USER MANUAL

Glas Craft
DISPENSING EXCELLENCE

MX

Dispensing System

INCLUDES:

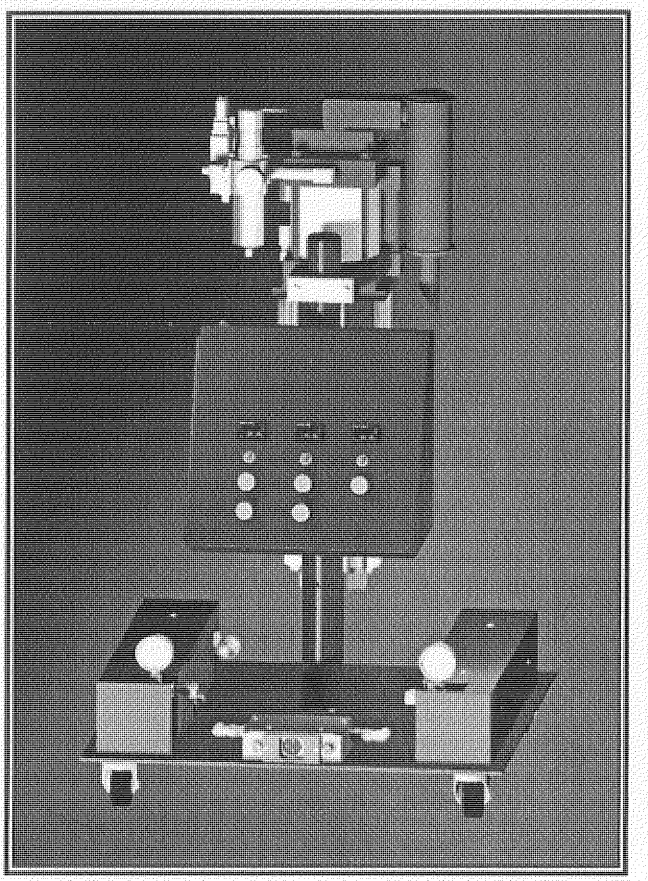
17254-01
PROBLER GUN ASSEMBLY

22515-35
HEATED HOSE ASSEMBLY

21825-611
PROPORTIONING UNIT ASSEMBLY

21875-00
ISO HEAT EXCHANGER ASSEMBLY

21885-00
POLY HEAT EXCHANGER ASSEMBLY



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DISPENSING EXCELLENCE

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CE CERTIFIED

Glas Craft
An ISO 9001 Approved Company

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INTRODUCTION

About This Manual

Before operating, maintaining or servicing any **Glas-Craft** system, read and understand all of the technical and safety literature provided with **Glas-Craft** products. If you do not have the manuals and safety literature for your **Glas-Craft** system, contact your **Glas-Craft** distributor or **Glas-Craft, Inc.**

In this **Glas-Craft** technical and safety publication, the following advisories will be provided where appropriate:

NOTE
Is information about the procedure in progress.

CAUTION
Is imperative information about equipment protection.

WARNING
Is imperative information about personnel safety.

The information in this document is intended only to indicate the components and their normal working relationship typical use. Each assembly should be directed by a **Glas-Craft** distributor or made from the **Glas-Craft** assembly instructions provided.

This manual provides information for the assembly, operation, maintenance and service of this **Glas-Craft** product as used in a typical configuration. While it lists standard specifications and procedures, some deviations may be found.

In order to provide our users with the most up-to-date technology possible, we are constantly seeking to improve products. If technological change occurs after a product is on the market, we will implement that technology in future production and, if practical, make it available to current users as a retrofit, up-date or supplement. If you find some discrepancy between your unit and the available documentation, contact your **Glas-Craft** distributor to resolve the difference. **Glas-Craft, Inc.** reserves the right to change or modify this product as it deems necessary.

Careful study and continued use of this manual will provide a better understanding of the equipment and process, resulting in more efficient operation, longer trouble-free service and faster, easier trouble-shooting.

Related Manuals

For detailed component installation, operation and maintenance, refer to the following component manuals:

	COMPONENT	MANUAL NUMBER
17254	Probler Gun	GC-1023

PARTS & ILLUSTRATIONS

Includes

21800-00	MX FOAM SYSTEM * 6" AIR MOTOR, 1 PHASE, 200/240 VAC, 50/60 HZ., 60 AMP
17254-01	PROBLER GUN ASSEMBLY * W/ ROUND SPRAY MIXING CHAMBER
22515-35	HEATED HOSE ASSEMBLY, 35 FT.
21825-611	PROPORTIONING UNIT ASSEMBLY
21875-00	ISO HEAT EXCHANGER ASSEMBLY
21885-00	POLY HEAT EXCHANGER ASSEMBLY
59934-04	DIOCTYL PHTHALATE, 1 QT.
17661-03	GUN SERVICE KIT
21845-00	PUMP FLUID SECTION SERVICE KIT (TWO SUPPLIED)
18467-01	FLUID FILTER (TWO SUPPLIED)
17195-00	MIXING CHAMBER REMOVAL TOOL
	USER MANUALS

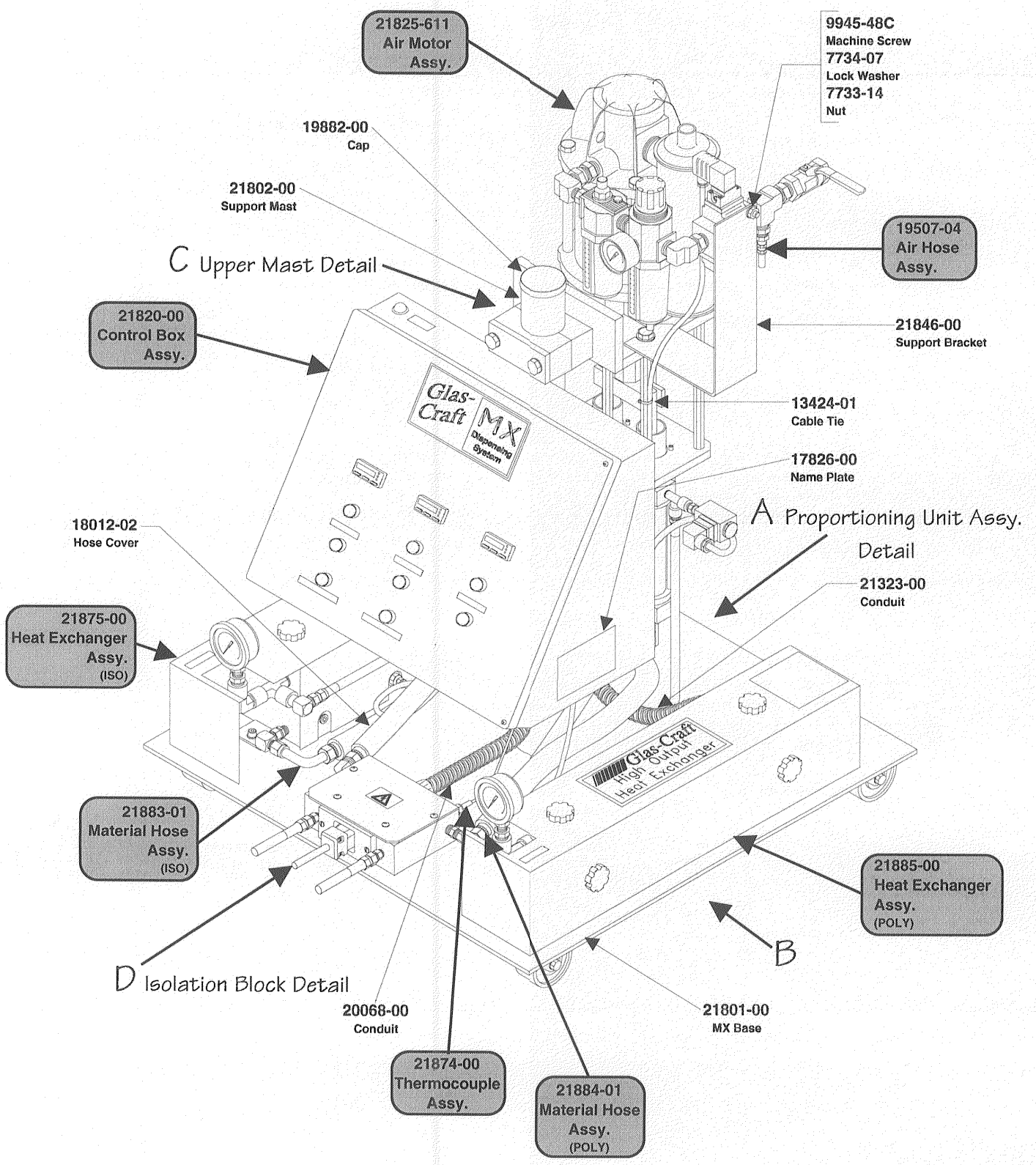
Options

21403-35	HIGH HEAT EXTENSION HOSE ASSY., 35 FT. > maximum Hose length, 210 FT.

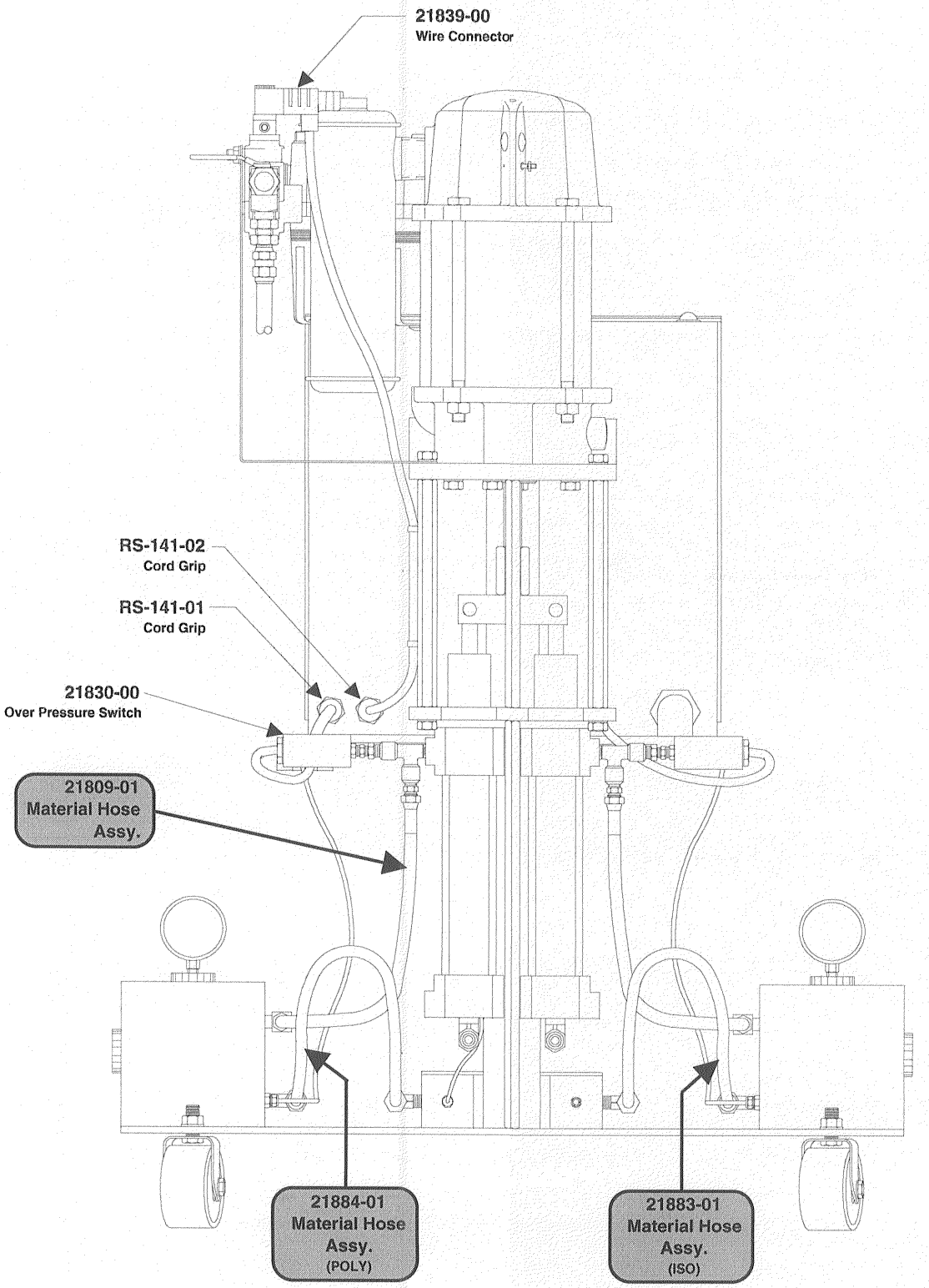
Service Kits

17661-03	GUN SERVICE KIT

21800-00 MX SYSTEM ASSEMBLY



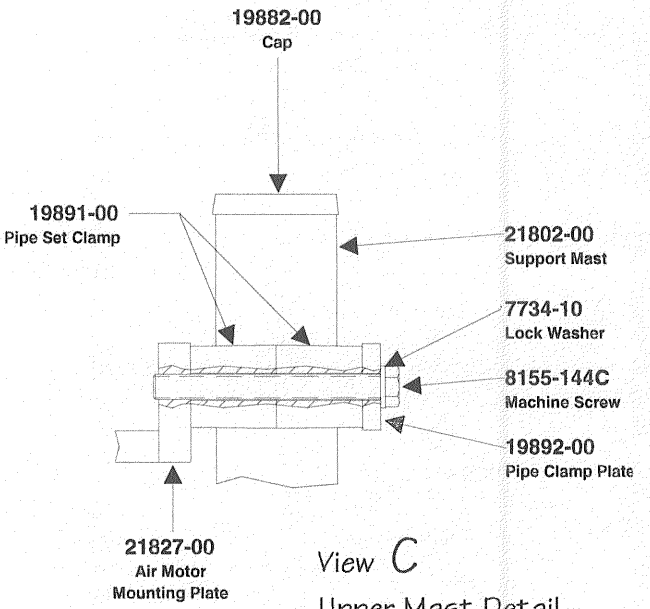
21800-00 MX SYSTEM ASSEMBLY



REAR VIEW

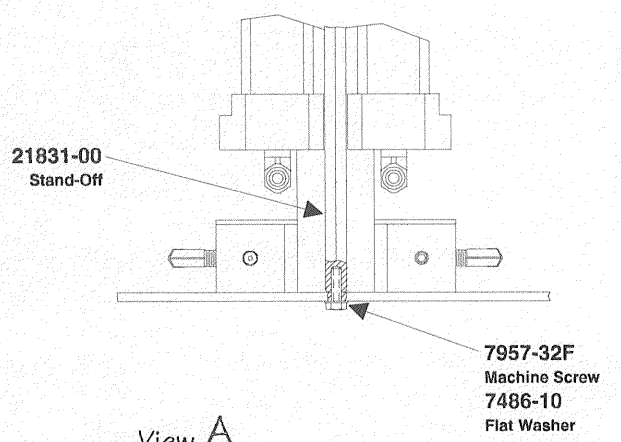
REVISED 10/98

21800-00 MX ASSEMBLY DETAILS



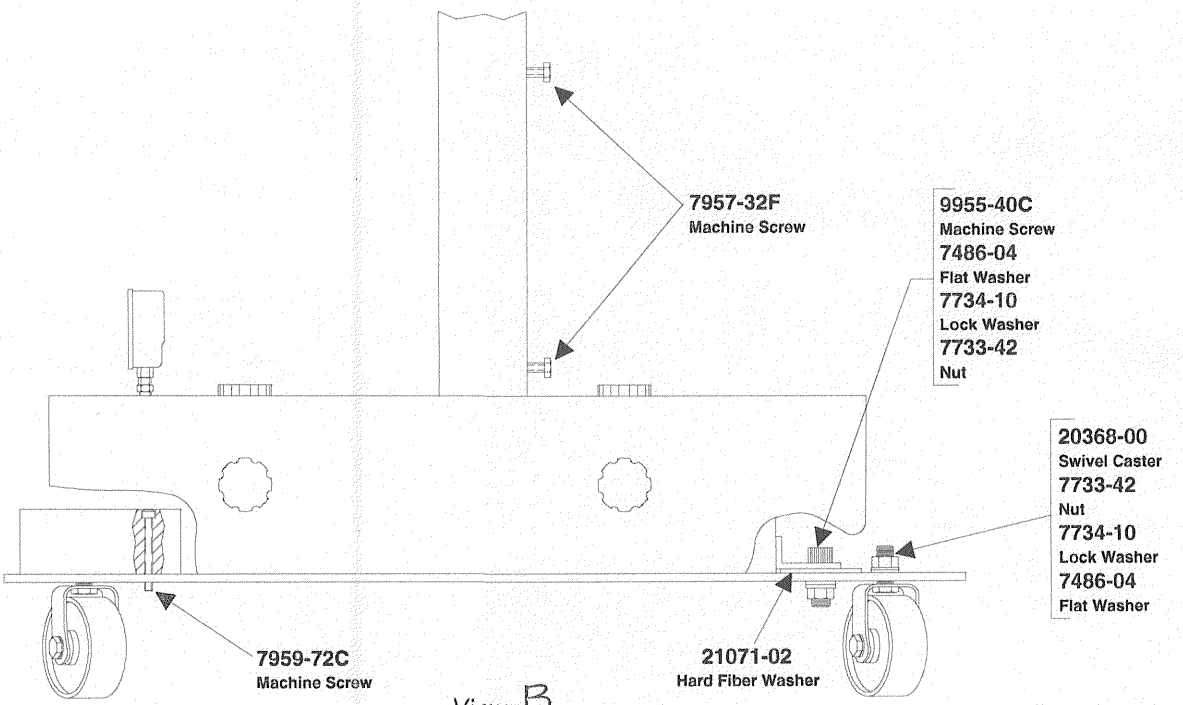
View C

Upper Mast Detail



View A

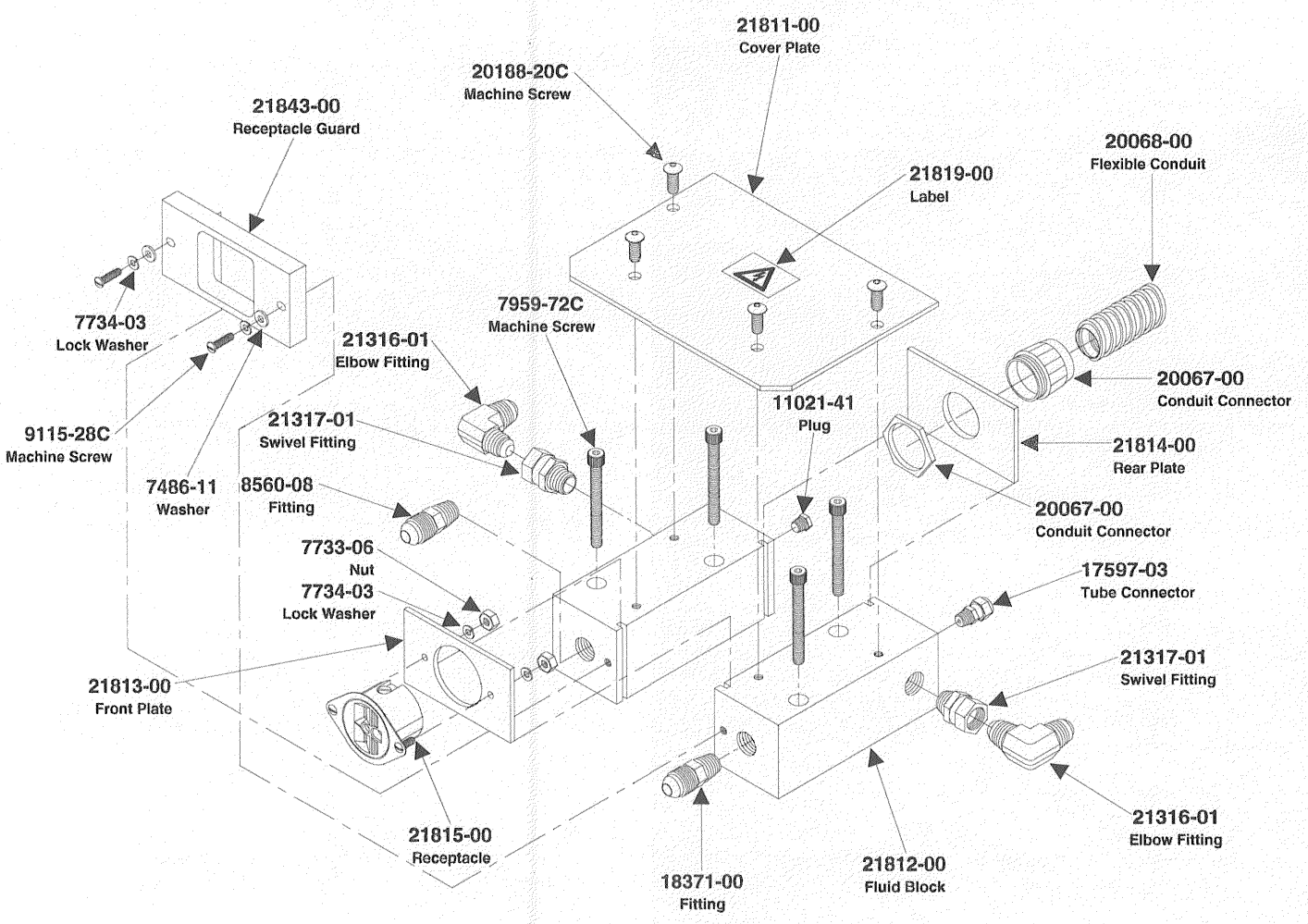
Proportioning Unit Assy. Detail



View B

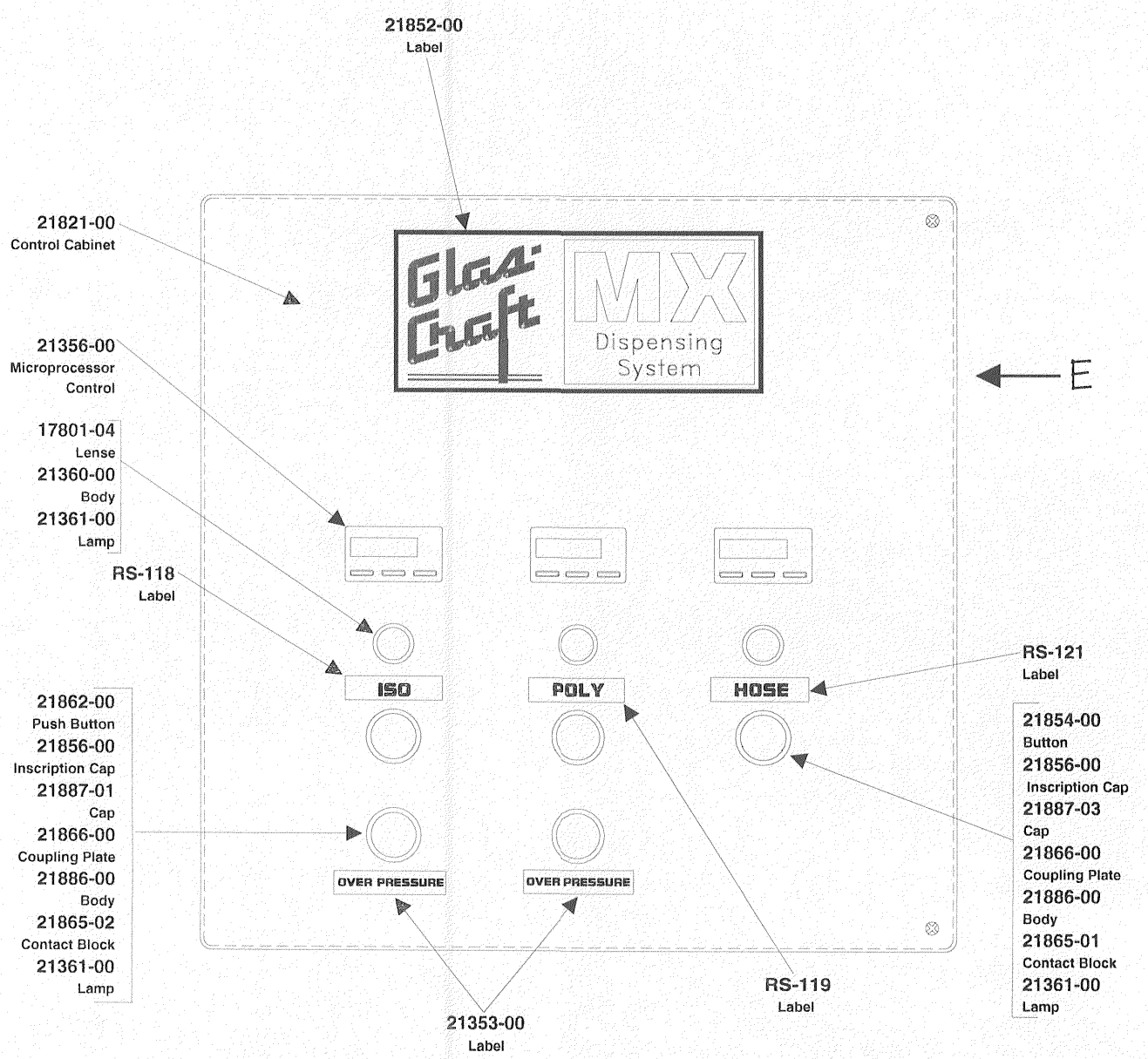
REVISED 10/98

21800-00 ISOLATION BLOCK ASSEMBLY



REVISED 10/98

21820-00 CONTROL BOX ASSEMBLY



REVISED 8/99

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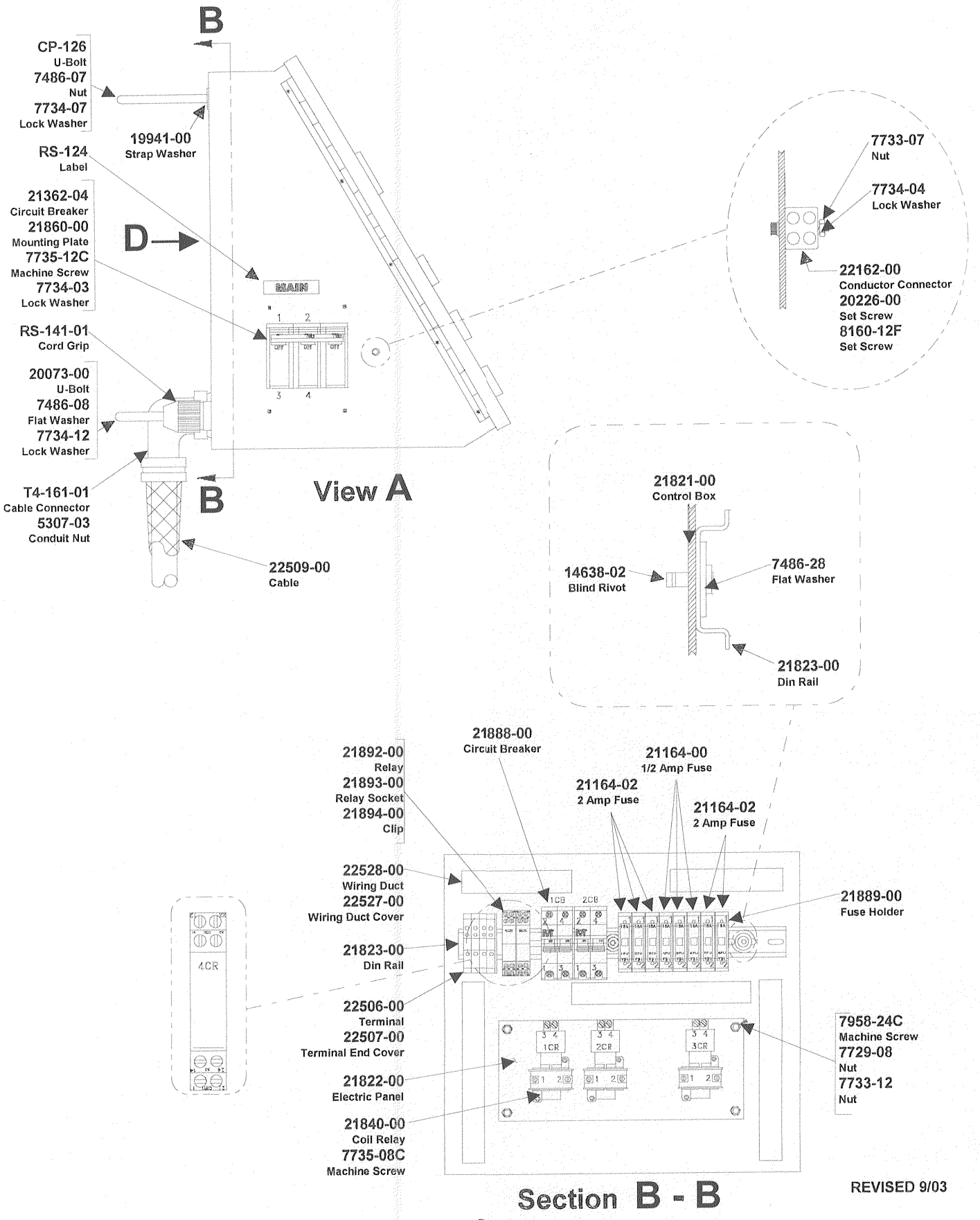

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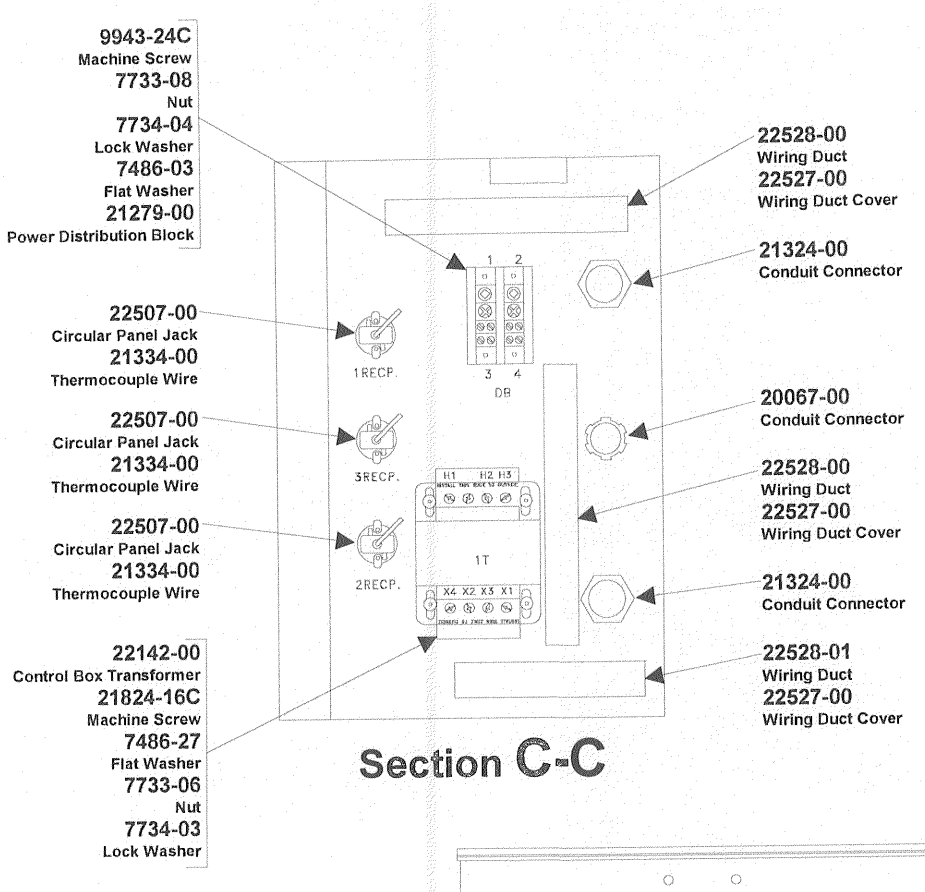
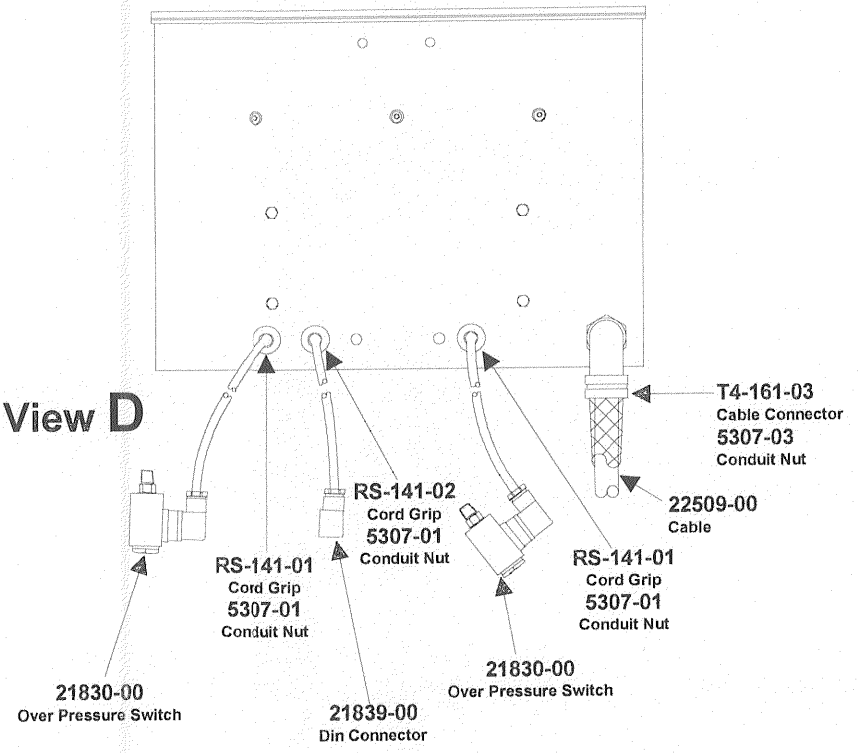


Section C-C



REVISED 9/03

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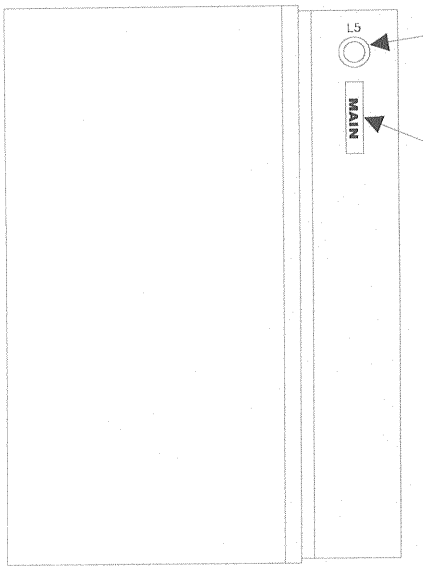
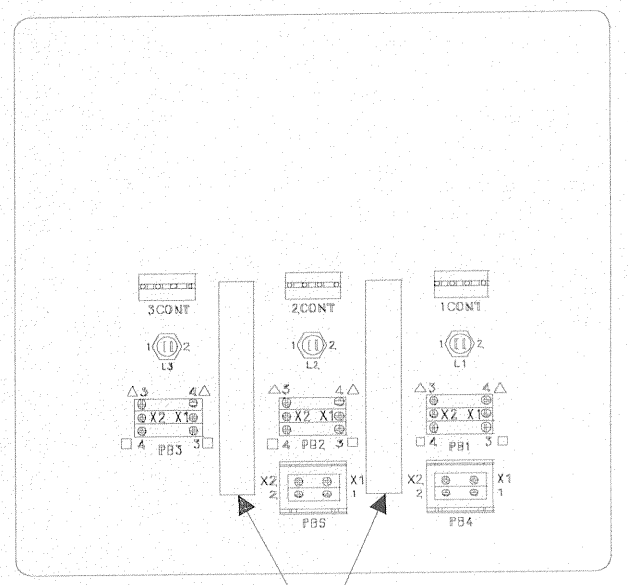


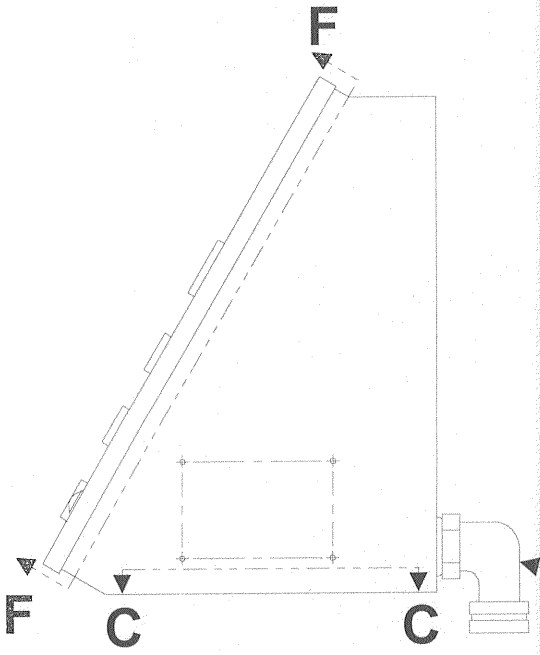
17801-00
Body
17801-03
Lense
17702-00
Lamp

RS-124
Label

Section F-F



22528-01
Wiring Duct
22527-00
Wiring duct Cover



T-161-01
Cable Connector

View E

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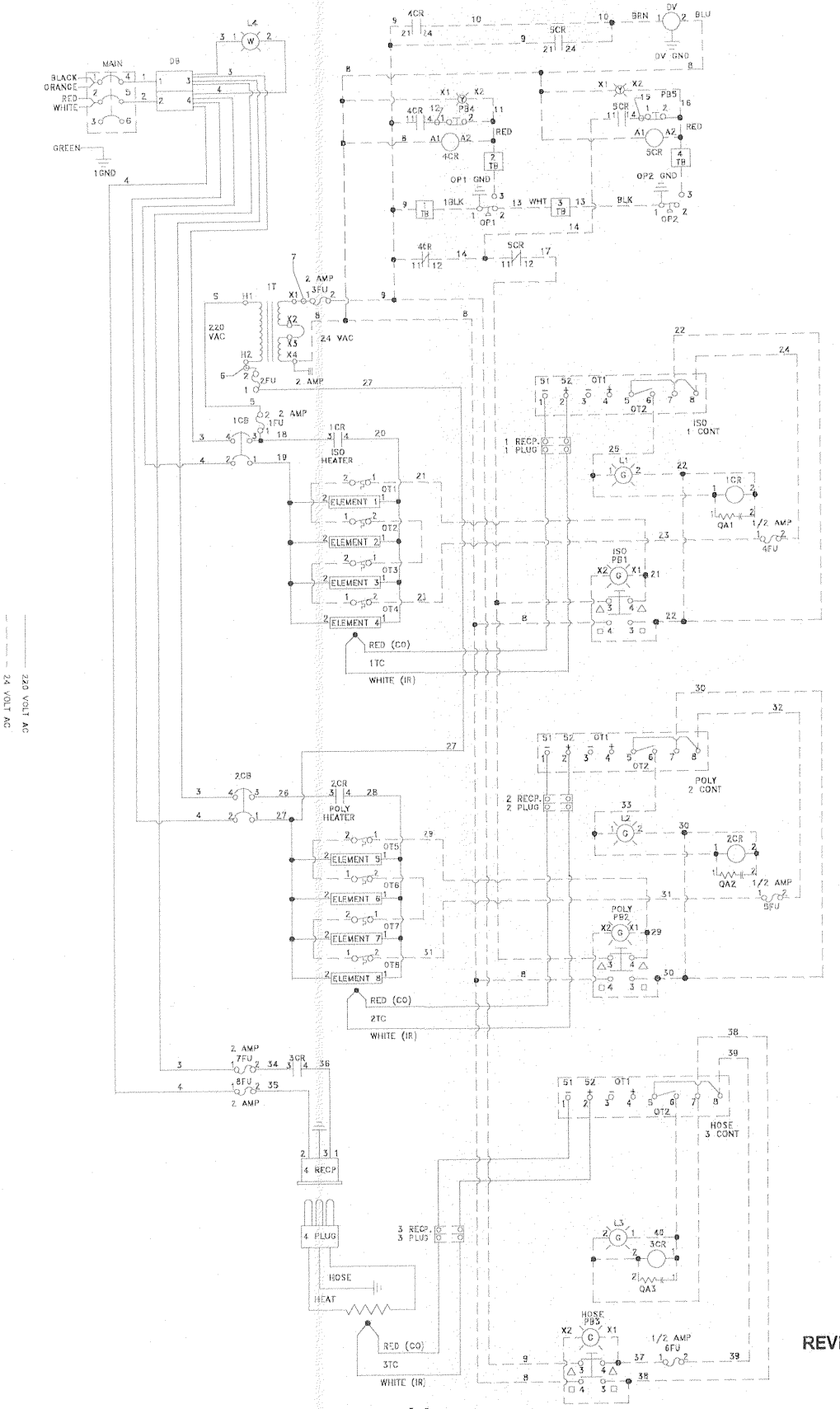
21820-00 MX SYSTEM SCHEMATIC



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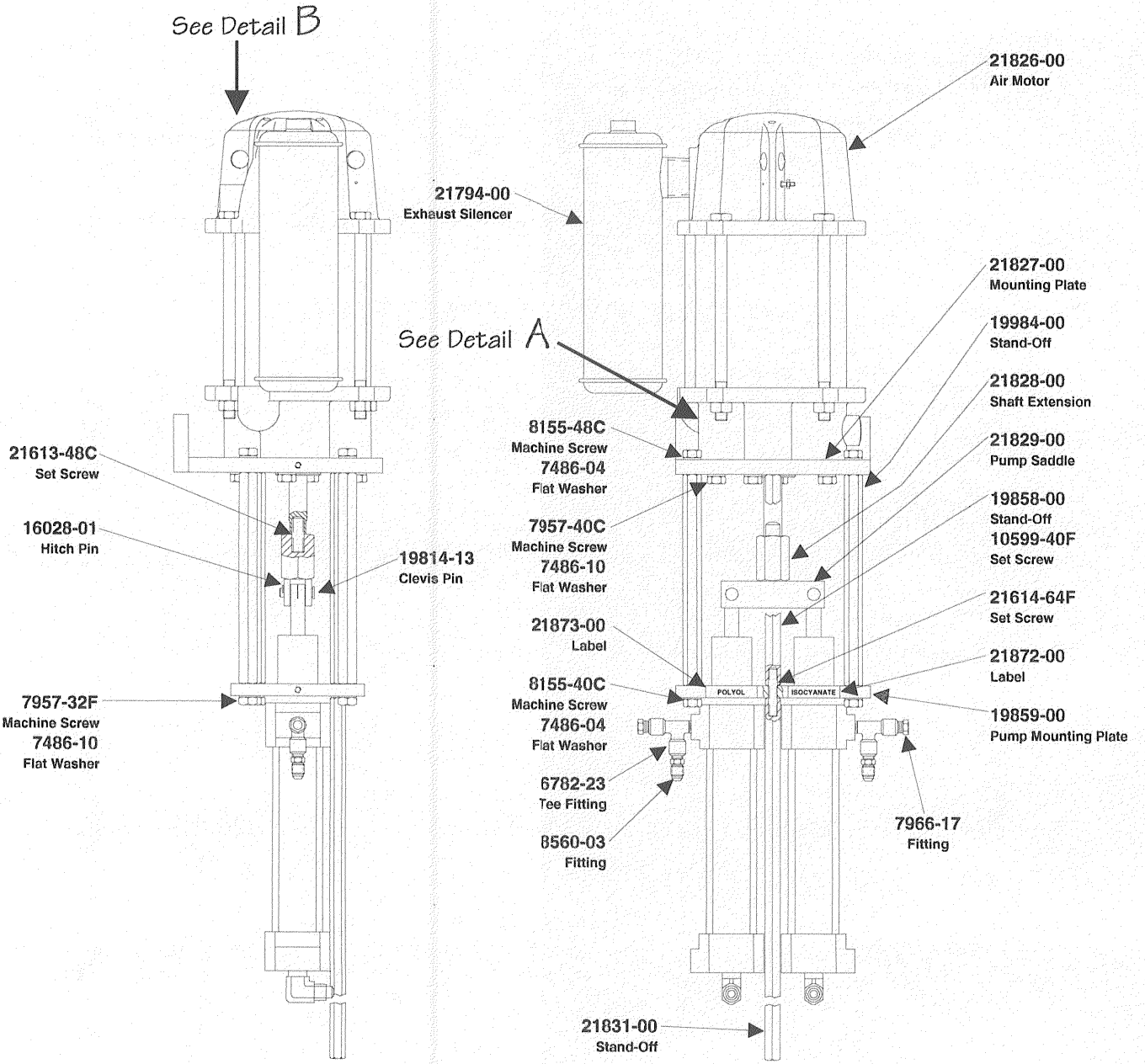
21825-XX MX PROPORTIONING UNIT ASSEMBLY



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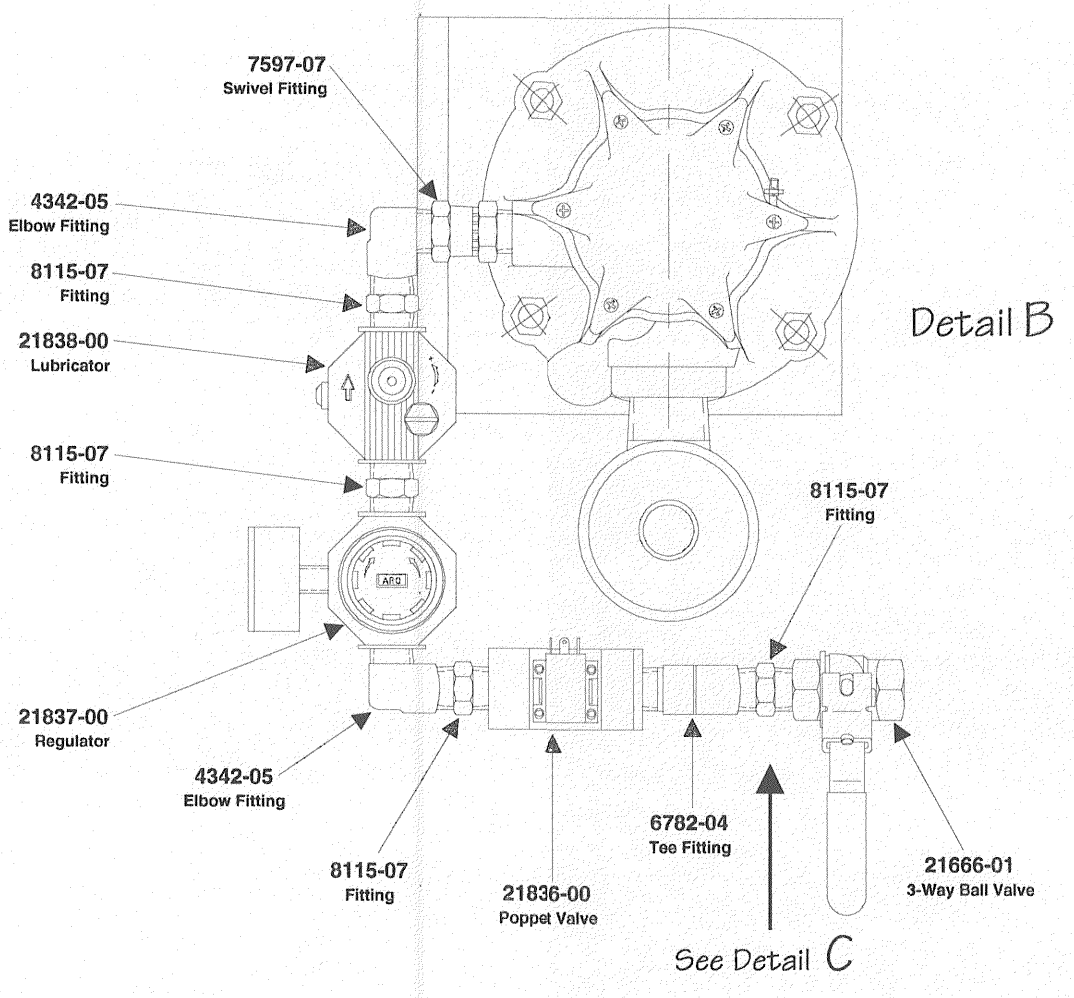
21825-XX MX PROPORTIONING DETAILS



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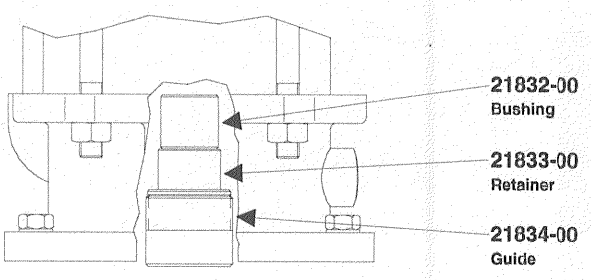

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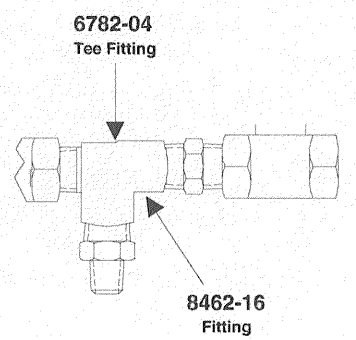

Detail C

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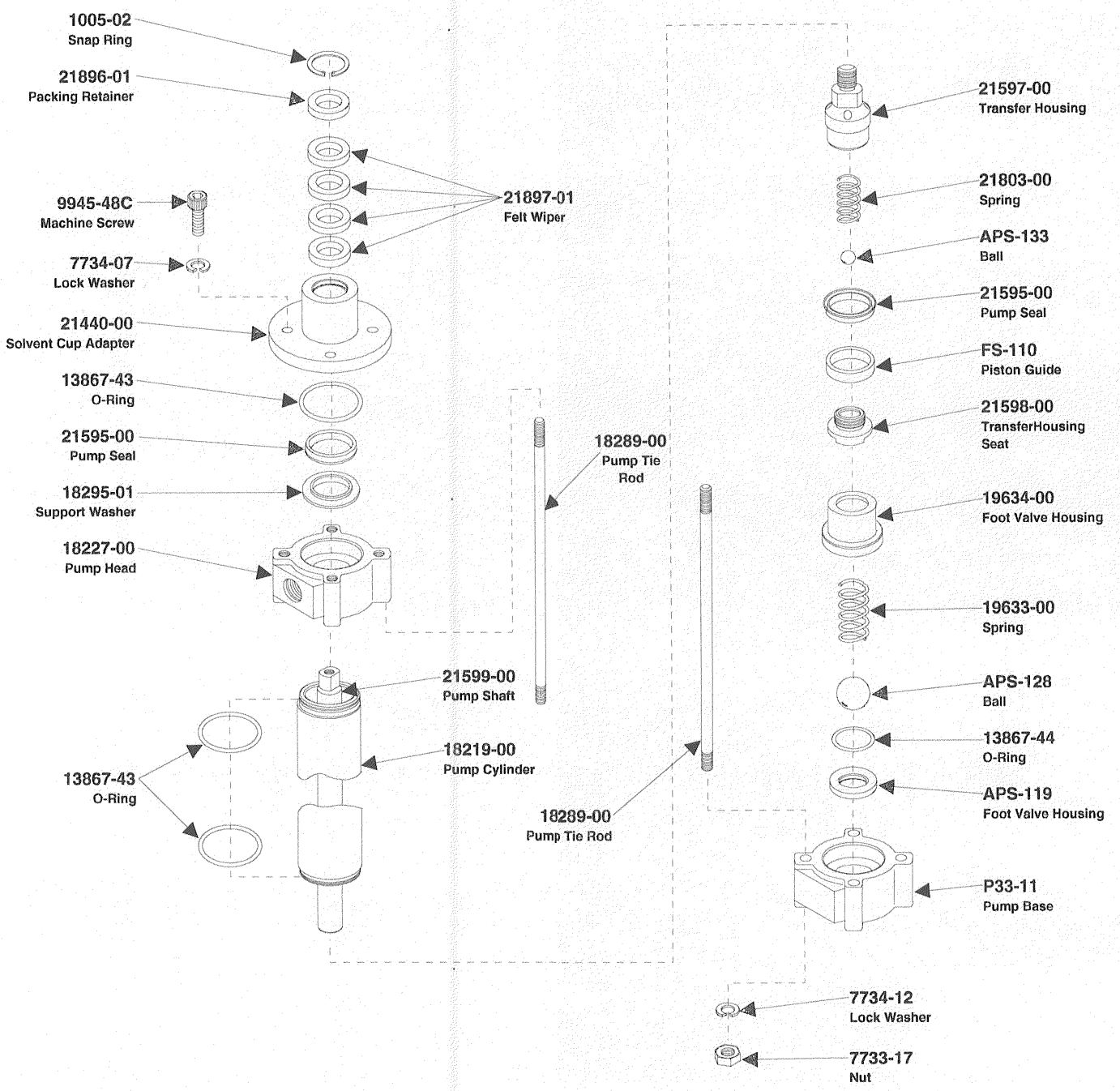
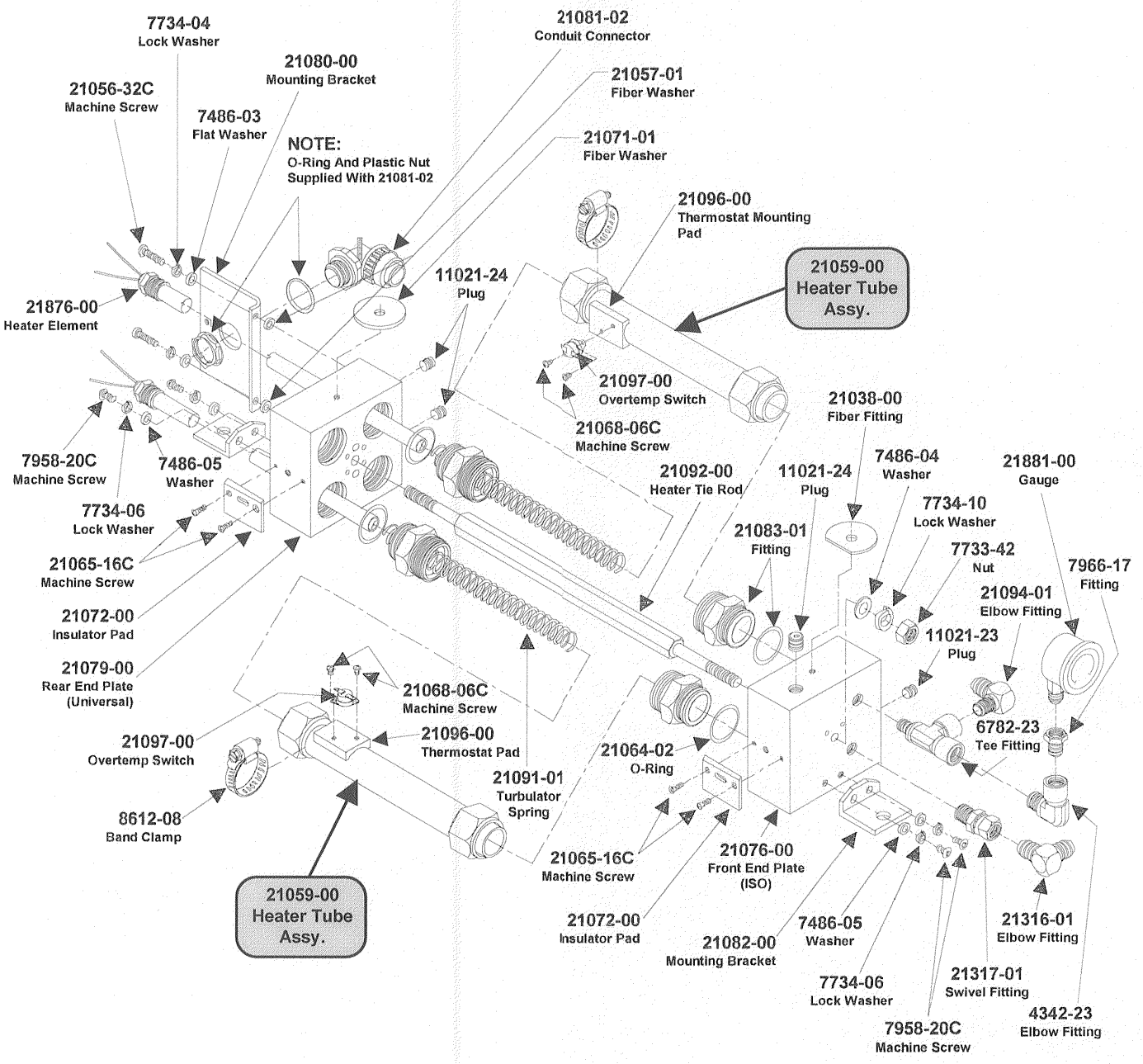
21835-00-00 FLUID SECTION ASSEMBLY

RATIO: 1:1



REPAIR KIT: 21845-00

21875-00 ISO HEAT EXCHANGER ASSEMBLY



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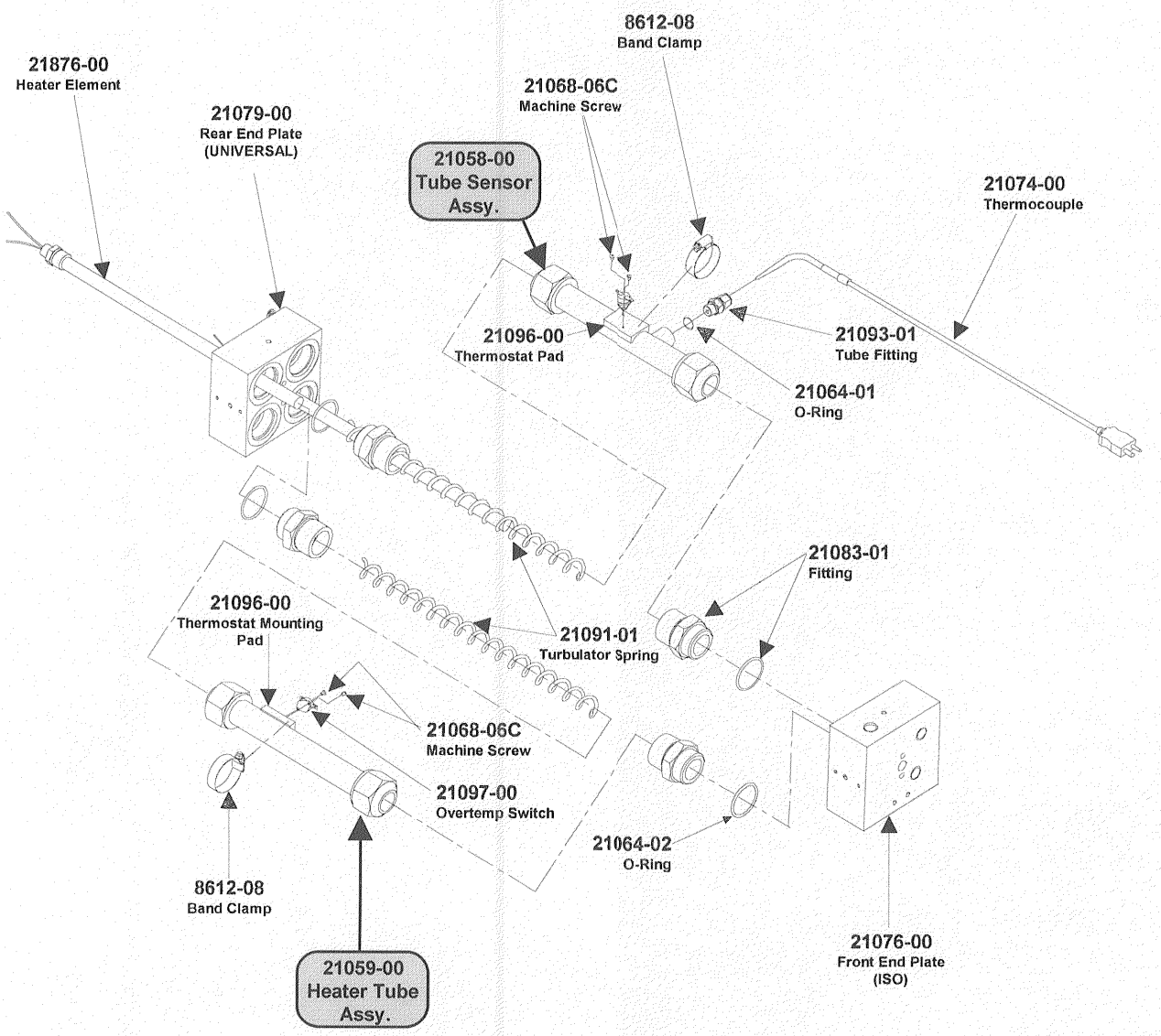

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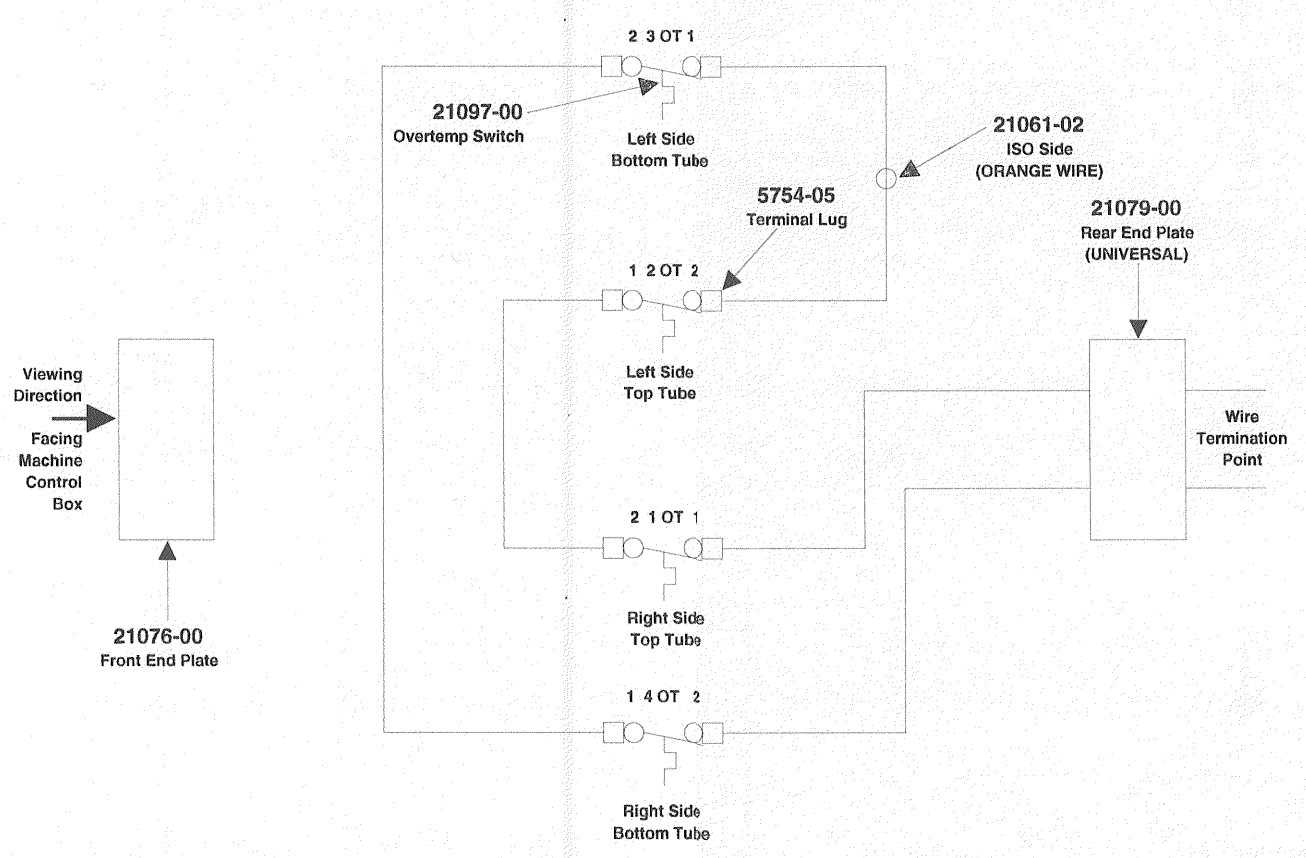
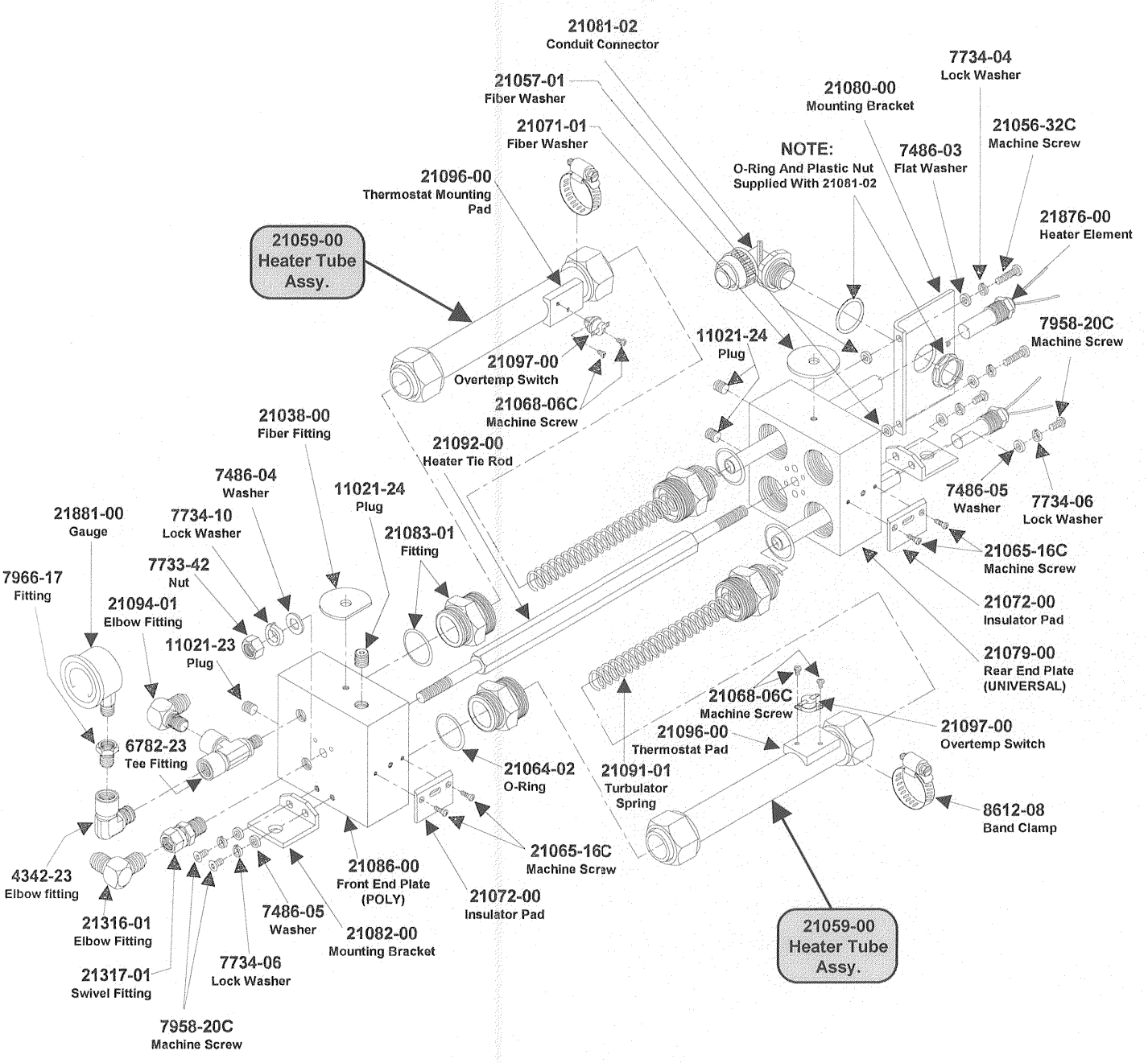
21875-00 HEAT EXCHANGER SCHEMATIC



21885-00 POLY HEAT EXCHANGER ASSEMBLY



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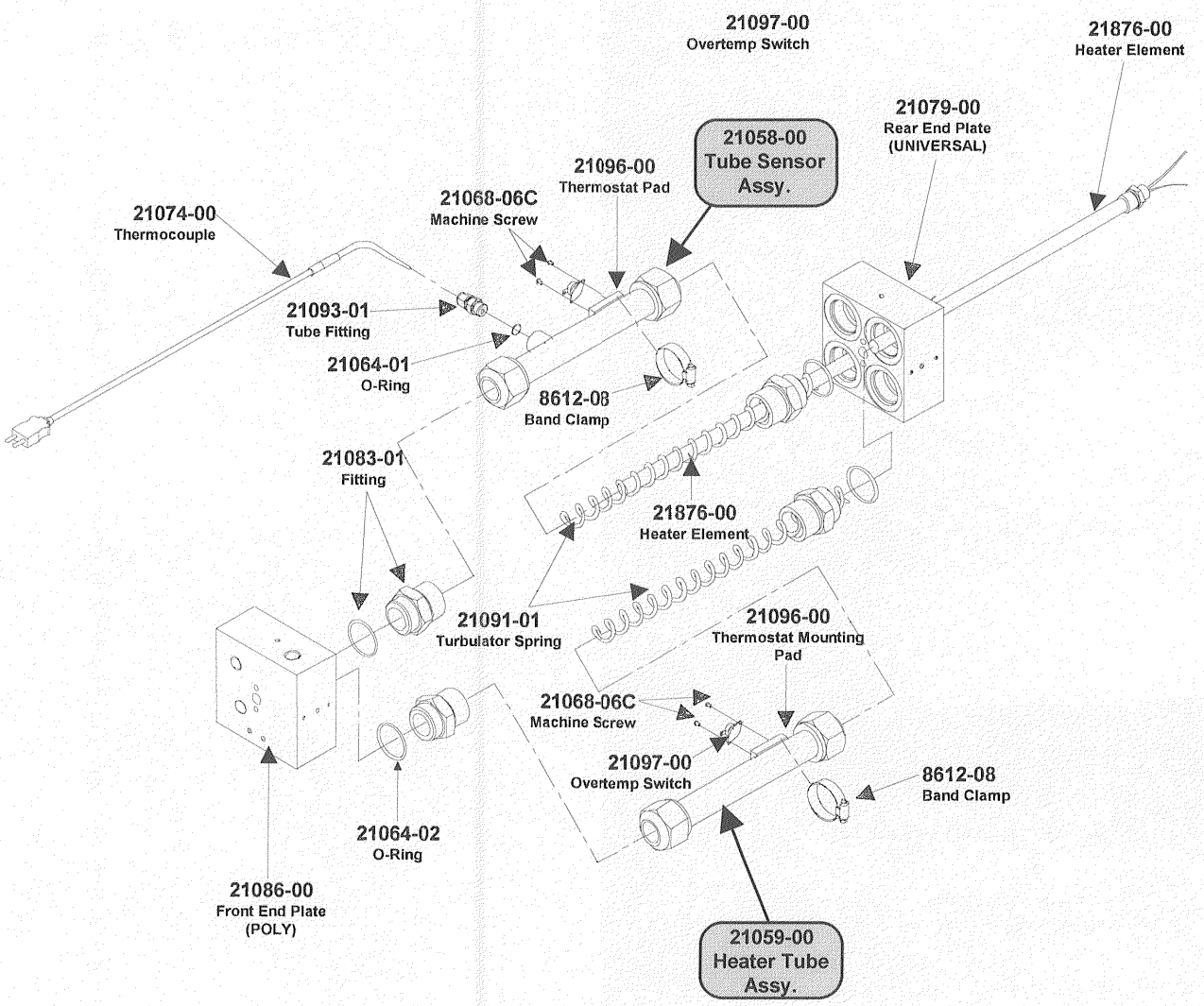
21885-00 POLY HEAT EXCHANGER DETAILS



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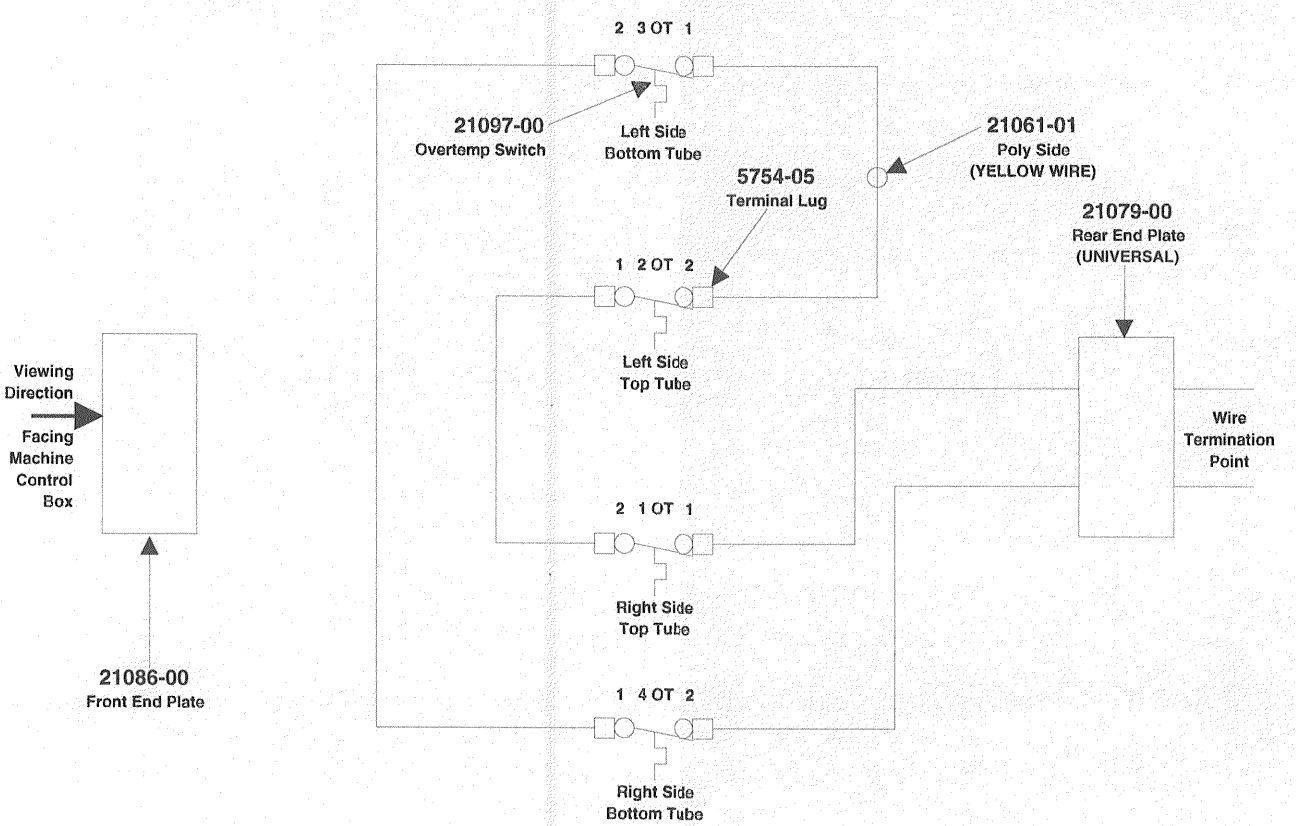
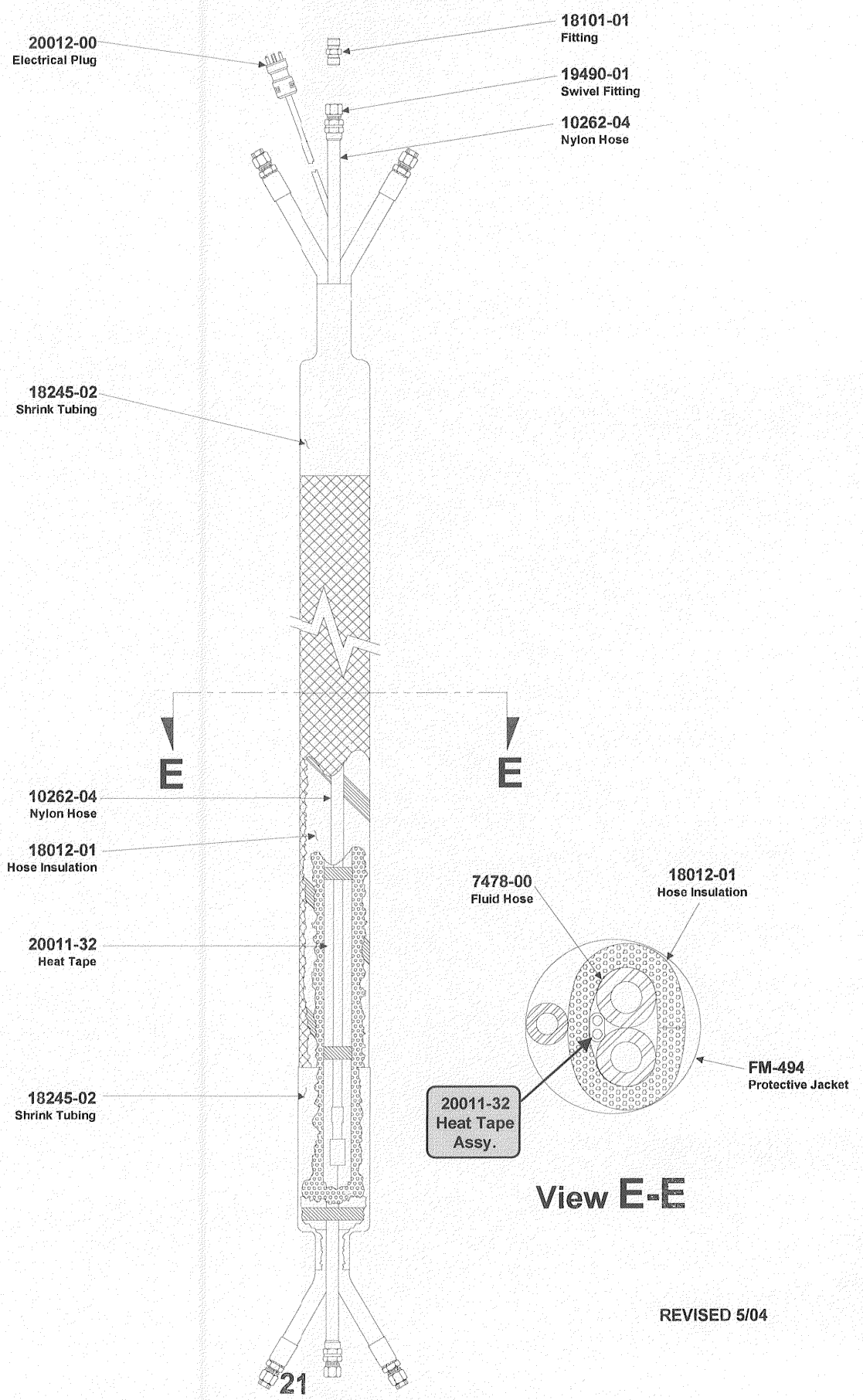
21885-00 POLY HEAT EXCHANGER SCHEMATIC



22515-35 HOSE ASSEMBLY



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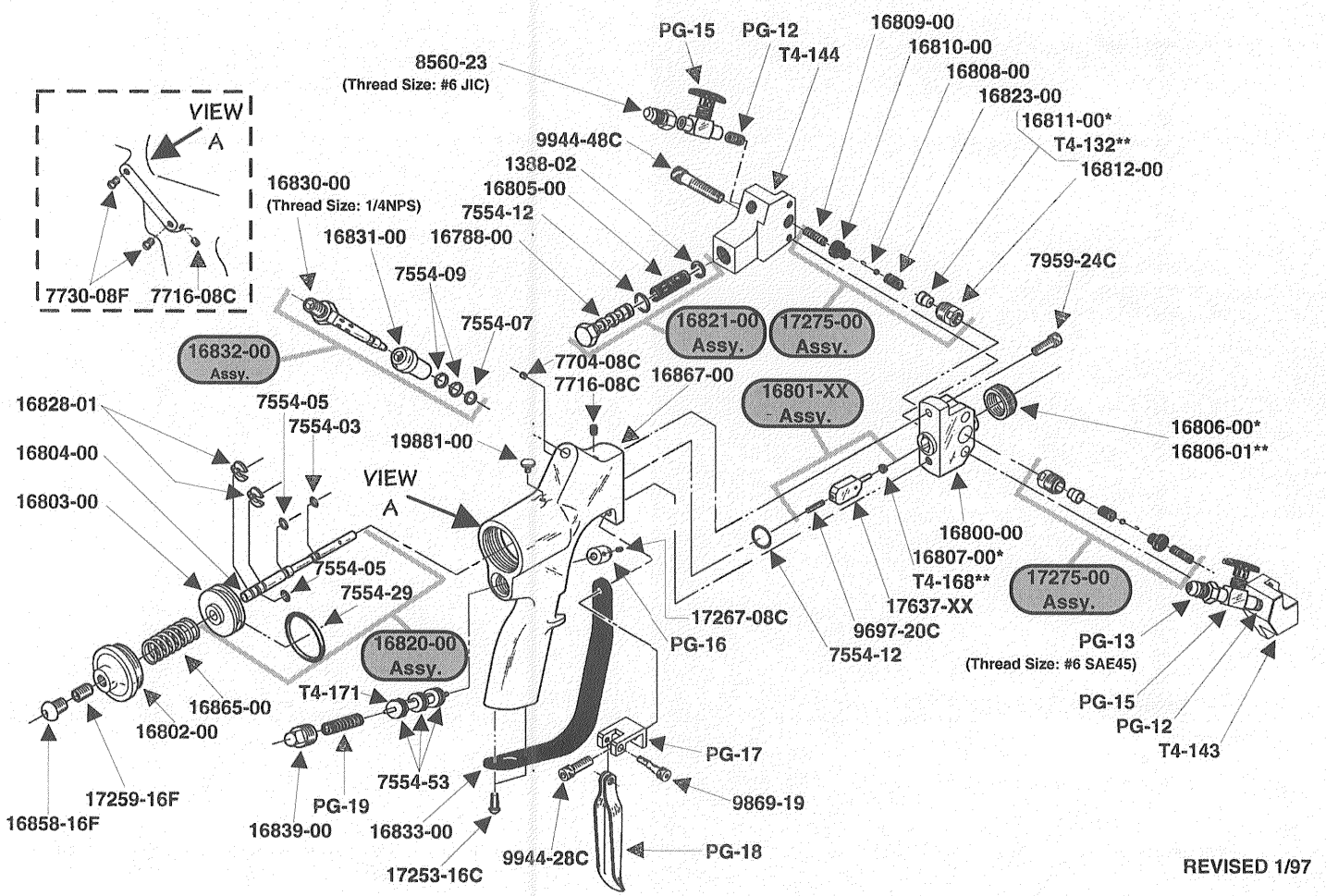
17254-01 PROBLER SPRAY GUN



REVISED 1/97

* Used with 17254-00, -01, -02, -03 Gun Assembly
** Used with 17254-04, -05 Gun Assembly

REPAIR KIT: 19134-00

SAFETY

Safe Handling And Use of Urethane Foam Equipment

Introduction

Any tool, if used improperly, can be dangerous. Safety is ultimately the responsibility of those using the tool. In like manner, safe operation of polyester processes is the responsibility of those who use such processes and those who operate the equipment. This manual outlines procedures to be followed in conducting polyester operations safely.

All personnel involved in dispensing operations should read and understand this manual. It is most important that equipment operators, maintenance and supervisory personnel understand the requirements for safe operation.

This manual cannot answer every circumstance; each user should examine his own operation, develop his own safety program and be assured that his equipment operators follow correct procedures. Glas-Craft hopes that this manual is helpful to the user and recommends that the precautions in this manual be included in any such program.

Urethane foam systems are comprised of several different chemical compounds, some of which may be hazardous if improperly used.

CAUTION

Particular caution must be taken with respect to the vapors released during the use of urethane foam systems.

Isocyanate compounds are used in urethane foaming operations. The medical history of persons who may be exposed to such isocyanates should be examined. It is recommended that individuals with a history of chronic respiratory ailments should avoid exposure to all isocyanates.

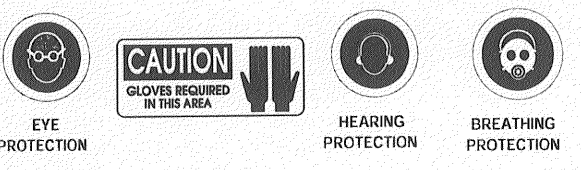
In addition to the manual, Glas-Craft recommends that the user consult the regulations established under the Occupational Safety & Health Act (OSHA), particularly the following sections:

1910.94 Pertaining to ventilation.
1910.106 Pertaining to flammable liquids.
1910.107 Pertaining to spray finishing operations, particularly Paragraph (m) Organic Peroxides and Dual Component Coatings.

Local codes and authorities also have standards to be followed in the operation of your spraying equipment. Chemical manufacturer's recommendations should be obtained and considered. Your insurance carrier will be helpful in answering questions that arise in your development of safe procedures.

Personnel Safety Equipment

Glas-Craft recommends the following Personal Safety Equipment for conducting safe operations of the Polyester Systems:



EYE PROTECTION | HEARING PROTECTION | BREATHING PROTECTION

Glas-Craft recommends that the user consult the state and local regulations established for all Safety equipment listed.

Operating Safely

In operating urethane foam equipment safely, user should make every effort to:

1. Handle chemicals safely.
2. Provide adequate ventilation.
3. Provide adequate safety equipment (gloves, respirators, safety glasses, protective clothing, etc.) for operators and all others working in areas where they may be exposed to the chemicals or their vapors.
4. Avoid operating equipment which has given any indication of malfunction.
5. Become fully acquainted with the equipment and chemicals used.

Handling Chemicals Safely

Storage of polyisocyanates, diamines, and organic solvents should be isolated and restricted to specially constructed storage rooms. Store chemicals in original containers and according to manufacturer's recommendations listed on the container. Maximum ambient temperatures to which such chemicals should be exposed are specified by the manufacturer and **MUST NOT** be exceeded either in the storage area or in the spraying or pouring area.

To avoid moisture contamination, do not open containers until ready for use. After use, the remaining material should be re-sealed in the original container and stored in areas away from moisture.

During clean-up of spilled isocyanate-component, respirators, gloves and eye protection must be worn. Isocyanates which have been spilled can be controlled by covering them with dry saw dust and/or other absorbent inert materials. Care should be taken to avoid skin contact. The absorbent material and the absorbed isocyanate should be collected promptly, placed in an open-top container, and treated with dilute solutions of ammoniom hydroxide and/or alcohol. While being treated in this manner, the material should be in an adequately ventilated area. Clothing on which any material has been spilled should be removed immediately, and cleaned before being worn again.

Clean-Up Solvents

WARNING

A hazardous situation may be present in your pressurized fluid system!

Halogenated Hydrocarbon Solvents can cause an explosion when used with aluminum or galvanized components in a closed (pressurized) fluid system (pumps, heaters, filters, valves, spray guns, tanks, etc.).

The explosion could cause serious injury, death and/or substantial property damage.

Cleaning agents, coatings, paints, etc. may contain Halogenated Hydrocarbon Solvents.

Some Glas-Craft spray equipment includes aluminum or galvanized components and will be affected by Halogenated Hydrocarbon Solvents.

A. There are three key elements to the Halogenated Hydrocarbon (HHC) solvent hazard.

1. **The presence of HHC solvents.** 1,1,1-Trichloroethane and Methylene Chloride are the most common of these solvents. However, other HHC solvents are suspect if used; either as part of paint or adhesives formulation, or for clean-up or flushing.

2. **Aluminum or Galvanized Parts.** Most handling equipment contains these elements. In contact with these metals, HHC solvents could generate a corrosive reaction of a catalytic nature.

3. **Equipment capable of withstanding pressure.** When HHC solvents contact aluminum or galvanized parts inside a closed container, such as a pump, spray gun, or fluid handling system, the chemical reaction can, over time, result in a build-up of heat and pressure, which can reach explosive proportions.

When all three elements are present, the result can be an extremely violent explosion. The reaction can be sustained with very little aluminum or galvanized metal: ***any amount of aluminum is too much.***

B. The reaction is unpredictable. Prior use of an HHC solvent without incident (corrosion or explosion) does ***NOT*** mean that such use is safe. These solvents can be dangerous alone (as a clean-up or flushing agent) or when used as a component of a coating material. There is no known inhibitor that is effective under all circumstances. Furthermore, the mixing of HHC solvents with other materials or solvents, such as MEK, alcohol, and toluene, may render the inhibitors ineffective.

C. The use of reclaimed solvents is particularly hazardous. Reclaimers may not add any inhibitors, or may add incorrect amounts of inhibitors, or may add improper types of inhibitors. Also, the possible presence of water in reclaimed solvents could feed the reaction.

D. Anodized or other oxide coatings cannot be relied upon to prevent the explosive reaction. Such coatings can be worn, cracked, scratched, or too thin to prevent contact. There is no known way to make oxide coatings or to employ aluminum alloys, which will safely prevent the chemical reaction under all circumstances.

E. Several solvent suppliers have recently begun promoting HHC solvents for use in coating systems. The increasing use of HHC solvents is increasing the risk. Because of their exemption from many State Implementation Plans as Volatile Organic Compounds (VOC's), their low flammability hazard, and their not being classified as toxic or carcinogenic substances, HHC solvents are very desirable in many respects.

WARNING

If you are now using Halogenated Hydrocarbon solvents in pressurized fluid systems having aluminum or galvanized wetted parts,

IMMEDIATELY TAKE THE FOLLOWING STEPS:

> Empty system, shut-off, completely depressurize in accordance with equipment service instructions.

> Remove equipment from service, disassemble in accordance with equipment servicing instructions.

> Inspect all parts for corrosion and/or wear. Replace any damaged parts.

> Thoroughly clean all parts of the equipment with a non-halogenated solvent and reassemble in accordance with equipment servicing instructions.

> Flush equipment with non-halogenated solvent.

> Do NOT reuse equipment with HHC solvents or with materials containing such solvents.

> Material suppliers and/or container labels should be consulted to ensure that the solvents used are compatible with your equipment.

NOTE

Glas-Craft is aware of NO stabilizers available to prevent Halogenated Hydrocarbon solvents from reaction under all conditions with aluminum components in a closed fluid system.

TAKE IMMEDIATE ACTION...
Halogenated Hydrocarbon solvents are dangerous when used with aluminum components in a closed fluid system.

F. Consult your material supplier to determine whether your solvent or coating contains Halogenated Hydrocarbon Solvents.

G. Glas-Craft recommends that you contact your solvent supplier regarding the best non-flammable clean-up solvent with the heat toxicity for your application.

H. If, however, you find it necessary to use flammable solvents, they must be kept in approved, electrically grounded containers.

I. Bulk solvent should be stored in a well-ventilated, separate building, 50 feet away from your main plant.

J. You should allow only enough solvent for one day's use in your laminating area.

K. **"NO SMOKING"** signs must be posted and observed in all areas of storage or where solvents and other flammable materials are used.

L. Adequate ventilation (as covered in OSHA Section 1910.94 and NFPA No. 91) is important wherever solvents are stored or used, to minimize, confine and exhaust the solvent vapors.

M. Solvents should be handled in accordance with OSHA Section 1910.106 and 1910.107.

Toxicity of Chemicals

A. Glas-Craft recommends that you consult OSHA Sections 1910.94, 1910.106, 1910.107 and NFPA No. 33, Chapter 14, and NFPA No. 91.

B. Contact your chemical supplier(s) and determine the toxicity of the various chemicals used, as well as the best methods to prevent injury, irritation and danger to personnel.

C. Also determine the best methods of first aid treatment for each chemical used in your plant.

First Aid

If chemicals containing isocyanates are splashed on the skin, they can produce ill effects. Steps to counteract such effects should be started immediately.

1. Apply Tincture of Green Soap, full strength, to the contaminated area. If Tincture of Green Soap is not immediately available, wash the exposed area repeatedly with soap and water. Soap and water is not as desirable as using Tincture of Green Soap because many isocyanate components are not easily dissolved in water. In addition, soap and water does not form a barrier to the isocyanates.
2. After approximately two to four minutes, wash off the Tincture of Green Soap with water. If there is still an indication of isocyanate present, repeat the application. If the isocyanate contamination is on the facial area, care must be taken to avoid getting the Tincture of Green Soap in the eyes.
3. If the person develops breathing difficulties, oxygen should be administered. Quite often the exposed person will experience residual effects such as coughing spells. **CONTACT PHYSICIAN IMMEDIATELY.**

WARNING

Contact a doctor immediately in the event of an injury and give him the information you have collected. If your information includes first aid instructions, administer first aid immediately while you are contacting the doctor.

4. If a person accidentally swallows isocyanates, large amounts of water should be swallowed immediately. Vomiting should then be induced by patient sticking his finger down his throat, or by swallowing large quantities of warm salt water or warm soapy water. After vomiting, more water should be taken to dilute isocyanate further. **CONTACT PHYSICIAN IMMEDIATELY.**

Ventilation

WARNING

Hazardous concentrations of some chemical vapors exist before they can be smelled. Chemical component suppliers should be contacted to determine at what concentrations the vapors of the chemicals they supply become dangerous, and the procedures and equipment needed to detect such dangerous concentrations. Such equipment should be obtained.

Adequate ventilation must be provided in any area where foam chemicals are sprayed or poured, and wherever the material containers are opened.

In industrial applications, foaming operations should be restricted to specific areas, and proper ventilation should be provided in these areas to prevent chemical vapors from spreading. Spray foaming operations MUST be restricted to a spray booth where a minimum exhaust of 100 feet per minute at the face of the booth is provided. Special care should be taken to prevent unsuspecting personnel both inside and outside of the plant from being exposed to chemical vapors. The chemical vapors should be exhausted to atmosphere in such a manner and at a sufficiently low concentration that personnel outside the plant are not exposed to dangerous concentrations of chemical vapors. Refer to OSHA Standards, sub-part G, 1910.107 and particularly sub-section (m) for Federal standards. State and local authorities may have applicable statutes or regulations concerning ventilation.

n contractor applications (for example, at a construction site, inside building or other enclosed space), the forced ventilation normally provided is likely to be inadequate. These applications, therefore, usually REQUIRE the use of forced, fresh air respirators for all persons in the areas where foaming operations are conducted or where the chemical vapors are likely to spread.

In industrial and contractor applications, it is advisable to run frequent tests to determine the exact concentration of isocyanate vapor in the air. Industrial equipment is available for making such determinations. Your chemical supplier can recommend such equipment and procedures.

Proper Safety Equipment

All persons spraying or working is areas where forced air ventilation is not adequate to remove isocyanate vapors from the air MUST use an approved (U.S. Bureau of Mines) fresh air supplied respirator.

Respirators should be regularly inspected, cleaned and disinfected according to good practices. Records must be kept of the inspections. The user MUST have a medical clearance indicating that he can safely use a respirator.

Respirators must fit securely; beards prevent a tight seal around the face. Eye glasses have to be given special attention and contact lenses are prohibited.

Safety goggles, gloves and other protective devices are suggested for operators of foaming equipment. Refer to OSHA Standards, sub-part 1, 1910.132, 1910.133 and 1910.134 for Federal standards.

IF YOU HAVE ANY QUESTIONS REGARDING THE ABOVE PRECAUTIONS OR ANY SERVICE OR OPERATION PROCEDURES, CALL YOUR **GLAS-CRAFT** DISTRIBUTOR OR **GLAS-CRAFT, INC.**

Notice

All statements, information and data given herein are believed to be accurate and reliable but are presented without guaranty, warranty or responsibility of any kind expressed or implied. The user should not assume that all safety measures are indicated or that other measures are not required.

Glas-Craft, Inc.

5845 WEST 82nd STREET, SUITE 102
INDIANAPOLIS, INDIANA 46278 U.S.A.

PHONE (317) 875-5592 **FAX (317) 875-5456**

APRIL 1996

INSTALLATION

Assembly Instructions

NOTE

The Glas-Craft MX System is factory assembled. If any questions arise concerning air or electrical connections, please refer to illustrations located in the forward portion of this User Manual or contact your Glas-Craft distributor.

A. Air Supply Connection

An air source which delivers a constant 45 CFM @ 100 PSI should connected directly to the Fitting, P/N 8560-03, mounted on the Proportioning Unit Air Motor Regulator, P/N 22516-00. (see "22520-00 PROPORTIONING ASSEMBLY, Detail A" illustration)

The air line to the Console should be a minimum 1/2 inch inside diameter (I.D.) if it is 25 feet or less in length. Should it be over 25 feet in length, the air line should be a minimum 3/4 inch I.D.

B. Electrical Conections

1. Prior to connecting Main Power, insert Hose Electrical Plug, P/N 20012-00 into the Receptacle, P/N 21815-00 located on the front of the Hose Block. (see "HOSE BLOCK ASSEMBLY" illustration)

WARNING

*Disconnect or turn **off** Main Power source before opening Control Panels Boxes to make any repairs or before making any electrical repair of any type to the MX system.*

CAUTION

*If you **do not** understand the electrical hook-up described above, consult your local **Glas-Craft** distributor OR a **qualified** electrician.*

OPERATION

Pre-Operation Checklist

A. Check that ***all*** fittings are securely tight.

B. Check electrical hook-up (*qualified* electrician recommended).

C. Circuit Breaker on Control Box should be switched to ***OFF*** position.

D. Main Air Regulator turned (counter clock-wise) to ***OFF*** position.

WARNING

Do not place any part of the body in the path of the material spray.
Do not point the gun at or near other personnel.
Do not look into the Mixing Chamber orifice at any time.
Because of the hazardous materials used in this equipment, it is recommended that the operator use an air mask, goggles, protective clothing, and other safety equipment as prescribed by current regulations, recommendations of the chemical suppliers, and the laws in the area where the equipment is being used.

A. Initial Start-Up Procedure

With all material and air lines connected and power cable attached, the system is now ready for start-up.

Filling The System

1. With all material and air lines connected and power cable attached to the system, the system is now ready to be filled with material. With transfer pumps in place, adjust regulators on transfer pumps to 30-50 psi to fill the system. Transfer pumps will cycle to fill pumps, heaters and hoses and then stop.

2. Remove the Side Blocks, P/Ns T4-143 and T4-144, on the front housing of the Gun, by removing Screws, P/N 9944-48C.

3. Place separate clean containers under each individual Side Block. Open manual Material Valves (black arrow forward, see Fig. 2 & 3) on each Side Block to allow trapped air to escape the Hose and material to flow into the containers until all air is purged from the material system. (see Fig. 1)

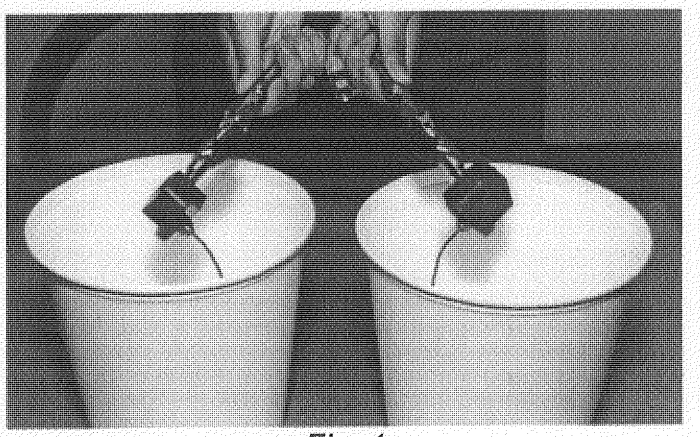


Fig. 1

NOTE

Remember to dispense one to two gallons of material to clear the system of grease and plasticizer that was used during factory testing.

4. Close manual Material Valves. Material pressures gauges should now register approximately equal pressure. If one side registers considerably more pressure than the other side, go to the high pressure side and bleed off some pressure by slightly opening the manual Material Valve on the Side Block over the container. Bleed pressure until both sides are approximately the same pressure.

5. Dispose of waste material properly and in accordance with chemical suppliers instructions and local, state and federal regulations.

NOTE

Before re-assembling Side Blocks, lubrication can be applied by dabbing a white lithium grease into holes inside of Gun Front Housing and wiping grease over Side Block Seals. Grease will purge itself when air valve is turned on at Gun and Gun is triggered.

6. Clean and lubricate Side Blocks and Seals thoroughly and re-assemble on Gun. Make certain that Side Block Screws are tighten securely.

7. Refer to Glas-Craft Material Operating Instructions for proper preparation of material, i.e, mixers, etc.

8. Make sure Main Proportioning Unit regulator, P/N 22516-00, is dialed (counter clock-wise) to zero.

9. Slowly adjust Regulator, P/N 18199-02, on the MX system to control Transfer Pumps. Regulator should be dialed up to 90-100 psi.

NOTE

Turn Transfer Pump Air Regulator on slowly. Pumps should cycle slowly until hoses are full of material.

10. Turn on Main Power.

11. Turn on Hose Control. This is done by pushing in the green button. Adjust temperature to desired setting by depressing the blue "SET" button and press either ⩔ or ⩓ button on the Controller simultaneously until desired temperature setting is achieved.

NOTE

Allow proper time for hose to warm up (approximately 15-20 minutes).

NOTE

To adjust temperature on Hose Controller, push and hold in blue button. Then push the up or down arrow to increase or decrease temperature. To see actual temperature of liquid in hose, push blue button once and release. The actual temperature will then be displayed for 10 seconds.

12. Turn on the ISO and POLY Heaters by pushing in the green buttons.

13. Adjust temperature to desired setting. ISO and POLY Controllers function exactly the same as the Hose Controller.

NOTE

Allow proper time for material to be heated (approximately 3-5 minutes).

14. Turn Purge Air and Material Valves ON at Gun. (see Fig. 2 & 3)

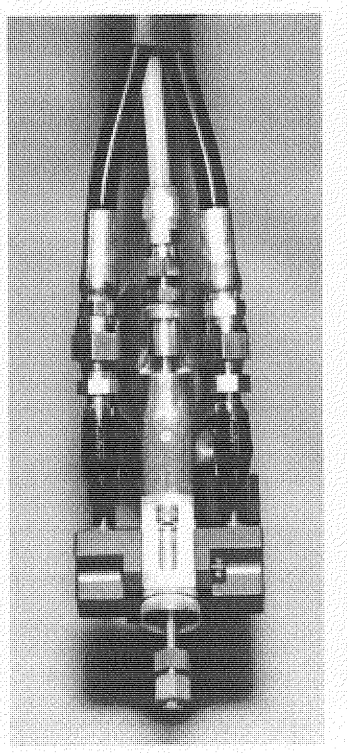


Fig. 2

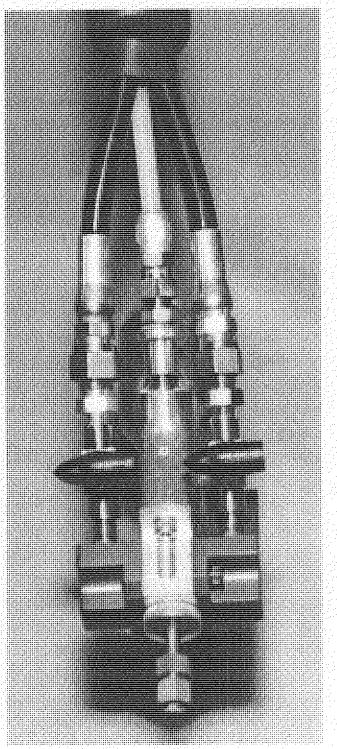


Fig. 3

15. Relieve any excess pressure by triggering the gun.

16. Dial-up Main Proportioning Unit regulator, P/N 21825-611, to desired pressure.

NOTE

Standard operating pressure should be set at 100 psi.

17. The system is now ready for operation.

B. Over Pressure System Protection

The MX system incorporates monitors for high pressure monitoring. These monitoring devices will prevent the MX system from continued operation if high pressure situations develop.

There are two pressure sensors located on each proportioning pump. The high pressure sensor is located at the outbound of the fluid section.

The high pressure monitoring sensor will engage if fluid pressure increases above 3200 psi.

If a high pressure situation develops, the sensor will detect this and immediately engage the hold-in circuit.

This will disengage power to the air motor and it will stop cycling. It will also turn the heater off.

On the control box panel, there are two yellow lighted push buttons marked over pressure. One of these push buttons will be illuminated after the monitoring sensor engages, indicating where the problem is located (ISO or Poly).

In the over pressure situation, the system will remain shutdown until it is manually reset.

At this point, it is necessary to determine if the problem is an over pressure situation.

When the sensor engages, the system will be frozen, giving you the pressure readings at the time the problem was detected.

Inspect the fluid pressure gauges, in an over pressure situation, one of the fluid pressure gauges will be significantly higher than the other gauge.

WARNING

When main power to unit is on, the console will have wires that are live. Disconnect or turn off main power source before opening console to make any repairs.

WARNING

Before performing any repairs on the system, ALL AIR and FLUID PRESSURES SHOULD BE RELIEVED TO ZERO (BLEED-OFF)!

C. Over Pressure Problem Correction

1. Determine if the problem is high pressure related.

2. Relieve system hydraulic pressure.

3. Turn off main power

4. Fix the problem area:
   a. Potential high pressure causes:
   - Restriction
   - Overheating material in static position
   - ISO filter at gun

5. Re-start system for operation

6. Once the power has been turned off and problem solved, and the main power is turned on again, the over/under pressure lighted buttons will automatically be reset.

D. Control Panels

MX System Control Panel Specifications

- **208 VAC**
- **60 Amp**
- **Singe Phase**
- **50/60 Cycles**

Main power cord has three wires:

- **Black - L1 (Power)**
- **White - L2 (Power)**
- **Green - Ground**

CAUTION

*If you **do not** understand the electrical hook-up described above, consult your local **Glas-Craft** distributor OR a **qualified** electrician.*

It is recommended that a qualified, licensed electrician should install power to the supply disconnect.

You should always follow all local or national electrical codes.

CAUTION

Disconnect power source BEFORE attempting any repairs or opening the Control Boxes. Access to internal parts is limited to qualified personnel ONLY!
Place Main Power Breaker in OFF position BEFORE disconnecting power cables. This equipment is not approved for use in hazardous locations as set forth in the National Electrical Code Article 500 and Sub-Part "S" of the OSHA Standards.

The green, small bulb lights on the Control Panel are cycle lights. They will illuminate when that component is actively cycling.

E. Proportioning Pump

Air Motor

- 6 inch diameter air motor with a 4 inch stroke.

NOTE

Supply air to air motor should be clean, dry air.

A Gauge/Regulator/Water Trap is located on the in-bound Main Air port of the Air Motor. The Water Trap should be drained after each use.

Fluid Sections

The wiper/lubrication cup at the top of each fluid section is designed to keep piston shaft clean and lubricate throat seal.

This special design requires very little maintenance.

Each month:

1. Wipe any residue from the mouth of the lubrication cup.
2. Add 1 teaspoon of a suitable lubricating solution.

Hoses

Each MX system is supplied with a 35 ft. high Heated Hose assembly.

A temperature sensing thermocouple is run 13 ft. into the B-side of the Hose assembly. This is where actual (process) material temperature is measured and reflected at the Hose Controller.

If additional hose lengths are required:

- 21404-35 Lead Hose
- 21403-35 Extension Hose

The P/N 21404-35 Lead Hose is supplied with the MX system. If additional hose assemblies are required, order P/N 21403-35 Extension Hose.

The P/N 21404-35 Lead Hose must be attached to the Gun. Extension Hoses (P/N 21403-35) are added to the Lead Hose and then attached to the machine.

NOTE

*The MX system, with 35' hose assembly, has a 1 amp hose fuse in the lower control box. If extra length hoses are required, the hose fuses **must** also be changed as follows…*

Hose Length	*Current Rating*
35'	***1.55 amp***
70'	***3.10 amp***
105'	***4.64 amp***
140'	***6.19 amp***
175'	***7.74 amp***
210'	***9.29 amp***

Stroke Counter

OPTIONAL: contact Glas-Craft Technical Service Department.

- **Per stroke the total volume output will be: .021 x strokes = U.S. gallons. (with 1:1 pumps)**

F. System Shut-Down

1. Turn Main Circuit Breaker to *OFF* position.

2. Perform Gun maintenance as follows:
   a. Check for leaking Seals, P/N 16811-00:
      - ❑ Turn OFF Gun incoming air by closing Gun Air Switch.
      - ❑ Wait approximately 10-20 seconds, then turn ON incoming air by opening Gun Air Switch.
      - ❑ Repeat two or three times.
      - ❑ If any material has been purged from the Gun, the Seals, P/N 16811-00 are leaking.
      - ❑ Correct leaks by replacing seals and re-checking.

   b. Check for leaking Material Valve, P/N PG-15:
      - ❑ Turn OFF both Material Valves.
      - ❑ Trigger Gun several times.
      - ❑ Turn OFF Gun incoming air by closing Gun Air Switch.
      - ❑ Trigger Gun several times.
      - ❑ If additional material is purged, the Material Valves are leaking.
      - ❑ Correct leaks by taking off Black Knobs and turning packing 1/8 to 1/4 turns at a time until leak has stopped. Re-check.

   c. Check Side Blocks:
      - ❑ Turn OFF the Air Switch on Gun.

WARNING

Before removing Side Blocks make certain that both Gun Material Valves are in the fully OFF positions!
Refer to Figures 4 and 5.
If Material Valves are on when Side Blocks are removed, the Gun will quickly become encased in urethane!

WARNING

Point Gun Side Blocks down, away from all personnel. Existing fluid pressures could cause material to exit the Side Blocks with considerable force.

- ❑ Take off Side Blocks by removing Screws, P/N 9944-48C.
- ❑ Examine the sides of the Mixing Chamber, P/N 17637-XX for scratches and/or material build-up. Carefully, without scratching the seal surfaces (sides), remove any accumulated material. Solvent can be used to wash accumulated material off of Chamber, Side Blocks, etc. Keep Gun Chamber tilted toward the ground so that solvent does not run back into Gun. Certain solvents will attack O-Rings on Chamber Shaft causing swelling and deterioration of O-Rings.
- ❑ Place generous amounts of high quality, white lithium grease in each side of the Gun Front Housing and on the Side Block Seals.
- ❑ Use a No. 50 Drill Bit to clean out the Mixing Chamber exit passage. Use a No. 55 Drill Bit to clean the inlet side holes of the Mixing Chamber taking care not to scratch the Mixing Chamber's polished surfaces.
- ❑ Re-assemble the Side Blocks and tighten Screws securely. Grease should appear at the tip of the Mixing Chamber. DO NOT open Air Switch on Gun because this will purge grease from the Gun. The grease should be allowed to remain in the Gun overnight.

3. Reduce Main Air Regulator setting to ZERO.

4. Visually inspect entire system for leaks.

5. Turn OFF Main Air Supply.

CAUTION

Do not bleed fluid pressure from the system.

OVERHAUL PROCEDURE

19875-00 (-01) Pumps
21835-00 Pumps

1. Dump pressure off system

WARNING
Be sure air and power are off to system.

This is achieved by splitting side blocks of of gun, opening ball valves and purging materials into clean containers.

2. Flush system side to be rebuilt with suitable solvent.

NOTE
This is optional, it makes the process easier.

3. Disconnect inlet fitting from the bottom of the pump.

4. Disconnect outlet fitting from the top of the pump.

   a. Systems with Over Pressure Valve: remove DIN connector from switch, Phillips screw.

   b. Remove Over Pressure Switch from fitting.

CAUTION
Do not immerse Over Pressure Valve in solvents externally. (Flushing will not affect).

5. Remove pump from base.

   1. Loosen and remove P/N 7729-10 Nylon Lock Nut from yoke.

(Older MX Systems), loosen allen screw screw in yoke, remove Hitch Pin, pull out Clevis Pin.

   b. Loosen and remove four bolts, P/N 9945-48C.

Breaking Down Pump

1. Loosen four nuts, P/N 7733-17 at the base of pump and remove, break loose, in a criss-cross pattern.

2. Remove Base, P/N P33-11 from Tie Rods, P/N 18289-00.

NOTE
On P/N 21835-00 pumps, watch out for APS-119, APS-128, & 19633-00. The 19633-00 will push these parts out. Observe which side of the APS-119 comes out, Keep right side up for diagnostics.

3. Remove Valve Housing from the cylinder.
   P/N UF-118 on 19875-00 pump.
   P/N, 19634-00 on 21835-00 pump.

4. Using a rubber mallet, tap shaft out through the bottom of the cylinder, P/N 18219-00.

5. Remove cylinder, P/N 18219-00 from Pump Head, P/N 18227-00.

6. Remove Cup Adapter, P/N 21440-00 from Pump Head, P/N 18227-00.

Disassemble Sub-Assemblies

1. Cup Adapter, P/N 21440-00.

   a. Remove Support Washer, P/N 18295-01.

   b. Remove Seal, P/N 21595-00.

   c. Remove Snap Ring, P/N 1005-02, Nylon Washer, P/N 21896-01, & Felt Wipers, P/N 21897-01.

2. Shaft Assembly:

   a) Remove P/N 21598-00, Transfer Seat from P/N 21597-00, Transfer Housing. Watch for P/N APS-133, Ball and P/N 21803-00, Spring. The Ball is loaded with spring tension.

   b. Remove FS-110, Piston Guide and P/N 21595-00 Pump Seal.

Cleaning

1. Thoroughly wash all parts in suitable solvent.
2. If parts have any build-up of hardened material, it is acceptable to polish parts with fine sand paper,(1200 grit) or steel wool(000).
3. It is recommended that the cylinder be honed with a fine grit bead honer,(P/N RK5-2).

Inspection

1. The Pump Cylinder, P/N 18219-00 inner wall should be smooth. No pitting or scarring should be seen. If slight scars show in the wall, they must not be able to be felt with a finger nail.
2. The Pump Shaft, P/N 21599-00 must not have any scoring, pitting, or build up of any debris on the shaft.
3. Set the Ball, P/N APS-133 in the Seat, P/N 21598-00 and hold up to a light. Observe for light between seat surface and the ball.

NOTE
If a large sliver of light shows, check for debris or scarring on Seat or Ball.

4. P/N APS-128 & P/N APS-119 repeat the above step.

NOTE
The APS-119 is reversible, you can use either side.

Re- Assemble

NOTE
All parts underlined are contained in repair kit.

2. Soak P/N 21897-01 in a light weight, non detergent oil, then install in P/N 21440-00.
3. Install P/N 21896-01, push down and install Snap Ring P/N 1005-02 in groove.
4. On bottom side of P/N 21440-00 install P/N 21595-00 in housings so that the lip faces out.
5. Lubricate and install O-Ring, P/N 13867-43 on bottom groove.
6. Install P/N 18295-01 with lip facing toward P/N 21595-00 seal.
7. Place P/N 21595-00 Seal and P/N FS-110 guide on P/N 21597-00. The lips of the Seal will face away from P/N FS-110.
8. Set P/N 21803-00 Spring in P/N 21597-00 Housing and set APS-133 Ball on Spring.
9. Apply blue lock-tite to the threads of P/N 21598-00 and install on P/N 21597-00. Tighten these two parts!
10. Lubricate and install two P/N 13867-49 O- Rings on P/N 18219-00 cylinder.
11. Using a light weight non-detergent oil, coat the seal on the shaft assembly and the walls of the cylinder, then install the shaft assembly into the cylinder, leave approximately 4" of the shaft exposed on the top side.
12. Install cylinder/shaft assembly into P/N 18227-00 Pump Head, careful not to cut O-Ring for Pump P/N 21835-00.
13. With the Pump Assembly upside down, (easy if clamped in a vise) install Foot Valve Housing P/N 19634-00.
14. Set P/N 19633-00 Spring in place and set P/N APS-128 Ball on Spring.
15. Lubricate and install P/N 13867-44 O-Ring in groove of P/N 19634-00.
16. Lubricate the outer edge of P/N APS-119 and set top of ball, square and center flats of P/N APS-119 and P/N 19634-00.
17. Gently set P/N P33-11 through P/N 18289-00 Tie Rods and push down square and firm until it sets down over cylinder O-Ring.
18. Continue holding P33-11 down, install (4) P/N 7734-12 Lock Washers and hand thread (4) P/N 7733-17 Nuts.
19. Tighten P/N 7733-17 in a criss- cross pattern until tight.

For 19875-00 Pumps:

1. Set UF-118 in cylinder.
2. Set P/N APS-128 in body.
3. Lubricate P/N 13867-44 and install in groove of UF-118.
4. Install P/N APS-119.
5. Gently set P/N P33-11 through P/N 18289-00 Tie Rods and push down square and firm until it sets down over cylinder O-Ring.
6. Continue holding P33-11 down, install 4 P/N 7734-12 Lock Washers and hand thread 4 P/N 7733-17 Nuts.
7. Tighten P/N 7733-17 in a criss- cross pattern until tight.
8. Lubricate P/N 21595-00 Seal (inside of P/N 21440-00 housing.
9. Gently push down over Pump Shaft P/N 21599-00 and set flush to P/N 18227-00 Pump Head.
10. Re-install pump in reverse order of removal.

LIMITED WARRANTY POLICY

GLAS-CRAFT, INC. ("Glas-Craft") warrants to the original Purchaser of Glas-Craft manufactured equipment and parts, that all Glas-Craft manufactured equipment and parts will conform to their published written specifications and be free of defects in workmanship and material for a period of one (1) year from the original date of installation. Glas-Craft makes no warranty to anyone other than the original Purchaser.

If any Glas-Craft manufactured part or equipment is found to be defective in workmanship or material within the one-year period from the date of installation, as determined solely by Glas-Craft, Glas-Craft, in its sole discretion, will either repair or replace the defective part or equipment at Glas-Craft's cost, including freight charges both ways, or credit or refund the purchase price for the defective equipment or part.

A warranty claim will be honored only when:

1. Glas-Craft has been informed, in writing, of any such defect in workmanship or material within ten (10) days after discovery by the original Purchaser;

2. An official of Glas-Craft has issued a return authorization number; and

3. The claimed defective equipment or part has been returned to Glas-Craft by the original Purchaser, freight prepaid (with proper return authorization number(s) attached), to: Glas-Craft, Inc., 5845 West 82nd Street, Suite 102, Indianapolis, IN 46278, U.S.A.

This warranty shall not apply to any equipment or parts that have been altered or repaired by anyone other than Glas-Craft or to defects or damage resulting from improper installation, misuse, negligence, accident, or use not specified by Glas-Craft. This warranty shall not apply to any equipment where any parts or components were replaced by any parts or components not manufactured or supplied by Glas-Craft. The decision by Glas-Craft shall be conclusive and binding on Purchaser.

Glas-Craft does not warrant that any equipment or parts sold to Purchaser meet or comply with any local, state, federal, or other jurisdiction's regulations or codes. Glas-Craft does not warrant that any equipment or part sold to Purchaser, when used individually or in concert with any other part, equipment, device, component or process, does not infringe on any patent rights of any third party. Glas-Craft only warrants that it has no specific knowledge of any such infringement.

Glas-Craft makes no warranty as to any parts or equipment manufactured by others. Purchaser shall look solely and only to the manufacturer of such parts or equipment with respect to any warranty claims. Glas-Craft hereby assigns to Purchaser the original manufacturer's warranties to all such equipment and parts, to the full extent permitted.

THE AFORESAID WARRANTY IS IN LIEU OF ALL OTHER WARRANTIES, EXPRESS OR IMPLIED. SPECIFICALLY THERE ARE NO WARRANTIES OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE, WHICH WARRANTIES ARE SPECIFICALLY DISCLAIMED.

Glas-Craft shall not be liable for any loss or expense resulting from damage or accidents caused by improper use or application of materials manufactured or sold by Glas-Craft or its distributors or agents.

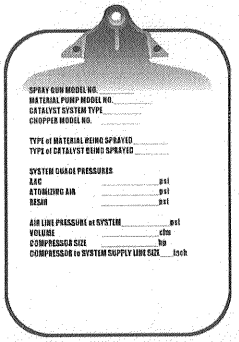
UNDER NO CIRCUMSTANCES SHALL GLAS-CRAFT'S LIABILITY EXCEED THE AMOUNT PURCHASER PAID FOR THE CLAIMED DEFECTIVE EQUIPMENT OR PART. UNDER NO CIRCUMSTANCES SHALL GLAS-CRAFT BE LIABLE FOR INCIDENTAL OR CONSEQUENTIAL DAMAGES OR FOR LOST PROFITS.

No action arising from or relating to any goods manufactured by or purchased from Glas-Craft may be brought more than one (1) year after the cause of action accrues.

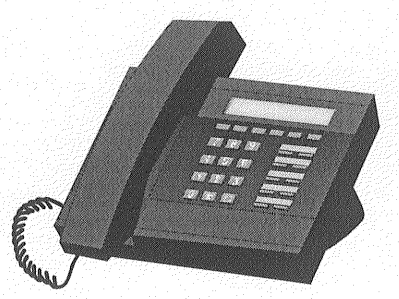
NOTES

NOTES

IF YOU HAVE AN EQUIPMENT PROBLEM...



If you have a problem that requires Distributor or Glas-Craft Service Department help, gather the following information *BEFORE* you pick-up the telephone.



	Model No.	Serial No.
SPRAY GUN		
SYSTEM		
TYPE of MATERIAL BEING SPRAYED		
SYSTEM GUAGE PRESSURES		
ISO HEATER GUAGE		PSI
POLY HEATER GUAGE		PSI
MATERIAL PUMP AIR MOTOR		PSI
MAIN AIR LINE PRESSURE at SYSTEM		PSI
MAIN AIR LINE VOLUME		CFM
COMPRESSOR SIZE		HP
COMPRESSOR to SYSTEM SUPPLY LINE SIZE		INCHES

Have a general equipment or operation question? You can contact the Glas-Craft Service Department via E-Mail at gciservice@glascraft.com

OPERATOR'S MANUAL

INCLUDING: OPERATION, INSTALLATION & MAINTENANCE

6564X–X
6566X–X
66620

6" AIR MOTORS

6564X–X and 66620
4" STROKE

6566X–X
6" STROKE

RELEASED: 8–28–91
REVISED: 8–30–96
(REV. J)

READ THIS MANUAL CAREFULLY BEFORE INSTALLING, OPERATING OR SERVICING THIS EQUIPMENT.

THIS MANUAL COVERS THE FOLLOWING MODELS

MODEL			
65643	65662	65665-2B	66620
65645	65665-B	65666	

SERVICE KITS

61355 for general repair of all 6" air motors.

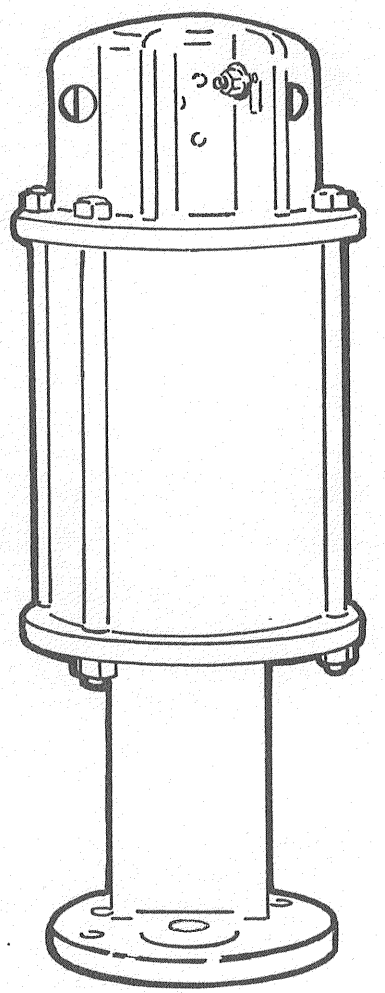
GENERAL DESCRIPTION

The 6" air motor is a general purpose power unit and is used with many 2-ball, 4-ball and chop check pumps. It utilizes tie rod type construction for easy breakdown and it connects to the various lower ends via tie rods for easy operation. Consult pump model operator's manual for specific instructions. It is recommended that a muffler be connected to the exhaust port to reduce noise to acceptable OSHA standards.

Filtered and oiled air will allow the air motor to operate more efficiently and yield a longer life to operating parts and mechanisms. A filter capable of filtering particles larger than 50 microns should be used with an oiler. Keep the oiler supplied with a good grade of S.A.E. no. 90W non-detergent gear oil, set at a rate not to exceed 1 or 2 drops per minute.

NOTICE

DO NOT OPERATE AIR MOTOR ABOVE RECOMMENDED AIR PRESSURE OF 150 P.S.I. (10.3 BAR) OR 75 CYCLES PER MINUTE. Air motor may be rated differently in the next assembly. Check model plate.



AIR MOTOR PARTS LIST

✓ PARTS SO MARKED ARE INCLUDED IN 61355 SERVICE KIT.

REF.	DESCRIPTION (SIZE IN INCHES)	QTY	PART NO.
□ 1	Machine Screw (8-32 x 7/8")	4	Y61-90-C
□ 2	Deflector	1	90409
	Deflector (model 65665-2B)	1	90409-1
□ 3	Screw (10-24 x 1/2")	6	95956827
✓ □ 4	Machine Screw (8-32 x 3/4")	8	Y19-89-S
✓ 5	Washer	8	90084
□ 6	Machine Screw (1/4-28 x 3/4")	2	Y119-49-C
7	Lock Washer	2	Y14-416
□ 8	Air Motor Cap	1	90078
	Air Motor Cap (model 65665-2B)	1	90078-5
□ 9	Valve Guide	1	90488
✓ 10	Gasket	1	90083-1
□ 11	Valve Plate and Pin Assembly	1	65756
□ 12	Insert Spring Assembly	1	65807
✓ 13	Valve Insert	1	99202
✓ 14	Valve Plate Gasket	1	90479
✓ 15	"O" Ring (1-3/8" o.d.)	2	Y325-26
✓ 16	Washer	1	91344
✓ 17	"O" Ring (7/8" o.d.)	2	Y325-18
18	Head Assembly	1	65890
	Head Assembly (model 65665-2B)	1	65890-3
✓ 19	"U" Cup (1-3/8" o.d.)	1	Y186-51
✓ 20	"O" Ring (6" o.d.)	2	Y325-256
✓ 21	Machine Screw (8-32 x 3/8")	4	Y61-85-C
22	Adapter	1	90111
□ 23	Piston Assembly	1	61419
□ 24	"O" Ring (1.191" o.d.)	1	90085
25	Nut	1	90112

REF.	DESCRIPTION (SIZE IN INCHES)	QTY	PART NO.
□ 26	Valve Rod		See chart, page 4
□ 27	Air Cylinder		See chart, page 4
28	Tube		See chart, page 4
✓ 29	"O" Ring		See chart, page 4
30	Air Motor Base Assembly		See chart, page 4
✓ 31	Valve Piston	1	92395
✓ 32	Valve Plate Gasket	1	90482
□ 33	Valve Plate	1	90480
✓ 34	Pilot Insert	1	90487
□ 35	Valve Guide	2	90481
✓ 36	Washer	1	90105
□ 37	Upper Gland	1	91006
✓ 38	Seal	1	91007
✓ 39	"O" Ring (1.255" o.d.)	1	91207
□ 40	Extension Rod	1	90080
41	Ground Lug	1	93006
✓ 42	Piston Adapter	1	92393
□ 43	Lower Gland	1	90114
✓ 44	Washer	1	91345
✓ 45	"O" Ring (7/16" o.d.)	1	Y325-11
46	Bolt		See chart, page 4
□ 47	Retaining Ring		See chart, page 4
□ 48	Guide Washer		See chart, page 4
✓ 49	"U" Cup		See chart, page 4
50	Nut		See chart, page 4
□ 51	Washer		See chart, page 4
□ 52	Piston Rod		See chart, page 4

□ **"Smart Parts", Keep these items on hand in addition to the service kits for fast repair and reduction of downtime.**

DISASSEMBLY OF AIR MOTOR

NOTE: ALL THREADS ARE RIGHT HAND.

1. Force the (23) piston assembly up by pushing the (52) piston rod toward the top of the air motor.
2. Remove the four (1) machine screws from the (2) deflector.
3. Remove the (2) deflector.
4. Remove the six (3) screws from the (8) air motor cap.
5. Remove the (8) air motor cap and (10) gasket.
6. Loosen the eight (4) machine screws (which hold the (11) valve plate and pin assembly, (9) valve guide, two (35) valve guides and the (33) valve plate) until the (9 and 35) valve guides can be removed by pulling upward (see figure 9).
7. Remove the eight (4) machine screws and eight (5) washers from the 6" air motor by pressing outward with a small allen wrench (see figures 1 and 9).
8. With a screwdriver, unhook the (12) insert spring assembly from the bottom of the (11) valve plate and pin assembly.
9. Remove the (12) insert spring assembly from the pins in the top of the (11) valve plate and pin assembly.
10. Remove the (11) valve plate and pin assembly and (33) valve plate by pulling upward. If they are stuck, tap the top edge lightly with a soft face hammer or screwdriver handle (do not tap with anything metallic).
11. Remove the (13) valve insert and the (34) pilot insert.
12. Remove the (32 and 14) gaskets.
13. Remove the (12) insert spring assembly.
14. Remove the two (6) machine screws and the two (7) lock washers from the (37) upper gland (see figure 9).
15. Pull the (31) valve piston upward until the (37) upper gland has pulled out of its chamber.

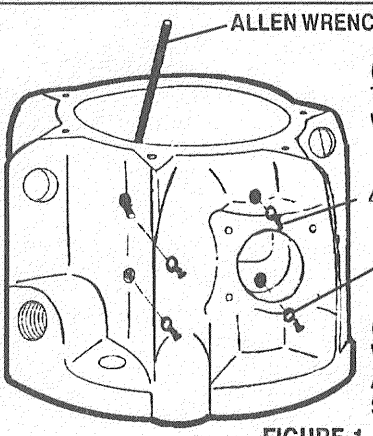
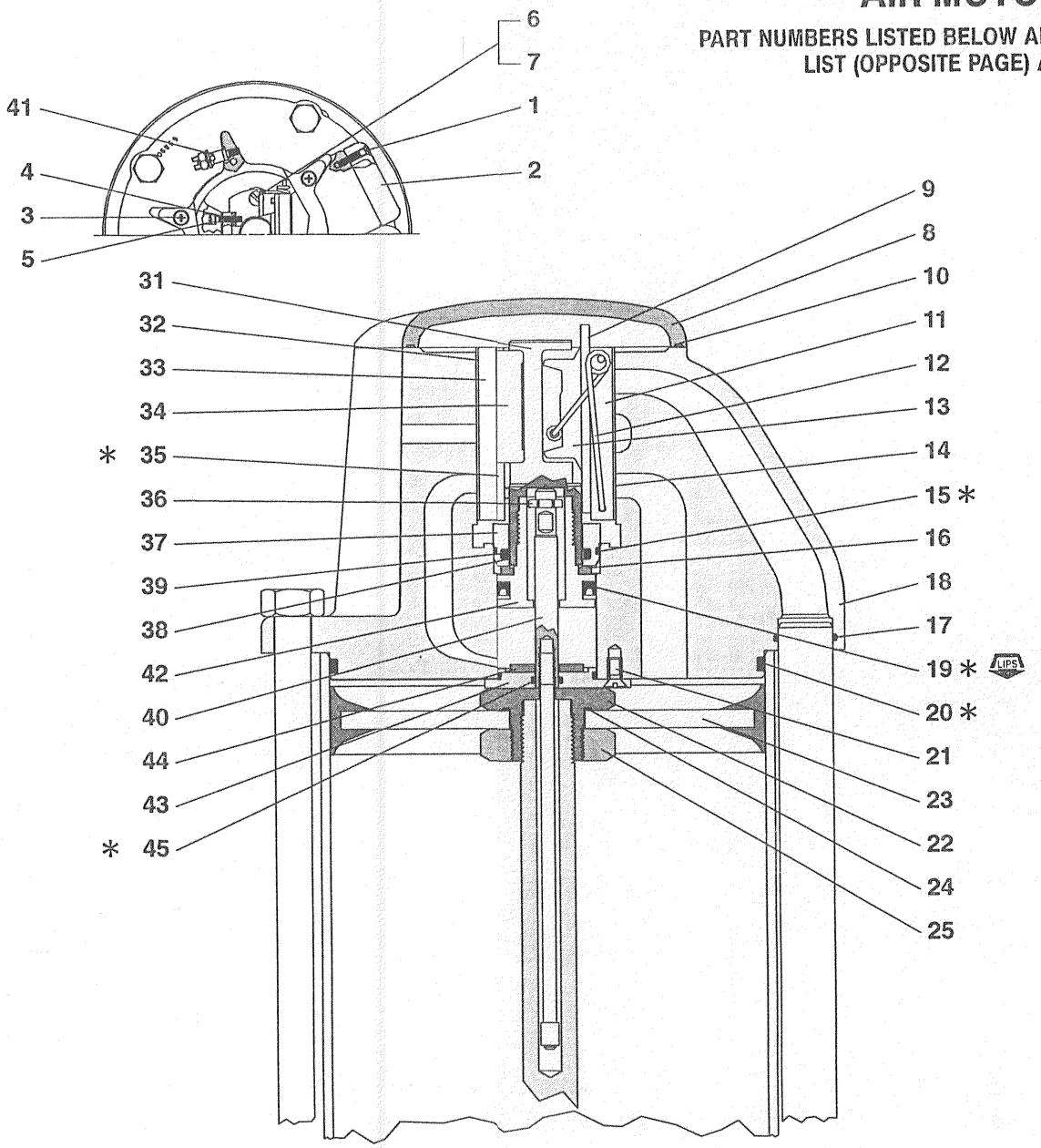


FIGURE 1

AIR MOTOR HEAD

PART NUMBERS LISTED BELOW AND ON PARTS LIST (OPPOSITE PAGE) ARE TYPICAL.



* NOTE: LUBRICATE WITH PARKER "O" RING LUBE (ARO P/N 36460).

FIGURE 2

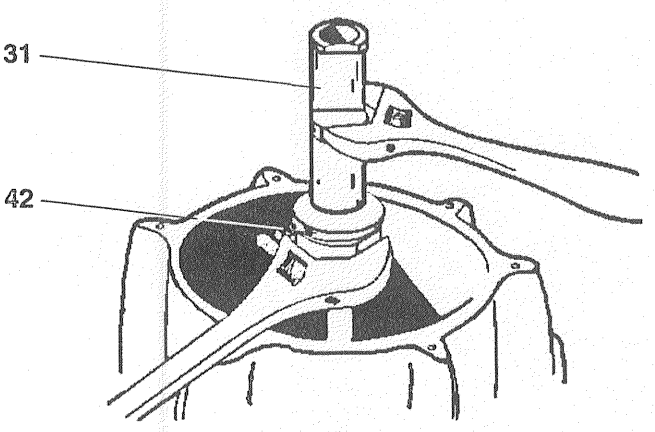


FIGURE 3

AIR MOTOR PARTS LIST

❑ INDICATES WHERE PARTS ARE USED.
• MODELS NO LONGER ACTIVE, SHOWN FOR REFERENCE ONLY.

* AIR MOTOR MODEL NO.

ITEM	DESCRIPTION	PART # (QTY)	65643	65645	65662	65665-B	65665-2B •	65666	66620 •
26 ❑	Valve Rod	90107-1							
	Valve Rod	90107-2							
27 ❑	Air Cylinder	90215-1							
	Air Cylinder	90215-2							
28	Tube	90485-1							
	Tube	90485-2							
29 ✓	"O" Ring	Y325-210							
30	Air Motor Base Assembly	65065							
	Air Motor Base Assembly	65065-2							
	Air Motor Base Assembly	65067							
	Air Motor Base Assembly ★	65868							
46	Bolt (1/2 - 20 x 10-1/4")	94046-1 (4)							
	Bolt (1/2 - 20 x 8-1/4")	94046-2 (4)							
47 ❑	Retaining Ring	Y147-131							
48 ❑	Guide Washer	73986							
49 ✓	"U" Cup	Y186-16							
50	Nut	Y11-8-C (4)							
51 ❑	Washer	90103							
52 ❑	Piston Rod	66628							
	Piston Rod	90082							
	Piston Rod	90108-1							
	Piston Rod	90108-2							

❑ "Smart Parts", Keep these items on hand in addition to the service kits for fast repair and reduction of downtime.

* See model plate on (30) base for number.

❑ INDICATES WHERE PARTS ARE USED.

✓ PARTS SO MARKED ARE ALSO INCLUDED IN 61355 SERVICE KIT.

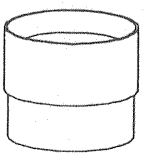
NOTE: Base styles and lower packings may vary from that shown on the cover. Refer to model number in the chart above.

For simplification of ordering and stocking, a Y325-210 "O" ring and a Y186-16 "U" cup will be included in 61355 service kit. When repairing the motor, use only the one that is needed.

All of the service parts are the same for all motors except the lower piston rod packing.

★ On model 65662 air motors, a plate is mounted on the bottom of the (30) base. Therefore, the following parts are different and illustrated on page 8.

93310 Bushing
93311 Retainer
93312 Guide
93313 Plate (note the orientation of the plate with the air inlet)
Y6-66-C Screw (4 req'd)
Y14-616-C Lock Washer (4 req'd)



90350 INSTALLATION TOOL

NOTE: It is highly recommended that a 90350 installation tool be used. This will greatly ease installation of (42) piston adapter and piston valve and will reduce the chances of damage to the (19) "U" cup. A damaged (19) "U" cup can usually lead to air motor failure.

* NOTE: LUBRICATE WITH PARKER "O" RING LUBE (ARO P/N 36460).

AIR MOTOR PISTON ROD AND BASE

SEE CHART ON OPPOSITE PAGE FOR EACH MODEL.

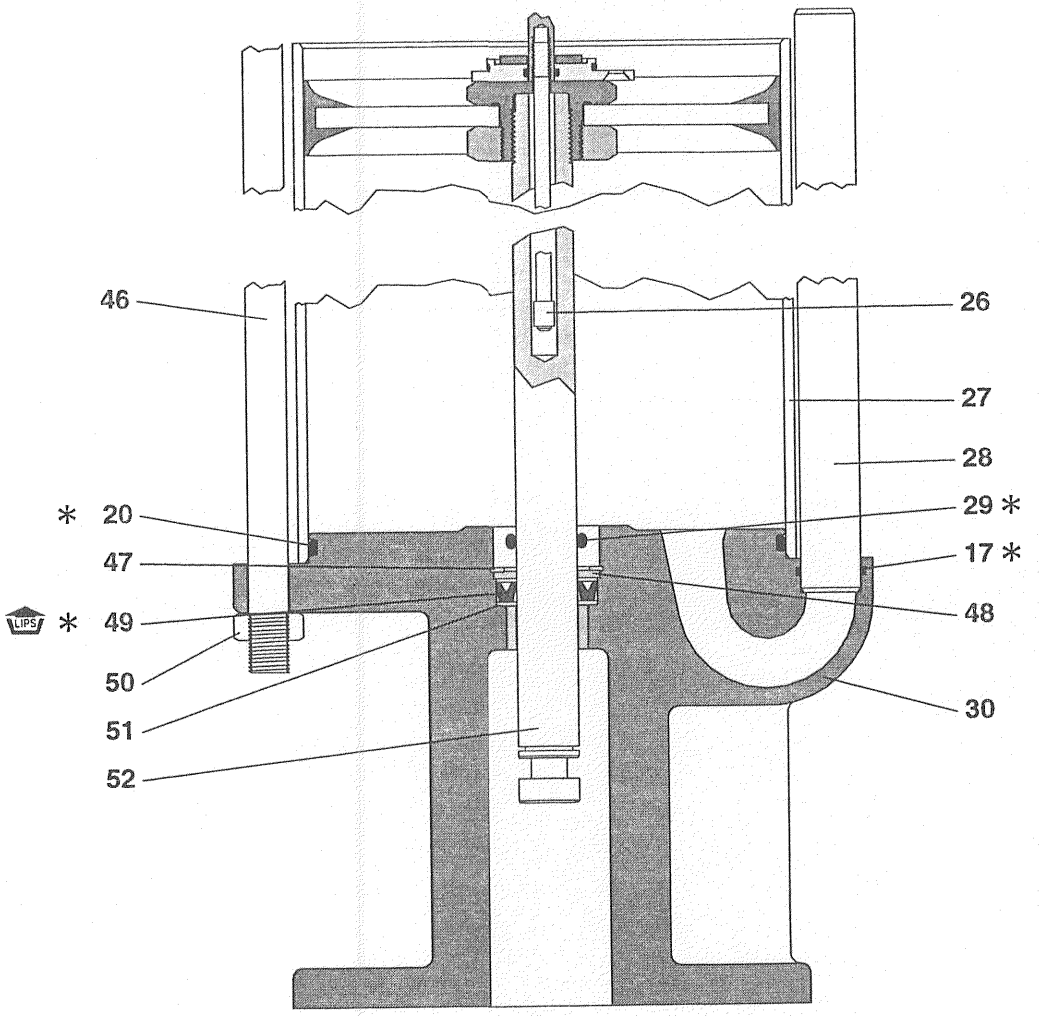


FIGURE 4

DISASSEMBLY OF AIR MOTOR (CONTINUED)

16. Remove the (37) upper gland.
17. Remove the (38) seal and (39 and 15) "O" rings from the (37) upper gland (see figure 7).
18. Disassemble the (31) valve piston from the (42) piston adapter (see figure 3).
19. Remove the (31) valve piston.
20. Pull the (42) piston adapter upward and grasp the (40) extension rod below the (42) piston adapter. Push the (42) piston adapter down on the (40) extension rod. Remove the (36) washer and (42) piston adapter.
21. Remove the (16) washer and the (19) "U" cup from the (42) piston adapter.
22. Remove the four (50) nuts from the four (46) bolts.
23. Remove the four (46) bolts.
24. Remove the (18) head assembly and place it on the workbench with the end that the (28) tube fits in "upward".
25. Remove the (20) "O" ring from the (18) head assembly.
26. Remove the four (21) machine screws from the (43) lower gland.
27. Remove the (43) lower gland.
28. Remove the (44) washer and (15 and 45) "O" rings from the (43) lower gland.
29. Remove the (28) tube.
30. Remove the (17) "O" ring from the (30) air motor base assembly and (18) head assembly.
31. Pull upward on the (27) air cylinder until the (52) piston rod is separated from the (30) air motor base assembly. If the (52) piston rod does not separate from the (30) air motor base assembly, remove the (52) piston rod after removal of the (27) air cylinder.
32. Remove the (20) "O" ring from the (30) air motor base assembly.
33. Remove the (47) retaining ring, (48) guide washer, (49) "U" cup and (51) washer from the (30) air motor base assembly.
34. Unscrew the (40) extension rod from the (26) valve rod by holding the (26) valve rod with adjustable type pliers and placing a wrench on the provided wrench flat at the top of (40) extension rod.
35. Unscrew the (52) piston rod from (22) adapter, using wrench flats on (52) piston rod. Remove (26) valve rod from (52) piston rod.

NOTE: Caution should be exercised so as not to mar or damage the finish on (40) extension rod or (52) piston rod.

36. Remove (25) nut, (23) piston assembly and (24) "O" ring from (22) adapter.

REASSEMBLY OF AIR MOTOR

NOTE: ALL THREADS ARE RIGHT HAND.
Apply grease to all "O" rings, "U" cups and other rubber goods when installing.

1. Slip the (24) "O" ring on the (22) adapter, clean with solvent and apply Loctite 271 to the external threads of the (22) adapter. Assemble the (22) adapter and (25) nut to the (23) piston assembly and tighten to 160 - 180 ft lbs.
2. Put the threaded end of the (26) valve rod thru the hole in the (22) adapter, with the "machined shoulder" end of the (26) valve rod on the threaded side of the (22) adapter.
3. While holding the (26) valve rod below the threads with locking pliers, clean with solvent and apply Loctite 271 to the threads and attach the (40) extension rod, using the provided wrench flats.
4. Place the "machined shoulder" end of the (26) valve rod into the hole in the end of the (52) piston rod and assemble (52) piston rod to (22) adapter, tightening using a wrench on flats provided.
5. Thoroughly grease and install the (20) "O" ring in the (30) air motor base assembly.
6. Grease and place the (51) washer and (49) "U" cup into the (30) air motor base assembly. Place the (48) guide washer and (47) retaining ring in the (30) air motor base assembly.
7. Grease and install (15) "O" ring on the (43) lower gland.
8. Grease the bore in the (18) head assembly and insert the (43) lower gland into the bore of the (18) head assembly, using a twisting motion.
9. Align the screw holes in the (43) lower gland and (18) head assembly.
10. Secure the (43) lower gland to the (18) head assembly using four (21) machine screws.
11. Put the (52) piston rod thru the (49) "U" cup in the (30) air motor base assembly, being careful not to damage the "U" cup.
12. Thoroughly grease the inside of the (27) air cylinder.

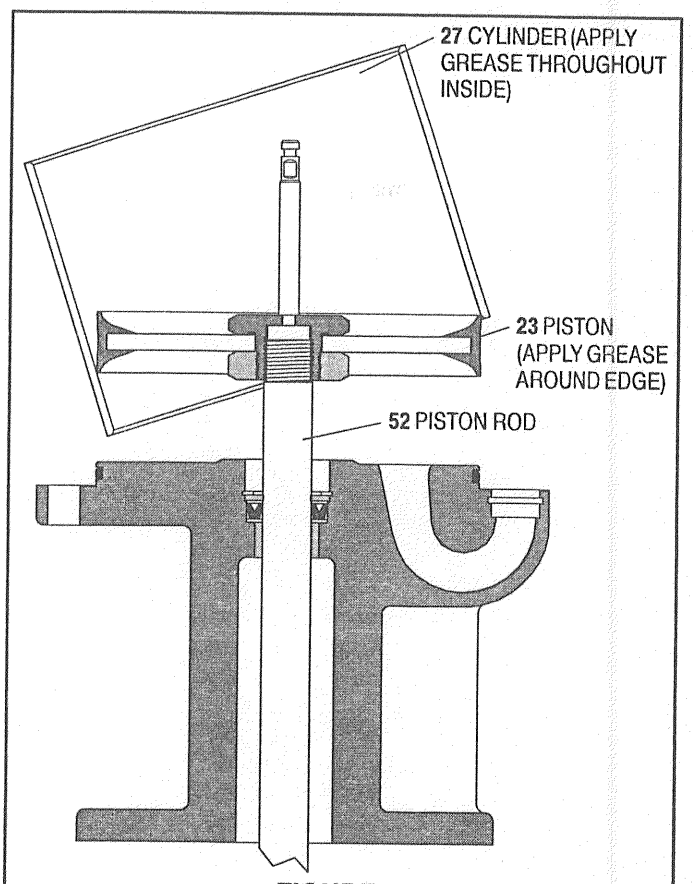
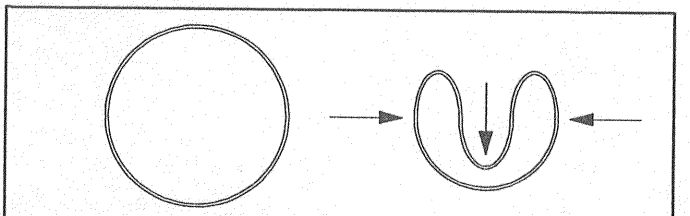


FIGURE 5

13. Fill the area between the lips of (23) piston assembly with grease, then insert into the bottom of the (27) air cylinder (see figure 3).
14. Push the (23) piston assembly to the top of the (27) air cylinder.
15. Thoroughly grease and install the (45 and 20) "O" rings into the (18) head assembly.
16. Thoroughly grease the two (17) "O" rings and install one in the (30) air motor base assembly. Install the other in the (18) head assembly.
17. Press the (28) tube into the counterbored hole in the (30) air motor base assembly.
18. Push the (40) extension rod thru the (45) "O" ring in the base of the (18) head assembly.
19. Press the (18) head assembly down until the (27) air cylinder and (28) tube are seated in the (18) head assembly.
20. Insert the four (46) bolts down thru the holes in the flanges of the (18) head assembly and the (30) air motor base assembly.
21. Screw the four (50) nuts on the four (46) bolts. Alternately and evenly tighten the nuts.
22. Thoroughly grease and install the (19) "U" cup in the (42) piston adapter, with the lips of the (19) "U" cup down toward the thick flange on the (42) piston adapter.
23. Thoroughly grease and install the (39 and 15) "O" rings in the (37) upper gland.
24. Bend the (38) seal in a heart shape and install in the (37) upper gland inside the (39) "O" ring (see figure 6).



PUSH SIDES IN, AS SHOWN, THEN SLIDE INTO BORE AND POSITION SEAL IN GROOVE.

FIGURE 6

25. Grease and carefully push the (31) valve piston into the (37) upper gland to size the (38) seal, then remove (see figure 7 below).

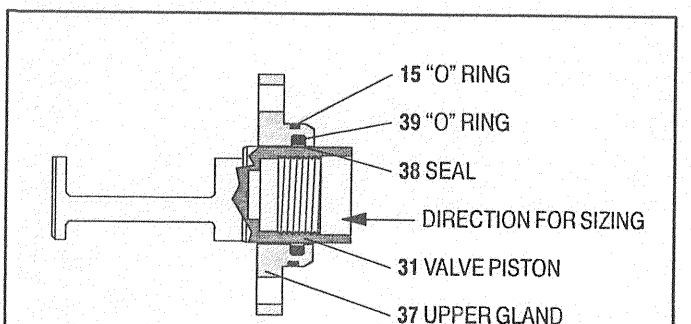


FIGURE 7

26. Place the (44) washer over the (40) extension rod.
27. Pull the (40) extension rod up and grasp with two fingers (see figure 8).
28. Place the 90350 installation tool over the (40) extension rod, with the turned diameter down and the chamfer up.
29. Fit the turned diameter of the 90350 installation tool into the bore in the bottom of the (18) head assembly.
30. Place the (42) piston adapter down over the (40) extension rod, with the threads up.
31. Insert the (36) washer into the groove in the top of the (40) extension rod.

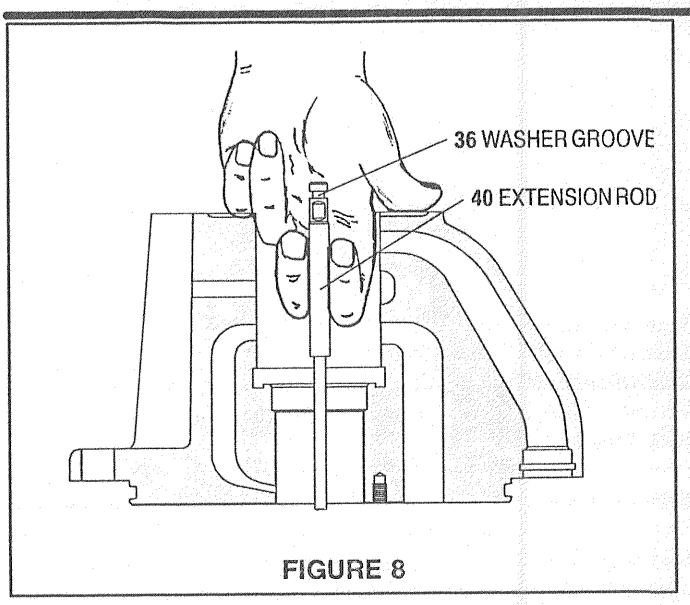


FIGURE 8

32. Pull the (42) piston adapter up around the (36) washer.
33. Place the (16) washer over the (40) extension rod and into the (42) piston adapter.
34. Clean with solvent and put Loctite 271 on the threads of the (31) valve piston. Screw the (31) valve piston into the (42) piston adapter and tighten (see figure 3).
35. Push the assembled (42) piston adapter and (31) valve piston down thru the 90350 installation tool until they bottom.
36. Remove the 90350 installation tool.
37. Install the (37) upper gland over the (31) valve piston and push down, being careful to retain the (38) seal in the "O" ring groove.
38. Align the two bolt holes and secure the (37) upper gland to the (18) head assembly with the two (6) machine screws and two (7) lock washers (see figure 9).
39. Insert the (12) insert spring assembly in the (18) head assembly, with the hooks down and the nylon roller toward the (31) valve piston (see figures 2 and 9).
40. Thoroughly grease and insert the (34) pilot insert, two (35) valve guides, (33) valve plate and (32) gasket into the (18) head assembly (see figure 9).
41. Thoroughly grease and insert the (13) valve insert into the (18) head assembly (see figure 2).
42. Thoroughly grease and insert the (14) gasket and the (11) valve plate and pin assembly between the (13) valve insert and the (18) head assembly, with the two pins in the (11) valve plate and pin assembly up (see figures 2 and 9).
43. Hook the round coils in the (12) insert spring assembly over the pins in the (11) valve plate and pin assembly (see figure 9).
44. Hook the bottoms of the (12) insert spring assembly into the holes on the side of the (11) valve plate and pin assembly.
45. Insert the (9) valve guide against the face of the (11) valve plate and pin assembly. The legs of the (9) valve guide should be down, with the leg having the threaded hole the farthest from the bottom toward the air inlet in the (18) head assembly.
46. Insert and tighten across corners of eight (4) machine screws and eight (5) washers (see figures 1 and 9).
47. Thoroughly grease and install the (10) gasket in the (8) air motor cap.
48. Place the (8) air motor cap on the (18) head assembly and secure with the six (3) screws (see figure 2).
49. Place the (2) deflector on exhaust port of the (18) head assembly, with the opening down, and secure with four (1) machine screws (see figure 2).

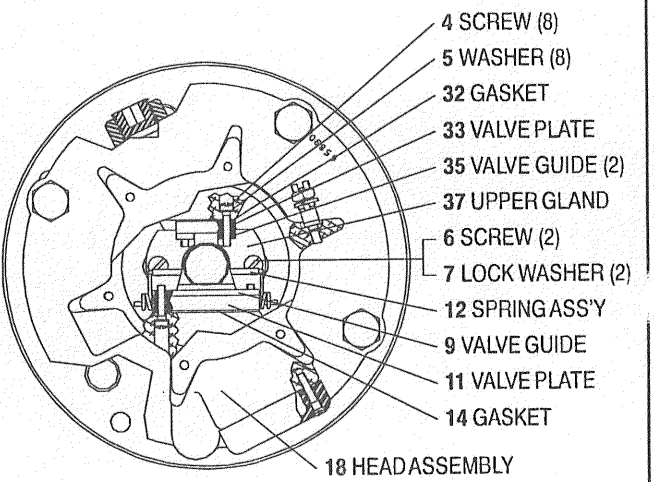


FIGURE 9

TROUBLE SHOOTING

PROBLEM

Air leakage out of main exhaust.

CAUSE

Worn (13) valve insert.

REMEDY

Replace (13) valve insert.

CAUSE

Worn (11) valve plate and pin assembly.

REMEDY

Replace (11) valve plate and pin assembly.

CAUSE

Damaged (23) piston assembly.

REMEDY

Replace (23) piston assembly.

PROBLEM

Continual air leakage out of bleeder hole in (18) head assembly.

CAUSE

Worn (15) "O" ring or (38) seal.

REMEDY

Replace (15) "O" ring and (38) seal.

PROBLEM

Air leakage around (52) piston rod.

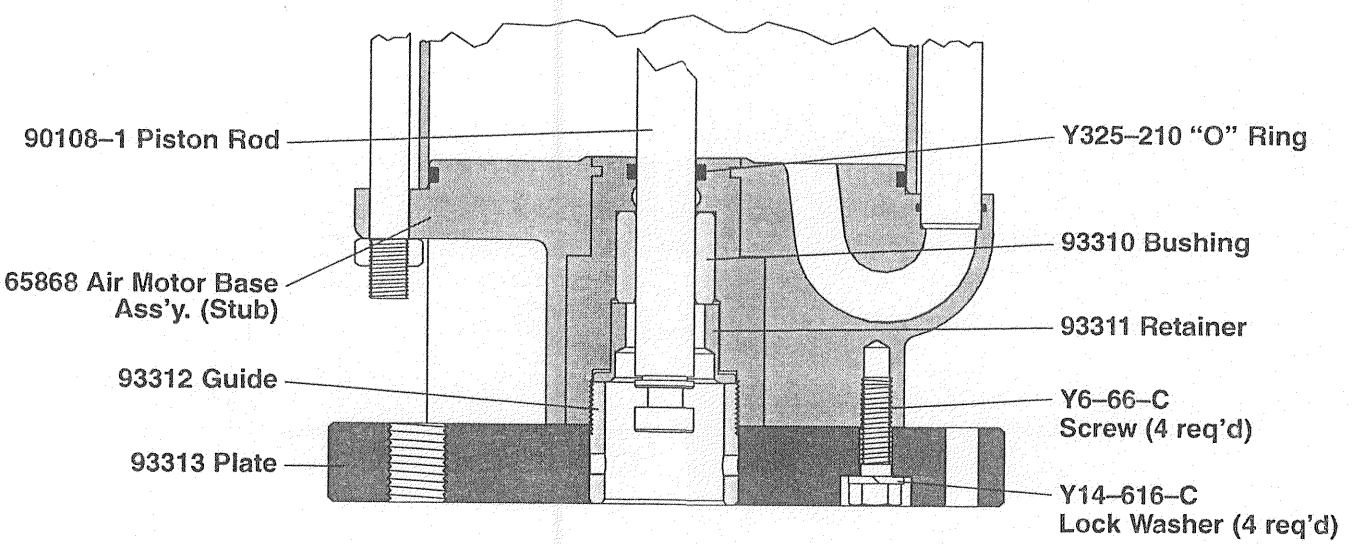
CAUSE

Worn (49) "U" cup.

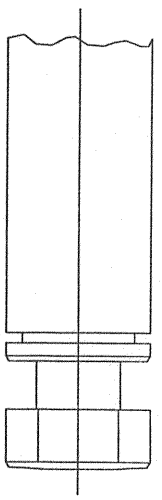
REMEDY

Replace (49) "U" cup.

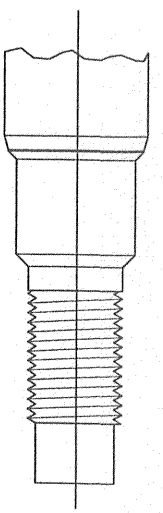
65662 AIR MOTOR PISTON ROD & BASE



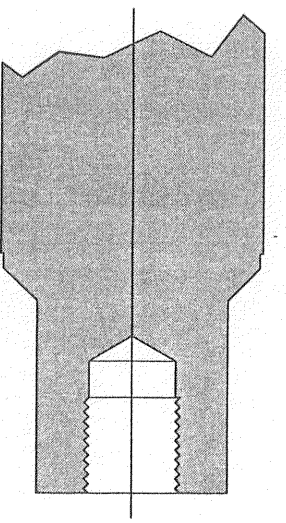
ITEM 52 PISTON ROD END VARIETY



90108–1 Piston Rod
90108–2 Piston Rod



66628 Piston Rod



90082 Piston Rod

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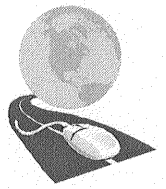

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