



TECHNICAL MANUAL

Installation, Operation and Maintenance Instructions

COMMANDER 18-4

HIGH TEMPERATURE DOOR TYPE

COMMANDER 18-4

COMMADNER 18-4C

COMMANDER 18-4H

CS-4

Insinger Machine Company
6245 State Road
Philadelphia, PA 19135-2996

800-344-4802

Fax: 215-624-6966

www.insingermachine.com



TECHNICAL MANUAL

including Installation, Operation, and Maintenance Instructions

FOR

DOOR TYPE DISHMACHINES

MODELS

Commander 18-4

Commander 18-4C

Commander 18-4H

CS-4

CS-4C



Thank you for Purchasing this quality Insinger product.

On the space provided please record the Model and Serial Number of this unit:

Model: _____

Serial Number: _____

When referring to this equipment please have these numbers available.

Each piece of equipment at Insinger is carefully tested before shipment for proper operation. If the need for service should arise please contact your local Authorized Insinger Service Company. A Service Network Listing is provided within this manual. Check this list for your local authorized servicer.

For proper activation of the *Insinger Limited Warranty* a SureFire™ Start-up should be completed on your machine. Refer to the Introduction section in this manual for an explanation of Insinger's SureFire™ Start-up and Check-out Program.

Please read the Insinger Limited Warranty, and all installation and operation instructions carefully before attempting to install or operate your new Insinger product.

To register your machine for warranty by phone, fax, or the internet or for answers to questions concerning installation, operation, or service contact our Technical Services Department:

| | |
|----------------|--------------------------------|
| Toll-Free | 800.344.4802 |
| Fax | 215.624.6966 |
| Email | service@insingermachine.com |
| World-Wide Web | http://www.insingermachine.com |

Thank you.
Insinger Machine Company



DOOR TYPE DISHMACHINES
MODEL: Commander 18-4 & CS Series
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COMMANDER 18-4 Series & CS Series
TECH MANUAL INTRODUCTION
Part 1, Section A



A. INTRODUCTION

A.1 Purpose

The purpose of this Tech Manual is to provide installation, operation, cleaning and maintenance directions. A section is provided for replacement parts.

A.2 Scope

This manual contains all pertinent information to assist in the proper installation, operation, cleaning, maintenance, and parts ordering for the Commander 18-4 series and CS-4 series dishwashers.

The installation instructions are intended for qualified equipment installers. The operation and cleaning instructions are intended for the daily users of the equipment. The maintenance and parts sections are intended for qualified service and/or maintenance technicians.

Replacement parts may be ordered directly from our factory or from your local Insinger Authorized Service Agency. For the name of your local Insinger Authorized Service Agency please reference the Service Network Listing in Section 1 of this manual. You can also speak to the Insinger Technical Services Department, 800/344-4802, or e-mail us at service@insingermachine.com. When calling for warranty information or replacement parts please provide the model and serial number of your Insinger equipment. These important numbers should be noted in this manual on the spaces provided on the opening page.

A.3 Start-Up Program

Insinger is proud to offer our exclusive Surefire™ Start-up & Check-out Program to our commercial customers. This service is included in the purchase price of your new Insinger dishwasher. We will provide an authorized factory service technician for the initial start-up of your new Insinger dishwasher to ensure it is running correctly. Please call the factory or your local Insinger Sales Representative to schedule this service.

A.4 Definitions

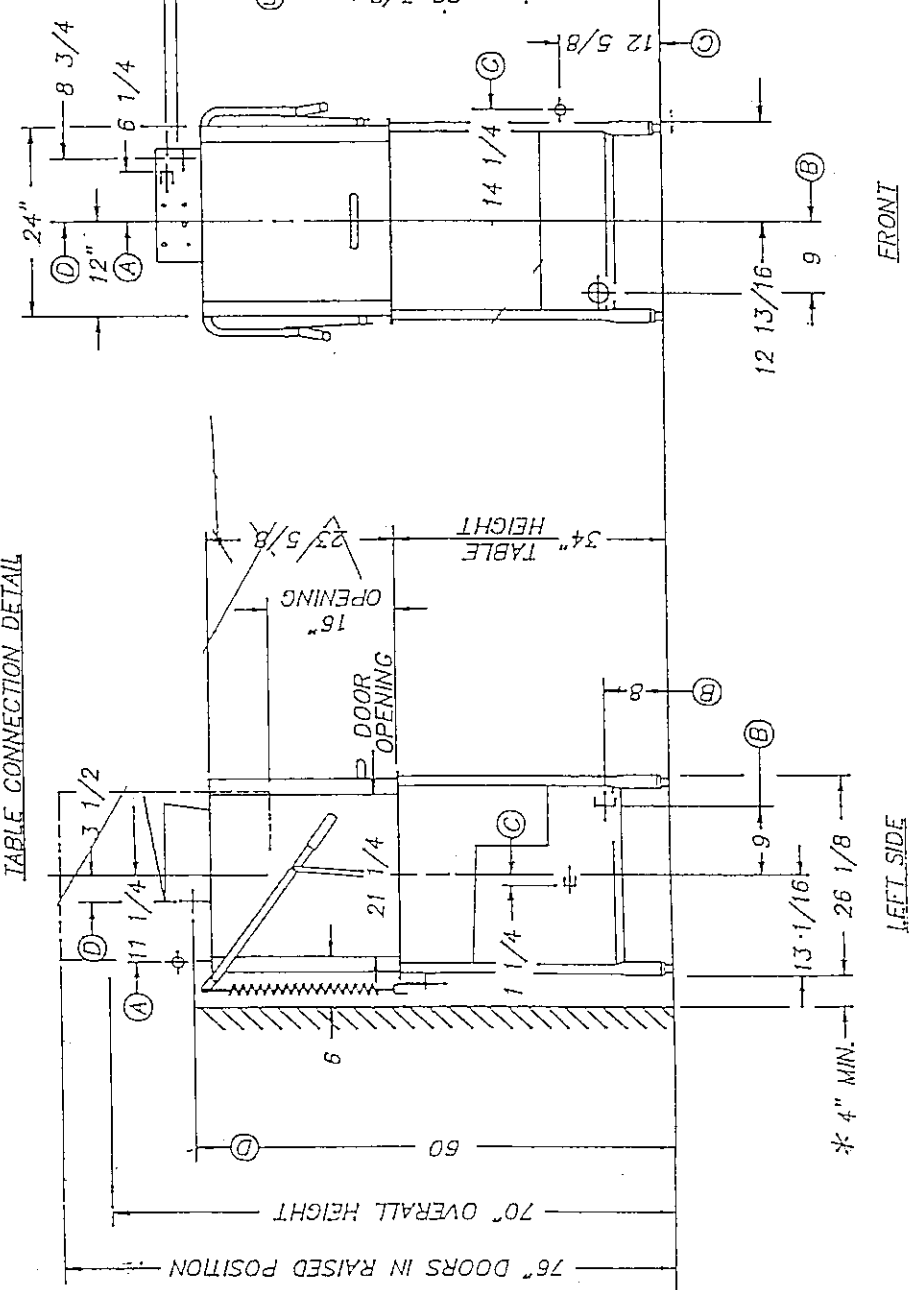
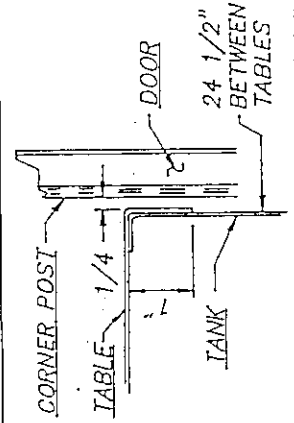
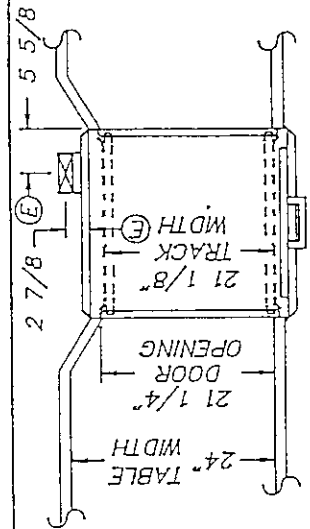
Throughout this guide you will find the following terms: WARNING, CAUTION, & NOTE. When used, these terms will be outlined in a box to draw attention:

WARNING indicates potential physical danger.

CAUTION indicates potential equipment damage.

NOTE indicates helpful operating hints or tips.

| INSTALLATION CONNECTIONS | | |
|--------------------------|------------------------------------|-------------|
| L.T.R. | DESCRIPTION | SIZE |
| A | HOT WATER TO FINAL RINSE -- 180° F | 1/2" FIPS |
| B | DRAIN CONNECTION | 1 1/2" FIPS |
| C | GAS CONNECTION | 3/4" FIPS |
| D | ELECTRICAL CONNECTION | 1 HP |
| E | FLUE | 1 3/4" x 5" |



NOTE:

1. WASH TANK IS FILLED THRU THE FINAL RINSE TANK.
- * 2. ALLOW 2 FEET MINIMUM FROM A VERTICAL COMBUSTIBLE WALL.

COMMANDER 18-4 (GAS)
 AUTOMATIC DISHWASHING MACHINE

INSINGER
 WUCHERER COMPANY

6245 Stola Rd., Tel. 215-624-4800
 Philadelphia, PA 19135-2986 FAX: 215-624-6966

SCALE: 3/4" = 1'-0"
 DRAWN: EMM-1.14.97
 APPROVED: EBA 1.14.97

DWG. NO. **18-4G**

CS-4**AUTOMATIC SINGLE TANK
CHEMICAL SANITIZING
DOOR TYPE DISHWASHER****DESIGN**

Automatic door type, single tank dishwasher with a timed wash-and-rinse cycle. Fully automatic operation with power on/off button. Capacity is 80 racks per hour for light soil (60 racks per hour for normal soil) - 20" x 20" racks. Cycle starts when doors are closed. Designed for straight through operation. Corner model available for right angle operation.

STANDARD EQUIPMENT

- Tank heat: 3 KW electric immersion heater or steam injector
- NSF approved Sanitizer Injector Pump
- Capillary Thermometer for Wash
- In-Line Thermometer for Final Rinse
- Vacuum Breaker
- Four Plastic 20" x 20" Racks (2 Plate Racks and 2 Silver Racks)
- Manifold Cleanout Brush
- Inspection Door
- S/S frame with S/S Legs
- Automatic Tank Fill
- Low Water Protection
- Detergent Connection Provision
- Space Saving Compact Design
- Fully Automatic Operation
- Top Mounted Control Panel (NEMA 12)
- Simplified Scrap Screen Design
- Door Safety Switch
- Interchangeable Upper & Lower Spray Arms
- Standard Frame Drip Proof Motor
- Override Switch for De-liming

OPTIONAL ACCESSORY EQUIPMENT

- Pressure Reduction Valve and Line Strainer
- Stainless steel steam coil tank heat
- Gas tank heat
- Security package
- Totally Enclosed Motors
- Door Activated Drain Closer



6245 State Road
Philadelphia PA 19135-2996
215/624-4800
215/624-6966 FAX

800/344-4802

NOTES:

INSTALLATION CONNECTIONS

| LTR | DESCRIPTION | SIZE |
|-----|-----------------------------------|----------|
| A | HOT WATER TO FINAL RINSE - 120" L | 1/2" IPS |
| B | STEAM TO TANK COIL | 1/2" IPS |
| C | DRAIN CONNECTION | 1/2" IPS |
| D | CONDENSATE RETURN - TANK COIL | 3/8" IPS |
| E | ELECTRICAL CONNECTION | 1" IP |

* ADD 3 KW FOR ELECTRIC HEAT.

NOTES:

1. WASH TANK IS FILLED THRU THE FINAL RINSE LINE.
2. CHEMICAL SANITIZER INJECTOR PUMP FURNISHED.

CS-4C

AUTOMATIC CHEMICAL SANITIZING DISHWASHING MACHINE



INSINGER
MACTON COMPANY

6245 Stole Rd. Tel. 215-824-4800
Philadelphia
PA 19135-2996 FAX: 215-674-6966

| | |
|-----------|--------------|
| SCALE: | 3/4" = 1'-0" |
| DRAWN: | PG 12.30.92 |
| APPROVED: | RAC 12.30.92 |

CS-4C

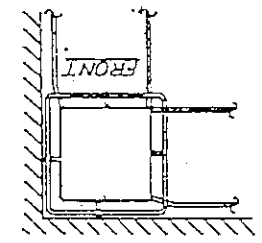
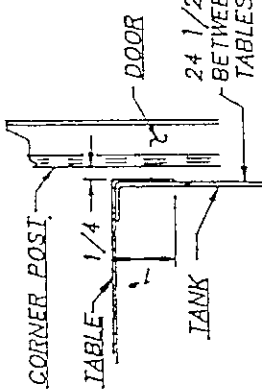
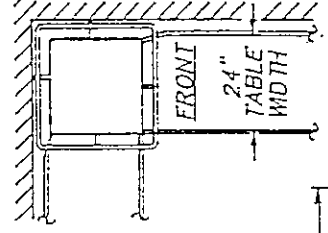
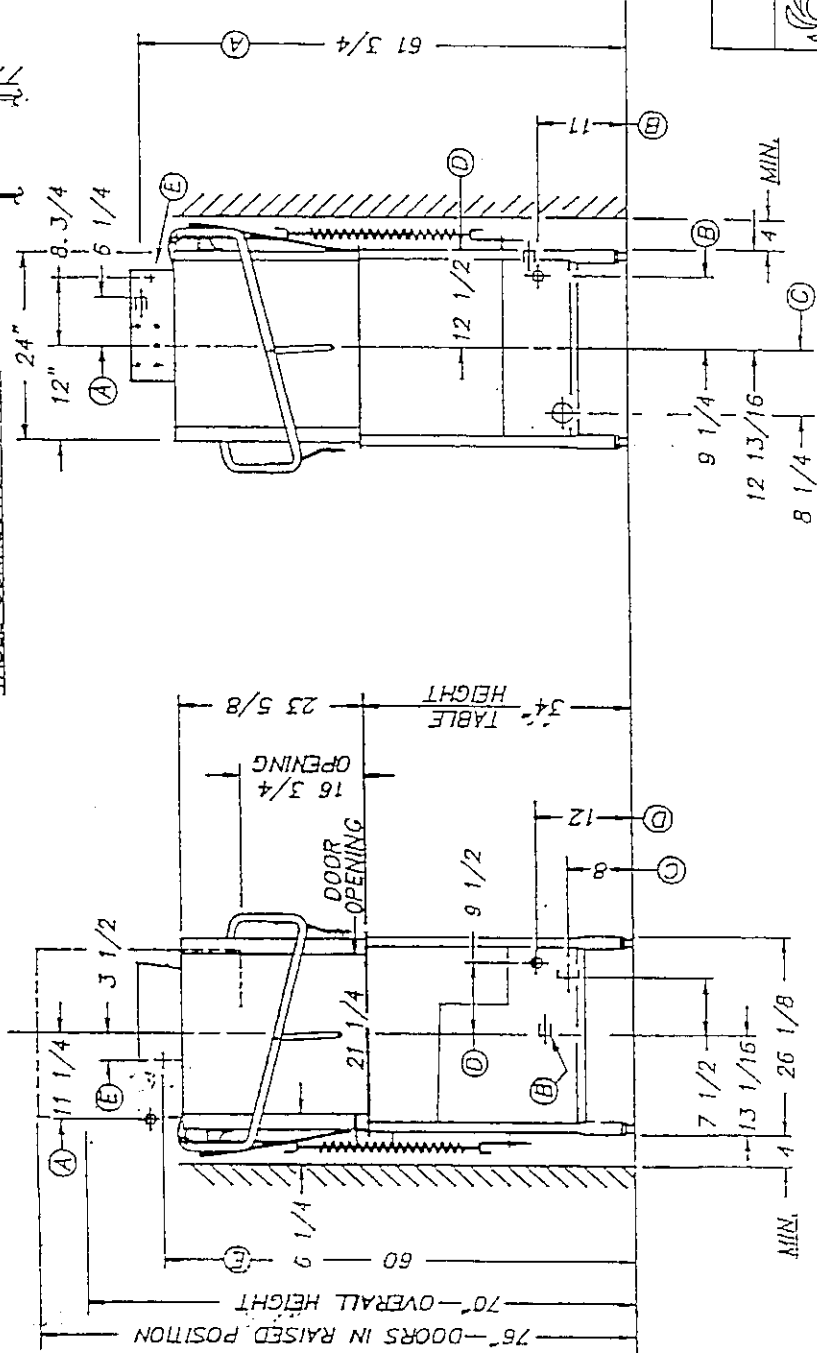


TABLE CONNECTION DETAIL





INSINGER MACHINE COMPANY
LIMITED WARRANTY

Insinger Machine Company, Inc. (Insinger) hereby warrants to the original retail purchaser of this Insinger Machine Company, Inc. product, that if it is assembled, installed, and operated in accordance with the printed instructions accompanying it, that said Insinger product shall be free of defects in material and workmanship, for a period of one (1) year (12 months) after the date of installation or fifteen (15) months from the date of shipment from Insinger, whichever occurs first, provided the warranty registration card is returned to Insinger within 15 days after installation. If the Warranty Registration Card is not returned to Insinger within this period, the warranty will expire after one year from the date of shipment from the factory. Insinger will not assume any responsibility of extra costs for installation in any areas where there are jurisdictional problems with local trades or unions.

Insinger may require reasonable proof of your date of purchase. Therefore, you should retain your copy of the invoice or shipping document.

This limited warranty shall be limited to the repair of parts which prove defective under normal use and service within the warranty period set forth above, and which on examination shall indicate, to Insinger's satisfaction, that the parts are defective. Insinger will repair the defective part of parts. All warranty work must be done during normal working hours, by either an Insinger Appointed Service Agency or an agency receiving prior authorization from Insinger. Defective parts become the property of Insinger. Parts replaced within the warranty period carry a warranty only until the end of the original limited warranty period. Replacement parts not supplied by Insinger will relieve Insinger of all future liability and responsibility.

This limited warranty does not cover: lighting of gas pilots or burners, cleaning of gas lines, replacement of fuses or resetting of overload breakers, adjustment of thermostats, adjustment of clutches, opening or closing of utility supply valves or switching of electrical supply, cleaning of valves, strainers, screens, nozzles, or spray pipes, performance of regular maintenance and cleaning as outlined in the TECH MANUAL, damages resulting from water conditions, accidents, alterations, improper use, abuse, misapplication, tampering, improper installation or failure to follow maintenance and operation procedures, fire, flood, acts of God or improper maintenance or service, or for improper operation or failure to follow normal operating instructions (as set out in the TECH MANUAL) or failure as a result of the aforesated.

TURN OVER

SERVICE NETWORK LISTING

ALABAMA

Total Equipment Service Co.
2302 3rd St.
Attala, AL 35954
PH 205.538-0261

Jones-McLeod Appliance Service
1616 7th Avenue, North
Birmingham, AL 35203
PH 205.251-0159
FX 205.322-1440
Statewide 800.821-1150

Moores Refrigeration Service
1226A Capshaw Rd.
Harvest, AL 35749
PH 205.837-4189
FX 205.837-3199

ALASKA

J & J Service
341 56th St.
Anchorage, AK 99518
PH 907.561-1060

ARIZONA

Authorized Commercial Service
1938 E. Osborn Road
Phoenix, AZ 85016
PH 602.234-2443
FX 602.230-8225
Statewide 800.824-8875

ARKANSAS

Bronley Parts and Service, Inc.
806 Izard St.
Little Rock, AR 72201
PH 501.374-0281
FX 501.661-0223
National 800.237-9859

Scott Service Co., Inc.
7123 I-30, Suite 51
Little Rock, AR 72209
PH 501.562-1863
FX 501.562-2308

CALIFORNIA

Acme Pacific Repairs, Inc.
1347 Fulton Place
Fremont, CA 94539
PH 510.252-2070
FX 510.656-1753
Statewide 800.241-2382

Ridge Electric Motor Company
1235 G St.
Fresno, CA 93706
PH 209.268-5031

Magna Mechanical
1570 Fashion Avenue
Long Beach (LA), CA 90813
PH 310.432-3330
FX 310.435-5953
Code 2

GCS Service
946 E. 12th St.
Los Angeles, CA 90021
PH 213.749-7785
FX 213.749-7788
National 800.327-1433

Chapman Appliance Service
1784 San Diego Ave.
San Diego, CA 92110
PH 619.298-7106
FX 619.298-7591

COLORADO

Sammons Refrigeration
3459 Astrozon Court
Colorado Spring, CO 80910
PH 303.392-6732

Metro Appliance Service
1640 S. Broadway
Denver, CO 80210
PH 303.778-1126
FX 303.778-0268
National 800.525-3582

CONNECTICUT

A-Tech Service
161 San Rico Dr.
Manchester, CT 06045
PH 203.649-6627
FX 203.649-7882
National 800.832-8324

DELAWARE

Insinger Machine Company
6245 State Road
Philadelphia, PA 19135
PH 215.624-4800
FX 215.624-6966
National 800.344-4802

DISTRICT of COLUMBIA

Equipment Engineering Co, Inc.
7573 Gary Road
Manassas, VA 22110
PH 703.631-1575
FX 703.369-2082

FLORIDA

Ross Commercial Service
3635 Pearl St.
Jacksonville, FL 32206
PH 904.355-2696
FX 904.355-2698
Statewide 800-824-5843

Main Commercial Appliance
12733 62nd St., North
Largo, FL 32811
PH 813.535-5246
FX 813.532-0940

GCS Service
3373 NW 168th St.
Miami, FL 33056
PH 305.621-6666
FX 305.621-6656
National 800.766-8966

GCS Service
4303 Vineland Rd., Suite F-11
Orlando, FL 32811
PH 407.841-2552
FX 407.423-8425
National 800.338-7322

Commercial Appliance Repair
9507 Sandpiper St.
Pensacola, FL 32514
PH 904.478-5533
FX 904.478-7062

A.L.T. Service Co.
5621 Crawfordville Rd.
Tallahassee, FL 32310
PH 904.878-5343
FX 904.656-6810

GCS Service
3902 Corporex Park Dr.
Suite 350
Tampa, FL 33619
PH 813.626-6044
National 800.282-3008

GEORGIA

Total Service Co. of Albany
835 Flint Ave.
Albany, GA 31701
PH 912.888-2302
FX 912.883-1548
National 800.648-8321

Barkel, Inc.
3095 Presidential Drive
Atlanta, GA 30340
PH 770.455-0795
FX 770.986-0707

Total Service Co. of Macon
850 Hillcrest Industrial Blvd.
Macon, GA 31204
PH 912.743-6505
FX 912.741-1848
National 800.822-4696

Hughes Service Co., Inc.
PO Box 30314
Savannah, GA 31410
PH 912.897-7179
FX 912.598-0369

HAWAII

Food Equipment Service Company
300 Puuhale Rd.
Honolulu, HI 96819
PH 808.847-4871
FX 808.842-1560

SERVICE NETWORK LISTING

NEW MEXICO

Southeast Appliance Repair
 10812 Oakland NE
 Albuquerque, NM 87122
 PH 505.856-6103
 FX 505.856-7684

NEW YORK

Alpro Service Co., Inc.
 1127 Willoughby Ave.
 Brooklyn, NY 11237
 PH 718.386-2515
 FX 718.417-6380

B.E.S.T.
 2133 Genesee Street
 Buffalo, NY 14211
 PH 716.893-6464
 FX 716.893-6466
 Statewide 800.338-5011

Summit Restaurant Repair
 272 Elmton Rd.
 Elmont, NY 11003
 PH 516.326-7900
 FX 516.326-8021
 Nat'l 800.675-7560

Northern Parts and Service
 171 S. Catherine Street
 Plattsburgh, NY 12901
 PH 518.563-3200
 FX 800.782-5424
 National 800.634-5005

Duffy's Restaurant Service
 3138 Oneida Street
 Sauquoit, NY 13456
 PH 315.737-9401
 FX 315.737-7132
 Statewide 800.836-1014

Action Service
 45 S. Fagan Ave.
 Schenectady, NY 12304
 PH 518.377-0911
 FX 518.377-1704

Quality Restaurant Repair Svc
 134 N. Montgomery St.
 Walden, NY 12586
 PH 914.778-3554
 FX 914.778-1221

NORTH CAROLINA

Whaley FoodService Repairs
 8334-K Arrowridge Blvd.
 Charlotte, NC 28273
 PH 704.529-6242
 FX 704.529-1558
 Statewide 800.877-3599

Whaley FoodService Repairs
 203-D Creek Ridge Rd.
 Greensboro, NC 27406
 PH 910.333-2333
 FX 910.333-2533
 Statewide 800.800-0807

Whaley FoodService Repairs
 335-105 Sherwee Dr.
 Raleigh, NC 27603
 PH 919.779-2266
 FX 919.779-2224
 Statewide 800.849-6011

Whaley FoodService Repairs
 6418-101 Amsterdam Way
 Wilmington, NC 28405
 PH 910.791-0000
 FX 910.791-6020
 National 800.758-2314

NORTH DAKOTA

Dakota Food Equipment Service
 P.O. Box 2925
 1802 1st Avenue, S.
 Fargo, ND 58108
 PH 701.232-4428
 National 800.437-4076

OHIO

ARR/CRS, Inc.
 2830 Johnstown Rd.
 Columbus, OH 43219
 PH 614.476-3225
 FX 614.476-1196
 National 800.282-5406

DMO Food Equipment Services
 8001 Sweet Valley Dr.
 Valley View, OH 44125
 PH 216.328-0600
 FX 216.328-0604

Commercial Parts & Service
 204 Linden Avenue
 Dayton, OH 45403
 PH 513.259-0091
 FX 513.259-0753
 National 800.837-2828

The Wichman Company
 1720 Arlington Ave.
 Toledo, OH 43537
 PH 419.385-9121

OKLAHOMA

Kruger Electric Service
 100 NE 24th Street
 Oklahoma City, OK 73105
 PH 405.528-8883
 FX 405.528-5405
 National 800.522-8069

OREGON

Ron's Service
 16364 SW 72nd Ave.
 Portland, OR 97224-7750
 PH 503.624-0890

PENNSYLVANIA

Commercial Kitchen Service
 223 Church St.
 Carroltown, PA 15722
 PH 814.344-9100

K&D Service Company
 1833-41 N. Cameron St.
 Harrisburg, PA 17103
 PH 717.236-9039
 FX 717.238-4367
 Statewide 800.932-0503

Insinger Machine Company
 6245 State Road
 Philadelphia, PA 19135
 PH 215.624-4800
 FX 215.624-6966
 National 800.344-4802

GCS Service
 210 Vista Park Drive
 Pittsburgh, PA 15205
 PH 412.787-1970
 FX 412.787-5005
 Nat'l 800/738-1221

RHODE ISLAND

Food Equipment Service
 200 Broad St.
 Providence, RI 02903
 PH 401.331-1163
 FX 401.521-5560

SOUTH CAROLINA

Whaley FoodService Repair
 748 Congaree Rd.
 Greenville, SC 29607
 PH 803.234-7011
 FX 803.234-6662
 Statewide 800.494-2539

Whaley FoodService Repair
 1406-C Commerce Place
 Myrtle Beach, SC 29577
 PH 803.626-1866
 FX 803.626-2632

Whaley FoodService Repair
 P.O. Box 60307
 N. Charleston, SC 29419
 PH 803.760-2110
 FX 803.760-2255

Whaley FoodService Repair
 P.O. Box 4023
 West Columbia, SC 29171
 PH 803.791-4420
 FX 803.794-4630
 National 800.877-2662

SOUTH DAKOTA

Hogg Restaurant Service
 821 Railroad Ave.
 Aberdeen, SD 57401
 PH 605.225-1845
 FX 605.225-0569
 National 800.456-1469

COMMANDER 18-4 Series & CS Series
INSTALLATION INSTRUCTIONS
Part 2, Section A



Caution

As with any 3 phase system, an electrician must check all motors for proper phasing, i.e., Pump motors must be running in direction indicated by arrow on housing.

A.3 MECHANICAL CONNECTIONS

- A.3.1 Connect 140DEGF water lines for tank fill/booster as tagged and noted on the installation drawings.
- A.3.2 If machine is provided with steam heat connect the steam lines and steam condensate lines as tagged and noted on installation drawings.
If machine is provided with gas heat, connect the gas lines for each tank.
- A.3.3 Connect the drain line.

Caution

Drain lines must be as specified on installation drawings. Drain line should be properly vented and should have fall of not less than $\frac{1}{4}$ " to the foot of proper flow. Some area plumbing codes require drains to flow into an open gap with an opening twice the diameter of the pipe. Check with your local plumbing codes for the type of drain connection required.

Caution

All lines must be flushed prior to use to remove debris.

Caution

Do not reduce the size of lines as specified in installation drawings. All lines are sized to facilitate necessary flows, pressures, etc.

A.4 HVAC

- A.4.1: Ventilation system must be sized to provide adequate ventilation per machine specs. Refer to spec sheet.

COMMANDER 18-4 Series & CS Series
OPERATION & CLEANING INSTRUCTIONS
Part 2, Section B



Insinger dishmachines are user-friendly, making them the easiest dishwashers on the market to operate and maintain.

By following the operation procedure and general cleaning procedures your Insinger dishwasher will give you years of trouble free service.

B.1 Operation Instructions

- B.1.1 Ensure drain overflow tube is in place Close the tank drain valve.
- B.1.2 Check for proper installation and cleanliness of all internal, removable components such as suction strainers, scrap screens, and spray manifolds.
- B.1.3 Ensure all water, steam, and gas lines are open. Ensure electrical circuits are on.
- B.1.4 Close machine doors.
- B.1.5 Move the power toggle switch to the "ON" position. The machine will fill the tank, run through a complete wash/rinse cycle and shut-off.
- B.1.6 When the tanks are full the tank heat will operate automatically. Proper tank heat temperature is 156DEGF minimum. Proper final rinse temperature is 180DEGF minimum.

Caution

To ensure proper operation of the auto tank fill feature and the tank heaters, level float(s) located in each tank MUST be cleaned daily

- B.1.7 Open doors.
- B.1.8 Insert a rack of soiled dishware in machine and lower doors. Machine will wash and rinse automatically. When the rinse indicator light goes off the machine cycle is complete.

Note

Overloading racks will minimize the proper cleaning of ware.

Warning

Do not open the doors during the wash/rinse cycle as hot water is being sprayed. An interlock is provided to stop the wash/rinse cycle if the doors are opened but the momentum of the spinning hubs will cause hot water to be sprayed.

COMMANDER 18-4 Series & CS Series
OPERATION & CLEANING INSTRUCTIONS
Part 2, Section B



B.1 Operation Instructions, cont'd

- B.1.9 Raise doors and remove rack of clean ware. For continuous operation repeat steps B.1.9 and B.1.10.
- B.1.10 Upon completion of ware cleaning move the power toggle switch to the "OFF" position.
- B.1.11 Refer to the cleaning procedures for proper clean-up of the dishmachine.
- B.1.12 A switch on the control panel labelled "Wash Cycle" is provided for de-liming the machine. When activated, this switch will keep the machine in an indefinite wash cycle. This feature can also be used to wash heavily soiled ware on an extended wash cycle
- B.1.13 Report any unusual occurrences to qualified service personnel.

The following cleaning procedures should be done daily, at the end of the shift.

B.2 Cleaning Procedures, Daily

- B.2.1 Remove all internal removable parts including spray manifolds, scrap screens, drain overflow tubes, suction strainers and curtains.
- B.2.2 Remove the end caps from the spray manifolds and clean with the brush provided. Flush the manifolds.
- B.2.3 Flush scrap screens.
- B.2.4 Clean drain overflow tube.

Note

V-cup seal on the drain overflow tube may become gummed and not allow the overflow tube to seat properly. This will cause the drain to leak water. Remove any build-up on the v-seal. When the seal becomes worn, replace.

- B.2.5 Clean suction strainers of build-up.

Note

Improper cleaning of suction strainers will cause the pumps to cavitate. This will cause poor washing results.

- B.2.6 Clean tank level float(s).

Caution

Level floats must be cleaned daily. Build-up of scale or grease will cause faulty operation of the tank fill & heat system.

DOOR TYPE DISHWASHERS
MAINTENANCE and REPAIR PROCEDURES
Part 3, Section A



Following is a basic guide for the repair and replacement of common dishwasher parts.

Refer to the Basic Service Guide for troubleshooting tips.

A.1 MAINTENANCE

A.1.1 Daily - Refer to the operation and cleaning instructions provided in this manual for daily cleaning procedures.

A.1.2 Weekly

A.1.2.1 The entire machine should be wiped down using an industrial grade stainless steel cleaner.

A.1.2.2 Under the supervision of your detergent supplier the machine interior must be properly de-limed.

Note

The water quality in some areas requires de-liming to be done more frequently. Contact your detergent supplier for recommended de-liming frequency.

A.1.3 Quarterly

A.1.3.1 Remove and clean the strainer screens on water and steam lines. If the screens cannot be cleaned, replace.

A.1.3.2 Inspect condition of solenoid valve seats and diaphragms. Replace where necessary.

A.1.3.3 Inspect drain O-Rings for leakage. Replace where necessary.

A.1.3.4 Check door spring tension and adjust where necessary.

A.1.3.5 Check wash and rinse hub bushing/bearing and replace where necessary.

A.2 MAINTENANCE PROCEDURES

A.2.1 Solenoid Valve Disassembly

A.2.1.1 Disconnect power supply to machine. Turn off Water supply.

A.2.1.2 Remove cap on top of coil. Remove coil.

A.2.1.3 Remove 4 hex bolts and lift bonnet from valve body. Note positioning of spring and plunger.

A.2.1.4 Remove main piston.

A.2.1.5 Inspect for dirt, wear or lime build-up. Clean or replace as required.

A.2.1.6 Reassemble in reverse of disassembly.

DOOR TYPE DISHMACHINES
MAINTENANCE and REPAIR PROCEDURES
Part 3, Section A



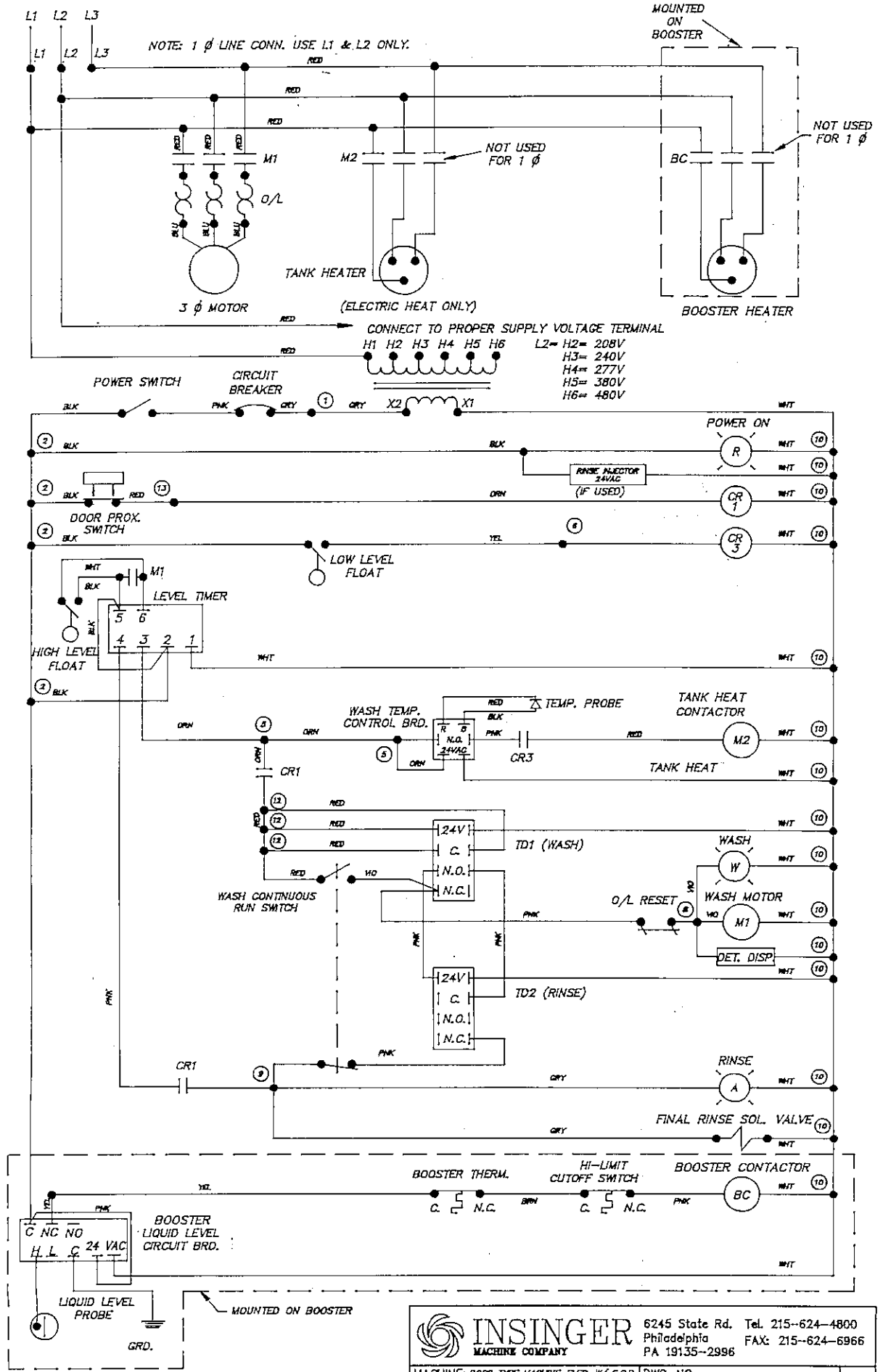
- A.2.5 Wash Tank Temperature Adjustment cont'd
 - A.2.5.3 Adjust the tank temperature to the desired temperature by turning the potentiometer located on the temperature control board. An arrow on the potentiometer indicates increase.
 - A.2.5.4 If the temperature does not change refer to section A.2.6, Troubleshooting Tank Temperatures.
- A.2.6 Troubleshooting Tank Temperatures
 - A.2.6.1 Electric Heat
 - A.2.6.1.1 If temperature cannot be adjusted per section A.2.5 check the temperature control board P/N DE9-96 proper operation. If the temperature control board is faulty, replace.
 - A.2.6.1.2 Verify tank heat contactor is working correctly. If not, replace.
 - A.2.6.1.3 Verify all immersion heaters are working properly and not limed. If not, replace.
 - A.2.6.2 Steam Heat
 - A.2.6.2.1 See Section A.2.6.1.1.
 - A.2.6.2.2 Verify steam pressure per machine specifications.
 - A.2.6.2.3 Verify steam trap is not clogged. If so, replace.
 - A.2.6.3 Gas Heat
 - A.2.6.3.1 See Section A.2.6.1.1.
 - A.2.6.3.2 Verify gas supply.
 - A.2.6.3.3 Verify pilot is lit. If not, light. If pilot does not stay lit, replace.
 - A.2.6.3.4 Verify gas solenoid is working correctly. If not, replace.
- A.2.7 Motor Overloads
 - A.2.7.1 All motors used on Insinger Machines are provided with motor overloads. Motor overloads are adjusted when the machines are factory tested. Should it be necessary to adjust the motor overloads in the field first verify the motor current draw for the voltage the machine is using.
 - A.2.7.2 Using the Control Panel Component Layout Dwg. located in Section 3 to identify the overload adjust by turning the dial to the appropriate AMP draw.

BASIC SERVICE GUIDE

| SYMPTOM | POSSIBLE CAUSE | Solution |
|-------------------------------|--|---|
| 1. Machine will not operate | a. No Power b. Blown fuse or tripped breaker c. Motor overloads tripped | a. Check power supply b. Replace fuse; reset breaker c. Reset overload |
| 2. Tank will not hold water | a. Drain not closed b. Drain overflow not seated or installed c. Pump petcock opened | a. Close drain b. Reseat or install drain overflow c. Replace V-seal |
| 3. Tank fills beyond overflow | a. Obstruction in overflow tube or drain line | a. Remove obstruction |
| 4. Water leaks around door | a. Doors not seating b. Clogged spray pipe | a. Reseat doors b. Clean spray pipe with brush provided |
| 5. Weak or ineffective spray | a. Clogged spray pipe b. Manifolds not installed properly c. Obstruction in pump d. Pump rotation reversed e. Suction strainer clogged | a. Clean spray pipe with brush pipe b. Ensure proper placement of upper and lower pipes c. Clear obstruction through pump inspection plate d. Arrow on pump housing indicates direction, correct electrically e. Clean suction strainer |

BASIC SERVICE GUIDE

| SYMPTOM | POSSIBLE CAUSE | Solution |
|--|--|--|
| 10. Tank not filling/tank heat coming on with no water in tank | a. Level float dirty b. Level control system not working | a. Clean level float with Scotch-Brite or equivalent - two floats per tank b. Troubleshoot level control circuit |
| 11. Tank temperature too low/high | a. Thermostat not adjusted b. Heat circuitry not working c. Electric heat, power turned off d. Electric heat, immersion heaters limed e. Steam heat, steam turned off f. Steam heat, not enough steam g. Steam heat, condensate traps clogged h. Gas heat, gas turned off i. Gas heat, pilot not lit | a. Adjust thermostat located in control panel b. Troubleshoot circuitry c. Turn power on d. De-lime machine e. Turn steam on f. Adjust steam pressure per machine spec's g. Clean or replace condensate traps h. Turn on gas i. Re-light pilot |



FILE: \WIRE\DOOR030

ECN# 950 10.4.93

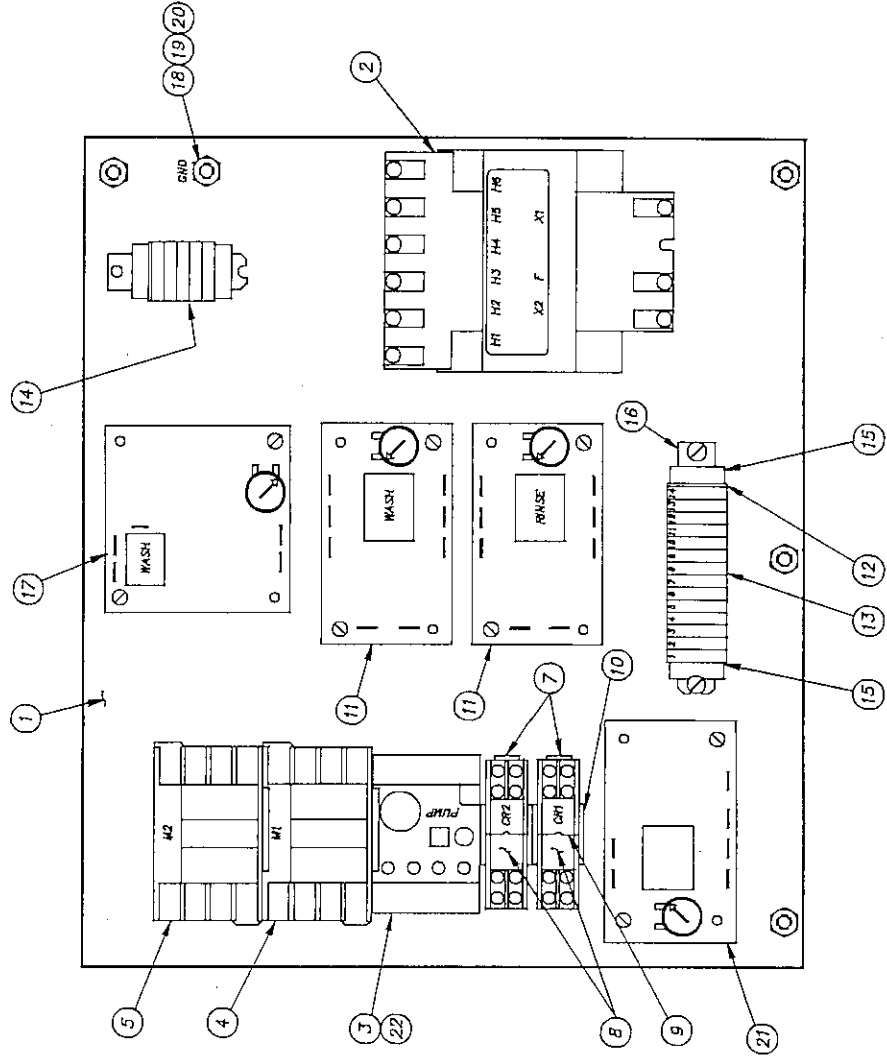
| | |
|--|--|
| | 6245 State Rd. Tel: 215-624-4800 Philadelphia PA 19135-2996 FAX: 215-624-6966 |
| | MACHINE: DOOR TYPE MACHINE-ELEC. W/ S.C.B. DWG. NO. DRAWN: RAF 08.05.88 APPROVED: MJM 08.05.88 |

WDOOR030 H

PARTS LIST-CONTROL BOX COMPONENTS
COMMANDER 18-3, CS-4

| ITEM | DESCRIPTION | PART NO. | QTY |
|------|-------------------------------------|-------------|-----|
| 1 | CONTROL COMPONENT PLATE | DE10-6 | 1 |
| 2 | TRANSFORMER | DE6-6 | 1 |
| 3 | OVERLOAD | | |
| | ALL VOLTAGES | | |
| | 480V-3PH-60HZ 1.8A | DE2-52 | 1 |
| | 380V-3PH-50HZ 2.0A | DE2-52 | 1 |
| | 240V-3PH-60HZ 3.6A | DE2-53 | 1 |
| | 240V-1PH-60HZ 8.0A | DE2-56 | 1 |
| | 220V-3PH-60HZ 4.3A | DE2-54 | 1 |
| | 220V-1PH-50HZ 9.0A | DE2-57 | 1 |
| | 208V-3PH-60HZ 3.8A | DE2-53 | 1 |
| | 208V-1PH-60HZ 10.0A | DE2-57 | 1 |
| 4 | CONTACTOR (PUMP MOTORS) | DE1-66 | 1 |
| 5 | CONTACTOR (ELEC. TANK HEAT ONLY) | DE1-66 | 1 |
| 6 | RELAY BASE | AR | AR |
| 7 | RELAY | DE2-37 | AR |
| 8 | RELAY HOLD-DOWN SPRING | DE2-38 | AR |
| 9 | DIN RAIL | DE3-43 | 1 |
| 10 | TIME DELAY (WASH, RINSE) | DE9-84A | 1 |
| 11 | TERMINAL END COVER PLATE | DE7-27 | 2 |
| 12 | TERMINAL SECTION | DE3-40 | 1 |
| 13 | TERMINAL BLOCK ASS'Y. | DE3-39 | 14 |
| 14 | (UP TO 300V.) | | |
| 15 | (300V. - 600V.) | DE3-9 | 1 |
| 16 | TERMINAL END CLAMP | DE3-3 | 1 |
| 17 | DIN RAIL (TERMINAL STRIP) | DE3-41 | 2 |
| 18 | CIRCUIT BOARD (TEMPERATURE CONTROL) | DE3-42B | 1 |
| 19 | 1/4 INTERNAL TOOTH LOCK WASHER | DE9-96 | 1 |
| 20 | 1/4-20 HEX NUT | D313C-65 | 1 |
| 21 | 1/4-20 X 1/2 LG. WELD STUD | D312C-GC2 | 1 |
| 22 | TIMER LEVEL | D308C-GC-4G | 1 |
| | OVERLOAD BASE | DE7-31 | 1 |
| | | DE2-60 | 1 |

USED ON: COMMANDER 18-3
 COMMANDER 18-4
 CS-4



MAM 8.13.92 SK-3490 PG. 1 OF 2

INSINGER
 MACHINE COMPANY
 6245 State Rd. Tel. 215-624-4800
 Philadelphia PA 19135-2996 FAX: 215-624-6966

ABSOLUTE SEE REV. E

ECN# 905 8.3.93

FILE: \SKETCH\SK34901

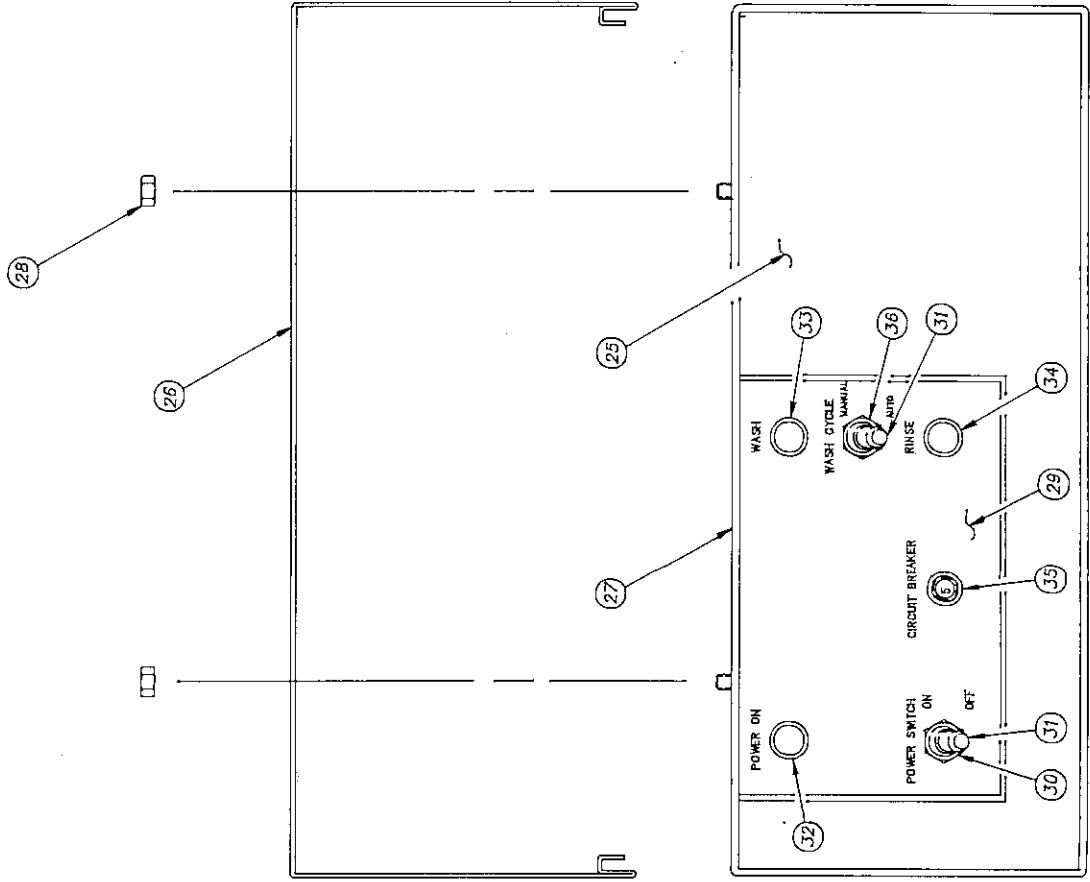
PARTS LIST-CONTROL BOX COMPONENTS
COMMANDER 18--3, CS-4

| ITEM | DESCRIPTION | PART NO. | QTY. |
|------|----------------------|-------------|------|
| 25 | CONTROL BOX | D3-704 | 1 |
| 26 | CONTROL BOX COVER | D3-713 | 1 |
| 27 | GASKET | 9007--001 | 1 |
| 28 | SEAL NUT | D312C-EF--5 | 4 |
| 29 | LEGEND DECAL | SK-2306 | 1 |
| 30 | SWITCH | DE5--8 | 4 |
| 31 | BOOT, SWITCH | DE9--13 | 2 |
| 32 | PILOT LIGHT (RED) | DE9-107 | 1 |
| 33 | PILOT LIGHT (WHITE) | DE9-108 | 4 |
| 34 | PILOT LIGHT (AMBER) | DE9-109 | 1 |
| 35 | CIRCUIT BREAKER (SA) | DE9-43 | 1 |
| 36 | SWITCH | DE5--11 | 1 |

NOT SHOWN:

TANK IMMERSION HEATER (3KW)

- 480VAC--3PH
- 380VAC--3PH
- 240VAC--3PH
- 240VAC--1PH
- 220VAC--3PH
- 220VAC--1PH
- 208VAC--3PH
- 208VAC--1PH
- DE13--SC73
- DE13--SC53
- DE13--SC43
- DE13--SC41
- DE13--SC33
- DE13--SC31
- DE13--SC23
- DE13--SC21



MAM 9.13.92

SK-3490

PG. 2 OF 2



INSINGER
MACHINE COMPANY

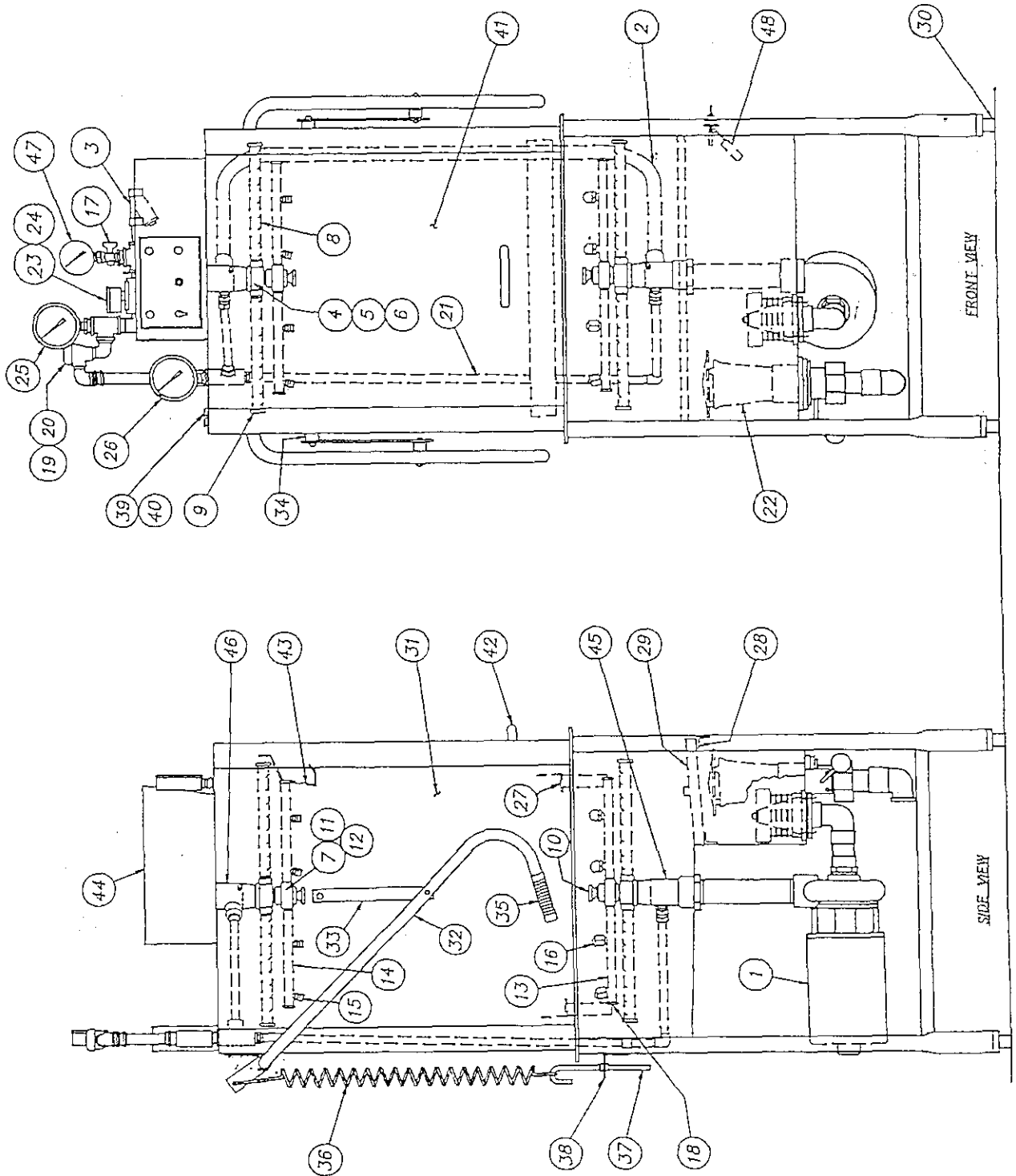
6245 State Rd. Tel. 215-624-4800
Philadelphia, PA 19135-2996
FAX: 215-624-8966

ECN# 905 8.3.93

FILE: \SKETCH\SK34902

OBsolete SEE REV. E

COMMANDER 18-4
COMMANDER 18-4H



PARTS LIST: COMMANDER CS-4

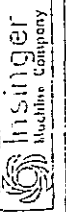
| ITEM | MACHINE | PART No. | DESCRIPTION | REQ. |
|------|---------------|---------------------|--|------|
| 1 | 18-4 18-4H | 1089-19 1089-19A | PUMP & MOTOR ASS'Y (1 H.P. - SPECIFY VOLTAGE) PUMP & MOTOR ASS'Y (2 H.P. - SPECIFY VOLTAGE) | 1 |
| 2 | | 1463-16 | DISCHARGE LINE ASS'Y | 1 |
| 3 | | D-2483A | Y STRAINER, 1/2 | 1 |
| 4 | | 1084-76 | SPRAY HUB - WASH | 2 |
| 5 | | D2-563 | O-RING | 2 |
| 6 | | 952-27 | BUSHING, PLASTIC (WASH ARM HUB) | 2 |
| 7 | | 1089-178 | BUSHING, PLASTIC (RINSE ARM HUB) | 2 |
| 8 | | 1089-23 | WASH SPRAY PIPES | 4 |
| 9 | | D2-554-2 | PLUG, 3/4-10 UNC-2A (WASH ARM) | 4 |
| 10 | | D2-584 | LOCKING SCREW | 2 |
| 11 | | 372-52 | HUB - RINSE ARM | 2 |
| 12 | | 1084-35 | BUSHING, BRONZE (RINSE ARM HUB) | 2 |
| 13 | | 1463-21 | LOWER RINSE ARM ASS'Y | 1 |
| 14 | | 1463-20 | UPPER RINSE ARM ASS'Y | 1 |
| 15 | | D-2700 | SPRAY NOZZLE -- UPPER RINSE ARM | 4 |
| 16 | | D-2836 | SPRAY NOZZLE -- LOWER RINSE ARM | 4 |
| 17 | | D-2497 | PETCOCK | 1 |
| 18 | | D2-554-1 | PLUG, 9/16-12 UNC-2A | 4 |
| 19 | | D-2241A | VACUUM BREAKER, 1/2 | 1 |
| 20 | | D-2242A | VACUUM BREAKER REPAIR KIT | 1 |
| 21 | | 1463-18 | FINAL RINSE ASSEMBLY | 1 |
| 22 | | SK-3028 | DRAIN ASSEMBLY (W/PARTS LIST) | 1 |
| 23 | | D-2606 | SOLENOID VALVE, 1/2 | 1 |
| 24 | | D-2641 | SOLENOID VALVE REPAIR KIT | 1 |
| 25 | | D-2495 | TEMPERATURE GAUGE - FINAL RINSE | 1 |
| 26 | | D-2390 | TEMPERATURE GAUGE | 1 |
| 27 | | 1084-14A | TRACK ASS'Y | 2 |
| 28 | | 1089-9 | TRAY SUPPORT | 2 |
| 29 | | 1089-10 | SCRAP SCREEN | 1 |
| 30 | | D-2430 | BULLET FOOT | 4 |
| 31 | 18-4 18-4H | 1089-8 1463-10 | DOOR -- SIDE | 2 |
| 32 | 18-4 18-4H | 1084-25 1463-12 | DOOR ARM | 1 |
| 33 | 18-4 18-4H | 1084-38 1463-8 | LINK, ARM-DOOR | 2 |
| 34 | 18-4 18-4H | 957-26 1463-7 | SPACER, S/S, DOOR -- ARM LINK | 2 |
| 35 | | D-2245 | GRIP -- DOOR HANDLE | 2 |
| 36 | | SK-2294A | SPRING | 2 |
| 37 | 18-4 18-4H | 957-27 1463-14 | SPRING EXTENSION -- LOWER | 2 |
| 38 | | 1089-12 | SPRING BRACKET | 1 |
| 39 | | DE5-37 | SWITCH, MAGNETIC | 1 |
| 40 | | DE5-37A | MAGNET | 1 |
| 41 | 18-4 18-4H | 1089-57 1463-11 | DOOR -- FRONT | 1 |
| 42 | | D-2099 | HANDLE, FRONT DOOR | 1 |
| 43 | | 1089-59 | FRONT DOOR HANGER | 1 |
| 44 | | SK-3490 | CONTROL BOX ASS'Y | 1 |
| 45 | | 1089-16A | MANIFOLD ASS'Y, LOWER | 1 |
| 46 | | 1089-15A | MANIFOLD ASS'Y, UPPER | 1 |
| 47 | | D-1003 | PRESSURE GAUGE | 1 |
| 48 | | DE5-60 | LIQUID LEVEL FLOAT | 2 |

PARTS LIST - COMMANDER 18-4C

| <u>ITEM</u> | <u>PART NO.</u> | <u>DESCRIPTION</u> | <u>REQ.</u> |
|-------------|-----------------|---|-------------|
| 1 | D-2465 | PUMP & MOTOR ASS'Y (1 H.P. - SPECIFY VOLTAGE) | 1 |
| 2 | D2-541 | SUCTION STRAINER | 1 |
| 2A | D3-825 | SUCTION STRAINER SPRING | 1 |
| 3 | 1463-16 | DISCHARGE LINE ASS'Y | 1 |
| 4 | D-2483A | "Y" STRAINER, 1/2 | 1 |
| 5 | 1084-76 | SPRAY HUB - WASH | 2 |
| 6 | D2-563 | O-RING | 2 |
| 7 | 952-27 | BUSHING | 2 |
| 8 | 1089-178 | BUSHING, PLASTIC | 2 |
| 9 | 1089-23 Rev.A | WASH SPRAY PIPES (UPPER & LOWER) | 4 |
| 10 | D2-554-2 | PLUG, 3/4-10 UNC-2A | 4 |
| 11 | D2-584 | LOCKING SCREW | 2 |
| 12 | 1084-22 | SPRAY HUB - RINSE | 2 |
| 13 | 1084-35 | BUSHING - UPPER | 2 |
| 14 | 1084-36 | BUSHING - LOWER | 2 |
| 15 | 1463-21 | RINSE, LOWER SPRAY PIPE ASS'Y | 1 SET |
| 15A | 1463-20 | RINSE, UPPER SPRAY PIPE ASS'Y | 1 SET |
| 16 | D2836 | RINSE SPRAY NOZZLES - LOWER PIPE RINSE | 4 |
| 16A | D2700 | RINSE SPRAY NOZZLES - UPPER PIPE RINSE | 4 |
| 17 | D-2497 | PETCOCK | 1 |
| 18 | D2-554-1 | PLUG, 9/16-12 UNC-2A | 4 |
| 19 | D-2241A | VACUUM BREAKER, 1/2 | 1 |
| 19A | D-2242A | VACUUM BREAKER REPAIR KIT | 1 |
| 21 | 1169-179 | DRAIN ASS'Y | 1 |
| 22 | 1100-79A | DRAIN HANDLE ASS'Y | 1 |
| 23 | D-2606 | SOLENOID VALVE, 1/2 | 1 |
| 23A | D-2641 | SOLENOID VALVE REPAIR KIT | 1 |
| 24 | D-2495 | TEMPERATURE GAUGE -- FINAL RINSE | 1 |
| 25 | D-2390 | TEMPERATURE GAUGE | 1 |
| 26 | 1089-107 | TRACK ASS'Y | 2 |
| 29 | 1089-9 | TRAY SUPPORT | 2 |
| 30 | 1089-10 | SCRAP SCREEN | 1 |
| 31 | D-2430 | BULLET FOOT | 4 |
| 32 | 1089-8 | DOOR - SIDE | 2 |
| 33 | 1084-126 | DOOR ARM | 1 |
| 34 | 1084-119 | LINK - DOOR ARM | 2 |
| 35 | 957-26 | SPACER - DOOR ARM LINK | 2 |
| 36 | 952-118 | PIVOT BRACKET - DOOR ARM | 2 |
| 37 | D2-551 | PIVOT BALL | 1 |
| 38 | 952-139 | SUPPORT - PIVOT BRACKET | 2 |
| 39 | SK-2294A | SPRING | 2 |
| 40 | 957-27 | SPRING EXTENSION - LOWER | 2 |
| 41 | 1089-118 | SPRING BRACKET | 1 |
| 42 | DE5-37 | SWITCH, MAGNETIC | 1 |
| 43 | DE5-37A | MAGNET | 1 |
| 44 | 957-49 | SPRING EXTENSION - UPPER | 2 |
| 45 | 1089-108 | CORNER TRACK | 1 |
| 46 | SK-3490 | CONTROL BOX ASS'Y | 1 |
| 47 | DE5-60 | LIQUID LEVEL FLOAT | 1 |
| 48 | 1089-16A | MANIFOLD ASS'Y, LOWER | 1 |
| 49 | 1089-15A | MANIFOLD ASS'Y, UPPER | 1 |
| 50 | D-1003 | PRESSURE GAUGE | 1 |
| 52 | 963-38 | SUCTION STRAINER FLANGE | 1 |
| 53 | D514 | GASKET, PUMP FLANGE | 1 |
| 54 | D134 | PUMP FLANGE | 1 |
| 55 | D316A-H3-H4 | 1 1/2" 90° ELBOW | 1 |
| 56 | D207A-12-12.5 | 1 1/2" TUB. Cu, 3 1/8" Lg. | 1 |
| 57 | D317A-H3-H2 | ADAPTER 1 1/2" | 1 |
| 58 | D314F-HT-72 | NIPPLE 1 1/2" IPS x 9" Lg. LOE | 1 |

SHEET 2 OF 2

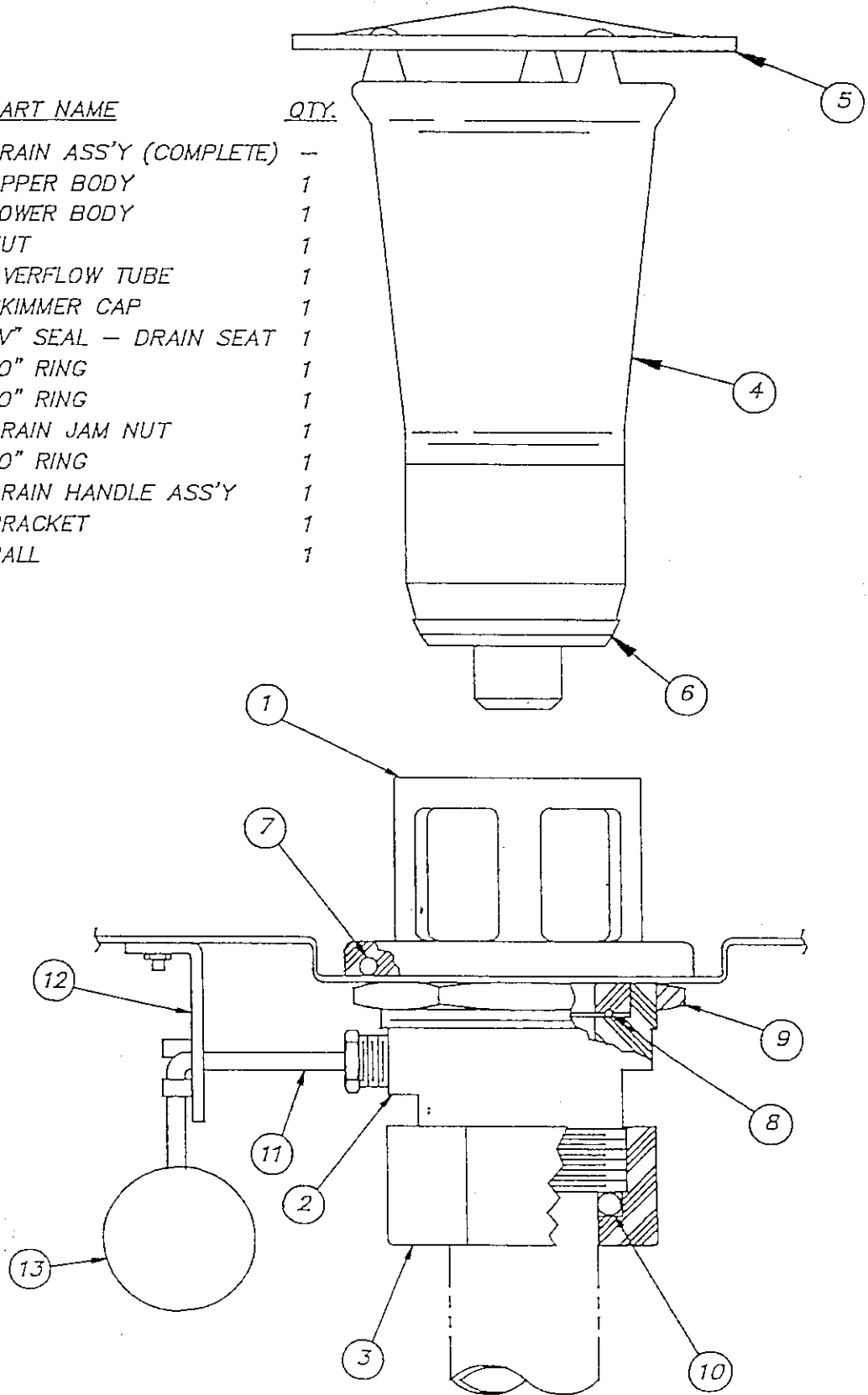
Philadelphia, PA 19135
 (215) 624-4800
 FAX (215) 624-6966



SK-2837

FILE: SKETCH\SK-28372 EGN# 1512 12.20.96

| ITEM | PART NO. | PART NAME | QTY. |
|------|-----------|------------------------|------|
| | 954-50 | DRAIN ASS'Y (COMPLETE) | -- |
| 1 | 954-50A | UPPER BODY | 1 |
| 2 | 954-50B | LOWER BODY | 1 |
| 3 | 954-50C | NUT | 1 |
| 4 | 1169-179D | OVERFLOW TUBE | 1 |
| 5 | D-193 | SKIMMER CAP | 1 |
| 6 | D2-557 | "V" SEAL - DRAIN SEAT | 1 |
| 7 | D2-548 | "O" RING | 1 |
| 8 | D2-549 | "O" RING | 1 |
| 9 | D-305 | DRAIN JAM NUT | 1 |
| 10 | D2-550 | "O" RING | 1 |
| 11 | 1100-79A | DRAIN HANDLE ASS'Y | 1 |
| 12 | 954-8C | BRACKET | 1 |
| 13 | D-2407 | BALL | 1 |



SK- 3028

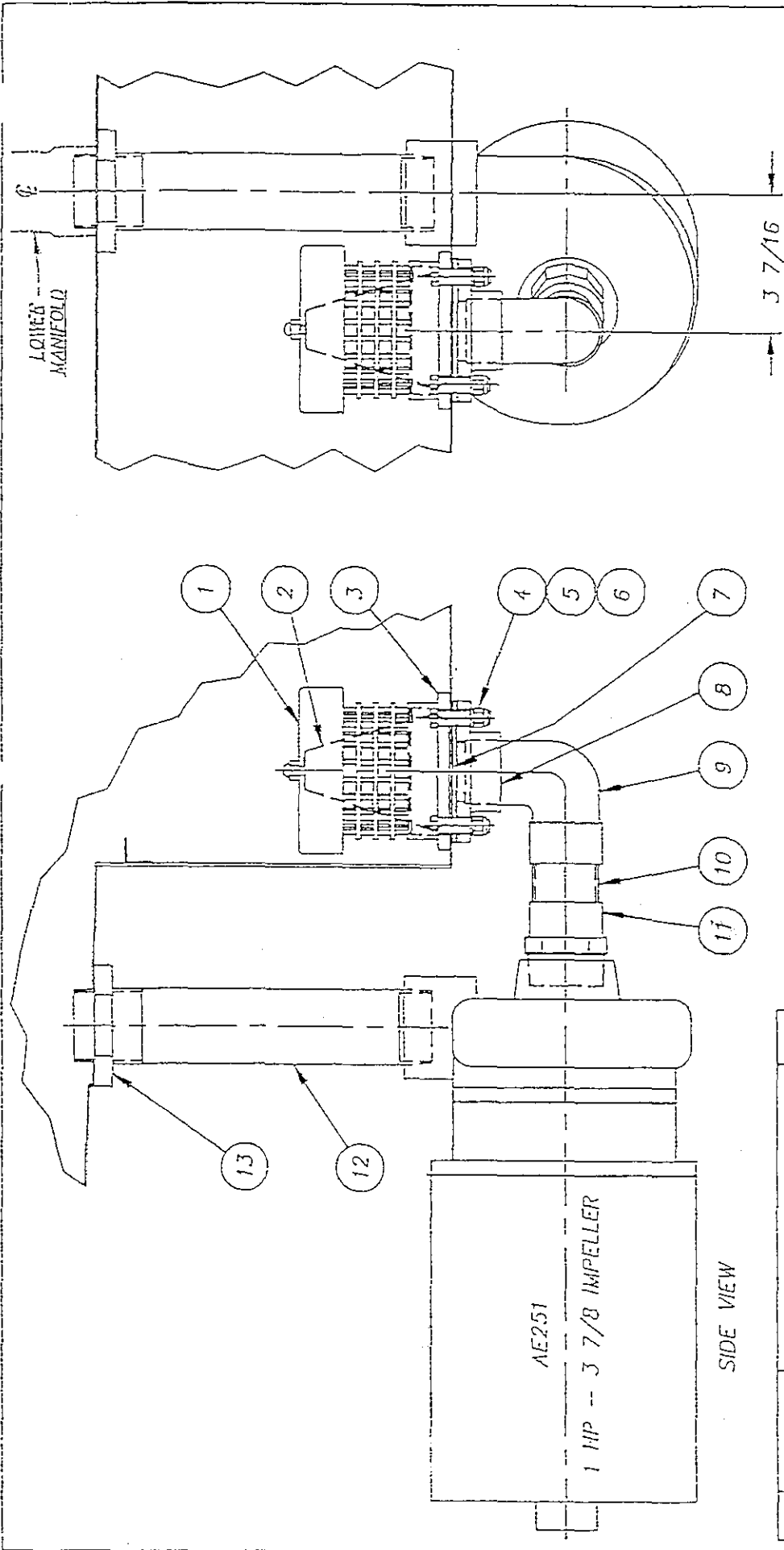
ECN# 1512 12.20.96

FILE: SKETCHA SK-3028

MAM 2.11.93

 **Insinger**
Machine Company

Philadelphia, PA 19135
(215) 624-4800
FAX (215) 624-6966



FRONT VIEW

SIDE VIEW

AE251
1 HP -- 3 7/8 IMPELLER

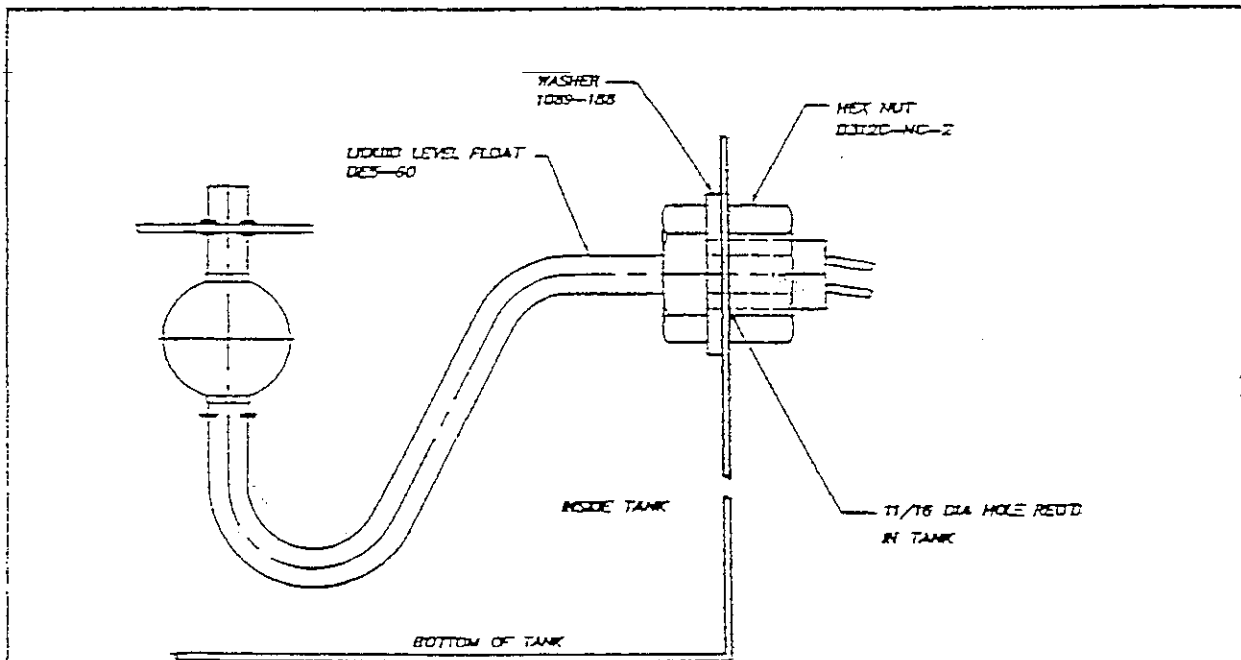
| ITEM | PART NO. | DESCRIPTION | QTY. |
|------|---------------|-----------------------------------|------|
| 1 | D2-541 | SUCTION STRAINER | 1 |
| 2 | DJ-825 | SUCTION STRAINER SPRING | 1 |
| 3 | 963-38 | SUCTION STRAINER FLANGE | 1 |
| 4 | | HEX HD. S/S SCREW 3/8-16 x 1 1/4" | 4 |
| 5 | 0311A-01 | COPPER WASHER 3/8 | 4 |
| 6 | 0312C-0C-5 | LOCKNUT 3/8-16 | 4 |
| 7 | D-514 | GASKET, PULP FLANGE | 1 |
| 8 | 0131 | PUMP FLANGE | 1 |
| 9 | D316A-113-114 | 1 1/2" ELBOV 90° | 1 |
| 10 | | 1 1/2" COPPER TUB, 3 1/8" Lg. | 1 |
| 11 | D317A-113-112 | ADAPTER 1 1/2" | 1 |
| 12 | 0314F-113-72 | NIPLLE 1 1/2 IPS x 8" LG. LGE | 1 |
| 13 | 0326F-111 | LOCKNUT 1 1/2 IPS | 1 |

| | | | | | |
|--|--------------------------------|--|---------|-------------|-----------------|
| TITLE | PUMP, MOTOR & SUCTION ASSEMBLY | HEXT ASSY | REQ'D 1 | DWG. NO. | 1089-19 |
| MATL | AS NOTED | SCALE | 1:4 | USED ON | 18-3,CS-4 (ALL) |
| REV | D | ECN NO | 145B | DATE | 8.30.96 |
| FILE: | PARTS\1089-19 | | | | |
| Insinger Machine Company | | Philadelphia, PA 19135 (215) 624-4800 FAX (215) 624-6966 | | | |
| | | DRWN/DATE | | RFN 9.03.91 | |

In order to insure the proper operation of your INSINGER dishwasher, it is necessary that the LIQUID LEVEL FLOAT be wiped free of any residue and/or moisture at each cleaning. This should be done, preferably, after each use of the machine, or, at a minimum, once each day.

The LIQUID LEVEL FLOAT is located below the scrap screens in those tanks which contain water heating devices (coils, steam injectors, or electric immersion heaters) and pump inlet strainers. They are usually located, in rackless and rack conveyor style machines, on the inside tank wall, at approximately water level, opposite and parallel to the inspection doors. In the door, stationary rack, type machines, the LIQUID LEVEL FLOAT may be found beneath the scrap screen.

Below is a depiction of the LIQUID LEVEL FLOAT; and the surfaces which must be wiped clean.



NOTE:
INSTALL LIQUID LEVEL FLOAT
IN POSITION SHOWN.

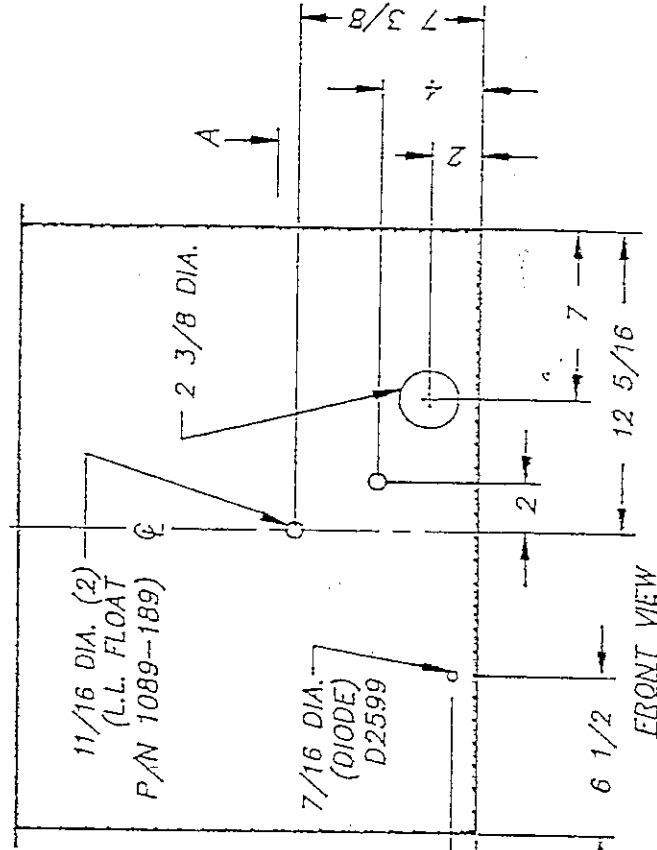
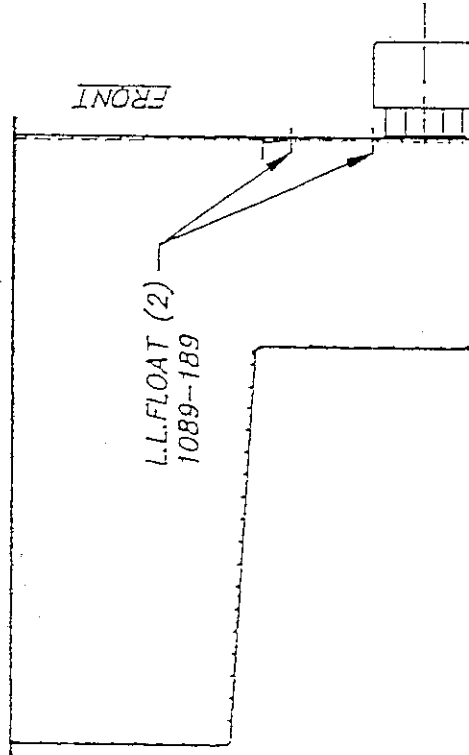
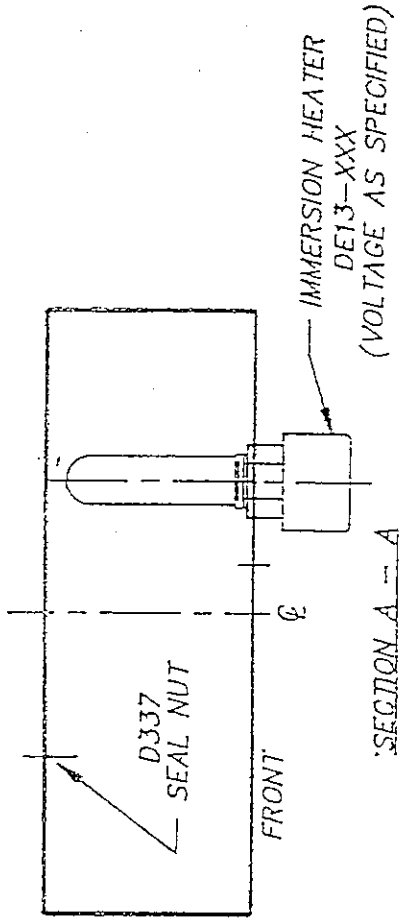
| | | | | | |
|----------------------|--------|-----------------|--|------------|----------------------------|
| | | TOLERANCES | TITLE | PREC. ASSY | DWG. NO. |
| | | FRACTIONS 31/64 | LIQUID LEVEL FLOAT | REDES | 1089-189 |
| | | DECIMALS | TYPICAL INSTALLATION | | |
| | | XXX = .005 | | SCALE | USED ON |
| | | XXX = .01 | AS NOTED | FILL | ALL MODELS |
| | | ANGLES 31/2 | | | |
| REV | EDN NO | DATE | UNLESS OTHERWISE SPECIFIED | | |
| FILE: PARTS/1089-189 | | | Insinger Machine Company P.O. Box 10135 (215) 524-4000 FAX (215) 524-2964 | | WORK/DRAWN PC 7.2.97 |

USED ON STANDARD

18-3 (CORNER)

50-20N2--NSU (CORNER)

CS-4 (CORNER)

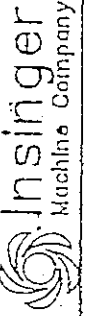


NOTE:

FOR PRISON PACKAGE LOCATION HEATER & FLOAT SWITCHES SEE SHEET 2 OF 2

SHEET 1 OF 2

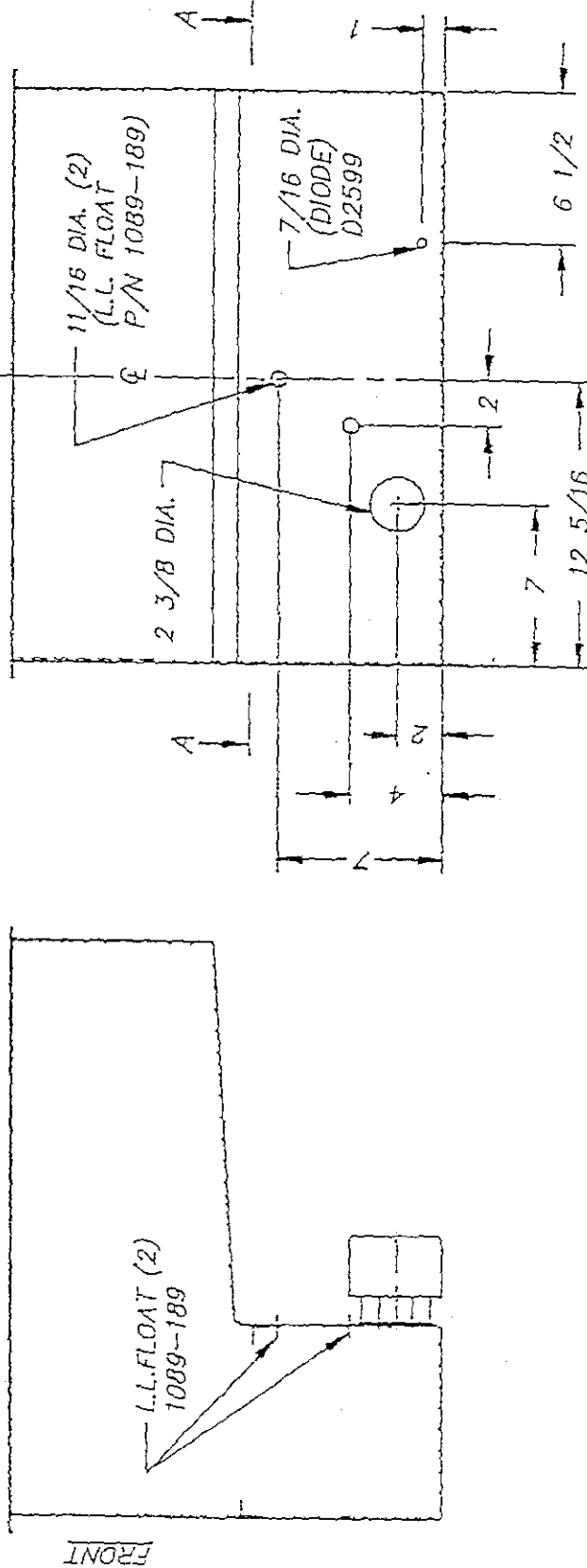
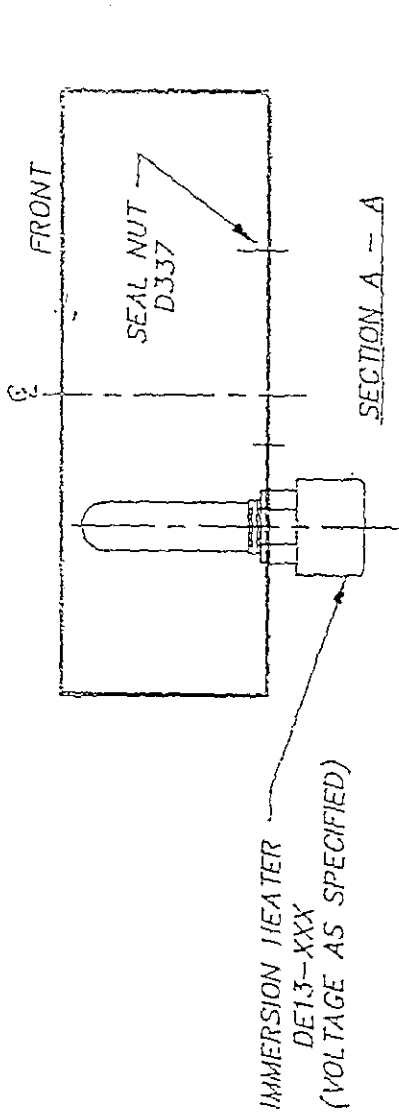
| | | | | | |
|----------------------------|--|---|--|--------------------|--|
| TOLERANCES | | TITLE | | NEXT ASSY DWG. NO. | |
| FRACTIONS ±1/64 | | ELECTRIC HTR., DIODE & LIQUID LEVEL FLOAT LOCATIONS | | 1089-183 | |
| DECIMALS | | MATERIAL | | SCALE | |
| .XXX ± .005 | | AS NOTED | | 1=8 | |
| .XX ± .01 | | PHILADELPHIA, PA 19135 | | USED ON | |
| ANGLES ±1/2° | | (215) 624-4800 | | SEE ABOVE | |
| UNLESS OTHERWISE SPECIFIED | | FAX (215) 624-6866 | | DRWN/DATE | |
| REV | | ECN NO | | RFN | |
| E 1442 | | 8.8.96 | | 1.30.92 | |
| D 1082 | | 10.25.94 | | | |
| C 880 | | 8.23.93 | | | |
| FILE: PARTS\1089-183 | | DATE | | | |



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FAX (215) 624-6866

USED ON PRISON PACKAGES:

- 1B-3, (CORNER)
- 50-20N2-NSU (CORNER)
- CS-4 (CORNER)



NOTE:

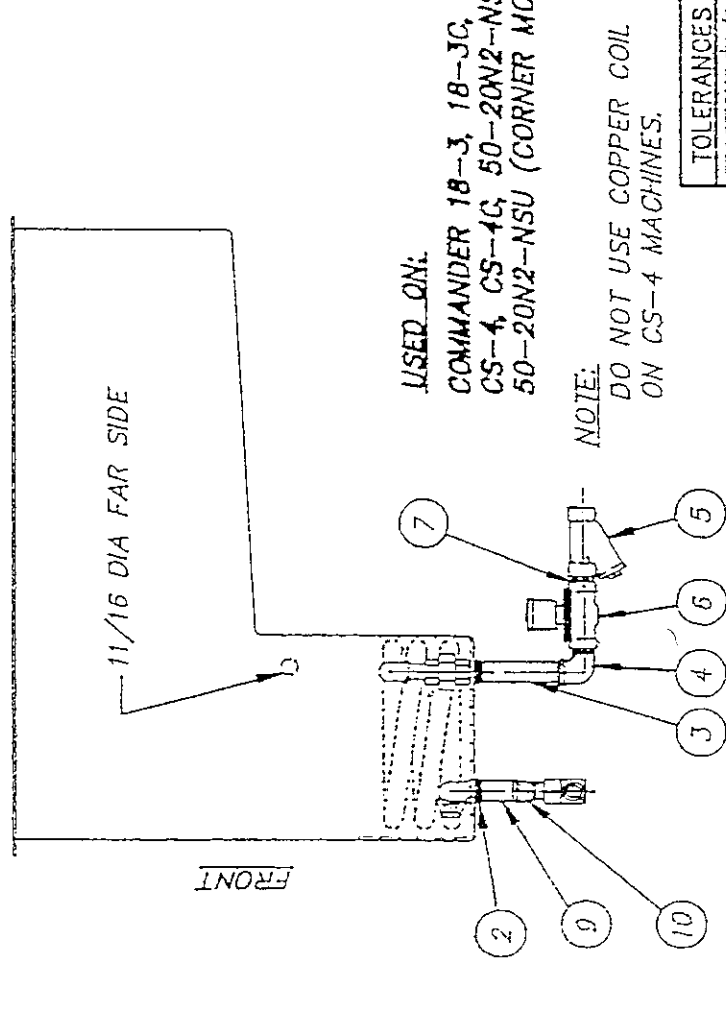
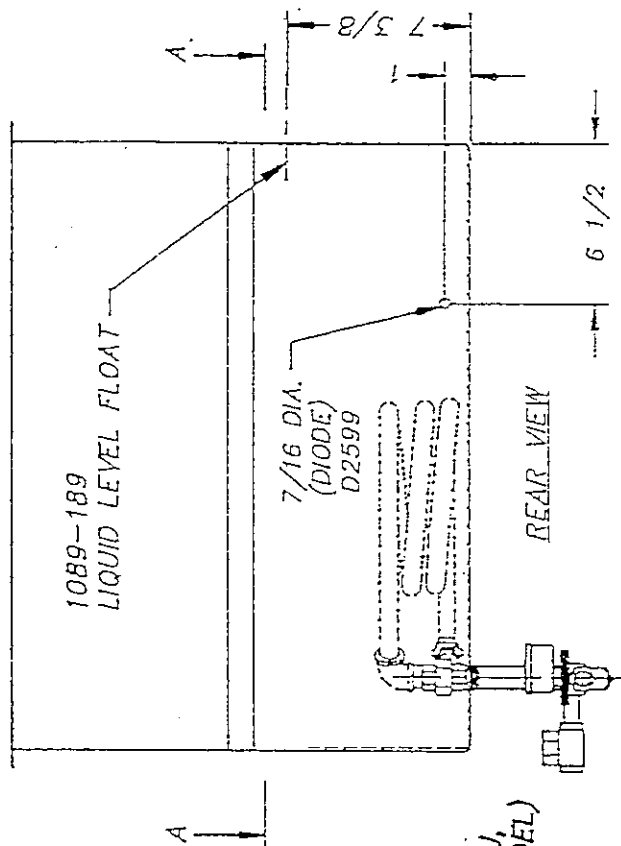
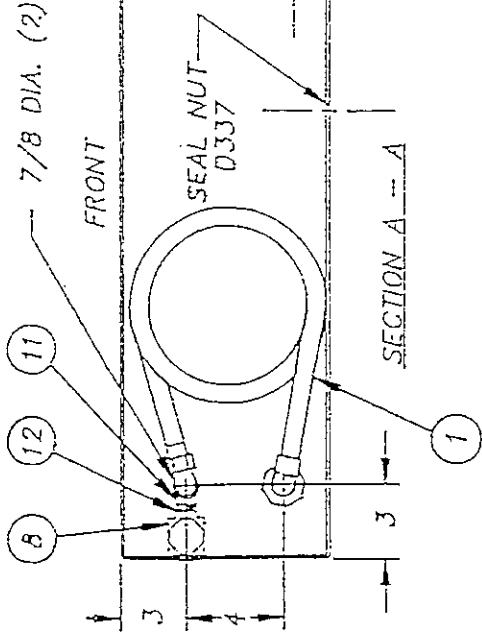
HEATER & FLOAT SWITCHES FOR PRISON PACKAGES

REAR VIEW

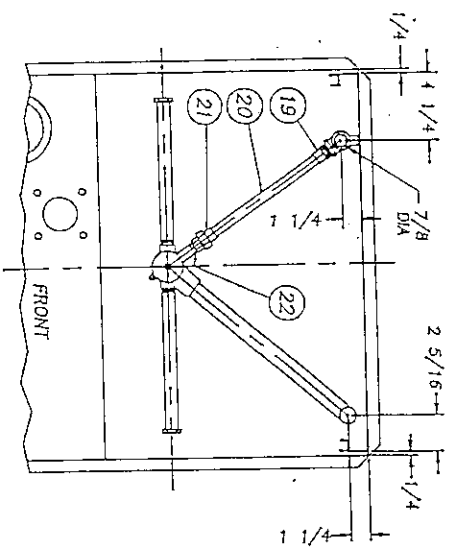
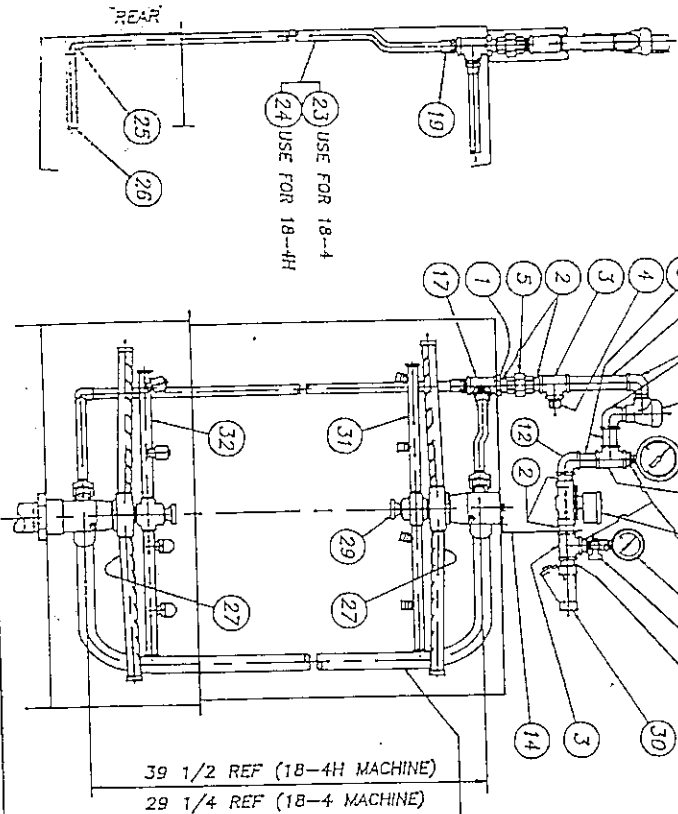
SHEET 2 OF 2

| | | | |
|----------------------------|--------|---|------------------------|
| REV | ECH NO | DATE | FILE: PARTS \ 1089-183 |
| C | 888 | 8.23.93 | |
| D | 1082 | 10.25.94 | |
| E | 1442 | 8.8.96 | |
| TOLERANCES ±: 1/64 | | | |
| FRACTIONS ±: 1/64 | | | |
| DECIMALS | | | |
| .XXX ± .005 | | | |
| .XX ± .01 | | | |
| ANGLES ± 1/2° | | | |
| UNLESS OTHERWISE SPECIFIED | | | |
| TITLE | | ELECTRIC HTR., DIODE & LIQUID LEVEL FLOAT LOCATIONS | |
| MATERIAL | | AS NOTED | |
| NEXT ASSY REQ'D | | 1089-183 | |
| SCALE | | 1=B | |
| USED ON | | SEE ABOVE | |
| DRWN/DATE | | RFN | |
| PHILADELPHIA, PA 19135 | | 1.30.92 | |
| INSINGER Machine Company | | (215) 624-4800 | |
| FAX: (215) 624-6966 | | | |

| NO. | DESCRIPTION | PART NO. | QTY. |
|-----|------------------------------------|---------------|------|
| 1 | STEAM COIL ASSY - COPPER | 1089-32 | 1 |
| 2 | STEAM COIL ASSY - S/S | 1089-32A | 2 |
| 3 | LOCKNUT 1/2 IPS | D326A-D | 1 |
| 4 | NIPPLE 1/2 IPS X 4 1/2 LG. L.O.E. | D314A-D18-LOE | 1 |
| 5 | 90° STREET ELL 1/2 MIPS X 1/2 FIPS | D316A-D1-D2 | 1 |
| 6 | Y STRAINER 1/2 IPS | D-2483A | 1 |
| 7 | SOLENOID 1/2 IPS | D-2594 | 1 |
| 8 | CLOSE NIPPLE 1/2 IPS | D314A-DCL | 1 |
| 9 | STEAM TRAP 3/8 IPS | D-2102 | 1 |
| 10 | NIPPLE 1/2 IPS X 2 1/2 LG. L.O.E. | D314A-D10-LOE | 1 |
| 11 | RED COUPLING 1/2 FIPS X 3/8 FIPS | D321A-D1-C1 | 1 |
| 12 | 90° STREET ELL 3/8 IPS | D316A-C1-C2 | 1 |
| 13 | CLOSE NIPPLE 3/8 IPS | D314A-CCL | 1 |



| TOLERANCES | | TITLE | NEXT ASSY | DWG. NO. |
|--|--|--|-----------|----------|
| FRACTIONS ±1/64 | | STEAM COIL, DIODE | | 1089-82 |
| DECIMALS | | AND LIQUID LEVEL FLOAT | REQ. | |
| .XXX ± .005 | | LOCATIONS | SCALE | USED ON: |
| .XX ± .01 | | | 1:8 | AS NOTED |
| ANGULAR ±1/2 | | | | |
| UNLESS OTHERWISE SPECIFIED | | | | |
| ECN# 1442 8.8.96 ECN# 888 8.23.93 ECN# 758 10.2.92 | | Insinger Machine Company Philadelphia, PA 19135 (215) 624-4800 (215) 624-6966 FAX (215) 624-6966 | | |
| DRWN/DATE MAM 7.24.92 | | | | |



DISCHARGE
LINE ASSY. SEE
DWG. NO. 1463-16

- NOTES:
1. * * * INDICATES CHROME PLATED.
 2. ITEM #30 IS NOT REQUIRED WHEN A BOOSTER IS SPECIFIED, REPLACE WITH 90° UNION ELBOW 1/2 KIPS X 1/2 COPPER.
 3. ITEM #30 & #13 ARE NOT REQUIRED WHEN USING A SELF-CONTAINED BOOSTER.

| NO. | DESCRIPTION | PART NO. | QTY. |
|-----|-----------------------------------|--------------|------|
| 1 | LOCKWUT, HEX | D326F-01 | 1 |
| 2 | NIPPLE, GLOBE | D314F-0C-00 | 3 |
| 3 | TEE | D320F-010101 | 5 |
| 4 | PLUG, PIPE | D328F-02A | 1 |
| 5 | UNION, STRAIGHT | D318F-01-01 | 1 |
| 6 | NIPPLE, PIPE | D314F-0S-36 | 1 |
| 7 | ELBOW, 90° STREET | D316F-01-02 | 2 |
| 8 | BREAKER, VACUUM | D-2241 | 1 |
| 9 | NIPPLE, PIPE | D314F-0S-16 | 2 |
| 10 | REDUCER, HEX | D322F-02-B1 | 2 |
| 11 | GAUGE, TEMPERATURE | D-2495 | 1 |
| 12 | ELBOW, 90° | D316F-01-01 | 1 |
| 13 | VALVE, SOLENOID (WATER) | D-2606 | 1 |
| 14 | BRACKET PIPING SUPPORT | DHW, 951-79 | 1 |
| 15 | PETCOCK | D2497 | 1 |
| 16 | GAUGE, PRESSURE | SK-1433 | 1 |
| 17 | TEE | D320E-010101 | 1 |
| 19 | ADAPTER | D317E-03-02 | 2 |
| 20 | TUBING, S/S | D207C-B1-36 | 1 |
| 21 | UNION | D318E-D3-01 | 2 |
| 22 | REDUCER, FLUSH | D333J-02-01 | 2 |
| 23 | FOR 18-4: TUBING, S/S | D207C-B1-112 | 1 |
| 24 | FOR 18-4H: TUBING, S/S | D207C-04-153 | 1 |
| 25 | ELBOW, 90° | D316E-03-03 | 1 |
| 26 | TUBING, S/S | D207C-04-39 | 1 |
| 27 | ASS'Y, SPINNING SPRAY PIPE (WASH) | DHW, 1089-25 | 2 |
| 28 | | D2-584 | 2 |
| 29 | SOEVI, LOCKING | D-2483A | 1 |
| 30 | STRAINER, "Y" | DHW, 1463-20 | 1 |
| 31 | UPPER RINSE SPRAY PIPE ASS'Y | DHW, 1463-20 | 1 |
| 31 | LOWER RINSE SPRAY PIPE ASS'Y | DHW, 1463-21 | 1 |

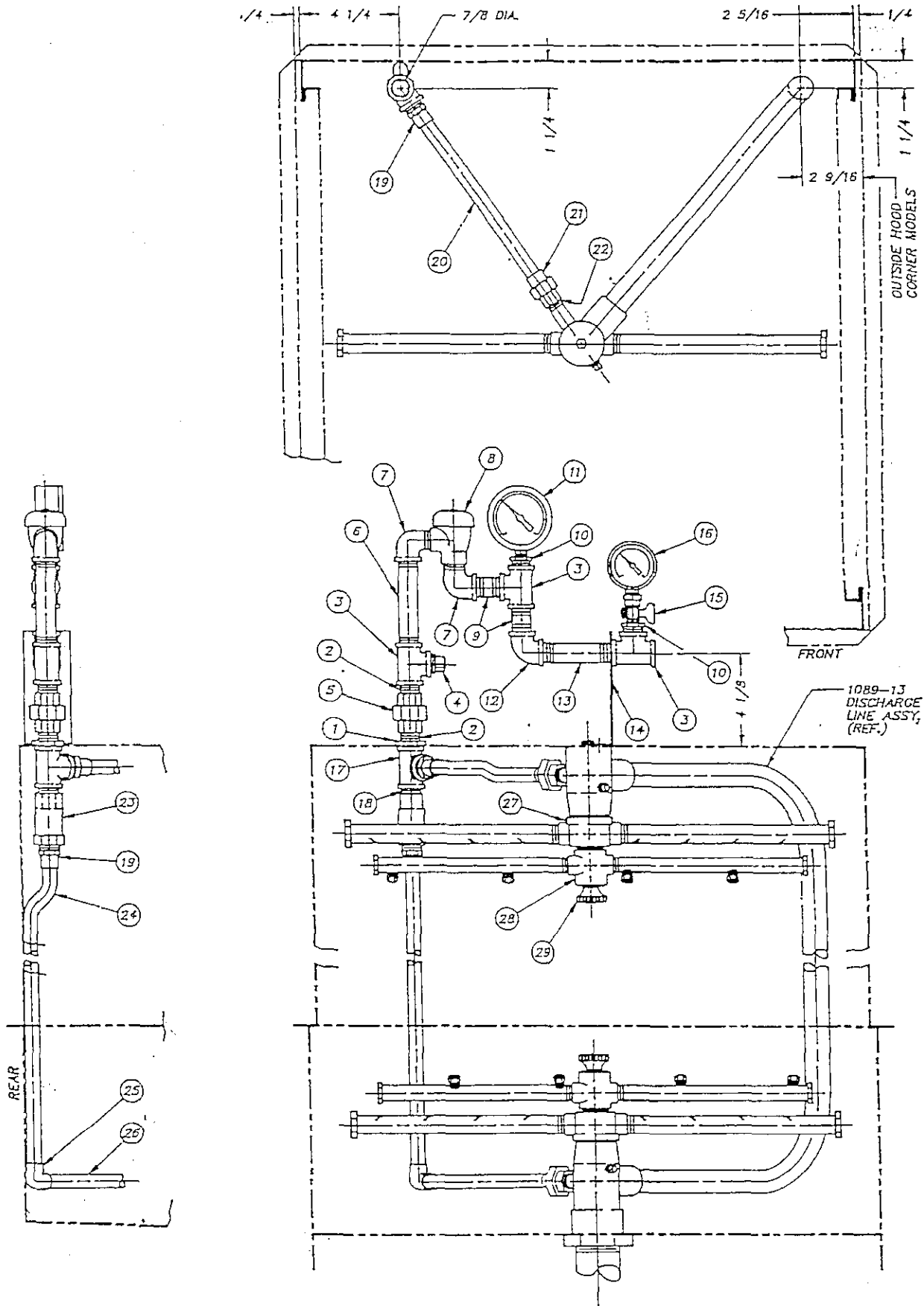
4. FOR MODEL 50-20N2-NSU, REPLACE ITEM #14 WITH 1084-85, ITEM #6 WITH 3/4 IPS X 1 1/2" LG. BRASS NIPPLE (D314F-06) & ADD A 90° STREET ELBOW 1/2 KIPS X 3/4 IPS (D316F-02-E1) TO INLET END OF "Y" STRAINER.

| REV | EQI NO. | DATE | TOLERANCES | TITLE | SCALE | USED ON |
|-----|---------|------|---|--|-------|-------------|
| | | | FRAGMENTS ±1/64 DECIMALS .005 XXX ± .01 ANGLES ±1/2° UNLESS OTHERWISE SPECIFIED | FINAL RINSE ASS'Y (ALL 18-4 MACHINES) | 1-8 | 18-4 ALL |
| | | | | | | DRN/DN/DATE |
| | | | | | | 10 |
| | | | | | | 12.2.96 |

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 Machine Company
 Philadelphia, PA 19133
 (215) 624-4000
 FAX (215) 624-6966

| REV | EQI NO. | DATE | TOLERANCES | TITLE | SCALE | USED ON |
|-----|---------|------|---|--|-------|-------------|
| | | | FRAGMENTS ±1/64 DECIMALS .005 XXX ± .01 ANGLES ±1/2° UNLESS OTHERWISE SPECIFIED | FINAL RINSE ASS'Y (ALL 18-4 MACHINES) | 1-8 | 18-4 ALL |
| | | | | | | DRN/DN/DATE |
| | | | | | | 10 |
| | | | | | | 12.2.96 |

NEXT ASSY/DWG. NO.
 1463-18
 FILE: PARTS\1463-18



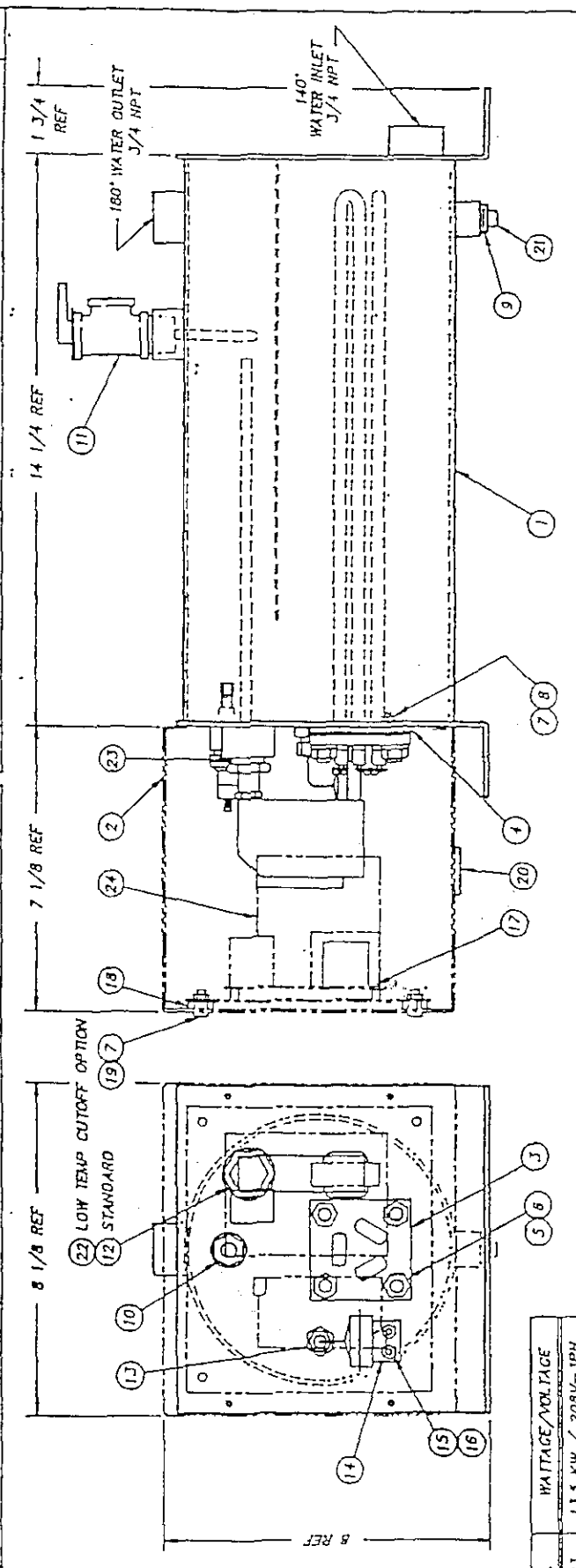
PG. 1 OF 2

| | | | |
|---|---|--------------------|----------------------|
| TOLERANCES: FRACTIONS ± 1/64" DECIMAL ± .005" ANGULAR ± 1/2° | TITLE FINAL RINSE ASSEMBLY (SELF CONTAINED BOOSTER) | PART. NO. NOTED | DWG. NO. 1192-10 |
| UNLESS OTHERWISE SPECIFIED | MATL. SEE PG. 2 OF 2 | SCALE 1/4" | USED ON COR. 11-3 |
| INSINGER MACHINE CO. PHILA., PA. 19156-2996 (215) 624-1900 | | RAF 11.15.80 | |

1192-10
PG. 1 OF 2

FILE: \ACAD\PARTS\119210-1

| NO. | PART NO. | SIZE | DESCRIPTION | QTY. | NO. | PART NO. | SIZE | DESCRIPTION | QTY. |
|-----|-------------|------|--|------|-----|-------------|------|-------------------------------------|------|
| 13 | DE5-61 | - | HI-TEMP. CUT-OFF SWITCH 3/8 NPT | 1 | 1 | 1192-2 | B | HELOMENT, BOOSTER | 1 |
| 14 | 1192-11 | A | BRACKET, CUT-OFF SWITCH | 1 | 2 | 1192-7 | B | COVER, SATELLITE CONTROL BOX | 1 |
| 15 | 0J12C-0C-2 | - | NUT, HEX #8-32 | 3 | 3 | SEE TABLE | - | HEATER, IMMERSION | 1 |
| 16 | 0309C-0C-2C | - | HELDSTUD #8-32 x 1/4 LG. | 2 | 4 | 1192-8 | A | GASKET, HEATER | 1 |
| 17 | 1192-1J | 0 | CONTROL BOARD ASSY | 1 | 5 | 0J12C-JC-2 | - | NUT, HEX 3/8-16 UNC-2B | 4 |
| 18 | 0J12C-0C-2 | - | NUT HEX 1/4-20 | 4 | 6 | 0J1JC-J2 | - | LOCKWASHER J/8 | 4 |
| 19 | 0309C-EF-40 | - | PAN HD. SCREW #10-32 X 1/2 LG | 4 | 7 | 0J12C-EF-2 | - | NUT, HEX #10-32 UNF-2B | 4 |
| 20 | 02759 | - | SWAP-ON VENT PLUG | 1 | 8 | 0J1JC-E2 | - | LOCKWASHER #10 | 4 |
| 21 | 0329-5 | - | DRAIN COCK 1/4 IPS | 1 | 9 | 0J22F-C2-81 | - | REDUCER J/8 NIPS X 1/4 FPS | 1 |
| 22 | 02301 | - | THERMOSTAT LESS ENCL. (LOW TEMP CUTOFF OPTION) | 1 | 10 | DE9-144 | - | LIQUID LEVEL PROBE | 1 |
| 23 | 0J22F-E2-C1 | - | BUSHING, 3/4 TO 3/8 | 1 | 11 | 02693 | - | TEMP.-PRESSURE RELIEF VALVE J/4 NPT | 1 |
| 24 | DE1-55 | - | CONTACTOR | 1 | 12 | 02396 | - | THERMOSTAT (STANDARD) | 1 |



| ITEM | PART NO. | WATTAGE/VOLTAG |
|------|-----------|--------------------|
| J | DE1J-8C2J | 13.5 KW / 209V-JPH |
| | DE1J-8C3J | 13.5 KW / 220V-JPH |
| | DE1J-8C4J | 13.5 KW / 240V-JPH |
| | DE1J-8C5J | 13.5 KW / 360V-JPH |
| | DE1J-8C6J | 13.5 KW / 440V-JPH |
| | DE1J-8C7J | 13.5 KW / 480V-JPH |

| TOLERANCES | DATE | FILE: PARTS/1192-1 |
|----------------------------|----------|--------------------|
| FRACTIONS ±1/64 | 2.1.95 | |
| DECIMALS | 2.27.94 | |
| XXX ± .005 | 4.17.93 | |
| XX ± .01 | 11.19.92 | |
| ANGLES ±1/2° | 12.21.90 | |
| UNLESS OTHERWISE SPECIFIED | | |

| REV | ECN NO. | DATE |
|-----|---------|----------|
| 5 | 1127 | 2.1.95 |
| 4 | 1073 | 2.27.94 |
| 3 | 972 | 4.17.93 |
| 2 | 778 | 11.19.92 |
| 1 | 517 | 12.21.90 |

| TITLE | SCALE | USED ON |
|---------------------------------|-------|---------|
| SELF CONTAINED BOOSTER ASSEMBLY | 1 | J/8 |
| NOTED | | 18-J |

| NEXT ASSY Dwg. NO. | REQ'D | SCALE | USED ON |
|--------------------|-------|-------|---------|
| 1192-1 | 1 | 1 | J/8 |

Philadelphia, PA 19135
 (215) 874-1800
 FAX (215) 821-6986

Insinger
 Machine Company

DRWN/DATE
 RAF

11.29.90



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