

Title of Training	Chem Grout Pump	
Equipment Info.	Make/Type/Size/Model	Chem Grout CG-502/31/A/HP
Material Needed	Operators Manual along with Grout Machine for hands on operators training	PPE: Hard Hat- Sturdy Gloves-Safety Glasses-Face Shield-Work Boots-N-95 Respirator-Hearing Protection



GENERAL PROCEDURES

Before attempting to mix and pump production materials, it is prudent to rinse the mixer and charge the pump hopper with sufficient water to thoroughly flush the pump and all grout lines. This is to purge the grouting system of any residual materials or scale that may exist. Once that is completed, remove the grout hose from the pump and drain out all water by elevating one end, or by progressively elevating the entire hose, starting at one end and proceeding to the other.

Next, mix slurry composed of Portland cement in approximate proportions of 6-1/2 to 7-1/2 gallons of water to one bag (94 lbs.) of cement, and pumps this through the grouting system. This is to remove any residual water from the hose, lubricating it for the production material to follow. Now the production grout may be mixed and pumped immediately behind the slurry mix, which is thus evacuated from the hose, and may be retrieved in a bucket. Do not attempt to pump production material through a dry hose.

Finally, one last word about procedures. Occasionally, no matter how conscientious an operator may be, a hose will get plugged. Once this happens, the only sure way to remove the plug is to empty it of material. Beating on it with a hammer or running over it with a vehicle will not usually be successful. A prudent operator will be prepared for such eventuality by having readily available a sufficient length of small diameter stiff tubing, hose or plastic pipe to which he can rapidly connect a water source and flush the grout from the hose.

Personal Protection

- Handling or processing cement products may generate dust which can cause mechanical irritation to the eyes, skin, nose and throat.
- Appropriate eye protection shall be worn at all times while handling and mixing products.
- Approved dust masks shall be worn to protect the nose and throat from dust.
- Safety shoes, gloves and other appropriate skin protection shall be worn at all times.
- Always wash hands with suitable soap after handling products and before food consumption



SAFETY:

- Various guards, shields, grates and screens are provided over moving parts, such as: sheaves, couplings, augers, paddles, belts, etc. to guard against injury to operators while the equipment is in operations.

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- Warning stickers are provided to remind operators of the potential hazards.
- Operators are advised to utilize appropriate personal safety equipment including, but not limited to, safety glasses or goggles, dust masks or respirators, gloves and / or rain gear and hard hats.
- NEVER PUT HANDS OR TOOLS IN MIXERS OR PUMP UNLESS PRIMARY POWER SOURCE IS SHUT OFF AND DISCONNECTED AND KINETIC ENERGY DISSIPATED. ON ELECTRICALLY POWERED EQUIPMENT, USE PROPER LOCK OUT/TAG OUT PROCEDURES. FAILURE TO OBSERVE THIS WARNING COULD RESULT IN SERIOUS PERSONAL INJURY AND/OR DAMAGE TO THE MACHINE.
- NEVER ATTEMPT TO DISCONNECT OR OPEN THE COUPLING ON ANY PART OF THE PUMP DISCHARGE SYSTEM WHILE PUMP IS IN OPERATION, OR IF THE DISCHARGE SYSTEM IS UNDER PRESSURE FOR ANY REASON.
- NEVER OPERATE MACHINE WITHOUT THE VARIOUS GUARDS, SHIELDS AND OTHER SAFETY EQUIPMENT WITH WHICH THE MACHINE WAS ORIGINALLY EQUIPPED IN PLACE AND FUNCTIONAL.
- ALL ELECTRICAL CONNECTIONS MUST BE MADE BY A QUALIFIED ELECTRICIAN.
- HYDRAULIC COMPONENTS, INCLUDING, BUT NOT LIMITED TO VALVES, FITTINGS, HOSES, MOTORS, RESERVOIR AND FILTERS MAY BE HOT. TO PREVENT INJURY, TOUCH ONLY THE HANDLES PROVIDED. LET THE HYDRAULIC COMPONENTS COOL BEFORE SERVICING THE EQUIPMENT.

GROUT PUMPING TIPS SET-UP

- In general, the most important factors in setting up are proximity to the work and access to materials and water supply; consideration should be given to the disposal of waste materials and wash-out residue.
- It is always best to keep grout lines as short as possible to reduce pumping distances. This is particularly important when pumping hard-to-pump materials, such as sanded grouts and pre-blended materials.
- The source of solid materials (cement, fly ash, sand, etc.) should be readily accessible and an adequate supply of water should be available for mixing and clean-up.
- When planning a project for high production rates, it is well to remember that the greatest consumption of time occurs when charging the mixers. A proper set-up can reduce this to a minimum.

START-UP

After set up, visually inspect that there are no foreign objects or old set up materials in either the pump or the mixer(s), then make all necessary connections.

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- With operating levers, valves, or handles in either "NEUTRAL" or "OFF" position and the primary power source turned OFF, fill the pump hopper with clear water.
- Turn on the primary power source and observe that conditions are normal and machine is ready to run.
- Check each mixer for proper operation by running the mixer in both forward and reverse directions, if unit is so constructed as to allow reverse direction.
- Next, start the delivery pump to discharge the water that was previously introduced into the pump hopper. This is an ideal opportunity to check the grouting system to determine that all lines and hoses are clear and unobstructed. Pump condition may also be checked at this time by testing discharge pressure.
- When it is determined that all systems are normal, shut off the pump and drain the water from the pump and all lines.

NOTE: Some pre-blended materials and some on-site mixes of sand and cement tend to separate and clog the hoses upon contact with residual water in the hose; so it's a good procedure to mix and pump out cement/water slurry prior to mixing and pumping the production material, to lubricate the pump and hoses.

CLEAN-UP

NEVER RUN PUMP WITHOUT FLUID AS IT WILL CAUSE SEVERE DAMAGE PUMP.

After disposing of excess production material, carefully wash out mixer tanks, paddles and baffles into the pump hopper and pump the resulting washout material through the grout hoses to a suitable disposal site. Continue this operation until only clear water is discharged. It is advisable to drain all residual wash water from the pump and all hoses when washout is complete.

Maintenance

Daily - add oil SAE 10 or SAE 20 at (15) Drain filter (16).

Operation

- Connect air- line and grout line. Pour 5 gallons water in hopper.
- Start pump by opening valve and pump out water.
- Disconnect and manually drain hose.
- Reconnect grout hose. Begin mixing by introducing first water, then solid materials to mixer.
- Mix until smooth and creamy, then discharge into hopper and begin pumping.

Hands on Field Exercises

- Pre-Start Up Operations
- Proper operations
- Shutdown & Clean Up Procedures

A. Participant Field Exercises

1. Participants will partake in the following hands-on activities

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- a. Perform a pre-start up inspection of the grouting machine
- b. Demonstrate proper grout machine operations
- c. Proper Shutdown and clean out mixer tanks, paddles and baffles into the pump hopper and pump the resulting washout material for disposal

This Safety Training Topic (STT) does not necessarily cover all possible hazards associated with this equipment and should be used in conjunction with equipment manual. It is designed as a guide to be used to compliment training in the field at Brieser Construction and as a reminder to users prior to equipment use.

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EMPLOYEE NAME (Print or Type)	EMPLOYEE SIGNATURE	TRADE	JOB TITLE
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