Rapid-Air

Operating Instructions

100D & 100T Series Servo Feed Control Ver. ‘C’

100D, s/n 133095 & Later
100T, s/n 133336 & Later

4601 Kishwaukee Street, Rockford, IL 61109
815.397.2578
www.rapidair.com

Publication 87000050

Thank you for purchasing a Rapid-Air 100 series servo feed.

Our roots are in stamping and our engineering expertise is extensive. Many of our earliest products remain in use today, in small shops and large factories worldwide. Some of these products are still manufactured, with only slight modifications to the original design allowing for modern manufacturing technologies to be used in their production.

We designed and built our first servo driven roll feed in 1994. The current models combine the best of our proven mechanical design with a state of the art control system. As with the whole Rapid-Air product line there has been an ongoing program of product improvement.

All Rapid-Air products are built right here in our own U.S. factory. No inconsistent design, differing parts or sourcing problems. Just the same reliable quality, renowned support and lasting value you can always expect from Rapid-Air.

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SPECIFICATIONS

Mechanical

100D

Max Material Width:

106D	6” (152mm)
112D	12” (304mm)
118D	18” (457mm)

Max Thickness Capacity at Full Width:

106D	0.085” (2.15mm)*
112D	0.060” (1.52mm)*
118D	0.045” (1.14mm)*

* based on low carbon steel, commercial grade

100T

Max Material Width:

106T	6” (152mm)
112T	12” (304mm)
118T	18” (457mm)

Max Thickness Capacity at Full Width:

106T	0.105” (2.66mm)*
112T	0.080” (2.03mm)*
118T	0.065” (1.65mm)*

* based on low carbon steel, commercial grade

Common

Max Feed Roll Opening:

106(x)	0.150” (3.81mm)
112(x)	0.150” (2.54mm)
118(x)	0.150” (3.81mm)

Roll Position Repeatability:	± 0.0025”
Roll Type:	8620 C.R.S. Hardened & Ground
Stock Entrance:	Edge Guides Standard
Options:	Cascade Rollers Pneumatic Operated Pilot Release Rollers Mechanical Operated Pilot Release Rollers Special Rolls – Contact Factory Self-Centering Edge Guides

SPECIFICATIONS cont'd

Electrical

Line Voltage:	
100D	120 VAC, 1Ø, 50/60 Hz
100T	240 VAC, 3Ø, 50/60 Hz
Rated Input Current:	
100D	9.9 Amps @ 120 VAC, 1Ø, 50/60 Hz
100T	4.6 Amps @ 240 VAC, 3Ø, 50/60 Hz
Max Inrush Current:	10.0 Amps
Max Operating Temperature:	30˚ C Ambient
Controller:	Trio Motion Coordinator MC302X
AC Servo Drive:	Kollmorgen AKD–B00606
Display:	Beijer H-T60b-S
Enclosure	
Rating:	IP65
Dimensions:	24" x 18" x 10" (610mm x 457mm x 254mm)
Inputs:	Use PNP sensor or isolated contact Min 3.5 VDC / Max 30 VDC Min 2 mA / Max 15 mA
Outputs:	Sourcing: 24VDC @ 250 mA max.
Options:	460 VAC, 3Ø, 50/60 Hz AC Cooled Enclosure Adjustable Mounting Bracket Serial Feed Interface

Pneumatic

Shop Air (required for Pilot Release rolls)	Filtered and lightly lubricated Working Pressure 80-120 PSI Maximum Pressure 150 PSI

Mechanical Setup

Installation

It is very important that the servo feed or a feed & bracket combination be securely mounted and not allowed to float. When mounting the servo feed it should be positioned with the centerline of the drive rollers in line with the centerline of the die entrance and at the proper pass line height. Alignment of the feed to the die (parallelism) is very important to the accuracy of the feed. Drag due to misalignment can cause short feeds and servo faults. The servo feed has 4 holes, threaded for 3/8-16 bolt for mounting purposes. **The bolts used for mounting must not penetrate into the servo body by more than 0.625".**

If the feed is positioned a distance far enough away from the die so that the material sags then it is possible to get short feeds or buckling from the feed motion. To help prevent this a guide or 'bridge' should be built between the servo feed and the die.

An adjustable mounting bracket is available from Rapid-Air as an optional mounting method (see page 32). The bracket is mounted directly to the top of the bolster plate via two bolts. Recommended bolt diameter is 7/16-14. The vertical plate of the bracket has two adjusting screws to provide additional support, stability and perpendicularity alignment.

Once the bracket has been aligned and secured to the bolster plate the servo feed can then be mounted to the bracket. The slotted holes in the bracket allow for accurate alignment of the servo feed on the x-axis. Loosen the elevator locking screws (item #8) and rotate the elevating screw (item #3) to position the servo feed at the proper pass line height. When correctly positioned retighten the elevator locking screws to prevent the unit from moving.

Gear Train

The gear train is located on the same side as the roll release handle. It is a non-lubricated gear train so it is essentially maintenance free.

Pilot Release Stop

(Item #67 on sheet 1 of 2)

Our 100(x) series servo feeds are equipped with a pilot release stop as standard. In a press feeding application higher speed applications may benefit from adjusting the pilot release stop. By limiting the amount the rolls can open, time is not wasted by the rolls traveling full open and close. The pilot release stop adjustment is mounted next to the roll pressure knob and should be set to let the rolls open about 0.005/0.010" to free the material during piloting.

Roll Release Handle

The roll release handle is located on the side of the servo feed. If the PILOT RELEASE STOP has not been set then the handle can travel 'full stroke' and lock in the fully open position. This is the max feed roll opening of 0.150". If the pilot release stop has been set then the handle will only travel enough to open the rolls to the amount set by the pilot release stop. The handle will not lock in this position, do not force beyond this point.

Roll Pressure

(Item #34 on sheet 2 of 2)

The roll pressure knob is located on the entrance side of the servo feed and is a knurled knob with a locking nut located right behind it. It is positioned parallel to the inlet face and uses a compression spring for adjusting roll pressure. Adjust so there is only enough pressure applied to properly feed the stock. Exerting too much pressure can result in ‘fluting’ of the edges or cause camber.

Entrance Guide

The entrance guide’s adjustable rollers should be adjusted to maintain the incoming stock centered on the feed rolls. Similar guides are available as an option for the exit side of the feed rolls. By having a set of guides on each side of the servo feed the setup time for aligning the material in the feed is decreased considerably as you will know that the material is straight through the feed before entering the die.

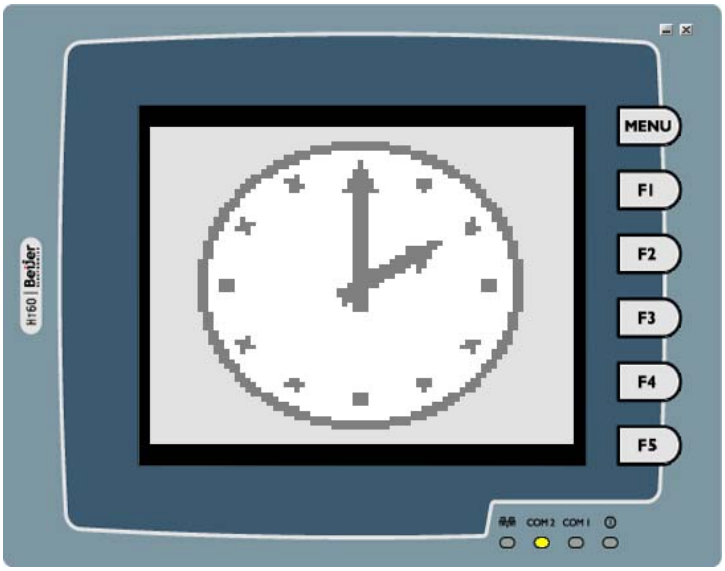
SERVO FEED OPERATION

When the control is turned on some of the components must boot-up, much like a computer. During this period the display will show a ‘clock’ so you can recognize the control is in the process of getting ready. If the control is turned on immediately after the incoming service is restored, you will notice a longer boot up time is required.

The display is a touch screen. Touch the screen in the general area of an object when it is necessary to enter numbers, ‘push’ pushbuttons or reset values. The screen has a built in screen saver function whereby it blanks after a predetermined time of inactivity. Touch the screen anywhere to bring back it to life.

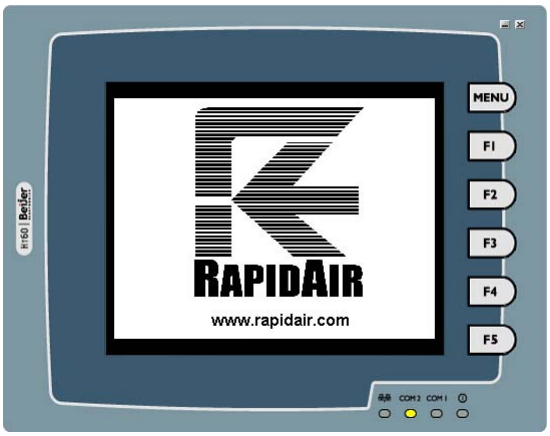
On the right hand side of the display there are 5 programmable function keys. These keys have different functions depending on the active screen. The ‘F5’ key is typically the EXIT or CANCEL key. The keys are always active. If you forget a key’s function you can press the MENU button and the function key menu for the active screen will ‘slide out’. The slide out menu is also a touch key so you can either touch the appropriate menu choice or press the ‘F’ key itself. Once a choice is made the slide out menu will close. You can also close the slide out menu by pressing the MENU button a second time. As you become accustomed to the operation of the servo feed you will probably find yourself calling for the slide out menu less and less.

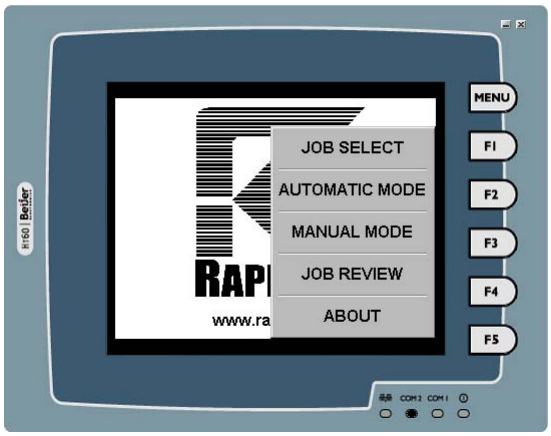
The servo feed will power up with the last job used as the active job. This means there is no need to load the same job number day after day.



SERVO FEED OPERATION cont'd

SPLASH SCREEN:





Once the control is booted up and ready to go the Rapid-Air logo will be displayed. This is called the SPLASH screen. The SPLASH screen is the main menu.

F1 – JOB SELECT	Go to this screen to set up the desired job.
F2 – AUTOMATIC	Go to this screen to start making parts.
F3 – MANUAL	Go to this screen to manually control individual functions.
F4 – JOB REVIEW	Go to this screen to quickly see what the active job is and its parameters.
F5 – ABOUT	Go to this screen for information about the servo feed.

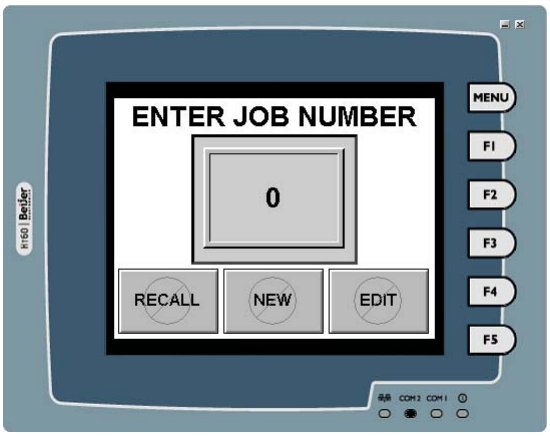
You can change to any screen listed, no particular order is required. For purposes of explaining the controls we will describe how to enter a new job number and the job parameters.

A typical sequence would be:

- **JOB SELECT** – Enter a job number
  - **SELECT NEW, EDIT or RECALL**
  - **NEW & EDIT** lead to a series of screens that allow you to configure the job recipe.
- **MANUAL** – Allows you to test settings and position the material for production.
- **AUTOMATIC** – Ready for production, waiting for the feed initiate signal.

SERVO FEED OPERATION cont'd

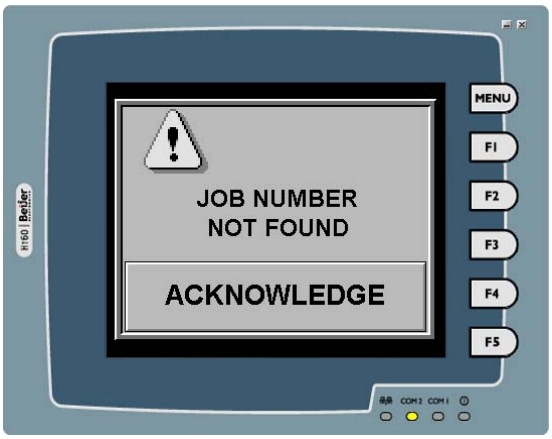
JOB SELECT:

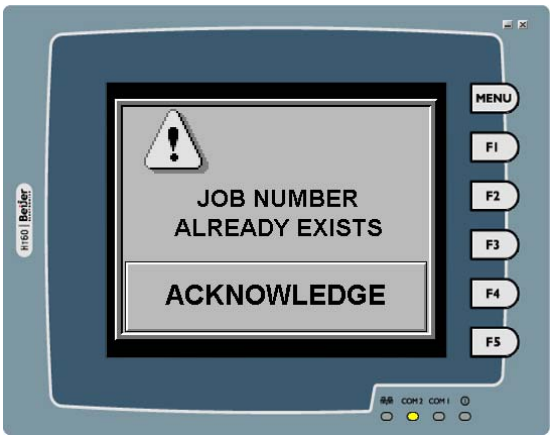


This screen is used to define a new job, edit an existing job or recall an existing job. Up to 99 jobs can be created and stored. Until a valid job number is entered the 'RECALL', 'NEW' and 'EDIT' pushbuttons are not enabled. 'F5' is the only function key used on this screen. Use the 'F5' key to return to the SPLASH screen without changing any job information.

RECALL: This pushbutton recalls a previously set up job and makes it the active job. If an invalid job number is entered you will get a fault message. Simply acknowledge the message and try again. When the recall is successful you will be returned to the SPLASH screen.

NEW & EDIT: Both of these pushbuttons will lead you through the same job definition screens. If you've forgotten what job numbers have previously been set up and you enter a used number and then push 'NEW' you will get a fault message. This action is intended to keep the operator from accidentally changing a stored job. Similarly, if you enter a job number that does not exist and try to 'EDIT' it you will get a fault message. Simply acknowledge the message and try again.

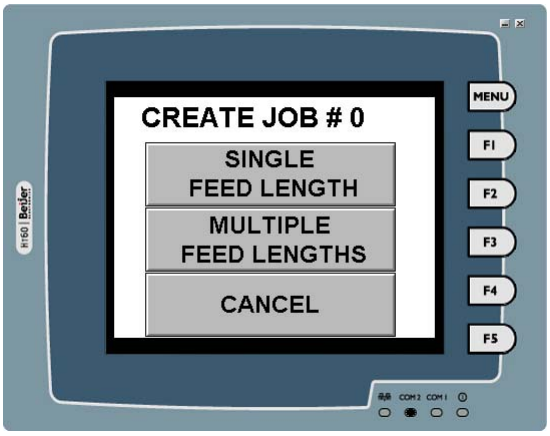




SERVO FEED OPERATION cont'd

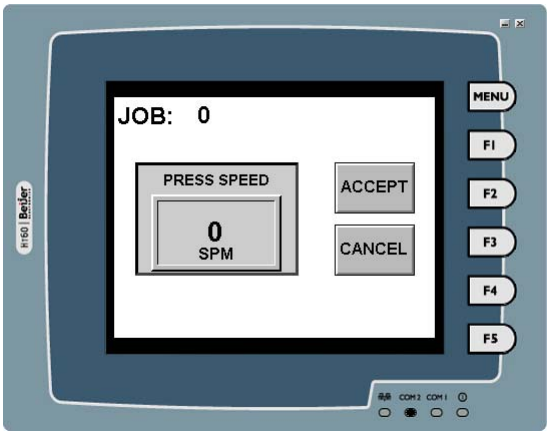
NEW & EDIT:

When entering job parameters the first decision is whether the job is a single sequence (1 feed length) or a multi-sequence (2 or more different feed lengths) application. Jobs #1-25 may be defined either way, while jobs #26 and higher can only be a single job. For jobs 1-25 you are presented with a screen to select either SINGLE FEED LENGTH or MULTIPLE FEED LENGTHS. On jobs #26 and higher this screen is bypassed.



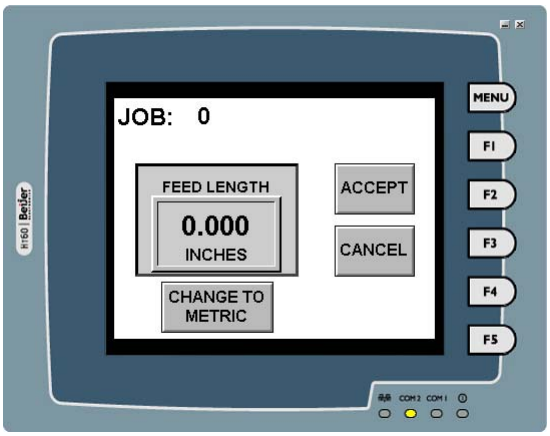
NEW – SINGLE SEQUENCE

For all single sequence jobs you are presented with 3 more screens to enter the required job information. Enter the PRESS SPEED in strokes per minute. Enter the FEED WINDOW in degrees and indicate if PILOT RELEASE of the rolls is required. Not all models of the Rapid-Air servo feeds are equipped with the pilot release capability as standard, so the PILOT RELEASE defaults to NO. If your model does not have pilot release capability or your application does not require pilot release you may skip the PILOT RELEASE prompt.

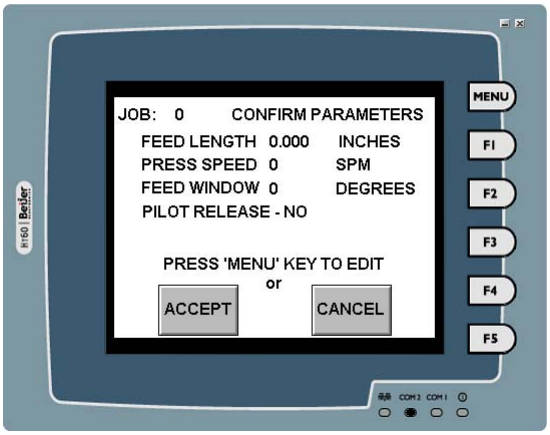


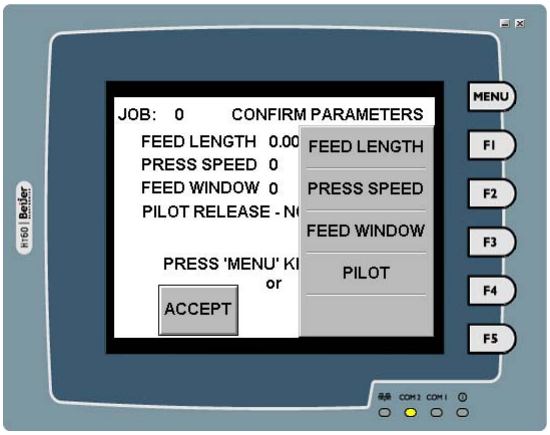
SERVO FEED OPERATION cont'd

Finally enter the FEED LENGTH. For the operator's convenience the units used for length can be toggled between inches and millimeters.

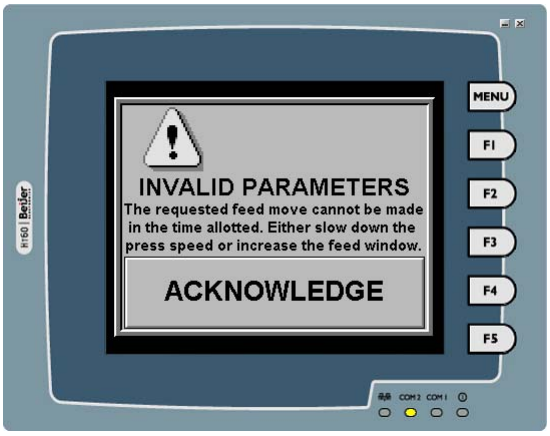


After all of the parameters are entered the job settings are displayed. The operator is asked to confirm the information is correct. If any entry needs to be corrected the 'F' keys or the slide out menu will allow a particular parameter to be changed. Once accepted the controller does the math to determine the needed move profile and confirm the requested move is within specs of the servo feed model. Upon successful entry of a job the operator is returned to the SPLASH screen.





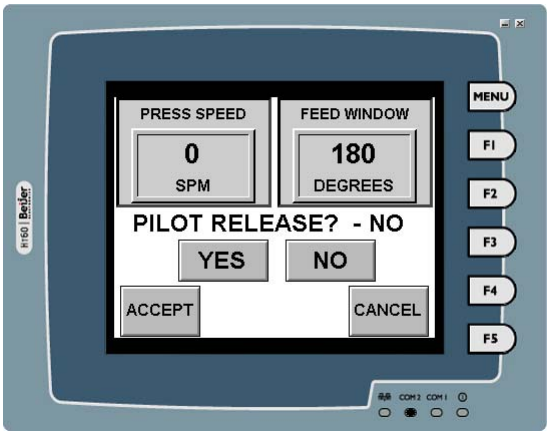
If the move is beyond the capabilities of the servo feed a warning is displayed. Acknowledging the fault will return the operator to the CONFIRM PARAMETERS screen where the job can be canceled or corrected and re-accepted.

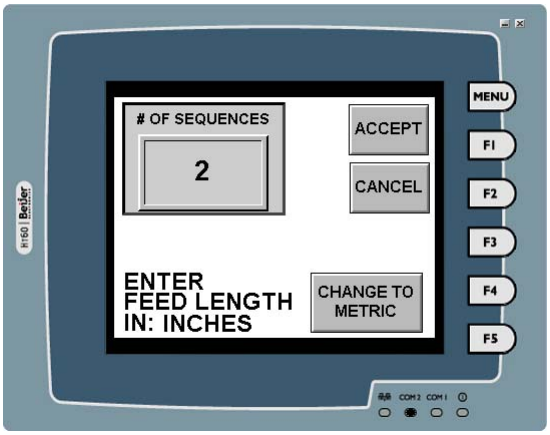


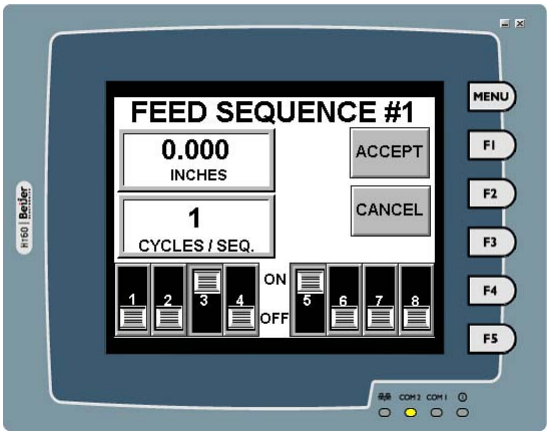
SERVO FEED OPERATION cont'd

NEW – MULTIPLE SEQUENCE

MULTI-SEQUENCE jobs require similar information and the screens are designed to step you through the process. Required information still includes the PRESS SPEED and FEED WINDOW but this is only entered one time, not for each sequence. Each feed length is a sequence and the number of sequences is needed. Up to 10 sequences are allowed per job. The operator is only required to enter information for however many sequences were indicated as being required. In addition each sequence may be cycled up to 10 times. The default number of cycles per sequence is 1 and if this is correct it does not need to be changed. For example a job may require 5 feeds of 3 different feed lengths, 1.0", 0.53", 0.53", 0.53" & 2.5". This job would be a MULTI-SEQUENCE job of 3 sequences. The 2nd sequence would require 3 cycles.



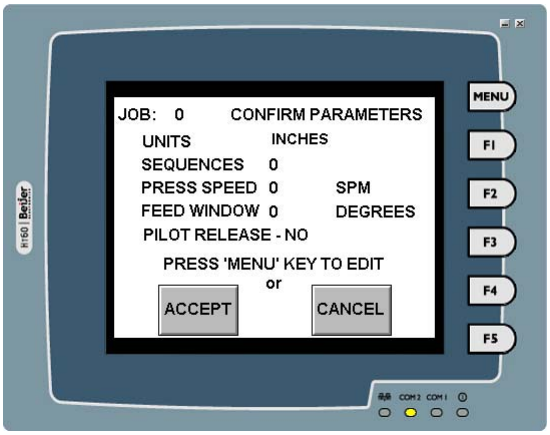


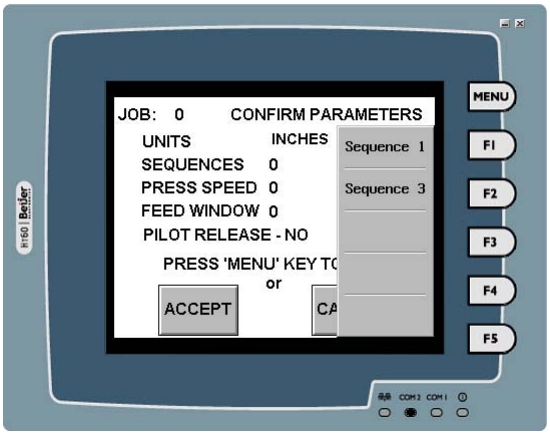


GAG programming is included in the standard servo feed control, but the associated outputs are a purchased option. If the option is not included GAG outputs may be programmed on/off all day long with no effect. The outputs are programmed via the slide switches at the bottom of each feed sequence screen. When the GAG option is included the outputs are updated at the beginning of each sequence.

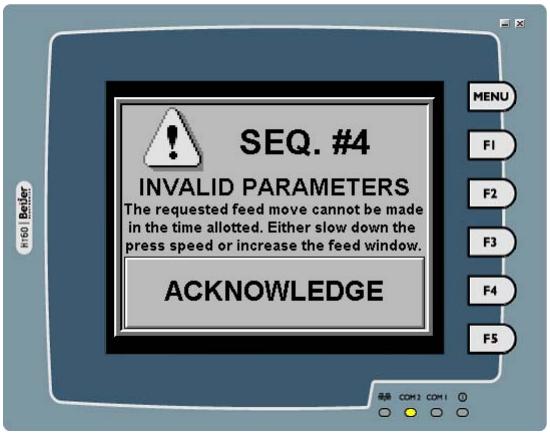
SERVO FEED OPERATION cont'd

Once all of the required information is entered a brief summary of the job is displayed. Individual sequences can be reviewed by way of the 'F' keys or slide out menu. At this point a job can be accepted, canceled or edited.





As with the single sequence job definition, once a job is accepted the move profiles are calculated and checked for compatibility with the servo feed model. If a sequence is determined to be out of spec an error message is displayed, indicating which sequence is bad. As soon as an out of spec move is encountered the controller stops processing the job. This means if more than one move is out of spec you are notified of only one at time and it must be corrected before others will be found.



SERVO FEED OPERATION cont'd

MANUAL:

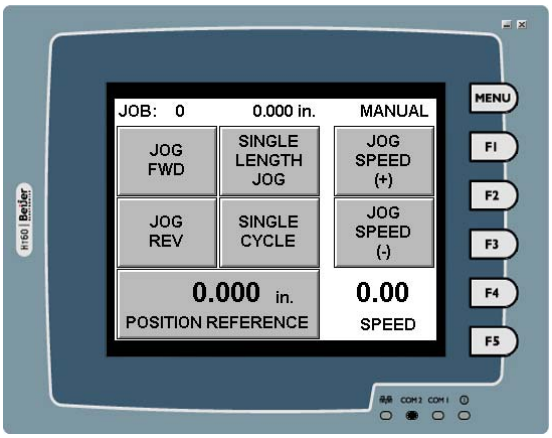
The manual mode is to aid in job setup and for maintenance. You can jog forward (JOG FWD) and you can jog reverse (JOG REV). The jog speed can be changed via the JOG SPEED (+) and JOG SPEED (-) pushbuttons. The speed can vary from 1 to 20. These numbers do not relate to anything like inches/sec, they are just a reference so you can return to a particular speed during future setups. When either jog speed change button is pushed the speed changes a small amount initially. The longer the button is held the more coarse the change becomes.

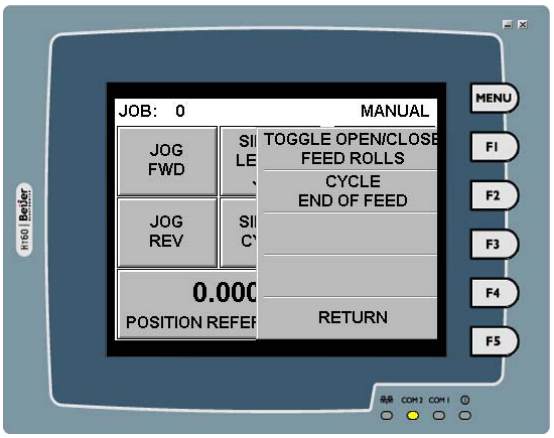
The SINGLE CYCLE pushbutton will cause 1 feed length to be fed at the normal production speed and accel/decel rates. The JOG LENGTH pushbutton will jog forward just like the JOG FWD button except it will only feed up to the programmed feed length and then the POSITION REFERENCE indicator needs to be reset to 0.000 before it will jog again. Touch the POSITION REFERENCE 'box' to reset it.

It is possible to jog the servo feed via hardwired pushbuttons. If the servo feed was not ordered with a remote jog pendant it is possible to field install JOG FWD and JOG REV pushbuttons. See page 2 of 2 of the included electrical schematic. Like the HMI jog buttons, the hardwired pushbuttons will only be active when the display is on the manual function screen.

'F1' will toggle the rollers open and closed if the servo feed is equipped with air operated rollers.

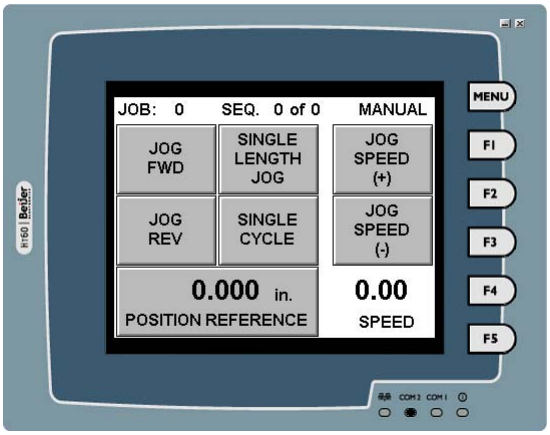
'F2' will cycle the END OF FEED output.

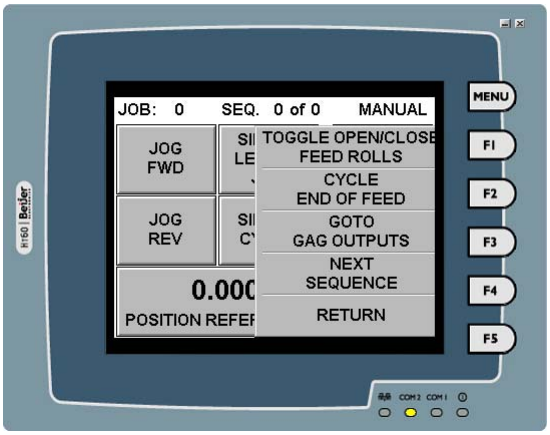




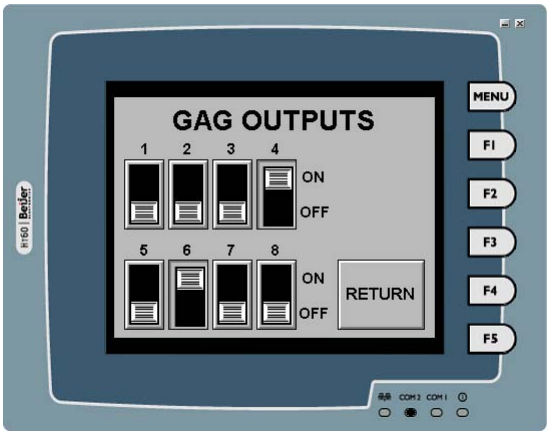
SERVO FEED OPERATION cont'd

MANUAL mode for a MULTI_SEQUENCE job is similar with a couple of additional functions. The manual screen indicates which sequence is active. This is important if you are jogging SINGLE CYCLE or a SINGLE LENGTH JOG. The 'F4' key will allow you to step thru the defined sequences.





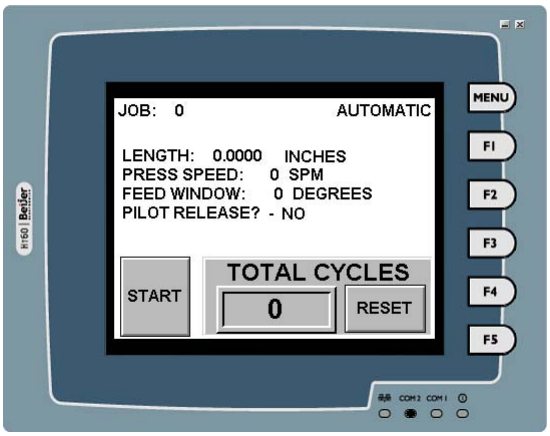
'F3' will display a screen that allows you to turn on/off the GAG outputs. In the manual mode the GAG outputs are ***not*** automatically turned off/on based on the current sequence.

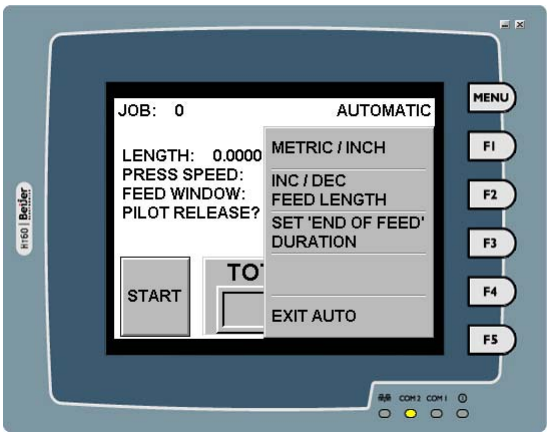


SERVO FEED OPERATION cont'd

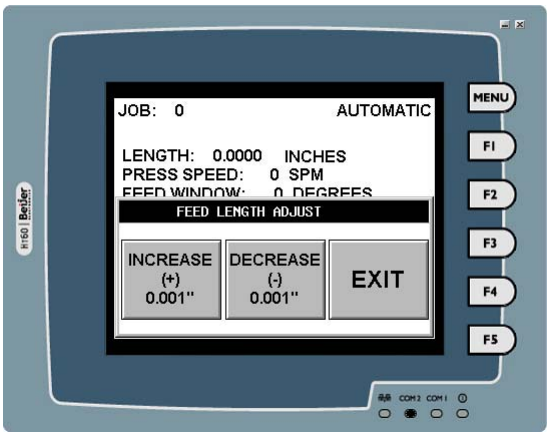
AUTOMATIC:

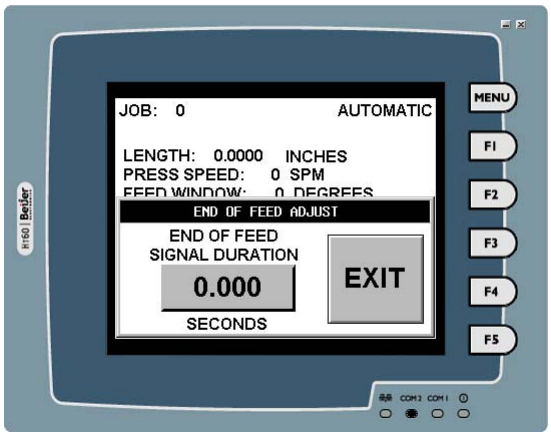
Changing to the AUTOMATIC screen does not cause the servo feed to respond to the feed initiate input. The pushbutton labeled START must be pushed to enable the feed cycling. Once enabled the feed will cycle when the feed initiate input is activated and the pushbutton label will change to STOP.





The start/stop toggling action of this pushbutton will allow the operator to stop and re-start the servo feed as needed without going through several different screen changes. The TOTAL COUNT indicator may be reset at any time. To completely exit the automatic mode press the 'F5' key. The 'F' keys offer access to 3 additional features of the automatic mode. 'F1' will toggle the displayed feed length between inches and millimeters. 'F2' will allow you to adjust the feed length (while cycling) in 0.001" increments. The adjusted feed length will then be saved as the job's programmed length. The servo feed control has an output dedicated to the 'END of FEED' signal. This signal will turn on at the end of the feed motion and will remain on for the time period set via 'F3'. After the time period has lapsed the output will turn off. On a SINGLE SEQUENCE job the END of FEED signal will turn on at the end of every feed motion. For a MULTI-SEQUENCE job it will only turn on after the last cycle of the last sequence.

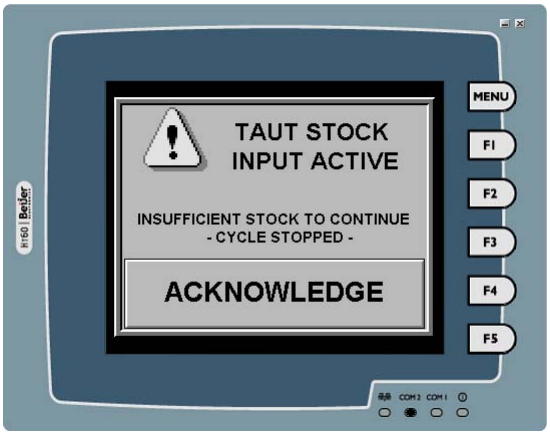




SERVO FEED OPERATION cont’d

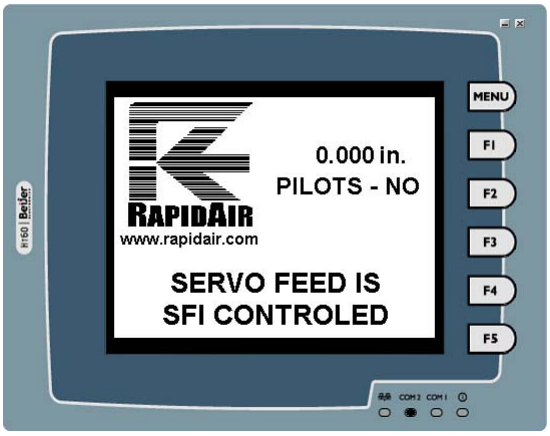
AUTOMATIC cont’d:

The servo feed control has an input dedicated for a TAUT stock sensor. A user supplied sensor wired to this input will cause the servo feed to stop cycling if the input is triggered. The feed will continue to feed the length in progress when the input is triggered so it must be adjusted to allow enough stock in the loop to allow the completion of that feed length. The TAUT stock input is only active in the AUTOMATIC mode.



SERIAL FEED INTERFACE (optional)

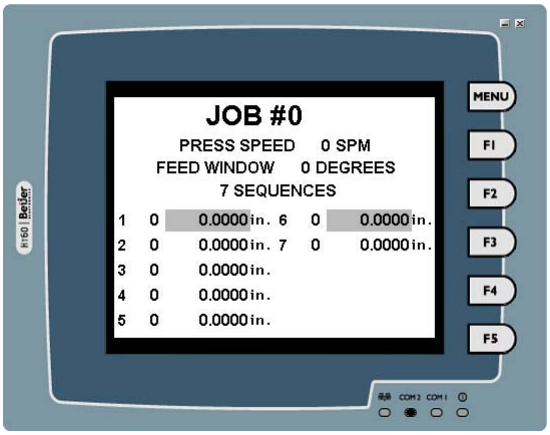
The servo feed control has the capability of being interfaced to various press automation controls via a RS-232 serial communication link. When enabled, all control of the servo feed is done by the mothership. When ready to operate the screen shown below is displayed. In addition to the SFI control reminder the current mode, feed length and pilot requirement is displayed. The SFI can be field added. To enable the SFI interface a special cable is required (available from Rapid-Air Corp.) and a configuration jumper must be installed. Contact Rapid-Air for more information.



When the servo feed is equipped for a SFI a RS-232 breakout board is mounted on the control subpanel. A communication cable from the press automation controller with flying leads can be connected to the servo feed via the terminal strip on the breakout board. Optionally the servo feed's cable connected to the breakout board can be removed from the board and mating DB9 connectors can be coupled together eliminating the need for the breakout board.
The servo feed RS-232 pinout is:
5 - GND
3 - RX
2 - TX
SH - SHIELD

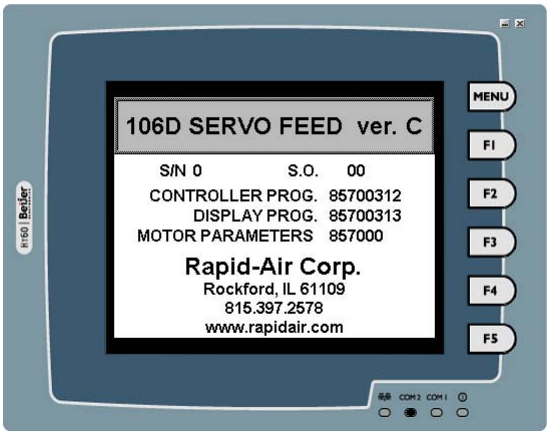
JOB REVIEW

When the feed is powered up the last job used, edited or recalled is the active job by default. If you do not remember what that job is you can review it by pressing ‘F4- JOB REVIEW’ on the SPLASH screen.



ABOUT

If you contact Rapid-Air Corp. to request parts or seek other assistance with your servo feed you may be requested to provide the Rapid-Air serial number or other programming information. You can find this information on the ‘ABOUT’ screen. Because the display or other parts may not be working when you need to contact us please record the information in the space provided below.



Servo Feed Model Number _____

Serial Number (S/N) _____

Shop Order Number (S.O.) _____

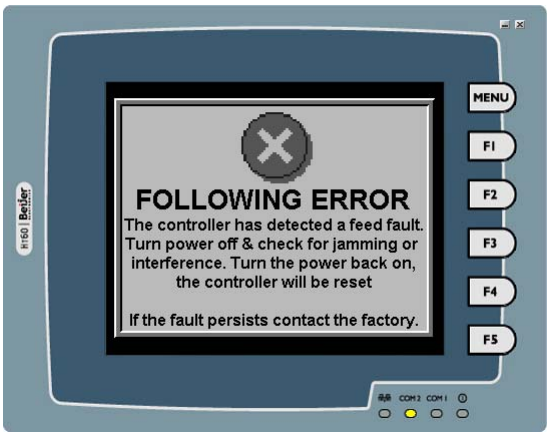
Controller Prog. Number _____

TROUBLESHOOTING

If the servo drive faults out it is reported back to the controller as a general fault condition and the controller is not able to annunciate the specific cause. The operator interface will display the following message.

There is a 2 character LED display on the front panel of the drive. The left character will be ‘F’ as in fault, and the right side displays the 3 digit fault number as follows: 1-9-1-[break] (for example). If the drive faults out you may get lucky and it is a onetime occurrence. Note the fault code and completely cycle power by turning the disconnect off and on. If this does not clear the fault or the fault quickly returns contact Rapid-Air Corp.

A fault you are more likely to be able to recover from will be sensed by the controller and the following message will be displayed.



TROUBLESHOOTING cont'd

Roll Parallelism

The servo feed has an eccentric shaft to allow adjustment of the upper roll to ensure it is parallel with the fixed position lower roll. It has an adjustment of 0.005" and the adjusting mechanism is located on the side of the feed by the Roll Release handle. The eccentric is locked in position by two ¼-20 button head screws. The shaft has 5/8" wrench flats which allow CW or CCW rotation to move the position of the upper roll end.

The parallel adjustment is factory set at assembly. If material tracking is a problem first inspect the alignment of the feed to the die as well as the payoff equipment setup. Also confirm the material itself is not the issue. Check the material camber by cutting a 3' to 5' length of stock from the payoff. Lay the material next to a straight edge and observe if there is camber. If there is not obvious camber turn the sample strip upside down from the way it is normally being fed and run it through the servo feed. If the material now tracks in the other direction it could be indicative of a material issue rather than a feed problem.

Only after confirming these items are not the cause should you attempt to adjust the roll parallelism.

Roll Parallelism Adjustment

- Remove both the entrance and exit roll covers.
- With the upper roll down, shine a light on the contact point between the upper and lower rollers. Observe from the opposite side. If the amount of light showing between the rollers is the same for the entire length of the rolls then the parallelism is good. If one end or the other has more light showing (i.e. more gap) then adjustment is indicated.
- To adjust:
    - Loosen the two ¼-20 button head eccentric lock screws.
    - Rotate the eccentric while viewing the amount of light showing between the rollers. Rotate until the rolls appear parallel.
    - Tighten the two ¼-20 button head eccentric lock screws. Check the opening with a feeler gage
- Replace both the entrance and exit roll covers.

WARRANTY

Warranty Terms & Conditions

ALL SALES BY THE COMPANY ARE MADE SUBJECT TO THE FOLLOWING TERMS AND CONDITIONS. PLEASE READ.

Warranty – The Company warrants for a period of one year from the date of shipment by the Company that the product shipped is free from defects in material and workmanship. THIS WARRANTY IS EXCLUSIVE AND IN LIEU OF ALL IMPLIED WARRANTIES IN LAW, INCLUDING MERCHANTABILITY. The Company obligation under this warranty is limited to repairing or replacing, F.O.B. Rockford, IL, any part or parts proved to have been defective when shipped. In no event shall the Company be liable for special or consequential damages. Provisions set forth in specifications are descriptive and subject to change and are not intended as warranties.

Customer License Agreement

Rapid-Air reserves the rights in its software. The software program is licensed by Rapid-Air to the original purchaser of the equipment which contains the software for use only on the terms set forth in this license.

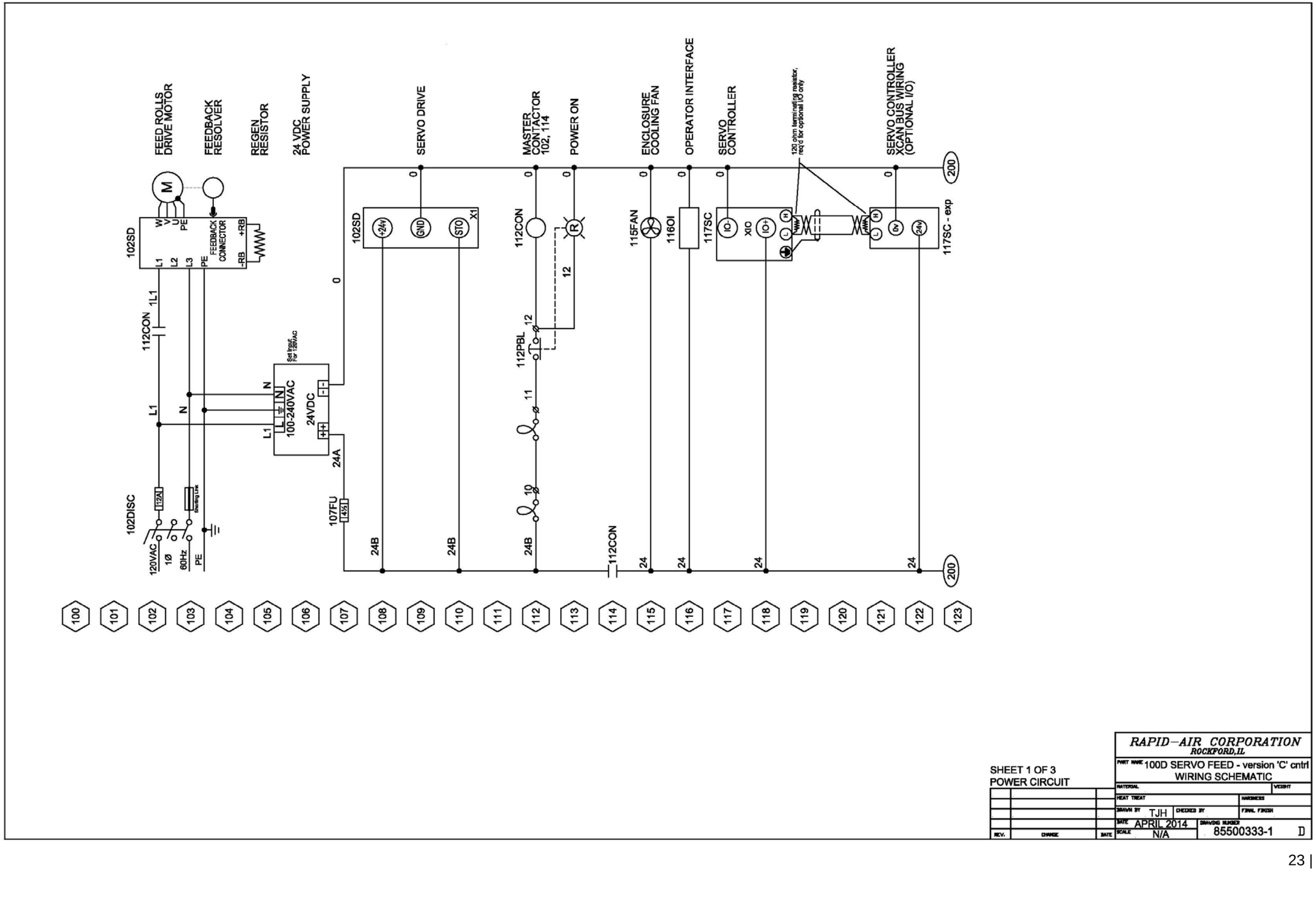
You may use the program only on the programmable servo controller furnished with the system and only in conjunction with the servo feed supplied with the system.

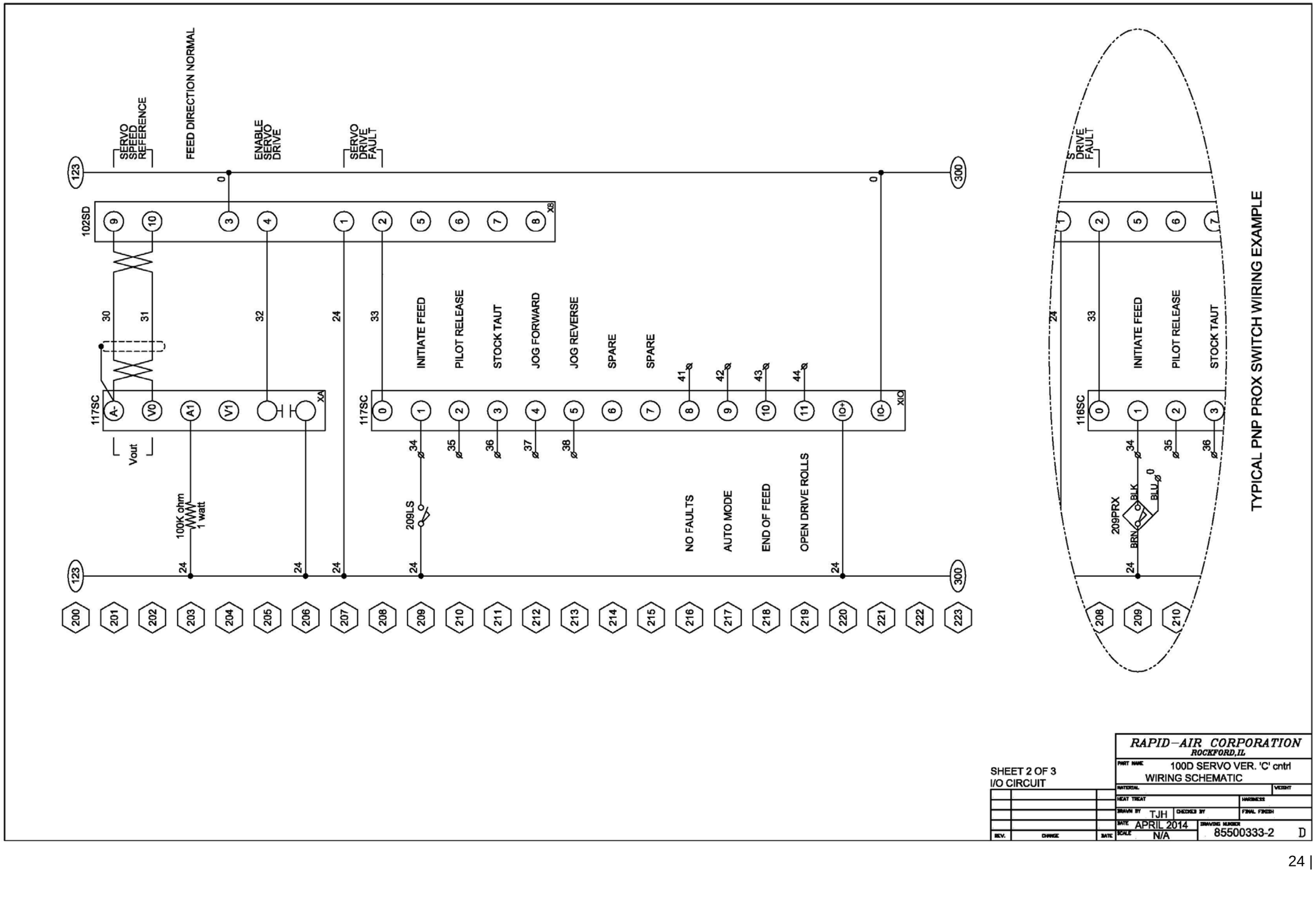
You may not without expressed permission from Rapid-Air:

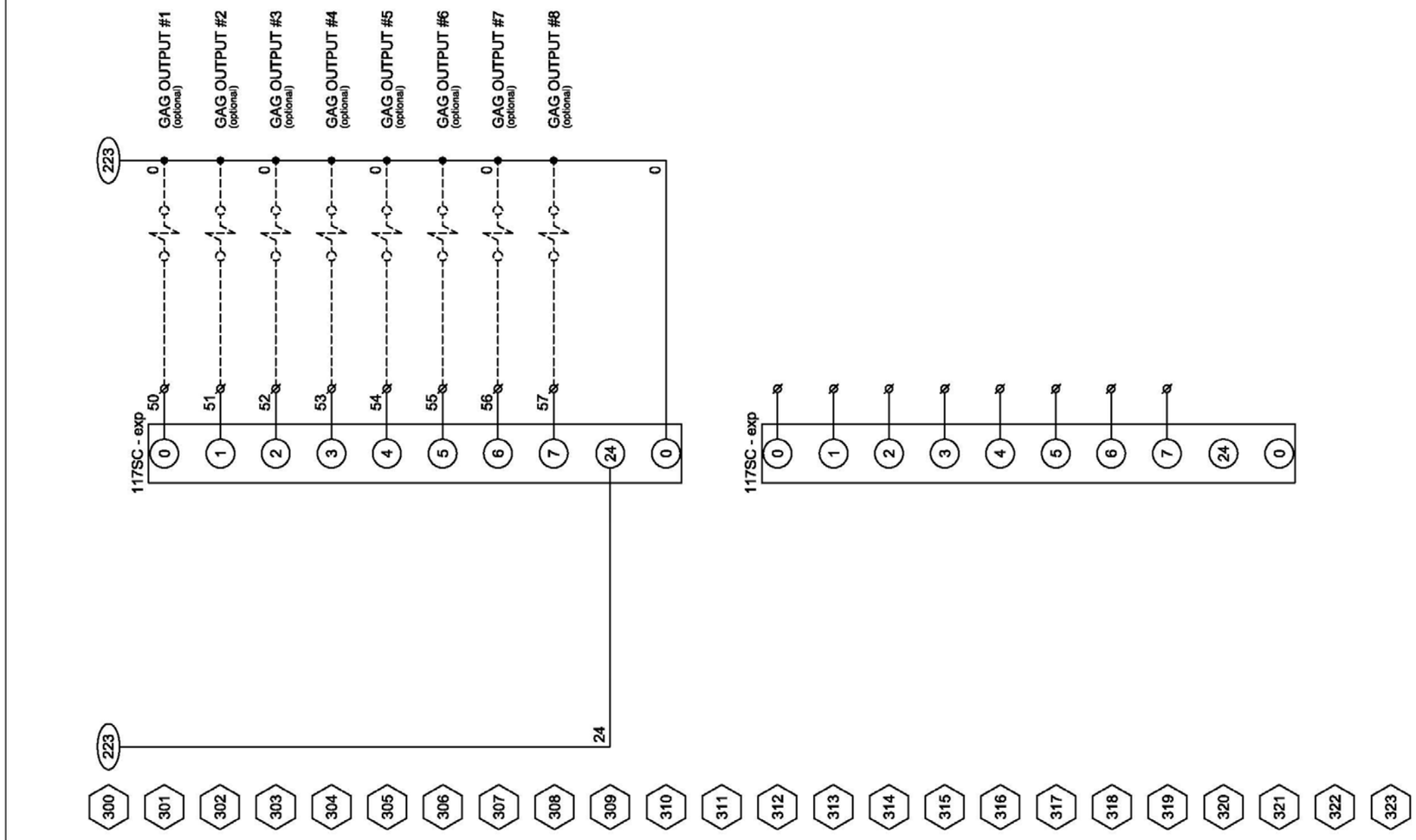
A. Copy, distribute, or document the program for others.
B. Modify or merge any portion of the program for use on non-compatible hardware.
C. Make alterations to the program.

WARRANTY

NO ADDENDUMS

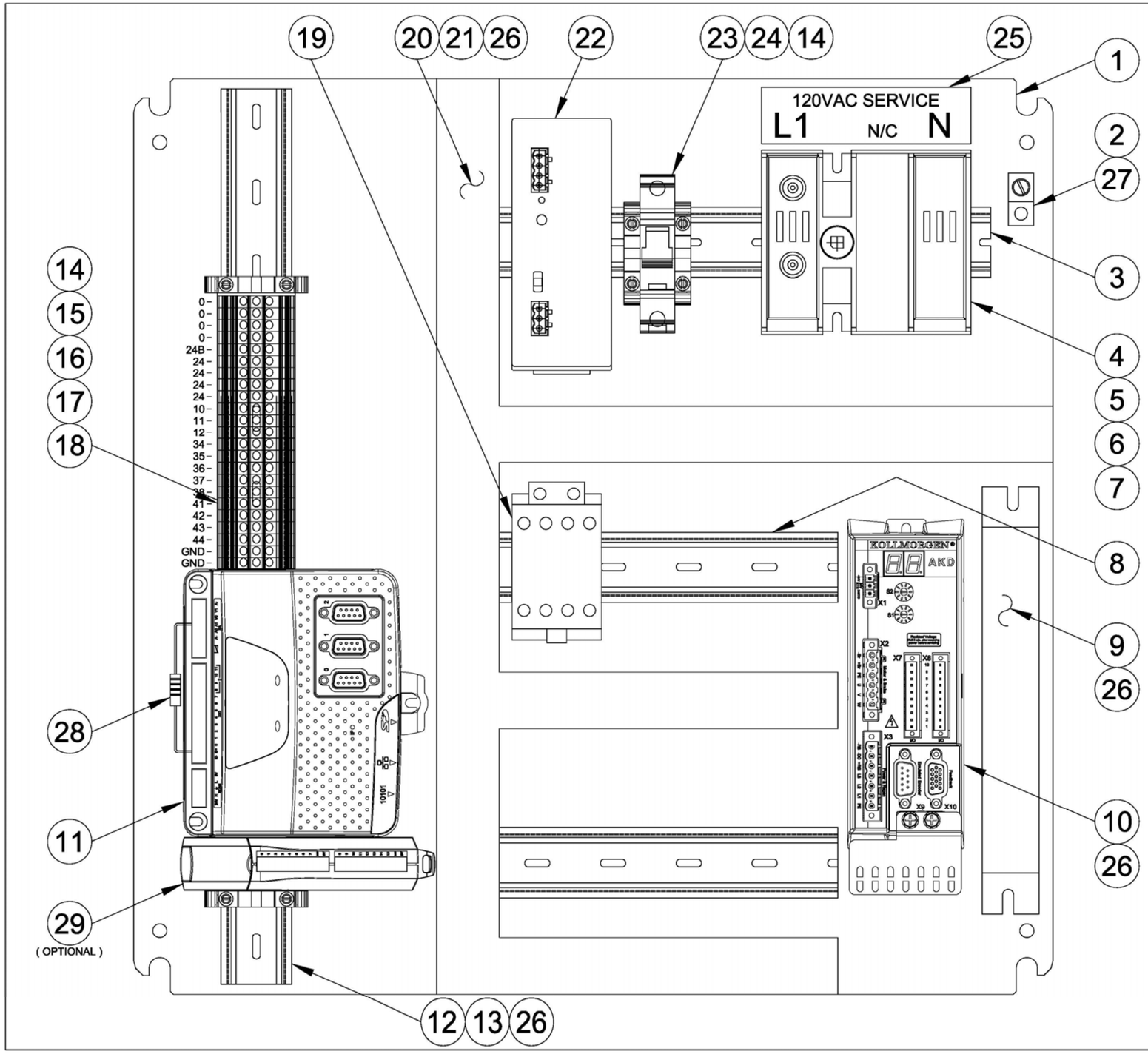

FEED ROLLS DRIVE MOTOR
FEEDBACK RESOLVER
REGEN RESISTOR
24 VDC POWER SUPPLY
SERVO DRIVE
MASTER CONTACTOR 102, 114
POWER ON
ENCLOSURE COOLING FAN
OPERATOR INTERFACE
SERVO CONTROLLER
120 ohm terminating resistor, req'd for optional I/O only
SERVO CONTROLLER XCAN BUS WIRING (OPTIONAL I/O)
102SD
112CON
112PBL
115FAN
116OI
117SC
117SC - exp
102DISC
107FU
100-240VAC
24VDC
120VAC
60Hz
24A
24B
SHEET 1 OF 3
POWER CIRCUIT
RAPID–AIR CORPORATION
ROCKFORD,IL
100D SERVO FEED - version 'C' cntrl
WIRING SCHEMATIC
TJH
APRIL 2014
N/A
85500333-1
D


SERVO SPEED REFERENCE
FEED DIRECTION NORMAL
ENABLE SERVO DRIVE
SERVO DRIVE FAULT
123
300
102SD
117SC
116SC
INITIATE FEED
PILOT RELEASE
STOCK TAUT
JOG FORWARD
JOG REVERSE
SPARE
SPARE
NO FAULTS
AUTO MODE
END OF FEED
OPEN DRIVE ROLLS
100K ohm 1 watt
209LS
209PRX
Vout
TYPICAL PNP PROX SWITCH WIRING EXAMPLE
SHEET 2 OF 3
I/O CIRCUIT
RAPID–AIR CORPORATION
ROCKFORD,IL
100D SERVO VER. 'C' cntrl
WIRING SCHEMATIC
TJH
APRIL 2014
N/A
85500333-2
D



SHEET 3 OF 3
OPTIONAL I/O CIRCUIT

RAPID–AIR CORPORATION ROCKFORD,IL					
PART NAME 100D SERVO FEED - version 'C' cntrl WIRING SCHEMATIC					
MATERIAL				WEIGHT	
HEAT TREAT				HARDNESS	
DRAWN BY TJH	CHECKED BY			FINAL FINISH	
DATE APRIL 2014	DRAWING NUMBER 85500333-3				D
SCALE N/A					
REV.	CHANGE	DATE			



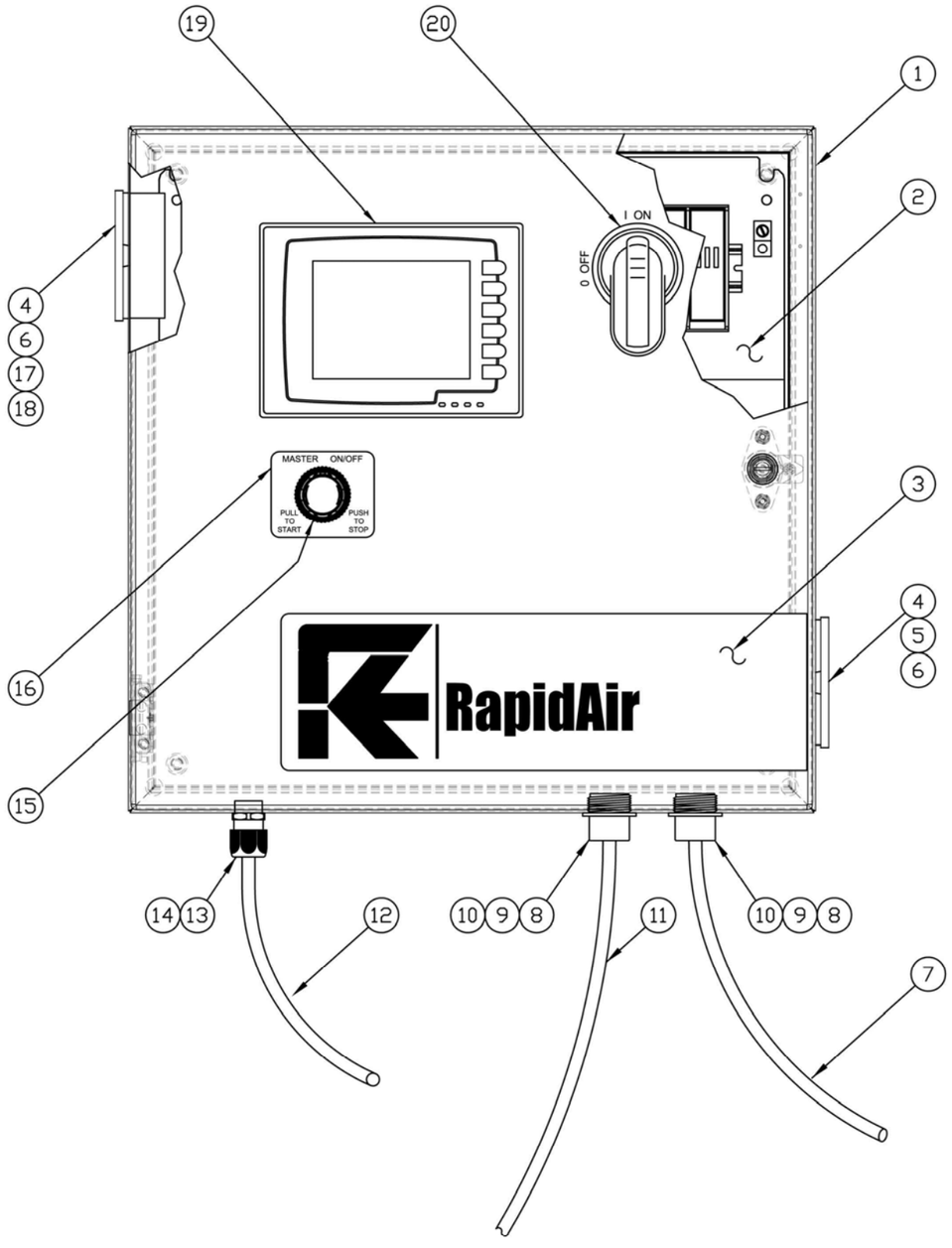
USE WITH:
85500333 100D WIRING SCHEMATIC - version 'C' cntrl

	ITEM	QTY.	PART NO.	DESCRIPTION
	N/S	2	69340036	26 GA. FERRULE
	N/S	4	69340037	20 GA. FERRULE
	N/S	5	69340039	16 GA. FERRULE
	N/S	3	69340040	14 GA. FERRULE
	N/S	1	69300048	CNTRLR / DISPLAY CABLE
	N/S	1	69300047	CNTRLR / DRIVE CABLE
(OPTIONAL)	29	1	69100828	SERVO CONTROLLER EXPANSION I/O
	28	1	69101008	RESISTOR
	27	1	66020050	1/4-20 x 1/2" RHMS
	26	31	66008037	8-32 x 3/8" RHMS
	25	1	39900310	120VAC DISCONNECT WIRING LABEL
	24	1	69101002	4½A FUSE - CLASS CC
	23	1	69100597	FUSE HOLDER
	22	1	69100435	24VDC @ 5A POWERSUPPLY
	21	1	69100748	1" WIRE DUCT COVER
	20	1	69100749	1" x 2" WIRE DUCT
	19	1	69100819	CONTACTOR
	18	2	69100775	GROUND TERMINAL
	17	.5	69100773	TERMINAL JUMPERS
	16	1	69100771	TERMINAL END BARRIER
	15	21	69100770	TERMINAL
	14	4	69100772	TERMINAL END ANCHORS
	13	2	31900659	TERMINAL STANDOFF
	12	1	69100769	DIN RAIL - 18"
	11	1	69100827	SERVO CONTROLLER
	10	1	69100820	SERVO DRIVE
	9	1	69101005	REGEN RESISTOR
	8	2	69100769	DIN RAIL - 6.38"
	7	1	69101006	DISCONNECT SHORTING LINK
	6	1	69100584	DISCONNECT SHAFT
	5	1	69101007	12A FUSE - CLASS J
	4	1	69100582	DISCONNECT - 30A/600VAC
	3	1	69100769	DIN RAIL - 9.5"
	2	1	69280249	GROUND LUG
	1	1	38900199	SUBPANEL

REV.	CHANGE	DATE

RAPID–AIR CORPORATION
ROCKFORD,IL

PART NAME: 100D SERVO CONTROL SUBPANEL ASSEMBLY
MATERIAL | WEIGHT
HEAT TREAT | HARDNESS
DRAWN BY: TJH | CHECKED BY | FINAL FINISH
DATE: APRIL 2014 | DRAWING NUMBER: 28900430 D
SCALE: N/A



ITEM	QTY.	PART NO.	DESCRIPTION
N/S	1	10900601	100 & 200 SERVO CNTRL STAND
N/S	1	69280216	INSULATED SLEEVE CLAMP
N/S	1	60940015	RETAINER
20	1	69100583	DISCONNECT HANDLE
19	1	69100829	OPERATOR INTERFACE
18	4	66006175	RHMS 6-32
17	1	69100657	24VDC ENC. COOLING FAN
16	1	39900188	PUSHBUTTON NAMEPLATE
15	1	69100902	EXT'D HEAD PUSHBUTTON
14	1	69280201	1/2" N.P.T. LOCKNUT
13	1	69280200	CORDGRIP
12	1	69300002	120VAC LINE CORD 14/3
11	1	69300041	MOTOR POWER CABLE
10	2	69280248	METRIC LOCKNUT - M32
9	2	69280247	SPLIT CORDGRIP GROMMET
8	2	69280246	SPLIT CORDGRIP SHELL
7	1	69300042	MOTOR FEEDBACK CABLE
6	8	65100632	HEX NUT 6-32
5	4	66506062	FHSCS 6-32
4	2	69100643	VENT COVER & FILTER
3	1	39900243	LOGO LABEL
2	1	28900430	SUBPANEL ASSEMBLY
1	1	38900200	ENCLOSURE

RAPID–AIR CORPORATION
ROCKFORD,IL

PART NAME: 100D SERVO CONTROL ASSEMBLY

NEXT ASS'Y.

STANDARD MFG. TOLERANCES UNLESS OTHERWISE SPECIFIED

DECIMALS		
ONE PLACE	.0	±.030
TWO PLACE	.00	±.010
THREE PLACE	.000	±.005
FOUR PLACE	.0000	±.0005
FRACTIONS		±1/64

FINISH 63

REV.	CHANGE	DATE

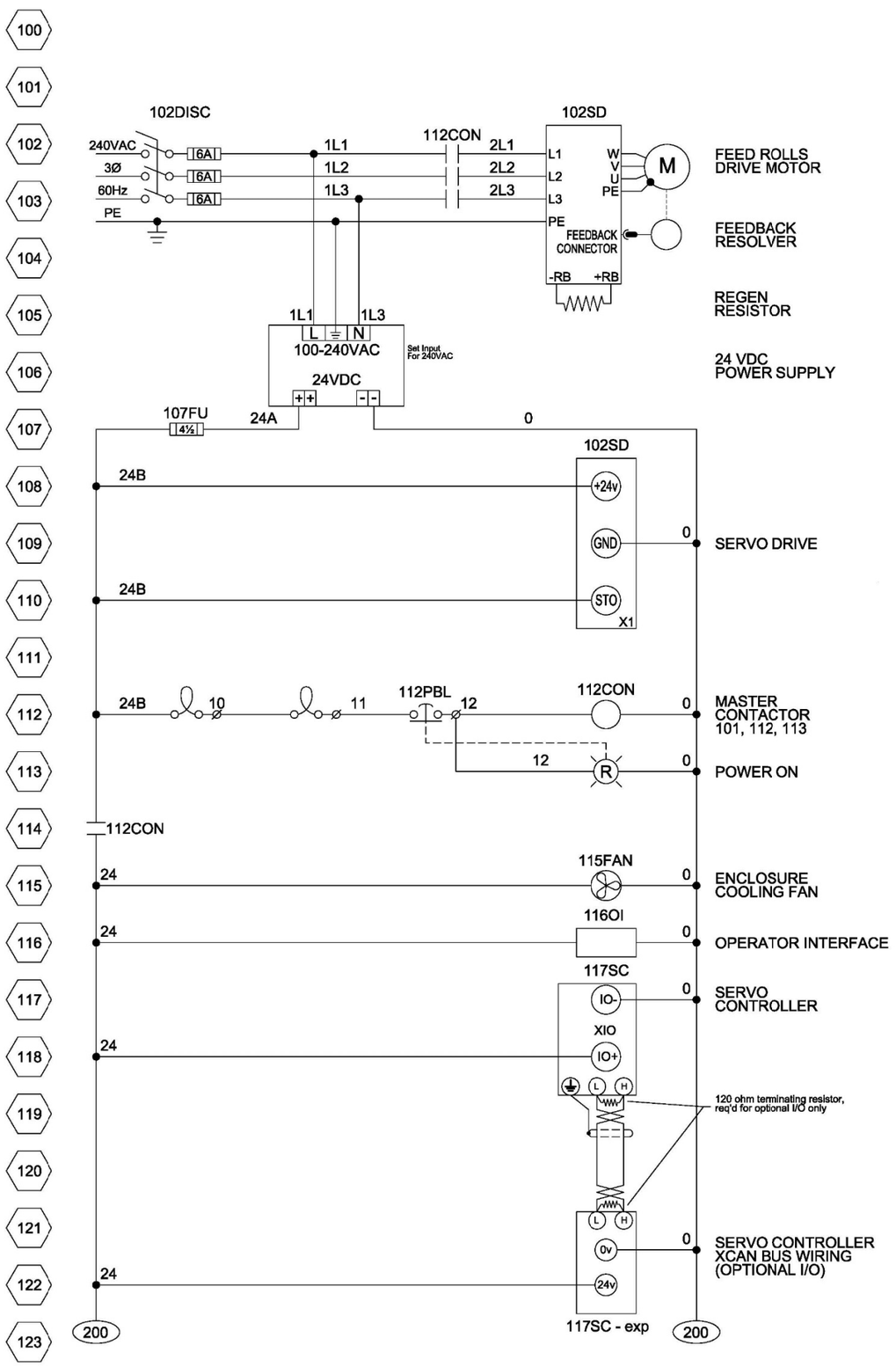
MATERIAL | WEIGHT

HEAT TREAT | HARDNESS

DRAWN BY TJH | CHECKED BY | FINAL FINISH

DATE APRIL 2014 | DRAWING NUMBER 28900431 D

SCALE N/A



REV.	CHANGE	DATE

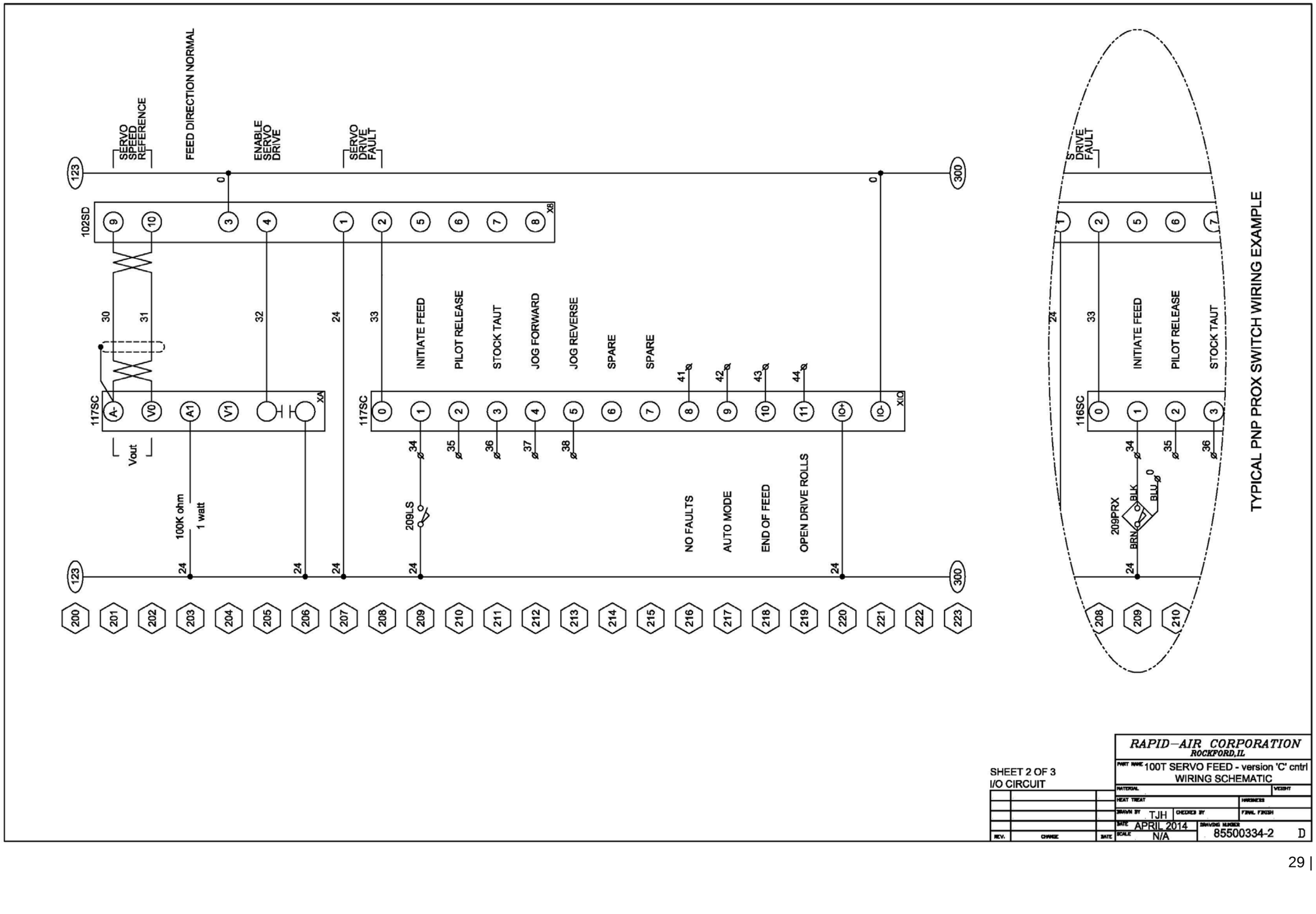
SHEET 1 OF 3
POWER CIRCUIT

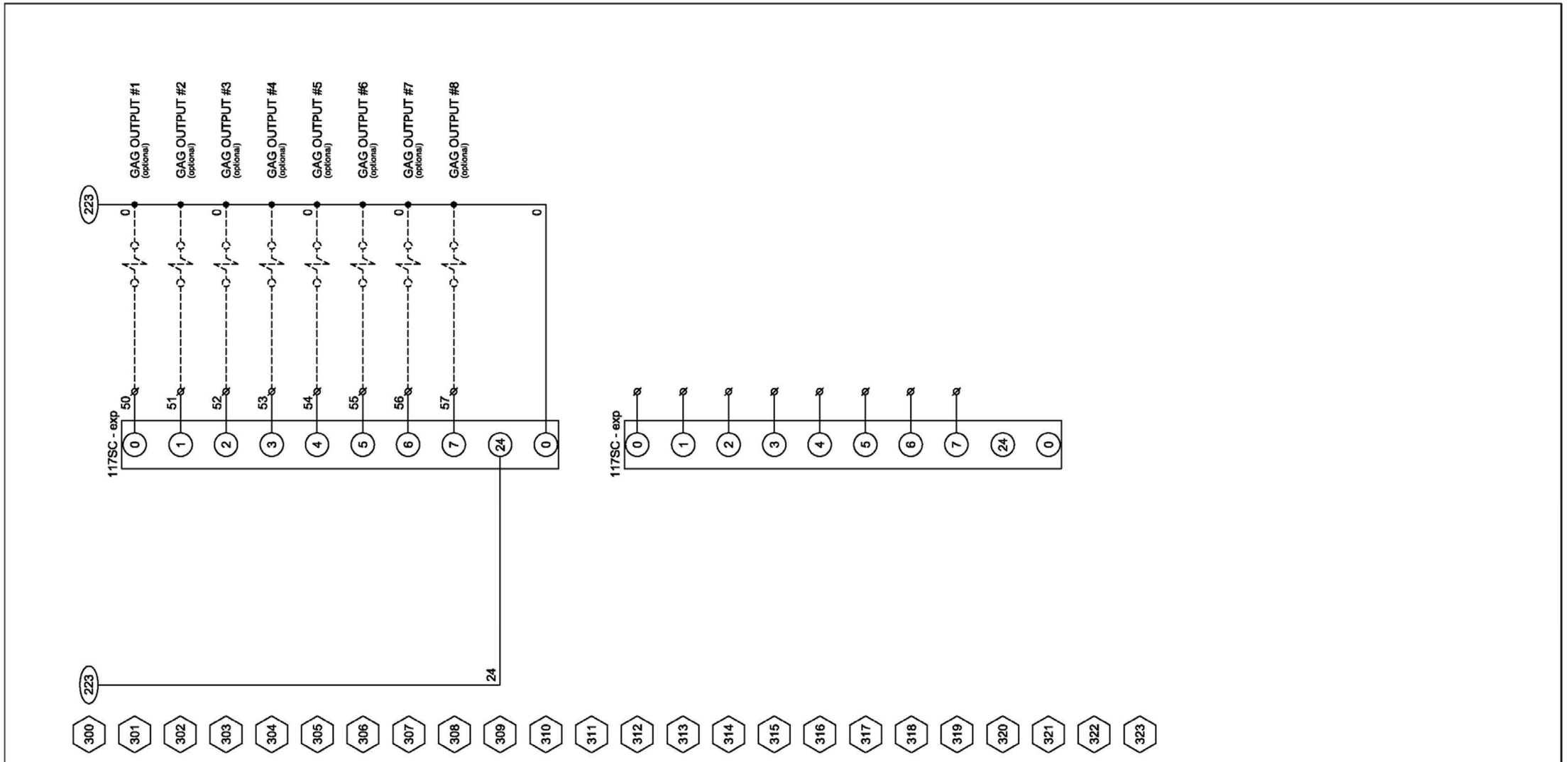
RAPID-AIR CORPORATION
ROCKFORD,IL

PART NAME: 100T SERVO FEED - version 'C' cntrl
WIRING SCHEMATIC

MATERIAL
HEAT TREAT
HARDNESS
VENDIT

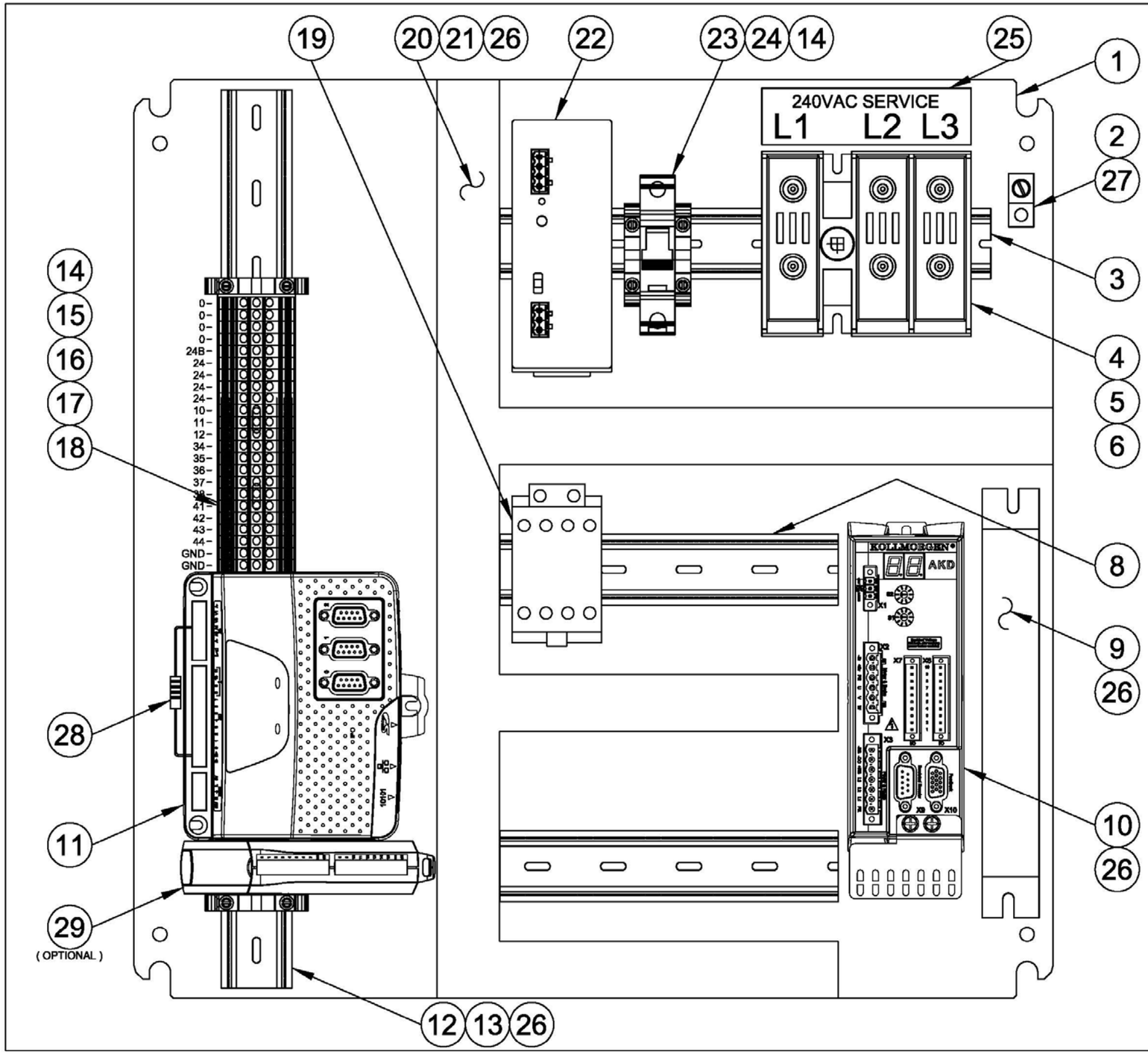
SCALE	DATE	DRAWN BY	CHECKED BY	DRAWING NUMBER	FINAL FINISH
N/A	APRIL 2014	TJH		85500334-1	D


SERVO SPEED REFERENCE
FEED DIRECTION NORMAL
ENABLE SERVO DRIVE
SERVO DRIVE FAULT
123
300
102SD
117SC
116SC
209PRX
209LS
100K ohm
1 watt
Vout
INITIATE FEED
PILOT RELEASE
STOCK TAUT
JOG FORWARD
JOG REVERSE
SPARE
SPARE
NO FAULTS
AUTO MODE
END OF FEED
OPEN DRIVE ROLLS
BLK
BRN
BLU
TYPICAL PROX SWITCH WIRING EXAMPLE
TYPICAL PNP PROX SWITCH WIRING EXAMPLE
RAPID–AIR CORPORATION
ROCKFORD,IL
100T SERVO FEED - version 'C' cntrl
WIRING SCHEMATIC
SHEET 2 OF 3
I/O CIRCUIT
TJH
APRIL 2014
N/A
85500334-2
D



SHEET 3 OF 3
OPTIONAL I/O CIRCUIT

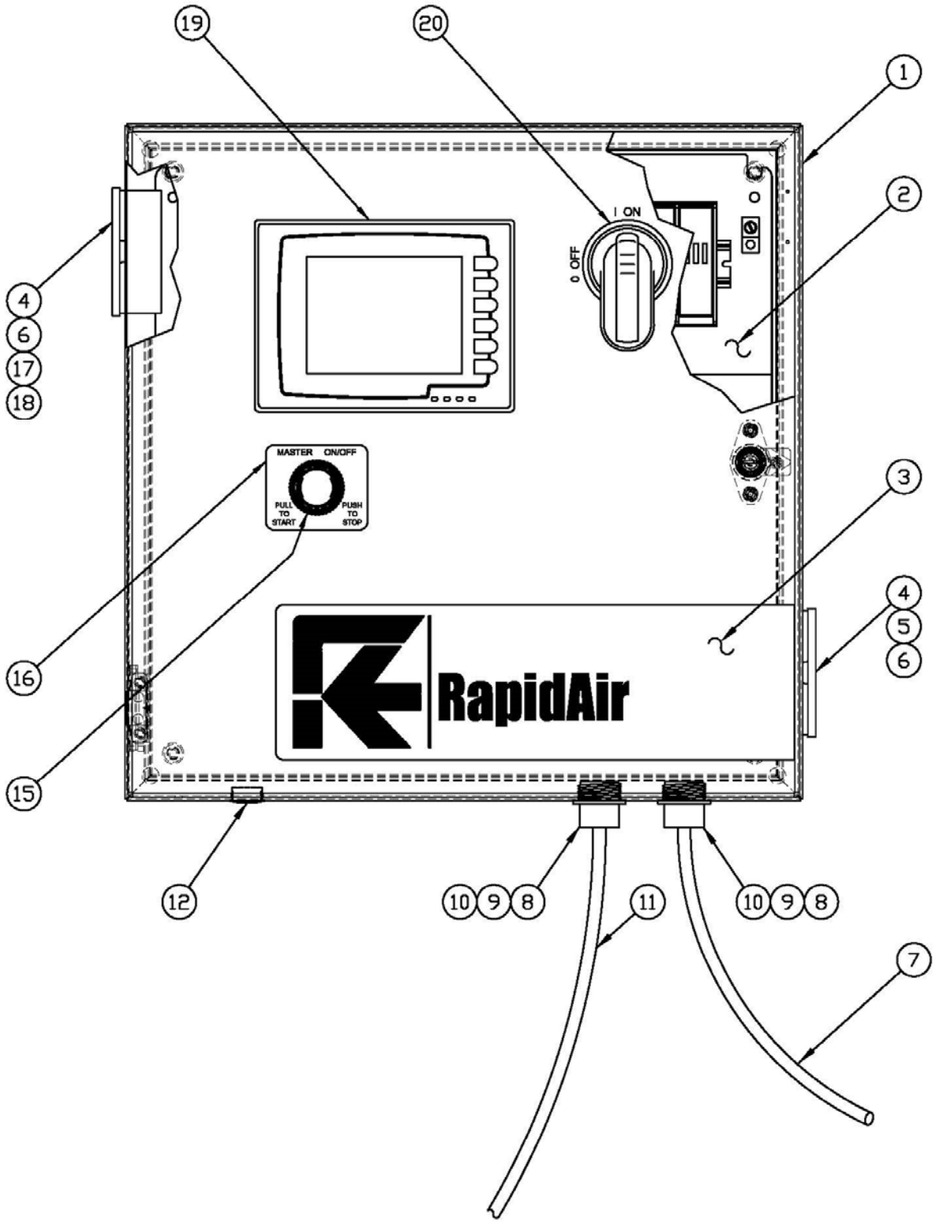
RAPID–AIR CORPORATION ROCKFORD,IL					
PART NAME 100T SERVO FEED - version 'C' cntrl WIRING SCHEMATIC					
MATERIAL				WEIGHT	
HEAT TREAT				HARDNESS	
DRAWN BY TJH	CHECKED BY			FINAL FINISH	
DATE APRIL 2014	DRAWING NUMBER 85500334-3				D
SCALE N/A					
REV.	CHANGE	DATE			



USE WITH:
85500334 100T WIRING SCHEMATIC - version 'C' cntrl
85500339 MSx HUMMER SCHEMATIC

N/S	2	69340036	26 GA. FERRULE
N/S	4	69340037	20 GA. FERRULE
N/S	5	69340039	16 GA. FERRULE
N/S	3	69340040	14 GA. FERRULE
N/S	1	69300048	CNTRLR / DISPLAY CABLE
N/S	1	69300047	CNTRLR / DRIVE CABLE
(OPTIONAL) 29	1	69100828	SERVO CONTROLLER EXPANSION I/O
28	1	69101008	RESISTOR
27	1	66020050	1/4-20 x 1/2" RHMS
26	31	66008037	8-32 x 3/8" RHMS
25	1	39900311	240VAC DISCONNECT WIRING LABEL
24	1	69101002	4½A FUSE - CLASS CC
23	1	69100597	FUSE HOLDER
22	1	69100435	24VDC @ 5A POWERSUPPLY
21	1	69100748	1" WIRE DUCT COVER
20	1	69100749	1" x 2" WIRE DUCT
19	1	69100819	CONTACTOR
18	2	69100775	GROUND TERMINAL
17	.5	69100773	TERMINAL JUMPERS
16	1	69100771	TERMINAL END BARRIER
15	21	69100770	TERMINAL
14	4	69100772	TERMINAL END ANCHORS
13	2	31900659	TERMINAL STANDOFF
12	1	69100769	DIN RAIL - 18"
11	1	69100827	SERVO CONTROLLER
10	1	69100820	SERVO DRIVE
9	1	69101005	REGEN RESISTOR
8	2	69100769	DIN RAIL - 6.38"
7			
6	1	69100584	DISCONNECT SHAFT
5	3	69100586	6A FUSE - CLASS J
4	1	69100582	DISCONNECT - 30A/600VAC
3	1	69100769	DIN RAIL - 9.5"
2	1	69280249	GROUND LUG
1	1	38900199	SUBPANEL
ITEM	QTY.	PART NO.	DESCRIPTION

REV.	CHANGE	DATE	RAPID–AIR CORPORATION ROCKFORD,IL
			PART NAME: 100T SERVO CONTROL SUBPANEL ASSEMBLY
			MATERIAL / WEIGHT
			HEAT TREAT / HARDNESS
			DRAWN BY: TJH / CHECKED BY / FINAL FINISH
			DATE: APRIL 2014 / DRAWING NUMBER: 28900432 D
			SCALE: N/A



USE WITH:
85500334 100T WIRING SCHEMATIC - version 'C' cntrl
85500339 MSx HUMMER SCHEMATIC

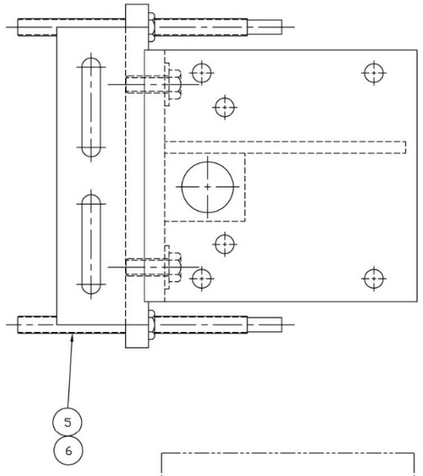
ITEM	QTY.	PART NO.	DESCRIPTION
N/S	1	10900601	100 & 200 SERVO CNTRL STAND
N/S	1	69280216	INSULATED SLEEVE CLAMP
N/S	1	60940015	RETAINER
20	1	69100583	DISCONNECT HANDLE
19	1	69100829	OPERATOR INTERFACE
18	4	66006175	RHMS 6-32
17	1	69100657	24VDC ENC. COOLING FAN
16	1	39900188	PUSHBUTTON NAMEPLATE
15	1	69100902	EXT'D HEAD PUSHBUTTON
14			
13			
12	1	69320005	HOLE PLUG
11	1	69300041	MOTOR POWER CABLE
10	2	69280248	METRIC LOCKNUT - M32
9	2	69280247	SPLIT CORDGRIP GROMMET
8	2	69280246	SPLIT CORDGRIP SHELL
7	1	69300042	MOTOR FEEDBACK CABLE
6	8	65100632	HEX NUT 6-32
5	4	66506062	FHSCS 6-32
4	2	69100643	VENT COVER & FILTER
3	1	39900243	LOGO LABEL
2	1	28900432	SUBPANEL ASSEMBLY
1	1	38900200	ENCLOSURE

NEXT ASSY.
STANDARD MFG. TOLERANCES UNLESS OTHERWISE SPECIFIED
SECTION 5
ONE PLACE .5 ±.030
TWO PLACE .25 ±.010
THREE PLACE .125 ±.005
FOUR PLACE .0625 ±.0025
FRACTIONS ±1/64
FINISH 63

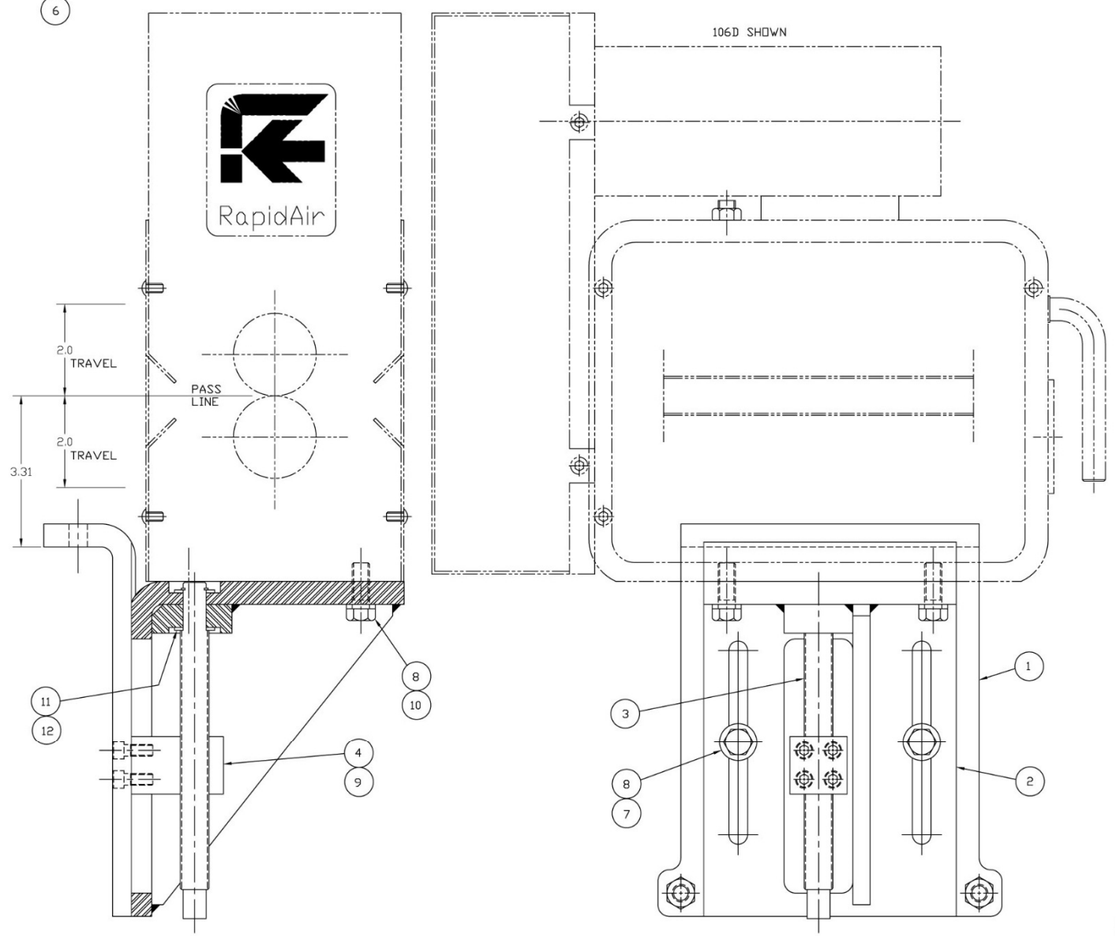
REV.	CHANGE	DATE

RAPID–AIR CORPORATION
ROCKFORD,IL

PART NAME: 100T SERVO CONTROL ASSEMBLY
MATERIAL | WEIGHT
HEAT TREAT | HARDNESS
DRAWN BY: TJH | CHECKED BY | FINAL FINISH
DATE: APRIL 2014 | DRAWING NUMBER: 28900433 D
SCALE: N/A



ITEM	QTY.	PART NO.	DESCRIPTION
15			
14			
13			
12	1	60910050	RETAINING RING
11	2	34100104	WASHER
10	4	61300037	LOCKWASHER 3/8
9	4	65920062	SHCS 1/4-20 X 5/8
8	6	65836100	HEX BOLT 3/8-16 X 1
7	2	61200026	FLAT WASHER 3/8"
6	2	65113716	JAM NUT 3/8-16
5	2	36100087	ADJUSTING SCREW
4	1	31702275	ADJUSTING SCREW PLATE
3	1	32900724	ADJUSTING SCREW
2	1	31900654	FEED SUPPORT BRACKET
1	1	31900653	MOUNTING BRACKET



RAPID–AIR CORPORATION
ROCKFORD,IL ● MADISON,SD

PART NAME: ADJUSTABLE MOUNTING BRKT. (100 SERIES SERVO)

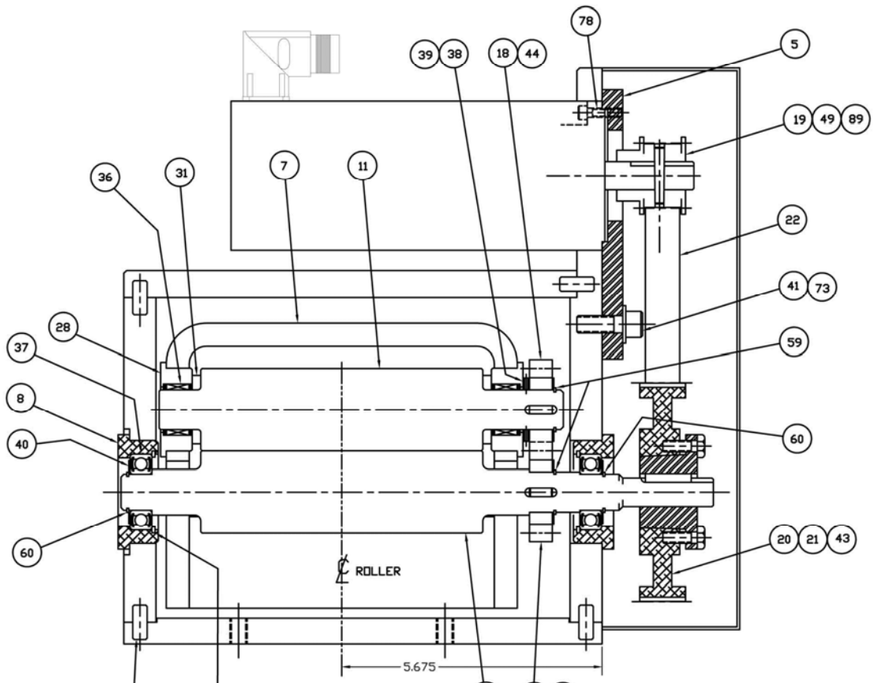
NEXT ASSY.
STANDARD MFG. TOLERANCES UNLESS OTHERWISE SPECIFIED
DECIMALS: ONE PLACE .X ±.030; TWO PLACE .XX ±.010; THREE PLACE .XXX ±.005; FOUR PLACE .XXXX ±.0005; FRACTIONS ±1/64
FINISH 63

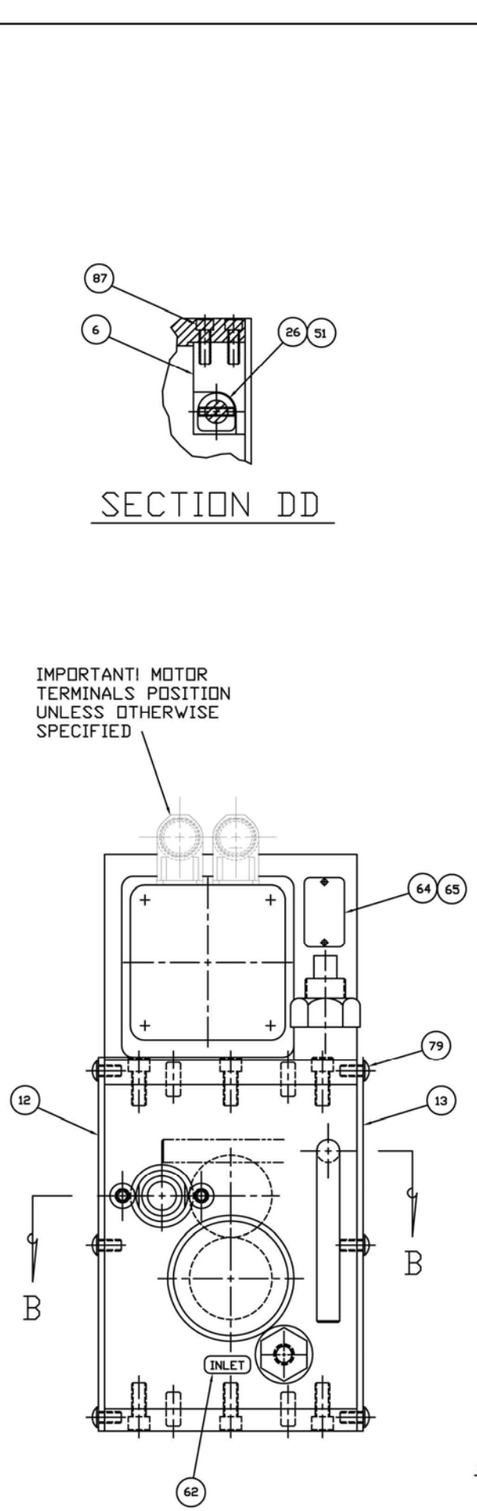
MATERIAL | WEIGHT
HEAT TREAT | HARDNESS
DRAWN BY DLU | CHECKED BY | FINAL FINISH
DATE 8-13-09 | DRAWING NUMBER 10900599 E
SCALE FULL

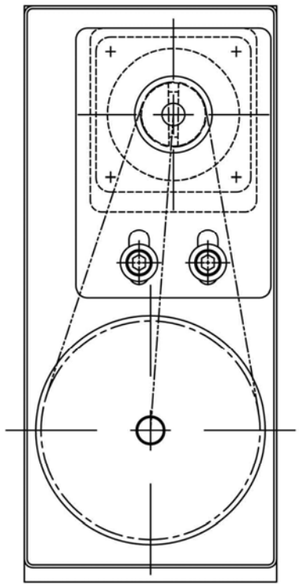
REV. | CHANGE | DATE
WAS F4276-2

SECTION DD

IMPORTANT! MOTOR TERMINALS POSITION UNLESS OTHERWISE SPECIFIED







SHEET 1 OF 2

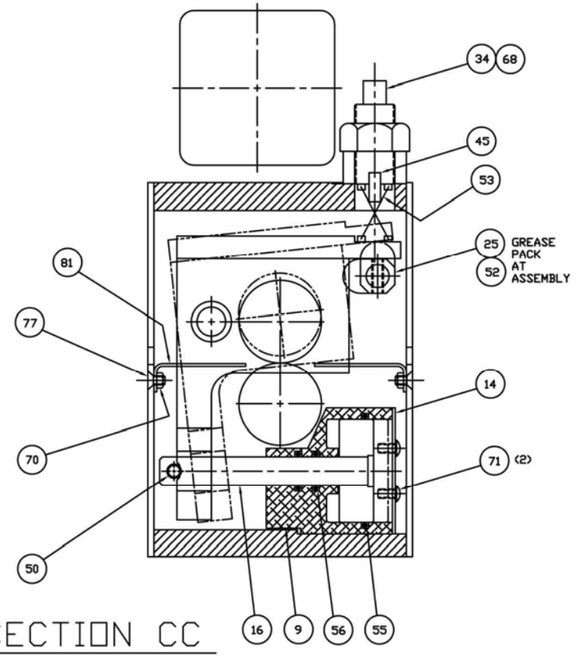
RAPID-AIR CORPORATION
ROCKFORD, IL • MADISON, SD

PART NAME 106D SERVO W/VERSION 'C' CONTROL (4-PIECE HOUSING CONSTRUCTION)

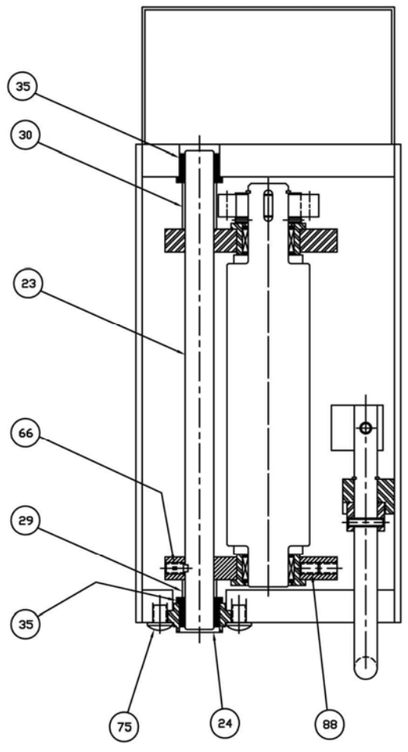
MATERIAL					VENDOR
HEAT TREAT					FINISHES
DRAWN BY	DLU	CHECKED BY		FINAL FINISH	
DATE	12/16/13	DRAWING NUMBER	13000592		E
SCALE	FULL				

ITEM	QTY.	PART NO.	DESCRIPTION
83	1	62900004	PLUG
82	1	31702417	ADJ. SCREW PLATE
81	2	31500471	STOCK GUIDE
80	4	65920100	SHCS 1/4-20 X 1
79	12	66620050	BHSCS 1/4-20 X 1/2
78	4	65912075	SHCS #10-32 X 3/4
77	4	66512037	FHSCS #10-32 X 3/8
76	12	65931075	SHCS 5/16-18 X 3/4
75	2	66631037	BHSCS 5/16-18 X 3/8
74	4	65920062	SHCS 1/4-20 X 5/8
73	2	65936100	SHCS 3/8-16 X 1
72	2	66612050	BHSCS #10-32 X 1/2
71	4	66612037	BHSCS #10-32 X 3/8
70	4	65101032	HEX NUT #10-32
69	1	65113716	JAM NUT 3/8-16
68	1	65118814	JAM NUT 7/8-14
67	1	66700056	OVAL POINT SET SCREW
66	1	66700072	SET SCREW
65	2	66300250	DRIVE SCREW
64	1	39900051	S/N TAG
63	1	39900245	RAPIDAIR LOGO
62	1	39900175	INLET LABEL
61	1	60910050	RETAINING RING
60	2	60910078	RETAINING RING
59	2	60910087	RETAINING RING
58	2	60900165	RETAINING RING
57	1	60930043	GRIP RING
56	2	60108208	"O" RING
55	1	60108228	"O" RING
54	2	60108111	"O" RING
53	1	37500107	SPRING
52	1	62425075	ROLL PIN 1/4 X 3/4
51	1	62419075	ROLL PIN 3/16 X 3/4
50	1	62131150	SPIRAL PIN
49	1	62500002	TAPER PIN
48	1	62318050	DOWEL PIN 3/16 X 1/2
47	8	62331075	DOWEL PIN 5/16 X 3/4
46	2	62225050	DOWEL PIN 1/4 X 1/2
45	1	62325062	DOWEL PIN 1/4 X 5/8
44	1	36800005	KEY
43	1	36800013	KEY
42	1	69000047	MOTOR
41	2	34700082	WASHER
40	2	64520028	THRUST WASHER
39	4	34700117	THRUST WASHER
38	1	64510001	THRUST BEARING
37	2	64600054	BALL BEARING
36	2	64500061	NEEDLE BEARING
35	2	64100073	BUSHING
34	1	36100099	ADJUSTING SCREW
33	1	36300008	AIR INLET FITTING
32	1	34400533	AIR TUBE
31	2	34100320	UPPER ROLLER SPACER
30	1	34100372	SPACER
29	1	34100318	SPACER
28	2	33900264	BEARING SLEEVE
27	1	36600035	CAM HANDLE
26	1	36500044	HANDLE CAM
25	1	36500043	CAM
24	1	32900854	ECCENTRIC SHAFT
23	1	32900945	PIVOT SHAFT
22	1	32500003	TIMING BELT
21	1	32500030	BUSHING FOR 32500029
20	1	32500029	ALUMINUM PULLEY
19	1	32500005	MOTOR PULLEY
18	1	32600231	UHMW GEAR
17	1	32602600	STEEL GEAR
16	1	25500071	PISTON ASSEMBLY
15	1	31500426	BELT COVER
14	1	31500425	PISTON COVER
13	1	21900325	EXIT GUARD ASSEMBLY
12	1	21900324	ENTRANCE GUARD ASSEMBLY
11	1	34200365	UPPER ROLLER
10	1	34200364	LOWER ROLLER
9	1	30100284	PISTON HOUSING
8	2	30100283	BEARING HOUSING
7	1	31900636	UPPER ROLLER BRACKET
6	1	31702088	CAM HANDLE SUPPORT PLATE
5	1	31702086	MOTOR MOUNTING PLATE
4	1	31702416	TOP PLATE
3	1	31702415	L.H. SIDE PLATE
2	1	31702414	R.H. SIDE PLATE
1	1	31702413	BOTTOM PLATE

ITEM	QTY.	PART NO.	DESCRIPTION
89	1	32500042	TAPER PIN INSTALLATION DRAWING
88	1	66220037	SET SCREW 1/4-20 X 3/8 C.P.
87	2	65920075	SHCS 1/4-20 X 3/4
86	1	39901009	CAUTION LABEL
85	1	39900304	CAUTION LABEL
84	1	39900261	CAUTION LABEL



SECTION CC



SECTION BB

SHEET 2 OF 2

RAPID-AIR CORPORATION
ROCKFORD,IL • MADISON,SD

PART NAME 106D SERVO W/VERSION "C" CONTROL (4-PIECE HOUSING CONSTRUCTION)

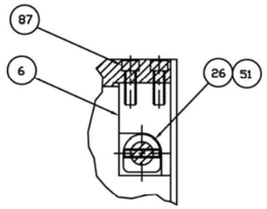
MATERIAL — VENDOR

HEAT TREAT — HARDNESS

DRAWN BY DLU — CHECKED BY — FINAL FINISH

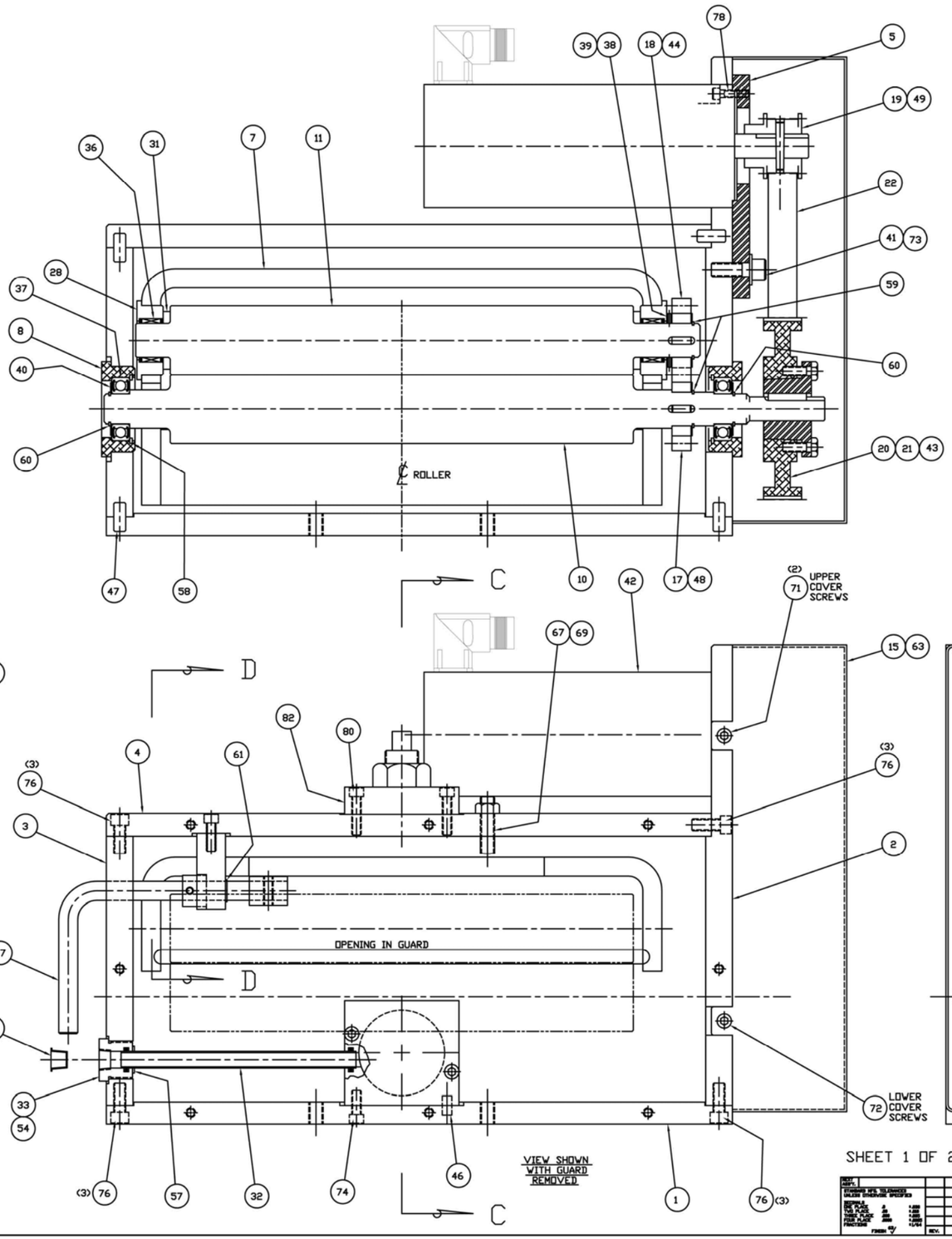
DATE 12-16-13 — DRAWING NUMBER 13000592 E

SCALE FULL



SECTION DD

IMPORTANT! MOTOR TERMINALS POSITION UNLESS OTHERWISE SPECIFIED



SHEET 1 OF 2

RAPID-AIR CORPORATION
ROCKFORD,IL • MADISON,SD

112D SERVO W/VERSION "C" CONTROL
(4-PIECE FRAME CONSTRUCTION)

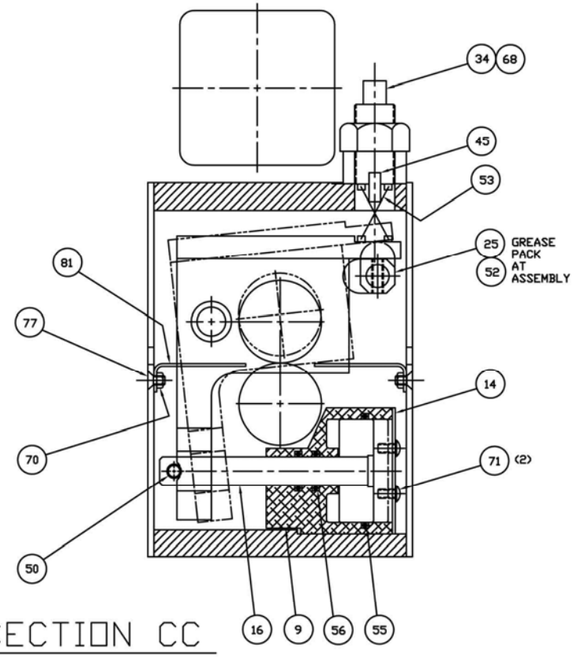
DRAWN BY DLU | CHECKED BY | FINAL FINISH

DATE 3-21-14 | DRAWING NUMBER 13000595 E

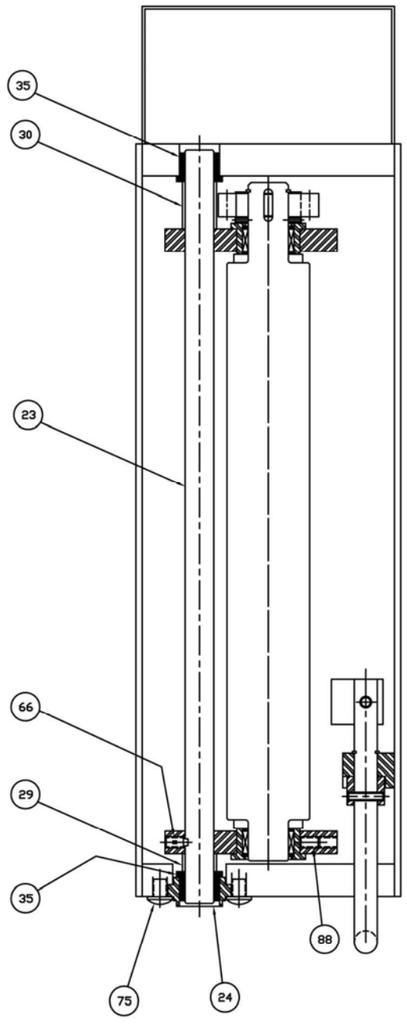
SCALE FULL

ITEM	QTY.	PART NO.	DESCRIPTION
83	1	62900004	PLUG
82	1	31702417	ADJ. SCREW PLATE
81	2	31500479	STOCK GUIDE
80	4	65920100	SHCS 1/4-20 X 1
79	16	66620050	BHSCS 1/4-20 X 1/2
78	4	65912075	SHCS #10-32 X 3/4
77	6	66512037	FHSCS #10-32 X 3/8
76	12	65931075	SHCS 5/16-18 X 3/4
75	2	66631037	BHSCS 5/16-18 X 3/8
74	4	65920062	SHCS 1/4-20 X 5/8
73	2	65936100	SHCS 3/8-16 X 1
72	2	66612050	BHSCS #10-32 X 1/2
71	4	66612037	BHSCS #10-32 X 3/8
70	6	65101032	HEX NUT #10-32
69	1	65113716	JAM NUT 3/8-16
68	1	65118814	JAM NUT 7/8-14
67	1	66700056	OVAL POINT SET SCREW
66	1	66700072	SET SCREW
65	2	66300250	DRIVE SCREW
64	1	39900051	S/N TAG
63	1	39900245	RAPIDAIR LOGO
62	1	39900175	INLET LABEL
61	1	60910050	RETAINING RING
60	2	60910078	RETAINING RING
59	2	60910087	RETAINING RING
58	2	60900165	RETAINING RING
57	1	60930043	GRIP RING
56	2	60108208	"O" RING
55	1	60108228	"O" RING
54	2	60108111	"O" RING
53	1	37500107	SPRING
52	1	62425075	ROLL PIN 1/4 X 3/4
51	1	62419075	ROLL PIN 3/16 X 3/4
50	1	62131150	SPIRAL PIN
49	1	62500002	TAPER PIN
48	1	62318050	DOWEL PIN 3/16 X 1/2
47	8	62331075	DOWEL PIN 5/16 X 3/4
46	2	62225050	DOWEL PIN 1/4 X 1/2
45	1	62325062	DOWEL PIN 1/4 X 5/8
44	1	36800005	KEY
43	1	36800013	KEY
42	1	69000047	MOTOR
41	2	34700082	WASHER
40	2	64520028	THRUST WASHER
39	4	34700117	THRUST WASHER
38	1	64510001	THRUST BEARING
37	2	64600054	BALL BEARING
36	2	64500061	NEEDLE BEARING
35	2	64100073	BUSHING
34	1	36100099	ADJUSTING SCREW
33	1	36300008	AIR INLET FITTING
32	1	34400534	AIR TUBE
31	2	34100320	UPPER ROLLER SPACER
30	1	34100372	SPACER
29	1	34100318	SPACER
28	2	33900264	BEARING SLEEVE
27	1	36600035	CAM HANDLE
26	1	36500044	HANDLE CAM
25	1	36500043	CAM
24	1	32900854	ECCENTRIC SHAFT
23	1	32900960	PIVOT SHAFT
22	1	32500003	TIMING BELT
21	1	32500030	BUSHING FOR 32500029
20	1	32500029	ALUMINUM PULLEY
19	1	32500005	MOTOR PULLEY
18	1	32600231	UHMW GEAR
17	1	32602600	STEEL GEAR
16	1	25500071	PISTON ASSEMBLY
15	1	31500426	BELT COVER
14	1	31500425	PISTON COVER
13	1	21900329	EXIT GUARD ASSEMBLY
12	1	21900328	ENTRANCE GUARD ASSEMBLY
11	1	34200367	UPPER ROLLER
10	1	34200366	LOWER ROLLER
9	1	30100284	PISTON HOUSING
8	2	30100283	BEARING HOUSING
7	1	31900637	UPPER ROLLER BRACKET
6	1	31702088	CAM HANDLE SUPPORT PLATE
5	1	31702086	MOTOR MOUNTING PLATE
4	1	31702442	TOP PLATE
3	1	31702415	L.H. SIDE PLATE
2	1	31702414	R.H. SIDE PLATE
1	1	31702441	BOTTOM PLATE

ITEM	QTY.	PART NO.	DESCRIPTION
89	1	32500042	TAPER PIN INSTALLATION DRAWING
88	1	66220037	SET SCREW 1/4-20 X 3/8 C.P.
87	2	65920075	SHCS 1/4-20 X 3/4
86	1	39901009	CAUTION LABEL
85	1	39900304	CAUTION LABEL
84	1	39900261	CAUTION LABEL



SECTION CC



SECTION BB

SHEET 2 OF 2

RAPID-AIR CORPORATION
ROCKFORD,IL • MADISON,SD

PART NAME: 112D SERVO (4-PIECE FRAME CONSTRUCTION)

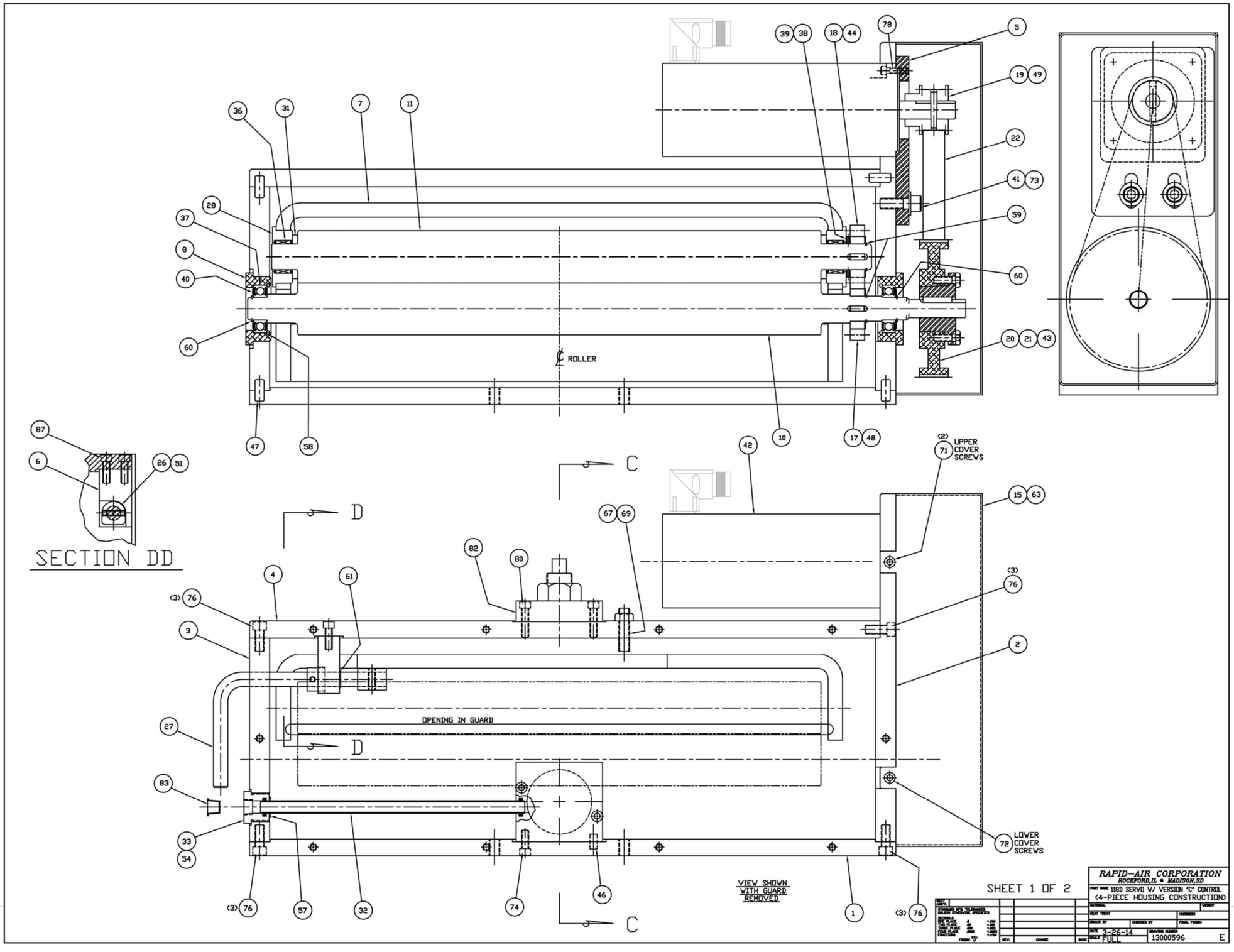
MATERIAL | WEIGHT

HEAT TREAT | HARDNESS

DRAWN BY: DLU | CHECKED BY | FINAL FINISH

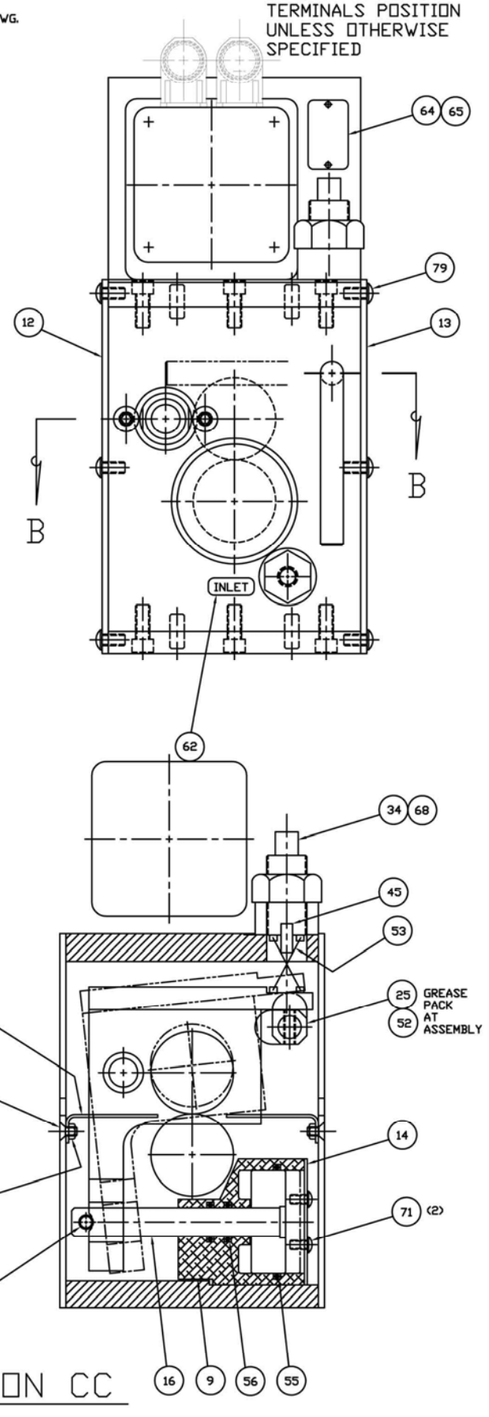
DATE: 3-21-14 | DRAWING NUMBER: 13000595 | E

SCALE: FULL

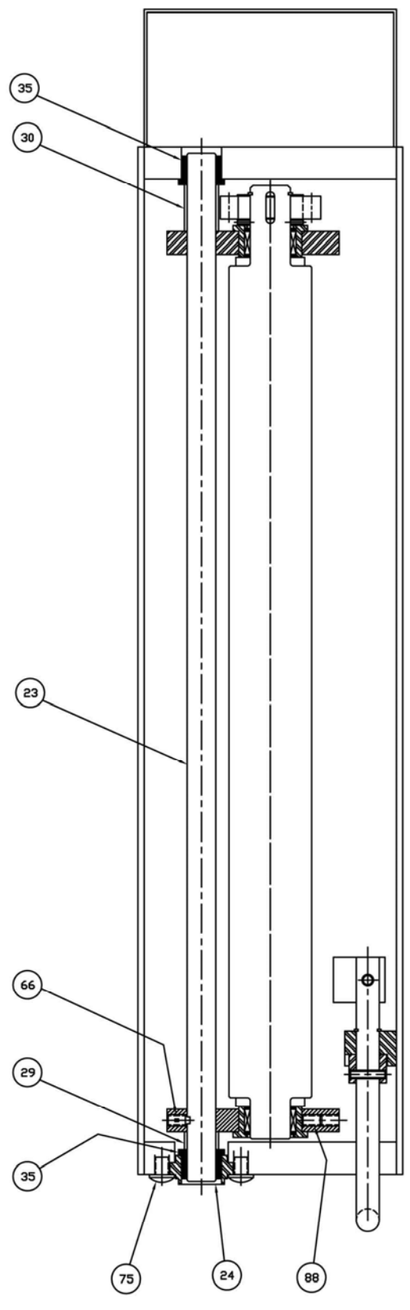

SECTION DD
ROLLER
OPENING IN GUARD
VIEW SHOWN WITH GUARD REMOVED
(2) UPPER COVER SCREWS
(3) LOWER COVER SCREWS
RAPID-AIR CORPORATION
ROCKFORD,IL • MADISON,SD
118D SERVO W/ VERSION 'C' CONTROL
(4-PIECE HOUSING CONSTRUCTION)
SHEET 1 OF 2
3-26-14
13000596
E
FULL

ITEM	QTY.	PART NO.	DESCRIPTION
89	1	32500042	TAPER PIN INSTALLATION DWG.
88	1	66220037	SET SCREW 1/4-20 X 3/8
87	2	65920075	SHCS 1/4-20 X 3/4
86	1	39901009	CAUTION LABEL
85	1	39900304	CAUTION LABEL
84	1	39900261	CAUTION LABEL
83	1	62900004	PLUG
82	1	31702417	ADJ. SCREW PLATE
81	2	31500482	STOCK GUIDE
80	4	65920100	SHCS 1/4-20 X 1
79	20	66620050	BHSCS 1/4-20 X 1/2
78	4	65912075	SHCS #10-32 X 3/4
77	8	66512037	FHSCS #10-32 X 3/8
76	12	65931075	SHCS 5/16-18 X 3/4
75	2	66631037	BHSCS 5/16-18 X 3/8
74	4	65920062	SHCS 1/4-20 X 5/8
73	2	65936100	SHCS 3/8-16 X 1
72	2	66612050	BHSCS #10-32 X 1/2
71	4	66612037	BHSCS #10-32 X 3/8
70	8	65101032	HEX NUT #10-32
69	1	65113716	JAM NUT 3/8-16
68	1	65118814	JAM NUT 7/8-14
67	1	66700056	OVAL POINT SET SCREW
66	1	66700072	SET SCREW
65	2	66300250	DRIVE SCREW
64	1	39900051	S/N TAG
63	1	39900245	RAPIDAIR LOGO
62	1	39900175	INLET LABEL
61	1	60910050	RETAINING RING
60	2	60910078	RETAINING RING
59	2	60910087	RETAINING RING
58	2	60900165	RETAINING RING
57	1	60930043	GRIP RING
56	2	60108208	"O" RING
55	1	60108228	"O" RING
54	2	60108111	"O" RING
53	1	37500107	SPRING
52	1	62425075	ROLL PIN 1/4 X 3/4
51	1	62419075	ROLL PIN 3/16 X 3/4
50	1	62131150	SPIRAL PIN
49	1	62500002	TAPER PIN
48	1	62318050	DOWEL PIN 3/16 X 1/2
47	8	62331075	DOWEL PIN 5/16 X 3/4
46	2	62225050	DOWEL PIN 1/4 X 1/2
45	1	62325062	DOWEL PIN 1/4 X 5/8
44	1	36800005	KEY
43	1	36800013	KEY
42	1	69000047	MOTOR
41	2	34700082	WASHER
40	2	64520028	THRUST WASHER
39	4	34700117	THRUST WASHER
38	1	64510001	THRUST BEARING
37	2	64600054	BALL BEARING
36	2	64500061	NEEDLE BEARING
35	2	64100073	BUSHING
34	1	36100099	ADJUSTING SCREW
33	1	36300008	AIR INLET FITTING
32	1	34400535	AIR TUBE
31	2	34100320	UPPER ROLLER SPACER
30	1	34100372	SPACER
29	1	34100318	SPACER
28	2	33900264	BEARING SLEEVE
27	1	36600035	CAM HANDLE
26	1	36500044	HANDLE CAM
25	1	36500043	CAM
24	1	32900854	ECCENTRIC SHAFT
23	1	32900962	PIVOT SHAFT
22	1	32500003	TIMING BELT
21	1	32500030	BUSHING FOR 32500029
20	1	32500029	ALUMINUM PULLEY
19	1	32500005	MOTOR PULLEY
18	1	32600231	UHMW GEAR
17	1	32602600	STEEL GEAR
16	1	25500071	PISTON ASSEMBLY
15	1	31500426	BELT COVER
14	1	31500425	PISTON COVER
13	1	21900331	EXIT GUARD ASSEMBLY
12	1	21900330	ENTRANCE GUARD ASSEMBLY
11	1	34200381	UPPER ROLLER
10	1	34200380	LOWER ROLLER
9	1	30100284	PISTON HOUSING
8	2	30100283	BEARING HOUSING
7	1	31900638	UPPER ROLLER BRACKET
6	1	31702088	CAM HANDLE SUPPORT PLATE
5	1	31702086	MOTOR MOUNTING PLATE
4	1	31702444	TOP PLATE
3	1	31702415	L.H. SIDE PLATE
2	1	31702414	R.H. SIDE PLATE
1	1	31702443	BOTTOM PLATE

IMPORTANT! MOTOR TERMINALS POSITION UNLESS OTHERWISE SPECIFIED



SECTION CC



SECTION BB

SHEET 2 OF 2

RAPID-AIR CORPORATION
ROCKFORD,IL • MADISON,SD

PART NAME 118D SERVO W/VERSION "C" CONTROL (4-PIECE HOUSING CONSTRUCTION)

MATERIAL		WEIGHT	
HEAT TREAT		FINISH	
DRAWN BY DLU	CHECKED BY	FINAL FINISH	
DATE 3-26-14	DRAWING NUMBER 13000596		E
SCALE FULL			