MASTER PACK / GS MFG
MODEL PPFD

(Portable Proportioner Foam Dispenser)

OPERATIONS MANUAL

SYSTEM SPECIFICATIONS

MATERIAL RATIO:	1:1 (Fixed)
MATERIAL VISCOSITY:	200 – 700 (CPS) @ 60 degrees Ambient Temperature
OUTPUT:	15-20 lbs per minute
OPERATING TEMPERATURE:	110 degrees Comp A / 125 degrees Comp B depending upon Ambient Temperature
OPERATING PSI:	100 PSI
ELECTRICAL REQUIREMENTS:	220 V @ 40 AMP, Single Phase
DISPENSING GUN:	100 PSI
COMPRESSED AIR REQUIREMENTS:	14-18 CFM @ 100 PSI / 5 HP Air Compressor
MAXIMUM LENGTH HOSE:	150 feet

SAFETY EQUIPMENT REQUIRED

SAFETY EYEWEAR

FRESH AIR SYSTEM

COMPLETE TYVEC FULL COVER SUIT

AND GLOVES

OPERATION / SPRAY PROCEDURE

After the initial startup and wet-out procedure is complete, it will be necessary to dial in the spray pattern.

Make sure solvent pressure pot is filled with Appropriate solvent, lid is tight and 100 PSI of air is connected to the solvent tank. Connect an additional air line (90-100 PSI) to the air line at the hose near the machine (this is for the gun air).

Turn the 3-way solvent/air valve on the gun to the solvent side and check for solvent to flow through the mix tube. Then turn the valve handle to the air side and purge solvent from the mix tube than close the valve (middle position).

The air will nucleate the foam and is required for mixing and development of a spray pattern. Increasing the air will further increase the atomization and reducing the air will decrease the atomization. It may be necessary to adjust Pump motor speed in conjunction with the air adjustment to achieve better results. We have found that running the pump motor controller at 20% to 30% provided optimum results. . *Never run motor speed over 50% without consulting factory!*

Release trigger to stop the flow of foam. IMMEDIATELY open solvent valve for 1 to 2 seconds and purge solvent through mix tube into a 5 gallon flush bucket. Bucket should have a lid attached (Stick gun mixer into spout of lid while flushing to reduce fumes). Open air valve for 1 to 2 seconds to chase solvent out (with air) from mix tube. Flush 1 second of solvent through mix tube and close flush valve. This will leave solvent in the mix tube and keep the tube from building up with Foam. When spraying, place gun mix tube into bucket spout and open the flush valve to **AIR** position to purge solvent left in mix tube.

WARNING:

Fumes from solvents & chemicals are dangerous! Approved fresh air respirator, gloves, safety glasses and protective suites MUST be worn at all times.

SAFETY CONTINUED

HANDLING CHEMICALS SAFELY:

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 avoid exposure to all isocyanates.

In additions to the manual, Master Pack and GS Mfg recommend that the user consult the regulations established under the Occupational Safety and Health Act, (OSHA), particularly the following sections:

- 1910.94 Pertaining to ventilation
- 1910.106 Pertaining to flammable liquids
- 1910.107 Pertaining to spraying finishing operations particularly paragraph (M) Organic Peroxides and dual component coatings

Local codes and authorities also have standards to be followed in the operating 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 safety procedures.

Storage of polyisocynates, 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 warn. 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 materials and the absorbed isocyanate should be collected promptly, placed in an open-top container, and treated with dilute solutions or 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

Many clean-up solvents are extremely flammable. Please read and follow the manufacturer's warnings and directions. **NO SMOKING** around clean-up solvents and polyurethane equipment. **NO SMOKING** signs must be posted and observed in all areas of operations or where solvents and other flammable materials are used or stored. Clean-up solvents must also be kept away from sources of ignition and used only with adequate ventilation to prevent build-up of vapors. Solvents should be handled in accordance with OSHA Section 1910.106 and 1910.107

SAFETY CONTINUED

TOXICITY OF CHEMCIALS

Master Pack and GS Mfg recommend that you contact your chemical supplier(s) for MSDS data sheets available on each product used. Copies of the MSDS sheets on each product should be easily accessible in case of emergency and can assist to determine the best methods of first aid treatment for each chemical used in your plant. It is also recommended that you consult OSHA Sections 1910.94, 1910.106, 1910.107 and NFPA No. 33, Chapter 14 and NFPA No. 91.

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 in 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 that easily dissolved in water. In addition, soap and water does not form a barrier to the isocyanates.
2. In 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.
4. **CONTACT A DOCTOR IMMEDIATELY IN THE EVENT OF AN INJURY**
5. If a person accidentally swallows the chemical 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

Hazardous concentrations of some chemical 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 ore opened.

Ventilation, continued

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 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. Therefore, these applications **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.

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 the 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 required for operators of foaming equipment. Refer to OSHA Standards, sub-part 1, 1910.132, 1910.133 and 1910.134 for Federal Standards.

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.

INSTALLATION START-UP PROCEDURE

Install 55 gallon drums on drum dollies. Connect chemical hoses from pump dispenser to chemical drums.

1. Install 220 Volt, 40 AMP power to the machine and turn on the main power. Activate power switch for heated hoses. Set temperature at 140° (NOTE: heated hoses may take up to 15 mins. To reach optimum set temperature).

2. Turn the speed control knob on the motor controller 4 to 5 turns (clockwise). Counter-clockwise turns motor off.

3. With the static mixer and retaining nut removed from gun, and the dispenser placed over an empty receptacle, depress the trigger on the gun to begin the flow of material.

Purge all air from the system until a steady flow of both “A” and “B” chemicals are present.

4. When equal amounts of component “A” and component “B” flow from the dispenser, release trigger. Foam Chemicals should dispense at a 1:1 ratio.

5. Coat the nozzle area with Vaseline and install the retaining nut and air mix tube.

6. Open air valve near hoses to begin flow of air through nozzle, begin spraying foam.

SHUT DOWN PROCEDURES

1. Flush gun with solvent & air through nozzles.
2. Remove nozzle & lock collar from front of gun.
3. Store in chemical receptacle provided during training.
4. Install “NIGHT PLUGS” with Vaseline in front “A” & “B” ports.
5. Turn off electrical & close valves on chemical free drums.

CAUTION

When spraying foam chemical insure you have enough solvent and foam chemical in drums and pails. Failure to monitor chemical and solvent flush inventory levels could result in a dispensing gun malfunction.

Call Master Pack for Further Information 949-487-2068

SAFETY

Safe Handling & Use of Urethane Foam Equipment

Any tool, if used improperly, can be dangerous. Safety is ultimately the responsibility of those using the tool. In like manner, safe operation of polyurethane 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 polyurethane 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 their own operation, develop their own safety program and be assured that their equipment operators follow correct procedures. Master Pack and GS Mfg recommend that the precautions in this manual be included in any such program and periodic safety inspections be performed.

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

REQUIRED PERSONNEL SAFETY EQUIPMENT:

The following personnel safety equipment is strongly recommended by Master Pack and GS Mfg for conducting safe operations of the urethane systems.

- **EYE PROTECTION**
- **GLOVES**
- **HEARING PROTECTION**
- **BREATHING PROTECTION**

Master Pack and GS Mfg recommend that the user consult the state and local regulations established for all safety equipment listed.

OPERATING SAFETY:

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 glassed, protective clothing) etc.
4. Avoid operating equipment which has given any indication of malfunction
5. Become fully acquainted with the equipment and chemicals used
6. Particular caution must be taken with respect to the vapors released during the use of urethane foam systems

TROUBLESHOOTING GUIDE

PROBLEM	PROBABLE CAUSE	RESOLUTION
Steam coming from spray tip – Poor spray pattern	• Cold Foam • Tip Plugged	• Heat Foam • Clean Tip
No Chemical Flow	• Gun Blockage • Drums NOT Vented • Motor Overload • Valves Closed	• Clear Restriction • Reset Motor Speed Control • Adjust Setting
Foam Fees Soft, NOT Tack Free White Color	• ISO Port Plugged on Gun	• Clean “A” Port
Foam Feels Hard, Crunchy (“A” ISO Rich)	• Polyol Too Thick	• Clean Gun • Raise Temperature on “B” Side
No Solvent Coming Out When Valve is Opened	• Solvent Check Valve is Plugged • Solvent Tank Dry	• Clean and Replace Check Valve • Refill Tank
Poor Mix	• Static Mix Tube Plugged • Low Air Pressure – No Mix • Chemicals too Cold	• Replace Static Mix Tube • Increase Gun Air Pressure • Heat Chemicals

Many problems are caused by materials being too thick. The material viscosity increases with cold temperature. Usually the POLY “B” side is thicker and a higher pressure will be evident on the POLY side fluid material gauge. Pre-heating the material will thin the POLY and lover the pressure/load on the motor.

Another problem is the gun plugging. The aluminum gun body (where the chemicals exit) can be kept clean with proper flushing and servicing. If dispenser becomes plugged with foam, immediately flush gun and remove air mix tube. Flush dispenser with solvent and air.

A drill bit and pin vise is recommended for cleaning the 1/8” exit port on gun.

FOAM CHEMICAL RATIO BALANCE

Must Read

If you have been provided with a Ratio Tip, simply attach the ratio tip to the gun and then "flow" the chemicals. They should "flow" at a 1:1 ratio.

The only way to adjust the ratio is by the heat. If you are using more Component "B", reduce the heat by 10 degrees on the pre-heaters. Perhaps also raise the Component "A" chemical by the same amount of 10 degrees. Re-assemble the dispensing gun and spray the foam.

After spraying for 30 minutes, re-attach the ratio tip and check ratio once again.

The electric pumps control the ratio. If there is an uneven flow, the dispenser could be partially restricted. (see trouble shooting guide)

REMEMBER NEVER TO EMPTY THE 55 GALLON DRUMS COMPLETELY. CHECK INVENTORY OF FOAM CHEMICAL AND SOLVENT **BEFORE** BEGINNING TO SPRAY FOAM.

Failure to maintain proper chemical inventory in drums could result in a "CROSS-OVER" of Foam Chemical in Dispensing Gun.

NOTE: The estimated cost to replace, repair, otherwise clean dispensing gun if restricted by foam is $750.00 excluding any shipping charges.

EQUIPMENT WARRANTY

Master Pack warrants the products of its manufacture for a period of one year against manufacturer's defects in workmanship or material.

Master Pack's only obligation under this warranty is to repair or replace that part that has failed because of faulty workmanship or materials. There are no warranties written or implied or either merchantability or fitness for a particular application. Warranty DOES NOT extend to **LABOR TO REINSTALL PARTS.**

Master Pack assumes no liability for damage to property or for consequential damages for loss of goodwill, or production, or income, which results from use or misuse of their products by purchaser or others.

Master pack, at its discretion, will replace or repair any parts that fail within one year from date of purchase because of manufacturer's defect in material or workmanship. (This does not cover O'rings, gun cleaning general "wear & tear" of normal operation and pump packing's). Purchaser must return subject item to Master Pack or its authorized distributor.

Warranty is also **CONDITIONAL** on the Purchase of proper flush solvent for gun and preservative "chemical" for long term equipment storage (over 60 days).

FAILURE to use proper cleaning solution recommended by Master Pack **COMPLETELY VOIDS WARRANTY** on Equipment as outlined above.

Purchase Date:_____ Purchase Order #:_____

Model Number:_____ System Number:_____

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DATE:_____

This document is to certify that the following personnel have been properly instructed in the procedures outlined below. In addition, Spray Foam Equipment maintenance procedures are to be expected and implemented to insure the proper function/foam yields of the equipment.

PERSONNEL: _____

_____

EMPLOYED BY: _____

LOCATED AT: _____

TRAINED BY: _____

PROCEDURE	DONE	INITIAL
Safety (Glasses, Gloves, Ventilation)		
Daily start up and shut down		
Foaming techniques		
Cleaning and Maintaining Equipment		
Trouble Shooting		
Changing Drums – **see page 10 of Operations Manual** REMEMBER NEVER TO EMPTY THE 55 GALLON DRUMS COMPLETELY. CHECK INVENTORY OF FOAM CHEMICAL AND SOLVENT **BEFORE** BEGINNING TO SPRAY FOAM. Failure to maintain proper chemical inventory in drums could result in a "CROSS-OVER" of Foam Chemical in Dispensing Gun. **NOTE: The estimated cost to replace, repair, otherwise clean dispensing gun if restricted by foam is $750.00 excluding any shipping charges.**		
Copy of Operations Manual		

Customer Employee or Representative