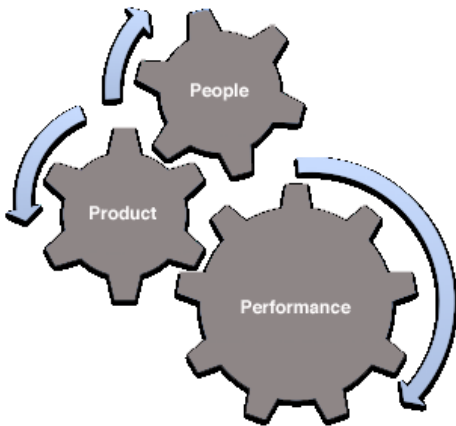




# *SERVICE MANUAL*

81500B  
Steamroller Lint  
Conditioner

(U.S. Patent Number 6,314,618)



**SAMUEL JACKSON**





*Typical Steamroller Lint Conditioner  
installation*

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*We appreciate your business and hope you enjoy your  
Samuel Jackson Steamroller Lint Conditioner System*

This manual contains information on the installation, startup, and operation of your Steamroller system. Included are sections on:

- Assembly and Installation
- Electrical Installation
- Startup and Adjustment
- Maintenance and Troubleshooting
- List of Major Components

***IS STARTUP ASSISTANCE PROVIDED?***

Startup and inspection service is provided in most locations with your new Samuel Jackson Steamroller Lint Conditioner System free of charge by Samuel Jackson, Inc. Please contact us to make arrangements or for questions regarding startup services.

In the future when you require service, technical support, or parts please contact us by phone, fax, or the internet. Our engineers and service people are available to assist you in obtaining the best performance from your Samuel Jackson, Inc. products.

*Again, thanks for choosing a Samuel Jackson Steamroller Lint Conditioner System*

**SAMUEL JACKSON, INCORPORATED**  
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TELEPHONE 806-795-5218 OR 800-862-9966  
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## Warning



### **READ THIS CAREFULLY BEFORE OPERATING THIS SAMUEL JACKSON PRODUCT!**

The Samuel Jackson product line consists of sophisticated technology capable of greatly enhancing a gin's productivity and efficiency. Improper use of these products could adversely affect those very same factors and potentially cause injury to gin personnel. For this reason, we include an extensive manual with every product. These manuals outline the proper and safe operating procedure for their respective product. **Do not operate any Samuel Jackson product without first reading the entire manual and all accompanying information.**

Sometimes there are updates added at the customer's discretion to products already in the field. We always refer customers to our website, [www.samjackson.com](http://www.samjackson.com) for the latest product information. The latest manual can be downloaded or printed from the website free of charge. In addition to printed literature, the website includes training videos on several popular products. When available, these videos are highly recommended for viewing before operating a respective product. If you do not have internet access, give us a call and we will gladly send you the latest product information.

Please consult the gin safety administrator to help identify all hazards and become knowledgeable regarding all necessary personal protective equipment prior to any service work being performed on the machines. This is particularly important during the installation phase. Safe access must be available at all times before service is started.

***DANGER: Please read and understand all the warnings below before operating or maintaining a Samuel Jackson product. If you do not understand, call Samuel Jackson at 806-795-5218 before proceeding. Failure to do so could result in injury or even death. (Si usted no entiende, llame a Samuel Jackson al +1-806-795-5218 antes de proceder. La falta de hacerlo podría causar lesión o muerte.)***

#### **Electrical.**

Most Samuel Jackson products use supply voltage between 110 and 480 volts AC. These levels are considered high voltage and are extremely dangerous.

#### **Access Doors.**

Samuel Jackson products have access doors for added convenience of product maintenance. Access doors must not be opened while the equipment is in operation. Access doors should also remain closed while any connected equipment such as a fan or conveyor is in operation.

#### **Moving Parts.**

Many Samuel Jackson products have moving or rotating parts. These parts could form pinch points or grab loose clothing or jewelry. Do not reach across or into any product while in operation.

**Do not work on any Samuel Jackson product without first following OSHA Lockout/Tagout procedures. Confirmation by a licensed electrician that there is no electricity present is highly recommended. We recommend using a Samuel Jackson Authorized Technician for all work Samuel Jackson products. Additional safety information is located throughout this manual and should be read carefully before operating this Samuel Jackson product. If you have any questions about how to properly operate a Samuel Jackson product, please call +1-806-795-5218 before proceeding.**

## HOW DOES THE STEAMROLLER WORK?

The Steamroller is positioned between the battery condenser and the lint slide (see Figure 1). After the cotton comes out of the battery condenser, it is fed into the Steamroller by a large, perforated screen drum. The cotton enters the Steamroller on top of a stationary perforated screen. Moist air from a Humidaire Unit enters the plenum chamber at the base of the Steamroller. This moist air passes up through the stationary screen and penetrates the batt. All of the moist air is forced evenly through the batt, resulting in a uniformly moisturized batt of cotton. A single roller serves to both doff the cotton off the drum and to compress the cotton into a thin batt of conditioned cotton upon leaving the Steamroller. The used air from this process is evacuated from the top of the Steamroller and typically added to the air in the lint flue riser.

Seals at the entrance and exit of the Steamroller reduce cold air leakage. With little cold air leakage, the temperature inside the Steamroller remains the same as the temperature of the humid air. The result is less condensation and fewer problems associated with condensation.

Due to the ability to add high amounts of moisture, the moist air generator must have fast-responding, but stable temperature control. For this reason, every Steamroller Lint Conditioning System uses a PLC-controlled Samuel Jackson Humidaire Unit to generate moist air. Using this Humidaire Unit is a key element in achieving consistent moisture levels.

Each gin has a different layout and each gin manager has different concerns. The Steamroller System is not a one size fits all solution. To address these differences, every system is carefully engineered to meet the requirements of each installation.

The resulting success of the Steamroller Lint Conditioning System is due to the ability of the Steamroller to effectively add moisture to fiber, a tightly controlled humid air supply, and an engineered system layout.

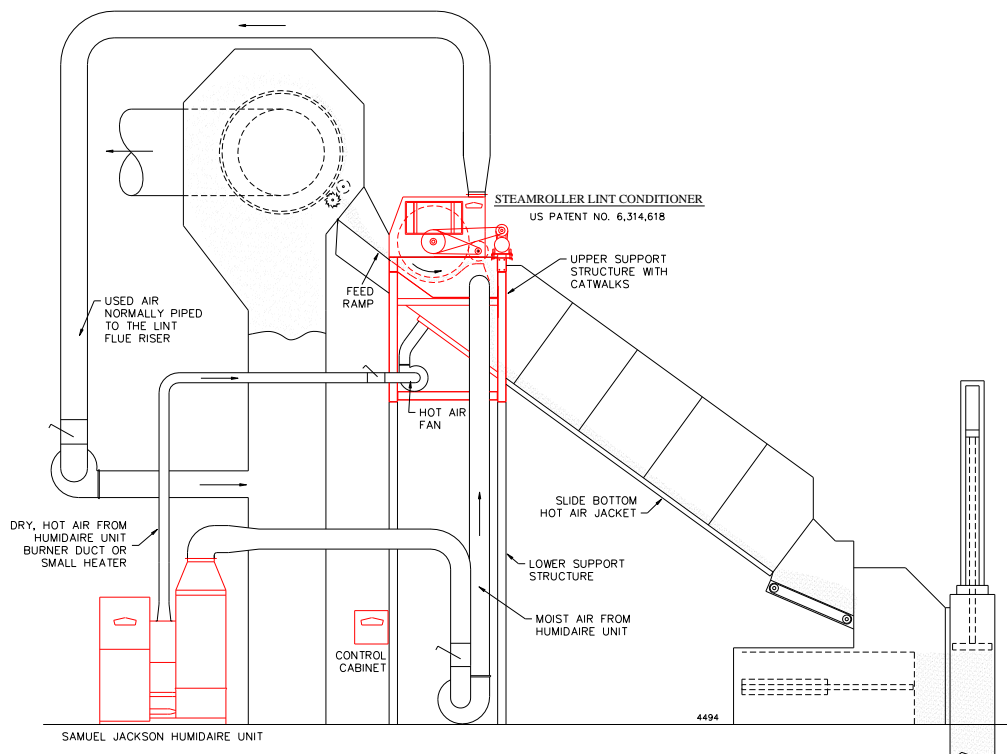


Figure 1 – Steamroller System Layout

14-4494



## STARTUP and ADJUSTMENTS

A Samuel Jackson technician will normally commission the new Steamroller system. The following adjustments will be made at that time in the following order. However, it may become necessary for the gin personnel to make adjustments from time to time using the following guidelines.

### ***MOIST AIR FLOW ADJUSTMENT***

- Start moist air fan (No. 30 size centrifugal fan recommended, 1200 fan RPM, 10 HP motor). Start Steamroller exhaust air fan (No. 30 centrifugal fan recommended, 1900 RPM, 15 HP motor). Some systems will use the battery condenser fan to pull the used air. Verify that motor amperages are okay.
- Adjust total moist air volume for 2200 to 2500 CFM. For 12 inch diameter pipe, Velocity Pressure (Vp) should measure 0.5 to 0.6 inches water column (inches w.c.).
- Balance moist air volume to each side of plenum using the independent slide gate valves after the air split. For each 12 inch pipe, Vp should be 0.1 to 0.15 inches w.c.
- Mark valve positions and pin slide gates in place.

### ***STEAMROLLER EXHAUST AIR ADJUSTMENT***

- With both fans running, adjust exhaust air volume from Steamroller to 4100 to 4300 CFM with the slide gate valve in the 16 diameter line. For 16 inch diameter pipe, Vp should be 0.55 to 0.6 inches w.c.
- Recheck moist and exhaust air volumes and fine tune slide gate valve adjustments.
- Mark valve position and pin slide gate in place.

### ***DRY HOT AIR ADJUSTMENT***

***Use the following instructions if the dry hot air is pulled off the burner duct of the Humidaire Unit. If an auxiliary source of hot air is used, such as the Samuel Jackson HG-1-1401 Heater with Blower Fan, refer to the heater's manual for setup. When using an auxiliary heater, set the air volume for about 1,500 CFM and the setpoint temperature for 180 degrees F.***

- Start Humidaire Unit. Use JOG WATER PUMP button to start water pump. Adjust air and water temperatures to 130 and 125 degrees F respectively.
- 20020 DRY HOT AIR FAN under Steamroller normally starts automatically when flame is established. Adjust air volume for 6 inch diameter pipe to 850 CFM with slide gate valve in pipe. Vp should be 1.1 inches w.c.
- After air and water temperatures stabilize, adjust dry hot air temperature to about 180 degrees F by adjusting ambient/heated air mixture using gate valve on manual mix valve transition.
- Mark valve positions and pin both slide gates in place.

- Adjust slide gate on entry to Feed Ramp so that some air is coming out of louver on top of Feed Ramp. This small amount of air keeps Feed Ramp warm and helps convey the cotton down the ramp into the Steamroller. Further adjustment may be required when cotton is present. The air should not be so great as to disturb the batt.
- Adjust slide gates on hot air pans on plenum sides so a little air comes out of drum shaft openings on hood sides.

### ***DRIVE BELT TENSION***

- Adjust tension on Steamroller COG DRIVE BELT (CDB) using the four motor/gear head base jack screws. Adjust all screws equally. Tension is correct when belt deflects 1/8 to 1/4 inch when pushing hard on center on belt.

### ***DRIVE ROTATION***

- Check for proper 3 phase voltage to Steamroller power disconnect at CONTROL CABINET.
- Start Steamroller from LOCAL PANEL (LP) using the START/STOP switch. **Immediately** check Steamroller rotation. If rotation is wrong, reverse two of the 3 phase wires between VARIABLE FREQUENCY DRIVE (VFD) and motor. Reversing wires before VFD will have no effect.



**POWER SHOULD BE DISCONNECTED AND LOCKED OUT BEFORE ATTEMPTING TO CHANGE MOTOR ROTATION.**

### ***SCREEN DRUM AND DOFFER ROLLER ALIGNMENT AND SEPARATION***

- The separation between the Screen Drum and the Doffer Roller was checked and set at the factory and should require no further adjustment. Separation is set to about 1/16 inch using shims (Part Numbers 20503 and 20504). Minimal separation (without contact) improves lint doffing.
- Alignment of the Screen Drum within the Steamroller housing is critical to avoid abnormal DRUM RING SEAL BRUSH (SB) wear. Alignment was checked and set at the factory. Some minor adjustments may be required after installation. Adjust for equal clearance between the Screen Drum sides and housing at both Steamroller inlet and outlet ends by placing shims under the bearings. Following shims are available from factory. Refer to Figure 2 for shim locations.

Shim Part No. 20503 (0.075 inch thick for 1 3/4 bearing)

Shim Part No. 20504 (0.048 inch thick for 1 3/4 bearing)

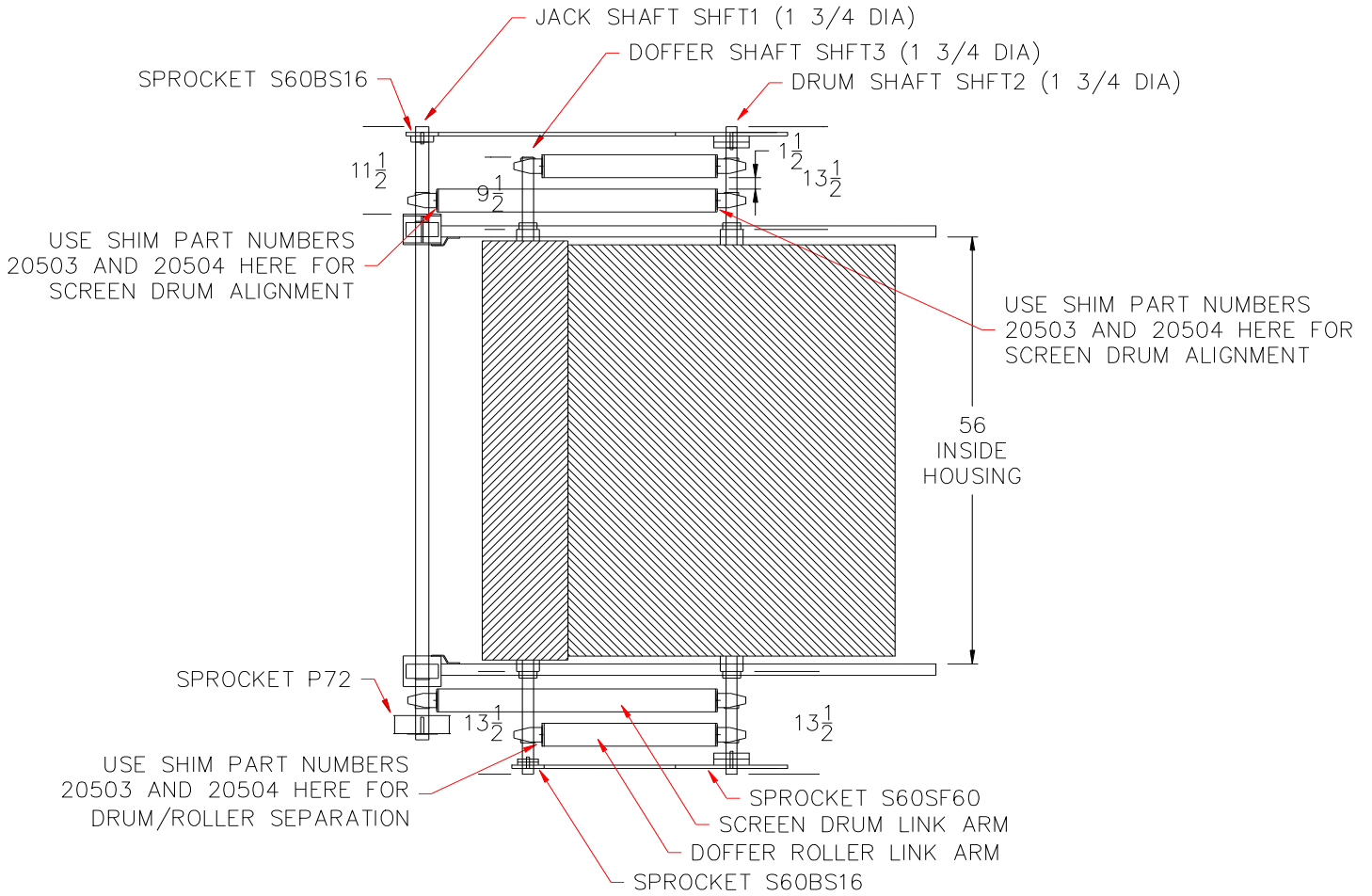


Figure 2 – Top view of Drive Train

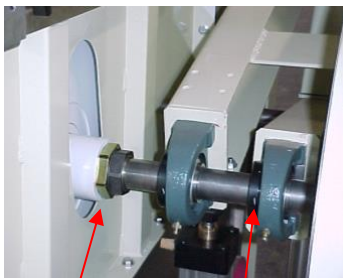
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## ADJUSTING POSITION OF SCREEN DRUM AND DOFFER ROLLER ON SHAFTS

- Following are recommended torque settings for keyless shaft bushings, screws on bearing lock collars and QD sprocket bushing bolts. These torque settings were used at the factory during Steamroller assembly and adjustment.



*Tightening the KEYLESS TRANTORQUE BUSHING (TT) to the proper torque (3300 in-lb, 275 ft-lb) is **extremely** important. If shifting of the Screen Drum or Doffer Roller within the Steamroller housing is required, avoid loosening the TT's. It is better to loosen the bearing set collars and shift shaft through collars for adjustment. Check chain sprockets for chain alignment. A special 2 1/4 inch crowfoot wrench, Part No. 20732, is available from the factory for use in tightening the trantorques TT (does not include the torque wrench).*

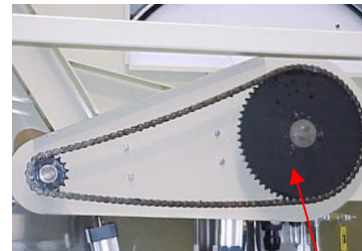


**TT**  
3300 IN-LB      **PB1-3/4**  
180 IN-LB

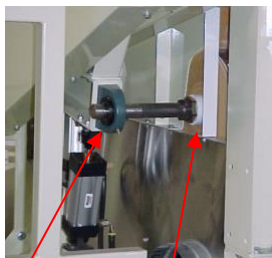


20732  
CROWFOOT  
WRENCH

CHAIN GUARD REMOVED  
FOR ILLUSTRATION

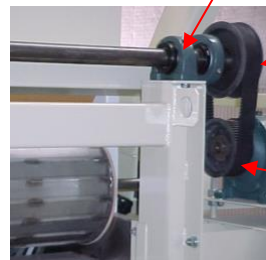


**S60SF60**  
360 IN-LB



**PB1-3/4**  
180 IN-LB      **TT**  
3300 IN-LB

**PB1-3/4**  
180 IN-LB



**P72**  
180 IN-LB

**P56**  
180 IN-LB

## SELECTING SPEED CONTROL MODE

There are two methods (MODES) available for controlling the surface speed of the Steamroller Screen Drum. The surface speed must be set 8 to 10% faster than the surface speed of the condenser drum for good drafting action. See *SETTING STEAMROLLER SPEED* section for help on setting the speed.

All adjustments are made using the LOCAL PANEL (LP), see Figure 3, in the Steamroller Control Cabinet. To enter *SETUP MENU*, with LEARN button pressed, turn start/stop switch to stop (●) and hold for 5 seconds keeping LEARN button pressed, then turn to start (I). Release both. You are now in the *SETUP MENU*.



Figure 3 – Local Panel

*Mode* will be blinking. Press LEARN to enter *Mode* setup. Use start/stop switch to select *Mode* 1, or 2.

- Choose *Mode 1* if condenser drum speed is variable. Condenser adjustable frequency drive puts out a 4-20 mA signal, proportional to Hz output to battery condenser motor, for Steamroller control to follow.
- Choose *Mode 2* if condenser speed is constant.

Press LEARN to select *Mode*. Accept default *SPEED RATIO* for now. See *SETTING STEAMROLLER SPEED* section for information on setting speed ratio. Use start switch to select *Exit*, press LEARN to quit *SETUP MENU*.

## **CONFIGURATION OF VARIABLE FREQUENCY DRIVE**

The Steamroller VARIABLE FREQUENCY DRIVE (VFD) was configured at the factory. All default settings for the AC TECH brand VFD (Samuel Jackson Part Number 20822 or 20904) are used except as shown in following tables. Consult factory before making any configuration changes.

PARAMETER MENU: USER SETTING RECORD				
PARAM. NUMBER	PARAMETER NAME	FACTORY DEFAULT	USER SETTING	
49	TB13C	NONE		
50	TB13D	EXT FAULT		
52	TB14 OUT	NONE		
53	TB15 OUT	NONE		
54	RELAY	NONE	RUN	
57	SERIAL	DISABLE		
58	ADDRESS	30		
61	PASSWORD	0019		
63	SOFTWARE	(N/A)		
64	MONITOR	ON		
65	PROGRAM	RESET 60		
66	HISTORY	MAINTAIN		
69	LANGUAGE	ENGLISH		
70	FAULT HISTORY	(N/A)		

PARAMETER MENU: USER SETTING RECORD				
PARAM. NUMBER	PARAMETER NAME	FACTORY DEFAULT	USER SETTING	
21	SUP CMP	.0 %		
22	TORQUE	CONSTANT		
23	CARRIER	2.5 kHz		
25	START	NORMAL	POWER UP	
26	STOP	COAST		
27	ROTATION	FORWARD		
28	AUTOMAN	BOTH	AUTO	
29	MANUAL	KEYPAD		
30	CONTROL	LOCAL	REMOTE	
31	HZ UNITS	HERTZ		
32	HZ MULT	1.00		
33	SPEED DP	XXXXX		
34	LOAD MLT	100%		
35	CONTRAST	HIGH		
38	TB5 MIN	.00 Hz	20 HZ	
40	TB5 MAX	60.00 Hz	60 HZ	
42	TB10A OUT	NONE		
43	Φ TB10A	60.00 Hz		
44	TB16B OUT	NONE		
45	Φ TB16B	125%		
47	TB13A	NONE	4-20 mA	
48	TB13B	NONE		

PARAMETER MENU: USER SETTING RECORD				
PARAM. NUMBER	PARAMETER NAME	FACTORY DEFAULT	USER SETTING	
0	LINE VOLTS	AUTO		
1	SPEED #1	20.00 Hz		
2	SPEED #2	20.00 Hz		
3	SPEED #3	20.00 Hz		
4	SPEED #4	20.00 Hz		
5	SKIP #1	.00 Hz		
6	SKIP #2	.00 Hz		
7	BAND WID	1.00 Hz		
8	ACCEL	30.0 SEC	6.0 SEC	
9	DECEL	30.0 SEC	6.0 SEC	
10	MIN FRQ	.50 Hz	20 HZ	
11	MAX FRQ	60.00 Hz		
12	DC BRAKE	.0 VDC		
13	DC TIME	.0 SEC		
14	DYN BRAKE	OFF	ON	
16	CURRENT	160 %		
17	MOTOR OL	100%		
18	BASE	60.00 Hz		
19	FX BOOST	(NOTE 1)		
20	AC BOOST	0.00%		

NOTE 1: REFER TO SECTION 18.0 - DESCRIPTION OF PARAMETERS

If changes are required to configuration, the drive must be powered up but not given a run signal. Refer to steps above to enter the *SETUP MENU* program and choose *ConfigDrive*. Press LEARN to power up drive. On completion of changes, press LEARN again to exit.

### **SETTING STEAMROLLER SPEED**

Set Steamroller Screen Drum surface speed 8 to 10 percent faster than battery condenser surface speed for good drafting action. Use a tachometer with a surface speed wheel to measure condenser drum speed.

- For example, condenser drum speed is 350 fpm. With someone on ground at Steamroller control, adjust speed ratio until the Steamroller Screen Drum surface speed is 350 X 1.08 or 378 fpm. 378 to 385 fpm will be okay. Adjust speed ratio by pressing LEARN button while using start/stop selector switch as a +/- switch. LEARN button must be pressed to prevent stopping the Steamroller.

If condenser drum speed is automatically changed according to number of gin stands in operation, it is a good idea to check speed change operation by switching each gin stand in as a final check for speed ratio setup.



*Condenser drum surface speeds should be kept between 250 and 425 feet per minute for maximum Steamroller performance.*

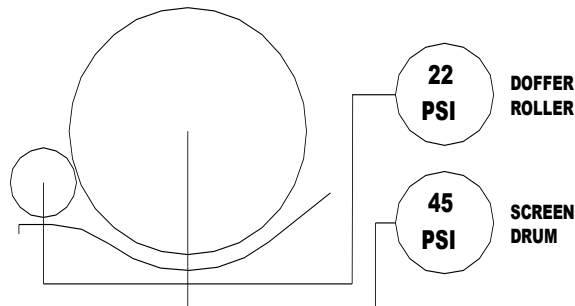
### **AIR CYLINDER PRESSURE ADJUSTMENTS**

AIR CYLINDERS (CYL) are located under the link arms supporting the Screen Drum and Doffer Roller. The cylinders exert a constant upward force on the link arms to control squeezing action on the lint batt passing through machine. Maintaining proper air pressure to these Air Cylinders is important. Adjust PRECISION AIR REGULATORS (APR) on the PNEUMATIC CONTROL PANEL (AP) to following pressures:

- 45 psi for two cylinders under Screen Drum
- 22 psi for two cylinders under Doffer Roller

For best air pressure adjustment, back regulator screw fully out before turning in for final air pressure.

#### **AIR PRESSURE ADJUSTMENTS**



## MAINTENANCE

### CAUTION

#### *USING CYLINDER BLOCKS FOR SAFETY*

Steamroller operators will find it helpful to use the Air Cylinders to lift the Doffer Roller and Screen Drum up for cleaning and maintenance. ***IT IS EXTREMELY IMPORTANT TO POSITION THE CYLINDER BLOCKS BLK OVER THE EXTENDED CYLINDER RODS FOR SAFETY.*** Two Cylinder Blocks with clip pins are provided. One Cylinder Block in place on one Air Cylinder is sufficient to support each shaft.

CYLINDER BLOCKS  
WITH PINS



#### *PERIODIC CLEANING*

To maintain maximum performance from the Steamroller System, a cleaning schedule is recommended. Steamrollers operating on stripper harvested cotton normally require more frequent cleaning than Steamrollers operating on picker harvested cotton. New users should check the Steamroller after the first 12 hours of operation for pin and leaf trash build up in the plenum chamber under the Plenum Screen (PSCREEN) and lint in the exhaust hood area above the Doffer Roller. Each gin develops its own cleaning schedule based on experience.

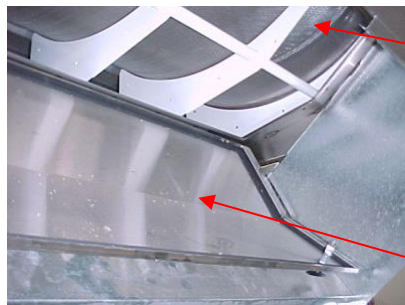


**DANGER**

**POWER SHOULD BE DISCONNECTED AND LOCKED OUT BEFORE CLEANING OR PERFORMING MAINTENANCE ON STEAMROLLER. STEAMROLLER STARTS AUTOMATICALLY.**

Following are main areas to check and clean.

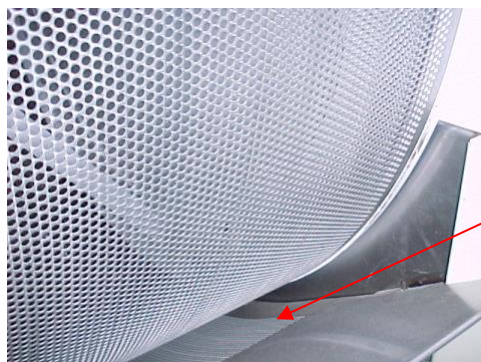
- ***Air Plenum Chamber under Plenum Screen.*** It is normal for small pin and leaf trash to sift through the Plenum Screen. Excessive buildup of this trash will create a rough surface on the top side of the Plenum Screen making it difficult for cotton flow through Steamroller.



AIR PLENUM CHAMBER UNDER  
PLENUM SCREEN

ACCESS DOOR

- ***Feed Apron.*** Over time, a layer of cotton and cotton tags may form at point where solid Feed Apron ends and Plenum Screen begins. Keeping this point smooth is necessary for easy feeding of the cotton under the Screen Drum. Check for small sticks lodged in screen holes.



CHECK FOR LINT TAGS  
HERE

- **Drum Ends and Shaft Openings.** Some lint may manage to work past the Drum Ring Seal Brushes and accumulate on the Screen Drum Ends. Remove large Air Hood Access Panels to clean this area during periodic cleaning.
- **Exhaust Air Hood.** Check for lint collecting in the area inside the Exhaust Air Hood between the Doffer Roller and the Screen Drum. It is normal for a small amount of lint to accumulate here. The lint poses no problem unless allowed to build up enough to choke off exhaust outlet in top of hood.

CHECK THIS  
AREA FOR LINT  
ACCUMULATION



- **Screen Drum Surface.** A thin matt of lint will eventually form on the screen. Enough of this matt will block air flow and reduce performance. Check in *TROUBLESHOOTING* section for ways to reduce this. Clean off with a brush.



*If cleaning of lint fly off Screen Drum is required, do so immediately after shut down. Damp lint is easier to remove from the screen.*

- **Screen Drum Inside.** Pin and leaf trash pushed through holes into inside of Screen Drum will remain and build up reducing the flow of exhaust air through Screen Drum. Periodically open up an end of the Screen Drum by removing one of the Drum End Covers DCOVR and clean out.

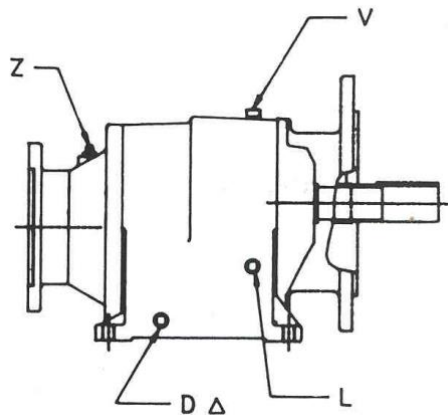
### **GEAR BOX AND BEARING LUBRICATION**

- **GEAR BOX.** Proper lubrication is essential to the performance and life of the Gear Box. Proper lubrication consists of:
  1. Use of the proper type and viscosity of lubricants.
  2. Maintenance of the correct oil level for the mounting position used.
  3. Drain, flush and refill at the required intervals.

The DODGE Gear Box is filled at the DODGE factory with MOBIL SHC-634 oil (Samuel Jackson Part No. 20615) with AGMA Grade 7. This oil is suitable for all speeds and in ambient conditions from -10 degrees F to +110 degrees F. If another type of oil is used, the Gear Box should be drained and flushed with mineral spirits to avoid any compatibility problems between the SHC-634 and the new oil. Contact the Samuel Jackson factory for the list of other oil types recommended by DODGE. Oil changes are recommended every 1000 hours.

DODGE recommends using CHEVRON OIL CO. SRI Number 2 (Samuel Jackson Part No. 20616) for motor bearing lubrication. Lubricate motor bearing every 1000 hours.

One quart of oil (Part No. 20615) and one tube of bearing lubricant (Part No. 20616) is supplied with each new Steamroller.



Gear Box with Lubrication Points

L = OIL LEVEL PLUG  
Z = MOTOR BEARING GREASE ZERK  
V = VENT PLUG  
D = DRAIN PLUG

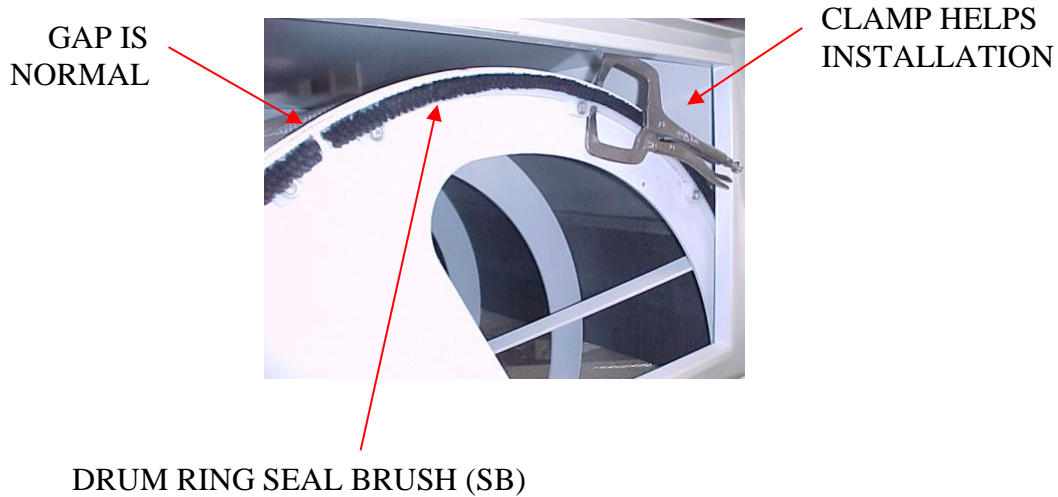
- **BEARINGS.** Use a No. 2 Lithium base grease (Part No. 20616) or equivalent. For a typical Steamroller running 24 hours per day with all shaft speeds under 250 RPM, lubricate every 10 weeks. *DO NOT OVER GREASE.* A small amount of lubrication at frequent intervals is preferable to a large amount at infrequent intervals.

### ***REPLACING SCREEN DRUM RING SEAL BRUSHES***

Special seals are used to seal the gap between the ends of the Screen Drum and the Housing. These Drum Ring Seal Brushes (SB) (Part No. 20011A) are attached to the drum ends with ¼ UNC X 1 ¼ stainless steel hex head cap screws and steel lock nuts. The Seal Brushes reduce the amount of moist air escaping at the edge of the cotton batt and also prevent lint entrapment on the Screen Drum ends.

To replace the Seal Brushes, raise the Screen Drum up with the Air Cylinders. Place Cylinder Block on one of the extended cylinder rods for safety. Remove Drum Screen Covers (DCOVR).

The Seal Brushes are designed to flex around the curvature of the drum. Attach one end of the Seal Brush with a screw, using a flat washer between the head of the screw and the Seal Brush. It is helpful to use a clamp to help the brush conform to the drum curvature before tightening each screw. It is normal for the small gaps between the ends of the two Seal Brushes on each Screen Drum end.



### ***REPLACING DOFFER ROLLER END SEALS***

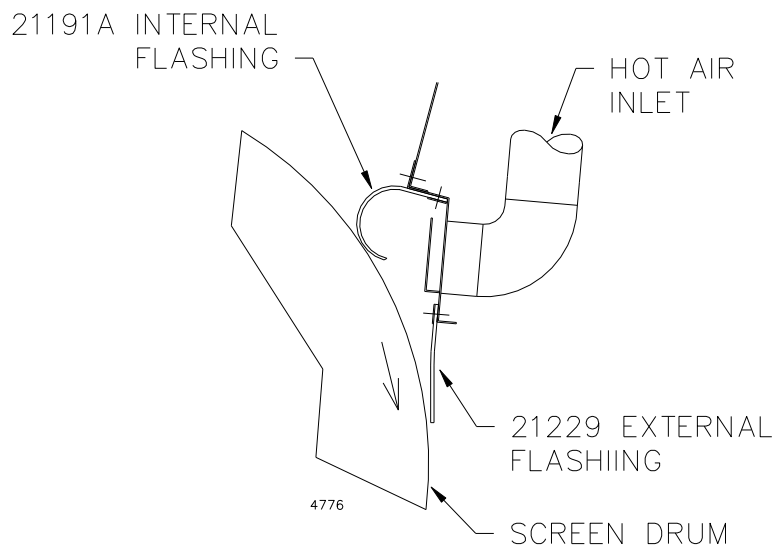
A Doffer Roller End Seal (Part No 20916) (DRES) is in place on each end of the Doffer Roller to seal the gaps between the end of the roller and the housing.

To replace the End Seals, raise the Doffer Roller up with the Air Cylinders. Place a Cylinder Block on one of the extended cylinder rods for safety. Remove the Access Panels, Bearings, Chain Guard and Sprocket. After replacing Seals, tighten bearing and bushing bolts to torques shown in *STARTUP and ADJUSTMENTS* section.



## REPLACING FLASHINGS ON SCREEN DRUM DRYER AIR BOX

The Screen Drum Dryer Air Box has two flashings that require replacing periodically. They are shown below and are Samuel Jackson Part Numbers 21191A and 21229. While replacing these flashings, check for lint buildup in the 4 inch diameter air inlet. It is necessary to remove the small 90 degree 4 inch elbow for access.



CHECK FOR LINT  
BLOCKAGE HERE



21187 SCREEN DRUM  
DRYER AIR BOX

## TROUBLESHOOTING

Once the Steamroller System is started and adjusted properly, most future problems result from not maintaining a cleaning schedule. Cleaning schedules are unique to each gin and whether the cotton is stripper or picker harvested. Once a cleaning schedule is found that results in minimum problems, stick with it. Following are some problems and the solutions.

### SYMPTOMS

Cotton batt is pulled apart between condenser and Steamroller. Conditioned cotton batt exiting Steamroller is broken and intermittent.

Cotton batt ribbons (bunches) up between condenser and Steamroller. Eventually, the Steamroller chokes.

Cotton batt will not start into Steamroller.

### SOLUTIONS

Reduce Steamroller speed ratio, see *ADJUSTMENT* section, to reduce draft.

Condenser drum may be turning too fast for a good batt of cotton even at full gin capacity. Keep condenser surface speed below 425 feet per minute.

Increase Steamroller speed ratio, see *ADJUSTMENT* section, to increase draft.

If increasing speed ratio does not eliminate problem, increase dry hot air flow to Feed Ramp to help convey cotton toward Steamroller.

Condenser drum may be turning too slow resulting in a very thick, slow moving batt. Keep condenser drum surface speed above 250 feet per minute.

Check that Screen over Air Plenum is clean. Refer to *MAINTENANCE* section for cleaning tips.

Check that Feed Apron transition to Perforated Screen point is clear of tags and small sticks.

Check that no moist air is escaping up Feed Ramp where cotton enters Steamroller. If air is coming up, check for chokage in exhaust air pipe or fan.

Check that Screen Drum and Doffer Roller Air Cylinder Pressures are set correctly.  
Screen Drum – 45 psi  
Doffer Roller – 22 psi

## TROUBLESHOOTING, continued

### SYMPTOMS

Moist air is escaping up Feed Apron and Ramp. Apron and Ramp feel damp and a thin layer of cotton forms on these surfaces increasing friction.

Screen Drum hairs over.

Drum Seal Ring Brushes have excessive wear.

### SOLUTIONS

Check that Steamroller exhaust air pipe is clear.

Check that all Steamroller clean-out doors are closed.

Check slide gate valve positions on moist air and exhaust air pipes. If valves have been moved, re-check air flows. See *STARTUP* section for air flow settings.

Check for severe hairing of Screen Drum.

Re-check surface speeds of condenser drum and Steamroller Screen Drum. Screen Drum surface speed should be 8 to 10% faster than condenser drum surface speed. A higher speed difference can cause hairing.

Check that the Doffer Roller Flashing (DRF) is sealing well onto the doffer roller. Outside air that leaks in between the roller and the flashing will cool the drum screen resulting in moisture condensing in the screen. This will lead to hairing.

If adequate moisture levels are obtained in bales, try lowering Humidaire Unit water temperature. The greater the difference between air and water temperatures, the lower the humidity and less moisture. Refer to Humidaire Unit Manual for more information on setting air and water temperatures.

Check Screen Drum Dryer Air Box for blockage of hot air flow. Internal flashing (Part No. 21191A) may need replacing.

Check alignment of Screen Drum in Housing. Refer to *SCREEN DRUM AND DOFFER ROLLER ALIGNMENT AND SEPARATION* section.

Check that dry hot air is flowing through the hot air pans on the sides of the moist air plenum and into the brush cavities on the ends of the drum.

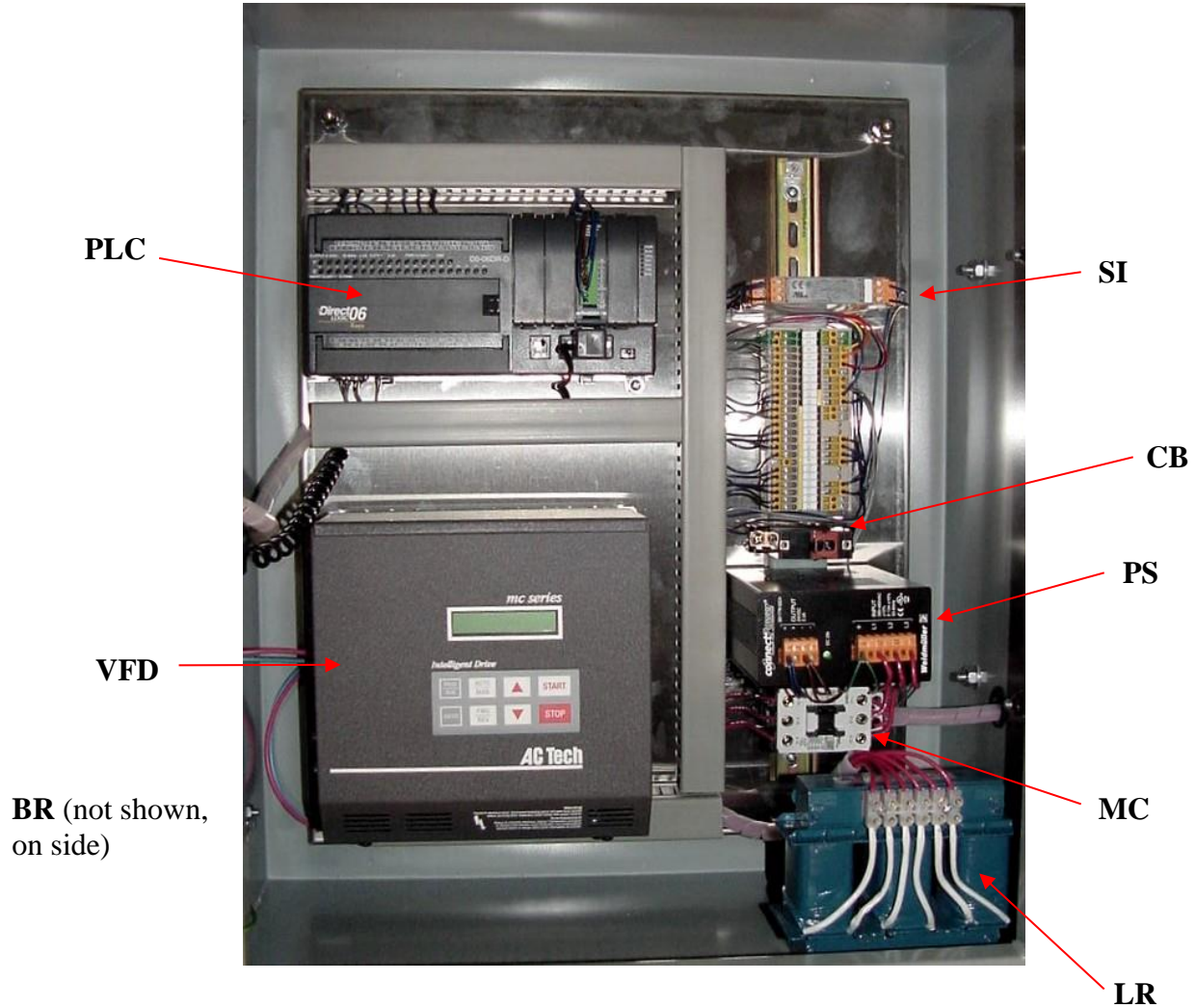
## SUGGESTED SPARE PARTS KIT LIST

A spare parts kit (Part No. 81700B) is available from the factory. Following is a list of the parts included in this kit.

<b>Quantity</b>	<b>Part Number</b>	<b>Description</b>
1	20042	5 HP MOTOR
1	15671	COG DRIVE BELT
4	20011A	RING SEAL BRUSH
2	25600	BEARING, 1 3/4 INCH BORE
2	20690	TRANTORQUE KEYLESS BUSHING, 1 3/4 BORE
2	20916	DOFFER ROLLER END SEAL, 3/8 INCH UHMW
1	19773D	DOFFER ROLLER FLASHING ASSEMBLY
1	21229	EXTERNAL AIR BOX FLASHING
1	21191A	INTERNAL AIR BOX FLASHING
1	20240	COMPRESSED AIR REGULATOR
12 FEET	22025	PLENUM DOOR SEAL

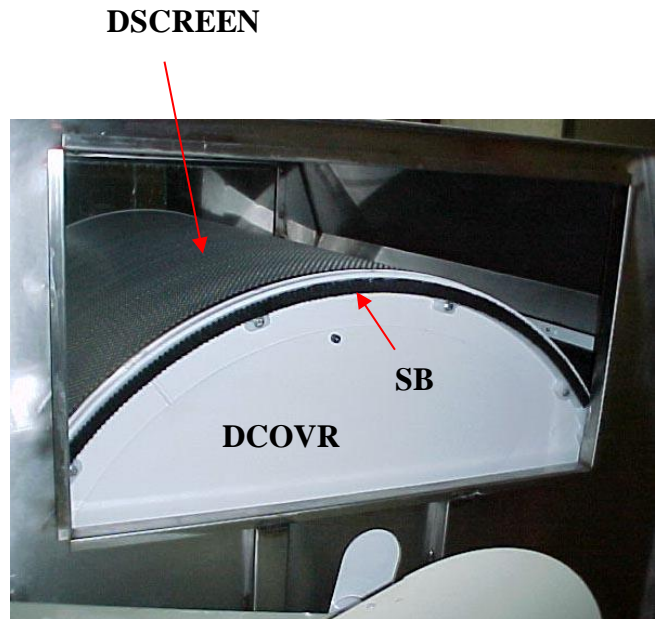
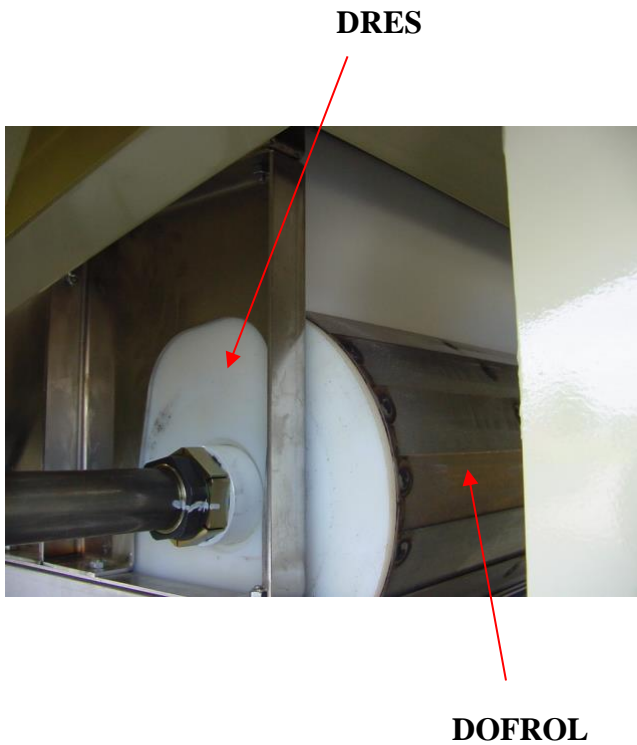
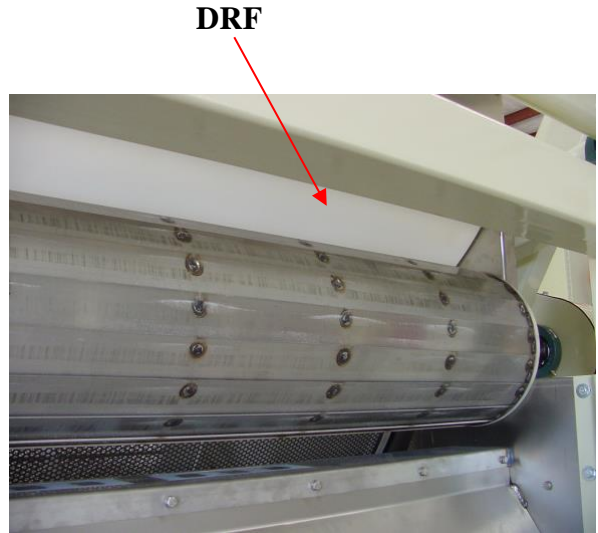
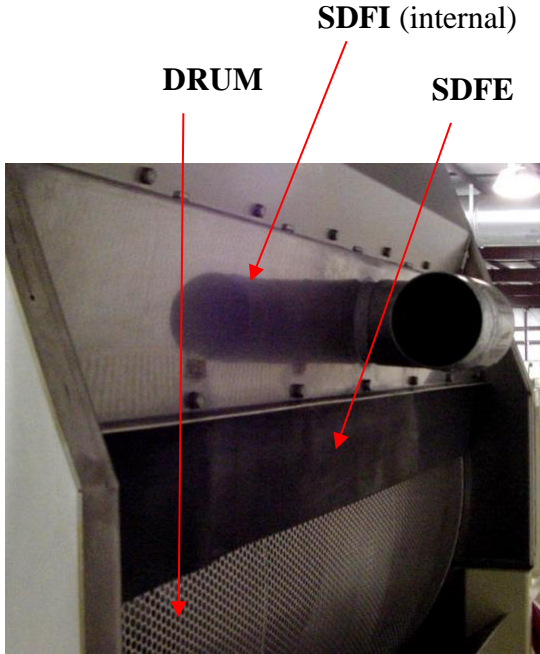


**COMPONENTS FOR STEAMROLLER  
20025B CONTROL CABINET**  
(REFER TO COMPONENT LIST FOR PART NUMBERS AND DESCRIPTIONS)



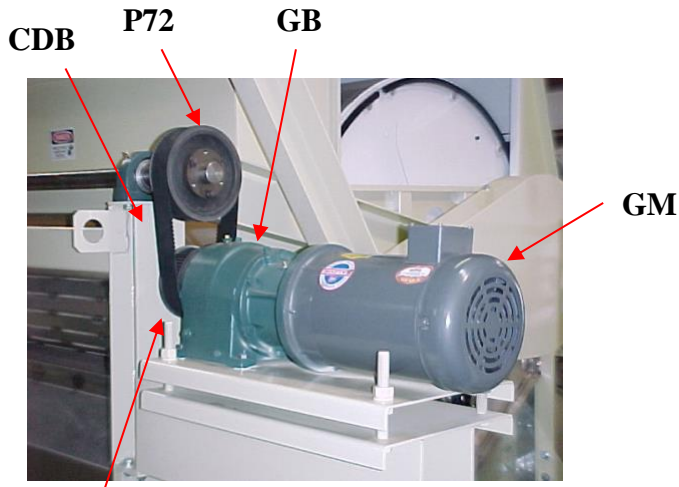
**COMPONENTS FOR STEAMROLLER  
SCREEN DRUM, DOFFER ROLLER,  
FLASHINGS AND SEALS**

(REFER TO COMPONENT LIST FOR PART NUMBERS AND DESCRIPTIONS)

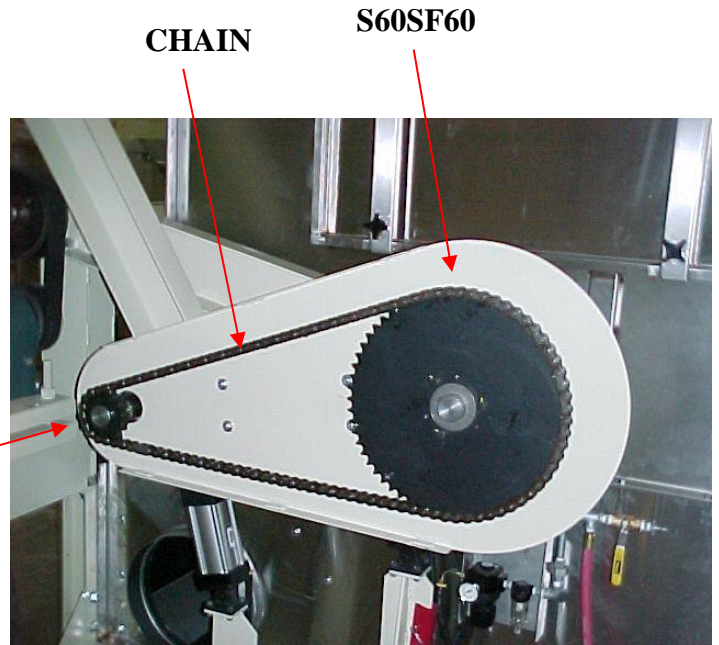


# COMPONENTS FOR STEAMROLLER DRIVE TRAIN

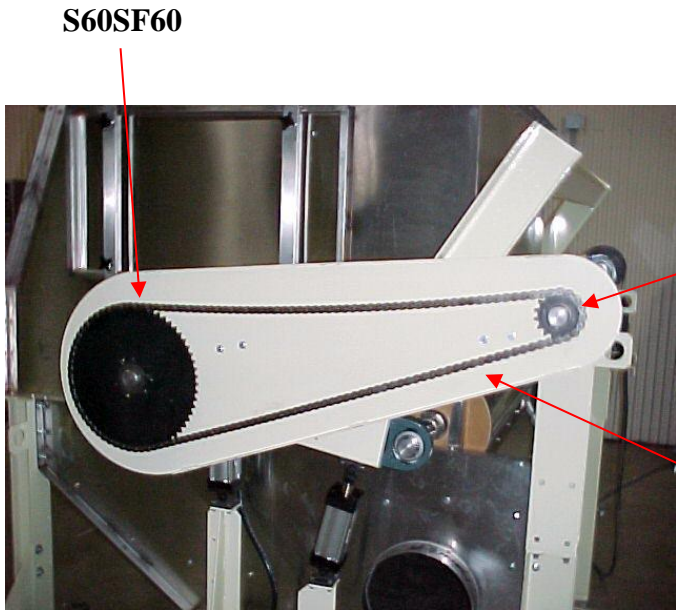
(REFER TO COMPONENT LIST FOR PART NUMBERS AND DESCRIPTIONS)



P56



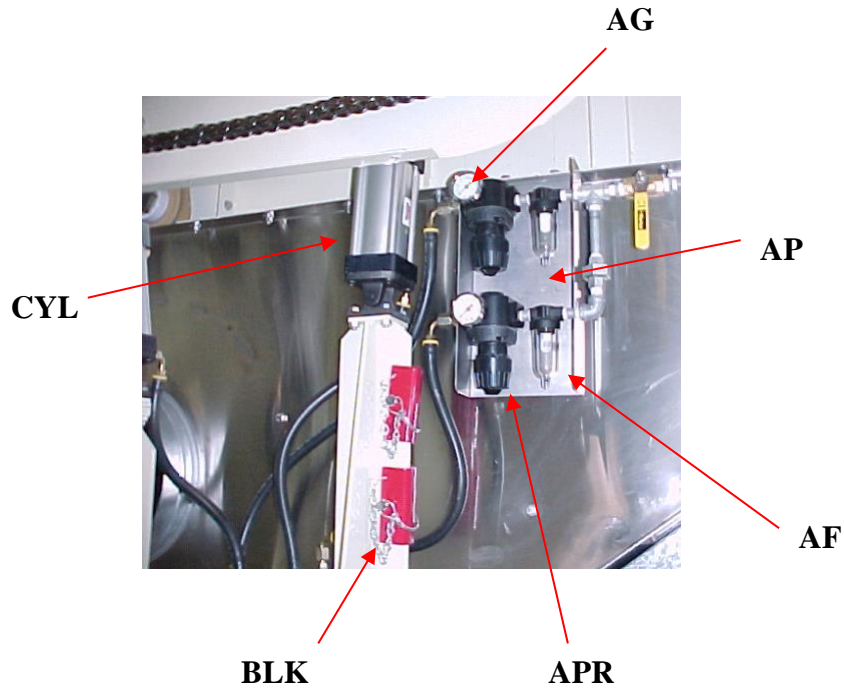
CHAIN GUARD REMOVED FOR ILLUSTRATION



CHAIN GUARD REMOVED FOR ILLUSTRATION

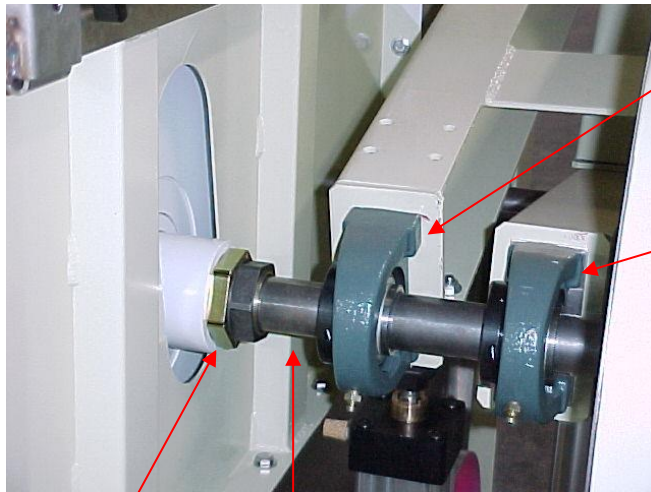
# COMPONENTS FOR STEAMROLLER PNEUMATICS

(REFER TO COMPONENT LIST FOR PART NUMBERS AND DESCRIPTIONS)



# COMPONENTS FOR STEAMROLLER BEARINGS, BUSHINGS AND SHAFTS

(REFER TO COMPONENT LIST FOR PART NUMBERS AND DESCRIPTIONS)



**PB1-3/4**

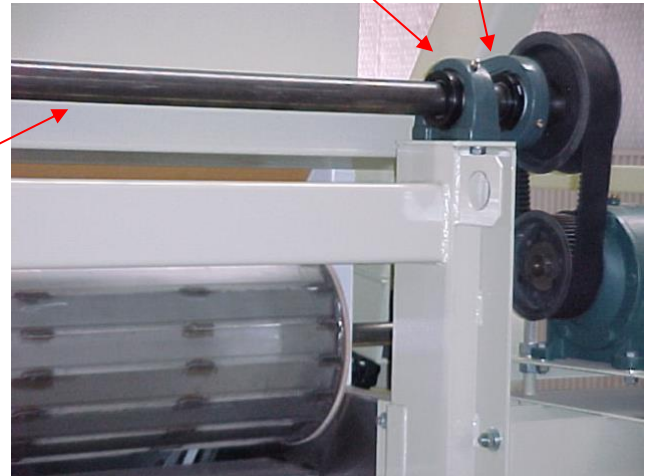
**PB1-3/4**

**TT**

**SHFT2**

**PB1-3/4**

**PB1-3/4**

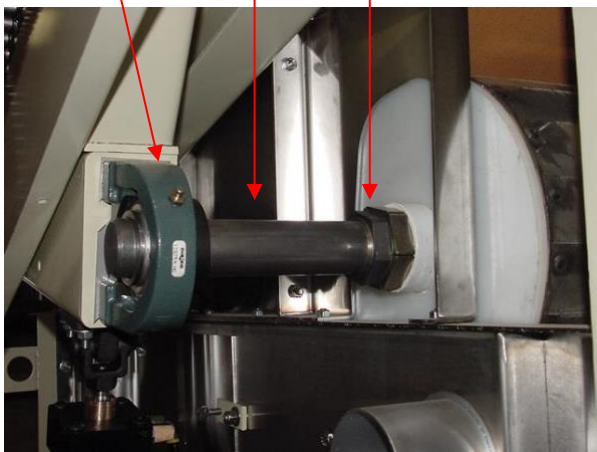


**SHFT1**

**PB1-3/4**

**SHFT3**

**TT**

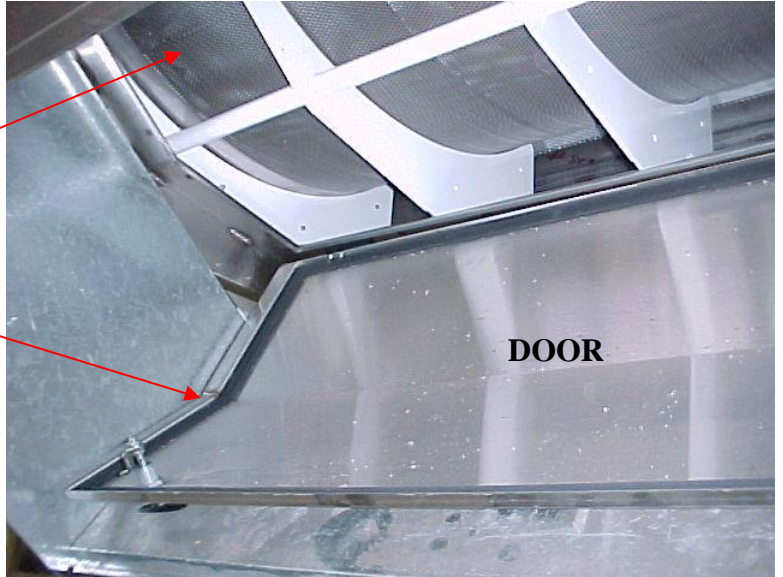


**COMPONENTS FOR STEAMROLLER  
BOTTOM SCREEN AND PLENUM  
(REFER TO COMPONENT LIST FOR PART NUMBERS AND DESCRIPTIONS)**

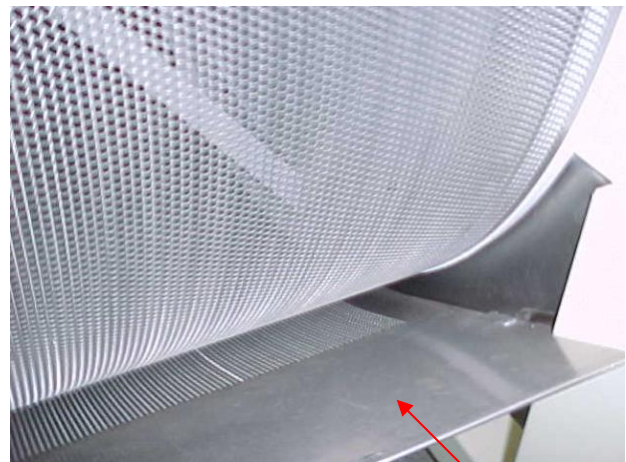
**PSCREEN**

**GASKET**

**DOOR**



**DOOR**



**APRON**

## STEAMROLLER COMPONENT LIST

SYMBOL	PART NAME, NUMBER, MFR'S TYPE	LOCATION
AF	COMPRESSED AIR FILTER 13593A, F07-200-MITA	AIR PANEL
AG	AIR PRESSURE GAGE 13706, 0-160 PSI	AIR PANEL
AP	PNEUMATIC CONTROL PANEL ASSY 20012B, SJI	BODY
APR	PRECISION AIR REGULATOR 20240, P16-02-H00	AIR PANEL
APRON	FEED APRON COVER PLATE 20282, SJI	BODY
BLK	CYLINDER BLOCK WITH CLIP PIN 20078, SJI	BODY
BR	BRAKING RESISTOR 20894, 250 OHM, 240 WATT	CONTROL CABINET
CB	CIRCUIT BREAKER, DOUBLE POLE 17787, NRAS 2100 5A	CONTROL CABINET
CDB	COG DRIVE BELT 15671, RPP 960-8M-50	GEAR HEAD TO JACK SHAFT
CHAIN	NO. 60 RIVET CHAIN 15683, 60 RIV CHAIN	SHAFTS
CYL	AIR CYLINDER 20015, FW2C108541 X 4"	BODY
DCOVR	DRUM END COVER 19724, SJI	SCREEN DRUM
DISPLAY	OPERATOR DISPLAY 19642, DV-1000	CABINET
DOFROL	DOFFER ROLLER 19778A, SJI	DOFFER ROLLER
DOOR	PLENUM ACCESS DOOR 20061B, SJI	BODY
DRES	DOFFER ROLLER END SEAL 20916, 3/8 INCH UHMW	DOFFER ROLLER

**STEAMROLLER COMPONENT LIST**  
continued

<u>SYMBOL</u>	<u>PART NAME, NUMBER, MFR'S TYPE</u>	<u>LOCATION</u>
DRF	DOFFER ROLLER FLASHING ASSEMBLY 19773D, SJI	BODY
DRUM	SCREEN DRUM 19755A, SJI	SCREEN DRUM
DSCREEN	DRUM SCREEN SECTION 20684, SJI	SCREEN DRUM
GASKET	DOOR GASKET 20063, R-472-E	BODY
GB	GEAR HEAD, 9.30 RATIO 20041, M85012	BODY
GM	5HP MOTOR 20042, VM3615T	GEAR HEAD
LR	LINE REACTOR 21155, 37G 00803	CONTROL CABINET
LP	LOCAL PANEL 20031, SJI	CONTROL CABINET
MC	MOTOR CONTACTOR 21613 SC-E04G-24VDC	CONTROL CABINET
P56	SPROCKET – 56 TOOTH 15680, P56-8M-50-SK HTS	GEAR HEAD
P72	SPROCKET – 72 TOOTH 15681, P72-8M-50-SK HTS	JACK SHAFT
PB1-3/4	BEARING – 1 ¾ BORE 25600, TB-DL-112	JACK SHAFT SCREEN DRUM DOFFER ROLLER
PLC	PROGRAMMABLE LOGIC CONTROL 20594B, DL06 COMPRISED OF: 21563 BASE, 19857 BATTERY, 21566 ANALOG IN/OUT	CONTROL CABINET



**STEAMROLLER COMPONENT LIST**  
continued

<u>SYMBOL</u>	<u>PART NAME, NUMBER, MFR'S TYPE</u>	<u>LOCATION</u>
PS	POWER SUPPLY 21570, 3 PHASE TO 24VDC	CONTROL CABINET
PSCREEN	PLENUM SCREEN 19708 FOR SR-2001-54, 54 INCH SLIDE, SJI 20606 FOR SR-2001-40, 41 INCH SLIDE, SJI	BODY
SB	DRUM RING SEAL BRUSH 20011A, SJI	SCREEN DRUM
S60BS16	SPROCKET - 16 TOOTH 15672, 60 BS 16 1-3/4 HT	JACK SHAFT DOFFER ROLLER
S60SF60	SPROCKET - 60 TOOTH 15678, 60 SF 60	SCREEN DRUM SHAFT
SDFE	SCREEN DRUM FLASHING, EXTERNAL 21229, SJI	BODY
SDFI	SCREEN DRUM FLASHING, INTERNAL 21191A, SJI	BODY
SHFT1	JACK SHAFT 19712, 1 3/4 DIA, SJI	JACK SHAFT
SHFT2	SCREEN DRUM SHAFT 19711A, 1 3/4 DIA, SJI	SCREEN DRUM
SHFT3	DOFFER ROLLER SHAFT 19713A, 1 3/4 DIA, SJI	DOFFER ROLLER
SI	4-20 mA SIGNAL ISOLATOR, 2 CHANNEL 21218, LOOP POWERED	CONTROL CABINET
TT	TRANSTORQUE KEYLESS BUSHING, 1 3/4 20690, 6202480	SCREEN DRUM DOFFER ROLLER
VFD	VARIABLE FREQUENCY DRIVE 20822, M1551BJ (460VAC, 50/60 HZ) 20904, M1450BJ (380-415VAC, 50/60 HZ)	CONTROL CABINET

## ASSEMBLY and INSTALLATION

*Please take extra precaution and follow all safety rules when gin modifications and equipment installations are occurring.*

After taking delivery of the Steamroller System, please take a moment to familiarize yourself with the major parts of the system. The system should arrive with a comprehensive shipping list identifying all the boxes, skids, pallets, etc. The custom lower steel support structure, custom lint slide, sheet metal pipe, fittings and fans may be supplied with the order at the gin's request. The major parts are:

- 81500B STEAMROLLER LINT CONDITIONER ASSEMBLY
  - 20040 MOTOR/GEAR HEAD ASSEMBLY  
(includes cog drive belt, this manual, 20021 customer fastener kit with nuts and bolts, and related installation drawings)
  - 19800A LOWER VERTICAL SUPPORT ASSEMBLY
  - CATWALK BASES AND RAILS FOR LEFT AND RIGHT HAND SIDES
  - BY-PASS SLIDE PIECES FOR UNDER STEAMROLLER
  - 20025B STEAMROLLER CONTROL CABINET
  - 20200 CUSTOM FEED RAMP ASSEMBLY  
(includes installation drawing, fasteners, and in some cases 20201 Top Ramp Assembly)
  - \* 20020 HOT AIR FAN (If used in place of an auxiliary heater/blower)
  - \* LINT SLIDE PIECES (if supplied)
  - \* LOWER STEEL SUPPORT STRUCTURE ASSEMBLY (if supplied)
  - \* 6 INCH DIA HOT AIR PIPE, 12 INCH DIA MOIST AIR PIPE, 16 DIA USED EXHAUST PIPE (if supplied)
  - \* NO. 30 CENTRIFUGAL FAN, 10 HP MOTOR, FOR MOIST AIR (if supplied)
  - \* NO. 30 CENTRIFUGAL FAN, 15 HP MOTOR, FOR AIR (if supplied)
- \* these required items only supplied if ordered, otherwise they must be supplied by others**



*All required nuts and bolts for assembling the Steamroller are included in the 20021 CUSTOMER FASTENER KIT normally packed in the MOTOR/GEAR HEAD box. Nuts and bolts for the custom lower structural steel are also included in this box (when structure is supplied). Nuts and bolts for installation of the sheet metal are not supplied.*

### **ASSEMBLY OF CATWALKS AND BY-PASS SLIDE PARTS**

Refer to following drawings CAT4115A and CAT4116A for assembly of catwalks and CAT4117A for by-pass slide parts under Steamroller. The CATWALK BASE ASSEMBLY is the same for left and right hand sides. The CATWALK RAIL ASSEMBLIES are unique to each side.

### **INSTALLATION OF STEAMROLLER, LINT SLIDE AND PIPING**

Custom installation drawings are supplied by Samuel Jackson, Incorporated and the sheet metal supplier for installation of the Steamroller, lint slide, placement of the fans and Humidaire Unit. These drawings are normally packed in the MOTOR/GEAR HEAD box.



*The lower lint slide section (when supplied with the system) has the angle flange connecting the lint slide to the press pusher/charger cabinet lightly tack welded onto the slide walls. The tack welds are easily broken if minor adjustments need to be made to the overall length of the slide. Weld angle flange to side walls after completing assembly.*

### **MATCH-UP OF STEAMROLLER CATWALKS TO CONDENSER CATWALKS AND LADDERS**

The gin is responsible for providing the match-up and connections between the battery condenser catwalks and the catwalks provided with the Steamroller. In some instances, the installers will need to make slight modifications to the Steamroller's CATWALK ASSEMBLY RAILS. Battery condenser access ladders also may require relocation to facilitate the installation.

The Steamroller needs to be easily accessible from both sides as well as underneath to facilitate maintenance and cleaning.

### **COMPRESSED AIR SUPPLY**

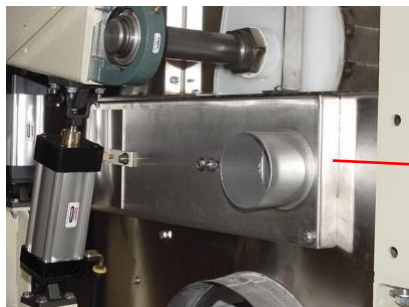
A source of compressed air is required to operate the air cylinders supporting the screen drum and doffer roller. The required volume of compressed air is small. The required

minimum pressure is 100 psi (6.8 bars). Use a 3/8" steel line to connect air to the 20012A PNEUMATIC CONTROL PANEL (AP) located on the Steamroller's left side.

### ***HOT AIR PANS ON PLENUM SIDES***

The Steamroller is shipped with hot air pans attached to both sides of the moist air plenum. Dry hot air enters the stainless steel pans, warms the side of the plenum and exits through holes into the brush cavities on the ends of the screen drum. This hot air pressurizes the brush cavities to keep lint from migrating up the ends of the drum. The air also keeps the seal brushes dry which prolongs their life and increases their sealing action.

Two 65 inch long, 4 inch diameter, galvanized flexible tubes direct hot air from the false bottom under the slide to the hot air pans. They are attached to ports welded into the lower vertical support assembly. Below are pictures of the installation of these tubes. Use sheet metal screws to fasten the tubes to the elbows.



Hot Air Pan (right side shown) with 90 degree elbow attached for hose connection



Flexible tube, 4 inch diameter, 65 inch long

Port on each side of lower vertical support for dry hot air source with 90 degree elbow attached for hose connection.

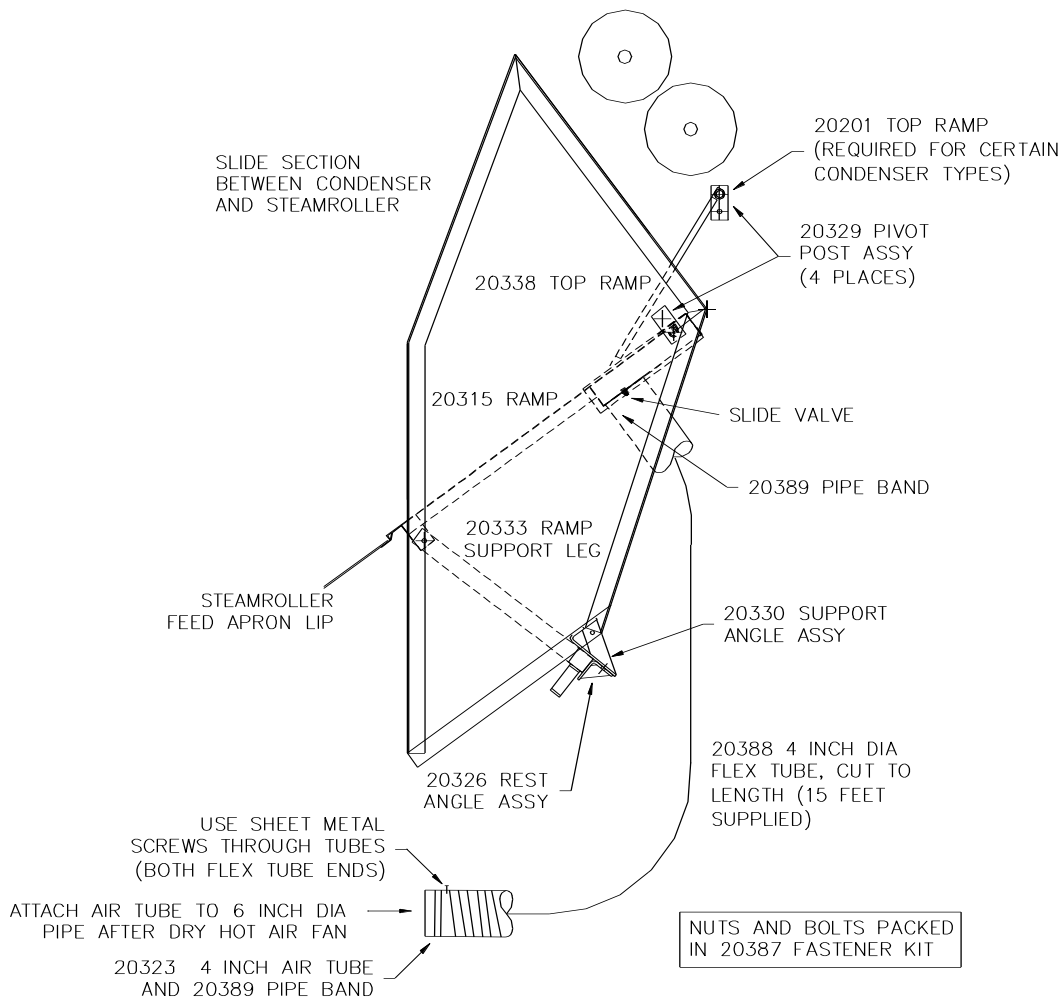
False slide bottom for dry hot air

## **FEED RAMP INSTALLATION**

A custom FEED RAMP (Samuel Jackson Part No. 20200) directs cotton from the battery condenser to the feed apron lip of the Steamroller. A typical view of the feed ramp is shown in Figure 4. If Steamroller by-pass is required, the Ramp Support Leg is unpinned and pulled away from the Support Angle allowing the Ramp to drop down. Cotton can then pass under the Steamroller.

Install the ramp after the slide section between the condenser and Steamroller is in place. The length and installation details of each feed ramp are unique to the gin so a detailed assembly and installation drawing is packed with the feed ramp.

Certain types of condensers also require the TOP RAMP ASSEMBLY (Part No. 20201) to direct cotton from the condenser feed out roll to the feed ramp. This ramp is included in shipment when required. This ramp is also shown in the typical view below.

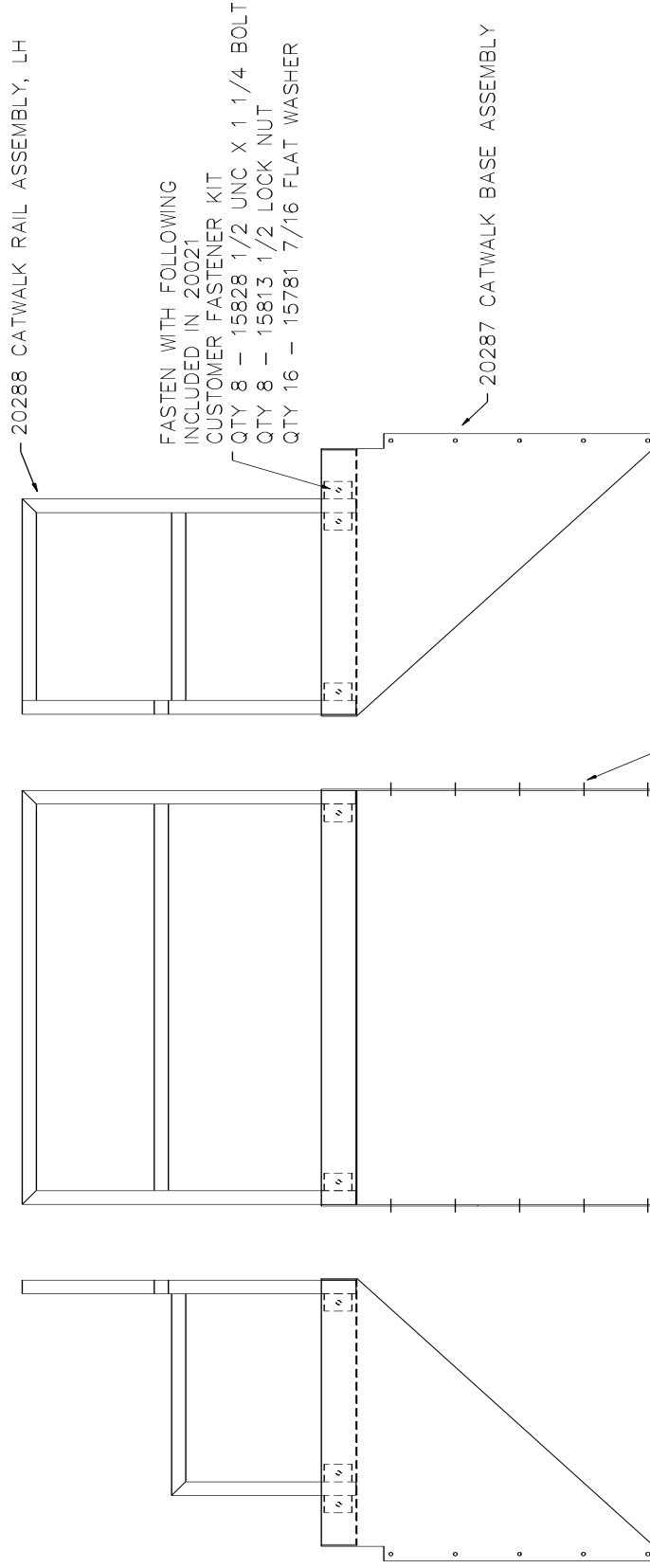


**Figure 4 – Typical Installation and Assembly of  
20200 FEED RAMP and 20201 TOP RAMP**

14-4079

LEFT SIDE CATWALK ASSEMBLY  
FOR STEAMROLLER

CAT4115A  
5-00



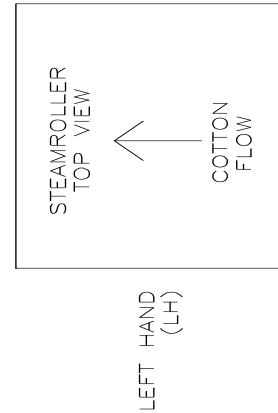
INLET END VIEW

LEFT SIDE VIEW

OUTLET END VIEW

FASTEN TO 19800A LOWER VERTICAL SUPPORT WITH FOLLOWING INCLUDED IN 20021 CUSTOMER FASTENER KIT:  
QTY 10 - 15828 1/2 UNC X 1 1/4 BOLT  
QTY 10 - 15813 1/2 LOCK NUT  
QTY 20 - 15781 7/16 FLAT WASHER

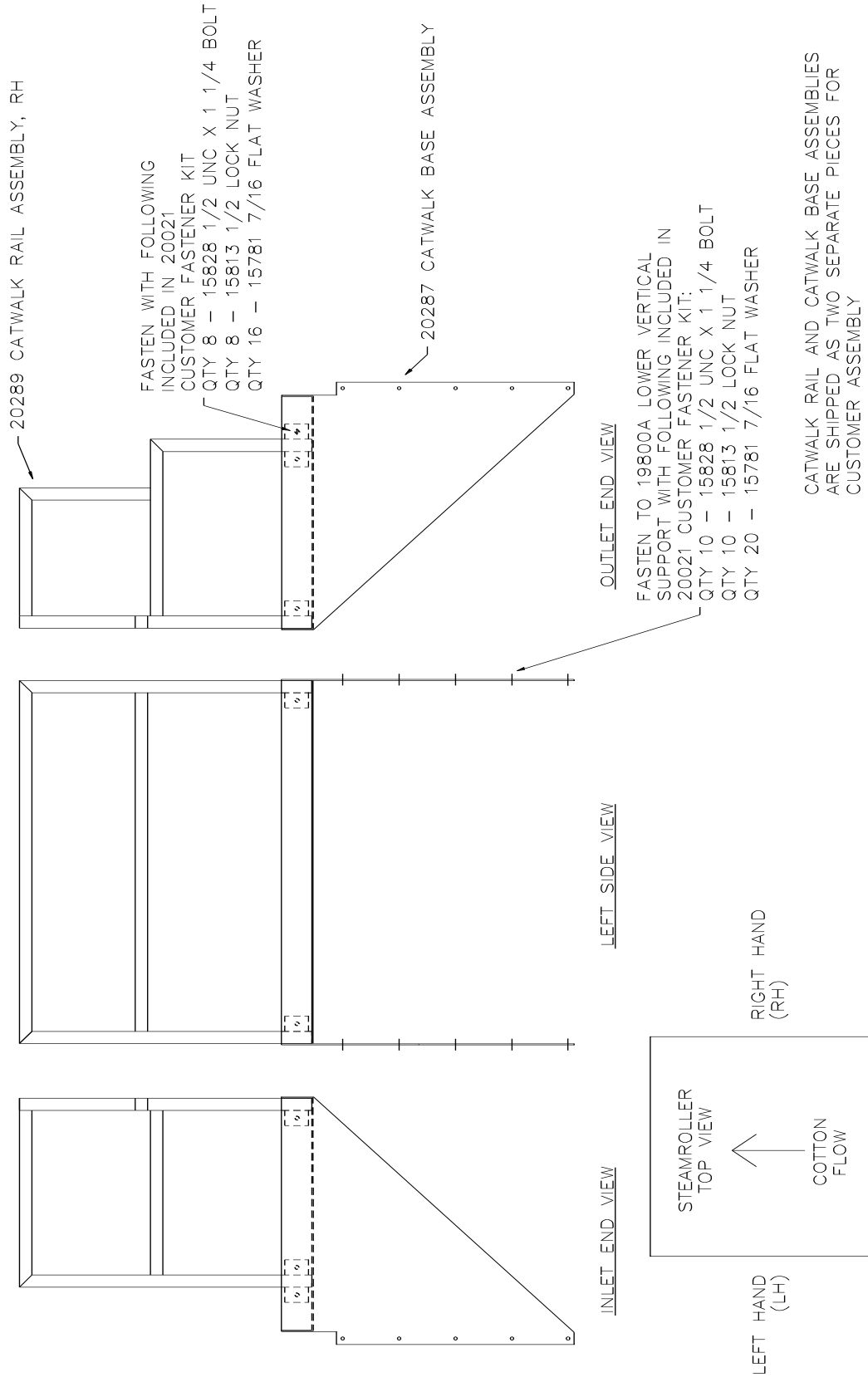
FASTEN WITH FOLLOWING INCLUDED IN 20021 CUSTOMER FASTENER KIT:  
QTY 8 - 15828 1/2 UNC X 1 1/4 BOLT  
QTY 8 - 15813 1/2 LOCK NUT  
QTY 16 - 15781 7/16 FLAT WASHER



CATWALK RAIL AND CATWALK BASE ASSEMBLIES ARE SHIPPED AS TWO SEPARATE PIECES FOR CUSTOMER ASSEMBLY

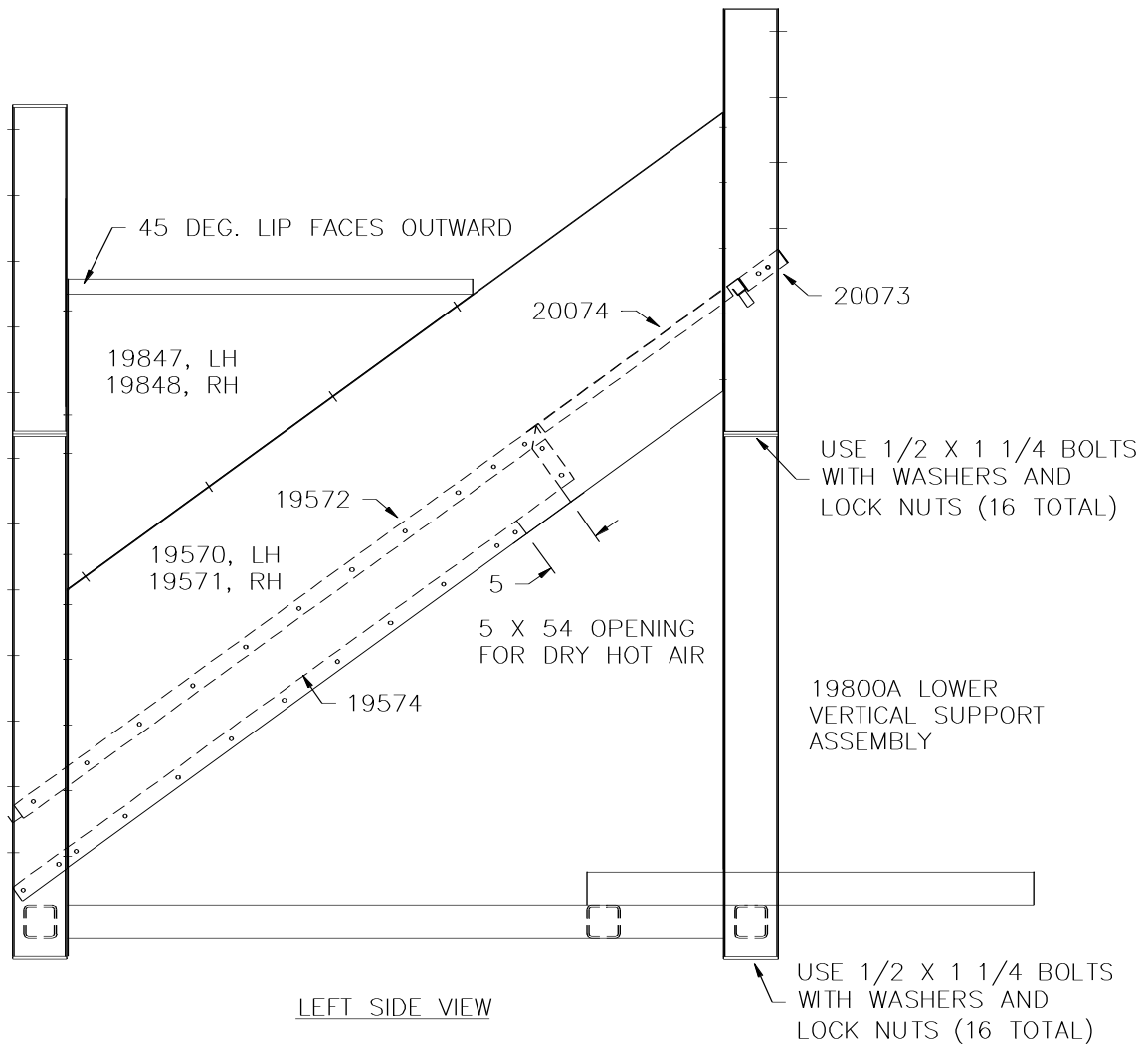
RIGHT SIDE CATWALK ASSEMBLY  
FOR STEAMROLLER

CAT4116A  
5-00



ASSEMBLY OF BY-PASS SLIDE PARTS  
UNDER STEAMROLLER

CAT4117A  
5-00



USE FOLLOWING FASTENERS SUPPLIED IN PART NO. 20021 CUSTOMER FASTENER KIT:

QTY 38 - 15743 5/16 UNC X 3/4 BOLTS FOR GALVANIZED TO PAINTED METAL

QTY 38 - 15723 1/4 FLAT WASHERS FOR PAINTED METAL BOLT HEAD SIDES

QTY 52 - 15800 5/16 UNC X 1/2 BOLTS FOR GALVANIZED TO GALVANIZED PANELS

QTY 90 - 15715 5/16 UNC LOCK NUTS

QTY 32 - 15828 1/2 UNC X 1 1/4 BOLTS

QTY 32 - 15813 1/2 UNC LOCK NUTS

QTY 64 - 15781 7/16 FLAT WASHERS



## ELECTRICAL INSTALLATION

Refer to the *EXTERNAL ELECTRICAL CONNECTIONS* diagram:

- CAT4141 for standard installations.
- Moisture Mirror manual if optional automatic moisture control is used.



*Locate the 20025B STEAMROLLER CONTROL CABINET on one of the lower legs of the lower structural steel support assembly. This will keep the 3 phase electrical leads between the CONTROL CABINET and the MOTOR/GEAR HEAD under 50 feet to avoid potential Variable Frequency Drive (VFD) and motor problems.*

### ***ELECTRICAL POWER REQUIREMENTS***

- **3 PHASE POWER.** (480VAC 60HZ, 415VAC 50HZ, 380VAC 50HZ normal voltages and frequencies). 30 amp breaker. Connect power to non-fusible disconnect supplied on side of 20225B Control Cabinet. Consult factory if different voltage is available (i.e. 230VAC 50/60HZ). If 230VAC is used, a different Variable Frequency Drive is required and a different Motor Contactor (MC) (Part No. 20279) is required. For 480VAC, part No. 20822 Variable Frequency Drive is used. For 380-415VAC, part No. 20904 Variable Frequency Drive is used.
- **24VDC POWER.** A power supply (PS) is supplied in the Control Cabinet to provide 24VDC power for the PLC and the motor contactor (MC). The 3 phase power supplies power to the PS.
- **GROUNDING.** *Connect the ground lug on the control panel directly to a 6-foot (minimum) grounding pole using AWG8 aluminum ground wire or better. The grounding pole should be located no more than 25-feet from the control cabinet. The Steamroller's PLC can lose its program if not grounded properly.*

### ***ELECTRICAL POWER FOR 20020 HOT AIR FAN (if fan is used)***

A 3 phase motor contactor (Part No. 14854A) can be supplied for positioning on the Humidaira Unit electrical panel. The coil of the contactor is automatically energized starting the 1 ½ HP fan motor when Humidaira flame is established to pre-heat the feed ramp and slide bottom. The installing electrician is responsible for wiring the contactor to the 20020 HOT AIR FAN. A Samuel Jackson technician will complete the wiring of the 3 phase leads to the contactor and the coil at system commissioning.

## ***STEAMROLLER SPEED CONTROL***

A Variable Frequency Drive (VFD) is supplied with each Steamroller system to allow a fine offset match of the surface speed of the Steamroller's Screen Drum (SD) to the battery condenser screen drum. At system commissioning, this speed offset will be determined with the ratio setting.

In gins where the battery condenser's drum speed is adjustable (whether through a speed potentiometer or an automatic scheme based on number of gin stands operating), the Steamroller's VFD must be able to track this speed change. The battery condenser's variable frequency drive must provide a 4-20mA DC output control signal based on output frequency for the Steamroller to follow. Terminals for speed signal are shown on the *EXTERNAL ELECTRICAL CONNECTIONS* diagrams.

## ***START/STOP CONTROL OF THE STEAMROLLER***

The installing electrician is responsible for providing a "dry contact" to terminals 7 and 30 shown as "STEAMROLLER RUN" on the Electrical Connections Diagrams. Most gins prefer to have the Steamroller automatically start when the battery condenser starts. The "dry contact" may come from interposing a relay from the battery condenser run light or using a set of normally open auxiliary contacts on the battery condenser motor starter.

### ***RUN INDICATOR SIGNAL***

A "STEAMROLLER RUN STATUS" signal is provided for optional use to indicate that the Steamroller is running. The Steamroller's PLC maintains a "dry contact" closure between terminals 33 and 34 while the VFD is reporting to the PLC that it is in run mode. Use of this signal is encouraged to minimize lint system chokes if the Steamroller stops due to a VFD fault, etc.



*Some gins treat the RUN INDICATOR signal the same as the low air pressure switch signal on the lint flue riser. If the Steamroller stops running, all the gin stand breasts come out and cotton feed is stopped.*

## ***MOIST AIR THERMOCOUPLE***

A moist air thermocouple (Part No. 16900B or 21708, blue threads, with 8 inch probe) is supplied with the Humidaire Unit. For Steamroller systems, locate this thermocouple in the 12 inch diameter moist air pipe after the moist air fan but before the split to each side of the Steamroller's air plenum chamber.

The thermocouple wire, or transmitter wire, can be run with other sensitive wires but not with power wires. Refer to the Humidaire Unit's service manual for additional wiring information.

## ***AUTOMATIC MOISTURE CONTROL OPTION***

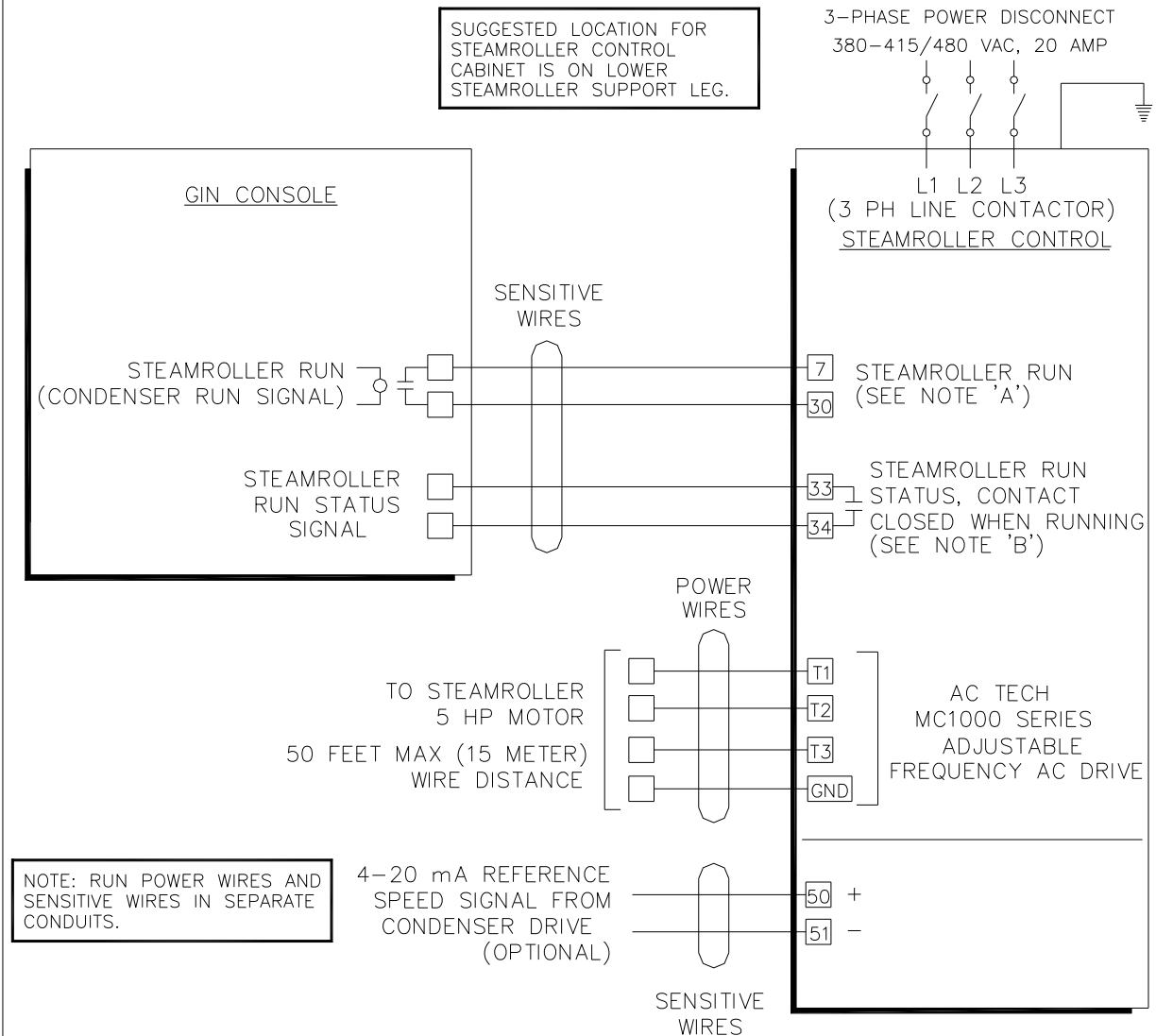
Optional automatic moisture control for the Humidaire Unit is available using the 81660 Moisture Mirror or 81661 Moisture Mirror II with a compatible bale moisture sensor.

Various lint moisture measuring methods are available. A stable, linear 4-20mA signal output corresponding to lint moisture content is required. Consult the factory for information on connection of these measuring devices to the Moisture Mirror.

Be sure to use shielded cable for sensitive wires. Keep 3 phase power wires away from the sensitive control signals and the sensor wires.

# EXTERNAL ELECTRICAL CONNECTIONS FOR SAMUEL JACKSON STEAMROLLER

CAT4141  
6-04



NOTE 'A' - PROVIDE A MAINTAINED "DRY CONTACT" ACROSS TERMINALS 7 AND 30 FOR STEAMROLLER RUN SIGNAL. IF RUN SIGNAL COMES FROM CONDENSER, STEAMROLLER SHOULD START A FEW SECONDS BEFORE CONDENSER STARTS.

NOTE 'B' - STEAMROLLER'S PLC PROVIDES A "DRY CONTACT" ACROSS TERMINALS 33 & 34 FOR STEAMROLLER'S RUN STATUS SIGNAL. CONTACT IS MADE WHEN STEAMROLLER IS RUNNING.

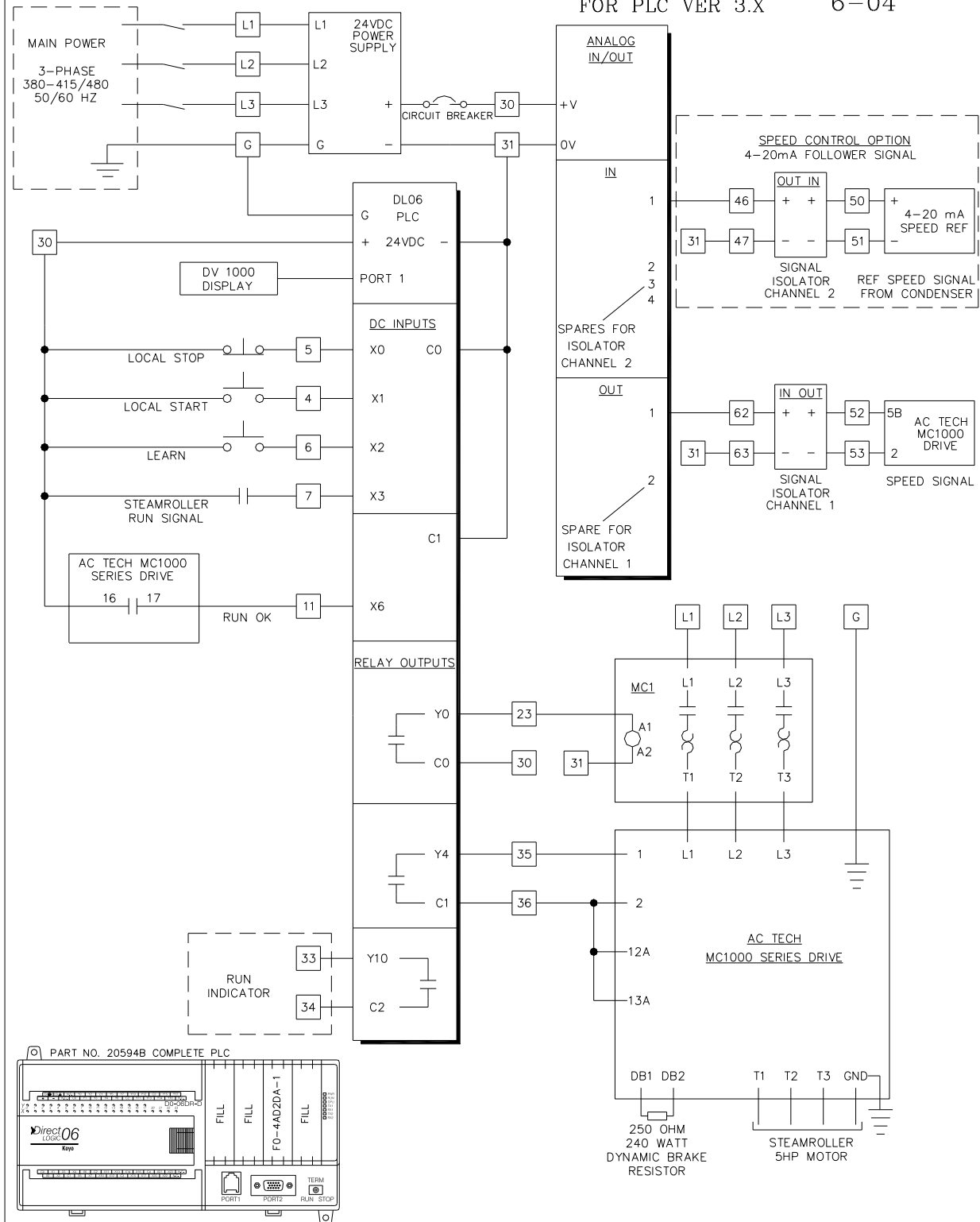
POWER FOR OPTIONAL 3 PH 2 HP  
DRY HOT AIR FAN COMES  
FROM SJI PART NO. 14854A  
CONTACTOR ON HUMIDIAIRE PANEL.  
CONTACTOR ON WHEN FLAME ON.

# STEAMROLLER ELECTRICAL SCHEMATIC

CAT4140

FOR PLC VER 3.X

6-04



***Technical Addendum - August 2006***  
*(for software versions 3.1 or later)*

PLC program versions prior to v3.1 clamped the 4-20mA signal going to the Steamroller VFD at 9.3mA on the low end. Steamroller VFDs shipped prior to September 2006 were setup with a minimum speed of 20 Hz and with 4mA = 20 Hz / 20mA = 60 Hz.

9.3mA gave us 33.3 Hz minimum speed as long as our PLC worked; however, if the PLC or analog card died then the motor would spin at 20 Hz. In the new PLC program the 9.3mA lower limit has been removed; the minimum speed setting in the Steamroller's VFD should be set at 30 Hz to protect the motor when using software versions 3.1 or later. The 4-20 high and low settings in the Steamroller's VFD need to match the 4-20 high and low settings of the condenser drive.

When following a condenser the PLC (old program and new program) literally takes the 4-20 signal from the condenser, multiplies by the speed ratio, and outputs the result to the Steamroller's VFD (10mA input with a speed ratio of 1.1 results in 11mA output). If the condenser's 4-20mA signal is set for 4mA = 0 Hz and 20mA = 60 Hz (typical) then we have a non-linear response with our old factory default of 4mA = 20 Hz and 20mA = 60 Hz.

If you upgrade a Steamroller from software version 3.0 to version 3.1 or later then you need to change the following settings in the Steamroller's VFD:

MIN FRQ = 30 Hz

TB5 MIN = condenser 4mA value (usually 0 Hz)

TB5 MAX = condenser 20mA value (usually 60 Hz, sometimes 70 Hz)

These changes in conjunction with the software versions 3.1 and later will give a linear response to the condenser drive and protect the Steamroller's motor from burning up.

Be aware that you will need to reset the speed ratio after making the changes to the min and max values for the 4-20 signal.

*- Note -*

*If the condenser VFD outputs a 0-20mA signal and can not be changed to a 4-20mA signal then setting 0mA = 0 Hz in the condenser VFD and TB5 MIN = 12 Hz in the Steamroller VFD will keep the speeds linear.*

**LIMITED WARRANTY**

**SAMUEL JACKSON, INCORPORATED**

For Commercial and Industrial Customers of Samuel Jackson Moisture Control Products

**SAMUEL JACKSON, INCORPORATED** ("Sam Jackson") warrants to its customers who purchase Sam Jackson products that its equipment is free from defects in material and workmanship under normal use and service for 12 months from the date of shipment from its Lubbock, Texas factory.

**THIS WARRANTY DOES NOT EXTEND TO EQUIPMENT SUBJECTED TO MISUSE, NEGLIGENCE, OR ACCIDENT: NOR DOES THIS WARRANTY APPLY UNLESS THE PRODUCT COVERED BY IT IS PROPERLY INSTALLED BY A QUALIFIED, COMPETENT TECHNICIAN, WHO IS LICENSED WHERE STATE AND LOCAL CODES REQUIRE, AND WHO IS EXPERIENCED IN MAKING SUCH INSTALLATIONS.**

Equipment, which is defective in material or workmanship and within the warranty period, will be repaired or replaced, at Sam Jackson's option, in order to facilitate proper operation.

**THIS WARRANTY IS LIMITED TO THE PRECISE TERMS SET FORTH ABOVE, AND PROVIDES EXCLUSIVE REMEDIES EXPRESSLY IN LIEU OF ALL OTHER REMEDIES, AND IN PARTICULAR THERE SHALL BE EXCLUDED THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE. IN NO EVENT WILL SAM JACKSON BE LIABLE FOR ANY INCIDENTAL OR CONSEQUENTIAL DAMAGE OF ANY NATURE.**

Sam Jackson neither assumes nor authorizes any person to assume for Sam Jackson any other liability or obligation in connection with the sale of this equipment, Sam Jackson's liability and Customer's exclusive remedy being limited to repair or replacement as set forth above.

**SAMUEL JACKSON, INCORPORATED**  
3900 Upland Avenue Lubbock, Texas 79407

## **IMPORTANT!**

**The following notice affects your warranty.**

### **Electrical Controls and Your Safety**

Your new Sam Jackson product may be equipped with electrical controls, or designed to interact with controls on a related Sam Jackson product.

In the event that local, state, federal or other specified safety compliance is required, we will consider modifications to meet the particular requirements. Implementation of alternative safety devices may incur additional charges. No warranty of compliance with a particular standard is made in the absence of specific reference to it in our quotation.

If you modify, or permit others to modify, these controls without specific written permission from Sam Jackson, Inc. the warranty on your product will be void and there is a possibility of serious damage to machinery, damage to product, serious injury to personnel, or death. The modifier of the controls assumes all liability for these consequences.

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