LED 1216
Ultrasonic Vapor Degreaser

The password for the Set-up Mode is

12589

Keep this password in a safe location.

Limit access to the password to prevent unauthorized personnel from entering unsafe solvent settings.

Warning:

Entering incorrect solvent temperatures may cause unsafe conditions which will allow solvent vapors to escape or damage the degreaser.

BRANSON Ultrasonics Corporation
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Instruction Manual

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Instruction Manual

Warning:

1. Keep the covers closed when not processing parts through the cleaner.

2. Always wear eye protection, gloves and protective clothing when handling solvents. Do not allow solvent to come into contact with the body. Solvent above 140°F (60°C) can cause burns. With prolonged or frequent contact, solvent removes natural oils from the skin.

3. Do not inhale or take solvent internally - either could be fatal.

4. All solvents are toxic to some degree. Do not allow solvent vapors to exceed the threshold limit value stated in Section V of the applicable OSHA Material Safety Data Sheet.

5. Never enter or lean into a degreaser. Solvent vapors will be present even if the degreaser appears empty. Solvent vapors displace air and may cause death by asphyxiation. Use cleanout doors when cleaning the degreaser.

6. Before adding solvent, be certain that the solvent to be added is the same as the solvent already in the cleaner.

7. Do not expose any halogenated solvent or its vapors to the high temperatures existing in open flames or exposed electric heating elements, or the solvent may decompose to toxic or corrosive substances.

8. Do not use solvents which have become over-contaminated. High contamination levels may result in fire hazards or solvent breakdown and equipment damage.

9. Do not bring solvent into contact with highly reactive metals such as sodium, potassium and barium. The solvent can quickly break down to form toxic and corrosive compounds.

10. Solvents can break down and become acidic when exposed over prolonged periods to reactive metals such as magnesium, aluminum, zinc and beryllium. When cleaning parts made of these materials, analyze the solvent frequently to determine if it has broken down. Failure to comply with this recommendation will result in damage to the equipment and will void the warranty covering it.

11. Never operate the cleaner with the countertop removed. The covers are a pinch hazard under this condition.

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LED 1216
Ultrasonic Vapor
Degreaser

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Introduction

LED 1216

1.1 About This Manual

This manual contains instructions for installing, operating and maintaining the LED 1216 degreaser.

At the back of the manual you will find Appendices containing documentation including wiring and plumbing schematics and assembly drawings.

The following definitions apply in this manual:

Note: **Inconvenience only if disregarded - no damage or personal injury.**

Caution: **Equipment damage may occur, but not personal injury.**

Warning: **Personal injury may occur - DO NOT DISREGARD.**

PN indicates Part Number.

Part(s) indicates your workpiece or component to be cleaned.

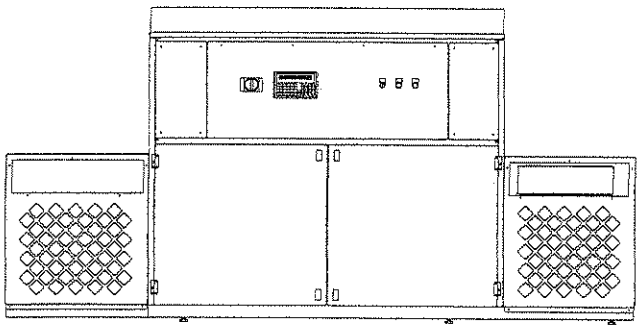


Figure 1-1
LED 1216

1.2 General System Description

The Branson LED 1216 degreaser is used to clean parts using solvent vapors and ultrasonic immersion in liquid solvent.

It consists of a degreaser module, an Ultrakool freeboard chiller and a Branson TDR two dimensional robot. A Branson BC 150 chiller module may be used with water cooled versions. The modules are interconnected to form a self-contained system which needs only solvent, connections to electrical power, and TDR compatible baskets to become operational.

1.3 Solvent Compatibility

The Branson LED 1216 is designed to be used with non-flammable azeotropic solvents with boiling points between 85 degrees Fahrenheit and 200 degrees Fahrenheit.

Warning: Do not use flammable solvents in this degreaser. Fire or explosion may result.

1.4 How Parts are Cleaned

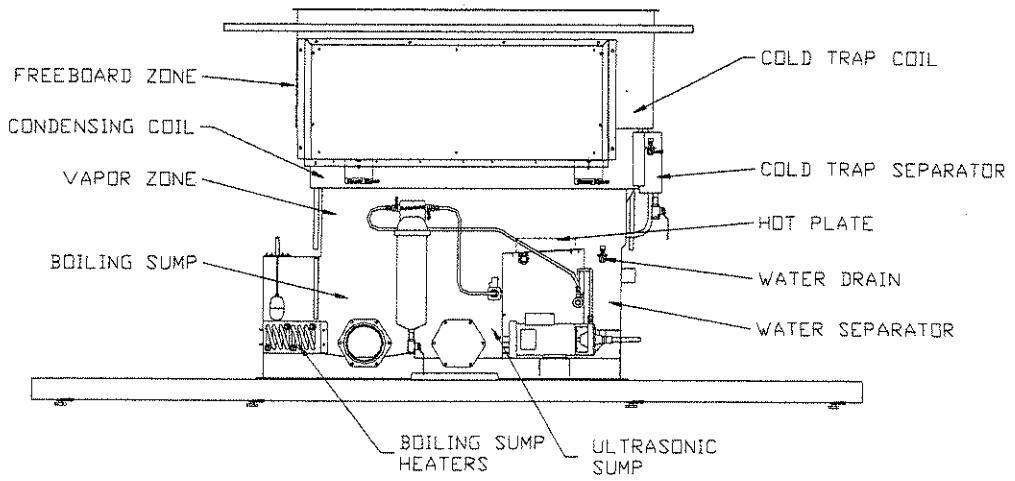
The cleaner uses three methods to remove soils from the surface of parts:

- Dissolving
- Ultrasonic cavitation or scrubbing, and
- Vapor Rinsing

Cleaning solvents dissolve soils through chemical action. The process is enhanced by agitation induced by ultrasonic cavitation. Cavitation provides a strong mechanical action which also removes non-soluble soils. Vapor rinsing dilutes any dirty solvent which clings to the part when it is removed from the ultrasonic bath.

1.5 How the Cleaner Works

Figure 1-2
LED 1216



1. The boiling sump heater boils the solvent
2. Solvent vapors fill the vapor zone.
3. Some vapors condense on parts; dirty solvent drips into the boiling sump.
4. Remaining vapors condense on condensing coils and mix with water extracted from the atmosphere.
5. Water and condensate collect in the trough and pass into the water separator desiccator.
6. Water is removed by the water separator/desiccator.
7. Pure solvent overflows into the ultrasonic sump.
8. Solvent mixes with the dirt removed by ultrasonic cleaning.
9. Dirty solvent overflows into the boiling sump so that all dirt ends up in the boiling sump.
10. Cold Trap coil extracts solvent vapors from air in freeboard zone.
11. Hot Plate conductively transfers heat to parts to vaporize solvent residues and reduce emissions.

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Controls

2.1 Introduction - Component Identification and Specifications

This chapter describes the LED 1216 components, controls and specifications.

2.2 Component Identification

Figure 2-1
LED 1216
Front View

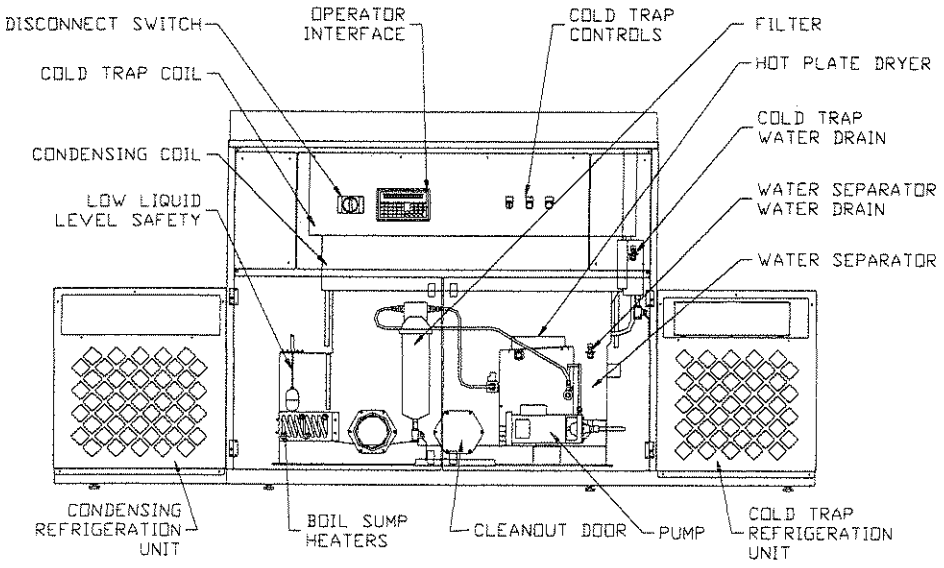
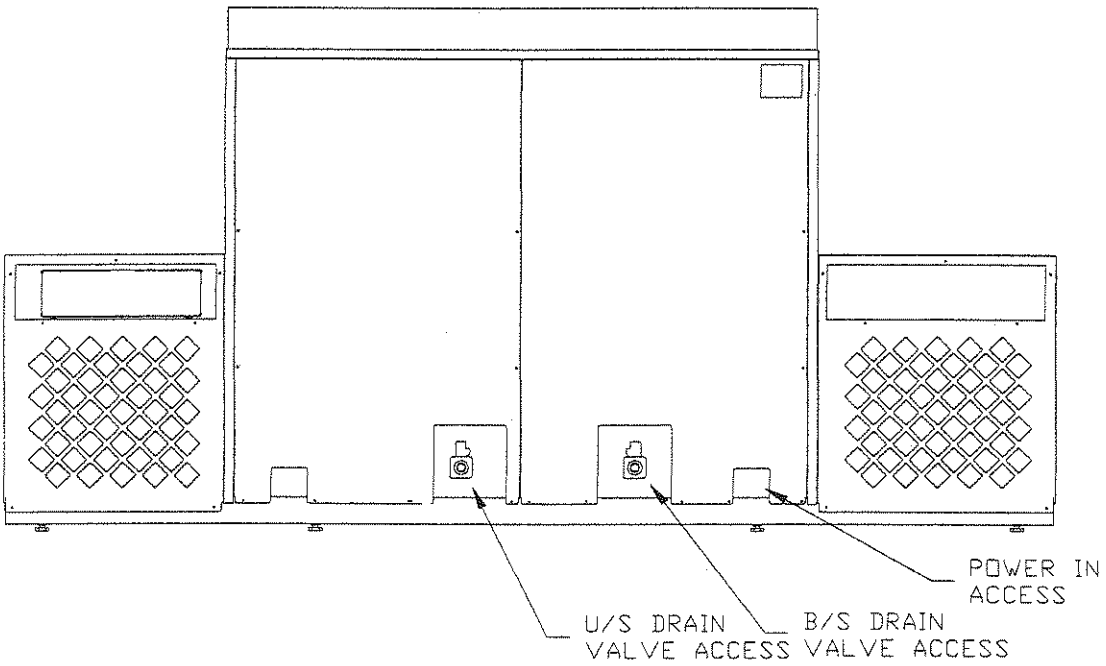
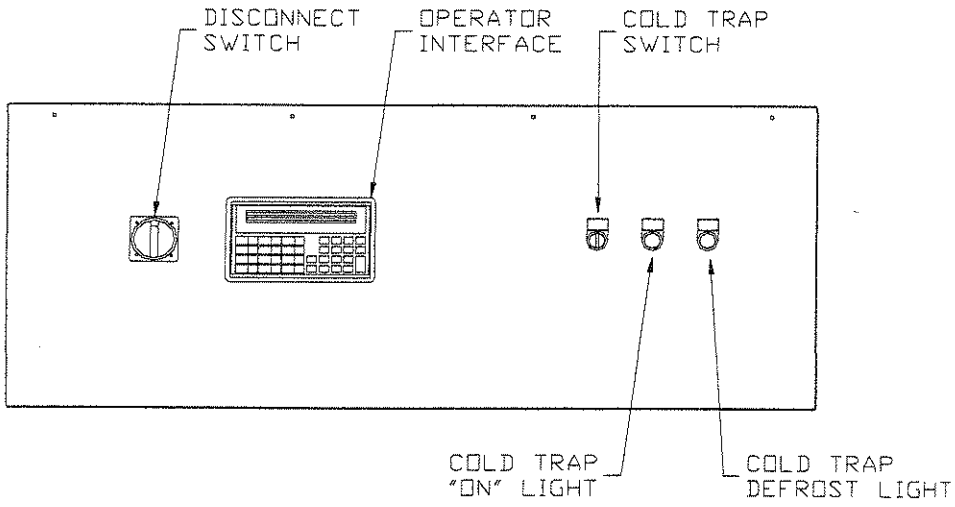


Figure 2-2
LED 1216
Back View



2.3 Control Identification

Figure 2-3
LED 1216
Controls



2.4 Specifications

LED 1216

Overall Dimensions:	Length L to R	115"
	Width F to B	36"
	Height	58 1/2"
Working Dimensions	Left to Right	12"
	Front to Back	16"
	Depth	12"
Working Capacity:	10 gallons	
Total Solvent Capacity:	25 gallons	
Vapor Zone Dimensions	Left to Right	45 1/4"
	Front to Back	19 1/4"
	Depth	12 1/2"
Freeboard Zone	Left to Right	49 1/4"
	Front to Back	23 1/4"
	Depth	19 1/4"

Voltage: 208-240 VAC, 3 phase, 50/60 Hz, 38 Amps

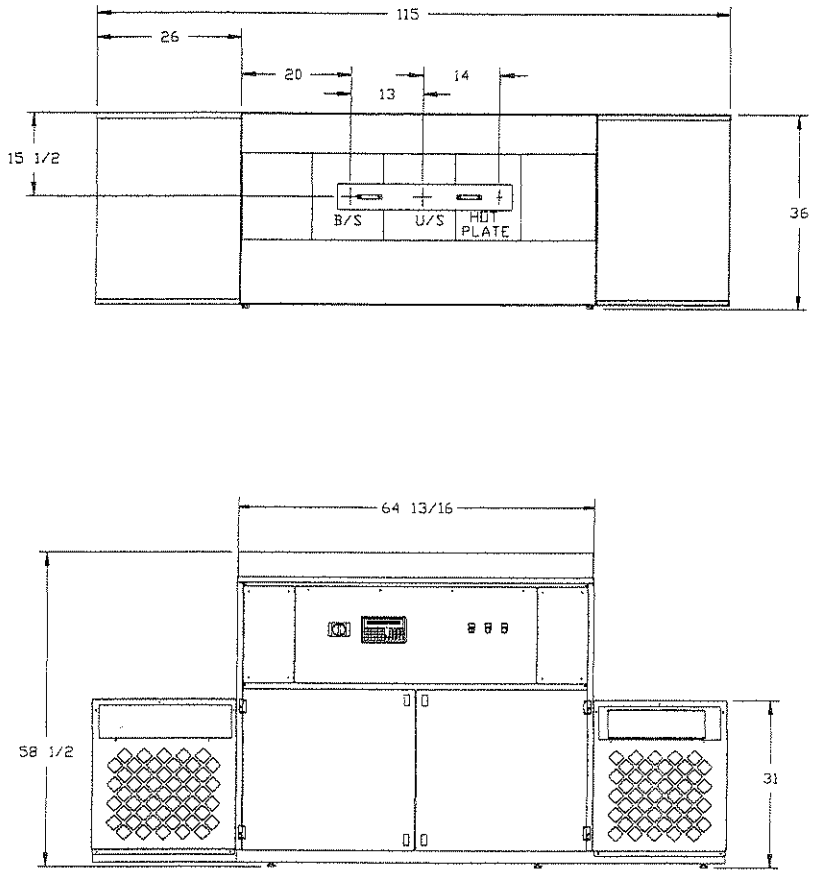
Freeboard Chiller: Ultrakool

TDR (if purchased)

Requires separate power drop.

Voltage: 208-240 VAC, 1 phase, 60hz, 5 Amps

Figure 2-4
LED 1216
Dimensions



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Installation

3.1 Unpacking and Handling

Use reasonable precautions when unpacking and handling your system. To avoid damage, use the shipping container when transporting the equipment.

Inspect all external controls and surfaces prior to setup to detect possible shipping damage. Report any damage at once to the carrier.

Note: **The carrier is responsible for damage to equipment during shipment. If damage has occurred, notify the carrier immediately. Retain packing materials for inspection.**

Caution: **Lift the degreaser near the control side leveling feet and near the center leveling feet. Failure to support the center section may damage the sheet metal panels.**

3.2 Public Utility Requirements

See specifications.

3.3 Location

Locate the LED 1216 in a well ventilated area. Provide space all around for control, filling and making connections.

Locate away from direct air currents.

Warning: **Do not install near welding operations, exposed electrical heating elements or open flames. Solvent vapors may decompose when exposed to high temperatures or ultraviolet light and form toxic and corrosive compounds.**

3.4 Leveling

Level the degreaser using the leveling feet

3.5 Connections

Note: **Remove the back panel from the degreaser before making connections.**

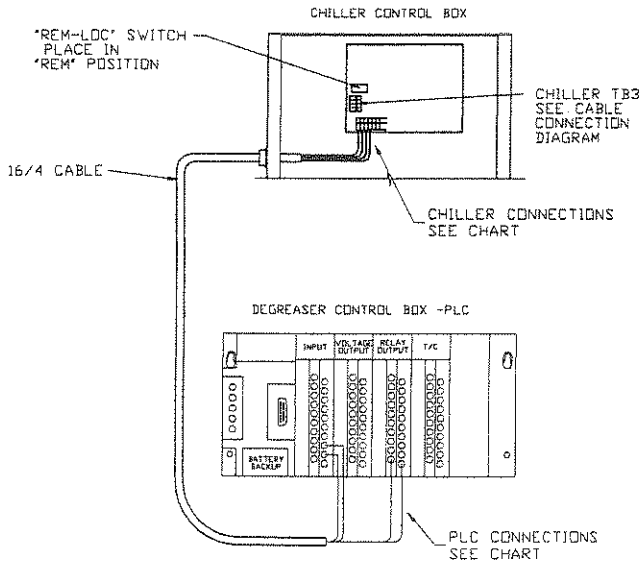
a. **Chiller (Optional Water Cooled Units Only)**

Note: **Refer to the chiller manual for general instructions regarding the installation and operation of the chiller.**

- Connect a hose between the chiller "Water Out" connection and the degreaser "Water In" connection.
- Connect a hose between the chiller "Water In" connection and the degreaser "Water Out" connection.
- Connect the chiller interconnect cable from the degreaser to the following terminals on the chiller control board:

Wire Color	Function	Chiller	Degreaser
Black	Chiller Run	TB1-1	Relay Mod 18
White	Chiller Run	TB1-2	Relay Mod 19
Red	Interlock	TB1-3	Input Mod 18
Orange	Interlock	TB1-4	Input Mod 16

Figure 3-1
Chiller Connections



- Connect the chiller to a fused disconnect in accordance with the chiller manual.
- Set the chiller Local/Remote switch to "REM".
- Fill the chiller with antifreeze in accordance with the operator's manual instructions.

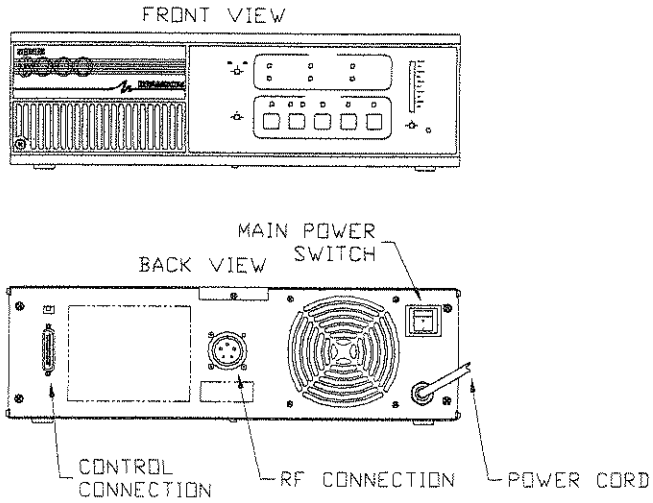
Caution: **Connect the chiller to the power source at least 6 hours before initial start-up to prevent damage to the compressor.**

b. Ultra-Kool Cold Trap Module

The Ultra-Kool cold trap is fully installed at the factory. No field connections are required.

c. Ultrasonic Generator

Figure 3-2
Ultrasonic Power Supply



Note: Refer to the S8000 Manual for general instructions regarding the installation and operation of the Series 8000 Power Supplies

- Place the power supply into the opening in the cold trap skirt.
- Remove the access panel to the right of the degreaser control panel.
- Connect the RF cable to the power supply.
- Connect the control cable to the power supply.
- Plug the power supply into the outlet on the right side of the degreaser control panel.
- Turn the main power switch on the back of the power supply to the 'on' position.

d. **TDR (If supplied)**

Note: **Refer to the TDR manual for general instructions regarding the installation and operation of the TDR.**

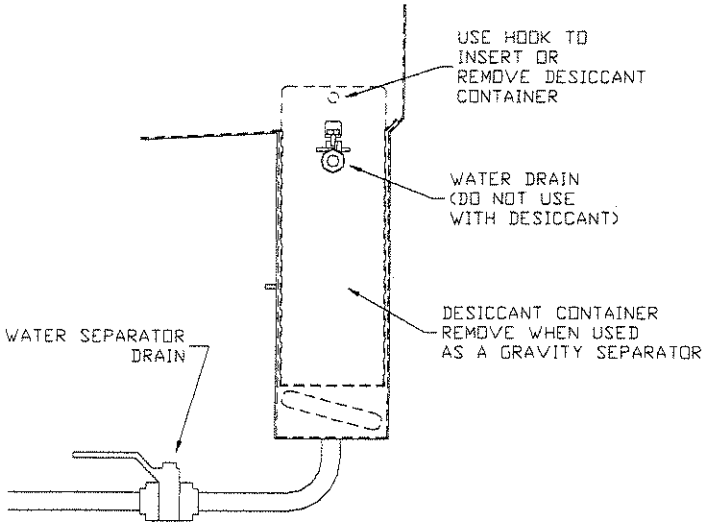
- Install the TDR as described in the TDR manual.
- Connect the output cable from the TDR output connector to the 25 pin connector on the back of the degreaser control box.
- Connect the restart cable from the restart connector on the back of the TDR to the 15 pin connector on the back of the degreaser control box.

3.6 Filling the Degreaser

- Connect the solvent supply to the ultrasonic drain valve. Pump solvent into the tank and allow it to overflow into and fill the boil sump to within 2 inches of the top of the weir separating it from the ultrasonic sump.
- The water separator will fill with distilled solvent when the degreaser is operated. This will reduce the amount of solvent in the boiling sump so that it does not splash into the ultrasonic sump.

3.7 Water Separator

Figure 3-3
Water Separator



Consult the solvent manufacturer to determine if the solvent requires desiccant to control the water in the degreaser.

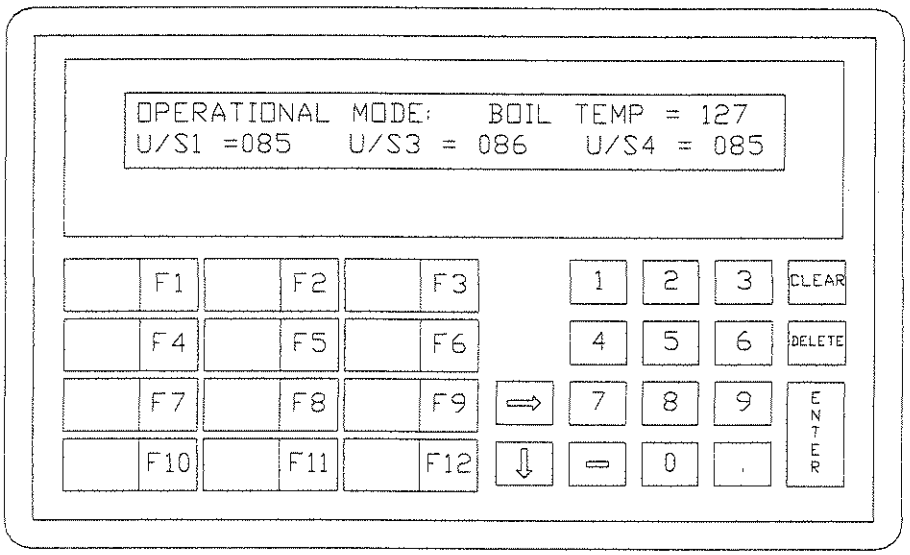
To use the separator/desiccator as a separator, do not install the desiccator insert. Drain the water floating on top of the separator when its depth exceeds 2 inches (approximately 3/4 gallon). To drain the water, open the water drain valve and allow the water to drain until the flow stops. Close the water drain valve.

To use the separator/desiccator as a desiccator, install a filter bag, Part Number 000-265-502, into the desiccant container and fill with desiccant. Consult your solvent supplier to determine the proper desiccant. Install the desiccant container into the water separator/desiccator.

Warning: Use a hook to insert and remove the desiccant container. Never climb into or reach into a degreaser. Death by suffocation may occur.

3.8 Control Set-up

Figure 3-4
Operator Interface



a. Operator Interface Navigation

Key	When	In Order To
F1	Any Mode	Change to Operational Mode
F2	Any Mode	Change to Night Cool Mode
F3	Any Mode	Change to Set-up Mode. A password is required to enter the set-up mode
F4	Operational or Night Cool Mode with covers in Manual configuration	Open or close left cover
F5	Operational or Night Cool Mode with covers in Manual configuration	Open or close right cover
F6	Operational or Night Cool Mode	Turn cooling on or off
F7	Operational Mode	Turns ultrasonic sump heat on or off
F8	Operational Mode	Turn boiling sump and configured ultrasonic sump heaters on or off
F9	Operational Mode	Turn configured recirculation pumps on or off
F10	Operational Mode with Ultrasonics in manual configuration	Turns ultrasonics on or off
F11	Operational Mode with Ultrasonics in manual configuration	Turns hot plate heater on or off
F12	Any Mode	Reset cleared Emergency Stop errors to allow restarting of the process
⇒ (right arrow)	Set-up Mode, Operational Mode in status view	Go to the next item
.	Operational Mode, Set-up Mode	Toggle on/off or "1/0"
Enter	Set-up Mode	Enter new numerical data in field
Clear	Set-up Mode	Clear numerical data from field
Number	Set-up Mode	

b. PLC Configuration

The PLC must be configured for the solvent and for the desired modes of operation.

To configure the PLC:

- Turn on the Power to the degreaser. The Operator interface will light up and then show:

  SELECT MODE: PRESS F1 FOR OPERATING MODE
  F2 FOR NIGHT COOL MODE F3 FOR SETUP MODE

- Press **F3** for Set-up Mode.

  ENTER PASSWORD #####
  PRESS F1 FOR OP MODE OR F2 FOR NC MODE

- Press CLEAR to clear the password register.
- Enter the password. Press ENTER to complete the entry. If it is incorrect, the entry will be cleared. Enter the password again or press F1 to go to the Operational Mode or F2 to go to the Night Cool Mode. If the number was correct, the following screen will be shown.

  SETUP MODE
  ENTER SOLVENT BOILING TEMPERATURE 123

Warning: **Check that the correct temperature in degrees Fahrenheit is entered. A temperature which is low will cause nuisance alarms. A temperature which is too high may allow vapors to escape from the degreaser or may create a flammable condition. The Solvent Boiling Temperature is the temperature at which PURE solvent boils. It may be corrected for altitude. NEVER correct for contamination.**

- If the temperature is correct, press ⇒. If the temperature is wrong, press CLEAR, then enter the new temperature. Press ENTER to complete the entry.

SETUP MODE
ENTER BOIL SUMP TEMP DIFFERENTIAL 15

- The boil sump temp differential is the amount above the pure solvent boiling point that may be reached before a BOIL SUMP OVERTEMPERATURE ALARM is shown. The maximum value is 30 degrees Fahrenheit. Consult the solvent manufacturer for the recommended setting for the solvent and soil which you will be using.

Warning: **Setting the boil sump temp differential too high may result in flammable concentrations of oils in the boiling sump.**

SETUP MODE
ENTER U/S TEMPERATURE SETPOINT 100

- Enter the temperature which you want the ultrasonic sumps to operate at. Normally, they will operate at 15 to 20 degrees Fahrenheit below the pure solvent boiling temperature. If they are set too low, solvent action will be reduced and vapor generation will be reduced because of condensation on the tank surfaces. If they are set too high, the final vapor rinse will be reduced. All ultrasonic tanks are set to operate at the same temperature.

SETUP MODE
ENTER LOW VAPOR TEMP DIFFERENTIAL 20

- The low vapor temp differential is the amount below the pure solvent boiling point that may be reached before a NOT READY message is displayed. This message indicates that the vapor blanket is not established and that parts should not be cleaned. The minimum value is 20 degrees F.

SETUP MODE
ENTER HI VAPOR TEMP DIFFERENTIAL 20

- The hi vapor temp differential is the amount below the pure solvent boiling point that may be reached before a HIGH VAPOR LEVEL ALARM is displayed. This message indicates that the vapor blanket has risen above the condensing coil. A serious cooling malfunction may exist. The minimum value is 20 degrees F. Setting this parameter too high may result in nuisance alarms.

SETUP MODE
ENTER CONDENS COIL TEMPERATURE 60

The condens coil temperature is the maximum temperature which may be reached by the condensing coil before a CONDENSING COIL TEMPERATURE ALARM is displayed. This message indicates that the cooling liquid is too hot to effectively condense the solvent. The maximum temperature is 90 degrees Fahrenheit. This setting should only be used with high boiling temperature solvents (above 160 degrees F.)

Warning: **Do not set CONDENS COIL TEMP higher than 30 degrees below the boiling temperature. Too high of a temperature may prevent a cooling failure from shutting off the degreaser heat.**

SETUP MODE
ENTER HOT PLATE TEMPERATURE 300

Set the hot plate temperature between 0 and 300°F. It will be normal for the temperature to oscillate approximately 25°F around the set point. This variation is necessary to insure maximum response rate when a basket is placed on the dryer.

SETUP MODE
ULTRASONICS: (0) MANUAL = 1 AUTO = 0

- Set this parameter to 1 for the manual mode or 0 for the automatic mode. Press '.' to toggle the setting. In the manual mode, the ultrasonics in tank 2 are controlled by F9, tank 3 by F10 and tank 4 by F11. In the auto mode, the ultrasonics are controlled by the TDR as configured later in the set-up procedures.

SETUP MODE
COVER: (0) MANUAL = 1 AUTO = 0

- Set this parameter to 1 for the manual mode or 0 for the automatic mode. Press '.' to toggle the setting. In the manual mode, the covers are controlled by F4 for the left cover and F5 for the right cover. In the auto mode, the left cover is controlled by TDR output 1 and the right cover is controlled by TDR output 2.

SETUP MODE
ENTER COVER TIME DELAY 8 SEC

- This parameter controls the amount of time the motor will operate if the cover does not reach its limit switch. This protects the cover motor in the event that something prevents it from opening or closing fully. The maximum setting is 20 seconds. It should be set long enough to allow the cover to move to the extreme position.

SETUP MODE
PRESS F1 FOR OPERATIONAL MODE

- The set-up process is now complete. Press F1 to go to the operational mode or F2 to go to the Night Cooling Mode.

3.9 Programming the TDR

Note: **Refer to the TDR manual for general programming instructions.**

a. **Set vertical speed to no greater than 11 feet per minute.**

Caution: **Moving into or out of a degreaser too quickly will disrupt the vapor zone and increase solvent losses. 11 feet per minute is the maximum allowed by the EPA.**

b. **Opening and closing covers.**

The countertop is arranged so that there are moveable covers over the boiling sump and over tank 4. The center of the countertop is slotted so that the TDR may move from tank to tank without opening the covers. The covers only need to be opened when the TDR is entering or leaving the degreaser.

- Turn on output 1 (Code 011) to open the left cover if the covers are configured for automatic operation.
- Turn off output 1 (Code 010) to close the left cover if the covers are configured for automatic operation.
- Turn on output 2 (Code 021) to open the right cover if the covers are configured for automatic operation.
- Turn off output 2 (Code 020) to close the right cover if the covers are configured for automatic operation.

c. **Preventing Crashes with the Covers**

- Before moving in or out of the left cover opening, enter a "STOP 1" (Code 001). This will cause the TDR to wait until the cover is open before moving through the left cover opening.
- Before moving in or out of the right cover opening, enter a "STOP 2" (Code 002). This will cause the TDR to wait until the cover is open before moving through the right cover opening.

d. **Turning Ultrasonics on and off**

- Turn on output 3 (Code 031) to turn on the ultrasonics.
- Turn off output 3 (Code 030) to turn off the ultrasonics.

3.10 Checking Pump Rotation

The pump rotation direction must be in the direction shown on the face of the pump. All pumps were set to rotate correctly with the phase relationship in the factory. They will either all rotate correctly or all rotate backwards.

To check pump rotation:

- Prepare the degreaser for operation. Fill it with solvent.
- Remove the back panel from the degreaser.
- Enter the Operational Mode by pressing F1.
- Turn on Cooling by pressing F6.
- Turn on Heat by pressing F8.
- Turn on the pumps by pressing F9.
- Note the direction of fan rotation on the pump. They should rotate in a counterclockwise direction when viewed from the back of the degreaser.
- If the direction is wrong, shut the degreaser down, disconnect it from the power source. Reverse any 2 of the 3 power-in wires.

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Operation

4.1 Introduction

Before preparing the LED 1216 for operation, read the following warnings. Failure to follow these warnings may result in property damage, serious personal injury or death.

Anyone using the LED 1216 should read and thoroughly understand this manual, as well as familiarize themselves with the precautionary instructions pertaining to using and handling chemicals. If necessary, contact the chemical manufacturer for recommendations regarding the use and handling of the manufacturer's products.

Warning:

1. **Keep the covers closed when not processing parts through the cleaner.**

2. **Always wear eye protection, gloves and protective clothing when handling solvents. Do not allow solvent to come into contact with the body. Solvent above 140°F (60°C) can cause burns. With prolonged or frequent contact, solvent removes natural oils from the skin.**

3. **Do not inhale or take solvent internally - either could be fatal.**

4. **All solvents are toxic to some degree. Do not allow solvent vapors to exceed the threshold limit value stated in Section V of the applicable OSHA Material Safety Data Sheet.**

5. **Never enter or lean into a degreaser. Solvent vapors will be present even if the degreaser appears empty. Solvent vapors displace air and may cause death by asphyxiation. Use cleanout doors when cleaning the degreaser.**

6. **Before adding solvent, be certain that the solvent to be added is the same as the solvent already in the cleaner.**

7. **Do not expose any halogenated solvent or its vapors to the high temperatures existing in open flames or exposed electric heating elements, or the solvent may decompose to toxic or corrosive substances.**

8. Do not use solvents which have become over-contaminated. High contamination levels may result in fire hazards or solvent breakdown and equipment damage.

9. Do not bring solvent into contact with highly reactive metals such as sodium, potassium and barium. The solvent can quickly break down to form toxic and corrosive compounds.

10. Solvents can break down and become acidic when exposed over prolonged periods to reactive metals such as magnesium, aluminum, zinc and beryllium. When cleaning parts made of these materials, analyze the solvent frequently to determine if it has broken down. Failure to comply with this recommendation will result in damage to the equipment and will void the warranty covering it.

11. Never operate the cleaner with the countertop removed. The covers are a pinch hazard under this condition.

4.2 Adding Solvent

Note: Add only clean virgin or certified reclaimed solvent to the degreaser.

Add solvent to the ultrasonic tank and allow it to overflow until the boiling sump is filled 2 inches from the top of the weir separating it from the ultrasonic tank. Do not pour solvent into the top of the degreaser. There are two acceptable methods of adding solvent:

a. Pump the solvent into the ultrasonic tank drain.
b. Pump the solvent through a tube placed through the countertop opening and inserted below the surface of the ultrasonic tank.

Note: Do not overfill the boiling sump. It will contaminate the ultrasonic sump.

4.3 Starting the Cold Trap

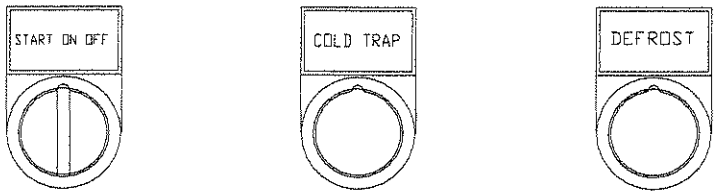
Note: It is normal for ice to accumulate on the expansion valve.

The cold trap should be on any time that solvent is in the degreaser. It will significantly reduce the amount of solvent losses. To start the cold trap, turn the START-ON-OFF switch to START, hold until the green light turns on and release. The switch will turn to ON.

Note: **If power is disconnected while the coils are cold, the compressor may not start until the coils warm up.**

The cold trap will defrost approximately once per hour. The frost on the cold trap coil will melt and the liquid will be collected in the trough and flow into the reservoir. The DEFROST light will be on during the defrost cycle.

Figure 4-1
Cold Trap Controls



a. Cold trap operation

Initial condition

- START-ON-OFF switch is OFF.
- Hi-low pressure switch causes the compressor to cycle occasionally for a few seconds to maintain the low pressure condition. The GREEN light will light when this occurs.

Caution: **Do not disconnect from power for long periods (4 hours or more.) Pressure will build up a may damage the compressor due to liquid migration.**

Turn START-ON-OFF switch to START position.

- Liquid line solenoid opens so that pressure rises.

When pressure reaaches setpoint (20 psig):

- Compressor starts.
- Green light turns on.
- Defrost timer motor runs.
- Fans run.

Release START-ON-OFF switch. Spring returns it to run position.

- If pressure is still low, all functions is the previous section will turn off.
- If pressure has risen, the functions in the previous section will continue to operate.

Defrost timer times out

- Fan turns off.
- Defrost solenoid opens to send hot refrigerant gases through the cold trap coil.
- Amber light turns on.

Coil pressure rises as the ice melts

- Defrost solenoid turns off.
- Fans turn on

Timer resets

- Fans are on and solenoid is off

b. Stopping the Cold Trap

Turn START-ON-OFF switch to OFF

- Liquid line solenoid closes
- All othe functions continue to operate as compressor pumps the refrigerant into the accumulator.

The Hi-low pressure switch opens

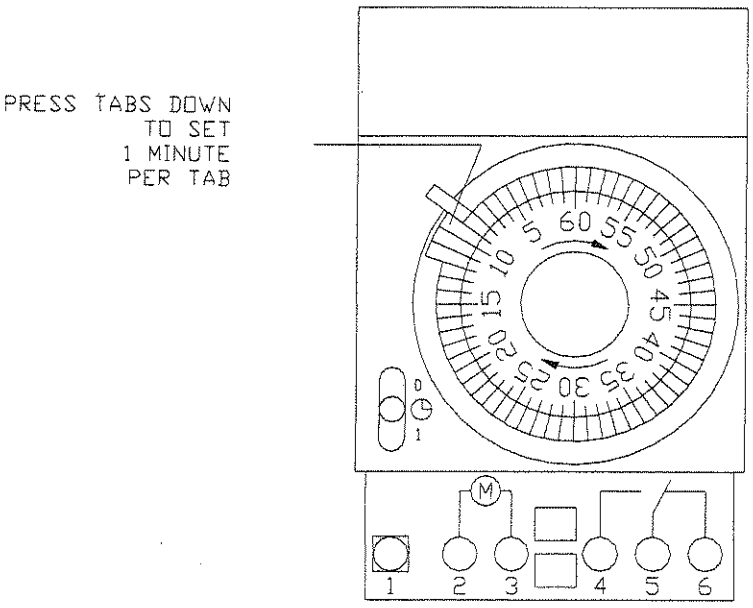
- Compressor stops.
- Green light turns off.
- Fans turn off
- Timer motor stops

4.4 Setting Cold Trap Defrost Timer

The cold trap defrost timer is factory set to defrost once each hour for 3 minutes duration.

In high humidity conditions, it may be necessary to increase the duration of the defrost cycle to completely melt the accumulated ice.

Figure 4-2
Defrost Timer



To set timer:

Press down green tab. Each tab is one minute. Minimum recommended setting is 3 minutes. Do not set more than one defrost cycle per hour.

4.5 Operator Interface Navigation

Key	When	In Order To
F1	Any Mode	Change to Operational Mode
F2	Any Mode	Change to Night Cool Mode
F3	Any Mode	Change to Set-up Mode. A password is required to enter the set-up mode
F4	Operational or Night Cool Mode with covers in Manual configuration	Open or close left cover
F5	Operational or Night Cool Mode with covers in Manual configuration	Open or close right cover
F6	Operational or Night Cool Mode	Turn cooling on or off
F7	Operational Mode	Turns ultrasonic sump heat on or off
F8	Operational Mode with Cooling on	Turn boiling sump and configured ultrasonic sump heaters on or off
F9	Operational Mode with Boil Sump heater on	Turn configured recirculation pumps on or off
F10	Operational Mode with Boil Sump heater on and with Ultrasonics in manual configuration	Turns ultrasonics on or off
F11	Operational Mode with Boil Sump heater on	Turns hot plate heater on or off
F12	Any Mode	Reset cleared Emergency Stop errors to allow restarting of the process
→ (right arrow)	Set-up Mode, Operational Mode in status view	Go to the next item
.	Operational Mode, Set-up Mode	Toggle on/off or "1/0"
Enter	Set-up Mode	Enter new numerical data in field
Clear	Set-up Mode	Clear numerical data from field
Number	Set-up Mode	

4.6 Starting the Degreaser

Turn the Disconnect to ON ('1' will be displayed in the window.) The PLC will display the following message on initial start-up:

SELECT MODE: PRESS F1 FOR OPERATING MODE
F2 FOR NIGHT COOL MODE F3 FOR SETUP MODE

If the degreaser was last in the Set-up Mode, the display will read:

SETUP MODE
PRESS F1 FOR OPERATIONAL MODE

- Press F1 to turn on the Operational Mode

OPERATIONAL MODE: BOIL TEMP= ###
US =### HOT PLATE = ###

Note: **Press the right arrow (→) to see the status of individual functions. See Section 5.2 for details.**

- Press F6 to turn on the Cooling. The chiller should start. Wait for approximately 5 minutes for the condensing coil to get cold.
- Press F8 to turn on the boil sump heat.
- Press F7 to turn on the ultrasonic sump heat.
- Press F9 to turn on the recirculation pump.
- Press F11 to turn on the hot plate heat.

4.7 Ultrasonics in Manual Configuration

Note: **Refer to the S8000 manual for detailed instructions regarding setup and operation of the power supplies.**

For manual or automatic mode, see SETUP MODE.

Check that the Power switch on the back of the power supply is ON.

When the ultrasonics are configured in the manual mode, press F10 to toggle the ultrasonics on and off.

Continuous operation of the ultrasonics may cause the ultrasonic sump temperature to rise above the set point. Operate ultrasonics only when parts are being cleaned to avoid performance degradation from operating too near the boiling point of the solvent.

4.8 Ultrasonics in Automatic Configuration

Note: **Refer to the S8000 manual for detailed instructions regarding setup and operation of the power supplies.**

For manual or automatic mode, see SETUP MODE.

Check that the Power switch on the back of the power supply is ON.

When the ultrasonics are configured in the automatic mode, they are controlled by the TDR. No operator interaction is required.

4.9 Degassing

Note: **Consult the S8000 manual for detailed degassing instructions.**

The solvent in the ultrasonic tank should be degassed before cleaning parts. The power supply may be switched to the degas mode and then operated from the power supply front panel. Front panel controls override the degreaser controls.

Caution: **Check that the tank is full before turning on the power supply from the front panel. Damage to the power supply may result from operation with an empty tank.**

Reset the front panel control for normal operation before cleaning parts.

4.10 Manual Cover Operation

- Press F4 to toggle the left cover open and closed when the covers are configured for manual operation.
- Press F5 to toggle the right cover open and closed when the covers are configured for manual operation.

4.11 Automatic Cover Operation

The TDR controls the opening and closing of the covers when they are configured for automatic operation. No operator actions are required.

4.12 Forcing Covers Open

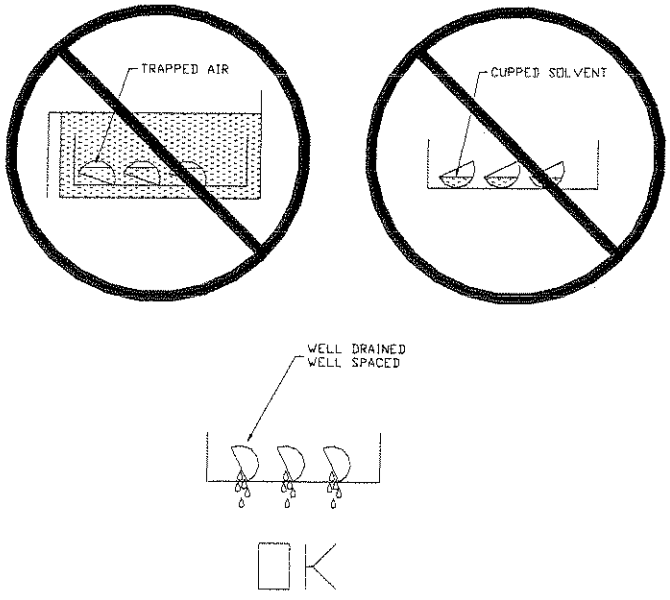
The covers are spring loaded and may be forced open manually. The springs exert a maximum of 5 pounds force and will open easily. They must be held open by hand. The open limit switches are not activated when the covers are forced open.

Warning: **Return covers to the closed position slowly. The momentum of the covers if released from the open position may cause injury.**

4.13 Loading Baskets

Figure 4-1 shows both correct and incorrect ways to load a cleaner basket. Place parts in the basket so that air will not be trapped when the basket enters the cleaner and so that solvent can drain when the basket leaves the vapor zone.

Figure 4-2
Loading a
Basket



14 Manual Operation

The LED 1216 is not intended for manual operation. The TDR is an integral part of emissions reduction equipment and should be used for all cleaning operations. Manual configurations are provided for maintenance purposes only.

4.15 Night Cool Mode

Press F2 to turn on the night cool mode. The heat, pumps and ultrasonics will turn off.

```
NIGHT COOL MODE
COOLING IS ON
```

The chiller will continue to operate if it was turned on. If it was not on, turn it on by pressing F6.

Leave the Cold Trap on whenever solvent is in the degreaser.

Press F1 to return to the Operational Mode. The operation will return to the state it was in before Night Cool Mode was entered.

4.16 Shut Down

- Turn off the Ultrasonics if they were turned on in the Manual Configuration.
- Turn off the Pump by pressing F9.
- Close covers which are open.
- Turn off Heat by pressing F8.
- Turn off cooling by pressing F6.
- If complete shutdown is required, turn the disconnect switch to OFF ('0' will be displayed in the window.)

4.17 Emergency Shut Down

Heat, ultrasonics and recirculation will be shut off if an alarm condition is encountered. The following message is displayed:

```
EMERGENCY SHUT DOWN!  PRESS F12 FOR RESET
```

PRESS RIGHT ARROW KEY (→) FOR CAUSE

Press the right arrow key to see what alarm cause the Emergency Shut Down. The following messages will be displayed. Press the right arrow key (→) to display the next message. If the message indicates ON, that fault condition existed. If the message indicates OFF, that fault did not occur.

BOIL SUMP LOW LEVEL ALARM = ON

- Boil sump level is low. This prevents overheating the heater due to incomplete solvent coverage. Add solvent.

BOIL SUMP OVERTEMPERATURE ALARM = ON

- Boil sump is too hot. This corresponds to excessive contamination. The boil sump should be drained and the solvent replaced with fresh solvent.

HIGH VAPOR LEVEL ALARM = ON

- Vapors have risen above the condensing coil. This is a sign of a general cooling failure. Check the cooling system.

CONDENSING COIL TEMPERATURE ALARM = ON

- Condensing coil is too warm. This could be caused by a chiller failure, a low coolant flow condition or excessively warm cooling water.

HOT PLATE OVERTEMPERATURE ALARM = ON

- Hot plate is too hot and may cause solvent breakdown. Set the hot plate temperature lower.

CHILLER FLOW SWITCH ALARM = ON

- Coolant flow is too low. This could be caused by a pinched coolant hose, a chiller pump failure or by the supply valve being shut off in a water cooled system.

CHILLER INTERLOCK ALARM = ON

- Chiller is not operating. This could be caused by a loss of electrical power in the chiller, the chiller being shut off or damage to the interconnecting cable.

Messages will remain even if the cause of the message has returned to a safe state.

- Press F12 to clear the alarms messages. They will only clear if they have reset to their safe state. When all faults have been cleared, pressing F12 will return to the Operational Mode in the previous condition.

Warning: **Emergency Shut Downs are serious faults. Do not resume operation until the cause of the failure has been determined and corrected.**

4.18 Draining Reservoir

The reservoir collects water and solvent from the cold trap. The water will float on top of the solvent. Check the reservoir sight glass frequently. Drain the water and solvent when the reservoir is two thirds full.

- Return the solvent to the water separator by opening the solvent return valve until water appears in the water separator. Close the solvent return valve.

- Drain the water from the reservoir by opening the water drain valve. Collect the water and solvent in a suitable container. Return the solvent to the degreaser and dispose of the water in accordance with local regulations. Close the water drain valve.

LED 1216
Ultrasonic Vapor Degreaser

BRANSON Ultrasonics Corporation
41 Eagle Road
Danbury, CT 06813-1961
(203) 796-0400

Maintenance

5.1 Routine Inspection

Loosening of plumbing connections is common during shipment and use. Check all connections during the initial startup of the degreaser and routinely thereafter. Leaks in solvent systems may be difficult to detect because the solvent evaporates so quickly.

Feel for dampness or cold spots caused by evaporative cooling. There are dyes that can be added to the solvent to assist in leak detection. These dyes may be difficult to remove when the degreaser is later used for cleaning.

5.2 Troubleshooting With the Operator Interface

Several diagnostic aids are included in the Operator Interface programming.

a. Operational Temperature Indicators: Whenever the degreaser is in the Operational Mode, the boiling sump temperature and the temperatures of the ultrasonic sumps are displayed. The boiling sump temperature may be used to track the contamination level of the solvent. The ultrasonic sump temperatures can be used to determine when the system is ready to clean parts.

b. The alarm capabilities and the actions required to correct them are shown in Section 4.17.

c. Status indicators are available in the Operational Mode by pressing the right arrow key (→). The following messages will be displayed:

Use the right arrow key (→)to move to the next message.

Note: **The messages shown here are "ON" If the function is off, the message on the screen will be "OFF". Actual temperatures will be displayed.**

- LEFT COVER = 1 (1 = OPEN, 0 = CLOSED)
- RIGHT COVER = 1 (1 = OPEN, 0 = CLOSED)
- COOLING IS ON
- BOILING SUMP HEAT IS ON

- RECIRCULATION PUMP IS ON
- SUBCOOLING TEMPERATURE =###
- U/S HEAT IS ON
- HOT PLATE HEAT IS ON
- ULTRASONICS IS ON
- HIGH VAPOR TEMPERATURE = ###
- LOW VAPOR TEMPERATURE = ###
- CONDENSING COIL TEMPERATURE =###

Press the right arrow key (→) to return to the normal Operational Mode display.

5.3 Draining Water From Water Separator

To use the separator/desiccator as a separator, do not install the desiccator container.

At least once each day, open the water separator water drain and collect the discharge into a container. When the flow stops, close the drain. The discharge will contain some dissolved or suspended solvent. Dispose of this residue in accordance with local regulations.

5.4 Changing Desiccant

Desiccant must be tested routinely and changed when necessary. It may be regenerated and reused; check with the desiccant manufacturer for regeneration instructions.

a. Testing Frequency

The rate of desiccant exhaustion is determined by the amount of water introduced by the parts, the ambient humidity and the temperature of the condensing and cold trap coils.

Note: **For maximum solvent and equipment life, do not allow the desiccant to become fully loaded with water. Change the desiccant before the desiccant test shows positive.**

Use the following guidelines to determine testing frequency for your local conditions. The guidelines also detail how to obtain the maximum life from the desiccant.

1. Each working shift, test the solvent leaving the water separator until you can establish a baseline. For example:

   After testing the desiccant twice per shift and changing the desiccant three times, you may determine that the SHORTEST desiccant life is four days and the LONGEST desiccant life is six days.

2. Revise your testing schedule. Continuing the example above:

   Test on the third day and then daily until the desiccant needs to be changed.

3. If you observe free water in the desiccant chamber, then change the desiccant regardless of the test results.

b. Testing Procedure

Use the desiccator test kit, PN 000-870-901, to detect the presence of water in the solvent leaving the water separator.

1. Turn off the cleaner and allow the vapor zone to collapse.

2. Remove a 100ml solvent sample from Tank 4 and place the sample in a beaker.

3. Add 1 teaspoon of Tel-Tale Indicating Silica Gel to the solvent sample.

4. Stir the contents of the beaker for one minute and then set the beaker aside for thirty minutes.

5. If the gel shows a pink tinge, the desiccant is loaded and must be changed.

c. **Changing the Desiccant Procedure**

1. Use a hook to lift the desiccant container out of the separator.

Warning **Never enter or lean into a degreaser. Solvent vapors will be present even if the degreaser appears empty. Solvent vapors displace air and may cause death by asphyxiation. Use a hook when replacing desiccant.**

2. Suspend the container above the separator until all dripping stops.

3. Remove the container from the degreaser and empty the desiccant bag. Follow the manufacturer's recommendations for regenerating desiccant.

4. Replace the desiccant bag in the container. Fill with desiccant.

5. Using the hook, replace the desiccant container in the separator.

5.5 Cleanout Procedure

It is vitally important that solvent equipment be kept clean for the safety of the operator, the economy of the operation and the effectiveness of the cleaning.

Warnings:

1. **Never enter or lean into a degreaser. Solvent vapors will be present even if the degreaser appears empty. Solvent vapors displace air and may cause death by asphyxiation. Use cleanout doors when cleaning the degreaser.**

2. **Unplug or electrically "lock-out" the degreaser before cleaning unit.**

3. **Always consult the solvent manufacturer for contamination information, safe handling practices and proper storage procedures.**

a. Frequency of Cleaning

Cleaning frequency is determined by the type and amount of soil being removed. At a minimum, boil down and drain the cleaner when the contamination reaches 25%.

b. Cleanout Steps

Check the solvent routinely for acidity. Acid can be introduced in two ways:

- Under certain conditions, solvents can break down to become acidic.
- The soils being cleaned may be acidic.

Consult the solvent manufacturer to determine the best method of checking acidity.

1. Without cleaning any parts, operate the degreaser for at least 4 hours to purify the solvent in the ultrasonic sump.

2. Shut off and lock out electrical power.

3. Drain the water separator and ultrasonic sump into suitable containers. Check for acidity or degradation. If the solvent is acid or degraded, dispose of it in accordance with local regulations. If the solvent is acceptable, it will be returned to the degreaser at the end of the procedure.

4. Drain the boiling sump. This solvent must either be reclaimed in a still or disposed of in accordance with local regulations.

5. Remove all dirt, chips and sludge, Use the cleanout doors. Do not enter the degreaser. Most contaminants may be removed by brushing with a stiff brush and rinsing with solvent. You may have to scrape off hardened or caked on sludge with a paint scraper or similar tool.

Caution: Do not use a carbon steel wire brush on stainless steel tanks or plumbing components. If you use rags or other absorbent materials, be sure to dispose of them properly.

6. Brush out the condensate trough and make sure that there are no obstructions to condensate flow. Take care to avoid damage to corrosion resistant finishes.

7. Brush the condensing coils, walls and tank bottoms to remove all accumulated residues.

8. If the solvent tested positive for acid, follow acid cleanout procedures.

9. Close the drain valves and refill with previously drained solvent. Add new solvent as required.

10. Check for leaks.

11. Restart following initial startup procedures.

5.6 Acid Cleanout Procedures

A degreaser which has gone acid can be neutralized and repassivated. Complete removal of all solid residue from the cleaner and associated plumbing is essential to avoid recurrence of the acid condition.

All exposed surfaces of the cleaner, pipes, fittings and valves must be neutralized with special attention being given to corners and seams. To do so:

a. Using a medium stiff bristle brush, scrub the interior of the degreaser with a 5% baking soda and water solution (approximately 1/2 lb. per gallon.)

b. Thoroughly rinse the system, including all plumbing and associated equipment, with water and flush out all residue.

c. Scrub the unit (especially corners and weld seams) with STA-CLEAN* or a solution of one part OAKITE 33* to six parts water.

Warning: **OAKITE 33 contains acid. Avoid contact with eyes and skin. Wear appropriate eye protection, gloves and protective clothing.**

d. Flush the solution through all the pipes, fittings and valves.

e. If Oakite 33 was used in step c., neutralize all treated surfaces using a 5% baking soda and water solution. (approximately 1/2 lb. per gallon.)

f. Thoroughly rinse the system, including all plumbing and associated equipment, with water and flush out all residue.

g. Drain all cavities and dry out the system before adding solvent.

h. Refill the system and resume normal operations.

*STA-CLEAN is a stainless steel cleaner made by Leedle Inc., 2929 S. Halstead Street, Chicago, Illinois 60608

OAKITE 33 is a product of Oakite Products, 50 Valley Road, Berkeley Heights, New Jersey 07922, Telephone 1-800-526-4473

5.7 Recommended Spare Parts List

000-135-106	FUSE BAN 10A 250V FB	BUSS BAN-10
000-135-110	FUSE BAN 20A 250V FB	BUSS BAN-20
000-135-124	FUSE FNQ 5A 500V SB	BUSS FNQ-5
000-265-502	BAG DESICCANT BSD 1620	
000-342-140	O-RING 2-357-V747-75	
000-385-083	SWITCH PROX 5802	
000-870-901	DESICCANT TEST KIT	
000-950-555	MOLECULAR SIEVES DESICCANT (5 LBS)	
CPN-003-002	BEARING FLANGED BOSTON FP812-4	1/2 SHAFT 1/2 LNG
CPN-049-002	FUSE FNQ-R 2.25A 500V SB	BUSS FNQ-R-2 1/4
SPP-002-230	FUSE KTK-R 2A 600V FB	BUSS KTK-R-2
SPP-002-642	FUSE FNQ 15A 500V SB	BUSS FNQ-15
SPP-005-394	FUSE FNQ-R 1A 500V SB	BUSS FNQ-R-1
SPP-005-766	SPRING SASH 3.5-4.5 LBF	MCMASTER 1053A13
SPP-006-162	O-RING 2.36ID-2.63OD VITON	MCMASTER 9464K111

5.8 Ultra-Kool Parts

Available from:
Ultra-Kool Inc
Box 458
Gilbertsville, PA 19525
(610) 367-2019

Penn dual pressure control	P70MA-1C	
Square D pump down switch	KS65-B	
GE Fan Motors1/12 HP	5KSP29DG-5040S	
Danfoss pressure regulator	7/8	
Danfoss solenoid coils	Type 01827513 24 VAC	
Danfoss solenoid valves	Type 032F1166	
Copeland Condensing Unit	KAJA-011E-TAC-100	SPP-003-696

LED 1216
Ultrasonic Vapor Degreaser

BRANSON Ultrasonics Corporation
41 Eagle Road
Danbury, CT 06813-1961
(203) 796-0400

Parts Lists

CUSTOMER: ITT BARTON
BUC: 287234
DESCRIPTION: LED 1216S
PROJECT ENGINEER: BALDWIN/BRIDGES

REVISION			
R	DESCRIPTION	BY	DATE
A	GENERAL CHANGES	RWB	12/05/96
			/ /
			/ /

ITEM	R	PART NUMBER	DWG NUMBER	QTY	UOI	DESCRIPTION
SPC-287-234		PARENT = SPC-287-234				
			B100-3779	1.00	DW	FINAL ASSY LED 1216
			B51-3203	1.00	DW	WIRING SCHEMATIC LED 1216
			B55-1282	1.00	DW	PLUMBING SCHEMATIC LED
		SPP-006-479		1.00	EA	"COLD TRAP" FOR LED1216 PURCHASED FROM ULTRA-COOL INC
1	A	000-352-200		47.00	EA	NUT HEX 1/4-20 SS
2	A	000-354-207		45.00	EA	WASHER LOCK 1/4 SS
3		200-047-085		2.00	EA	SWAGE THERMO 3/16 X 1/4NPT OMEGA-LOK
4		CPN-060-019		3.00	EA	THERMOCOUPLE J 3/16X12 6 FT OMEGA JTIN-316G-12 6FT
6		SPP-006-162		1.00	EA	O-RING 2.36ID-2.639OD VITON MCMASTER 9464K111
7		000-352-110		45.00	EA	NUT HEX 10-32 SS
8		000-354-033		69.00	EA	WASHER LOCK #10 IT ZPS
9		SPP-006-478	B25-2800	2.00	EA	HEATER SERP LOW DENS 2KW 208V B25-2800
10		000-400-053		14.00	EA	LUG HEATER 10P
11		000-593-108		3.00	EA	SEALTITE ADAPT STR 3/4
12		000-509-006		15.00	FT	SEALTITE 3/4
13		000-651-086		1.00	EA	GUARD HEATER BSD/BLD 1216 C15143
14		000-651-060		2.00	EA	COVER CLEANOUT DOOR
15		000-342-140		2.00	EA	O RING 2-357-V747-75
16		000-348-186		12.00	EA	BOLT HEX 5/16-18X1 ZPS
17		000-352-114		44.00	EA	NUT HEX 5/16-18 ZPS

CUSTOMER: ITT BARTON
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A	GENERAL CHANGES	RWB	12/05/96
			/ /
			/ /

ITEM	R	PART NUMBER	DWG NUMBER	QTY	UOI	DESCRIPTION
SPC-287-234 PARENT = SPC-287-234						
18		000-354-065		28.00	EA	WASHER LOCK 5/16 ST ZPS
20		000-535-115		1.00	EA	NIPPLE 304SS 1/4 X CL
21		000-559-103		4.00	EA	VALVE BALL 316 SS 1/4
22		000-535-116		3.00	EA	NIPPLE 304SS 1/4 X 1-1/4
23		000-503-106		6.00	FT	TUBE 304SS .375 OD .028 STR
24		000-593-122		5.00	EA	SEALTITE ELBOW 90 1/2
25		000-593-106		4.00	EA	SEALTITE ADAPT STR 1/2
26		CPN-047-003		7.00	EA	ADAPT CORD 1/4-5/16 NYL 1/2NPT HUBBELL SHC1016CR
27		CPN-047-004		1.00	EA	ADAPT CORD 1/16-1/8 NYL 1/2NPT HUBBELL SHC1013CR
28		000-503-108		8.00	FT	TUBE 304SS .625 OD .035 STR
29		000-348-260		10.00	EA	BOLT HEX 1/4-20X.5 SS
30		000-155-184		1.00	EA	HEATER RUBBER 800W 220V 10X7 SELF ADH W/TSTAT
31		CPN-032-344		1.00	EA	COVER HEATER 800W
32		000-110-052		1.00	EA	BOX JCT 2X4
33		000-110-053		1.00	EA	COVER BOX JCT 2X4
34		000-599-003		3.00	EA	CONN 2 SCR .25X .66 OD 1/2P THOMAS & BETTS 3302
35		000-352-202		18.00	EA	NUT HEX 6-32 SS
36		000-354-023		18.00	EA	WASHER LOCK #6 IT ZPS
37		000-486-051		1.00	FT	TUBE TYGON 1/4
38		CPN-060-018		3.00	EA	THERMOCOUPLE J WASH #10 5 FT OMEGA WTJ-10-S-60
39		CPN-062-094		2.50	FT	INSULATION NEOP ADH 2 IN X 1/2 MCMASTER 8694K89 25FT RL

CUSTOMER: ITT BARTON
BUC: 287234
DESCRIPTION: LED 1216S
PROJECT ENGINEER: BALDWIN/BRIDGES

REVISION			
R	DESCRIPTION	BY	DATE
A	GENERAL CHANGES	RWB	12/05/96
			/ /
			/ /

ITEM	R	PART NUMBER	DWG NUMBER	QTY	UOI	DESCRIPTION
SPC-287-234 PARENT = SPC-287-234						
40		000-385-304		1.00	EA	SWITCH FLOW 1/2 NPT PVC
41		CPN-121-008		2.00	EA	ADAPTER NYL 3/4HOSE-1/2MNPT McM # 5372K32
44		CPN-163-005		1.00	EA	FILTER CRTG 10 IN 2 MIC COTTON WOUND SS CORE
45		000-529-113		1.00	EA	COUP FULL 304SS 1/2
46		SPP-005-943		3.00	EA	HEATER STRIP 250W 240V CHROMOLOX OT-1225 PCN 129402
47		000-354-030		18.00	EA	WASHER FLAT 1/4 BR
48		000-490-238		24.00	FT	WIRE HEATER 14
49		000-127-140		1.00	EA	WELDSTUD SS 6-32 X 1/2
50		100-240-136		1.00	EA	RF CABLE ASSY 15 FT - 8000
51		000-030-238		1.00	EA	CONNECTOR C-H CGB195
52		000-348-199		8.00	EA	BOLT HEX 3/8-16X1.5
53		CPN-073-006		8.00	EA	NUT HEX 3/8-16 SS MCMASTER 91845A031
54		000-354-060		8.00	EA	WASHER FLAT 3/8 ZPS
55		200-114-100		8.00	EA	WASHER LOCK 3/8 SS
56		000-348-103		112.00	EA	SCREW MS 10-32X.625 FH SS
57		100-116-030		16.00	EA	WHEEL ROLLER TDR 1-9/16
58		000-348-198		16.00	EA	BOLT HEX 5/16-18X1.5
59		000-354-049		14.00	EA	WASHER FLAT #10 BR
60		SPP-005-766		2.00	EA	SPRING SASH 3.5-4.5 LBF MCMASTER 1053A13
61		CPN-069-002		1.00	EA	GEARMOTOR 32.7RPM 230/1 1/20HP GRAINGER 1L523
62		CPN-069-003		1.00	EA	GEARMOTOR BRAKE GRAINGER 5X400 (FOR CPN-069-002 GEARMOTOR)

:USTOMER: ITT BARTON
:UC: 287234
)ESCRIPTION: LED 1216S
'ROJECT ENGINEER: BALDWIN/BRIDGES

R	DESCRIPTION	BY	DATE
A	GENERAL CHANGES	RWB	12/05/96
			/ /
			/ /

TEM	R	PART NUMBER	DWG NUMBER	QTY	UOI	DESCRIPTION
:PC-287-234 PARENT = SPC-287-234						
63		CPN-069-004		1.00	EA	SOL BRAKE 230/60 K040021-002 PARTS CO. OF AMERICA
64		CPN-069-005		1.00	EA	GEARMOTOR CONDUIT BOX 2A754 GRAINGER
65		000-595-302		4.00	EA	NUT WIRE #73 ORANGE
66		CPN-176-002		1.00	EA	PULLEY TIME 16T 3/8P 3/4W 1/2B BROWNING 16LF075-1/2
67		SPP-005-592		21.00	FT	BELT TIMING 3/8P 3/4W ROLL BROWNING
68		CPN-091-001		1.00	EA	SHAFT IDLER OMN POW C A25-2500
69		CPN-027-001		3.00	EA	COLLAR CLAMP SS 1/2 BORE BOSTON CSSC50
70		CPN-176-001		1.00	EA	PULLEY TIME 16T 3/8P 3/4W 3/4B BROWNING 16LF075-3/4
71		CPN-003-002		2.00	EA	BEARING FLANGED BOSTON FP812-4 1/2 SHAFT 1/2 LNG GLASS/TEFLON
72		SPP-006-453	A25-2784	2.00	EA	BLOCK DRIVE COVER B25-2784 LED 1620
73		SPP-006-454	A25-2785	2.00	EA	BLOCK DRIVE COVER SPACER B25-2785
74		000-348-197		4.00	EA	BOLT HEX 1/4-20X1.5
75		000-385-084		1.00	EA	MAGNET PROX SWITCH
76		000-348-047		13.00	EA	SCREW MS 4-40X.375 PAN SS
77		000-354-022		13.00	EA	WASHER LOCK #4 IT ZPS
78		200-099-200		4.00	EA	SWITCH REED SPDT PROXIMITY HAMLIN 59135-030
79		SPP-006-455		1.00	EA	HINGE SS 1.25X36X.06 HOLES 2IN MCMASTER 1658A624
80		000-350-016		14.00	EA	SCREW MS 6-32X.5 PH SS
81		CPN-099-245		1.00	EA	SWITCH DISCONNECT 3 POLE 100A SPRECHER&SCHUH LE3-100-1753
82		CPN-099-247		1.00	EA	SWITCH HANDLE FOR LE3-XXX SPRECHER+SHUH LFS2-N-6-175
83		SPP-005-767		1.00	EA	OIT OP INTERFACE FOR GE FANUC MAPLE SYSTEMS GEF460C-240B

CUSTOMER: ITT BARTON
BUC: 287234
DESCRIPTION: LED 1216S
PROJECT ENGINEER: BALDWIN/BRIDGES

REVISION			
R	DESCRIPTION	BY	DATE
A	GENERAL CHANGES	RWB	12/05/96
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ITEM	R	PART NUMBER	DWG NUMBER	QTY	UOI	DESCRIPTION
SPC-287-234 PARENT = SPC-287-234						
84		SPP-005-935		1.00	EA	OIT OPERATING CABLE GE MAPLE SYSTEMS 7431-0020
85		SPP-006-456		1.00	EA	SWITCH SEL 3 POS MOM/MAINT SPRECHER+SCHUH DSK3P-G-10/01
86		SPP-006-457		1.00	EA	INSERT SM CUST "COLD TRAP" SPRECHER+SCHUH DT3 SML CUSTOM
87		SPP-006-458		1.00	EA	INSERT SM CUST "DEFROST" SPRECHER+SCHUH DT3 SML CUSTOM
88		SPP-006-459		1.00	EA	INSERT SM CUSTOM "START ON OFF SPRECHER+SCHUH DT3 SML CUSTOM
89		SPP-005-371		1.00	EA	LIGHT PILOT 24V AMBER SPRECHER+SHUH, DL3R-A-E-24V
90		SPP-005-117		1.00	EA	LIGHT PILOT 24V GREEN SPRECHER+SHUH, DL3R-G-E-24V
91		CPN-099-244		3.00	EA	SWITCH LEGEND CAR SM RND BTM SPRECKER 424-52
92		000-594-102		6.00	FT	DUCT WIRE 91020
93		000-594-101		6.00	FT	DUCT WIRE COVER 90011
94		SPP-004-748		1.00	EA	XFMR CTRL 250VA 208-480 X 24 ACME TA-2-81325
95		000-350-026		33.00	EA	SCREW MS 8-32X.25 PH SS
96		000-354-035		33.00	EA	WASHER LOCK #8 IT ZPS
97		CPN-103-007		3.00	EA	BLOCK TERM DIST 16021 BUSSMANN
98		CPN-103-005		25.00	EA	TERMINAL BLOCK W/ REJECT FUSE ENTRELEC P/N 116 298.27
99		SPP-005-394		2.00	EA	FUSE FNQ-R 1A 500V SB BUSS FNQ-R-1
100		SPP-005-529		1.00	EA	FUSE FNQ 8A 500V SB BUSS FNQ-8
101		SPP-002-230		2.00	EA	FUSE KTK-R 2A 600V FB BUSS KTK-R-2
102		000-135-106		5.00	EA	FUSE BAN 10A 250V FB BUSS BAN-10
103		000-135-110		4.00	EA	FUSE BAN 20A 250V FB BUSS BAN-20
104		CPN-049-002		3.00	EA	FUSE FNQ-R 2.25A 500V SB BUSS FNQ-R-2 1/4

CUSTOMER: ITT BARTON
SUC: 287234
DESCRIPTION: LED 1216S
PROJECT ENGINEER: BALDWIN/BRIDGES

REVISION			
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A	GENERAL CHANGES	RWB	12/05/96
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ITEM	R	PART NUMBER	DWG NUMBER	QTY	UOI	DESCRIPTION
SPC-287-234 PARENT = SPC-287-234						
.05		SPP-002-642		6.00	EA	FUSE FNQ 15A 500V SB BUSS FNQ-15
.06		SPP-006-460		1.00	EA	TIMER 1 HOUR 208/240VAC GRASSLIN V86/1 S1HU-240
.07		000-404-126		6.00	EA	TERM BLK 10MM GND 165 115.10 ENTRELEC
.08		CPN-084-007		3.00	EA	CONTACTOR 25A CA3-9-10-24-NO NO DWG S&S
.09		CPN-084-003		5.00	EA	CONTACTOR 12A, 3POLE+NO/AUX SPRECHER CA4-9-10-24-NO
.10		000-310-142		4.00	EA	RELAY DPDT 10A LY2-US-24V
.11		CPN-093-001		4.00	EA	SOCKET RELAY OMRON PTF08A-E
.12		CPN-084-004		1.00	EA	CONTROLLER MOTOR CIRCUIT 1.6A SPRECHER & SCHUH, KTA3-25-1.6A
.13		SPP-005-367		1.00	EA	CONTROLLER MOTOR CIRCUIT 1A SPRECHER & SCHUH, KTA3-25-1A
.15		SPP-005-927		1.00	EA	PLC GE9030 BASEPL/CPU 5 SLOT GE IC693CPU311
.16		SPP-003-004		1.00	EA	PLC GE9030 POWER SUP 120/240AC GE#IC693PWR321
.17		SPP-005-928		1.00	EA	PLC GE9030 BATTERY BACKUP GE IC693ACC301
.18		SPP-003-006		1.00	EA	PLC GE9030 INPUT MOD 24DC 16PT GE#IC693MDL645
.19		SPP-003-007		1.00	EA	PLC GE9030 OUTP RELAY 2A 16PT GE#IC693MDL940
.20		SPP-003-432		1.00	EA	PLC GE9030 OUTP RELAY ISOL 8PT GE#IC693MDL930
.21		SPP-003-012		1.00	EA	PLC GE9030 TEMP CONTR MODULE HORNER#HE693THM800
.22		CPN-103-004		6.00	FT	TRACK MOUNTING DIN TYPE GRAINGER 6X295
.23		SPP-003-891		1.00	EA	CONN D-SUBMINIATURE 25 SOCKETS DIGI-KEY 125F-ND
.24		200-029-596		1.00	EA	CONN DSUB 15POS PLUG SDR MET
.25		200-063-195		2.00	EA	KIT ACCY D SHELL CONN
.26		CPN-082-003		2.00	EA	RECEPT EL 250/20/2 GND 2326 HUBBELL TWIST FLANGED NYLON

CUSTOMER: ITT BARTON
BUC: 287234
DESCRIPTION: LED 1216S
PROJECT ENGINEER: BALDWIN/BRIDGES

REVISION			
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A	GENERAL CHANGES	RWB	12/05/96
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ITEM	R	PART NUMBER	DWG NUMBER	QTY	UOI	DESCRIPTION
SPC-287-234 PARENT = SPC-287-234						
127		000-352-067		6.00	EA	NUT HEX 8-32X11/32 ZPS
128		000-342-003		4.00	EA	GROMMET 3/8 X 15/64 X .18
129		000-127-028		2.00	EA	BUTTON SNAP 7/8
130		SPP-005-752		2.00	EA	HINGE OFFSET LEFT TYPE B SOUTHCO 96-10-510-50
131		SPP-005-753		2.00	EA	HINGE OFFSET RIGHT TYPE B SOUTHCO 96-10-520-50
132		SPP-005-754		4.00	EA	LATCH FLUSH LIFT & TURN TOOL SOUTHCO 62-43-35 BLACK 1-1.4
133		000-127-009		73.00	EA	NUT MONAD 10-32 130061
134		000-230-095		1.00	EA	LABEL SPECIFICATION
135		000-030-490		1.00	EA	TERM AMP MTA-156 RECEPT
136		000-030-491		1.00	EA	TERM AMP MTA-156 RETAINER
137		000-127-054		8.00	EA	FOOT LEVELING PSD
140		000-404-128		7.00	EA	TERM BLK 10MM GREY 115 120.17 ENTRELEC
141		200-049-016		2.00	EA	FUSE BAN 15A 230V FB BUSS BAN-15
200		000-484-640		8.00	FT	TUBE TEFLON 14TW
201		SPP-006-578		1.00	EA	CONDENSING UNIT 1-1/2 230/3 COPELAND F3AH0152-TFC-001
202		000-513-430		1.00	EA	VALVE DB ADRPE-3-0/80-5/8ODF SPORLAN
203		200-513-808		1.00	EA	DRIER/FILTER 3/8 SOLDER ALCO EK-163S 3/8
204		200-513-802		1.00	EA	INDICATOR MOISTURE 3/8 ALCO AMI-1SS3-3/8
205		200-513-807		1.00	EA	REFRIG TEV 1-1/2 R22 ALCO AAE-1-1/2 HW
206		000-547-215		2.00	EA	TEE CU 5/8C X 5/8C X 1/4C
207		000-523-310		1.00	EA	BUSHING EXTND 3/4 FTG X 1/2C

:USTOMER: ITT BARTON
)UC: 287234
)ESCRIPTION: LED 1216S
'ROJECT ENGINEER: BALDWIN/BRIDGES

REVISION			
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A	GENERAL CHANGES	RWB	12/05/96
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ITEM	R	PART NUMBER	DWG NUMBER	QTY	UOI	DESCRIPTION
PC-287-234 PARENT = SPC-287-234						
08		000-513-524		1.00	EA	NUT FLARE 3/8 OD
09		000-547-304		1.00	EA	TEE 3/8C
10		000-503-304		6.00	FT	TUBE COP .250 OD SF COIL
11		000-503-315		16.00	FT	TUBE COP .625 OD SF COIL
12		000-503-308		6.00	FT	TUBE COP .375 OD SF COIL
13		000-230-127		1.00	EA	LABEL DANGER HIGH VOLTAGE
14		100-065-434		2.00	EA	LABEL 40 KHZ
15		100-065-454		1.00	EA	LABEL B/S DRAIN
16		100-065-455		1.00	EA	LABEL U/S DRAIN
17		100-065-445		2.00	EA	LABEL WATER DRAIN
18		100-065-438		1.00	EA	LABEL VAPOR TEMP
19		100-065-458		1.00	EA	LABEL B/S TEMP
20		100-065-462		1.00	EA	LABEL U/S TEMP
21		000-230-095		1.00	EA	LABEL SPECIFICATION
22	A	000-348-162		6.00	EA	SCREW MS 10-32X.63 PAN SS
PC-287-234A PARENT = SPC-287-234						
			B24-12332	1.00	DW	CONDENSING COIL LED 1216
			B24-12333	8.00	EA	BRACKET CONDENS COIL LED 1216
			B24-12335	1.00	DW	WATER SEPARATOR COLD TRAP LED 1216
			B24-12337	1.00	DW	FRAME TANK SUPPORT LED 1216

CUSTOMER: ITT BARTON
BUC: 287234
DESCRIPTION: LED 1216S
PROJECT ENGINEER: BALDWIN/BRIDGES

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A	GENERAL CHANGES	RWB	12/05/96
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ITEM	R	PART NUMBER	DWG NUMBER	QTY	UOI	DESCRIPTION
SPC-287-234A		PARENT = SPC-287-234				
			B24-12392	1.00	DW	HANGER COLD TRAP 3
			B29-2872	1.00	DW	TANK DETAIL LED 1216
		000-127-135		27.00	EA	WELDSTUD SS 1/4-20 X 1-1/4
		000-127-140		7.00	EA	WELDSTUD SS 6-32 X 1/2
		000-127-147		20.00	EA	WELDSTUD SS 10-32 X 1/2
		000-185-208		5.00	SH	METAL SHT 316L-2B 14GA
		000-185-209		1.00	SH	METAL SHT 316L-2B 12GA
		000-348-064		4.00	EA	SCREW MS 6-32X1 BH SS
		000-501-112		3.00	FT	PIPE 304SS 1/2 SCH 40
		000-503-108		45.00	FT	TUBE 304SS .625 OD .035 STR
		000-503-110		6.00	FT	TUBE 304SS .750 OD .049 STR
		000-580-100		2.00	EA	BEZEL CLEANOUT CAST
		000-589-239		1.00	EA	SWAGE SS-600-2-8
		000-589-254		1.00	EA	SWAGE SS-1010-1-8
		000-600-015		2.00	EA	SWAGE MACH SS1010
		000-600-400		7.00	EA	COUP MACH HALF 304SS 1/4
		000-650-562		4.00	EA	BRACKET COIL PSD
		000-651-068		2.00	EA	BRACKET HEATER GUARD BSD A REV A 15144
		200-047-085		3.00	EA	SWAGE THERMO 3/16 X 1/4NPT OMEGA-LOK
		SPP-005-762		1.00	EA	VALVE BALL 316SS 1/2 SOC WELD APOLLO 85-203
		SPP-006-445		1.00	EA	ELBOW 304SS WELD BUTT 1/2X90 MCMASTER 45605K511

CUSTOMER: ITT BARTON
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DESCRIPTION: LED 1216S
PROJECT ENGINEER: BALDWIN/BRIDGES

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ITEM	R	PART NUMBER	DWG NUMBER	QTY	UOI	DESCRIPTION
SPC-287-234A PARENT = SPC-287-234						
		SPP-006-446		4.00	EA	VALVE BALL 316SS NPTXSOC 1/2 APPOLLO 85-XX
200		000-490-079		10.00	FT	WIRE HKP 16G TEF NB RED
202		000-802-167		12.00	EA	TRANSDUCER KIT 40KHZ
203		000-175-051		14.00	EA	STANDOFF
204		000-175-048		1.25	SF	ADHESIVE FILM 12" WIDE
205		000-400-093		8.00	EA	TERM SPLICE PRL 14-16 NON-INS
206		000-400-094		6.00	EA	TERM SPLICE PRL 10-12 NON-INS
208		000-490-080		2.00	FT	WIRE HKP 18G TEF NB RED
210		000-490-079		1.00	FT	WIRE HKP 16G TEF NB RED
211		000-490-083		2.00	FT	WIRE HKP 16G TEF NB BLACK
212		000-490-081		1.00	FT	WIRE HKP 18G TEF NB BLACK
213		000-400-134		1.00	EA	TERM GND 10 16GA AMP 350436-2 REEL
SPC-287-234B PARENT = SPC-287-234						
			B24-12302	1.00	DW	COVER CONTROL BOX
			B24-12305	1.00	DW	SKIRT COLD TRAP FRONT LED
			B24-12309	1.00	DW	SKIRT COLD TRAP BACK LED
			B24-12347	1.00	DW	SKIRT LED1216 LEFT
			B24-12348	1.00	DW	SKIRT LED1216 RIGHT
			B24-12349	1.00	DW	SKIRT LED1216 FRONT
			B24-12350	1.00	DW	SKIRT LED1216 ACCESS PANEL

CUSTOMER: ITT BARTON
BUC: 287234
DESCRIPTION: LED 1216S
PROJECT ENGINEER: BALDWIN/BRIDGES

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ITEM	R	PART NUMBER	DWG NUMBER	QTY	UOI	DESCRIPTION
SPC-287-234B		PARENT = SPC-287-234				
			B24-12351	1.00	DW	SKIRT LED1216 BACK LEFT
			B24-12352	1.00	DW	SKIRT LED1216 BACK RIGHT
			B24-12353	1.00	DW	SKIRT DOOR LEFT LED 1216
			B24-12354	1.00	DW	SKIRT DOOR RIGHT LED 1216
			B24-12355	1.00	DW	SKIRT COLD TRAP LED 1216
			B24-12356	1.00	DW	SKIRT CONDENSING FRONT LED1216
			B24-12357	1.00	DW	SKIRT CONDENSING BACK LED 1216
			B24-12367	1.00	DW	SKIRT CONDS W/REST LED 1216
		000-185-209		.50	SH	METAL SHT 316L-2B 12GA
		000-185-631		4.50	SH	METAL SHT 3003H14 .063
SPC-287-234C		PARENT = SPC-287-234				
			A24-12268	1.00	DW	CLAMP BELT COVER
			A24-12278	1.00	DW	PLATE ADJUST 1 SENSOR
			A24-12292	1.00	DW	PLATE ADJUST 2 SENSORS
			B24-12273	1.00	DW	COVER HEATER BOIL SUMP
			B24-12303	1.00	DW	PANEL CONTROL BOX LED
			B24-12331	1.00	DW	BRACKET HEATER LED 1216
			B24-12336	1.00	DW	COVER HEATER HOT PLATE LED 121
			B24-12338	1.00	DW	COVER TRANSDUCER LED 1216
			B24-12340	1.00	DW	PLATE COVER DRIVE LED 1216

CUSTOMER: ITT BARTON
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PROJECT ENGINEER: BALDWIN/BRIDGES

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ITEM R	PART NUMBER	DWG NUMBER	QTY	UOI	DESCRIPTION
SPC-287-234C	PARENT = SPC-287-234				
		B24-12341	1.00	DW	COUNTERTOP INSERT LED 1216
		B24-12345	1.00	DW	COUNTERTOP LEFT LED 1216
		B24-12346	1.00	DW	COUNTERTOP RIGHT LED 1216
		B24-12358	1.00	DW	SUPPORT GEN C/TRAP LED 1216
		B24-12368	1.00	DW	SUPPORT GEN CONDS LED 1216
		B24-12394	1.00	DW	BRACKET FILTER LED
	000-127-147		6.00	EA	WELDSTUD SS 10-32 X 1/2
	000-185-206		.75	SH	METAL SHT 304-4 16GA
	000-185-209		.50	SH	METAL SHT 316L-2B 12GA
A	000-185-204		.22	SH	METAL SHT 304-4 22GA
SPC-287-234D	PARENT = SPC-287-234				
		B24-12301	1.00	DW	CONTROL BOX LED
		B24-12328	1.00	DW	COVER LEFT LED 1216
		B24-12329	1.00	DW	COVER RIGHT LED 1216
		B24-12330	1.00	DW	CONTAINER DESSICANT LED 1216
		B24-12339	1.00	DW	TRACK LED 1216
		B24-12342	1.00	DW	INSERT COVER LED 1216
		B24-12343	1.00	DW	COUNTERTOP FRONT LED 1216
		B24-12344	1.00	DW	COUNTERTOP BACK LED 1216
	000-127-147		8.00	EA	WELDSTUD SS 10-32 X 1/2

CUSTOMER: ITT BARTON
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DESCRIPTION: LED 1216S
PROJECT ENGINEER: BALDWIN/BRIDGES

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ITEM	R	PART NUMBER	DWG NUMBER	QTY	UOI	DESCRIPTION
SPC-287-234D PARENT = SPC-287-234						
		000-185-204		.33	SH	METAL SHT 304-4 22GA
		000-185-205		.33	SH	METAL SHT 316L-2B 16GA
		000-185-206		2.00	SH	METAL SHT 304-4 16GA
		000-348-012		4.00	EA	SCREW MS 10-32X1/4 PAN 316
		200-055-030		2.00	EA	HANDLE COVER PLASTIC
SPC-287-234E PARENT = SPC-287-234						
			B99-1401	1.00	DW	PUMP ASSY S25 WELDED
		000-589-232		1.00	EA	SWAGE SS-600-1-4
		000-589-254		1.00	EA	SWAGE SS-1010-1-8
		CPN-285-004		1.00	EA	PUMP PRICE S25-33TEF 230/460/3 S25SS-334-09315-33-36-3T7
SPC-287-234F PARENT = SPC-287-234						
			B24-12306	1.00	DW	HEAT EXCHANGER LED
		000-185-205		.05	SH	METAL SHT 316L-2B 16GA
		000-503-110		.75	FT	TUBE 304SS .750 OD .049 STR
		000-503-120		1.25	FT	TUBE 304SS 1.500 OD .065 STR
		000-529-202		1.20	FT	HOSE SS CORR 3/4ID 1-1/4OD
		000-589-110		2.00	EA	SWAGE SS-600-1-4MPW
SPC-287-234G PARENT = SPC-287-234						
			B99-1400	1.00	DW	FILTER ASSY

CUSTOMER: ITT BARTON
BUC: 287234
DESCRIPTION: LED 1216S
PROJECT ENGINEER: BALDWIN/BRIDGES

R	DESCRIPTION	REVISION BY	DATE
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ITEM	R	PART NUMBER	DWG NUMBER	QTY	UOI	DESCRIPTION
SPC-287-234G		PARENT = SPC-287-234				
		000-519-119		2.00	EA	BUSHING 304SS 3/4M X 1/2F
		000-589-234		2.00	EA	SWAGE SS-600-1-8
		SPP-006-451		1.00	EA	FILTER HOUSING SS 10X3/4 O-RNG SHELCO SF-78
SPC-287-234H		PARENT = SPC-287-234				
		000-580-250		1.00	EA	SWITCH LEVEL BSD 1216
5		SPP-006-161	B25-2723	1.00	EA	SWITCH LEVEL LED1216 B25-2723
SPC-287-234J		PARENT = SPC-287-234				
			B24-12359	1.00	DW	FRAME SKIRT SUPPORT LED 1216
		000-127-152		6.00	EA	NUT WELD 1/2-13
		000-185-209		.25	SH	METAL SHT 316L-2B 12GA
		SPP-005-698		30.00	FT	TUBE SQUARE 304SS 3x3X11GA
SPC-287-234K		PARENT = SPC-287-234				
	A		B24-12603	2.00	DW	BRACKET C BOX 1216 & 1620
	A	000-185-205		.01	SH	METAL SHT 316L-2B 16GA

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LED 1216
Ultrasonic Vapor Degreaser

BRANSON Ultrasonics Corporation
41 Eagle Road
Danbury, CT 06813-1961
(203) 796-0400

Assistance

B.1 Calling the Local Branson Representative

If you have a problem, call the local Branson field sales or service representative, who will know you, your needs and your applications. The local representative may have a critical replacement part in stock that will return your machine to operation in the shortest possible time.

Before you call, take the following steps:

Step	Action
1	Have this manual with you.
2	Know how your system has been set up and equipped, including equipment model numbers and serial numbers.
3	Describe the problem.
4	List the steps you have already taken.
5	Have a list of service spares on hand.
6	Enter the name and phone number of your Branson Representative here: Name: _____ Phone: _____

B.2 Calling Branson, Danbury

If the local Branson representative is unavailable, call Branson in Danbury at (203) 796-0400 and follow the automated voice system to the area you need. Be sure to ask for the extension of the person with whom you speak.

You can also call after 5:00 P.M. or before 8:00 A.M. (Eastern Standard Time), or at any time during weekends and holidays and leave a message in the Corporate Mailbox. This message will be relayed to the correct department and answered during the next working day.

B.3 Obtaining Replacement Parts

If you need to purchase replacement parts, coordinate the following with your purchasing agent:

Step	Action
1	Purchase Order Number.
2	Ship to: _____
3	Bill to: _____
4	Shipping instructions – air freight, truck, etc.
5	Special instructions (for example, "Hold at the airport and call"). Be sure to give a name and phone number.
6	Call the Branson Parts Store at (203) 796-0400. Most parts can be shipped the same day they are ordered.

B.4 Returning Equipment

The following Authorization to Return Equipment form should accompany any equipment returned to Branson Ultrasonic Corporation by customers. Using the form will ensure proper handling and identification of your equipment and expedite its repair and/or return.

Complete the form according to the instructions on the back of the form. Please indicate fully and clearly the billing and shipping address(es).

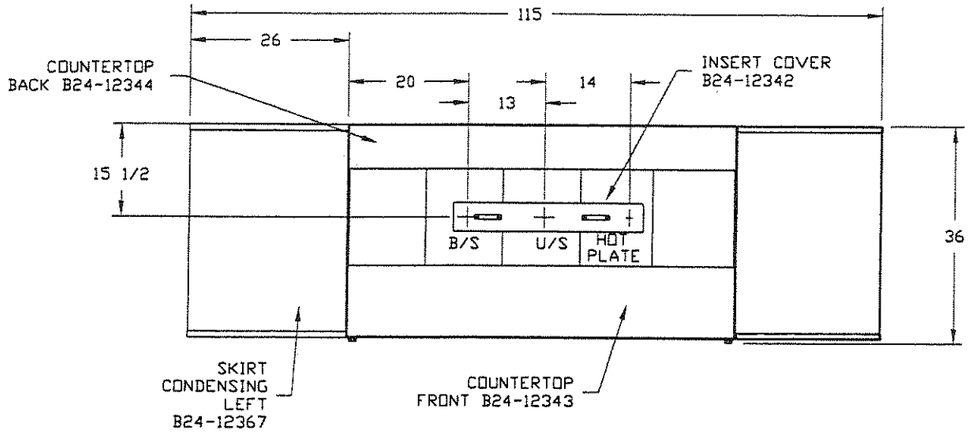
- For equipment not covered by the warranty, include a purchase order to avoid delay.
- Pack carefully in original packing material to avoid damage in shipment.
- Return general repairs by any convenient method. Send priority repairs by Air Freight.
- Prepay the transportation charges FOB the repair site (either the field office or Danbury, CT).

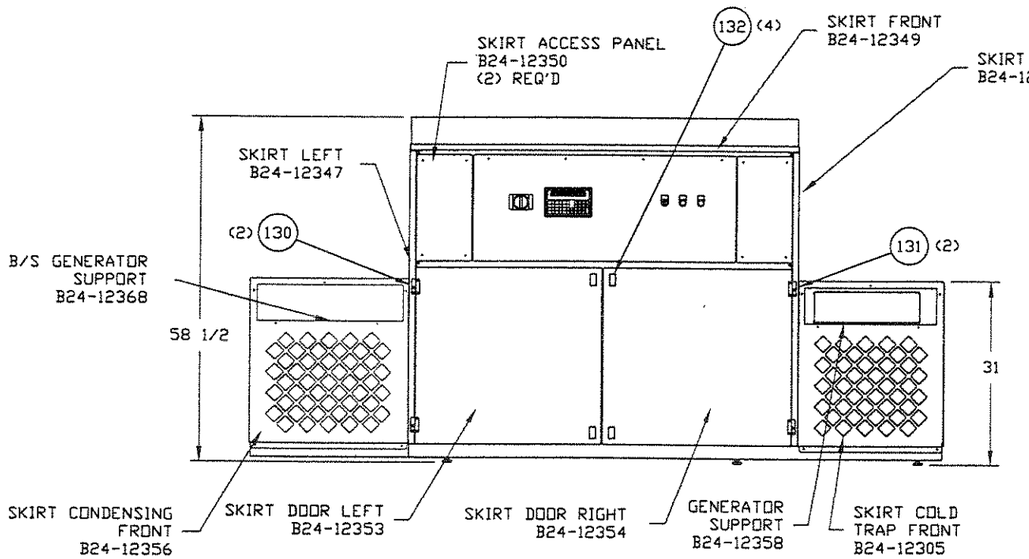
LED 1216
Ultrasonic Vapor Degreaser

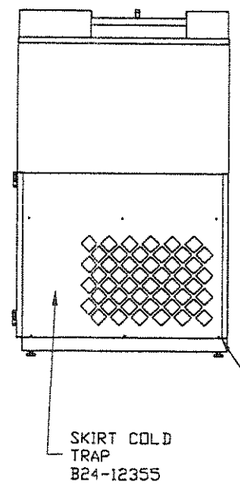
BRANSON Ultrasonics Corporation
41 Eagle Road
Danbury, CT 06813-1961
(203) 796-0400

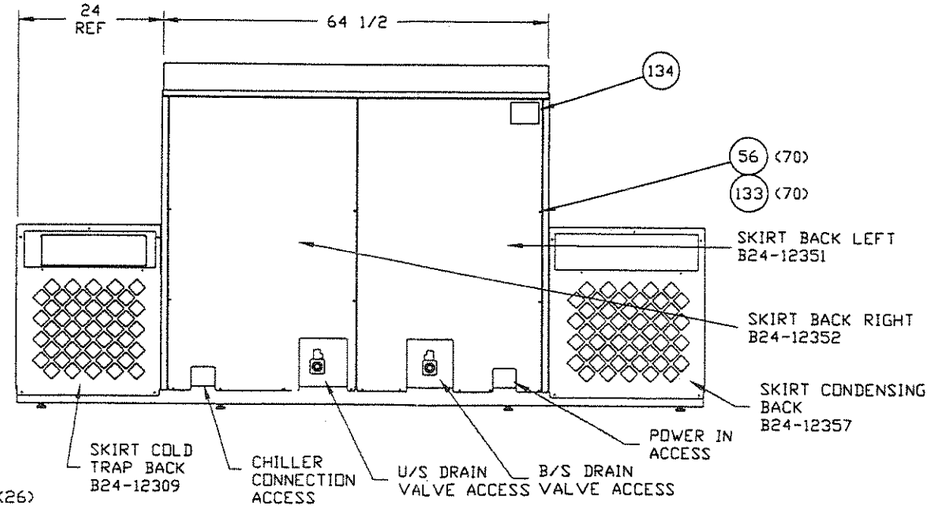
Drawings

REVISIONS			
REV.	DESCRIPTION	DATE	E.C.N. BY/APPR.
A	SEE SHT 1.	11/14/96	RWB/RSB









THIS DRAWING IN. DIMENSIONED IN INCHES MM.

DIMENSIONAL TOLERANCE UNLESS OTHERWISE SPECIFIED

.XX	±.015
.XXX	±.005
ANGLE	±1°

MAT'L SEE DWG

FINISH NONE

QTY

	APP.	DATE
DRW	RSB	09-05-96
CHK	RSB	09-05-96
PRJ ENG	RSB	09-05-96

BRANSON PRECISION CLEANING

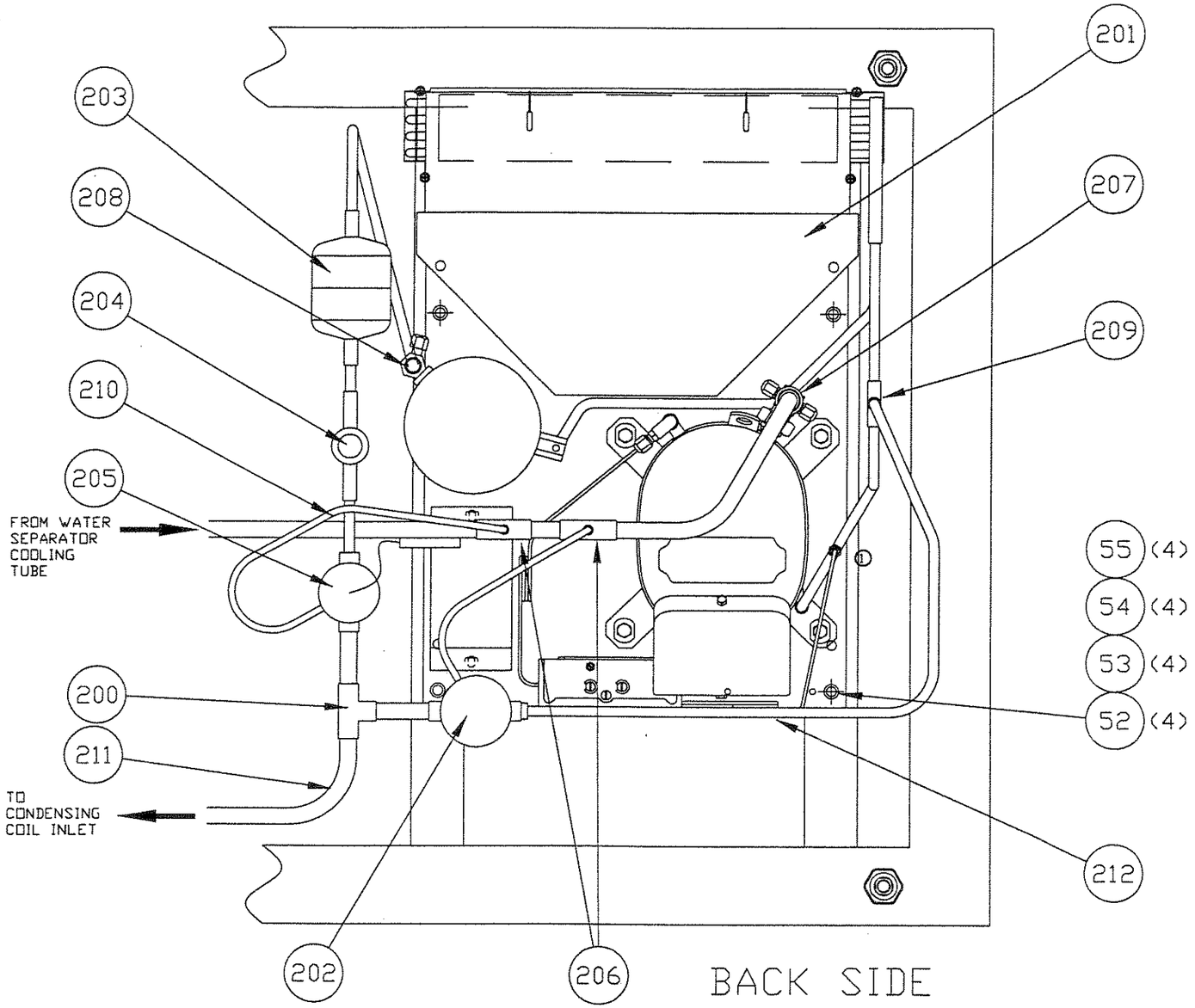
BRANSON 41 EAGLE ROAD DANBURY,CT 06813-1961 (203)796-0400

TITLE: FINAL ASSY LED 1216 (SKIRTS)

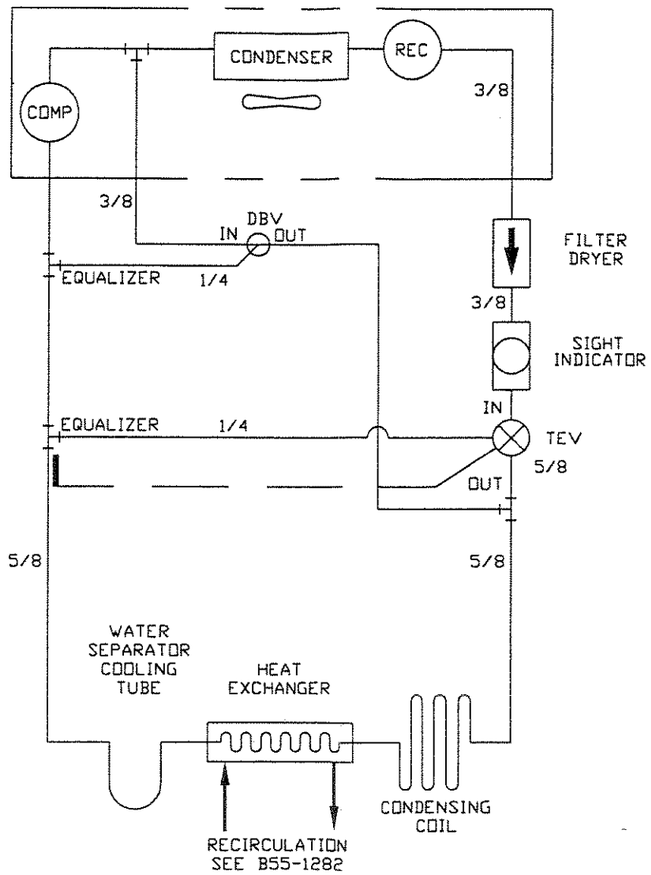
USED ON	SIZE	DWG NO.	REV
287234	B	100-3779	A

SCALE	PART NO.	SHEET
1 :20	SPC-287-234	5 OF 5

REVISIONS			
REV.	DESCRIPTION	DATE	E.C.N. BY/APPR.
A	SEE SHT 1.	11/14/96	RWB/RSB



BACK SIDE



CONDENSING REFRIGERATION UNIT

THIS DRAWING IN. DIMENSIONED IN INCHES MM.

DIMENSIONAL TOLERANCE UNLESS OTHERWISE SPECIFIED

.XX	±.015
.XXX	±.005
ANGLE	±1°

MAT'L

FINISH

QTY

	APP.	DATE
DRW	RSB	09-05-96
CHK	RSB	09-05-96
PRJ ENG	RSB	09-05-96

BRANSON PRECISION CLEANING

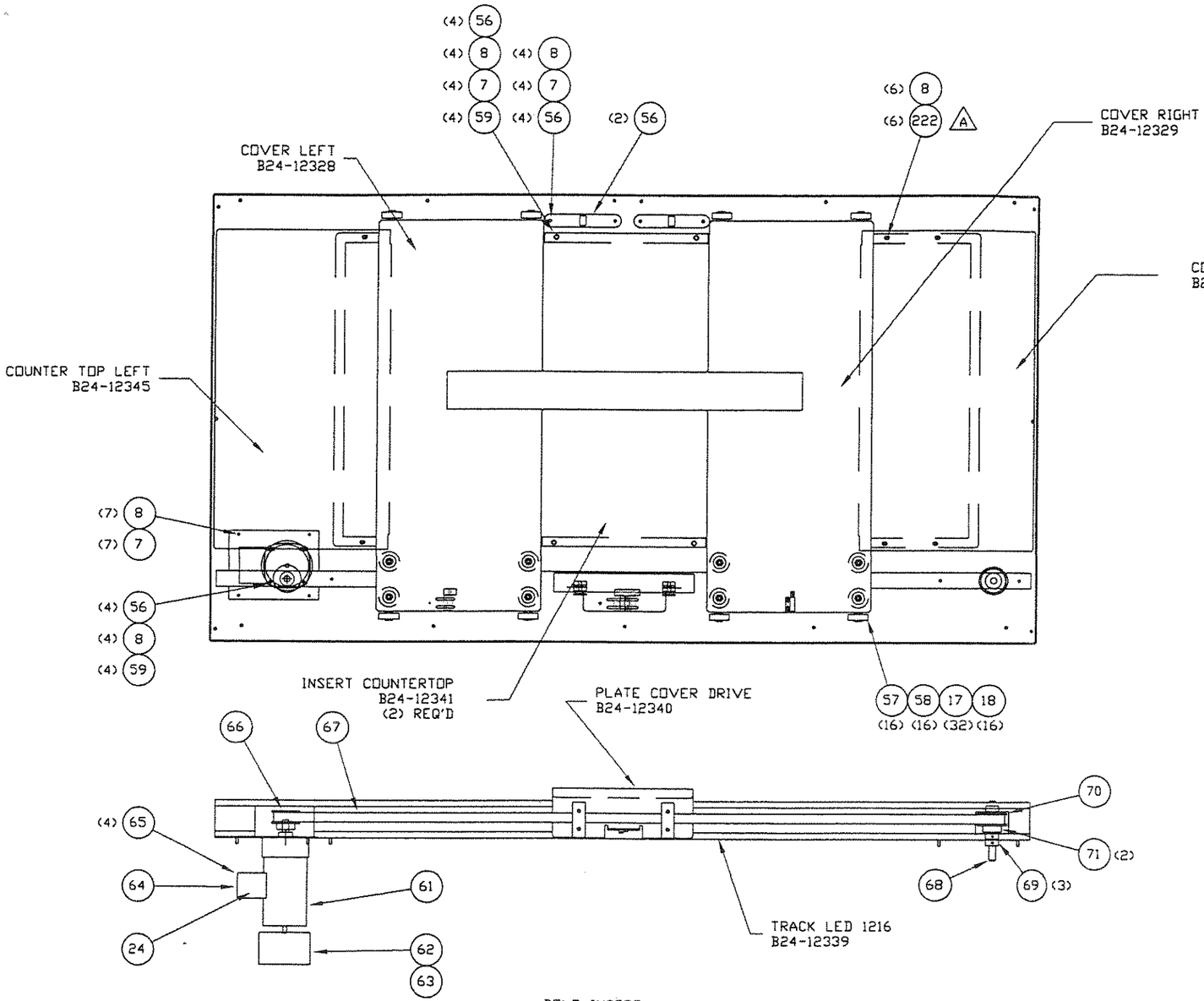
BRANSON 41 EAGLE ROAD DANBURY,CT 06813-1961 (203)796-0400

TITLE: FINAL ASSY LED 1216 (CONDENS)

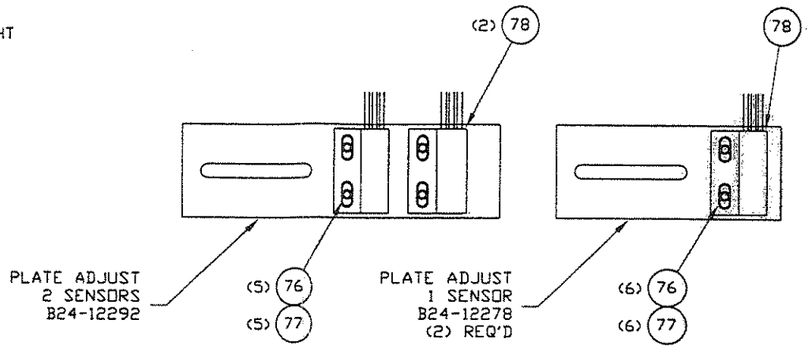
USED ON	SIZE	DWG NO.	REV
287234	B	100-3779	A

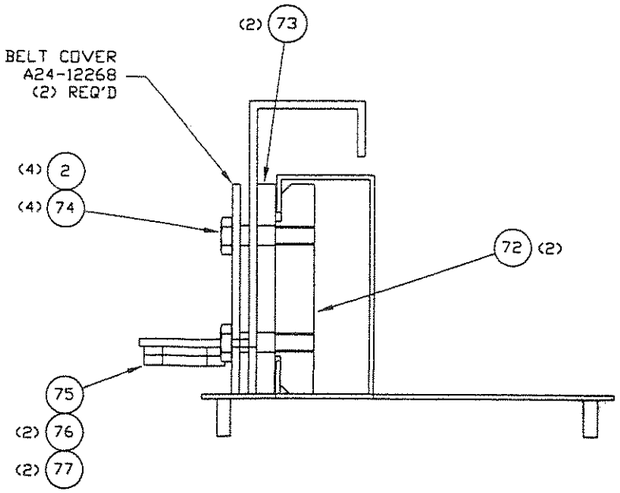
SCALE	PART NO.	SHEET
1:5	SPC-287-234	4 OF 5

REVISIONS			
REV.	DESCRIPTION	DATE	E.C.N. BY/APPR.
A	SEE SHT 1.	11/14/96	RWB/RSB



BELT CLAMPING DETAIL





THIS DRAWING IN. DIMENSIONED IN INCHES MM.

DIMENSIONAL TOLERANCE UNLESS OTHERWISE SPECIFIED
.XX ±.015
.XXX ±.005
ANGLE ±1°

MAT'L SEE DWG
FINISH NONE
QTY

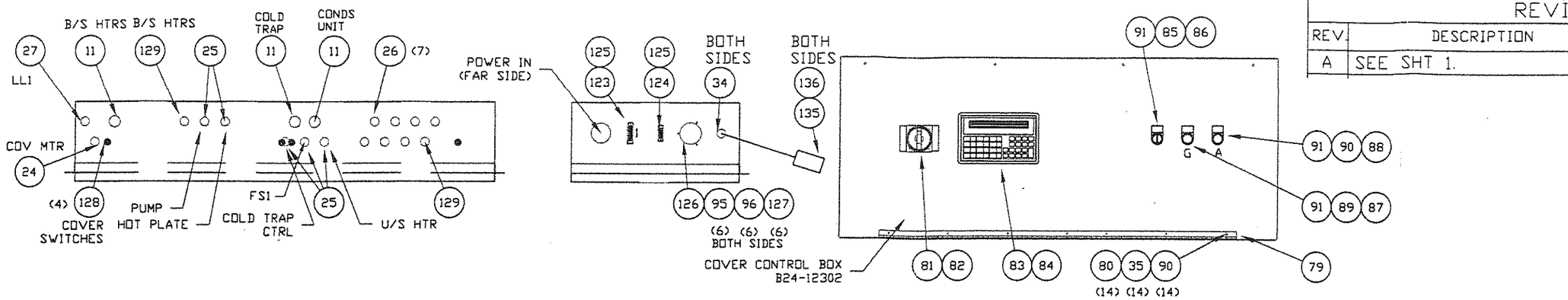
	APP.	DATE
DRW	RSB	09-05-96
CHK	RSB	09-05-96
PRJ ENG	RSB	09-05-96

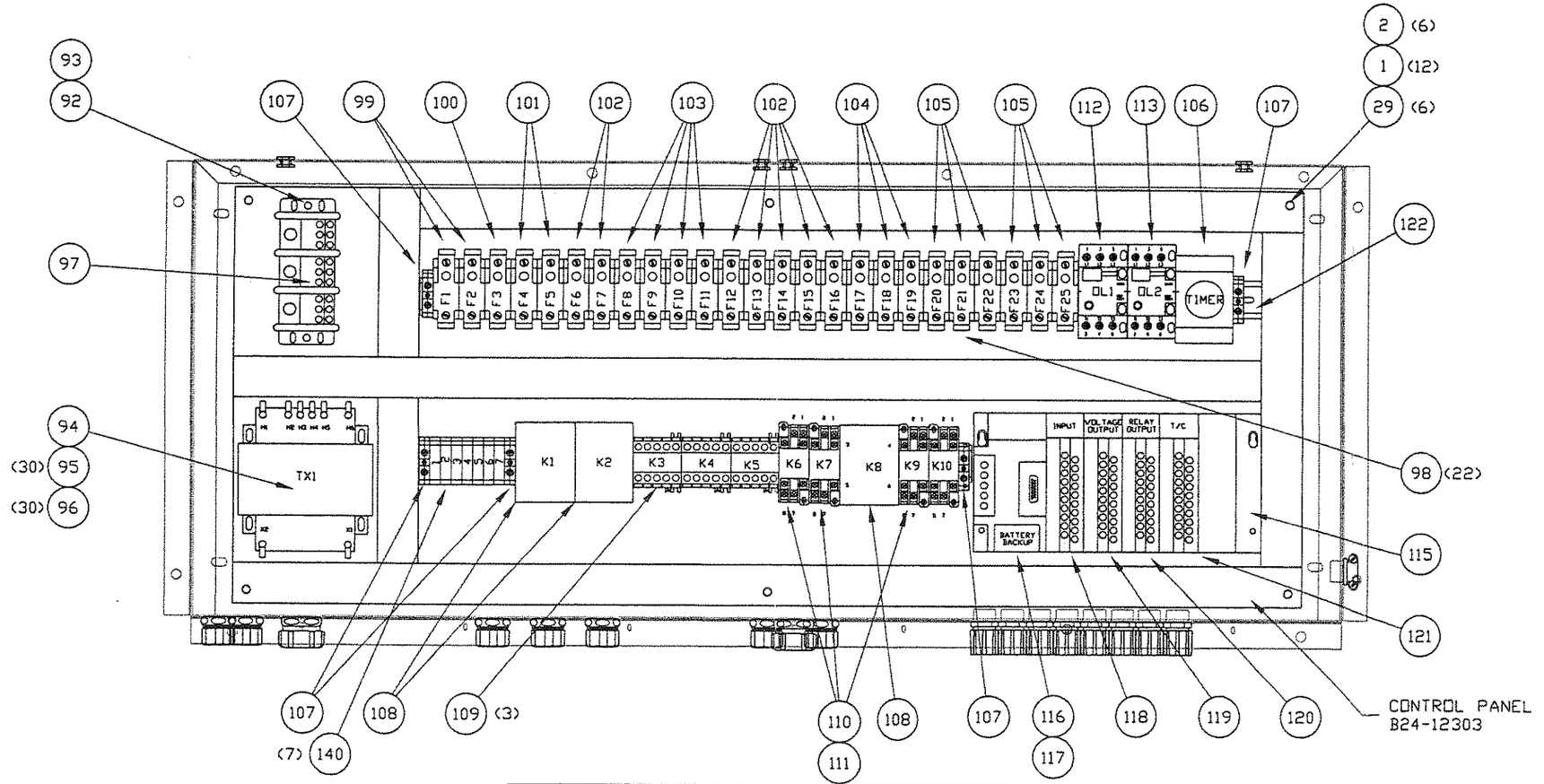
BRANSON PRECISION CLEANING
BRANSON 41 EAGLE ROAD DANBURY,CT 06813-1961 (203)796-0400

TITLE: FINAL ASSY LED 1216 (COVER)

USED ON 287234 | SIZE B | DWG NO. 100-3779 | REV A
SCALE 1 :20 | PART NO. SPC-287-234 | SHEET 3 OF 5

REVISIONS			
REV.	DESCRIPTION	DATE	E.C.N. BY/APPR.
A	SEE SHT 1.	11/20/96	RWB/RSB





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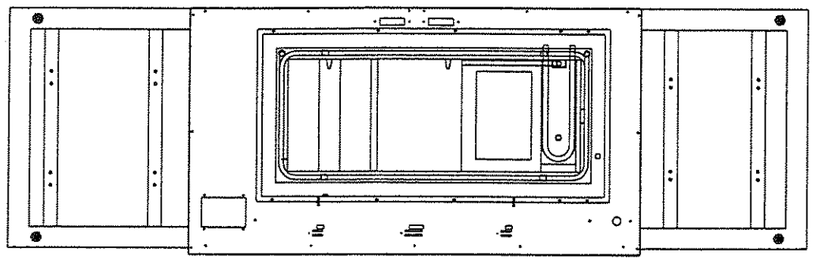
	FINISH		
	QTY	DRW RSB	09-05-96
THIS DRAWING IN. DIMENSIONED IN INCHES MM.		CHK RSB	09-05-96
DIMENSIONAL TOLERANCE UNLESS OTHERWISE SPECIFIED .XX ±.015 .XXX ±.005 ANGLE ±1°		PRJ ENG RSB	09-05-96

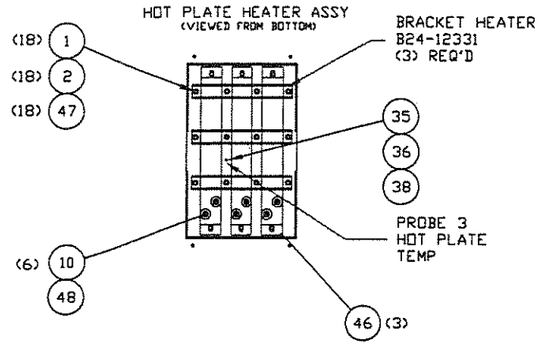
BRANSON PRECISION CLEANING
BRANSON 41 EAGLE ROAD DANBURY,CT 06813-1961 (203)796-0400

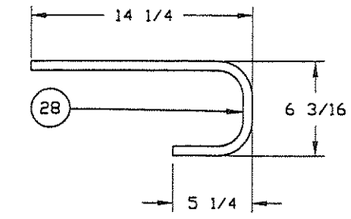
TITLE: FINAL ASSY LED 1216 (CONTROLS)

USED ON	SIZE	DWG NO.	REV
287234	B	100-3779	A
SCALE 1 :20	PART NO. SPC-287-234	SHEET 2 OF 5	

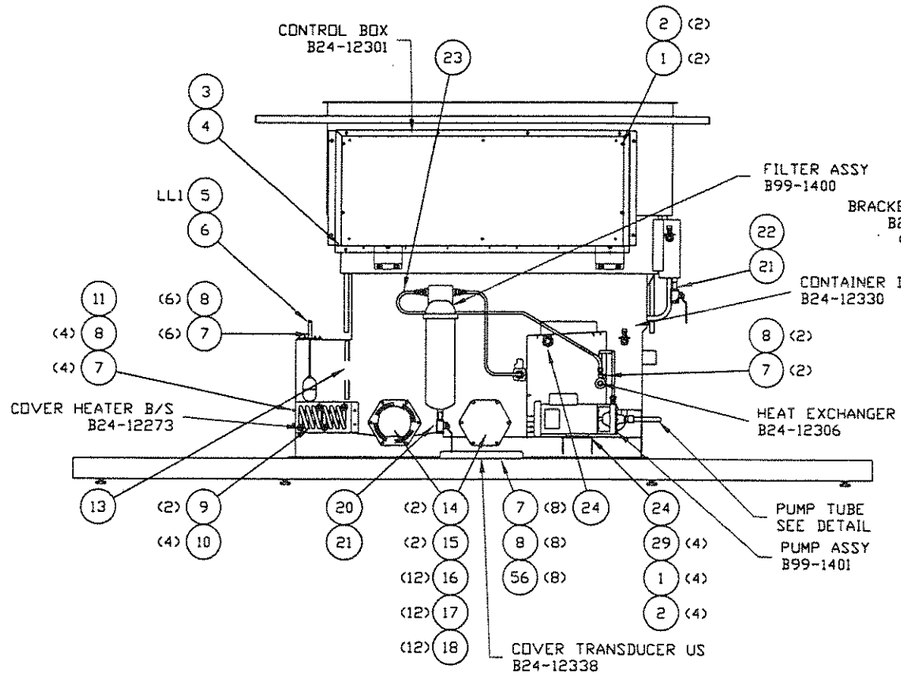
REVISIONS			
REV.	DESCRIPTION	DATE	E.C.N. BY/APPR.
A	SHT 1: ADDED BRACKET B24-12603 (2). QTY ITEM 1 WAS (43). QTY ITEM 2 WAS (41). SHT 3: QTY ITEM 7 WAS (45). QTY ITEM 59 WAS (14). ADDED ITEM 222: 000-348-062 (6).	11/14/96	RWB/RSB

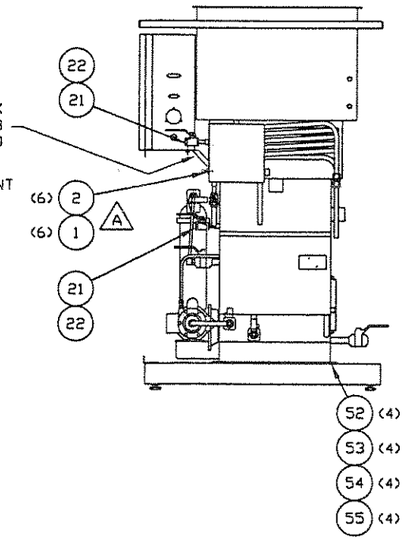


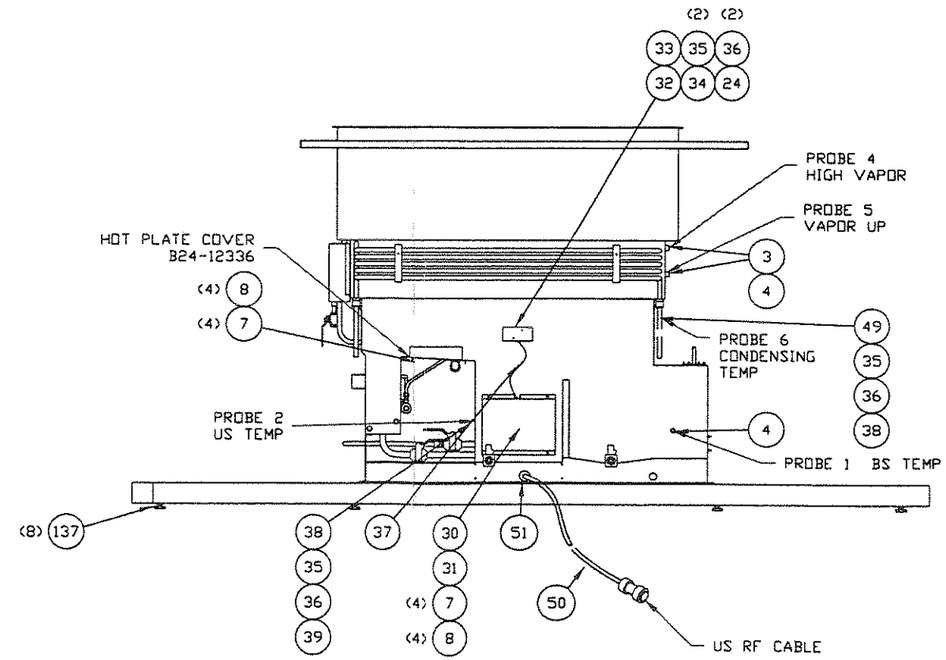




PUMP TUBE







THIS DRAWING DIMENSIONED IN INCHES IN. MM.

DIMENSIONAL TOLERANCE UNLESS OTHERWISE SPECIFIED

.XX	±.015
.XXX	±.005
ANGLE	±1°

MAT'L SEE DWG

FINISH NONE

QTY

	APP.	DATE
DRW	RSB	09-05-96
CHK	RSB	09-05-96
PRJ ENG	RSB	09-05-96

BRANSON PRECISION CLEANING

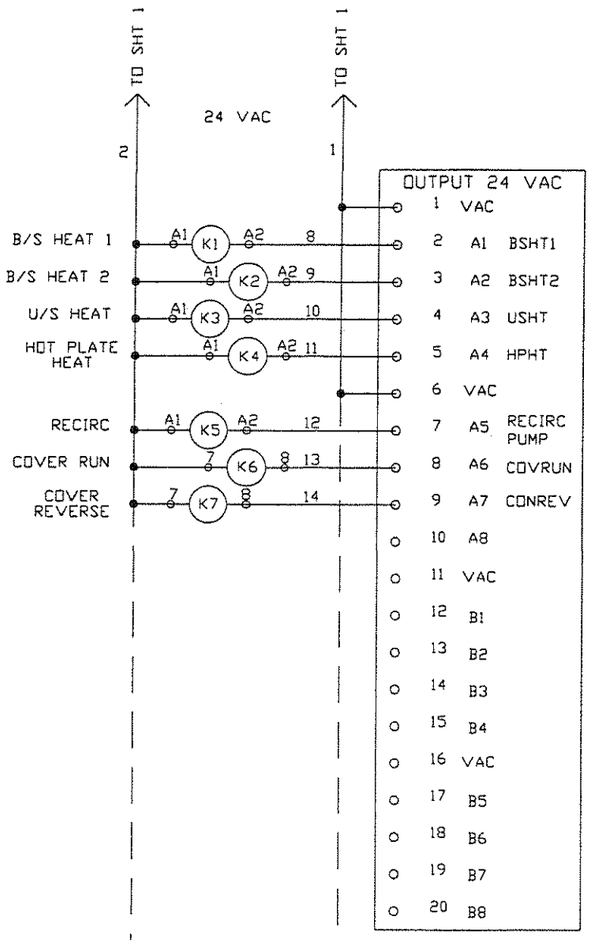
BRANSON 41 EAGLE ROAD DANBURY,CT 06813-1961 (203)796-0400

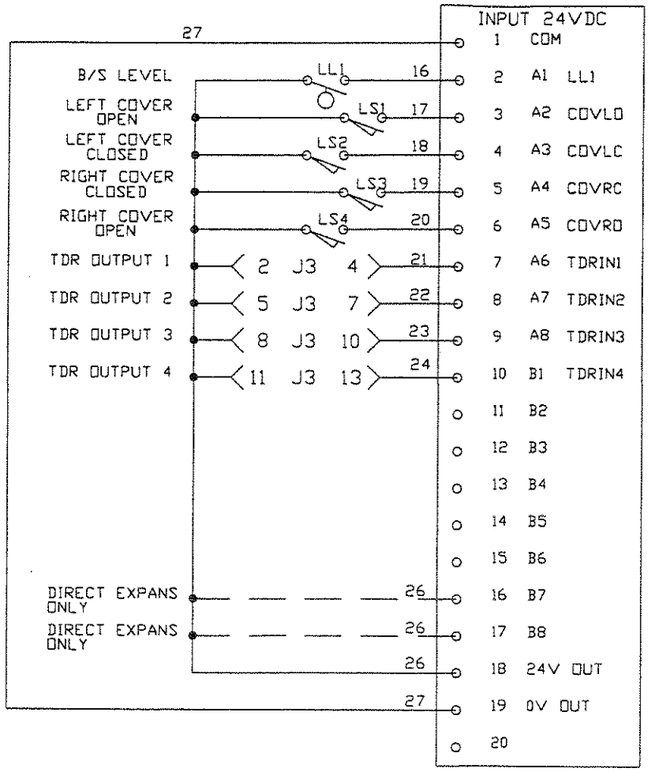
TITLE: FINAL ASSY LED 1216

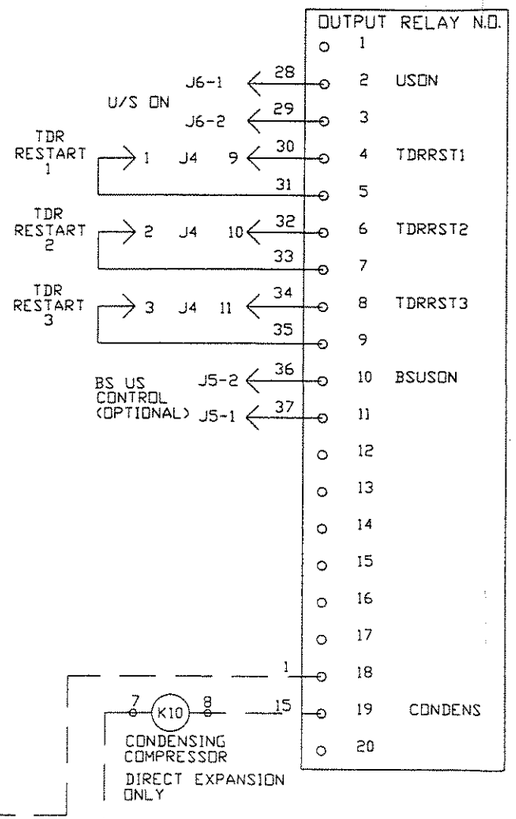
USED ON	SIZE	DWG NO.	REV
287234	B	100-3779	A

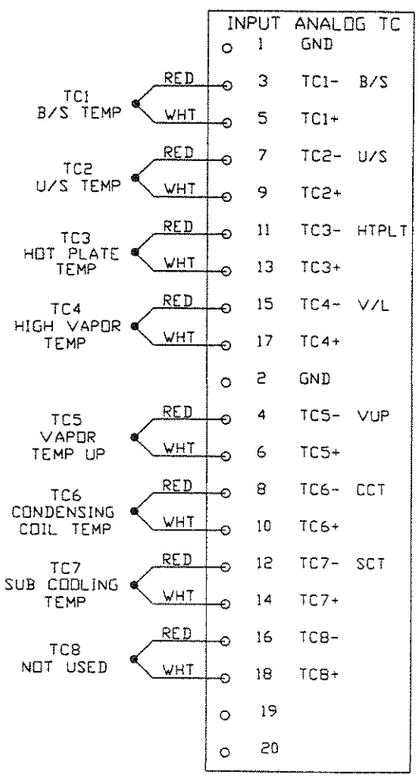
SCALE	PART NO.	SHEET
1 :20	SPC-287-234	1 OF 5

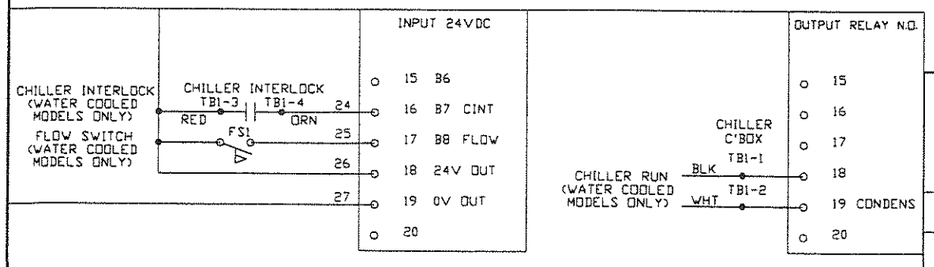
REVISIONS			
REV.	DESCRIPTION	DATE	E.C.N. BY/APPR.
B	CHANGED OUTPUT MODULE.	6/7/96	RWB/RSB
C	ADDED (OPTIONAL) TO BS US CONTROL.	9/5/96	RWB/RSB
D	SEE SHT 1.	12/26/96	RWB/RSB
E	ADDED WATER COOLED OPTION	01-16-97	RWB/RSB











WATER COOLED/CHILLER CONNECTIONS

THIS DRAWING IN. DIMENSIONED IN INCHES MM.

DIMENSIONAL TOLERANCE UNLESS OTHERWISE SPECIFIED
.XX ±.015
.XXX ±.005
ANGLE ±1°

MAT'L
FINISH
QTY

	APP.	DATE
DRW	RSB	05-07-96
CHK	RSB	05-07-96
PRJ ENG	RSB	05-07-96

BRANSON PRECISION CLEANING
BRANSON 41 EAGLE ROAD DANBURY,CT 06813-1961 (203)796-0400

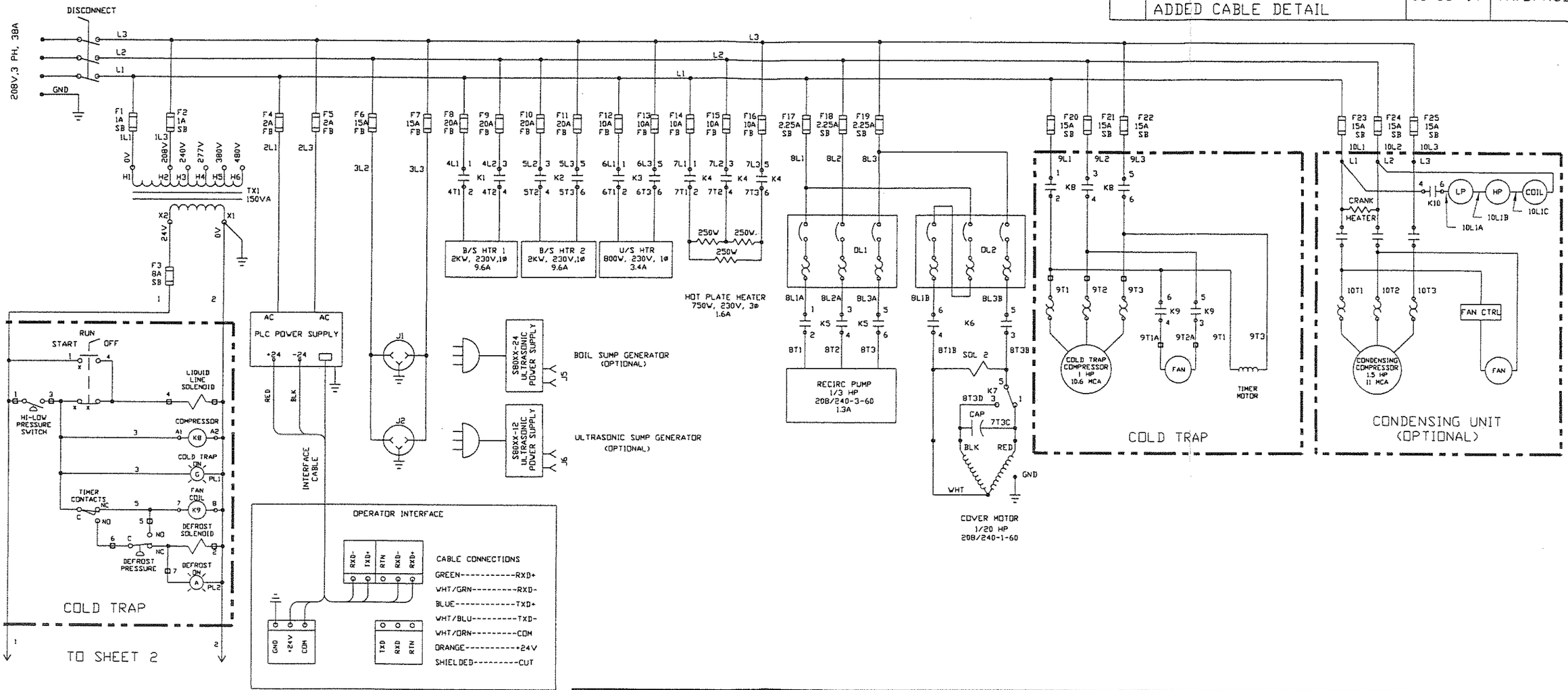
TITLE: WIRING SCHEMATIC LED 1216

USED ON | SIZE B | DWG NO. 51-3203 | REV E

SCALE NONE | PART NO. | SHEET 2 OF 2

filename= 5132032

REVISIONS			
REV.	DESCRIPTION	DATE	E.C.N. BY/APPR.
B	ADDED POLE TO START, RUN, OFF SWITCH.	6/7/96	RWB/RSB
C	ADDED (OPTIONAL) TO BOIL SUMP GENERATOR.	9/5/96	RWB/RSB
D	MOVED K10 COIL. (SHT 2)	12/26/96	RWB/RSB
E	MODIFIED START/RUN/OFF SW ADDED CABLE DETAIL	01-16-97	RWB/RSB



THIS DRAWING IN. DIMENSIONED IN INCHES MM.

DIMENSIONAL TOLERANCE UNLESS OTHERWISE SPECIFIED

.XX	±.015
.XXX	±.005
ANGLE	±1°

MAT'L	
FINISH	
QTY	

	APP.	DATE
DRW	RSB	05-07-96
CHK	RSB	05-07-96
PRJ ENG	RSB	05-07-96

BRANSON PRECISION CLEANING

BRANSON 41 EAGLE ROAD DANBURY,CT 06813-1961 (203)796-0400

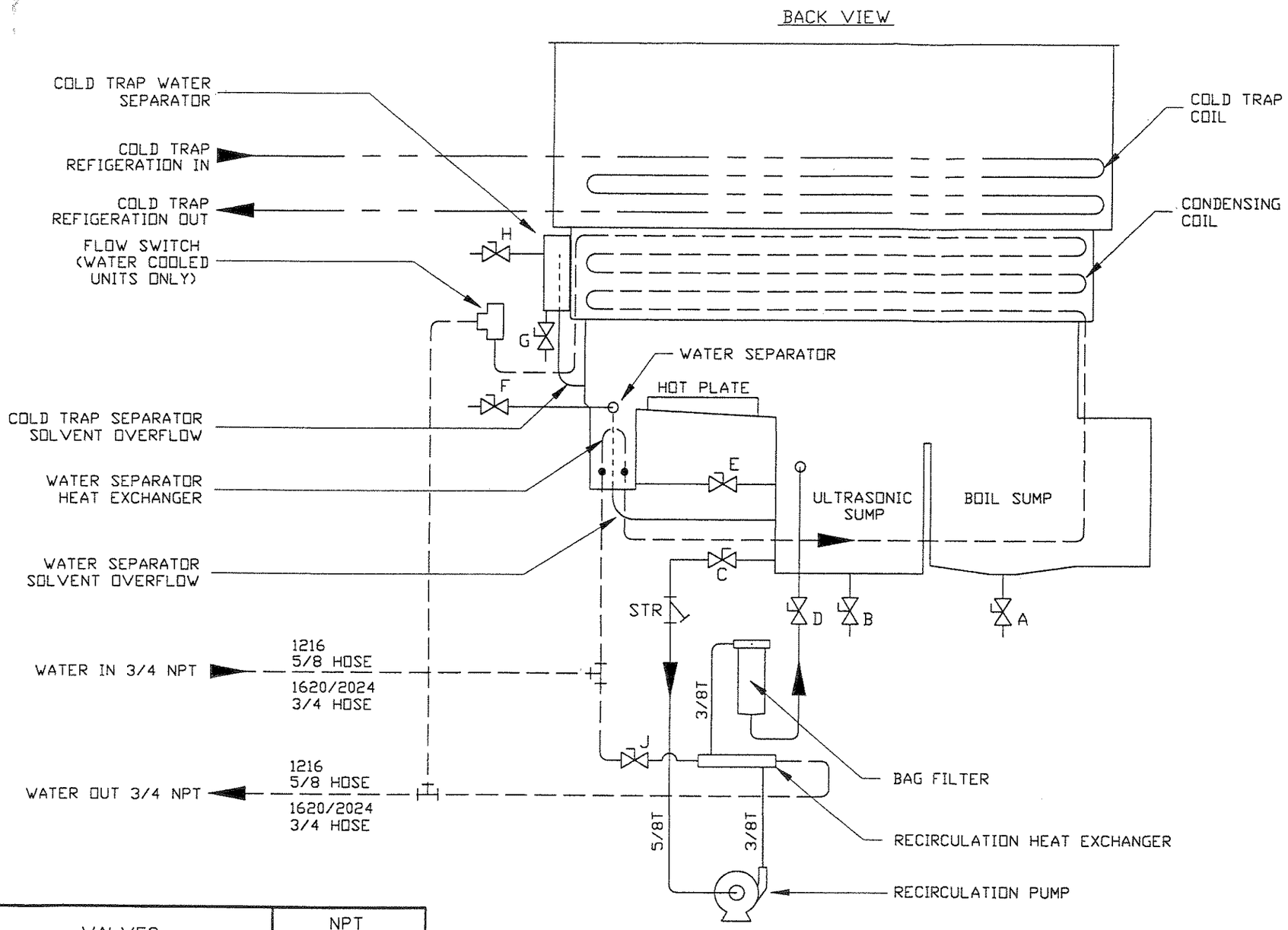
TITLE: WIRING SCHEMATIC LED 1216

USED ON	SIZE	DWG NO.	REV
277357	B	51-3203	E

SCALE	PART NO.	SHEET
NONE		1 OF 2

filename=5132031

REVISIONS			
REV.	DESCRIPTION	DATE	E.C.N. BY/APPR.
A	CHANGE FLOW DIRECTION, FILTER	03-13-97	RSB
B	ADDED COOLING WATER FLOW CONTROL VALVE	02-06-98	RWB/.RSB



VALVES		NPT		
		1216	1620	2024
A	BOIL SUMP DRAIN	1/2	3/4	1
B	ULTRASONIC SUMP DRAIN	1/2	3/4	1
C	RECIRC PUMP SHUTOFF	1/2	1/2	1/2
D	FILTER SHUTOFF	1/2	1/2	1/2
E	WATER SEPARATOR DRAIN	1/2	1/2	1/2
F	WATER SEPARATOR WATER DRAIN	1/4	1/4	1/4
G	COLD TRAP SEPARATOR DRAIN	1/4	1/4	1/4
H	COLD TRAP WATER DRAIN	1/4	1/4	1/4
J	HEAT EXCHANGER FLOW CONTROL	3/4	3/4	3/4

THIS DRAWING IN. DIMENSIONED IN INCHES MM.

DIMENSIONAL TOLERANCE UNLESS OTHERWISE SPECIFIED
.XX ±.015
.XXX ±.005
ANGLE ±1°

MAT'L
FINISH
QTY

	APP.	DATE
DRW	RWB	04-30-96
CHK	RSB	05-01-96
PRJ ENG	RSB	05-01-96

BRANSON PRECISION CLEANING
BRANSON 41 EAGLE ROAD DANBURY,CT 06813-1961 (203)796-0400

TITLE: PLUMBING SCHEMATIC LED

USED ON	SIZE	DWG NO.	REV
LED	B	55-1282	B

SCALE: NONE | PART NO. | SHEET: 1 OF 1

filename=1282 1R