

Effective 1-1-00

SUPERFLOW CHOPPER SYSTEM

IT IS THE OPERATORS RESPONSIBILITY TO INSURE THAT THIS SYSTEM IS OPERATED SAFELY. LOCAL CODES AND OPERATING INSTRUCTIONS MUST BE FOLLOWED. EQUIPMENT OPERATORS SHOULD READ AND UNDERSTAND THE LOCAL CODES AND OPERATING INSTRUCTIONS BEFORE USING THIS SYSTEM.

I INTRODUCTION

Each system built by GS MFG. is completely assembled and fluid pressure checked prior to shipping. The purpose of this quality control procedure is to insure that all components of the system function properly. During the preparation for shipping, we dis-assemble as little as possible to make it easier for you to get the new system into production.

II SYSTEM DESCRIPTION

The Superflow System is composed of six sub systems:

1. Air System
2. Resin Pumping System
3. Catalyst Pumping System
4. Superflow Gun
5. Superflow Chopper Motor
6. Solvent Purge System

AIR SYSTEM

The air systems performs two basic operations. First , it controls the air-operated trigger assembly on the gun, which permits positive and simultaneous delivery of resin and catalyst, and provides air to the chopper motor via the two-stage trigger. The air trigger requires only minimal finger pressure which allows the long periods of continuous operation without operator fatigue. Secondly, the air system provides power to the pumping system

RESIN PUMPING SYSTEM

The resin pump is the heart of the Superflow System. It draws material from a drum or bulk-fed resin supply. There is an inlet filter, outlet filter, accumulator, and in-line shut off valve. The pump is controlled by an air regulator which is used to establish the flow rate of resin that is required.

CATALYST PUMPING SYSTEM

The unique slave assembly consist of the slave arm, pump, gauge, relief valve, siphon and return lines. This assembly is attached to the air motor of the resin pump and is driven by a shaft on the top of the motor. Removal of one connecting pin that attaches the shaft to the slave arm allows each material to be pumped separately. The location of the pump on the slave arm determines the flow rate of MEKP therefore altering the ratio of catalyst. There is an inlet filter screen and an additional in-line filter attached to the in-line shut off valve on the stainless steel braided MEKP hose.

SUPERFLOW GUN

The ultimate internal-mix flow coating gun is CNC machined from billet aluminum with independent resin and catalyst passages, each of which is terminated with solid fluid needles seating in the fluid plate. These needles are spring loaded in the "closed or off" position and provide positive shut-off when the gun is not in operation. The valves are simultaneously operated by the air trigger assembly in the first stage (partial triggering). When the trigger is fully engaged (2nd stage), air will flow from the gun to the chopper motor.

The F1 Superflow nozzle consists of the nozzle body, mixers, o'rings, MEKP check assembly, solvent check assembly and the GS Superflow nozzle. Under normal conditions the nozzle assembly is the only part of the gun you will have to remove and dis-assemble for cleaning at the end of the day. There is an air shut-Off valve on the back of the gun which will deactivate the trigger.

THIS VALVE IS THERE FOR YOUR PROTECTION. WHEN THE GUN IS NOT BEING USED OR IF YOU ARE REMOVING THE NOZZLE, THE VALVE SHOULD BE IN THE OFF POSITION.

THE GUN IS BASICALLY AN AIR-PISTOL WITH MODULAR PLATES ATTACHED TO THE FRONT. NEVER SUBMERGE THE GUN AND CHOPPER MOTOR IN SOLVENT.

CHOPPER MOTOR

GS has developed a chopper motor/cutter which is both powerful and quiet. Air is fed to the motor from the gun/trigger assembly. There is a large knob on the rear of the gun which is attached to a bulkhead that controls the volume of air supplied to me motor. Fiberglass (single or double) strands enter the rear of the cover and are drawn into the roller, idler bearing and cutting head assembly and chopped and distributed out the front into the "outlaw" chute and into the resin flow streams.

SOLVENT PURGE SYSTEM

A small pail mounted pump is used to pump solvent to the Superflow nozzle assembly for cleaning during the day. A small shut-off valve at the rear of the gun opens the purge line and an air regulator on the pump controls the flow.

REMEMBER - THIS IS AN INTERNAL-MIX GUN. ALWAYS FLUSH THE NOZZLE WITH SOLVENT WHEN YOU STOP SHOOTING TO PREVENT GELLING OF THE MATERIAL IN THE NOZZLE.

III SYSTEM ASSEMBLY

1. Remove all items from the box.
2. Mount the mast/pump to the cart using the bolts in the cart.
3. Attach the cart handle (M7) and the mast support brace to the cart using the bolts in the cart.
4. Connect the brace to the mast using bolt in the mast.
5. Lay all of the boom pieces flat on the floor.
6. Attach the spring/elbow (RB5) to the main boom (RB1) using the bolt, nut and washer in the boom.
7. Slide the front boom into the spring. (The farther in-the more tension on the spring).
8. Remove and reverse the eyelet extension (RB14) on the end of the boom and attach the 2 small eyelet's.
9. Insert the pin (RB3) into the square tubing end of the main boom. Slide the hose guide (RB4) through the hoses and pin up to the bottom of the square tubing. Fold the front boom over and set the boom assembly on top of the mast with the pin inserting into the mast.
10. Mount the solvent pail rack on the cart.
11. Attach the solvent pail cover to the solvent pump, mount on a CLEAN bucket and set it in the rack.
12. Attach the MEKP bottle rack to the mast.
13. Screw the material accumulator (P48-98) to the outlet tee on the resin pump.
14. Attach the material filter (P31) to the same tee.
15. Attach the siphon hose assembly to the bottom inlet swivel on the resin pump.
16. Attach the air manifold assembly (M15-SF).
17. Screw the remaining eyelet's into the boom.
18. Mount the MEKP slave pump/arm assembly to the air motor of the resin pump.
- **MAKE SURE THE BRACKET-ARM SHAFT IS IN LINE-**
19. Connect all hoses as marked, including the MEKP siphon hose assembly.

**PLEASE READ THE OPERATING INSTRUCTIONS
BEFORE STARTING UP THE SYSTEM**

IV INITIAL OPERATING INSTRUCTIONS:

These instructions will give you step by step directions on how to bring the system up to the operating state. Please carefully follow each instruction.

1. Fill the oil cup reservoir on the resin pump 1/2 full with the Dibutyl Phthalate Lubricant.
2. Fill the solvent pail with clean solvent.
3. Put a fresh jug of MEKP in the bottle rack and install the siphon/return lines into the jug. Screw the cap on completely.
4. Put the resin siphon hose/tube into the drum of resin or connect the transfer hose to the bulk-fed system.
5. Make sure the air regulator on the resin and solvent pumps are turned off. (counter-clockwise) before attaching the main air hose to the air manifold/watertrap.

AIR REQUIREMENTS:

100-120 PSI 17-25 CMF

Use a large (1/2 I.D. minimum) air hose as short as possible. Hard pump the hose from your air source to the manifold water trap. **DO NOT USE QUICK-DISCONNECTS** They will restrict the air flow volume supplied to the system. A shut-off valve (same I.D. or larger than the hose) can be used.

6. Connect the air hose at this time.

PRIMING THE UNIT

1. Remove the F9 Superflow nozzle and F8 gasket.
2. Take out the F11 cartridge using the removal bolt provided. Remove the inside F12 o'rings from the nozzle cavity.
3. With the B23-1/8 solvent valve off, turn up the air regulator on the solvent pump and solvent hose. After the pump stalls (hose filled) increase the regulator to 75-100 PSI.
4. Check for solvent flow through the nozzle by opening the solvent valve briefly.
5. Remove the pin that connects the slave arm to the top of the air motor.
6. Screw the R38 knob all the way in.
7. Pull the trigger on the gun and put the lock in place so the gun is open.
8. Put a container with water under the gun for the initial flow of MEKP out of the gun.
9. Open the B33 (Red) shut-off valve on the MEKP line.
10. Using short strokes, pump the slave arm by hand until there is a solid flow for MEKP out of the gun.
11. Turn off the B33 (Red) valve.

12. Pump the slave arm until there is 500-600 PSI on the catalyst gauge.
NOTE: The automatic relief valve on the pump is set @ 1300 PSI. The return line valve on the pump must be closed.
13. Purge solvent through the nozzle.
14. Open the B33 (Blue) resin valve.
15. Slowly increase the resin pump air pressure regulator until the pump starts to stroke. Continue until there is a solid flow of resin out of the nozzle.
16. Unlock the trigger to stop the resin flow.
17. Purge the nozzle with solvent.
18. Reconnect the slave arm to the top of the air motor.
19. Open the B33 MEKP valve (both material valves should be open).

PREPARATION FOR SHOOTING/CHOPPING

1. Using a thin layer of Vaseline on each item, reinsert the cartridge and F12 o'rings into the nozzle in order (see drawing). The cartridge should be flushed with face of the F1 nozzle body.
2. Apply a thin layer of Vaseline on the face of the nozzle, and bolt on the F9 nozzle and F8 gasket.
3. Trigger the gun and increase the resin pump pressure until the desired flow rate is delivered. **ALWAYS FLUSH THE NOZZLE WITH SOLVENT AFTER SHOOTING.**
4. Clamp the roving guide + brake (if used) to the box or boxes of roving. String the roving up into all of the boom eyelet's and into the back of the chopper motor cover.
5. Open the R38 knob (3 full turns).
6. Pull the trigger on the gun all the way to shoot material and fiberglass. Use the R38 knob to control the speed of motor until the desired rate of chop is delivered.

NOTE: When pulling the trigger, you can actually slow or speed up the motor slightly. Always pull the trigger completely.

DON'T FORGET TO FLUSH THE NOZZLE!

“DIALING IT IN”

RESIN/MEKP RATIO

1. The resin pump air regulator controls the flow resin.
2. Changing the location of the MEKP pump on the slave arm will alter the MEKP percentage. (Closer to the air motor will increase the MEKP flow).

RESIN/GLASS RATIO

RESIN/GLASS PATTERN

The “outlaw” chute on the chopper motor cover has been adjusted during our quality control testing, but here’s a few tips to get optimum quality in your glass/resin pattern.

1. The short top “Gurney Flap” at the outlet directs the flow of glass in a downward direction to the bottom of the chute. The top flap can be bent up or down so that the glass will hit approximately 1/4 of an inch from the end of the bottom chute. If the glass hits the chute too soon the glass will clog in the cover. If the glass goes too far it will “fly” and bounce off of the resin streams.
2. The bottom chute can also be moved from side to side to direct the flow of glass to the center of the resin streams.
3. The chopper motor assembly is mounted to the gun by the RC32 bolt. You can loosen this bolt to move the assembly up and down towards the resin stream. Usually having the chute as close to the front of the gun without disturbing the flow of resin will give you the best results.

ADJUSTING THE “OUTLAW CHUTE IS THE KEY TO EVEN GLASS DISPERSION IN YOUR RESIN PATTERN. FIBERGLASS WILL DIFFER IN THE WAY IT CUTS AND SEPARATES AND FLOWS ONTO THE RESIN STREAMS; TAKE TIME TO ‘DIAL IT IN’ FOR OPTIMUM RESULTS.

DAILY SHUT-DOWN

1. Turn the air valve (R49) on the gun off.
2. Flush the nozzle with solvent.
3. Remove the F9 nozzle and F8 gasket.
4. Hold your hand over the front of the nozzle and turn the solvent valve on to “push” the cartridge out of the nozzle body. If it doesn’t come out, use the mixer removal bolt to remove all of the mixers. Remove the inside F12 o’ring.
5. Soak the F9 nozzle, gasket and bolts only in solvent overnight. Remove the F12 o’rings and soak the cartridge overnight.
6. Disconnect the air supply to the system.

DO NOT BLEED OFF THE MATERIAL PRESSURE IN THE GUN. LEAVE FLUID PRESSURE IN THE HOSES AND GUN. REMOVING THE AIR SUPPLY WILL NOT RELIEVE THE FLUID PRESSURE

CHARGING THE RESIN PUMP ACCUMULATOR

As resin viscosity's and ambient temperatures vary during the year, pulsation of the MEKP/resin flow is sometimes visible. Charging the accumulator will minimize this pulsation for a smoother overall material flow from the gun.

1. Turn the resin pump air regulator down to zero.
2. Disconnect the slave arm from the resin pump by removing the connecting pin at the top of the air motor.
3. Open the by-pass valve under the accumulator and drain the resin into a bucket.
4. Turn on the B23 valve at the top of the accumulator. This will force resin out of the accumulator into the bucket. Resin, the air will exit through the by-pass valve until the ball check (inside the accumulator) will eventually stop the flow of air as it seats the bottom of the accumulator.
5. Turn off the by-pass valve.
6. Turn off the B23 air valve.
7. Re-connect the slave arm to the top of the resin pump.
8. Pull the trigger on the gun and turn the resin pump air regulator pressure to approximately 30 PSI or to normal operating pressure.