

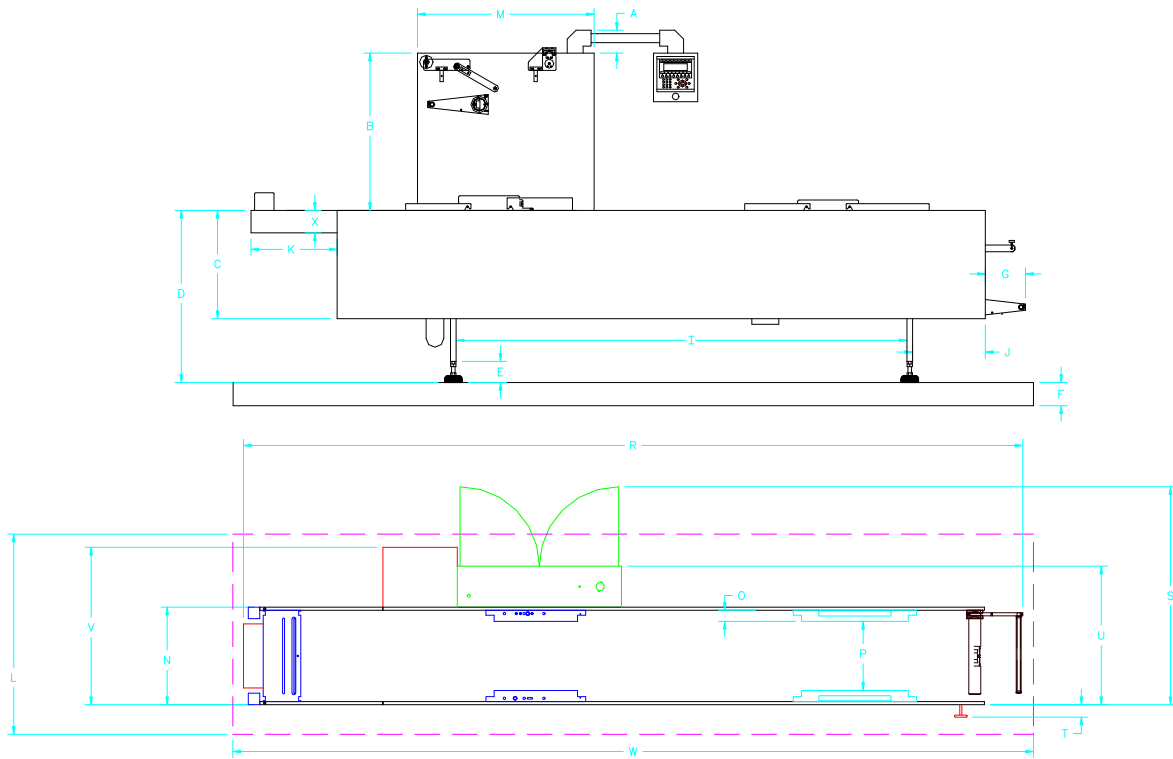
INSTALLATION

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TECHNICAL REQUIREMENTS

RI-200 MACHINE DIMENSIONS



Web width	A	B	C	D	E	F	G	I	J	K	L
285	139	787	612	945*1	105*2	183	239	2550*3	407	*4	1219
320											
355											
420											
459											

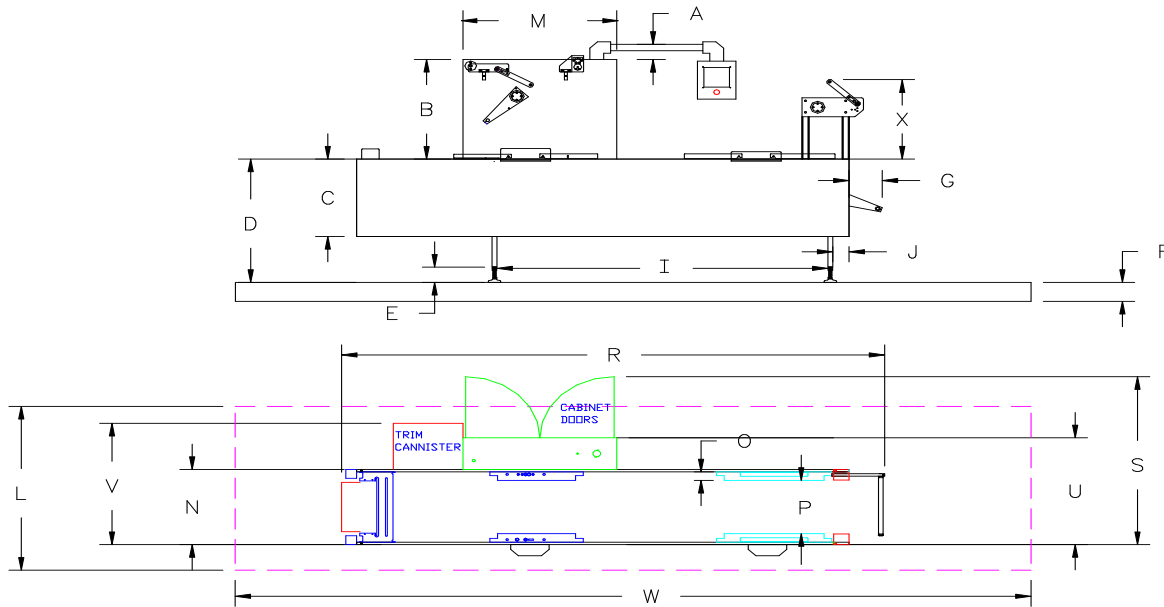
Web width	M	N	O	P	R	S	T	U	V	W	X
285	998	455	67.5	287	3992*3*4	1225	59	726	813	*5	173
320		490		322		1260		761	848		
355		525		357		1295		796	883		
420		590		422		1360		861	948		
459		629		461		1399		900	987		

- *1 with legs adjusted in
- *2 maximum adjustment
- *3 with loading area extension add 1000mm
- *4 length of discharge extension that was ordered
- *5 no loading area extension and less than 1000mm discharge extension – 4876.8mm
loading area extension or over 1000mm discharge extension – 6096mm
loading area extension and over 1000mm discharge extension – 6705.6mm

**Shipping height
2054mm (6.7388')**

All dimensions are in millimeter
25.4mm = 1 inch

RA-200 MACHINE DIMENSIONS



Web width	A	B	C	D	E	F	G	I	J	K	L
285	139	787	612	945*1	105*2	183	216	2153*3	105.5	*4	1219
320											
355											
420											
459											

Web width	M	N	O	P	R	S	T	U	V	W	X
285	998	455	67.5	287	3532*3*4	1225	59	726	813	*5	628
320		490		322		1260		761	848		
355		525		357		1295		796	883		
420		590		422		1360		861	948		
459		629		461		1399		900	987		

*1 with legs adjusted in

*2 maximum adjustment

*3 with loading area extension add 1000mm N/A

*4 length of discharge extension that was ordered N/A

*5 no loading area extension and less than 1000mm discharge extension – 4876.8mm N/A

loading area extension or over 1000mm discharge extension – 6096mm N/A

loading area extension and over 1000mm discharge extension – 6705.6mm N/A

Shipping height
2054mm (6.7388')

All dimensions are in millimeter
25.4mm = 1 inch

INSTALLING THE RI-200

Be careful when moving the RI-200. The machine is top heavy and the sealing end of the machine is heavier than the forming end. When the machine is picked up it will try to tip toward the cabinet side.

The first step to install the RI-200 is to move the machine to the location where it will be permanently placed. Leave the RI-200 on the skid and banded down, this will lesson the chance of the machine tipping over or being damaged. When the machine is in the proper location, remove the banding, lift the machine and remove the skid.

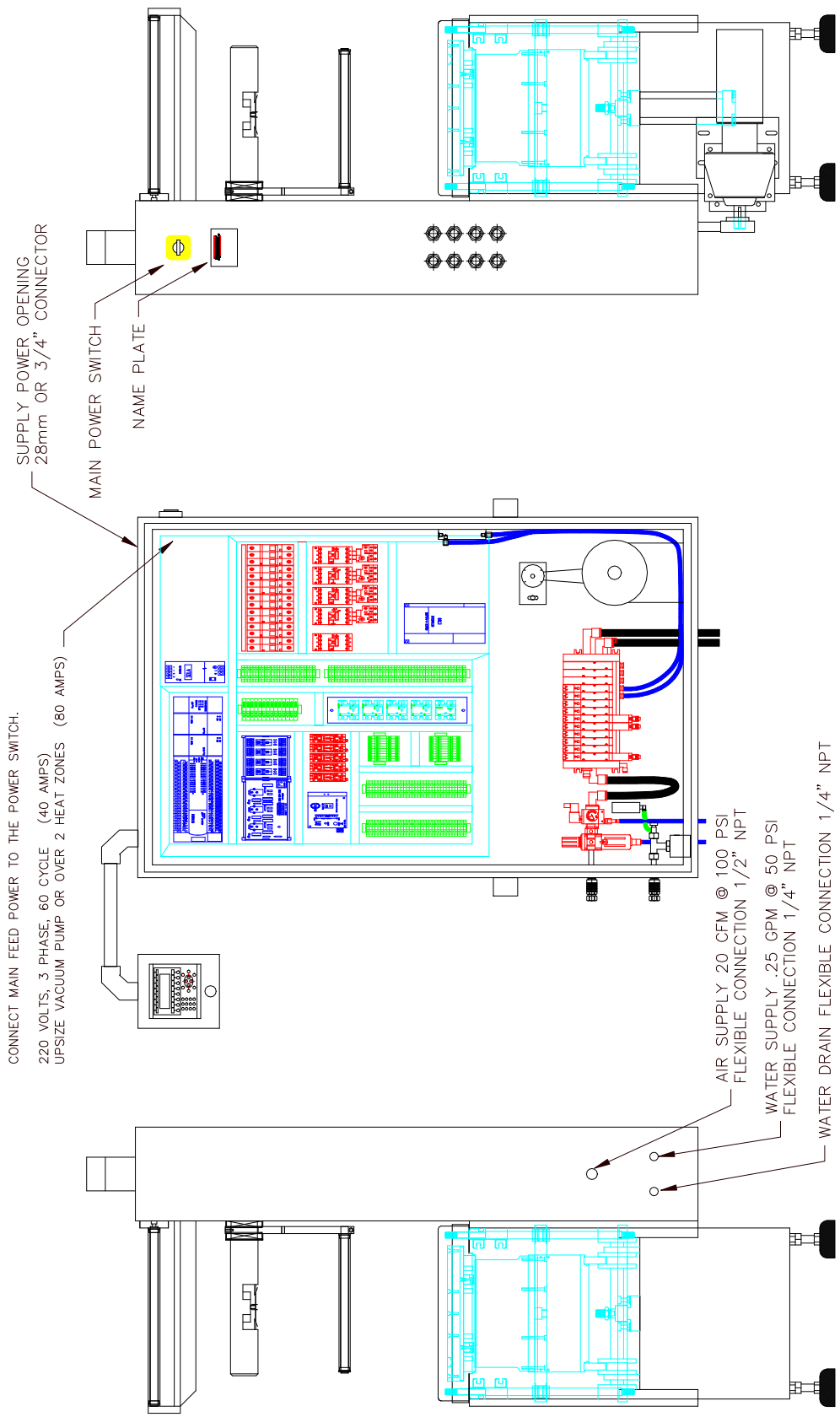
Once the RI-200 is setting on the floor, adjust the legs to the desired height. Now the machine is ready to be leveled.

Leveling the machine is a critical step. If the RI-200 is not level, the machine will experience vacuum leaks among other problems. Leveling the machine is done at the forming and sealing dies. Place a level on the forming die. Level the machine in both directions, with advance and across the machine. After the forming end is leveled, the sealing end must also be leveled. Repeat the same procedure on the sealing end as the forming end. After both ends are leveled, re-check both ends several times to ensure levelness.

The next step in the installation process is to anchor the machine to the floor. If the machine is not anchored to the floor the RI-200 will walk and become unlevel. Rollstock, Inc. suggests that "L" brackets are placed on the outside corner of each leg and anchored to the floor.

The last step in the installation process is to connect the utilities to the RI-200. The RI-200 needs compressed air, water, and power to run. The list of requirements for the utilities is listed earlier in this section. The requirements must be met or exceeded to avoid problems.

On the next page is a drawing indicating where to connect the utilities.



Now remove all the banding and packing materials form the RI-200. Remove all the parts that were placed in the belly of the machine for transportation. Make sure everything is free.

The last thing to do is check rotation of the rotary knives, vacuum pump, and the trim canister blower motors. To check this, manually activate the rotary knife contactor C3. The rotary knives should rotate clockwise from the operator side of the machine. If the rotary knives do not rotate the same direction reverse two of the incoming phases. Once the rotary knife rotation is set the vacuum pump and trim canister blower motors should rotate the correct direction but should be double-checked. Vacuum pump motor contactor is C1 and trim canister blower motor is C2. The phasing of the frequency drive does not matter. The advance motor will always advance the correct direction.

Please read the machine operation section of this manual before trying to run the machine.

INSTALLATION IS COMPLETE.

INSTALLATION CHECK LIST

Model:	_____
Machine #:	_____
Customer:	_____
Date installed:	_____
Service technician:	_____
Number of days:	_____

General

Initial

1.	RI-200 is level	1.	
2.	RI-200 is anchored to the floor	2.	
3.	Adequate air supply (1/2" supply)	3.	
4.	Adequate power supply	4.	
5.	Adequate water supply / flow	5.	

Safety switches

Initial

1.	Forming in safety guard	1.	
2.	Forming out safety guard	2.	
3.	Sealing in safety guard	3.	
4.	Sealing out safety guard	4.	
5.	Crosscut safety guard	5.	
6.	Rotary knife safety guard	6.	
7.	Discharge safety guard	7.	
8.	Cabinet safety	8.	
9.	Water safety	9.	
10.	Air pressure safety	Set PSI:	Alarm PSI:

Motor rotation**Initial**

1.	Rotary knife motor	1.
2.	Trim canister blower motor	2.
3.	Vacuum pump motor	3.

Machine**Initial**

1.	Film unwind and tracking – lower web	1.
2.	Film unwind and tracking – upper web	2.
3.	Cutting system	3.
4.	Trim removal	4.
7.	Code dating	7.
8.	Film registration	8.
9.	Short stroke	9.

Customer**Initial**

1.	Training	1.
2.	20 user settable programs set	2.
3.	User program settings form filled out	3.
4.	Global program setting form filled out	4.

Tooling**Initial**

	Die		Sealing frame		Bleed down
	Web width	Cut off	Track	Row	
1.					1.
2.					2.
3.					3.
4.					4.
5.					5.
6.					6.
7.					7.
8.					8.

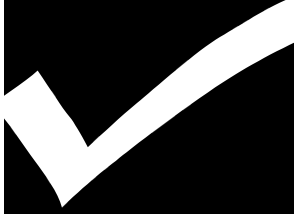
Final check off

Initial

1. Spare parts tool box	1.
2. RI-200 manual	2.

Installation has been completed and I am satisfied with the machine.

Sign off: _____ **Title:** _____ **Date:** _____



TECHNICAL TRAINING

Date: _____

Location: _____

Trained by: _____

I have attended the RI-200 training course and understand all the topics covered.

Topics covered:

1. Basic machine operation
2. Removal and inspection of tooling
3. Sealing head
4. Forming head
5. Cutting system
6. Film registration
7. Code dating
8. Loader
9. Utility cabinet
10. User interface
11. Periodic maintenance

Attended by

Title

TRAINING OUTLINE

1. Basic machine operation

- A. Heating of forming film
- B. Forming
- C. Evacuation
- D. Gas
- E. Sealing
- F. Cutting
- G. Connection of vacuum pump
- H. Trim removal
- I. Film routing

2. Removal and inspection of tooling

- A. Utility O-ring
- B. Seal gasket inspection and replacement
- C. 3.2mm cord in forming and sealing buckets
- D. Inspection of hosing
- E. Inspection of forming insert
- F. Correct filler plates in the seal and form buckets

3. Seal head

- A. Removal of the seal bar
- B. Inspection of seal bar and Teflon coating
- C. Replacement of heaters and thermocouple
- D. Removal of pusher plate
- E. Inspection of springs and top hats
- F. Inspection of seal bladders
- G. Replacement of seal bladders
- H. Internal die plug

4. Forming head

- A. Positioning of forming station
- B. Application of Teflon tape
- C. Adjustment of heat bar

5. Cutting system

- A. Program settings

- B. Location adjustment
- C. Blade change

6. Film registration

- A. Program settings
- B. Adjusting the registration photo-eye
- C. Registering film

7. Code dating

- A. Installation of type & ink
- B. Position of head
- C. Program settings
- D. Adjustments (heads, air pressure)

8. Loader

- A. Controls
- B. Operation

9. Utility cabinet

- A. PLC inputs and outputs
- B. Replacement of fuses
- C. SSR controlled heat zones
- D. Tracing signal from PLC to valve
- E. Manual activation of air valve
- F. Replacement of air valve
- G. Setting of air pressure
- H. Drive system
- I. Inspection of sealing check valve

10. MTA controller

- A. RUN [Production] screen
- B. SETUP screens

- C. Maintenance screens
- D. 20 user settable programs (Load/ Save Program)
- E. Vacuum diagnostic function
- F. Clean-up program

11. Periodic maintenance

- A. Review section 5 maintenance

MACHINE OPERATION

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GOT1000 USER INTERFACE



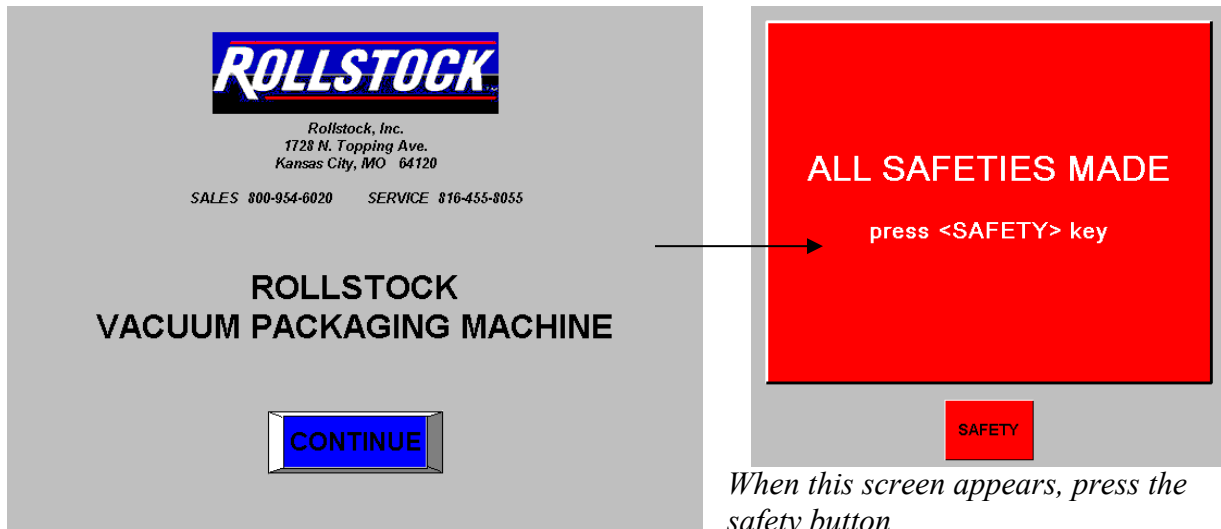
The Rollstock RI200 & RA200 with program 5.01 or higher utilizes the Mitsubishi Got1000 series touch screen. The user interface is accompanied by hard wire start/stop and e-stop buttons; for safety, reliability and convenience.

Initial Start-Up

Quick start is a step by step procedure designed to allow the customer a simple way of getting the RI-200 running as quick as possible. This section will get the machine running but the entire machine operation section of the manual should be read to better understand the machine and how it works. The machine is equipped with stored programs and other features that make the machine easier to use and maintain if they are used.

Turn on the main power switch. If the user interface doesn't light up check the emergency stop switch.

The user interface will switch through several screens as it boots up. The first screen that will be displayed after boot up is the Rollstock, Inc.® company information screen. If you have any questions call the service number to talk to a service technician. Press the Continue button



The second part of the start-up sequence is all the safeties on the machine become active except the water safety. The water safety is active when the heaters are turned on. If a safety is not made, a screen will appear on the GOT to show which safety is not made. A list of all safeties on the machine is in the section safety & alarm screens. When the safety is made the screen will automatically reset and show another safety that is not made or will show the all safeties made screen.

There are two safeties that have to be acknowledged after they are made, low air pressure and low water flow. These two safeties will be in alarm until the words “press the safety key” appear underneath the alarm; when the words appear below the alarm press the safety key to reset the alarm. Once all safeties are made, the all safeties made screen appears.

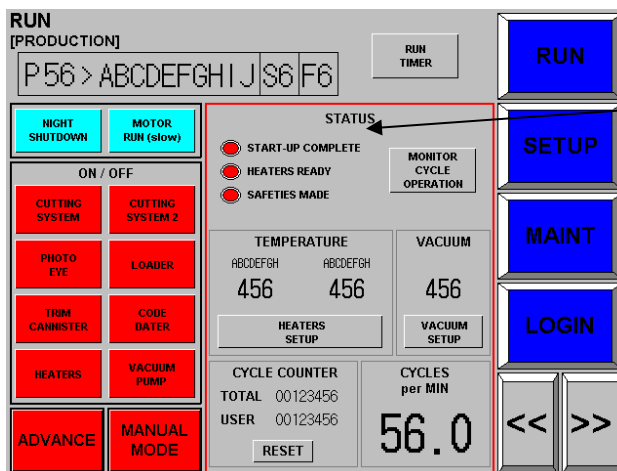
The third stage of the start-up sequence is advance incomplete. If the advance was incomplete when the machine was turned off, one of four different screens will appear on the E300 to indicate why the advance was incomplete. The screen pictured below is one of four advance incomplete screens that can appear. The difference in the four screens is the reason why the advance was incomplete and that information is on the top of the display. If the advance was complete before the machine was turned off this part of the start up procedure is skipped.



Reasons why advance incomplete
Safety, E-stop, timeout, f.drive

When an advance incomplete screen appears, press the advance button. The chains will move and the number in the box at the bottom of the screen will count down. This part of the advance is timed. If the number is large enough the advance key might need to be pressed several times. When the number reached 0 the screen will automatically clear.

The fourth and final stage of the start-up procedure is the **on/off menu**. On The Run screen all equipment is turned on and off.



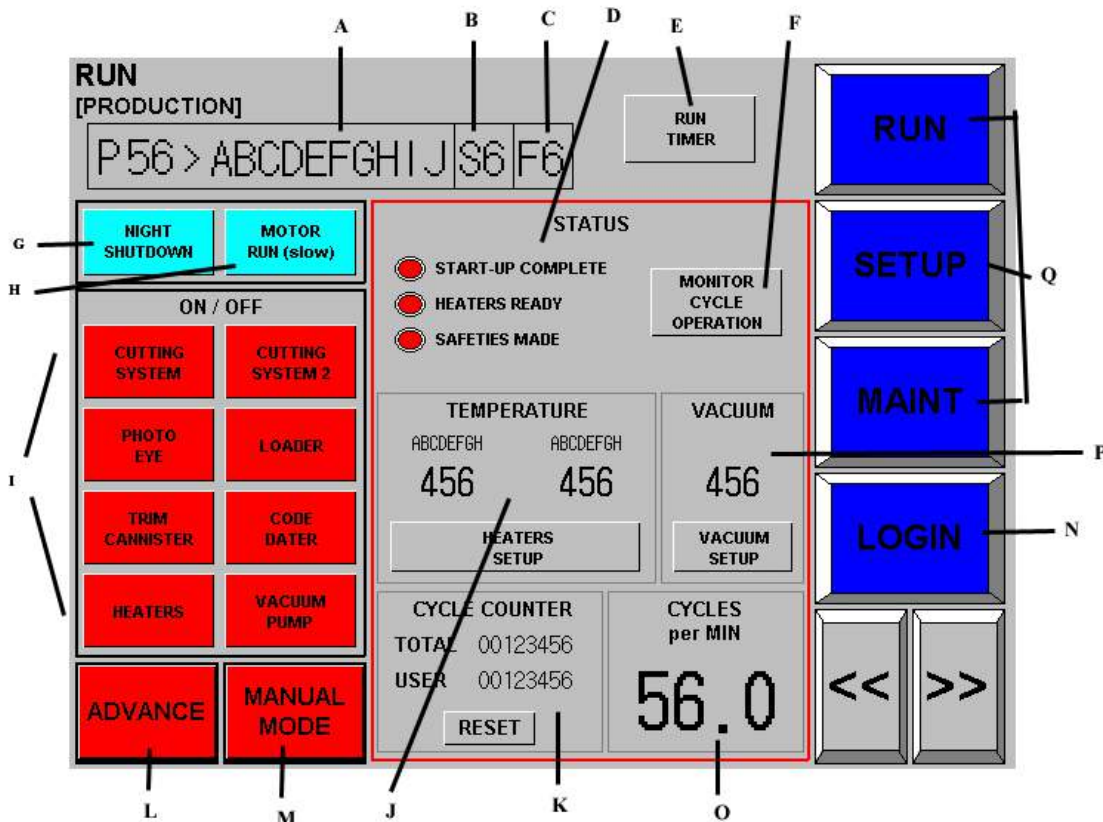
For the machine to be capable of cycling the heaters, vacuum pump and trim canister must be turned on. The start-up complete indicator will be green when these three items are on

At this point the start-up procedure is complete. The Machine is ready to run.

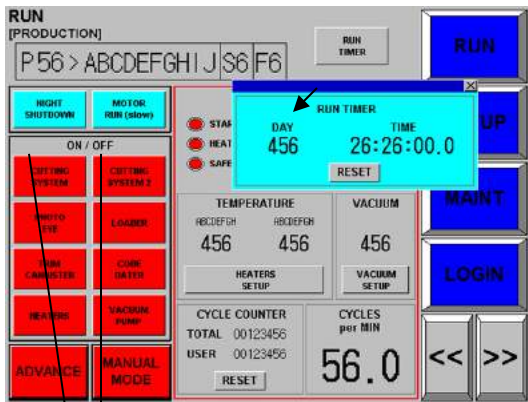
2.1 RUN [PRODUCTION] SCREEN

The Production screen serves as the base from which everything is controlled.

- A. Program: The current loaded stored program
- B. Seal Process:
- C. Forming Process:
- D. System Status: Monitors start up requirements
- E. Run Timer: opens a window that monitors the actual production time
- F. Monitor Cycle Operation: opens a window that shows cycle functions
- G. Night shut Down: Closes dies and engages cleaning heaters
- H. Motor run slow: The chains will move continuous at a slow speed.
- I. On/Off : Turns on or motors and accessories
- J. Temperature: Monitor heaters' temperature
- K. Cycle Counter: count machine cycles
- L. Advance: Advances chains one index
- M. Manual/Auto: Manual mode does one cycle; auto mode continuous cycles
- N. Login: allows users to login to password protected areas
- O. Cycles per Minute: Monitors the cycle rate of the machine.
- P. Vacuum: Monitors vacuum level of chamber
- Q. Navigation Buttons: Allows access to settings and Maintenance screens



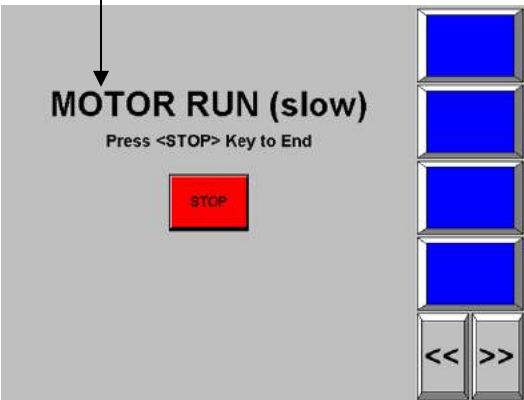
RUN [PRODUCTION] FUNCTIONS



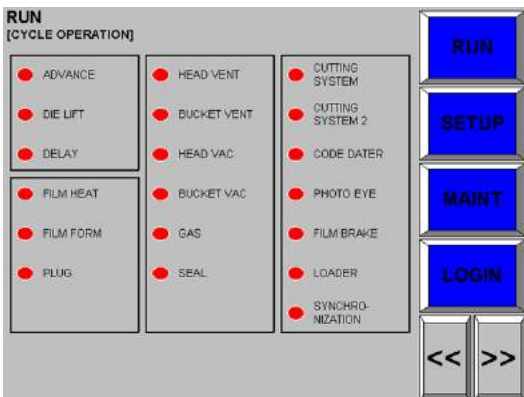
Run Timer – Monitors the actual time the machine has been operating. The timer can be reset by pressing the reset on the screen. Touch the X on the top Right to close the window.



Night Shut Down- Turns off all functions, closes dies, and energizes cleaning heaters. The machine will stay in this state until the “Stop” button is pressed. Often used when cleaning/hosing the area. The dies being closed, prevents moisture from entering the vacuum system.



Motor Run Slow- Engages the drive in continuous slow speed. Press “Stop” to disengage. Used to start film, to clear out film, and oil gripper chins.



Cycle Operation – Views all processes in real time. Touch the run tab to return to the production screen

Night Shut Down

This feature is designed to protect the RI-200 during plant cleaning. When the feature is entered the dies will close and two fifty-watt heaters, one in the form heat bar and one in the seal heat bar, will be powered. Since only a fifty-watt heater is used in each heat bar there is no safety risk. The heaters will be powered the entire time the machine is in the night shut down mode and both dies will reach a temperature of between 40° and 50° Celsius. By closing the dies and providing enough heat to prevent the moisture that may enter the dies from condensation this will protect the vacuum system from being contaminated with water.

To place the machine in night shut down mode press the button labeled Night Shut Down. When the night shut down mode is entered all equipment on the RI-200 will automatically be turned off and if logged in will automatically logout. Ten minutes after entering the night shut down mode the fifty-watt cleaning heat in each heat bar will be powered for the cleaning program to operate correctly the power and air supply must be left on. Once in the night shut down mode, if a safety is broke the alarm screen will be displayed but the dies will remain closed.

To exit the night shut down mode press the stop key. When the stop key is pressed the dies will drop, will return to the RUN screen.

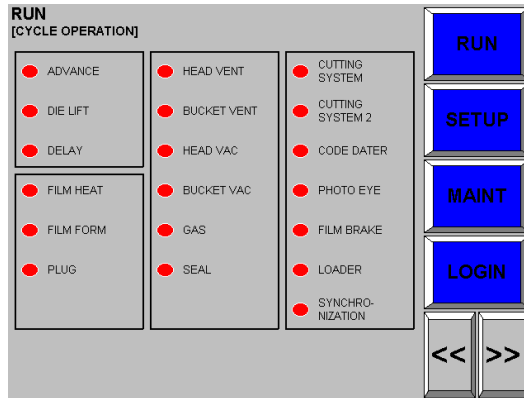
The main power switch and the air supply to the RI-200 must remain on when using the cleaning program.

If the RI-200 is put in the night shut down function every night the power to the machine never gets shut off. To avoid possible PLC problems the RI-200 should be shut off at least once a week for one minute. The PLC is like any computer, they need to be reset occasionally.

Motor Run Slow

This feature of the RI-200 is designed to aid in the maintenance of the machine. With this feature, oiling and cleaning the chains is made easy and takes only one person.

Cycle Operation



In the cycle operation screen there are no variables that can be changed. This screen is only for visual indication of what the machine is doing. The Red circles will change to green in front of the action that is currently happening.

The screen is broke into five different sections; movement-delay, forming station, sealing station and accessory equipment.

Movement-delay

- Advance- Active while the chains are moving
- Die lift- Active while the dies are moving up and while they are up
- Delay- Active while delay timer times out

Forming station

- Film heat- Active while film is heating
- Film form- Active while film is forming
- Plug- Active while plugs are moving down and is down

Sealing station

- Head vent- Active while head vent is closed
- Bucket vent- Active while bucket vent is closed
- Head vac- Active while head vacuum valve is open
- Bucket vac- Active while bucket vacuum valve is open
- Gas- Active while gas valve is open
- Seal- Active while seal bar is moving down and is down

Accessory equipment

- Cut. Sys. 1- Active when guillotine head, hole punch head or flying knife is fired
- Cut. Aux- Active when guillotine or hole punch support is moving up and up
- Code dater- Active when code dater valve is fired
- Photo eye- Active when photo-eye for film registration signal is present
- Film brake- Active when film brake valve is fired
- Loader- Active when loader relay is fired
- Synchronization- Active when return signal is present

2.2 SETUP [PROGRAM]

SETUP [PROGRAM]		LOAD PROGRAM	SAVE PROGRAM	RUN	
ADVANCE DISTANCE SETPOINT <input type="text" value="400.0"/> mm ACTUAL 400.0 mm		PROCESS TYPE FORMING <input type="text" value="1"/> SEALING <input type="text" value="1"/>		SETUP	
MACHINE SETTINGS <input type="text" value="LIQUID SPEED"/> <input type="text" value="END w/DIES OPEN"/>				MAINT	
<input type="text" value="FULL STROKE"/> <input type="text" value="CYCLE ROTARY KNIFES"/>				LOGIN	
OTHER SETTINGS PHOTO EYE ENABLE (mm) <input type="text" value="10.0"/>		<input type="text" value="PROGRAM START (mm)"/> <input type="text" value="1.0"/>		<input type="text" value="PULSE VACUUM OFF"/>	
				<<	>>

ADVANCE DISTANCE: The first setting is the *set point*. This is the distance the chains moves each advance or index. The setting can be set in tenths of a millimeter. The range of this variable is 130 to 999 mm. To change the advance distance: login then touch the box to the right of the text set point. A number pad window will appear touch the desired numbers and press enter. If the value enter is outside the range, a box will appear showing the minimum and maximum values, press OK to leave the warning screen.

The *actual* is not a settable variable. The actual displays the distance the chains actually moved. This value is set to 0 at the start of an advance and counts up. It is common for the actual and the set point number to vary slightly. Over several advances, the machine will have an accuracy of at least $\pm .2$ mm.

MACHINE SETTINGS: The next settable variable is the speed of advance. The RI200 has four different speeds to choose from; liquid, slow, normal, and high. The RI200 uses a frequency drive so the speeds are in reference to the speed of the motor shaft in hertz or revolutions per second. The frequency drive is equipped with a dynamic Brake so the chains stop quickly and makes the advance ore accurate that a synchronous motor with a mechanical brake.

- Liquid speed -** The motor has two acceleration speeds and two deceleration speeds. For the first 70mm of advance the motor accelerates up to 8 hertz, at 70mm into advance the motor ramps up to 15 hertz. At 70mm before the end of advance the motor decelerates to 8 hertz, and 40mm before the end of advance decelerates to 3 hertz, and then applies the dynamic brake and stops.
- Slow speed -** The motor has one acceleration speed and one deceleration speed. The motor accelerates to 15 hertz. At 40mm before the end of advance the motor decelerates to 3 hertz, and then applies the dynamic brake and stops.
- Normal speed -** The motor has one acceleration speed and one deceleration speed. The motor accelerates to 40 hertz. At 60mm before the end of advance the motor will decelerate to 3 hertz, and then applies the dynamic brake and stops.
- High speed -** The motor has one acceleration speed and one deceleration speed. On high speed the motor accelerates quicker than any other speed. The motor accelerates to 55 hertz. At 90mm before the end of advance the motor will decelerate to 3 hertz, then applies the dynamic brake and stops.

To change the speed of advance, touch the box with the advance speed. Each touch will change the advance speed from: liquid > slow > normal > high > liquid.

The third setting on the advance screen is the stroke. The RI200 can be full or short stroked. When this setting is changed to short stroke, the machine will only drop the dies until it activates the center proximity switch on the die lift cylinder. The center proximity switch is adjustable so the distance the dies open can be changed. The RI200 will only short stroke when in automatic mode of operation and is cycling. If the machine is stopped or a safety is broke, the dies will drop to the bottom. In full stroke the dies will always drop to the bottom. By short stroking the RI200, the cycles per minute will increase.

To change the stroke press the box with stroke it will switch between full stroke and short stroke.

The fourth setting is end with. This setting has two possible settings: END w/DIES OPEN or END W/ ADVANCE. With Dies open selected when the RI200 is stopped the dies will drop and the RI200 will stop. When this setting is switched to advance and the RI200 is stopped, the dies will open and the chains will move one index.

To change the end with press the box with the end w/ text it will switch between END w/ ADVANCE and END w/ DIES OPEN.

The next setting is the Rotary knife. There are two possible settings: cont -run (continuous run) or cycle. When the rotary knives are set to constant run the minute the start button is pressed the rotary knives will start spinning and keep spinning until the machine is stopped. When the setting is changed to cycle, the rotary knives will turn on with advance and turn off with advance. To cut the film the rotary knives has to be spinning faster than the chain is moving.

When the rotary knives are cycling if there is any drag on the blades or the blades get dull they have a hard time getting up to speed. By setting the rotary knives to constant run this problem is eliminated.

OTHER SETTINGS

The photo eye distance is only used when the photo eye is turned on and printed film is used. The photo eye looks for a black dot on the film. When a black dot is spotted the film brake valve is energized. The photo-eye distance is the point before the end of advance when the photo-eye becomes active. If a dot is spotted before the photo-eye is active it will be ignored. The distance is usually set to 10mm. This setting prevents the film brake from activating at the wrong time.

The program start distance is used to increase the speed or cycles of the machine. When in automatic and the machine is cycling, program start will start closing the dies before the advance is complete. The distance entered is the distance before the end of advance that the dies will start to close. Be careful, if the dies are closed before advance is complete this will cause problems. In full stroke a value of 15mm or less is sufficient. In short stroke this value should not be larger than 5mm.

Pulse Vacuum: touch the button to turn on or off Pulse Vacuum for seal process 1 and 4. The pulse vacuum times are in the SETUP [TIMERS 2] screen.

FORMING & SEALING PROCESS

PROCESS TYPE: The RI200 has four forming and five sealing programs. Each program is different in the respect of which valves are fired and in what order the valves are fired. The programs are set up for different kinds of dies.

FORMING PROGRAMS

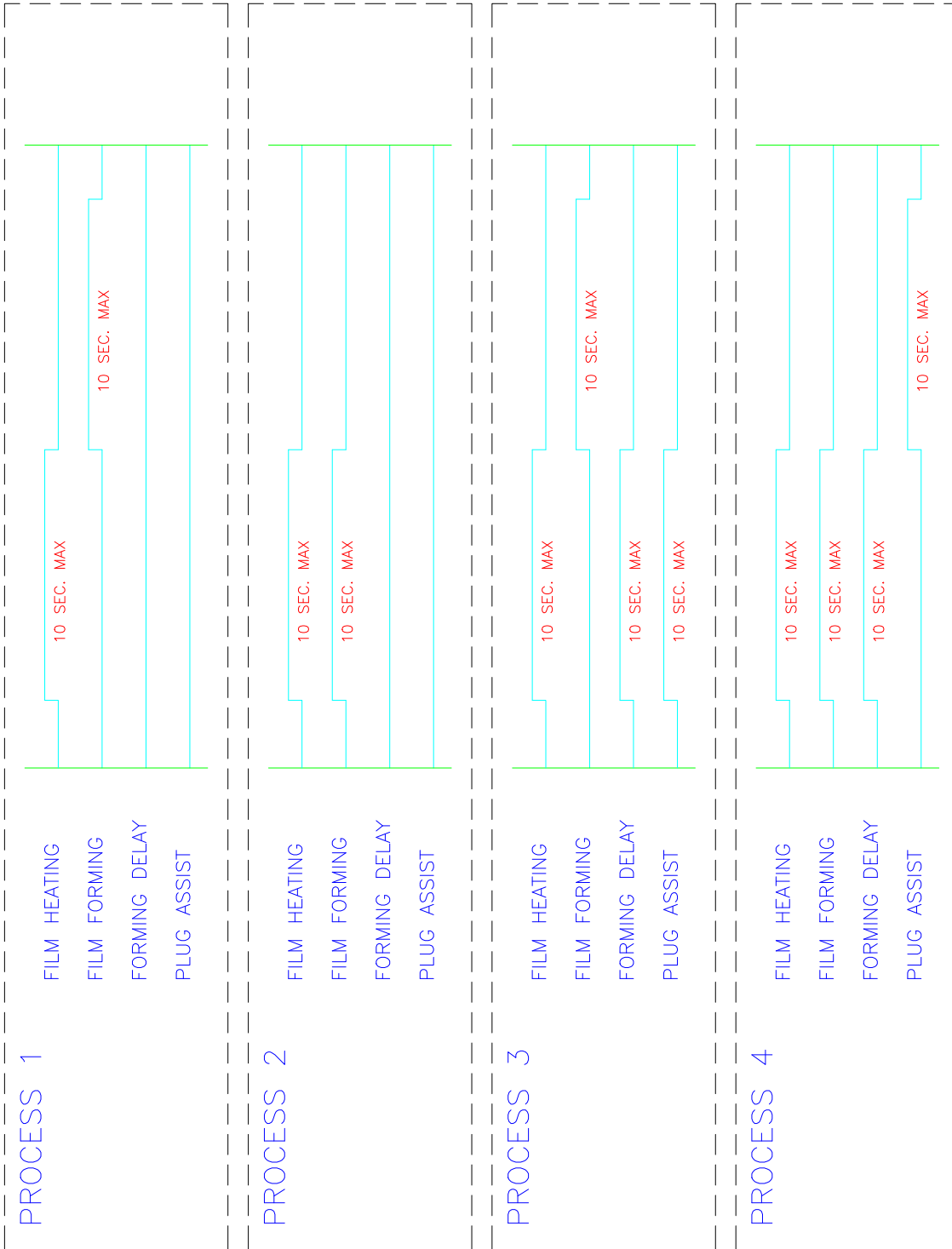
- Program 1-** Forming program 1 is for a standard forming die. Forming consists of film heating then film forming.
- Program 2-** Forming program 2 is for a forming die that has pre-heat. Film heating and film forming start at the same time.
- Program 3-** Forming program 3 is for a forming die that uses plug assist and pre-heat. Film heating and plug assist occur at the same then forming delay then film forming.
- Program 4-** Forming program 4 is for a forming die that uses plug assist and pre-heat. Film heating and film forming occurs at the same time then forming delay then plug assist.

SEALING PROGRAMS

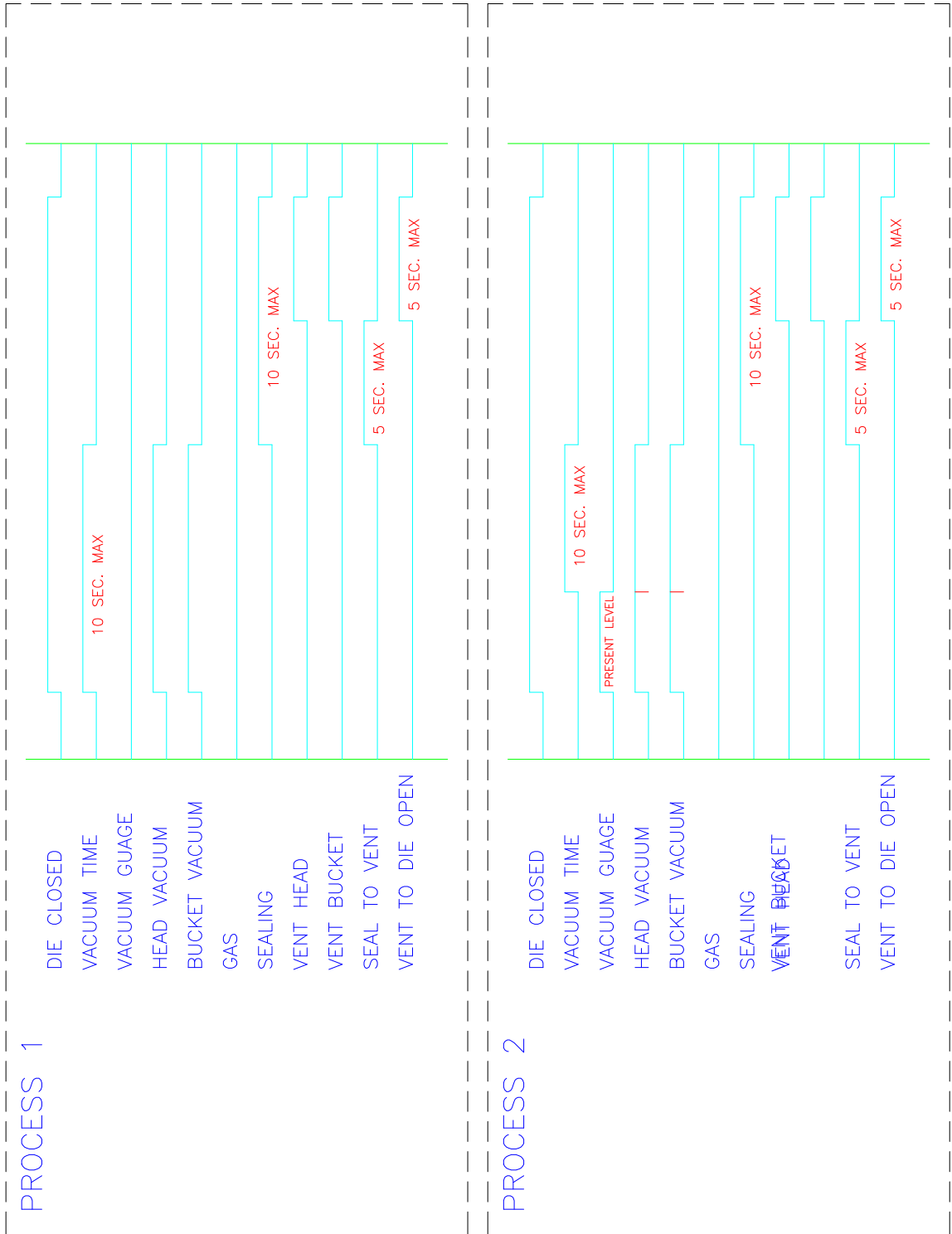
- Program 1-** Sealing program 1 is for standard package evacuation. Evacuation is timed and then package is sealed. Pulse vacuum can be enabled on this process allowing the vacuum to be rapidly turned on and off.
- Program 2-** Sealing program 2 is for standard package evacuation but uses a vacuum gauge so vacuum must reach a preset level then vacuum times out and package is sealed.
- Program 3-** Sealing program 3 is similar to sealing program 2 except when vacuum level is reached bucket vacuum is shut off and top(head) vacuum then uses vacuum timer before it is shut off. After top (head) vacuum is shut off the package is sealed.
- Program 4-** Sealing program 4 is strictly timers but after the vacuum timer times out and vacuum is shut off then the package is gassed for the length of the gas timer then sealed. Pulse vacuum can be enabled on this process allowing the vacuum to be rapidly turned on and off.
- Program 5-** Sealing program 5 is similar to sealing program 4 but both the vacuum and gas use the vacuum gauge to reach preset levels. Vacuum is applied until the preset level is reached and the vacuum timer times out. Then gas is applied until the preset level is reached and the timer times out. The package is then sealed.

The next four pages show a graphical representation of the forming and sealing programs and the valves and timers used

FORMING PROCESSES



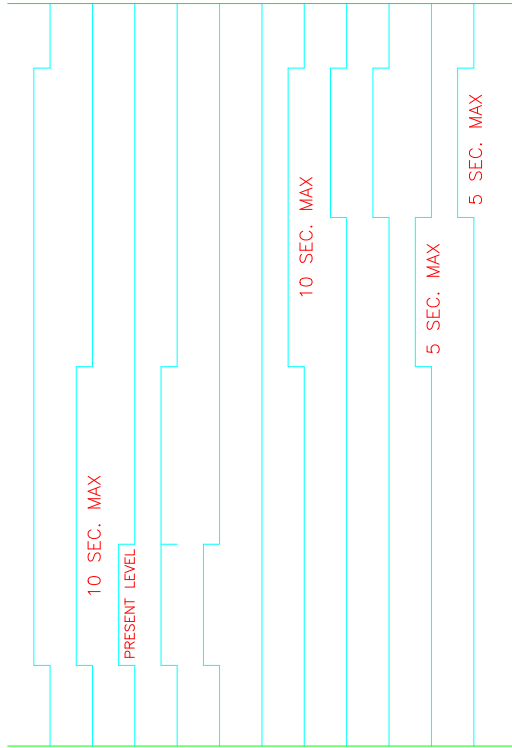
SEALING PROCESSES



SEALING PROCESSES

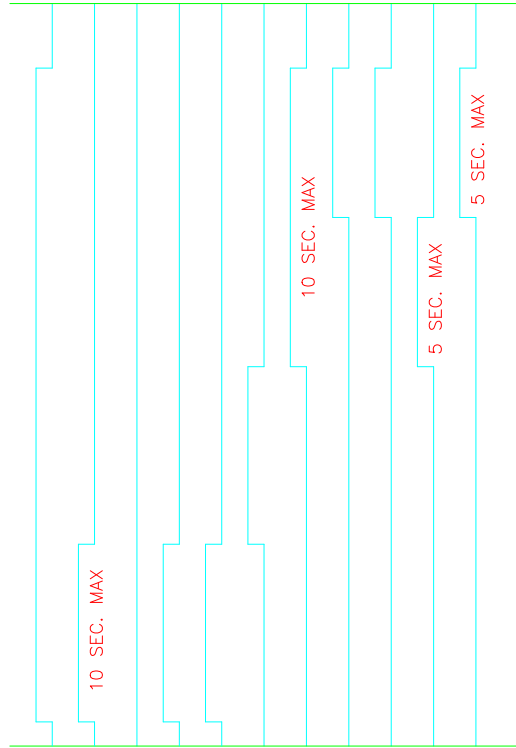
PROCESS 3

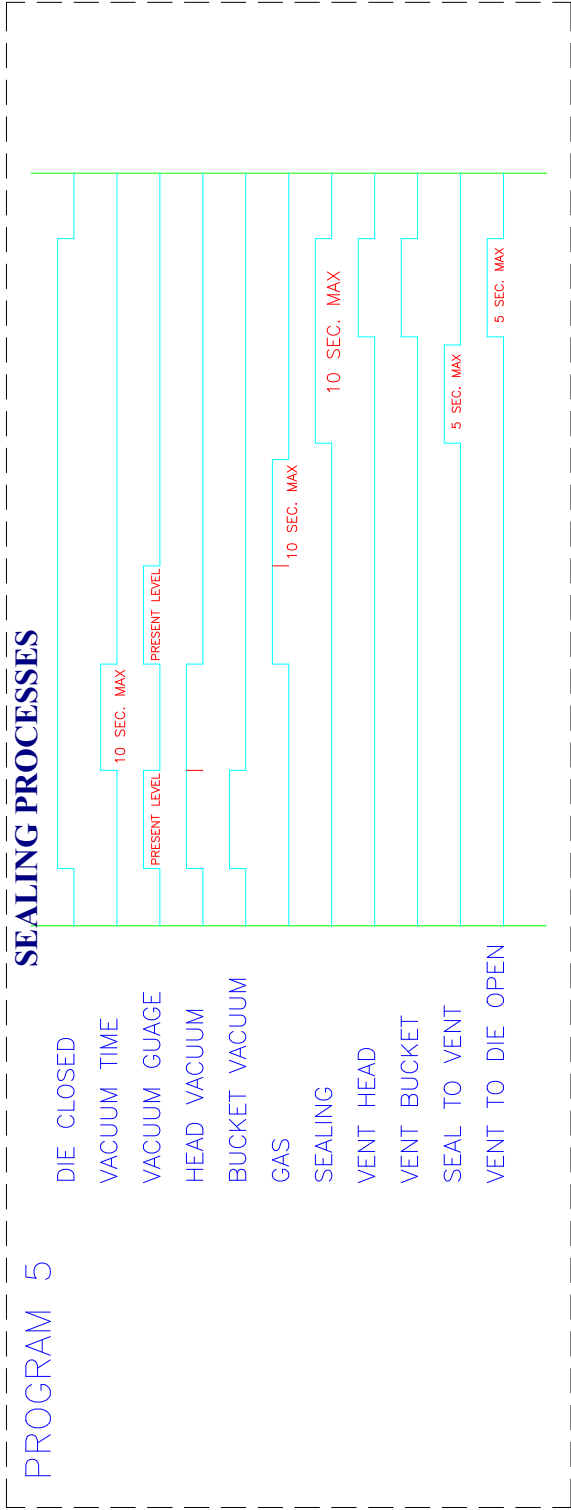
DIE CLOSED
 VACUUM TIME
 VACUUM GAUGE
 HEAD VACUUM
 BUCKET VACUUM
 GAS
 SEALING
 VENT HEAD
 VENT BUCKET
 SEAL TO VENT
 VENT TO DIE OPEN



PROCESS 4

DIE CLOSED
 VACUUM TIME
 VACUUM GAUGE
 HEAD VACUUM
 BUCKET VACUUM
 GAS
 SEALING
 VENT HEAD
 VENT BUCKET
 SEAL TO VENT
 VENT TO DIE OPEN





USER STORED PROGRAMS

Load Program / Save Program

The RI200 is set up with twenty complete and independent user stored programs. The purpose of the stored programs is to make the machine faster and easier to change over (run multiple dies and/or inserts and dividers). The user stored programs hold all the variables that might need to be changed between the die sets, inserts and dividers. Using a different stored program for each size pocket will enable the stored program to be optimized to run that package. So when changing the size of pocket, the program is changed and the machine is optimized to run that product without having to manually change individual settings.

The two commands that control the user stored programs, Save Program and Load Program are located at the top of each page of the Setup menu. The first step in setting up the stored programs is to optimize each program for speed; each different size of pocket for each size die should have its own program. Also, if the same size pocket uses a different forming or sealing process it should also have its own user stored program. Refer to the manual section [forming & sealing processes](#).

The name of the saved program should be something that is easy to remember for the die configuration. If the wrong program is loader for that die configuration the machine will probably not perform as expected.

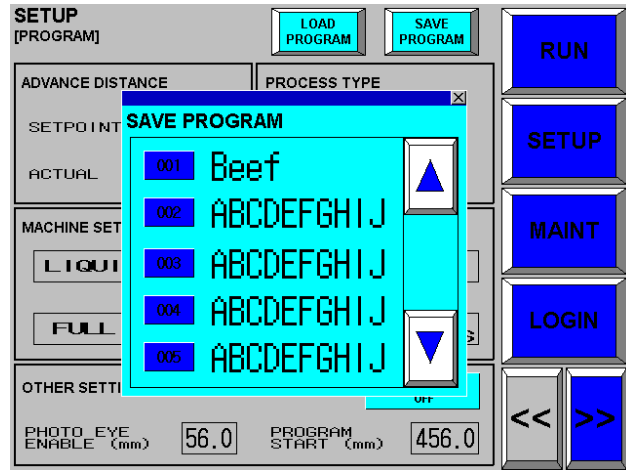
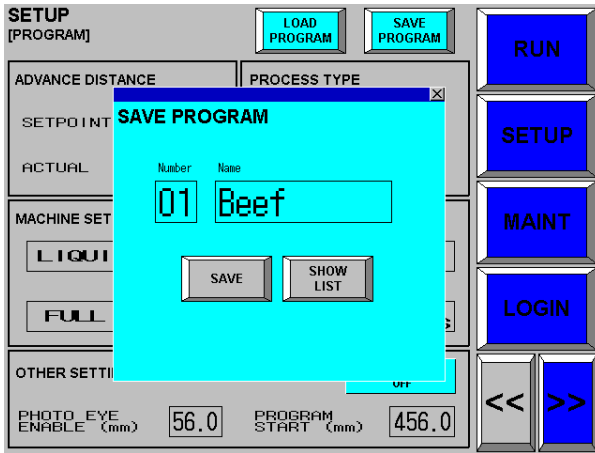
The machine can be physically set up to run each package size. Set the machine up and change the program to the one that refers to the die configuration on the machine. At this point the machine can be started. As timer settings, heater settings, advance distance, and advance speed these settings will automatically be loaded form the saved program.

The last step in setting up the user stored programs is to fill out the forms in the [setting forms](#) section of this manual. If these forms are filled out and setting get changed or something happens to the PLC the original settings can be re-entered through the Save program screen to quickly put the machine back to where it was.

When the machine was installed the service technician should have filled out the setting forms for you. It is important to update these forms as new programs are added. Rollstock, Inc. keeps a copy of the original setting forms from when the machine was installed.

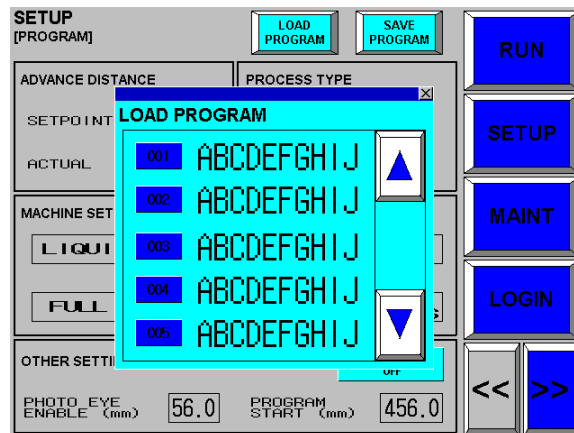
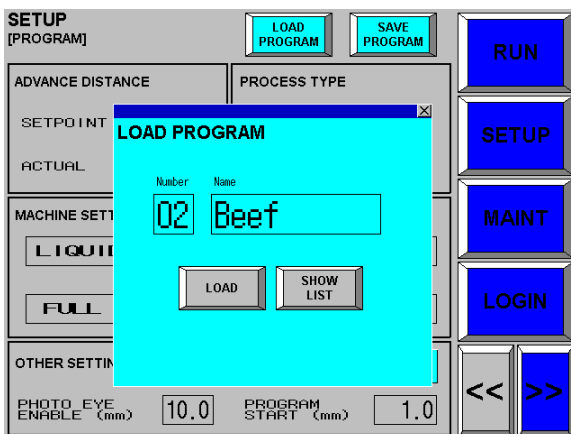
Save Program/ Load Program

Once the machine has the optimize timers and setting entered. To save the program press the Save program button at the top of the Setup screens. Touch the Name box to enter the Name of the process that is easy to remember. By pressing the Show List this will open the list of all programs to be easily viewed.



When the Save button is press it will open a prompt will ask if you want to overwrite a program.

To Load a program press the Load Program button. This will open the load program window then select the program number or press the show list to find the desired program.



Timers

Timers 1

SETUP [TIMERS 1]		LOAD PROGRAM	SAVE PROGRAM	RUN	
FILM HEATING (sec)	1.3	DELAY (sec)	2.0	RUN	
FILM FORMING (sec)	1.2	GAS FLUSH (sec)	2.1	SETUP	
EVACUATION (sec)	1.0	SEALING (sec)	2.2	MAINT	
SEAL to VENT HEAD (sec)	0.8	FORMING DELAY (sec)	1.5	LOGIN	
SEAL to VENT BUCKET (sec)	1.0	PLUG ASSIST (sec)	3.0	<< >>	
VENT to DIE OPEN (sec)	1.2				

Film Heating-Time the bottom film is heated before forming.

Film Forming- Time the bottom film is being formed.

Evacuation- Time vacuum is applied to head and bucket

Seal to Vent Head- Time the seal bar is engages, until the head vent valve opens.

Seal to Vent Bucket- Time the seal bar is engaged, until the Bucket Vent valve opens

Vent to Die Open- Time from vent open to die open

Delay- Adds extra time at the end of the cycle

Gas Flush- Time gas is injected (if equipped)

Sealing- Time the seal bar is pressed down

Forming Delay- Offsets the start of the forming operation

Plug Assist- Time plug is activated (if equipped)

Timers 2

SETUP [TIMERS 2]		LOAD PROGRAM	SAVE PROGRAM	RUN	
PULSE VACUUM ON (sec)	1.0	PULSE VACUUM OFF (sec)	1.1	SETUP	
CUTTING DELAY (sec)	0.5	DATING DELAY (sec)	1.0	MAINT	
CUTTING TIME (sec)	1.0	DATING TIME (sec)	1.00	LOGIN	
INDEXES/CUT	1	SCAN TIME (sec)	10.0	<<	>>

Pulse Vacuum On- the length of the on pulse if pulse vacuum is active.

Pulse Vacuum Off- the length of time the vacuum is off if pulse vacuum is active.

Cutting Delay- Delays the cutting blade.

Cutting Time- Total time cutting system will work per cycle.

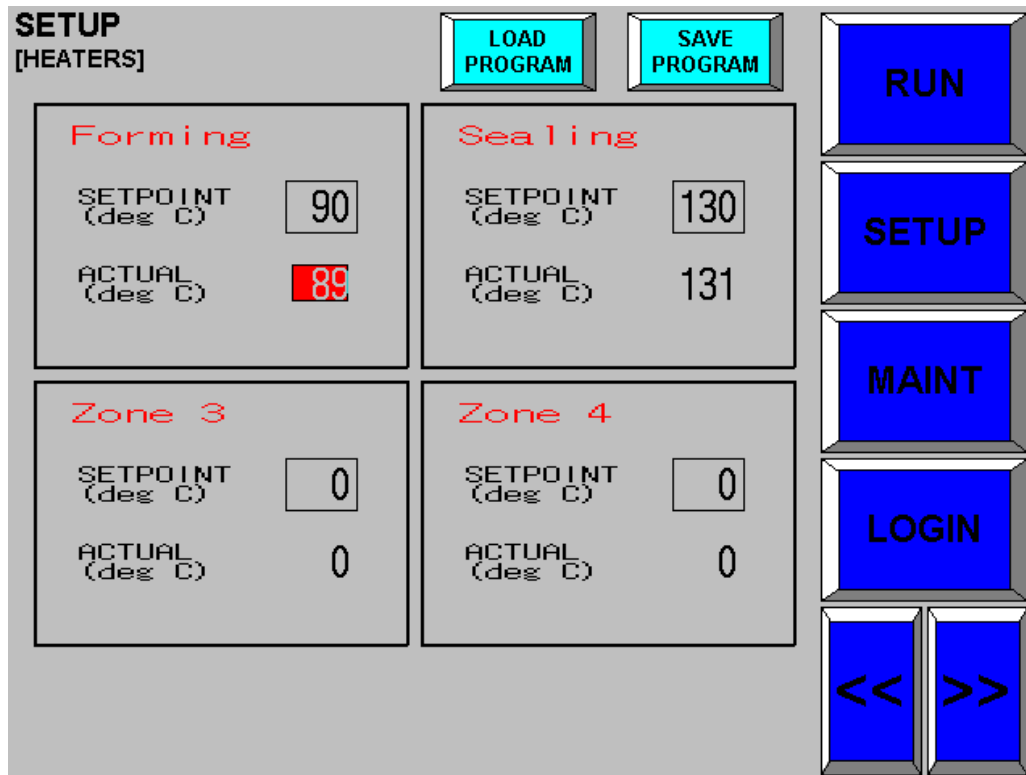
Indexes/Cut- How many times cutting systems will work per cycle

Dating Delay- offsets time of code dater start (if equipped)

Dating Time- Total time code dater will run per cycle

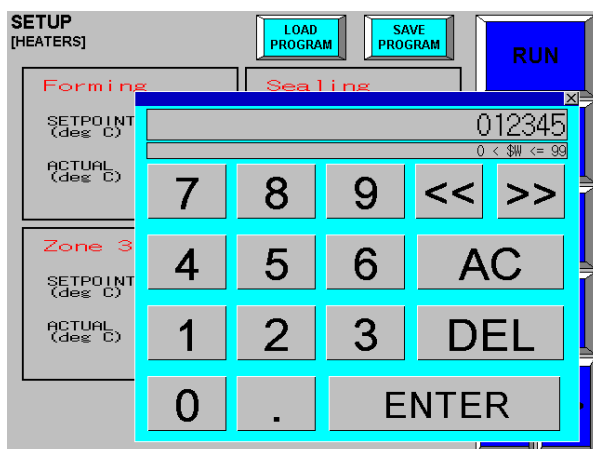
Scan Time- Setting for error detection

Heaters



This screen shows the set point, actual temperature, name of heat zone and if the heat zone is being called for. When the zone is actually being called for, the background behind the actual temp will turn red. The set point for each heat zone is the only values that can be changed on this screen and you must be logged in.

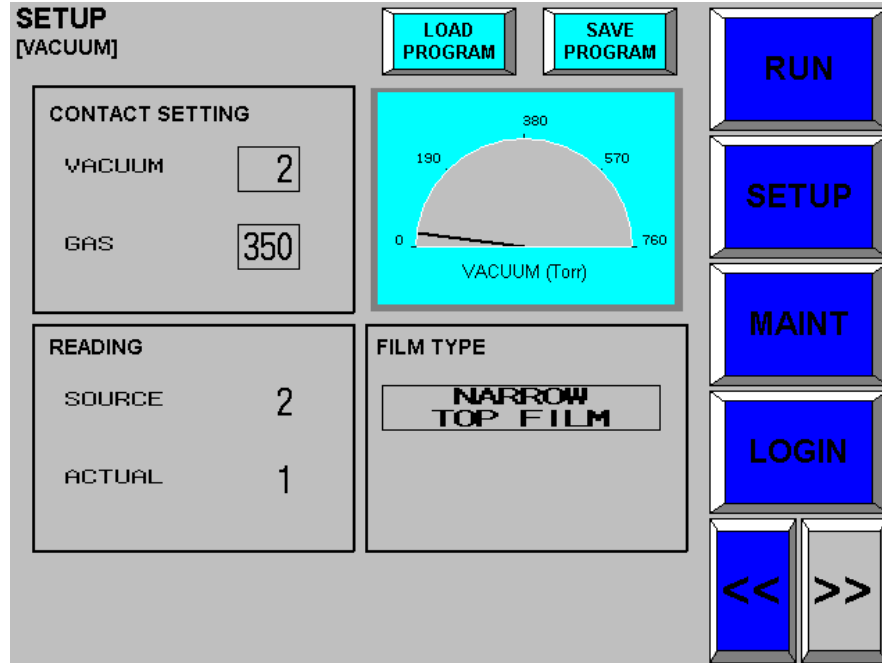
To change the set point touch the set point box and a number pad will appear then type the desired temp. Press the X to close the window. The new value entered must be between 0° and 200° Celsius. The new value does not take affect until the enter key is pressed. If the value is outside the acceptable range, a message will appear that will tell if the value is too high or too low. This box is displayed for about two seconds then disappears and the value of the variable is returned to the old value.



If the heat zone is unplugged (no thermocouple) the display will show 0 as an actual temperature.

(All heat zones that are not in use should read 0° Celsius)

VACUUM



The vacuum readings are in Torr. The RI-200 monitors three areas of vacuum; the source, the sealing head and the sealing bucket. When the RI-200 is cycling, only two of the zones are used. The source measures what the vacuum pump is capable of. This value is measured and updated only while the dies are closing. The actual displays what the vacuum level is in the package. This value is measured and updated the entire time that the dies are closed. These two values are located on the left side of the screen in the bottom box.

This screen has three variables that can be set; vacuum, gas and wide or narrow top film. These variables are located in the Film Type box on the bottom right side of the screen. The vacuum and gas settings are used only in certain sealing programs refer to forming and sealing program section of the manual. If the sealing program selected does not use the vacuum and/or gas settings the values entered will be ignored.

To change the value of the vacuum or gas settings use the cursor arrow keys to move the blinking box cursor around the value of the setting. Enter a new value and press the enter key. If a value is entered outside of the range for the setting, a box will appear showing what the maximum or minimum value for the setting is. The box will appear for two seconds, and then the value will go back to the old value. The range for the two settings is 0 to 759 Torr.

The top film setting determines which sensor is used to read the package vacuum so the actual reading will be the package. On a normal seal die or nozzle gas die, the package evacuation is the sealing head sensor and uses narrow web. On a pin gas seal die, the package evacuation is the sealing bucket and takes wide top web.

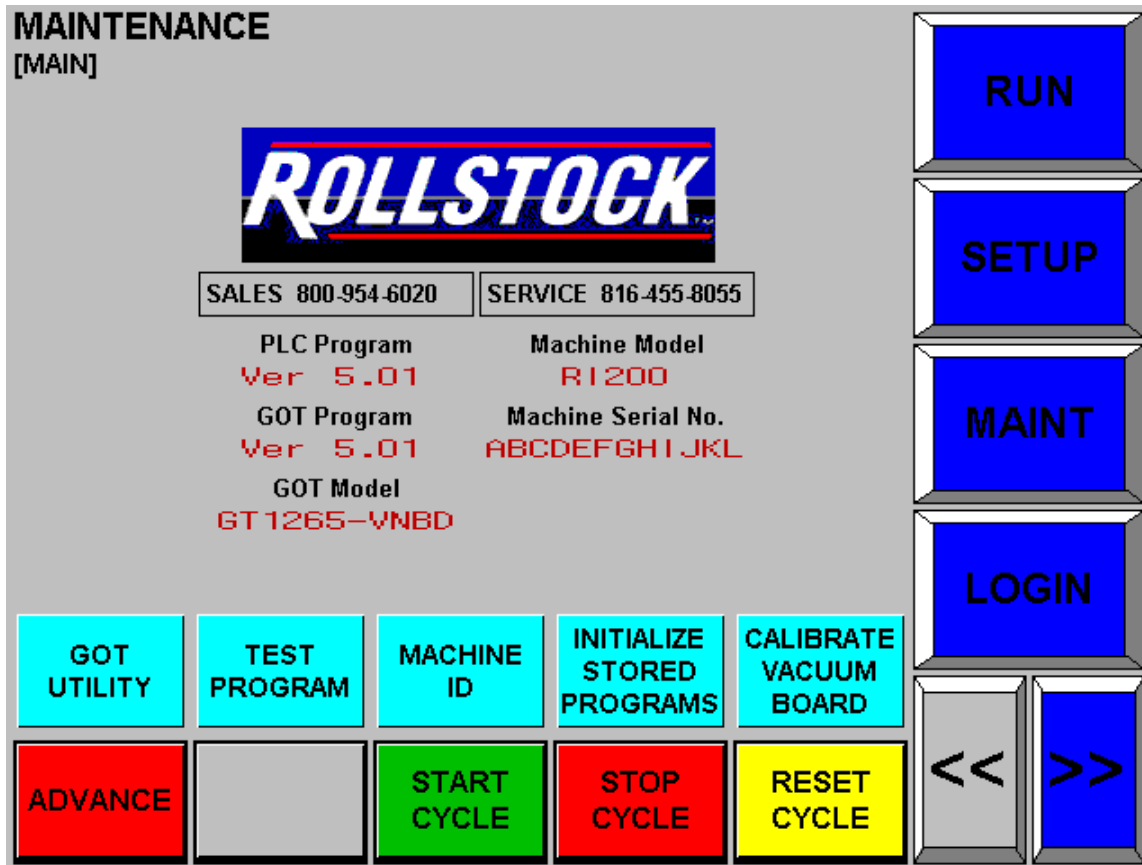
The right hand side of this screen displays a gauge that measures the last 100 Torr of the package vacuum. This gauge is only a visual representation of the actual vacuum reading.

2.3 MAINT (Maintenance) Screen

This screen contains the company name, phone numbers, and also information about the program running the machine (program info). Beyond the Maintenance [main] screen the other screens are password protected and should only be accessed by fully trained personnel. Many function are included in the maintenance section, for enhance control of GOT, PLC inputs, and outputs.

For sales call 800-954-6020

For service call 816-455-8055



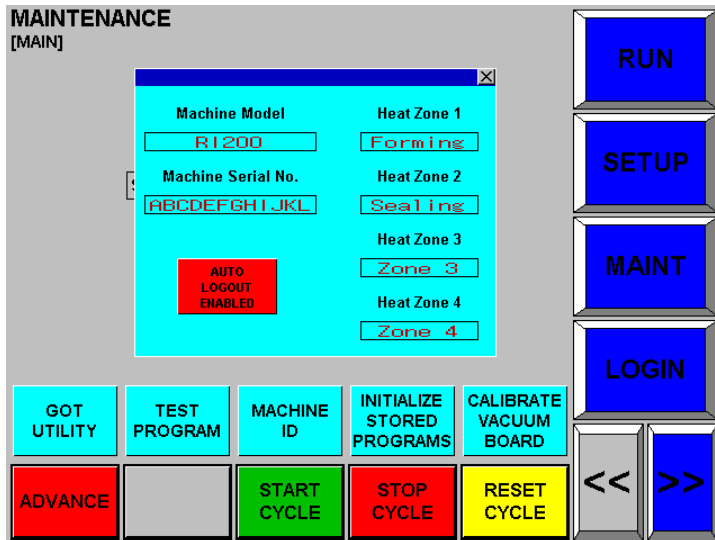
Advance- moves the chains one index

Start Cycle- internal Start button, same function as the external button. The button starts the machine.

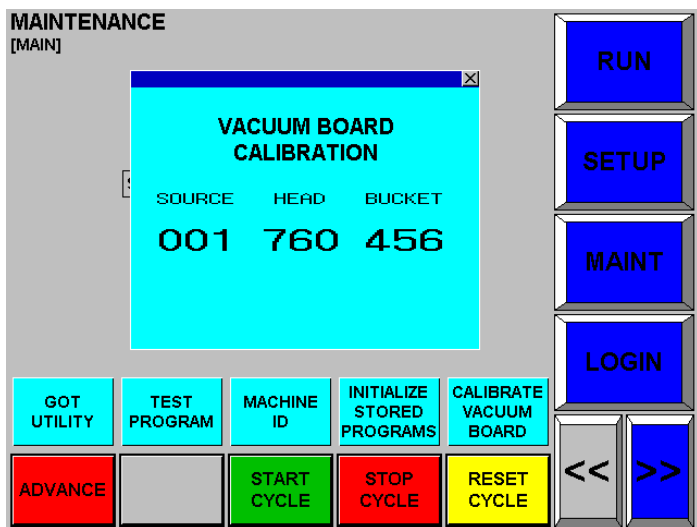
Stop Cycle – internal Stop button, same function as the external button. The button stops the machine.

GOT UTILITY – provides a operation system for Compact flash operation

Reset Cycle – Resets the advance routine.

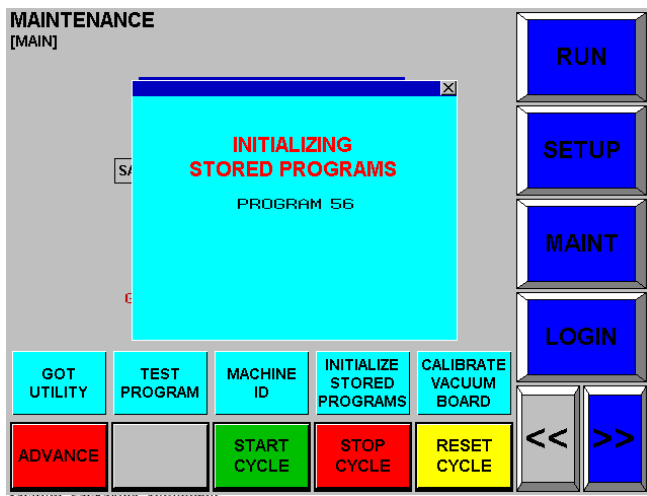


Machine ID- Opens a window that allows naming of the machine model, machine SN and heat zones. It also has a button to enable or disable auto logout. After being login this setting will automatically log out after a period of time.



Vacuum Board Calibration- the RI-200 is equipped with a vacuum board that can read three zones of vacuum. This board is used in the sealing processes that require a level to be met and is used in the test program. For the machine to operate properly in certain sealing programs and on the test program the board must be calibrated correctly. If the board is out of calibration the readings on the display for vacuum levels will not be accurate. This screen reads the vacuum board and displays the current level the entire time the function is active. This is the only place in the program that all three zones can be seen while all three are actively being updated.

To calibrate the vacuum board requires an external vacuum gauge and a way of varying the vacuum on the board. Due to this fact, it usually requires a Rollstock, Inc. service technician to come to the plant and calibrate the board. If foreign objects get sucked into the vacuum sensors on the vacuum board this will cause the gauge to lose accuracy. If this happens the board can not be calibrated, it must be replaced



Initialize Stored Programs- Sets all values to default. This must be used after changing a PLC or display. Press the X to close the window.

Test Program

MAINTENANCE [TEST PROGRAM]		
	HEAD	BUCKET
START	456	456
60 sec	456	456
SEAL	456	456
TOTAL	456	456

SOURCE	1
VACUUM	56
BD	56
SEAL	56

ADVANCE

START TEST

STOP TEST

RUN

SETUP

MAINT

LOGIN

<<

>>

The test program is a handy maintenance and troubleshooting tool to check for and locate vacuum leaks. The test program checks three zones of vacuum: the head vacuum, the bucket vacuum and the source vacuum. Bottom web that has not been formed is used to separate the head chamber from the bucket chamber. When the test is run the head and bucket chambers are separated so if a bad bleed down occurs the problem can be isolated to the head, bucket and/or seal bladders.

Before the test program is started two things must be done. First, bottom web that has not been formed must be in the machine to separate the seal head from the seal bucket. And second, the sealing temperature must be turned down to 60° Celsius or below. If the sealing temperature is not turned down, when the seal bar is fired during the test program the sealant on the film will activate and stick to the bar.

Press the Start Test button to start the test. On the right hand side of the screen, the source value is sampled while the dies are closing. This value represents the maximum vacuum level that the vacuum pump can achieve.

Below the source are three timers that show the progress of the test. The test program takes 90 seconds to complete. When the dies close, vacuum will be pulled on the seal head and seal bucket for 20 seconds. The VAC timer will count to 20 and when complete will remain at 20. The vacuum will then shut off and the die will hold vacuum (bleed down) for 60 seconds. The BD timer will count to 60 and when complete will remain at 60. After the 60 second bleed down, the seal bar will fire for 5 seconds. The SEAL timer will count to 5 and when complete will remain at 5. After the seal bar timer times out, the seal die will be vented. The test program is complete.

The graph on the left side of the screen displays the vacuum levels. While the test is pulling a vacuum for 20 seconds the start values will display the current vacuum levels. When the 20 second vacuum time is complete, the start values will stop updating and the 60 SEC. Values will display the current vacuum levels. When the 60 SEC bleed down time is complete, the 60 SEC values will stop updating and the seal values will display the current vacuum levels. When the seal timer is complete, the seal value will stop updating. At this time the dies will vent and the total bleed down for the test will be calculated and displayed.

To exit the test program, press the stop key at anytime.

Stopping the test program in the middle of the test will always turn the vacuum off and vent the seal die before the die tries to open. When the program is exited, the dies will drop. To start a new test press the advance button to move the film one index then press the start button to start the next text.

Acceptable ranges	
Source:	4 Torr or less
Start:	2 Torr or less from source
60 sec. Bleed down:	25 Torr or less from start
Seal:	10 Torr or less from 60 sec. Bleed down
Total:	35 Torr or less

Maintenance Screens

MAINTENANCE
[INPUTS 1]

X00 Encoder Pulse	X10 Main Cabinet Safety SW
X01 Die Up PX	X11 Motor Overload RLY
X02 Die Down PX	X12 Forming Guard RLY
X03 Die Short PX	X13 Forming Guard
X04 Spare	X14 Sealing Guard RLY
X05 External Advance PB	X15 Sealing Guard
X06 Water Safety SW	X16 xCut Guard RLY
X07 Air Safety SW	X17 xCut Guard

Navigation buttons: RUN, SETUP, MAINT, LOGIN, << >>

MAINTENANCE
[INPUTS 2]

X20 Rotary Guard RLY	X30 Main Drive VFD ALM
X21 Rotary Guard	X31 External Start PB
X22 Discharge Guard RLY	X32 External Stop PB
X23 Discharge Guard	X33 Spare
X24 Spare	X34 Spare
X25 Spare	X35 Spare
X26 Film Reg PES	X36 Spare
X27 Sync Return	X37 Spare

Navigation buttons: RUN, SETUP, MAINT, LOGIN, << >>

MAINTENANCE
[INPUTS 3]

X40 Spare
X41 Spare
X42 Spare
X43 Spare
X44 Spare
X45 Spare
X46 Spare
X47 Spare

Navigation buttons: RUN, SETUP, MAINT, LOGIN, << >>

MAINTENANCE
[OUTPUTS 1]

Y00 Rotary Knife Contactor	Y10 Bucket Vacuum
Y01 Cut Sys1 Primary	Y11 Gas Flush
Y02 Cut Sys2 Primary	Y12 Sealing
Y03 Die Lift Down	Y13 Vent Head
Y04 Die Lift Up	Y14 Vent Bucket
Y05 Film Heating	Y15 Plug Assist
Y06 Film Forming	Y16 Code Dater
Y07 Head Vacuum	Y17 Film Brake

Navigation buttons: RUN, SETUP, MAINT, LOGIN, << >>

MAINTENANCE
[OUTPUTS 2]

Y20 Zone 1 Heater	Y30 Loading Grid
Y21 Zone 2 Heater	Y31 Vacuum Pump
Y22 Zone 3 Heater	Y32 Trim Canister
Y23 Zone 4 Heater	Y33 Water Valve
Y24 Cleaning Heater	Y34 Labeler Valve
Y25 Film Cooling	Y35 Spare
Y26 Reg PES Power	Y36 Spare
Y27 Loader Relay	Y37 Spare

Navigation buttons: RUN, SETUP, MAINT, LOGIN, << >>

MAINTENANCE
[OUTPUTS 3]

Y40 Main Drive VFD STF
Y41 Main Drive VFD RH
Y42 Main Drive VFD RM
Y43 Main Drive VFD RL
Y44 Main Drive VFD MSR
Y45 Main Drive VFD RST
Y46 Spare
Y47 Spare

Navigation buttons: RUN, SETUP, MAINT, LOGIN, << >>

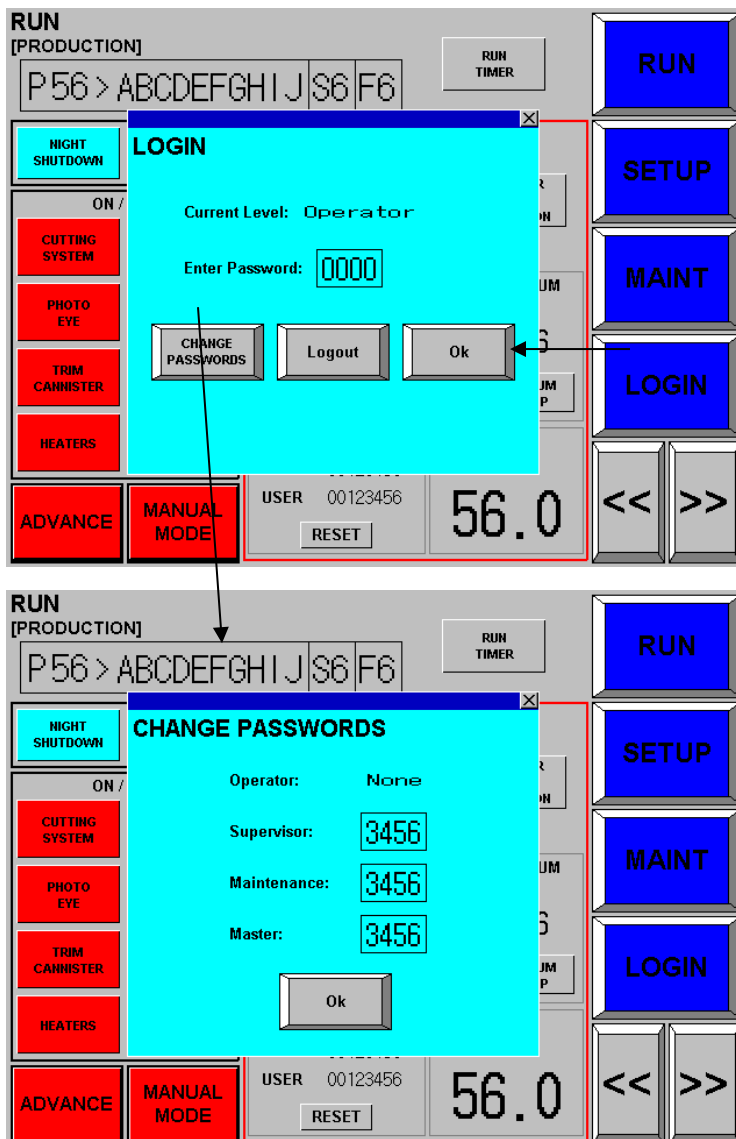
Inputs- display's all of the PLC inputs and monitors there state in real time.

Outputs- When in the output menus, the machine switches off all automatic functions and the Technician can manually energize the output function.

2.4 Login Password Protection

The RI200 is password protected at four levels, Operator, Supervisor, Maintenance, and Master levels. These passwords can be programmed at the Master Level to suit the Customer needs. If the correct password is entered, a message will be displayed for two seconds saying that you are logged in and then will disappear. If the wrong password is entered three times in a row the screen will disappear and you will not be logged in.

Once the correct password is entered, the screens that are password protected can be accessed. The password will be retained until the user manually logs out, the night shut program is activated or the machine is shut off or if the auto logout feature is on.



2.5 EXTERNAL SWITCHES

The RI-200 program has inputs for three external switches. External start, stop, and advance switches can be added for convenience. The default setup has start, stop and e-stop below the GOT.



2.6 Safety & Alarm screens

This section is divided into two parts, the safety screens and the alarm screens. All the safety and alarm screens that may be encountered during the operation of the RI-200 are shown. The safety screens deal only with the safety circuit of the machine while the alarm screens are displayed when timed events take too long or required signals are not present when expected.

SAFETY SCREENS

The status of the safety circuit is displayed on the Run Production screen. When the indicator is green all safeties are made and acknowledge.

The safety circuit works on priority. The highest priority safety is always displayed.

- 1 Cabinet open
- 2 Low air pressure
- 3 Low water flow
- 4 Thermal overload
- 5 Drive alarm
- 6 Forming guard safety relay
- 7 Forming guard
- 8 Sealing guard safety relay
- 9 Sealing guard
- 10 Crosscut guard safety relay
- 11 Crosscut guard
- 12 Rotary knife guard safety relay
- 13 Rotary knife guard
- 14 Discharge guard safety relay
- 15 Discharge guard

Latching safeties

The low air pressure safety will be displayed one second after the air pressure switch signal is lost. The screen below on the left is displayed while the air pressure is low. Once the air pressure is restored the screen on the right will be displayed. The low air pressure safety is a latching alarm so the safety key must be pressed to acknowledge that the safety is made before it will reset.



The low water flow safety screen will be displayed fifteen seconds after the signal is lost from the water flow switch. This switch is a flow switch not a pressure switch. When this screen is displayed the heaters will automatically be shut off. When this screen appears, the safety is automatically reset. Press the safety key to acknowledge and clear the safety.



The Main drive fault safety appears on the screen when the frequency drive goes into alarm. To clear this alarm shows up press the Reset key. This will reset the frequency drive and automatically clear the safety.



Non latching safeties

The safety screens below will be displayed while the safety is not made. When the safety is made the screen will automatically clear.

MAIN
CABINET OPEN

MOTOR THERMAL
OVERLOAD

FORMING GUARD

FORMING GUARD
SAFETY RELAY

SEALING GUARD

SEALING GUARD
SAFETY RELAY

CROSSCUT GUARD

CROSSCUT GUARD
SAFETY RELAY

ROTARY KNIFE GUARD

ROTARY KNIFE
SAFETY RELAY



DISCHARGE GUARD
SAFETY RELAY

DISCHARGE GUARD

ALARM SCREENS

The first two alarms are alarms that deal with the proximity switches on the die lift cylinder. Just about everything the RI-200 does uses the proximity switches. The machine needs to know where the die lift carriage is at and this is what the die lift proximity switches are used for. If the PLC does not get a signal from the proximity switch where the carriage is supposed to be in a preset amount of time, one of the screens below will be displayed. These two alarms will stop the machine and the safety key will need to be pressed to reset the alarm.



DIES NOT CLOSED

press <SAFETY> key



SAFETY



DIES NOT OPEN

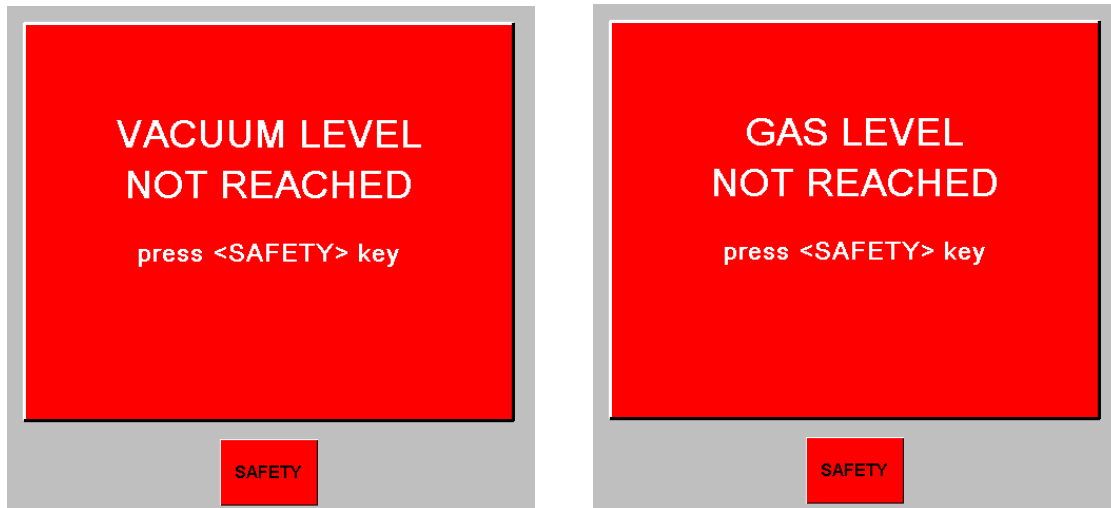
press <SAFETY> key



SAFETY

The next two alarms deal with the vacuum board and sealing programs 2, 3 and 5. When one of these alarms shows up, the preset level is not reached in a preset time (scan timer). The dies will remain closed and the RI-200 will continue to try and reach the preset level. Once the level is satisfied, the screen will automatically switch back to the main menu. If the level can not be

satisfied, Press the safety key and the screen will automatically go to the vacuum setting screen. The vacuum setting screen will display the vacuum level in the chamber and allow the vacuum and gas set points to be changed. The most common reason for one of these screens to be displayed is the vacuum system developed a leak.



The alarm below is used with the loader function. When the loader is turned on, the RI-200 will send a signal to tell the loader to start loading then the die up proximity switch is made to start the program. When the loader is done it must return a signal to the RI-200 in a preset amount of time (scan timer) telling the RI-200 that it is complete. If the signal is not received before the scan timer, the RI-200 will go into alarm and the no synchronization screen will appear. When this screen appears, if the return signal is received the machine will continue and return to the main menu. From this screen the loader can be turned off by pressing OK to bypass, so the machine will continue.



The next alarm, advance incomplete, appears when the machine is advancing and the advance is interrupted or can not be completed. When an advance incomplete screen appears the reason for the advance not being completed will be displayed in the top center of the screen. There are four reasons why the advance was incomplete: safety (pictured), timeout, e-stop, and frequency drive. When this alarm appears press the advance key. The chains should move in slow speed and when the advance is complete the alarm will automatically clear and the display will return to the

main menu. Depending on the distance required to complete the advance, the advance key might need to be pressed several times.

The box in the bottom middle of the screen shows the distance left to complete the advance. If this is a negative or a large number, a new distance can be entered to finish the advance.

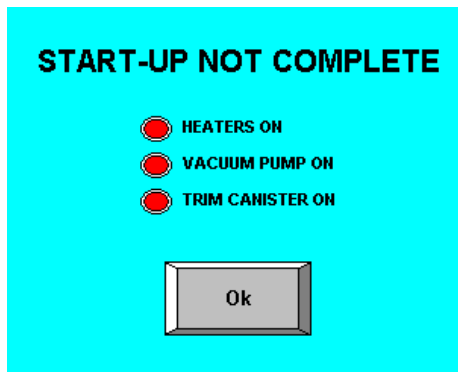
On this screen the reset button can be pressed to reset the advance counter to a full index.



For the RI-200 to program the heaters, canister must be on.

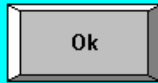
cycle or enter the test vacuum pump and trim The startup complete

indicator on the Run screen green when these three items are on. If one or more of these items are not on when the start key is pressed or the test program is entered the startup incomplete alarm screen will be displayed. This screen will display only the items that need to be turned on. The screen below shows all three. From this screen press ok to exit. Then on the Run screen turn on the required items.



When the heaters not ready screen appears this means that at least is not within ten degrees of its set point. This screen displays only the heat zones that are not within range. This alarm is displayed when the start key is pressed or while the machine is cycling. If the RI-200 is cycling, the machine will automatically stop. This screen will automatically disappear when all heat zones are within ten degrees of their set points or the main menu key can be pressed to return to the main menu.

HEATERS NOT READY



2.7 Load Program from Compact Flash

With the GOT1265 it can load the program or overwrite an existing program from a Compact flash card (CF card).

With the power off insert the CF card. Make sure the switch under the CF card slot is ON. Then press and hold the red button labeled S.MODE on the back of the display. Turn on the Machine and keep holding the red button until the screen displays Compact Flash check in progress.

Then release the red button. If a program is already on the GOT it will prompt:

Basic OS has been already installed.

-Existing OS: Ver .

-Expected OS: Ver

*Existing other OS, special data and
project data will be deleted.*

Do you want to install?

Press OK

Install now...

This will install the base OS and GOT utility. It will load for several minutes.

Next it will prompt:

Project data download now?

Press OK

Download now...

This will load the Rollstock project program. It will download for several minutes

Then it will prompt

Install is completed.

Restart now.

Press OK

The GOT will Reboot and start the Rollstock program

Last step is to remove CF card by: Turning off the power and turn off the switch under the CF card slot. Then press the eject button near the CF card to remove the CF card and keep in a safe location.

ELECTRICAL SCHEMATICS

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Plug pin assignments	_____	Page 20
Wiring harness assignments	_____	Page 22
Drawings:		
Part location	_____	Page D01
Electrical	_____	Page D06
Pneumatic	_____	Page D20
Seal die	_____	Page D25
Form die	_____	Page D28
Water	_____	Page D31

PART NUMBERS

Sub-assemblies

SUB 1	24V DC power supply
SUB 2	Encoder
SUB 3	Vacuum circuit board
SUB 4	Photo-eye
SUB 5	Frequency drive
SUB 8	Programmable logic controller (PLC)
SUB 9	Special block 0 (thermocouple)
SUB 10	Special block 1 (analog to digital converter)
SUB 11	Extension block (advance control)
SUB 12	User interface
SUB 13	Safety relay circuit board

Switches

S1	Main power switch
S2/1	Emergency stop
S2/2	Emergency stop
S3	Advance switch external
S4	Die lift proximity up switch
S5	Die lift proximity down switch
S6	Die lift proximity short switch
S7	Water flow switch
S8	Air pressure switch
S9	Cabinet open switch
S10	Drive alarm switch (in frequency drive)
S11	Start switch external
S12	Stop switch external

Safety magnetic switches

S20/1	Forming guard safety switch (operator side in)
S20/2	Forming guard safety switch (cabinet side in)
S20/3	Forming guard safety switch (operator side out)
S20/4	Forming guard safety switch (cabinet side out)
S20/5	Forming guard safety switch (2 ND operator side out)
S20/6	Forming guard safety switch (2 nd cabinet side out)
S21/1	Sealing guard safety switch (operator side in)
S21/2	Sealing guard safety switch (cabinet side in)
S21/3	Sealing guard safety switch (operator side out)
S21/4	Sealing guard safety switch (cabinet side out)
S21/5	Sealing guard safety switch (2 nd operator side out)
S21/6	Sealing guard safety switch (2 nd cabinet side out)

S22/1	Crosscut guard safety switch (operator side)
S22/2	Crosscut guard safety switch (cabinet side)
S23/1	Rotary knife guard safety switch (operator side)
S23/2	Rotary knife guard safety switch (cabinet side)
S24/1	Discharge guard safety switch (operator side)
S24/2	Discharge guard safety switch (cabinet side)

Relays

R1	Water valve relay on C4 aux contacts
R2/1	Forming guard safety relay
R2/2	Sealing guard safety relay
R2/3	Crosscut guard safety relay
R2/4	Rotary knife guard safety relay
R2/5	Discharge guard safety relay
R3	Cleaning heater relay
R4	Heat zone #1 relay (typically forming)
R5	Heat zone #2 relay (typically sealing)
R6	Heat zone #3 relay
R7	Heat zone #4 relay
R8	Gas relay
R9	Loader relay
R10	Relay in loader
R11	Labeler relay
R12	Vacuum pump relay
R13	Water chiller relay

Fuses

F4	1 amp	PLC +V0
F5	1 amp	PLC +V1
F6	1 amp	PLC +V2
F7	1 amp	PLC +V3
F8	1 amp	PLC +V4
F9	1 amp	PLC +V5
F10	1 amp	FX2N-8EYT (com 1) (com 2)
F13	1 amp	User interface
F14	125m amp	Encoder (micro fuse is on PLC)

Valves

V1	Main air valve (dump valve)
V2	Water valve
V3/1	Die lift up valve
V3/2	Die lift down valve
V4	Film heating valve
V5/1	Film forming valve
V5/2	Film forming valve (air over vacuum forming)
V6	Head vacuum valve
V7	Bucket vacuum valve
V8	Sealing valve
V9	Gas flush valve
V10	Vent valve
V11	Vent bucket valve
V12	Plug assist valve
V13	Cutting system 1 valve
V14	Cutting auxiliary valve
V15	Film brake valve
V16	Film cooling valve
V17	Code dating valve
V18	Loading grid valve
V19	Film re-wind valve (air motor valve)

Regulators

RG1	Main machine air regulator
RG2	Sealing regulator
RG3	Film forming regulator
RG4	Film heating regulator
RG5	Code dating regulator
RG6	Gas regulator

Circuit breakers

B2	Control breaker
B3	Cleaning heater breaker
B4	Zone #1 heater breaker (typically forming)
B5	Zone #2 heater breaker (typically sealing)
B6	Zone #3 heater breaker
B7	Zone #4 heater breaker

Magnetic motor contactors

C4 Heating zone control contactor

Motors

M1 Vacuum pump motor
M2 Trim canister blower motor
M3 Rotary knife motor
M4 Advance motor
M5 Film re-wind air motor
M6 Forming vacuum pump motor
M7 Water chiller pump motor

Combination Motor Controller

CMC1 Vacuum pump CMC
CMC2 Trim canister CMC
CMC3 Rotary knife CMC
CMC4 Forming vacuum pump CMC
CMC6 VFD CMC

Electrical plugs

WP1 Die plug
WP2 Trim canister / vacuum pump plug
WP3 Forming vacuum pump plug
WP4 Water chiller plug

PLC INPUTS (FX_{2N}-64MT ESS)

X0	Encoder
X1	Die lift proximity up switch
X2	Die lift proximity down switch
X3	Die lift proximity short switch
X4	Free
X5	Advance switch (external)
X6	Water flow switch
X7	Air pressure switch
X10	Cabinet open switch
X11	Motor thermal overload
X12	Forming guard magnetic safety switch (NO relay)
X13	Forming guard magnetic safety switch (NC PLC)
X14	Sealing guard magnetic safety switch (NO relay)
X15	Sealing guard magnetic safety switch (NC PLC)
X16	Crosscut guard magnetic safety switch (NO relay)
X17	Crosscut guard magnetic safety switch (NC PLC)
X20	Rotary knife guard magnetic safety switch (NO relay)
X21	Rotary knife guard magnetic safety switch (NC PLC)
X22	Discharge guard magnetic safety switch (NO relay)
X23	Discharge guard magnetic safety switch (NC PLC)
X24	Reserved
X25	Reserved
X26	Film registration (photo-eye) signal
X27	Synchronization return
X30	Advance drive alarm
X31	Start switch (external)
X32	Stop switch (external)
X33	Free
X34	Free
X35	Free
X36	Free
X37	Free

PLC OUTPUTS (FX_{2N}-64MT ESS)

Y0	Rotary knife contactor / film re-wind valve
Y1	Cutting system 1 valve
Y2	Cutting auxiliary valve
Y3	Die lift down valve
Y4	Die lift up valve
Y5	Film heating valve
Y6	Film forming valve
Y7	Head vacuum valve
Y10	Bucket vacuum valve
Y11	Gas flush relay
Y12	Sealing valve
Y13	Vent valve
Y14	Vent bucket valve
Y15	Plug assist valve
Y16	Code dating valve
Y17	Film brake valve
Y20	Heat zone #1 relay (typically forming)
Y21	Heat zone #2 relay (typically sealing)
Y22	Heat zone #3 relay
Y23	Heat zone #4 relay
Y24	Cleaning program heater relay
Y25	Film cooling valve
Y26	Film registration (photo-eye) power
Y27	Loader relay
Y30	Loading grid valve
Y31	Vacuum pump contactor
Y32	Trim canister blower contactor
Y33	Water valve relay
Y34	Labeler relay
Y35	Free
Y36	Free
Y37	Free

PLC EXTENSION BLOCK OUTPUTS (FX_{2N}-8EYT)

Y40	STF (start drive forward)
Y41	RH (high speed)
Y42	RM/AU (medium speed)
Y43	RL/OH (low speed)
Y44	MRS/RT (2 nd accel – decel)
Y45	RES (reset drive)
Y46	Used (SD from drive on com)
Y47	Used (SD from drive on com)

FREQUENCY DRIVE PARAMETER SETTINGS (FR-E720-110)

Par#	Name	Setting
0	Torque boost	8
1	Maximum frequency	120
2	Minimum frequency	0
3	Base frequency	60
4	Multi-speed setting (high speed)	15
5	Multi-speed setting (middle speed)	3
6	Multi-speed setting (low speed)	3
7	Acceleration time	0.5
8	Deceleration time	0.2
9	Electronic thermal overcurrent protection	7.5
10	DC injection brake operation frequency	3.0
11	DC injection brake operation time	0.6
12	DC injection brake voltage	5
13	Starting frequency	0.5
14	Load pattern selection	0
15	Jog frequency	5
16	Job acceleration / deceleration time	0.5
17	MRS Input Selection	0
18	High-speed maximum frequency	120
19	Base frequency voltage	9999
20	Acceleration / deceleration reference frequency	60
21	Acceleration / deceleration time increments	0
22	Stall prevention operation level	150
23	Stall prevention operation level at double speed	9999
24	Multi-speed setting (speed 4)	15
25	Multi-speed setting (speed 5)	40
26	Multi-speed setting (speed 6)	8
27	Multi-speed setting (speed 7)	55
29	Acceleration / deceleration pattern	0
30	Regenerative function selection	0
31	Frequency jump 1A	9999
32	Frequency jump 1B	9999
33	Frequency jump 2A	9999
34	Frequency jump 2B	9999
35	Frequency jump 3A	9999
36	Frequency jump 3B	9999
37	Speed display	0.000
40	RUN key rotation direction selection	0
41	Up-to-frequency sensitivity	10

42	Output frequency detection	6.00
43	Output frequency detection for reverse rotation	9999
44	Second acceleration / deceleration time	0.2
45	Second deceleration time	0.2
46	Second torque boost	8
47	Second V/F (base frequency)	60
48	Second stall prevention	9999
51	Second electronic thermal O/L relay	7.5
52	DU / PU main display selection	0
54	FM terminal function selection	0
55	frequency monitoring reference	60
56	Current monitoring reference	11
57	Restart coasting time	9999
58	Restart cushion time	1.0
59	Remote setting function selection	0
60	Energy saving control selection	0
61	Reference current	9999
62	Reference current for acceleration	9999
63	Reference current for deceleration	9999
65	Retry selection	0
66	Stall prevention operation level reduction starting frequency	60
67	Number of retries at alarm occurrence	0
68	Retry waiting time	1
69	Retry count display erasure	0
70	Special regenerative brake duty	0
71	Applied motor	4
72	PWM frequency selection	4
73	Analog input selection	1
74	Filter time constant	1
75	Reset selection / disconnected PU detection / PU stop selection	14
77	Parameter write disable selection	0
78	Reverse rotation prevention selection	1
79	Operation mode selection	0
80	Motor capacity	9999
81	Number of motor poles	9999
82	Motor exciting current	9999
83	Rated motor voltage	200V
84	Rated motor frequency	60
89	Speed control gain	9999
90	Motor constant (R1)	9999
91	Motor constant (R2)	9999
92	Motor constant (L1)	9999
93	Motor constant (L2)	9999
92	Motor constant (L1)	9999
93	Motor constant (L2)	9999

94	Motor constant (X)	9999
96	Auto-tuning setting / status	0
117	Station number	0
118	Communication speed	192
119	Stop bit length / data length	1
120	Parity check presence / absence	2
121	Number of communication retries	1
122	Communication check time interval	0
123	Waiting time setting	9999
124	CR, LF presence / absence selection	1
125	Terminal 2 frequency setting	60
126	Terminal 4 frequency setting	60
127	PID control automatic switchover frequency	9999
128	PID action selection	0
129	PID proportional band	100
130	PID integral time	1
131	Upper limit	9999
132	Lower limit	9999
133	PID action set point for PU operation	0
134	PID differential time	9999
145	PU display language selection	1
146	Factory set – do not change	1
147	Acceleration/deceleration time switching frequency	9999
150	Output current detection level	150
151	Output current detection signal delay time	0
152	Zero current detection level	5.0
153	Zero current detection period	.5
156	Stall prevention operation selection	0
157	O/L signal output timer	0
158	AM terminal function selection	1
160	User group read selection	0
161	Frequency setting/key lock operation selection	0
162	Automatic restart after power failure	1
165	Stall prevention operation level for restart	150
168	Factory set – do not change	
169	Factory set – do not change	
170	Watt-Hour meter clear	9999
171	Actual operation hour meter clear	0
172	User group registered display/batch clear	0
173	User group 1 registration	0
174	User group 1 deletion	0
178	STF terminal function selection	60
179	STR terminal function selection	61
180	RL terminal function selection	0
180	RL terminal function selection	0

181	RM terminal function selection	1
182	RH terminal function selection	2
183	MRS terminal function selection	3
184	RES terminal function selection	62
190	Run terminal function selection	0
191	FU terminal function selection	4
192	A, B, C terminal function selection	99
232	Multi-speed setting (speed 8)	9999
233	Multi-speed setting (speed 9)	9999
234	Multi-speed setting (speed 10)	9999
235	Multi-speed setting (speed 11)	9999
236	Multi-speed setting (speed 12)	9999
237	Multi-speed setting (speed 13)	9999
238	Multi-speed setting (speed 14)	9999
239	Multi-speed setting (speed 15)	9999
240	Soft-PWM setting	1
241	Analog input display unit switchover	0
244	Cooling fan operation selection	1
245	Rated motor slip	9999
246	Slip compensation response time	0.5
247	Constant-output region slip compensation selection	9999
249	Ground fault detection at start	0
250	Stop selection	9999
251	Output phase loss protection selection	1
255	Life alarm status display	0
256	Inrush current limit circuit life display	100
257	Control circuit capacitor life display	100
258	Main circuit capacitor life display	100
259	Main circuit capacitor life measuring	0
261	Power failure stop selection	0
267	Terminal 4 input selection	0
268	Monitor decimal digits selection	9999
269	Factory set – do not change	
270	Stop-on contact control selection	0
275	Stop-on contact excitation current low speed multiplying factor	9999
276	PWM Carrier frequency at stop-on contact	9999
277	Stall prevention operation current switchover	0
278	Brake opening frequency	3
279	Brake opening current	130
280	Brake opening current detection time	.3
281	Brake operation time at start	.3
282	Brake operation frequency	6
283	Brake operation time at stop	.3
286	Droop Gain	0
287	Droop filter time constant	.3

292	Automatic acceleration/deceleration	0
293	Acceleration/deceleration separate selection	0
295	Magnitude of frequency change setting	0
298	Frequency search gain	9999
299	Rotation direction detection selection at restart	0
338	Communication operation command source	0
339	Communication speed command source	0
340	Communication start up mode select	0
342	Communication EEPROM write selection	0
343	Communication error count	0
450	Second applied motor	9999
495	Remote output selection	0
496	Remote output data 1	0
497	Remote output data 2	0
502	Stop mode selection at communication error	0
503	Maintenance timer	0
504	Maintenance timer alarm output set time	9999
547	USB communication station number	0
548	USB communication check time interval	9999
549	Protocol selection	0
550	NET mode operation command source selection	9999
551	PU mode operation command source selection	9999
555	Current average time	1
556	Data output mask time	0
557	Current average value monitor signal output reference current	
563	Energization time carry over times	0
564	Operating time carrying over times	0
571	Holding time at the start	9999
611	Acceleration time at a restart	9999
645	AM 0V adjustment	1000
653	Speed smoothing control	0
665	Regeneration avoidance frequency gain	100
800	Control method selection	30
859	Torque Current	9999
872	Input phase loss protection selection	1
882	Regeneration avoidance operation selection	0
883	Regeneration avoidance operation level	400
885	Regeneration avoidance compensation frequency limit value	6
886	Regeneration avoidance voltage gain	100
888	Free	9999
889	Free	9999
901	AM terminal calibration	
902	Terminal 2 frequency setting bias frequency	0
902	Terminal 2 frequency setting bias	0
903	Terminal 2 frequency setting gain frequency	60

903	Terminal 2 frequency setting gain	100
904	Terminal 4 frequency setting bias frequency	0
904	Terminal 4 frequency setting bias	20
905	Terminal 4 frequency setting gain frequency	60
905	Terminal 4 frequency setting gain	100
922	Factory set – do not change	
922	Factory set – do not change	
923	Factory set – do not change	
923	Factory set – do not change	
990	PU buzzer control	1
991	PU contrast adjustment	58
Pr.CL	Parameter clear	0
ALLC	All parameter clear	0
Er.CL	Faults history clear	0
Pr.CH	Initial value change list	0

TERMINAL STRIP ASSIGNMENTS

COLUMN 1

No.	Left side	Right side
1	Forming safety guard S20/1,/2,/3,/4	24V DC
2	Forming safety guard S20/1	
3	Forming safety guard S20/2	
4	Forming safety guard S20/5	
5	Forming safety guard S20/6	PLC input X13
6	Forming safety guard S20/1	24V DC
7	Forming safety guard S20/1 & S20/2	
8	Forming safety guard S20/2 & S20/3,/5	
9	Forming safety guard S20/3,/5 & S20/4,/6	
10	Forming safety guard S20/4,/6	R2/1 coil
11	Sealing safety guard S21/1,/2,/3,/4	24V DC
12	Sealing safety guard S21/1	
13	Sealing safety guard S21/2	
14	Sealing safety guard S21/3	
15	Sealing safety guard S21/4	PLC input X15
16	Sealing safety guard S21/1	24V DC
17	Sealing safety guard S21/1 & S21/2	
18	Sealing safety guard S21/2 & S21/3	
19	Sealing safety guard S21/3 & S21/4	
20	Sealing safety guard S21/4	R2/2 coil
21	Crosscut safety guard S22/1,/2	24V DC
22	Crosscut safety guard S22/1	
23	Crosscut safety guard S22/2	PLC input X17
24	Crosscut safety guard S22/1	24V DC
25	Crosscut safety guard S22/1 & S22/2	
26	Crosscut safety guard S22/2	R2/3 coil
27	Rotary knife safety guard S23/1,/2	24V DC
28	Rotary knife safety guard S23/1	
29	Rotary knife safety guard S23/2	PLC input X21
30	Rotary knife safety guard S23/1	24V DC
31	Rotary knife safety guard S23/1 & S23/2	
32	Rotary knife safety guard S23/2	R2/4 coil

COLUMN 2

No.	Left side	Right side
33	Discharge safety guard S24/1 & S24/2	24V DC
34	Discharge safety guard S24/1	
35	Discharge safety guard S24/2	PLC input X23
36	Discharge safety guard	24V DC
37	Discharge safety guard S24/1,/2	
38	Discharge safety guard S24/2	R2/5 coil
39	Water flow switch S7	24V DC
40	Water flow switch S7	PLC input X6
41	Air pressure switch S8	24V DC
42	Air pressure switch S8	PLC input X7
43	Cabinet switch S9	24V DC
44	Cabinet switch S9	PLC input X10
45	External switch power S3,11,12	24V DC
46	Advance switch S3	PLC input X5
47	Start switch S11	PLC input X31
48	Stop switch S12	PLC input X32
49	Proximity switch power S4,5,6	24V DC
50	Die lift up proximity switch S4	PLC input X1
51	Die lift down proximity switch S5	PLC input X2
52	Die lift short proximity switch S6	PLC input X3
53	Loader relay R9	R9 contact
54	Loader relay R9	R9 contact
55	Synchronization	24V DC
56	Synchronization	PLC input X27
57	Film registration (photo-eye) power	PLC output Y26
58	Film registration (photo-eye) power	0V DC
59	Film registration (photo-eye) signal	PLC input X26
	Ground – film registration (photo-eye)	
60	User interface	F13
61	User interface	0V DC
	Ground – User interface	

COLUMN 3 row 1

No.	TOP SIDE	BOTTOM SIDE
62	Water valve V2	R1 contact
63	Cutting system 1 V13	PLC output Y1
64	Cutting auxiliary V14	PLC output Y2
65	Die lift up valve V3/1	PLC output Y4
66	Die lift down valve V3/2	PLC output Y3
67	Film heating valve V4	PLC output Y5
68	Film forming valve V5/1 & V5/2	PLC output Y6
69	Head vacuum valve V6	PLC output Y7
70	Bucket vacuum valve V7	PLC output Y10
71	Gas valve V9	R8 contact
82	OV DC for valves	

COLUMN 3 row 2

No.	TOP SIDE	BOTTOM SIDE
72	Sealing valve V8	PLC output Y12
73	Vent valve V10	PLC output Y13
74	Bucket vent valve V11	PLC output Y14
75	Plug assist valve V12	PLC output Y15
76	Code dater valve V17	PLC output Y16
77	Film brake valve V15	PLC output Y17
78	Film cooling valve V16	PLC output Y25
79	Loading grid valve V18	PLC output Y30
80	Film re-wind valve V19	PLC output Y0
81	Reserved	
82	OV DC for valves	

- * **82 is the back row of the double stacked terminal blocks bussed together. The terminal blocks have a diode between the bottom row and the top row and are 0V DC for the valves.**

COLUMN 4

No.		Left side		Right side	
83	Emergency stop	S2/1	⇐ 1 Switch	S2/1	220V AC B2
84	Emergency stop			S2/1	
85	Emergency stop			S2/2	
86	Emergency stop	S2/1	2 Switch ⇒	S2/2	Term. 109,F2,F15
	Ground – air dump valve				
87	Air dump valve V1				220V AC B2
88	Air dump valve V1				Term. 107
89	Cleaning heater (zone #1) typically forming				220V AC R3
90	Cleaning heater (zone #1) typically forming				220V AC B3
91	Cleaning heater (zone #2) typically sealing				220V AC R3
92	Cleaning heater (zone #2) typically sealing				220V AC B3
	Ground – zone #1 heater (typically forming)				
93	Zone #1 heater				220V AC R4
94	Zone #1 heater				220V AC B4
	Ground – zone #2 heater (typically sealing)				
95	Zone #2 heater				220V AC R5
96	Zone #2 heater				220V AC B5
	Ground – zone #3 heater				
97	Zone #3 heater				220V AC R6
98	Zone #3 heater				220V AC B6
	Ground – zone #4				
99	Zone #4 heater				220V AC R7
100	Zone #4 heater				220V AC B7
	Ground – rotary knife motor				
101	Rotary knife motor M3				C3 line 1
102	Rotary knife motor M3				C3 line 2
103	Rotary knife motor M3				C3 line 3
	Ground – trim canister blower motor				
104	Trim canister blower motor M2				C2 line 1
105	Trim canister blower motor M2				C2 line 2
106	Trim canister blower motor M2				C2 line 3
	Ground – vacuum pump motor				
107	Vacuum pump motor M1				C1 line 1
108	Vacuum pump motor M1 w/7.5hp,10hp				C1 line 1
109	Vacuum pump motor M1				C2 line 2
110	Vacuum pump motor M1 w/7.5hp, 10hp				C2 line 2
111	Vacuum pump motor M1				C1 line 3
112	Vacuum pump motor M1 w/7.5, 10hp				C1 line 3
113	External vacuum pump control				C1 NO contact
114	External vacuum pump control				C1 NO contact
115	External vacuum pump thermal overload				24V DC

No.	Left side	Right side
116	External vacuum pump thermal overload	PLC input X11
117	Labeler relay R11	R11 NO contact
118	Labeler relay R11	R11 NO contact
	Ground – frequency drive	

PLUG PIN ASSIGNMENTS

Die plug

Plug	Description	Harness	
Pin 1	Thermocouple (+)	Red wire	2 conductor 18ga. Shielded
Pin 2	Thermocouple (-)	Black wire	
Pin 3	Ground	Green / yellow wire	5 conductor 14ga.
Pin 4	220V AC main heaters	Wire 1	
Pin 5	220V AC main heaters	Wire 2	
Pin 6	220V AC cleaning heaters	Wire 3	
Pin 7	220V AC cleaning heaters	Wire 4	

Trim canister / vacuum pump plug

* pin out changes with vacuum pump size

Plug	3Hp & 5Hp	7.5Hp & 10Hp		12Hp and Larger
Pin 1	Vacuum pump	Vacuum pump	Phase 1	Vacuum pump control
Pin 2	Vacuum pump	Vacuum pump	Phase 2	Vacuum pump control
Pin 3	Vacuum pump	Vacuum pump	Phase 3	
Pin 4	Trim blower	Trim blower		Trim blower
Pin 5	Trim blower	Trim blower		Trim blower
Pin 6	Trim blower	Trim blower		Trim blower
Pin 7	Ground	Ground		Ground
Pin 8		Vacuum pump	Phase 1	Vacuum pump overload
Pin 9		Vacuum pump	Phase 2	Vacuum pump overload
Pin 10		Vacuum pump	Phase 3	

- * Trim blower pins are not used if blower is mounted in the side frame
- * 7.5Hp & 10Hp – due to current draw on the plug, two pins are used per phase
 Pins 1-8 phase 1
 Pins 2-9 phase 2
 Pins 3-10 phase 3
- * Greater than 10Hp or house vacuum require motor control on the pump and the plug is used to pull in the contactor and return the thermal overload status to the RI-200.

Forming vacuum pump plug

Plug	Description	Harness
Pin 1	Forming vacuum pump	1
Pin 2	Forming vacuum pump	2
Pin 3	Forming vacuum pump	3
Pin 4		
Pin 5		
Pin 6		
Pin 7	Ground	Green/yellow wire
Pin 8		
Pin 9		
Pin 10		

Water chiller plug

Plug	Description	Harness
Pin 1	Water chiller	1
Pin 2	Water chiller	2
Pin 3		
Pin 4		
Pin 5		
Pin 6		
Pin 7	Ground	Green/yellow wire
Pin 8		
Pin 9		
Pin 10		

WIRING HARNESS ASSIGNMENTS

Die lift cylinder proximity switch harness

Wire	Description
Red	24V DC
Black	Die lift up proximity switch
White	Die lift down proximity switch
Green	Die lift short proximity switch

Air manifold harness

* harness this side

Sealing	Bucket Vacuum	Head Vacuum	Vent	Film Heating	Film Forming	Die lift Up	Die lift Down	Cutting System 1	Cutting Aux.	Option 1	Option 2	Bucket Vent
V8	V7	V6	V10	V4	V5/1	V3/1	V3/2	V13	V14	V17	V15	

Plug pin	Harness wire		Valve name	Valve number
	Color	Band		
1	Black	None	Sealing	V8
2	Brown	None	Bucket vacuum	V7
3	Red	None	Head vacuum	V6
4	Orange	None	Vent	V10
5	Yellow	None	Film heating	V4
6	Pink	None	Film forming	V5/1 & V5/2
7	Blue	None	Die lift up	V3/1
8	Violet	White	Die lift down	V3/2
9	Grey	Black	Cutting system 1	V13
10	White	Black	Cutting auxiliary	V14
11	White	Red	Option 1	V17
12	Yellow	Red	Option 2	V15
14	Yellow	Black	Bucket Vent (Option 3)	
13	Orange	Red	common	All

* **Option 1 & option 2 valves are pre-wired.**

Option 1 – code dating valve V17

Option 2 – film brake valve V15

* Terminal blocks for valves are double stacked blocks with a diode between the bottom row and the top row. The top row is positive and the back row is 0V DC,

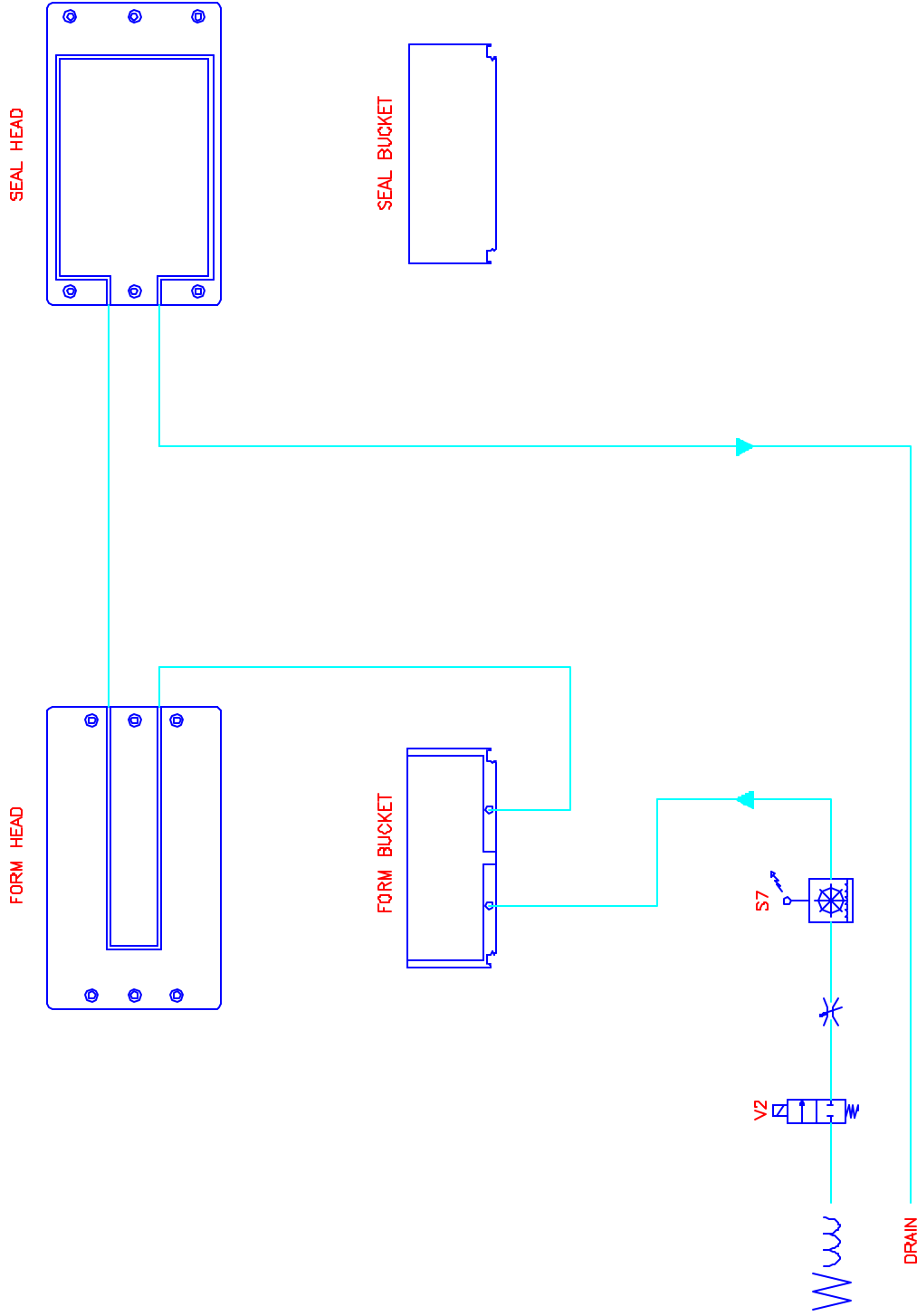
Encoder harness

Wire	Description
Blue	24V DC
Black	0V DC
Brown	Signal X0
Braided shield	Ground

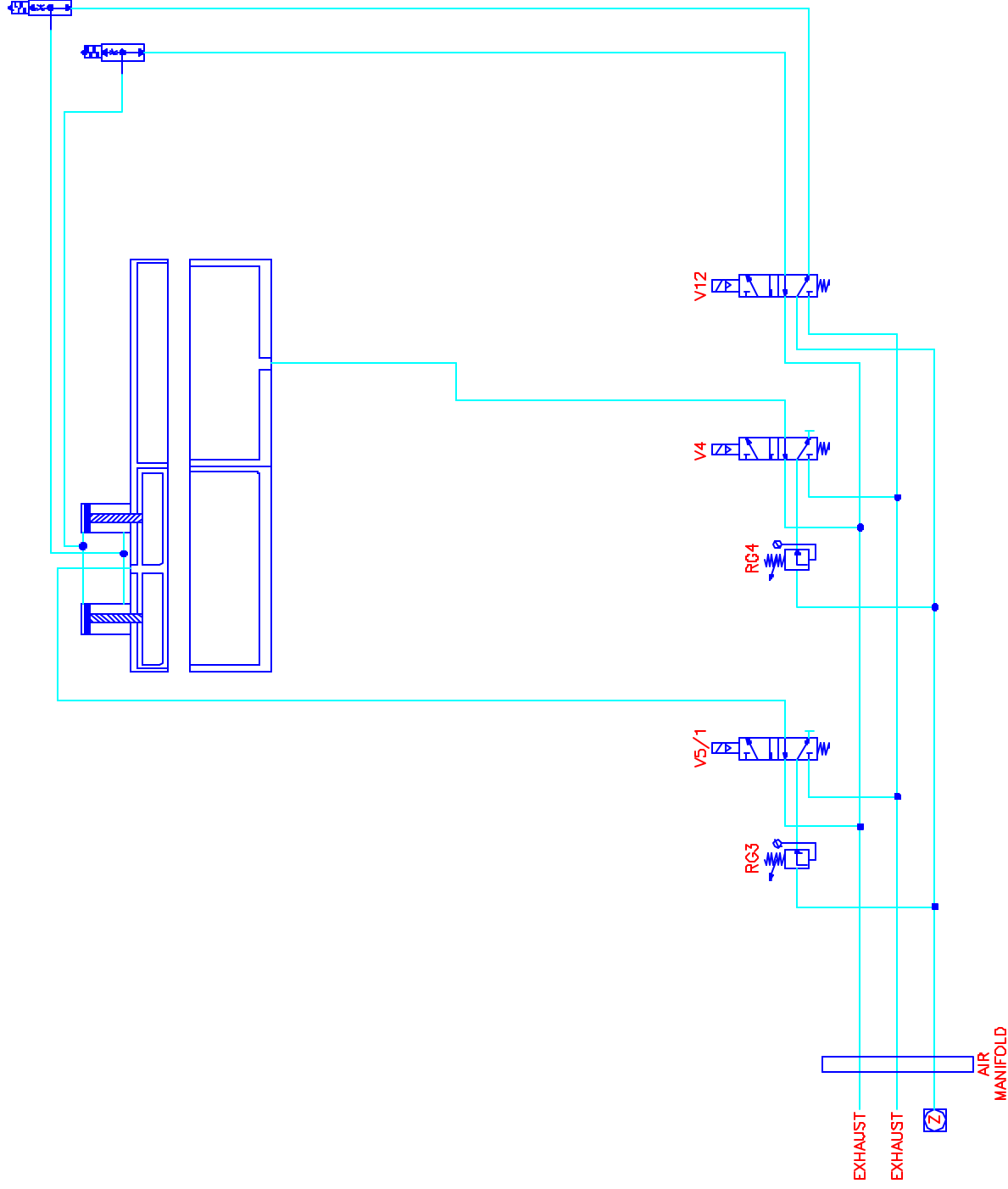
Film registration (photo-eye) harness

Wire	Description
Brown	24V DC Terminal 57
Blue	0V DC Terminal 58
Black	Signal Terminal 59
Shield	Ground
White	Not used

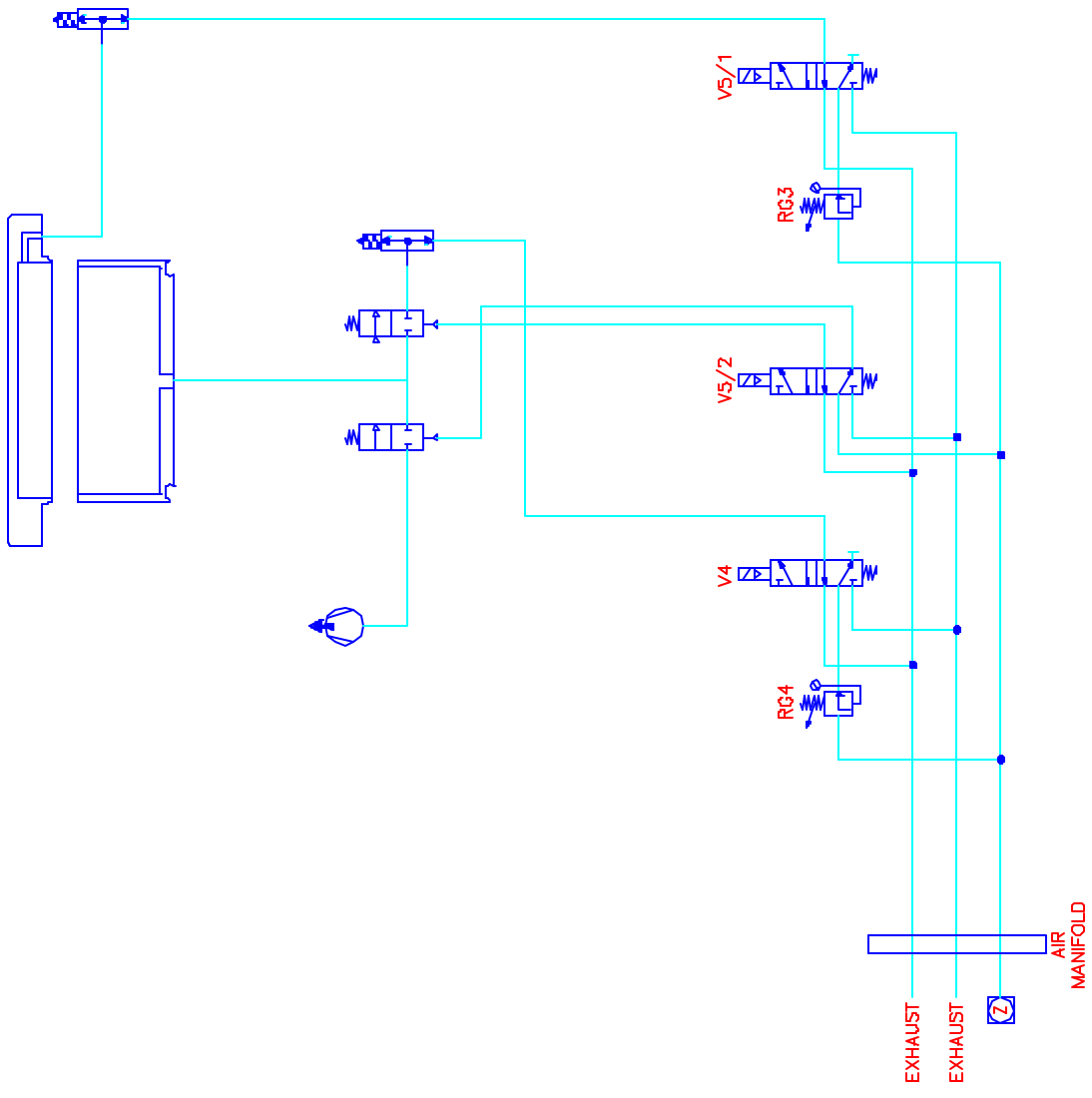
V2 WATER



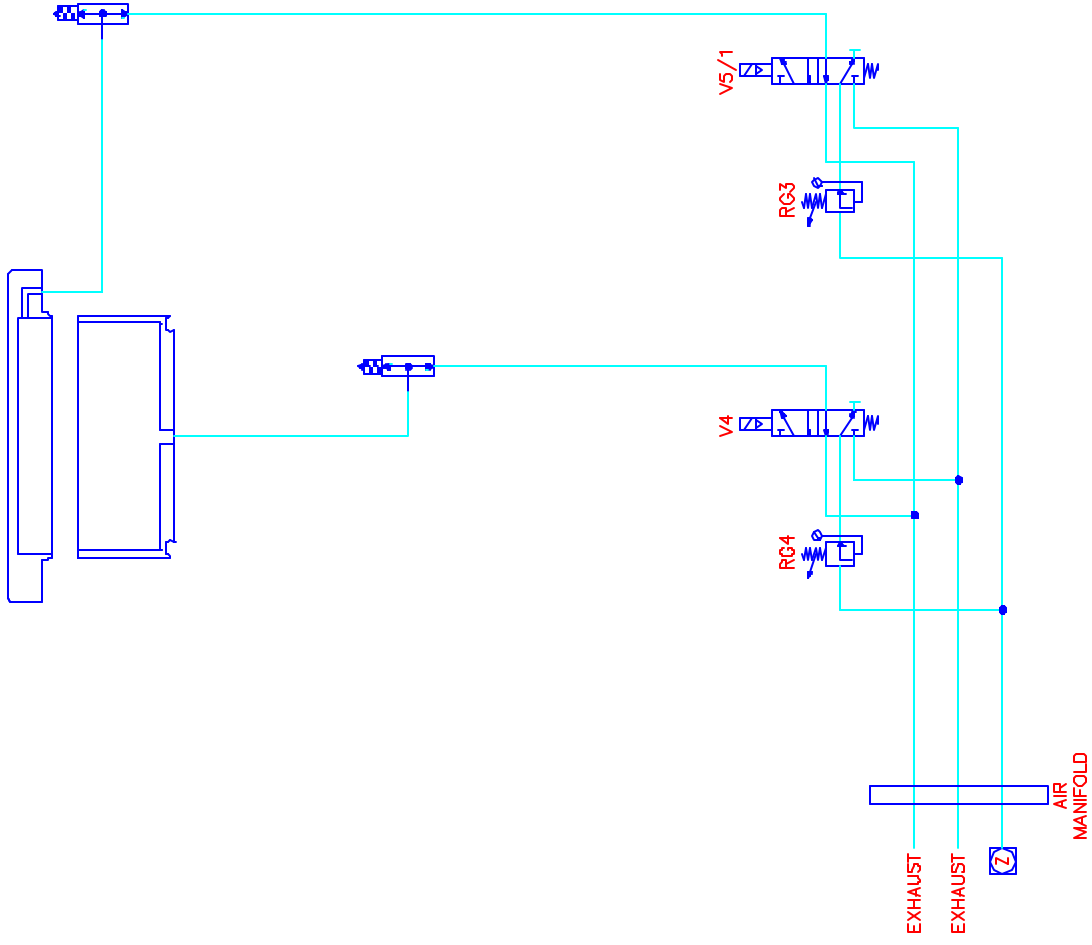
V4 FILM HEATING
V5/1 FILM FORMING
V12 PLUG



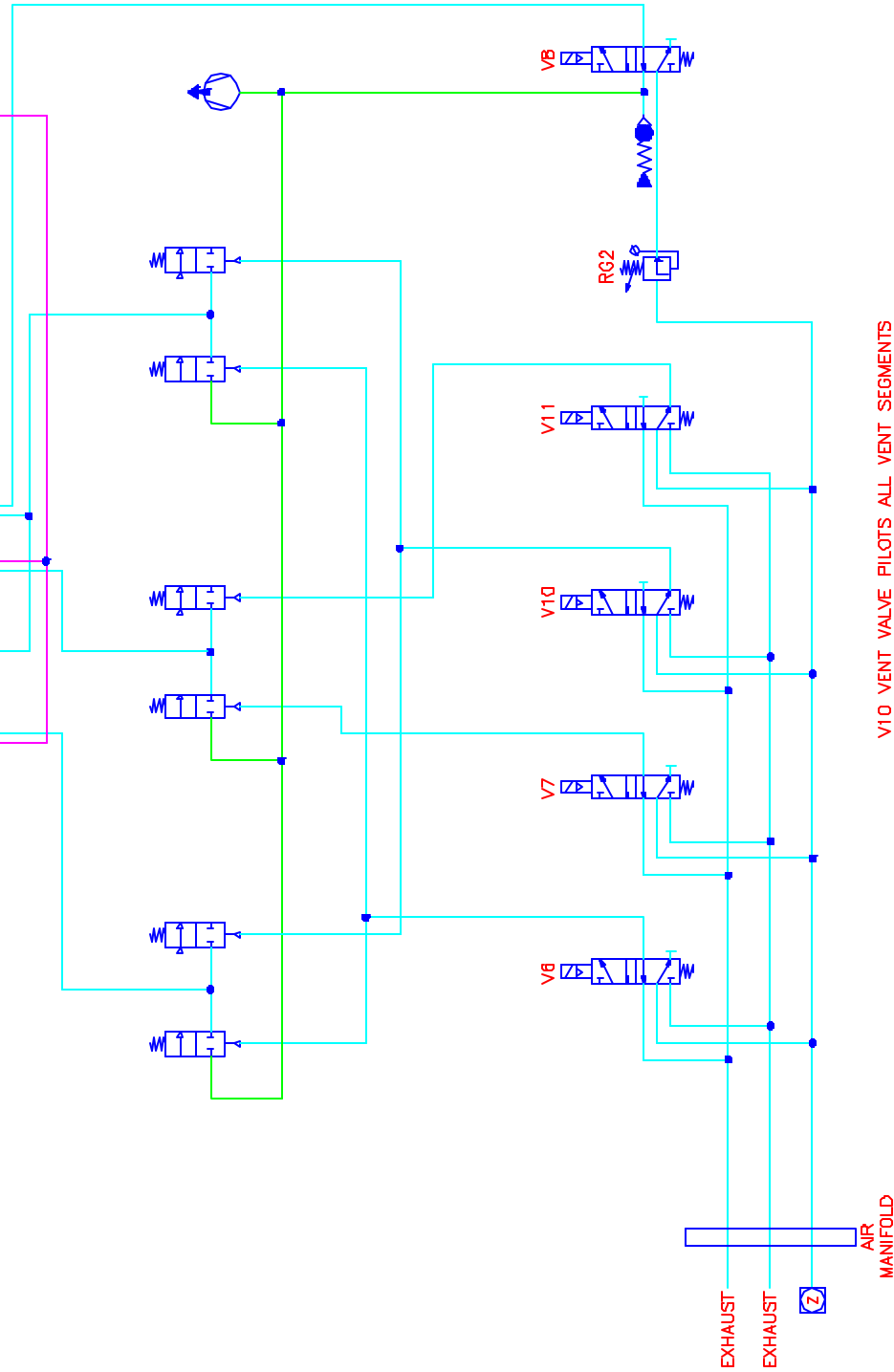
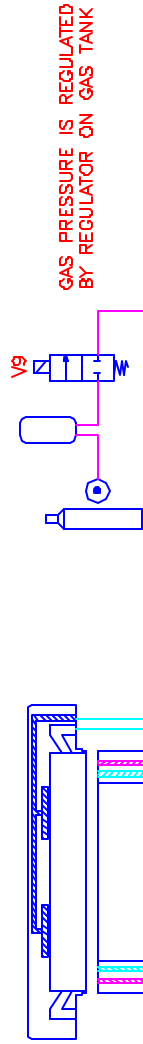
V4 - FILM HEATING
 V5/1 FILM FORMING
 V5/2 FILM FORMING (VACUUM)



V4 - FILM HEATING
V5/1 - FILM FORMING

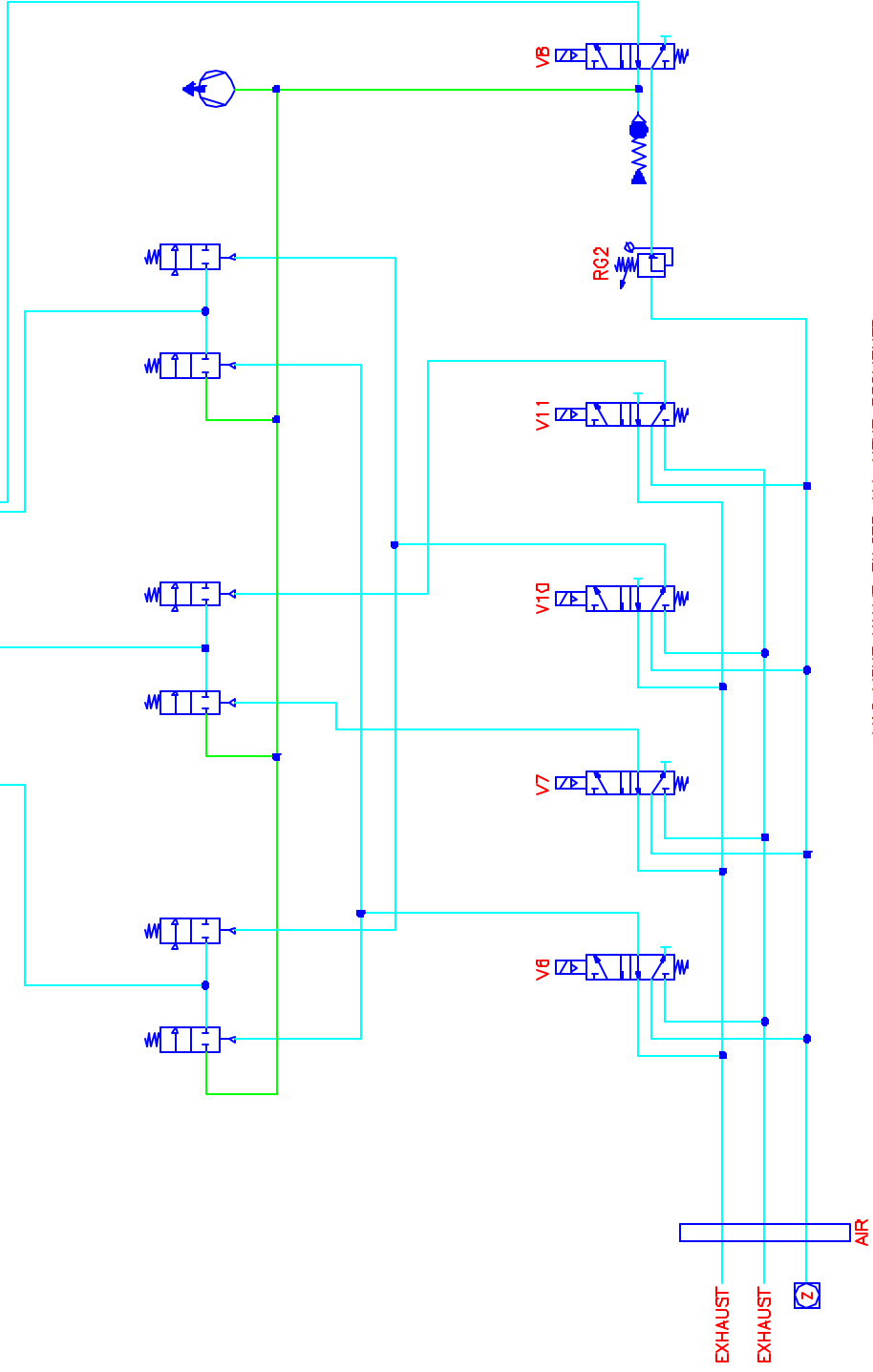
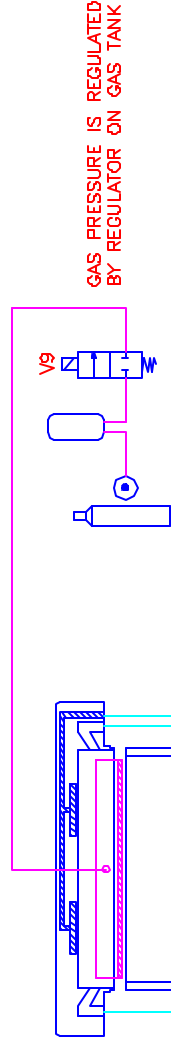


V6 HEAD VACUUM
 V7 BUCKET VACUUM
 V8 SEAL
 V9 GAS
 V10 VENT BUCKET
 V11 VENT BUCKET



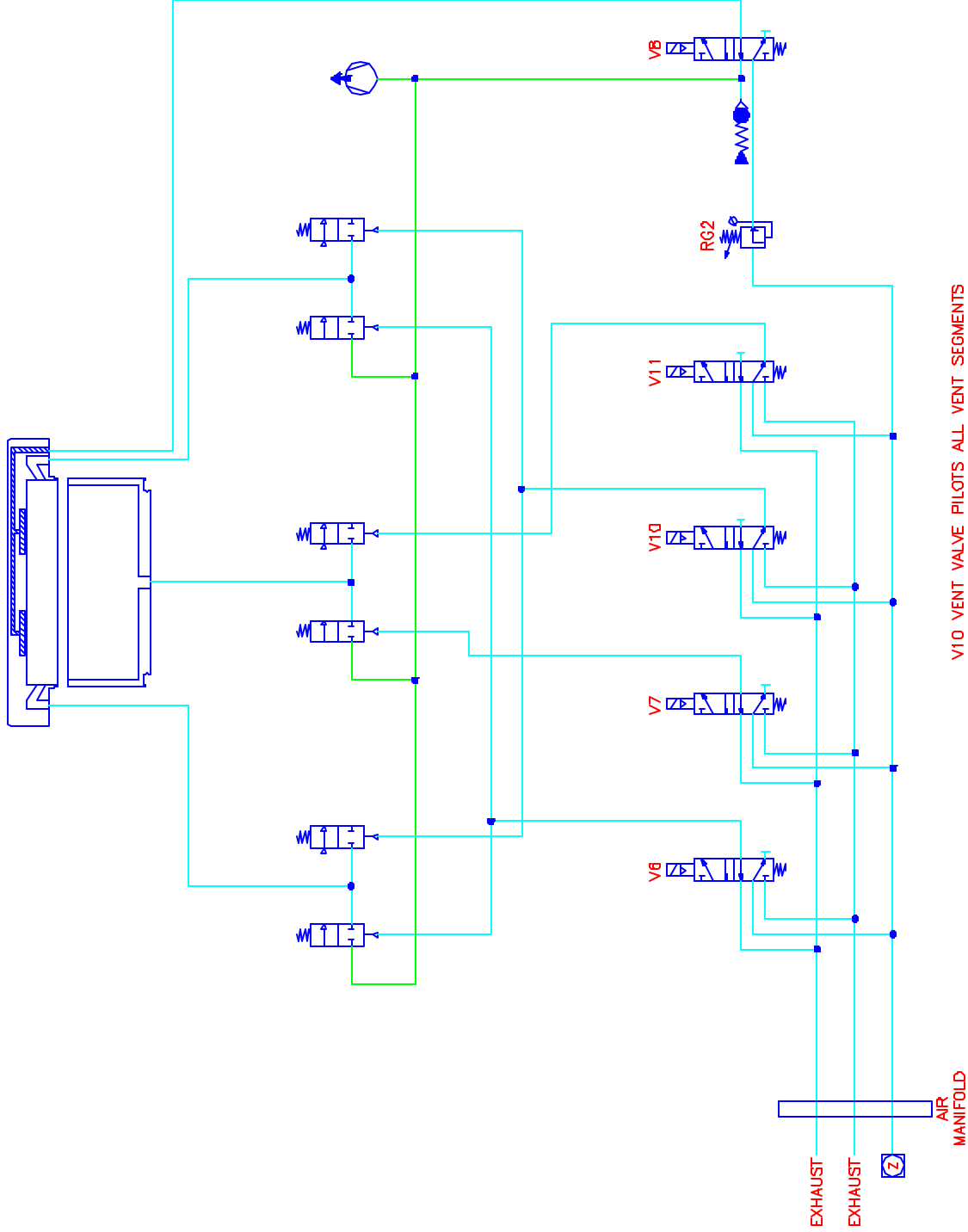
V10 VENT VALVE PILOTS ALL VENT SEGMENTS UNLESS V11 VENT BUCKET IS INSTALLED TO VENT BUCKET

V6 HEAD VACUUM
 V7 BUCKET VACUUM
 V8 SEAL
 V9 GAS
 V10 VENT
 V11 VENT BUCKET



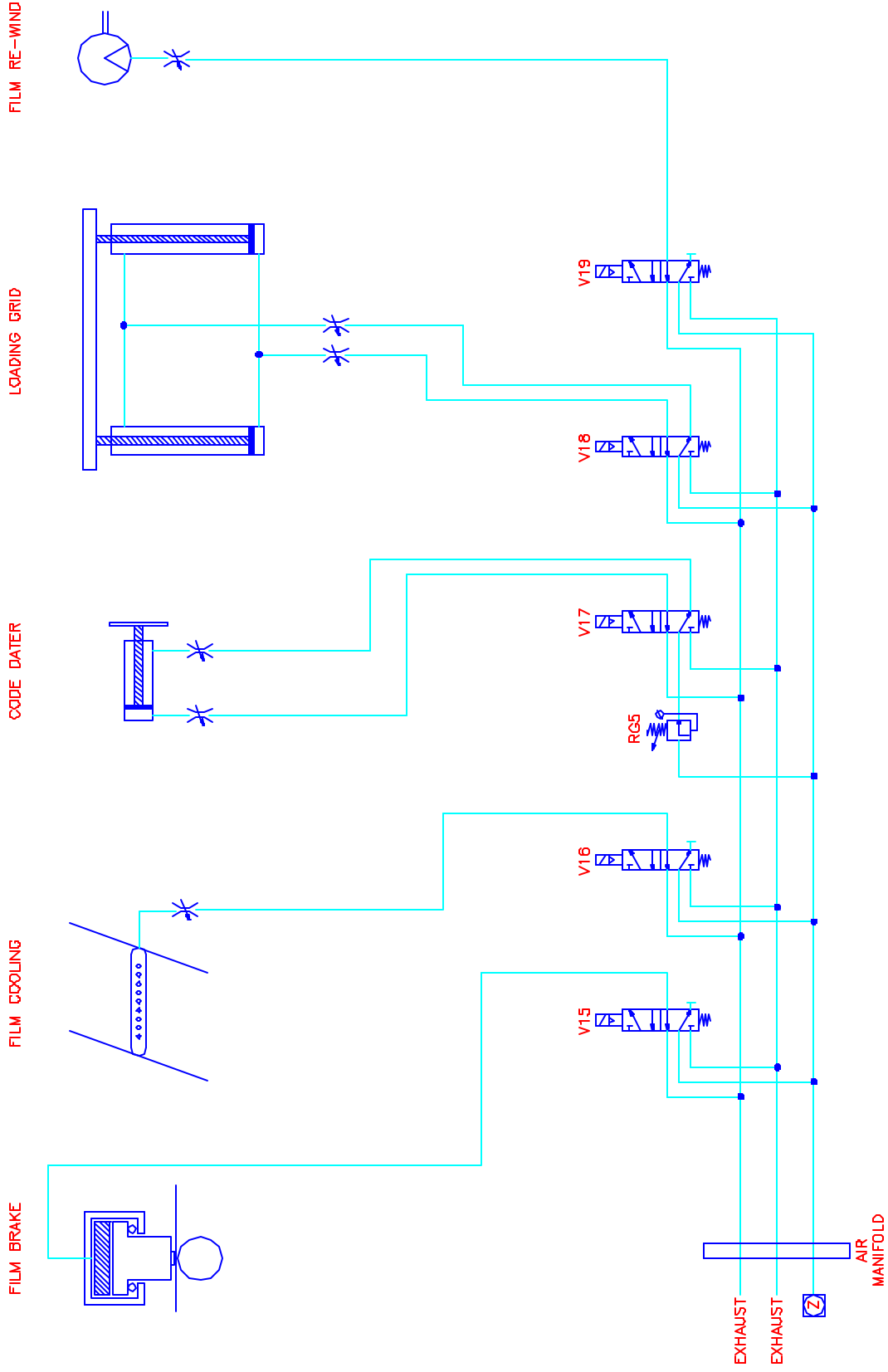
V10 VENT VALVE PILOTS ALL VENT SEGMENTS
 UNLESS V11 VENT BUCKET IS INSTALLED TO
 VENT BUCKET

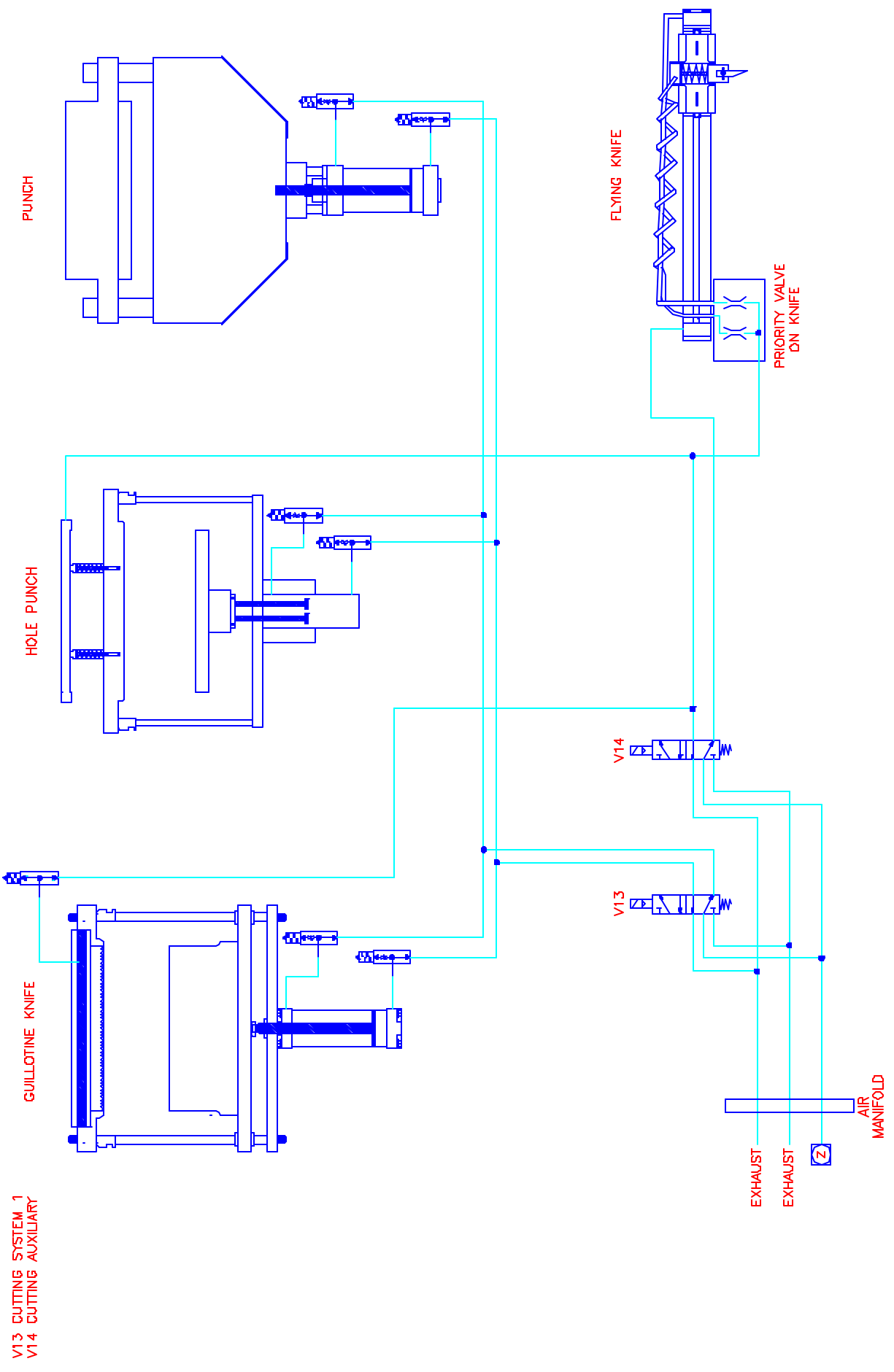
V6 HEAD VACUUM
 V7 BUCKET VACUUM
 V8 SEAL
 V10 VENT
 V11 VENT BUCKET



V10 VENT VALVE PILOTS ALL VENT SEGMENTS
 UNLESS V11 VENT BUCKET IS INSTALLED TO
 VENT BUCKET

V15 FILM BRAKE
 V16 FILM COOLING
 V17 CODE DATER
 V18 LOADING GRID
 V19 FILM RE-WIND





V13 CUTTING SYSTEM 1
 V14 CUTTING AUXILIARY

GUILLOTINE KNIFE

HOLE PUNCH

PUNCH

V14

V13

FLYING KNIFE

EXHAUST

EXHAUST

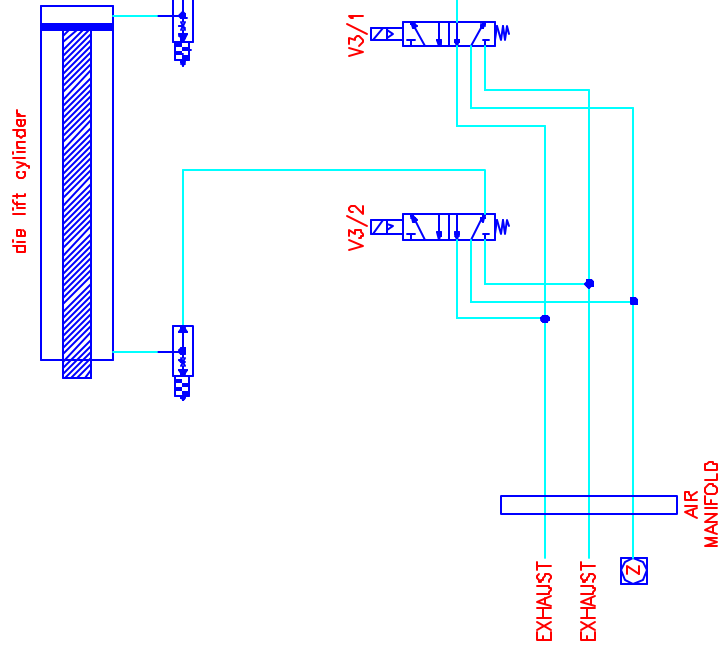
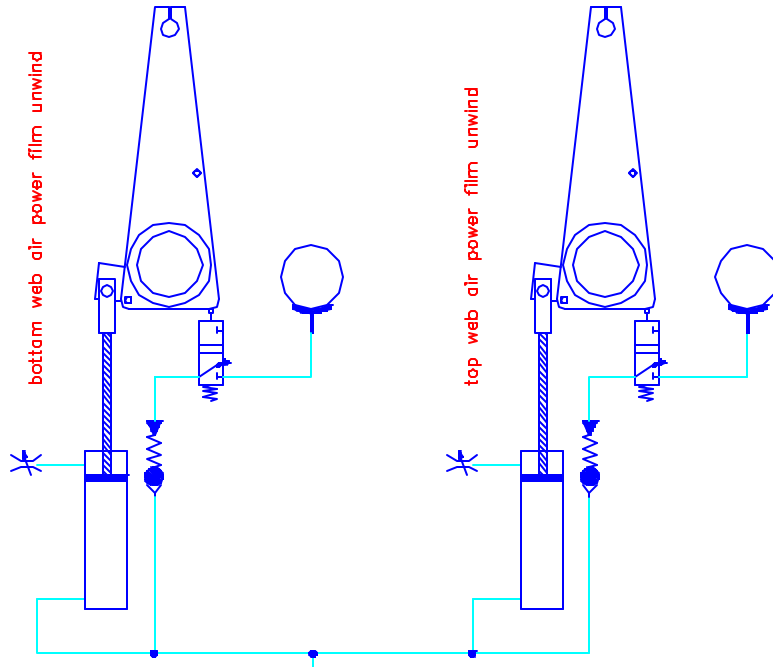
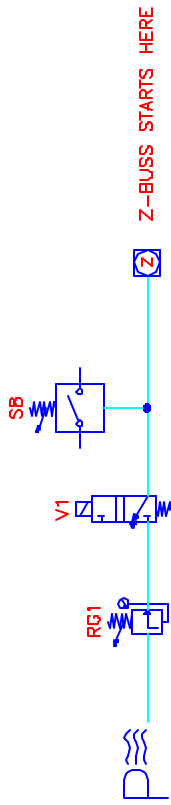
Z

AIR
 MANIFOLD

PRIORITY VALVE
 ON KNIFE

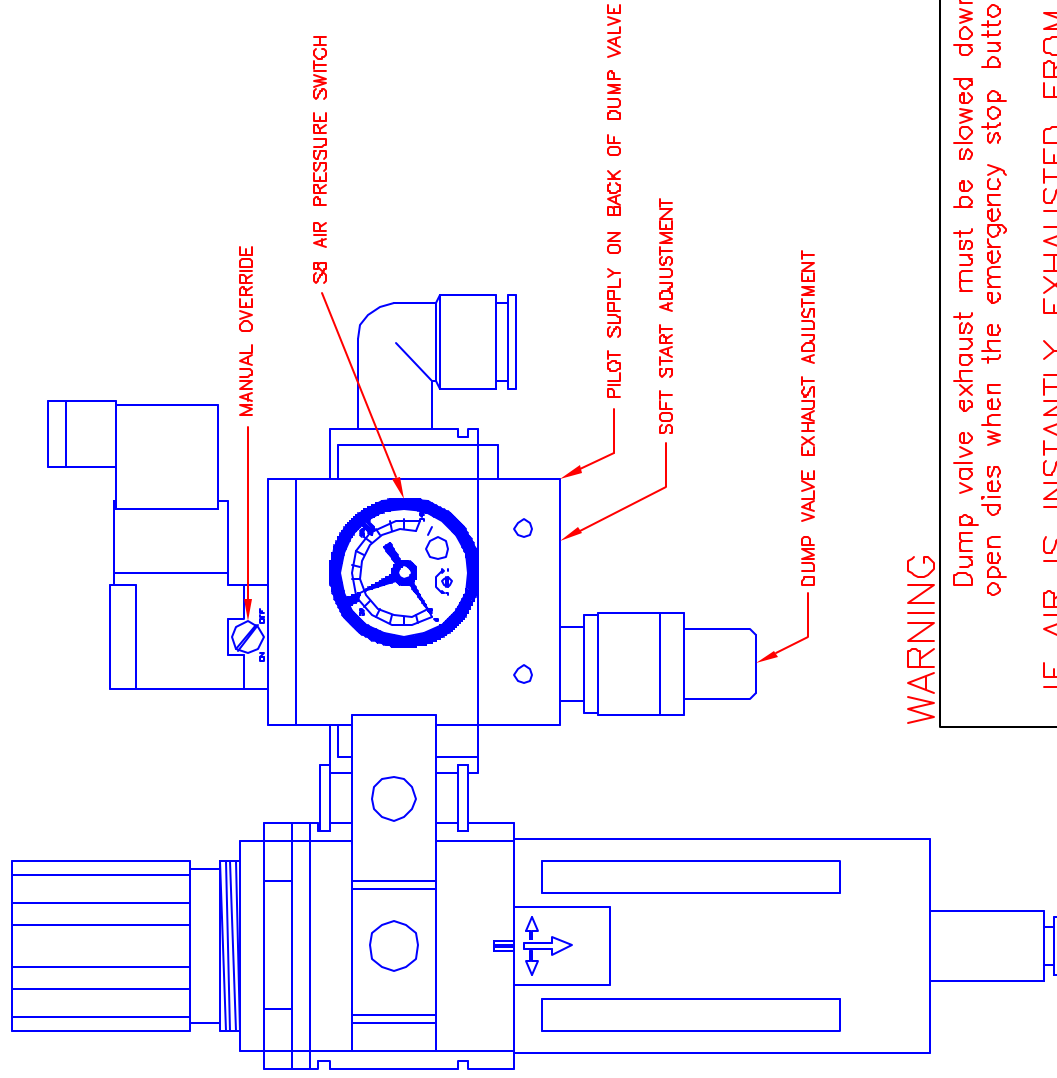
V1 AIR DUMP
 V3/1 DIE LIFT UP
 V3/2 DIE LIFT DOWN

AIR PREP. ASSEMBLY



FILTER / REGULATOR
RG1

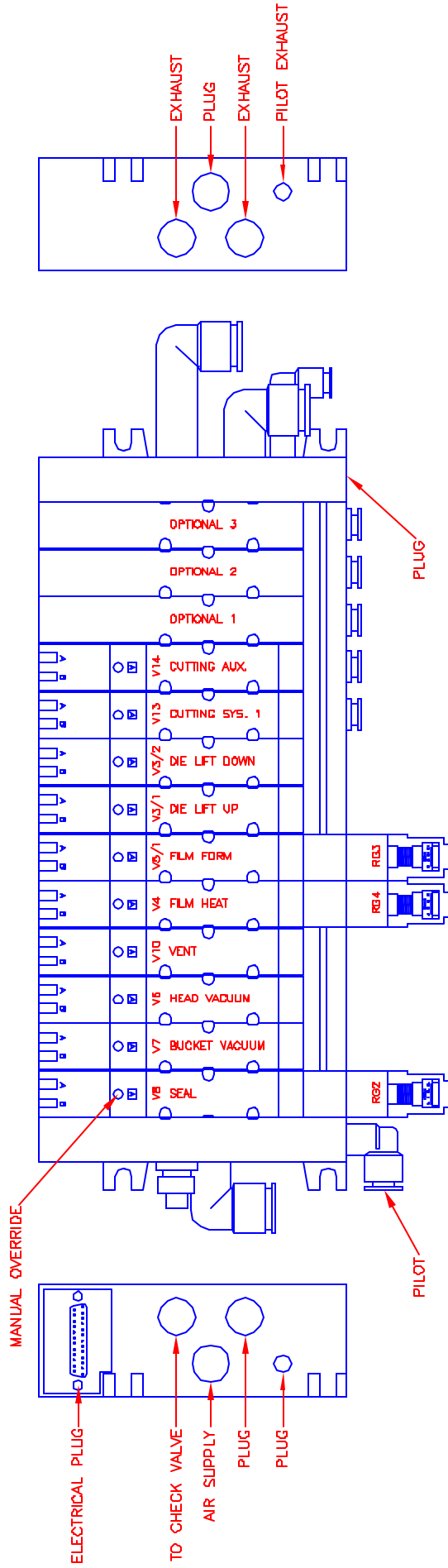
DUMP VALVE
V1



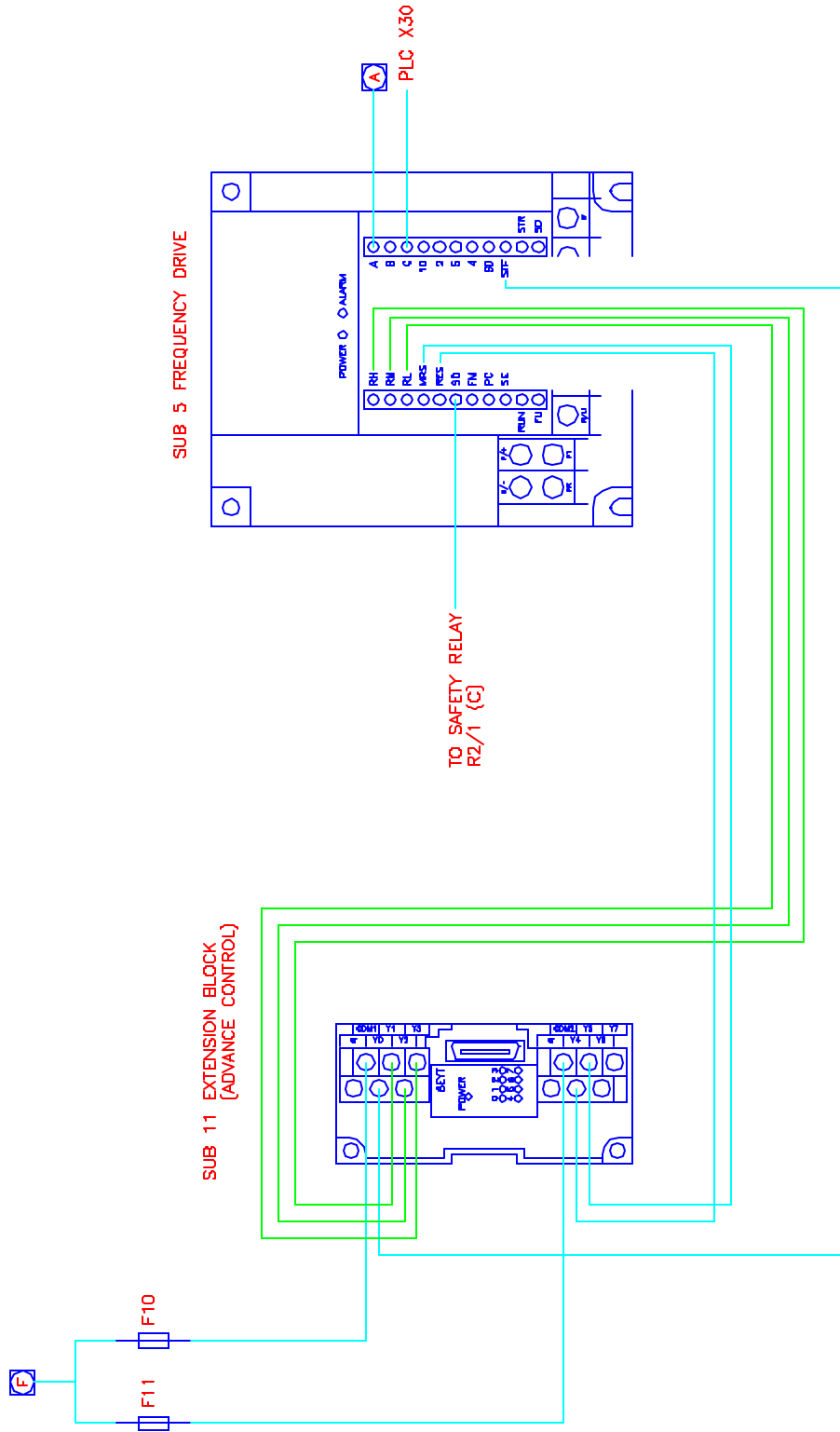
WARNING

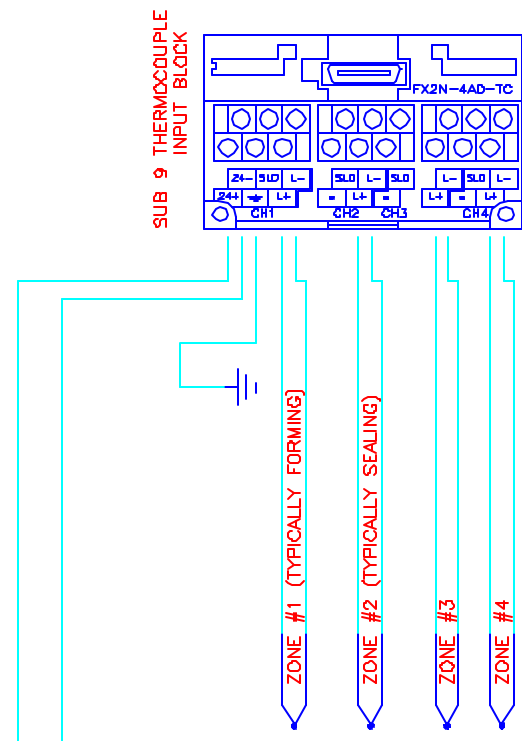
Dump valve exhaust must be slowed down enough to open dies when the emergency stop button is pressed

IF AIR IS INSTANTLY EXHAUSTED FROM THE MACHINE THE DIES WILL NOT OPEN WHEN E-STOP IS PRESSED

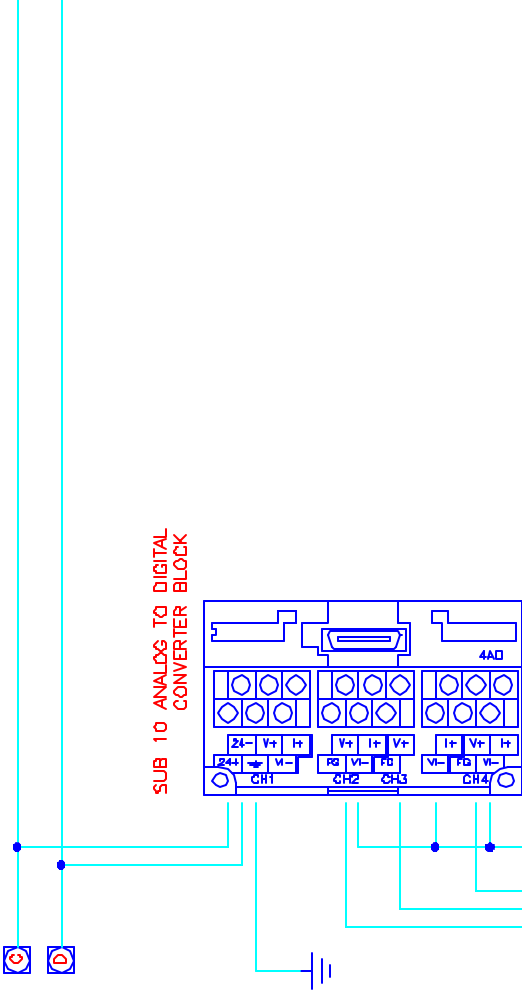


OPTIONAL 1 - WIRED FOR CODE DATING (V17)
 OPTIONAL 2 - WIRED FOR FILM BRAKE (V15)

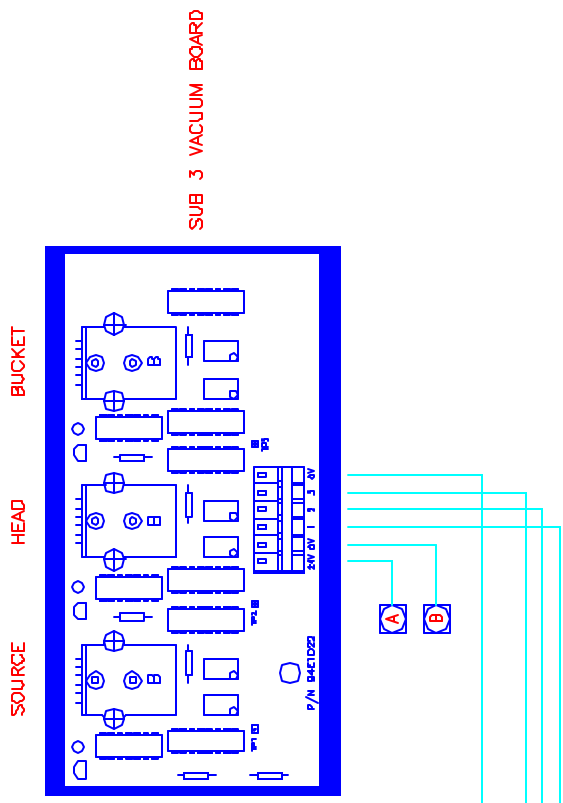




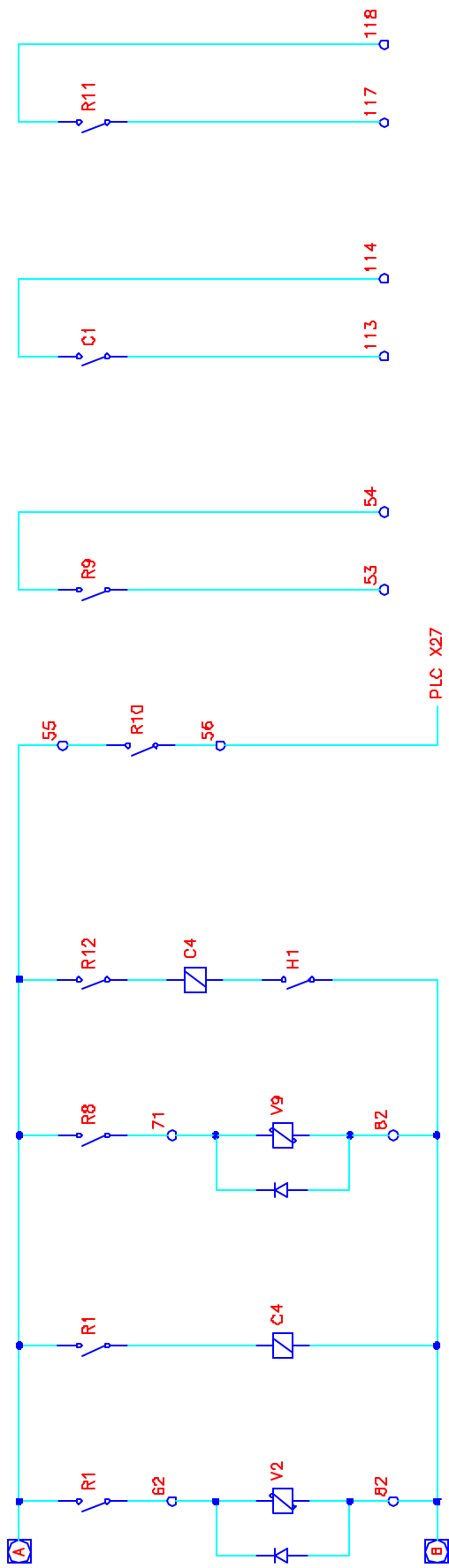
SUB 9 THERMOCOUPLE INPUT BLOCK



SUB 10 ANALOG TO DIGITAL CONVERTER BLOCK



SUB 3 VACUUM BOARD



WATER

HEATER CONTROL

GAS

VACUUM PUMP

SYNCHRONIZATION

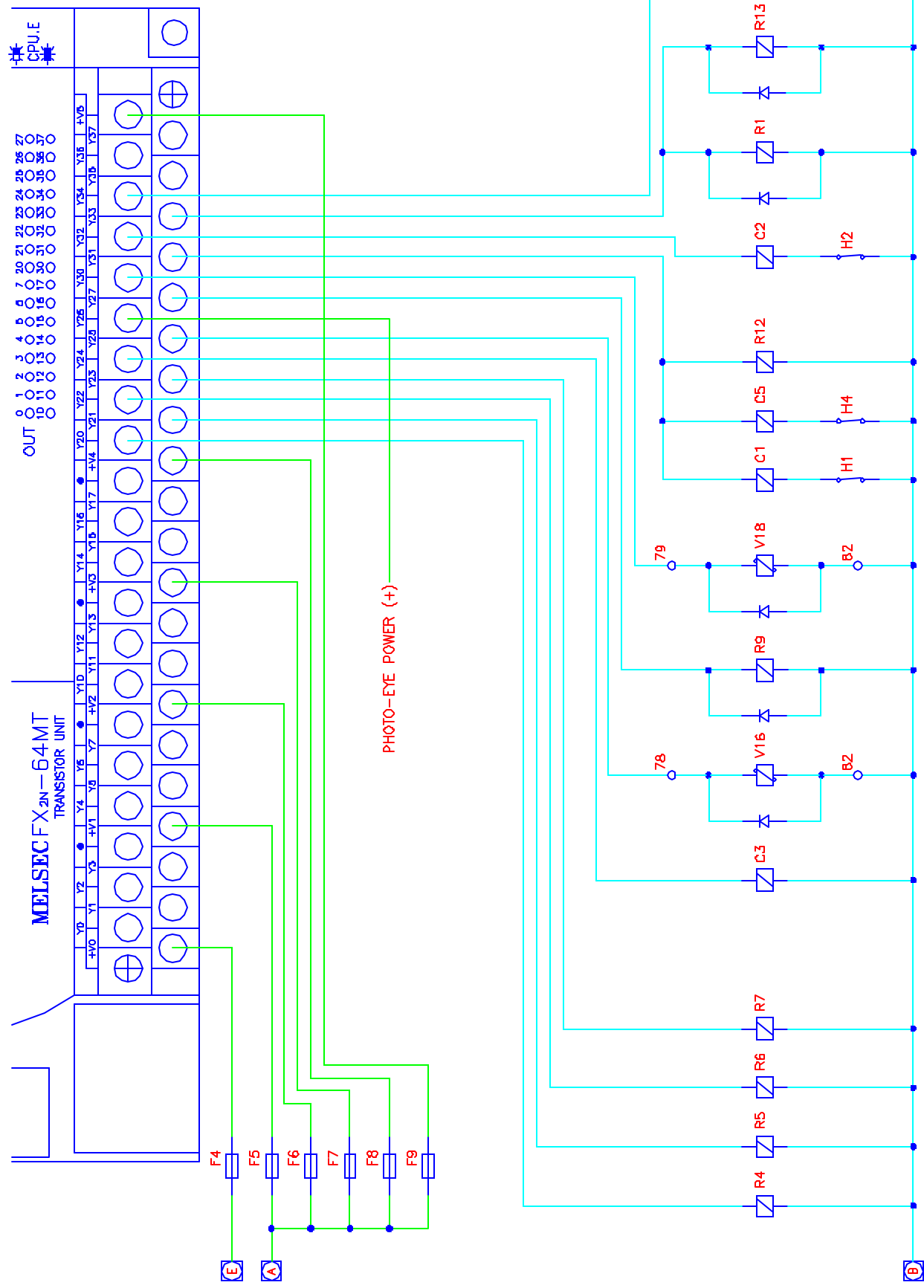
START LOADING

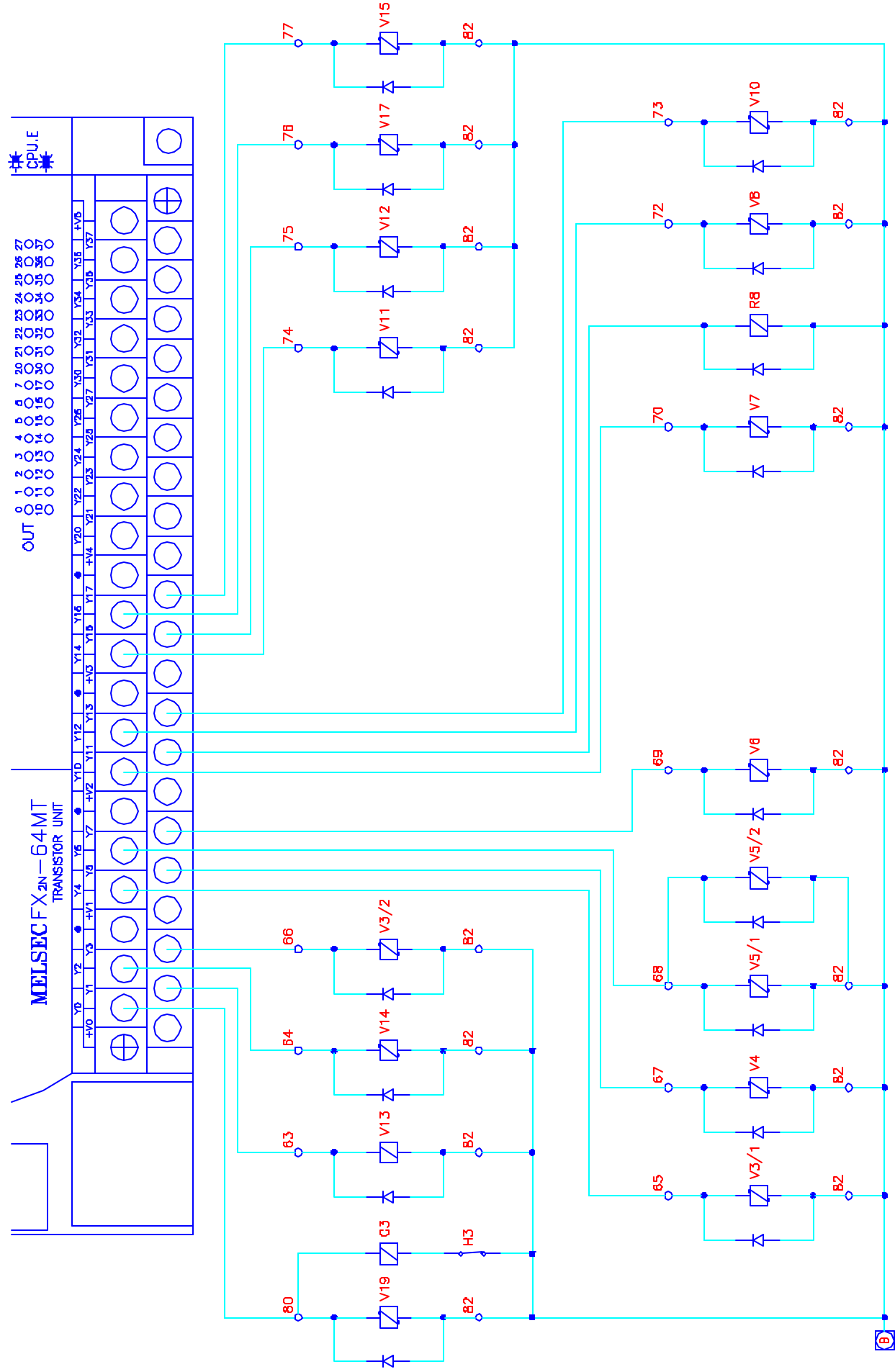
EXTERNAL VACUUM PUMP CONTROL

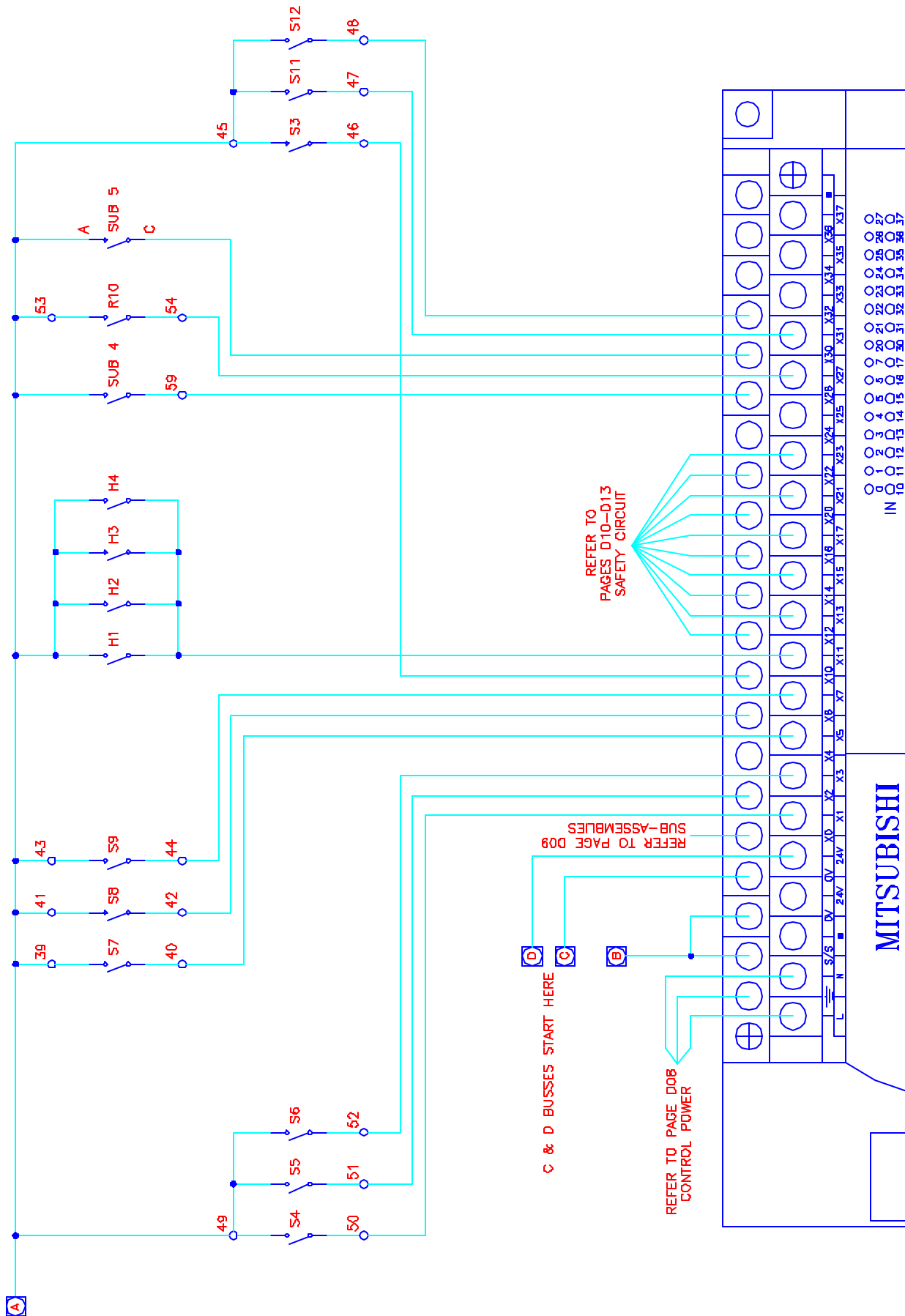
LABELER

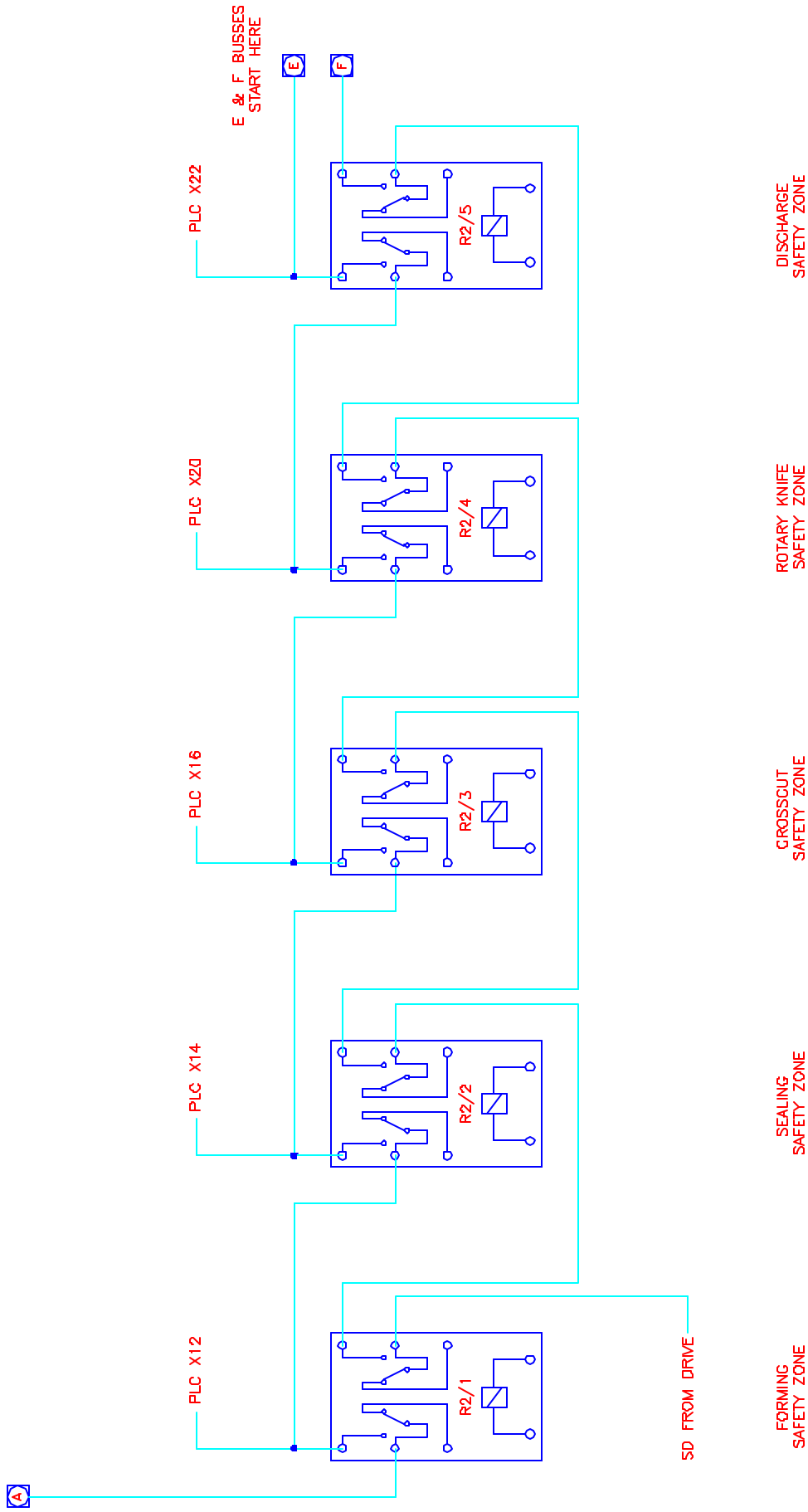
LOADER

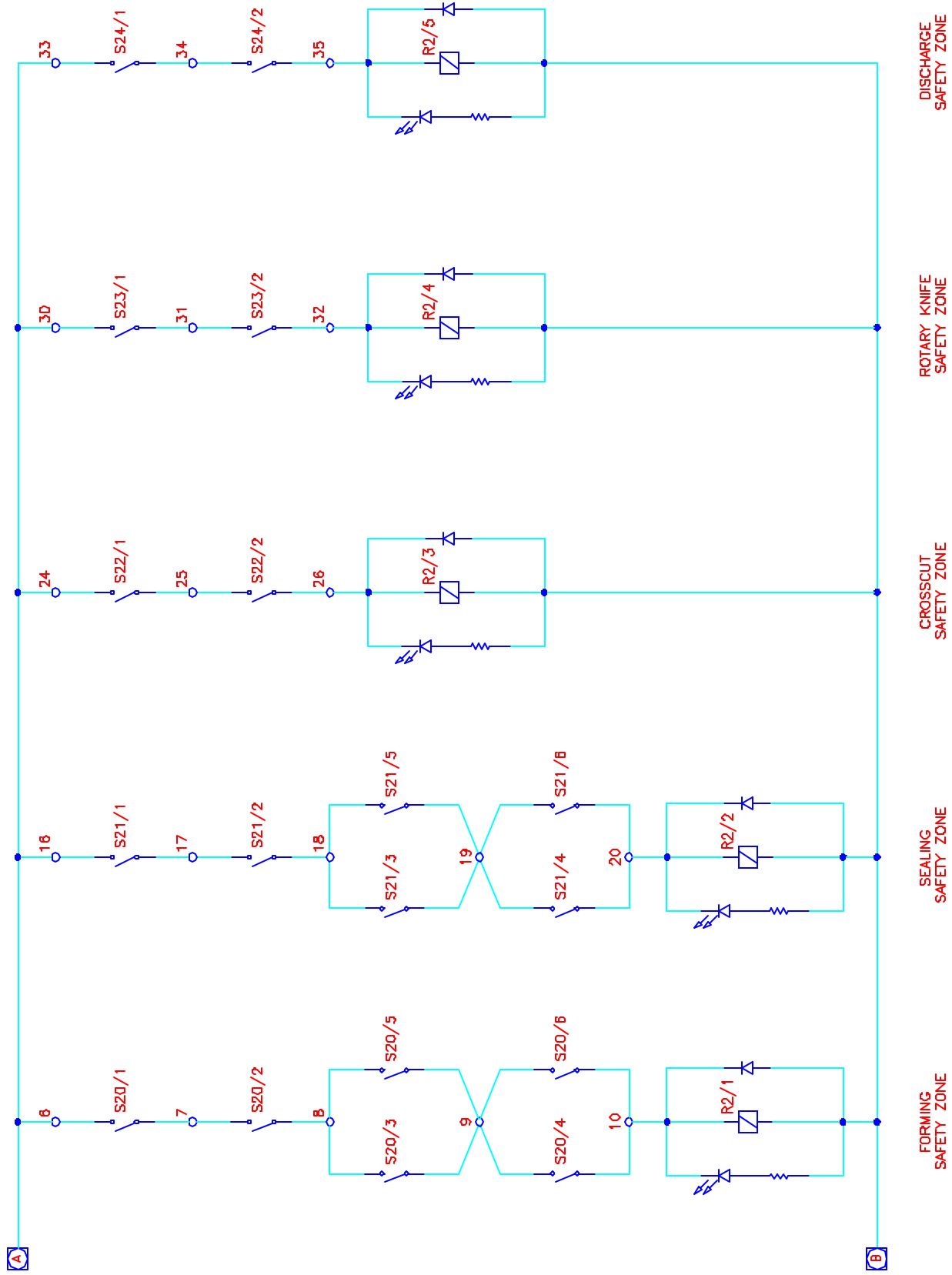
RELAY USED ONLY WITH 32A CONTACTOR LP1 D3210

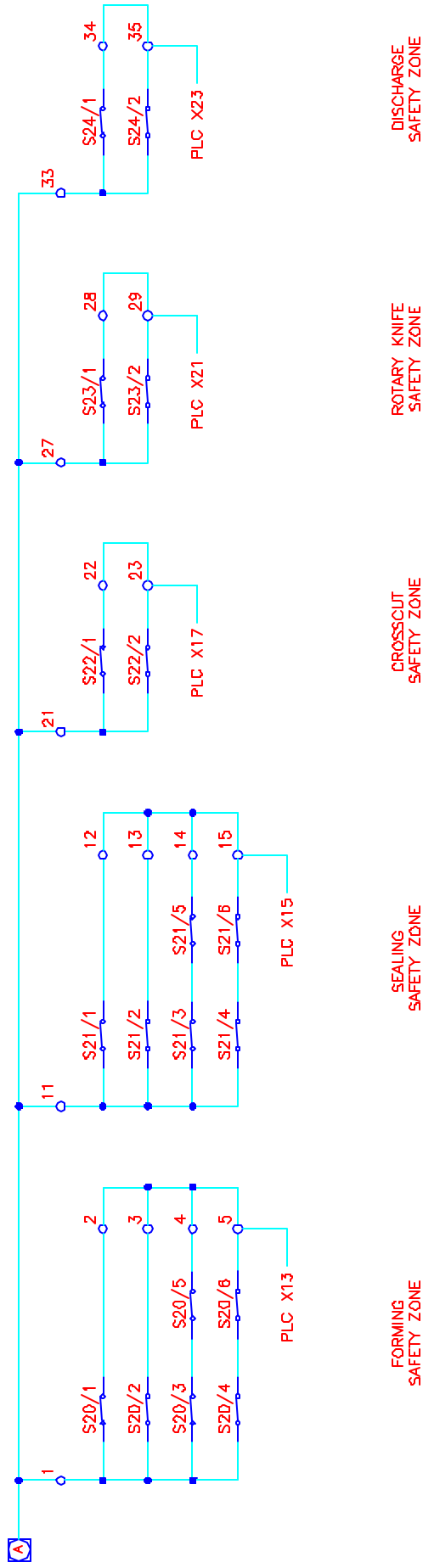












FORMING
SAFETY ZONE

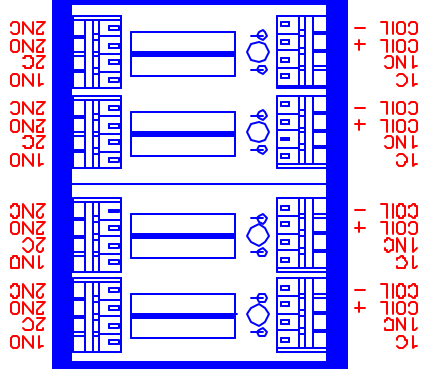
SEALING
SAFETY ZONE

CROSSCUT
SAFETY ZONE

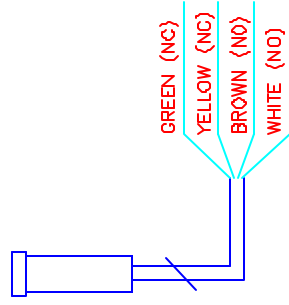
ROTARY KNIFE
SAFETY ZONE

DISCHARGE
SAFETY ZONE

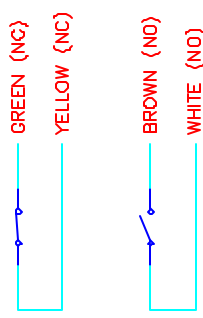
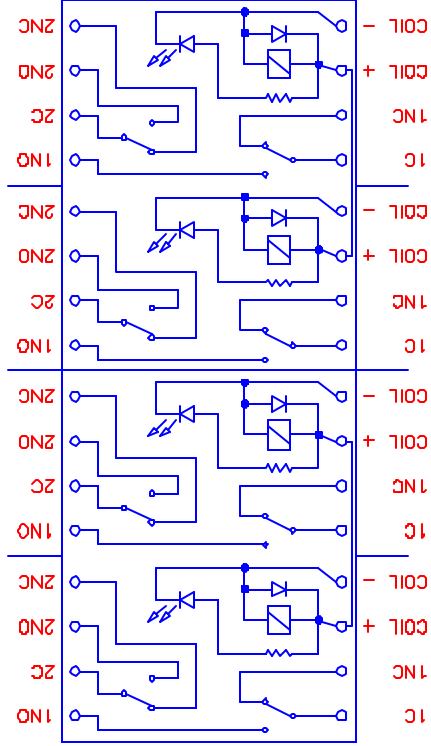
SUB 13 SAFETY RELAY BOARD
(TERMINAL LAYOUT)



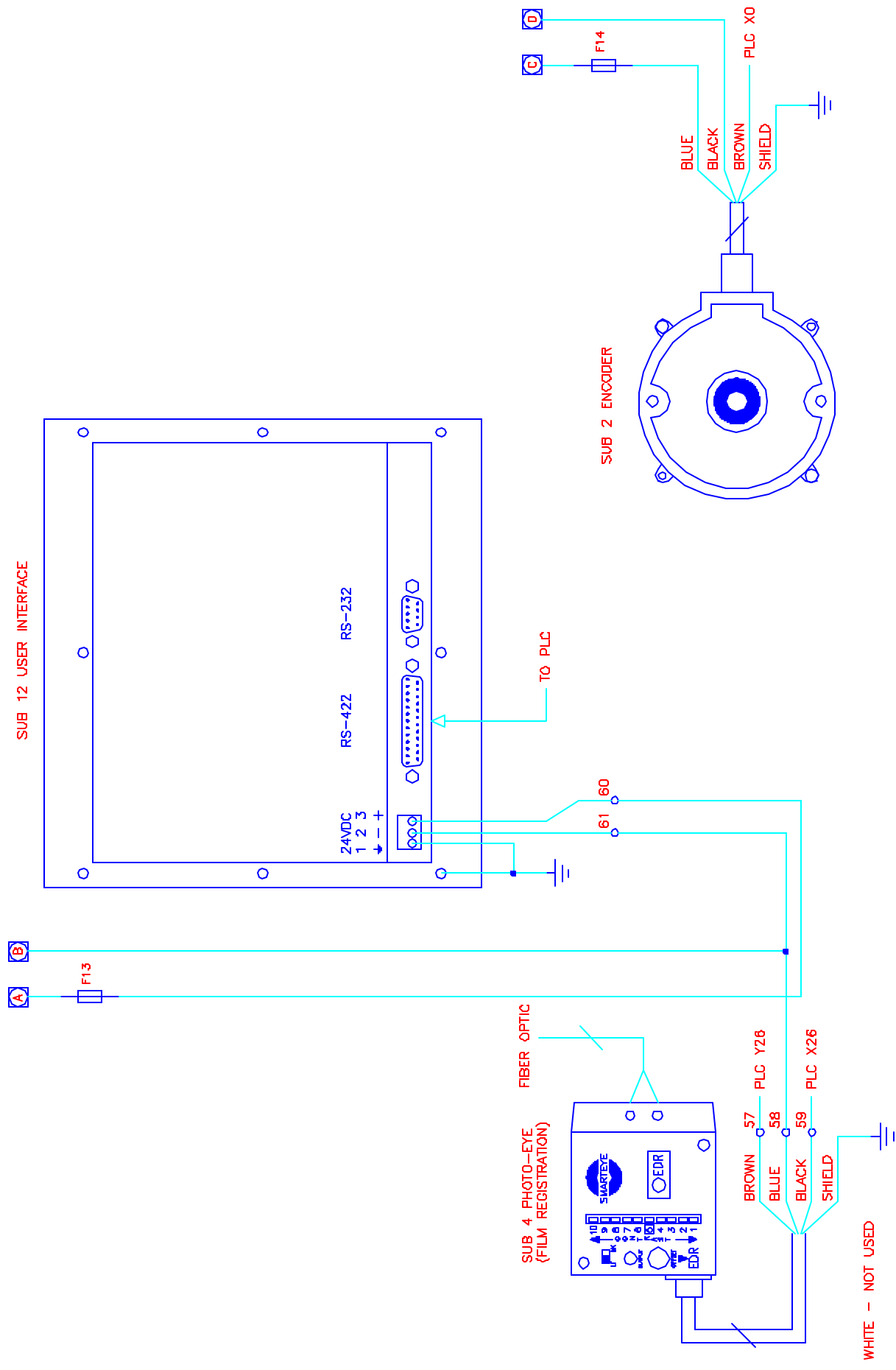
MAGNETIC SAFETY SWITCH

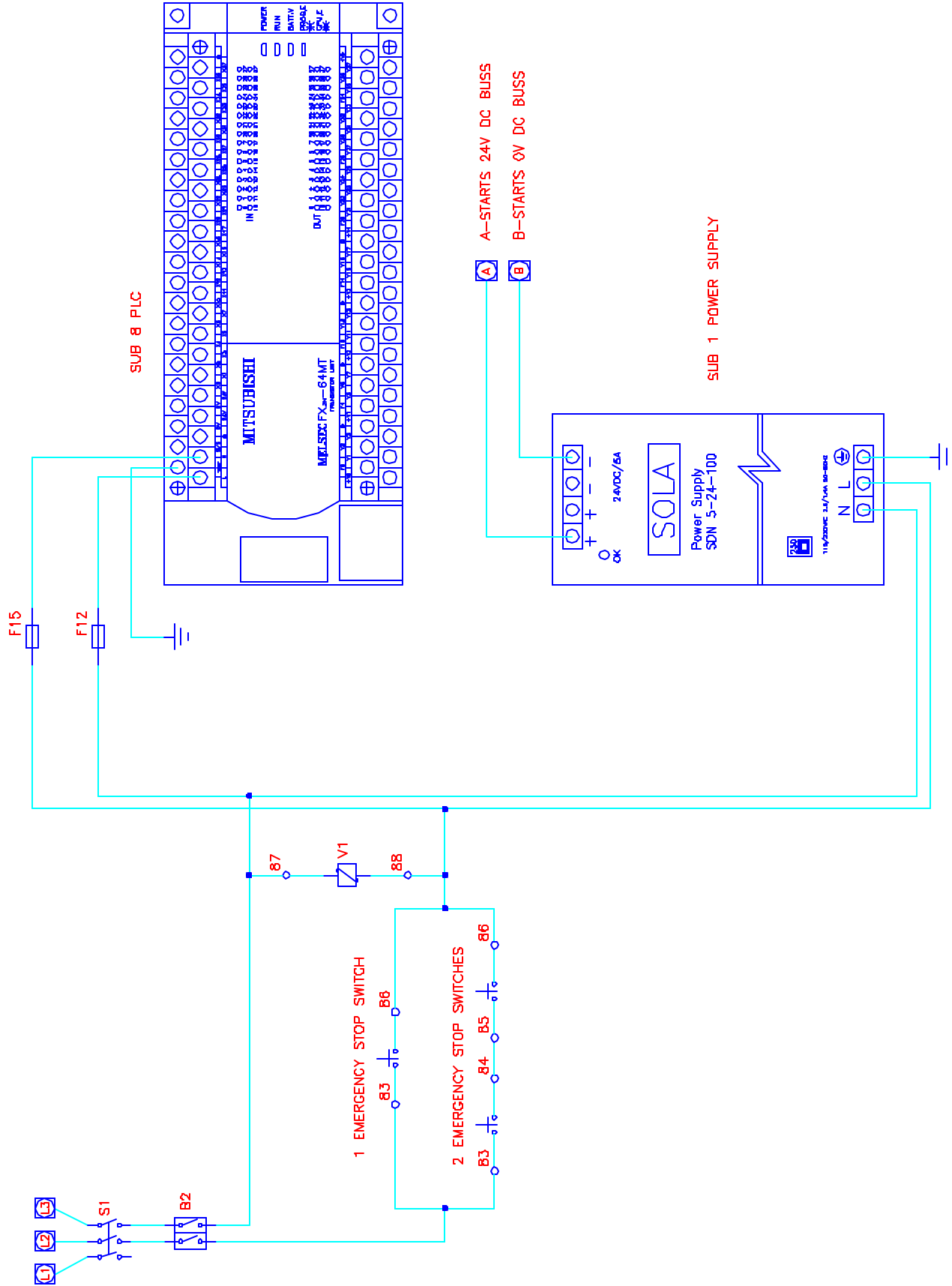


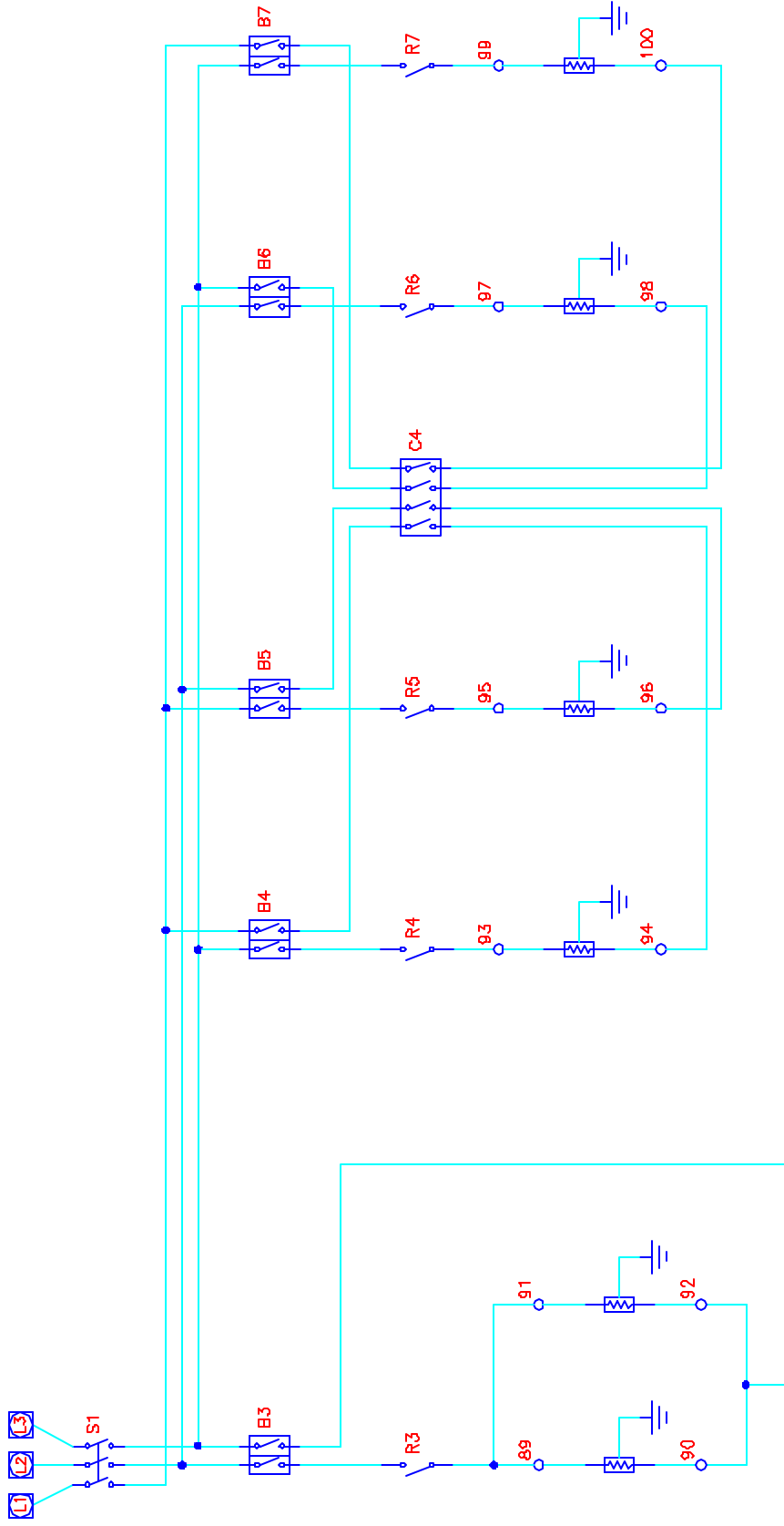
SUB 13 SAFETY RELAY BOARD
(BOARD LAYOUT)



SUB 12 USER INTERFACE







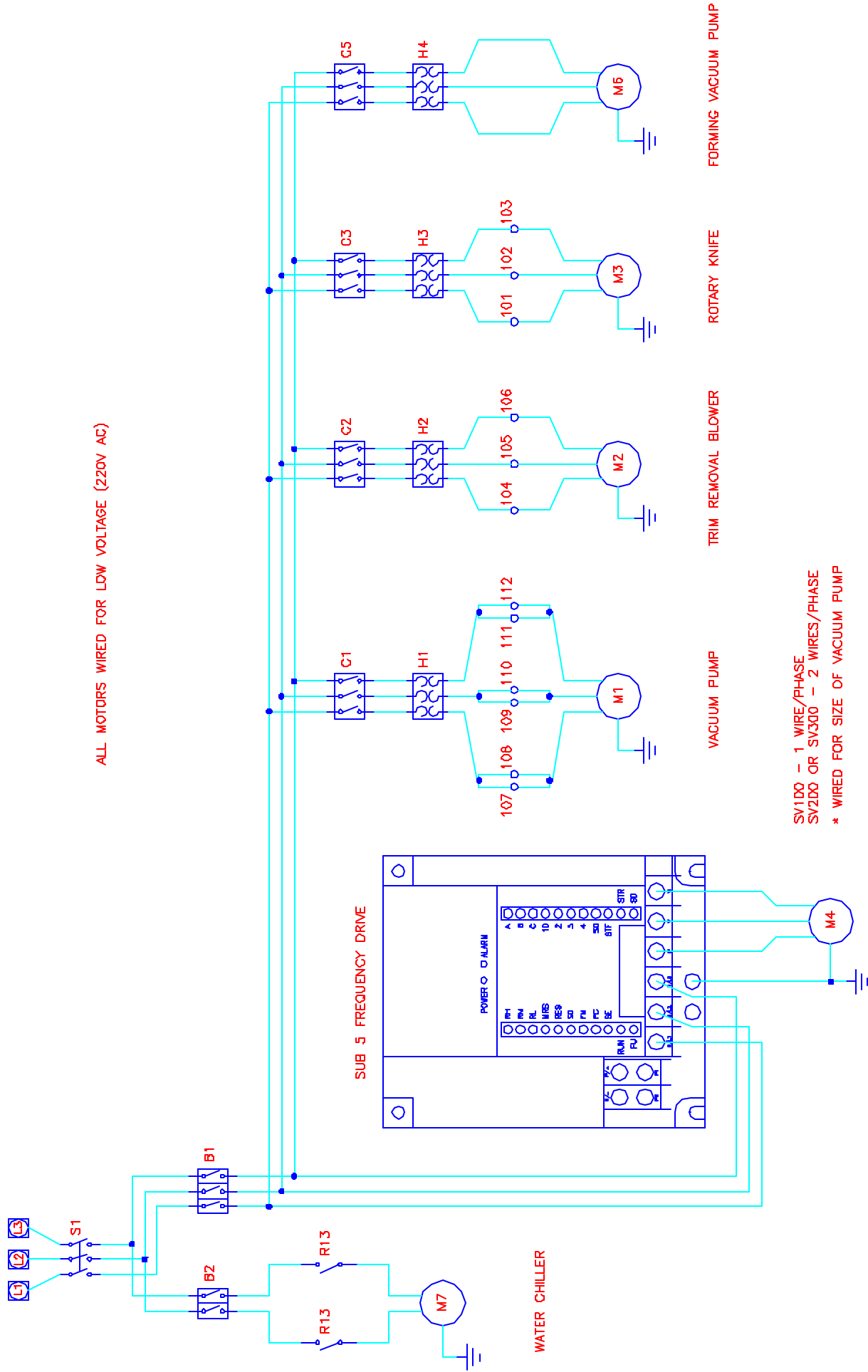
FORMING
NIGHT SHUTDOWN
SEALING
HEATERS

ZONE #1 HEATER
TYPICALLY FORMING

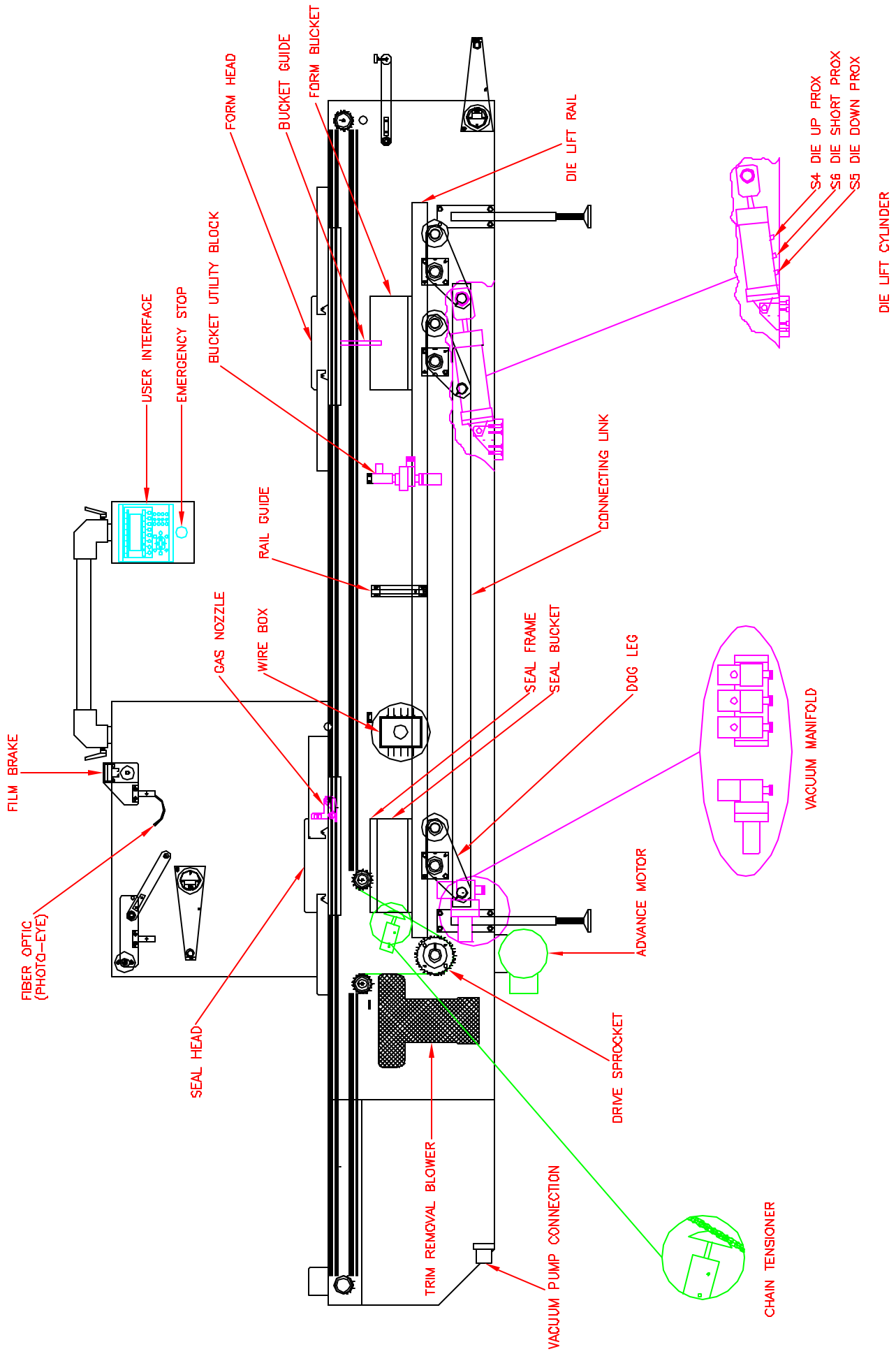
ZONE #2 HEATER
TYPICALLY SEALING

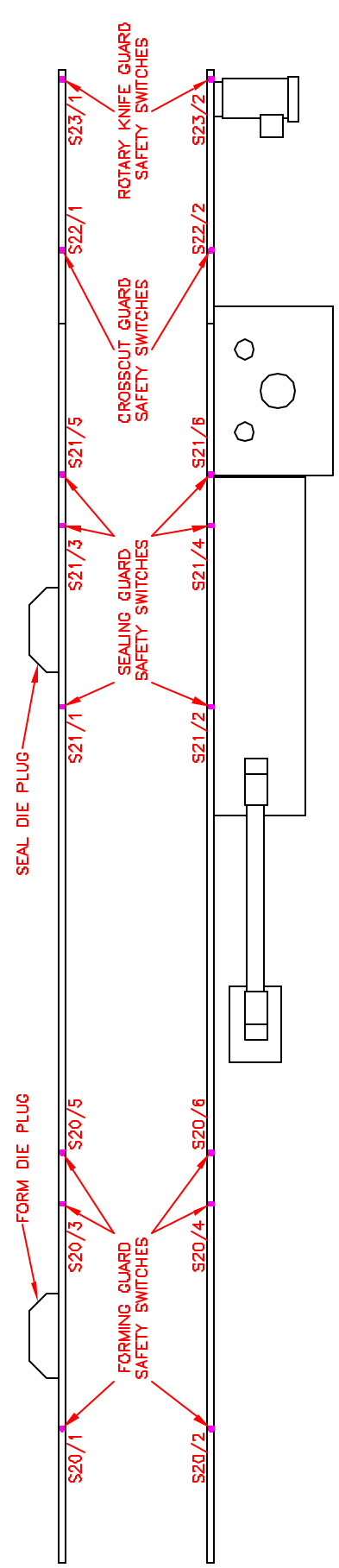
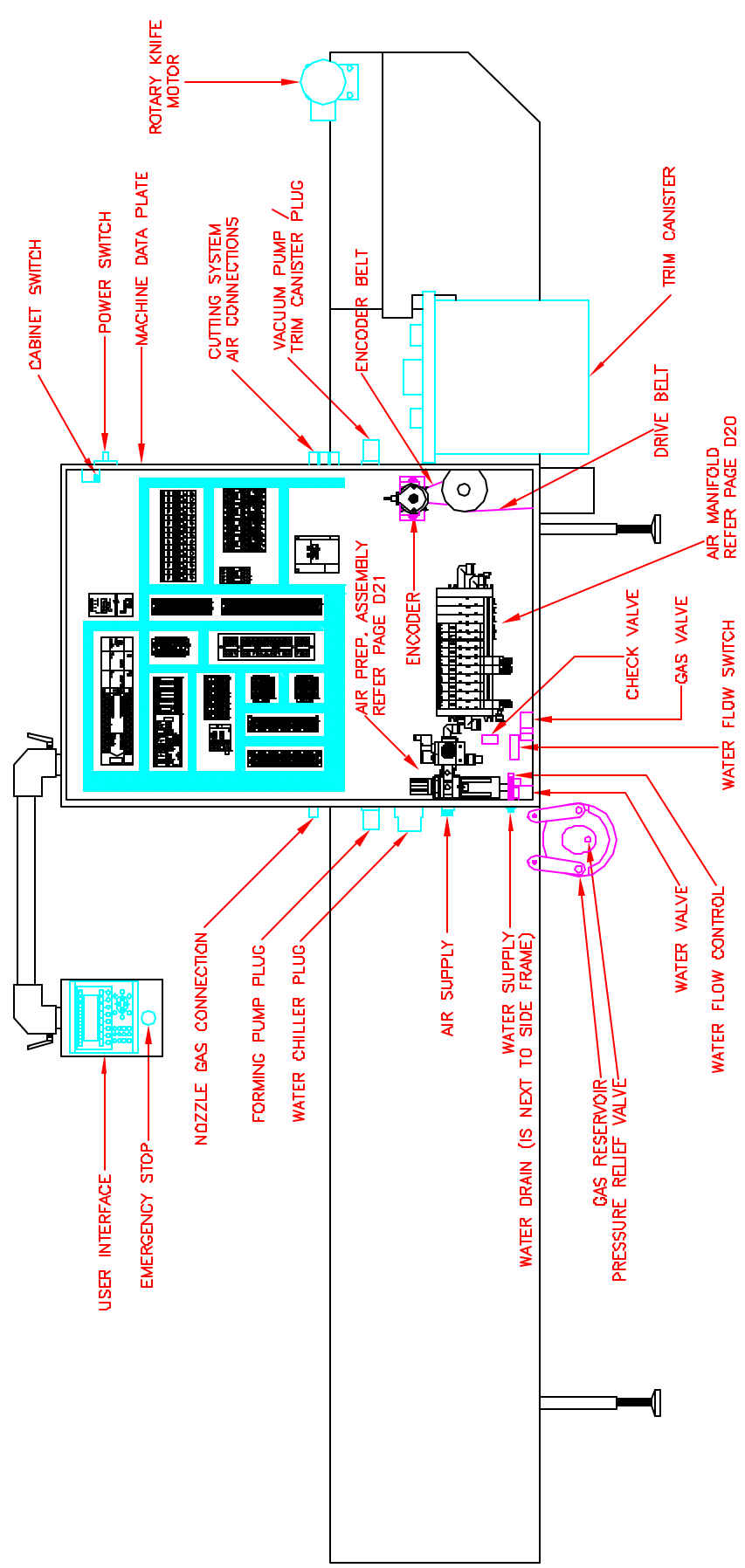
ZONE #3 HEATER

ZONE #4 HEATER



SV100 - 1 WIRE/PHASE
 SV200 OR SV300 - 2 WIRES/PHASE
 * WIRED FOR SIZE OF VACUUM PUMP





Sub-Assemblies

- Sub 1 24V DC switching power supply
- Sub 3 Vacuum board
- Sub 4 Photo-eye
- Sub 5 Frequency drive
- Sub 8 PLC
- Sub 9 Thermocouple block
- Sub 10 Analog to digital converter
- Sub 11 8 output block (drive)
- Sub 13 Safety relay board

Breakers

- B1 Motors breaker
- B2 Control breaker
- B3 Night shutdown heater
- B4 Heat zone #1 breaker (typically forming)
- B5 Heat zone #2 breaker (typically sealing)
- B6 Heat zone #3 breaker
- B7 Heat zone #4 breaker

Relays

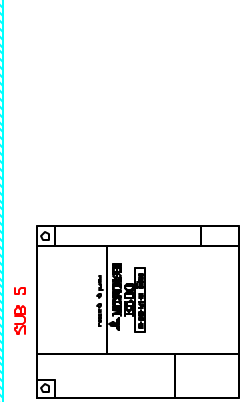
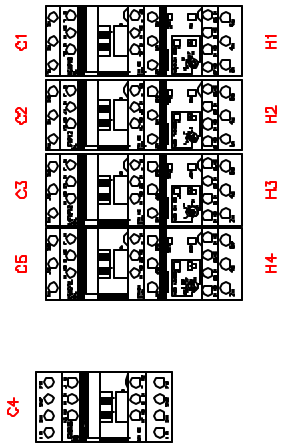
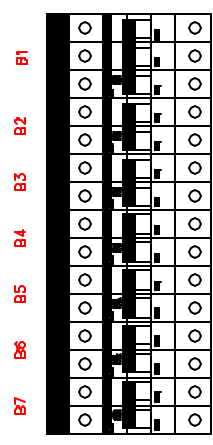
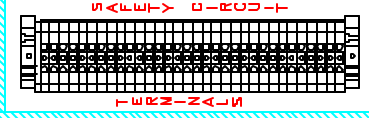
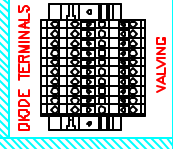
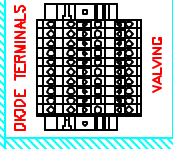
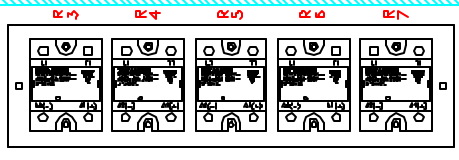
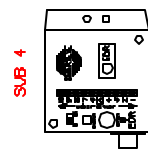
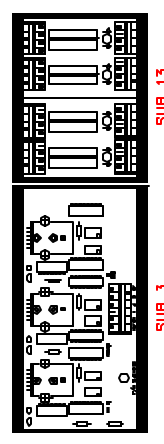
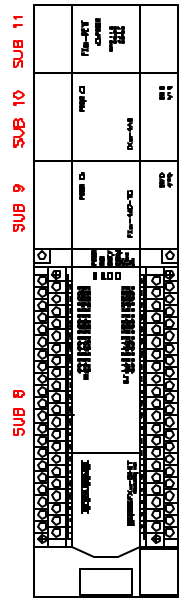
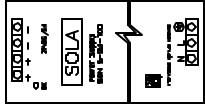
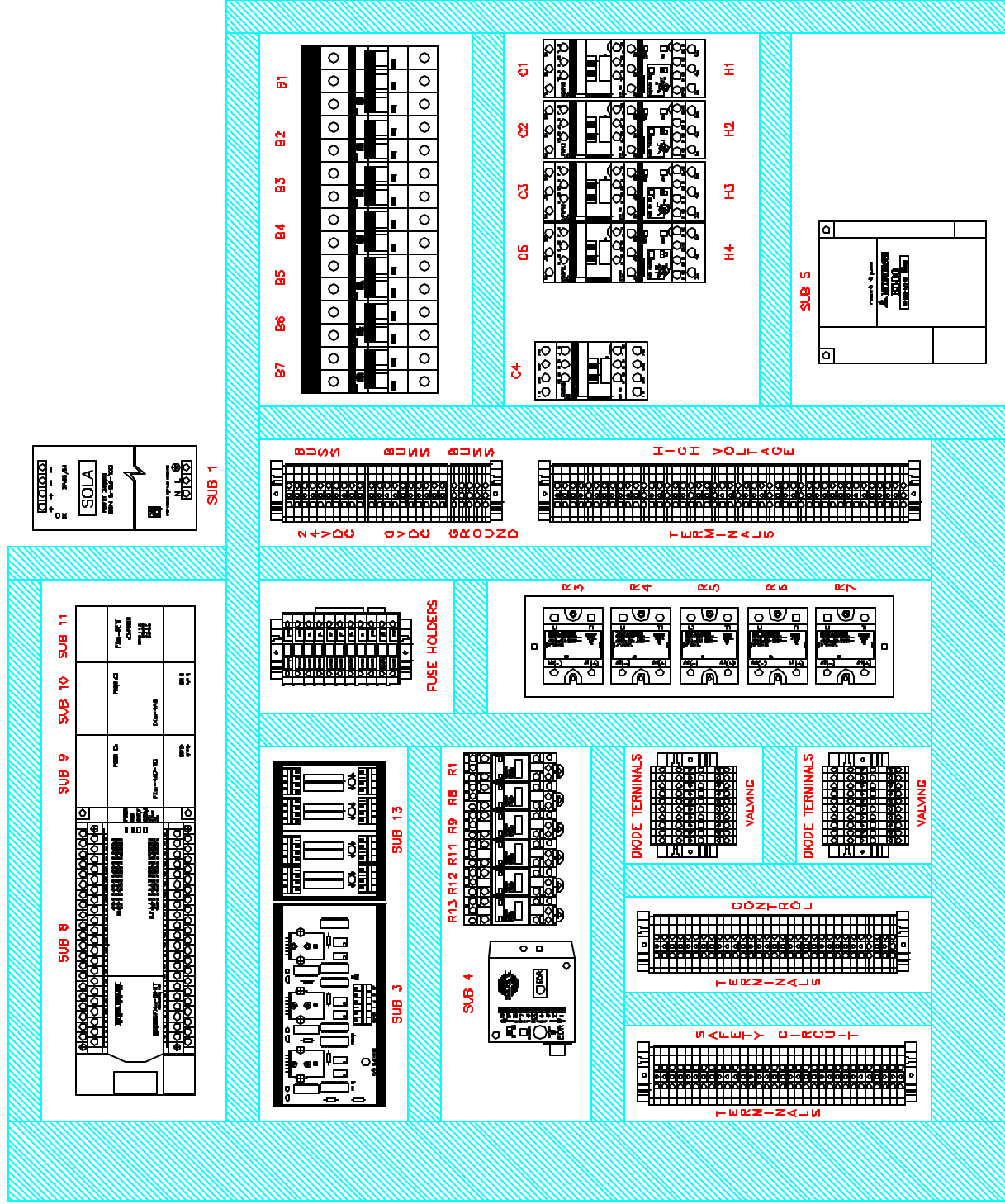
- R1 Heater control relay
- R2/1 Farming guard safety relay
- R2/2 Sealing guard safety relay
- R2/3 Grosscut guard safety relay
- R2/4 Rotary knife guard safety relay
- R3 Night shutdown heater relay
- R4 Heat zone #1 relay (typically forming)
- R5 Heat zone #2 relay (typically sealing)
- R6 Heat zone #3 relay
- R7 Heat zone #4 relay
- R8 Gas relay
- R9 Loader relay
- R10 Labeler relay
- R11 Vacuum pump relay
- R13 Water chiller relay

















































Contactors

- C1 Vacuum pump contactor
- C2 Trim canister blower contactor
- C3 Rotary knife contactor
- C4 Heat zone control contactor
- C5 Farming vacuum pump contactor

Motor Thermal Overloads

- H1 Vacuum pump motor overload
- H2 Trim canister blower motor overload
- H3 Rotary knife motor overload
- H4 Farming vacuum pump motor overload



	24V DC							
		LED	SINGLE POLE DOUBLE THROW SWITCH	RELAY COIL	4 POLE CONTACTOR	GAS SOURCE	MUFFLER	VACUUM MANIFOLD VACUUM SEGMENT
	0V DC							
		DIODE	NORMAL OPEN PUSH BUTTON SWITCH	AIR OR WATER COIL	MOTOR THERMAL OVERLOAD	DUMP VALVE	REGULATOR	VACUUM MANIFOLD VENT SEGMENT
	GROUND							
		RESISTOR	NORMAL OPEN LOCKING PUSH BUTTON SWITCH	3 POLE SWITCH	MOTOR	3/2 AIR VALVE	FLOW CONTROL	BRAKE
	WIRE JUNCTION							
		VARISTOR	FUSE	2 POLE CIRCUIT BREAKER	AIR SOURCE	WATER OR GAS VALVE	QUICK EXHAUST W/ MUFFLER	AIR MOTOR
	TERMINAL STRIP JUNCTION							
		NORMAL CLOSED SWITCH	HEATER	3 POLE CIRCUIT BREAKER	WATER SOURCE	MANUAL ACTIVATED VALVE	ADJUSTABLE QUICK EXHAUST W/ MUFFLER	WATER FLOW SWITCH
	BUSS							
		NORMAL CLOSED SWITCH	THERMOCOUPLE	3 POLE CONTACTOR	VACUUM SOURCE	CHECK VALVE	PRESSURE ACTIVATED SWITCH	GAS RESERVOIR

- L1 Phase 1 of incoming 220V AC, 3 phase
- L2 Phase 2 of incoming 220V AC, 3 phase
- L3 Phase 3 of incoming 220V AC, 3 phase

- A 24V DC buss from power supply, SUB 1
- B 0V DC buss from power supply, SUB 1

- C 24V DC from PLC internal power supply
- D 0V DC from PLC internal power supply

- E 24V DC from power supply, SUB 1, through safety relays

- F 24V DC from SD terminal on frequency drive through safety relays

- Z Filtered air out of the air prep. assembly

USER PROGRAM SETTINGS

	Program 1	Program 2	Program 3	Program 4	Program 5
Name					

Timer settings

Delay					
Film heating					
Film forming					
Evacuation					
Gas flush					
Sealing					
Forming delay					
Plug assist					

Heater settings

Zone #1 (forming)					
Zone #2 (sealing)					
Zone #3					
Zone #4					

Process

Forming	1 2 3 4	1 2 3 4	1 2 3 4	1 2 3 4	1 2 3 4
Sealing	1 2 3 4 5	1 2 3 4 5	1 2 3 4 5	1 2 3 4 5	1 2 3 4 5

Advance

Distance					
Speed					

USER PROGRAM SETTINGS

	Program 6	Program 7	Program 8	Program 9	Program 10
Name					

Timer settings

Delay					
Film heating					
Film forming					
Evacuation					
Gas flush					
Sealing					
Forming delay					
Plug assist					

Heater settings

Zone #1 (forming)					
Zone #2 (sealing)					
Zone #3					
Zone #4					

Process

Forming	1 2 3 4	1 2 3 4	1 2 3 4	1 2 3 4	1 2 3 4
Sealing	1 2 3 4 5	1 2 3 4 5	1 2 3 4 5	1 2 3 4 5	1 2 3 4 5

Advance

Distance					
Speed					

USER PROGRAM SETTINGS

	Program 11	Program 12	Program 13	Program 14	Program 15
Name					

Timer settings

Delay					
Film heating					
Film forming					
Evacuation					
Gas flush					
Sealing					
Forming delay					
Plug assist					

Heater settings

Zone #1 (forming)					
Zone #2 (sealing)					
Zone #3					
Zone #4					

Process

Forming	1 2 3 4	1 2 3 4	1 2 3 4	1 2 3 4	1 2 3 4
Sealing	1 2 3 4 5	1 2 3 4 5	1 2 3 4 5	1 2 3 4 5	1 2 3 4 5

Advance

Distance					
Speed					

USER PROGRAM SETTINGS

	Program 16	Program 17	Program 18	Program 19	Program 20
Name					

Timer settings

Delay					
Film heating					
Film forming					
Evacuation					
Gas flush					
Sealing					
Forming delay					
Plug assist					

Heater settings

Zone #1 (forming)					
Zone #2 (sealing)					
Zone #3					
Zone #4					

Process

Forming	1 2 3 4	1 2 3 4	1 2 3 4	1 2 3 4	1 2 3 4
Sealing	1 2 3 4 5	1 2 3 4 5	1 2 3 4 5	1 2 3 4 5	1 2 3 4 5

Advance

Distance					
Speed					

GLOBAL PROGRAM SETTINGS

Vacuum screen settings		
Vacuum level		
Gas level		
Top film	Wide	Narrow

Advance screen settings		
Stroke	Full	Short
End with	D. Open	Advance
Rotary knife	Cycle	C. Run

Setup Timers screen settings	
Seal to vent	
Vent to D. Open	
Cutting delay	
Cutting time	
Indexes / cut	
Dating delay	
Dating time	
Scan time	
Photo-eye	
Prog. Start	

USER PROGRAM SETTINGS

	Program 1	Program 2	Program 3	Program 4	Program 5
Name					

Timer settings

Delay					
Film heating					
Film forming					
Evacuation					
Gas flush					
Sealing					
Forming delay					
Plug assist					

Heater settings

Zone #1 (forming)					
Zone #2 (sealing)					
Zone #3					
Zone #4					

Process

Forming	1 2 3 4	1 2 3 4	1 2 3 4	1 2 3 4	1 2 3 4
Sealing	1 2 3 4 5	1 2 3 4 5	1 2 3 4 5	1 2 3 4 5	1 2 3 4 5

Advance

Distance					
Speed					

USER PROGRAM SETTINGS

	Program 6	Program 7	Program 8	Program 9	Program 10
Name					

Timer settings

Delay					
Film heating					
Film forming					
Evacuation					
Gas flush					
Sealing					
Forming delay					
Plug assist					

Heater settings

Zone #1 (forming)					
Zone #2 (sealing)					
Zone #3					
Zone #4					

Process

Forming	1 2 3 4	1 2 3 4	1 2 3 4	1 2 3 4	1 2 3 4
Sealing	1 2 3 4 5	1 2 3 4 5	1 2 3 4 5	1 2 3 4 5	1 2 3 4 5

Advance

Distance					
Speed					

USER PROGRAM SETTINGS

	Program 11	Program 12	Program 13	Program 14	Program 15
Name					

Timer settings

Delay					
Film heating					
Film forming					
Evacuation					
Gas flush					
Sealing					
Forming delay					
Plug assist					

Heater settings

Zone #1 (forming)					
Zone #2 (sealing)					
Zone #3					
Zone #4					

Process

Forming	1 2 3 4	1 2 3 4	1 2 3 4	1 2 3 4	1 2 3 4
Sealing	1 2 3 4 5	1 2 3 4 5	1 2 3 4 5	1 2 3 4 5	1 2 3 4 5

Advance

Distance					
Speed					

USER PROGRAM SETTINGS

	Program 16	Program 17	Program 18	Program 19	Program 20
Name					

Timer settings

Delay					
Film heating					
Film forming					
Evacuation					
Gas flush					
Sealing					
Forming delay					
Plug assist					

Heater settings

Zone #1 (forming)					
Zone #2 (sealing)					
Zone #3					
Zone #4					

Process

Forming	1 2 3 4	1 2 3 4	1 2 3 4	1 2 3 4	1 2 3 4
Sealing	1 2 3 4 5	1 2 3 4 5	1 2 3 4 5	1 2 3 4 5	1 2 3 4 5

Advance

Distance					
Speed					

GLOBAL PROGRAM SETTINGS

Vacuum screen settings		
Vacuum level		
Gas level		
Top film	Wide	Narrow

Advance screen settings		
Stroke	Full	Short
End with	D. Open	Advance
Rotary knife	Cycle	C. Run

Setup Timers screen settings	
Seal to vent	
Vent to D. Open	
Cutting delay	
Cutting time	
Indexes / cut	
Dating delay	
Dating time	
Scan time	
Photo-eye	
Prog. Start	

MAINTENANCE

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MAINTENANCE OUTLINE

Every time die head is removed

1. Check O-rings

Daily

2. Check vacuum pump oil level & condition
3. Check trim removal hoses for jams

Weekly

4. Inspect seal gasket
5. Inspect Teflon coating on sealing heat bar
6. Inspect 3.2mm cord on forming bucket
7. Inspect Teflon coating on forming heat bar
8. Remove excess trim from gripper chain and sprockets
9. Run vacuum diagnostics program

Every two weeks

10. Check chain tensioners
11. Oil transport chain
12. Check for missing grippers
13. Inspect vacuum pump oil condition
14. Inspect cutting systems

Monthly

15. Clean screen in vacuum pump
16. Inspect 3.2mm cord in seal bucket
17. Inspect hoses & wires for wear

Every three months

18. Change vacuum pump oil and filter
19. Grease die lift system
20. Check & grease phenolic guides
21. Check oil level in gear box
22. Check filter in main machine filter/regulator

* Each item on this schedule is explained in more detail later in this section

Every six months

23. Check wear plates
24. Check & switch transport chain

25. Check advance drive system
26. Adjust die lift proximity switches
27. Check die lift 90°
28. Adjust air pressure switch
29. Adjust water flow switch
30. Check & clean seal head

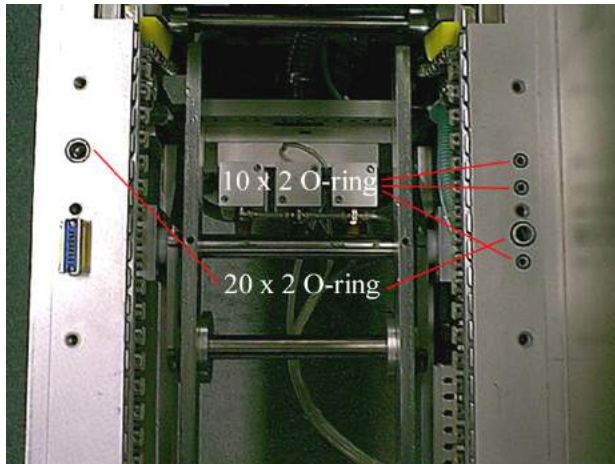
Annually

31. Change vacuum pump exhaust filters
32. Change gear box oil
33. Check that the machine is level
34. Check die gap

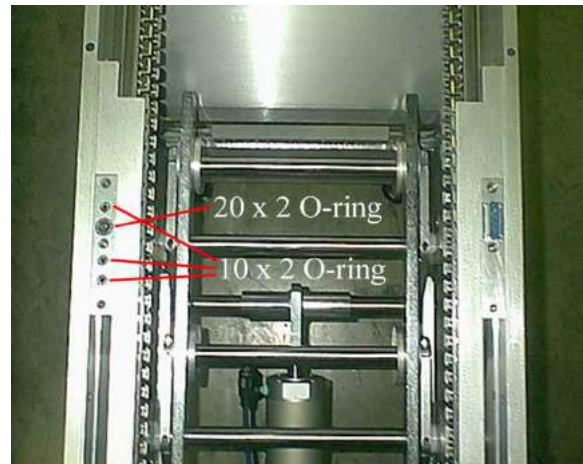
* Each item on this schedule is explained in more detail later in this section
Every time die head is removed

1. Check O-rings

The side frames have O-rings that seal the head to the ports. When the head is removed and re-installed be vary careful not to slide the head into place. The head must be set into place so the O-rings are not harmed. If any of the O-rings are nicked or crushed replace them. When installing new O-rings use a **little** vacuum grease to help seal the port to the head and hold the O-rings in place. Not all ports are used. Only the ports that have hoses connected need O-rings. There are two different sizes of O-rings used; 10 x 2 and 20 x 2.



sealing station



forming station

Parts:	96N4016	Utility block O-ring kit
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Daily

2. Check vacuum pump oil level & condition

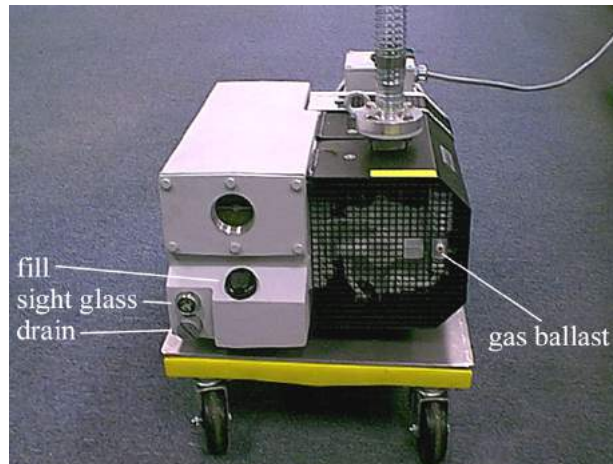
The vacuum pump has a sight glass to check the level and condition of oil. The oil

level should be kept in the middle or upper half of the sight glass.

The vacuum pump oil is clear. If the oil looks milky in color there is moisture trapped in the oil. If the oil does not clear in one hour of running the pump, change the oil. If there is a lot of moisture in the pump it might take two or three changes to get rid of all the water. Water in the vacuum pump oil decreases the pumps efficiency and the level of vacuum the pump is capable of pulling.

If the oil in the vacuum pump turns dark in color the oil and filter should be changed at once. Dark color oil means either the oil is breaking down or particles are mixed with the oil. Failure to change the oil and filter immediately will shorten the life of the pump.

Also make sure the gas ballast is in the open position. The gas ballast should remain open at all times. This allows moisture to escape from the pump.



Parts:	96N3002	Vacuum pump oil
	96N4020	Vacuum pump oil change kit SV40
	96N4021	Vacuum pump oil change kit SV100
	96N4022	Vacuum pump oil change kit SV200
	96N4023	Vacuum pump oil change kit SV300

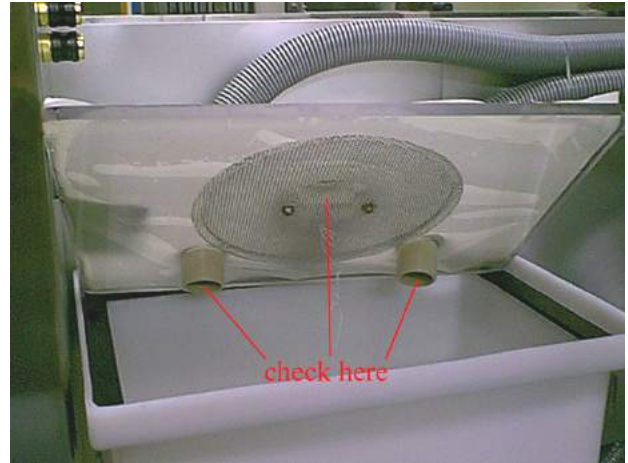
3. Check trim removal hoses for jams

The trim removal hoses run from the end of the discharge extensions to a white plastic canister next to the cabinet. The trim remove system uses a blower to create a vacuum

that will suck the trim scrap of film into the canister. If the hoses get plugged, this will cause the trim blower thermal overload to activate. The hoses should be checked at the end of the machine and under the trim canister lid. Also check under the screen. If trim gets into the blower it will cause the blower to fail.



CHECK HERE



Weekly

4. Inspect seal gasket

The seal gasket is a critical part of the vacuum system. If the gasket is starting to look

worn, has tears or the top part of the “T” is pinched off it must be replaced. If gaskets get pinched off within two weeks the die gap should be checked it might be too tight. Refer to the maintenance outline for the step on checking the die lift 90°.

It is important for the integrity of the vacuum chamber that the new seal gasket gets installed correctly and is not stretched. The proper way to install a new gasket is to lay the gasket on top of the seal bucket and press in the corners. If the seal frame has more than one pocket, press in all the intersections. Now the rest of the gasket can be pressed into the groove. It is important to press the gasket in the grooves in halves. Go in the middle of two sections that are all ready pressed in an press that center in. Continue to break the gasket into halves and press the rest of the gasket into the groove. The gasket does not have to be completely flat on the seal frame. The first couple of times the die closes the gasket will flatten out.

Parts:	Call for pricing & part # for gaskets 1-800-954-6020
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5. Inspect Teflon coating on sealing heat bar

The seal bar must remain clean and free of scratches to operate properly. From time to time film will build up on the seal bar and it must be removed. The easiest way to clean the seal bar is to heat the bar and use a small piece to forming web sealant out. As the hot bar is scrubbed the sealant on the forming web will activate and pull the film and sealant from the seal bar. Do not use anything metal to clean the bar or Teflon might be removed.

Also check the seal bar for scratches. Small scratches do not hurt anything but if the scratches get large enough film will stick to the bar. Once film starts sticking to the bar the problem gets worse and worse. Rollstock, Inc. suggests that every machine have a **spare** seal bar so when problems arise the bar can be replaced. Rollstock, Inc. can rebuild your bar with approximately a two week turn around. Scratches can be covered with Teflon tape to keep the machine running if you do not have a spare seal bar

Parts:	Call for pricing on rebuilding or new seal bar 1-800-954-6020
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6. Inspect 3.2mm cord on forming bucket

The top of the forming bucket has 3.2mm cord to seal the forming bucket to the head when the dies close. The cord has to be continuous and in good condition. If the cord has any nicks or looks worn it needs to be replaced.

When installing the new 3.2mm cord it is important not to stretch the cord. If the cord gets stretched its not 3.2mm in diameter any more and also might go back to its original diameter leaving a gap. If this occurs the machine will either have a high pitched squeal and/or not form good packages. To install the 3.2mm cord start the cord in the middle of one side and press one spot in. Lay the rest of the cord around the bucket and press in each corner being careful not to stretch the cord. As with the seal gasket work in halves and press the cord into the groove on three sides of the bucket. The side with the splice is done last. Once the three sides are done, on the fourth side cut the cord slightly long and press the rest of the cord into the groove. Since the cord is cut long the cord will be pressed together where the splice is.

Parts:	88D0302 3.2mm cord
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7. Inspect Teflon coating on forming heat bar

The forming bar is Teflon coating to prevent the film from sticking to the bar. The forming bar also has a diamond pattern cut into it to allow air to flow.

The forming bar must remain clean and free of scratches to operate properly. Small scratches do not hurt anything but if the scratches get large enough film will stick to the bar. Once film starts sticking to the bar the problem gets worse and worse it will need to be recoated. Scratches can be covered with Teflon tape to keep the machine running.

Parts:	54N1018 Teflon tape
	Call for pricing on rebuilding or new form bar 1-800-954-6020

8. Remove excess trim from gripper chain and sprockets

Excess trim build up on the sprockets can cause several problems. It can cause extra drag on the chain causing the frequency drive to go into alarm. It can cause more tension on one side of the chain than the other which might cause the chain to stretch or run uneven causing wrinkles in the film.

The entire chain needs to be checked and all trim removed. If the chains need to be run the easiest way to accomplish this is to use the function motor run slow. This function will run the chains in slow speed until the stop button is pressed or a safety is broke. This function is located on the features menu. Also every sprocket on the machine needs to be checked for excess trim. There are six sprockets and four idler rollers.

9. Run vacuum diagnostics program

The machine has a built in function that will test the integrity of the vacuum system. Running this test from time to time will help catch small vacuum problems before they become big problems. This test also helps isolate the problem which will greatly reduce the time needed to repair vacuum leaks.

When running the test program use only non-formed bottom web and advance the film under the sealing die. Since top web is not used, the sealing temperature should be lowered to 50°C or lower so film will not stick to the seal bar. The test program feature is located on the Maint menu. To enter the test program press test program button. To start the test, press the Start Test button. Press one of the NAV buttons to leave the screen.

The table below shows acceptable vacuum levels. For more information on the test problem refer to the machine operation section of the manual under features menu, test program. If unsure of the results or help in finding and correcting a problem call (800) 954-6020.

<u>Acceptable ranges</u>	
Source:	4 torr or less
Start:	2 torr or less from source
60 sec. Bleed down:	25 torr or less from start
Seal:	10 torr or less from 60 sec. Bleed down
Total:	35 torr or less

Every two weeks

10. Check chain tensioners

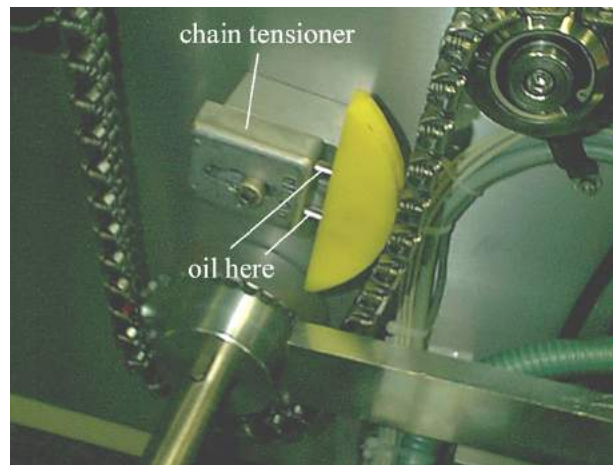
The Rollstock machine is equipped with automatic chain tensioners. The chain tensioners are spring loaded against the chain. As the chain stretches the tensioners will keep the proper amount of tension on the chain.

Oil the chain tensioner shafts with gripper chain oil and make sure they move freely. If the chain tensioners are frozen (will not move) then the chain tensioner needs to be replaced.

Check the chain tensioners for proper adjustment. The proper adjustment of the chain tensioner is when the tensioner is in the middle of its stroke (can move in or out). If the chain tensioner needs adjustment loosen the one bolt that holds it in place, adjust the tensioner and then re-tighten the bolt. If there is not enough movement in the chain tensioner adjustment this can be corrected two different ways. First, try to move the chain tensioner mount. The chain tensioner mount has three different mounting locations. If moving the mount still does not allow proper adjustment then a link will need to be removed from the chain.

If removing links from one chain than the same amount of links must be removed from the other chain. Each chain must have the same number of links or the film will have wrinkles.

If the chain needs to be shortened refer to step 24 check advance system



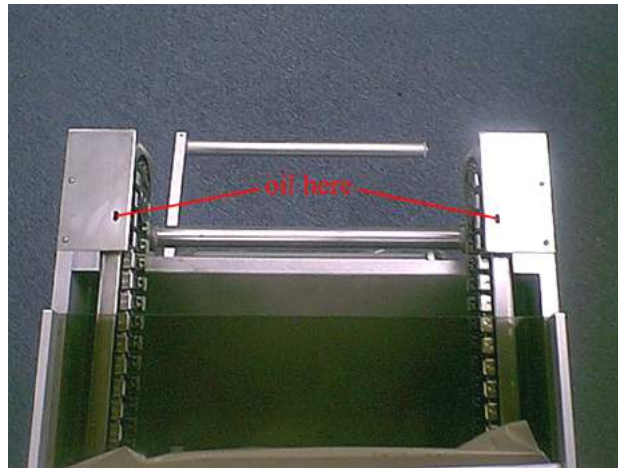
Parts:	94F2415	Chain tensioner
	96N3001	Gripper chain oil

11. Oil transport chain

The gripper chain must be oiled on a regular basis to prevent the chain from stretching prematurely and causing excessive wear on the drive system. When the chain stretches, each side usually stretches differently and once this happens wrinkles will appear in the film due to different speeds of the two chains. If the chain gets bad enough it will bind up causing the chain not to move.

The suggested interval for this step is two weeks. This step may need to be performed more often if the chain loses its oil (usually dependent on how the machine is cleaned).

The first step in oiling the chains is to mark a link on each chain so you know when the chain has made a complete revolution. Next put the machine in the motor run (slow) function which is located on the RUN screen. This function will run the chains continuously in slow speed until the stop button is pressed or a safety is broke. **When oiling the chains make sure to oil the chain, not the grippers. If the grippers get oiled the film will easily pull out of the grippers.**



Parts:	96N3001	Gripper chain oil
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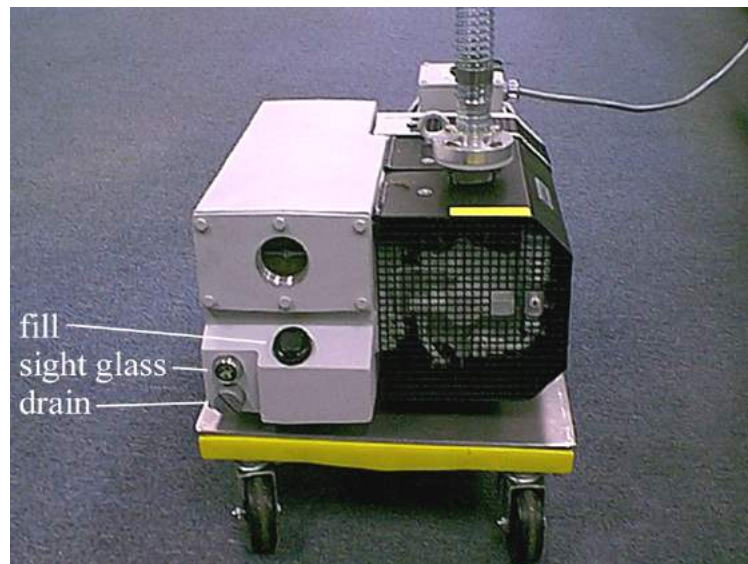
12. Check for missing grippers

The chain has spring loaded grippers on it. If the gripper falls off it should be replaced. A few missing grippers will not cause problems with picking up and holding the film as long as they are not in a row. If there are a lot of grippers missing the chain tensioners should be check. Refer to step 10

Parts:	88F0263	Gripper chain clamp
	88F0264	Gripper chain spring
	88F0265	Gripper chain bushing

13. Inspect vacuum pump oil condition

Clean oil is essential to keeping the vacuum pump running at factory specifications. Remove a small amount of oil from the pump and place in a clear glass. Hold the glass up to a light and if any particles are in the oil change the oil and filter.



Parts:	96N4020	Vacuum pump oil change kit SV40
	96N4021	Vacuum pump oil change kit SV100
	96N4022	Vacuum pump oil change kit SV200
	96N4023	Vacuum pump oil change kit SV300

14. Inspect cutting systems

Check all cutting systems and make sure they are operating properly. Cycle the machine and check that all cylinders are firing correctly. Also check the condition of all blades and hoses. Make sure to check the T-strip in the guillotine lower unit.

Parts:	88K2202	Flying crosscut knife blade
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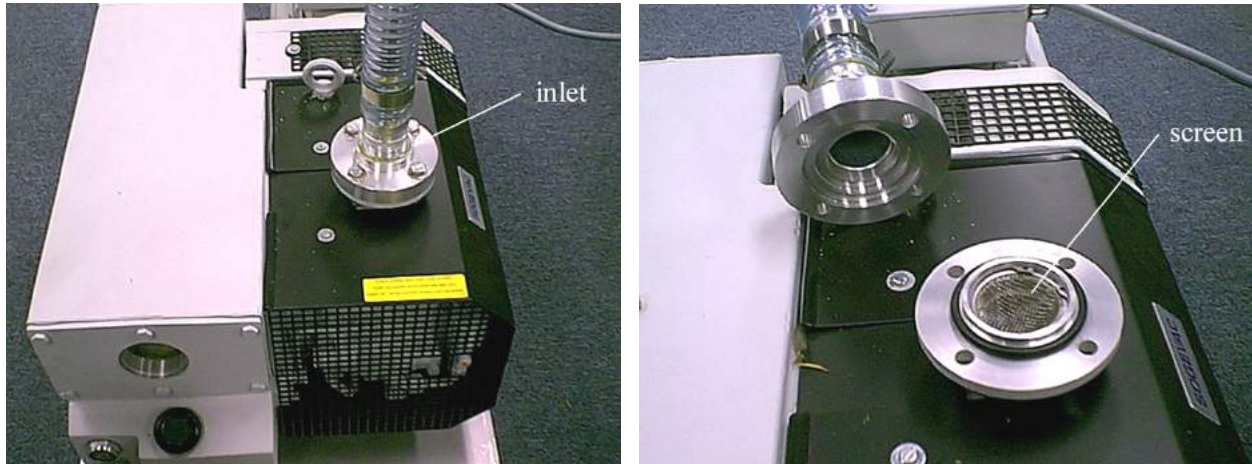
88K0267	Rotary knife blade
90D1001	T-strip
96K1006	285 serrated guillotine blade
95K1160	285 zig zag guillotine blade
96K1007	320 serrated guillotine blade
95K1159	320 zig zag guillotine blade
96K1008	355 serrated guillotine blade
95K1161	355 zig zag guillotine blade
96K1009	420 serrated guillotine blade
95K1566	420 zig zag guillotine blade
96K1010	459 serrated guillotine blade
95K1162	459 zig zag guillotine blade

Monthly

15. Clean screen in vacuum pump

The vacuum pump has a screen that is located under the fitting on top of the vacuum pump. This screen is to keep large particles from entering the pump. As the screen fills up, the vacuum will get restricted. There are two ways to clean the screen. The first way is to remove the hose clamp and hose and use a shop vac to suck the screen clean. The second way is to remove the four bolts from the union and separate the

union and remove the screen. Use the vacuum grease on the O-ring around the screen when re-installing. Not all pumps have the union. If your pump does not have the union the black cover over the pump needs to be removed and there are 4 bolts on top of the pump that holds the threaded port on. The screen will be under the threaded port.



16. Inspect 3.2mm cord in seal bucket

The seal bucket is a two piece system. The bucket consists of a lower bucket and a seal frame on top that is held in place by four clips. By using the two piece system this allows for quick and easy changeovers. Between the seal bucket and seal frame is 3.2mm cord which is used to seal the bucket and frame together. The cord will get nicked from time to time by removing and install the seal frames. If the cord is nicked or flattens out or shows signs of wear it needs to be replaced.

When installing the new 3.2mm cord it is important not to stretch the cord. If the cord gets stretched it's not 3.2mm in diameter any more and also might go back to its original diameter leaving a gap. If this occurs there will be a big vacuum leak in the bucket. To install the 3.2mm cord start the cord in the middle of one side and press one spot in. Lay the rest of the cord around the bucket and press in each corner being careful not to stretch the cord. As with the seal gasket work in halves, press the cord into the groove on three sides of the bucket. The side with the splice is done last. Once the three sides are done, on the fourth side cut the cord slightly long and press the rest of the cord into the groove. Since the cord is cut long the cord will be pressed together where the splice is.

Parts:	88D0302	3.2mm cord
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17. Inspect hoses & wires for wear

The chain and die lift are all moving parts. Anytime you have moving parts, if something moves it might wear. Remove the loading pan and look in the belly of the machine around all moving parts for hoses or wires in contact with moving parts. If anything looks like it is wearing, move it out of the way or replace it if necessary.

Parts:	55P1011	Blue 10mm poly hose
	55P1012	Green 10mm poly hose
	55P1013	Yellow 10mm poly hose
	55P1010	Clear 10mm poly hose
	94V3710	Clear ¼" poly hose
	88V1166	19mm vacuum hose
	95V1003	1 ½" vacuum hose

Every three months

18. Change vacuum pump oil and filter

The vacuum pump should be hot when changing the oil. Drain the oil and replace the filter and fill the pump with oil. The oil level should be between the middle of the sight glass and the top. **Use only oil that is rated for vacuum pumps.**



Parts:	96N4020	Vacuum pump oil change kit SV40
	96N4021	Vacuum pump oil change kit SV100
	96N4022	Vacuum pump oil change kit SV200
	96N4023	Vacuum pump oil change kit SV300

19. Grease die lift system

The lifting system has six points of rotation that must be greased. There are 6 rail bearing, 6 wear plates and 12 collars that must be greased to keep wear down to a minimum.

To grease the die lifting system start by removing the forming and sealing buckets.

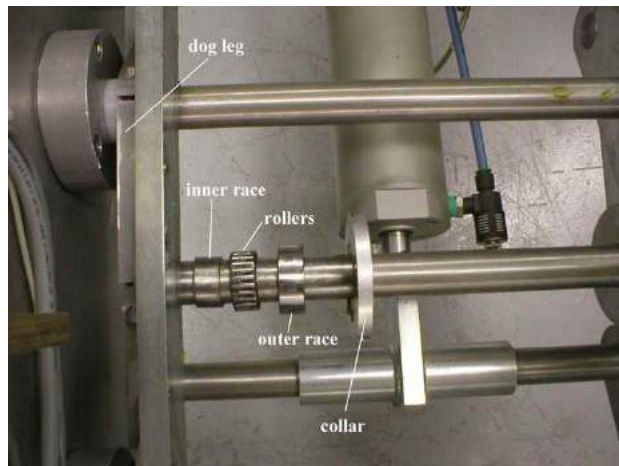
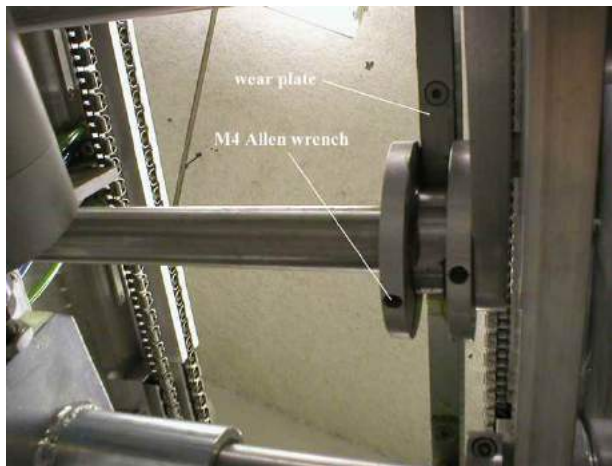
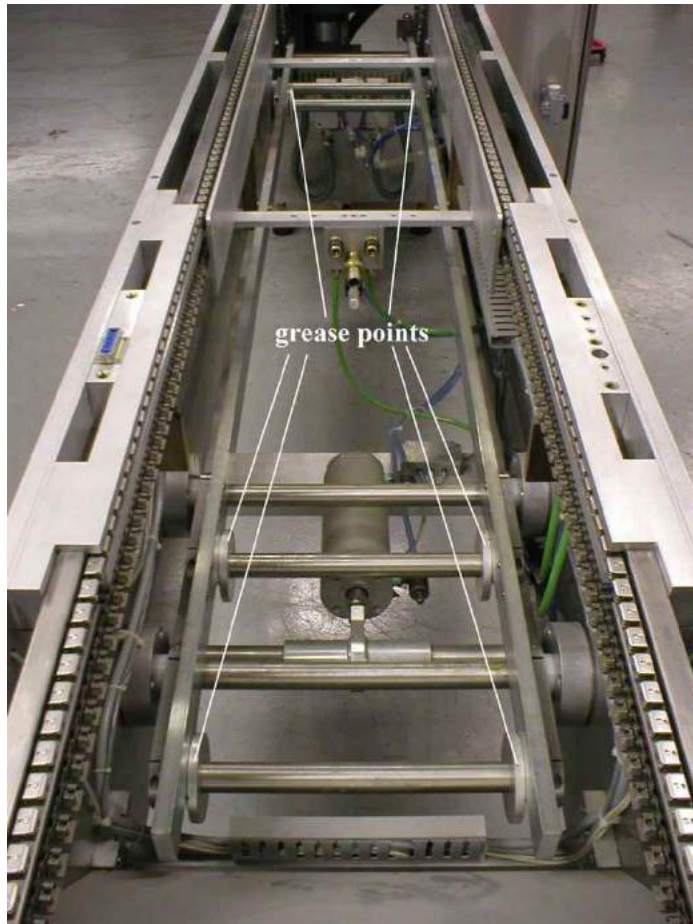
The first thing to grease is the six rail bearings. The rails are what the forming and

sealing buckets sit on in the machine. Use a M4 Allen wrench to loosen the inside collar and slide the collar into the middle of the machine. The set screw locking the collar into place is on the bottom side. Next slightly lift the rail and slide the bearing into the middle of the machine and separate it. The bearing consists of three parts: inner race, rollers, outer race. Grease the rollers on the bearing. Slide the bearing and collar back into place and tighten set screw. Be careful not to load the collar against the rail to hard. It has to slide against the rail as the carriage raises and lowers. Repeat this step for the other 5 bearing.

The second step is to grease the wear plates. The wear plates are hardened steel pieces that are bolted onto the bottom of the rail and this is the part of the rail that actually rides on the bearing. Grease all six wear plates.

The last step is to grease the collars. Each dog leg has two collars, one on each side of the rail, to hold the rail in place. There will be marks on the sides of the rails were the collars rub. Grease each rail on both sides were the collars rub.

(pictures on next page)



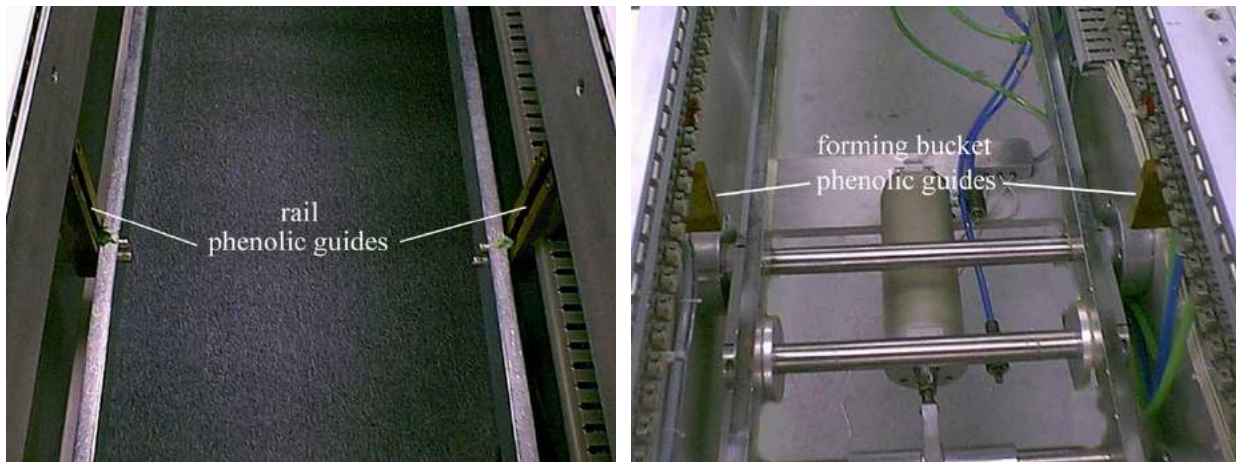
Parts:	96N3003	grease
	40B1008	Bearing

20. Check & grease phenolic guides

There are two sets of phenolic guides on the machine. The first set is located in the middle of the machine and is used to keep the rails & sealing bucket in position. The second set is located on the forming station and is used to keep the forming bucket in position. If any of these guides are loose, the packages may not line up. This is most noticeable at the sealing station, one end of the package will have a wide seal and the other end will be narrow.

First check the rail phenolic guides. Each rail has an aluminum block bolted to it that rides in the phenolic guide. This block should fit fairly tight. If the block is loose, the guide is worn and will need to be replaced. This guide also needs to be greased to prevent premature wear.

The second set of phenolic guides are located on the forming station and should be checked and greased the same as the rail phenolic guides.

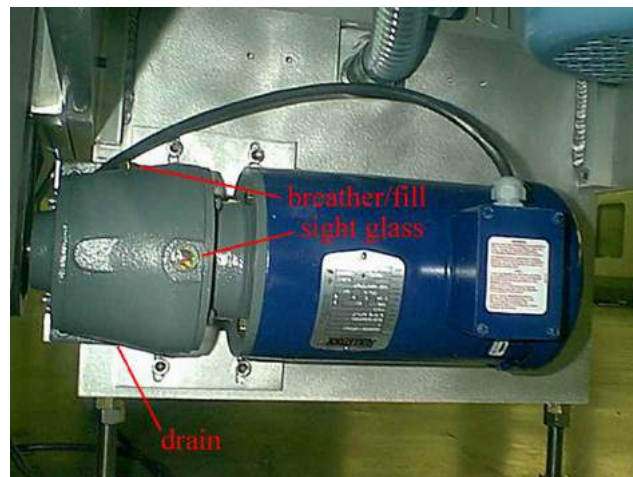


Parts:	96N3003	Grease
	94M1007	Rail Phenolic guide
	94M1012	Bucket phenolic guide

21. Check oil level in gearbox

The gearbox is located on the discharge side of the back leg by the cabinet. The gearbox provides speed reduction of the motor and increases the torque to move the gripper chain.

The proper oil level in the gearbox is in the middle or upper half of the sight glass. If the level is below this point then remove the breather/fill plug and add enough oil to reach the proper level. If the gearbox is over filled, oil will be discharged through the brass breather on top of the gearbox as the gearbox is running. If oil was added and it appears that the gearbox was overfilled advance the machine a couple of times and recheck the oil level. When adding oil, air gets mixed in with the oil and by running the chains the air will be removed from the oil to get a true oil level. If the box still appears to be overfilled then some oil can be removed from the gearbox through the drain plug on the bottom of the gearbox or it can be left alone and it will be discharged through the breather.



Parts:	96N3004	Gearbox oil
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22. Check filter in main machine filter/regulator

All the air the machine uses goes through the main machine filter/regulator. The purpose of this filter is to protect the pneumatics system by removing particles and droplets from the air. For this filter to protect the machine pneumatics system and provide enough air for the machine it must be cleaned occasionally.

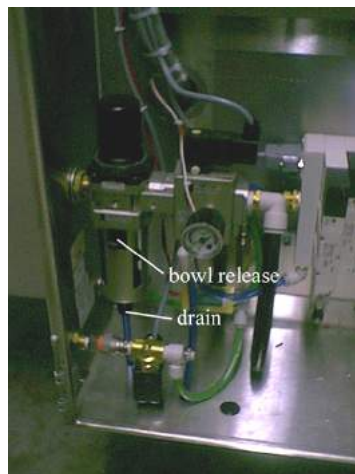
The bowl on this filter is equipped with an automatic drain to release the fluid collected automatically. As the bowl fills with fluid, the automatic drain has a float that will raise. When it raises high enough the fluid will be discharged out the drain hose in the bottom of the bowl. If the bowl gets dirty the automatic drain will not re-seat after draining causing air to leak out the automatic drain or the float will get stuck down and will not discharge the fluid. If the float is stuck down, the bowl will fill with fluid until full and then the fluid will bypass the filter and enter the pneumatics system.

The bowl on the bottom of the filter/regulator also has a white circular filter that looks and feels like plastic. This filter in the bowl has to be cleaned for the main machine filter/regulator to supply adequate air to the machine.

Turn the air supply to the machine off before removing the bowl from the main machine filter/regulator. The air must be turned off at a valve outside of the machine. Turning the machine off is not enough. The gauge inside the machine will read no pressure but the main machine filter regulator will still have air pressure.

To remove the bowl, first remove the blue drain hose in the bottom of the bowl. Next push the black bowl release lever down and twist the bowl 45° and pull down. To remove the white filter, rotate the black cone on the bottom of the filter and pull downward. Remove the filter.

Thoroughly clean the filter and the inside of the bowl. Re-assemble and turn the air supply to the machine on.

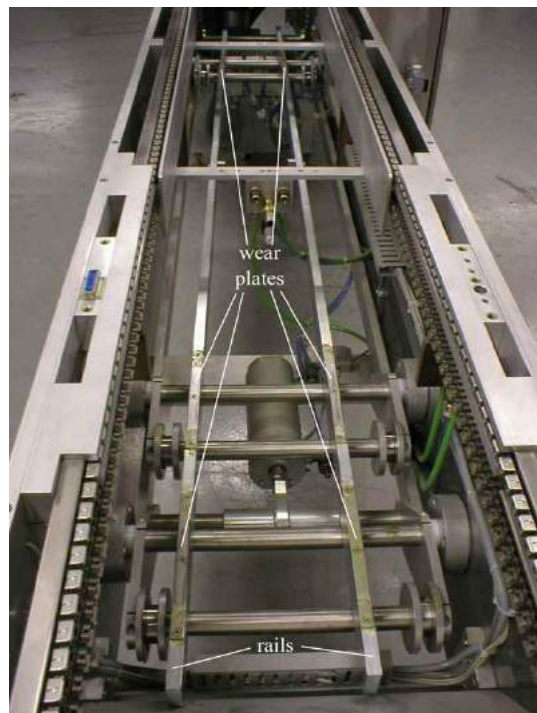


Every six months

23. Check wear plates

The wear plates are hardened steel plates on the bottom of the rails that the rail bearing ride on. There is a tremendous amount of force applied on the die lift carriage when the machine is running. The wear plates over time will develop grooves where the bearing comes in contact with the wear plate when the lifting system is in the up position. Once a wear plate is no longer flat, it needs to be replaced. The machine has six wear plates, one for each rail bearing.

To check the wear plates, the forming and sealing buckets must be removed. Next, the two die lift rails must be removed from the collars and rotated upside down in the machine. Rub your finger along the wear plate. If there are any grooves in the wear plate it must be replaced. Before re-installing the rails grease the wear plates.



Parts:	96N3003	Grease
	88M1200	Wear plate

24. Check & switch transport chain

Replacing the transport chain is a costly expensive. To get the maximum life span of the chain requires extensive maintenance. In earlier steps the chain is oiled and debris

is removed. This is the basic chain maintenance. In this step the chains must be removed from the machine and all bearings, sprockets, chain tensioners and chain guides are checked and the chains are re-installed on the opposite side of the machine.

Each chain must have the same number of links. The cabinet side chain stretches more than the operator side. To help keep the chain stretch the same for both sides, the chains must be switch. Uneven stretching or different number of links will cause the two chains to run at different speeds. If this happens, the film will twist in the machine and the packages will have wrinkles and be uneven.

To start this step, first locate and mark the master link for each chain. The master links should be in the same spot on each side. Also, each chain must be labeled for which side of the machine it is on, cabinet or operator.

Once this is done the master links need to be moved to the bottom side under the forming station. This is the only place on the machine that does not have chain guide and is the easiest place to break the chains. The chains can be moved into position one of two ways; manually by pressing the advance key on the user interface or the function motor run slow.

Once the chains are in position, remove the chain tensioner from both sides, the two infeed chain covers, the two discharge chain covers and the infeed roller. Break both chains by removing the master links and remove the chains from the machine.

Remove any debris and clean all of the chain guide, idlers and sprockets, including the drive sprocket.

Check the four opener sprockets, four idler sprockets and two drive sprockets for wear. The cabinet side discharge opener sprocket may be a double opener. This double opener is used to power a exit conveyor. If any of the sprockets show signs of wear, either on the teeth or were the chain rides, they need to be replaced.

Next check the bearings in the four opener sprockets and the four idler sprockets. The discharge opener sprockets have clutch bearings so they only spin one direction. If any of the bearings do not spin freely and smoothly they need to be replaced. Signs of a worn out bearing are rough or ratcheting movement.

If the chains are excessively dirty they need to be cleaned before the are put back in the machine. Re-install the chains in the machine. Make sure that the chains are installed on the opposite side they came out of and connect each chain.

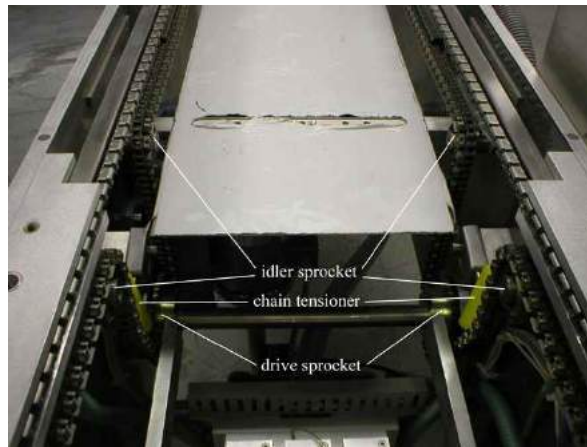
Check the two chain tensioners. The chain tensioners are spring loaded and should be able to be pressed in. If the chain tensioner will not move it needs to be replaced.

Install and load the chain tensioners. For the chain tensioner to work properly it should be loaded half way. If the chain has stretched so the proper tension can not be applied

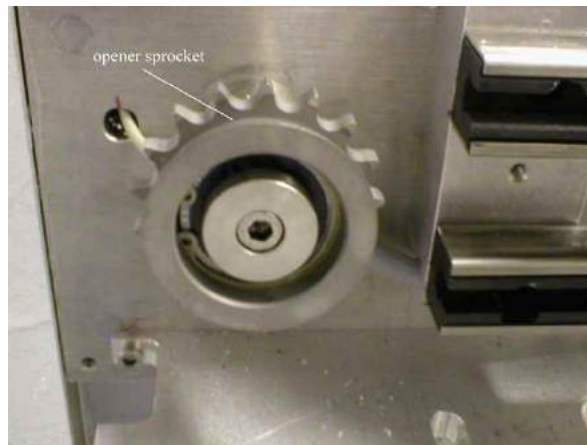
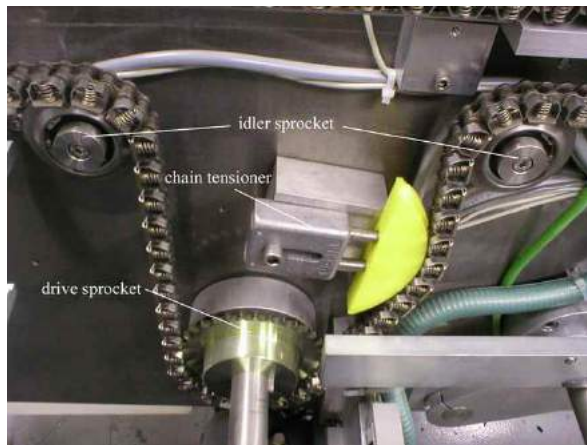
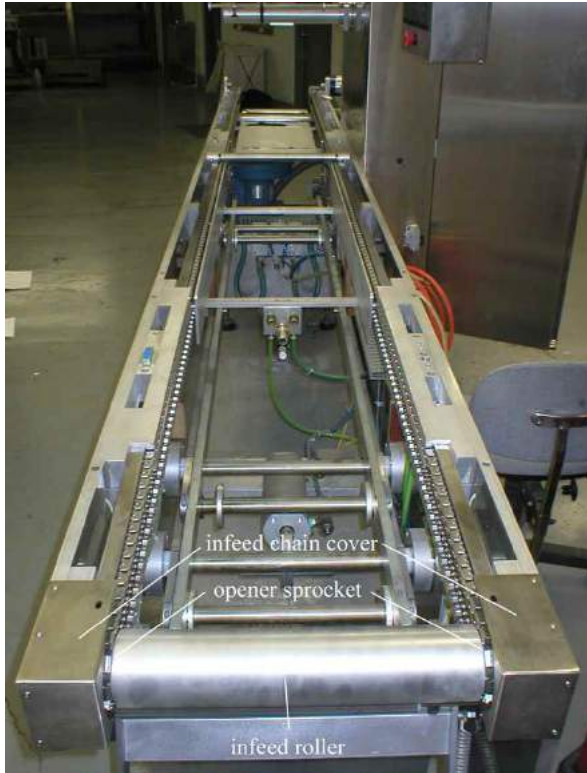
either the tensioner mounting block needs to be moved or a link needs to be removed from the chain. The tensioner mounting block can be mounted in three different positions. First try to move the block to load the chain properly. If the adjustment can not be made with the tensioner mounting block then the chain needs a link removed. If removing a link from one side, a link must be removed from the other side. Both chains must have the same number of links.

Re-install the chain covers & roller.

Oil the chains, refer to step 11.



(continued on next page)



Parts:	88F0212	Infeed opener sprocket w/bearing
	88F0212D	Discharge opener sprocket
	40B1021	Clutch bearing (discharge opener)
	88F0213	Double opener sprocket
	97F8629	Drive sprocket
	88F1350	Idler sprocket w/bearing
	94F2415	Chain tensioner
	88F0266	Master link
	96N3001	Gripper chain oil

25. Check advance drive system

The machine uses four timing belt sprockets and two timing belts to move the transport chain. To insure the accuracy of the advance system all belts and pulleys must be tight. If there is any play in the sprockets or the belts are worn or loose the advance accuracy will be lost.

The first step in checking the advance drive system is to open the back cabinet and remove the chain cover. Inspect the belts and sprockets and remove any debris.

Next, check the drive belt and the encoder belt for wear, alignment and tension.

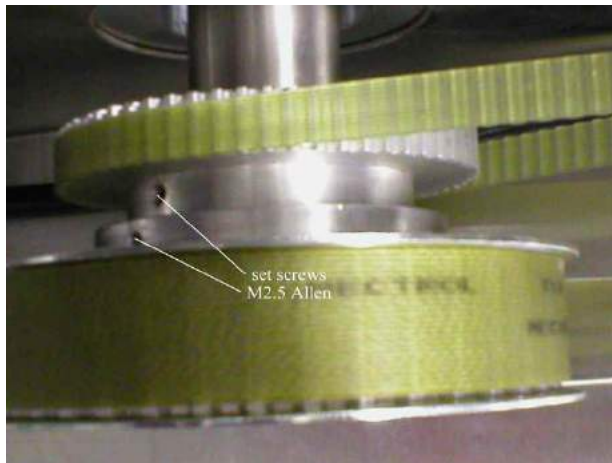
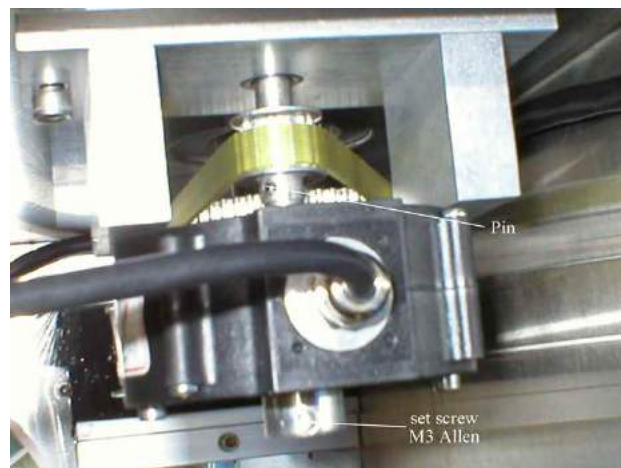
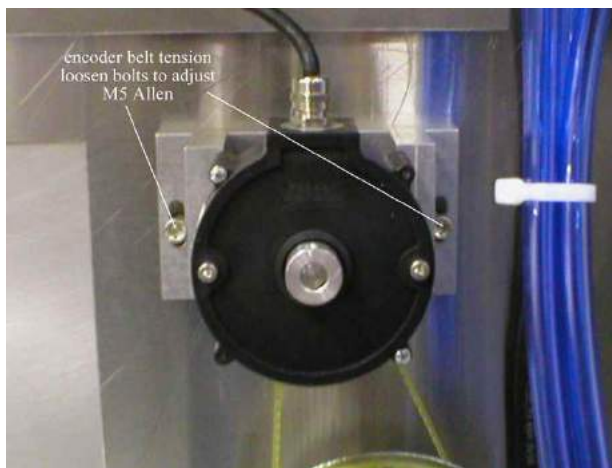
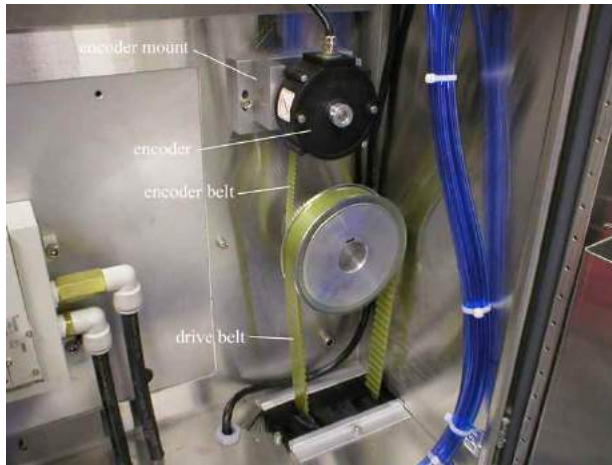
Three of the sprockets have sides to help with belt alignment. If a belt rides up on the side of a sprocket this usually stretches or frays the side of the belt. This is the most common sign of wear. Also check the belt for cracks and for worn timing teeth. If any of these signs exist, replace the belt.

The belts should ride in the middle of all sprockets. The only sprocket that is not adjustable is the little encoder sprocket. It is pinned on the shaft. If alignment needs to be adjusted, start with this sprocket and work your way down.

The tension of each belt should be snug, not tight. Each belt has it's own tensioner. The encoder mount adjusts the tension on the encode belt. The drive motor adjusts the tension on the drive belt.

Check all sprocket set screws to ensure they are tight. Make sure that the little encode sprocket pin is tight on the sprocket. Over time this hole may increase causing the sprocket not to be tight on the shaft. If this happens, replace the sprocket. There is also a set screw on the encoder that locks it down to the shaft.

(pictures on next page)



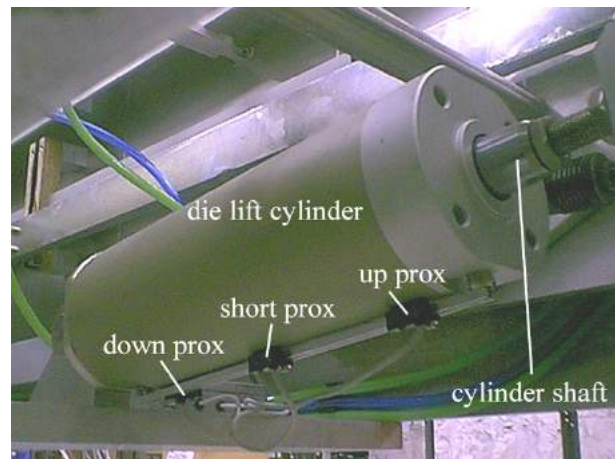
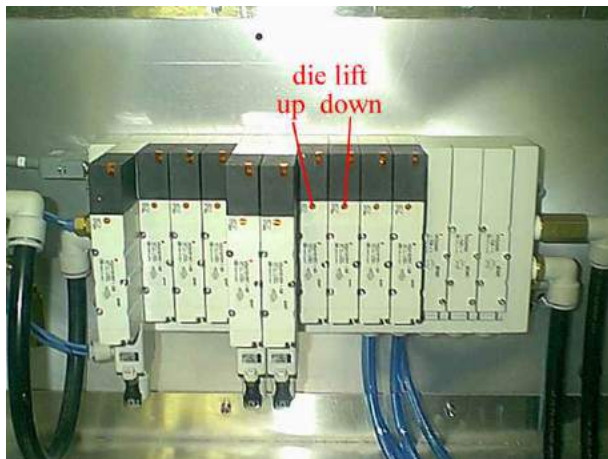
Parts:	94F2567	Drive belt
	94C1007	Encoder belt
	94F1012	Encoder sprocket (12 tooth)

26. Adjust die lift proximity switches

Proper adjustment of the die lift proximity sensors is crucial to the operation of the machine. The die lift proximity sensors are tied into every function of the machine. If the machine is acting weird first try adjusting the proximity switches.

There are three sensors on the die lift cylinder. The two end ones, die up and die down, need to be set exact. The center one is used for short stroke and is set so the die opens wide enough for the package. To set the die down proximity switch air must be on and the die lift carriage must be down. Loosen the die down proximity switch and slide it toward the middle of the cylinder until the light goes out. Now slide the switch slowly toward the end of the cylinder until the light comes on and tighten the switch down. Make sure that the switch is pressed against the cylinder when adjusting. If the switch is away from the body of the cylinder it affects the sensing position of the sensor. Now that the die down switch is set the die up switch must also be set.

The first step in setting the die up switch is to raise the die lift carriage. On the air manifold manually activate the seventh and eighth valves from the left side. **Be careful, by manually firing these two valves the safety system will be bypassed.** The picture below is pointing to the manual activation buttons. Use a screw driver to press the buttons in and twist 90° to lock. Once both valves are manually activated the die lift carriage will raise and the die up proximity sensor can now be set. The die up proximity sensor is set the same way as the die down proximity sensor. Loosen the mounting bolts and slide the sensor toward the center of the cylinder. Once the light goes out move the sensor toward the edge of the cylinder and when the light comes on tighten the sensor down. When the adjustment is complete release the two die lift valves and the die lift carriage should fall and the machine is ready to run.

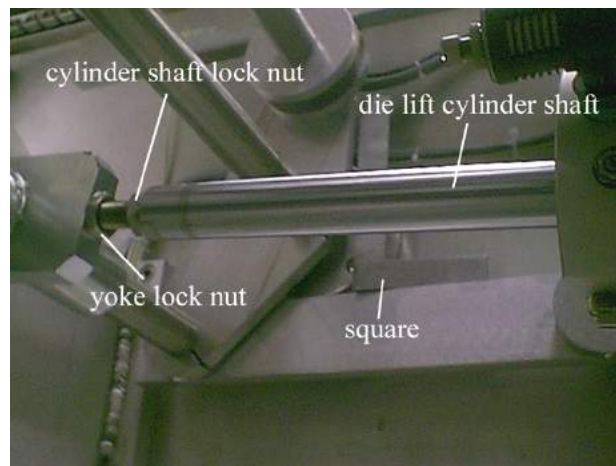
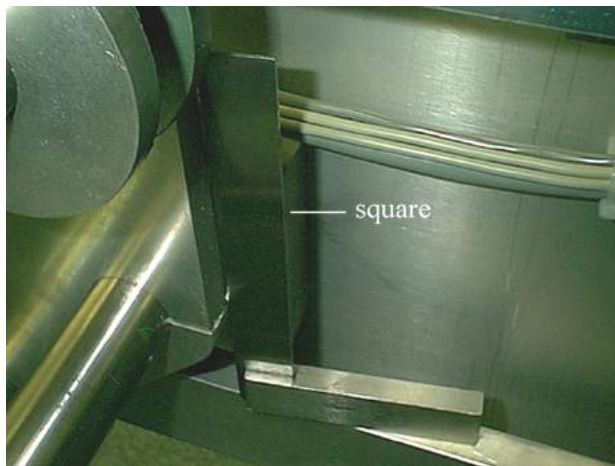


Parts:	94P2515	Die lift proximity switch
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27. Check die lift 90°

The die lift system works on dog legs (triangular pieces that rotate to raise the die lift carriage). Once the die lift carriage is closed all forces down on the carriage are on the bearings and shafts not the cylinder. If the cylinder is out of adjustment and the carriage is below or over 90° the forces will be against the cylinder and not the bearings and shafts. If this happens, the die lift carriage will be forced open while the package is being formed or when the seal bar fires. This will cause vacuum problems in the seal die and squealing and/or forming problems in the forming die. Also if under 90° the lift system will bang when it reaches the bottom. The rails will hit the cross shafts.

To check the die lift 90° enter the cleaning program which will close the dies. The cleaning program function is located on the features menu. The die lift cylinder is located under the forming station. Once the die lift carriage is closed, place a square on the rail next to the dog leg. The dog leg should go straight up the square. If adjustment needs to be done, loosen the shaft lock nut and turn the cylinder shaft to line up the dog leg. Once the dog leg is straight with the square, lock the shaft nut down. Failure to lock the shaft nut tightly will cause the lifting system to go out of 90° quickly. Now press the stop button to exit the cleaning program.

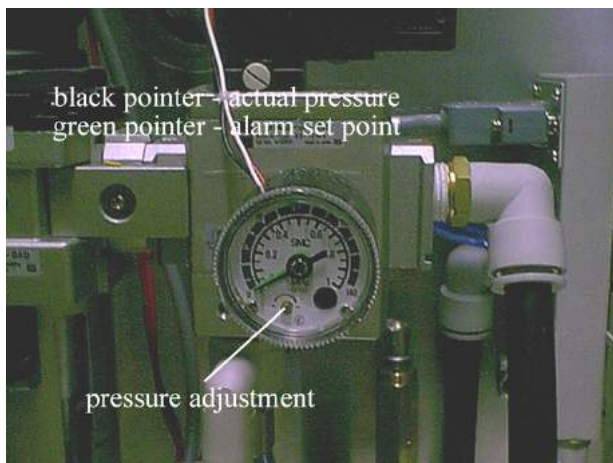


28. Adjust air pressure switch

The air manifold must maintain 60 PSI. The vacuum valves are air piloted and need 60 PSI to switch reliably. If the pressure falls below 60 PSI vacuum problems will be encountered.

The air pressure gauge and switch are one component. The black pointer shows the actual pressure and the green pointer shows the alarm set point. There are two green tabs on the outer edge of the faceplate. These tabs can be manually moved and they show the range of air pressure that the machine can operate on. To adjust the alarm set point use a screwdriver and turn the pressure adjustment screw. As the screw is turned the green pointer will move to indicate the alarm pressure.

To check the air pressure alarm make sure the green pointer is set at 60 PSI. Next, turn the regulator down slowly until PLC input X7 is not lit. When X7 is not lit the machine will go into low air pressure alarm. Now check the gauge to make sure it tripped at the correct pressure. Do not watch the screen for a low air pressure alarm. This alarm is on a time delay so the screen will not give an accurate alarm set point.



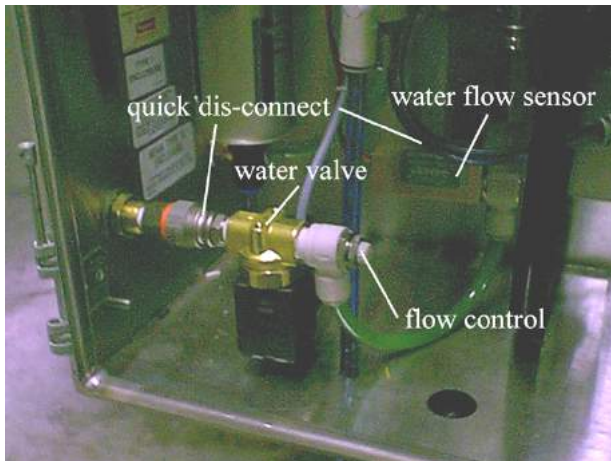
Parts:	94P1036	Air pressure switch/gauge
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29. Adjust water flow switch

Water has two uses on the rollstock machine. The first purpose of the water is to keep the forming bucket cool. If the forming bucket gets hot the machine will not form very good packages. The second reason for water is safety. The forming and sealing heads have heat bars and the water keeps the top of the die heads cool. Also if the seal head gets hot and stays hot for an extended period of time the seal bladders will dry out and fail prematurely causing a vacuum leak.

The machine is equipped with a flow sensor not a pressure sensor. For the switch to make, a ¼ gallon of water per minute must pass through the sensor. Pressure has no effect on the water flow switch.

To adjust the water flow switch turn on the heaters and watch PLC input X6 while turning the flow control down. Once the light goes out, turn the flow control up until the light comes back on. If while adjusting the water flow, the flow is below ¼ gallon of water per minute and the machine goes into alarm the heaters will need to be turned back on to finish the test. The low water flow alarm automatically shuts the heaters off and also shuts off the water valve. Having the water flow switch turned up higher than a ¼ gallon per time has no advantage it just wastes more water. While adjusting the water flow switch, watch PLC input X6 and not the user interface for low water flow. The alarm is on a time delay to filter out fluctuations in water flow and watching the screen will not accurately set the flow sensor.



Parts:	94P1008	Water flow switch
	94P1050	Water valve
	31P2035	Flow control

30. Check & clean seal head

This maintenance step is very important for rollstock machines that package extremely dry or extremely wet products. Pulling a hard vacuum on these two types of products will tend to suck moisture or particles up around and behind the seal bar. The seal bar has springs to keep it in the up position and uses two bladders behind the bar to extend the bar during the sealing process to seal the packages together. If the sides or back of the bar gets packed with debris, a spring brakes or a bladder leaks will cause the bar not to move properly causing bad seals.

The first part of this step is to remove the seal head from the machine. Remove the black die bolt plugs and remove the head.

Once the head is removed from the machine the bladders must be checked. Lay the head flat on a table with the seal bar facing up. Use a air hose to force air into the bladder port on the seal die. This will inflate the bladders and extend the seal bar. Remove the hose and cover the port with your finger. This part is tricky. The hose must be removed and the port covered before the bar settles to the bottom. Once the port is covered the seal bar should stop falling. If the port is covered and the bar continues to fall then at leased one bladder has a leak and needs to be replaced. When replacing the bladders, replace both. If one failed, the other one will probably fail shortly. The bladders are replaced later in this section.

The seal bar, pusher plate and top hats must be removed. Open the wire port cover and remove the seal bar wires from the terminal strip. Set the head on its side and remove the seal bar mounting bolts and slide the seal bar out of the head. Next, set the seal die flat on a table and remove the top hats and springs. Remove the pusher plate from the seal die.

If the bladders need to be replaced

Remove the bladder port cover and the brass nut holding the bladder in. Once this nut is removed the bladder can be removed. There is silicone on the bladder around the port that is used to seal the bladder. When the bladder is removed all silicone must be removed.

Clean all parts and the seal die cavity.

If changing the bladders

Now that all parts are clean the new bladders can be installed. First check the Teflon tape around the bladders. There is tape on the seal die behind the bladder and on the back of the pusher plate. Make sure all tape is in good condition and replace as necessary. Apply silicone on the bladder around the center air port. Press the bladder into place and tighten the brass nut. Check the 3.2mm cord around the bladder port cover. If it looks worn or nicked replace it. Apply a small amount of vacuum grease to the 3.2mm cord and install the bladder port cover.

Check the pusher plate. In the holes where the top hats and spring go there should be a lip for the spring to set on. If this lip is bent or broken off in any hole then the pusher

plate needs to be replaced.

Install the pusher plate. Replace any broken or worn springs and top hats.

On the top of the pusher plate are t-strips and two fiber washers. The purpose of these parts is to isolate that seal bar from the seal die and is also used to set the seal bar at the proper height. If the T-strips or fiber washers show signs of wear, replace them.

Set the seal die on its side and install the seal bar. Feed the wires into the wire port and push the bar into the head. Be careful not to nick the wires.

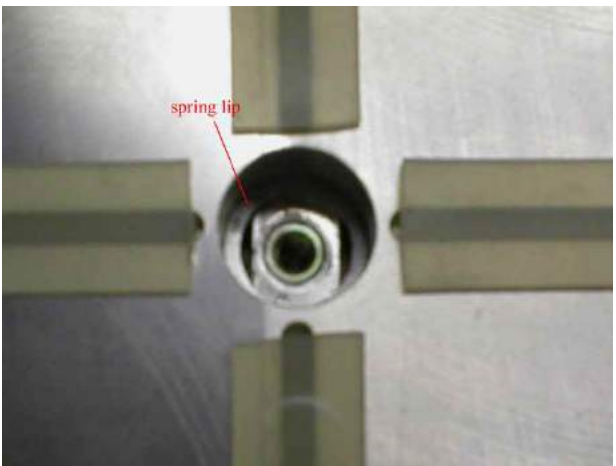
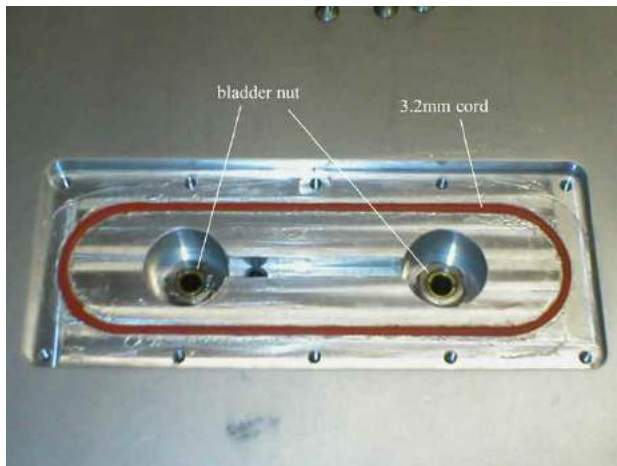
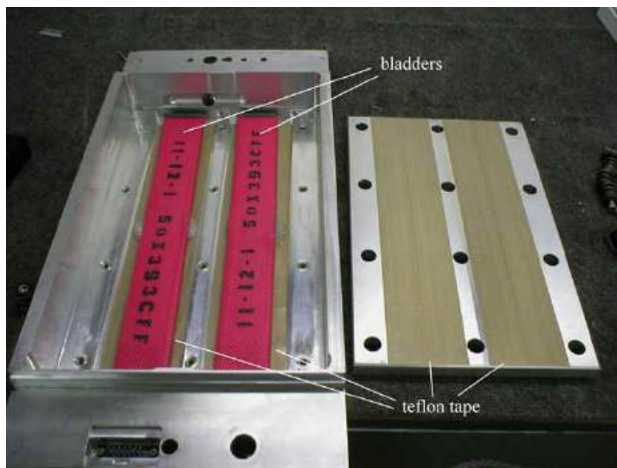
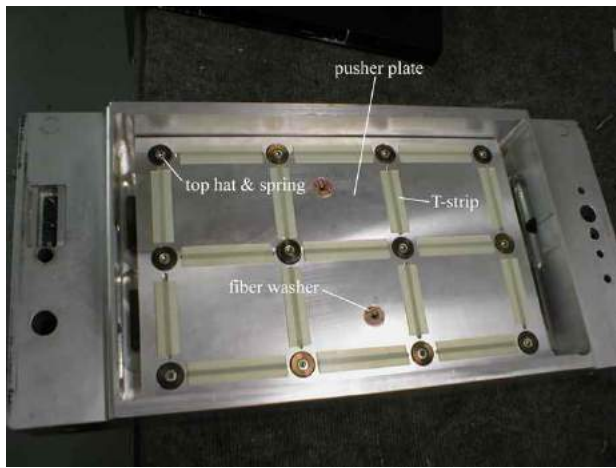
Connect the seal bar wires to the white terminal strip. This terminal strip fits tight into the wire port. If any of the plastic is torn around the screw on wire connection replace the terminal block to avoid the bar shorting out.

Install the wire port cover. Make sure to check the 3.2mm cord around the wire port and replace it if it looks worn or nicked. Apply a small amount of vacuum grease to the 3.2 cord.



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Seal Bar model A mounting



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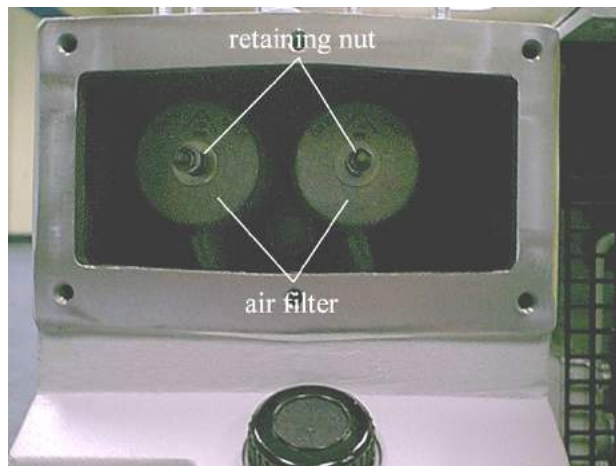
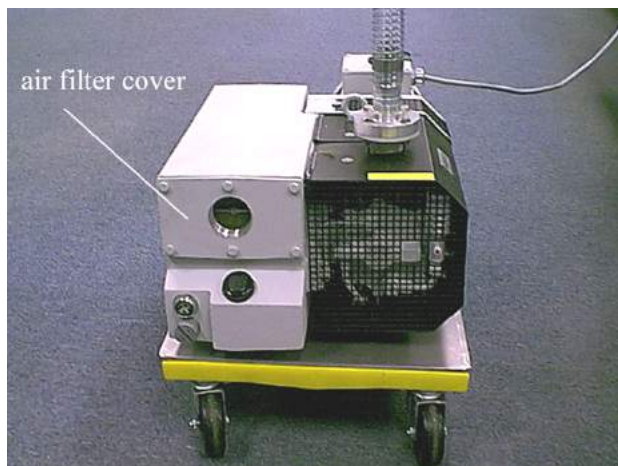
Parts:	96S1003	Die bolt plug
	51R1001	Vacuum grease 5.3oz.
	88D0302	3.2mm cord
	88D3564	Top hat
	88D0262	Spring
	88D5372	T-strip
	88D0726	Fiber washer
	88D0420	Terminal strip
	58R1008	Silicone 2.8 fl. Oz.
	54N1018	Teflon tape
	?	Bladder (sticker on die head)

Annually

31. Change vacuum pump exhaust filters

The vacuum pumps that Rollstock, Inc. uses has air filters. The size and number of filters varies for the different sizes of pumps. The function of the filter is to remove the oil from the air that is discharged by the pump. The filters will always be saturated with oil. The air filters should be changed once a year or if the pump starts smoking. If the filters get plugged a bypass valve will open and the air will be discharged without going through the filter and the pump will appear to be smoking. If this happens, the consumption of oil will also increase. When changing the air filters change all of the air filters at once and it is a good idea to change the oil and oil filter when changing the air filters.

The picture below is the SV100 model vacuum pump. The other models will appear slightly different and have different number of filters but the location and how to remove and install the filters is the same. To change the air filters remove the bolts from the air filter cover and remove the cover. The air filters are spring loaded into the pump. Remove the retaining nut. Remove the 2 washers and spring and remove the filter. Slide the new filter into place. Now slide a washer, then the spring, and then a washer and tighten down the nut. Now follow the same steps to replace the rest of the air filters.

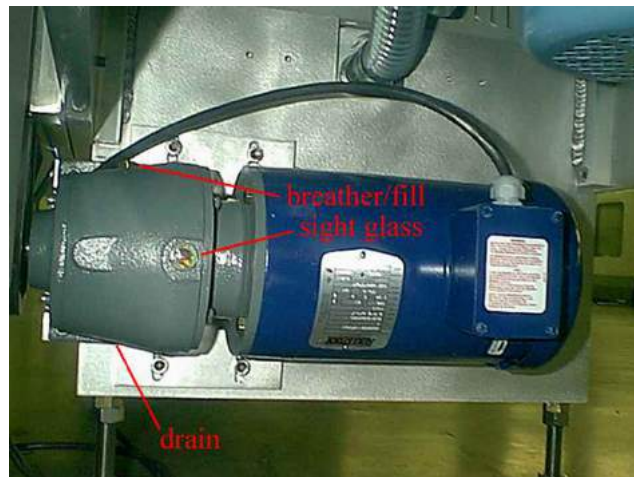


Parts:	94V2421	Small air filter SV40, SV100, SV200
	94V2441	Large air filter SV300
	96N4020	Vacuum pump oil change kit SV40
	96N4021	Vacuum pump oil change kit SV100
	96N4022	Vacuum pump oil change kit SV200
	96N4023	Vacuum pump oil change kit SV300

32. Change gearbox oil

The gearbox is located on the discharge side of the back leg by the cabinet. The gearbox provides speed reduction of the motor and increases the torque to move the gripper chains.

To change the oil in the gearbox remove the brass breather/fill plug on top of the gearbox. Remove the drain plug on the bottom of the gearbox and drain the oil. Once the oil is drained re-install the drain plug. There is a small circular gasket around the drain plug. Most of the time it either stays on the gear box or comes off with the plug but stays on the threads. Make sure the gasket is there when re-installing the drain plug. Fill the gear box with oil. The gearbox is filled through the breather/fill on top of the gearbox. The proper oil level in the gearbox is in the middle or upper half of the sight glass. If the gearbox appears to be over filled then advance the machine a couple of times and recheck the oil level. When the gearbox is filled air gets trapped in the oil and by advancing the chains the air is removed and this will give a true oil level. If the box still appears to be over filled then some oil can be removed from the gearbox through the drain plug on the bottom of the gearbox or it can be left alone and the oil will be discharged through the breather as the gearbox runs.



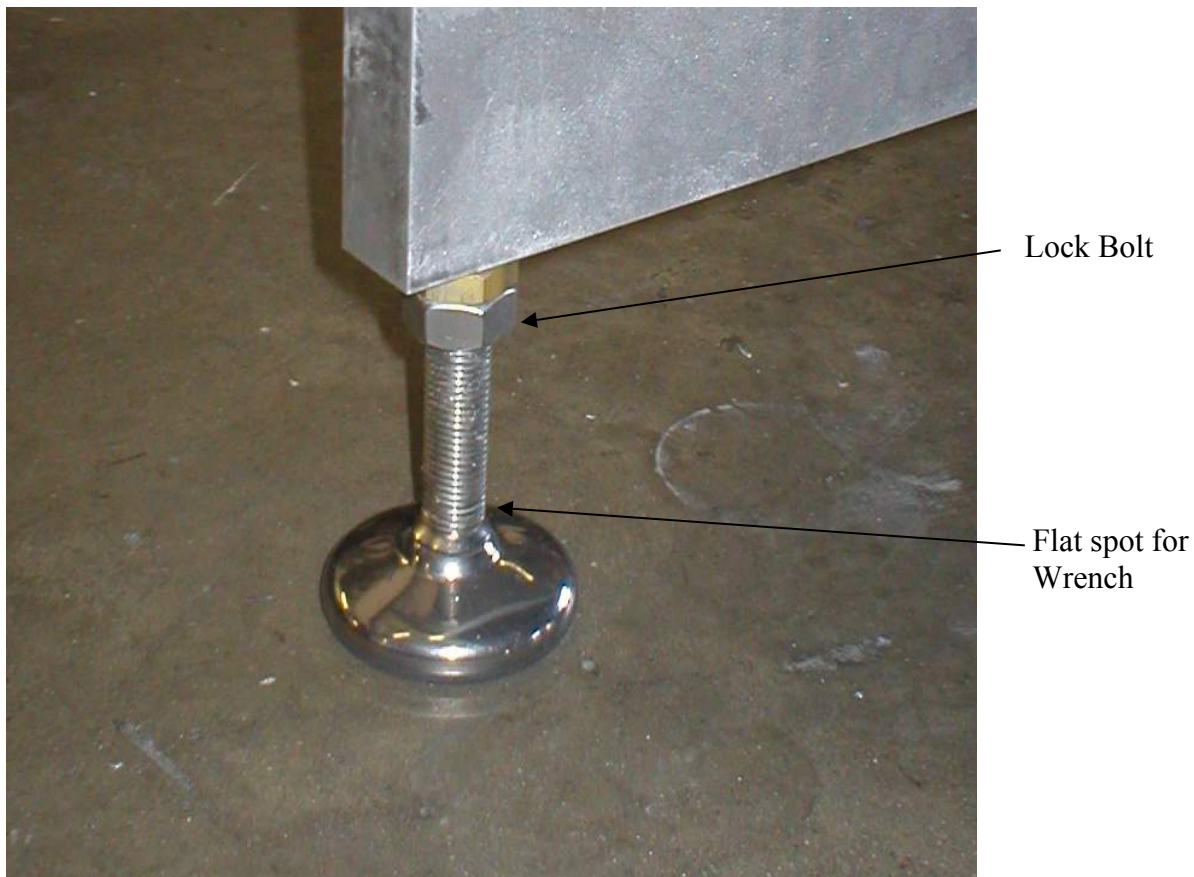
Parts:	96N3004	Gearbox oil
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33. Check that the machine is level

When the machine was installed Rollstock, Inc. suggests that the machine be anchored to the floor with “L” brackets on the outside corner of each leg. If this was done the machine should still be level but should be double-checked. If the machine was not anchored to the floor, the machine will “walk” while it is cycling. If the machine is unlevel this can cause several problems, the most common one being a vacuum leak.

To check the levelness of the machine place a level on top of the seal die and check the levelness in both directions, across the web and in advance. Now check the levelness on the forming die the same way it was checked on the sealing die. If either end or both are not level, adjustments to the legs need to be done to correct this problem.

When adjusting the levelness of the machine it usually requires the adjustment of all four legs. To adjust the legs first move the locking nut down 1 or 2 inches. Do this on all four legs and the flat spot will be used to adjust the height of the leg. Both dies will need to be checked for levelness in both directions as adjustments are made to the legs. This can be a time consuming process. The least amount of problems will be encountered the closer the machine is to being level.

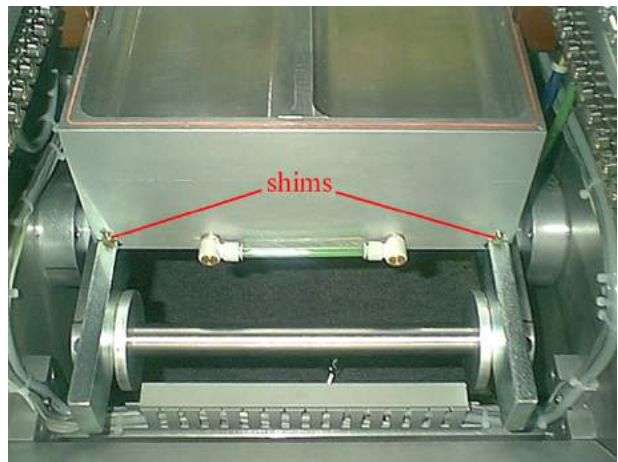
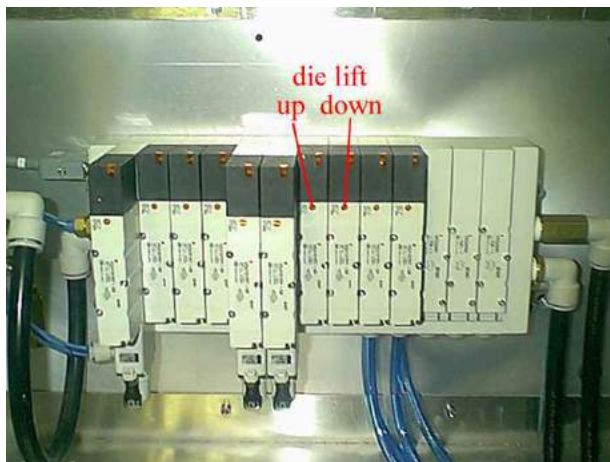


34. Check die gap

The die gap is probably the most important setting on the machine. If the die gap is too large there will be problems with forming packages and vacuum leaks. If the die gap is too small there will be problems with pinching the top “T” of the seal gasket off and the

die lift rails will start to bow causing numerous other problems.

To check the die gap first remove the seal gasket, the 3.2mm cord under the seal frame and the 3.2mm cord on top of the forming bucket. Next, the die lift system must be raised. Manually activate the seventh and eighth valves from the left side of the air manifold to manually raise the die lift. **Be careful, by manually firing these two valves the safety system will be bypassed.** The picture below is pointing to the manual activation buttons. Use a screw driver to press the buttons in and twist 90° to lock. Once the die lift is up the die gap is ready to be checked. Using feeler gauges, check the die gap in all four corners of both the forming and sealing die. The proper die gap is 1.5 to 1.8mm on the sealing die and .2 to .4mm on the forming die. If shims need to be added or removed this is done on the bottom corners of each die where the bucket sits on the rail. There is a screw on the side of the bucket to hold the shims in place. The shims are bent 90° so they are bolted on the side of the bucket and the bucket sets on the shims. Once the proper die gap is set, release the die lift valves and replace the 3.2mm cord on both buckets and the seal gasket.



Parts:	96N4036	Shim kit
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7 PARTS

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**For parts or service call
(800) 954-6020**

7.1 SEAL GASKETS

	Part #	Web width	Cut-off	Track	Row
G					
	Note:				
G					
	Note:				
G					
	Note:				
G					
	Note:				
G					
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For replacement gaskets use part # from above. If part # is not listed have machine number and die number available

Tools, Lubricants, Blades, Code Dater Parts

Tools

Metric Allen pack	74N1003
Piston insertion tool	74N1006
Crimp tool (wire ferrule)	94E6153

Lubricants

Vacuum pump oil 1qt.	96N3002
Vacuum grease 5.3oz.	51R1001
Pneumatic grease 25ml	58R1011
Gripper chain oil 1pt.	96N3001
Multi purpose grease 4oz.	96N3003
Gearbox oil 1qt.	96N3004

Cutting systems blades & cutters

Flying crosscut knife blade	88K2202
Rotary knife blade	88K0267
Hole punch cutter cylinder 7.9mm	88K2310
285 guillotine knife blade serrated	96K1006
285 guillotine knife blade zig zag	95K1160
320 guillotine knife blade serrated	96K1007
320 guillotine knife blade zig zag	95K1159
355 guillotine knife blade serrated	96K1008
355 guillotine knife blade zig zag	95K1161
420 guillotine knife blade serrated	96K1009
420 guillotine knife blade zig zag	95K1566
459 guillotine knife blade serrated	96K1010
459 guillotine knife blade zig zag	95K1162

*all guillotine blades are 4mm thick

Code dater

Ink black 48 cartridges	94A5003
Ink black 160 cartridges	94A5007
Type holder	94A5011
Air Cylinder	94A5013
Flow Control for air Cylinder	94A5016
Type- Date Set 1/8"	94A5020
Type- Numbers 1/8"	94A5021
Type- Letters and Numbers 1/8"	94A5022
Type available in other sizes – call for info	(816)-455-8055

Miscellaneous

Heating compound 2.5 oz.	96N3000
Package inflator	95N1049
Suction cup 3 ¹ / ₂ "	88D0554
Electrical tape	94E6158
Mixing nozzle for potting compound	58R1006
Hand plunger for potting compound	58R1014

VACUUM PUMP MAINTENANCE KITS

Vacuum pump oil change kit Busch 3hp & 5hp		Part # 96N4025
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Qty	Part #	Description
1	94V2428	Filter
3	96N3002	Oil 1qt.

Vacuum pump oil change kit Busch 7.5hp, 10hp & 12hp		Part # 96N4024
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Qty	Part #	Description
1	94V2422	Filter
7	96N3002	Oil 1qt.

Vacuum pump oil change kit SV200		Part # 96N4022
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Qty	Part #	Description
6	96N3002	Oil 1qt.

Vacuum pump oil change kit SV300		Part # 96N4023
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Qty	Part #	Description
8	96N3002	Oil 1qt.

Vacuum Pump exhaust filters		
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Qty	Part #	Description
1	94V2565	Exhaust filter for 3hp & 5hp
1	94V2566	Exhaust filter for 7.5hp, 10 & 12

Heat bar, O-rings, Flying knife Kits

TOOLING:

Heat bar wiring kit		Part # 96N4015
Qty	Part #	Description
1	96N3000	Heating compound 2.5oz.
1	94E6164	Acid brush
10	94E6103	Butt connector 22-18ga. Non-insulated
10	94E6104	Butt connector 16-14ga. Non-insulated
10	94E6105	Butt connector 10-12ga. Non-insulated
1	94E6106	Ring terminal 16-14ga. 10 stud non-insulated
1'	59E1003	High temperature shrink tubing 4.8
1'	59E1004	High temperature shrink tubing 6.4
1'	59E1007	High temperature shrink tubing 9.5
1'	54N2606	Silicone tubing 1/4"
1'	54N2603	Silicone tubing 3/8"
1'	54N2601	Silicone tubing 5/16"
5'	94E1011	Black silicone wire 16ga.
5'	94E1042	Blue silicone wire 16ga.
2'	94E1015	Green / yellow silicone wire 16ga.
5	20J1070	M6 x 16 FHSCS
1	20J2309	M5 x 6 pan head bolt

Utility block O-ring kit		Part # 96N4016
Qty	Part #	Description
20	52N2402	10 x 2 O-ring
10	88D0387	20 x 2 O-ring

Flying Knife parts		
Qty	Part #	Description
1	88K2202	Flying Knife Blade
1	94P2573	Cylinder for flying knife blade
1	80K1002	Coiler tubing
1	80K2576	Shock absorber
1	20J1143	Nut for shock absorber
1		

Vacuum Rebuild and Shim Kits

Vacuum valve seal kit	Part # 96N4017
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Qty	Part #	Description
6	52N2403	22 x 3 O-ring
6	88P2980	40mm K-ring
3	52N2401	22 x 2 O-ring
3	88V0415	50 x 3 O-ring

* Pneumatic grease 25ml 58R1011

* Piston insertion tool 74N1006

Vacuum valve rebuild kit	Part # 96N4018
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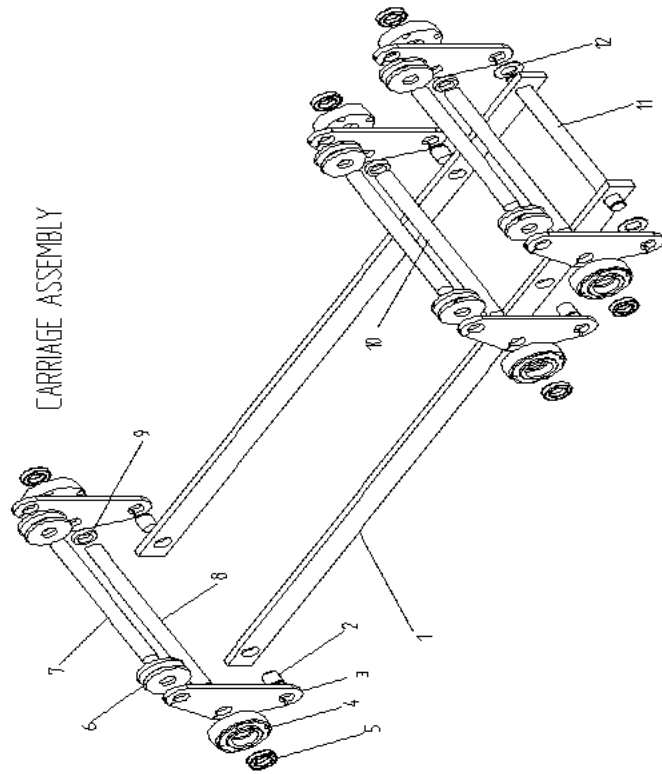
Qty	Part #	Description
2'	88D0302	3.2mm silicone cord
1	96N4017	Vacuum valve seal kit
6	94V3709	Piston
6	88V0321	Spring

* Pneumatic grease 25ml 58R1011

* Piston insertion tool 74N1006

Shim kit	Part # 96N4036
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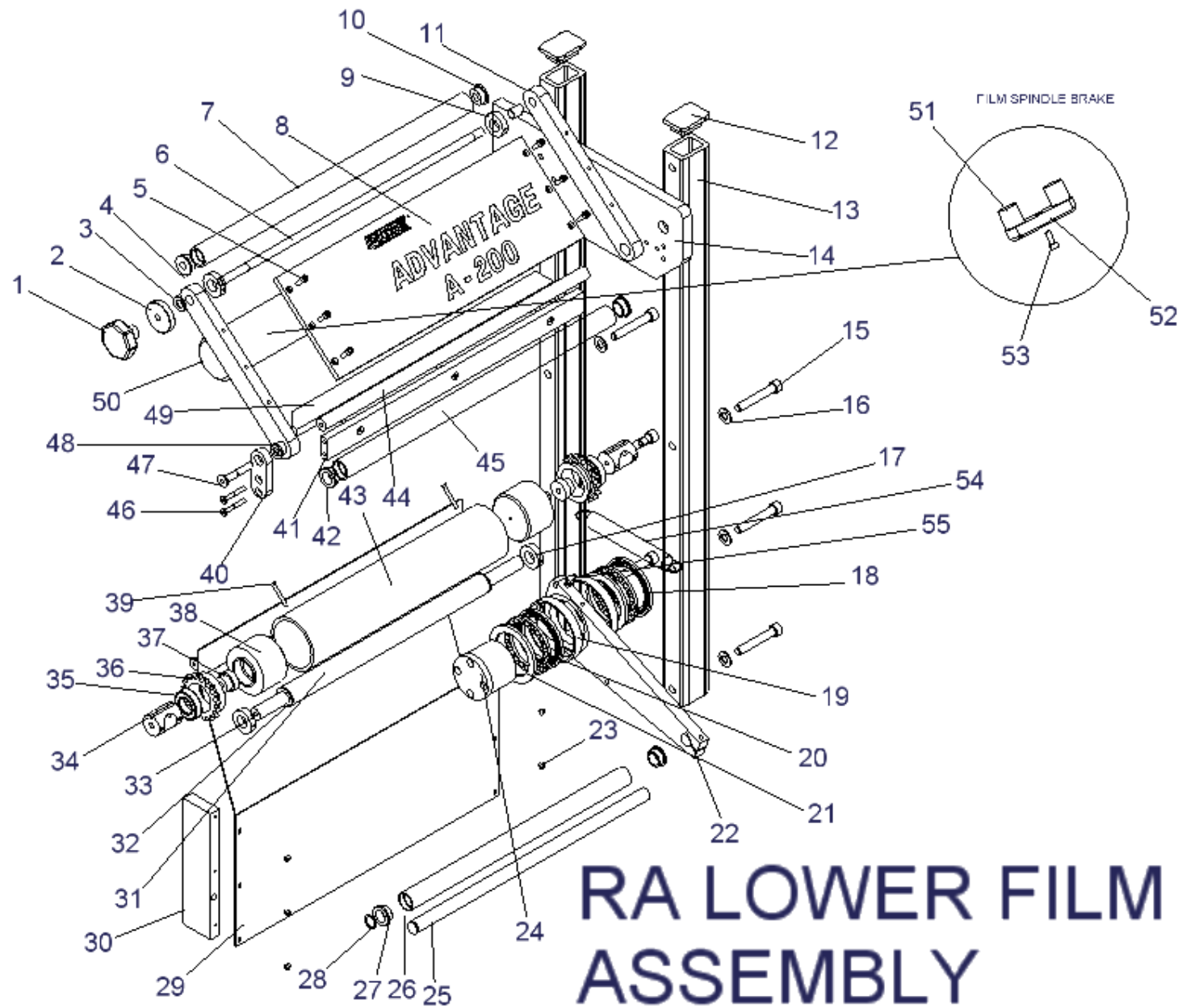
Qty	Part #	Description
10	96S7301	.15mm shim
10	96S7302	.20mm shim
10	96S7303	.25mm shim
10	96S7304	.30mm shim
10	96S7305	.50mm shim



CARRIAGE ASSEMBLY

SCALE 1/4

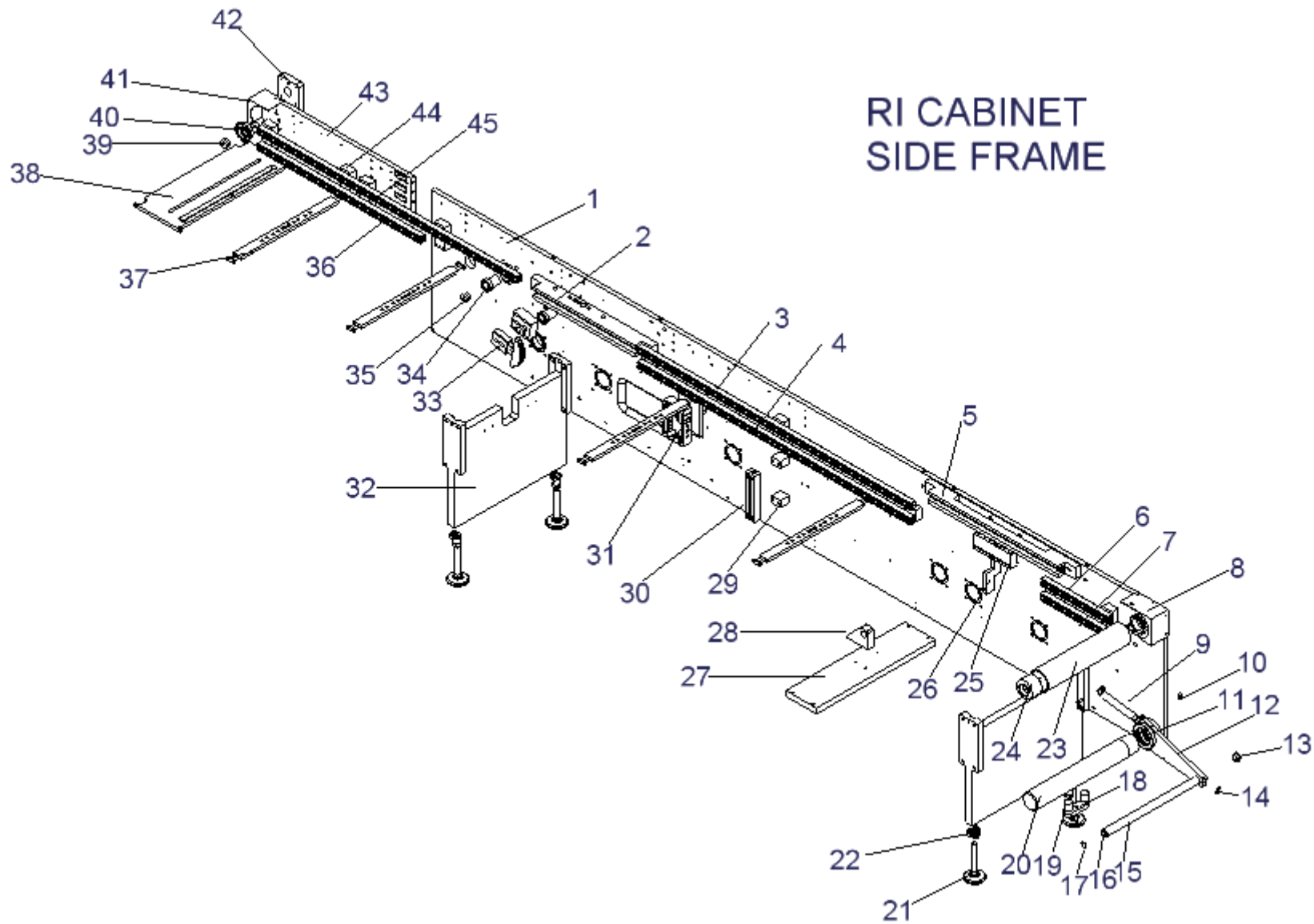
Carriage Assembly								
Ref. #	Qty	Description	ALL	285	320	355	420	459
1	2	Connecting link	94M1014					
	6	Bushing for connecting link	40B1001					
2	4	Connecting link spud short	94M1005					
	4	Retaining ring 1 3/8"	94M1019					
3	6	Die lift lever	94M1102					
	18	M6 x 20 SHCS for die lift lever	20J1023					
4	8	Pillow block	94M1100					
	32	M10 x 40 SHCS for pillow blocks	20J1050					
5	8	Bearing for pillow block	40B1012					
6	6	Bearing for die lift rail	40B1008					
7	3	Shaft die lift rail		94M2535	94M2536	94M2546	94M2540	94M2560
8,10	3	Shaft for bearings		94M2543	94M2537	94M2547	94M2541	94M2561
9	6	Spacer between pillow block & die lift lever	93S1001					
11	1	Shaft die lift yoke		94M2544	94M2538	94M2548	94M2542	94M2562
	2	Retaining ring 1 3/8"	94M1019					
12	6	Spacer connecting link	94M1002					
13	12	Die lift retaining collar	94M1101					
	12	M8 x 20 set screw pointed for die lift collar	20J1156					
	12	Grease fitting for die lift collar	26J1020					
		Not pictured:						
	1	Die lift yoke	94M1103					
	2	Bushing for die lift yoke	40B1002					
	1	All thread for die lift yoke	20J1128					
	6	Wear plate for die lift rail	88M1200					
	18	M6 x 8 FSHCS for wear plate	20J1067					24



RA LOWER FILM ASSEMBLY

Lower film Assembly RA200								
Ref. #	Qty	Description	Web Width					
			ALL	285	320	355	420	459
1	1	Star knob M12	22N1003					
2	1	Trapeze locking knob	95F1312					
3	1	Spacer	95F1383					
4	1	Trapeze arm operator side	95F1385					
5	6	M6 x 16 SHCS	20J1022					
6	1	Shaft trapeze guide form		95F1359	95F1354	95F1364	95F1351	95F1349
8	1	Trapeze parallel plate		95F1420	95F1377	95F1421	95F1387	95F1379
9	2	Collar locking 12.7mm ID	94F1004					
11	1	Trapeze arm cabinet side	95F1384					
12	2	Support cap film unwind	95F1382					
13	2	Film unwind support	95F1380W					
14	1	Film unwind mount plate	95F1381					
15	10	M12 x 75 SHCS	20J1130					
16	10	M12 washer	20J1096					
17	2	Collar locking 20mm ID	94F1125					
18	2	Bearing for film spindle	40B1031					
19	2	Dust cover for bearing	95F1302					
20	2	Bearing for film spindle	40B1031					
21	2	Washer for film spindle bearing	29F6014					
22	1	Dancer arm	95F1301					page19
23	4	M4 x 10 button head screw	20J1190					
24	1	Dancer arm spud	95F1305					
25	1	Shaft for dancer roller		95F2803	95F1304	95F1356	95F1317	95F1358
26	1	Roller for dancer arm		95F2806	95F1314	95F1355	95F1303	95F1357
27	2	Bushing roller 20mm ID	88F1101					
28	1	Clip external 3/4"	95M1009					
29	1	Infeed end plate		95S1018	95S1015	95S1019	95S1014	95S1017
30	1	Mount infeed pan operator side	95K1005					
31	1	Roller for infeed shaft		95F2802	94F1019	94F1040	94F1025	94F1041

Lower film Assembly RA200								
Ref. #	Qty	Description	Web Width					
			ALL	285	320	355	420	459
32	1	Shaft infeed roller forming		95F2818	94F1006	94F1030	94F1005	94F1031
33	2	Collar locking 20mm ID	94F1125					
34	2	Standoff for infeed chain sprocket	94F1008					
35	2	Bearing for infeed chain sprocket	40B1018					
36	2	Infeed chain sprocket	88F0212					
37	2	Infeed sprocket center	94F1016					
38	2	Bushing for infeed roller	88F1005					
39	2	M5 x 25 FSHCS	20J1064					
40	1	Trapeze end support	95F1393					
41	1	Trapeze mount support		95F1413	95F1378	95F1414	95F1394	95F1412
42	2	Bushing roller 20mm ID	88F1101					
43	1	Infeed roller		88F1010	88F1000	88F1011	88F1002	88F1012
44	1	Trapeze mount shaft		94F1055	94F1047	94F1056	94F1046	94F1048
45	1	Roller trapeze		94F1039	94F1042	94F1049	94F1041	94F1043
46	2	M6 x 20 FSHCS	20J1071					
47	1	M8 x 20 FSHCS	20J1077					
48	2	Spacer	95F1383					
49	1	Trapeze mount support gusset		95F1417	95F1411	95F1418	95F1410	95F1416
50	1	Film spindle		94S1014	94S1008	94S1015	94S1006	94S1016
51	2	Spring for film brake	88K0259					
52	1	Film brake shoe	95F1309					
53	1	M8 x 25 SHCS	20J1037					
54	1	Film unwind spring	88F0154					
55	1	M6 - 90° grease fitting	26J1021					
	1	Sleeve for film brake	95F1300					
	2	Infeed chain sprocket assembly	88F0214					
		includes #35, 36, 37						

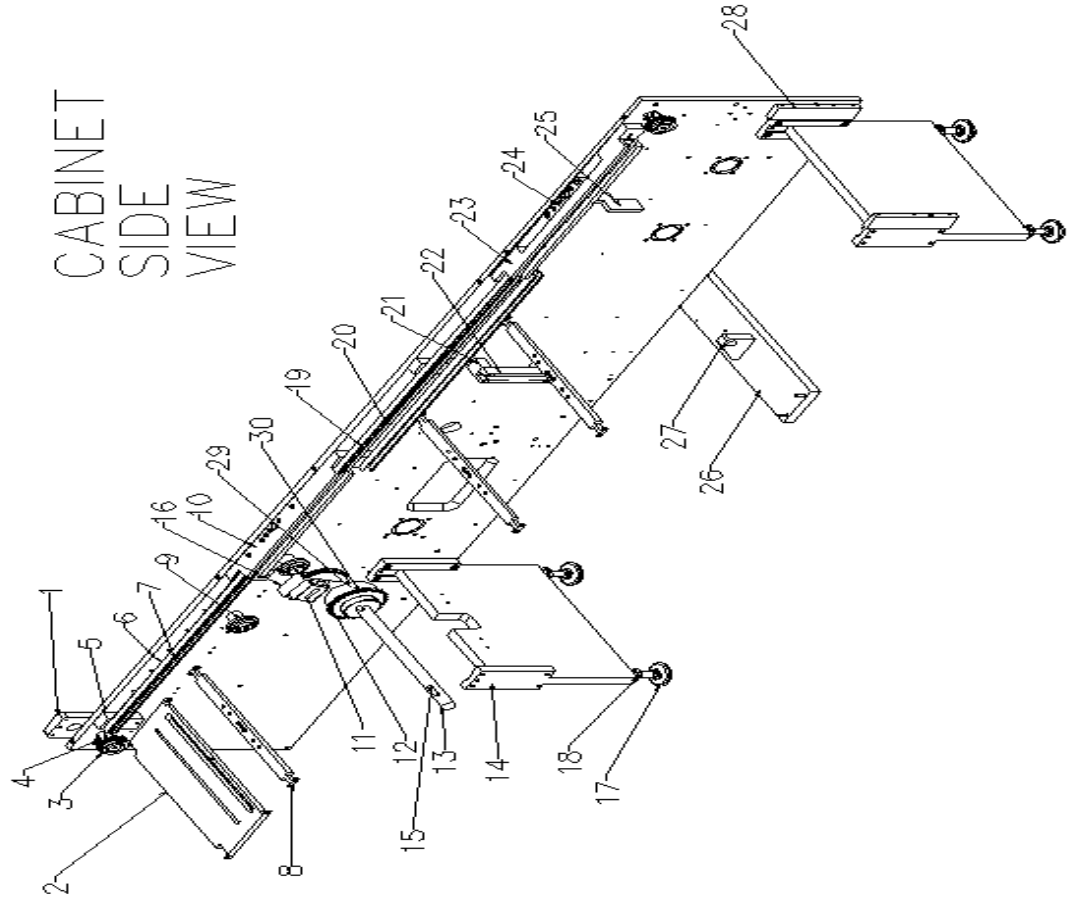


RI200 cabinet side view								
Ref#	Qty	Description	Web width					
			All	285	320	355	420	459
1	1	Cabinet side frame	94S2002					
2	1	Sealing utility block cabinet side	94S1010					
	1	Sealing utility block operator side	94S1011					
	2	Chain guide for seal utility block	97F7807					
3 & 4	4	Chain guide load area RI200	96F7649					
3 & 4		Includes: Stainless mounting channel						
3 & 4		and plastic insert						
5	2	Forming utility block guide	94S2418					
	2	Chain guide for guide	97F7806					
	2	Back plate for guide	94S9211					
6 & 7	4	Chain guide infeed	97F7650					
		Includes: Stainless mounting channel						
		and plastic insert						
8	1	Chain sprocket cover infeed cabinet	95H7022					
	1	Chain sprocket cover infeed operator	95H7027					
9	1	Film spring	88F0154					
10	4	SHCS M8 x 25	20J1037					
11	2	Film spindle bearing	40B1031					
	2	Washer for film spindle bearing	29F6014					
	2	Cover for film spindle bearing	95F1302					
12	1	Dancer arm	95F1301					
	1	Grease fitting for dancer arm	26J1021					
13	2	Bushing for dancer roller	88F1101					
14	1	SHCS M8 x 25	20J1037					
15	1	Dancer roller		95F2806	95F1314	95F1355	95F1303	95F1357
16	1	Dancer roller shaft		95F2803	95F1304	95F1356	95F1317	95F1358
16	1	Retaining ring 3/4"	95M1009					
17	1	Bushing for dancer roller	88F1101					
18	2	Spring for brake	88K0259					12

RI200 cabinet side view								
Ref#	Qty	Description	Web width					
			All	285	320	355	420	459
19	1	Brake for film spindle	95F1309					
	1	Bushing for brake	95F1300					
20	1	Film spindle		94S1014	94S1008	94S1015	94S1006	94S1016
21	4	Machine foot	94S1103					
22	4	Nut 20mm	20J1112					
23	1	Infeed roller		88F1010	88F1000	88F1011	88F1002	88F1012
24	2	Bushing for infeed roller	88F1005					
25	1	Forming utility block cabinet side	94M2422					
	1	Quick exhaust 1/4"	88P0396					
	1	Muffler for quick exhaust 1/4"	88P0398					
	4	Fitting 1/4" x 10mm straight	31P2010					
	1	Fitting 1/4" x 10mm 90	31P2011					
	1	Forming utility block operator side	94M2423					
26	2	Form bucket guide	94M1012					
27	1	Die lift cylinder mount		94S2566	94S2565	94S2568	94S2564	94S2569
28	1	Die lift clevis mount (SMC cylinder)	94M1001					
	1	Bushing for SMC clevis mount	40B1003					
	2	SHCS M8 x 30	20J1038					
29	4	Spacer for die lift guide	94M1003					
30	2	Guide for die lift rail	94M1007					
	2	Guide follower die lift	94M1004					
31	1	Wire box	94C5044W					
32	1	Leg discharge end		94S1012	94S1004	94S1026	94S1002	94S1022
33	2	Chain tensioner	94F2415					
	2	Chain tensioner spacer block	94F1001					
34 & 35	4	Chain sprocket idler assembly	88F0216					
36	1	Chain guide discharge cabinet lower	97F7804					page 13
37	4	Cross piece		96S7331	96S7332	96S7334	96S7333	96S7335
	1	Chain guide discharge operator lower	97F7805					

RI200 cabinet side view								
Ref#	Qty	Description	Web width					
			All	285	320	355	420	459
38	1	Cross member		94R2091	94R2092	94R2093	94R2094	94R2095
39 & 40	1	Chain sprocket assembly discharge cabinet side	88F0215					
	1	Chain sprocket assembly discharge operator side	88F0217					
41	1	Chain sprocket cover discharge cabinet	95H7028					
	1	Chain sprocket cover discharge operator	95H7023					
42	1	Rotary knife cabinet side mount	94K6303					
43	1	Discharge extension cabinet	97S7423					
44	6	Chain guide spacer	94F1002					
45	1	Chain guide top cabinet side	97F7802					
		Includes: Stainless mounting channel and plastic insert						
		Chain guide bottom cabinet side	97F7804					
		Chain guide top operator side	97F7803					
		Chain guide bottom operator side	97F7805					
		Utility block o-ring kit	96N4016					
		Includes 20- 10 x 2 o-ring and 10- 20 x 2 o-ring						
		#39 & 40 includes:						
		1 - 88F0212D discharge chain sprocket, 1 - 40B1021 one way bearing, 1- 94F1016 sprocket center						
		# 34 & 35 includes:						
		1 - 88F1350 idler sprocket, 1 - 40B1018 bearing and 1 - 88F2100 sprocket center						

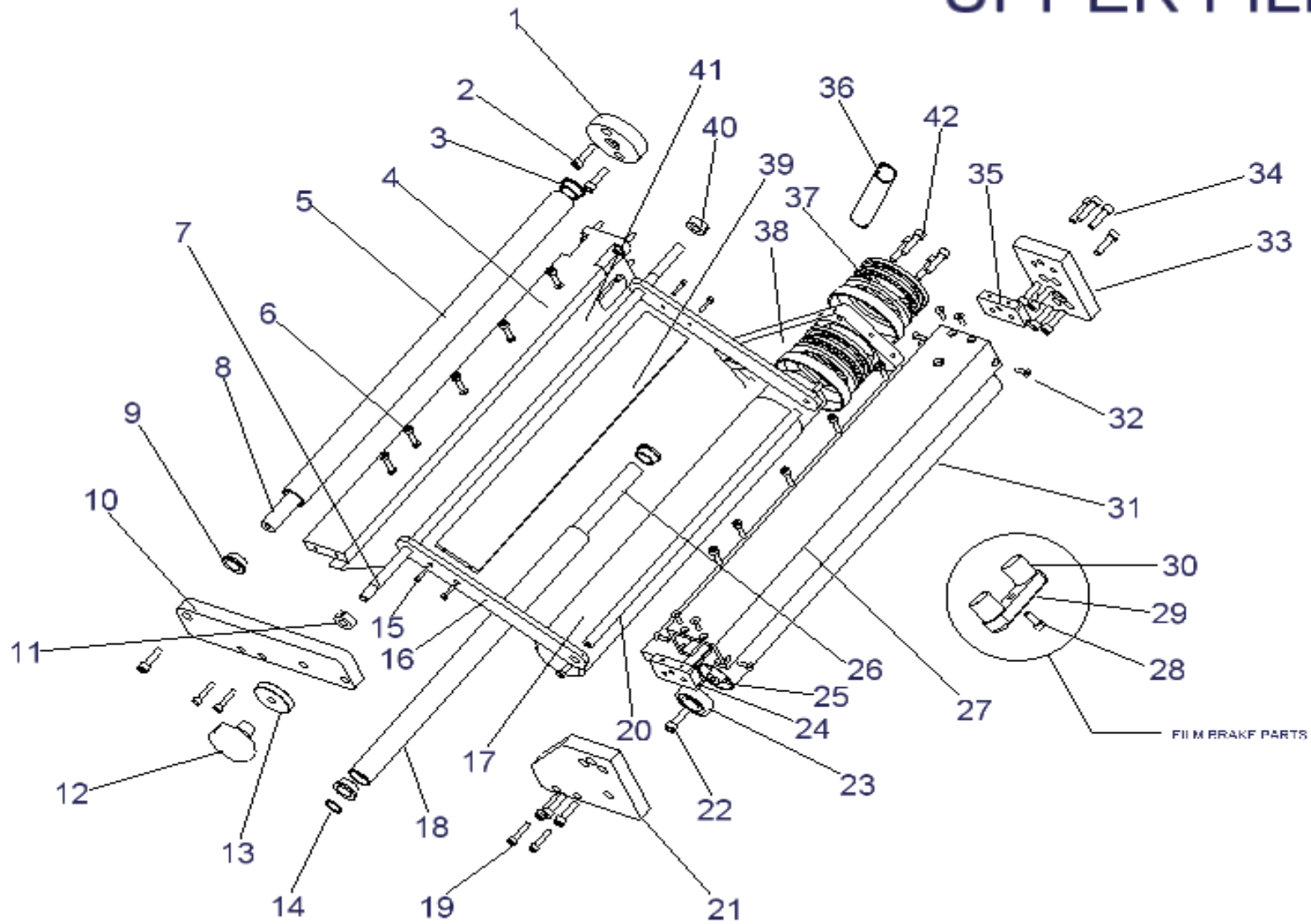
CABINET
SIDE
VIEW



RA200 cabinet side view								
Ref#	Qty	Description	Web width					
			All	285	320	355	420	459
1	1	Rotary knife cabinet side mount	94K6303					
2	1	Cross member		94R2091	94R2092	94R2093	94R2094	94R2095
3	1	Chain sprocket assembly discharge end cabinet side	88F0215					
	1	Chain sprocket assembly discharge end operator side	88F0217					
4	2	Standoff for chain sprocket discharge	94F1007					
5	2	Spacer for chain guide discharge	95F1002					
6 & 7	2	Chain guide cutting area RA200 Includes: Stainless mounting channel and plastic insert	97F7817					
8	4	Cross piece		96S7331	96S7332	96S7334	96S7333	96S7335
9	4	Chain sprocket idler assembly	88F0216					
10	1	Sealing utility block cabinet side	94S1010					
		Sealing utility block operator side	94S1011					
	2	Chain guide for seal utility block	97F7807					
11	2	Chain tensioner	94F2415					
12	2	Main drive sprocket	97F8629					
	2	M8 x 20 cup point set screw	20J1168					
13	1	Main drive shaft		94M2545	94F2539	94M2549	94F2543	94M2563
14	1	Leg discharge end		94S1012	94S1004	94S1026	94S1002	94S1022
15	3	Key 10 x 8 x 40	23J1007					
16	2	Chain tensioner spacer block	94F1001					
17	4	Machine foot	94S1103					
18	4	Nut 20mm	20J1112					
19 & 20	4	Chain guide load area RA200 Includes: Stainless mounting channel and plastic insert	97F7818					

RA200 cabinet side view								
			Web width					
Ref#	Qty	Description	All	285	320	355	420	459
21	4	Spacer for die lift guide	94M1003					
22	2	Guide for die lift rail	94M1007					
	2	Guide follower die lift	94M1004					
23	2	Forming utility block guide	94S2418					
24	1	Forming utility block cabinet side	94M2422					
	1	Quick exhaust 1/4"	88P0396					
	1	Muffler for quick exhaust 1/4"	88P0398					
	4	Fitting 1/4" x 10mm straight	31P2010					
	1	Fitting 1/4" x 10mm 90	31P2011					
	1	Forming utility block operator side	94M2423					
	2	Chain guide for form utility block	97F7806					
25	2	Form bucket guide	94M1012					
26	1	Die lift cylinder mount		94S2566	94S2565	94S2568	94S2564	94S2569
27	1	Die lift clevis mount (SMC cylinder)	94M1001					
	1	Bushing for SMC clevis mount	40B1003					
28	1	Mount for infeed pan cabinet side	95K1004					
	1	Mount for infeed pan operator side	95K1005					
	1	Utility block o-ring kit	96N4016					
		Includes 20- 10 x 2 o-ring and						
		10- 20 x 2 oring						
		# 3 & 4 includes:						
		1 - 88F0212D discharge chain sprocket, 1 - 40B1021 one way bearing, 1- 94F1016 sprocket center						
		# 9 includes:						
		1 - 88F1350 idler sprocket, 1 - 40B1018 bearing and 1 - 88F2100 sprocket center						

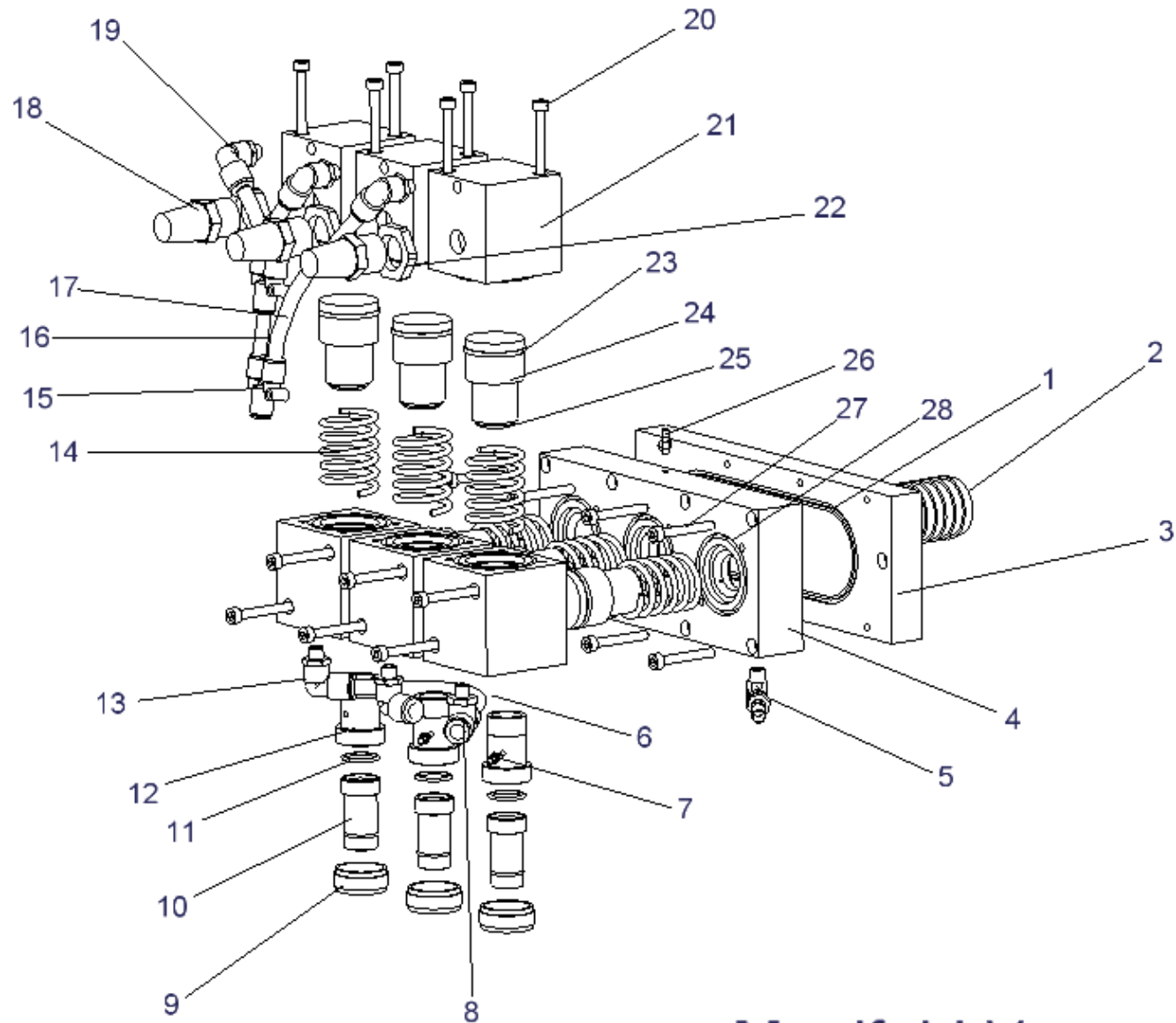
UPPER FILM



Upper film assembly RI200 and RA200

Ref. #	Qty	Description	Web Width					
			ALL	285	320	355	420	459
1	1	Sealing web roller shaft mount hub	95F1332					
2	2	M8 x 30 SHCS	20J1038					
3	2	Bushing 20mm ID	88F1101					
4	1	Top web film guide cross bar		95F2810	95F1319	95F1360	95F1320	95F1362
5	1	Sealing web roller		95F2814	95F1328	95F1366	95F1329	95F1367
6	5	M6 x 20 SHCS	20J1023					
7	1	Shaft trapeze guide seal		95F2808	95F1315	95F1350	95F1341	95F1352
8	1	Sealing web roller shaft		95F2819	95F1337	95F1375	95F1338	95F1376
9	2	Bushing 20mm ID	88F1101					
10	1	Top web film guide end plate	95F1318					
11	1	Collar	94F1127					
12	1	Star knob M12	22N1003					
13	1	Trapeze locking knob	95F1312					
14	1	Clip external 3/4"	95M1009					
15	4	M4 x 10 SHCS	20J1142					
16	2	Trapeze side frame seal web	95F1311					
17	1	Film spindle		94S1014	94S1008	94S1015	94S1006	94S1016
18	1	Dancer roller		95F2806	95F1314	95F1355	95F1303	95F1357
19	2	M6 x 25 SHCS	20J1024					
20	1	Trapeze tension bar		95F2805	94F1026	94F1044	94F1021	94F1045
21	1	Sealing web film brake end plate	95F1326					
		Film decal	96H1001					
22	1	M8 x 20 SHCS	20J1036					
23	2	Bearing for sealing roller	40B1025					
24	1	Film brake housing end	95F1325					
25	1	Sealing web roller shaft		95F2819	95F1337	95F1375	95F1338	95F1376
26	1	Shaft for dancer arm roller		95F2803	95F1304	95F1356	95F1317	95F1358
27	1	Sealing web brake shoe housing		95F2816	95F1335	95F1372	95F1336	95F1373
28	1	M8 x 25 SHCS	20J1037					page 16

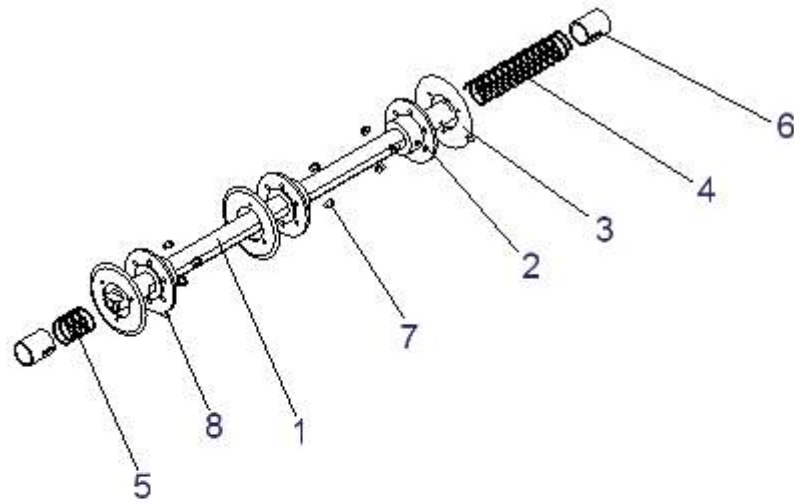
Upper film assembly RI200 and RA200									
Ref. #	Qty	Description	Web Width					420	459
			ALL	285	320	355	420		
29	1	Film brake shoe	95F1309						
30	2	Spring	88K0259						
	1	Sleeve for brake shoe	95F1300						
31	1	Sealing web roller film brake		95F2812	95F1330	95F1368	95F1331	95F1369	
32	8	FSHCS M5 x 10	20J1061						
33	1	Sealing web film brake mount plate	95F1327						
34	4	M8 x 20 SHCS	20J1036						
35	1	Film brake housing end	95F1325						
36	1	Film unwind spring	88F0154						
37	2	Bearing for film spindle	40B1031						
	2	Dust cover for bearing	95F1302						
	2	Washer for bearing	29F6014						
38	1	Dancer arm	95F1301						
	1	M6 - 90° grease fitting	26J1021						
39	1	Trapeze frame cross member		95F2807	94F2565	94F2563	94F2566	94F2564	
40	1	Collar	94F1127						
41	1	Film guide gusset		95F2811	95F1321	95F1361	95F1322	95F1363	
42	4	M8 x 25 SHCS	20J1037						



Manifold Vacuum Valve Assembly

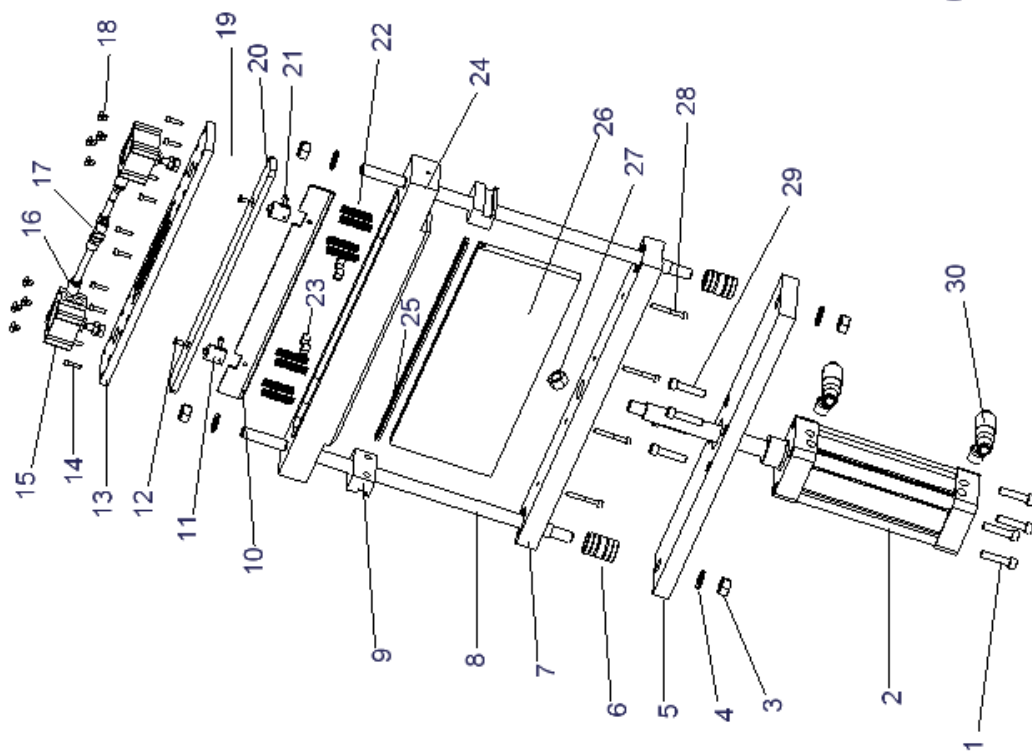
Vacuum Valve Assembly

Ref #	Qty	Description	Part #		Parts not shown	
1	2'	3.2 mm silicone cord	88D0302			
2	1	Hose barb 2" with 2" thread	39J1006		25'	Tubing 1/8" ID x 1/4" OD 94V3710
	1	Hose barb 1 1/2" with 2" thread	39J1003		5'	Vacuum hose 2" (clear) 95V1007
3	1	Vacuum valve back plate 2"	95V3706		5'	Vacuum hose 1 1/2" (clear) 95V1003
4	1	Vacuum manifold	95V3707		10'	Vacuum hose 19mm (green) 88V1166
5	1	Fitting 1/4" x 10mm 90 compression	31P1017			Piston insertion tool 74N1006
6	6"	Blue hose 10 x 6.5mm	55P1011			Vacuum valve test hose 95V3716
7	2	Hose barb 1/8"	32J1005			
8	1	Fitting 1/8" x 10mm T	31P2015			Vacuum valve seal kit 96N4017
9	3	Nut	88P0413			includes all o-rings and k-rings
10	3	Hose insert 19mm	88D0284			
11	3	O-ring 22 x 2	52N2401			Vacuum valve rebuild kit 96N4018
12	3	Brass fitting 1" x 3/4"	38J1001			includes seal kit, pistons, springs and 3.2 cord
13	2	Fitting 1/8" x 10mm 90	31P2014			
14	6	Vacuum valve spring	88V0321			
15	2	Y fitting	31P2012			
16	8"	Blue hose 10 x 6.5mm	55P1011			
17	12"	Blue hose 10 x 6.5mm	55P1011			
18	3	Muffler 3/4"	94P1004			
19	3	Fitting 1/8" x 10mm 90	31P2014			
20	12	M6 x 70SHCS	20J1031			
21	3	Vent segment	94V3702			
22	3	3/4" nut	30E1032			
23	6	K-ring 40mm	88P2980			
24	6	Piston	94V3709			
25	6	O-ring 20 x 3	52N2403			
26	1	Hose barb 1/8"	32J1005			
27	8	M6 x 40 SHCS	20J1027			
28	3	O-ring 50 x 3mm	88V0415			



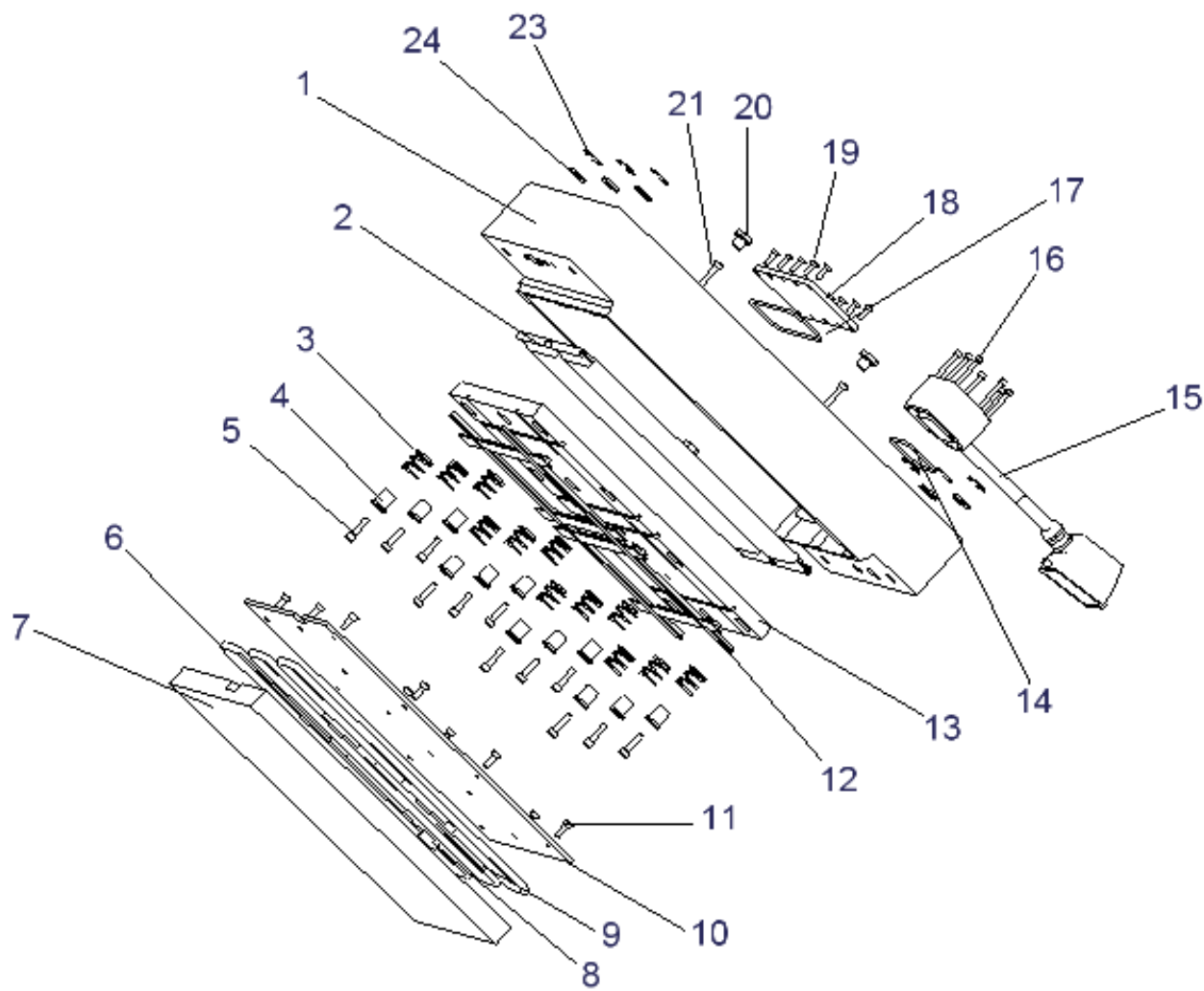
ROTARY KNIFE ASSEMBLY

Rotary Knife								
Ref#	Qty	Description	Web Width					
			All	285	320	355	420	459
1	1	Rotary knife shaft		88K1005	88K1004	88K1014	88K1012	88K1013
2	varies	Rotary knife hub	88K0242					
3	varies	Rotary knife blade	88K0267					
		Rotary knife blade split	88K0268					
4	1	Rotary knife spring long	88K0290					
5	1	Rotary knife spring short	88K0259					
6	2	Rotary knife collar	88K0243					
7	3/hub	Cheese head screw M5 x 6	20J1132					
8	1/hub	Set screw M8 x 8	20J1169					
	2	Set screw M4 x 10	20J1162					
	1	Rotary knife guard assembly		95H7052S	95H7051S	95H7053S	95H7050S	95H7054S



GUILLOTINE

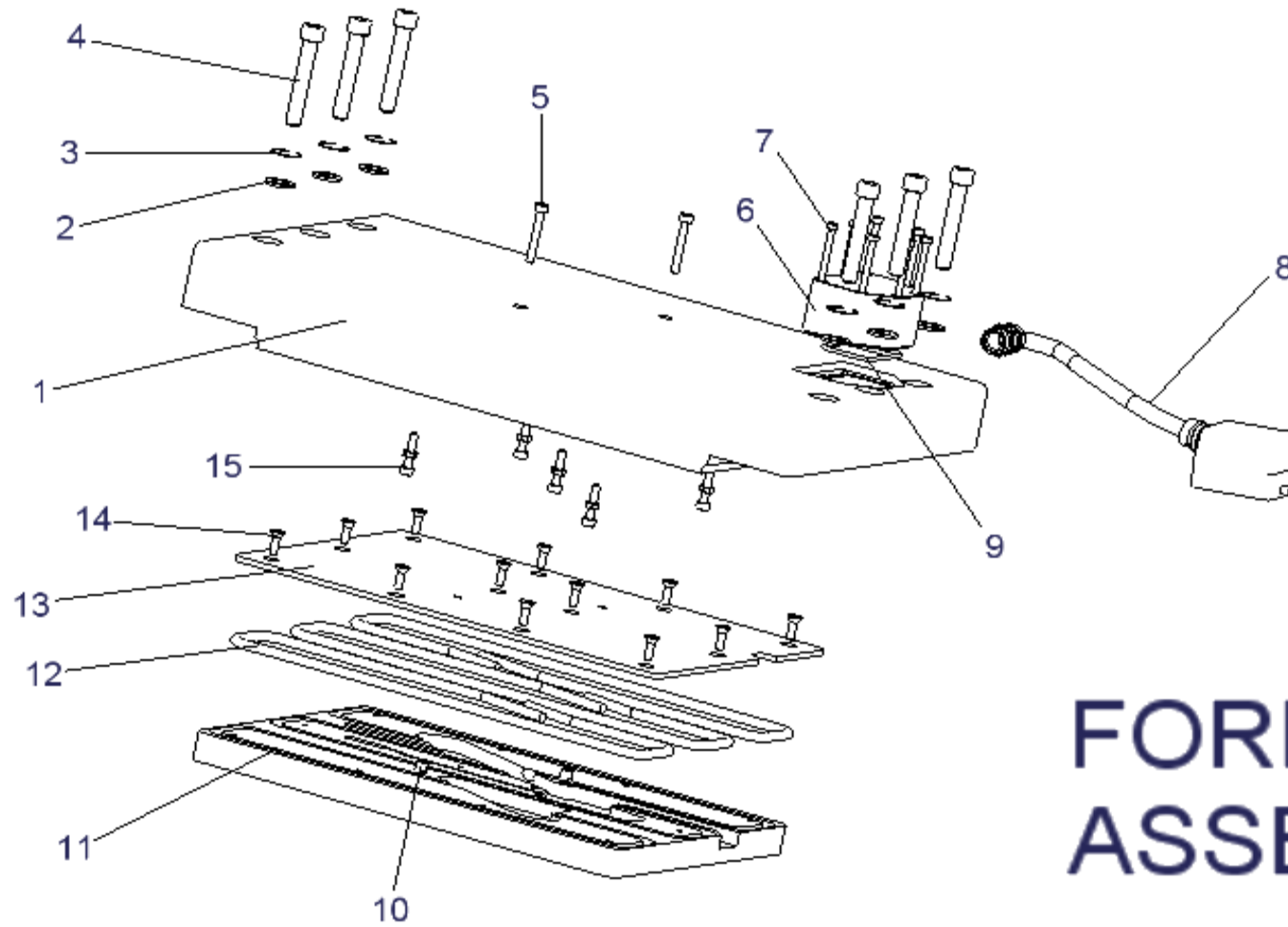
Guillotine Assembly								
Ref. #	Qty	Description	Web Width					
			ALL	285	320	355	420	459
2	1	Guillotine cylinder	95P1000					
3	4	Brass nut M16 x 2	20J1137					
4	4	Washer M16	20J1098					
5	1	Guillotine lower press bar		95K1208	95K1201	95K1225	95K1207	95K1228
6	2	Bearing for guillotine	40B1050					
	4	Retaining ring 32mm for bearing	26J0001					
7	1	Guillotine upper press bar		95K1211	95K1203	95K1226	95K1210	95K1229
8	2	Guillotine knife shaft	95K1214					
	2	Retaining ring 15mm for shaft	94M1018					
9	2	Guillotine mount block	95K1650					
10	1	Guillotine blade – serrated		96K1006	96K1007	96K1008	96K1009	96K1010
10	1	Guillotine blade – zig zag		95K1160	95K1159	95K1161	95K1566	95K1162
11	2	Guillotine blade clamp	95K1039					
12	2	M6 x 12 FSHCS	20J1069					
13	1	Guillotine top plate		95K1230	95K1231	95K1232	95K1233	95K1234
14	10	M5 x 16 SHCS	20J1013					
15	2	Cylinder for guillotine top plate	95P1020					
16	2	¼" PT – 10mm straight hex	31P2010					
17	1	Fitting Y for 10mm hose	31P2012					
18	8	M8 x 10 button head bolt	20J1216					
19	8	FSHCS M8 x 20	20J1077					
20	1	Guillotine blade bar		95K1217	95K1216	95K1218	95K1215	95K1219
21	2	M5 x 16 SHCS	20J1013					
22	8	Spring guillotine	88K0085					
23	4	Plug 19 x 11 x 10	95G6901					
24	1	Guillotine knife body		95K1213	95K2000	95K1220	95K1212	95K1223
25	2	T-strip guillotine	90D1001					
26	1	Guillotine press bar		95K1209	95K1202	95K1224	95K1204	95K1227
27	1	M20 nut thin	20J1208					
28	4	M6 x 35 SHCS	20J1026					
29	4	M10 x 30 SHCS	20J1049					
30	2	Speed exhaust controller 3/8"	94P2435					



SEAL HEAD ASSEMBLY

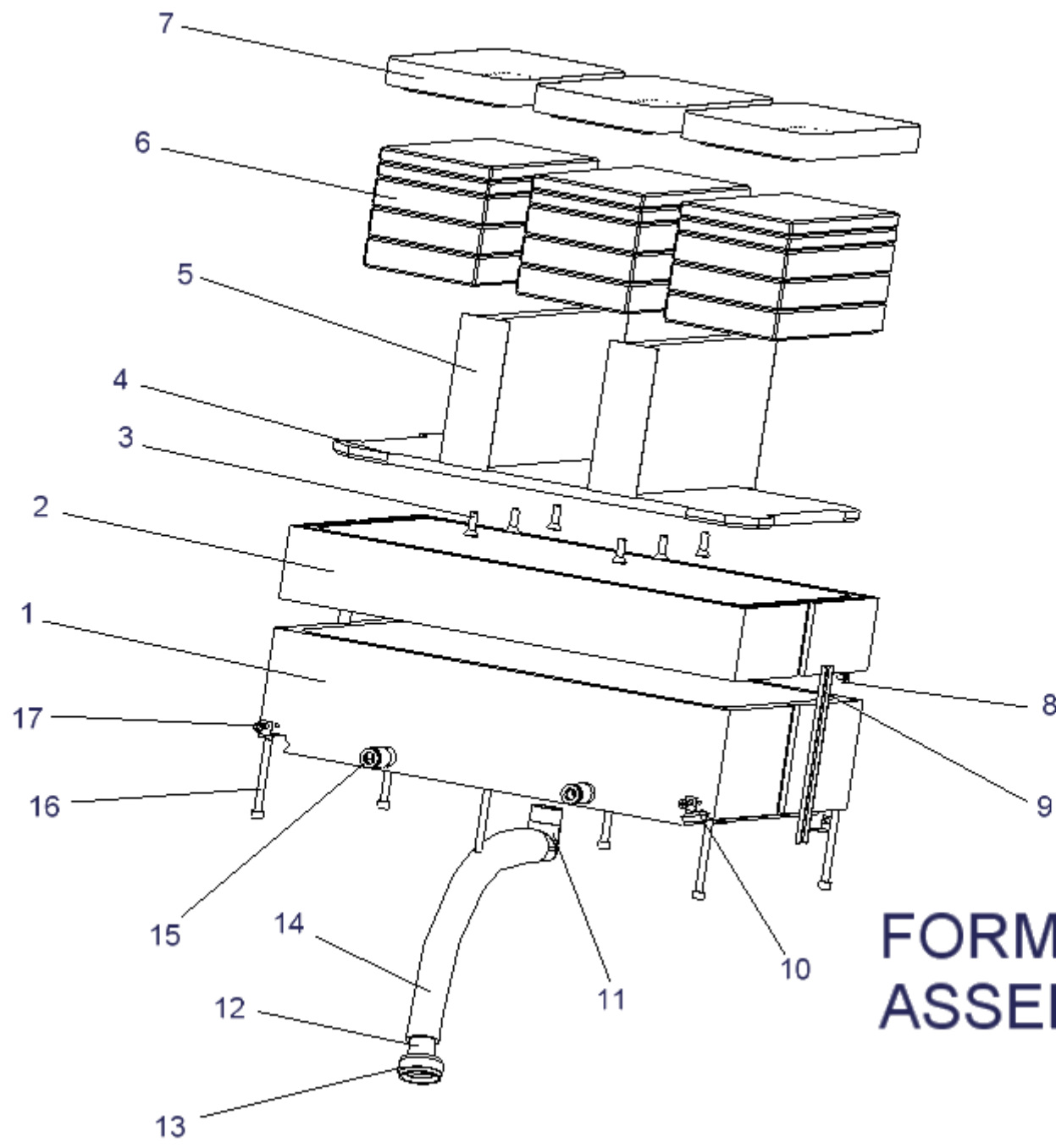
Seal head			
Ref #	Qty	Description	Part #
1	1	Seal head	Call
2	2	Seal bladder	size on die head sticker
3	9 or 12	Top hat spring	88D0262
4	9 or 12	Top hat	88D3564
5	9 or 12	M6 x 20 SHCS	20J1023
6	varies	Heaters	part number and quantity on die head sticker
7, 10	1	Seal bar with back plate	Call
8	1	Ungrounded thermocouple	94N1001
9	1	Cleaning heater	94E1005
11	varies	M6 x 16 FSHCS	20J1070
12	4	T-strip	88D5372
13	1	Pusher plate	Call
	2	Fiber washer	88D0726
14 & 17	1'	3.2mm silicone cord	88D0302
15	1	Plug assembly for die head	88E2102
16	7	M5 x 50 SHCS	20J1018
18	1	Bladder port cover	94D2301
18	1	Bladder port cover (over 350 cutoff)	94D2303
19	10	M5 x 16 FSHCS	20J1062
20	2	Threaded plug for seal head M16 x 1.5	94D2508
21	2	M6 x 40 FSHCS	20J1074
23	varies	Retaining ring	94M1020
24	varies	M12 washer	20J1096
	varies	M12 x 90 SHCS (holds seal head to machine)	20J1059
	varies	Plug for bolt hole on top of head	96S1003

Parts in 88E2102 plug assembly			
	1	Housing for male plug	88E3716
	1	External die plug male	88E1171
	3.5'	Cable 7 conductor 14ga. shielded	94E1041
	1	Terminal strip	88D0420
	1	Wire port cover block	94D2503
	1	External die plug female (on side of machine)	88E0704
	1	Housing for female plug	88E0705
		Heating compound 2.5oz.	96N3000
		Heat bar wiring kit	96N4015



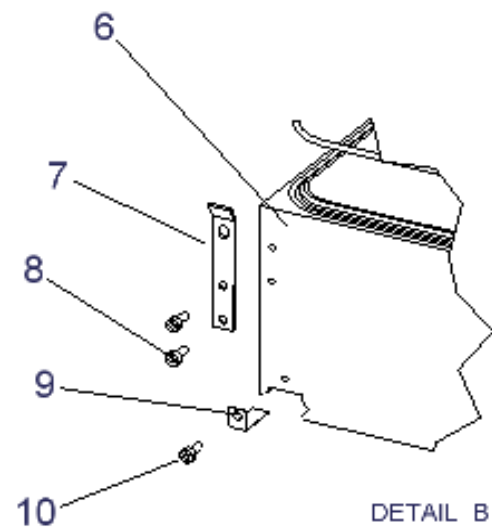
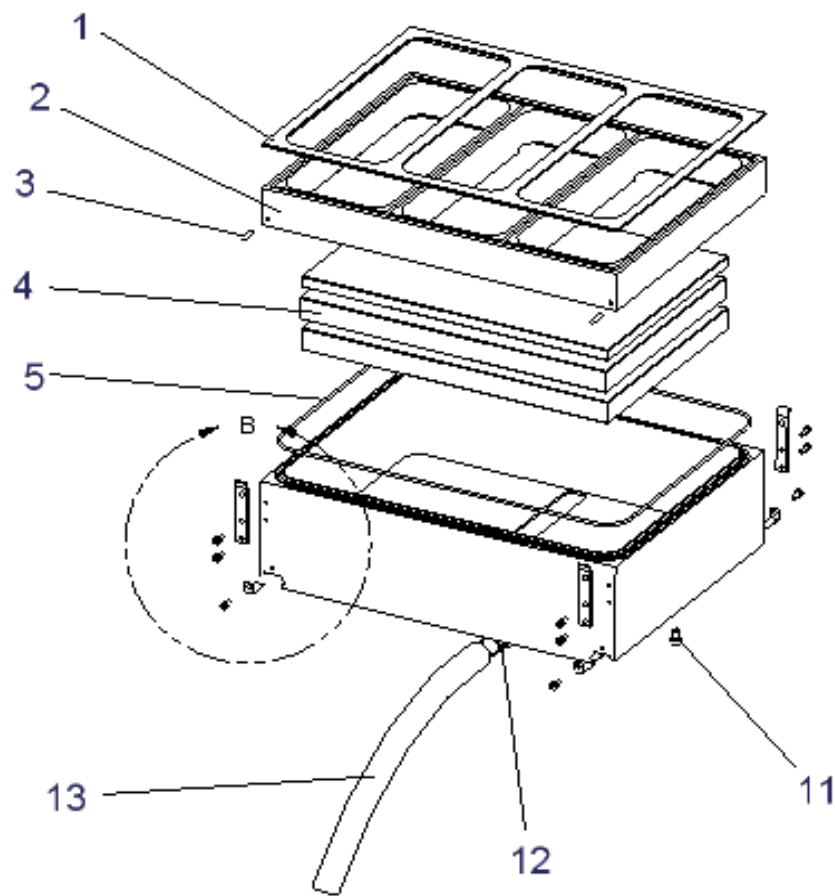
FORM HEAD ASSEMBLY

Form Head			
Ref #	Qty	Description	Part #
1	1	Form head	
2	varies	M12 washer	20J1096
3	varies	Retaining ring	94M1020
4	varies	M12 x 60 SHCS	20J1056
	varies	Plug for bolt hole on top of head	96S1003
5	2	SHCS M6 x 35	20J1026
6 & 8	1	Plug assembly for die head	88E2102
7	7	M5 x 50 SHCS	20J1018
9	1'	3.2mm silicone cord	88D0302
10	1	Ungrounded thermocouple	94N1001
11	1	Form bar	
12	varies	Heaters	part number and quantity on die head sticker
13	1	Form bar back plate	
14	varies	M6 x 16 FSHCS	20J1070
15	5	M6 x 20 SHCS	20J1023
	5	Nut M6	20J1102
	1	Cleaning heater	94E1005
		Parts in 88E2102 plug assembly	
	1	Housing for male plug	88E3716
	1	External die plug male	88E1171
	3.5'	Cable 7 conductor 14ga. shielded	94E1041
	1	Terminal strip	88D0420
	1	Wire port cover block	94D2503
	1	External die plug female (on side of machine)	88E0704
	1	Housing for female plug	88E0705
		Heating compound 2.5oz.	96N3000
		Heat bar wiring kit	96N4015



FORM BUCKET ASSEMBLY

Form Bucket			
Ref #	Qty	Description	Part #
1		Radius plate	Call
2		Filler plate aluminum	Call
3	1	Base plate	Call
4	1	Upper form bucket	Call
5	1	Lower form bucket	Call
6	4	M4 x 6 SHCS	20J1004
7	2	3/8" 10mm straight	31P2041
8	24"	Hose 19mm ID	88V1166
9	1	Nut	88P0413
10	1	Hose insert 19mm	88D0284
11		Shim for bucket	
12	6	M6 x 100 SHCS	20J1033
13	2	Guide plate form bucket	88D5677
Parts not shown			
		3.2mm silicone cord	88D0302
	1	Vacuum elbow (on bottom of lower bucket)	88D0283
	2	Hose clamp 1" (for 88V1166)	29J1030
		Hose 10/6.5mm green (for 3/8" fittings)	55P1012
		Hose clamp 10mm (for 55P1012 hose)	29J1020
	2	Hose barb 6mm (for 55P1012 hose)	88P0157U
	2	3/8" PT 10mm 90 hex	31P2021
		Shim kit	96N4036
		includes 10 each shims .15mm, .20mm, .25mm, .30mm, .50mm	



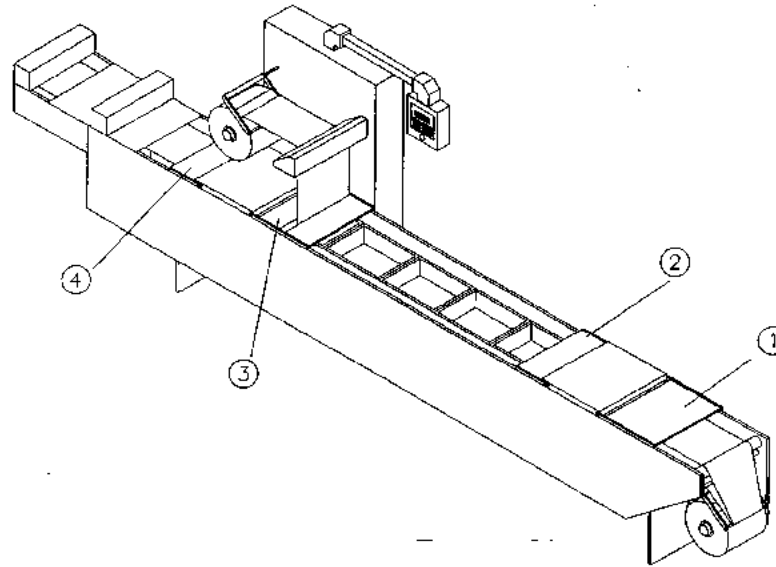
SEAL BUCKET

Seal Bucket			
Ref#	Qty	Description	Part #
1	1	Seal gasket	Call
2	1	Seal frame	Call
3	4	Dowell pin M4 x 20	23J1023
4	1	Filler plate plastic	Call
5		3.2mm silicone cord	88D0302
6	1	Seal bucket	Call
7	4	Clip for seal frame	94J1002
8	8	M4 x 6 SHCS	20J1004
9		Shim for bucket	
10	4	M4 x 6 SHCS	20J1004
11	2	M6 x 8 SHCS	20J1019
12	1	Vacuum elbow	88D0283
13	40"	Hose 19mm ID	88V1166
Parts not shown			
	1	Hose insert 19mm	88D0284
	1	Nut	88P0413
		Hose clamp 10mm	29J1020
		Hose clamp 10mm	29J1020

FAX: 816-455-8469

Include
Machine Serial #

ROLLSTOCK[®]
Vacuum Packaging Equipment



- ① FORMING INFEEED GUARD
- ② FORMING DISCHARGE GUARD
- ③ SEALING INFEEED GUARD
- ④ SEALING DISCHARGE GUARD

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GUARD NEEDED*