

Job #14-101

Hub Steel
ABL100

Operators Manual

CONTROLLED AUTOMATION, INC.

MACHINE SAFETY

This section outlines procedures necessary to ensure safe operation and service of Controlled Automation machinery. For further information, contact Controlled Automation Service Department at 501-557-5109.

WARNING!

THIS MACHINE CONTAINS HAZARDOUS VOLTAGES, PRESSURIZED FLUIDS, ROTATING AND MOVING MECHANICAL PARTS. EQUIPMENT DAMAGE, PERSONAL INJURY OR DEATH CAN RESULT IF THE FOLLOWING GUIDELINES ARE NOT OBSERVED.

Only qualified personnel familiar with this machine and its controls should be permitted to install, operate, troubleshoot, or repair machine.

INSTALLATION

Machine must be physically placed to provide proper access & clearances that meet National, State, & Local codes.

Additional guards, gates, & safety devices may need to be installed on, near, or around the machine depending on the location of the machine in customer's facility. Specific safety procedures may also need to be established for this machine. Each machine installation must be individually evaluated by qualified safety personnel. For further information, contact Controlled Automation Service Department at 501-557-5109.

DANGER!

MATERIAL ENTERING AND EXITING THIS MACHINE POSES A SIGNIFICANT SAFETY HAZARD. SERIOUS PERSONAL INJURY OR DEATH CAN RESULT IF PROPER SAFETY DEVICES ARE NOT INSTALLED AND PROPER SAFETY PROCEDURES ARE NOT FOLLOWED.

The main electrical supply for the machine must meet National, State, & Local codes as well as any specific requirements designated by the Controlled Automation Installation Instructions.

The machine must be ground according to National, State, & Local codes as well as any specific requirements designated by the Controlled Automation Installation Instructions.

The shop air supply to the machine must be clean and dry. The shop air supply pressure and flow rate requirements for this machine are located on the machine approval drawing.

CAUTION!

SHOP AIR SUPPLY THAT DOES NOT MEET SPECIFIED REQUIREMENTS CAN CAUSE ERRATIC MACHINE OPERATION AND MACHINE COMPONENT FAILURE, WHICH MAY CREATE SAFETY HAZARDS.

CONTROLLED AUTOMATION, INC.

MACHINE SAFETY

OPERATION

Operator must be trained by a Controlled Automation Installation/Service Technician or by a previously trained authorized operator.

Operator must wear safety glasses while the machine is in operation.

Operator must be aware of other personnel nearby while the machine is in operation.

Operator must **TURN OFF AND LOCK OUT** incoming AC power to the machine if other personnel, near the machine, are in a dangerous location or position.

All enclosure doors/covers must be closed before turning on power to the machine.

All safety devices and covers must be installed before turning on power to the machine.

Keep all body parts out of the machine while machine power is on.

Do NOT stand on, crawl under, or climb over or in the machine and/or conveyors while machine power is on.

TURN OFF AND LOCK OUT incoming AC power to the machine when changing punches and dies.

TURN OFF AND LOCK OUT incoming AC power to the machine when changing shear blades.

MAINTENANCE & SERVICE

TURN OFF AND LOCK OUT incoming AC power to the machine when performing visual inspection.

TURN OFF AND LOCK OUT incoming AC power to the machine when performing maintenance.

Before performing any maintenance on the machine, all hydraulic devices must be moved to their lowest possible position. This will prevent any unexpected movement of frames, punches, shears, etc. if any valves, cylinders, or hoses are removed.

Before performing any maintenance on the machine, shop air supply must be disconnect and drained from the machine. This will remove pneumatic energy from the machine and prevent any unexpected movement of pneumatic operated devices.

Do not remove or paint over machine safety labels. Replace any missing or damaged safety label on the machine. Replacement labels can be ordered from Controlled Automation Parts Sale at 501-557-5109.

When it is necessary to make electrical measurements with the power turned on, do not touch any electrical connection points. Remove all jewelry from wrists and fingers. Make sure test equipment is in good safe operating condition. Stand on some type of insulation (not grounded).

CONTROLLED AUTOMATION, INC.

MACHINE SAFETY

By signing below, customer acknowledges that the Controlled Automation Installation Technician has instructed the operator on all safety procedures for this machine. Customer also acknowledges that the operator has read and understands the above general machine safety procedures, has read and understands all safety information contained in the motor control manuals which are part of this machine. These manuals are provided by Controlled Automation during the machine installation.

A Copy of this is to be returned to Controlled Automation & a copy to be kept by the customer.

Job Number: 14-101

Customer: HUB SITE / SUNCOAST PROJECTS

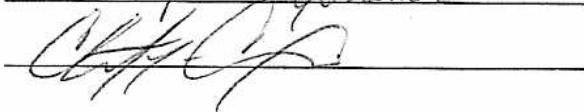
Machine: ABL 100 07-148

Supervisor Print Name: KEVIN HERRINGTON

Supervisor Signature: 

Date: 6/10/2016

Operator Print Name: Christopher Gonzalez

Operator Signature: 

Date: 06/10/2016

Installer Print Name: William Cooper

Installer Signature: 

Date: 6/10/16

Controlled Automation, Inc
Microsoft Windows Software

This form is for the protection of both parties concerning any misuse of this copy of Microsoft Windows. It may only be used for the system specified below.

Upon signing of this agreement, both parties agree on the use of Windows for the computer system specified below and accept the License Agreement enclosed in the Microsoft Windows package. This also confirms that Controlled Automation, Inc. has supplied an original copy of Microsoft Windows for the computer system specified below.

Windows Version: Windows 7 Professional

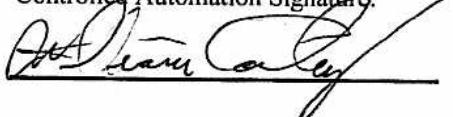
Windows COA Number: BC3GW-37KW2-24MBK-GCK4B-WW2K7

Company: Suncoast Projects, LLC dba Hub Steel

Job Number 14-101

Machine Type: Used ABL 100

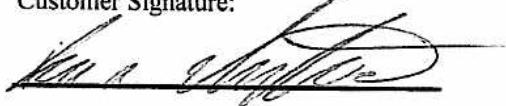
Controlled Automation Signature:



Date:

6/10/16

Customer Signature:



Date:

6/10/2016

BAD Job Build Sheet / WINDOWS 7 ACT/ ID/ INFO

JOB NUMBER: 14-101

COMPANY: Suncoast Projects, LLC dba Hub Steel

MACHINE TYPE: Used ABL 100

DATE/ TECH: JAN 13 2016 Jimmy

Windows 7 COA KEY: BC3GW-37KW2-24MBK-GCK4B-WW2K7
Windows Version Win 7

COMPUTER NAME: 14-101

Dave's xls spreadsheet updated no

COMPUTER SOFTWARE INFO**BAD MACHINE INFO**

WINCAD/SICAM LITE VERSION 4.4.9 13.0.7

BADMACHINE VERSION SC 6.1.27

CE VERSION 6.4

Motherboard Socket Type/Brand/Model # Socket 1151/ ASUS /Z170M-Pro

CPU i5 **Memory** DDR4
Hard Drive M.2 SSD

CONTROLLED AUTOMATION MACHINE INSTALLATION FORM

Customer Hub Steel Job Number 14-101

Machine ABL100 Date: 8/10/18 Installer WILLIAM COOPER
KEVIN HOLMAN

Authorized Signatures

MACHINE SAFETY: Operators must read and understand all safety material provided by Controlled Automation. Operators must be instructed by a Controlled Automation installation tech. on specific safety items and procedures. Altering the setup of the machine could cause injury or death.....

MACHINE OPERATION: Operators must know how to completely, correctly and safely operate the machine. This includes all programming functions, if applicable.....

OFFICE SOFTWARE: Office personnel, responsible for programming, are able to create parts, mults and the making of a shop disks.....

MACHINE MAINTANANCE: Operators and maintenance personnel are familiar with mechanical, elect., hyd., pneumatic and safety.....

IMPORTANT: By signing the above, you are indicating to us (Controlled Automation) that you are satisfied with each one of the items. Any problems should be taken care of, if possible, before the installation personnel leave the customer's facility.

List any problems with the machine and/or installation that have been mutually agreed upon to be addressed later by Controlled Automation or by the customer.

PROG S/W FOR RATCHET CYLINDER NEEDS TO BE REPLACED

CUSTOMER'S SIGNATURE:.....

CONTROLLED AUTOMATION SIGNATURE:.....

CONTROLLED AUTOMATION SERVICE CALL FORM

Customer HUB SITE / SUNCOAST PROJECTS	Date 6/10/16
Location GLOVERLAND, FL	Machine ABL-100
P.O. #	Service Tech William Cooper Kevin Hallinan

Initial Problem: INVERTER USED ABL 100

Steps To Correct:

Date	5/30	5/31	6/1	6/2	6/3	6/4	6/5	6/6	6/7	6/8	6/9	6/10	6/11
Travel	12.0	5.0						5.0					17.0
Shop	4.0	10.5	10.0	11.0	10.5	11.0	9.0	10.5	10.5	10.5	10.5	8.0	

Total Travel Hours	Total Shop Hours	Total Mileage
39.0	105.5	

PARTS INVOICE #

PARTS USED (NOT INCLUDED IN INVOICE #'S ABOVE)

750-512 MOOBUS UNIT

RETURNED PARTS (LIST PARTS RETURNED BY TECHNICIAN TO PARTS MANAGER)

Customer's signature is requested only to acknowledge that the initial problem has been resolved to the customer's satisfaction and to OK the work hours that will be charged. If the service call is under warranty, there will be no charges.

Customer's Signature Mike Miller Date 6/10/2016

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Job Number: _____

Customer: _____

Machine: _____

Supervisor Print Name: _____

Supervisor Signature: _____

Date: _____

Operator Print Name: _____

Operator Signature: _____

Date: _____

taller Print Name: _____

Installer Signature: _____

Date: _____

CONTROLLED AUTOMATION, INC.

ANGLE/BAR LINE INSTALLATION INSTRUCTIONS

Please read entire instructions. If there are any questions, please contact Controlled Automation.

NOTE: Some sections of these installation instructions are for options, which may not be applicable to your machine.

Special Tools Needed

Transit
Piano Wire (0.035"Ø)
2 - Hydraulic Bottle Jacks, 5 tons
Hammer Drill and Bit for Anchor Bolts (see anchor bolt list)
Various Length Levels
Long Straight Piece of Square Tubing or similar Material. (3" or 4" Square)
Come-along
Long Pry Bar
Tape Measures
Hammers
Sledge Hammers
Spacers to set between probe guide rod and encoder angle to place a level on

Unloading

The machine base weights approximately 7 tons. The machine base has slots at each corner so a cable can be wrapped around each end. The cables should be attached to a spreader beam and the spreader beam attached to the hoist. The cable lengths will need to be adjusted to get the proper balance of the machine. Normally the cable on the shear end is shorter than the cable on the infeed end.

Machine Base

Determine the approximate location of the machine using the dimensions on the approval drawings. Determine the highest location on the floor using the transit.

Set the machine base at the appropriate position on the floor. Aim the base as best possible in the direction of the infeed conveyors. Place your piece of straight tubing on the rolls in the machine base. Use this tube as the reference for leveling the machine in the infeed to outfeed direction. Use a torpedo level with the bubble on 45 degrees set on 2" Hex Bars to level the machine side to side. Use the hydraulic bottle jack to level the four corners of the base with the bottom of the V rolls at the proper elevation. Shim underneath the entire base using metal shims. Anchor base to the floor.

Infeed Conveyor

The rod must be straight and in alignment with the machine V rolls (use piano wire). The elevation of the rod must be the same for the entire length of the conveyor (use transit). The channel that the rod is attached to must be leveled (use level). The V rolls must be in alignment side to side along the length with the V rolls on the machine base (verify using straight tubing). There are jacking bolts on the conveyor base pads to help level the conveyor.

CONTROLLED AUTOMATION, INC.

ANGLE/BAR LINE INSTALLATION INSTRUCTIONS

The #1 section of infeed conveyor has an angle clip on the front of the conveyor to bolt to the machine base. The angle clip is installed for the purpose of proper alignment and proper height of the #1 section of infeed conveyor. After bolting up the #1 section check for proper alignment to the machine V rolls. The proper elevation of the probe guide rod must be set and the channel the probe guide rod is on must be leveled.

Run a piano wire through the machine the entire length of the infeed conveyors. Position the wire so it is at the same distance from all the V rolls in the machine. This wire will be used to align the infeed conveyors from the probe guide. Put the wire at a height that is easy to measure the distance to the probe guide rod. Remember the wire will have some sag. Measure from the vertical plane of the wire to the rod. Adjust the infeed conveyor #1 so the probe guide rod is the same distance from the vertical plane of the wire down the entire length of the conveyor. The come-along or long pry bar may be used to push or pull the conveyor one way or the other. Also, record the elevation of the probe guide rod at the closest point to the machine base using the transit. Set the infeed conveyor #1 so the probe guide rod is at the same elevation down its length. Use the jacking screws on the conveyor base to raise and lower the conveyor height. Level the channel to which the probe guide rod is mounted side to side. Spacers may be placed between the drive angle and the encoder angle so a level can be set in place. Verify that the long straight tubing or similar material will run from the infeed conveyor through the machine while remaining on all the V rolls. Adjust the conveyor as necessary. Shim and anchor the conveyors. Do not move the V-rolls on the infeed conveyor. If they are not aligned with the machine rolls, move the whole conveyor, not just the V-rolls. Set the remaining infeed conveyors in place. Use the provided dowel pins ($\frac{1}{2}$ "diameter x 1-1/2" long) to join the probe guide rods. Adjust the conveyor so the probe guide rod is at the appropriate distance away from the piano wire. Adjust the conveyor height so the rod is at the correct elevation using the transit. Adjust the conveyor so that the channel that the probe guide rod is mounted to is level front and back. Shim and anchor the conveyor.

Outfeed Conveyor

Place end of outfeed conveyor at the outfeed end of machine. Align with machine V rolls using piano wire as on the infeed. Make sure the roll height is the same roll height of machine V rolls. Blocks are added to raise it to working height. The blocks need to be removed after outfeed is installed. Note: Make sure air bags on first outfeed are inflated or blocked up to working height when installed. Set the 15' outfeed approximately 6" away from end of 5' outfeed and align.

Miscellaneous

Place the console at the location shown on the installation drawing.

Place the hydraulic power unit at the location shown on Approval Drawing. Attach the hydraulic lines from the power unit to the machine base.

Provide the air supply.

Provide the electrical power through a fused disconnect of the voltage and phase shown on the Approval Drawing. Do not turn power on to the panel.

Fill hydraulic power unit to the top of sight gauge, about 80 gallons, with hydraulic oil, Mobile DTE 26 or equivalent.

DO NOT TURN ON POWER TO THE MACHINE.

CONTROLLED AUTOMATION, INC.

ANGLE/BAR LINE INSTALLATION INSTRUCTIONS

Anchor Bolt List

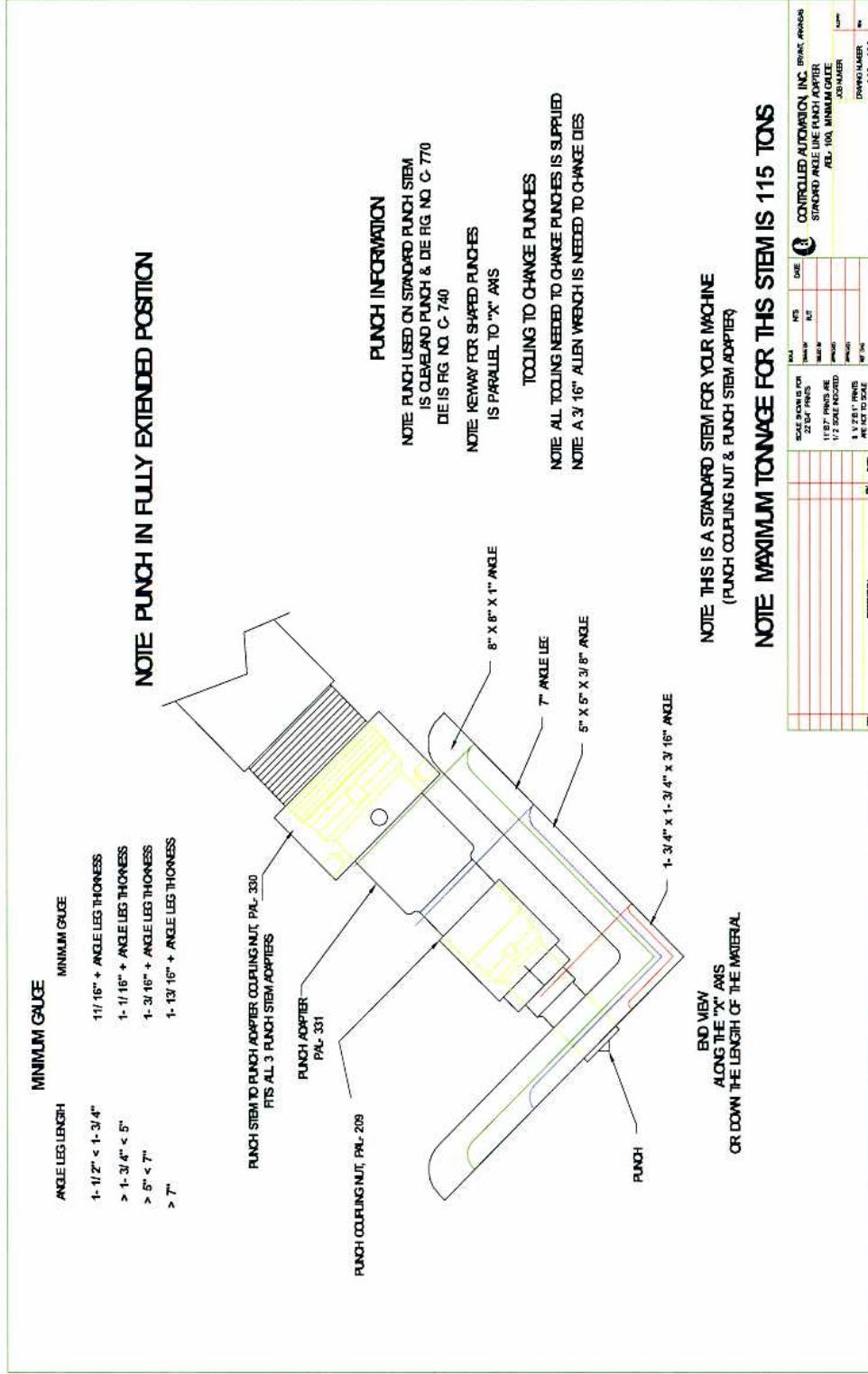
All anchor bolts need to be at least 4" deep into concrete floor.

Description	Bolt Type	Qty.
60' Infeed Conveyor	3/4"Ø	52
70' Infeed Conveyor	3/4"Ø	60
80' Infeed Conveyor	3/4"Ø	68
Machine Base	3/4"Ø	8
5' Outfeed Conveyor	1/2"Ø	8
15' Outfeed Conveyor	1/2"Ø	12 per section
Operator's Console	1/2"Ø	4
Electrical Panel	1/2"Ø	4
Stenciler	1/2" Ø	4
5 Infeed Load Conveyors	3/4"Ø	30
7 Infeed Load Conveyors	3/4"Ø	42

CONTROLLED AUTOMATION, INC.

115-ton Angleline Punch Stem Adapter

The 115-ton punch stem adapter is standard on the ABL-100 Angleline. It will handle the widest variety of gauges.



ABL Angeline

Shear Shimming

This table is applicable to all angle/bar line models *except* the ABL-86T-WM & ABL-74 (see below).

Figure 1 Shear Shimming Guide

Material Thickness	Single Cut Shear Clearance	Double Cut Shear Clearance
1/4"	.025" - .030"	.020" - .030"
5/16"	.025" - .040"	.020" - .035"
3/8"	.030" - .045"	.025" - .040"
1/2"	.040" - .055"	.035" - .060"
5/8"	-----	.045" - .075"
3/4"	-----	.060" - .085"

The ABL-86T-WM uses a single-cut shear with a .010" clearance. The maximum material size it can cut is 6 x 6 x 5/8 angle, and 6 x 5/8 flat bar.

Punch Tonnage Formula

Often it is helpful to know how large a hole the machine is capable of punching through a certain size material. Here is a formula to calculate how much tonnage it will take to punch. If the number you calculate is larger than the tonnage for your power unit or your punch adapters, you should not attempt to punch the hole.

Punch Tonnage = Punch Circumference * material thickness (inches) * shear strength of material

2000

The shear strength of the material is approximately

50,000 for A36 grade

52000 for A-572 - G50 grade

56000 for A-588 grade

A-572 - G50 grade

CONTROLLED AUTOMATION, INC.

ABL-100 ANGLE MACHINE - UPDATE

#14-101 - SUNCOAST PROJECTS - ORLANDO, FL

12/15/15

THE FULL LOAD AMPERAGE OF THE CONTROLLED AUTOMATION ABL-100 MACHINE IS 59 AMP @ 460VAC.

FLA	PROTECTION
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THE FOLLOWING ITEM IS SERVICED BY 1DISC - 600V 3 POLE COORDINATED PROTECT STARTER

30HP 3 PHASE MOTOR FOR HYDRAULIC POWER UNIT	40 AMP	AB #190-CPS40D12 w/ 190-P400
---------------------------------------------	--------	------------------------------

THE FOLLOWING ITEMS ARE SERVICED BY 2DISC -30A 600V 3 POLE FUSED DISCONNECT w/ 30A FUSES

1KVA 1PH COMPUTER ISOLATION TRANSFORMER	2.2 AMP	5 AMP FUSE
1KVA 1PH CONTROL VOLTAGE TRANSFORMER	2.2 AMP	

11KVA 3PH DRIVE ISOLATION TRANSFORMER (XPROBE)	13.8 AMP	20 AMP FUSE
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CONTROLLED AUTOMATION, INC.

ABL-100 ANGLE MACHINE - UPDATE

#14-101 - SUNCOAST PROJECTS - ORLANDO, FL

12/15/15

Manual Modbus (Switch Console) - Digital Inputs - Dwg. # 100W-902E-X

I-0	AC Power Start Switch
I-1	Stop Manual Switch (Program Stop)
I-2	Xprobe Enable Joystick Switch
I-3	TF Down Manual Switch
I-4	TF Up Manual Switch
I-5	Web Down Manual Switch
I-6	Web Up Manual Switch
I-7	Gripper Open Manual Switch
I-8	Gripper Close Manual Switch
I-9	Stencil Down Manual Switch
I-10	Stencil Up Manual Switch

Manual Modbus (Switch Console) - Analog Input - Dwg. # 100W-902D-X

AI-0	Xprobe Joystick Speed Reference
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CONTROLLED AUTOMATION, INC.

ABL-100 ANGLE MACHINE - UPDATE

#14-101 - SUNCOAST PROJECTS - ORLANDO, FL

12/15/15

Main Modbus (Main Enclosure) - Digital Outputs - Dwg. # 100W-955X-X

O-0	AC Power Start (CRM Start)
O-1	AC Power Stop (CRM Stop)
O-2	CE Reboot Relay (CRP)
O-3	
O-4	Xprobe Drive Start
O-5	Xprobe Drive Stop
O-6	HPU High Pressure
O-7	HPU Low Pressure
O-8	HPU Medium Pressure
O-9	First Holddown
O-10	Second Holddown
O-11	Third Holddown
O-12	Gripper Close
O-13	Gripper Open
O-14	Shear Extend
O-15	Shear Retract
O-16	Shear Green Light (Retrieve Part)
O-17	Shear Red Light (Machine In Process)
O-18	Shear Clamp On
O-19	Shear Clamp Off
O-20	Short Outfeed Conveyor On
O-21	Short Outfeed Conveyor Dump Up
O-22	Short Outfeed Conveyor Dump Down

Main Modbus (Main Enclosure) - Digital Inputs - Dwg. # 100W-955X-X

I-0	AC Power Detect (Control Voltage On)
I-1	Hydraulic Detect (HPU On)
I-2	Shear Extend Limit Switch
I-3	Shear Retract Limit Switch
I-4	Shear Complete Advance Manual Switch (Continue)
I-5	Stop Switch on Shear Console (Program Stop)
I-6	Shear Extend (Cycle) Manual Switches
I-7	Shear Retract Manual Switch
I-8	Short Outfeed Conveyor Dump Up Manual Switch
I-9	Short Outfeed Conveyor Dump Down Manual Switch
I-10	Short Outfeed Conveyor On Manual Switch

CONTROLLED AUTOMATION, INC.

ABL-100 ANGLE MACHINE - UPDATE

#14-101 - SUNCOAST PROJECTS - ORLANDO, FL

12/15/15

Frame CE Box - Digital Inputs - Dwg. # 100W-981I-X

I-0	TF Punch Extend Limit Switch
I-1	TF Punch Retract Limit Switch
I-2	TF Frame Home Limit Switch
I-3	Web Punch Extend Limit Switch
I-4	Web Punch Retract Limit Switch
I-5	Web Frame Home Limit Switch
I-6	
I-7	Xprobe Slow Speed Photoeye
I-8	Flapper Contact Proximity Switch
I-9	Xprobe Home Limit Switch
I-10	Flapper Extend Proximity Switch

Frame CE Box - Digital Outputs - Dwg. # 100W-981J-X

O-16	TF Frame Up Fast
O-17	TF Frame Down Fast
O-18	TF Frame Up Slow
O-19	TF Frame Down Slow
O-20	TF Punch Extend
O-21	TF Punch Retract
O-22	TF Probe
O-23	Web Frame Up Fast
O-24	Web Frame Down Fast
O-25	Web Frame Up Slow
O-26	Web Frame Down Slow
O-27	Web Punch Extend
O-28	Web Punch Retract
O-29	Web Probe
O-30	
O-31	Flapper Extend

Frame CE Box - Counter Inputs - Dwg. # 100W-981H-X

CNT0	Xprobe
CNT1	Web Probe
CNT2	TF Probe
CNT3	Shear

Frame CE Box - DA Outputs - Dwg. # 100W-981G-X

DA0	Xprobe Drive
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CONTROLLED AUTOMATION, INC.

ABL-100 ANGLE MACHINE - UPDATE

#14-101 - SUNCOAST PROJECTS - ORLANDO, FL

12/15/15

Stencil CE Box - Digital Inputs - Dwg. # 100W-984I-X

I-0 Stencil Wheel Init Proximity Switch

Stencil CE Box - Digital Outputs - Dwg. # 100W-984J-X

O-16 Stencil Frame Up Slow
O-17 Stencil Frame Down Slow
O-18 Stencil Hammer Extend
O-19 Stencil Wheel Drive Start
O-20 Stencil Wheel Drive Stop

Stencil CE Box - Counter Inputs - Dwg. # 100W-984H-X

CNT0 Stencil Wheel
CNT1 Stencil Frame

Stencil CE Box - DA Outputs - Dwg. # 100W-984G-X

DA0 Stencil Wheel Drive

CONTROLLED AUTOMATION, INC.

ABL-100 ANGLE MACHINE - UPDATE

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12/15/15

Infeed Modbus (Infeed Load Table Enclosure) - Digital Outputs - Dwg. # 100W-931E-X

- O-0 Table Index Cylinder Extend
- O-1 First 20' Load Zone Arms Up - 20' Material
- O-2 Second 20' Load Zone Arms Up - 40' Material
- O-3 Third 20' Load Zone Arms Up - 60' Material

Infeed Modbus (Infeed Load Table Enclosure) - Digital Inputs - Dwg. # 100W-931F-X

- I-0 Table Index Manual Switch
- I-1 Load Material Manual Switch
- I-2 Arms Up Manual Switch
- I-3 Table Index Cylinder Extend Proximity Switch
- I-4 Material at Load Position Limit Switch
- I-5 First 20' Load Zone Arms Up Limit Switch
- I-6 Second 20' Load Zone Arms Up Limit Switch
- I-7 Third 20' Load Zone Arms Up Limit Switch

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ABL-100 ANGLE MACHINE - UPDATE

#14-101 - SUNCOAST PROJECTS - ORLANDO, FL

12/15/15

1. 16-12 SO CORD - MAIN ENCLOSURE TO SWITCH CONSOLE

CG7575 CORD GRIP		CG7575 CORD GRIP
5L1	RED	5L1
5L2	BLUE	5L2
8L1	BLACK/WHITE	8L1
8L2	WHITE/BLACK	8L2
9L1	BLACK	9L1
9L2	WHITE	9L2
REM1	RED/BLACK	REM1
REM2	BLUE/BLACK	REM2
HPU1	ORANGE	HPU1
HPU2	ORANGE/BLACK	HPU2
G	GREEN	N/C
N/C	GREEN/BLACK	N/C

(CONSOLE GROUNDED VIA GREEN #10 STAR GROUND WIRE)

2. 16-6 SO CORD - SWITCH CONSOLE TO COMPUTER CONSOLE

LPCG507 CORD GRIP		LPCG507 CORD GRIP
5L1	RED	5L1
5L2	BLUE	5L2
8L1	BLACK	8L1
8L2	WHITE	8L2
G - CHASSIS	GREEN	G - CHASSIS
N/C	ORANGE	N/C

3F. 16-6 SO CORD - MAIN ENCLOSURE TO FRAME CE BOX

CG5050 CORD GRIP		CG5050 CORD GRIP
CB13	RED	6L1
6L2	BLUE	6L2
9L1	BLACK	9L1
9L2	WHITE	9L2
G	GREEN	G TERMINAL ONLY
N/C	ORANGE	N/C

3S. 16-6 SO CORD - MAIN ENCLOSURE TO STENCIL CE BOX

CG5050 CORD GRIP		CG5050 CORD GRIP
CB12	RED	6L1
6L2	BLUE	6L2
9L1	BLACK	9L1
9L2	WHITE	9L2
G	GREEN	G TERMINAL ONLY
N/C	ORANGE	N/C

4. 1/2" SEALTITE - MAIN ENCLOSURE TO NETWORK SWITCH ENCLOSURE

1/2" STRAIGHT STC		1/2" STRAIGHT STC
5L1	BLACK #16	L of 115VAC OUTLET CONNECTOR
5L2	WHITE #16	N of 115VAC OUTLET CONNECTOR
G	GREEN #16	G of 115VAC OUTLET CONNECTOR

CONTROLLED AUTOMATION, INC.

ABL-100 ANGLE MACHINE - UPDATE

#14-101 - SUNCOAST PROJECTS - ORLANDO, FL

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6. 1/2" SEALTITE - MAIN ENCLOSURE TO SHEAR SWITCH CONSOLE

1/2" STRAIGHT STC		1/2" STRAIGHT STC
O-16	BLUE/RED #16	O-16
O-17	VIOLET/RED #16	O-17
I-4	ORANGE/GREY #16	I-4
I-5	YELLOW/GREY #16	I-5
I-6	BLUE/GREY #16	I-6
I-7	VIOLET/GREY #16	I-7
I-8	BROWN/VIOLET #16	I-8
I-9	RED/VIOLET #16	I-9
I-10	ORANGE/VIOLET #16	I-10
REM2	BLACK/ORANGE #16	REM2
REM3	BLACK/YELLOW #16	REM3
9L1	BLACK #16	9L1
9L2	WHITE #16	9L2
G	GREEN #16	G - CHASSIS & SWITCH PLATE

8. 1/2" SEALTITE - MAIN ENCLOSURE TO INFEED CONVEYOR ESTOP SWITCH BOX

1/2" STRAIGHT STC		1/2" STRAIGHT STC
OT1	BLUE #16	OT1
OT2	BLUE #16	OT2
OT3	VIOLET #16	OT3
OT4	VIOLET #16	OT4
REM3	BLACK/YELLOW #16	REM3
REM4	BLACK/BLUE #16	REM4
G	GREEN #16	G - CHASSIS

10A. 8-4 SO CORD - MAIN ENCLOSURE TO XPROBE MOTOR - EXISTING

CG7575 CORD GRIP		CG7575 CORD GRIP
T1	BLACK	1
T2	WHITE	2
T3	RED	3
G	GREEN	GND LUG OF MOTOR

10B. 18-6 (3 PAIR SPOS) CABLE - MAIN ENCLOSURE (XPROBE DRIVE) TO XPROBE MOTOR RESOLVER - EXISTING

CG3150 CORD GRIP		MOTOR CONNECTOR
30 (SHD)	SHIELD	(SHIELD NOT CONNECTED AT MOTOR END)
27 (R1)	RED	CONNECTOR PIN F
28 (R2)	BLACK	CONNECTOR PIN G
23 (S2)	WHITE	CONNECTOR PIN M
24 (S4)	BLACK	CONNECTOR PIN E
25 (S1)	GREEN	CONNECTOR PIN D
26 (S3)	BLACK	CONNECTOR PIN N

10C. 16-3 SO CORD - MAIN ENCLOSURE TO BEEPER ON XPROBE

CG3150 CORD GRIP		CG3150 CORD GRIP
9L1	BLACK	L1 TERMINAL
9L2	WHITE	L2 TERMINAL
G	GREEN	CHASSIS OF BOX ON XPROBE

CONTROLLED AUTOMATION, INC.

ABL-100 ANGLE MACHINE - UPDATE

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MO-1. SEALTITE - MAIN ENCLOSURE TO MAIN OUTPUT BRANCH BOX

HPU1	BROWN #16	HPU1	
HPU2	RED #16	HPU2	
O-6	YELLOW/BLUE #16	22	1SOL22 - HIGH PRESSURE
O-7	VIOLET/BLUE #16	23	1SOL23 - LOW PRESSURE
O-8	GRAY/BLUE #16	24	1SOL24 - MEDIUM PRESSURE
O-9	ORANGE/BLUE #16	21	1SOL21 - FIRST HOLDDOWN
O-10	BLUE/GRAY #16	11	1SOL11 - SECOND HOLDDOWN
O-11	ORANGE/WHITE #16	2	1SOL12 - THIRD HOLDDOWN
O-12	BLUE/VIOLET #16	17	1SOL17 - GRIPPER CLOSE
O-13	GRAY/VIOLET #16	18	1SOL18 - GRIPPER OPEN
O-14	BROWN/WHITE #16	0	1SOL0 - SHEAR EXTEND
O-15	RED/WHITE #16	1	1SOL1 - SHEAR RETRACT
O-18	BROWN/YELLOW #16	25	1SOL25 - SHEAR CLAMP ON
O-19	RED/YELLOW #16	26	1SOL26 - SHEAR CLAMP OFF
9L2	WHITE #16	9L2	
G	GREEN #16		G - CHASSIS

MO-2. SEALTITE - MAIN ENCLOSURE TO OUTFEED DUMP ENCLOSURE (MOUNTED ON 5' OUTFEED CONVEYOR)

O-20	BROWN #16	113	4CR113 - SHORT OUTFEED CONTACTOR
O-21	RED #16	114	4SOL114 - SHORT OUTFEED DUMP UP
O-22	ORANGE #16	115	4SOL115 - SHORT OUTFEED DUMP DOWN
9L2	WHITE #16	9L2	
G	GREEN #16		G - CHASSIS

MI-1. SEALTITE - MAIN ENCLOSURE TO MAIN INPUT BRANCH BOX

I-2	RED/BROWN #16	55	3LS55 - SHEAR EXTEND LIMIT SWITCH
I-3	ORANGE/BROWN #16	56	3LS56 - SHEAR RETRACT LIMIT SWITCH
9L1	BLACK #16	9L1	(Relabel RET to 9L1)
9L2	WHITE #16	9L2	(Relabel + to 9L2)
G	GREEN #16		G - CHASSIS

CONTROLLED AUTOMATION, INC.

ABL-100 ANGLE MACHINE - UPDATE

#14-101 - SUNCOAST PROJECTS - ORLANDO, FL

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FO-1. 1/2" SEALTITE -FRAME CE BOX TO MAIN OUTPUT BRANCH BOX

1/2" PLASTIC SEALTITE CONNECTOR		1/2" SEALTITE CONNECTOR
O-16	BROWN/GRAY #16	7 1SOL7 - TF FRAME UP FAST
O-17	RED/GRAY #16	8 1SOL8 - TF FRAME DOWN FAST
O-18	ORANGE/GRAY #16	9 1SOL9 - TF FRAME UP SLOW
O-19	YELLOW/GRAY #16	10 1SOL10 - TF FRAME DOWN SLOW
O-20	VIOLET/WHITE #16	5 1SOL5 - TF PUNCH EXTEND
O-21	GRAY/WHITE #16	6 1SOL6 - TF PUNCH RETRACT
O-22	BLUE/WHITE #16	4 1SOL4 - TF PROBE
O-23	BROWN/VIOLET #16	13 1SOL13 - WEB FRAME UP FAST
O-24	RED/VIOLET #16	14 1SOL14 - WEB FRAME DOWN FAST
O-25	ORANGE/VIOLET #16	15 1SOL15 - WEB FRAME UP SLOW
O-26	BLUE/VIOLET #16	16 1SOL16 - WEB FRAME DOWN SLOW
O-27	BROWN/BLUE #16	19 1SOL19 - WEB PUNCH EXTEND
O-28	RED/BLUE #16	20 1SOL20 - WEB PUNCH RETRACT
O-29	VIOLET/GRAY #16	12 1SOL12 - WEB PROBE
9L1	BLACK #16	9L1
9L2	WHITE #16	9L2
G	GREEN #16	G - CHASSIS

FO-2. BELDEN #7410A - FRAME SBC BOX IN FLAPPER EXTEND AIR VALVE

LPCG50 CORD GRIP		LPCG50 CORD GRIP
O-31	BLACK - 1	AIR VALVE COIL
9L2	BLACK - 2	AIR VALVE COIL
G - TERMINAL	GREEN/YELLOW	G - CHASSIS

FI-1. 1/2" SEALTITE -FRAME CE BOX TO MAIN INPUT BRANCH BOX

1/2" PLASTIC SEALTITE CONNECTOR		1/2" SEALTITE CONNECTOR
I-0	(RED #16) VIOLET #16	52 3LS52 - TF EXTEND LIMIT SWITCH
I-1	(RED #16) GRAY #16	53 3LS53 - TF RETRACT LIMIT SWITCH
I-2	(RED #16) WHITE #16	54 3LS54 - TF HOME LIMIT SWITCH
I-3	(RED #16) BLUE/BROWN #16	57 3LS57 - WEB EXTEND LIMIT SWITCH
I-4	(RED #16) VIOLET/BROWN #16	58 3LS58 - WEB RETRACT LIMIT SWITCH
I-5	(RED #16) GRAY/BROWN #16	59 3LS59 - TF HOME LIMIT SWITCH
I-6	(RED #16) WHITE/BROWN 316	60 3LS60 - TORCH HOME LIMIT SWITCH
9L1	BLACK #16	9L1
9L2	WHITE #16	9L2
G	GREEN #16	G - CHASSIS

FI-2. 1/2" SEALTITE -FRAME CE BOX TO MAIN INPUT BRANCH BOX

1/2" PLASTIC SEALTITE CONNECTOR		1/2" SEALTITE CONNECTOR
I-7	RED #16 - I-7	I-7 F-PEC7 - XPROBE SLOW SPEED PHOTOEYE
I-8	RED #16 - I-8	I-8 F-PRS8 - FLAPPER CONTACT PROX SWITCH
I-9	RED #16 - I-9	I-9 F-LS9 - XPROBE HOME LIMIT SWITCH
I-10	RED #16 - I-10	I-10 F-PRS10 - FLAPPER EXTEND PROX SWITCH
9L1	RED #16 - 9L1	9L1
9L2	WHITE #16 - 9L2	9L2
G	GREEN #16	G - CHASSIS

CONTROLLED AUTOMATION, INC.

ABL-100 ANGLE MACHINE - UPDATE

#14-101 - SUNCOAST PROJECTS - ORLANDO, FL

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F-CNT0. 18-6 NEOPRENE SHIELDED CABLE - FRAME CE BOX TO XPROBE ENCODER

GROUNDING CONNECTOR		AMPHENOL ENCODER CONNECTOR
CONNECTOR	SHIELD	N/C
+5	RED	PIN D
RET	GREEN	PIN F
A	BLACK	PIN A
A#	BLUE	PIN E
B	WHITE	PIN B
B#	BROWN	PIN G

F-CNT1. 18-6 NEOPRENE SHIELDED CABLE - FRAME CE BOX TO WEB ENCODER

GROUNDING CONNECTOR		AMPHENOL ENCODER CONNECTOR
CONNECTOR	SHIELD	N/C
+5	RED	PIN D
RET	GREEN	PIN F
A	BLACK	PIN A
A#	BLUE	PIN E
B	WHITE	PIN B
B#	BROWN	PIN G

F-CNT2 . 18-6 NEOPRENE SHIELDED CABLE - FRAME CE BOX TO TF ENCODER

GROUNDING CONNECTOR		AMPHENOL ENCODER CONNECTOR
CONNECTOR	SHIELD	N/C
+5	RED	PIN D
RET	GREEN	PIN F
A	BLACK	PIN A
A#	BLUE	PIN E
B	WHITE	PIN B
B#	BROWN	PIN G

F-CNT3 . 18-6 NEOPRENE SHIELDED CABLE - FRAME CE BOX TO SHEAR ENCODER

GROUNDING CONNECTOR		AMPHENOL ENCODER CONNECTOR
CONNECTOR	SHIELD	N/C
+5	RED	PIN D
RET	GREEN	PIN F
A	BLACK	PIN A
A#	BLUE	PIN E
B	WHITE	PIN B
B#	BROWN	PIN G

F-DA0. 18-4 GRAY PVC SHIELDED CABLE - FRAME CE BOX TO MAIN ENCLOSURE

GROUNDING CONNECTOR		CG1850 CORD GRIP
CONNECTOR	SHIELD	PIN 1 OF BALDOR #SD23H2A15-E
DA0+	WHITE	PIN 4 OF BALDOR #SD23H2A15-E
DA0-	BLACK	PIN 5 OF BALDOR #SD23H2A15-E
DA1+	RED	PIN 2 OF BALDOR #SD23H2A15-E
DA1-	GREEN	PIN 1 OF BALDOR #SD23H2A15-E

CONTROLLED AUTOMATION, INC.

ABL-100 ANGLE MACHINE - UPDATE

#14-101 - SUNCOAST PROJECTS - ORLANDO, FL

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SO-1. 1/2" SEALTITE - STENCIL CE BOX TO STENCIL WHEEL DRIVE ENCLOSURE

1/2" PLASTIC STRAIGHT STC		1/2" STRAIGHT STC
O-16	BROWN #16	35 - S-SOL16 - STENCIL FRAME UP HYD. VALVE COIL
O-17	RED #16	36 - S-SOL17 - STENCIL FRAME DOWN HYD. VALVE COIL
O-18	ORANGE #16	37 - S-SOL18 - HAMMER EXTEND HYD. VALVE COIL
O-19	BROWN #16	CR6 - CR6 - STENCIL WHEEL DRIVE - START
O-20	RED #16	CR7 - CR7 - STENCIL WHEEL DRIVE - START
9L1	BLACK #16	9L1
9L2	WHITE	9L2
G	GREEN	G - CHASSIS

SI-1. 16-4 SO CORD - STENCIL CE BOX TO STENCIL WHEEL INIT PROXIMITY SWITCH

CG3150 CORD GRIP		CG3150 CORD GRIP
I-0	RED	S-PRS0 - STENCIL WHEEL INIT PROX SWITCH
9L1	BLACK	PROX SWITCH
N/C	WHITE	N/C
G	GREEN	G

S-CNT0. 18-6 NEOPRENE SHIELDED CABLE - STENCIL CE BOX TO STENCIL WHEEL ENCODER

OLFLEX GROUNDING CONNECTOR		AMPHENOL ENCODER CONNECTOR
CONNECTOR	SHIELD	N/C
+5	RED	PIN D
RET	GREEN	PIN F
A	BLACK	PIN A
A#	BLUE	PIN E
B	WHITE	PIN B
B#	BROWN	PIN G

S-CNT1. 18-6 NEOPRENE SHIELDED CABLE - STENCIL CE BOX TO STENCIL FRAME ENCODER

OLFLEX GROUNDING CONNECTOR		AMPHENOL ENCODER CONNECTOR
CONNECTOR	SHIELD	N/C
+5	RED	PIN D
RET	GREEN	PIN F
A	BLACK	PIN A
A#	BLUE	PIN E
B	WHITE	PIN B
B#	BROWN	PIN G

S-DA0. 16-2 GRAY PVC SHIELDED CABLE - STENCIL CE BOX TO STENCIL WHEEL SERVO DRIVE ENCLOSURE

OLFLEX GROUNDING CONNECTOR		CG1850 CORD GRIP
CONNECTOR	SHIELD	N/C
DA0+	WHITE	PIN 4 OF BALDOR #TSD-100-05-1-U
DA0-	BLACK	PIN 5 OF BALDOR #TSD-100-05-1-U

CONTROLLED AUTOMATION, INC.

ABL-100 ANGLE MACHINE - UPDATE

#14-101 - SUNCOAST PROJECTS - ORLANDO, FL

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30A. 1/2" SEALTITE - MAIN ENCLOSURE TO INFEED LOAD TABLE ENCLOSURE

1/2" STRAIGHT STC		1/2" STRAIGHT STC
5L1	BLACK/RED #16	5L1
5L2	WHITE/RED #16	5L2
9L1	BLACK #16	9L1
9L2	WHITE #16	9L2
REM5	BLACK/VIOLET #16	REM5
REM6	BLACK/GREY #16	REM6
G	GREEN #16	G - CHASSIS

30B. 1/2" SEALTITE - INFEED LOAD TABLE ENCLOSURE TO INFEED LOAD TABLE SWITCH CONSOLE

1/2" STRAIGHT STC		1/2" STRAIGHT STC
I-0	BROWN #16	Table Index Manual Switch
I-1	RED #16	Load Material Manual Switch
I-2	ORANGE #16	Arms Up Manual Switch
9L1	BLACK #16	9L1
9L2	WHITE #16	9L2
REM5	BLACK/VIOLET #16	REM5
REM6	BLACK/GREY #16	REM6
G	GREEN #16	G - CHASSIS & SWITCH PANEL

Angleline Machine Maintenance

Like any piece of equipment, many things can be done to minimize downtime and extend the equipment's life. Here is a short maintenance schedule, which should help keep your angle/bar line running problem-free.

Figure 1 Maintenance Schedule

Daily	Check hydraulic fluid level. Refill if needed.
	Check for and repair any hydraulic or air leaks.
	Check for and tighten any loose bolts and nuts.
	Check lubricating oil level and drain water from filter-regulator-lubricator at air inlet.
	Grease shear guide bearings and wipe away excess.
	Check encoders, connectors, gear and rack assemblies on all units.
	Check pinch wheel for mill scale, dirt, oil, freedom of movement, and loose nuts and bolts.
Weekly	Grease holdown wheel axles and center section roll bearings. Wipe off all excess grease.
	Clean probe and encoder racks on infeed conveyor.
	Check for groove on pinch wheel.
	Grease fittings on pinch wheel cam roll.
Monthly	Check engagement of X Drive gear to rack.
	Check condition of wiring to X Probe in conduflex and straighten if needed.
	Check alignment of shear blades and punches and dies.
	Check all bolts on the infeed conveyor.
Every 6 months	Check brushes on conveyor drive motors. Replace them when length gets close to the indicated mark on the brushes. Blow the carbon dust from the motors and brush housing. <u>Do not</u> remove motor and cover. (Some motors do not have brushes).
	Check oil level in drive gears.
Yearly	Replace hydraulic oil and filter. (Mobil DTE-26 or equivalent 5000-hour minimum service life). Drain and clean out tank.

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Electrical Drawing List - Page 1 of 2

100W-901A-1	COMPUTER CONSOLE
100W-901B-1	COMPUTER CONSOLE - PANEL LAYOUT
100W-901C-1	COMPUTER CONSOLE - POWER SUPPLY MOUNTING
100W-901D-1	COMPUTER CONSOLE - OUTSIDE DETAIL
100W-902A-2	SWITCH CONSOLE - SWITCH LAYOUT
100W-902B-1	SWITCH CONSOLE - PANEL LAYOUT
100W-902C-1	SWITCH CONSOLE - SCHEMATIC #1
100W-902D-1	SWITCH CONSOLE - SCHEMATIC #2
100W-902E-2	SWITCH CONSOLE - SWITCH SCHEMATIC
100W-905A-14101	XPROBE DRIVE - SCHEMATIC
100W-907C-2	ETHERNET NETWORK - GROUNDING
100W-907D-1	ETHERNET NETWORK - ENCLOSURE DETAIL
100W-908A-07148	STENCIL WHEEL DRIVE - SCHEMATIC
100W-908B-07148	STENCIL WHEEL DRIVE - LAYOUT
100W-911A-07148	SHEAR CONSOLE
100W-912-1	INFEED BRANCH BOX
100W-931A-1	INFEED LOAD TABLE - ENCLOSURE DETAIL
100W-931B-1	INFEED LOAD TABLE - ENCLOSURE PANEL LAYOUT
100W-931C-1	INFEED LOAD TABLE - MODBUS I/O DETAIL
100W-931D-1	INFEED LOAD TABLE - TERMINAL STRIP DETAIL
100W-931E-2	INFEED LOAD TABLE - MODBUS OUTPUTS
100W-931F-2	INFEED LOAD TABLE - MODBUS INPUTS
100W-932-07148	EXISTING - INFEED LOAD TABLE - SWITCH CONSOLE
100W-941-07148	OUTFEED DUMP CONVEYOR - 460VAC MAIN SERVICE
100W-942A-07148	OUTFEED DUMP CONVEYOR - MOTOR SCHEMATIC
100W-942B-07148	OUTFEED DUMP CONVEYOR - PANEL LAYOUT
100W-951-07148	MAIN SERVICE - 460VAC
100W-952-07148	HPU MAIN SERVICE - 460VAC
100W-953A-1	CONTROL VOLTAGE SCHEMATIC
100W-954-2	COMPUTER VOLTAGE
100W-955A-07148	EXISTING MAIN ELECTRICAL PANEL - OUTSIDE DETAIL
100W-955B-07148	EXISTING MAIN ELECTRICAL PANEL - PANEL LAYOUT
100W-955C-07148	MAIN MODBUS - I/O DETAIL
100W-955D-07148	MAIN MODBUS - TERMINAL DETAIL
100W-955E-07148	MAIN MODBUS I/O - OUTPUT 0-11
100W-955F-07148	MAIN MODBUS I/O - OUTPUT 12-19
100W-955G-07148	MAIN MODBUS I/O - INPUTS 0-9
100W-981A-1	FRAME CE BOX - COMPONENT LAYOUT
100W-981B-1	FRAME CE BOX - COMPUTER PANEL LAYOUT
100W-981C-1	FRAME CE BOX - I/O PANEL LAYOUT
100W-981D-14101	FRAME CE BOX - I/O BOARDS JUMPERS & SWITCHES
100W-981E-1	FRAME CE BOX - POWER DISTRIBUTION
100W-981F-3	FRAME CE BOX - COUNTER & DA CONNECTIONS
100W-981G-3	FRAME CE BOX - TERMINAL STRIP DETAIL
100W-981H-3	FRAME CE BOX - ENCODER CABLES
100W-981I-14101	FRAME CE BOX - 115VAC INPUTS
100W-981J-14101	FRAME CE BOX - 115VAC OUTPUTS

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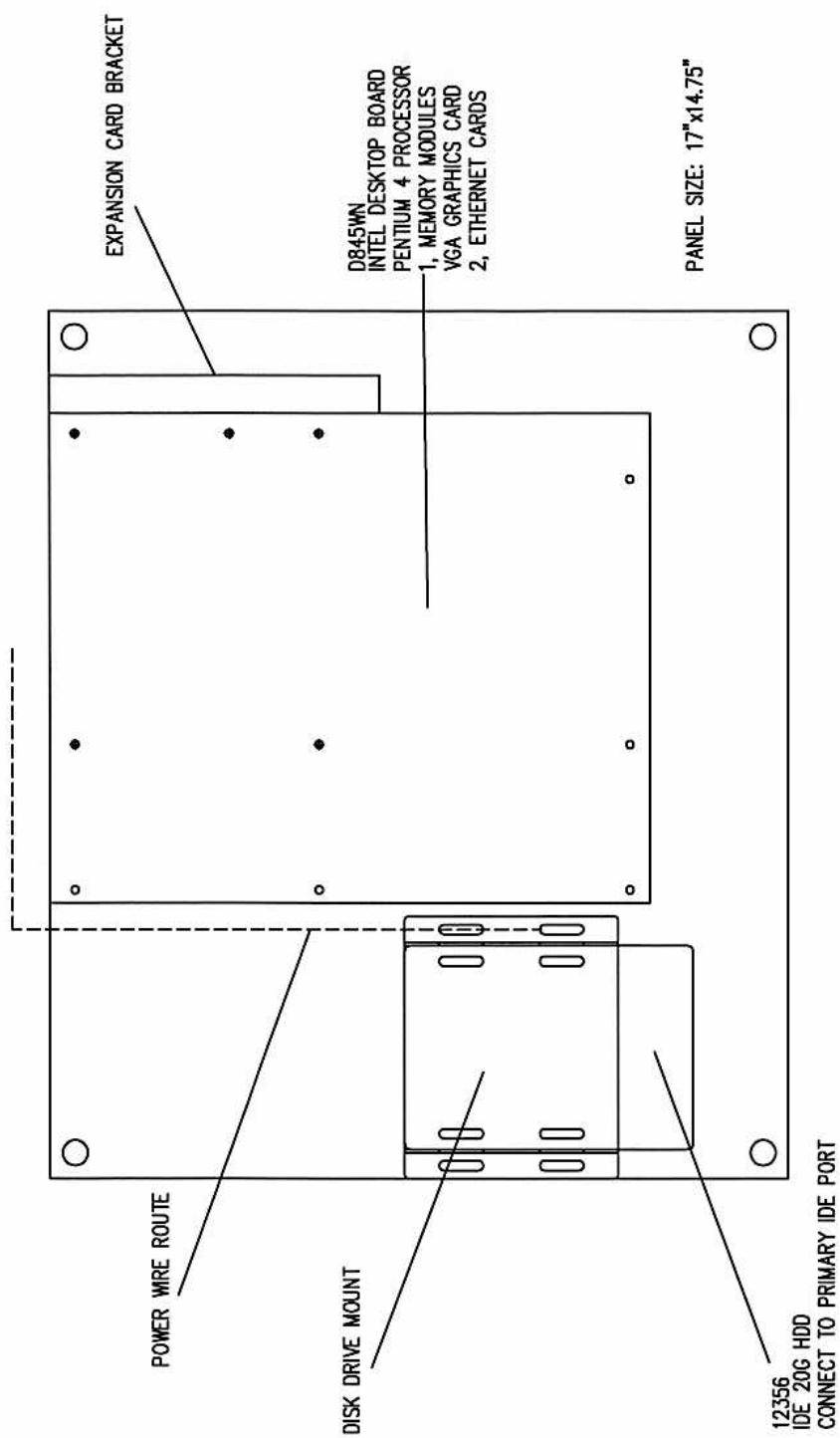
ABL-100 ANGLE MACHINE - UPDATE

#14-101 - SUNCOAST PROJECTS - ORLANDO, FL

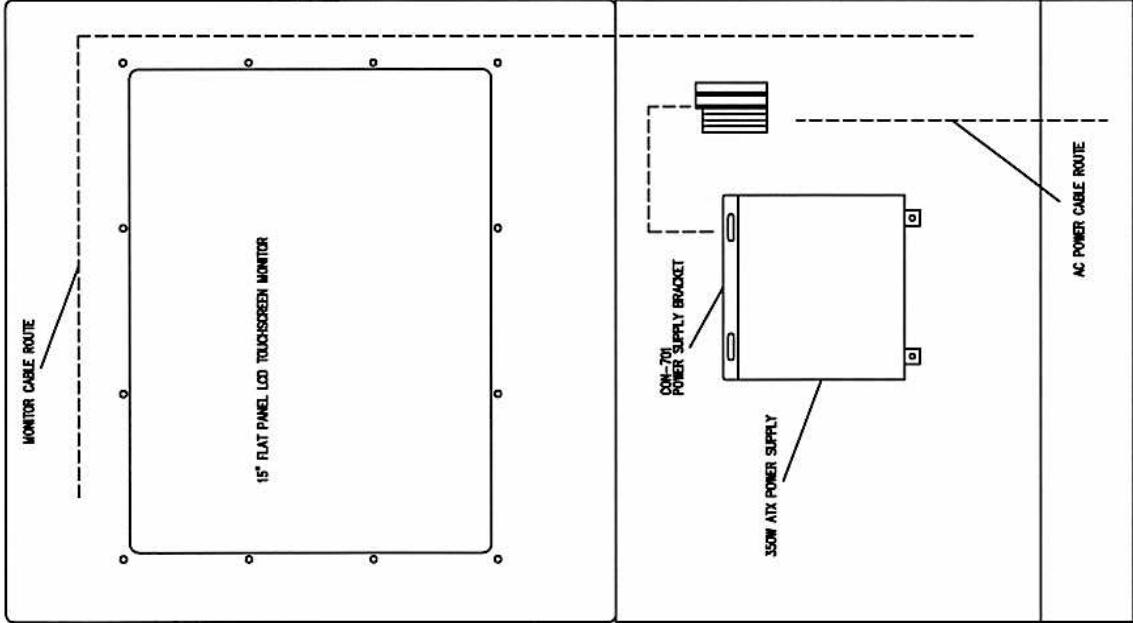
12/15/15

Electrical Drawing List - Page 2 of 2

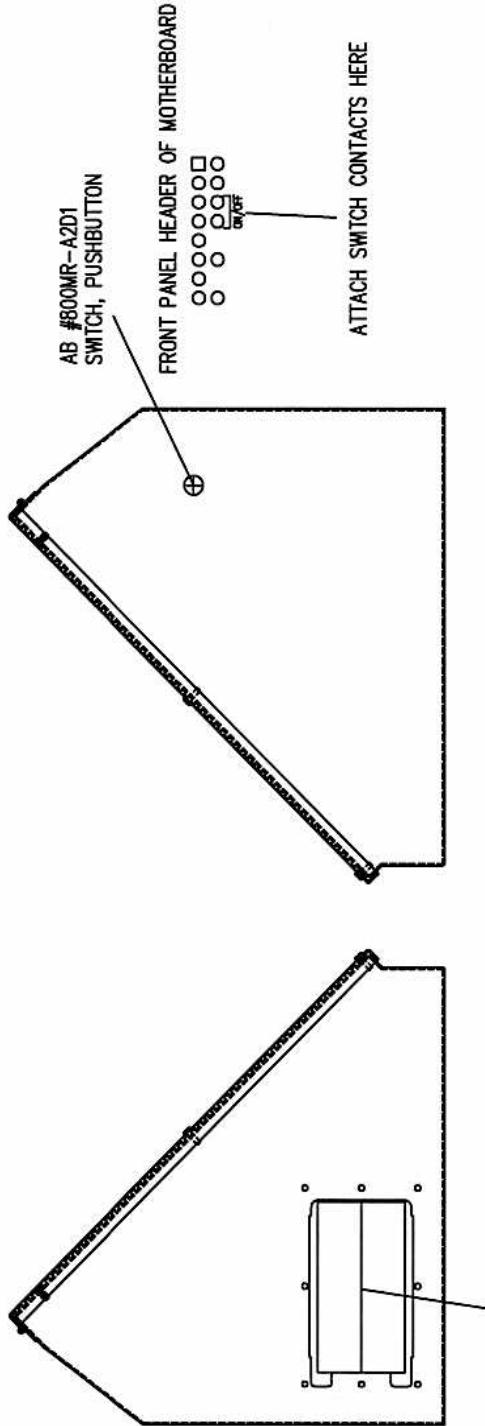
100W-984A-1	STENCIL CE BOX - COMPONENT LAYOUT
100W-984B-1	STENCIL CE BOX - COMPUTER PANEL LAYOUT
100W-984C-07148	STENCIL CE BOX - I/O PANEL LAYOUT
100W-984D-1	STENCIL CE BOX - I/O BOARDS JUMPERS & SWITCHES
100W-984E-1	STENCIL CE BOX - POWER DISTRIBUTION
100W-984F-1	STENCIL CE BOX - COUNTER & DA CONNECTIONS
100W-984G-1	STENCIL CE BOX - TERMINAL STRIP DETAIL
100W-984H-1	STENCIL CE BOX - ENCODER CABLES
100W-984I-1	STENCIL CE BOX - 115VAC INPUTS
100W-984J-07148	STENCIL CE BOX - 115VAC OUTPUTS



SCALE:	NTS	DATE	CONTROLLED AUTOMATION, INC.	P.O. BOX 888 BRYANT, AR 72089
DRAWN BY:	DAB	3/1/07	TIME	PHONE (501) 557-5109
DRAWING NUMBER:	100W-901B-1	REV:		ABL-100 ANGLELINE
				MAIN CONSOLE - PANEL LAYOUT

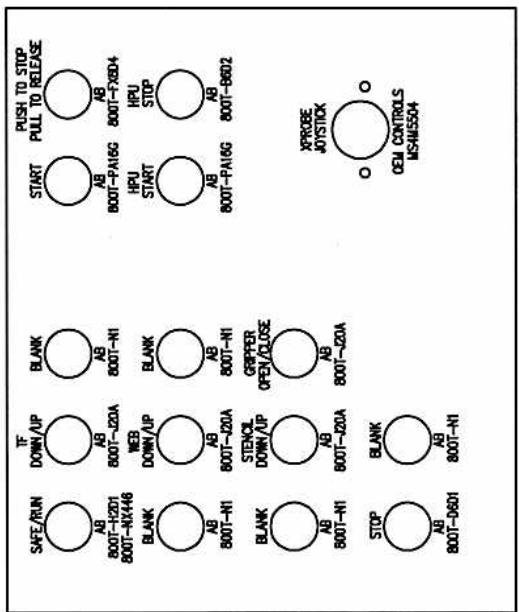


SCALE:	NTS	DATE	CONTROLLED AUTOMATION, INC.	P.O. BOX 888 BRYANT, AR 72089
DRAWN BY:	DAB	3/1/07		PHONE: (501) 557-5109
DRAWING NUMBER:	100W-901C-1	REV:	ABL-100 ANGLELINE	MAIN CONSOLE - POWER SUPPLY MOUNTING

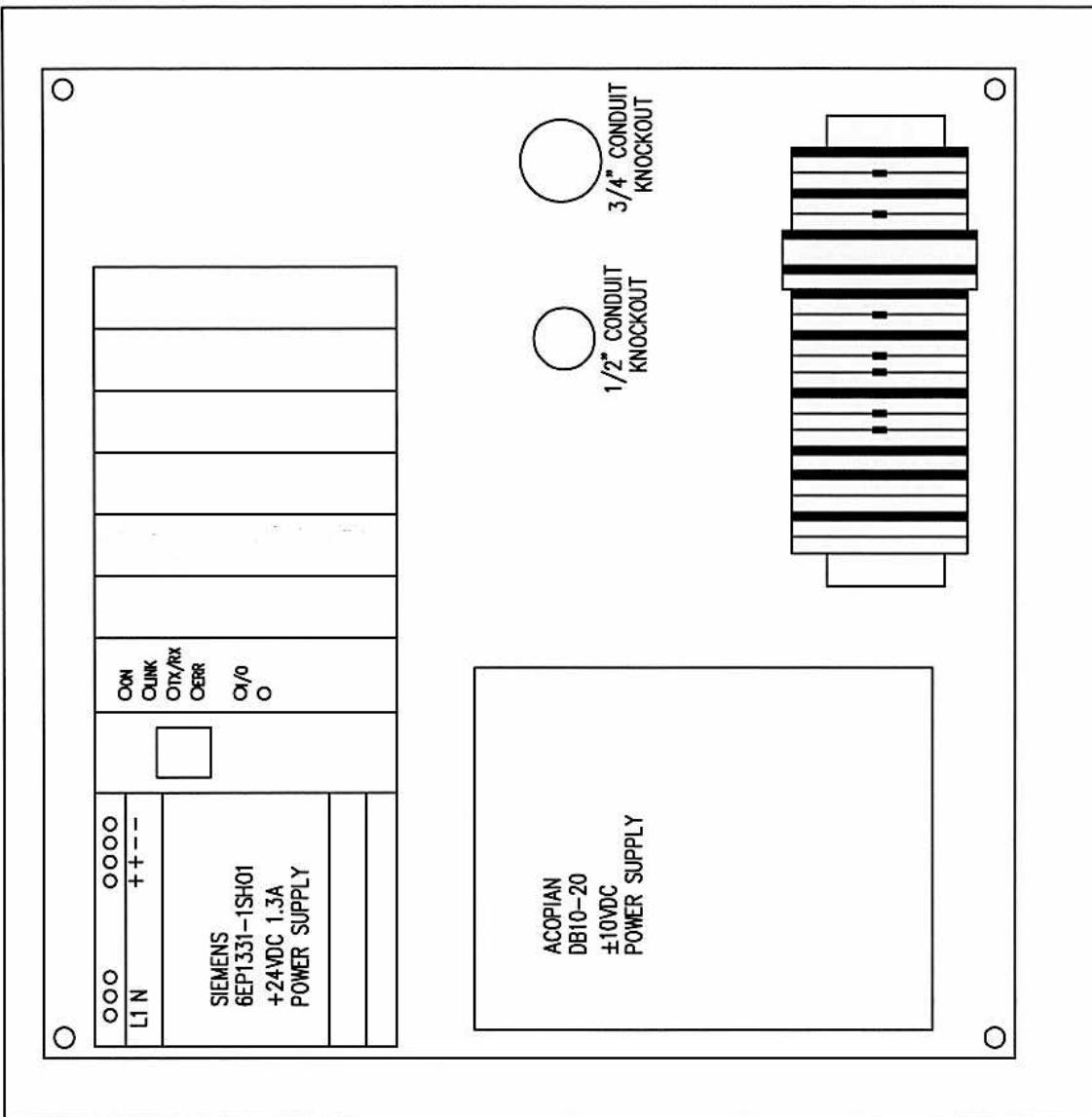


TOP DRIVE, CD-ROM IDE, ATTACH TO SEC IDE PORT
 BOTTOM DRIVE, TEAC 3-1/2 1.44MB FDD w/MOUNT KIT, ATTACH TO FLOPPY PORT
 MOUNT BRACKET WITH EXTERNAL DOOR
 INSTALL AFTER MOTHER BOARD SUB-PANEL IS INSTALLED
 SEE DRG# CON-900

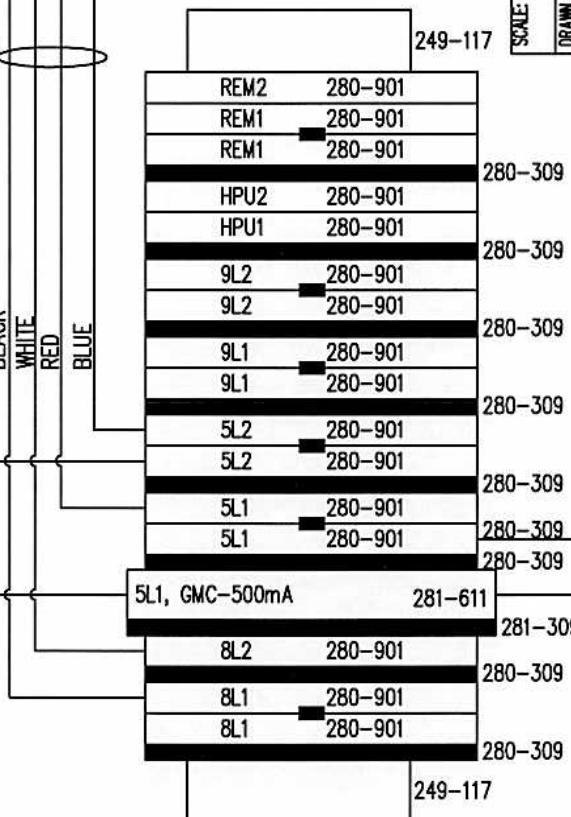
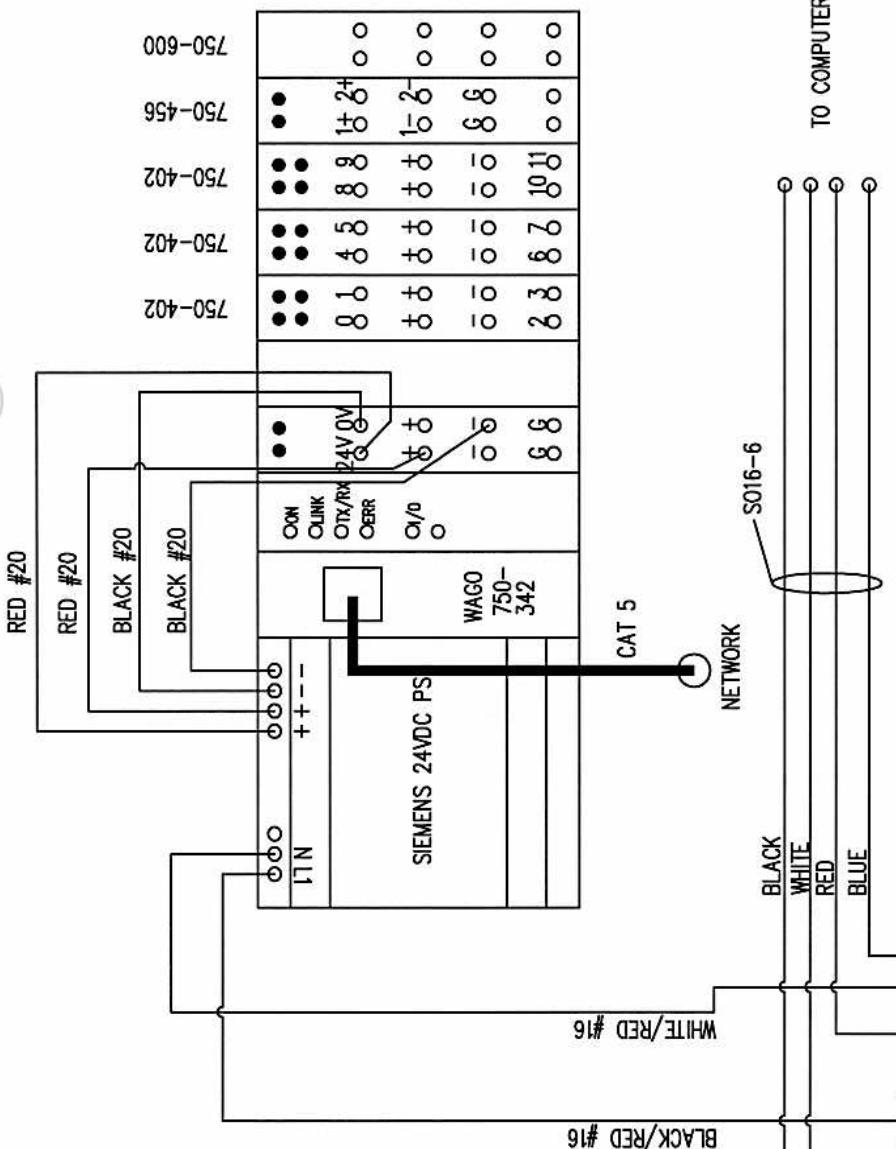
SCALE:	NTS	DATE	CONTROLLED AUTOMATION, INC.	P.O. BOX 888 BRYANT, AR 72089
DRAWN BY:	DAB	3/1/07	TIME:	PHONE: (501) 557-5109
DRAWING NUMBER:	100W-901D-1	REV:	ABL-100 ANGLELINE	MAIN CONSOLE - OUTSIDE DETAIL



SCALE:	NTS	DATE	CONTROLLED AUTOMATION, INC.	P.O. BOX 888 BRYANT, AR 72089
DRAWN BY:	DAB	11/10/06	TITLE	PHONE (501) 557-5109
DRAWING NUMBER:	100W-902A-2	REV.	ABL-100 ANGLELINE	SWITCH CONSOLE – SWITCH LAYOUT w/ STENCIL



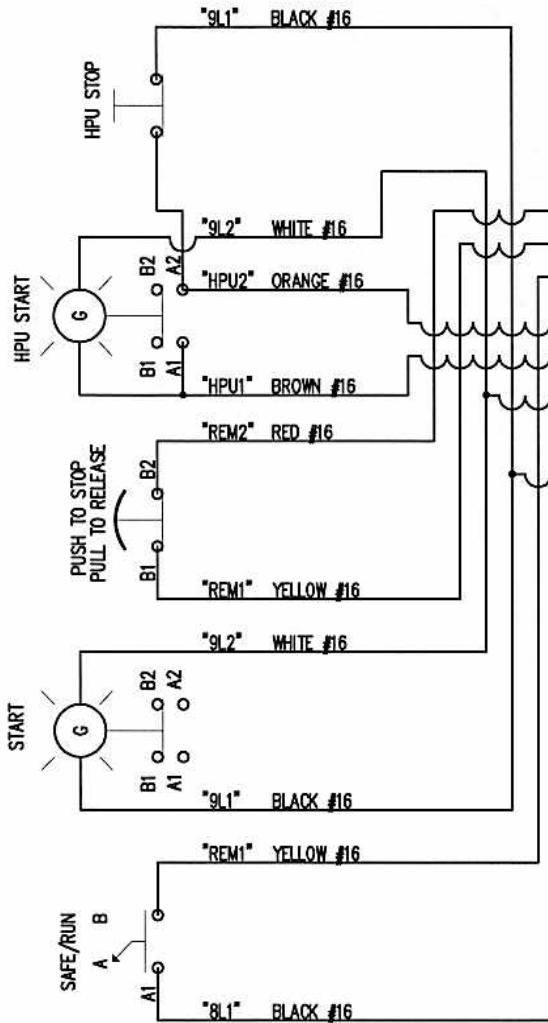
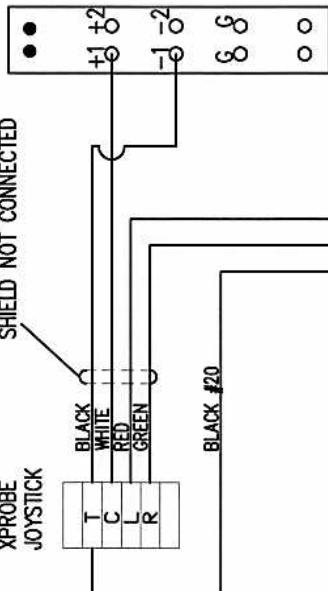
SCALE:	NTS	DATE	CONTROLLED AUTOMATION, INC.	P.O. BOX 888 BRYANT, AR 72088
DRAWN BY:	DAB	7/21/04	TITLE:	PHONE: (501) 557-5109
DRAWING NUMBER:	100W-902B-1	REV. 1	ABL-100 ANGLELINE	SWITCH CONSOLE - PANEL LAYOUT



SCALE:	NTS	DATE	CONTROLLED AUTOMATION, INC.	P.O. BOX 888 BRYANT, AR 72088
DRAWN BY:		11/06/06	ME	PHONE: (501) 557-5109
DRAWING NUMBER:	100W-902C-1	REV:	ABL-100 ANGLELINE	SWITCH CONSOLE - WIRING DIAGRAM #1

WAGO
750-456
-10VDC to +10VDC
2 CHANNEL
ANALOG INPUT

18-4 SHIELDED CABLE
SHIELD NOT CONNECTED



T - CENTER TAP OF POTENTIOMETER (COMMON)
C - WIPER ARM OF POTENTIOMETER (CONTROL)
L - LEFT END OF POTENTIOMETER RESISTOR
R - RIGHT END OF POTENTIOMETER RESISTOR



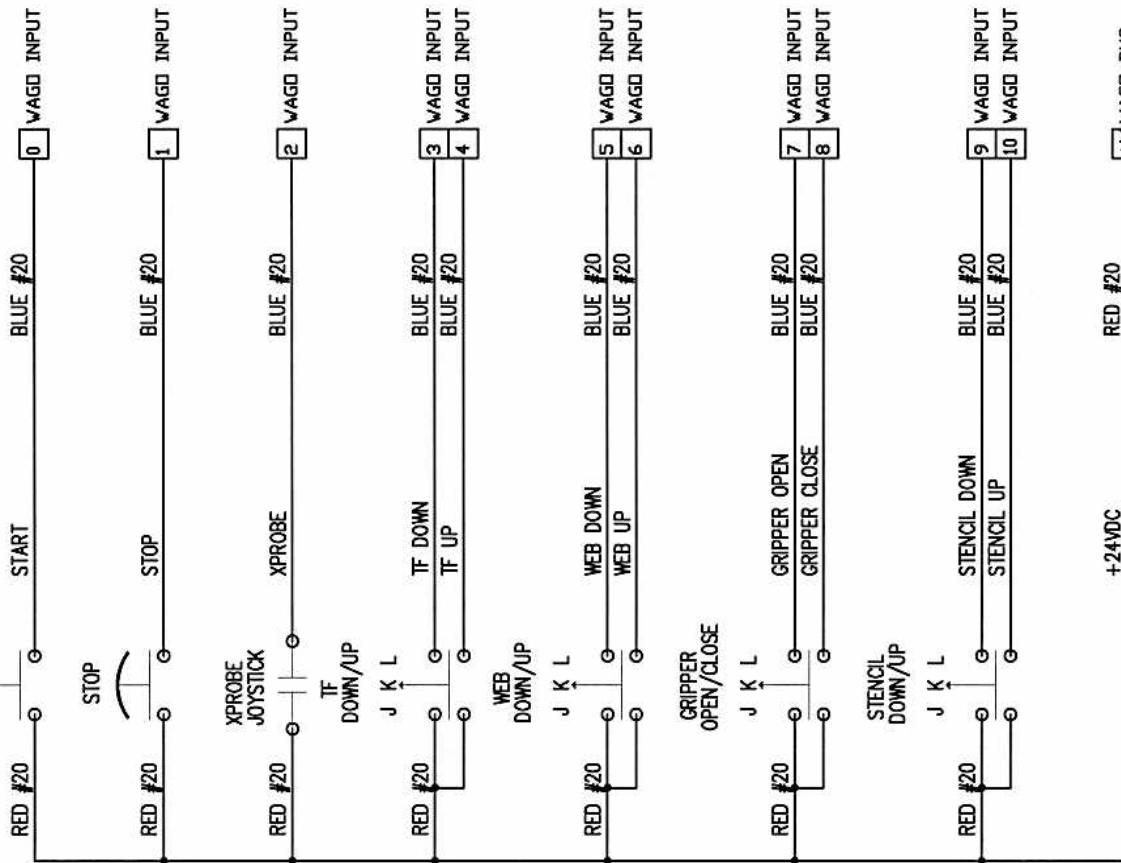
RED #16	REM2	280-901	
YELLOW #16	REM1	280-901	
YELLOW #16	REM1	280-901	
ORANGE #16	HPU2	280-901	280-309
BROWN #16	HPU1	280-901	280-309
WHITE #16	9L2	280-901	280-309
WHITE #16	9L2	280-901	280-309
BLACK #16	9L1	280-901	280-309
BLACK #16	9L1	280-901	280-309
	5L2	280-901	280-309
	5L2	280-901	280-309
	5L1	280-901	280-309
	5L1	280-901	280-309
	5L1, GMC-500mA	281-611	281-309
	8L2	280-901	280-309
	8L1	280-901	280-309
	8L1	280-901	280-309
			249-117

SCALE	NTS	DATE	TIME
DRAWN BY:	11/10/06	REV:	

DRAWING NUMBER:
100W-902D-1

P.O. BOX 888 BRYANT, AR 72089
PHONE: (501) 557-5109

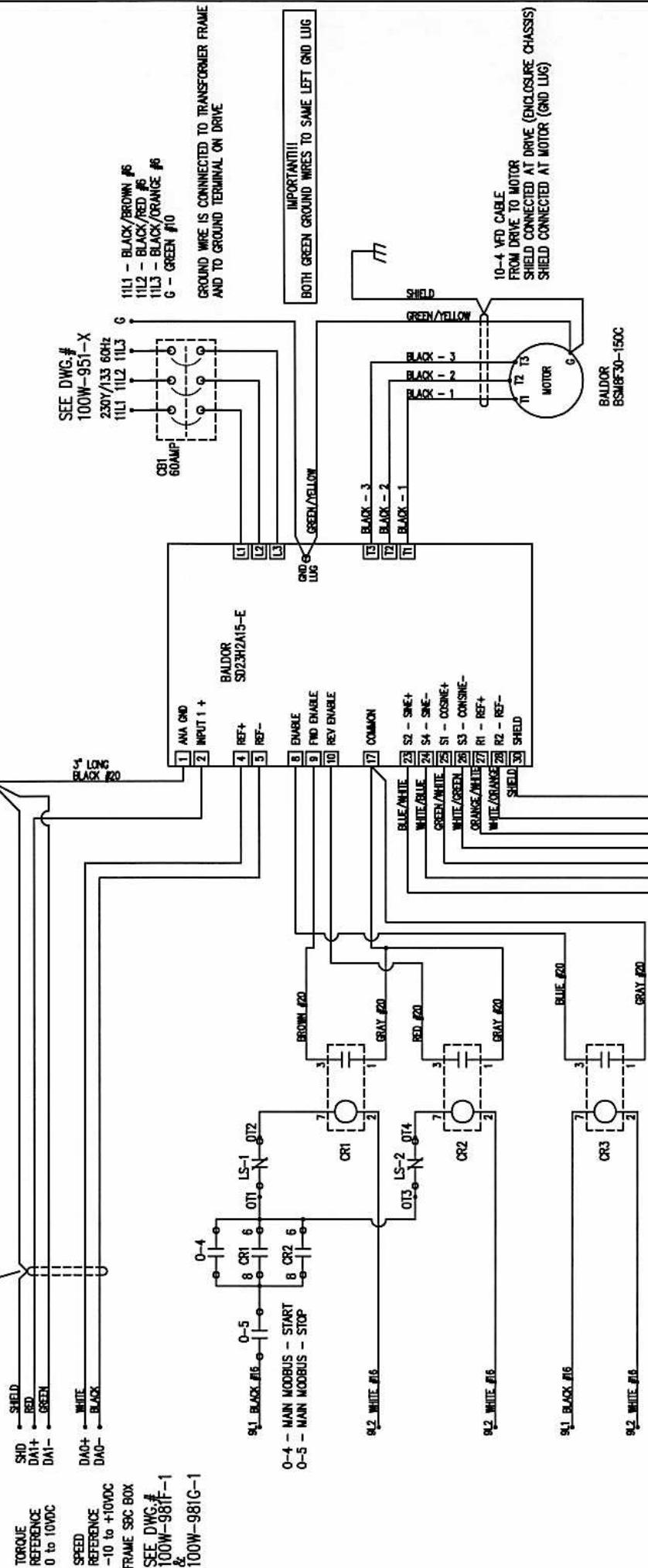
CONTROLLED AUTOMATION, INC.
ABL-100 ANGLELINE
SWITCH CONSOLE - WIRING DIAGRAM #2



SCALE:	NTS	DATE:	CONTROLLED AUTOMATION, INC.	P.O. BOX 888 BRYANT, AR 72089
DRAWN BY:		11/10/06	TITLE:	PHONE: (501) 557-5109
DRAWING NUMBER:	100W-902E-2	REV:	ABL-100 ANGLELINE	
			SWITCH CONSOLE - SWITCH WIRING DIAGRAM	

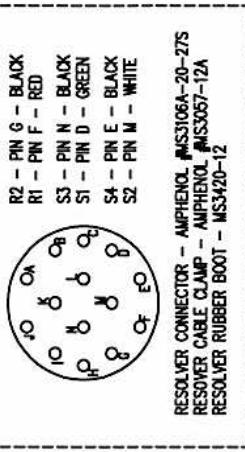
18-4 SHIELDED CABLE
SHIELD CONNECTED AT DRIVE (TERMINAL 1)

BLUE WRENCH
SECTION



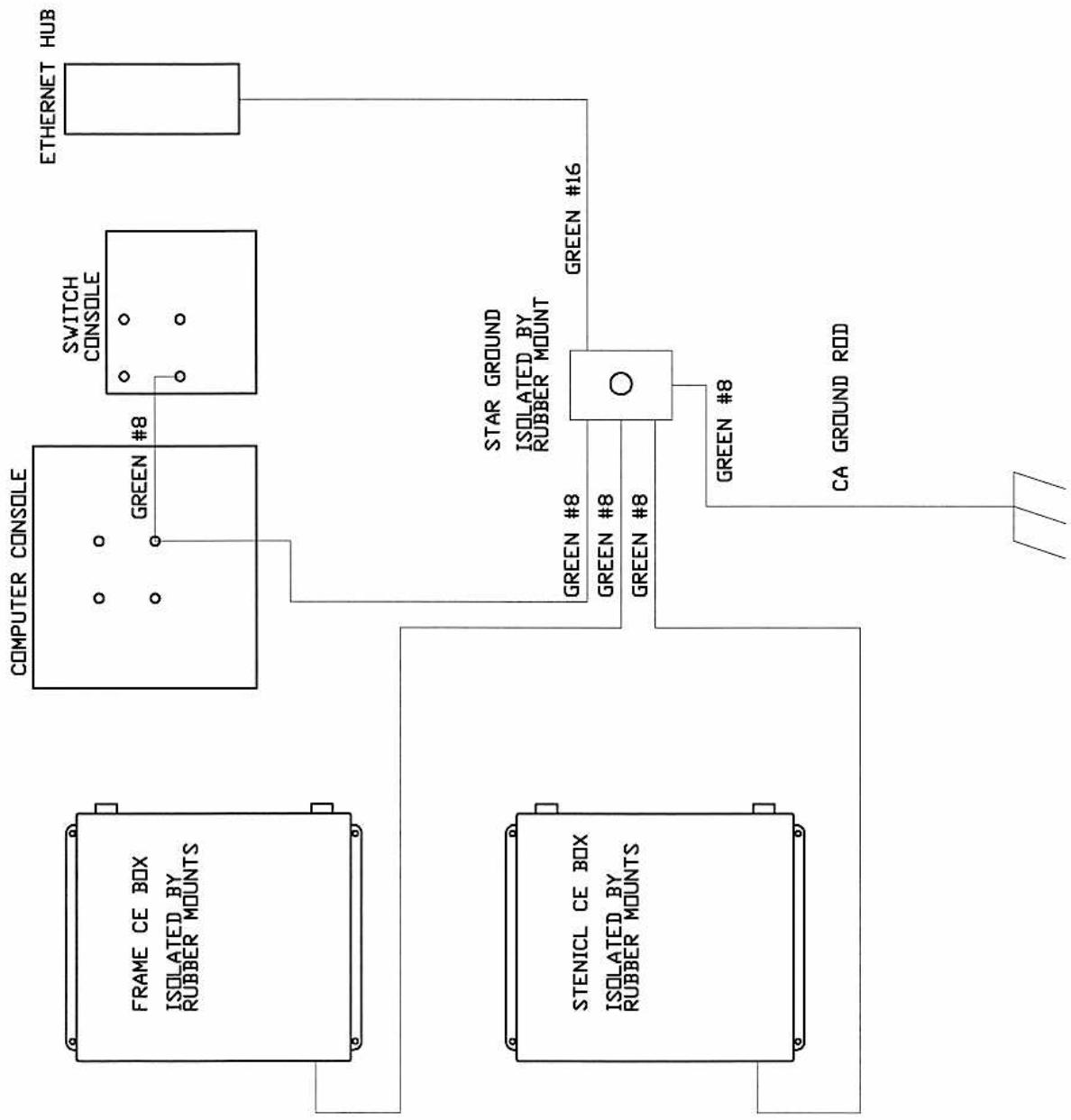
BELDEN #7202A
24-PAIR SHIELDED CABLE

NOTES:
LS-1 - OVERTRAVEL IN LIMIT SWITCH
LS-2 - OVERTRAVEL OUT LIMIT SWITCH
CR1 & CR2 - ALLEN-BRADLEY #700-HA32AI RELAYS & #700-HNN125 BASES
SURGE SUPPRESSOR ACROSS COIL OF ALL RELAYS - ALLEN-BRADLEY #198-MSM1
CB1 - 3 POLE, 240VAC, 60 AMP CIRCUIT BREAKER

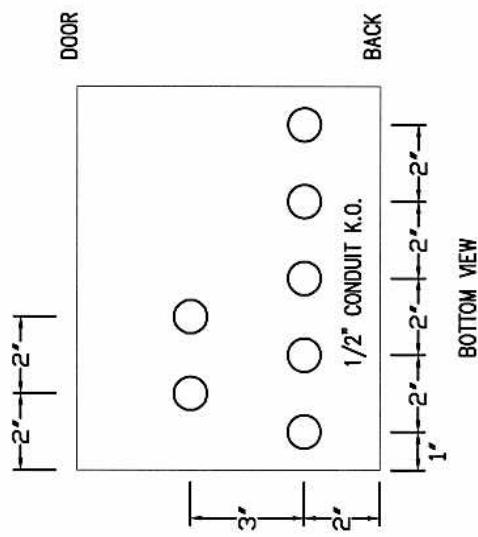
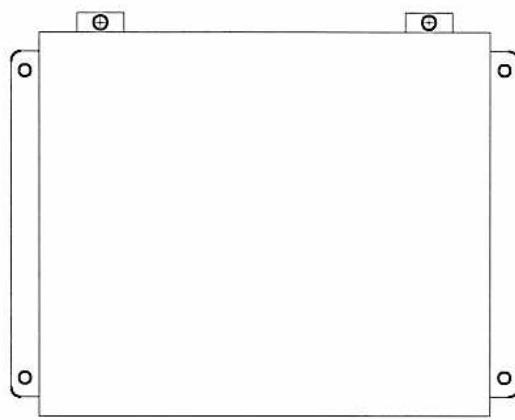


SCALE:	NTS	DATE	CONTROLLED AUTOMATION, INC.
DRAWN BY:	DAB	2/16/16	TITLE: SUNCOAST PROJECTS - ABL-100 UPDATE
DRAWING NUMBER:	100W-905A-14101	REV:	XPROBE DRIVE SCHEMATIC

P.O. BOX 888 BRYANT, AR 72089
PHONE: (501) 557-5109



SCALE:	NTS	DATE	CONTROLLED AUTOMATION, INC.	P.O. BOX 888 BRYANT, AR 72089
DRAWN BY:	DAB	8/6/04	TIME	PHONE: (501) 557-5109
DRAWING NUMBER:	100W-907C-2	REV:		ABL-100 ANGLELINE
				NETWORK DEVICE GROUND SCHEMATIC



BOTTOM VIEW

NOTES:
12" x10" x8" ENCLOSURE
PANEL SIZE IS 10.75" x8.83"

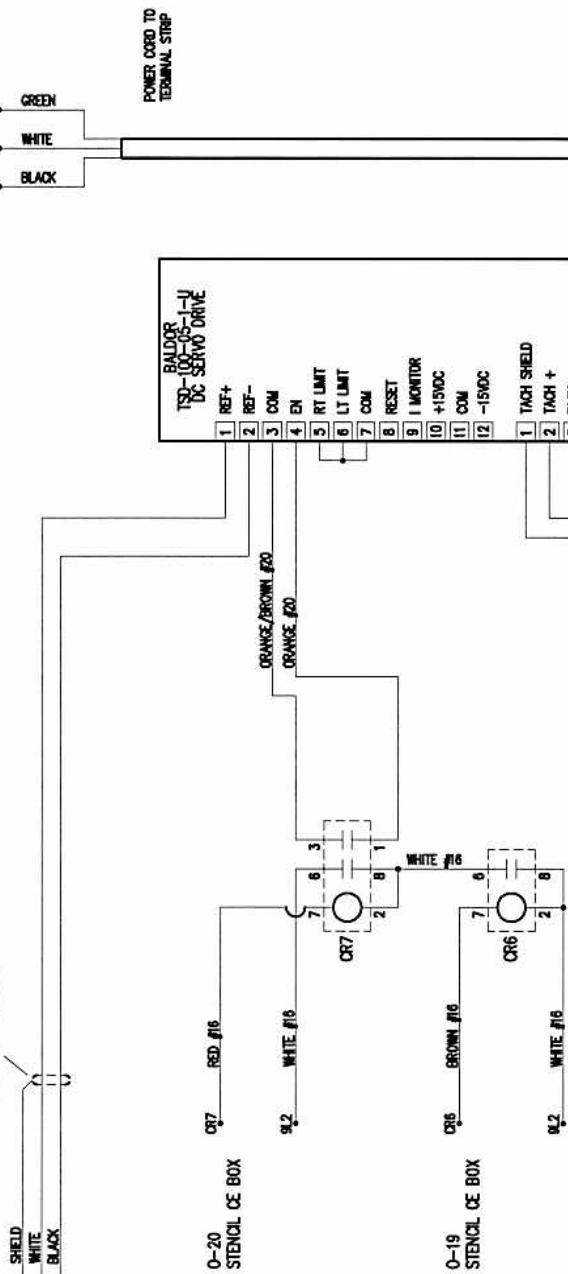
SCALE:	NTS	DATE	CONTROLLED AUTOMATION, INC.	P.O. BOX 888 BRYANT, AR 72089
DRAWN BY:	DAB	12/4/07	TIME	PHONE: (501) 557-5109
DRAWING NUMBER:	100W-907D-1	REV:	ABL-100 ANGLELINE	NETWORK SWITCH ENCLOSURE DETAIL

SEE DWG #
100W-953A-X
115VAC 60Hz
G
9.1 9L2

DAO
STENCIL CE BOX
REF+ WHITE
REF- BLACK

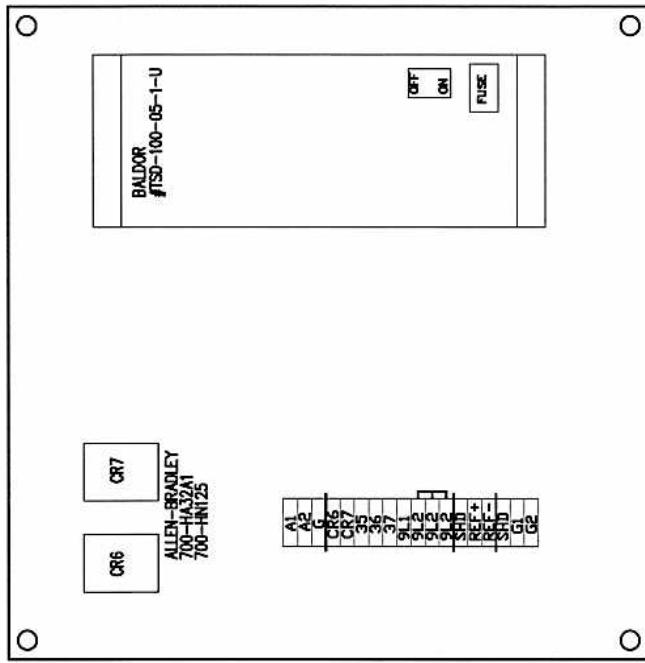
SEE DWG #
100W-984F-1
&
100W-984G-1

18-2 SHIELDED CABLE
SHIELD NOT CONNECTED AT DRIVE
CORD GRIP AT CE BOX



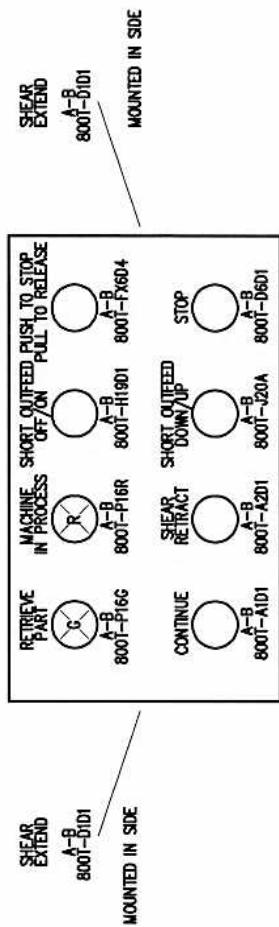
NOTES:
CR6 & CR7 - ALLEN-BRADLEY #700-HA32A1 RELAY & #700-HN125 BASE
TACHOMETER SHIELD CONNECTED AT DRIVE END ONLY

SCALE:	NTS	DATE	CONTROLLED AUTOMATION, INC.
DRAWN BY:	DAB	1/29/08	P.O. BOX 888 BRYANT, AR 72089 PHONE: (501) 557-5109
DRAWING NUMBER:	100W-908A-07148	REV:	TITLE: SOUTHLAND STEEL - ABL-100 UPDATE STENCIL WHEEL DRIVE SCHEMATIC



NOTES:
LOCATED IN 20" x 20" x 10" ENCLOSURE
PANEL SIZE IS 17" x 17"

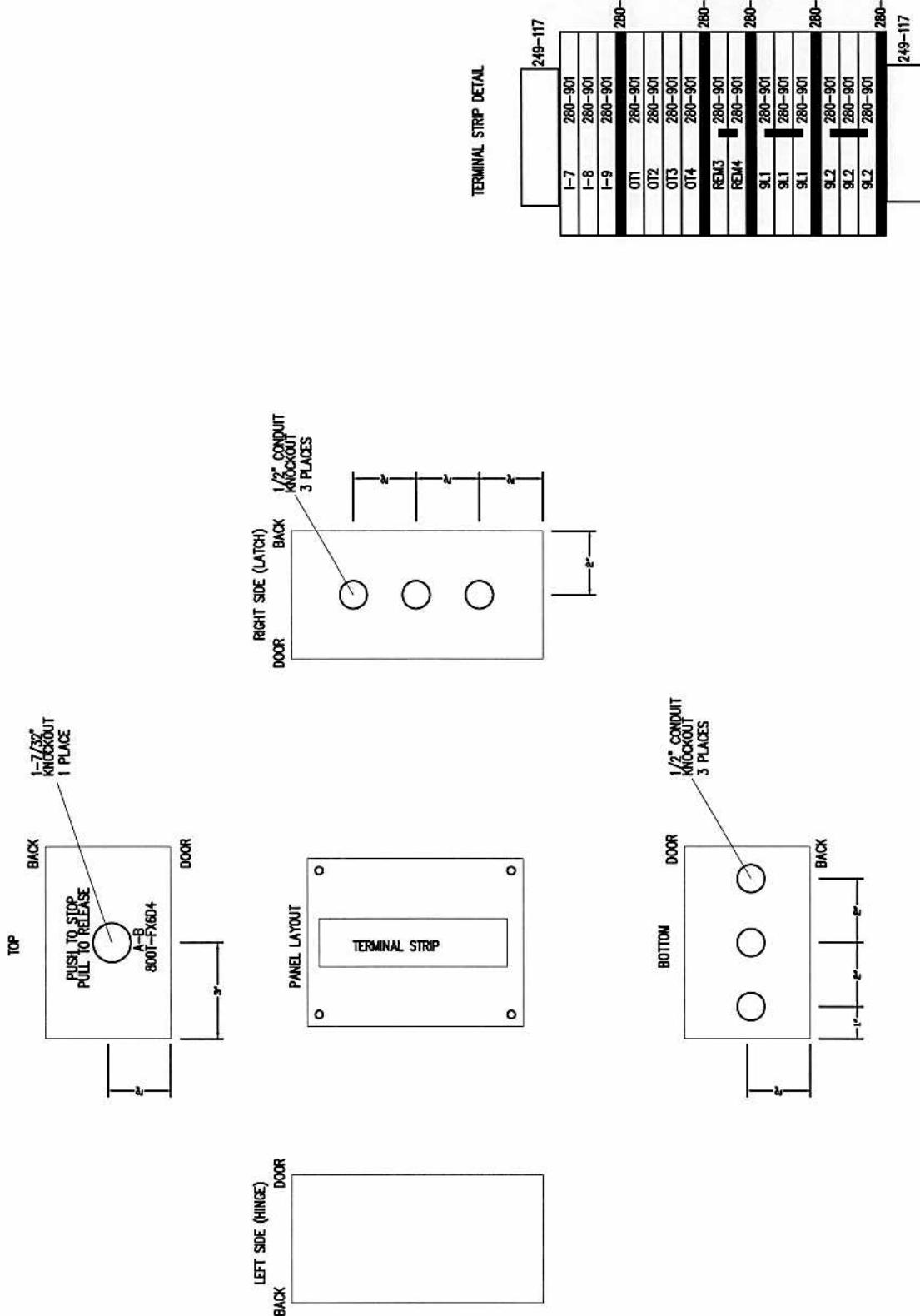
SCALE:	NTS	DATE	CONTROLLED AUTOMATION, INC.	P.O. BOX 888 BRYANT, AR 72089
DRAWN BY:	DAB	1/29/08	TIME	PHONE: (501) 557-5109
DRAWING NUMBER:	100W-908B-07148	REV. I	SOUTHLAND STEEL - ABL-100 UPDATE	STENCIL WHEEL DRIVE - LAYOUT



249-117	
REM3	280-901
REM2	280-901
I-10	280-901
I-9	280-901
I-8	280-901
I-7	280-901
I-6	280-901
I-5	280-901
I-4	280-901
O-17	280-901
O-16	280-901
9L2	280-901
9L2	280-901
9L1	280-901
9L1	280-901
249-117	

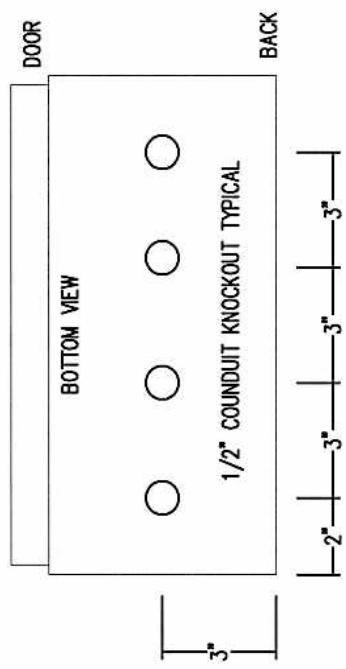
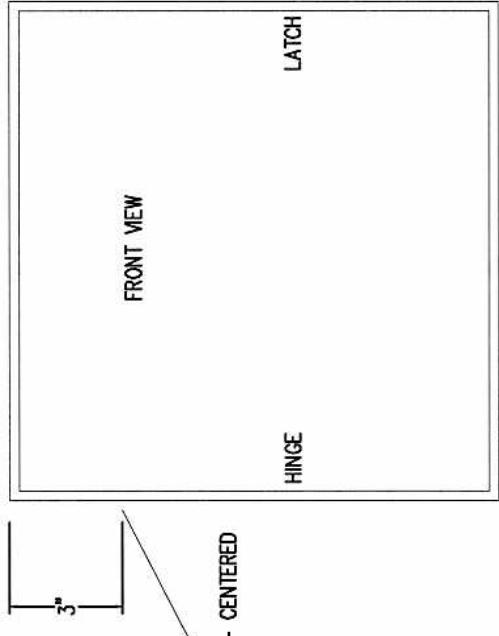
NOTES:
-

SCALE:	NTS	DATE	CONTROLLED AUTOMATION, INC.	P.O. BOX 888 BRYANT, AR 72089
DRAWN BY:	DAB	1/28/08	TITLE:	PHONE: (501) 557-5109
DRAWING NUMBER:	100W-911A-07148	REV. 1	SOUTHLAND STEEL - ABL-100 UPDATE	SHEAR CONSOLE - SWITCH LAYOUT



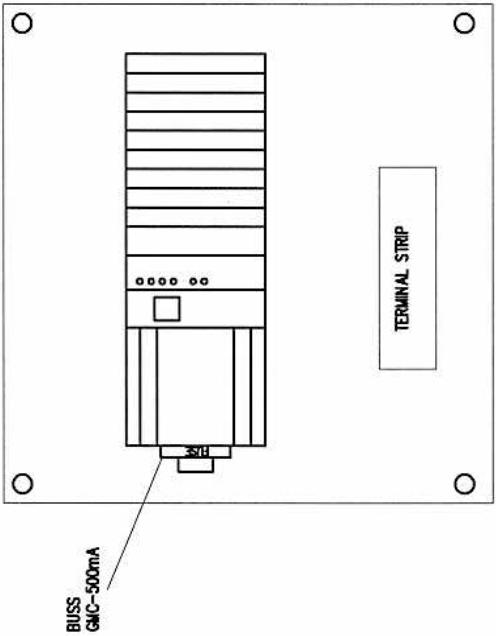
NOTES:
8" x 14" ENCLOSURE

SCALE:	NTS	DATE	CONTROLLED AUTOMATION, INC.	P.O. BOX 888 BRYANT, AR 72089
DRAWN BY:	DAB	11/10/06	TIME	PHONE: (501) 557-5109
DRAWING NUMBER:	100W-912-1	REV. 1		ABL-100 ANGLELINE
				INFEED CONVEYOR BRANCH BOX



NOTES:
16" x 16" x 6" ENCLOSURE ON INFEED CONVEYOR

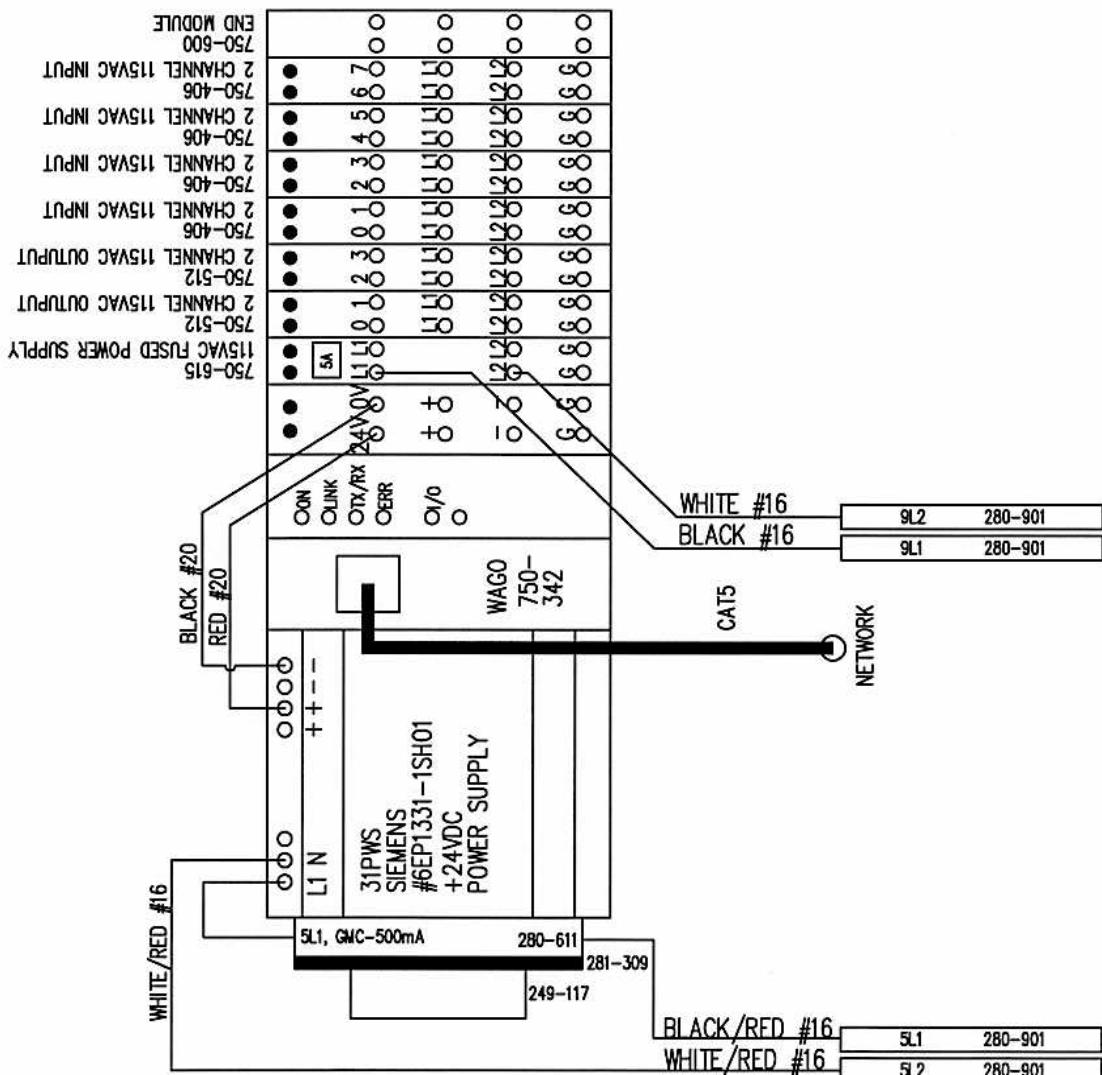
SCALE:	NTS	DATE	CONTROLLED AUTOMATION, INC.	P.O. BOX 530 BRYANT, AR 72089
DRAWN BY:	DAB	10/13/04	TIME	PHONE: (501) 557-5109
DRAWING NUMBER:	100W-931A-1	REV:		ABL-100 ANGLELINE
				INFEED LOAD TABLE - ENCLOSURE DETAIL



TERMINAL STRIP DETAIL
SEE DWG#
100W-931D-X

NOTES:
LOCATED IN 16" x 16" x 6" ENCLOSURE ON INFEED CONVEYOR
PANEL SIZE IS 13" x 13"

SCALE:	NTS	DATE	CONTROLLED AUTOMATION, INC.
DRAWN BY:	DAB	10/13/04	P.O. BOX 530 BRYANT, AR 72039 PHONE: (501) 557-5109
DRAWING NUMBER:	100W-931B-1	REV. 1	ABL-100 ANGLELINE
			INFEED LOAD TABLE - ENCLOSURE LAYOUT



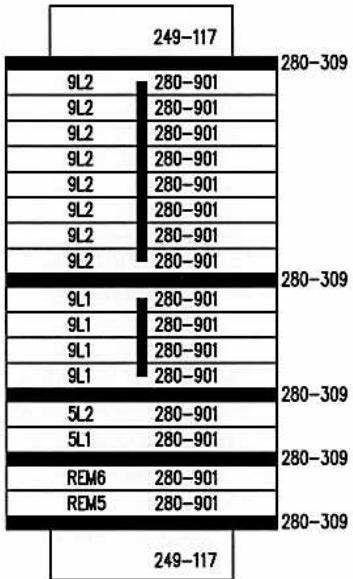
SCALE: NTS DATE: 10/13/04 DRAWN BY: DAB DRAWING NUMBER: 100W-931C-1

CONTROLLED AUTOMATION, INC.

P.O. BOX 888 BRYANT, AR 72089
PHONE: (501) 557-5109

ABL-100 ANGLELINE

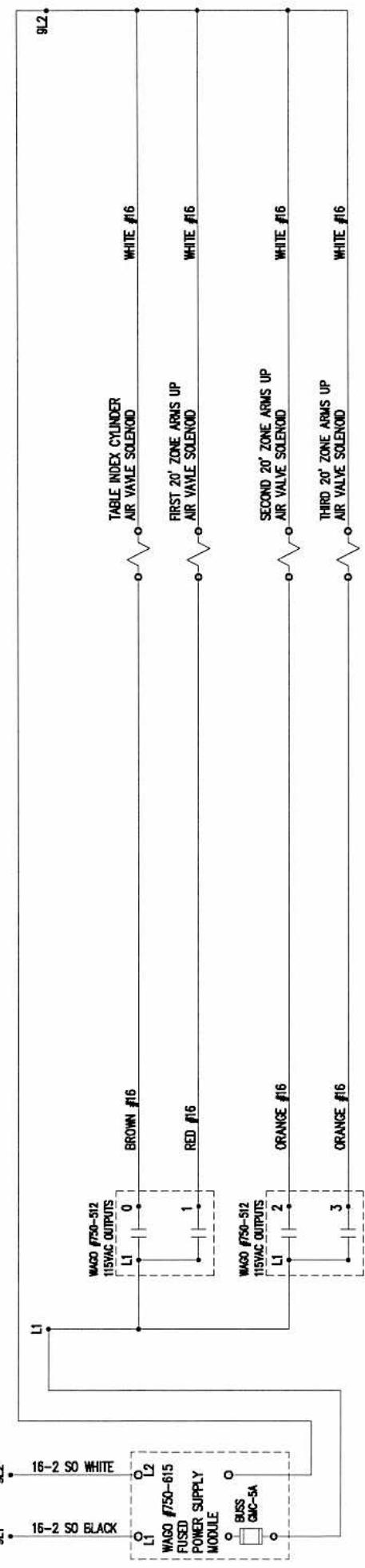
INFEED LOAD TABLE - MODBUS I/O DETAIL



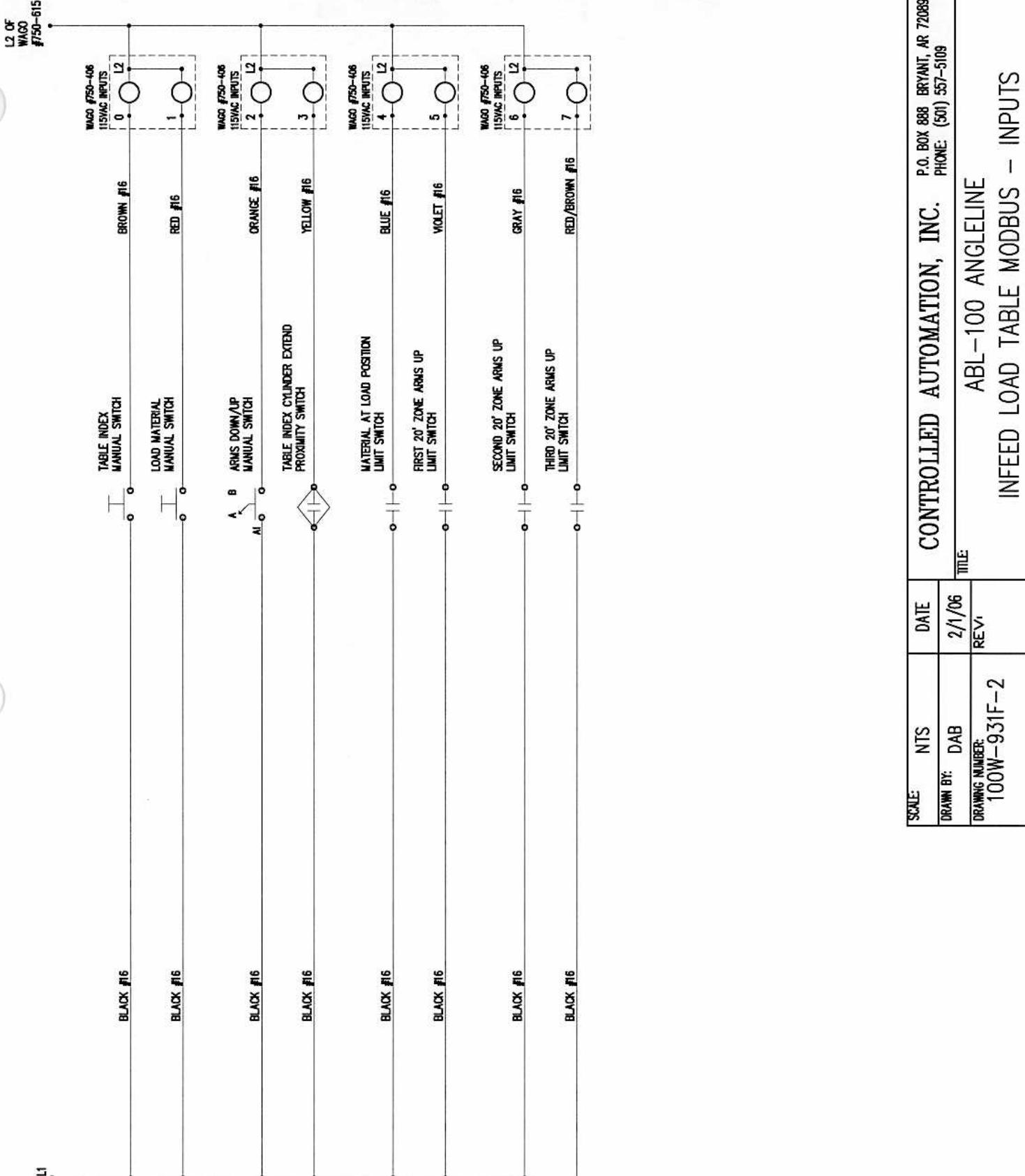
SCALE:	NTS	DATE	CONTROLLED AUTOMATION, INC.	P.O. BOX 888 BRYANT, AR 72089
DRAWN BY:	DAB	1/9/07	REV:	PHONE: (501) 557-5109
DRAWING NUMBER:	100W-931D-1		TITLE:	ABL-100 ANGLELINE INFEED LOAD TABLE - TERMINAL STRIP DETAIL

FROM MAIN ENC.

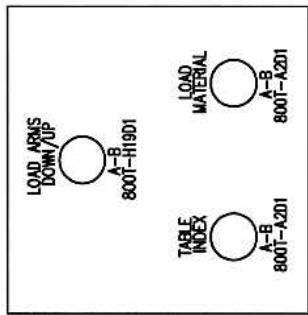
115VAC 60Hz



SCALE:	NTS	DATE	CONTROLLED AUTOMATION, INC.	P.O. BOX 888 BRYANT, AR 72089
DRAWN BY:	DAB	2/1/06	TITLE:	PHONE: (501) 557-5109
DRAWING NUMBER:	100W-931E-2	REV:	ABL-100 ANGLELINE	INFEED LOAD TABLE MODBUS – OUTPUTS



SCALE:	NTS	DATE	CONTROLLED AUTOMATION, INC.	P.O. BOX 888 BRYANT, AR 72089
DRAWN BY:	DAB	2/1/06	TIME	PHONE: (501) 557-5109
DRAWING NUMBER:	100W-931F-2	REV:	ABL-100 ANGLELINE	INFEED LOAD TABLE MODBUS - INPUTS



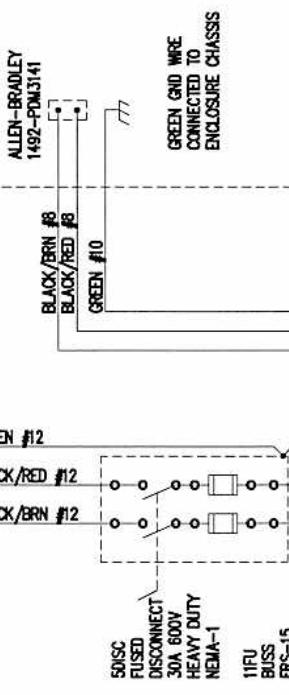
EXISTING CONSOLE

-

SCALE:	NTS	DATE	CONTROLLED AUTOMATION, INC.	P.O. BOX 888 BRYANT, AR 72089 PHONE: (501) 557-5109
DRAWN BY:	DAB	1/28/08	TIME:	SOUTHLAND STEEL - ABL-100 UPDATE
DRAWING NUMBER:	100W-932-07148	REV. 1		INFEED LOAD TABLE - SWITCH CONSOLE

SEE DWG.#
100W-951-X
460VAC 60Hz
1L1 o
1L2 o
1L3 o
G o

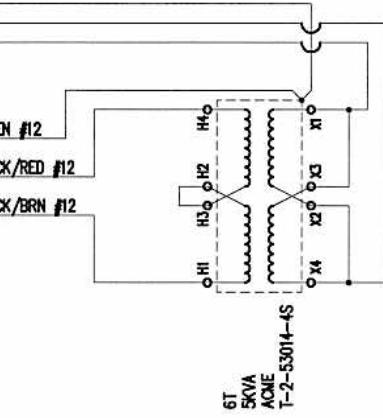
20" x 20" x 8" OUTFEED CONVEYOR ENCLOSURE



ALLEN-BRADLEY
1492-PBM3141
115VAC 60Hz
FOR OUTFEED CONVEYOR MOTORS

SEE DWG.#
100W-942A-X

GREEN GND WIRE
CONNECTED TO
ENCLOSURE CHASSIS



NOTES:

SCALE:	NTS	DATE	CONTROLLED AUTOMATION, INC.
DRAWN BY:	DAB	1/28/08	P.O. BOX 888 BRYANT, AR 72089 PHONE: (501) 557-5109
DRAWING NUMBER:	REV. 1	TIME:	SOUTHLAND STEEL - ABL-100 UPDATE
100W-941-07148			OUTFEED DUMP CONVEYOR - 460VAC MAIN SERVICE

20" x 20" x 8" OUTFEED CONVEYOR ENCLOSURE

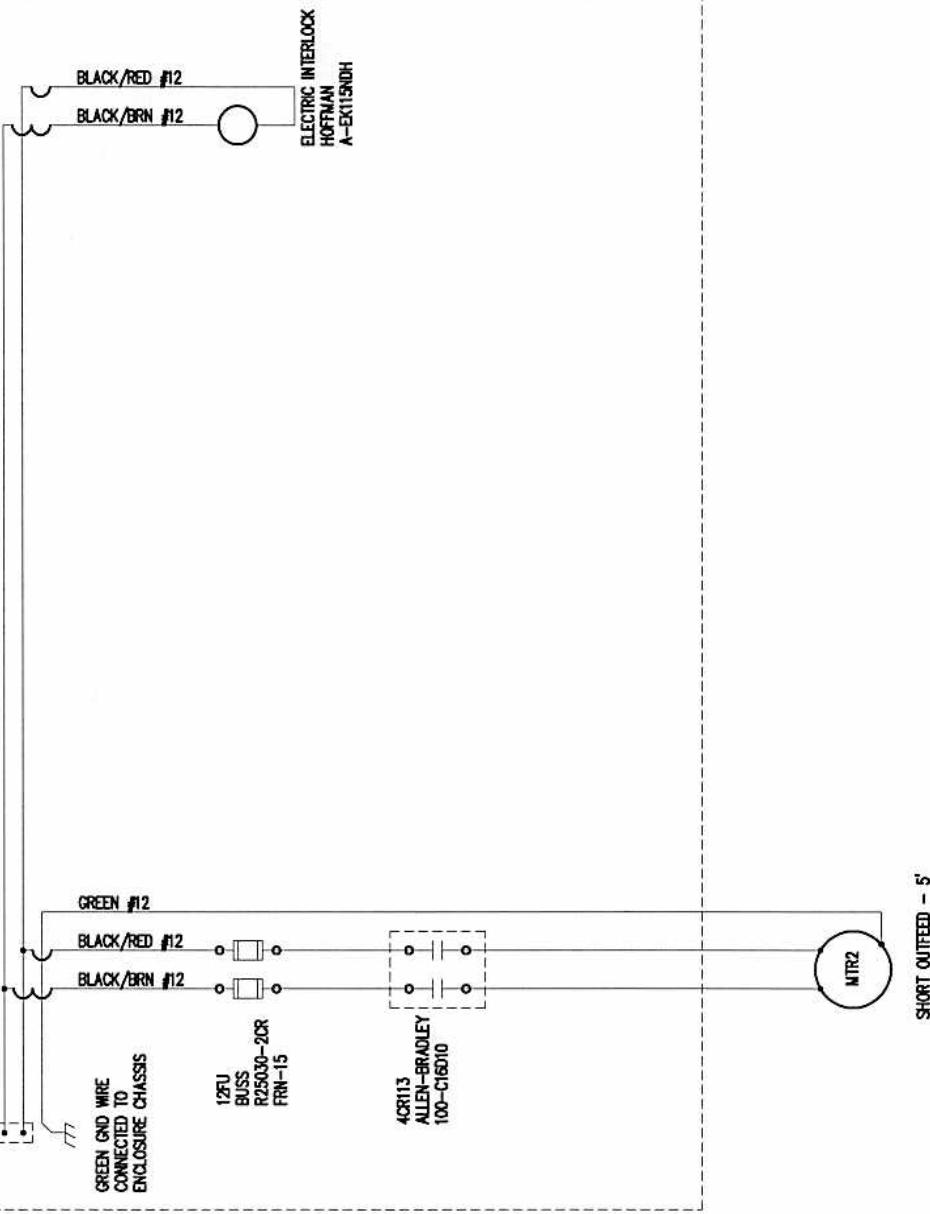
115VAC 60Hz
FOR OUTFEED CONVEYOR MOTORS
SEE DWG #
100W-941-X

ALLEN-BRADLEY
1492-FPM314I

GREEN GND WIRE
CONNECTED TO
ENCLOSURE CHASSIS

12FU
BUSS
R25030-20R
FRN-15

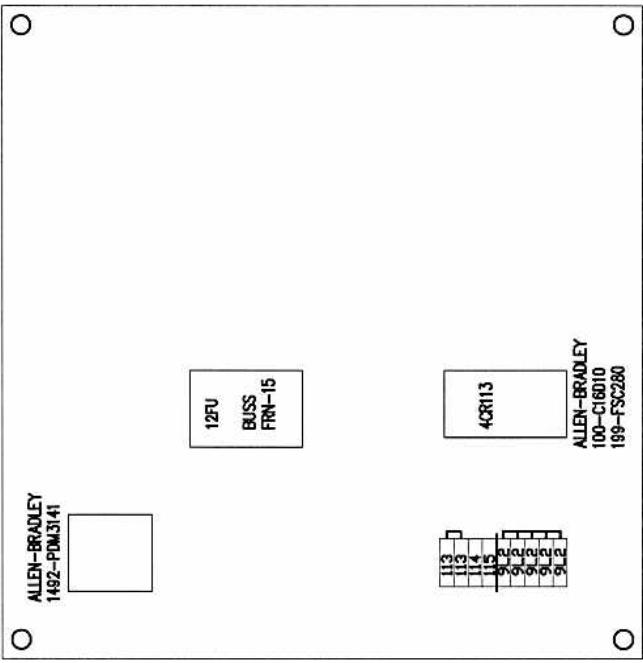
4CR113
ALLEN-BRADLEY
100-C16D10



SHORT OUTFEED - 5'
MOTOR - 3/4HP

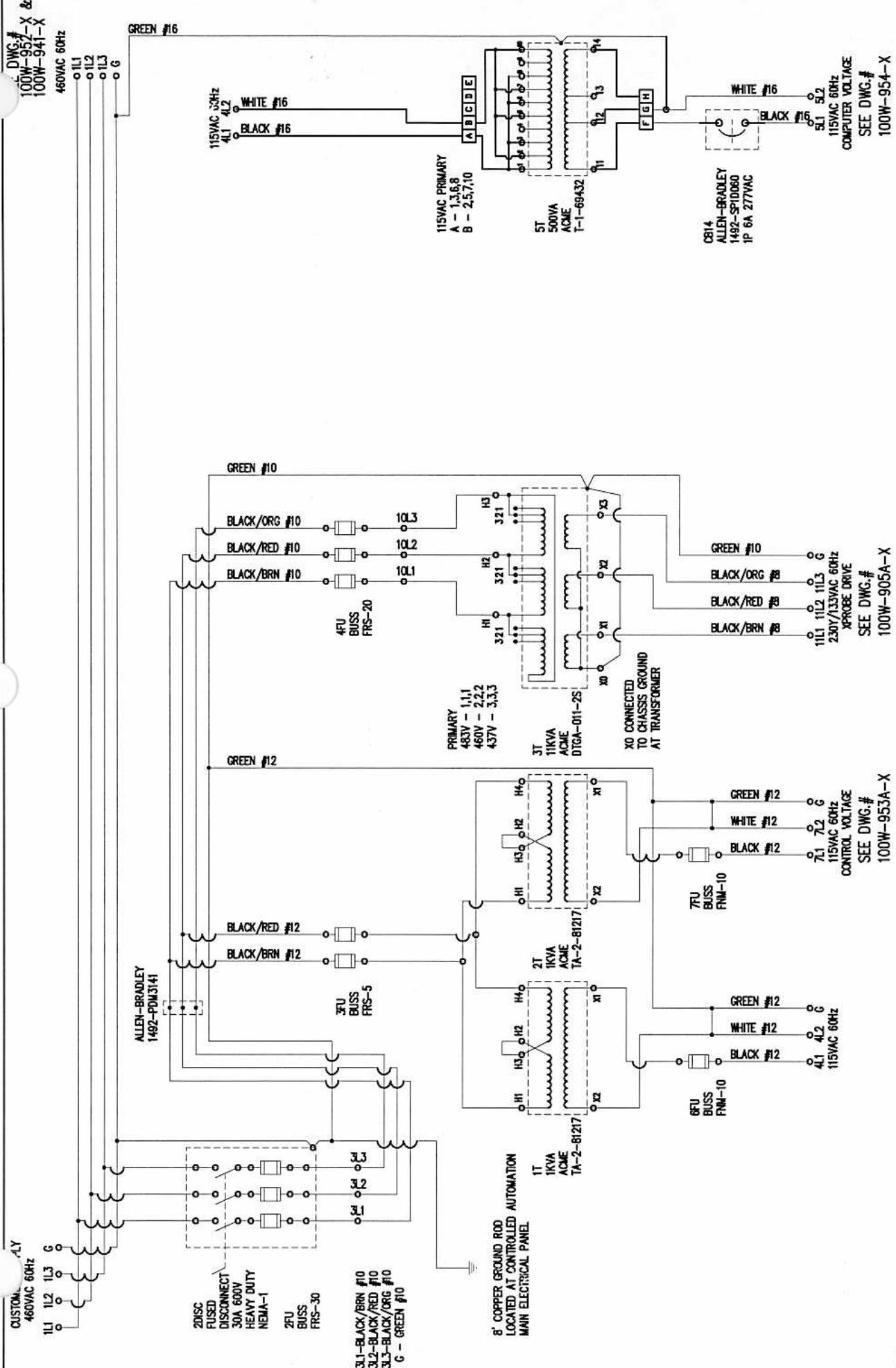
NOTES:

SCALE:	NTS	DATE	CONTROLLED AUTOMATION, INC.
DRAWN BY:	DAB	1/28/08	P.O. BOX 888 BRYANT, AR 72089 PHONE: (501) 557-5109
DRAWING NUMBER:	100W-942A-07148	REV. I	SOUTHLAND STEEL - ABL-100 UPDATE
			OUTFEED DUMP CONVEYOR - MOTOR SCHEMATIC



NOTES:
LOCATED IN 20" x 20" x 8" ENCLOSURE ON 5' OUTFEED CONVEYOR
PANEL SIZE IS 17" x 17"

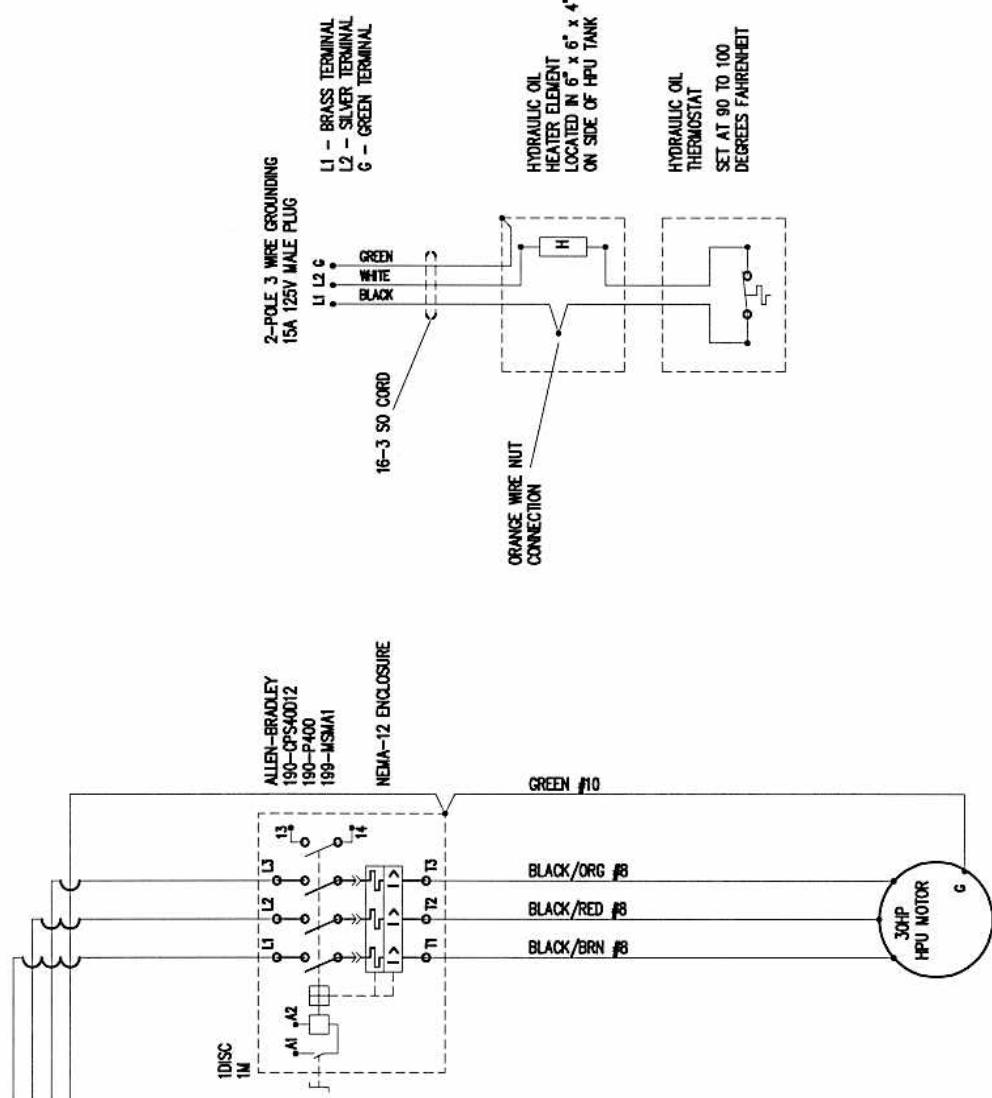
SCALE:	NTS	DATE	CONTROLLED AUTOMATION, INC.
DRAWN BY:	DAB	1/28/08	P.O. BOX 888 BRYANT, AR 72089 PHONE (501) 557-5109
DRAWING NUMBER:	100W-942B-07148	REV. I	TIME: SOUTHLAND STEEL - ABL-100 UPDATE
			OUTFEED DUMP CONVEYOR - PANEL LAYOUT



SCALE:	NTS	DATE	CONTROLLED AUTOMATION, INC.
DRAWN BY:	DAB	1/28/08	P.O. BOX 888 BRYANT, AR 72089 PHONE: (501) 557-5109
DRAWING NUMBER:	100W-951-07148	REV. E	SOUTHLAND STEEL - ABL-100 UPDATE MAIN SERVICE - 460VAC

SEE DWG. #
100W-951-X
460VAC 60Hz
111.0
112.0
113.0
6.0

FOR MOTOR STARTER
CONTROL
SEE DWG. #
100W-953A-X



ALLEN-BRADLEY
190-CPS012
190-P400
199-MSM1
NEMA-12 ENCLOSURE

LE 3 WIRE GROUNDING
25V MALE PLUG

L1 - BRASS TERMINAL
L2 - SILVER TERMINAL
G - GREEN TERMINAL

**HYDRAULIC OIL
HEATER ELEMENT
LOCATED IN 6" x 6" x 4" BOX
ON SIDE OF HPU TANK**

**HYDRAULIC OIL
THERMOSTAT
SET AT 90 TO 100
DEGREES FAHRENHEIT**

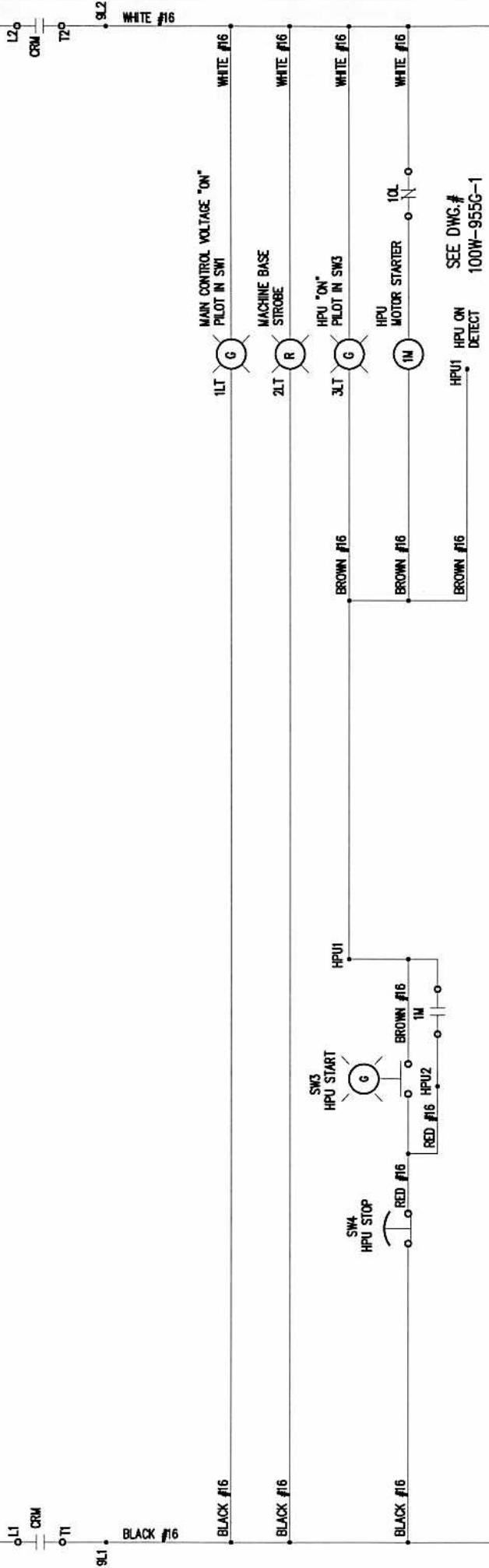
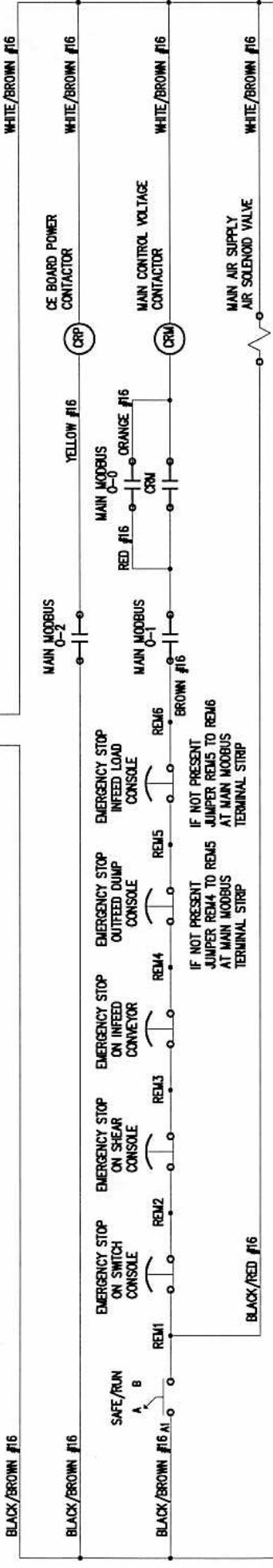
TERMINAL STRIP DETAIL
LOCATED IN HPU MOTOR
STARTER ENCLOSURE

	249-117	
	280-309	
HPU1	280-901	
HPU2	280-901	
HP	280-901	
LP	280-901	
MP	280-901	
912	280-901	
912	280-901	

NOTES

SCALE:	NTS	DATE	1/28/08	CONTROLLED AUTOMATION, INC.	P.O. BOX 888 BRYANT, AR 72089 PHONE: (501) 557-5109
DRAWN BY:	DAB	RE.V.		SOUTHLAND STEEL - ABL-100 UPDATE	
DRAWING NUMBER:	100W-952-07148			HPU MAIN SERVICE - 460VAC	

- DWG. # - 100W-951-X
115VAC 60Hz
CONTROL VOLTAGE #1 #2

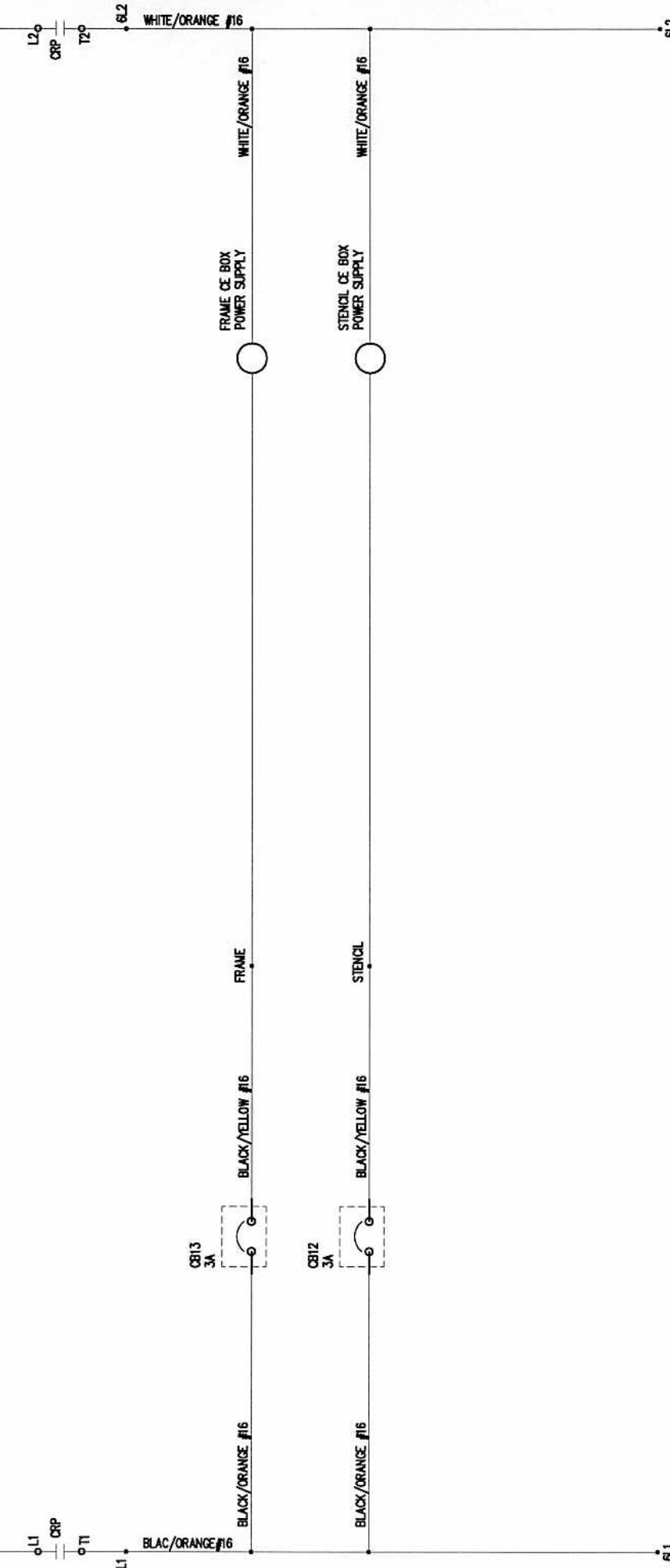


SCALE:	NTS	DATE	CONTROLLED AUTOMATION, INC.	P.O. BOX 888 BRYANT, AR 72088
DRAWN BY:	DAB	1/9/07	TIME	PHONE: (501) 557-5109
DRAWING NUMBER:	100W-953A-1	REV. A	ABL-100 ANGLELINE	CONTROL VOLTAGE SCHEMATIC

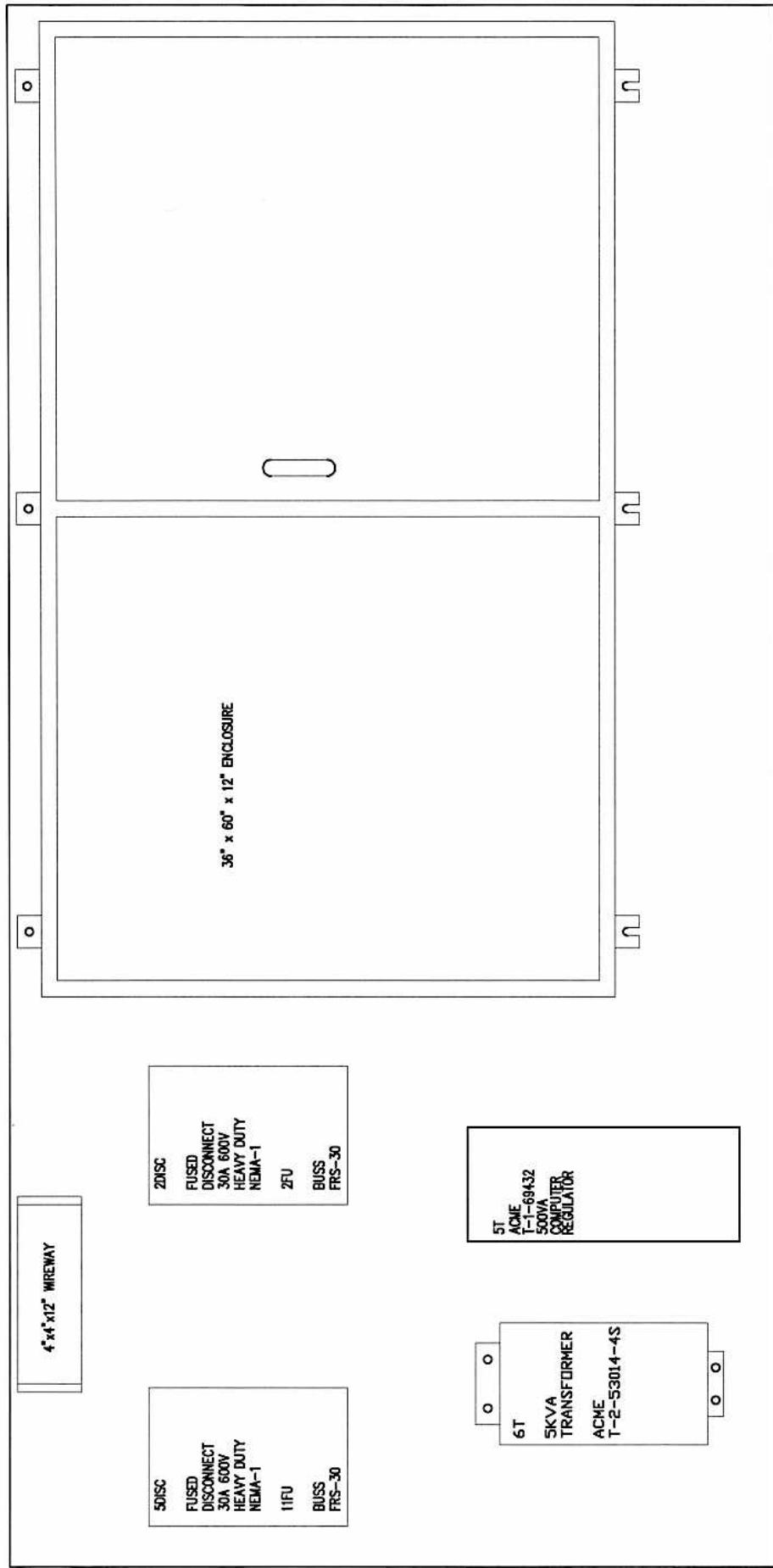
SEE DWG #
100W-951-X
115VAC 60Hz
COMPUTER VOLTAGE
S1 S2

BLACK/RED #16

WHITE/RED #16

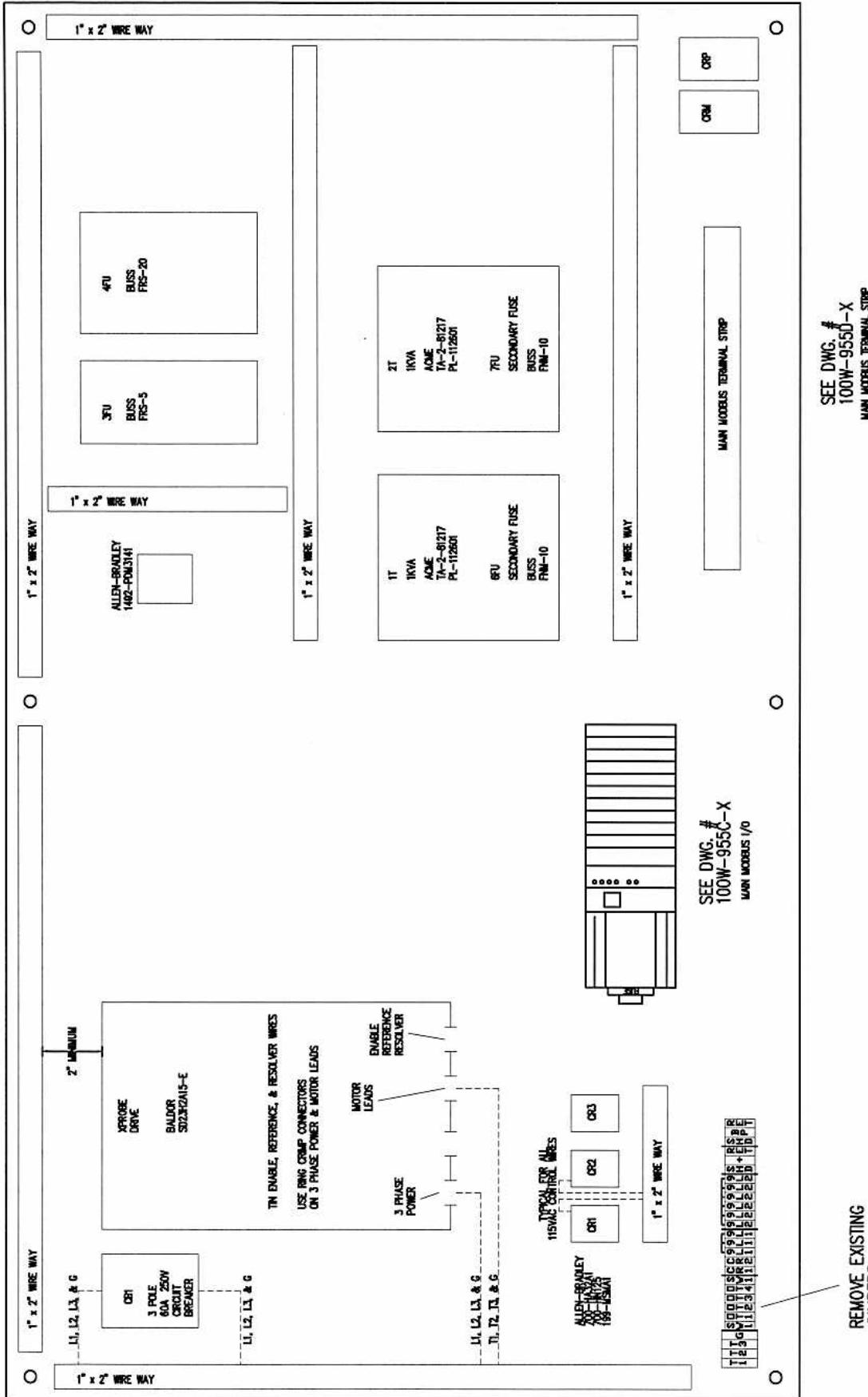


SCALE:	NTS	DATE	CONTROLLED AUTOMATION, INC.	P.O. BOX 888 BRYANT, AR 72089
DRAWN BY:	DAB	6/6/06	TITLE	PHONE: (501) 557-5109
DRAWING NUMBER:	100W-954-2	REV. 1	ABL-100 ANGLELINE	COMPUTER VOLTAGE SCHEMATIC



NOTES:
4" x 8" PANEL

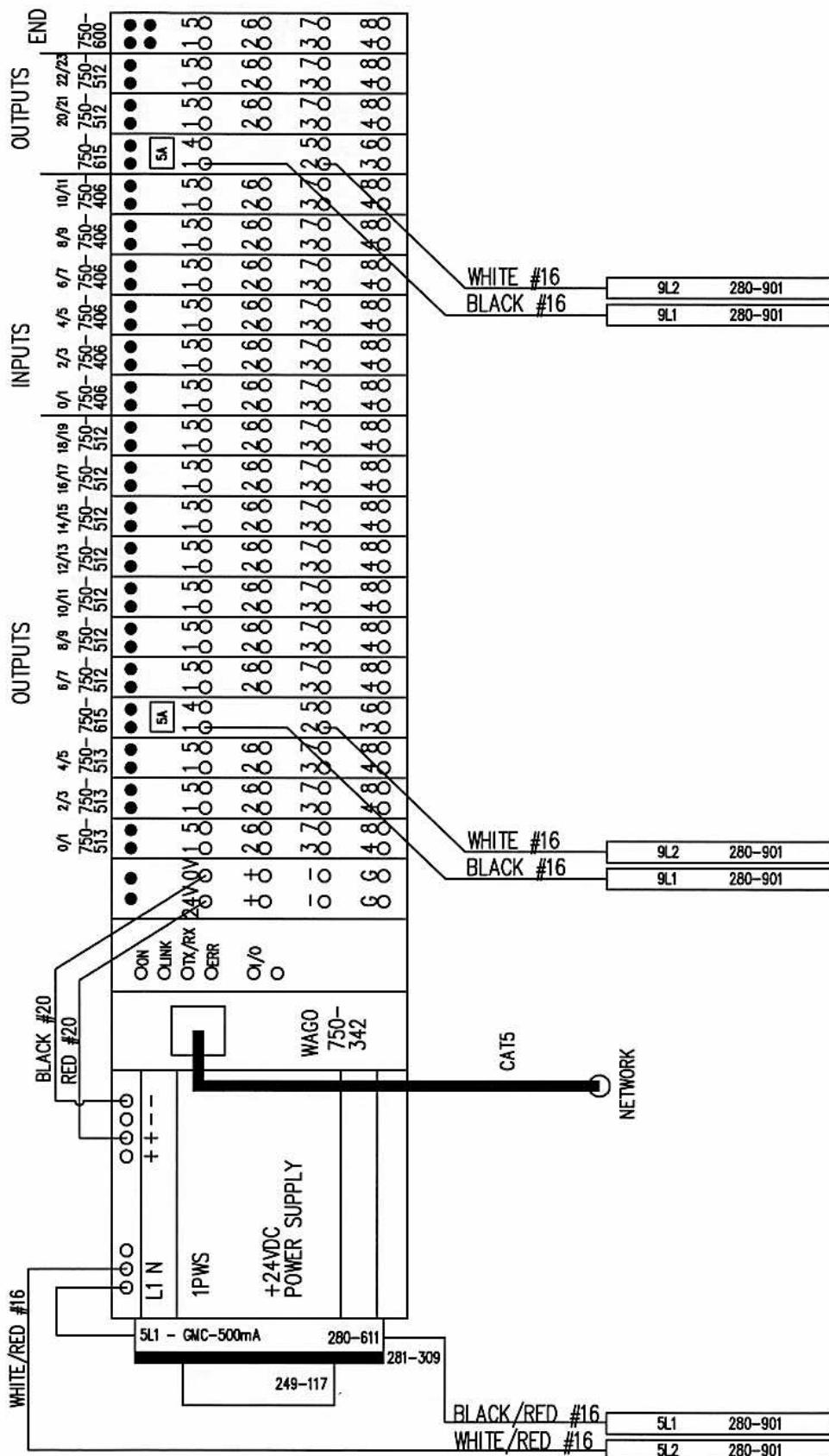
SCALE	NTS	DATE	CONTROLLED AUTOMATION, INC.
DRAWN BY:	DAB	1/28/08	P.O. BOX 888 BRYANT, AR 72089 PHONE: (501) 557-5109
DRAWING NUMBER:	100W-955A-07148	REV. I	TITLE: SOUTHLAND STEEL - ABL-100 UPDATE
			EXISTING MAIN SERVICE PANEL - 460VAC



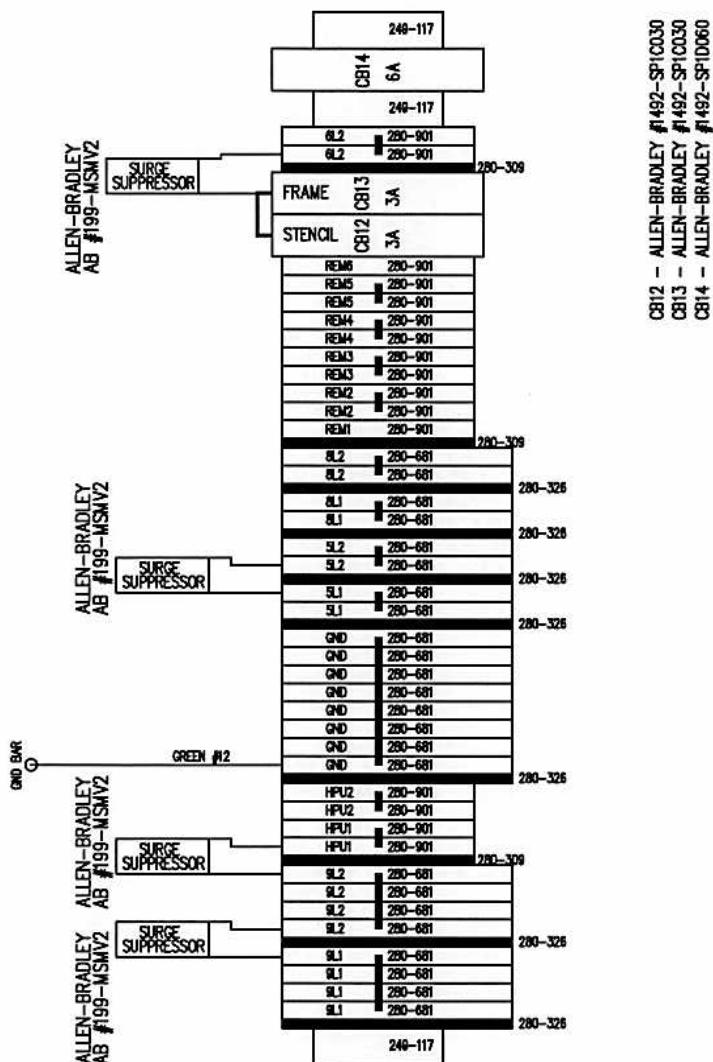
NOTES:
LOCATED IN 36" x 60" x 12" ENCLOSURE
PANEL SIZE IS 33" x 57"

SCALE	NTS	DATE	CONTROLLED AUTOMATION, INC.	P.O. BOX 888 BRYANT, AR 72089 PHONE: (501) 557-5109
DRAWN BY:	515	1/12/00		

SOUTHLAND STEEL - ABL=100 UPDATE
EXISTING MAIN PANEL LAYOUT - 460VAC

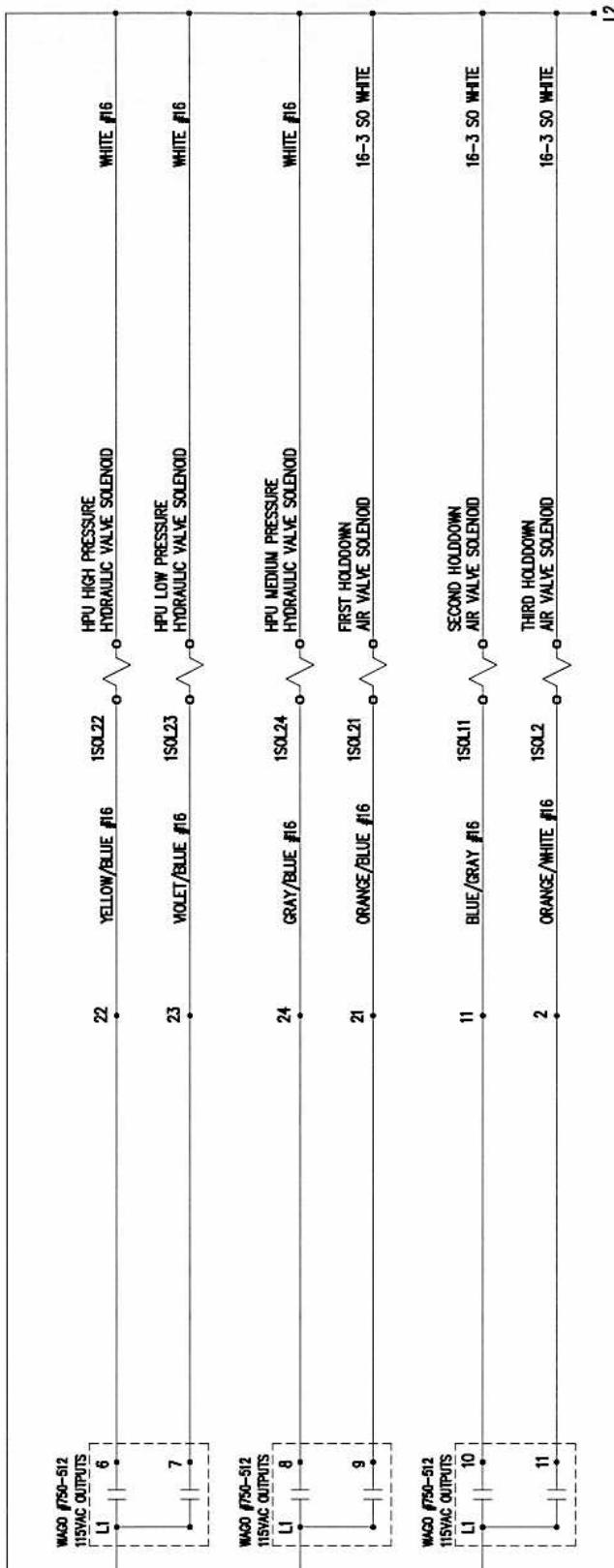
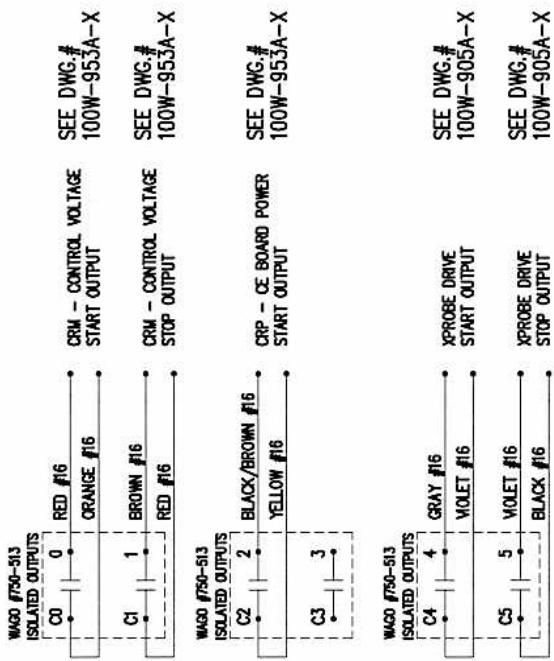
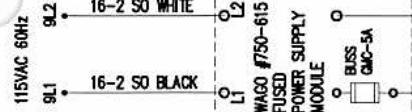


SCALE:	NTS	DATE:	CONTROLLED AUTOMATION, INC.	P.O. BOX 888 BRYANT, AR 72089
DRAWN BY:	DAB	1/29/08	TITLE:	SOUTHLAND STEEL - ABL-100 UPDATE
DRAWING NUMBER:	100W-955C-07148	REV:		MAIN MODBUS I/O DETAIL

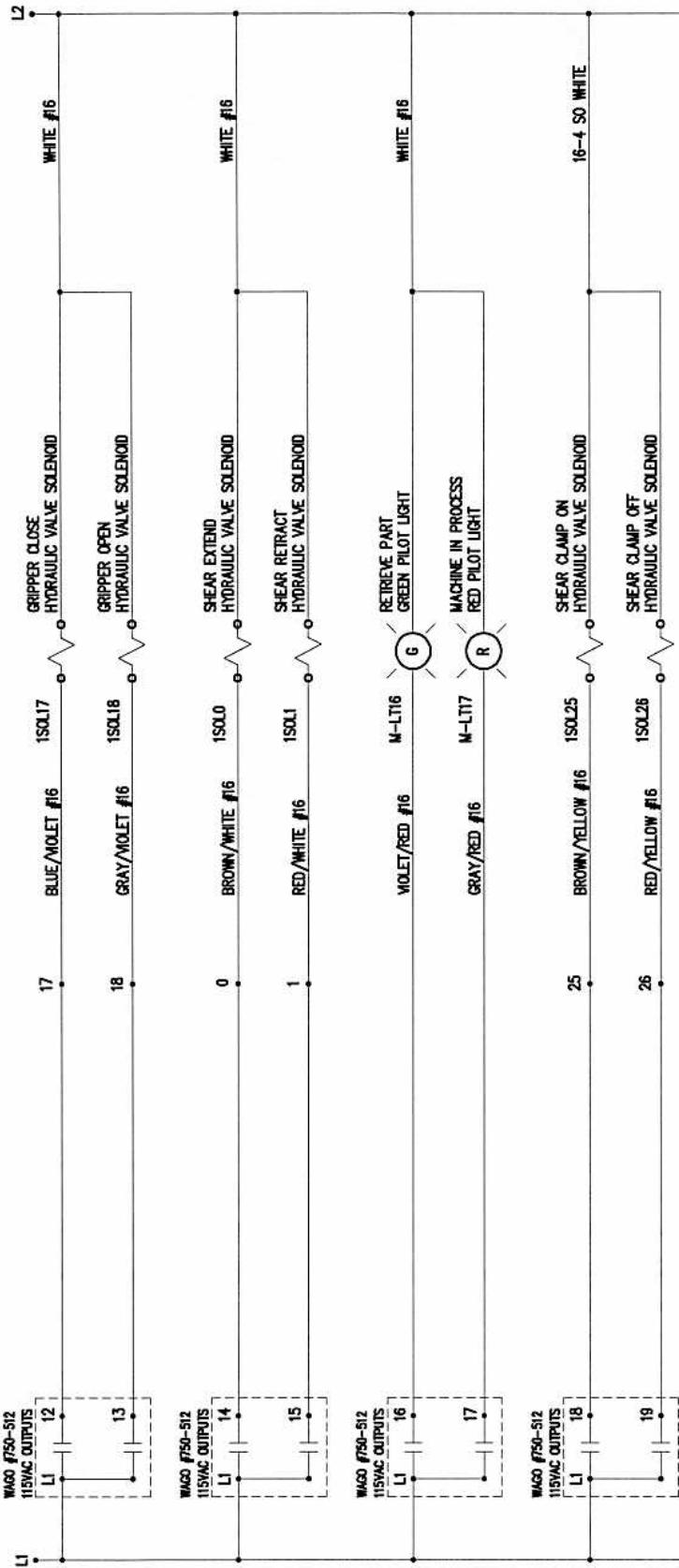


CB12 - ALLEN-BRADLEY #1492-SP10C50
 CB13 - ALLEN-BRADLEY #1492-SP10C50
 CB14 - ALLEN-BRADLEY #1492-SP10D60

SCALE:	NTS	DATE	CONTROLLED AUTOMATION, INC.	P.O. BOX 888 BRYANT, AR 72089
DRAWN BY:	DAB	1/29/08	ME	PHONE: (501) 557-5109
DRAWING NUMBER:	100W-955D-07148	REV. 1	ME	SOUTHLAND STEEL - ABL-100 UPDATE
				MAIN MODBUS - TERMINAL STRIP DETAIL



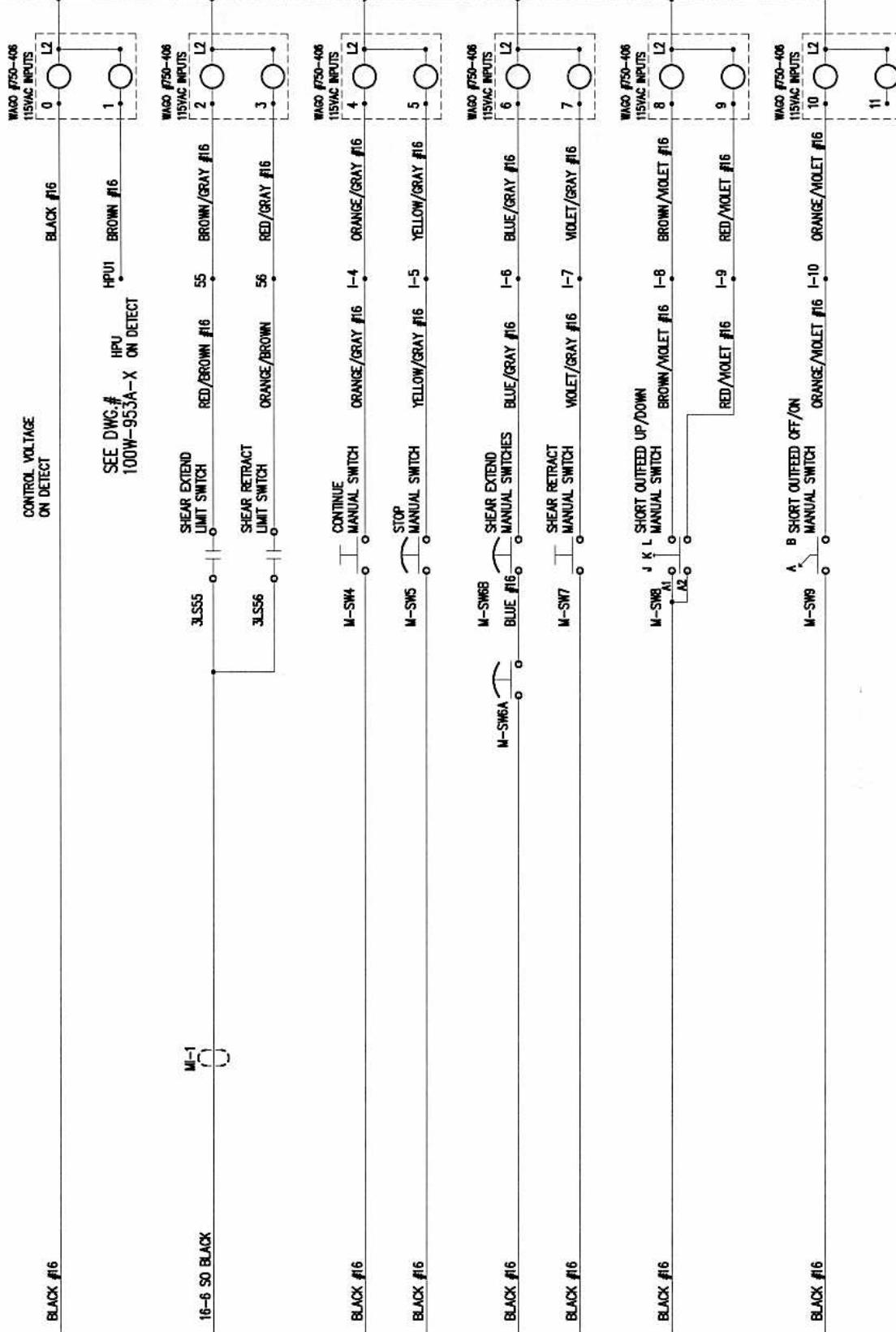
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DRAWN BY:	DAB	1/28/08	TIME	PHONE (501) 557-5109
DRAWING NUMBER:	100W-955E-07148	REV:	TIME	SOUTHLAND STEEL - ABL-100 UPDATE
				MAIN MODBUS I/O



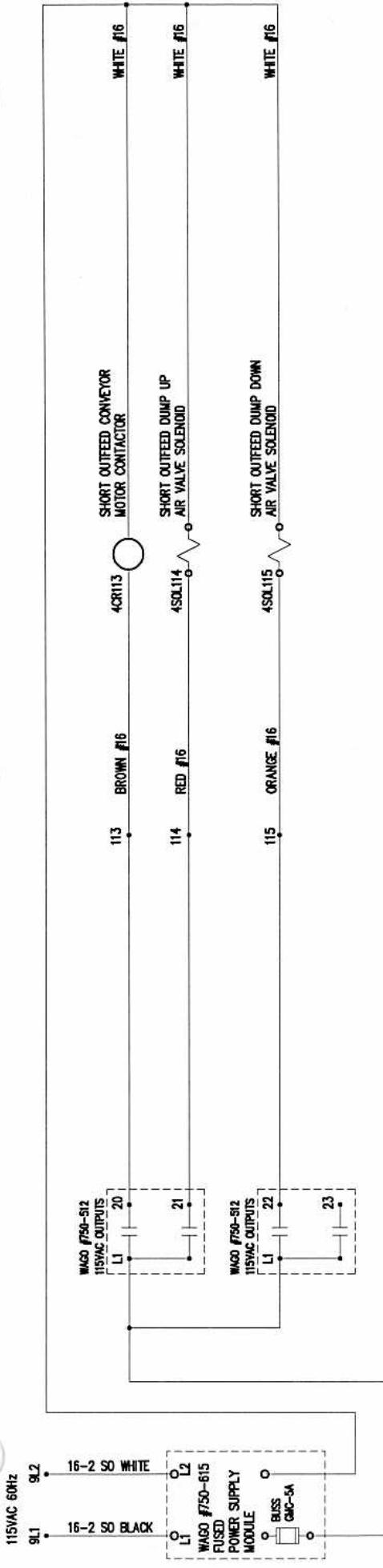
SCALE: NTS DATE: 1/28/08 DRAWN BY: DAB REV: I
 DRAWING NUMBER: 100W-955F-07148
 CONTROLLED AUTOMATION, INC.
 P.O. BOX 8888 BRYANT, AR 72089
 PHONE: (501) 557-5109
 SOUTHLAND STEEL - ABL-100 UPDATE
 MAIN MODBUS I/O

L2 OF
WAGO
#750-615

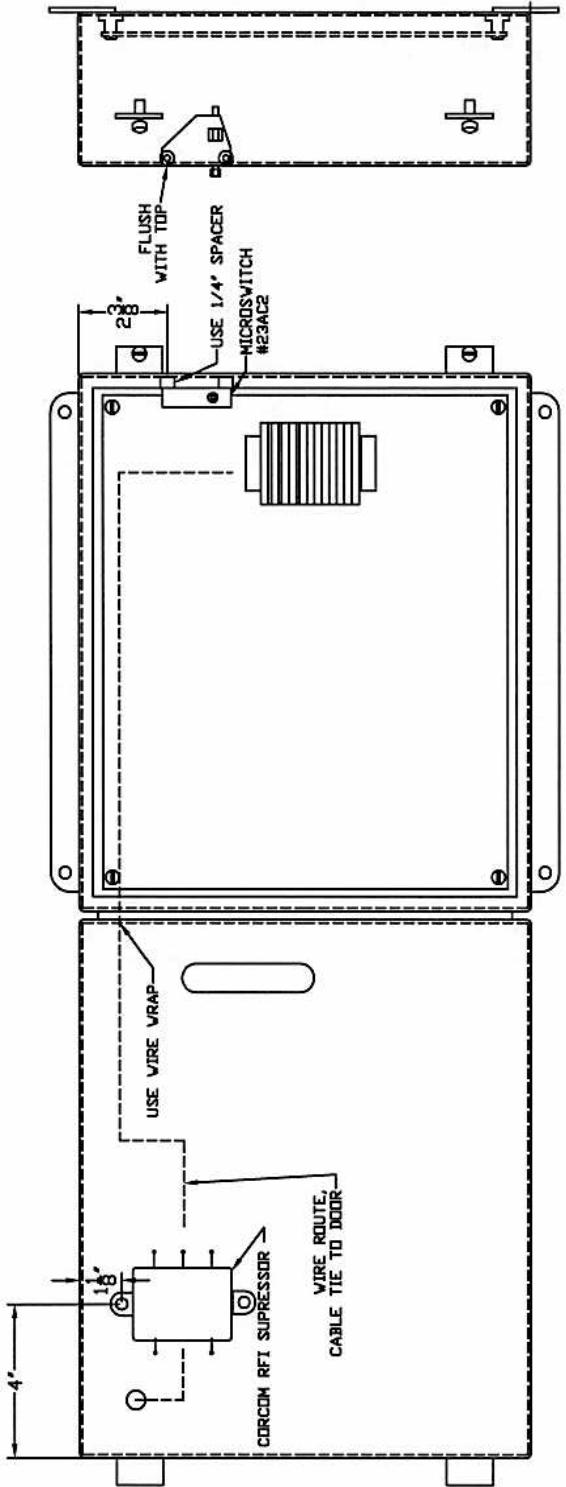
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SCALE:	NTS	DATE:	1/28/08	CONTROLLED AUTOMATION, INC.	P.O. BOX 888 BRYANT, AR 72089
DRAWN BY:	DAB	TIME:			PHONE: (501) 557-5109
DRAWING NUMBER:	100W-953G-07148	REV.:		SOUTHLAND STEEL - ABL-100 UPDATE	MAIN MODBUS I/O

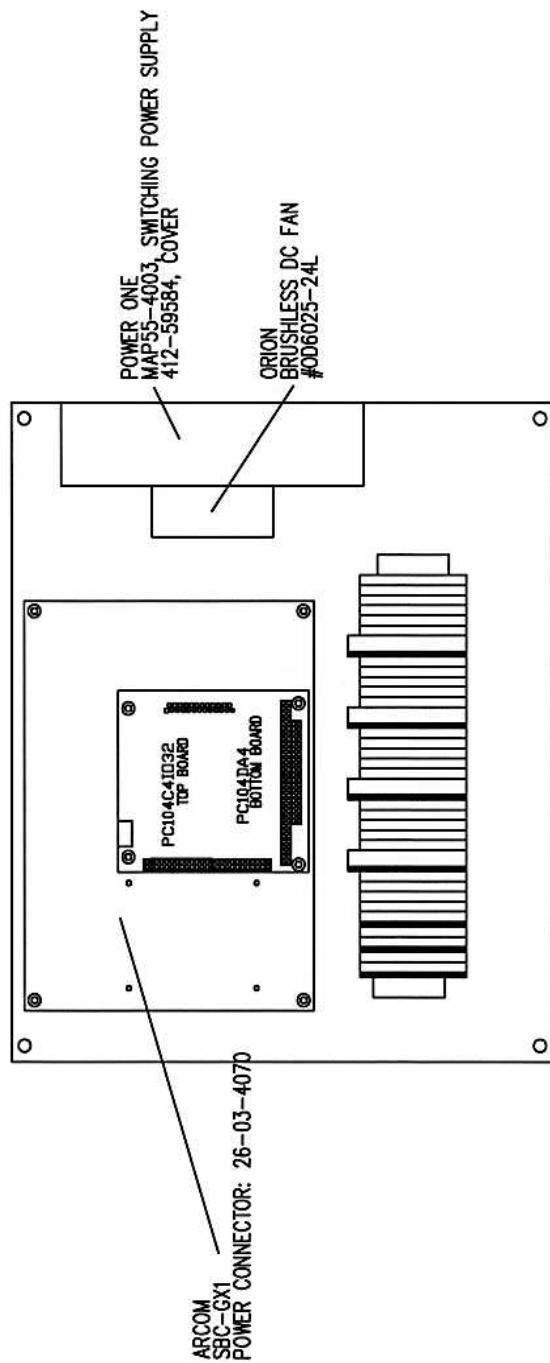


SCALE:	NTS	DATE	CONTROLLED AUTOMATION, INC.	P.O. BOX 888 BRYANT, AR 72089
DRAWN BY:	DAB	1/28/08	TIME:	PHONE (501) 557-5109
DRAWING NUMBER:	100W-955H-07148	REV:	SOUTHLAND STEEL – ABL-100 UPDATE MAIN MODBUS I/O	



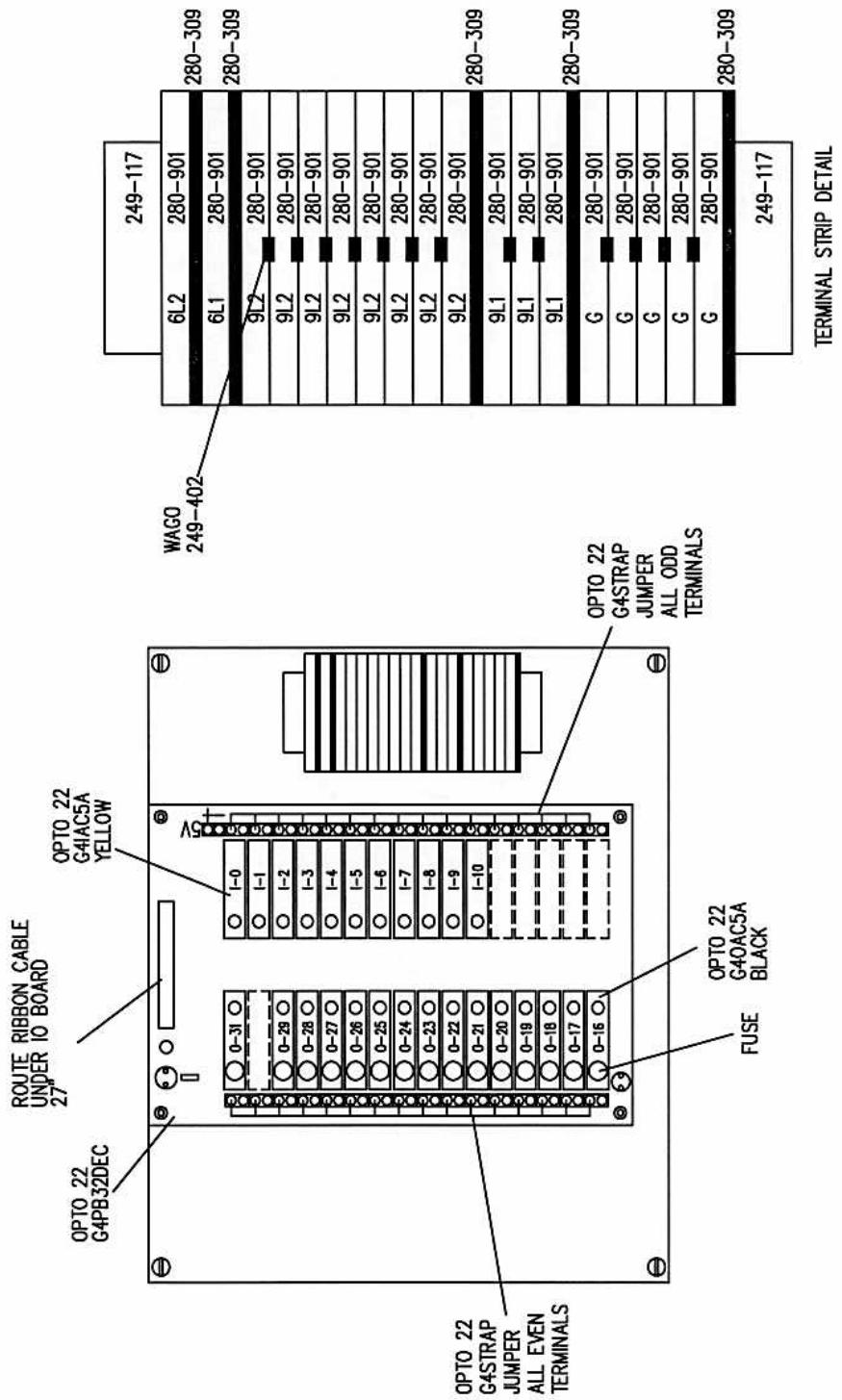
NOTES:
FRAME CE BOX IP ADDRESS - 19.86.2.50

SCALE:	NTS	DATE	CONTROLLED AUTOMATION, INC.	P.O. BOX 888 BRYANT, AR 72089
DRAWN BY:		7/21/04	TIME:	PHONE: (501) 557-5109
DRAWING NUMBER:	100W-981A-1	REV:		ABL-100 ANGLELINE
				FRAME CE BOX - COMPONENT LAYOUT



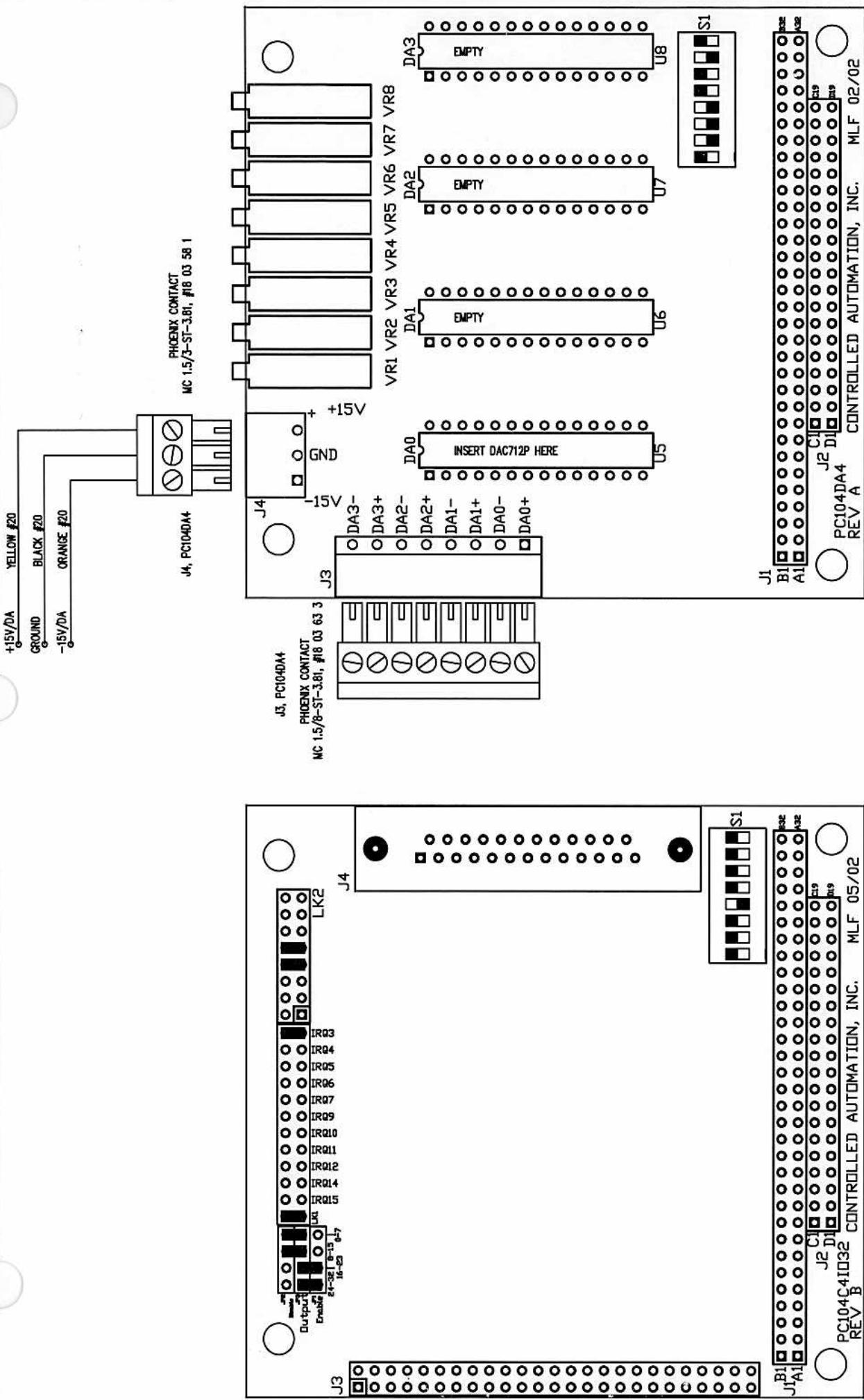
NOTES:
FRAME CE BOX IP ADDRESS – 19.86.2.50

SCALE:	NTS	DATE	CONTROLLED AUTOMATION, INC.	P.O. BOX 888 BRYANT, AR 72089
DRAWN BY:		7/21/04	TITLE	PHONE: (501) 557-5109
DRAWING NUMBER:	100W-981B-1	REV:	ABL-100 ANGLELINE	
			FRAME CE BOX – COMPUTER PANEL LAYOUT	



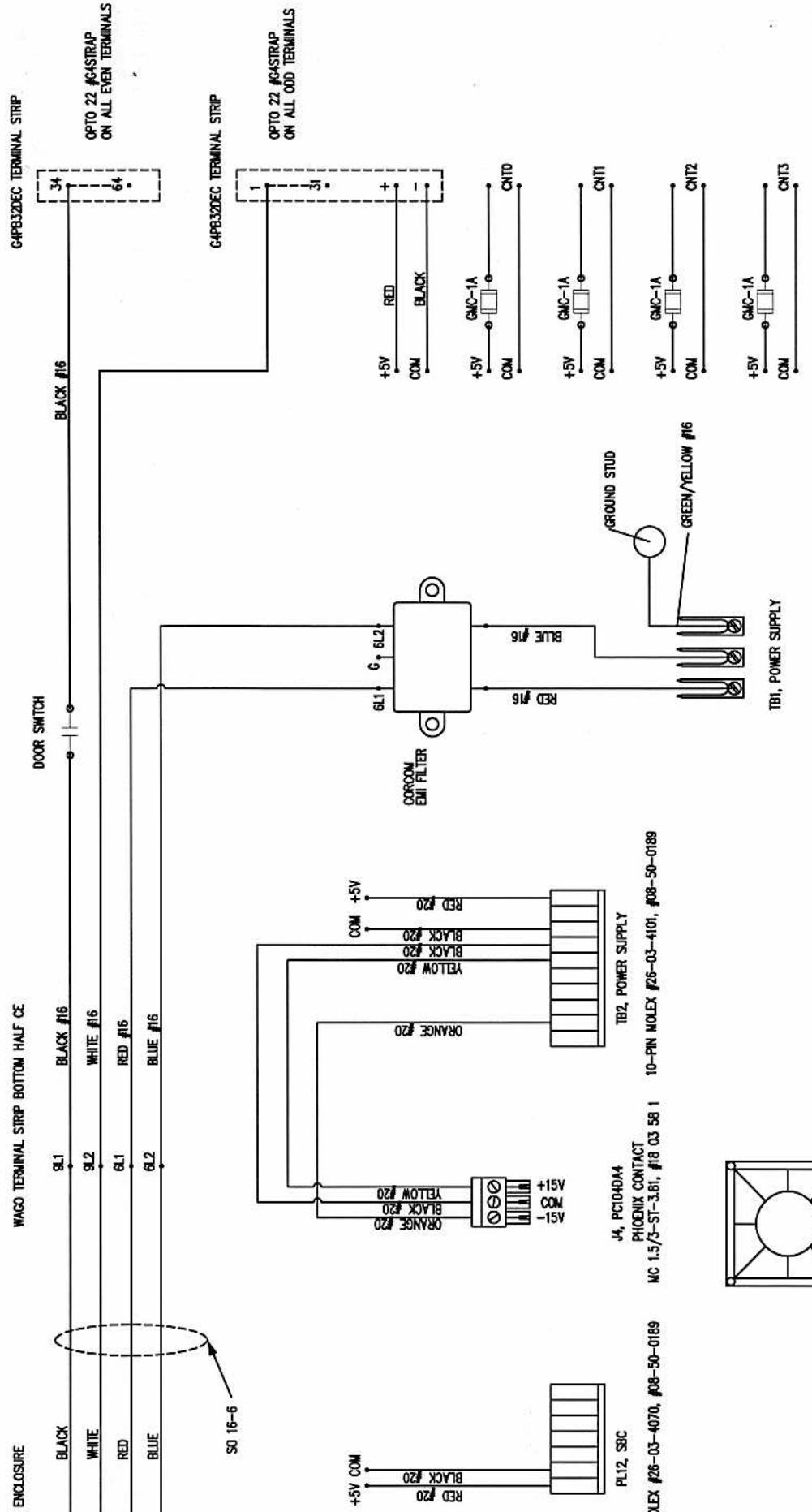
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FRAME CE BOX IP ADDRESS - 19.86.2.50
PANEL SIZE IS 10.75" x 12.75"

SCALE: NTS DATE: 2/16/16 DRAWN BY: DAB DRAWING NUMBER: 100W-981C-14101
 CONTROLLED AUTOMATION, INC.
 1000 E. SUNCOAST PROJECTS - ABL-100 UPDATE
 FRAME CE BOX - I/O PANEL LAYOUT
 P.O. BOX 888 BRYANT, AR 72089
 PHONE: (501) 557-5109



SCALE:	NTS	DATE	CONTROLLED AUTOMATION, INC.	P.O. BOX 888 BRYANT, AR 72089
DRAWN BY:		7/21/04		PHONE: (501) 557-5109
DRAWING NUMBER:	100W-981D-1	REV:	MLF	ABL-100 ANGLELINE
				FRAME CE BOX - BOARDS JUMPERS/SWITCHES

NOTES:
FRAME CE BOX IP ADDRESS - 19.86.2.50

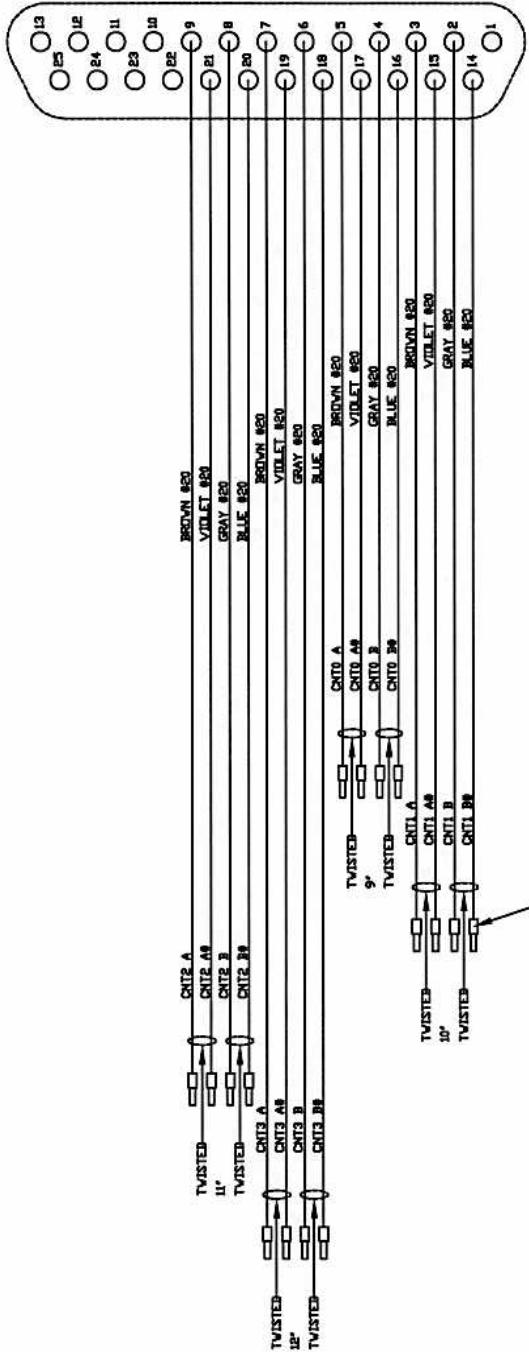


NOTES:
FRAME CE BOX IP ADDRESS - 19.86.2.50

SCHE: NTS DATE: . CONTROLLED AUTOMATION, INC. P.O. BOX 888 BRYANT, AR 72089
DEA MM BY: PHONE: (501) 557-5109

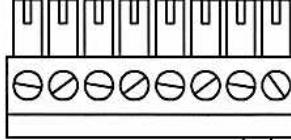
**ABL-100 ANGLELINE
FRAME CE BOX - POWER DISTRIBUTION**

DB-25, MALE



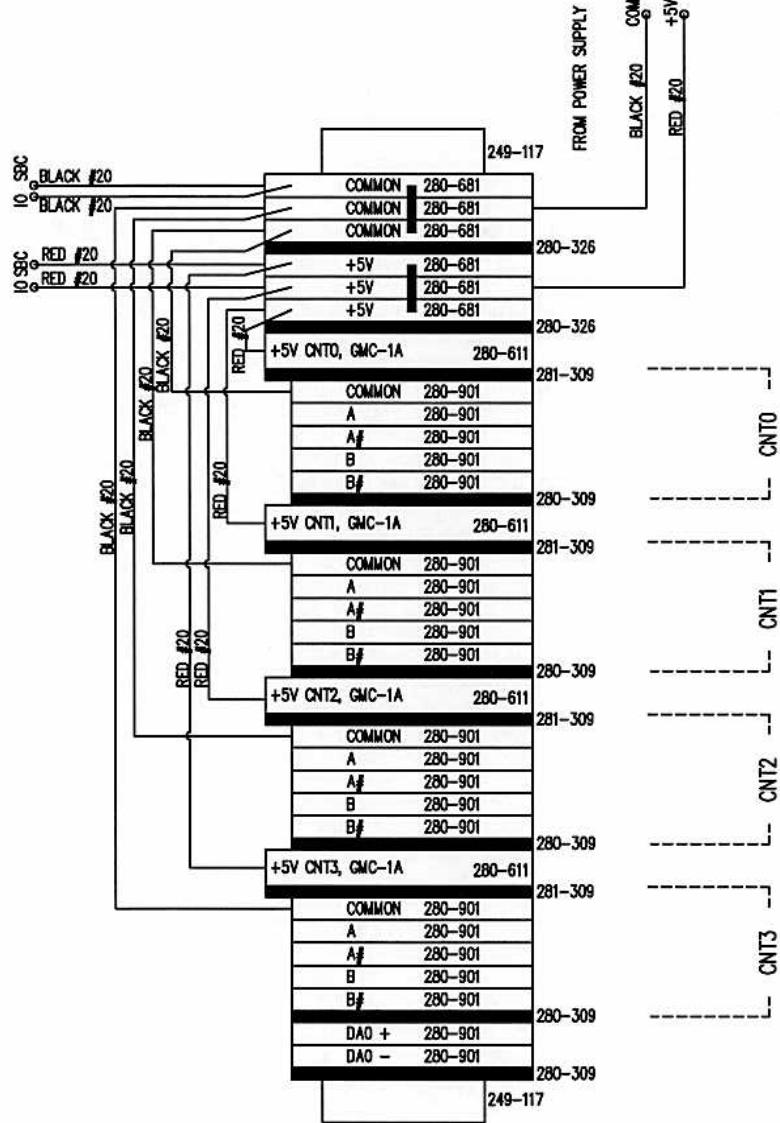
13. PCI040A4

PHOENIX CONTACT
MC 1.5/8-ST-3.81, #18 03 63 3



NOTES:
FRAME CE BOX IP ADDRESS - 19.86.2.50

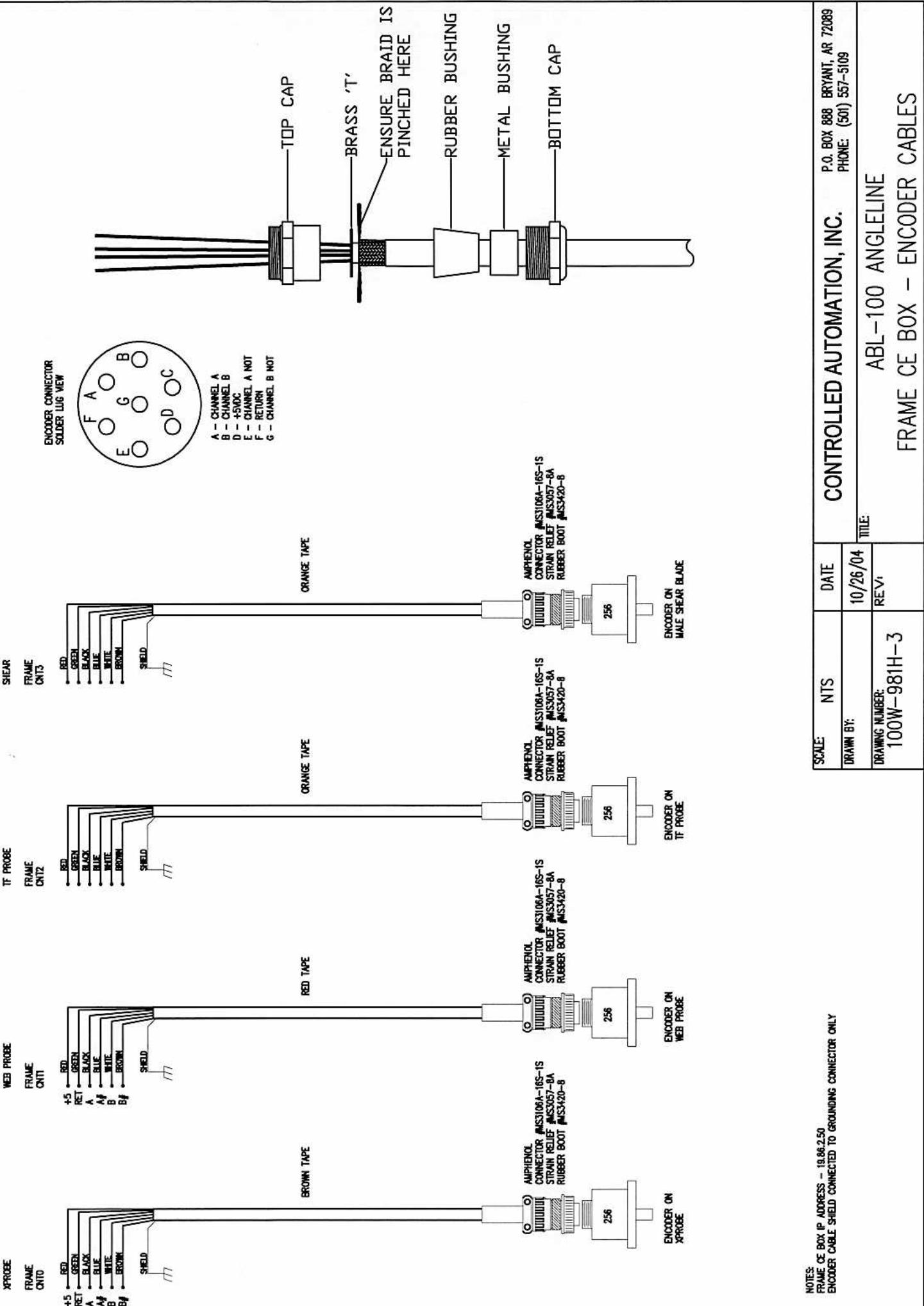
SCALE:	NTS	DATE	CONTROLLED AUTOMATION, INC.	P.O. BOX 888 BRYANT, AR 72089
DRAWN BY:		9/7/06	TIME:	PHONE: (501) 557-5109
DRAWING NUMBER:	100W-981F-3	REV:	ABL-100 ANGLELINE	FRAME CE BOX - COUNTER & DA CONNECTORS

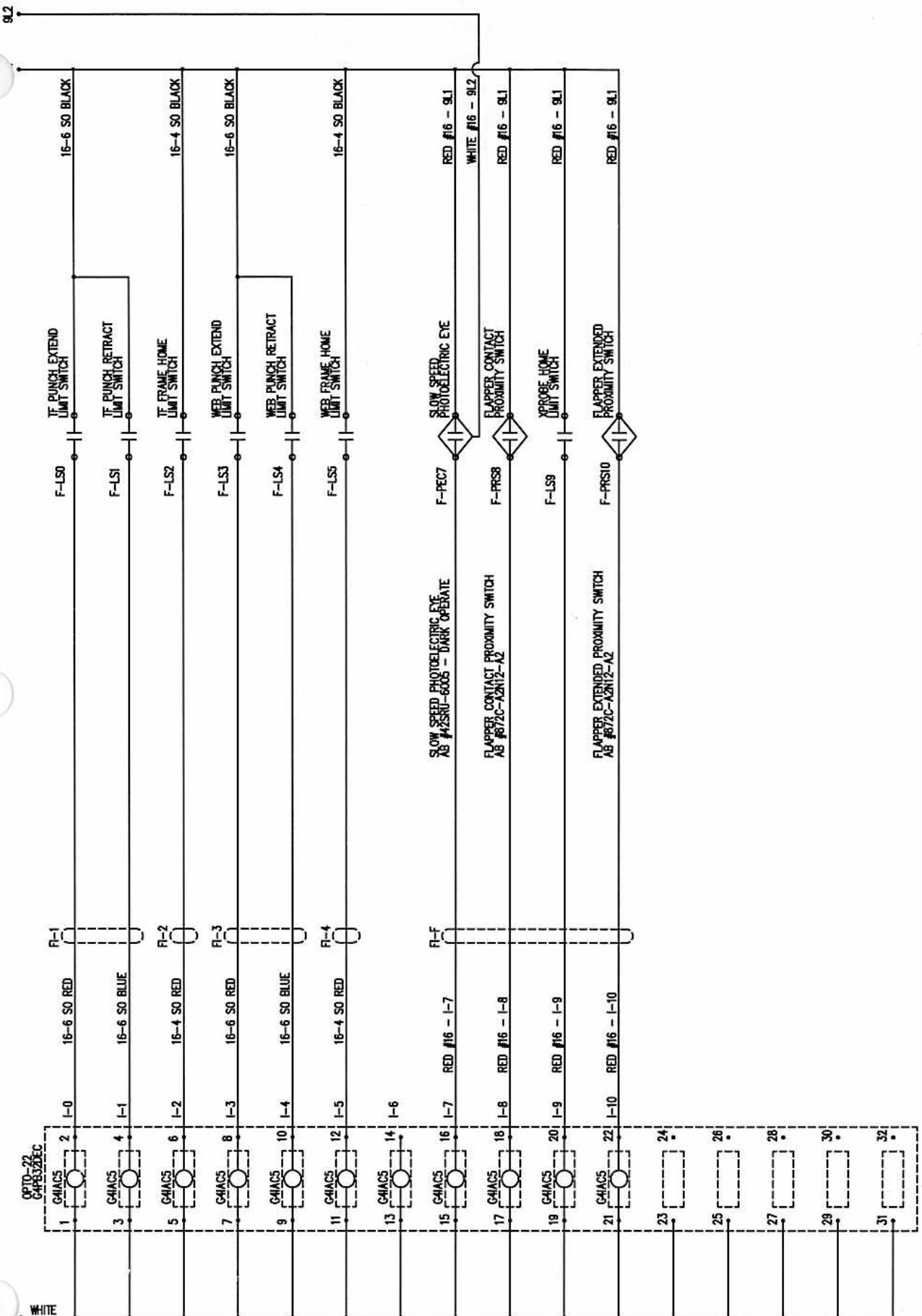


NOTE
FRAM

RESS - 19.68.250

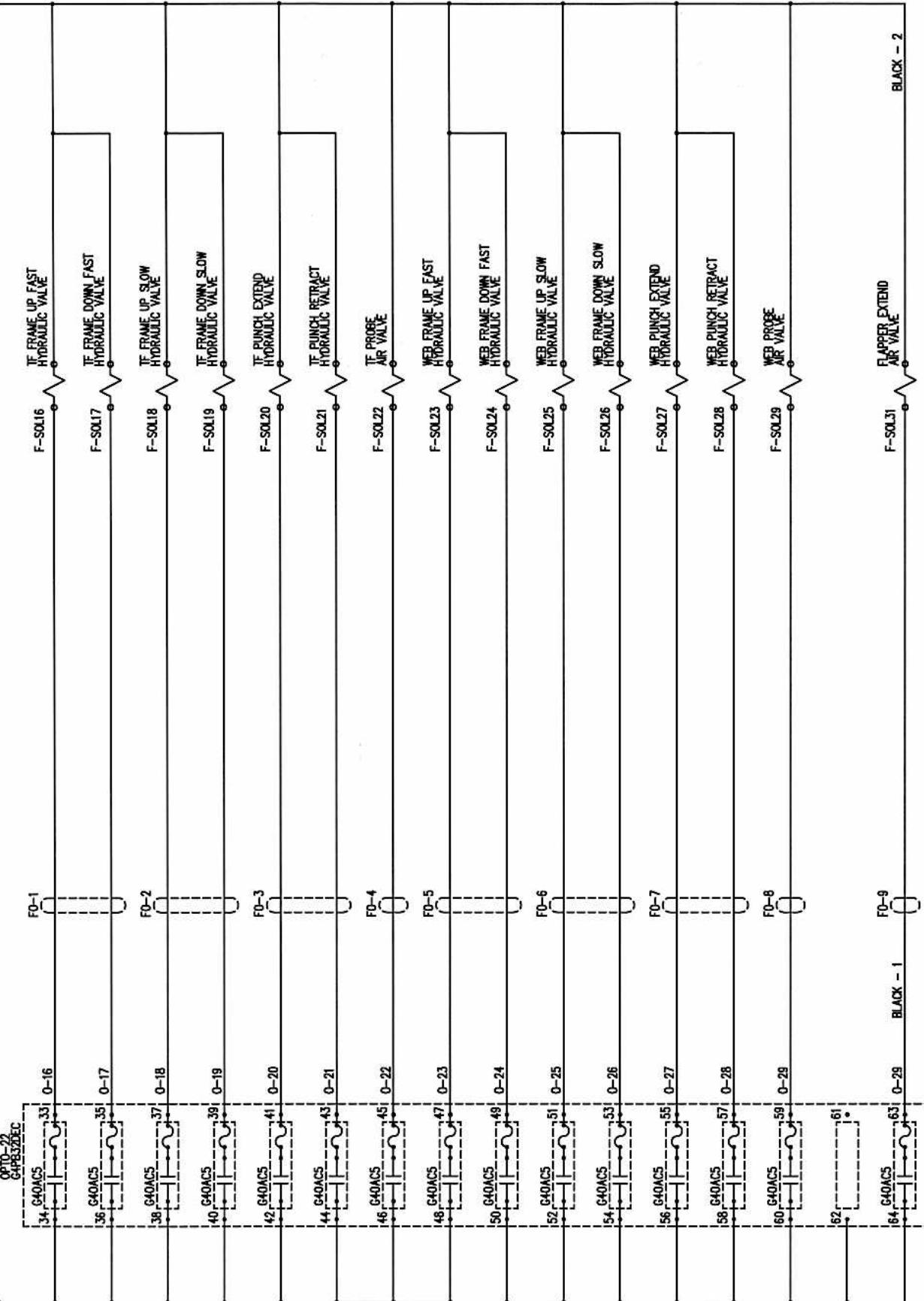
SCALE:	NTS	DATE	CONTROLLED AUTOMATION, INC.	P.O. BOX 888 BRYANT, AR 72089
DRAWN BY:		9/7/06	TITLE:	PHONE: (501) 557-5109
DRAWING NUMBER:	100W-981G-3	REV:	ABL-100 ANGLELINE	FRAME CE BOX - TERMINAL STRIP DETAIL





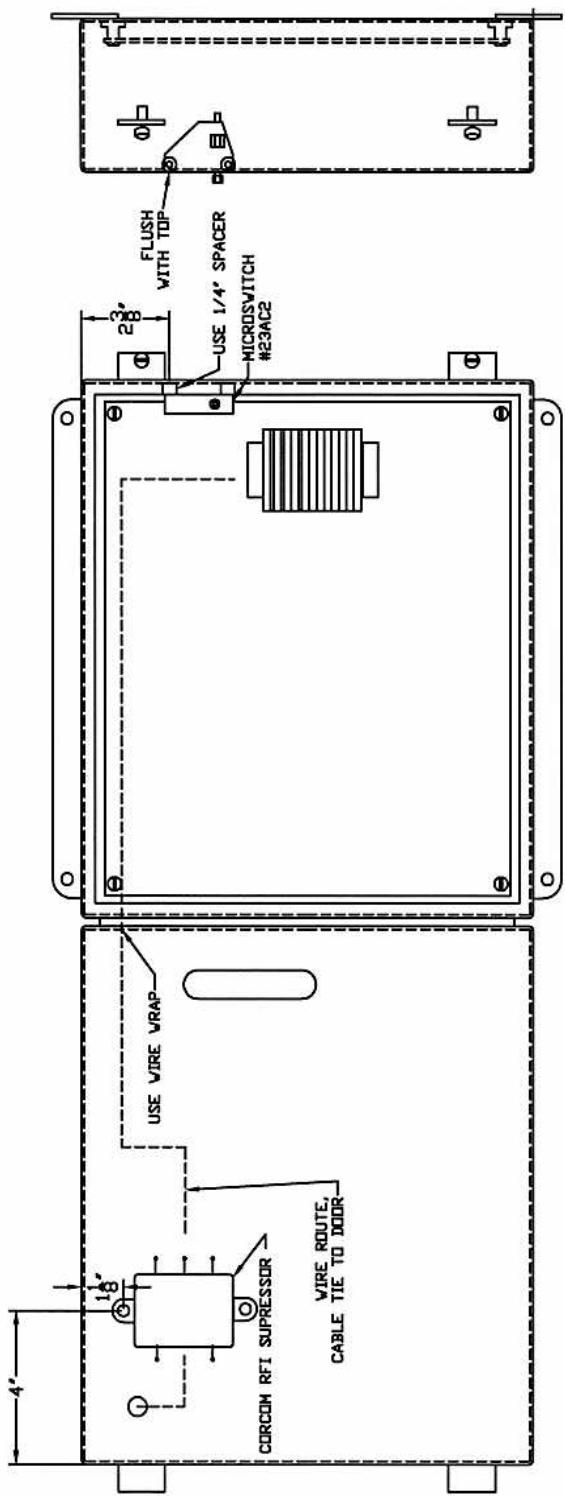
NOTES:
FRAME CE BOX IP ADDRESS - 19.86.2.50

SCALE:	NTS	DATE	CONTROLLED AUTOMATION, INC.	P.O. BOX 888 BRYANT, AR 72089
DRAWN BY:	DAB	2/16/16	REV.	PHONE: (501) 557-5109
DRAWING NUMBER:		100W-9811-14101	TITLE: SUNCOAST PROJECTS – ABL-100 UPDATE FRAME CE BOX – 115VAC INPUTS	



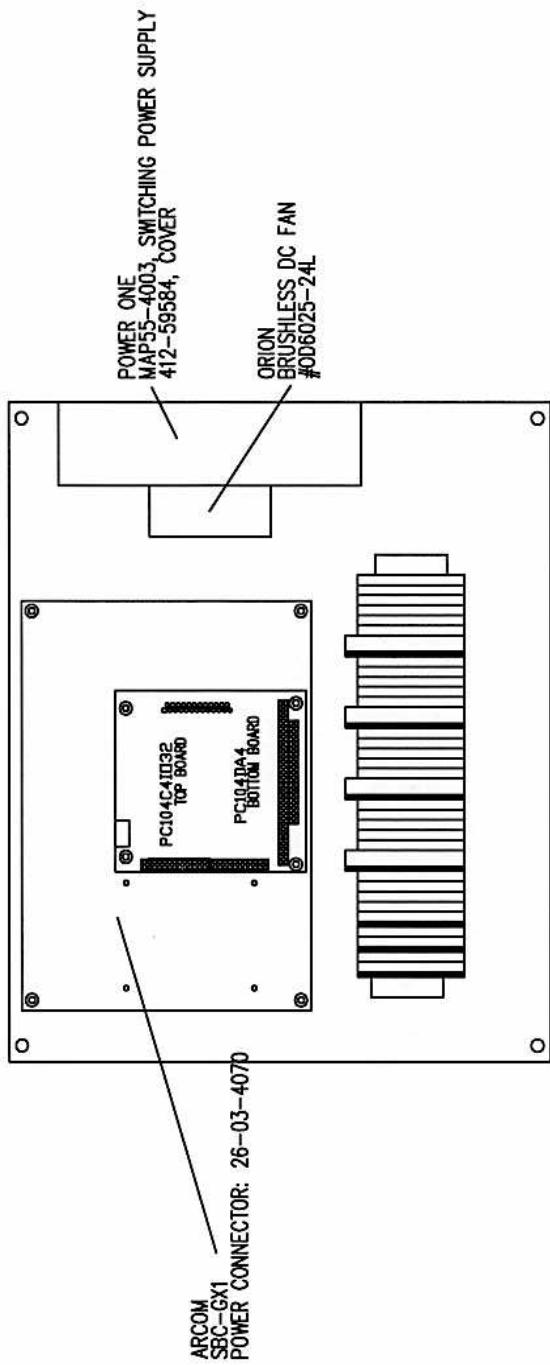
NOTES:
FRAME CE BOX IP ADDRESS - 19.86.2.50

SCALE:	NTS	DATE	CONTROLLED AUTOMATION, INC.	P.O. BOX 888 BRYANT, AR 72089
DRAWN BY:	DAB	11/13/06 <th>TITLE:</th> <td>PHONE: (501) 557-5109</td>	TITLE:	PHONE: (501) 557-5109
DRAWING NUMBER:	100W-981J-1	REV:	FRAME CE BOX - 115VAC OUTPUTS	



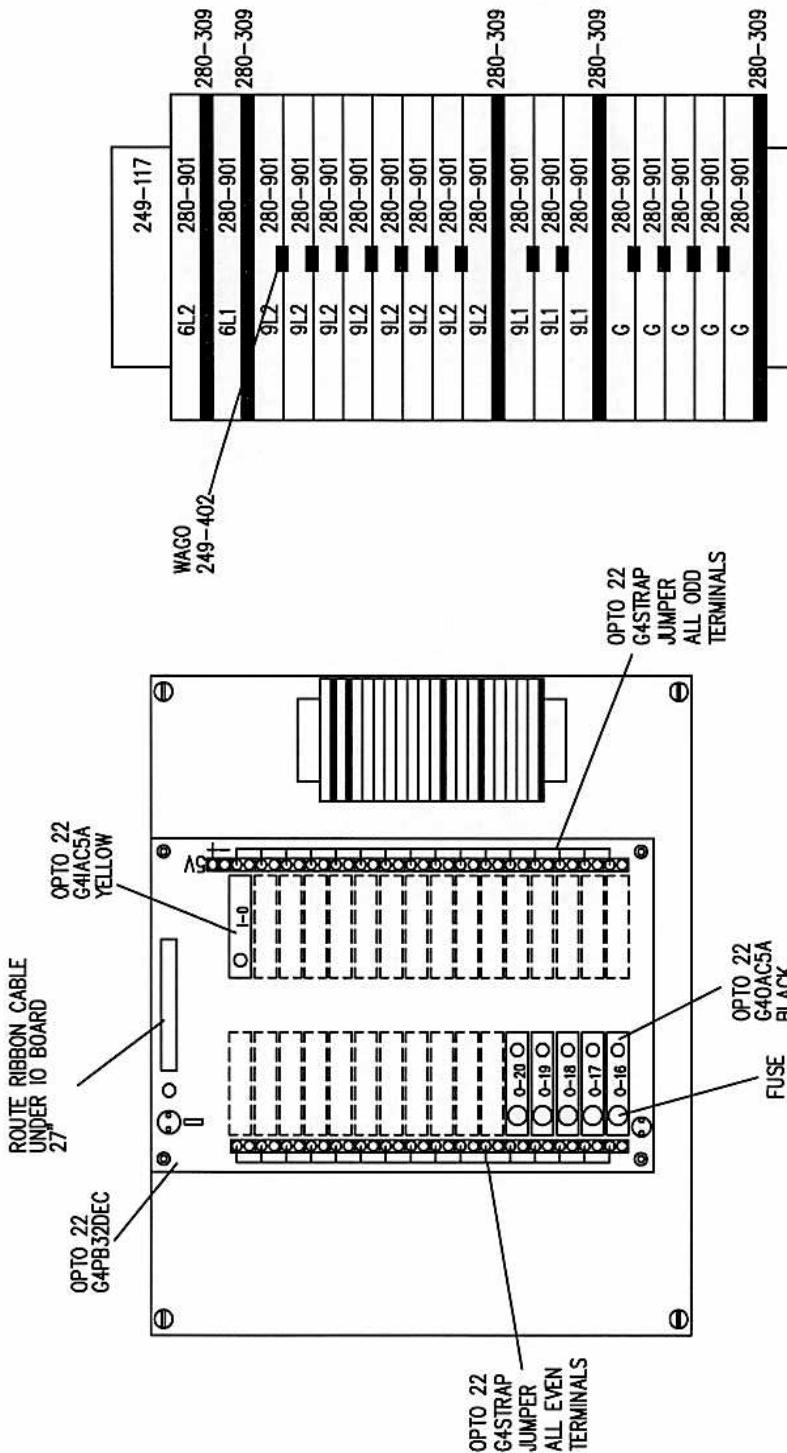
NOTES:
STENCIL CE BOX IP ADDRESS - 19.96.2.60

SCALE:	NTS	DATE	CONTROLLED AUTOMATION, INC.	P.O. BOX 888 BRYANT, AR 72089
DRAWN BY:		1/5/06	TIME	PHONE: (501) 557-5109
DRAWING NUMBER:	100W-984A-1	REV I		ABL-100 ANGLELINE
				STENCIL CE BOX - COMPONENT LAYOUT



NOTES:
STENCIL CE BOX IP ADDRESS - 19.86.2.60

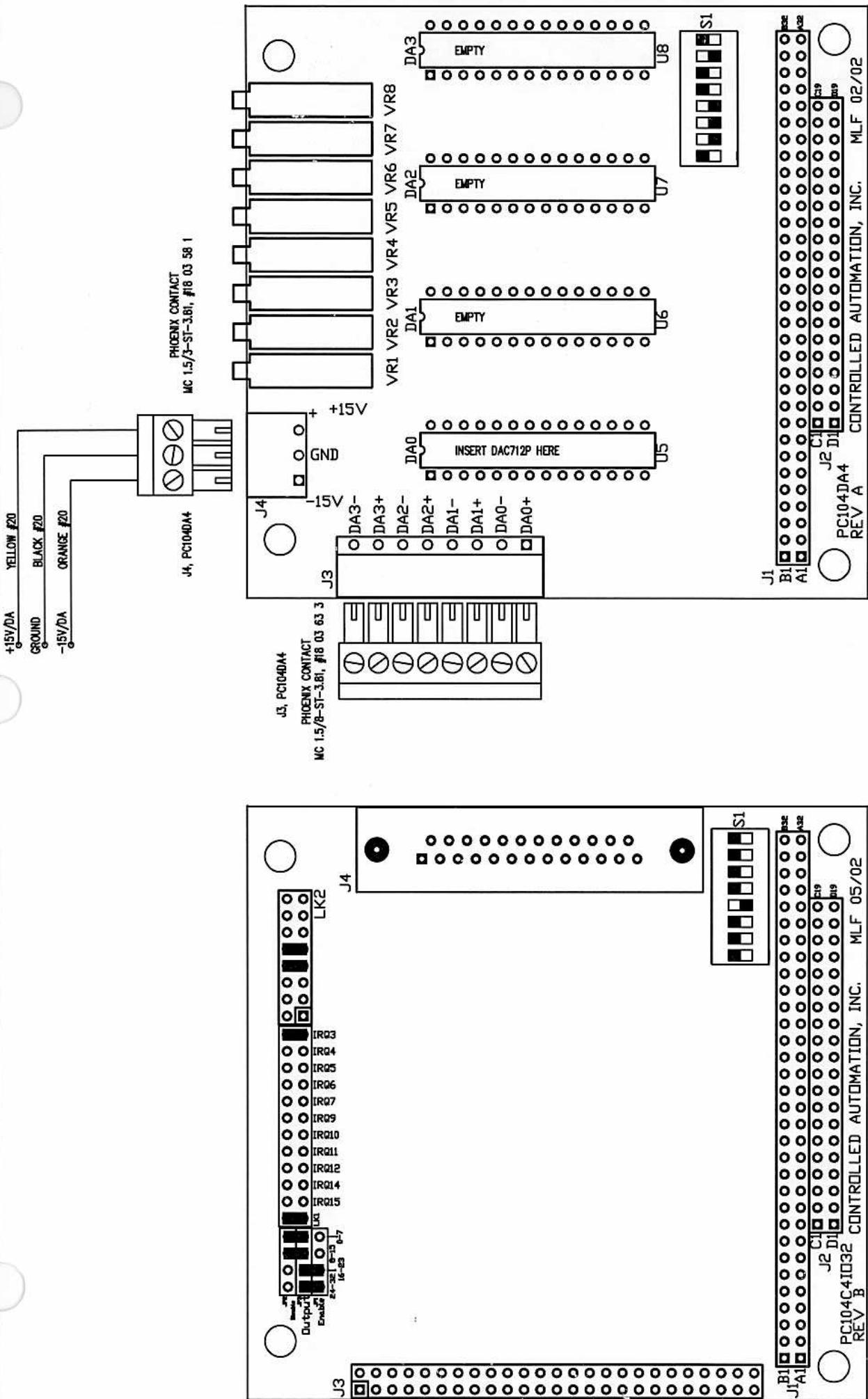
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DRAWN BY:		1/5/06	TIME	PHONE: (501) 557-5109
DRAWING NUMBER:	100W-984B-1	REV. I		ABL-100 ANGLELINE
				STENCIL CE BOX - COMPUTER PANEL LAYOUT



TERMINAL STRIP DETAIL

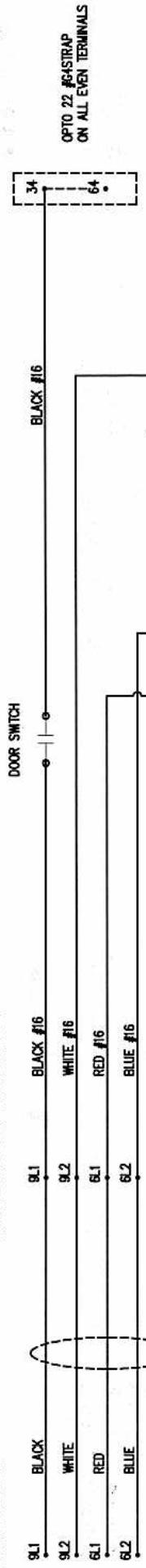
NOTES:
STENCIL CE BOX IP ADDRESS - 19.86.2.60
PANEL SIZE IS 10.75" x 12.75"

SCALE:	NTS	DATE	CONTROLLED AUTOMATION, INC.	P.O. BOX 888 BRYANT, AR 72089
DRAWN BY:		1/29/08	TIME:	PHONE: (501) 557-5109
DRAWING NUMBER:	100W-984C-07148	REV:	SOUTHLAND - ABL-100 UPDATE	STENCIL CE BOX - I/O PANEL LAYOUT

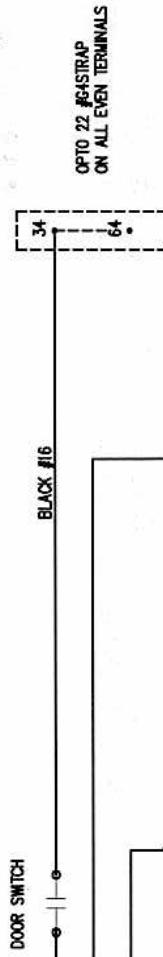


SCALE:	NTS	DATE	CONTROLLED AUTOMATION, INC.	P.O. BOX 888 BRYANT, AR 72089
DRAWN BY:		TIME	PHONE (501) 557-5109	
DRAWING NUMBER:	100W-984D-1	REV:	ABL-100 ANGLELINE	
			STENCIL CE BOX - BOARDS JUMPERS/SWITCHES	MLF 02/02

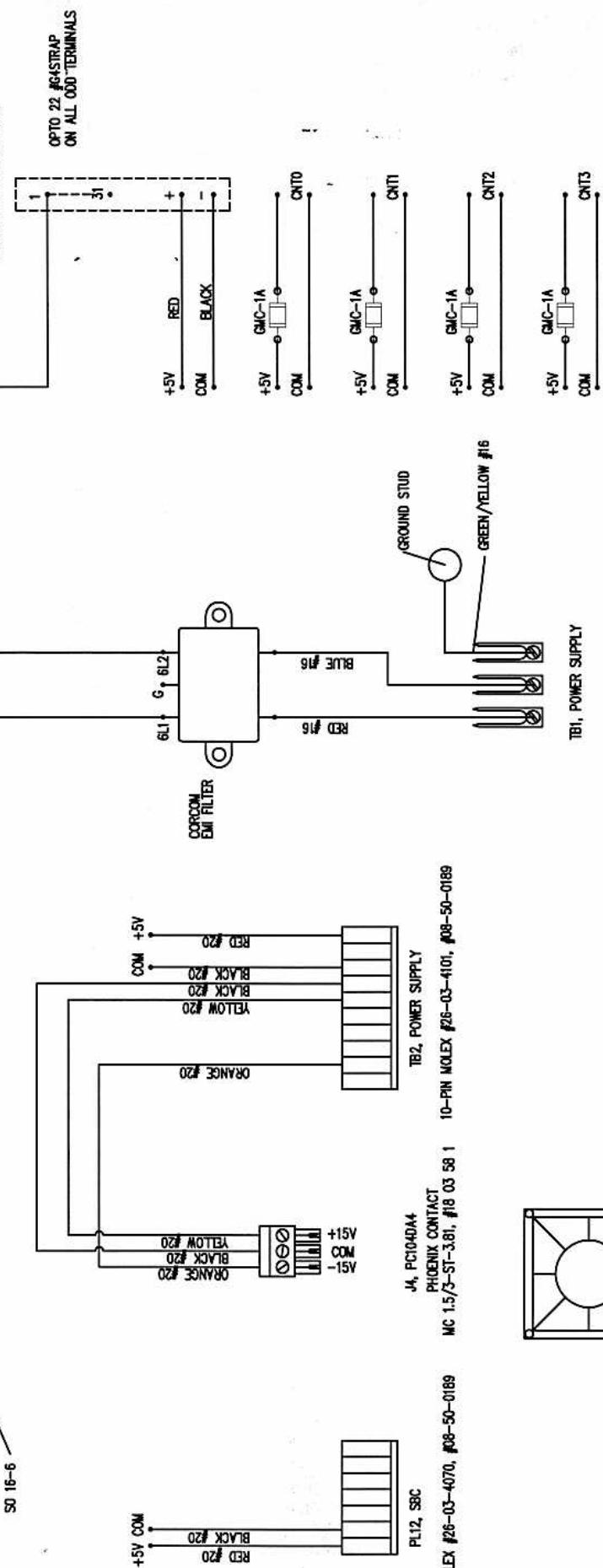
MAIN ELECTRONIC ENCLOSURE



G4P832DEC TERMINAL STRAP



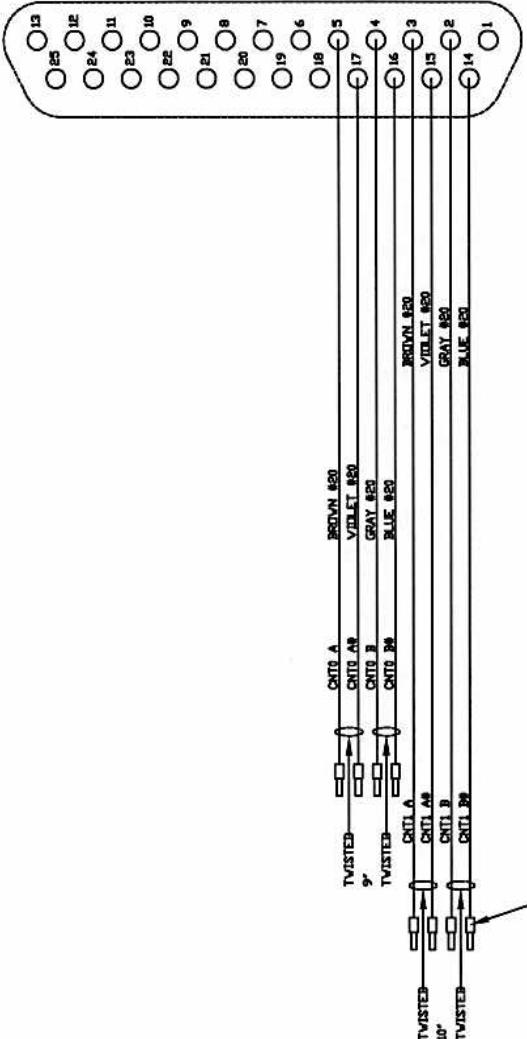
G4P832DEC TERMINAL STRAP

NOTES:
STENCIL CE BOX IP ADDRESS - 19.86.2.60

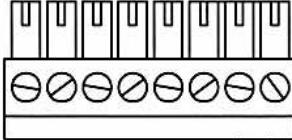
SCALE:	NTS	DATE	CONTROLLED AUTOMATION, INC.
DRAWN BY:	TIME	1/5/06	P.O. BOX 888 BRYANT, AR 72089 PHONE (501) 557-5109

DRAWING NUMBER:	REV.	ABL-100 ANGLELINE
100W-984E-1		STENCIL CE BOX - POWER DISTRIBUTION

DB-25, MALE



PC100DA4
PHOENIX CONTACT
MC 1.5/6-ST-3.81, #18 03 63 3

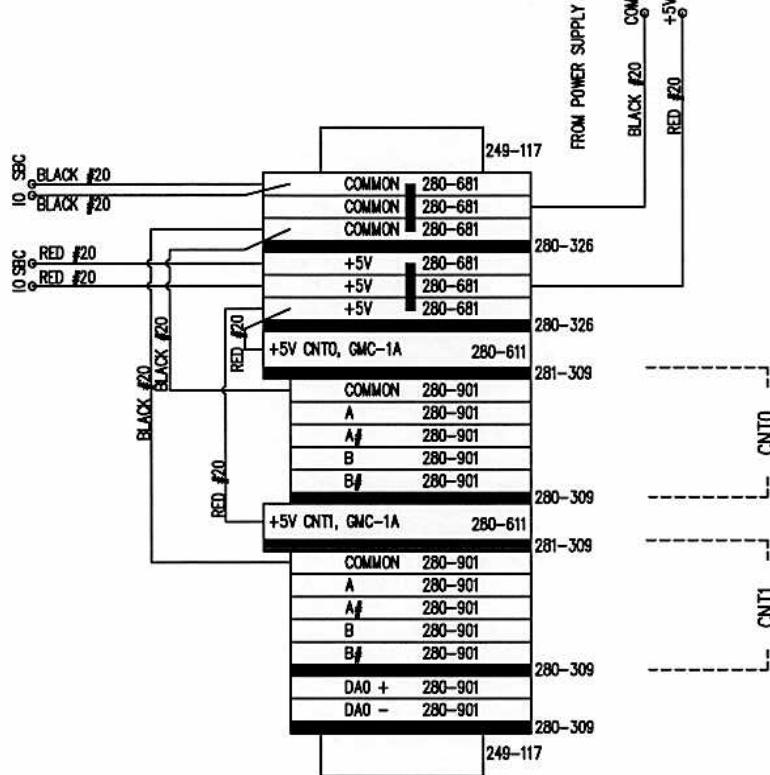


DA0- —————— VIRES TWISTED TOGETHER —————— BLACK #20
DA0+ —————— RED #20

FERRULE, VAGI - 216-203

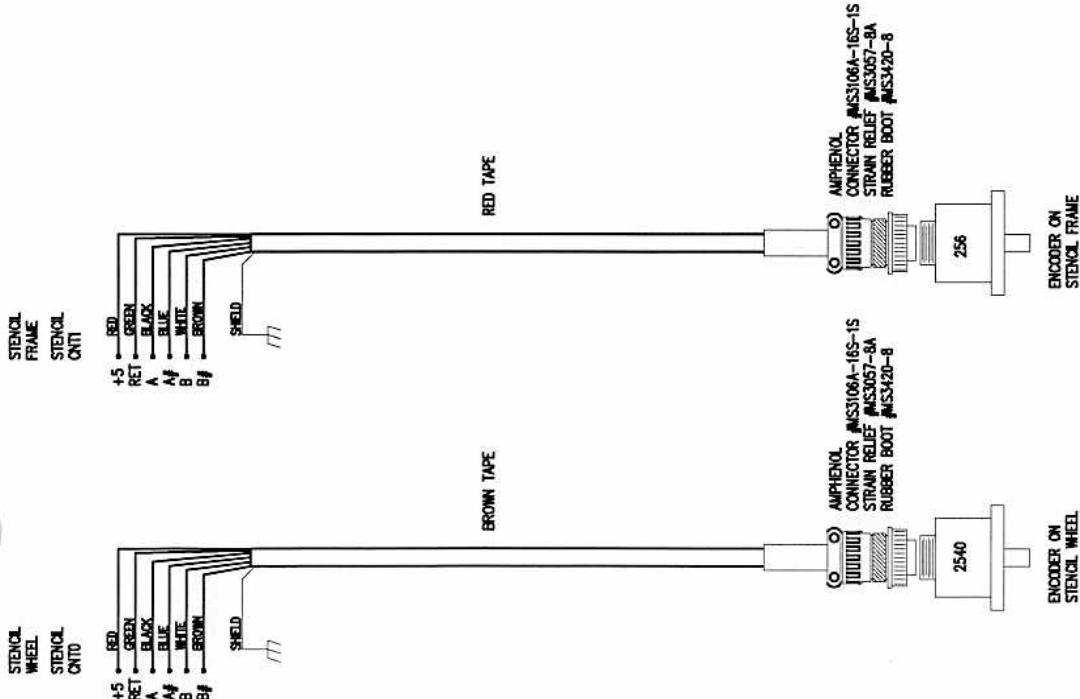
NOTES:
STENCIL CE BOX IP ADDRESS - 19.56.2.60

NAME:	NTS	DATE	CONTROLLED AUTOMATION, INC.	P.O. BOX 888 BRYANT, AR 72089
DRAWN BY:		1/5/06	PHONE: (501) 557-5109	
DRAWING NUMBER:	100W-984F-1	REV. I	ABL-100 ANGLELINE	STENCIL CE BOX - COUNTER & DA CONNECTORS

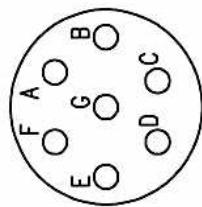


SCALE:	NTS	DATE	CONTROLLED AUTOMATION, INC.	P.O. BOX 888 BRYANT, AR 72089
DRAWN BY:		1/5/06	TITLE	PHONE: (501) 557-5109
DRAWING NUMBER:	100W-984G-1	REV:	ABL-100 ANGLELINE	
NOTES:	STENCIL CE BOX IP ADDRESS - 19.56.2.60		STENCIL CE BOX - TERMINAL STRIP DETAIL	

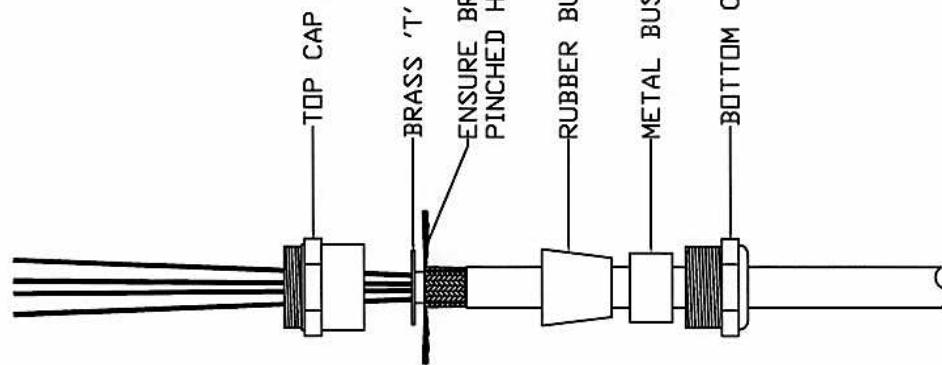
NOTES:
STENCIL CE BOX IP ADDRESS - 19.56.2.60



ENCODER CONNECTOR
SOLDER LUG VIEW



A - CHANNEL A
B - CHANNEL B
D - +5VDC
E - CHANNEL A NOT
F - RETURN
G - CHANNEL B NOT



TOP CAP

BRASS 'T'

ENSURE BRAID IS PINCHED HERE

RUBBER BUSHING

METAL BUSHING

BOTTOM CAP

P.O. BOX 888 BRYANT, AR 72089
PHONE: (501) 557-5109

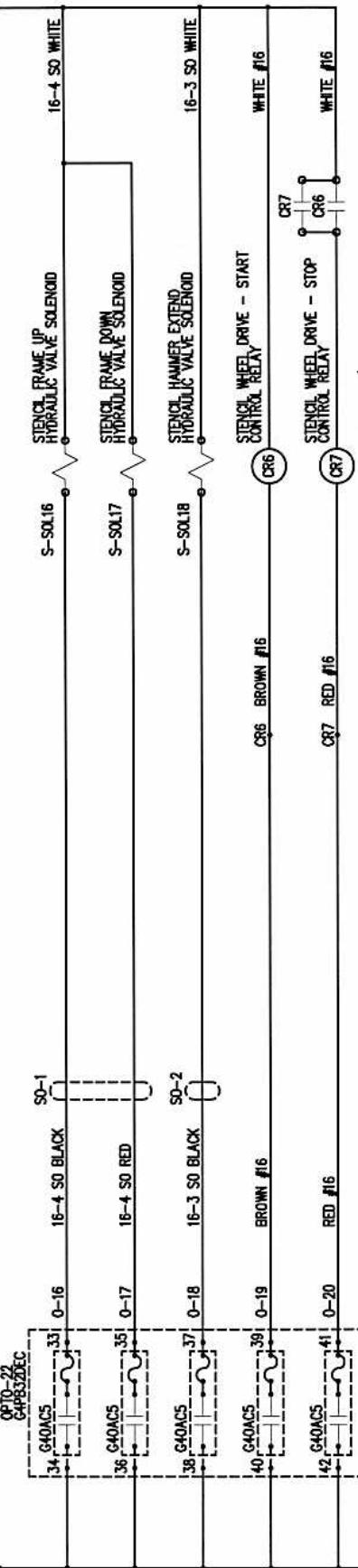
CONTROLLED AUTOMATION, INC.
ABL-100 ANGLELINE
STENCIL CE BOX - ENCODER CABLES

SCALE:	NTS	DATE	1/5/06
DRAWN BY:		REV.	
DRAWING NUMBER:	100W-984H-1	FILE	



NOTES:
STENCIL CE BOX IP ADDRESS - 19.96.2.60

SCALE:	NTS	DATE	CONTROLLED AUTOMATION, INC.	P.O. BOX 888 BRYANT, AR 72089
DRAWN BY:	DAB	11/13/06	TITLE	PHONE: (501) 557-5109
DRAWING NUMBER:	100W-984-1	REV:	ABL-100 ANGLELINE	
			STENCIL CE BOX - 115VAC INPUTS	



NOTES:
STENCIL CE BOX IP ADDRESS - 19.86.2.60

SCALE:	NTS	DATE	CONTROLLED AUTOMATION, INC.	P.O. BOX 888 BRYANT, AR 72089
DRAWN BY:	DAB	1/29/08	TITLE	PHONE: (501) 557-5109
DRAWING NUMBER:	100W-984J-07148	REV.	SOUTHLAND STEEL - ABL-100 UPDATE	
STENCIL CE BOX - 115VAC OUTPUTS				

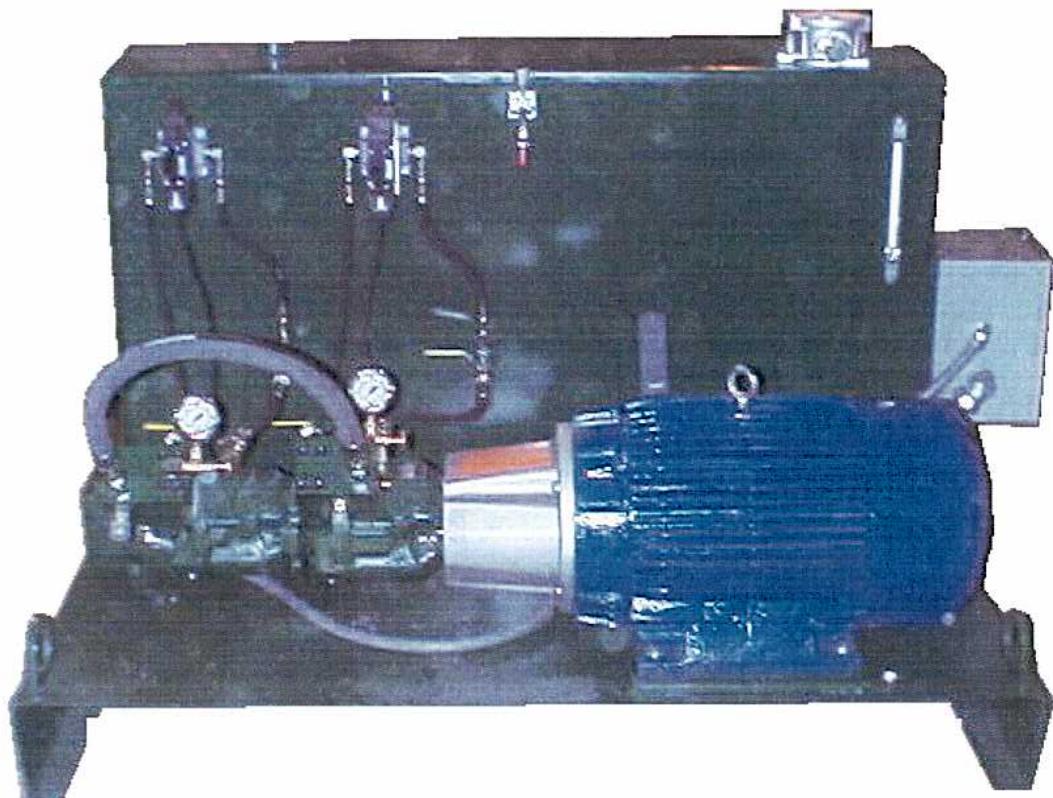
Controlled Automation, Inc.

Standard Power Unit

Model # 200-097 for Beamline/Angleline

Model # 200-098 for 2AT-175 Plate Punch

REV 2

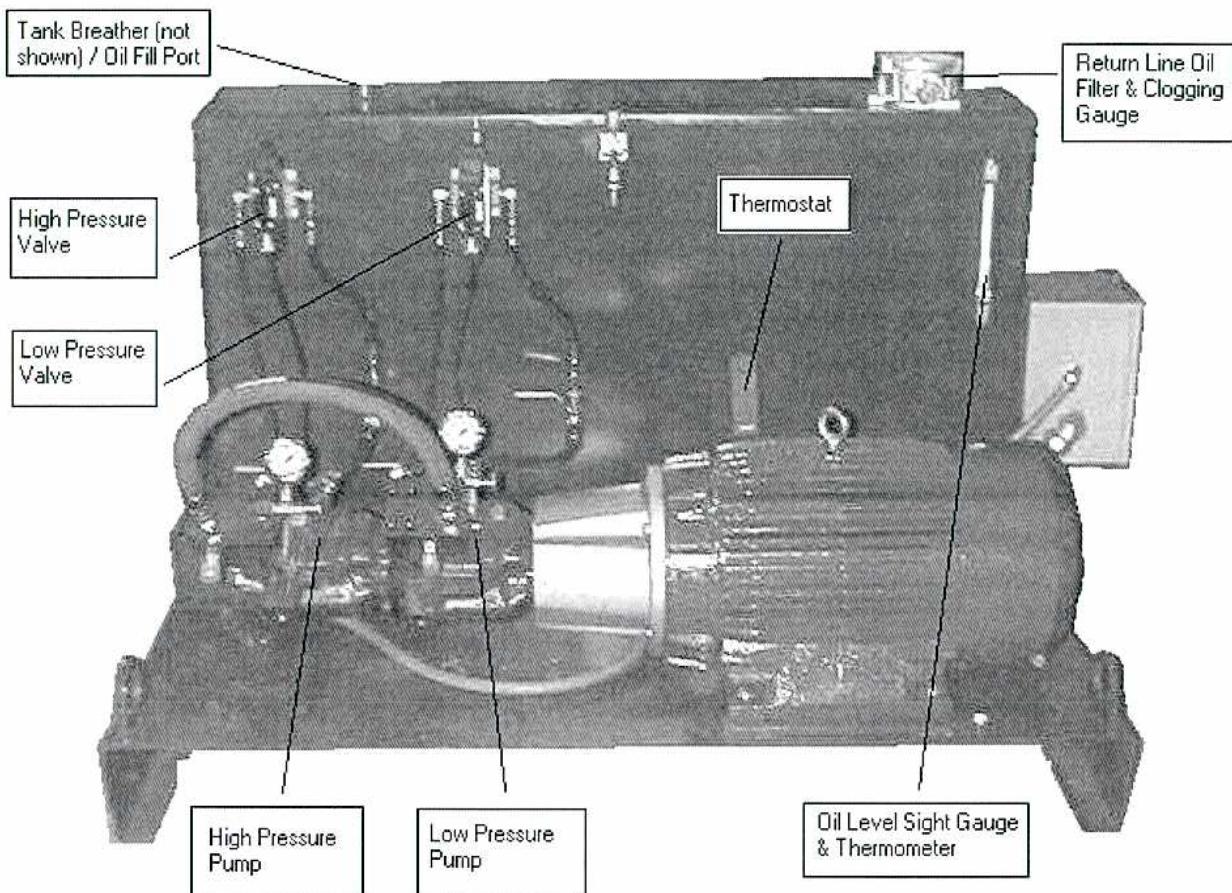


2/14/01

This is the third version (Rev. 2) of the Controlled Automation Standard Power Unit. On this version, the sandwich mounted relief valves underneath the high & low pressure hydraulic valves have been changed. The location of the pressure relief adjustments is the only thing affected by this different relief valve. Now the medium pressure solenoid and the medium pressure relief adjustment are both on the top part of the valve. The low pressure solenoid and the low pressure relief adjustment are both on the bottom part of the valve. On the earlier versions, the medium pressure solenoid is on the top and the medium pressure relief adjustment is on the bottom and the low pressure solenoid is on the bottom and the low pressure relief adjustment is on the top. This is shown on the drawing on page 6.

On the second version (Rev. 1) of the Controlled Automation Standard Power Unit (Model # 200-099A for Beamline/Angleline & Model # 200-100A for 2AT-175 Plate Punch), the orifices for the pressure signal lines are located internal to the hydraulic pumps. There is only 1 hydraulic hose attached to the left side of each of the 2 hydraulic valve manifolds located on the side of the tank. This is shown on the drawing on page 6.

On the original version (Rev. 0) of the Controlled Automation Standard Power Unit (Model # 200-097 for Beamline/Angleline & Model # 200-098 for 2AT-175 Plate Punch), the orifices for the pressure signal lines are external to the hydraulic pumps and are located in Tee hydraulic fittings. These Tee hydraulic fittings are located on the left side of each of these 2 hydraulic valve manifolds. The easiest way to identify this version is that there are 2 hydraulic hoses attached to each Tee fitting.

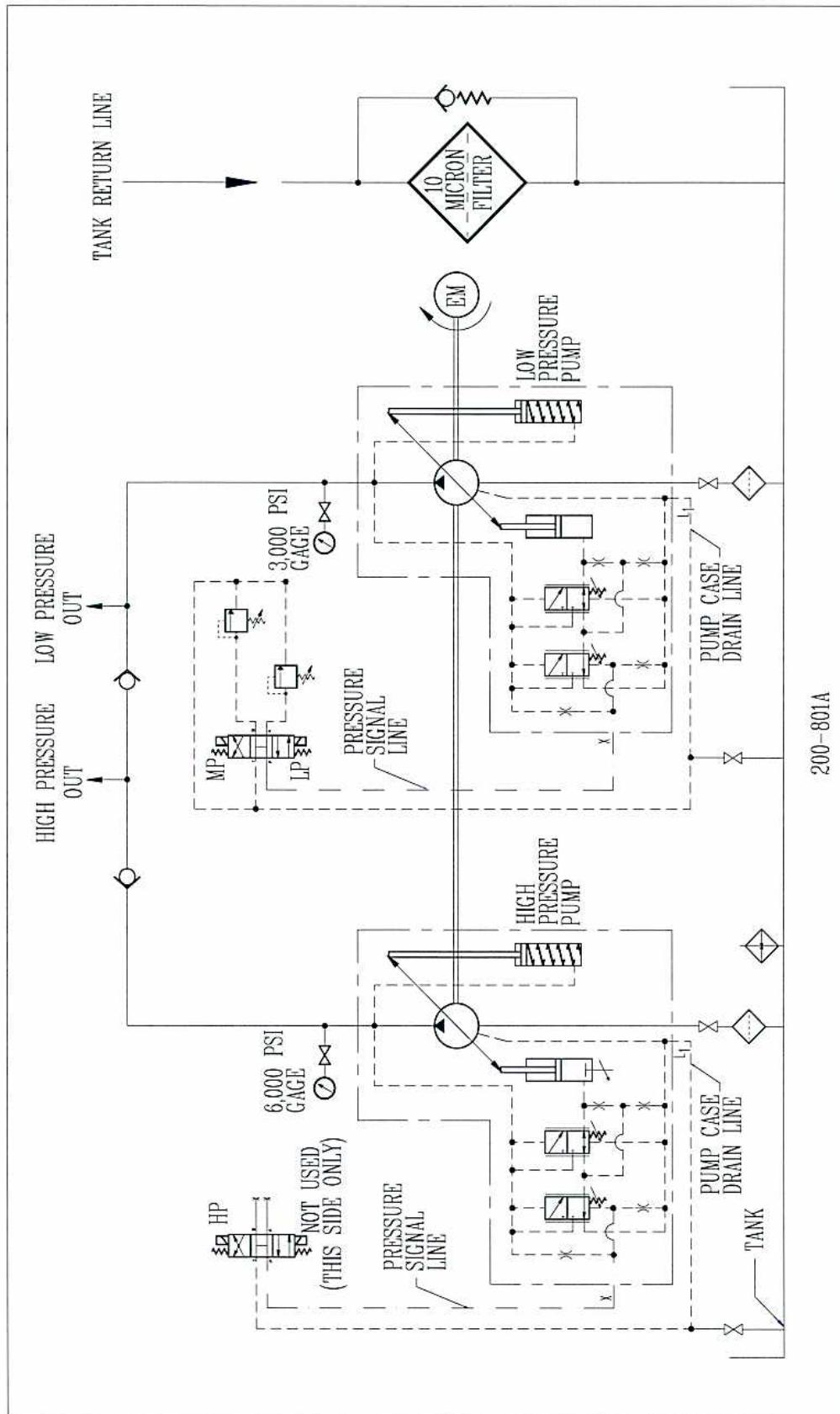


Description

The Controlled Automation standard power unit is an adjustable four-pressure, two-pump unit. It contains separate variable volume, remote pressure compensated, piston pumps for low pressure and high pressure. It also maintains a constant line pressure while both pumps are idle and can generate a medium pressure used on some machines with the low-pressure pump. Both pumps are powered by a common 30 hp, 1750-rpm motor. Each pump has its own adjustments for setting the maximum pressure that can be reached.

The power unit comes with a thermostat and oil heater as standard components and an optional cooling unit can be added if the oil runs over 145° F.

The power unit is mounted to a custom-made 90-gallon hydraulic oil tank and drip pan. The tank is equipped with strainers on both pump suction lines and a 10-micron filter on the oil return line as well. A clog indicator is installed on the return line filter.

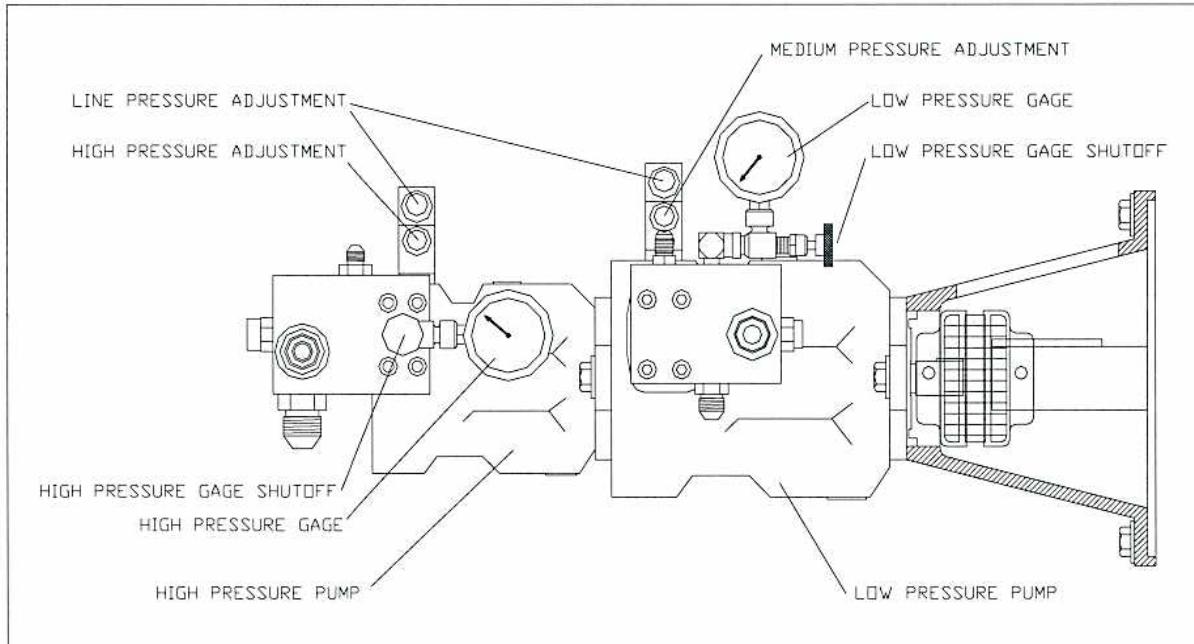


Hydraulic Schematic

Adjusting pressures

All pressures can be adjusted at the power unit. These pressures are pre-set by Controlled Automation and should not be adjusted above the pressures listed below unless instructed by a Controlled Automation representative.

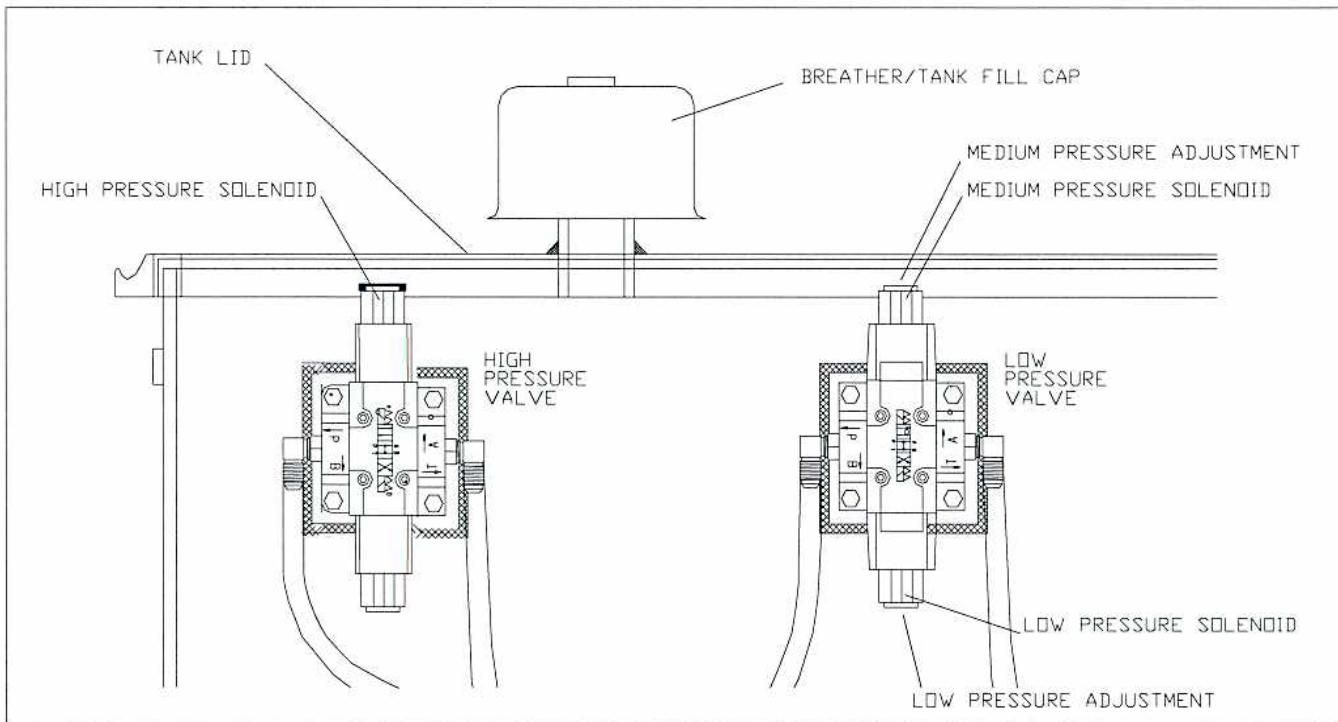
<u>Pressure</u>	<u>PSI Setting</u>
Line Pressure	300 PSI
Low Pressure	700 PSI
Low Pressure (Plate Punch)	1000 PSI
Medium Pressure	2000 PSI
High Pressure	4500 PSI



Line Pressure

An 11/16 wrench and a 3mm allen wrench are needed to adjust the line pressure. The line pressure must be adjusted on the low-pressure pump and on the high-pressure pump. The adjustments for the line pressure are located on the pumps, just behind the pressure gages. Each pump has two stacked adjustments located here. The top adjustment is for the line pressure. Adjusting the line pressure changes the settings on all other pressures. If the line pressure is adjusted, all other pressures will need to be adjusted to compensate. To set the line pressure proceed as follows:

1. Make sure that the pressure gages on both pumps are turned on. If not, turn them on by turning the brass gage shutoff knobs on the sides of the gage assemblies counter clockwise.
2. Remove the upper cap nut from the low-pressure pump with an 11/16 wrench.
3. Loosen the jam nut locking the adjustment set that was under the cap nut.
4. Use a 3mm allen wrench to adjust the pressure to 300 PSI.
5. Tighten the jam nut and replace the cap nut.
6. Remove the upper cap nut from the high-pressure pump with an 11/16 wrench.
7. Loosen the jam nut locking the adjustment set that was under the cap nut.
8. Use a 3mm allen wrench to adjust the pressure to 300 PSI.
9. Tighten the jam nut and replace the cap nut.
10. Turn the power unit off at the console before shutting off the pressure gage. Otherwise, pressure could get stuck between the shutoff knob and the gage.
11. Turn the pressure gages off by turning the brass gage shutoff knobs clockwise until tight.



Low Pressure

A 3/4 wrench and a 1/4 allen wrench are needed to adjust the low pressure. The adjustment for the low pressure is located on a sandwich valve located on the hydraulic oil tank next to the front lid latch. This sandwich valve controls the pressure for the low pressure and the medium pressure. The bottom adjustment adjusts the low pressure.

1. Make sure the pressure gage on the low-pressure pump is turned on. If not, turn it on by turning the brass knob located on the side of the gage assembly counter-clockwise.
2. Loosen the jam nut located on the bottom of the sandwich valve with a 3/4 wrench.
3. Turn on low pressure by pressing the brass button on the lower side of the low-pressure valve with a small screwdriver or welding rod.
4. Adjust the pressure to 700 psi or 1000 psi (machine dependent, see table) by turning the adjustment knob on the bottom of the sandwich valve with a 1/4 allen wrench.
5. Tighten the lower jam nut on the sandwich valve.
6. Turn the power unit off at the console before shutting off the pressure gage. Otherwise, pressure could get stuck between the shutoff knob and the gage.
7. Turn off the low-pressure gage by turning the brass pressure gage shutoff knob clockwise.

Medium Pressure

A 3/4 wrench, an 11/16 wrench,, a 3mm allen wrench, and a 1/4 allen wrench are needed to adjust the medium pressure. The adjustment for the medium pressure is located on a sandwich valve located on the hydraulic oil tank next to the front lid release lever. This sandwich valve controls the pressure for the low pressure and the medium pressure. The top adjustment adjusts the medium pressure.

1. Make sure the pressure gage on the low-pressure pump is turned on. If not, turn it on by turning the brass knob located on the side of the gage assembly counter-clockwise.
2. Loosen the jam nut located on the top of the sandwich valve with a 3/4 wrench.
3. Turn on medium pressure by pressing the brass button on the upper side of the low-pressure valve with a small screwdriver or welding rod.
4. Adjust the pressure to 2500 psi by turning the adjustment knob on the top of the sandwich valve with a 1/4 allen wrench.
5. Tighten the jam nut on the sandwich valve.
6. Remove the lower cap nut from the low-pressure pump with an 11/16 wrench.
7. Loosen the jam nut locking the adjustment set that was under the cap nut.
8. Turn on medium pressure by pressing the brass button on the upper side of the low-pressure valve with a small screwdriver or welding rod.
9. Use a 3mm allen wrench to adjust the pressure to 2000 PSI with the adjustment located on the pump.
10. Tighten the jam nut and replace the cap nut.
11. Turn the power unit off at the console before shutting off the pressure gage. Otherwise, pressure could get stuck between the shutoff knob and the gage.
12. Turn off the low-pressure gage by turning the brass pressure gage shutoff knob clockwise.

High Pressure

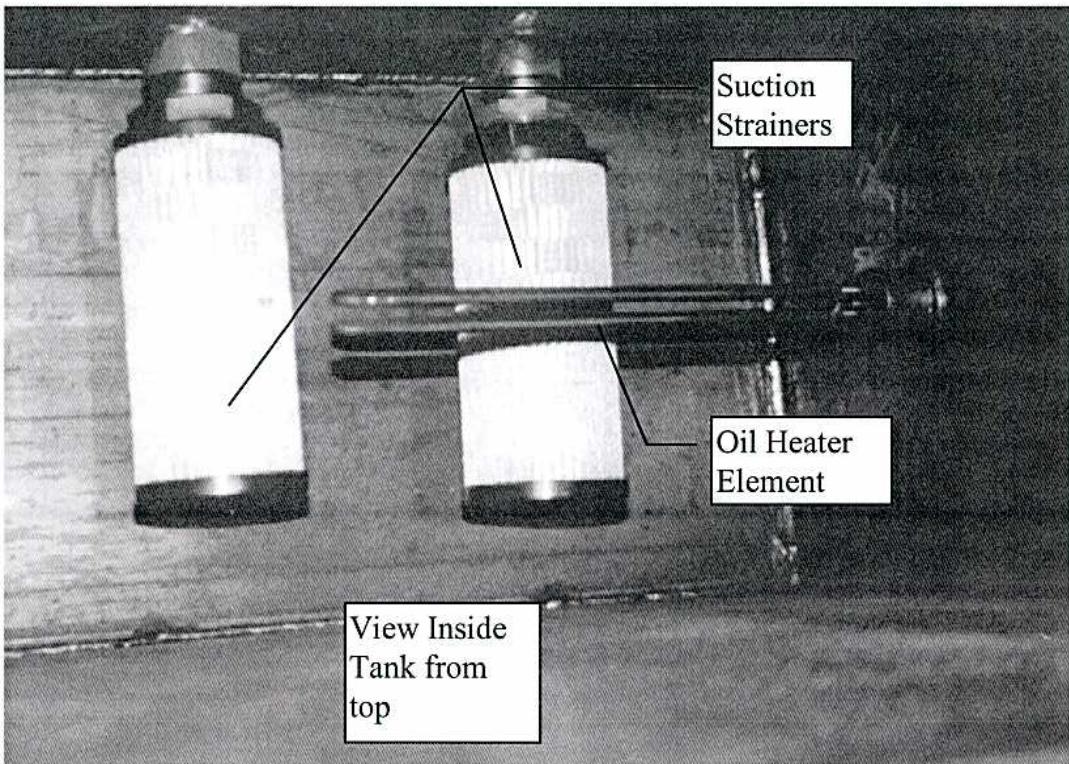
An 11/16 wrench and a 3mm allen wrench are needed to adjust the high pressure. The adjustment for the high pressure is located on the high-pressure pump, just behind the pressure gage. The pump has two stacked adjustments located here. The bottom adjustment is for the high pressure. To set the line pressure proceed as follows:

1. Make sure that the pressure gage on the high-pressure pump is turned on. If not, turn it on by turning the brass knobs on the side of the gage assembly counter clockwise.
2. Remove the lower cap nut from the high-pressure pump with an 11/16 wrench.
3. Loosen the jam nut locking the adjustment set that was under the cap nut.
4. Turn on high pressure by pressing the brass button on the upper side of the high-pressure valve with a small screwdriver or welding rod. The high-pressure valve is located to the left of the low-pressure valve on the hydraulic oil tank.
5. Use a 3mm allen wrench to adjust the pressure to 4500 PSI.
6. Tighten the jam nut and replace the cap nut.
7. Turn the power unit off at the console before shutting off the pressure gage. Otherwise, pressure could get stuck between the shutoff knob and the gage.
8. Turn off the high-pressure gage by turning the brass pressure gage shutoff knob clockwise.

Changing the hydraulic oil and filter elements

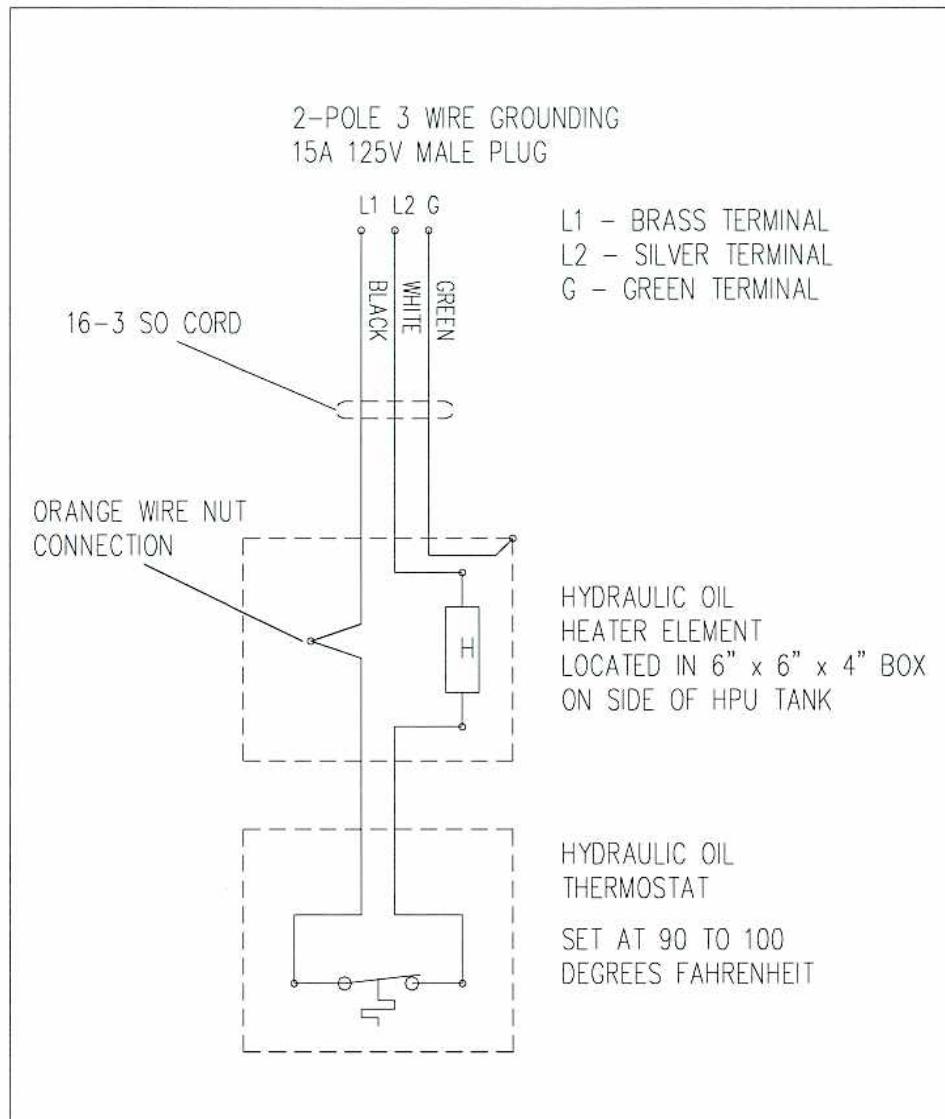
The hydraulic oil should be changed yearly. The hydraulic oil should also be changed in cases of contamination and thermal breakdown occurring when the pump breaks down or the oil temperature exceeds 180 degrees. The filter elements should be changed after the first 50 hours and every six months or 250 hours thereafter. To change the hydraulic oil proceed as follows:

1. Turn all power to the power unit off and lock out.
2. Remove the breather/tank filler cover located on the top of the tank lid.
3. Pump the oil out of the tank with a portable pump or drain the oil out by removing the drain plugs located on the underside of the tank.
4. Replace the drain plugs if removed.
5. Carefully remove the tank lid being sure not to damage any of the solenoid valves, gauges, or hoses on the unit.
6. Clean the suction strainers elements located on the inside wall of the tank. Replace if mesh is torn or damaged.
7. If the oil is being replaced with a portable pump, replace the lid now and refill the tank through the tank filler hole. This will help avoid contamination of the new oil. Otherwise refill the tank and then replace the cover.



Service Schedule

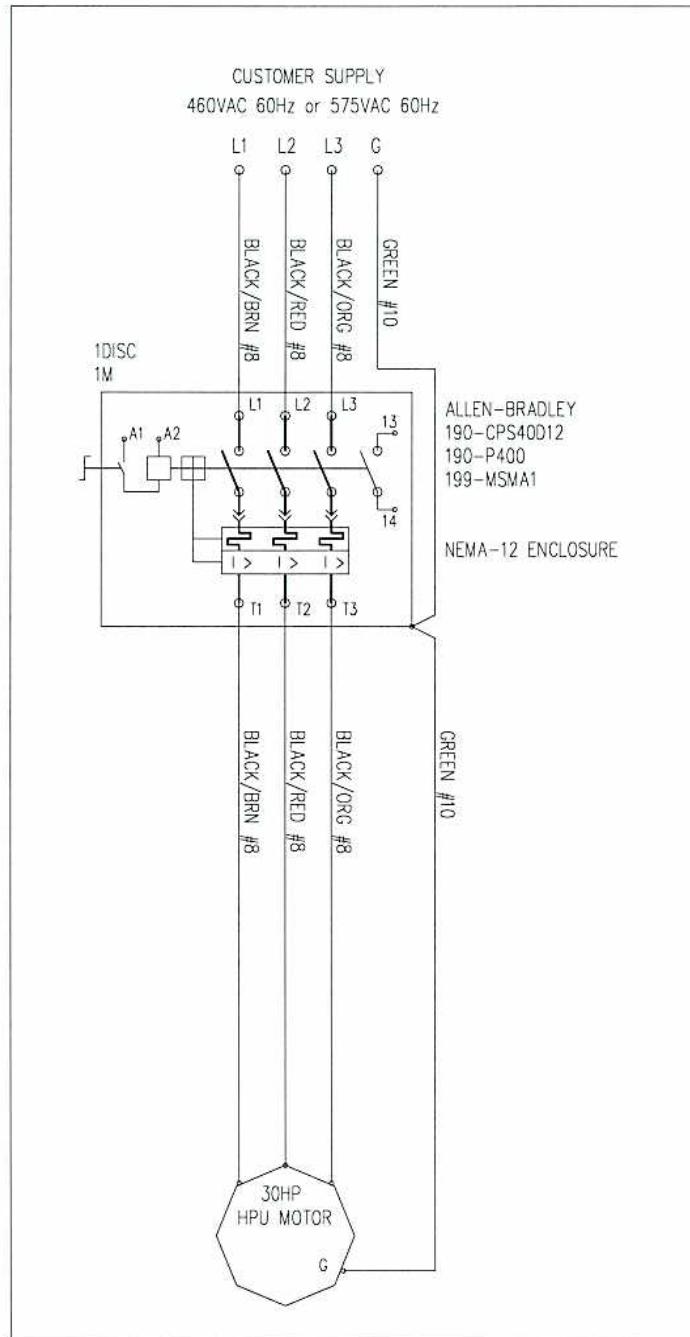
Daily	Check hydraulic fluid level. Check for and repair any hydraulic leaks. Check hydraulic oil filter clogging gauge and replace filter element if indicated.
Every 6 months or 250 hours	Replace filter element.
Yearly	Replace hydraulic oil and filter element. Clean suction strainer elements.



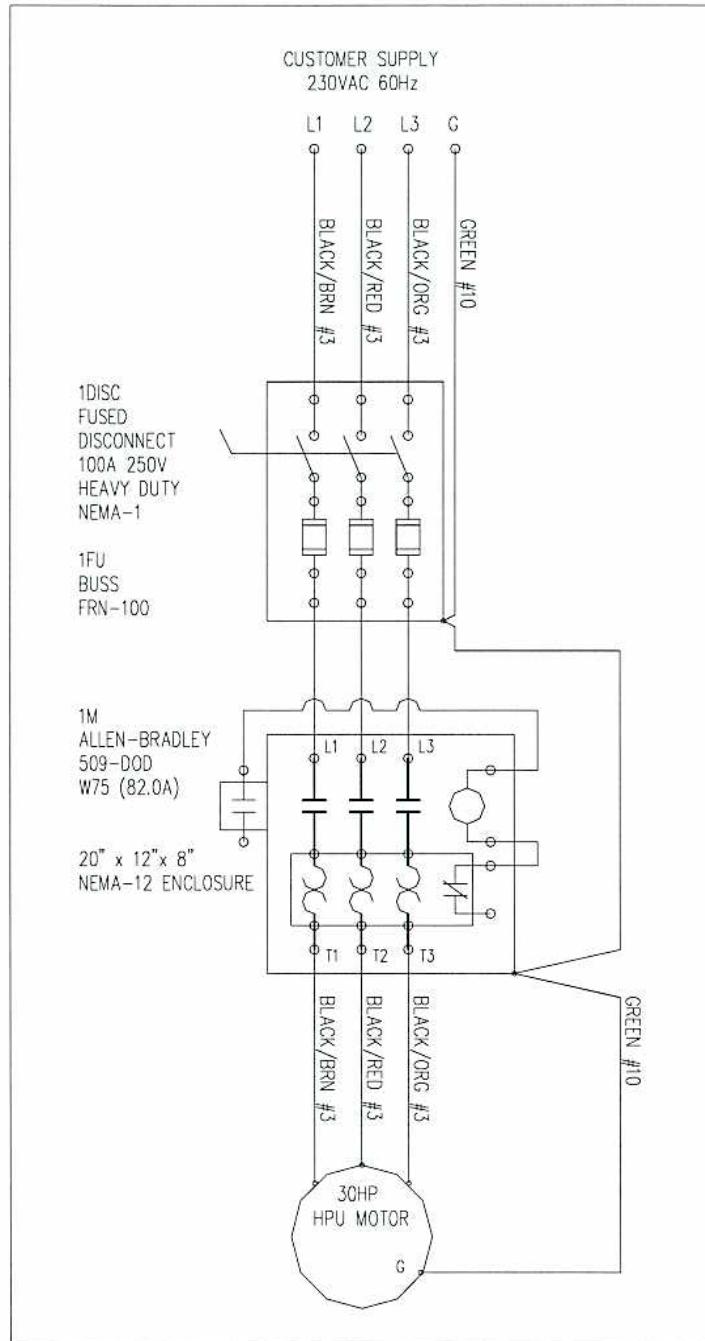
Hydraulic Oil Heater Element and Thermostat Electrical Diagram

Heater Element and Thermostat

The heater element, H in the diagram above, is a 4500 watt, 230VAC low density hot water heater element. 120VAC is used to allow slower heating of the oil. This allows the heat to dissipate into the surrounding oil and eliminates the possibility of scorching the oil. A Honeywell #121371 thermostat, mounted on the front of the tank, controls the heater element.



460/575 Volt Wiring for Power Unit Motor



230 Volt Wiring for Power Unit Motor

Specifications

Filter Element	<u>MP Products # MF180 1 P10NB</u> Replace after first 50 hours and every 250 hours thereafter or every 6 months whichever comes first.
Motor	30 horse power 286TC Frame 1750 RPM, 68 amps @ 230 volts 34 amps @ 460 volts
Motor Electrical (460 or 575 volt installations)	<u>Allen Bradley #190-CP240D12 Motor Starter</u> <u>Allen Bradley #190-P400 Trip Unit</u> <u>Allen Bradley #199-FSMA1 Surge Suppressor</u>
Motor Electrical (230 volt installation)	<u>Allen Bradley 509-DOD with 3 W75 Heaters</u> <u>3 Buss FRN-100 Fuses</u>
Low Pressure Pump	<u>Rexroth model # AA10VS045DRG/31R-PKC62N03</u> 1800 RPM Volume 45cm ³ /rev
High Pressure Pump	<u>Rexroth model # AA10VS028DRG/31R-PKC62N00</u> 1800 RPM Volume 28cm ³ /rev
Pump-Motor Coupling Insert	<u>Woods 6H</u>
Tank Capacity	90 gallons
Solenoid Valves	<u>Rexroth model # 4WE6H6I / EW110N9DAL</u>
Thermostat	<u>AQUASTAT with 3/4" well.</u> <u>Honeywell part # 121371B</u>
Heater Element	4500 watt/230 volt low-density hot water heater element with 1 inch NPT threads.
Hydraulic Oil - (Customer Supplied)	<u>Mobile DTE-26 or equivalent 5000-hour minimum service life. -- Replace Yearly</u>

Spare Parts List

Qty	Description	Part #
2	Woods 6h Sure-Flex Insert	6H FLEX
1	Woods 6s-1 Sure-Flex Coupling half (1" Dia.)	90006s-1
1	Woods 6s-1-7/8 Sure-Flex Coupling Half (1 7/8)	90006s-1 7/8
1	1npt/4500W/230V/low density heater element	HEATER
1	Honeywell Aquastat Thermostat	L-6006A
1	3000 PSI Liquid Filled Gauge	MPG1P3000A
1	6000 PSI Liquid Filled Gauge	MPG1P6000A
1	Rexroth Pump (High Pressure)	AA10VS028N
1	Rexroth Pump (Low Pressure)	AA10VS045K03
1	Tank Access, Sight GA. W/Thermometer	ALG-10T
1	Danfoss check valve	3C400-5SV
1	Rexroth Solenoid Valve	4WE6H6I / EW110 N9DAL
1	Hydraforce Relief Valve D03	CRV10-22A-S03C-NC-35
3	Return Line Filter Elements	MF180