



Technical Information

EZ³, FURNA³, AND EZ CAST SHOTCRETE CHECKLIST

- 1.) Locate the pump close to the area to be repaired so that the pumping distance can be minimized. Use more slick pipe and less hose to allow for easier pumping. Lay pumping line as directly as possible in an attempt to minimize turns and elbows in the pumping system.
- 2.) Shotcreting requires compressed air at 125 PSI & 400 CFM minimum (750 CFM preferred).
- 3.) Shotcreting requires an electric source of 440VOLTS, 3 phase, and 100 AMPS for the pump and for each mixer (minimum 60 AMPS for the pump and 30 AMPS per mixer).
- 4.) The water source should be placed close to the pump and mixer to simplify cleaning of equipment.
- 5.) To minimize the number of pump and line cleanouts, it is best once the process has started, to be able to continue without work stoppages until the installation is completed. All scaffolding must be done in advance so that moving to each repair location can be done as quickly as possible.
- 6.) Good communication at all time between nozzle, pump, and mixer operators is critical.
- 7.) At the start of the job, before mixing of castable takes place, the following items need to be checked or prepared:
 - a.) Is pump in good running order?
 - b.) Is a sufficient air supply accelerant available at nozzle?
 - c.) Are all people in place for shotcreting?
 - d.) Is lubricant mixed?
 - e.) Install sponge ball into the pumping line.
 - f.) **For horizontal pumping only:** Before the first batch of castable is placed in the pump hopper, the lubricant must be pumped into the line and then the pump hopper must be flushed out before dumping the first batch of castable into the hopper. (NOTE: the hopper door must be opened when being flushed out and must be closed before charging the first batch of castable.)
 - g.) After all preparations are made, the first castable batch to be shotcreted can be mixed.
 - h.) **For vertical pumping:** First, pump through the initial horizontal section as above in step f.) making sure there is a good flow of material before stopping the pump in order to connect the horizontal section to the vertical section. Next, lubrication mix must be poured into the pipe from the highest vertical point. Then, start pumping so that lubricant is discharged at the end of the vertical section and continue pumping until you get good flowing refractory mix from this location. Reconnect the next horizontal section to this vertical section and follow the same procedures of lubrication. Continue pumping through any additional sections of pipe and/or hose. **CAUTION:** Always lubricate and pump through hose sections one at a time to prevent plugging.
 - i.) After good mix starts coming out of the end of the hose, stop pumping.



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- j.) Connect the nozzle and start the shotcreting process.

- 8.) Secure a 2" x 12" box for the top of each mixer. (Prevents spilling of totes.)
- 9.) A consistent mix, not too wet or dry, is the secret to a smooth shotcrete process.
- 10.) Carefully watch the accelerant to make sure tanks do not empty.
- 11.) Pressure on accelerant tanks should be kept at 110 PSI and the nozzle air pressure should be kept at 100 PSI to prevent backpressure on the accelerant line.
- 12.) Keep compressor full of fuel to prevent unexpected work stoppage.
- 13.) At the end of the installation, cleanout of the pump and lines must be done immediately.
- 14.) All drums of accelerant should be mixed a few days before the start of the job. Each drum of accelerant is pre-measured and requires 11 gallons of water per drum (or fill the drums up to 5 1/4" from the top and mix. (These are 15-gallon drums.)
- 15.) If using tote bags on the job, two fork trucks will be required during the installation.
- 16.) The nozzle operator needs to be rotated frequently because the hose/nozzle is heavy.
- 17.) Soak the shotcrete hose with water 24 hours before the start of the shotcrete process.
- 18.) Three 5 gallon drums are required to premix lubricant.
- 19.) Metal anchors should be within 1/2" - 1" from the hot face.
(For example: For a 6" shotcrete lining, use 5 - 5 1/2" anchors.)
- 20.) Brick anchors should be used for all overhead installations placed approximately 14" on center.
- 21.) Call Resco Products, Inc for further details.