FLEXSTAR
TECHNOLOGY

Orion 104B

Users Manual

POWERED BY PEGASUS

STANDARD AND CE

104B Burn-In Peripheral Device Test Chamber

Document # 98-38181-00 Rev 6.0 11/29/2006

ORION is a Trademark of ***FLEXSTAR TECHNOLOGY, INC.***
This document supersedes all previous releases and revisions to the Operation and Maintenance Manual for the ***ORION 104B***.

Manuals included with the 104B

Host Software Manual

Fboot Software Manual

NPM 1-CH User's Manual

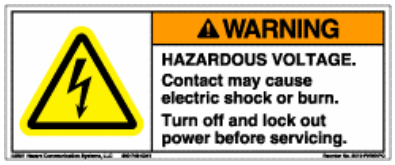
Pegasus SBC User's Manual

Watlow 984C 24 V Manual	***www.watlo.com/literature/prodtechinfo/search.cfm***
Watlow 988 Communication Manual	***www.watlo.com/literature/prodtechinfo/search.cfm***
ABB Frequency Converter User's Manual	***www.ABB.com***

100 Base T Hub Manual

1.0 Operation Procedures

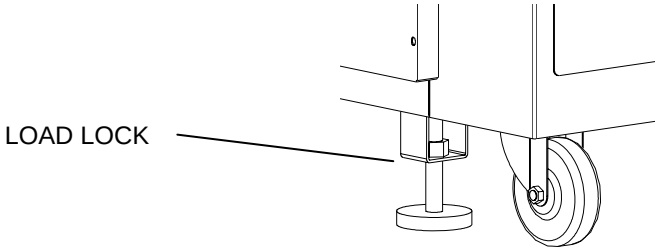
Read and observe all WARNING labels before servicing. See example below.
Caution: Indicates a potentially hazardous situation which, if not avoided, may result in a minor or moderate injury.
Warning: Indicates a potentially hazardous situation which, if not avoided, could result in death or serious injury.
Danger: Indicates an imminently hazardous situation which, if not avoided, will result in death or serous injury.



Warning: **When power cycling the 104B the power must remain off for 60 seconds and the controller must be in the exhaust mode to allow the 9 AMP phase converter to reset and all components time to discharge stored energy.**

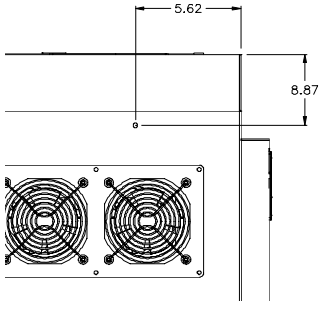
1.1 Rack Installation

Roll the cabinet into the desired location. **NOTE**: 36" of working space should be provided on all sides with electrical enclosures and cooling fans. If this clearance cannot be provided on the right side of the system (no electrical enclosures), then the second EMO switch should be provided on the back of the unit. See section 1.5. Using an adjustable wrench, tighten the six load locks against the floor. ***Warning***: the load locks are intended to hold the cabinet in position and are ***NOT*** intended to support the weight of the cabinet.

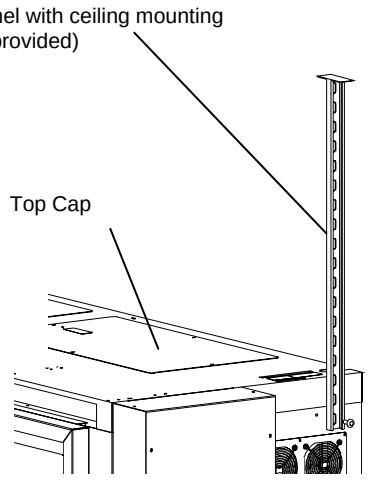


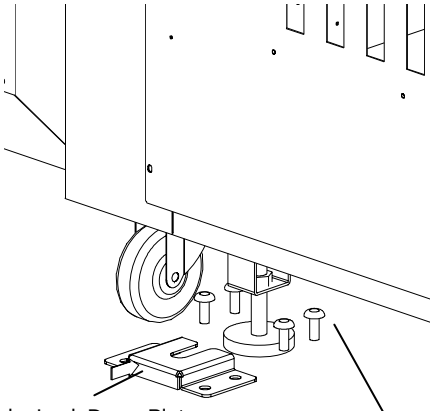
1.2 Earth Quake Lock Down

To install the 104B in an Earthquake prone region follow instructions below to install the 6 Earthquake Lock Down Plates. Complete Section 1.1 Rack Installation. Slide Earthquake Lock Down Plate (19-38615-00) over the load lock and mark the locations of the 4 3/8" holes on the floor. Once all Lock Down Plate holes have been marked roll the 104B aside and drill for 3/8" concrete drive anchors. For all other floors use appropriate 3/8" hardware. Roll the rack back into position and bolt the plates to the floor.
To secure the rack to the ceiling use a strut channel bolted to the rack and the ceiling with a ¼" or 5/16" nut and bolt. See diagram below for mounting hole location. For ease of installation remove the Top Cap after marking and drilling mounting holes.



Right side of 104b showing the mounting hole for the strut channel.





1.3 Main AC Power Hook-up

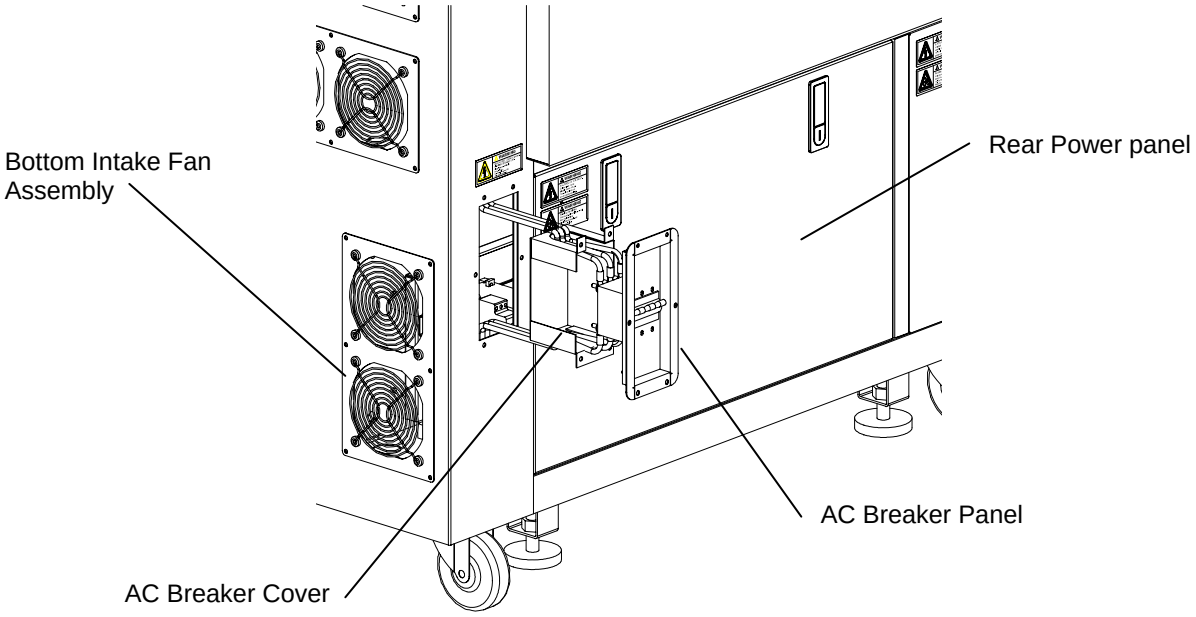
Power Requirements: 230VAC @ 40 AMP 50/60hz Three Phase unless otherwise stated on the machine.

Insure customer supplied power meets this requirement. The Orion Series is high performance test equipment. In order to ensure proper operation, care must be taken to supply computer grade AC power. This includes a low impedance ground. Failure to do so may cause unexpected operation or other errors.

The 104B main power switch is a UL listed 1077-circuit protector. Customer supplied power must use a UL 489 or IEC 947-2 10k AIC listed breaker for proper 104B protection.

The 104B is not supplied with a main power disconnect. The customer must supply a main power disconnect. It is acceptable to use a cord and plug as a disconnect device provided it is accessible and can be easily reached.

The main AC power can be installed through the top or bottom of the rack. Locate and remove the AC breaker panel. Remove the breaker cover and connect the AC power wires to the circuit breaker. For easy access remove the power panel and the bottom intake fan assembly.
To insure proper circulation and exhaust blower rotation insure the power phases are in line. This can be done by turning off the motor drive and visually inspecting the blower blade rotation. Both blower blades spin clock wise when functioning properly. If the blades are rotating backwards reverse two of the main power phases.

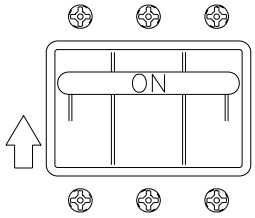


1.4 Rack Power Up / Power Down

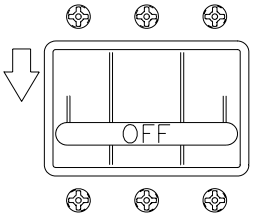
To safely power the 104B insure the main AC power cable is connected. Flip up the main circuit protector switch located at the back of the unit. To safely turn on the 104B push the start button located on the front control panel. A green LED will indicate unit powered.

To safely power down the 104B push the Stop Button located on the front panel. A red LED will indicate power down. Flip down the main power switch, wait 60 seconds to allow stored energy to discharge disconnect the main power cable and apply LOCK OUT DEVICE.

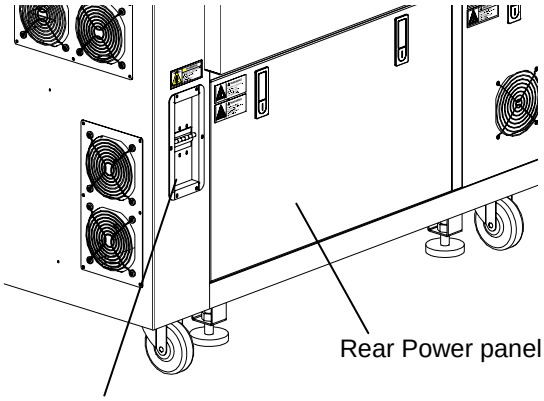
Main Power On / Off Switch Rear Panel

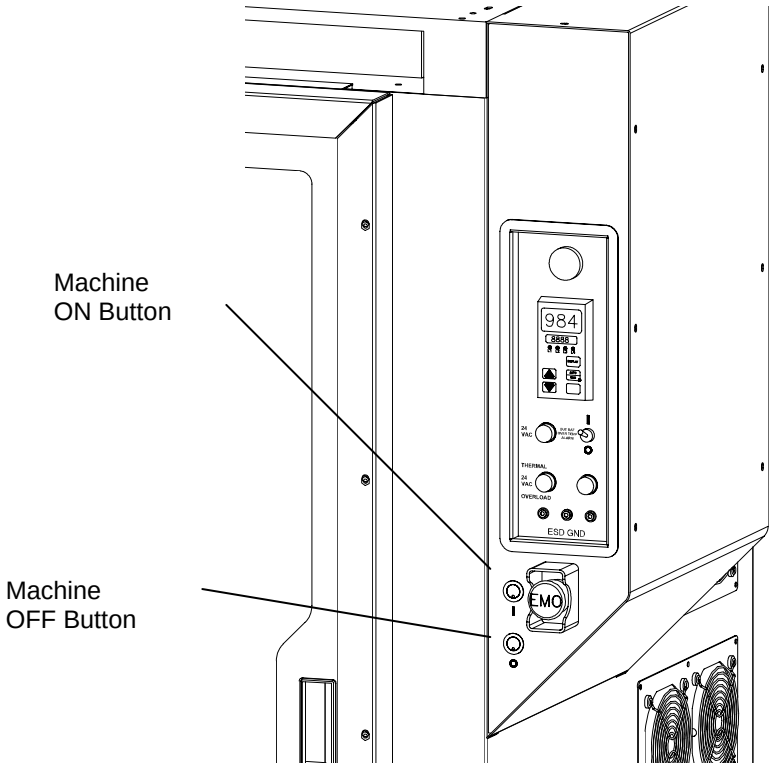


To apply power flip handle up.



To disconnect power flip handle down.



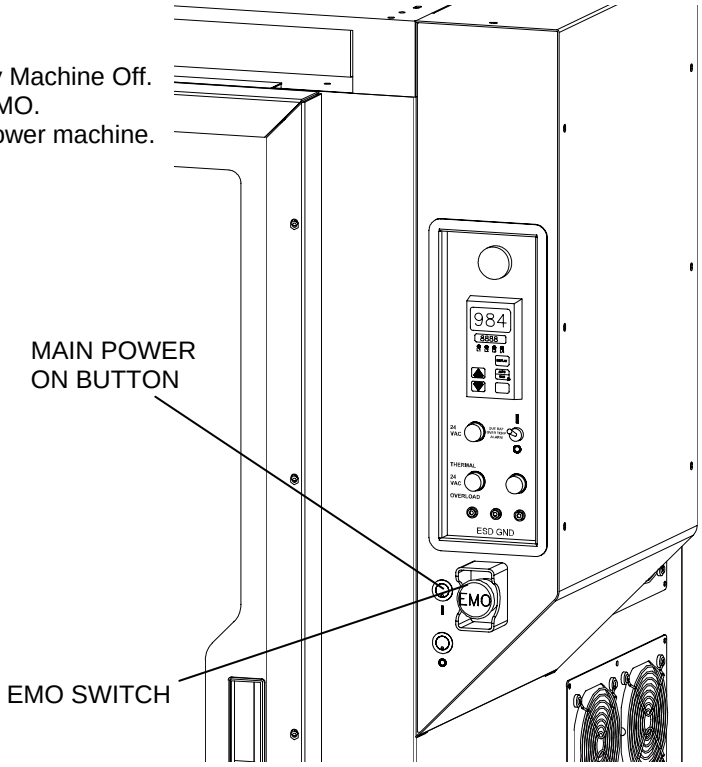


1.5 Hazardous Energy Identification

Main Circuit Protector:	40 AMP, Lower rear left side panel.
Contactor:	55 AMP. Inside the electrical bay, rear bottom left.
15VDC 1200 Watt Power Supply	80 AMP. QTY 8, Inside the power supply bay, rear bottom right, behind the power panel
24VDC 600 Watt Power Supply	25 AMP. QTY 1, Inside the power supply bay, rear bottom right, behind the power supply panel
1500 Watt Finned Strip heaters	7.2 AMP. Qty 4, Inside the heater bay, front lower left behind the intake panel.
24VDC 40 Watt Power Supply	1.66 AMP. QTY 1, Inside the power supply bay, rear bottom right, behind the power supply panel

1.6 Emergency Machine Off

Location: Control Panel
***Operation*:** Push **IN** to activate Emergency Machine Off.
Twist clock wise to Re-Set EMO.
Push main start BUTTON to power machine.

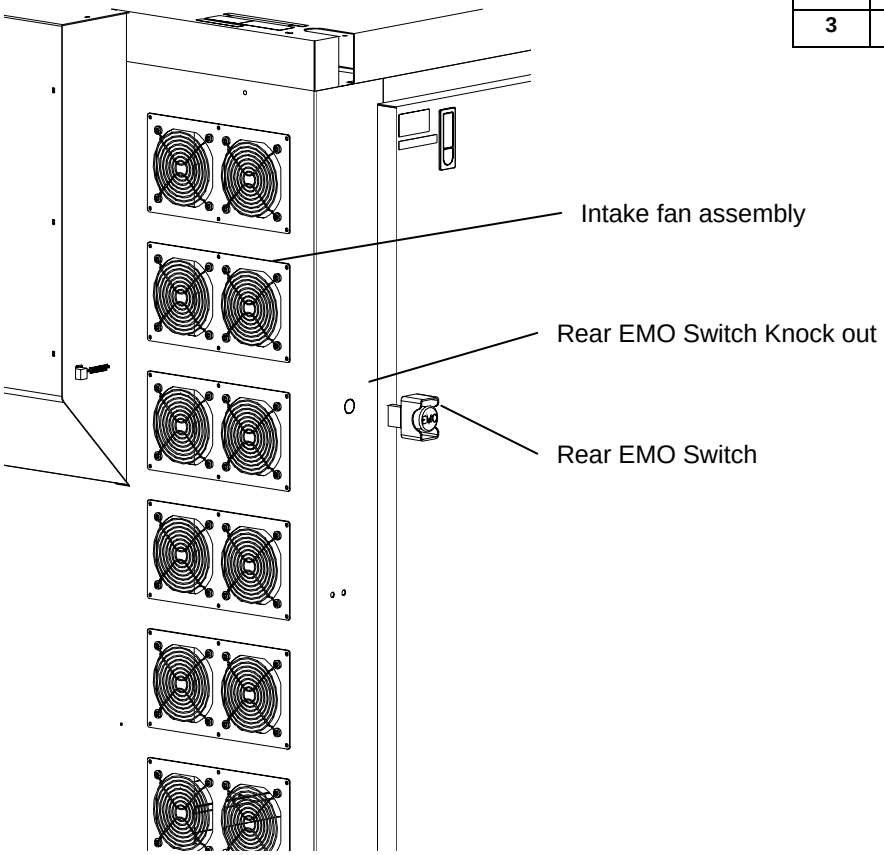


1.7 Rear EMO Switch Installation

WARNING HAZARDOUS VOLTAGE. Contact may cause electric shock or burn. Turn off and lock out power before servicing.

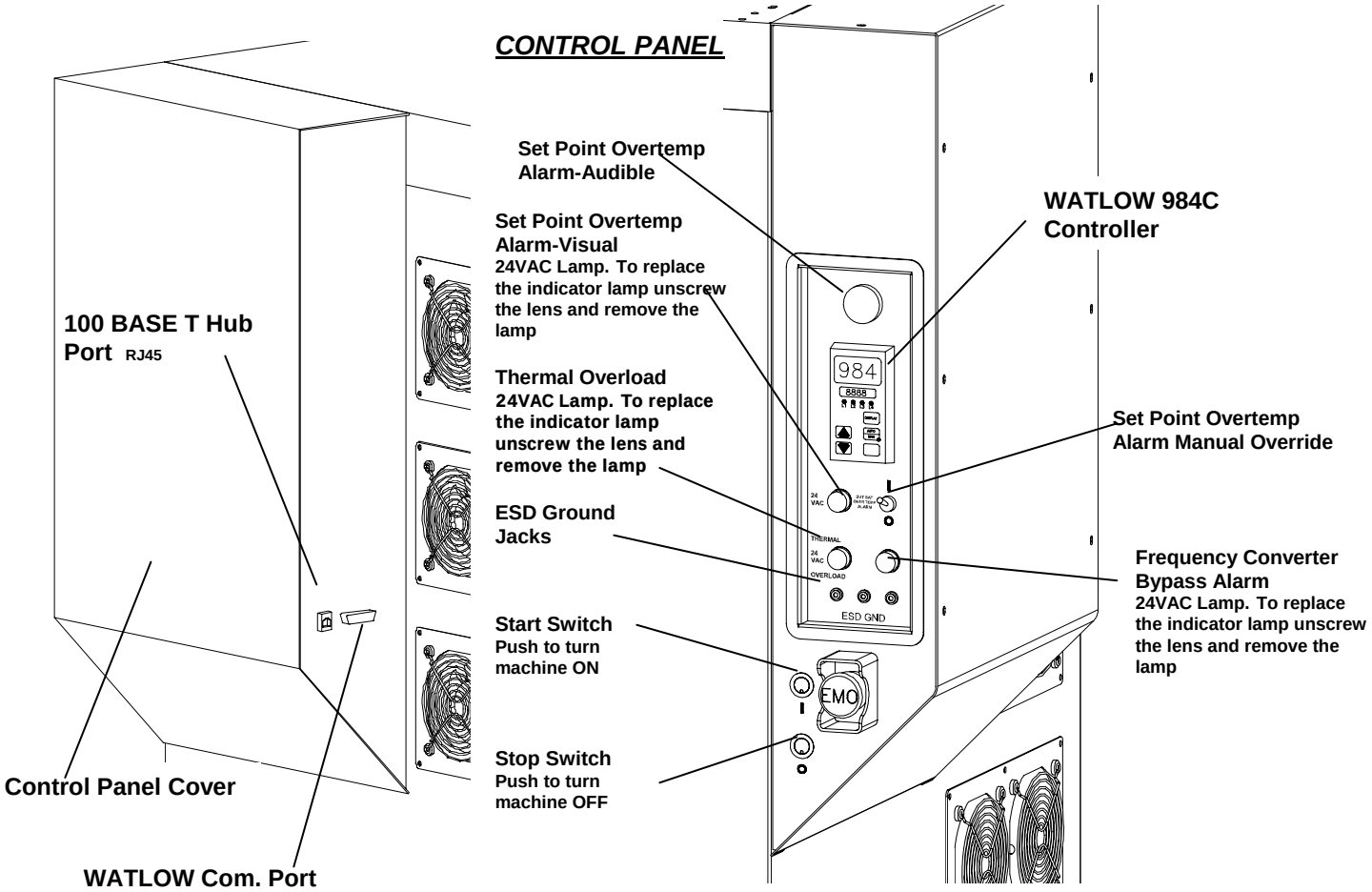
To install the EPO switch on the back of the 104B locate the EMO knock out on the rear left side panel and remove with a flat head screw drive. The EMO switch must meet all EMO safety standards and can be ordered from Flexstar Technology, see part list below. Refer to the 104B-wiring diagram for recommended wiring procedure. For easy access to the inside of the left side panel remove the intake fan assemblies.

ITEM	P/N	DESCRIPTION
1	35-38650-00	FLANGE, NARROW
2	38-38649-00	BUTTON, EMO
3	38-38651-00	EMO CONTACT BLOCK, NC



1.8 Control Panel Identification

To access the control wiring remove control panel cover.



Warning: **When power cycling the 104B the power must remain off for 60 seconds and the controller must be in the exhaust mode to allow the frequency converter to reset.**

Control Panel functions:

Start Switch

Starts machine. Green LED unit energized. The main circuit protector must be on the start machine.

Stop Switch

Stops machine. Red LED unit de-energized.

Thermal Overload

When the Thermal Overload light is energized either the heater bay or the DUT bay has gone into an over-temp condition and the unit the main power has shut off. See section 3.13

Frequency Converter Bypass

When the frequency converter bypass light is energized the motor drive has failed and the blowers are now operating on house power. If the control panel does not have a Fequency Converter bypass light installed then the 104B does not have the Frequency Converter circuitry installed. See section 4.0

Set Point Overtemp. Alarm Visual/Audible-Alarm

When the Set Point Overtemp alarm is energized the DUT bay has exceeded the high temp set point. To silence the alarm turn the Set Point Overtemp alarm Manual Override switch to off and manually decrease the racks set point. See section 2.1

2.0 Watlow 984C Temperature Controller

NOTE: The Controller has been factory set prior to shipment. Refer to Chapter 6 Section 6.7 Factory Calibration in the WATLOW 984C Controller Users Manual to modify settings.

A WATLOW 984C Manual is provided with the system. Refer to the manual for all 984C lockouts.

2.1 Setup / Modifying Settings

The following will setup Flexstar's preset controller parameters.

1) Push the **UP (↑)** and **DOWN (↓) ARROW KEYS** simultaneously and hold for three Seconds. **SEt** (Setup**)** will appear in the lower display. Push the **UP (↑) ARROW KEY** until **InPt** (Input Menu) appears in the upper display.

2) Press the **MODE KEY** to enter the current Value and advance to the next prompt. The Prompt appears in the lower display and the Value in the upper display. Push the **UP (↑)** and **DOWN (↓) ARROW KEYS** to select the Value.

	PROMPT	VALUE	NEW VALUE
To set the thermocouple type enter	IN1	"J"	_____
To set the low temperature range enter	RL1	"0"	_____ To set the high temperature range enter
RH1	"60"	_____	To set the calibration offset enter
CAL1	"0"	_____	To set the software filter enter
FTR1	"0"	_____	

Press the **MODE KEY** to return or change menu.

3) Push the **UP (↑) ARROW KEY** until **OtPt** (Output Menu) has been reached.

4) Press the **MODE KEY** to enter the current Value and advance to the next Prompt. The Prompt appears in the lower display and the Value in the upper display.

	PROMPT	VALUE	NEW VALUE
Confirm heater is connected to output 1.	OT1	"HT"	_____
Heater hysteresis setting.	HYS1	"2"	_____
Exhaust fans are connected to output 2.	OT2	"CL"	_____
Hysteresis setting for the exhaust fans. (+ *or* - *degrees of temp. setting*)	HYS2	"2"	_____
Connect energized alarm on to output 3.	OT3	"AL3n"	_____
Deviation reference alarm input 1.	AL3	"dE1"	_____
Hysteresis for the alarm.	HYS3	"1"	_____
Non-latching condition for the alarm.	LAT3	"nLA"	_____
Permit operator to reset the alarm output.	SIL3	"on"	_____

5) At this point push the **DISPLAY KEY**. Pressing the **DISPLAY KEY** returns the controller to the "Home" or operational state from any Prompt in any menu.

6) Push the **MODE KEY**.

7) Press the **UP (↑) ARROW KEY** until **SYS** has been reached. Push the **MODE KEY** and enter the following commands.

	PROMPT	VALUE	NEW VALUE
Degrees below setting for alarm warning.	A3Lo	"-5"	_____
Degrees above setting for alarm warning.	A3Hi	"5"	_____
Turns off the auto-tune.	Aut	"off"	_____

Press the **MODE KEY** to return or change menu.

8) Push the **UP (↑) ARROW KEY** until **PId** appears.

9) Press the **MODE KEY** to enter the current Value and advance to the next Prompt. The Prompt appears in the lower display and the Value in the upper display.

	PROMPT	VALUE	NEW VALUE
Degrees of process units or % of span.	Pb1	"1"	_____
Eliminates offset between set point and actual process temperature.	rE1	"0.00"	_____
Eliminate overshoot on start-up after the set point changes.	rA1	"0.00"	_____
Time for the controller to complete one on/off cycle. Expressed in seconds.	Ct1	"5.0	
Degrees of process units or % of span.	Pb2	"0"	_____
The area between output 1 and output 2 where no heating or cooling takes place in a heat/cool proportional control.	db	"0"	_____

10) Push the **DISPLAY KEY**. Adjust the set points with the **UP (↑)** and **DOWN (↓) ARROW KEYS**. The alarm will follow the set point ± 5°. The alarm will not be on when first powered up. It will wait until the temperature is in the set point before it is enabled.

3.0 Rack Maintenance

3.1 Cabinet Cleaning

Exterior

Keep Cabinet free of dust and dirt. Clean the exterior of the Cabinet with a soft damp cloth***. DO NOT USE ABRASIVE CLEANSER.***

Interior

TO PREVENT ELECTRICAL SHOCK, DISCONNECT CABINET POWER BEFORE PERFORMING MAINTENANCE, SERVICE OR CLEANING.

Inspect the Cabinets interior compartments frequently. If needed clean with an ESD safe cloth.

Door Operation

Inspect the two sliding doors rollers periodically. If the doors begin to move with difficulty lubricate the roller bearings with a small amount of Lithium grease. Properly dispose Lithium grease applicator according to MFG recommended process and local ordinances.

Plexiglas Care

Clean when required with soft damp cloth to remove smudges and dirt.
DO NOT USE ABRASIVE CLEANSER.

Cable / Connection Care

TO PREVENT ELECTRICAL SHOCK DISCONNECT THE CABINET FROM POWER BEFORE MAINTENANCE, & SERVICE.
Frequently inspect the Cabinet's AC, DC Power cabling, and connections, insuring good contact. Insure Ethernet cabling is kink free.

SBC Cooling Intake and Exhaust Fans

For optimal SBC performance frequently inspect and clean the SBC intake and exhaust cooling fans.

3.2 Drive Fixture

3.2.1 Drive Installation

To install a drive into the fixture, grasp the black ball knob and rotate the lever handle then pull the slider out until it stops on the hinge pin. Carefully place the drive into the fixture then push the slider in until it stops against the hinge pin then rotate the black ball knob closed. The drive has fully engaged the sub adapter when the lever has stopped against the right side of the fixture.

3.2.2 Sub Adapter Removal

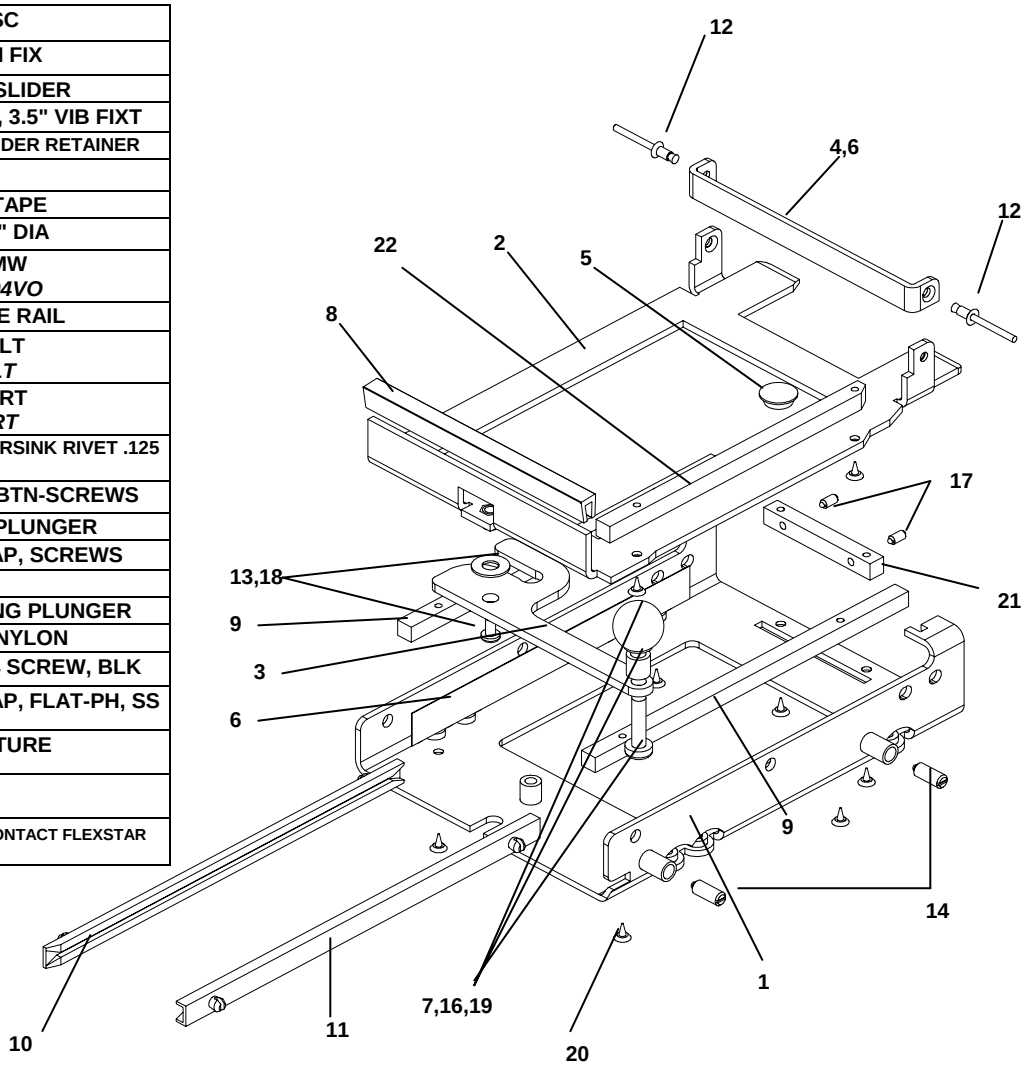
To remove the slider and sub adapter, rotate the lever handle and pull out the slider until it stops on the hinge pin. Unsnap the left card guide and rotate up tilting the slider up and out. Disconnect the cables and grasp the sub adapter pulling up and out. Reverse process to install sub adapter and slider.

3.2.3 Fixture Adjustment

Fixture Adjustment: place the drive in the fixture and slowly close the fixture until it engages the sub adapter. Tighten the 10-32 spring plungers on the right side of the fixture until they contact the edge of the slider then turn the spring plungers out 1 turn.

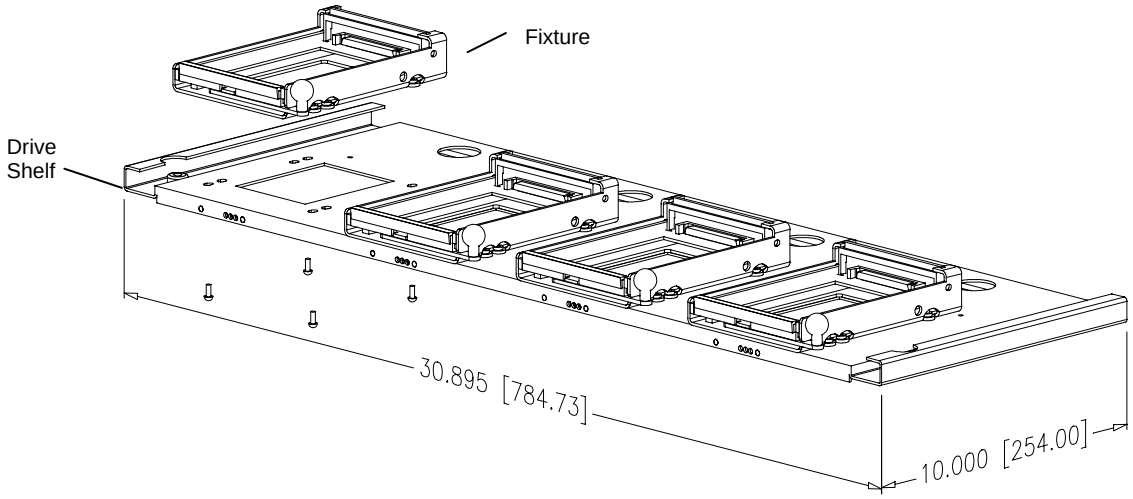
ITEM	P/N	DESC
1	19-36245-00	BASE, OPEN VIB II FIX
2	19-37584-00	IBM ULTRASTAR SLIDER
3	19-34797-00	LEVER, EJECTOR, 3.5" VIB FIXT
4	19-37587-00	IBM ULTRASTAR SLIDER RETAINER
5	25-30136-00	BUMPON
6	25-34578-00	POLYETHYLENE TAPE
7	25-34779-00	KNOB BALL 11/16" DIA
8	25-34810-00 *25-37649-00*	WEAR STRIP, UHMW *CE WEAR STRIP 94VO*
9	22-34800-03	VIB FIXTURE BASE RAIL
10	25-34812-00 *22-36023-01*	CARD GUIDE 6.5" LT *CE CARD GUIDE LT*
11	25-34813-00 *22-36023-02*	CARD GUIDE 6.6" RT *CE CARD GUIDE RT*
12	29-37588-00	ALUMINUM COUNTERSINK RIVET .125 DIA
13	27-34316-00	SCREW, 6-32x1/4 BTN-SCREWS
14	27-34816-00	SCREW, SPRING-PLUNGER
15	27-34808-00	SCREW, #4x1/4 TAP, SCREWS
16	27-34831-00	SPACER ALUM
17	27-38281-00	10-32 NOSE SPRING PLUNGER
18	27-35238-00	WASHER, .218 ID NYLON
19	27-70029-00	SCREW, 10-32x3/4 SCREW, BLK
20	27-34808-00	SCREW, #4x1/4 TAP, FLAT-PH, SS
21	22-34802-01	PCB RAIL VIB FIXTURE
22	22-34801-03	SLIDER RAIL
23		SUB- ADAPTER CONTACT FLEXSTAR FOR PART NUMBER

To order replacement parts please use the above part numbers and description.



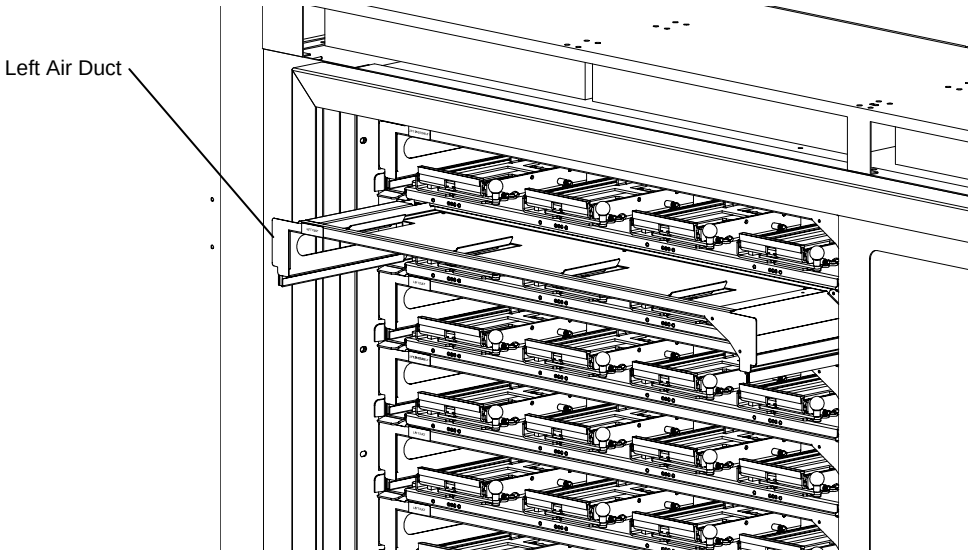
3.2.4 Fixture Shelf Removal and Installation

To remove the fixture-shelf, remove the air duct above and below the shelf to be removed and place aside. Disconnect all cables from the bulkhead and remove with shelf. If the rack is configured with IDE, Fibre or SATA cables disconnect them from the sub adapter and leave on the bulkhead. Unscrew the panel fastener on the bottom of the shelf guides and slide the shelf out of the rack. To remove the fixtures from the shelf unscrew four 6-32 screws from the bottom of the shelf. Reverse process to install the fixture shelf and ducts.



3.2.5 Shelf Duct Configuration

The 104B drive shelves are equipped with air ducts that deliver an equal amount of conditioned air to each drive. To remove an air duct grasp the bottom side of the duct and pull straight out. The ducts are labeled LEFT DUCT and RIGHT DUCT and the 104B should never be operated with the ducts swapped. To maintain optimal thermal performance the 104B should never be operated without the air ducts in position.



3.3 SBC Rear Tray

WARNING Lifting hazard. Single person lift could cause injury. Use assistance when moving or lifting.
SBC Panel Weight 33lb, 19kg

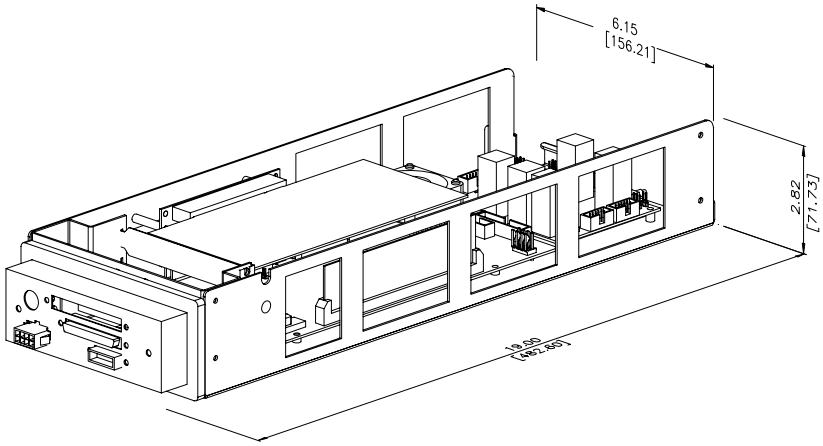
SBC Tray Assembly

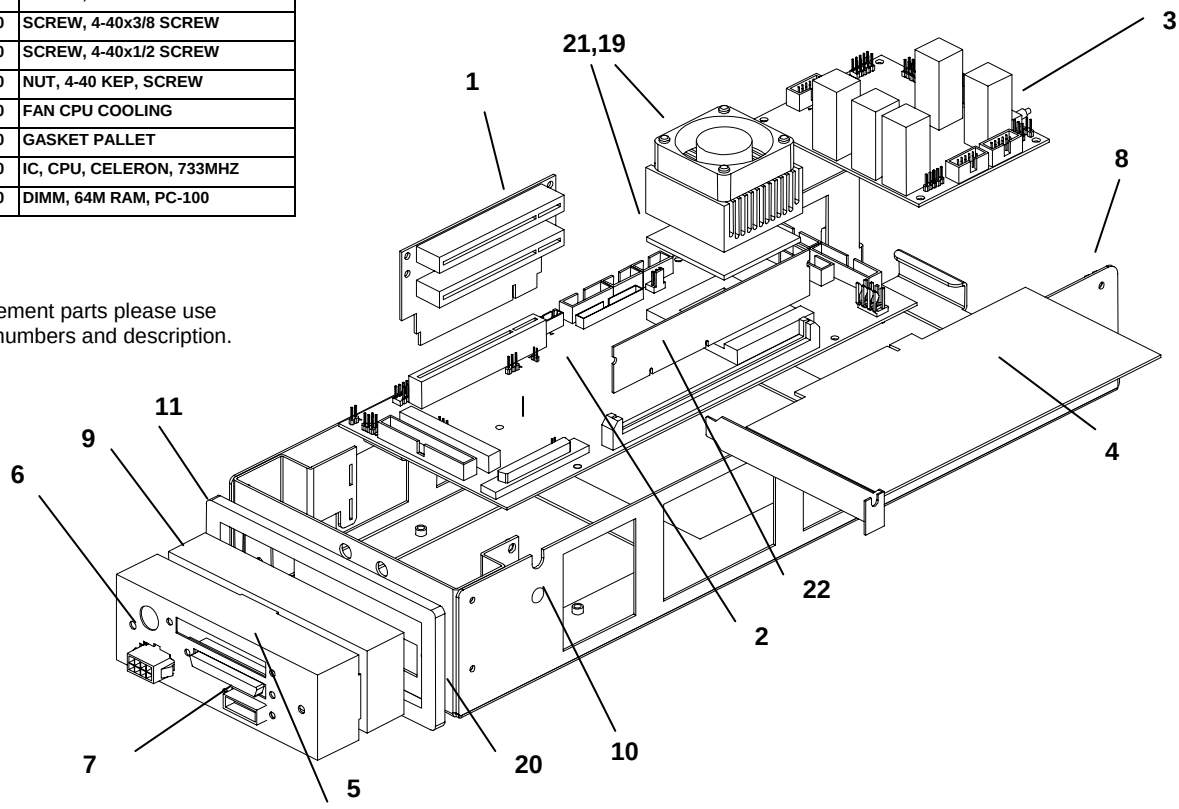
To access the SBC trays lift off the two SBC panels on the back of the machine. Warning: the removable SBC panels are a two-person lift. Single person lift could cause injury. To remove the SBC tray disconnect the cables that run from the sub adapter to the bulkhead nose. From the rear of the rack disconnect the Power and Ethernet Cables; unscrew the panel fastener on the rear of the tray and slide the tray out. If the rack is configured with IDE or Fibre or SATA cables carefully slide the pallet out to insure the cables do not chafe on the bulkhead. To replace the tray, reverse the process.

***Warning*: Do Not Operate the Rack For More then 10 Minutes with the SBC Panels Removed**

ITEM	P/N	DESC
1	02-37183-00	PWA, TWO SLOT RISER
2	02-37177-XX	PWA, PEGASUS SBC, CONTACT FLEXTAR FOR PART NUMBER
3	02-37351-00	PWA, 1-CH NWK POWER MARGIN
4		HOST BUS ADAPTER CONTACT FLEXSTAR FOR PART NUMBER
5		INTERFACE CABLE CONTACT FLEXSTAR FOR PART NUMBER
6	03-50564-11	CABLE, POWER MARGIN NOSE
7	03-50584-15	CABLE, LED, PALLET
8	03-50585-17	CABLE, VGA / KEYBOARD
9	19-50204-00	PALLET NOSE
10	19-37355-00	PALLET, 104B,
11	22-50215-00	NOSE INSULATION
12	25-30777-00	TIE WRAP, 6"
13	27-30359-00	CABLE TIE MOUNT
14	27-34106-00	SCREW, 6-32x1/4 SCREW
15	27-50315-00	SCREW, 4-40x1/4 SCREW
16	27-70009-00	SCREW, 4-40x3/8 SCREW
17	27-70048-00	SCREW, 4-40x1/2 SCREW
18	27-70101-00	NUT, 4-40 KEP, SCREW
19	35-37634-00	FAN CPU COOLING
20	43-50097-00	GASKET PALLET
21	53-37977-00	IC, CPU, CELERON, 733MHZ
22	53-37170-00	DIMM, 64M RAM, PC-100

To order replacement parts please use the above part numbers and description.





3.4 Air Handler

The 104B air handler consists of the intake baffle, circulation blower, circulation baffle and the exhaust blower. When the rack calls for cooling, the circulation blower draws air into the rack through the intake baffle. The circulation blower then pushes the air into the right side plenum over the DUT and to the left side plenum where it is picked up by the exhaust blower and removed form the rack. When the rack calls for heat the intake baffle closes, the circulation baffle opens, the exhaust blower turns off and the heaters turn on until the desired temperature is reached.

Intake Baffle (Ass'y P/N 01-37895-01)

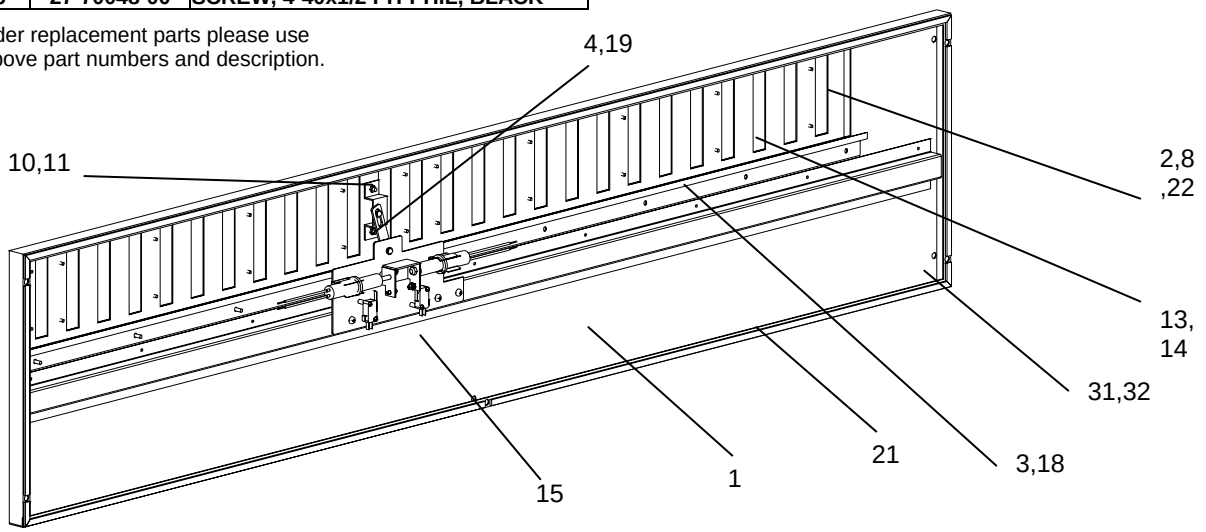
WARNING HAZARDOUS VOLTAGE. Contact may cause electric shock or burn. Turn off and lock out power before servicing.
WARNING burn hazard. Hot surface inside. Allow this area to cool before servicing.

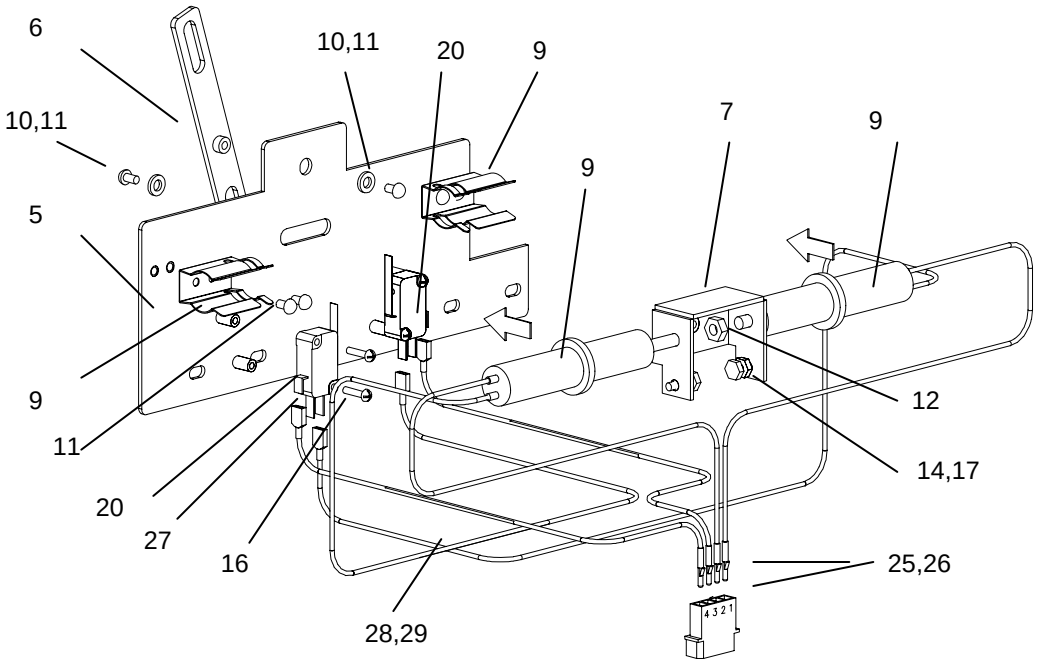
To access the intake baffle, remove the lower front panel and disconnect the intake actuator power. The intake baffle is on the inside of the lower front panel. To replace the actuator, remove the 12-24-nut, actuator pivot, 10-32 nuts and the actuator clamp. Reverse the above process to install the baffle assembly. See page 14 for baffle adjustment.

ITEM	P/N	DESCRIPTION
1	19-50627-00	PANEL, INTAKE BASE, 104B
2	19-37724-00	INTAKE BAFFLE, 104B
3	19-50633-00	SLIDER, INTAKE BAFFLE, 104B
4	19-50631-00	PLATE, INTAKE PUSH, 104B
5	19-37825-00	ACTUATOR MOUNT, 104B
6	19-50630-00	PIVOT, ACTUATOR, 104B
7	19-37826-00	PIVOT BRACKET, INTAKE ACT 104B
8	19-50635-00	INTAKE BAFFLE PERF, 104B
9	*39-37953-00*	ACTUATOR, THERMAL SERIES 700 *THERMAL ACTUATOR 24V*
10	27-34474-00	WASHER, #6 FLAT STAINLESS
11	27-34106-00	SCREW, 6-32x1/4 PH-PHIL, SS
12	27-50636-00	NUT, 12-24 HEX, STZN
13	27-50637-00	WASHER, #6 FENDER, 5/8 OD, SZ
14	27-70106-00	NUT, 6-32 KEP, 1/4" STZN
15	27-70064-00	SCREW, 10-32x3/8 PH-PHIL, STZN
16	27-70048-00	SCREW, 4-40x1/2 PH-PHIL, BLACK

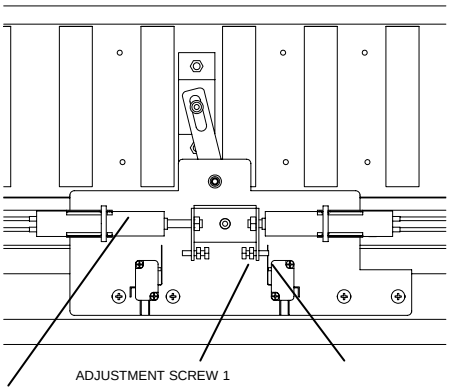
ITEM	P/N	DESCRIPTION
17	27-37901-00	SCREW, 6-32 X 5/8" HEX HEAD
18	27-50136-00	NUT, 8-32 KEP, STZN
19	27-70104-00	NUT, 10-32 KEP, 3/8", STZN
20	38-37892-00	SWITCH, SWITCH BASIC
21	43-37896-00	GASKET, TEMP WEATHER STRIP
22	43-37900-00	INSULATION, INTAKE BAFFLE 104B
23	32-30396-00	CONN, 4 POS AMP
24	32-30397-00	TERM, FEMALE, AMP
25	32-50462-00	CONN, 4 POS 'MATE N LOC' HSG
26	32-50463-00	CRIMP, MATE N LOC 14-20 GA.
27	33-36092-00	TERM, 0.187" FASTON, AMP
28	41-35378-00	WIRE, 18 AWG BLACK, UL1061
29	41-35409-00	WIRE, 14 AWG SF-2
30	25-31695-00	TIE WRAP, 3"
31	43-50043-00	1" CLOSED CELL INSULATION
32	43-50008-00	¼" LYTHERM INSULATION

To order replacement parts please use the above part numbers and description.

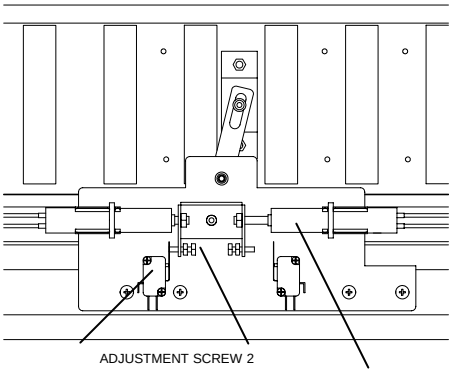




ACTUATOR OPEN



ACTUATOR CLOSED

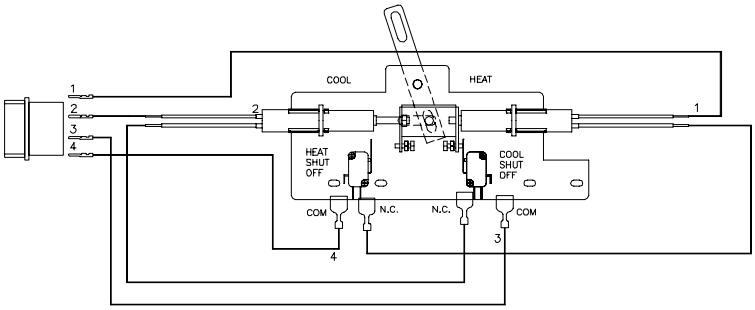


ACTUATOR No. 1
THIS ACTUATOR CONTROLS THE BAFFLE IN THE RAMP DOWN CYCLE. THE BAFFLE IS MOVED TO EXPOSE THE OPENINGS IN THE INTAKE BASE PANEL.

MICRO SWITCH No. 1
THIS MICRO SWITCH IS USED TO FINE TUNE THE LOCATION OF THE BAFFLE. BY TURNING THE ADJUSTMENT SCREW 1, IN OR OUT, THE BAFFLE CAN BE ADJUSTED TO ENSURE THE AIR INTAKE OPENINGS IN THE INTAKE BASE PANEL ARE COMPLETELY EXPOSED.

MICRO SWITCH No. 2
THIS MICRO SWITCH IS USED TO FINE TUNE THE LOCATION OF THE BAFFLE. BY TURNING THE ADJUSTMENT SCREW 2, IN OR OUT, THE BAFFLE CAN BE ADJUSTED TO ENSURE THE AIR INTAKE OPENINGS IN THE INTAKE BASE PANEL ARE COMPLETELY SEALED OFF.

ACTUATOR No. 2
THIS ACTUATOR CONTROLS THE BAFFLE IN THE RAMP UP CYCLE. THE BAFFLE IS MOVED TO CLOSE OFF THE OPENINGS IN THE INTAKE BASE PANEL.



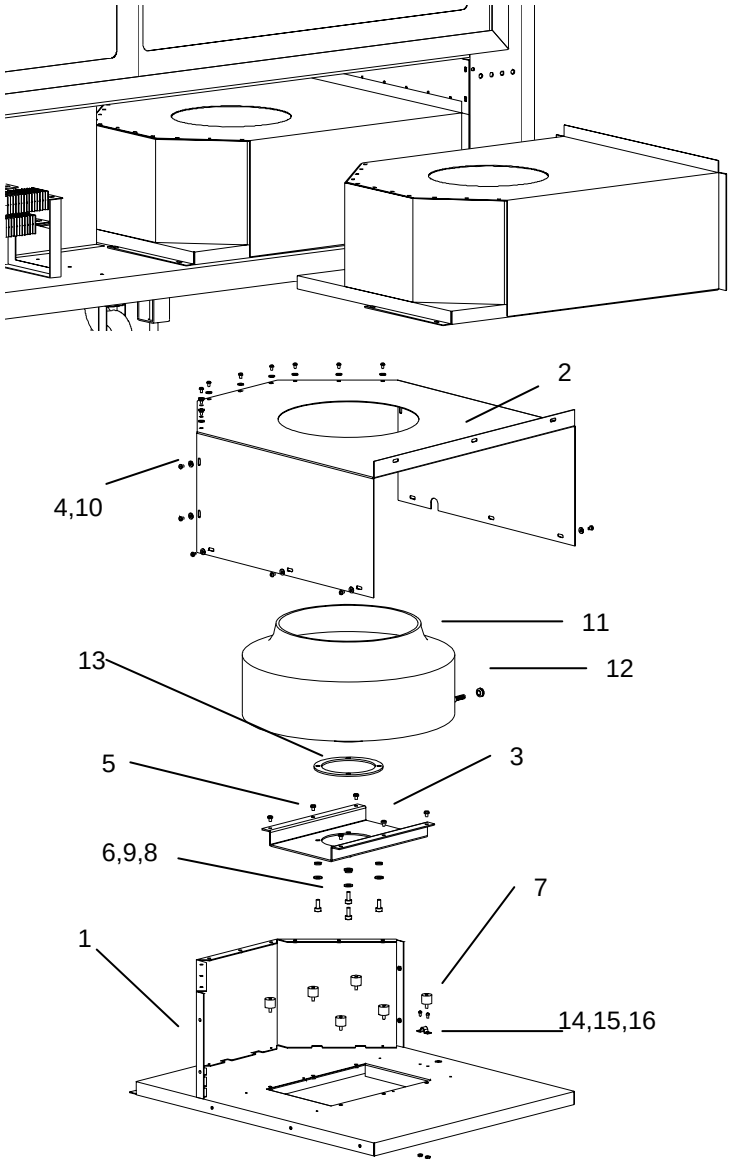
3.5 Circulation Blower Housing (Ass'y P/N 01-37681-00)

WARNING HAZARDOUS VOLTAGE. Contact may cause electric shock or burn. Turn off and lock out power before servicing.
WARNING Lifting hazard. Single person lift could cause injury. Use assistance when moving or lifting. Circulation Blower Weight 55lb, 25kg
WARNING Rotating fan blades. Can cause serious injury or cut. Keep hands clear. Turn off and lockout unit before servicing.
***Warning:* When power cycling the 104B the power must remain off for 60 seconds and the controller must be set in the exhaust mode to allow the frequency converter to reset.**

To access the circulation blower housing, remove the lower front panel and disconnect the intake actuator power. To remove the blower housing, disconnect the blower power at the terminal block in the rear to the cabinet. Unscrew the four 8-32 screws that secure the blower housing to the cabinet and slide out the blower housing out of the cabinet. To replace the blower, remove the 8-32 screws from the housing cover. Turn the blower over and remove the four 6MM bolts from the blower motor. Reverse the above process to install the blower. To access the lower section of the right plenum and the inside of blower box without removing the intake panel remove the access panel on the left side of the rack. The circulation blower assembly contains the following:

ITEM	P/N	DESCRIPTION
1	19-38049-00	BLOWER BOX
2	19-38050-00	COVER, BLOWER BOX, 104B
3	19-38051-00	BLOWER MOUNT
4	27-34455-00	WASHER, #8 FLAT
5	27-37104-00	SCREW, #10-32 X 1/4" PH-PHIL STZN
6	27-37117-00	WASHER, 1/4" FLAT STZN
7	27-38052-00	VIBRATION MOUNT, RUBBER
8	27-38053-00	WASHER, RUBBER .23 ID X 1/2" OD X .093
9	27-38067-00	SCREW, M6 X 16 PH-PHIL STZN
10	27-50158-00	SCREW, #8-32 X 1/4" PH-PHIL STZN
11	35-37681-00	BACKWARD CURVED IMPELLER 3100CFM
12	43-35795-00	GROMMET .312 ID, RUBBER
13	22-37692-00	DAMPENING RING
14	25-37098-00	CLAMP, RETAINING
15	27-70001-00	SCREW, 6-32x3/8 PH-PHIL, STZN
16	27-70103-00	NUT, 6-32 KEP STZN

To order replacement parts please use the above part numbers and description.



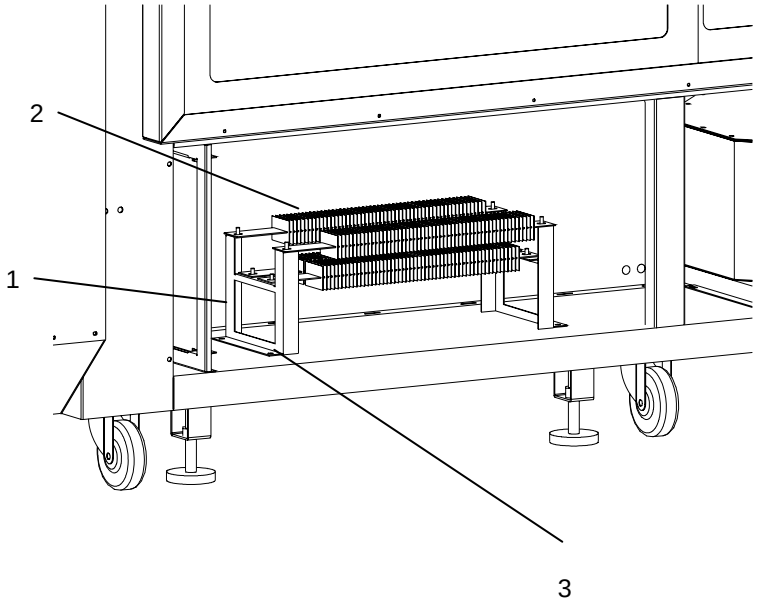
3.6 Heater Assembly

WARNING HAZARDOUS VOLTAGE. Contact may cause electric shock or burn. Turn off and lock out power before servicing.
WARNING burn hazard. Hot surface inside. Allow this area to cool before servicing.

To access the heater assembly, remove the lower front intake panel and disconnect the intake actuator power. To replace a heater, disconnect the power; unscrew the 8-32 nuts that secure the heaters to the mounts.

ITEM	P/N	DESCRIPTION
1	19-50362-00	HEATER MOUNT
2	34-37663-00	FINNED STRIP HEATER
3	27-50141-00	8-32 X 3/8 SCREWS

To order replacement parts please use the above part numbers and description.



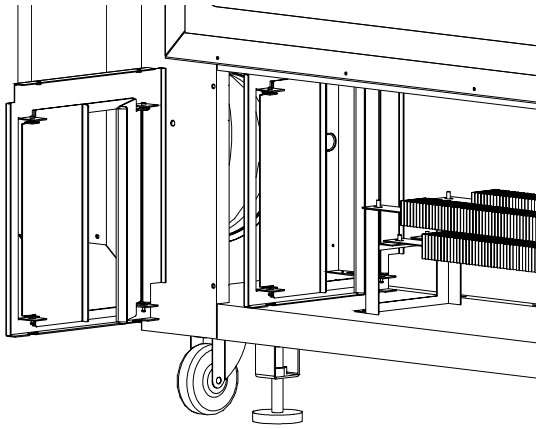
3.7 Circulation Damper Assembly (Ass'y P/N 01-38464-00)

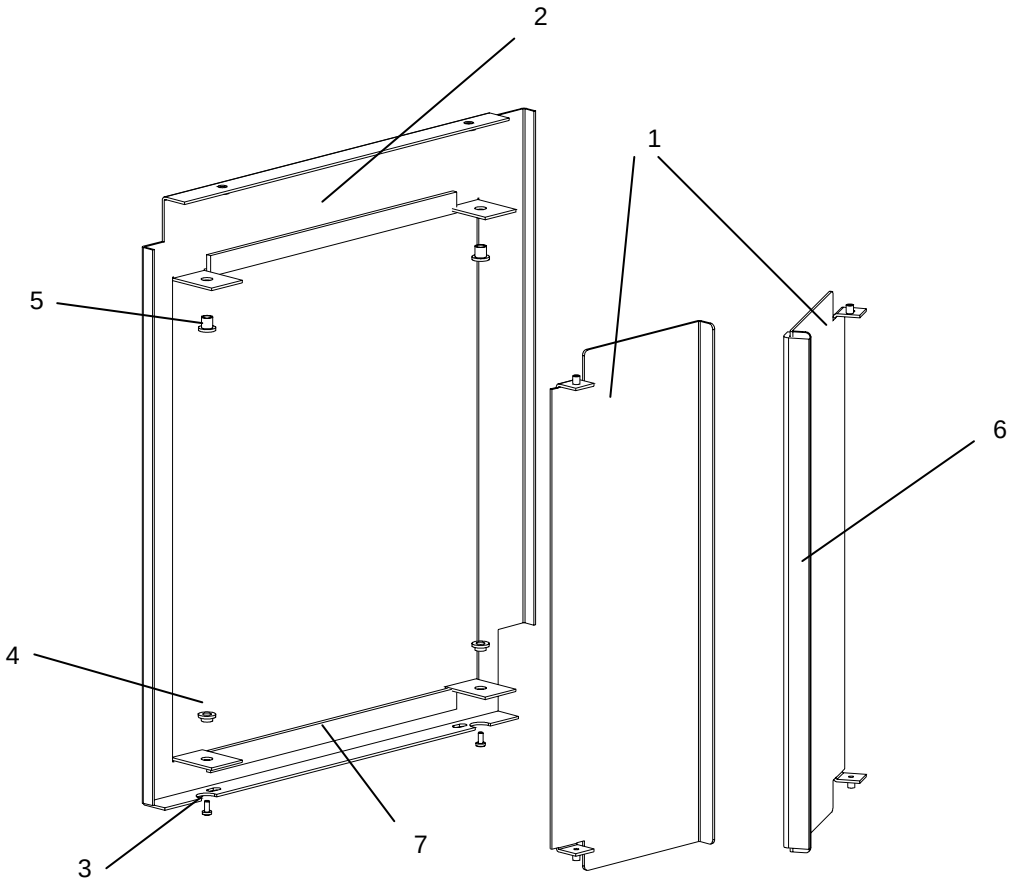
WARNING HAZARDOUS VOLTAGE. Contact may cause electric shock or burn. Turn off and lock out power before servicing.
WARNING burn hazard. Hot surface inside. Allow this area to cool before servicing.
Warning: **When power cycling the 104B the power must remain off for 60 seconds and the controller must be in the exhaust mode to allow the frequency converter to reset.**

To access the circulation baffle, remove the lower front intake panel and disconnect the intake actuator power. To remove the circulation baffle, unscrew the six 8-32 screws that secure the baffle to the cabinet, rotate the base toward the heater assembly and slide out. Reverse the above process to install the baffle assembly.

ITEM	P/N	DESCRIPTION
1	19-38403-00	DOOR, CIRCULATION DAMPER
2	19-38404-00	FRAME, CIRCULATION DAMPER
3	27-35225-00	SCREW, #4-40 X 1/4 PH-PHIL, SS
4	27-38405-00	WASHER, SHOULDER .200 ID X .093
5	27-38406-00	WASHER, SHOULDER .200 ID X .250
6	43-38473-12	TAPE, FIBERGLASS HIGH TEMP.
7	43-38473-08	TAPE, FIBERGLASS HIGH TEMP.

To order replacement parts please use the above part numbers and description.





3.8 Exhaust Blower Assembly (Ass'y P/N 01-50670-01)

WARNING HAZARDOUS VOLTAGE. Contact may cause electric shock or burn. Turn off and lock out power before servicing.
WARNING Lifting hazard. Single person lift could cause injury. Use assistance when moving or lifting. Exhaust Blower Assembly Weight 39lb, 18kg
WARNING Rotating fan blades. Can cause serious injury or cut. Keep hands clear. Turn off and lockout unit before servicing.
***Warning:* When power cycling the 104B the power must remain off for 60 seconds and the controller must be in the exhaust mode to allow the frequency converter to reset.**

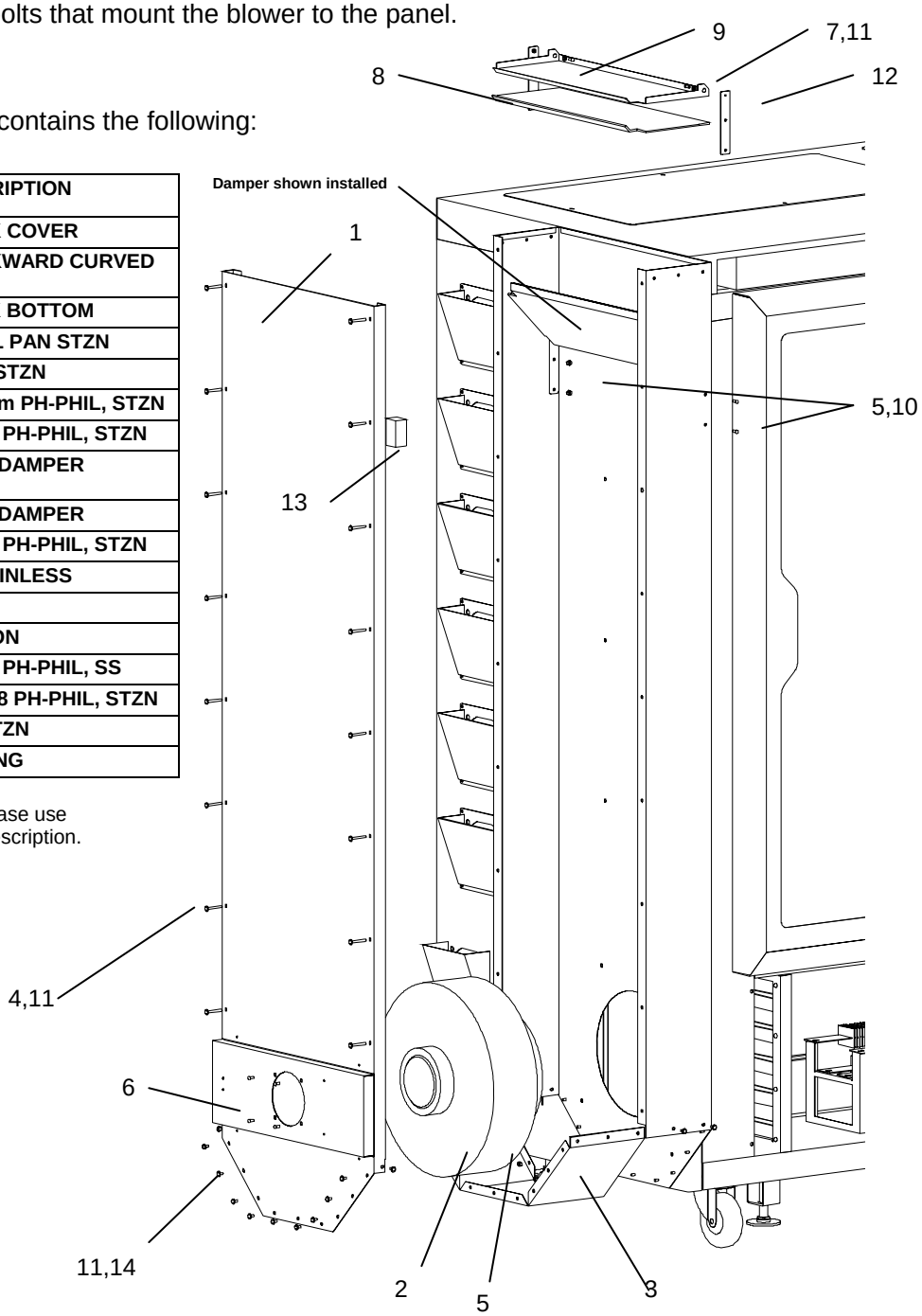
To replace the exhaust blower, remove the exhaust stack cover on the left side of the cabinet and disconnect the power. Remove the four 6mm bolts that mount the blower to the panel.

Exhaust Blower

The Exhaust Blower Assembly contains the following:

ITEM	P/N	DESCRIPTION
1	19-50620-00	EXHAUST STACK COVER
2	35-37683-00	IMPELLER, BACKWARD CURVED 3PH 230/460
3	19-50619-00	EXHAUST STACK BOTTOM
4	27-36461-00	#8-32 X 1 1/2 PHIL PAN STZN
5	27-50136-00	NUT, #8-32 KEP, STZN
6	27-35803-00	SCREW, M6x10mm PH-PHIL, STZN
7	27-70001-00	SCREW, 6-32x3/8 PH-PHIL, STZN
8	43-37986-00	INSET EXHAUST DAMPER INSULATION
9	19-37985-00	INSET EXHAUST DAMPER
10	27-50141-00	SCREW, 8-32x3/8 PH-PHIL, STZN
11	27-37794-00	WASHER, #8 STAINLESS
12	19-37734-00	PIVOT, DAMPER
13	43-50043-01	STOP, INSULATION
14	27-34471-00	SCREW, 8-32x1/4 PH-PHIL, SS
15	27-70064-00	SCREW, 10-32x3/8 PH-PHIL, STZN
16	27-70103-00	NUT, 6-32 KEP STZN
17	25-37098-00	CLAMP, RETAINING

To order replacement parts please use the above part numbers and description.



3.9 SBC Cooling Fan Replacement (Intake Ass'y 01-38609-00, Exhaust Ass'y 01-38608-00)

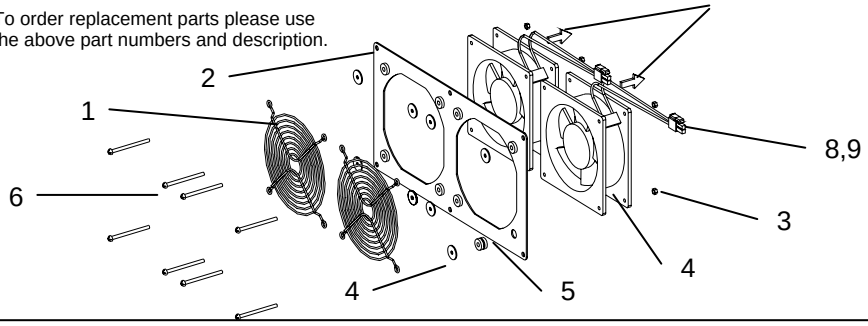
WARNING HAZARDOUS VOLTAGE. Contact may cause electric shock or burn. Turn off and lock out power before servicing.

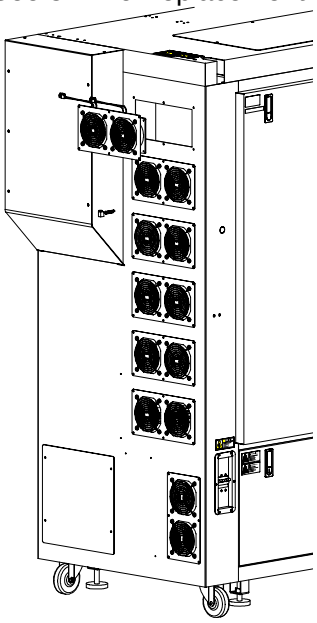
To replace an SBC cooling fan carefully remove the fan assembly from the side of the rack and disconnect the power connector. To insure proper airflow locate the airflow arrow on the frame of the fan and follow the assembly diagrams. For optimal SBC performance frequently inspect and clean the SBC intake and exhaust cooling fans. The fans are powered by one 24VDC 600-watt power supply. See 3.12 for replacement.

Intake Ass'y 01-38609-00

ITEM	PART NUMBER	DESCRIPTION
1	35-31015-00	FAN GUARD 4.5"
2	19-50588-00 *19-37653-00*	FAN PLATE *CE FAN PLATE*
3	27-70106-00	NUT, #6-32 KEP STZN
4	35-38555-00	FAN, 4.5" 130CFM 24VDC
5	25-50181-00	GROMMET 150 DAMP
6	27-50168-00	SCR.,6-32 X 2.5 PH-SLOT STZN
7	27-50637-00	WASHER, #6 FENDER, 5/8 OD
8	32-36096-00	CONN. .156 2 POSITION RECEPTACLE
9	33-35841-00	MINI FIT, FEMALE 18-22 AWG, GOLD

To order replacement parts please use the above part numbers and description.

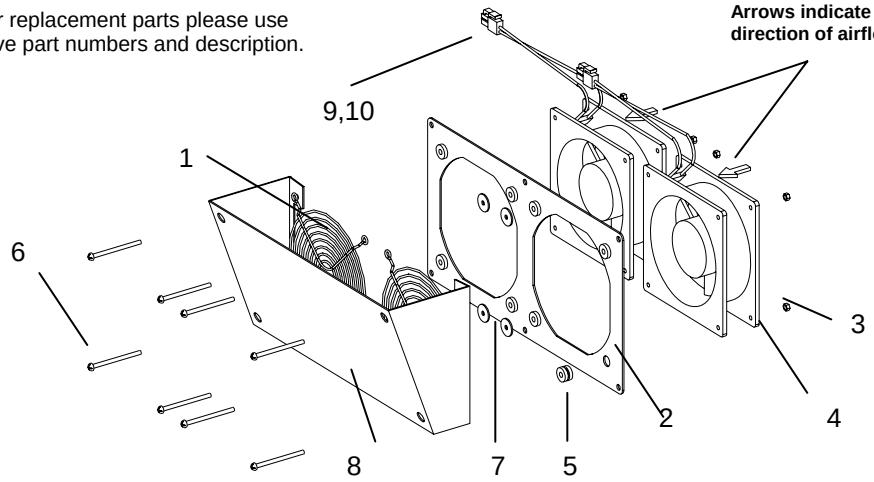


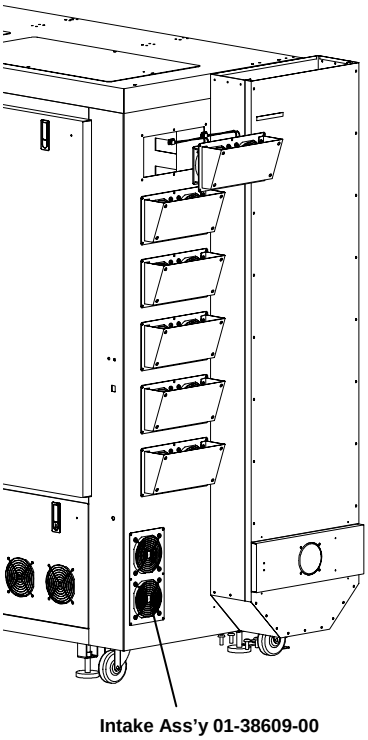


Exhaust Ass'y 01-38608-00

ITEM	PART NUMBER	DESCRIPTION
1	35-31015-00	FAN GUARD 4.5"
2	19-50588-00 *19-37653-00*	FAN PLATE *CE FAN PLATE*
3	27-70106-00	NUT, #6-32 KEP STZN
4	35-38555-00	FAN, 4.5" 130CFM 24VDC
5	25-50181-00	GROMMET 150 DAMP
6	27-50168-00	SCR.,6-32 X 2.5 PH-SLOT STZN
7	27-50637-00	WASHER, #6 FENDER, 5/8 OD
8	19-37722-00	PEGASUS 104B AIR DEFLECTOR
9	32-36096-00	CONN. .156 2 POSITION RECEPTACLE
10	33-35841-00	MINI FIT, FEMALE 18-22 AWG, GOLD

To order replacement parts please use the above part numbers and description.

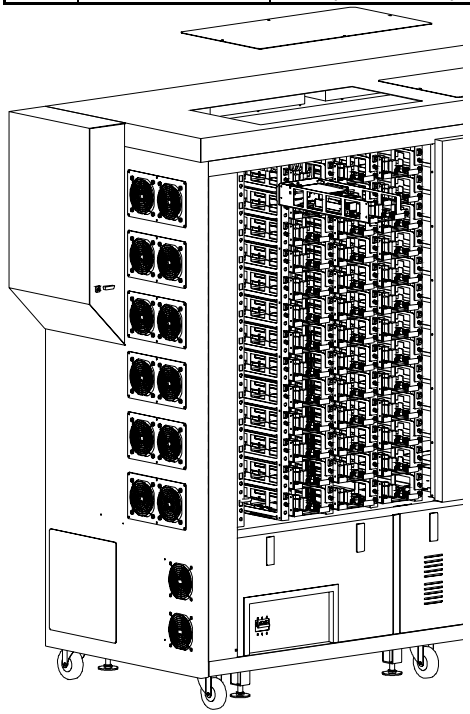


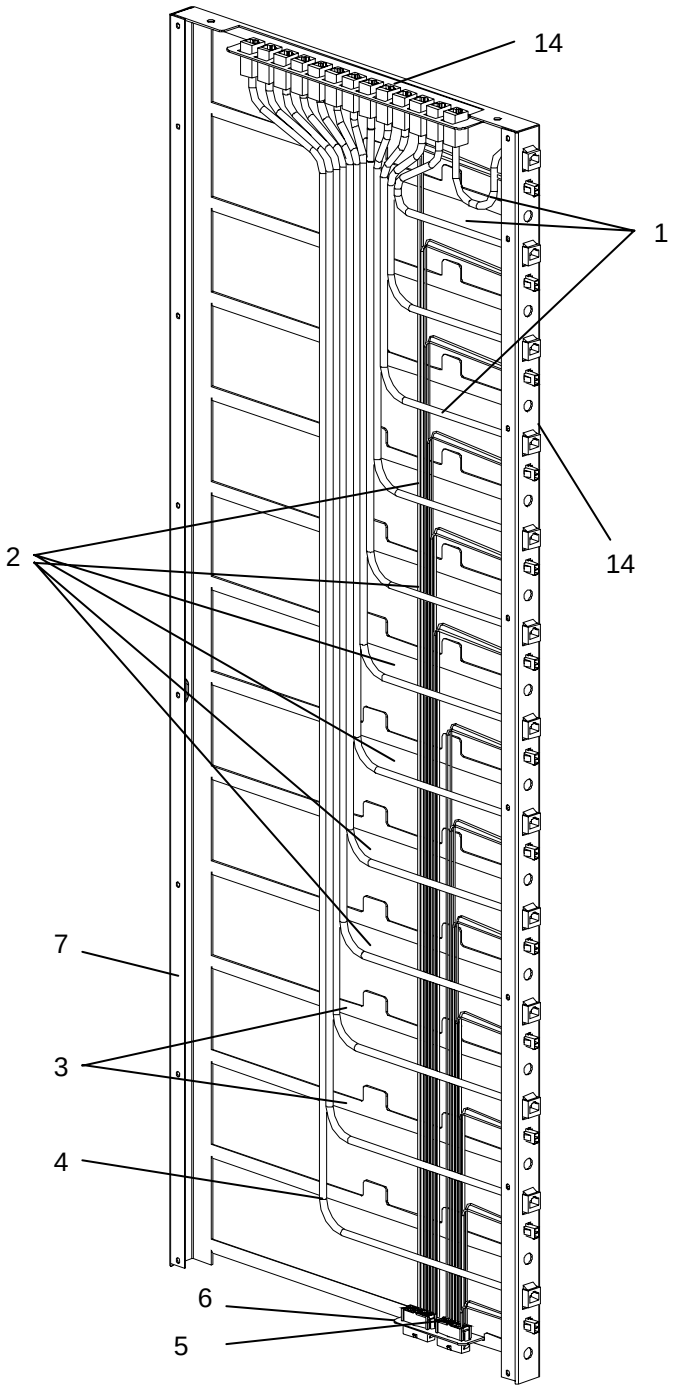


3.10 Pallet Ladder Assembly (Ass'y P/N 01-36279-00)

WARNING HAZARDOUS VOLTAGE. Contact may cause electric shock or burn. Turn off and lock out power before servicing.
WARNING Lifting hazard. Single person lift could cause injury. Use assistance when moving or lifting. SBC Panel Weight 33lb, 19kg
To replace a damaged power or Ethernet cable in the power ladder remove all the SBC pallets on both sides of the column with the damaged cable. Unscrew the Left Hand Tray Guide from Right Hand Tray Guide carefully clip the zip ties and remove the damaged cable. Reverse the process to replace the cable carefully zip tying the cable back into place. To access the Ethernet cables and RJ45 couplers in the top of the rack remove the access panel on the top of the rack.
***Warning:* Do Not Operate the Rack For More then 10 Minutes with the SBC Panels Removed**

ITEM	PART NUMBER	DESCRIPTION
1	03-38532-24	CABLE, RJ45-RJ45, 24"
2	03-38532-36	CABLE, RJ45-RJ45, 36"
3	03-38532-48	CABLE, RJ45-RJ45, 48"
4	03-38532-60	CABLE, RJ45-RJ45, 60"
5	03-38702-00	CABLE, LADDER PWR SHORT, 104B
6	03-38703-00	CABLE, LADDER POWER, 104B
7	19-38011-00	TRAY GUIDE, RIGHT HAND, 104B
8	19-38012-00	TRAY GUIDE, LEFT HAND, 104B NOT SHOWN
9	25-30777-00	TIE WRAP, 6"
10	25-31695-00	TIE WRAP, 3"
11	25-50542-00	WIRE TIE MOUNT, 1"
12	27-30359-00	CABLE TIE MOUNT
13	27-70000-00	SCREW, 6-32x1/4 PH-PHIL, STZN
14	32-50103-00	CONN, COUPLER, RJ45-RJ45





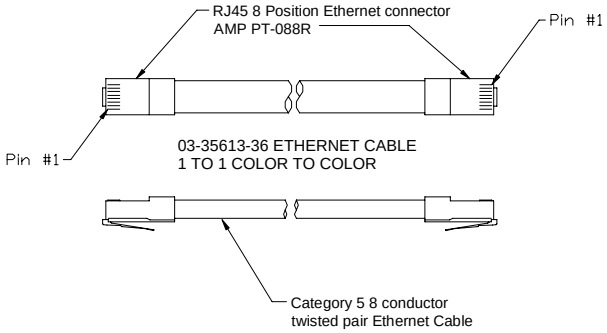
3.11 Hub Assembly

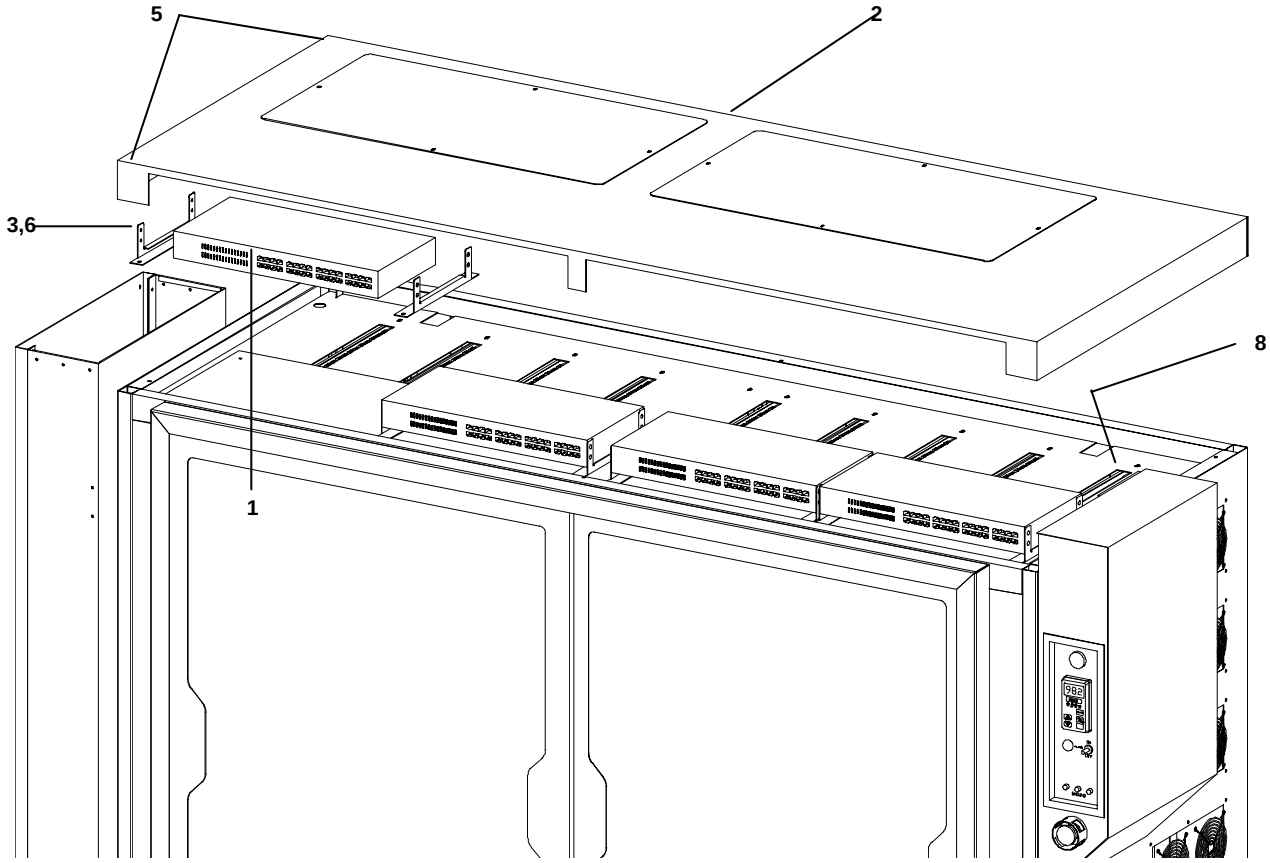
WARNING HAZARDOUS VOLTAGE. Contact may cause electric shock or burn. Turn off and lock out power before servicing.
WARNING Lifting hazard. Single person lift could cause injury. Use assistance when moving or lifting. TOP Cap Weight 64lb, 29kg

Warning: **When power cycling the 104B the power must remain off for 60 seconds and the controller must be in the exhaust mode to allow the frequency converter to reset.**

To replace the Ethernet Hubs remove the 6 10-32 screws in the top cap and lift the top cap off the rack. Unplug the Ethernet and power cables, remove the 4 8-32 screws in the hub bracket and lift the hub assembly off the rack. Remove the two hub brackets mounted to the hub. Reverse process to install a hub.

ITEM	PART NUMBER	DESCRIPTION
1	01-37710-00	32 PORT 100 BASE T HUB
2	01-50367-00	TOP CAP 104B
3	19-38355-00	HUB BRACKET
4	03-38532-36	36" ETHERNET CABLE
5	27-50311-00	10-32 X 3 1/2 SCREW Not shown
6	27-34308-00	8-32 X 1/4 SCREW Not shown
7	36-30275-00	ETHERNET POWER CABLE Not shown
8	38-37709-00	5 PORT HUB SWITCH (if necessary)

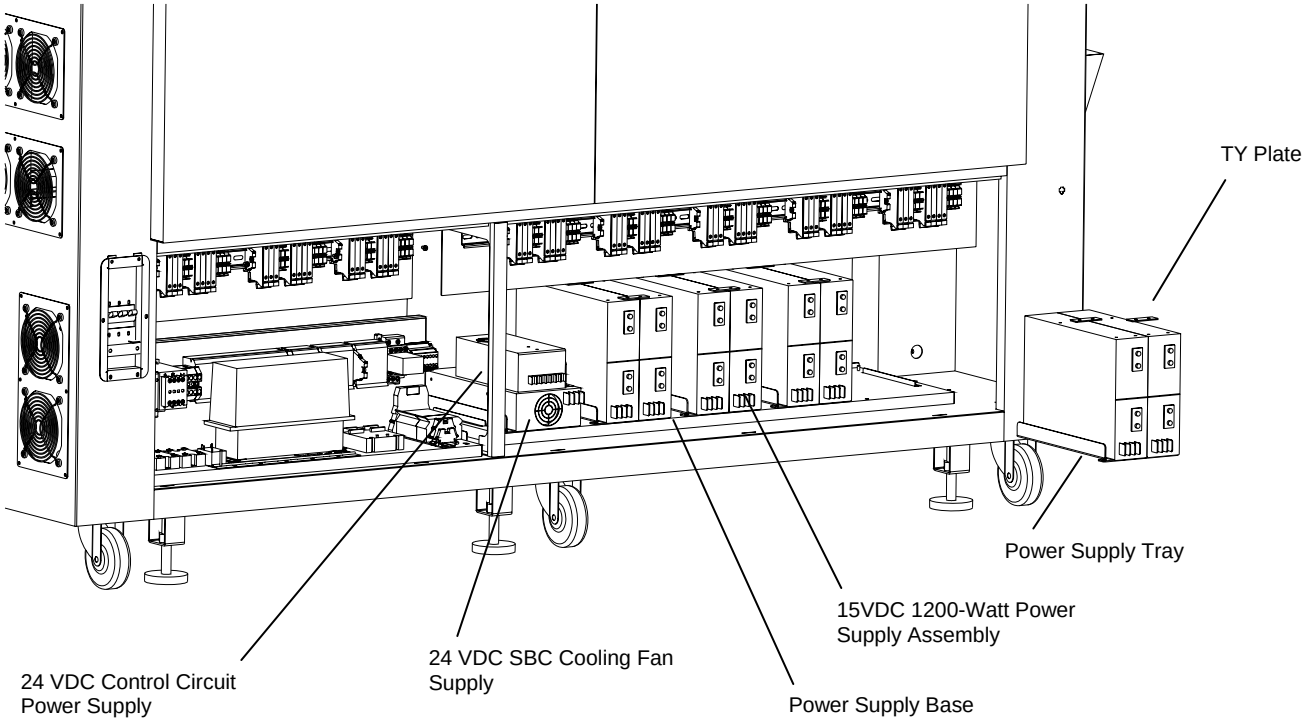




3.12 15 VDC Power Supply Replacement

WARNING HAZARDOUS VOLTAGE. Contact may cause electric shock or burn. Turn off and lock out power before servicing.
WARNING Rotating fan blades. Can cause serious injury or cut. Keep hands clear. Turn off and lockout unit before servicing.

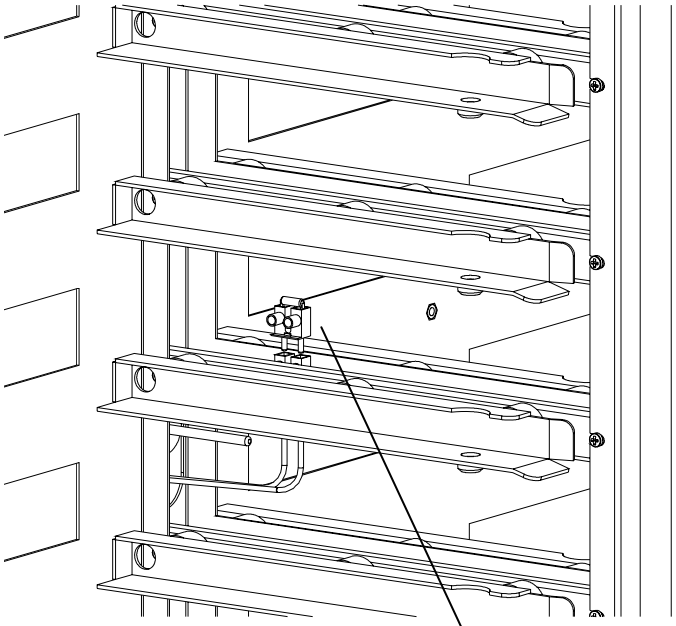
The 104B is equipped with 8 1200-watt 15VDC power supplies. Each power supply has two independent 600-watt outputs, which provide 92 watts of DC power to each port. The SBC assembly requires 35 watt, which leaves 57 watts of margined power for each drive. Remove the lower right rear power panel to access the 15VDC power supplies. To replace a power supply remove all wiring, unscrew the 10-32 holding the power supply tray in position and slide the assembly out. Remove the two TY plates that are on the top of the assembly. Turn the assembly over and remove the screws on the bottom and side of the assembly. Replace the power supply and reverse the process. When installing the power supply assembly ensure the tab at the rear of the tray engages the slot at the back of the power supply base.

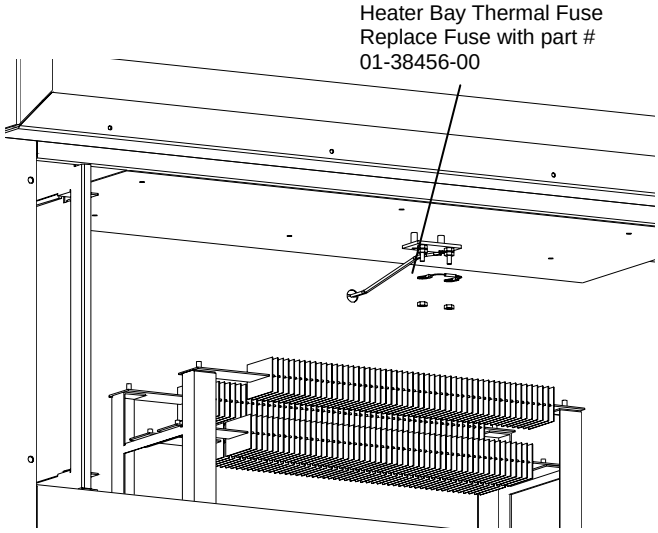


3.13 Thermal Over Temperature Shut Down

WARNING HAZARDOUS VOLTAGE. Contact may cause electric shock or burn. Turn off and lock out power before servicing.
WARNING burn hazard. Hot surface inside. Allow this area to cool before servicing.

The 104B has two thermal fuses that shut down the system when it goes into an over temperature condition. The first fuse is in the center of the DUT bay. It will shut down the system when the air temperature reaches 71 degrees Celsius. The second thermal fuse is in the heater bay and will shut down the system when the heater bay reaches 140 degrees Celsius. When either fuse is blown the machine shuts off and activates an amber light located on the control panel indicating one of the fuses has blown and needs to be replaced. To replace the fuse in the DUT bay locate the fuse holder in the center of the bay and unplug it from the terminal block. To replace the fuse in the heater bay remove the intake panel, locate the fuse assembly above heater and remove the two 8-32 nuts. Reverse process to install fuse.



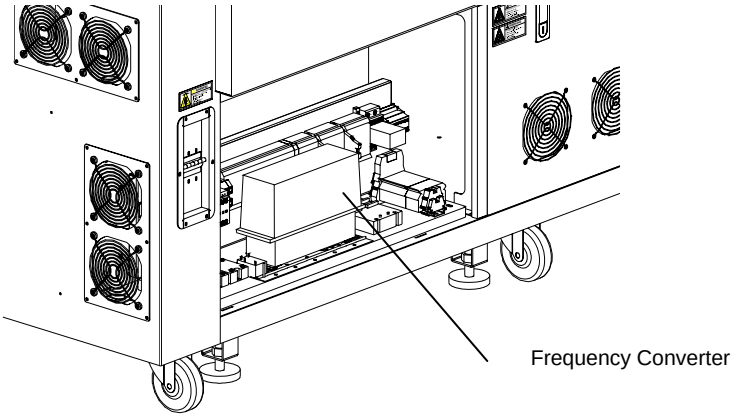


4.0 ABB Frequency Converter

WARNING HAZARDOUS VOLTAGE. Contact may cause electric shock or burn. Turn off and lock out power before servicing.
WARNING Rotating fan blades. Can cause serious injury or cut. Keep hands clear. Turn off and lockout unit before servicing.

The 104B has been equipped with an ABB Frequency Converter that powers the circulation and exhaust blowers. This was done to provide a constant frequency of 60Hz to the blowers regardless of the input frequency and to provide the customer with the flexibility of shipping the 104B to sites that have 50Hz frequency.

The ABB Frequency Converter is located in the power bay next to the main circuit breaker.
See the ABB Frequency Converter User's Manual for more information.



4.1 Frequency Converter Power On

The ABB Frequency Converter has been factory set to automatically start when the 104B is powered up. A green LED on the converter will indicate proper function.

4.2 Frequency Converter Power Reset

The Frequency Converter will shut down in an over current and over heat condition. When this occurs, the circulation and exhaust blowers will automatically switch to house power and continue running at a lower CFM. The 104B will continue to safely operate in this condition until test tests are complete and the operator can safely power down the system. To reset the Frequency Converter power down the 104B, waiting 60 seconds for the Frequency Converter to reset and power the 104B up in the cool mode.

4.3 Installing the Frequency Converter Circuit

If the Control Panel does not have a Frequency Converter bypass light installed then the 104B does not have the Frequency Converter circuitry installed. To wire in the Frequency Converter circuit simply add the warning light, change three wires and three jumpers.
See wiring diagram 104B Pegasus 208V 50/60Hz Fused Wiring Diagram 96-39634-00

4.4 Programming the ABB Frequency Converter

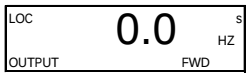
PROGRAMMING PROCEDURE
FOR ACS150 SERIES MOTOR DRIVE

This procedure is to be done when the 104B has been produced or rewired with the ABB ACS150 series motor drive.

The ABB ACS150 Motor Drive needs to have parameters changed from the default settings to operate per Flexstar's requirements. Below is a procedure and correct values required for proper motor drive operation.
Please review the PROGRAMMING section pages 43 through 54 of the ABB ACS150 user's manual before proceeding.

ABB - ACS 150 Series - Parameter Setup

Apply AC power
Immediately hit the REM/LOC button to put the unit in LOC mode
Set Watlow 984 to OFF



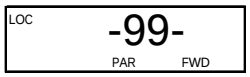
If unit is new out of the box it will be in local mode, thus will not start.

Hit Enter button to enter Main Menu

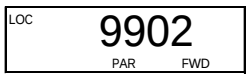
Use ⇧ to select next Parameter

Hit Enter to enter sub menu

Use ⇩ to select Parameter



Hit Enter to enter Parameters



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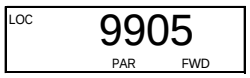
Use ⇧⇩ to set Parameter Hit Enter to exit

Use ⇧ to select next Parameter



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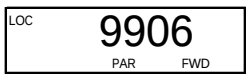

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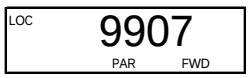

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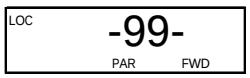
Hit Exit



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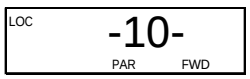

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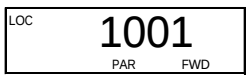

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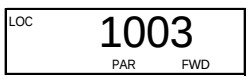
Use ⇧⇩ to set Parameter Hit Enter to exit

Use ⇧ to select next Parameter



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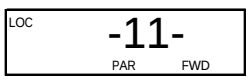
Use ⇧ to select next Parameter

Hold Enter

Use ⇧⇩ to set Parameter Hit Enter to exit

Hit Exit



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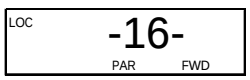


Hit Enter	LOC 1601 PAR FWD	Hold Enter	LOC 1 PAR SET FWD	Use ⇧⇩	to set Parameter Hit Enter to exit
Hit Exit	LOC -16- PAR FWD				
Use ⇧	to select next Parameter LOC -31- PAR FWD				
Hit Enter	LOC 3101 PAR FWD	Hold Enter	LOC 5 PAR SET FWD	Use ⇧⇩	to set Parameter Hit Enter to exit
Use ⇧	to select next Parameter LOC 3103 PAR FWD	Hold Enter	LOC 5.0 PAR SET FWD	Use ⇧⇩	to set Parameter Hit Enter to exit
Use ⇧	to select next Parameter LOC 3104 PAR FWD	Hold Enter	LOC 1 PAR SET FWD	Use ⇧⇩	to set Parameter Hit Enter to exit
Use ⇧	to select next Parameter LOC 3105 PAR FWD	Hold Enter	LOC 1 PAR SET FWD	Use ⇧⇩	to set Parameter Hit Enter to exit
Use ⇧	to select next Parameter LOC 3106 PAR FWD	Hold Enter	LOC 1 PAR SET FWD	Use ⇧⇩	to set Parameter Hit Enter to exit
Use ⇧	to select next Parameter LOC 3107 PAR FWD	Hold Enter	LOC 1 PAR SET FWD	Use ⇧⇩	to set Parameter Hit Enter to exit
Hit Exit	LOC -31- PAR FWD				
Use ⇧	to select next Parameter LOC -16- PAR FWD				
Hit Enter	LOC 1601 PAR FWD				
Use ⇧	to select next Parameter LOC 1607 PAR FWD	Hold Enter	LOC 1 PAR SET FWD	Use ⇧⇩	to set Parameter Hit Enter to exit
Hit Exit	LOC -16- PAR FWD				
Hit Exit	LOC PAr L MENU FWD				
Set POT to MAX Speed					
Hit Exit	LOC 0.0 S HZ OUTPUT FWD				

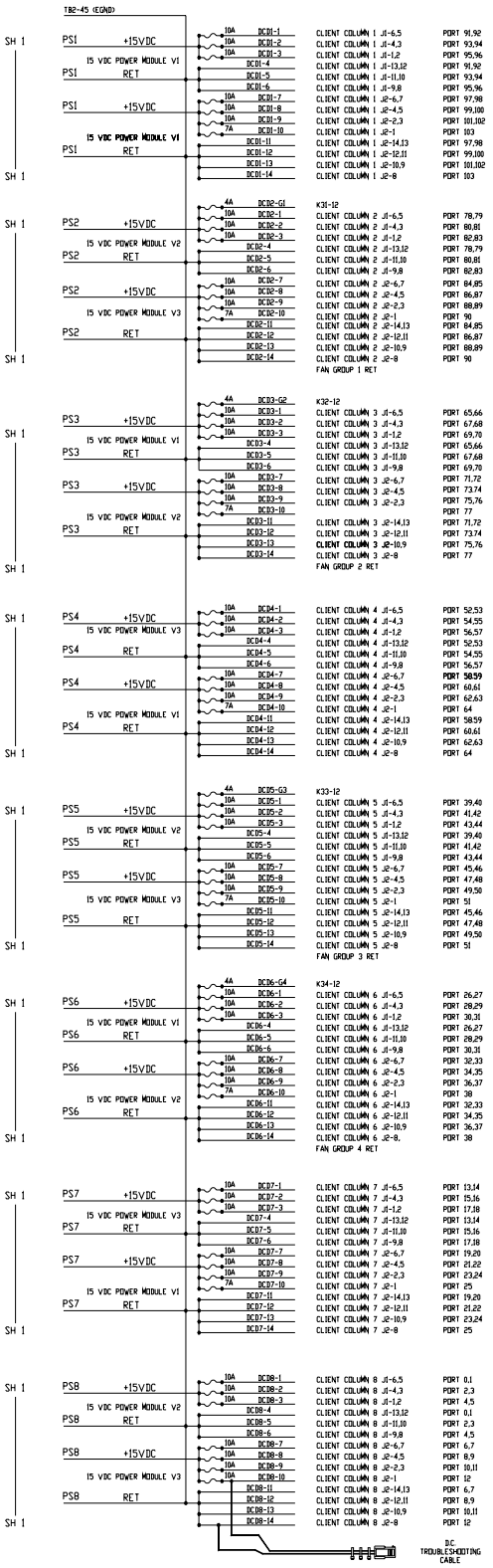
Hit REM/LOC button so that REM is displayed. Display should ramp up to 60.0Hz

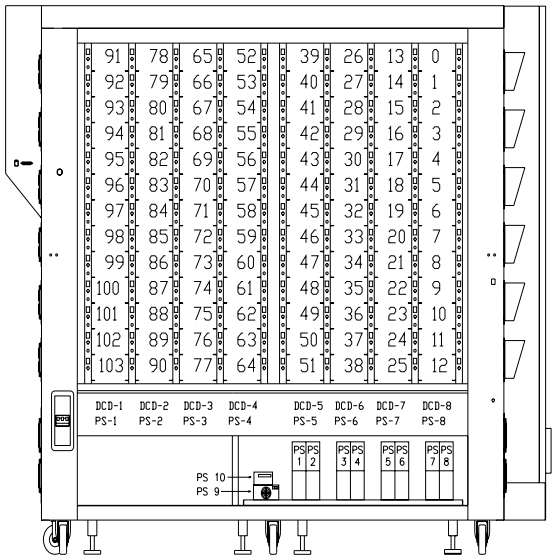
Programming is complete. Scroll through the values to verify proper settings.

Wait about 30 seconds and turn the 104B back on. When the 104B is turned back on the fans will start to spin then shut down and the by-pass lamp will come on. The By-pass lamp should stay on for about two to three seconds and then go out. Once by-pass lamp goes off the fans will restart. If the lamp does not go off and fans restart the MD did not fully power down. If it takes more than two to three seconds for the by-pass lamp to go off then the time-delay relay time is set too high, readjust relay by turning time adjustment screw fully CCW then CW ¼ turn.

5.0 WIRING DIAGRAMS

5.1 Port Wiring

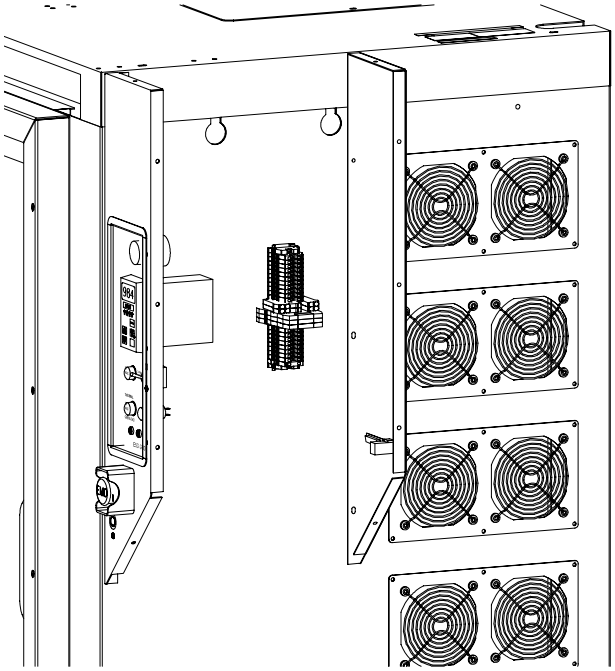




104B PORT NUMBERING
REAR VIEW

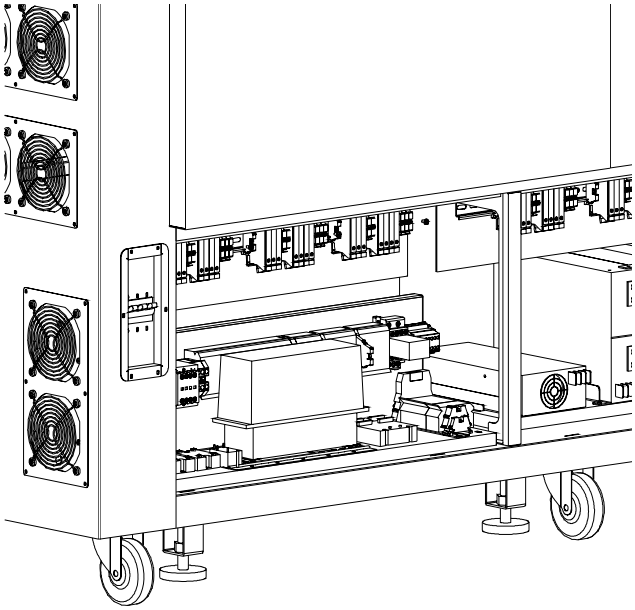
5.2 Control Wiring Diagram

To access the control wiring remove control panel cover.
See diagram: 104B Fused Control Panel Wiring Diagram 89-38602-00



5.3 Rack Wiring Diagram

To access the fused wiring base remove the power panel at the rear lower left of the rack.
See diagram: 104B Pegasus 208V 50/60Hz Fused Wiring Diagram 96-39632-00 and 96-39634-00



6.0 104B Trouble Shooting

The rack does not reach desired temperature.

Check the Watlow controller to ensure it is properly programmed. See page 7

If the rack does not reach the desired elevated temperature insure the intake baffle is completely closed. If the baffle does not close remove the intake panel and insure the assembly is property adjusted and does not bind, insure the thermal actuators are fully functional, replace parts that exhibit excessive wear or do not function. See pages 13-14.

If the rack does not reach the desired elevated temperature insure the circulation baffle is completely open. Remove the intake panel and insure the assembly is property adjusted and does not bind, insure the thermal actuator is fully functional, replace parts that exhibit excessive wear or do not function. See page 17.

If the rack does not reach the desired elevated temperature insure the exhaust stack baffle is fully closed. See page 18.

If the rack does not reach the desired elevated temperature insure the heaters are fully functioning. Each heater should produce 1500 watts of heat. See page 16.

The intake panel is hot to the touch.

Check the Watlow controller to insure it is properly programmed. See page 7

Insure the circulation baffle is completely open during the heat mode. Remove the intake panel and insure the assembly is property adjusted and does not bind, insure the thermal actuator is fully functional, replace parts that exhibit excessive wear or do not function. See page 17.

The blowers do not come on or the have shut down or seem to be producing lower airflow.

The ABB drive motor does not power up. The ABB drive motor has been factory set to start up when power is applied. Check the ABB jumper setting against the wiring diagram for the proper jumper settings.

The ABB drive motor has gone into current overload and the blowers are not running on house power. Reset the drive motor by powering down the 104B, waiting 60 seconds for the drive motor to reset and powering the 104B up in the cool mode. If the 104B is equipped with a drive motor reset switch use that to reset the drive motor. See page 22.

One of the blowers is wired backwards. If one of the blowers are wired backwards it will draw more current sending the drive motor into current overload shutting down the drive motor. Check the blower wiring against the wiring diagram. When the exhaust blower is properly wired it will draw 1.5 amps, when wired backwards it will draw 2.5 amps. When the circulation blower is properly wired it will draw 1.8 amps, when wired backwards it will draw 2.8 amps.

The SBC cooling fans have shut down.

If all the SBC cooling fans have stop running immediately turn off the machine. **DO NOT RUN THE MACHINE FOR MORE THEN 10 MINUTES WITH THE SBC COOLING FANS OFF**. Check all the fuses in line with the power supply and replace as necessary. If the fuses are ok check the 600 watt 24 VDC power supply in the power bay. See page 24

If one of the fans has failed power down the machine and replace the fan. See page 20

The drive does not engage the sub adapter.

The fixture slider ball plungers are not adjusted. Place the drive in the fixture and slowly close the fixture until it engages the sub adapter, tighten the ball plungers on the side of the fixture until they contact the edge of the slider then turn the ball plungers out 1 turn. See page 10.

The sub adapter is out of alignment. Place the drive in the fixture and slowly close the fixture until it engages the sub adapter, Tighten the ball plungers in the PCB Rail Vib Fixture to lock the sub adapter in place. See page 10.

Excessive drive vibration

The fixture is not tightened down. Insure the four 6-32 screws that fasten the fixture to the shelf are completely tightened down. See page 10

The drive shelf is not tightened down. Insure the panel fasteners on the shelf guides are completely tightened down. See page 10.

The circulation blower is out of balance. Remove the intake panel and check the circulation blower for proper alignment. The blower should spin freely with little or not noticeable wobble. Replace the blower if excessive wobble is present. See page 15.

Network Communication

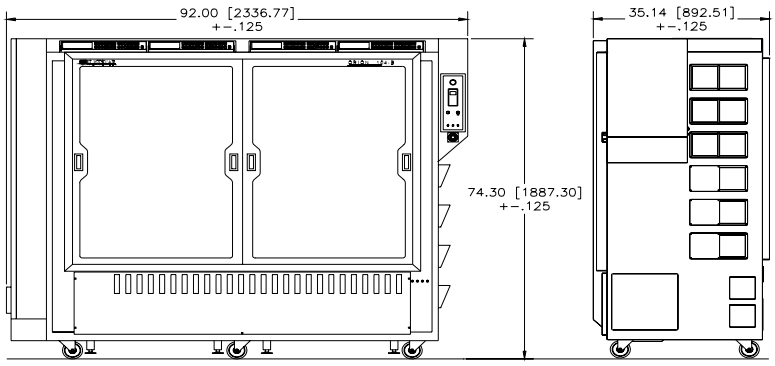
The port is not communicating with the hub. Ensure all cables are connected. Use an Ethernet tester to test each Ethernet cable. Replace or re-terminate any cable in question. See page 20. If all cables test good replace the Ethernet couplers in the pallet ladder assembly. See page 20.

The hubs do not communicate with the hub switch. Insure all cables are connected. Insure the switch has power. If the switch has power but no led indicators replace switch. Use an Ethernet tester to test the cable between the hub and hub switch. Replace cable if necessary. Insure the Ethernet cross over coupler is present and connected. Use an Ethernet tester to test the cross over coupler. Replace the coupler if necessary. See page 21.

7.0 104B Replacement Parts

ITEM	PART NUMBER	DESCRIPTION	WHERE USED
1	13-37659-00	984C WATLOW CONTROLLER	CONTROL PANEL
2	13-38653-00	PWR SUP. 24V DIN	POWER BASE
3	32-50103-00	COUPLER, RJ45 TO RJ45	CONTROL PANEL, PALLET LADDER ASSEMBLY
4	32-50104-00	D-SUB 25 PIN SOLDER TYPE PANEL MOUNT CONN.	CONTROL PANEL
5	13-38671-00	POWER SUPPLY, 1200W 15VDC, MPI	POWER SUPPLY BAY
6	35-38650-00	FLANGE, NARROW	CONTROL PANEL
7	38-38649-00	BUTTON, EMO	CONTROL PANEL
8	38-38651-00	EOM CONTACT BLOCK, NC	CONTROL PANEL
9	38-50064-00	TOGGLE SWITCH	CONTROL PANEL
10	13-38676-00	POWER SUPPLY, 600W 24VDC, MP6	POWER SUPPLY BAY
11	38-50120-00	TOGGLE SWITCH SEAL	CONTROL PANEL
12	39-38652-00	CONTACTOR, 55 AMP, 24VDC COIL	POWER BASE
13	38-38087-00 *38-37664-00*	40 AMP CIRCUIT BREAKER *CE CIRCUIT BREAKER 25AMP*	POWER BASE
14	39-37693-00	25 AMP 3 PHASE 240 VAC OUTPUT 3 TO 32 VDC OUTPUT SOLID STATE RELAY	CONTROL PANEL
15	39-50042-00	45 AMP 240 VAC OUTPUT 3 TO 32 VDC OUTPUT SOLID STATE RELAY	CONTROL PANEL
16	40-50113-00	VISUAL ALARM SOCKET	CONTROL PANEL
17	41-35409-00	WIRE 14 AWG SF-2	HEATER BAY
18	01-39873-00	AC MTR DRIVE, 230V 3PH, ABB ACS150	POWER PANEL
19	50-37658-00	CE VISUAL ALARM BULB	CONTROL PANEL
20	50-50112-00	VISUAL ALARM LENS	CONTROL PANEL
21	68-37660-00	AUDIBLE ALARM	CONTROL PANEL
22	39-38311-00	RELAY 4PDT 24V COIL	POWER BASE
23	39-38304-00	RELAY, TIME DELAY	POWER BASE
24	37-35436-00	FUSE 2A CERAMIC 3AB	POWER BASE
25	37-35437-00	FUSE 15 AMP 3AB	POWER BASE
26	37-37704-00	FUSE, 4A 1/4"X1 1/4" CERAMIC	POWER BASE
27	37-38611-00	FUSE, 3A CERSLOW BLOW 104B	POWER BASE
28	37-38618-00	FUSE, 5A CERSLOW BLOW 104B	POWER BASE
29	37-38619-00	FUSE, 7A CERSLOW BLOW 104B	POWER BASE
30	50-38305-00	AMBER LENS	CONTROL PANEL
31	39-38646-00	RELAY, DIN RAIL, 24V COIL	CONTROL PANEL
32	01-38459-00	HEATER BAY OVER TEMP. TEHRMAL FUSE	HEATER BAY
33	01-38457-00	DUT BAY OVER TEMP THERMAL FUSE	DUT BAY

PART IDENTIFIED WITH "CE" INDICATE THE PART IS USED IN THE 104B 400VAC CE UNIT ONLY, ALL OTHER PARTS ARE IDENTICAL



8.0 104B Decommissioning Procedure

The total weight of the 104B is 2100 lbs
The 104B is made up of 1425lb sheet steel, 325lb electronics, 225lb wire and cable assemblies, 100lb aluminum and 25lb plastic. Separate the 104B into the above categories and recycle or dispose components according to local ordinances.

9.0 Technical Support

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