

for

# Ready Mixed Concrete Truck Drivers

delivering to concrete pumps



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# **Safety Manual**

## **for Ready Mixed Concrete Truck Drivers Delivering to Concrete Pumps**

### **Preface**

This document has been created to provide safety guidelines for ready mixed concrete truck drivers who are making deliveries to concrete pumps.

No distinction has been made between front and rear discharge mixer trucks. The rules apply to both types equally.

This document is intended to inform the drivers of mixer trucks about the hazards found around concrete pumps and pumping jobs, and to provide guidance for avoiding those hazards. This document does not replace any safety guidelines provided by your company, or by any ready mix vehicle manufacturer. It is important for operators of ready mix trucks to be familiar with all safety guidelines that apply to the operation of his or her own equipment.

No attempt has been made to list all possible ways a mixer driver could be injured around a pumping job. It is assumed that prudent drivers will use their own devices, awareness, and judgement to stay out of harm's way.

Additional copies of this *Safety Manual* are available from the American Concrete Pumping Association.

**version 1.0.3**

**April, 2011**

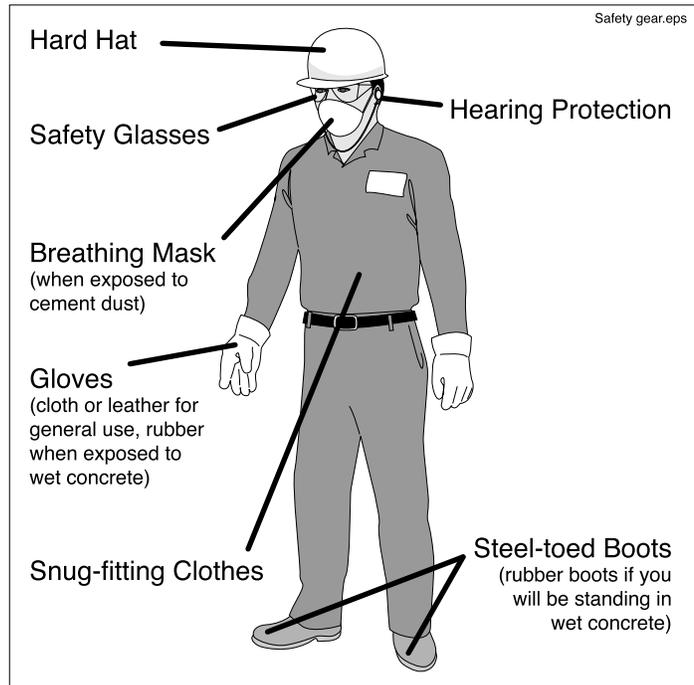
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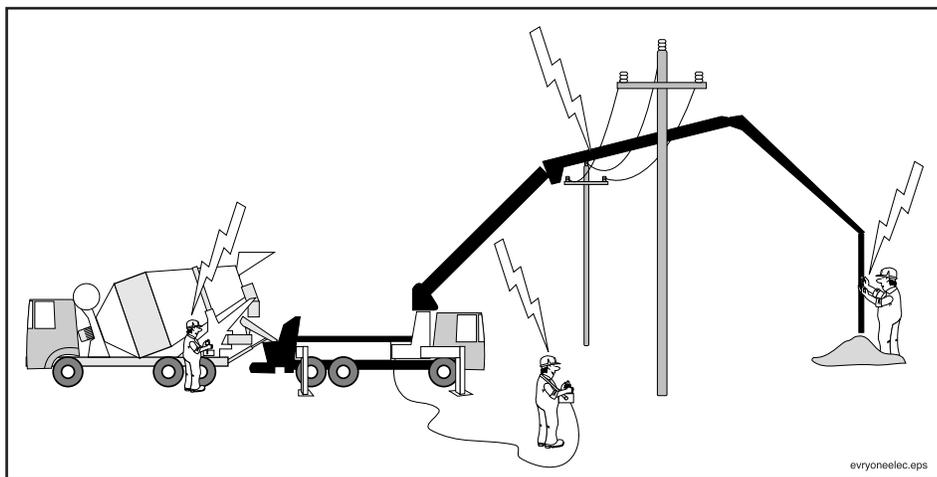
# 1. General

**1.1 ⚠️ WARNING!** Always wear Personal Protective Equipment (PPE) when working near a concrete pump. Safety glasses, hard hat, ear protection, and rubber gloves are especially important when working near the hopper. See Figure 1.



**Figure 1**  
Wear the same protective clothing as the operator

**1.2 ⚠️ WARNING! ELECTROCUTION HAZARD!** If the pump becomes energized, the electricity will travel through the concrete going in to the hopper and energize the mixer truck. If you are touching your truck or the pump, you could be electrocuted. Monitor the boom movements and alert the operator if the boom moves closer than 20 feet to any electrical wire (50 feet when the voltage exceeds 350 kv). (See Figure 2).



**Figure 2**  
If the boom becomes energized, the mixer truck is also energized

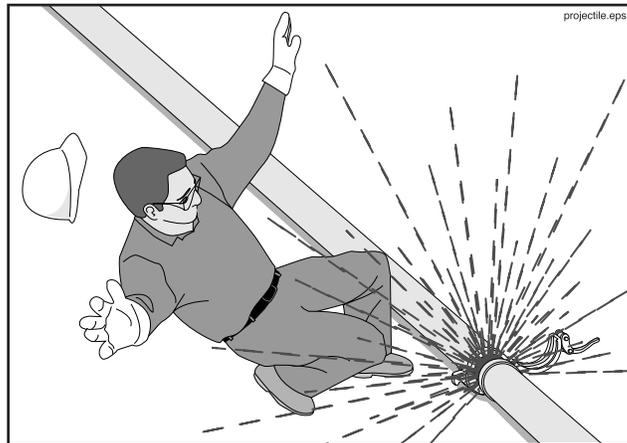
## Safety Rules for Ready Mixed Concrete Truck Drivers Delivering to Pumps

**1.3** **▲ WARNING! Falling hazard.** Never stand on, and avoid walking across a concrete pipeline while it's in use. Concrete pumps can develop pipeline pressures greater than 1000 PSI!. Pipelines can move without warning.



**Figure 3**  
**Never walk on the pipeline**

**1.4** **▲ WARNING! Projectile hazard.** Stay away when pipeline is being opened. If pressure remains when the pipeline is opened, or if a clamp or pipe breaks, concrete will be ejected with dangerous velocity. The pump operator is responsible for knowing how to safely remove pressure from the line. Always wear safety glasses near pipeline.



**Figure 4**  
**Stay away when pipeline is being opened**

**1.5** **▲ WARNING! Projectile hazard.** Do not touch any concrete pump pipe clamps or hoses. Alert the operator if you see a problem.

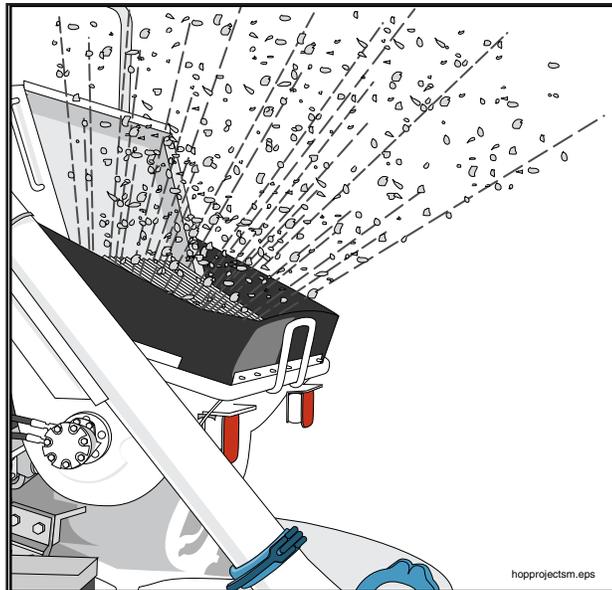
## Safety Rules for Ready Mixed Concrete Truck Drivers Delivering to Pumps

**1.6**  **WARNING! Falling hazard.** Use the “3 point rule” when getting on or off the pump. The 3 point rule is: One hand and two feet, or two hands and one foot are to be in contact with a secure surface at all times. Avoid getting on the pump unless it’s absolutely necessary.



**Figure 5**  
Use the 3 point method

**1.7**  **WARNING! Projectile hazard.** Always wear safety glasses before looking in the hopper. Keep your distance when monitoring the hopper. Never look into the end of a connected pipe or hose.



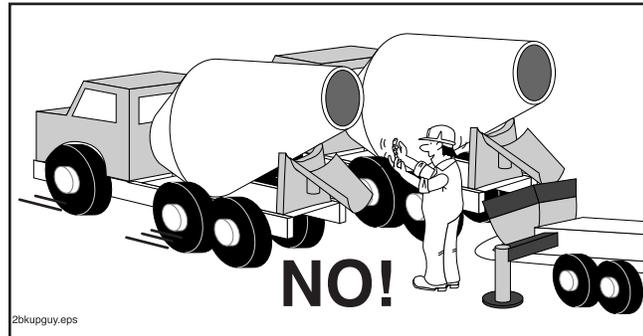
**Figure 6**  
Concrete can splash from the hopper

## 2. Arriving at the Job Site

- 2.1 **BE SEEN!** A safe jobsite depends on others knowing where you are. Does the pump operator know you're on site?
- 2.2 If you're delivering at night, does your truck have the proper lighting?
- 2.3 Do other equipment operators know you're there?
- 2.4 If using mirrors to back towards the pump, they must be clean and properly adjusted.
- 2.5 Always use a spotter when approaching the pump.
- 2.6 Look around. Inspect the route from the road to the pump before pulling on site.
- 2.7 Does the route allow a clear view of the pump hopper?
- 2.8 Will you be able to see the pump operator or spotter as you get close to the pump?
- 2.9 Will there be more than one mixer truck discharging into the pump hopper?
- 2.10 Can you see the outriggers of the pump?
- 2.11 Where will you be washing out?
- 2.12 If delivering at night, does the job have adequate lighting?

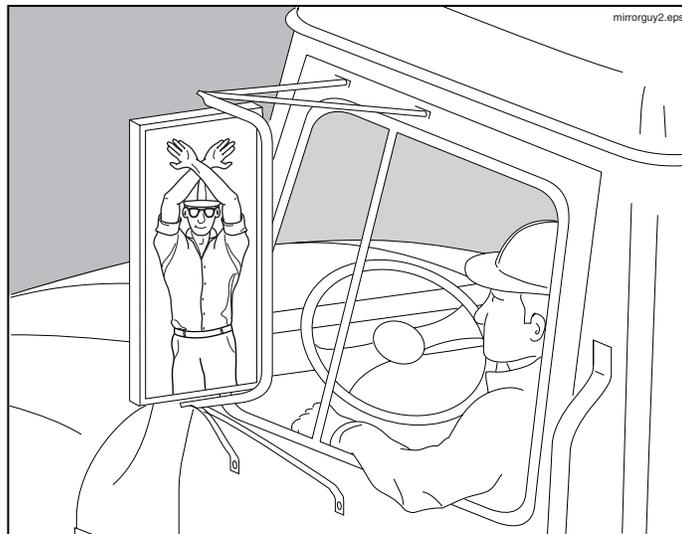
### 3. Approaching the Pump

**3.1** **⚠️ WARNING! Crushing hazard. NEVER get between the pump and a mixer truck.** Never let anyone else stand between the pump and a mixer truck. If more than one mixer truck is delivering to the pump hopper, make sure no one is trapped between the mixer trucks, or between the mixer truck and the concrete pump before you begin backing towards the pump. See Figure 7.



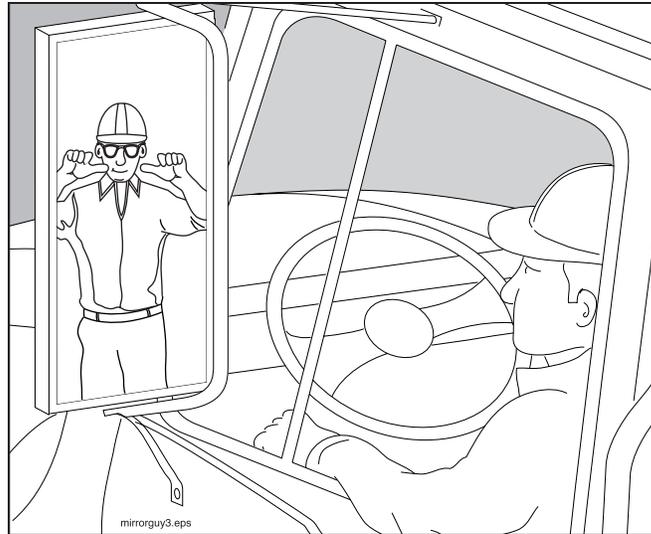
**Figure 7**  
**No one may stand between the pump and a mixer truck.**

**3.2** **⚠️ WARNING! Crushing hazard.** Do not get closer than 10 feet to the pump unless you have a clear view of the spotter who is directing you. If you lose sight of the spotter, **STOP IMMEDIATELY.** Do NOT continue to back up until line-of-sight has been reestablished. See Figure 8.



**Figure 8**  
**When backing, maintain visual contact at all times**

**3.3** **▲ WARNING! Crushing hazard.** When backing towards the pump hopper, the spotter must use clear and concise hand signals. If you do not understand the hand signals, **STOP IMMEDIATELY.**



**Figure 9**  
**What do you suppose he means by that signal?**

**3.4** **▲ WARNING! Crushing hazard.** If you find yourself acting as the spotter for another mixer truck, make sure the driver is watching you. Make sure you're not in the path of the mixer truck as it backs towards the hopper. If the driver is not safely approaching the pump, immediately signal the driver to stop. When stopped, agree on hand signals and discuss any other factors or conditions that would affect a safe approach to the pump.

**3.5** **▲ WARNING! Crushing hazard.** Take direction from only ONE spotter. Do NOT attempt to use both rear-view mirrors as you near the pump. Taking your eyes off the spotter for even a moment could lead to an accident.

**3.6** **▲ WARNING! Crushing and amputation hazard.** Do not allow anyone to move, raise, lower, operate, adjust, or unfold the discharge chute while backing towards the pump. Stop immediately if someone tries to make a chute adjustment.

**3.7** **▲ WARNING! Crushing hazard.** Know the condition of your brakes. Approach the pump hopper at a speed that allows you to stop immediately. Set the parking brake before leaving the cab. Be sure the transmission is in neutral. Trucks with automatic transmissions can move suddenly if the engine RPM is increased and the transmission is not in neutral.

**3.8** Remember to grab your hard hat and put on your safety glasses before leaving the cab.

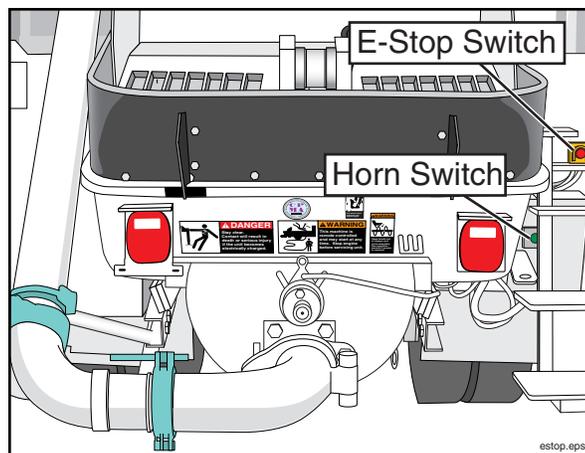
**3.9** **▲ WARNING! Equipment malfunction hazard.** If your truck hits any part of the pump, report the damage to the operator immediately. Even seemingly small damage can cause an unsafe operating condition, endangering everyone on the jobsite.

## 4. Delivering the Concrete

**4.1 ⚠️ WARNING! Plugging hazard.** Do not put concrete into the pump hopper until the operator directs you to do so. If the pump has not been primed, filling the hopper can cause the pump to plug. Plugs create a hazard because they cause the pump to reach maximum pressure.

**4.2 ⚠️ WARNING! Plugging hazard.** Foreign material can cause blockages. If you see foreign material coming from the mixer truck, signal the operator to stop the pump. If you cannot get the operator's attention, hit the emergency stop switch (E-stop). Do not allow the concrete chute rake or any other item to fall into the pump hopper. Do not attempt to grab foreign objects from the pump hopper while it is operating. Even if stopped, the pump is remote controlled and can start at any time. Alert the operator to stop the pump if you must remove foreign material from the hopper.

**4.3 ⚠️ WARNING! Hose whipping and other hazards.** You must know how to stop the pump in an emergency. Have the operator show you the locations of the emergency stop switches and how they work. If an emergency arises, hit the E-stop switch, then tell the operator about the problem. See Figure 10.



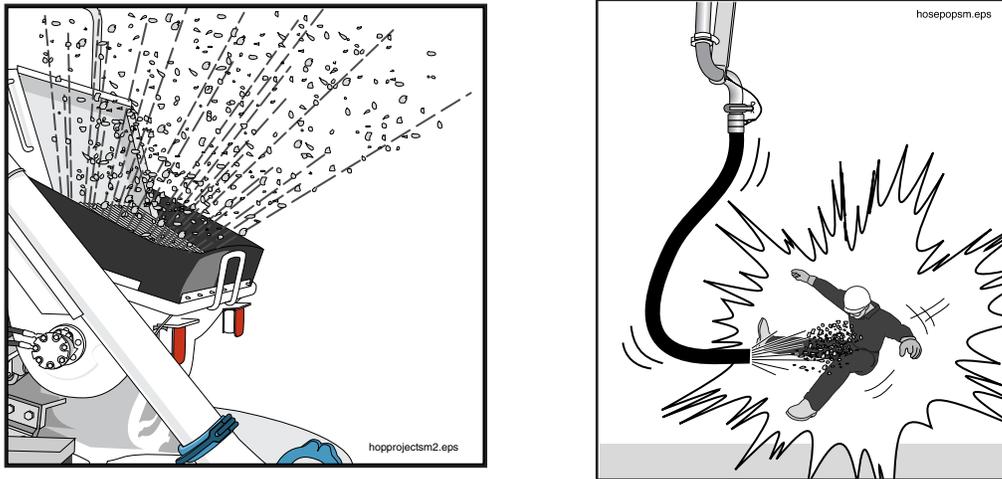
**Figure 10**  
Know how to stop the pump in an emergency

**4.4 ⚠️ WARNING! Hose whipping and other hazards.** You must know how to signal the pump operator to stop the pump if you can't keep enough concrete in the hopper. Some pumps are equipped with horn buttons on the rear of the pump. (See Figure 10.) Have the operator show you how to signal them. Use the emergency stop switch only if you can't get the operator's attention, because there is a restarting procedure from emergency stop that may cause delays. In spite of the restarting procedure, do not hesitate to use the emergency stop if the need arises.

**4.5 ⚠️ WARNING! Hose whipping and other hazards.** Keep the hopper about two-thirds full. Do not let the material level in the hopper become so low that air is sucked into the material cylinders of the pump. If air is sucked into the cylinders, the pump will compress the air. Compressed air always poses a hazard as it's released from the pump or the delivery pipeline. Before air is sucked into the cylinders, signal the operator to stop the pump. Some pumps are equipped with switches which will stop the pump without using the emergency stop. In that case, the operator would be able to show you what to do.

## Safety Rules for Ready Mixed Concrete Truck Drivers Delivering to Pumps

**4.6 ⚠ WARNING! Hose whipping and other hazards.** Regardless of how it happened, if air is sucked into the cylinders, the pump **MUST BE STOPPED**. If you cannot get the operator's attention, hit the emergency stop switch. It is the operator's job to know how to safely remove air from the pump and delivery system. Do not refill the hopper unless directed to do so by the pump operator. Stand away from the hopper and the end hose until the operator has removed the trapped air from the delivery system and has signaled you that it is safe to begin unloading again. See Figure 11.



**Figure 11**  
**Release of trapped air is hazardous**

**4.7 ⚠ WARNING! Hose whipping hazard.** Stay away from the end hose of the concrete pump. This is especially important to remember when the material is being placed close to the mixer truck. The tip hose may move quickly and unexpectedly, and if it is kinked, it could unkink violently.

**4.8 ⚠ WARNING! Crushing and amputation hazard.** Do not stand or allow anyone else to stand on the hopper grate. If they lose their balance, they can become trapped or killed in the hopper of the machine (see Figure 12). Never lift or move the hopper grate for any reason.



**Figure 12**  
**Stay out of the hopper**

## Safety Rules for Ready Mixed Concrete Truck Drivers Delivering to Pumps

**4.9** **⚠ WARNING! Projectile hazard.** Avoid walking under the boom of concrete pumping trucks. Avoid standing next to the elbow at the back of the pump.

**4.10** **⚠ WARNING! Head injury hazard.** Avoid walking under the outriggers of the concrete pump.

**4.11** **⚠ WARNING! Tripping hazard.** Try to avoid overfilling the hopper to the point where concrete piles up on the ground. As the concrete dries it creates a tripping hazard near moving machine parts.

**4.12** **⚠ WARNING! Tripping and falling hazard.** Do not climb on or off the pump truck while carrying anything that prevents you from using the “3 point rule.” Move objects separately, or have someone hand them to you when you are in a safe position. Avoid getting on the pump at all. Personnel should not stand on the pump because they could lose their balance near moving machine parts.



**Figure 13**  
**Use the 3 point rule;**  
**Never stand on the grates**

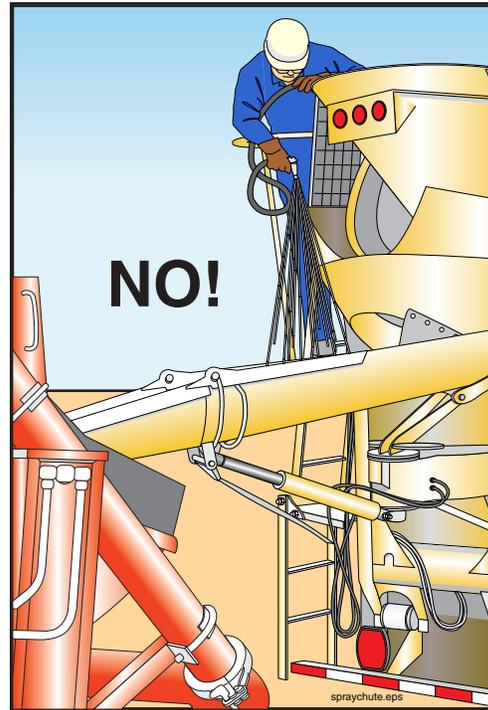


**4.13** There is only one operator of the concrete pump. The pump operator is responsible for the safe operation of the pump and boom. If you have questions regarding correct or safe pumping procedures, talk to the operator. Different operators may have different procedures, and this doesn't necessarily mean one of them is wrong. If in doubt, ask.

**4.14** Safety is always in the hands of the people on the job. Monitor the movements of the boom, even if there are no electric wires nearby. Alert the operator if he/she is nearing an obstruction or hazard.

## 5. Cleaning and Departing the Jobsite

**5.1** **⚠️ WARNING! Plugging hazard.** Do not wash out the mixer truck into the pump hopper. Water washes the cement and fine aggregate out of the mix, leaving a coarse mixture that cannot be pumped (called segregation). See Figure 14.



**Figure 14**  
**Do not wash out into the pump hopper**

**5.2** **⚠️ WARNING! Hose whipping and projectile hazard.** At the end of the job, the operator may want the level of material in the hopper to be lower than usual. In spite of this, do not allow the level to become so low that air is sucked into the material cylinders.

**5.3** **⚠️ WARNING! Collision hazard.** Do not drive under the boom of the concrete pump when pulling away from the job. Have the operator move the boom to a safe area, or take a different route off the jobsite.

**5.4** **⚠️ WARNING! Falling and hose whipping hazard.** If the pump operator is going to empty the hopper into your mixer truck, let him maneuver the end hose in with the boom. Do not try to help by directing it in with your hands. Kinking the hose can lead to serious injury.

**5.5** **⚠️ WARNING! Various hazards.** If the concrete is being pumped back into the mixer truck, stay away from the hopper, or sit in the cab of your truck until it's done.

**5.6** **⚠️ WARNING! Hose whipping and projectile hazard.** Make sure the operator knows you're empty and leaving. Be friendly; before leaving, if you have spare water, see if the pump operator needs it.

**5.7** **⚠️ WARNING! Crushing hazard.** Be sure all personnel are at a safe distance from the mixer truck before pulling away from the pump.

# 6. ACPA Recommended Handsignals

 <p>1. START PUMP SPEED UP</p>	 <p>2. SLOW PUMP DOWN</p>	 <p>3. STOP PUMP</p>	 <p>4. LITTLE BIT</p>	 <p>5. RELIEVE PRESSURE (2 taps)</p>	 <p>6. ADD WATER 4-GALLONS</p>	 <p>7. ALL DONE CLEAN UP</p>
 <p>8. BOOM UP</p>	 <p>9. BOOM DOWN</p>	 <p>10. BOOM LEFT</p>	 <p>11. BOOM RIGHT</p>	 <p>12. OPEN OR EXTEND BOOM</p>	 <p>13. CLOSE OR RETRACT BOOM</p>	 <p>14. STOP BOOM</p>

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Manufacturer's recommendations supercede  
any and all information provided by the ACPA.

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