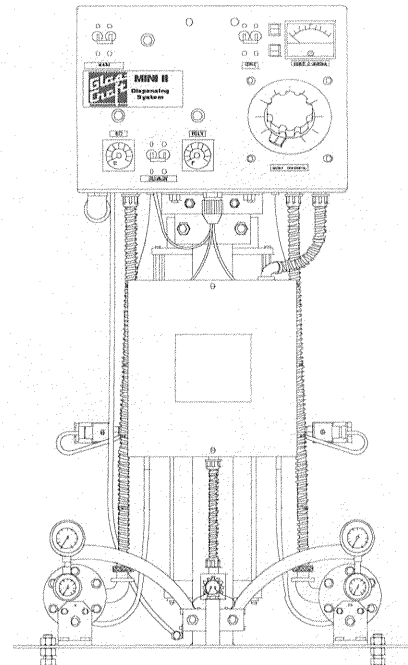
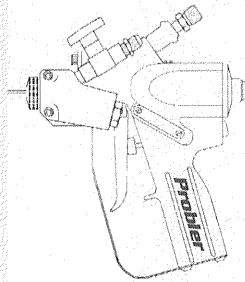




USER

MANUAL

Mini II Dispensing System



Glas-Craft, Inc.

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An ISO 9001
Approved
Company



Specialized Dispensing
Equipment and Technology

CE CERTIFIED

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Glas-Craft[®]

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INTRODUCTION

Glas-Craft

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.



NOTE

CAUTION Is imperative information about equipment protection.



CAUTION

WARNING Is imperative information about personnel safety.



WARNING

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 *Gla-Craft*

Mini II Dispensing System

18 lbs./min., Spray or Pour Dispensing System
Floor Mount with Base Plate

INCLUDES

20075-00	Mini II DISPENSING SYSTEM * 5" AIR MOTOR, SINGLE PHASE, 220 VAC, 50/60 HZ.
17254-02	PROBLER GUN ASSEMBLY * w/ROUND SPRAY MIXING CHAMBER
18006-00	WHIP HOSE ASSEMBLY
19524-00	HEATED HOSE ASSEMBLY, 50 FT.
20055-00	ELECTRICAL CONTROL ASSEMBLY
19852-511	PROPORTIONING UNIT ASSEMBLY
20060-00	HEAT EXCHANGER ASSEMBLY, POLY
20065-00	HEAT EXCHANGER ASSEMBLY, ISO
15845-00	BALL DRIVER
59934-04	DIOCTYL PHTHALATE, 1 QT.
19526-00	HOSE THERMOMETER
17661-03	GUN SERVICE KIT
18409-00	HEAT EXCHANGER O-RING KIT (TWO SUPPLIED)
21845-00	PUMP FLUID SECTION REPAIR KIT (TWO SUPPLIED)
19434-00	UNION FITTING ASSEMBLY
18467-01	FLUID FILTER (TWO SUPPLIED)
19507-03	AIR HOSE ASSEMBLY USER MANUALS

REPAIR PARTS KITS

17254-02	GUN	17661-03
AM-500-00	AIR MOTOR	AM-500-RK
19875-00	FLUID SECTION	21845-00
20060-00	HEAT EXCHANGER	18409-00
20065-00	HEAT EXCHANGER	18409-00

OPTIONAL EQUIPMENT

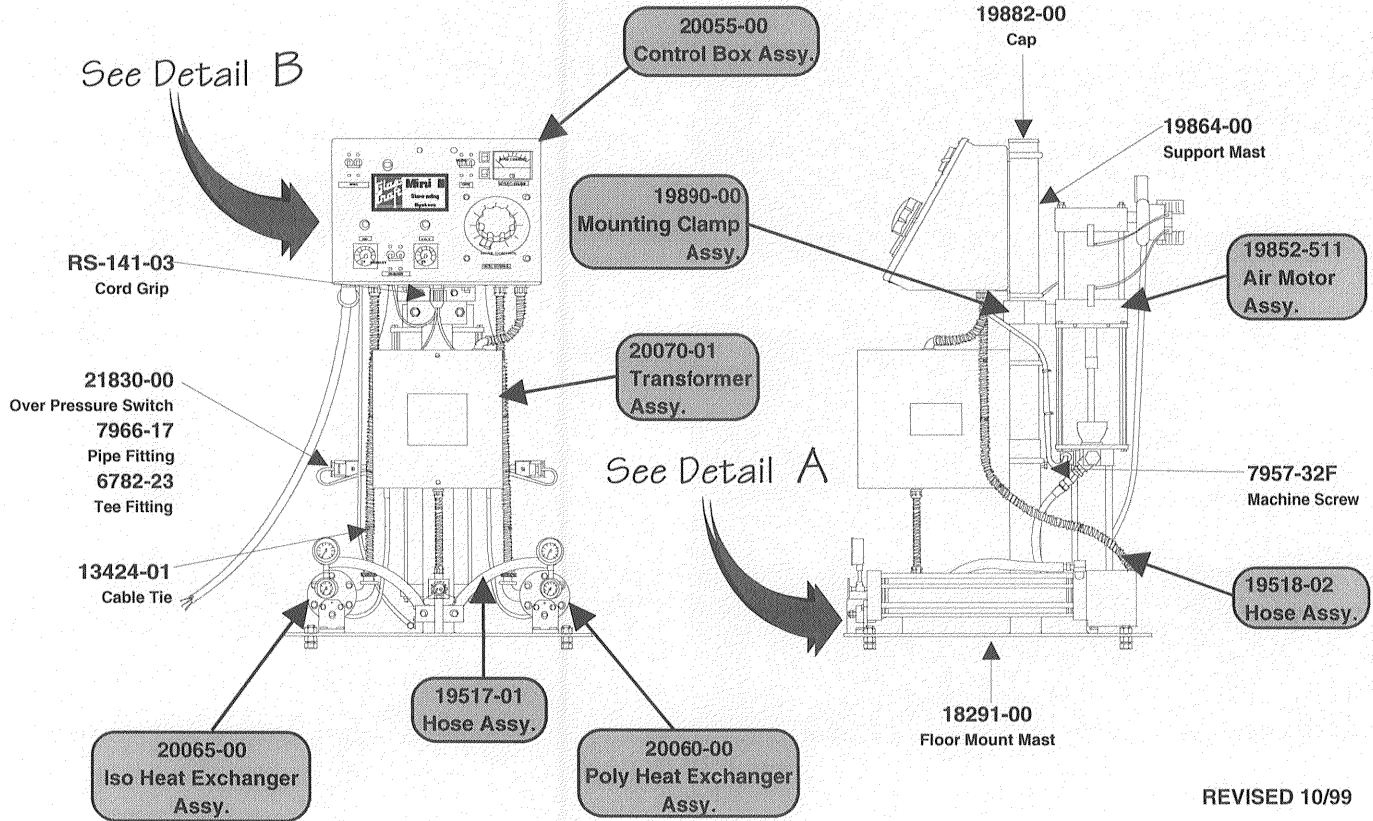
AD-100	DESICCANT AIR DRYER KIT	18374-XX	PROBLER GUN ASSEMBLY
FM-494	PROTECTIVE SLEEVING	18467-01	FLUID FILTER
LPA2-147-XXXX	SPRAY NOZZLE	19524-00	HEATED HOSE ASSEMBLY, 50 FT.
PG-06	EXTERNAL MIXING CHAMBER KIT	19940-PG	DISPENSE TIMER KIT
PG-10-XX	FLAT SPRAY CONVERSION KIT	19950-00	FLUID SECTION ASSY, 3:1 RATIO
PG-21	POUR ADAPTER	19975-00	FLUID SECTION ASSY, 2:1 RATIO
PG-25-01	POUR CONVERSION KIT	19994-00	MIXING CHAMBER MIXER ELEMENT
PG-26	AIR NUCLEATION POUR ADAPTER	19996-00	EXT'L MIXING CHAMBER BODY
16300-00	TRANSFER PUMP ASSY, 2:1	20169-00	FREON PUMP KIT
16801-01	ROUND SPRAY MIXING CHAMBER	9704-11	POUR TUBING (PER FOOT)
17254-XX	PROBLER GUN ASSEMBLY		
17666-01	TRANSFER KIT		
17667-00	NITROGEN KIT		
18219-01	PUMP CYLINDER, HARDENED		

NOTE: -XXXX INDICATES THE USER MANUAL MUST BE CONSULTED FOR CORRECT SIZE.

SYSTEM SPECIFICATIONS

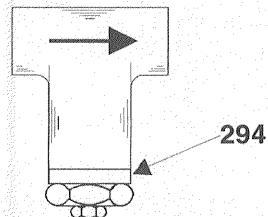
MATERIAL RATIO:	1:1 (FIXED)
MATERIAL VISCOSITY:	200-1000 CENTIPOISE (CPS) AT OPERATING TEMPERATURES
OUTPUT:	18 POUNDS PER MINUTE 8.16 KILOGRAMS PER MINUTE
OPERATING TEMPERATURES:	AMBIENT TO 150° F / 82° C CONTINUALLY VARIABLE
PURGING:	AUTOMATIC PNEUMATIC, SOLVENT-FREE, CONSTANT
ELECTRICAL REQUIREMENTS:	30 AMPS @ 208/240 VAC, 50/60 HZ Single Phase
COMPRESSED AIR REQUIREMENTS:	25 CFM @ 100 PSI 708 LITERS @ 7 BAR
OVERALL DIMENSIONS:	24 IN / 61 CM WIDE 24 IN / 61 CM DEEP 39 IN / 99 CM HIGH
SHIPPING WEIGHT:	340 LBS / 154 KG

20075-00 MINI II UNIT ASSEMBLY



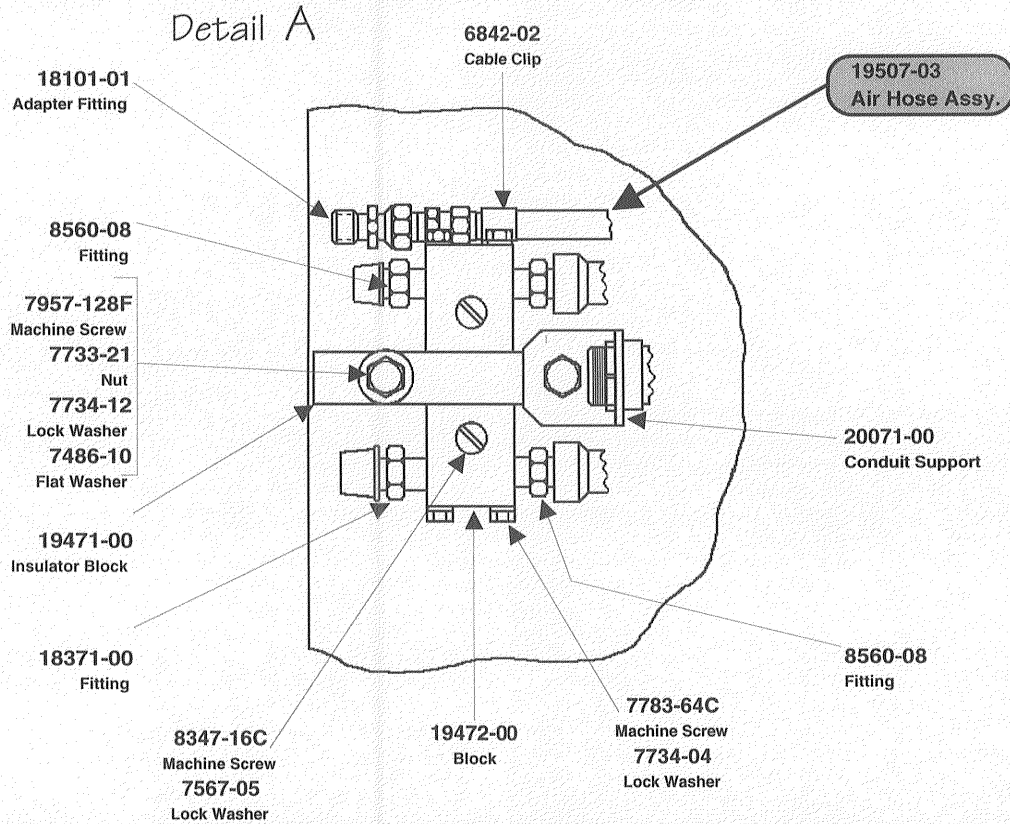
REVISED 10/99

18467-01 FILTER ASSEMBLY

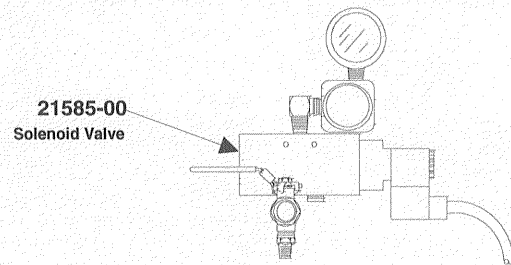
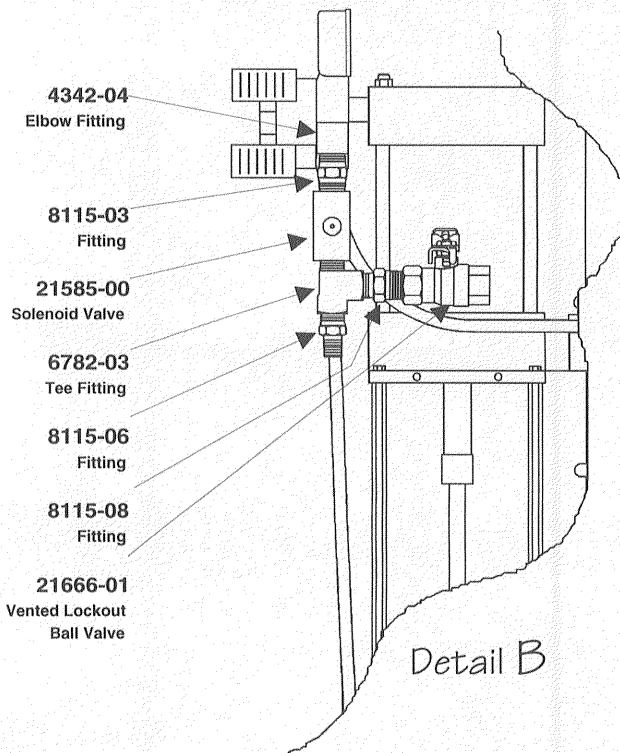


NOTE: P/N 17975-01 FILTER SCREEN (Not Shown)

ISOLATION BLOCK ASSEMBLY

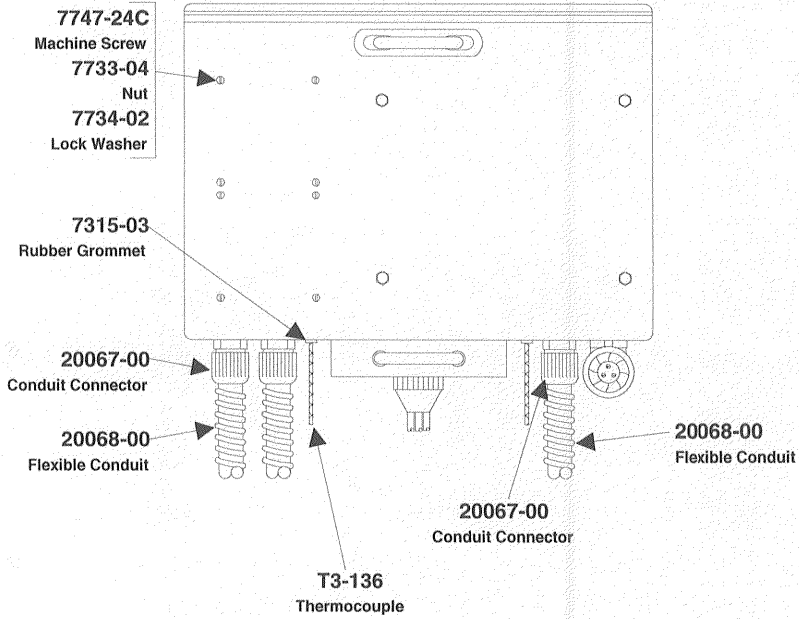


SYSTEM DETAIL

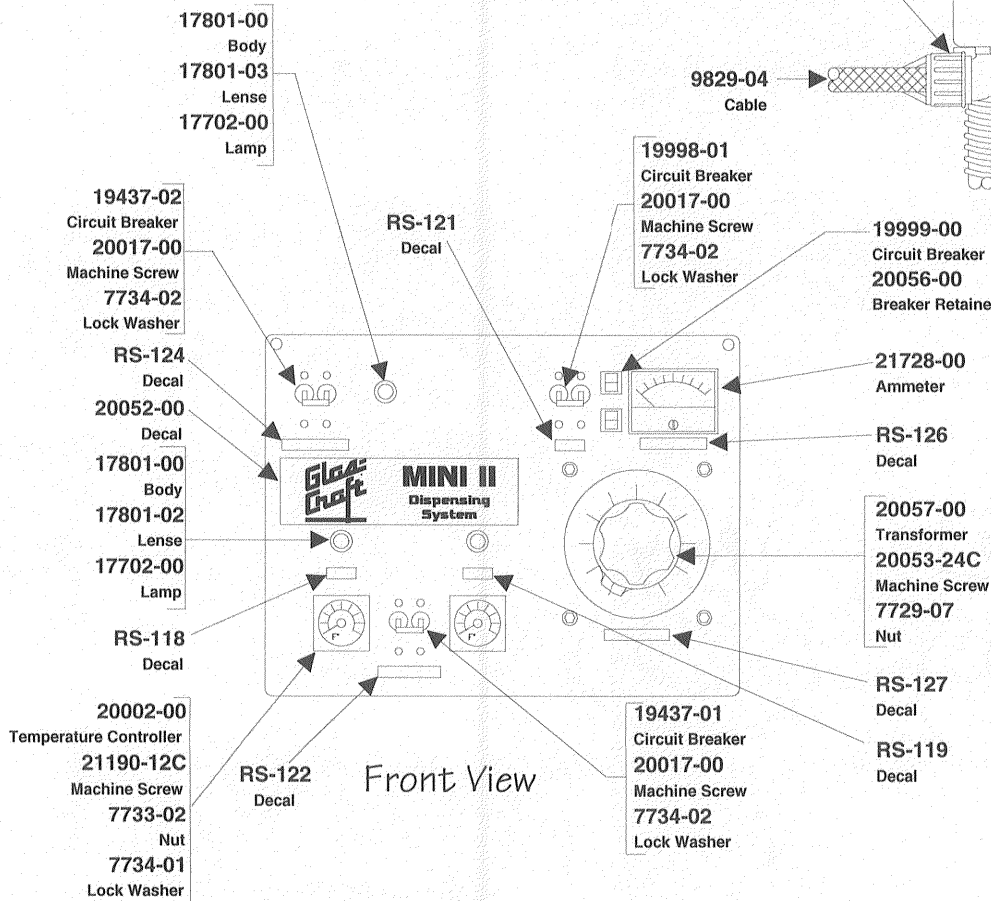
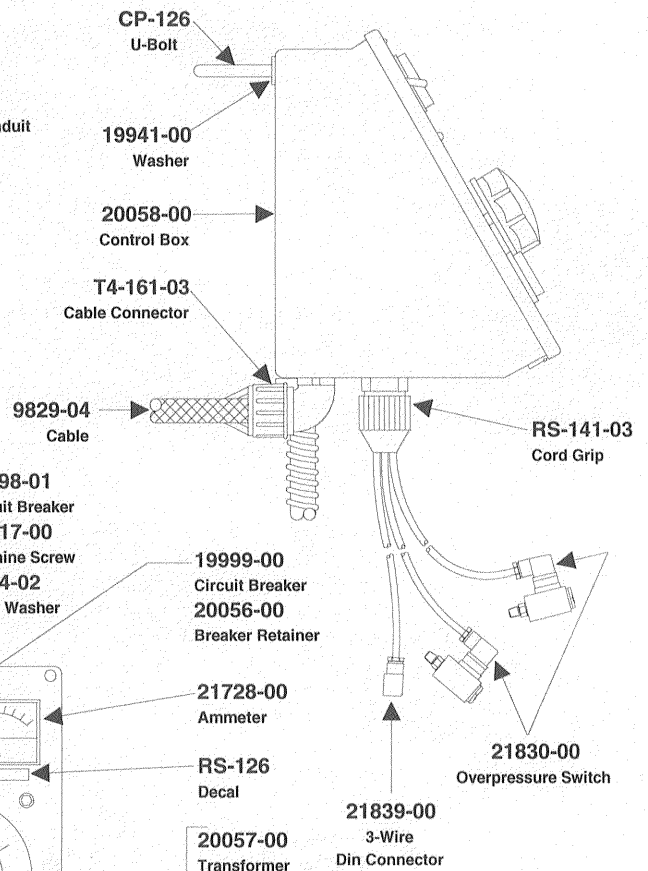


20055-00 CONTROL BOX ASSEMBLY

Back View



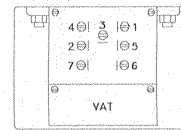
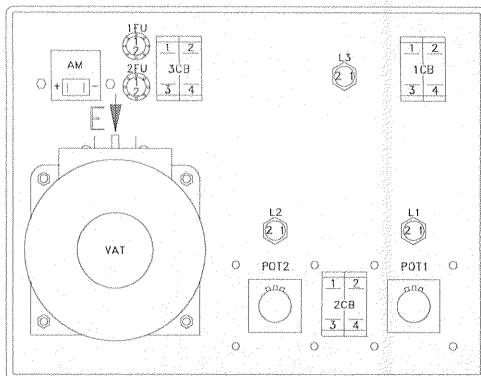
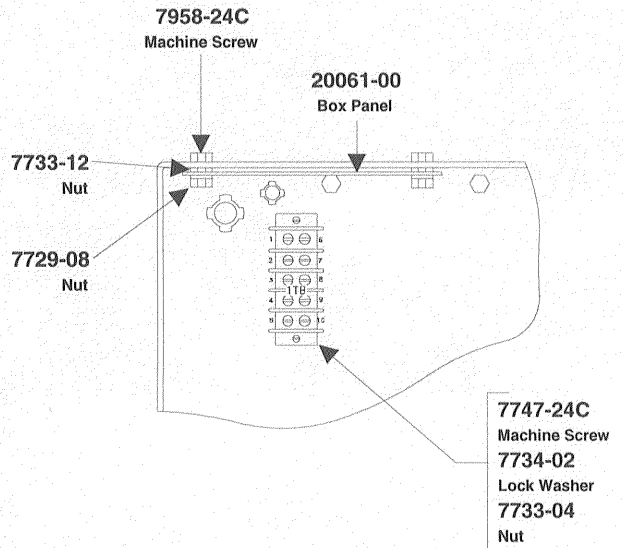
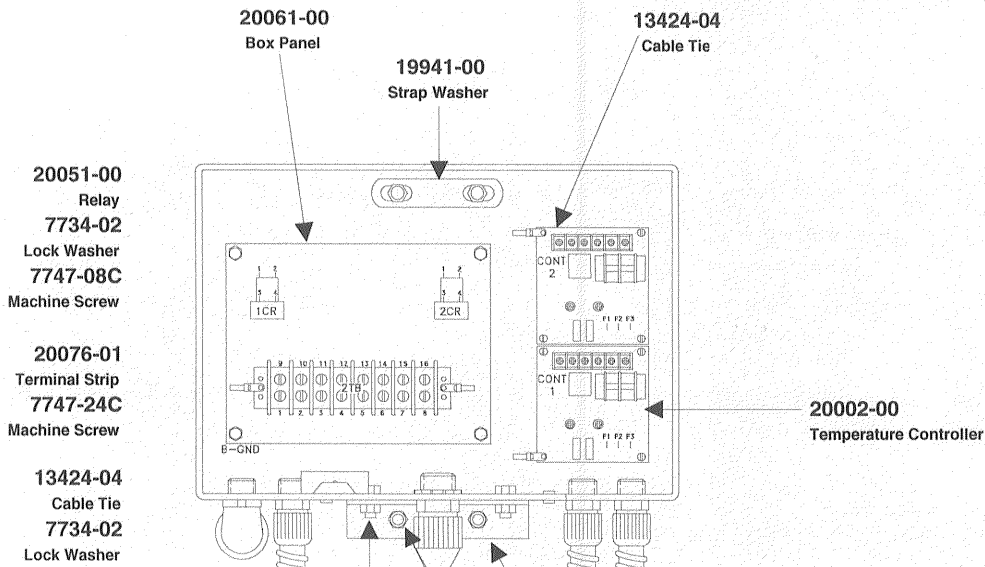
Side View



Front View

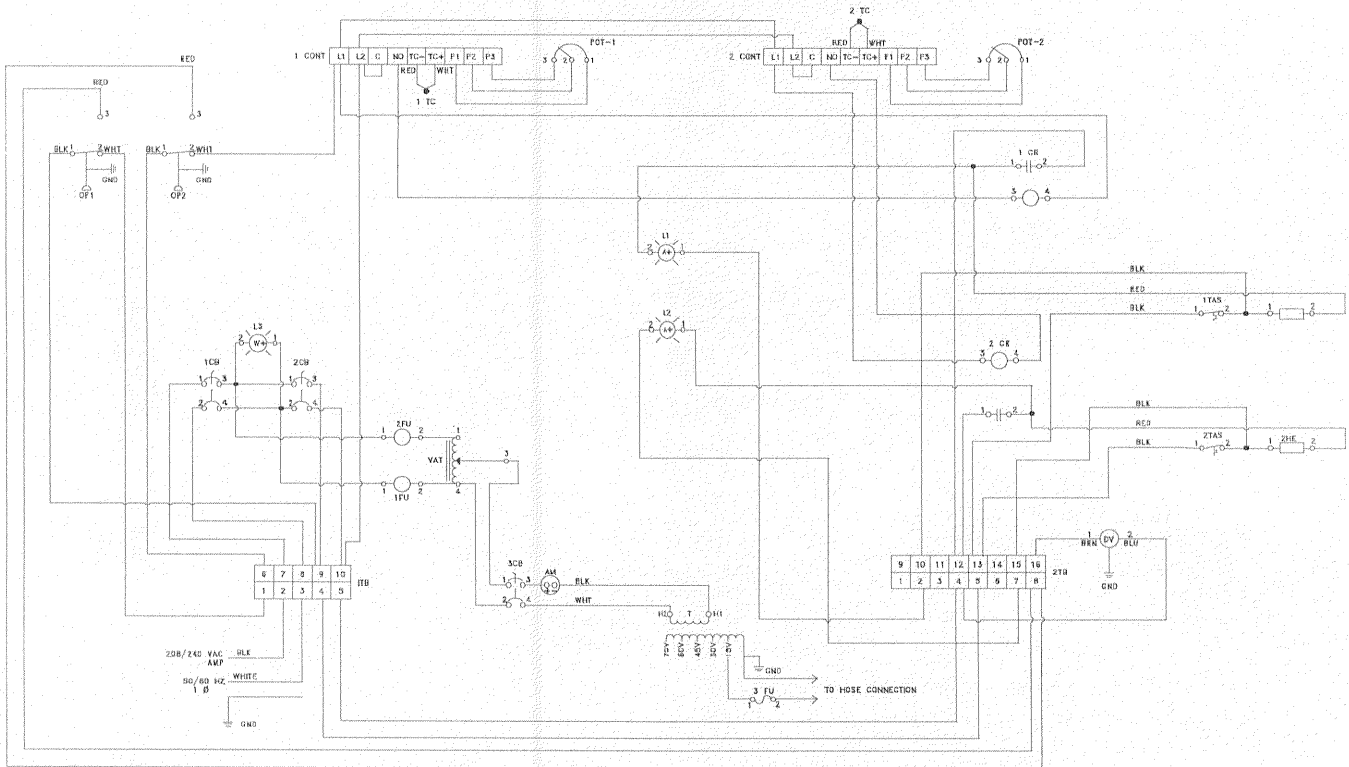
REVISED 9/99

20055-00 CONTROL BOX ASSEMBLY



REVISED 9/99

20075-00 SYSTEM SCHEMATIC

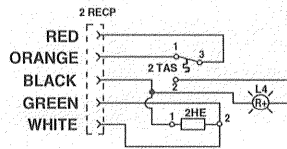


PARTS LIST

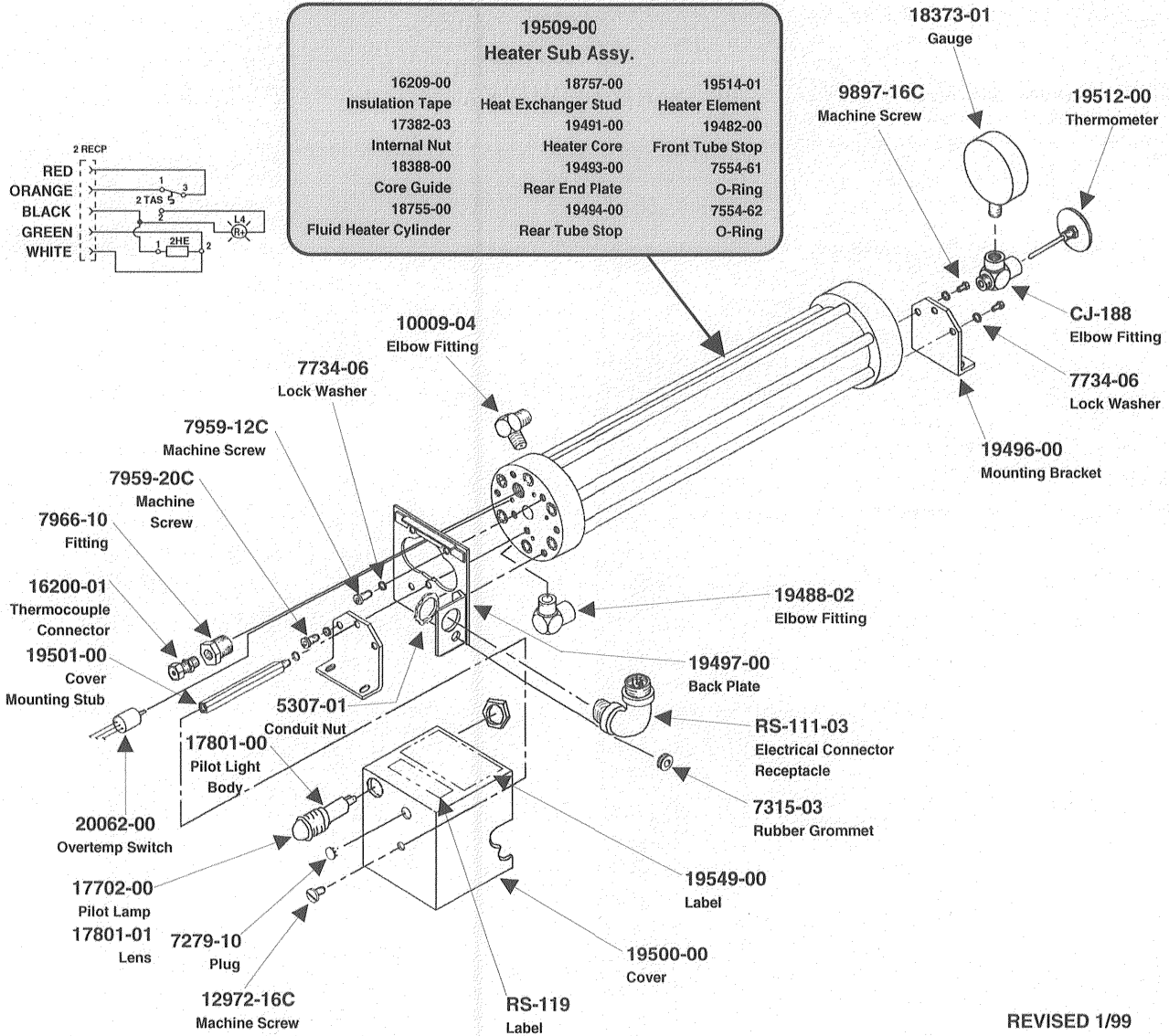
SYMBOL	PART NO.	DESCRIPTION
1 CB	19437-02	SERIES CIRCUIT BREAKER, 30A
2 CB	19437-01	SERIES CIRCUIT BREAKER, 20A
3 CB	19998-01	SERIES CIRCUIT BREAKER, 10A
2 CONT., 1 CONT.	20002-00	TEMP. CONTROLLER, 5A, 230 VAC
1 CR, 2 CR	20051-00	RELAY, SPST, 240 VAC, 10A
1 FU, 2 FU	19999-00	CIRCUIT BREAKER, 10A
L 1, L 2	17801-00, -02	PILOT LAMP SOCKET, AMBER, 210/250V
L 3	17801-00, -03	PILOT LAMP SOCKET, WHITE, 210/250V
VAT	20057-00	VARIABLE TRANSFORMER, 7.5A, 240 VAC
1 TC, 2 TC	T3-136	THERMOCOUPLE
AM	21728-00	AMMETER
T	21119-00	TRANSFORMER, 240 V PRI, 15/75 V SEC.
1 TAS, 2 TAS	19511-01, 02	OVERTEMP SWITCH, 160 F
HE	19514-00	HEATER ELEMENT, 2000 WATT, 208/240 VAC
3 FU	21142-00	FUSE 60A

REVISED 10/99

20060-00 HEAT EXCHANGER ASSEMBLY



19509-00 Heater Sub Assy.		
16209-00 Insulation Tape	18757-00 Heat Exchanger Stud	19514-01 Heater Element
17382-03 Internal Nut	19491-00 Heater Core	19482-00 Front Tube Stop
18388-00 Core Guide	19493-00 Rear End Plate	7554-61 O-Ring
18755-00 Fluid Heater Cylinder	19494-00 Rear Tube Stop	7554-62 O-Ring

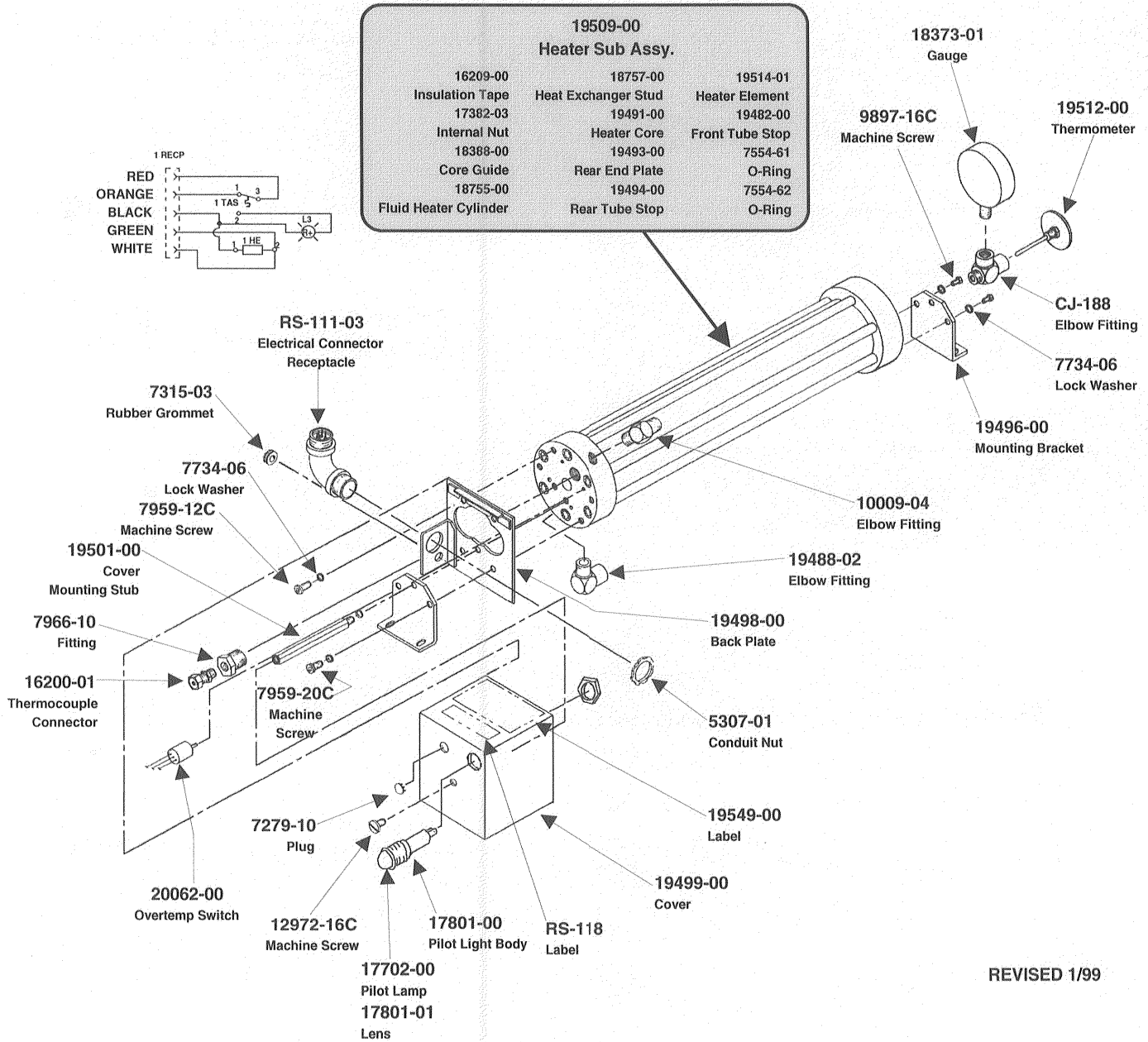


REVISED 1/99

POLYOL HEAT EXCHANGER (Right side when facing Unit)

REPAIR KIT: 18409-00

20065-00 HEAT EXCHANGER ASSEMBLY

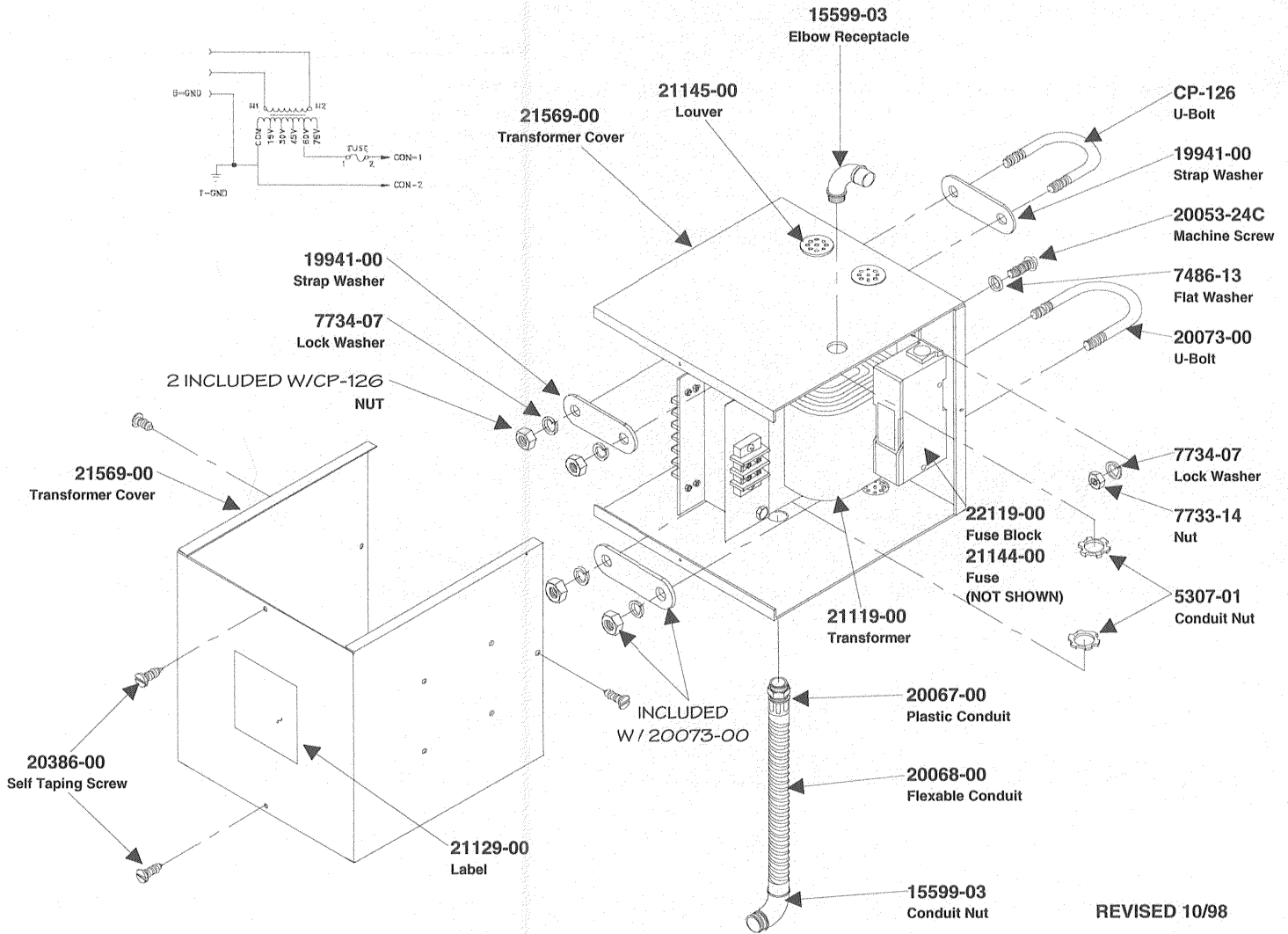


REVISED 1/99

ISOCYANATE HEAT EXCHANGER (Left side when facing Unit)

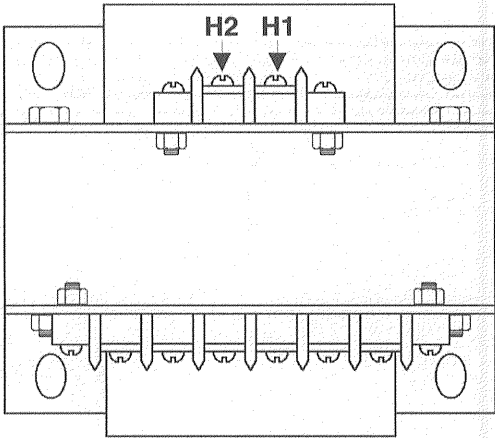
REPAIR KIT: 18409-00

20070-01 HOSE TRANSFORMER ASSEMBLY



NOTE: See **TRANSFORMER HOSE ELECTRICAL CIRCUIT CONNECTIONS** for proper Transformer wiring.

TRANSFORMER HOSE ELECTRICAL CIRCUIT CONNECTIONS



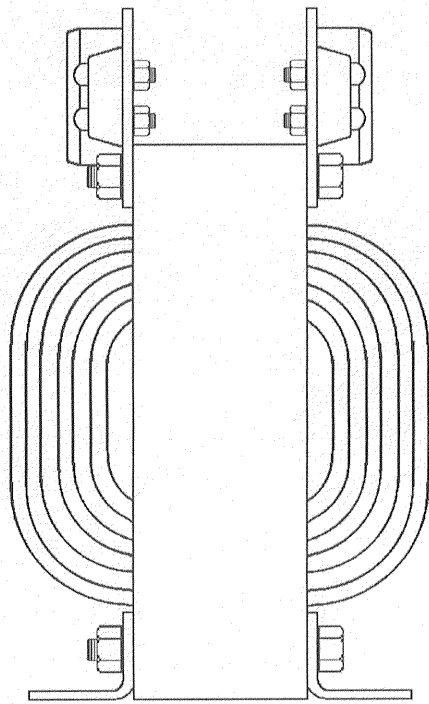
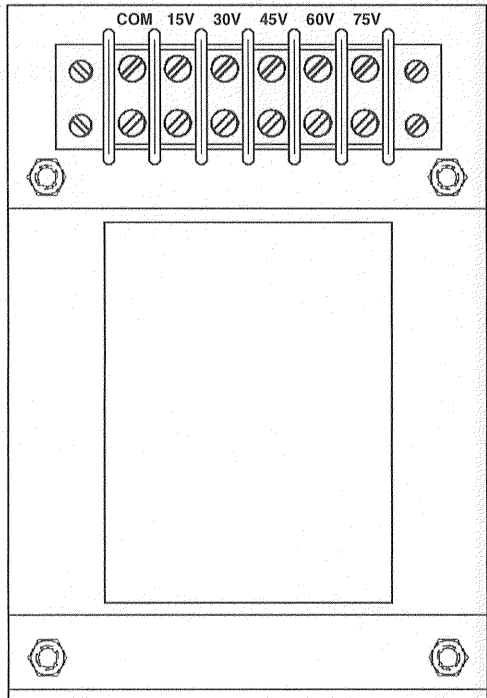
TRANSFORMER

H1 PRIMARY H2

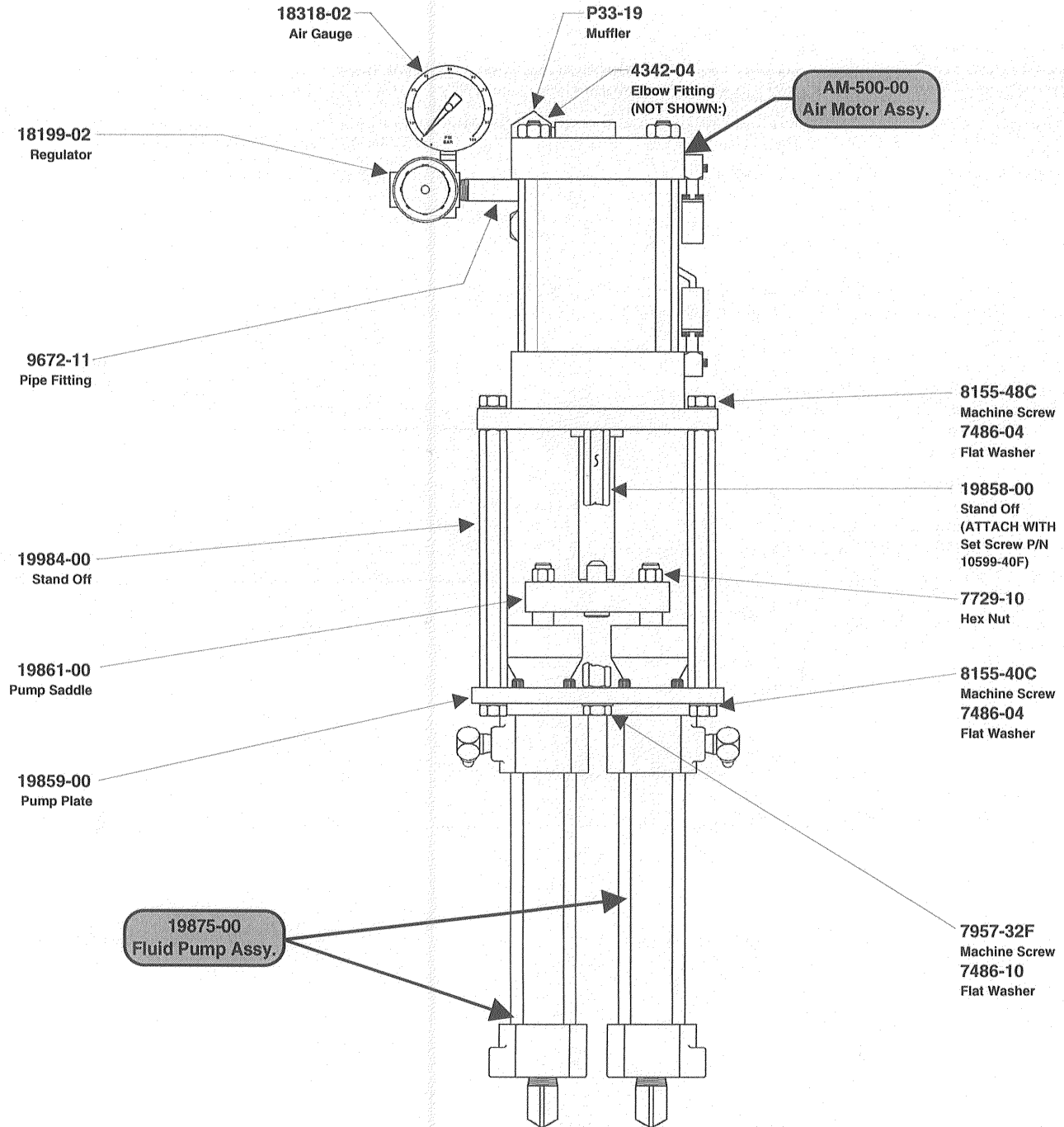
COM 15V 30V 45V 60V 75V
TO HOSE

CONNECTIONS	HOSE LENGTH
15V	50 FT
30V	100 FT
COM	150 FT
(DO NOT MOVE)	200 FT
60V	250 FT
75V	300 FT

21119-00

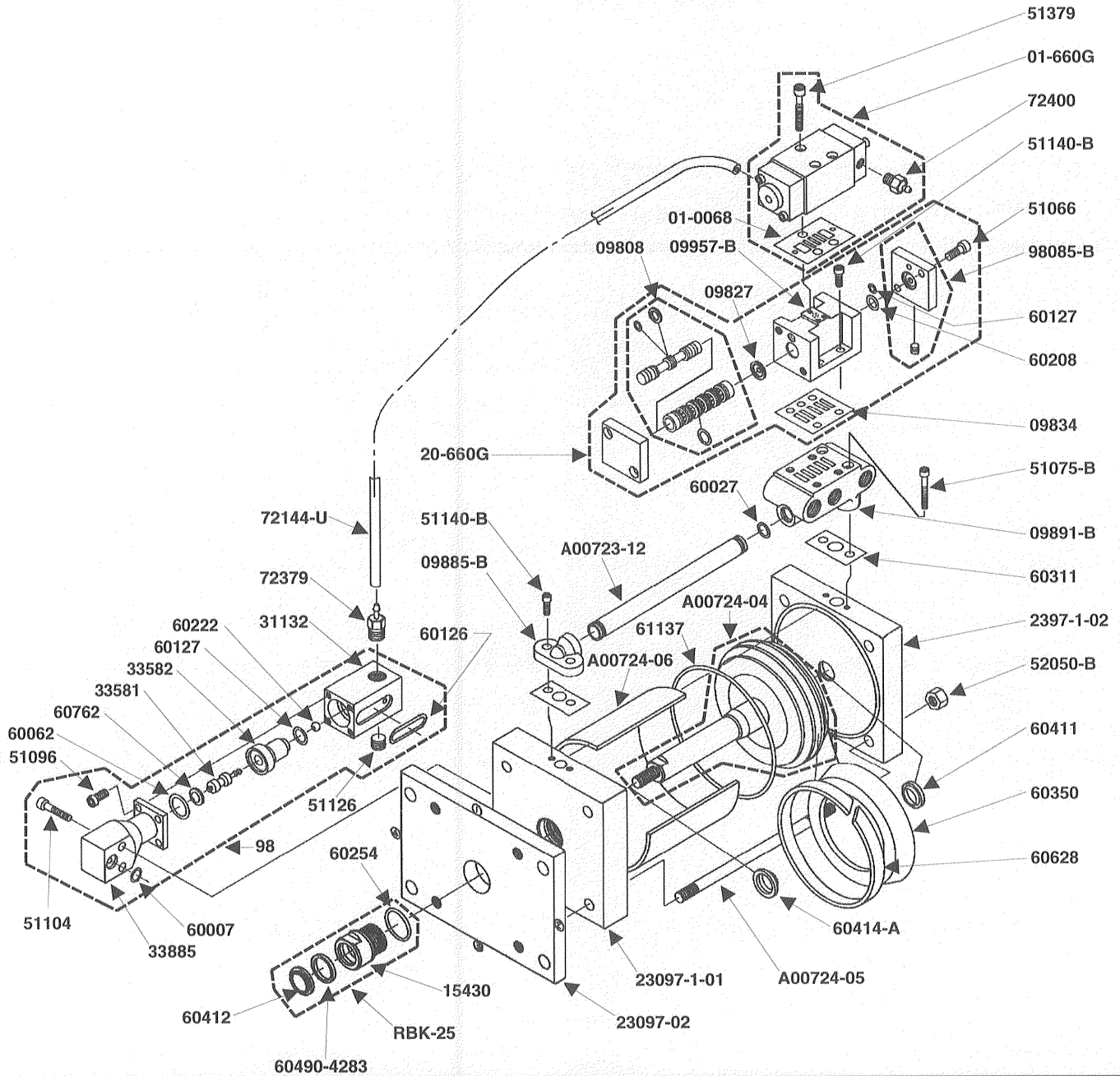


19852-511 PROPORTIONING UNIT ASSEMBLY



REVISED 2/98

AM-500-00 AIR MOTOR



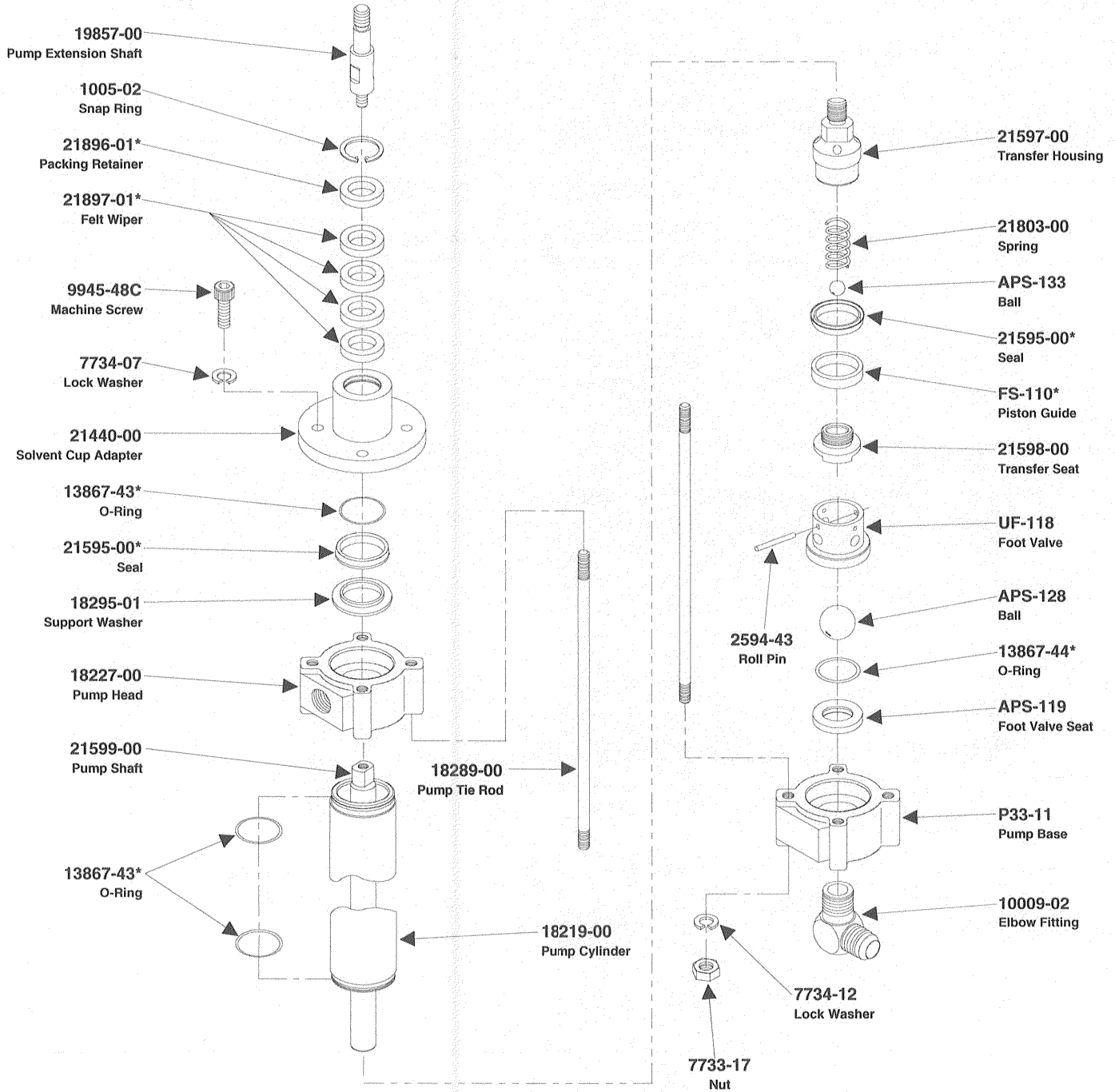
REPAIR KITS

20101-00 OVERHAUL KIT	20102-00 PISTON SEAL KIT	20103-00 ROD SEAL KIT	20104-00 SIGNAL VALVE KIT	20105-00 GASKET KIT	20106-00 MAIN VALVE KIT	20107-00 PILOT VALVE KIT
20102-00	60325	60254	33581	01-0068	09808	01-0020
20103-00	60327-80	60412	60007	09834	09827	01-0028
20104-00	50-TSH	60490-4283	60062	60027	60127	01-0069
20105-00	60628		60126	60311	60208	60747
20106-00			60127			
20107-00			60905			
20189-00			60222			
			60762			
			A-00723-13			

19875-00 FLUID SECTION

RATIO: 1:1

VOLUME: .021 gals. Displacement per cycle

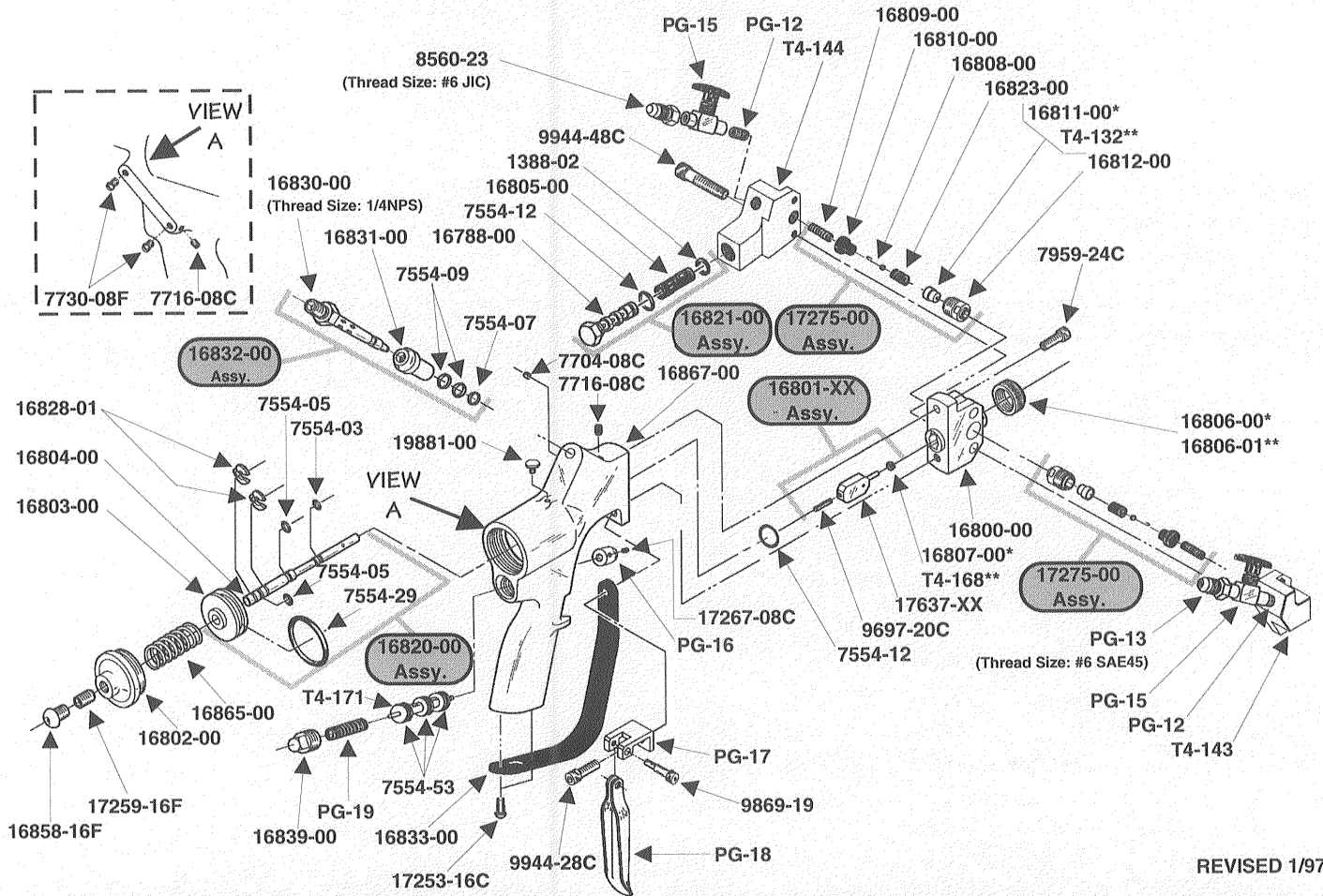


REPAIR KIT: 21845-00

(*) Indicates parts included in Repair Kit.

REVISED 8/98

17254 DISPENSE GUN



REVISED 1/97

* USED WITH P/N 17254-00, 01, -02, -03 GUN ASSEMBLY

** USED WITH 17254-04, -05 GUN ASSEMBLY

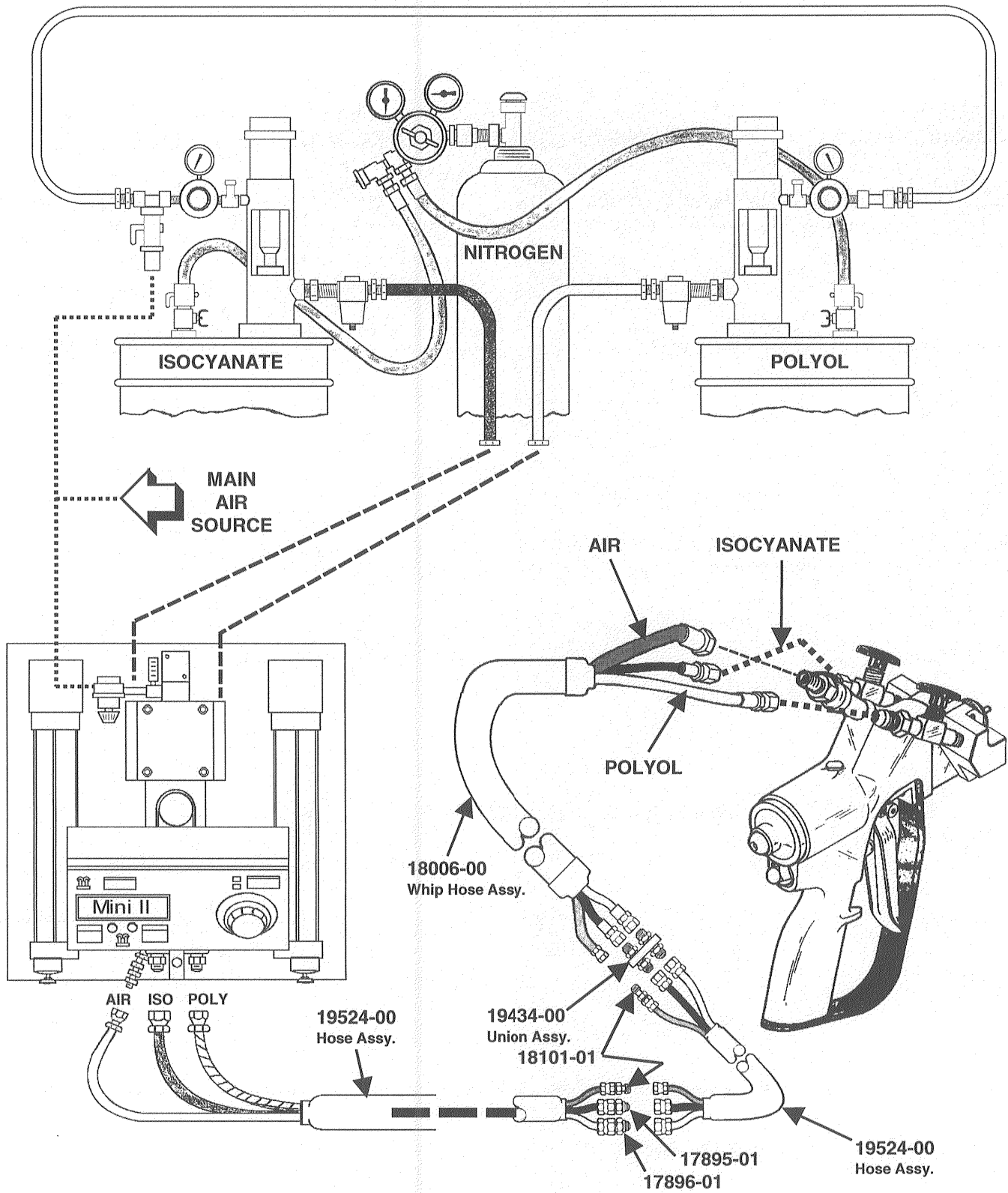
1388-02	SNAP RING
16788-00	FILTER SUPPORT
16800-00	MIXING CHAMBER HSG.
16801-XX	MIXING CHAMBER ASSY.
16802-00	REAR CAP
16803-00	PISTON
16804-00	PISTON SHAFT
16805-00	FILTER SCREEN
16806-00	CAP*
16806-01	CAP**
16807-00	AIR CAP SEAL*
16808-00	BALL
16809-00	SPRING
16810-00	BODY
16811-00	SEAL
16812-00	CHECK VALVE
16820-00	PISTON ASSY.
16821-00	FILTER ASSY.
16823-00	SPRING
16828-01	RETAINER RING
16831-00	AIR SWITCH SPOOL
16832-00	AIR SWITCH ASSY.

16833-00	TRIGGER GUARD
16839-00	TRIGGER PLUG
16839-00	AIR SWITCH TUBE
16858-16F	MACHINE SCREW
16865-00	SPRING
16867-00	HANDLE
17253-16C	MACHINE SCREW
17259-16F	MACHINE SCREW
17267-08C	MACHINE SCREW
17275-00	CHECK VALVE ASSY.
17637-XX	MIXING CHAMBER
19881-00	PLUG FITTING
7554-03	O-RING
7554-05	O-RING
7554-07	O-RING
7554-09	O-RING
7554-12	O-RING
7554-12	O-RING
7554-29	O-RING
7554-53	O-RING
7704-08C	MACHINE SCREW
7716-08C	MACHINE SCREW

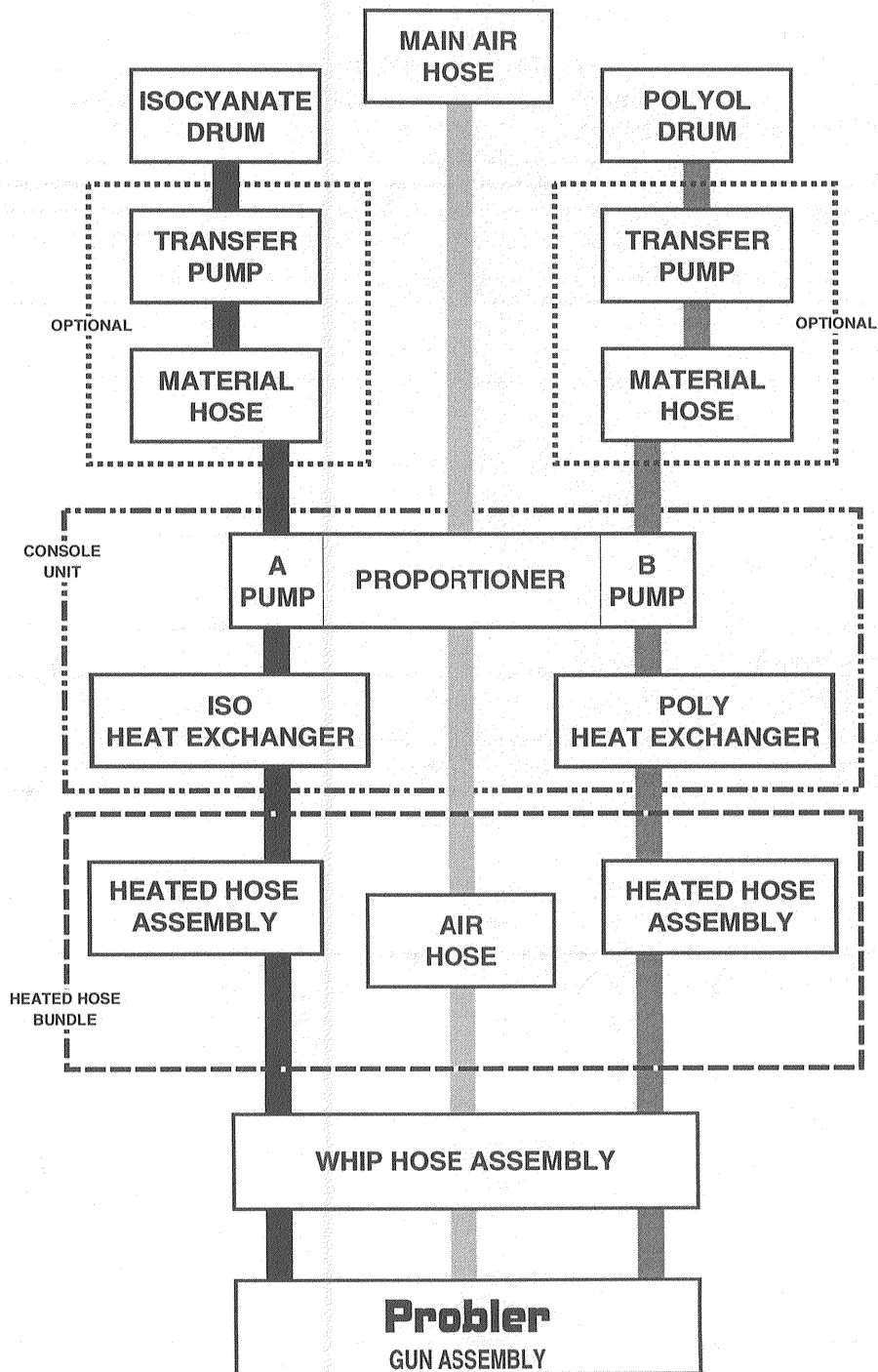
7716-08C	MACHINE SCREW
7730-08F	MACHINE SCREW
7959-24C	MACHINE SCREW
8560-23	FITTING
9697-20C	MACHINE SCREW
9869-19	MACHINE SCREW
9944-28C	MACHINE SCREW
9944-48C	MACHINE SCREW
PG-12	NIPPLE FITTING
PG-13	FITTING
PG-15	BALL VALVE
PG-16	TRIGGER BUTTON
PG-17	TRIGGER BRACKET
PG-18	TRIGGER
PG-19	SPRING
T4-132	SEAL
T4-143	SIDE BLOCK
T4-144	SIDE BLOCK
T4-168-00	AIR CAP SEAL**

REPAIR KIT: 19134-00

TYPICAL SYSTEM HOSE CONNECTION DIAGRAM



MATERIAL FLOW SCHEMATIC



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 ammonium 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.

In 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 in 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.

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APRIL 1996

INSTALLATION

Gla-Craft

ASSEMBLY INSTRUCTIONS



NOTE

Refer to "Typical System Connection Diagram" illustration during assembly steps.

A. FLUID LINE CONNECTION

The fluid lines that bring Isocyanate and Polyol from the drums to the pump inlets, and the hoses that take the chemicals and air from the isolation block to the gun should be connected as follows:

WARNING

Main power from power source should be disconnected or turned off to console before making hose connections.

1. Connect Hose assembly, P/N 19524-00 to Isolation Block on base at front of unit. The swivel fittings on the Hose assembly are sized differently and will attach only one way. (Match like sized fittings.) Also connect the Air Hose assembly at this time. It should be attached to the fitting located on the lower left side of the isolation block. (see Fig. 1)



CAUTION

Do not use pipe tape on isolation block or hose fittings as they are also an electrical connection.

2. Optional Extension Hose Installation

If only one Hose assembly is being used, proceed to instruction step 3. If optional extension Hoses are being used, proceed as follows:

Connect each extension Hose assembly, P/N 19524-00 together using Fittings, P/N 18101-01, P/N 17895-01 and P/N 17896-01. Each fitting should be securely tightened into swivel hose fitting using two proper sized wrenches. (see Fig. 2)

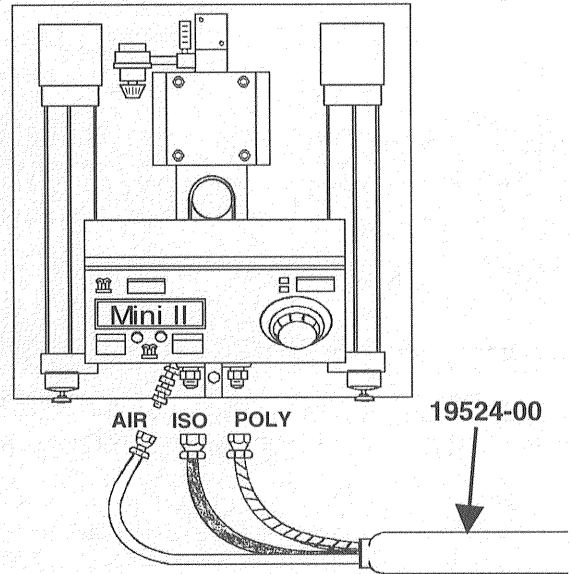


Fig. 1

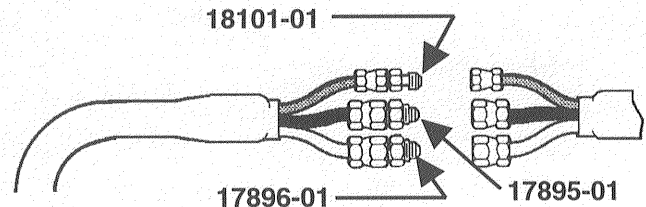


Fig. 2

WARNING

After connecting, wrap each fitting and hose end with electrical tape to prevent electrical arcing or short circuiting.



CAUTION

When using optional Hose assemblies, transformer wiring must be altered. Transformer is factory wired for 50 feet of hose only. (see Fig. 6, Hose Transformer Connection illustration)

3. Connect Whip Hose, P/N 18006-00 to Hose assembly, P/N 19524-00 using Hose Union assembly,

P/N 19434-00 and Air Line Fitting, P/N 18101-01. (see Fig. 3)

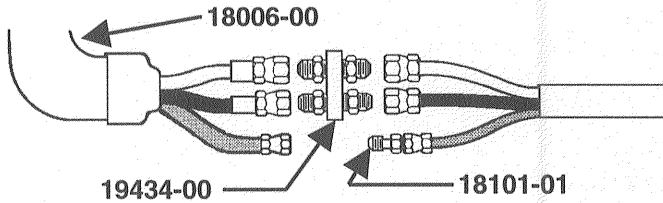


Fig. 3

WARNING

After connecting, wrap Hose Union assembly and Air Line Fitting with electrical tape to prevent electrical arcing or short circuiting.

4. The Whip Hose assembly should now be attached to the Gun. The swivel fittings on the Whip Hose assembly are sized differently and will attach only one way. (Match like sized fittings.) Also connect the Air Hose assembly to the Gun at this time. (see Fig. 4)

5. Fluid Hose connections between Console and Gun should now be complete. The following should be checked before proceeding:

- A. All fittings tight from Isolation Block to Gun.
- B. All Union Fittings and Air Line Unions used between Hose sections wrapped individually with several layers of electrical tape to prevent short circuiting of Hose.
- C. Air Line Union Fitting and Hose Union assembly used between last Hose section and Whip Hose wrapped individually with several layers of electrical tape to prevent short circuiting of Hose.

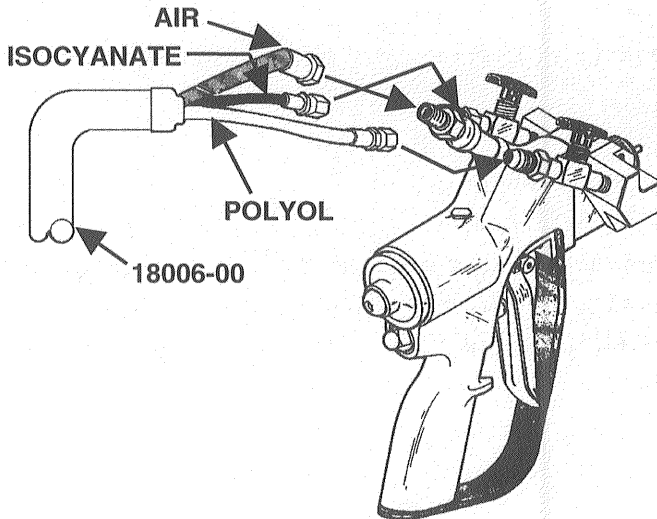


Fig. 4

WARNING

Transformer is factory wired at 24 volts output for one 50 foot Hose assembly, P/N 19524-00. If more than one section of Hose is to be connected (step 2), transformer wiring MUST be changed to 30 volt output taps. (see Figs. 5 & 6, Hose Transformer Connection illustration)

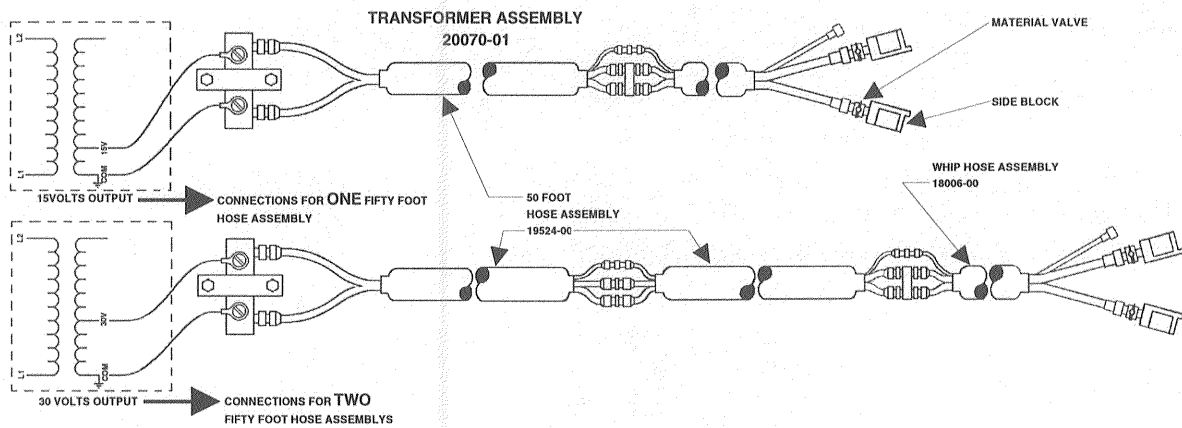
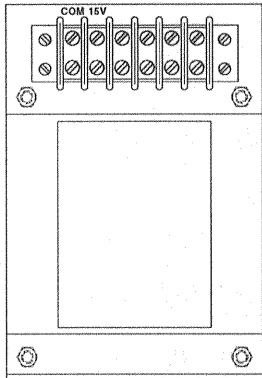


Fig. 5

Connection for a maximum fifty (50) foot Hose length.

Connection for (300) foot Hose length

CAUTION: 220 VOLTS



WARNING

**220 VOLT
INPUT TO PRIMARY**

Disconnect or shut off Main Power Supply to Unit before changing taps on Transformer

CAUTION: 220 VOLTS

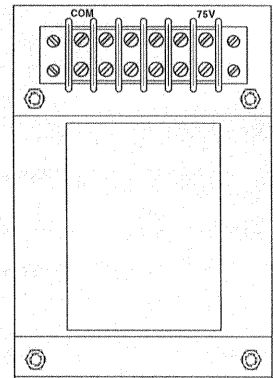


Fig. 6

CAUTION

Hose assemblies are constructed of durable, rugged materials. However, they are not indestructible. To provide precisely-controlled heated material, the Hoses have electrical wiring wrapped between layers. Avoid dragging hoses over or around sharp, abrasive edges and corners. Exercising caution and common sense will give long, reliable service from the Hoses.

WARNING

If temperature is over 75 degrees F, Polyol with Blowing Agent may expand vigorously when material drum is opened. This could result in material spewing from the drum. It is recommended that a cover (ie: cloth, rag, etc.) be placed over the bung as it is slowly opened to help prevent injury.

A circular safety icon containing a stylized face wearing safety glasses.

WARNING

A shock hazard exists between the Polyol hose connector fittings and the Isocyanate hose connector fittings at the Mini II Console assembly, P/N 20075-00, when the main power source is connected and the Main Power Circuit Breaker is on. Therefore, whenever power is on, never touch hose connector fittings on either side of Insulator Block, P/N 19471-00 with your hands or tools. You must disconnect or turn off the electrical power source and turn off the Main Power Circuit Breaker before you tighten or disconnect Hose Fittings, or before you begin any repair work on Mini II Console assembly.

6. *Optional Transfer Pump Installation*
Remove large drum bung-hole cover and install Material Transfer Pump Bung Adapter. Carefully lower Material Transfer Pump, P/N 16300-00 into drum. Gently lower the Pump into the drum until it touches the bottom of the drum, raise the Pump up 1/4 to 1/2 inch and tighten Bung Adapter securely.
7. *Optional Transfer Hose Kit Installation*
Connect Material Transfer Pumps to Mini II Console Proportioning Pumps using the Material Transfer Hose Kit, P/N 17666-01. Assemble Hoses and Filters as shown in Fig. 7. Make certain that all fittings are tighten securely.
8. With all fluid lines connected, an *optional* Nitrogen Kit, P/N 17667-00 or an *optional* Air Dryer Kit, P/N AD-100 should be installed on the material drums. (see Fig. 8)

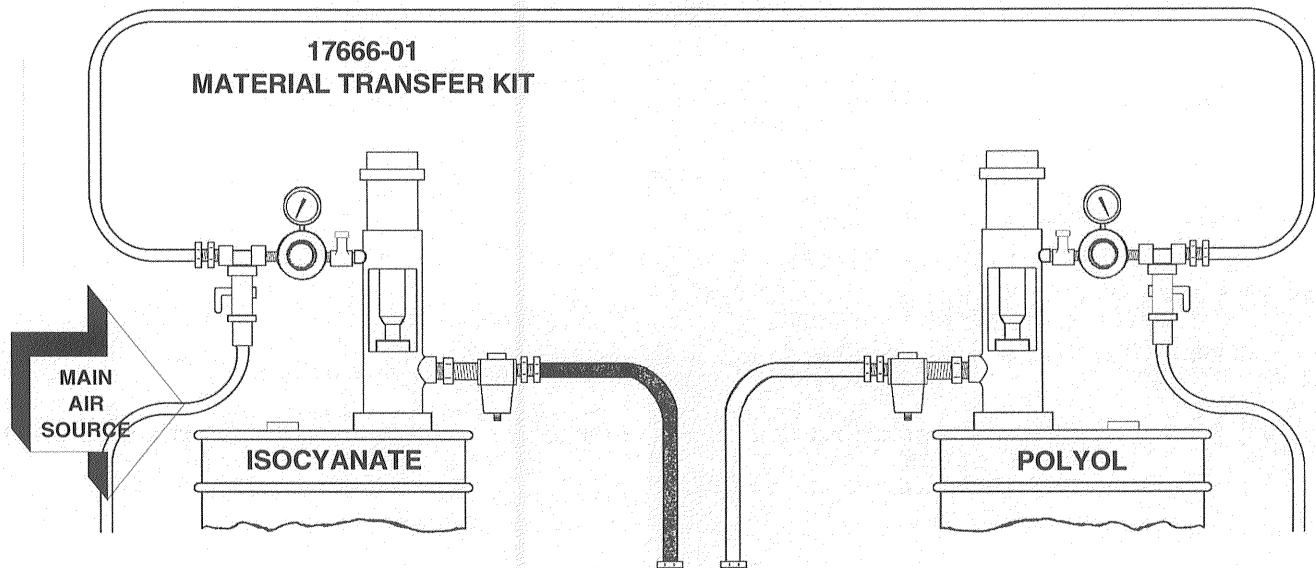


Fig. 7

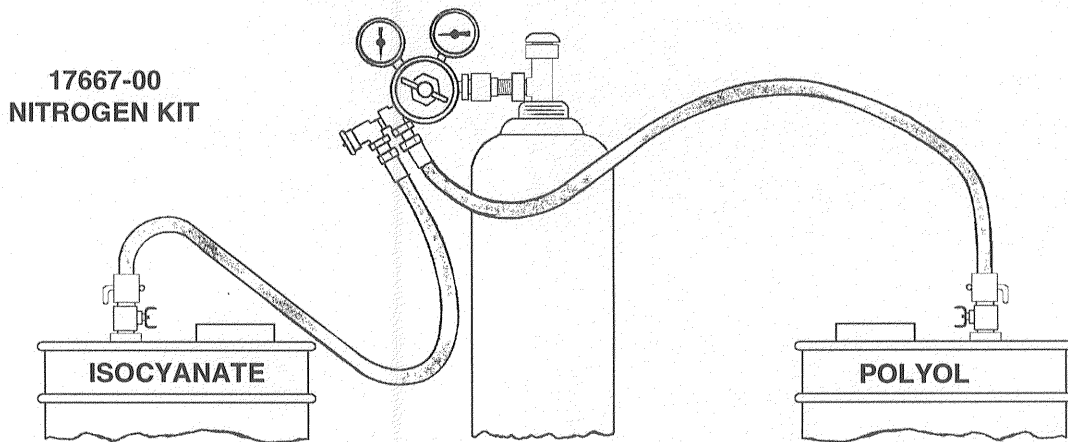


Fig. 8



NOTE

Glas-Craft strongly recommends the use of nitrogen or dry air as an atmosphere in the material drums. Either Kit provides a moisture-free atmosphere in the drums, thus reducing the chance of producing crystals in the isocyanate (A side) drum which can clog filters and hoses in the system.

B. AIR SUPPLY CONNECTION

An air source which delivers a constant 25 CFM @ 90-110 PSI (708 liters @ 6.3-7.7 BAR) and does not exceed 160 PSI (11.2 BAR) should be connected directly to the Fitting, P/N 6782-03, mounted on the Proportioning Unit Air Motor Regulator, P/N 18199-02. (see Fig. 9 and/or Proportioning Unit Assembly 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.

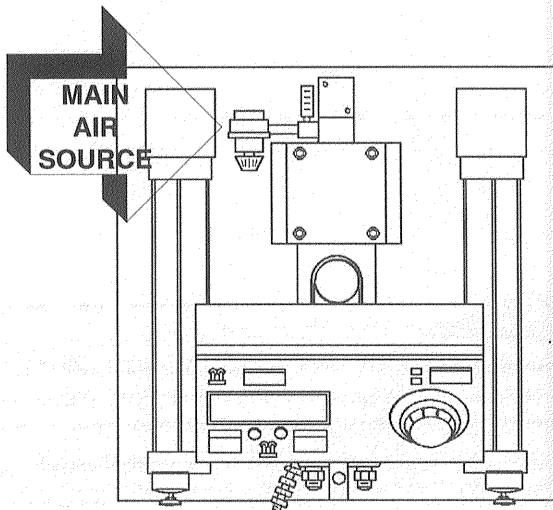


Fig. 9

C. ELECTRICAL CONNECTION

1. Attach the *white* and *black* wires of the Power Cord to a single phase of 208/240 VAC, 50/60 HZ. The *green* wire should be connected to GROUND. (see Fig. 10)

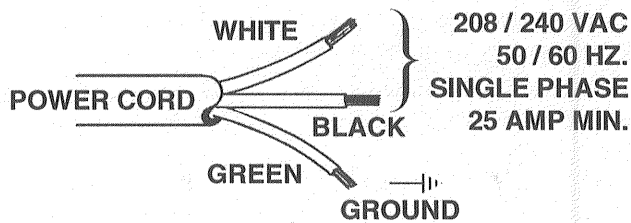


Fig. 10

WARNING

When Main Power to Mini II console is on, the white and black wires in the console are always live! Disconnect or turn off Main Power source before opening console to make any repairs or before making any electrical repair of any type to the Maxi system.



CAUTION

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

D. MINI II PANEL CONTROLS

- Refer to Figure 11 illustration during instruction steps D-1 thru D-4.

1. AIR MOTOR REGULATOR & GAUGE

The Air Motor Regulator and Gauge are mounted directly on the Air Motor air inlet. This Regulator is used to control the air pressure to the Air Motor. The Air Motor is connected in-line by a saddle to each positive displacement Proportioning Pump on the *Mini II* Proportioner. Rotating the Regulator in a clockwise direction will increase air pressure to the Motor, thus increasing spray pressure. Rotating the Regulator counter-clockwise reduces spray pressure. The Air Motor Regulator is normally adjusted for an air pressure of 60-80 PSI (4.2-5.6 BAR) for normal spraying operation.

2. HOSE CURRENT (TEMPERATURE) CONTROL

The right-hand side of the console operates the hose heating circuit. The Circuit Breaker marked **HOSE** turns power on to the hose circuit. The large black knob (rheostat) marked **HOSE CONTROL** controls the current to the Hoses which is read on the Meter labeled **HOSE CURRENT**. The numbers on the dial face of the Hose Control are for *reference only*. They **do not** indicate temperature. Temperature is indicated by the Hose Thermometer, P/N 19526-00 when it is inserted into the last section of heated Hose, P/N 19524-00. The amount of current to the Hose is limited to ten (10) amps by the Hose Breaker. The two Fuses protect the hose circuit from overload and require no attention under normal operating conditions.

WARNING

The Hose Transformer input current must not exceed ten (10) amperes at sixty (60) hertz for any long periods of time. Do not exceed seven (7) amperes at fifty (50) hertz.

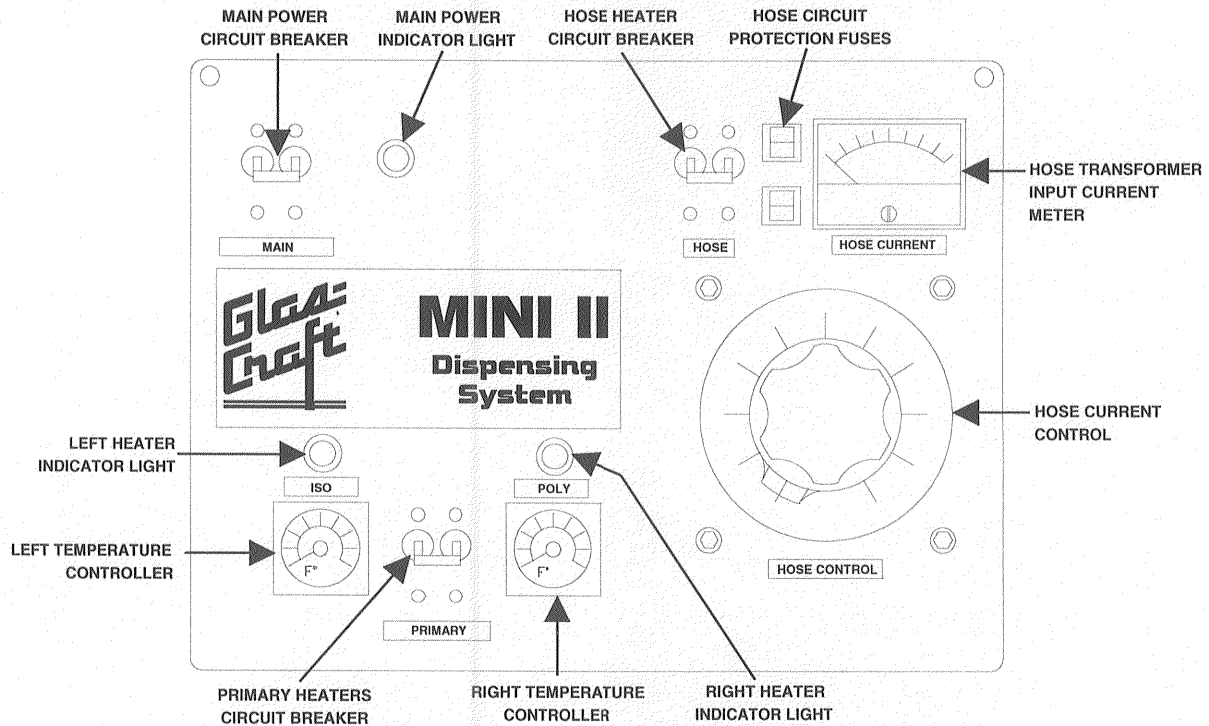


Fig. 11



NOTE

Do not place the Hose Thermometer in the Whip Hose, P/N 18006-00 as this hose is not heated. Place the Thermometer in the end of the last heated Hose nearest Whip Hose. Insert the Thermometer probe into the insulation around the Hose assembly.

Check the Hose Thermometer frequently to assure that proper hose temperature is being maintained. To increase hose temperature, turn the Hose Control knob clockwise and watch the ammeter for an indication of increased amperage. To decrease temperature, turn the Hose Control knob counter-clockwise.

3. MAIN BREAKER & POWER INDICATOR LIGHT

Located in the upper left-hand corner is the Main Breaker and Main Power Indicator Light. The Main Breaker allows power to go to all other areas of the Control Box requiring power. The light gives an indication of incoming voltage to the unit and acts as a main indicator light to signal that power is on inside the control console.

WARNING

The Main Breaker in the OFF position indicates that all power is off to other electrical components in the Control Console. Incoming power wires (white and black) from the power cord and the black and gray wires from incoming power to the line side of the Main Breaker are still energized (HOT) even when the Main Breaker is in the OFF position. Disconnect or turn off Main Power source before opening console to make any repairs or before making any electrical repair of any type to the Mini II system.

4. HEATER CIRCUIT & CONTROLS

The Circuit Breaker marked **PRIMARY** turns power on to the heater controllers. When each controller is turned up (clockwise) and calls for heat, the orange light above that controller will come on. Under normal conditions, the orange light will cycle on and off as the heater cycles on and off. However, should the controller malfunction and stick in the heating (primary light ON) position, or should the primary heater control be turned up too high, or run at too high a temperature for an extended period of time, the orange light above the iso or poly primary heater(s) may go out while the red light on

the back of the heater may come on and stay on or cycle on and off. This signals an overheated condition in one or both of the heaters. This is a signal that the circuit has sensed a hot or potentially hot condition in one or both of the primary heaters. When the red light is on (or cycling on and off) and the orange primary light is off, the heater electrical circuit has been broken and the heater is not heating material in this condition. To start the unit heating again, turn down the primary heater temperature and let the unit cool down by itself or trigger the gun to draw cool material into the heater. This will cool the heater down faster. When the heater cools to normal operating range again, the red light on the back of the heater(s) will go off and the orange primary light(s) will come back on indicating the heater(s) are heating again.



NOTE

Glas-Craft has optional overtemperature switch ranges available for different applications. Contact your local authorized Glas-Craft distributor for details.

PRE-OPERATION CHECK LIST

- A. Fill Solvent Cup Adapter, P/N 21440-00 with Dibutyl Phthalate Plasticizer, P/N 59934-04 supplied with system.
- B. Check that **all** fittings are securely tight.
- C. Check electrical hook-up (*qualified* electrician recommended).
- D. All Circuit Breakers on Control Box switched to **OFF** position.
- E. Air Regulator turned to **OFF** position.
- F. Hose Rheostat and Primary Heater dials in **OFF** position (ZERO).
- G. Hose Thermometer inserted into Heated Hose assembly near Hose Union, P/N 19434-00.

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. The section on the Control Box (see Installation section D, *Mini II* PANEL CONTROLS, steps 1 - 4) should be read and thoroughly understood by operator *before* proceeding.

1. FILLING THE SYSTEM

1. With optional Transfer Pumps in place, adjust air regulators on Transfer Pumps to 30-50 PSI to fill system. Transfer Pumps will cycle to fill Pumps, Heaters and Hoses and 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. 13 & 14) on each Side Block simultaneously 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. 12)

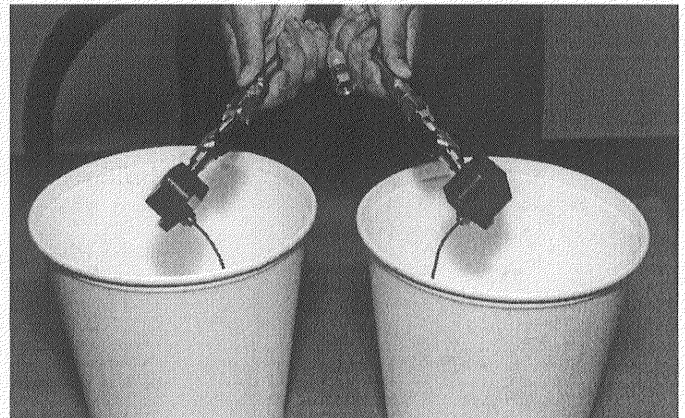


Fig. 12

4. Close manual Material Valves simultaneously. Material pressures gauges on each Heater 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 lithum 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. Adjust Main Air Regulator to 20 PSI to establish fluid pressure in Proportioner.
8. Switch MAIN Breaker to ON position. Voltmeter should read incoming voltage to unit.
9. Straighten Hose out flat to avoid uneven heating and avoid damage to internal wiring. Switch HOSE Breaker to ON position. Turn Hose Control clockwise until Hose Current Meter reads 7-9 amps to warm up Hose.

WARNING

The Hose Transformer input current must not exceed ten (10) amperes at sixty (60) hertz for any long periods of time. Do not exceed seven to eight (7-8) amperes at fifty (50) hertz.

Hose temperature will be indicated on Hose Thermometer placed in Hose. Operator should periodically check hose temperature and adjust HOSE CONTROL up or down to maintain desired primary heater temperature in hose while unit is spraying.



NOTE

Remember, the heated hose is not a material heater. The heated hose's function is to maintain the heat put into the material by the primary heaters. The hose will normally be set to maintain a temperature that is very close to the primary heater temperature settings.

10. Turn the PRIMARY Breaker to ON position. Adjust the temperature dials to the desired spray temperature. The controls and lights will cycle on and off until set temperature is reached or exceeded.



CAUTION

Due to the expansion of urethanes when heated, it is imperative that on cold start-up of the Mini II that the heaters be turned on and allowed to reach operating temperatures before the Main Pump Air Regulator is adjusted to the desired spray pressure. If you do not allow the heaters to reach operating temperature before adjusting air pressure, the material pressure will exceed the range of both gauges, permanently damaging them, and may also burst components.

11. Adjust Main Air Regulator to 60-100 PSI for spraying. Pouring operations will require less Main Air pressure.
12. Turn Purge Air and Material Valves ON at Gun. (see Fig. 13 & 14)
13. The system is now ready for operation.



NOTE

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

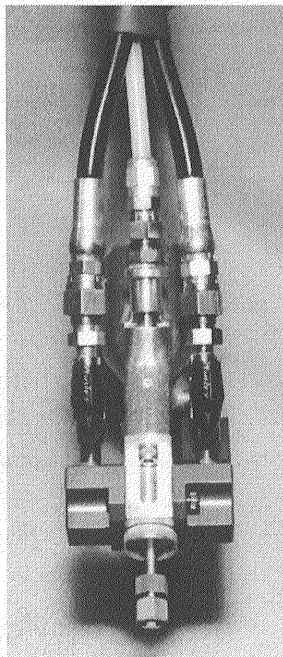


Fig. 14

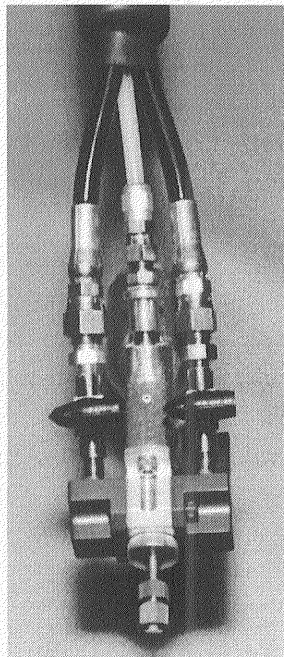


Fig. 15

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.



CAUTION

The Polyol will expand in the Hose if any normal operating pressures are bled off whenever the material is above approximately 75 degrees F. Hot Polyol hoses should never be bled, by any method, to zero pressure for two reasons.

1. The seals in the Gun rely on high pressure to make their seal. The high pressure cannot be maintained if the pumps are attempting to apply this pressure through a hose full of expanded froth; therefore, the Gun seal may leak.
2. Re-starting immediately after hot Polyol has expanded in the system may result in spraying substantial amounts of "bad" foam. This will continue until the expanded Polyol in the primary Heater and the Hose has been completely purged.

B. OVER PRESSURE SYSTEM PROTECTION

The Mini II system incorporates monitors for high pressure monitoring. These monitoring devices will present the Mini II system from continued operation if high pressure situations develop.

There are 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 2000 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.

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

D. DAILY SHUT-DOWN PROCEDURE

1. Turn Hose Control knob to *ZERO*. Turn Hose, Primary, and Main Circuit Breakers 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!

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 and Main Power to unit.

6. Close the nitrogen or dry air valves in the small drum bung holes of the material drums.

7. Coil heated Hoses with a minimum two foot bend-radius to avoid kinking and subsequent damage to the internal electrical wiring.

8. Refill the Solvent Cup Adapter, P/N 21440-00 with Dibutyl Phthalate Plasticizer, P/N 59934-04 supplied with system.



CAUTION

Do not bleed fluid pressure from the system.

E. EXTENDED SHUT-DOWN PROCEDURE

This procedure should be performed when the system is to be stored for an extended period of time (i.e. winter shut-down, etc.).

1. Place Main Circuit Breaker in OFF position and disconnect electrical cable from Main Power source.
2. If optional nitrogen kit installed:
 - > close valve on top of nitrogen cylinder .
3. If optional Transfer Pumps installed:
 - > close air valve to Transfer Pump Regulators.
 - > remove Transfer Pumps from material drums.
 - > clean outside of fluid section with a clean solvent.
 - > place Transfer Pumps in a five gallon container of clean solvent.
 - > open air valve to Transfer Pump Regulators.
 - > reduce Transfer Pump Regulator pressure setting to 25 PSI.
4. Reduce Main Air Regulator to 30 PSI.
5. Spray material from Gun, directing spray into a clean, suitable container, until clean solvent exits the Gun.
6. If optional Transfer Pumps installed:
 - > place in a five gallon container of Plasticizer (Dibutyl Phthalate or Dioctylphthalate).
7. Resume spraying until all solvent has been purged from the system and only plasticizer is exiting the Gun.
8. Perform *DAILY SHUT-DOWN PROCEDURE* steps D-1 to D-8.
9. If optional Transfer Pumps installed:
 - > place fluid ball valves on Transfer Pumps in OFF position.
10. Dispose of waste material properly and in accordance with chemical suppliers instructions and local, state and federal regulations.
11. Remove Bung Adapters from material drums, clean with solvent and coat with a multi-purpose grease.
12. Clean large bung openings of material drums with solvent and coat with a multi-purpose grease before re-installing the original drum bung caps.
13. If optional nitrogen kit installed:

- > open valve on nitrogen cylinder and pressurize material drums with 1 1/2-2 PSI **MAXIMUM** of nitrogen. Close Stopcock Valves on nitrogen supply lines at drum, leaving the drums pressurized. Close valve on top of nitrogen cylinder.



NOTE

Do not bleed nitrogen pressure from drums!

Do not bleed fluid pressure from the system!

14. Turn OFF Main Air source and remove air supply line from inlet fitting on Air Motor.
15. Generously coat shafts of Transfer Pump Air Motor, Main Air Motor, and Proportioning Pumps with a multi-purpose grease.
16. Coil heated Hoses with a minimum two foot bend-radius to avoid kinking and subsequent damage to the internal electrical wiring.

F. ROUTINE MAINTENANCE

1. DAILY

Check amount and color of plasticizer in Pump Lubrication Cups. Change badly discolored material to prevent damage to Pump Packings. Use a plastic siphon bottle to remove the discolored plasticizer from the Cups. Refill the Solvent Cup Adapter with Dibutyl Phthalate Plasticizer, P/N 59934-04 supplied with system.



CAUTION

If plasticizer discolors rapidly, replace the Pump Packings.

2. WEEKLY

Place a small amount of grease on Air Motor Shaft and rub over Shaft.



WARNING

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

To relieve Air and Fluid pressures:

ON SYSTEM CONSOLE:

- > Turn OFF valves that supply material to the Pumps.
- > Turn OFF Main Air Regulator on Air Motor.

ON GUN:

- > Open both Side Block Material Valves.
- > Turn ON Air Switch.
- > Point Gun into a clean, suitable container and trigger Gun until material flow stops.
- > Fluid pressure gauges *must* read zero (0), if not, trigger Gun until the fluid pressure gauges do read zero (0) pressure.
- > Turn OFF Side Block Material Valves.
- > Trigger Gun several more times to purge any material remaining in Gun. Turn OFF air Switch.
- > Unless system is to be returned to service at once, follow *DAILY SHUT-DOWN PROCEDURE*, steps B-1 to B-8.

MATERIAL OR MECHANICAL PROBLEM

TROUBLESHOOTING PROCEDURE

By following this procedure, you should be able to locate and cure problems easily. Remember, however, that a successful operator must know:

- WHAT GOOD MATERIAL LOOKS LIKE.
- HOW THE EQUIPMENT NORMALLY OPERATES.
- WHAT PATH THE MATERIALS FOLLOW THROUGH THE EQUIPMENT.
- KNOWLEDGE OF THESE TROUBLESHOOTING PROCEDURES.



NOTE

Always start with step one, never skip any portion of these procedures. The hydraulic pressure gauges are to be used for troubleshooting purposes only. The pressures registered on one gauge will not necessarily match the other. This difference can be caused by variance in materials, temperatures, viscosities, etc.

1. Identify the *missing* material.
2. Check the hydraulic pressure gauge on the *missing* material side.
 - a. If the *missing* material gauge reads HIGHER than normal, there is a RESTRICTION problem between the gauge and the Mixing Chamber tip in the Gun.
 - b. If the *missing* material gauge reads LOWER than normal, there is a STARVATION problem between the gauge and the material supply system.



NOTE

Problems may be cyclic in that they will appear first on only one stroke of the Proportioning Pump. Check the hydraulic pressure gauges during one of these bursts of missing materials and always stop spraying while you are getting a burst of good material.

3. Concern yourself only with the hydraulic pressure on the *missing* material side. In troubleshooting a STARVATION problem where the hydraulic pressure gauge on the *missing* material side is LOWER than normal, start at the point farthest from the unit and work forward. Check the obvious and easy things first.

A. NITROGEN SYSTEM

1. Bottle turned on?
2. Bottle has nitrogen in it?
3. Pressure dialed in for drums?
4. Air Valves on drums open?

B. MATERIAL DRUMS

1. Material in drums?
2. Material temperature?
 - a. No nitrogen and too much heat will cause the fluorocarbon R-11 to pre-expand on the resin side.
 - b. Too cold a material, especially at the bottom of the drum, will raise viscosity of the material and stall Transfer Pumps.

C. OPTIONAL TRANSFER PUMP(S)

1. Is it operating?
2. Is air turned on to Transfer Pump?
3. Regulated pressure where it should be?
4. Severe contamination of pump shaft on isocyanate side. This indicates that the pump shaft is not being lubricated.
5. Check Filter of Transfer Pump.
6. Before diagnosing a faulty Transfer Pump, be sure and check all items just listed under Transfer Pump including step 3.B.b.

D. FILTER ASSEMBLY

1. Check fluid filter at inlet to Proportioning Pumps if applicable.

E. PROPORTIONING PUMPS

1. Determine whether the burst appears on the Pump's up or down stroke.
 - a. If burst appears on UP stroke, check UPPER Ball Seat and Cups.
 - b. If burst appears on DOWN stroke, check LOWER Ball Seat

2. Bore hole of Mixing Chamber clean?
3. Filter Strainer Screen clean?
4. Side hole in Mixing Chamber clean?

B. MATERIAL TEMPERATURE

1. Too high a temperature on resin side can cause the fluorocarbon R-11 to pre-expand in either the Hose or the Primary Heater.

C. HOSES

1. Make sure that the Hoses are not plugged.

5. Troubleshooting a poor spray pattern.



NOTE

Follow the procedures in the order given. Remember that repairs should be made as soon as possible. Don't leave the unit open to air any longer than necessary, as this will lead to further problems, such as moisture entering the system and causing the isocyanate to crystallize.

After the unit has been exposed to the atmosphere, it should be run long enough to displace the material that was in the unit when it was opened up.

NEVER inspect filter assemblies at time of shut-down!

4. In troubleshooting, a restriction problem where the hydraulic pressure gauge on the *missing* material side is higher than normal, start at the point farthest from the unit and work backward. Check obvious and easy things first.



WARNING

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



NOTE

To troubleshoot a poor spray pattern, you must understand the four factors that affect the spray pattern.

A. TEMPERATURE

1. Too warm a material temperature will cause a separation (fingering) in the pattern.
2. Too cold a material temperature will cause a stream effect.

B. PRESSURE

1. Too high a pressure will cause excessive overspray and/or separation (fingering).
2. Too low a pressure will cause a stream effect.

C. CONTAMINATION IN THE MIXING CHAMBER

1. A foreign object in the Mixing Chamber will cause a poor pattern.



NOTE

Correct problem(s) immediately!

A. GUN

1. Side Block Material Valve turned on?

OVERHAUL PROCEDURE

Gla-Craft

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 off 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.

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Glax-Craft

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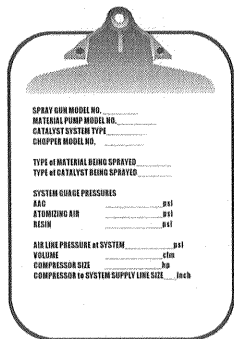
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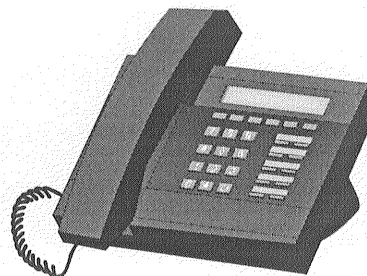
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IF YOU HAVE AN EQUIPMENT PROBLEM...

Glas-Craft



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 GAUGE PRESSURES		
ISO HEATER GAUGE		PSI
POLY HEATER GAUGE		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 Glas-Craft Service Department via E-Mail at gciservice@glascraft.com

FOR YOUR REFERENCE

Glas-Craft

DATE PURCHASED _____

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INSPECTION REPORT

GLAS-CRAFT

FOAM EQUIPMENT

- Micro Maxi Mini II
 Mini III MX MX II
 MH MH II Mongoose

Part No. _____ Inspected By _____

Serial No. _____ Inspection Date ____/____/____

- NEW REPAIR RETURN

VISUAL INSPECTION

	N/A	Accept	Reject		N/A	Accept	Reject
Appearance	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Fluid Filters	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Visual Leakage	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Power Cord	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

FUNCTIONAL TESTS

	N/A	Accept	Reject
Smoothness of Pump Operation	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Pump Output Pressure	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Pump Dead-Head Pressure	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Electrical Wiring & Connections	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Electrical Control Functions	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Heater Operation	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Air Connections	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Over Pressure Sensors	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

- Service Manual Literature

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