



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
Table of Contents

Part 1 - Technical Information

- * Section A, Introduction
- * Catalogue Cut-sheet and Installation Drawing
- * Warranty
- * Authorized Service Agency Network Listing

Part 2 - Installation and Operation Instructions

- * Section A, Installation Instructions
- * Section B, Operation and Cleaning Instructions

Part 3 - Maintenance and Repair Procedures

- * Section A, Maintenance and Repair Procedures
- * Basic Service Guide

Part 4 - Electrical Schematics and Replacement Parts

- * Machine Wiring Diagrams
- * Control Panel Layout and Component Drawing

Part 5 - Replacement Parts

- * Overall Assembly Drawing for:
 - * Commander 18-4, 18-4H, CS-4
 - * Commander 18-4C, CS-4C
- * Drain Assembly
- * Motor Assembly, 1HP
- * Pump, Motor & Suction Assembly
- * Level Float Installation
- * Electric Heater, Diode and Level float
- * Steam Injectors, Steam Coils and Steam Booster Assembly's
- * Final Rinse Assembly
- * Final Rinse Assembly (self-contained booster)
- * Electric Booster Assembly
- * Self Contained Booster Assembly
- * Gas-heated Machines
 - * Parts Listing
 - * Troubleshooting
 - * Sequence of Operations

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

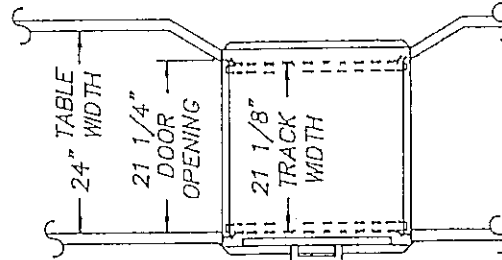
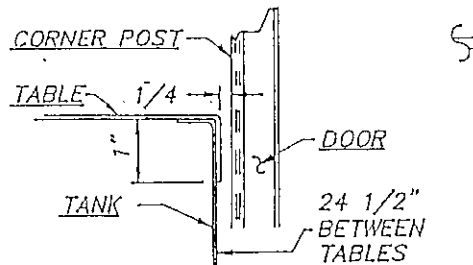
Throughout this guide you will find the following terms: WARNING, CAUTION, & NOTE. When used, these terms will be outlined in a box to draw attention:

WARNING indicates potential physical danger.

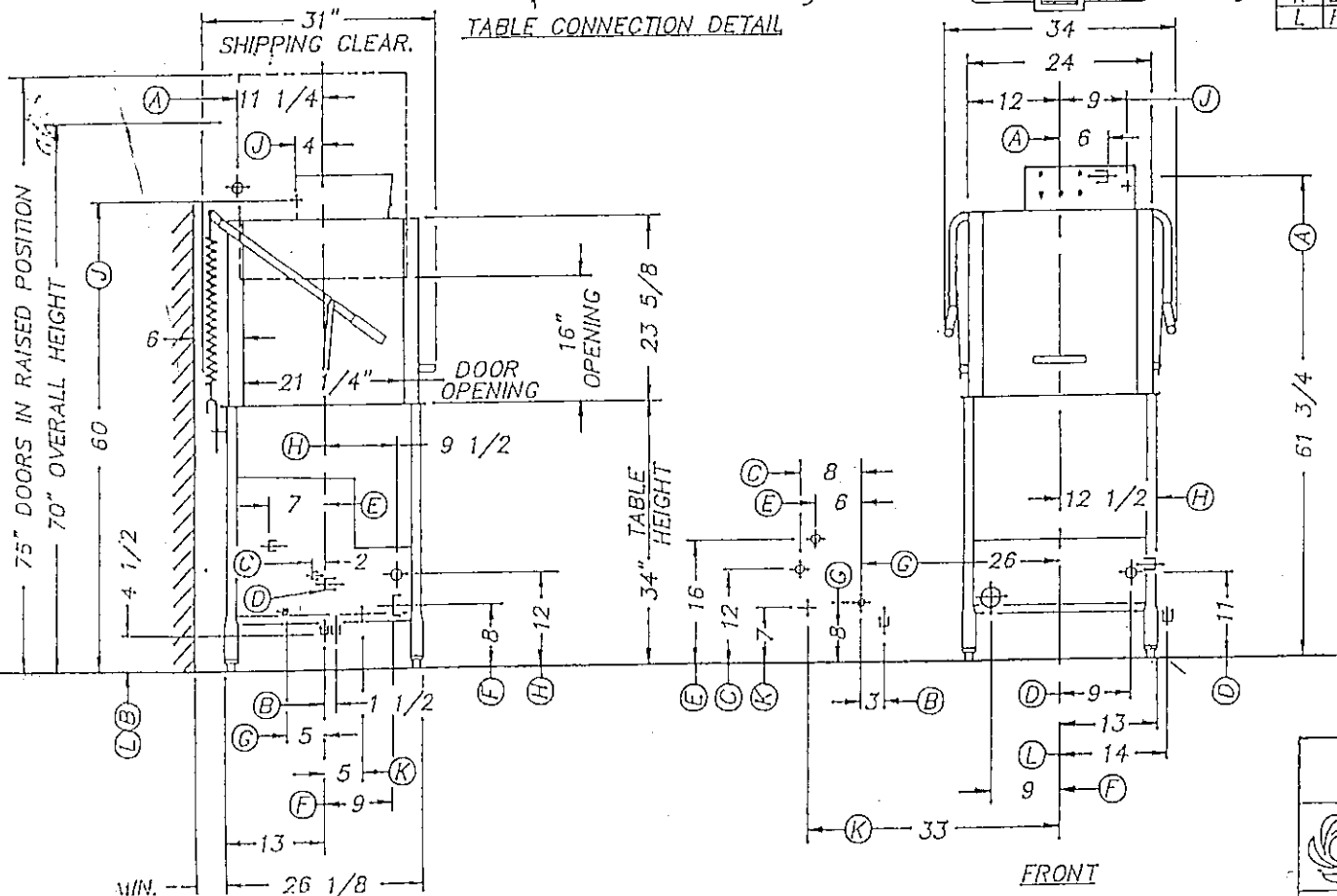
CAUTION indicates potential equipment damage.

NOTE indicates helpful operating hints or tips.

INSTALLATION AND LAYOUT DETAIL



INSTALLATION CONNECTIONS		
LIR	DESCRIPTION	SIZE
A	HOT WATER TO FINAL RINSE - 180° F	1/2 FIPS
B	HOT WATER TO REMOTE ELEC. BOOSTER ^Δ	1/2 FIPS
C	HOT WATER TO STEAM BOOSTER ^Δ	1/2 FIPS
D	STEAM TO TANK	1/2 FIPS
E	STEAM TO STEAM BOOSTER	1/2 FIPS
F	DRAIN CONNECTION	1 1/2 FIPS
G	CONDENSATE RETURN - STEAM BOOSTER	1/2 FIPS
H	CONDENSATE RETURN - COIL ONLY	3/8 FIPS
J	ELECTRICAL CONNECTION - MOTORS	1 HP *
K	ELECTRICAL CONNECTION-REMOTE BOOSTER	6 KW **
L	HOT WATER TO B.I. ELEC. BOOSTER ^Δ	1/2 FIPS



- * ADD 3 KW FOR ELECTRIC HEAT, PLUS 13.5 KW FOR BUILT-IN ELEC. BOOSTER.
- ** 10 KW FURNISHED WHEN SPECIFIED.
- ^Δ FOR HOT WATER TO BOOSTER 140° F STANDARD / 110° F SPECIAL.

- NOTES:**
1. WASH TANK IS FILLED THRU THE FINAL RINSE LINE.
 2. FOR GAS HEATED MACHINE SEE DWG 18-4G.

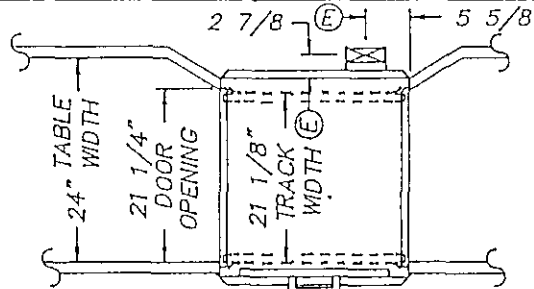
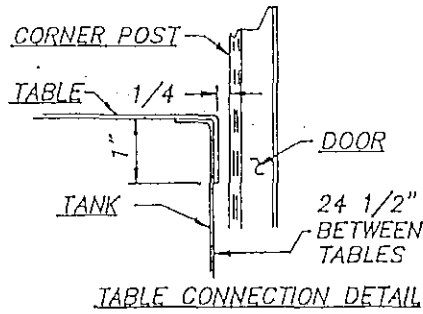
COMMANDER 18-4
AUTOMATIC DISHWASHING MACHINE

INSINGER
MACHINE COMPANY

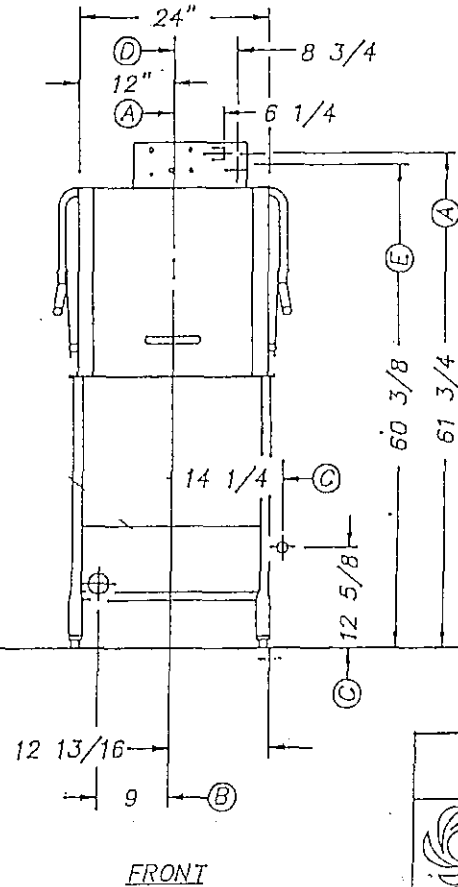
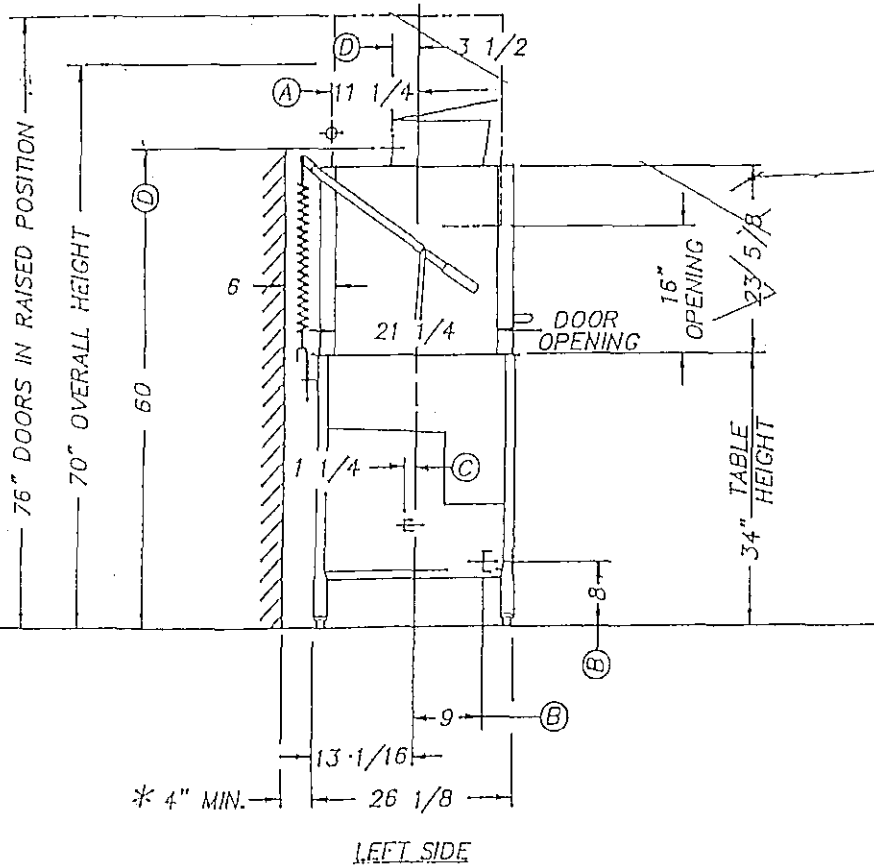
6245 State Rd. Tel. 215-624-4800
Philadelphia PA 19135-2996
FAX: 215-624-6066

SCALE: 3/4" = 1'-0"	DWG. NO.
DRAWN: EMM 1.14.97	18-4
APPROVED: EDA 1.14.97	

INSTALLATION AND LAYOUT DETAIL



INSTALLATION CONNECTIONS		
LTR	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	FLUID	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 WASHING COMPANY
6245 State Rd. Tel. 215-624-4800
Philadelphia PA 19135-2996 TWX: 710-670-1233
FAX: 215-624-6966

SCALE: 3/4" = 1'-0"	DWG. NO.
DRAWN: EMM 1.14.97	18-4G
APPROVED: EBA 1.14.97	

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 AND LAYOUT DETAIL

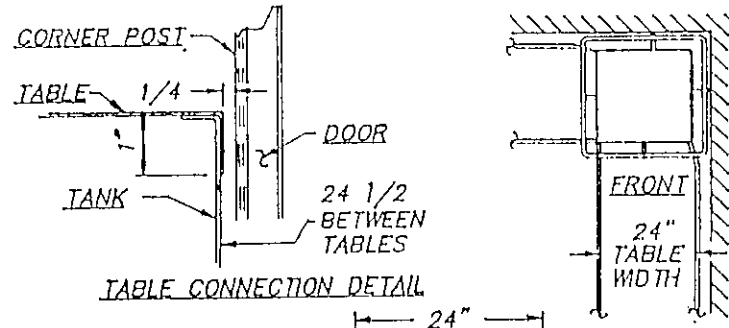
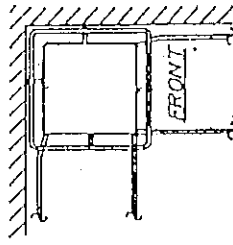
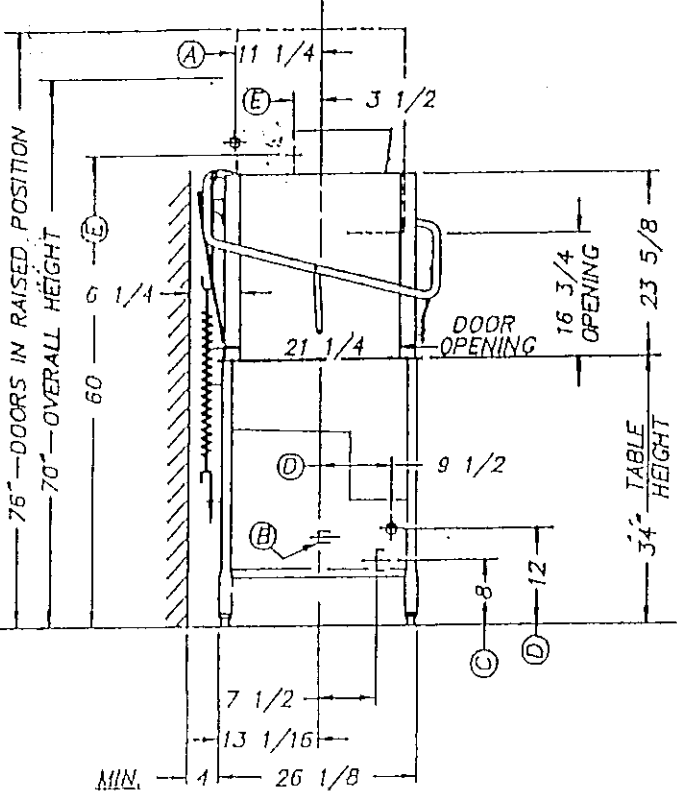


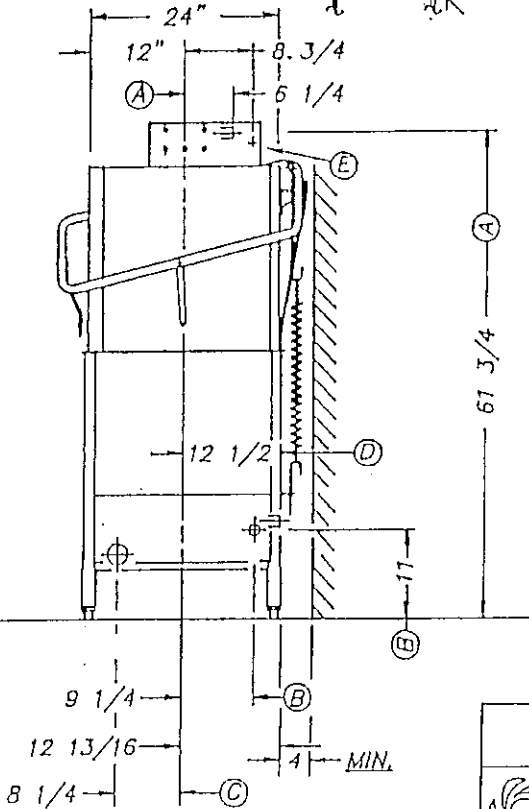
TABLE CONNECTION DETAIL

INSTALLATION CONNECTIONS		
LTR	DESCRIPTION	SIZE
A	HOT WATER TO FINAL RINSE -- 120° F.	1/2 FIPS
B	STEAM TO TANK COIL	1/2 FIPS
C	DRAIN CONNECTION	1 1/2 IPS
D	CONDENSATE RETURN - TANK COIL	3/8 FIPS
E	ELECTRICAL CONNECTION	1 IIP

* ADD 3 KW FOR ELECTRIC HEAT.



LEFT SIDE



FRONT

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 MACHINE COMPANY	6245 Stok Rd. Tel. 215-824-4800 Philadelphia PA 19135-2996 FAX: 215-624-6968
	SCALE: 3/4" = 1'-0" DRAWN: PG 12.30.92 APPROVED: RAC 12.30.92



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

Moore's 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

Bromley 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

Berkel, 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 DISHWASHINES
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.

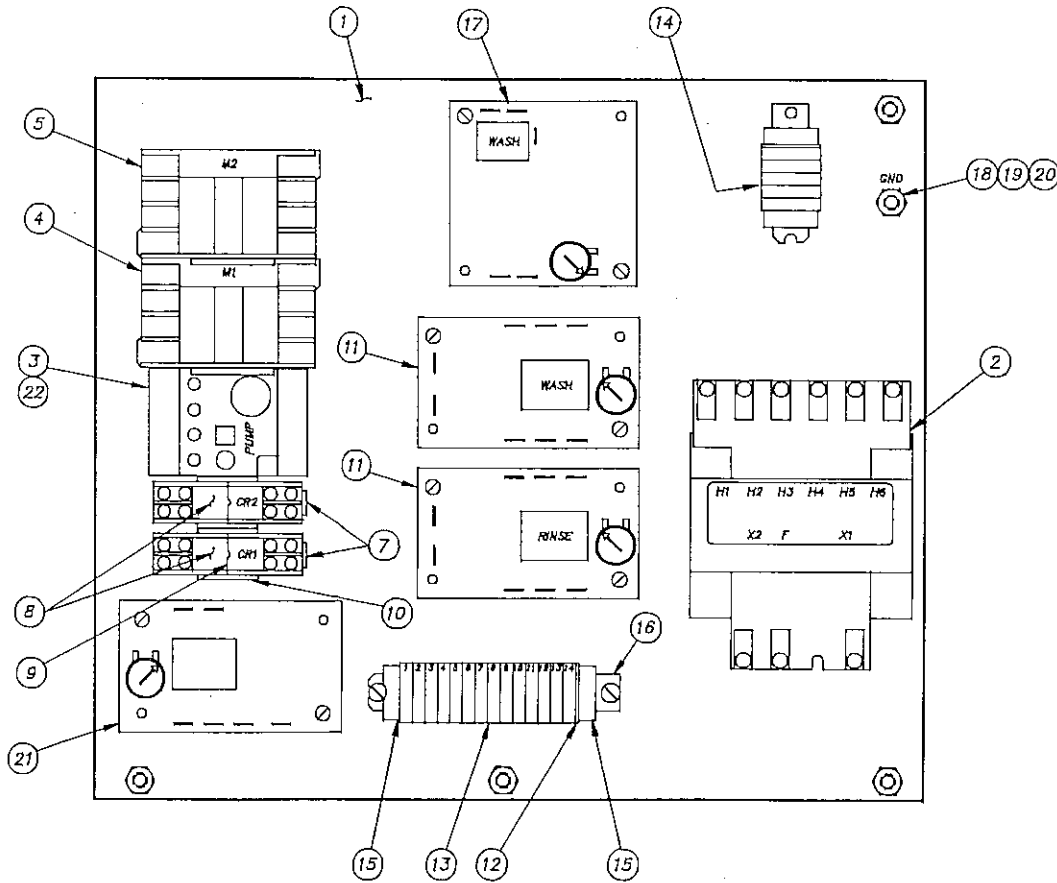
BASIC SERVICE GUIDE

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

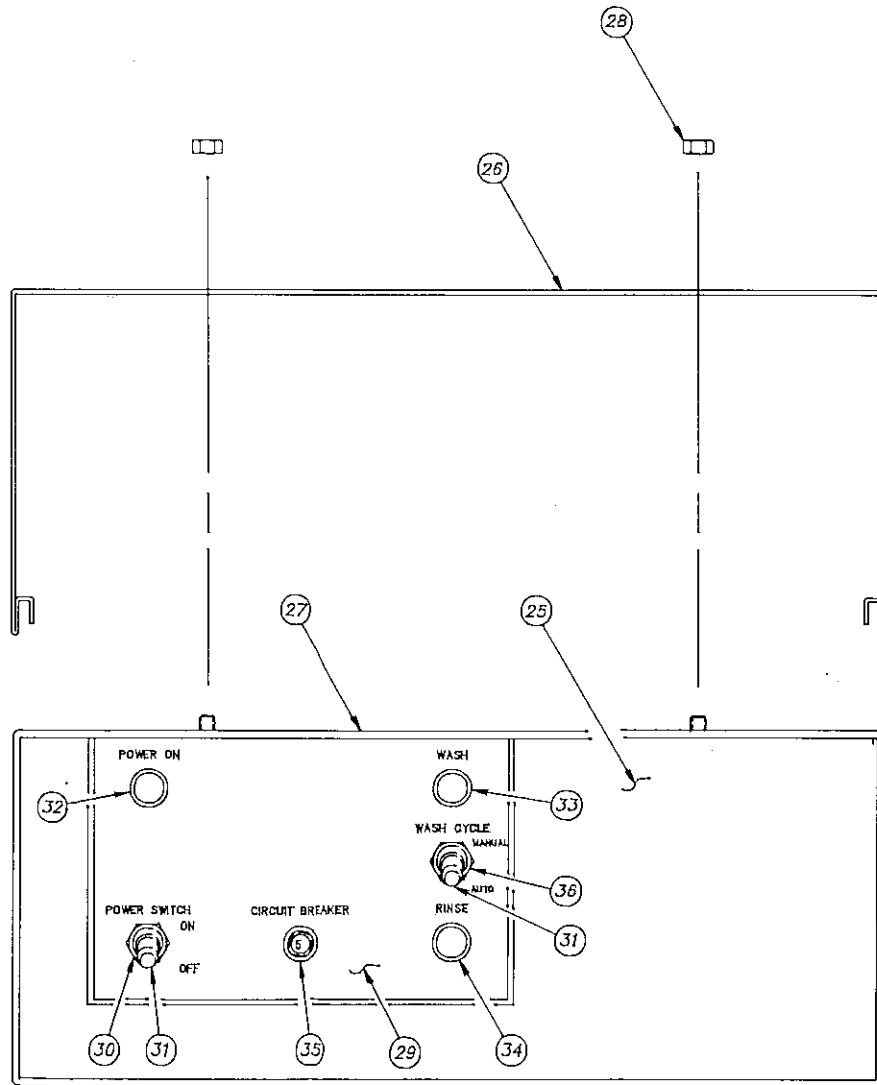
PARTS LIST-CONTROL BOX COMPONENTS
COMMANDER 18-3, CS-4



ITEM	DESCRIPTION	PART NO.	QTY.
1	CONTROL COMPONENT PLATE	DE10-6	1
2	TRANSFORMER		1
	ALL VOLTAGES	DE6-6	
3	OVERLOAD		1
	480V-3PH-60HZ 1.8A	DE2-52	
	380V-3PH-50HZ 2.0A	DE2-52	
	240V-3PH-60HZ 3.6A	DE2-53	
	240V-1PH-60HZ 8.0A	DE2-56	
	220V-3PH-50HZ 4.3A	DE2-54	
	220V-1PH-50HZ 9.0A	DE2-57	
	208V-3PH-60HZ 3.8A	DE2-53	
	208V-1PH-60HZ 10.0A	DE2-57	
4	CONTACTOR (PUMP MOTORS)	DE1-66	1
5	CONTACTOR (ELEC. TANK HEAT ONLY)	DE1-66	1
6			
7	RELAY BASE	DE2-37	AR
8	RELAY	DE2-38	AR
9	RELAY HOLD-DOWN SPRING	DE3-43	AR
10	DIN RAIL	DE9-84A	1
11	TIME DELAY (WASH, RINSE)	DE7-27	2
12	TERMINAL END COVER PLATE	DE3-40	1
13	TERMINAL SECTION	DE3-39	14
14	TERMINAL BLOCK ASS'Y. (UP TO 300V.)		
	(300V. - 600V.)	DE3-9	1
		DE3-3	1
15	TERMINAL END CLAMP	DE3-41	2
16	DIN RAIL (TERMINAL STRIP)	DE3-42B	1
17	CIRCUIT BOARD (TEMPERATURE CONTROL)	DE9-96	1
18	1/4 INTERNAL TOOTH LOCK WASHER	D313C-65	1
19	1/4-20 HEX NUT	D312C-6C2	1
20	1/4-20 X 1/2 LG. WELD STUD	D309C-6C-4G	1
21	TIMER, LEVEL	DE7-31	1
22	OVERLOAD BASE	DE2-60	1

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

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

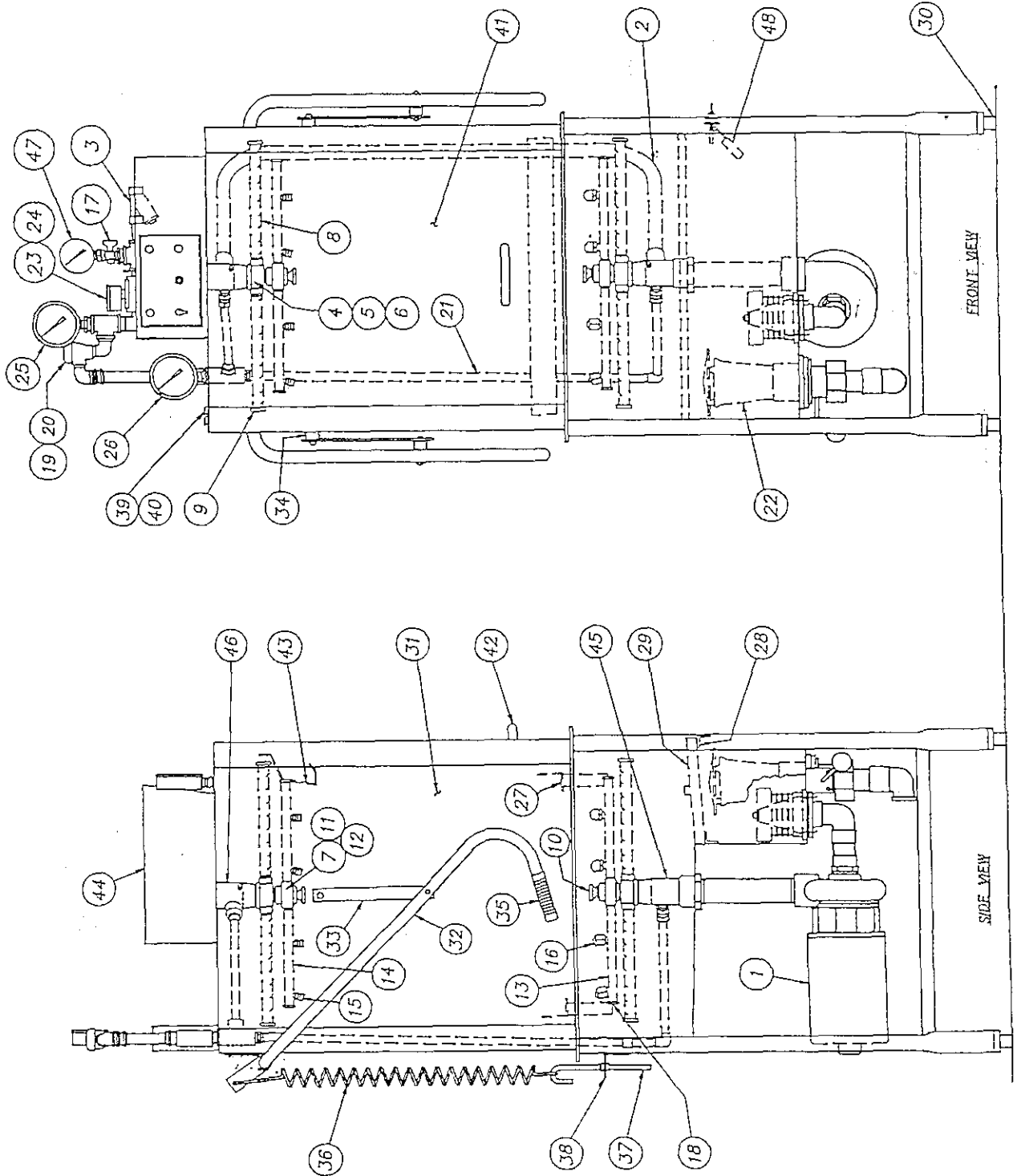


ITEM	DESCRIPTION	PART NO.	QTY.
25	CONTROL BOX	D3-704	1
26	CONTROL BOX COVER	D3-713	1
27	GASKET	9007-001	1
28	SEAL NUT	D312C-EF-5	4
29	LEGEND DECAL	SK-2306	1
30	SWITCH	DE5-8	1
31	BOOT, SWITCH	DE9-13	2
32	PILOT LIGHT (RED)	DE9-107	1
33	PILOT LIGHT (WHITE)	DE9-108	1
34	PILOT LIGHT (AMBER)	DE9-109	1
35	CIRCUIT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

NOT SHOWN:

TANK IMMERSION HEATER (3KW)	QTY.	
480VAC-3PH	DE13-SC73	1
380VAC-3PH	DE13-SC53	
240VAC-3PH	DE13-SC43	
240VAC-1PH	DE13-SC41	
220VAC-3PH	DE13-SC33	
220VAC-1PH	DE13-SC31	
208VAC-3PH	DE13-SC23	
208VAC-1PH	DE13-SC21	

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

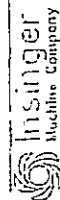
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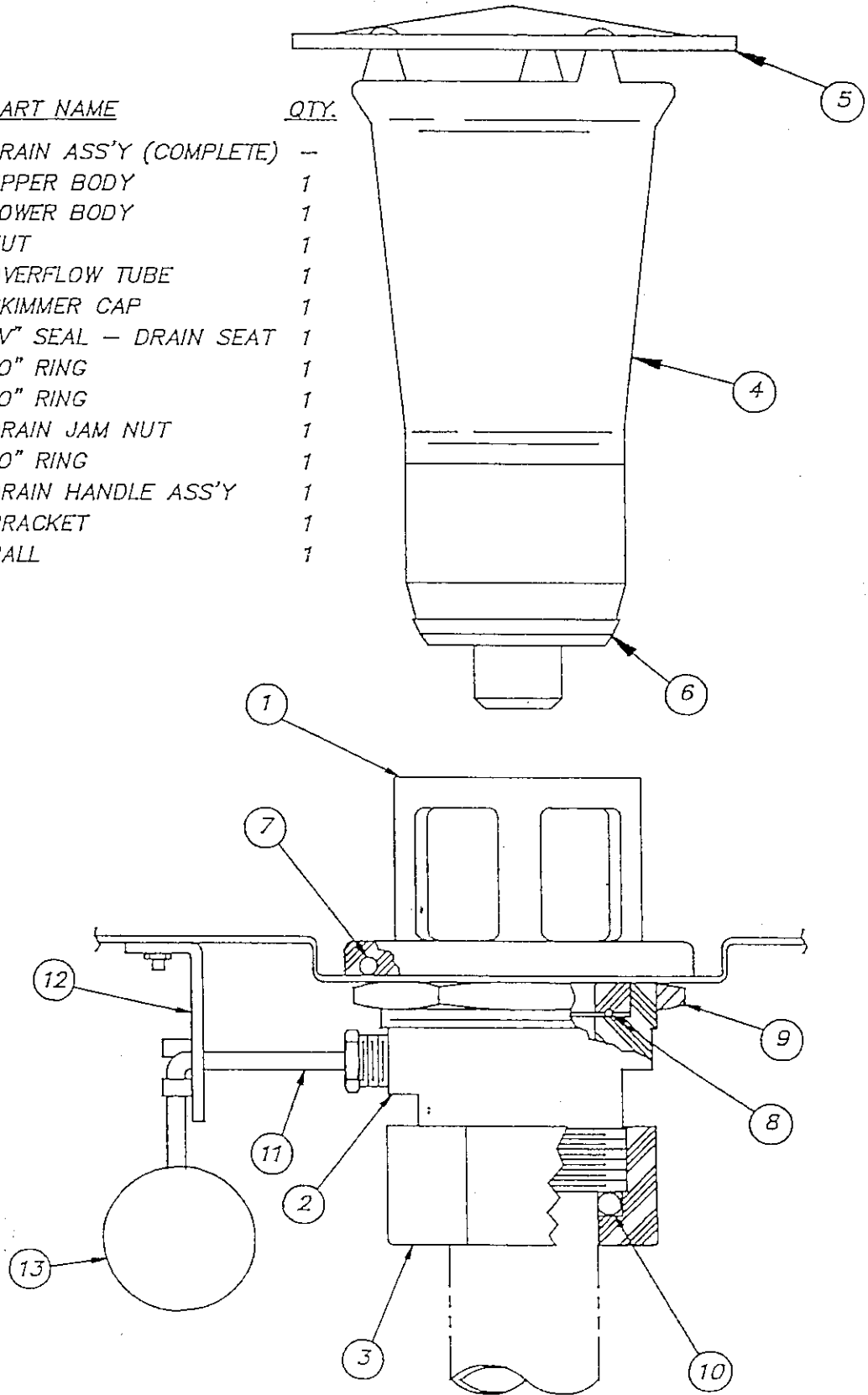
SHEET 2 OF 2

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

SK-2837



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

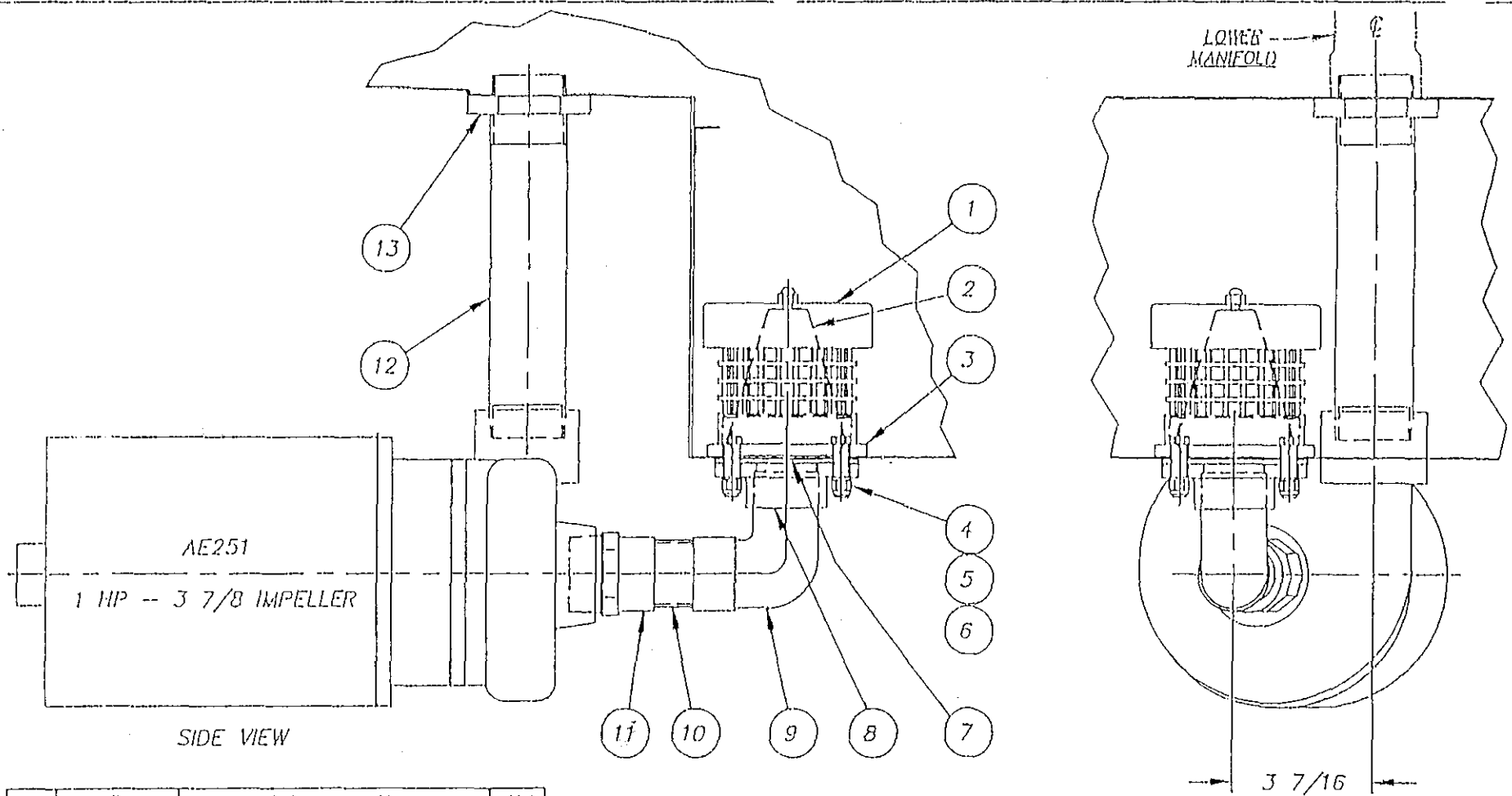
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MAM-2.11.93

 **Insinger**
Machine Company

Philadelphia, PA 19135
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FAX (215) 624-6966



ITEM	PART NO.	DESCRIPTION	QTY.
1	D2-541	SUCTION STRAINER	1
2	D3-825	SUCTION STRAINER SPRING	1
3	B63-38	SUCTION STRAINER FLANGE	1
4	HEX HD. S/S SCREW 3/8-16 x 1 1/4"	4
5	D313A-J1	COPPER WASHER 3/8	4
6	D312C-JC-5	LOCKNUT 3/8-16	4
7	D-514	GASKET, PUMP FLANGE	1
8	D134	PUMP FLANGE	1
9	D316A-113-114	1 1/2" ELBOW 90°	1
10	1 1/2" COPPER TUB, 3 1/8" Lg.	1
11	D317A-113-112	ADAPTER 1 1/2"	1
12	D3141-117-72	NIPPLE 1 1/2 IPS x 9" LG. LGE	1
13	D326F-111	LOCKNUT 1 1/2 IPS	1

TITLE			NEXT ASSY	DWG. NO.
PUMP, MOTOR & SUCTION ASSEMBLY			REQ'D 1	1089--19
MAT'L			SCALE	USED ON
AS NOTED			1:4	18-3,CS-4 (ALL)
D	1458	8.30.96	DRWN/DATE	
REV	ECN NO	DATE	RFN	
FILE: PARTS\1089-19			9.03.91	

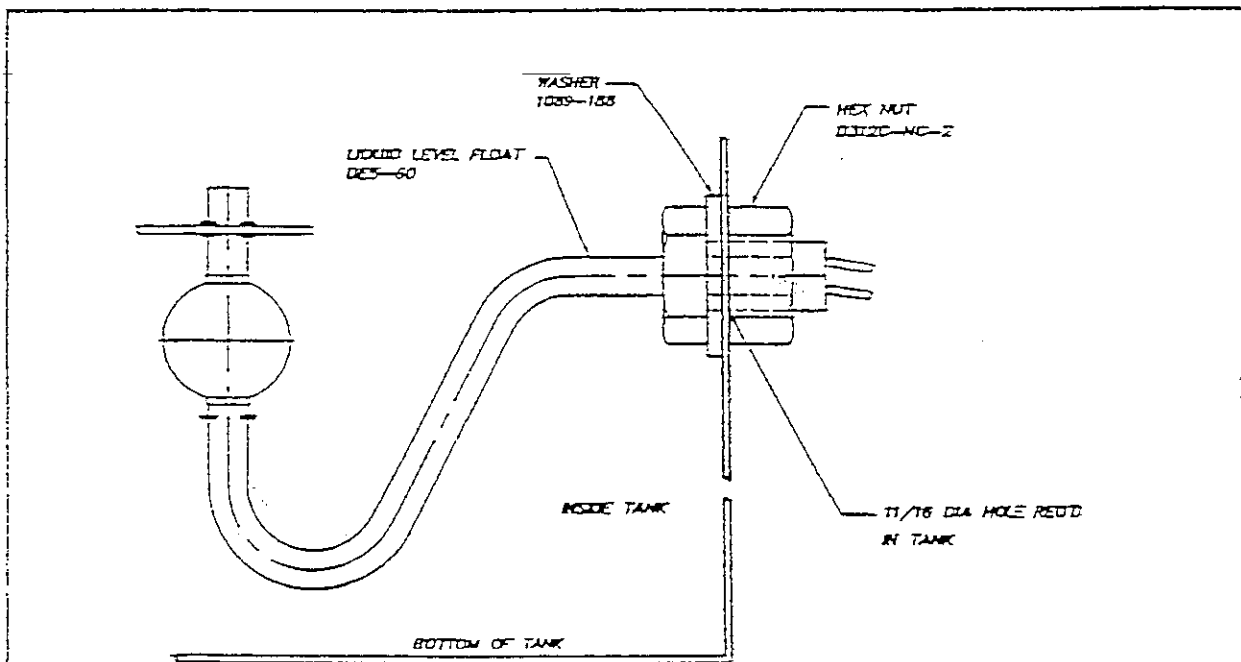

Insinger
 Machine Company

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

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.

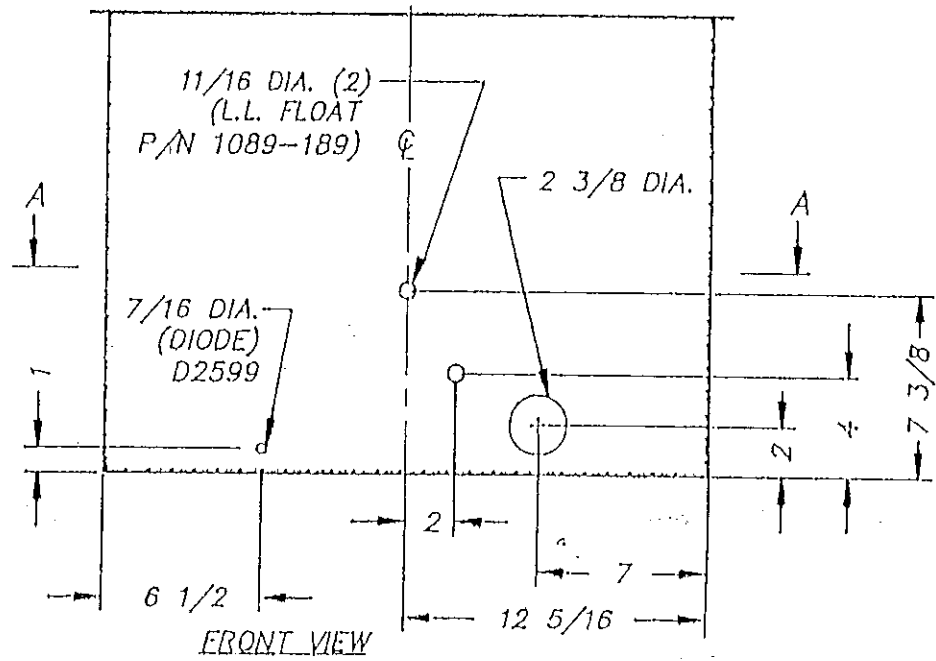
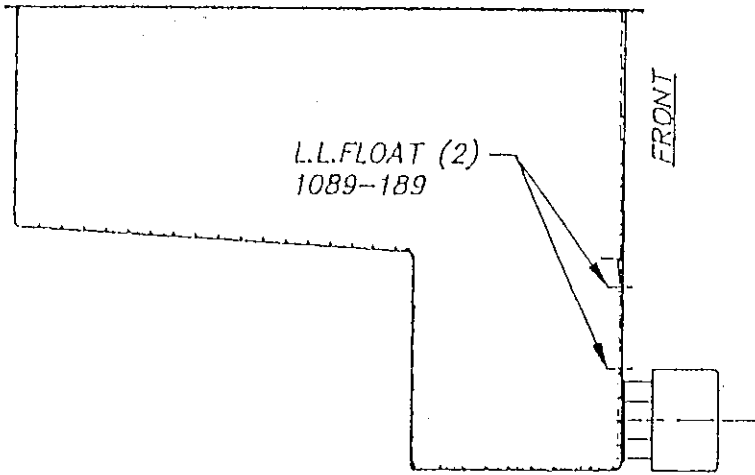
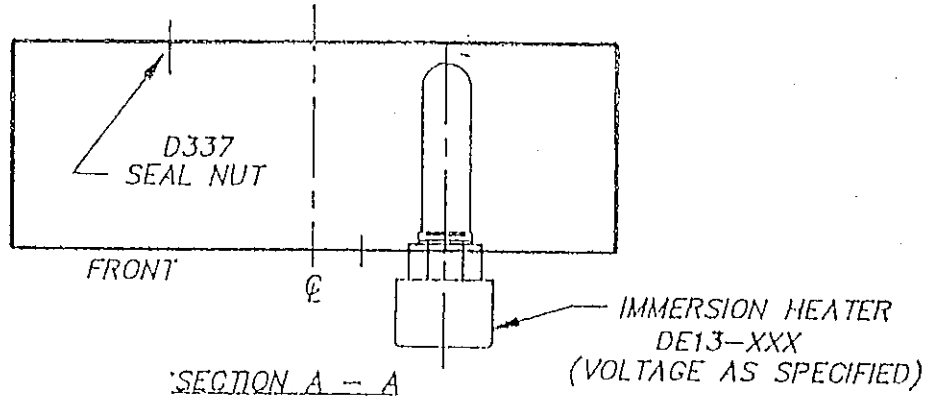
		TOLERANCES	TITLE	FRONT ASSIST	DWG. NO.
		FRACTIONS 31/64	LIQUID LEVEL FLOAT	REDES	1089-189
		DECIMALS	TYPICAL INSTALLATION		
		XXX = .005	DATE	SCALE	USED ON
		XX = .01	AS NOTED	FULL	ALL MODELS
		ANGLES = 1/2			
		UNLESS	Insinger Machine Company P.O. Box 10135 (215) 524-4000 FAX (215) 524-2954		WORK/DATE PC 7.2.97
REV	EDN NO	DATE	OTHERWISE SPECIFIED		
FILE PARTS		1089-189			

USED ON STANDARD

18-3 (CORNER)

50-20N2-NSU (CORNER)

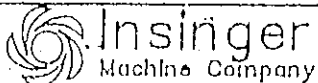
CS-4 (CORNER)



NOTE:

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

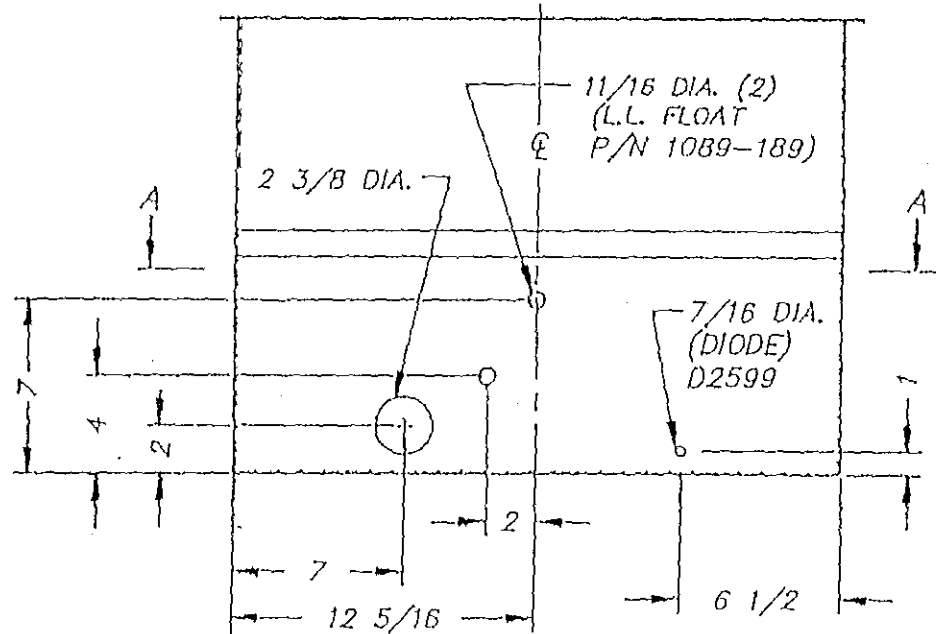
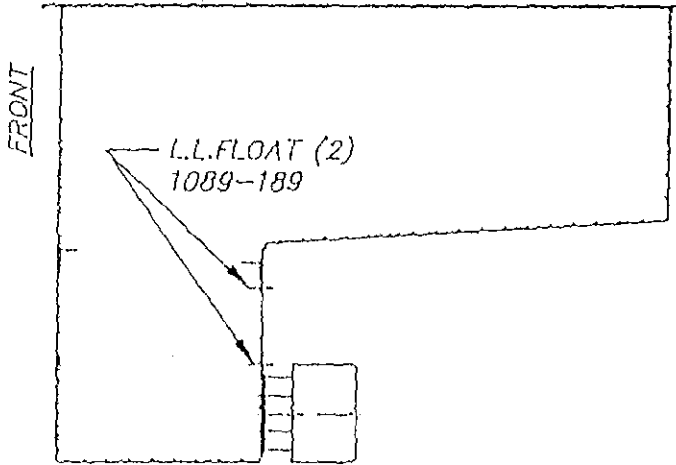
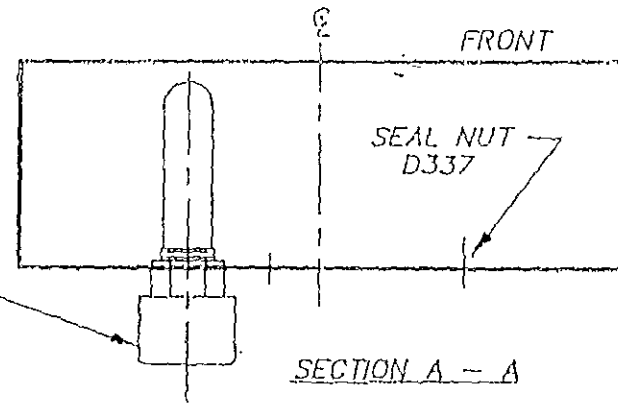
SHEET 1 OF 2

REV	ECN NO	DATE	TOLERANCES	TITLE	NEXT ASSY	DWG. NO.
E	1442	8.8.96	FRACTIONS ±1/64	ELECTRIC HTR., DIODE & LIQUID LEVEL FLOAT LOCATIONS	REQ'D	1089-183
D	1082	10.25.94	DECIMALS		SCALE	
C	888	8.23.93	.XXX ± .005	MATL	1=8	USED ON
			.XX ± .01	AS NOTED		SEE ABOVE
			ANGLES ±1/2°	 Insinger Machine Company		DRWN/DATE
			UNLESS OTHERWISE SPECIFIED		Philadelphia, PA 19135	
				(215) 624-4800		1.30.92
				FAX (215) 624-6966		

USED ON PRISON PACKAGES:

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

IMMERSION HEATER
DE13-XXX
(VOLTAGE AS SPECIFIED)




NOTE:

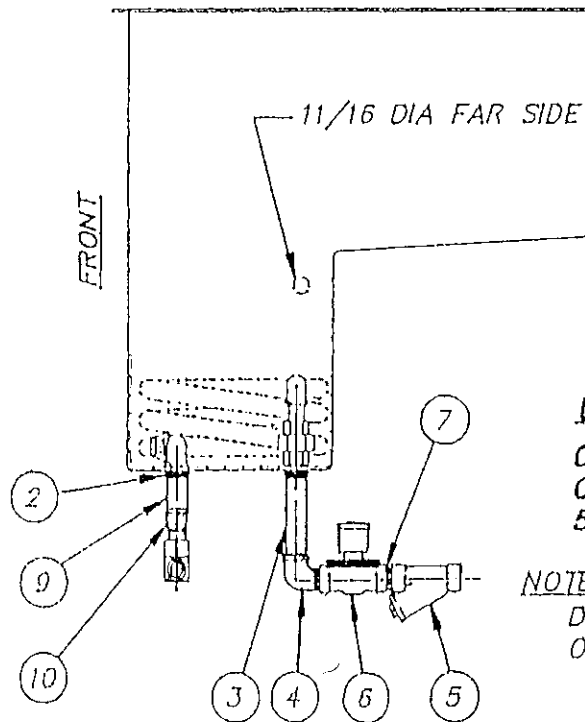
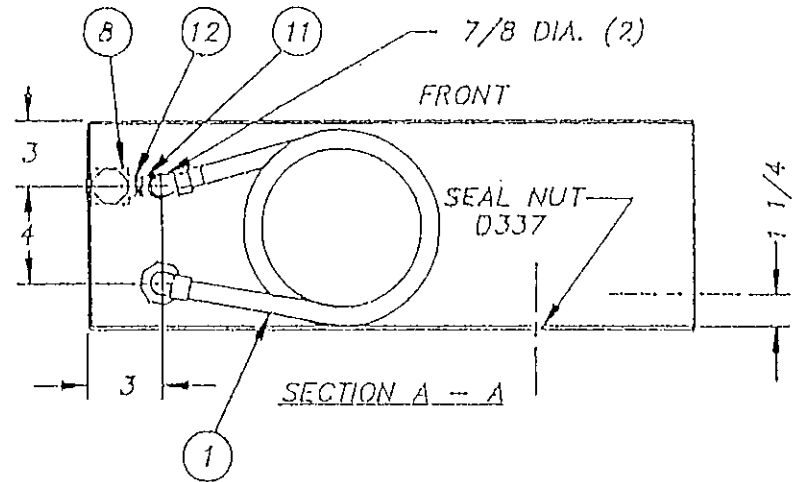
HEATER & FLOAT SWITCHES FOR PRISON PACKAGES

REAR VIEW

SHEET 2 OF 2

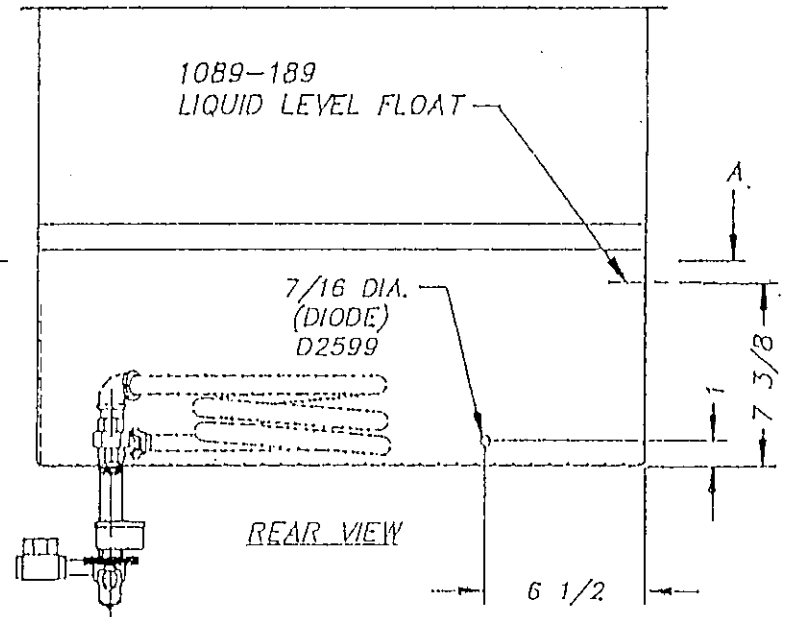
			TOLERANCES	TITLE	NEXT ASSY	DWG. NO.
			FRACTIONS ±1/64	ELECTRIC HTR., DIODE &	REQ'D	1089-183
			DECIMALS	LIQUID LEVEL FLOAT LOCATIONS		
E	1442	8.8.96	.XXX ± .005	MAT'L	SCALE	USED ON
D	1082	10.25.94	.XX ± .01	AS NOTED	1=B	SEE ABOVE
C	888	8.23.93	ANGLES ±1/2°			
REV	ECN NO	DATE	UNLESS OTHERWISE SPECIFIED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

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



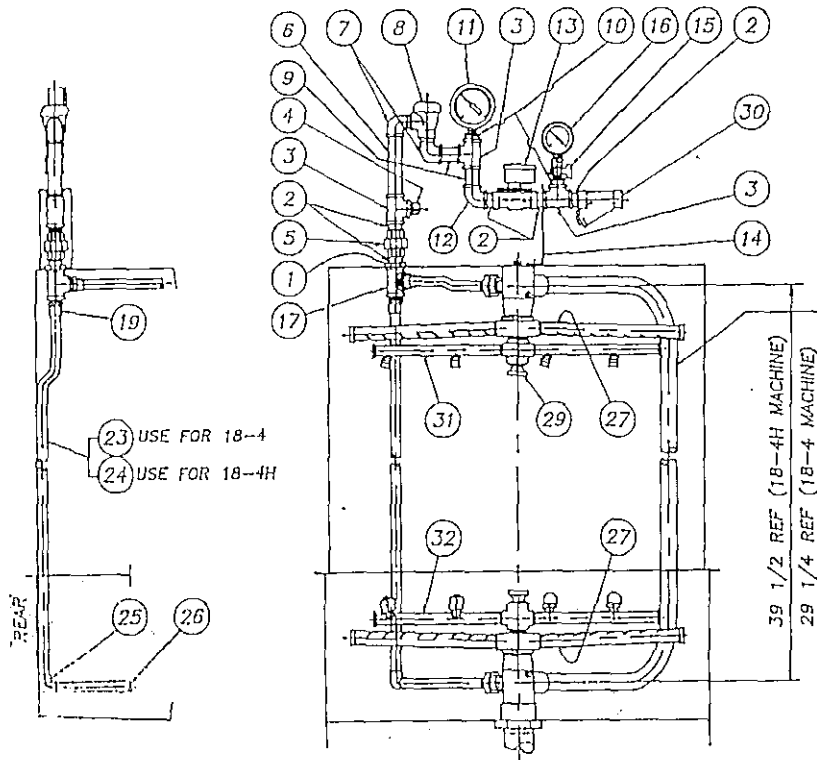
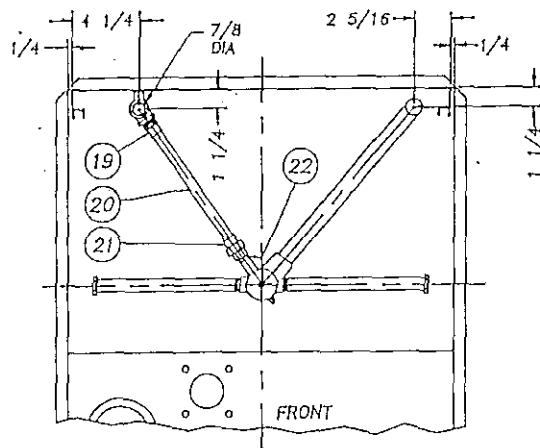
USED ON:
 COMMANDER 18-3, 18-JC,
 CS-4, CS-4C, 50-20N2-NSU,
 50-20N2-NSU (CORNER MODEL)

NOTE:
 DO NOT USE COPPER COIL
 ON CS-4 MACHINES.



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

- ECN# 1442 8.8.96
- ECN# 888 8.23.93
- ECN# 758 10.2.92



23 USE FOR 18-4
24 USE FOR 18-4H

39 1/2 REF (18-4H MACHINE)
29 1/4 REF (18-4 MACHINE)

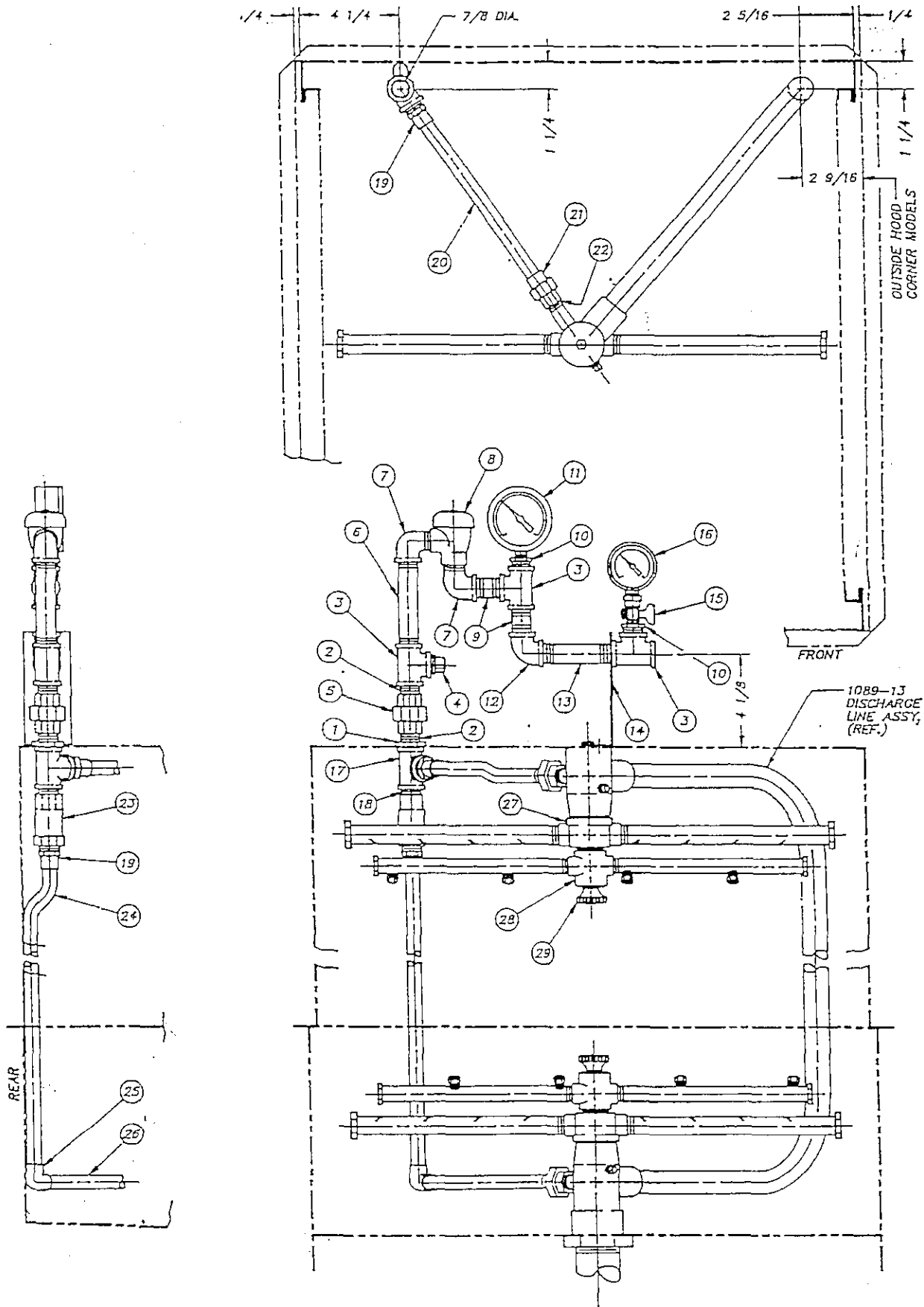
DISCHARGE LINE ASSY. SEE DWG No. 1463-16

NO.	DESCRIPTION	PART NO.	QTY.
1	LOCKNUT, HEX 1/2 IPS	D326F-D1	1
2	NIPPLE, GLOSE 1/2 IPS	D314F-DC-00	5
3	TEE 1/2 IPS	D320F-D1D1D1	3
4	PLUG, PIPE 1/2 IPS	D328F-D2A	1
5	UNION, STRAIGHT 1/2 IPS	D318F-D1-D1	1
6	NIPPLE, PIPE 1/2 IPS x 4 1/2" LG.	D314F-DS-36	1
7	ELBOW, 90° STREET 1/2 IPS	D316F-D1-D2	2
8	BREAKER, VACUUM 1/2 IPS	D-2241	1
9	NIPPLE, PIPE 1/2 IPS x 2" LG.	D314F-DS-16	2
10	REDUCER, HEX 1/2 MIPS x 1/4 FIPS	D322F-D2-B1	2
11	GAUGE, TEMPERATURE 1/4 IPS	D-2495	1
12	ELBOW, 90° 1/2 IPS	D316F-D1-D1	1
13	VALVE, SOLENOID (WATER) 1/2 IPS	D-2606	1
14	BRACKET, PIPING SUPPORT	DWG. 951-79	1
15	PETCOCK 1/4 IPS	D2497	1
16	GAUGE, PRESSURE 1/4 IPS	SK-1433	1
17	TEE 1/2 IPS	D320E-D1D1D1	1
19	ADAPTER 1/2 MIPS x 1/2 C	D317E-D3-D2	2
20	TUBING, S/S 1/2 CTS x 9" LG.	D207C-B4-36	1
21	UNION 1/2 FIPS x 1/2 C	D318E-D3-D1	2
22	REDUCER, FLUSH 1/2 MIPS x 3/8 FIPS	D32JJ-D2-C1	2
23	FOR 18-4: TUBING, S/S 1/2 CTS x 28" Lg.	D207C-B4-112	1
24	FOR 18-4H: TUBING, S/S 1/2 CTS x 38 1/4" Lg.	D207C-D4-153	1
25	ELBOW, 90° 1/2 C	D318E-D3-D3	1
26	TUBING, S/S 1/2 CTS x 9 3/4" LG.	D207C-D4-39	1
27	ASS'Y, SPINNING SPRAY PIPE (WASH)	DWG. 1089-25	2
28	"	"	"
29	SCREW, LOCKING	D2-584	2
30	STRAINER, "Y" 1/2 IPS	D-2483A	1
31	UPPER RINSE SPRAY PIPE ASS'Y	DWG. 1463-20	1
31	LOWER RINSE SPRAY PIPE ASS'Y	DWG. 1463-21	1

NOTES:

- * * * INDICATES CHROME PLATED.
- ITEM #30 IS NOT REQUIRED WHEN A BOOSTER IS SPECIFIED, REPLACE WITH 90° UNION ELBOW 1/2 MIPS X 1/2 COPPER
- ITEM #30 & #13 ARE NOT REQUIRED WHEN USING A SELF-CONTAINED BOOSTER.
- 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-D6) & ADD A 90° STREET ELBOW 1/2 MIPS x 3/4 FIPS (D316F-D2-E1) TO INLET END OF "Y" STRAINER.

REV	ECH NO	DATE	TOLERANCES	TITLE	NEXT ASSY	DWG. NO.
			FRACTIONS ±1/64	FINAL RINSE ASS'Y	REQ'D	1463-18
			DECIMALS	(ALL 18-4 MACHINES)		
			.XXX ± .005	MATL	SCALE	USED ON
			.XX ± .01		1=8	18-4 ALL
			ANGLES ±1/2°		DRWN/DATE	
			UNLESS OTHERWISE SPECIFIED		10	12.2.96
FILE:	PARTS\1463-18			Philadelphia, PA 19135 (215) 624-4800 FAX (215) 624-6866		



REAR

FRONT

OUTSIDE HOOD
CORNER MODELS

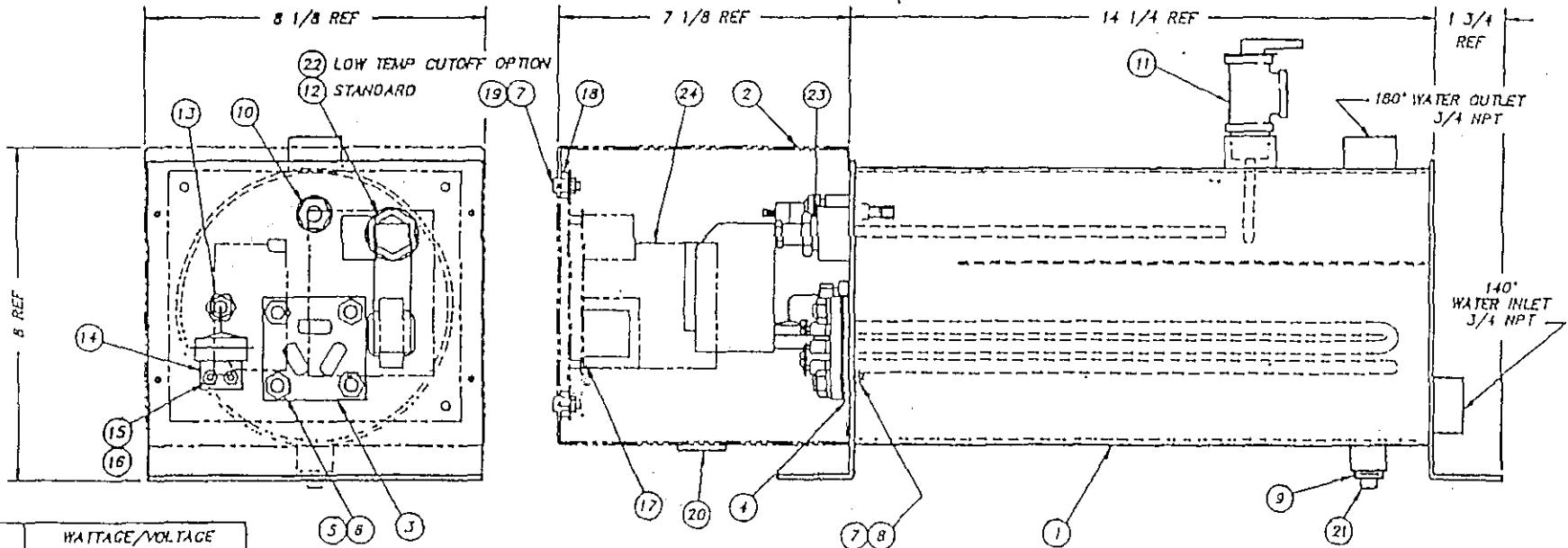
PG. 1 OF 2

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. 12-3 RAF
INSINGER MACHINE CO. PHILA., PA. 19156-2996 (215) 624-1900			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	DES-61	-	HI-TEMP. CUT-OFF SWITCH 3/8 NPT	1	1	1192-2	B	WELDMENT, BOOSTER	1
14	1192-11	A	BRACKET, CUT-OFF SWITCH	1	2	1192-7	B	COVER, SATELLITE CONTROL BOX	1
15	DJ12C-DC-2	-	NUT, HEX #8-32	3	3	SEE TABLE	-	HEATER, IMMERSION	1
16	DJ09C-DC-2C	-	WELDSTUD #8-32 x 1/4 LG.	2	4	1192-8	A	GASKET, HEATER	1
17	1192-13	B	CONTROL BOARD ASSY	1	5	DJ12C-JC-2	-	NUT, HEX 3/8-16 UNC-2B	4
18	DJ12C-GC-2	-	NUT HEX 1/4-20	4	6	DJ13C-J2	-	LOCKWASHER 3/8	4
19	DJ09C-EF-40	-	PAN HD. SCREW #10-32 X 1/2 LG	4	7	DJ12C-EF-2	-	NUT, HEX #10-32 UNF-2B	8
20	D2759	-	SNAP-ON VENT PLUG	1	8	DJ13C-E2	-	LOCKWASHER #10	4
21	DJ29-5	-	DRAIN COCK 1/4 IPS	1	9	DJ22F-C2-81	-	REDUCER 3/8 MIPS X 1/4 FPS	1
22	D2301	-	THERMOSTAT LESS ENCL. (LOW TEMP CUTOFF OPTION)	1	10	DE9-144	-	LIQUID LEVEL PROBE	1
23	DJ23F-E2-C1	-	BUSHING, 3/4 TO 3/8	1	11	D2693	-	TEMP.-PRESSURE RELIEF VALVE 3/4 NPT	1
24	DE1-55	-	CONTACTOR	1	12	D2396	-	THERMOSTAT (STANDARD)	1



ITEM	PART NO.	WATTAGE/VOLTAGE
J	DE13-BG2J	13.5 KW / 208V-3PH
	DE13-BG3J	13.5 KW / 220V-3PH
	DE13-BG4J	13.5 KW / 240V-3PH
	DE13-BG5J	13.5 KW / 380V-3PH
	DE13-BG6J	13.5 KW / 440V-3PH
	DE13-BG7J	13.5 KW / 480V-3PH

REV	EQI NO	DATE	TOLERANCES	TITLE	NEXT ASSY	DWG. NO.
E	1127	2.11.95	FRAGMENTS ±1/64	SELF CONTAINED BOOSTER ASSEMBLY	1	1192-1
D	1073	9.27.94	DECIMALS			
C	922	8.17.93	.XXX ± .005			
B	778	11.19.92	.XX ± .01			
A	517	12.21.90	ANGLES ±1/2°	NOTED	J/B	USED ON 18-J
FILE: PARTS\1192-1			UNLESS OTHERWISE SPECIFIED			Philadelphia, PA 19135 (215) 624-4800 FAX (215) 624-6966
						DRWN/DATE RAF 11.29.90



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