



Important Change!

Although information contained in this manual states a minimum safe distance from power lines as 17 feet, effective November 2010, the minimum safe distance has been changed to 20 feet clearance from power lines at all times and 50 feet clearance when the voltage exceeds 350kv.

Co-worker Safety Rules

for
Laborers, Oilers, and the Placing Crew



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Version 6.0.1

CALIFORNIA
Proposition 65 Warning

Diesel engine exhaust and some of its constituents are known to the State of California to cause cancer, birth defects, and other reproductive harm.

VI. Co-worker Safety

16. Safety Rules For Workers Assigned To The Pump

16.1

⚠ WARNING You must know how to stop the pump and boom. Have the operator show you the locations of the emergency stop switches (Figure 72).

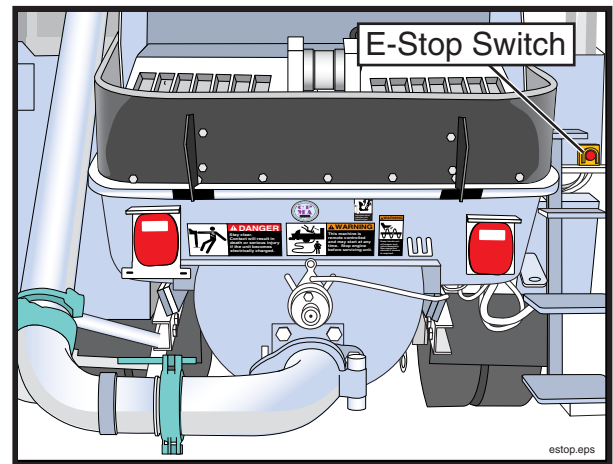
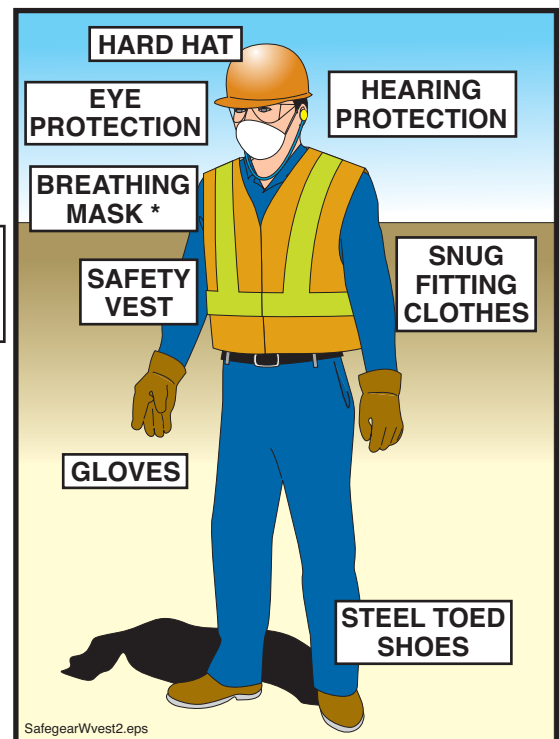


Figure 72
Know how to stop the unit in an emergency

16.2

⚠ WARNING You should wear the same personal protective equipment (PPE) as the operator. Goggles, hard hat, ear protection, and rubber gloves are especially important when working near the hopper (Figure 73).



* Breathing mask needed when cement dust (or other toxic dust) is present in the air.

Figure 73
Wear the same personal protective equipment as the operator

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16.3

⚠ DANGER **Electrocution hazard!** If the pump or boom becomes energized with high voltage and you are in contact with **any** part of it, you are at **risk of electrocution!** You should monitor the movement of the boom and **alert the operator** if the boom comes within 17 feet of an electrical wire. (See Figure 74.)

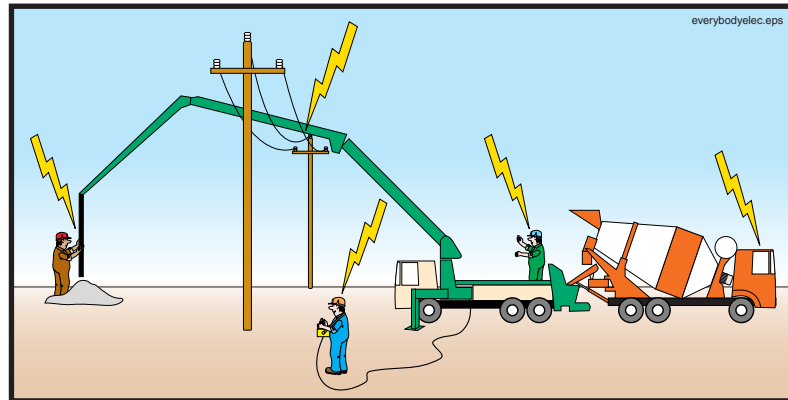


Figure 74

If the pump becomes energized, everything that touches the pump is also energized

16.4

⚠ DANGER When overhead wires are in the area that the boom will be moving to complete a pour, a spotter must be employed whose only job is to warn the operator if the boom comes within 17 feet of the wires. The spotter must understand the responsibilities assigned, and must be able to judge a 17 foot distance.

16.5

⚠ WARNING Keep an eye on the movements of the boom, even when there are no electrical wires nearby. Alert the operator if the boom is nearing any obstruction or hazard. Where job site safety is concerned, two sets of eyes and ears are better than one.

16.6

⚠ WARNING **Crushing hazard. Never, ever position yourself between the ready mix truck and the pump!** Stand to the side, where the driver can see you (Figure 75).



Figure 75

Never stand between the ready mix truck and the pump

16.7

⚠ WARNING When backing in ready mix trucks, use clear and concise hand signals (Figure 76).

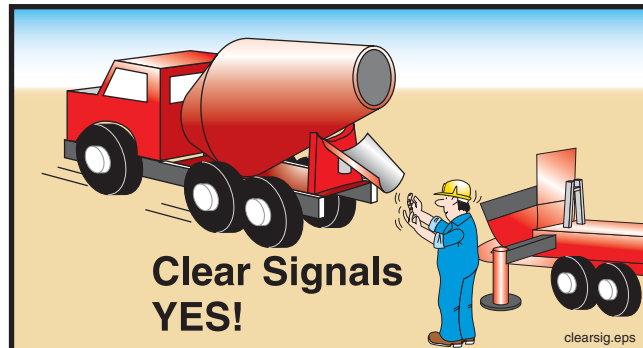


Figure 76
Use clear, concise hand signals

16.8

⚠ WARNING If handling the chutes of a ready mix truck, keep your hands clear of the hinged areas.

16.9

⚠ WARNING Do not allow the ready mix driver to put concrete in the pump hopper until the pump operator gives him the OK. Filling the hopper early can cause the pump to plug.

16.10

⚠ WARNING If you see foreign material that could create a blockage coming from the ready mix truck, alert the operator to stop the pump. Do not attempt to remove the material from the hopper or grate while the hydraulic system is ready to work. (See point 16.19 on page 64.) If necessary, depress the E-stop button to stop the pump and alert the operator.

16.11

⚠ WARNING Never allow the ready mix driver to clean out in the hopper, because it can create a blockage. (Water will wash the cement and fine sand from the coarse aggregate causing segregation.)

16.12

⚠ WARNING Do not operate the pump or boom unless you are also a trained operator and the regular operator has released the controls to you. **There must not be more than one operator at a time.** This does not apply to stopping the pump or boom if there is a need to do so.

16.13

⚠ WARNING Do not let the concrete level in the hopper become low! If air is sucked into the material cylinders, the pump will compress the air. Compressed air always poses a hazard as it is expelled from the hopper or the delivery pipeline (Figure 77). If air is taken into the material cylinders, take the following steps to minimize the hazard:

1. Stop the pump immediately. Hit the emergency stop button if that is the quickest way to stop the pump. There will be an expulsion of compressed air the next time the concrete valve shifts. If possible, fill the hopper with concrete to help contain the expulsion. Do not put your face directly over the hopper.

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2. Alert the operator of the problem. It is his job to know the procedures for safe removal of air from the pump and delivery system. These procedures include pumping in reverse for a couple of strokes.
3. Persons standing at the discharge end or near the delivery line must be warned to move away until all of the air has been purged. Warn them to stay a reasonable and prudent distance beyond the reach of the end hose or point of discharge (Figure 77).
4. When the pump is restarted, don't assume that the first little air bubble is the end of the compressed air.
5. Do not allow anyone near the discharge until concrete runs steadily from the end and there is no movement of the delivery system.
6. If workers are positioned in high or precarious places, warn them to expect a loud sound as the air escapes the pipeline. (Warn them even if they are well away from the discharge.) That way, we can prevent the worker from falling as a result of being startled by the noise.

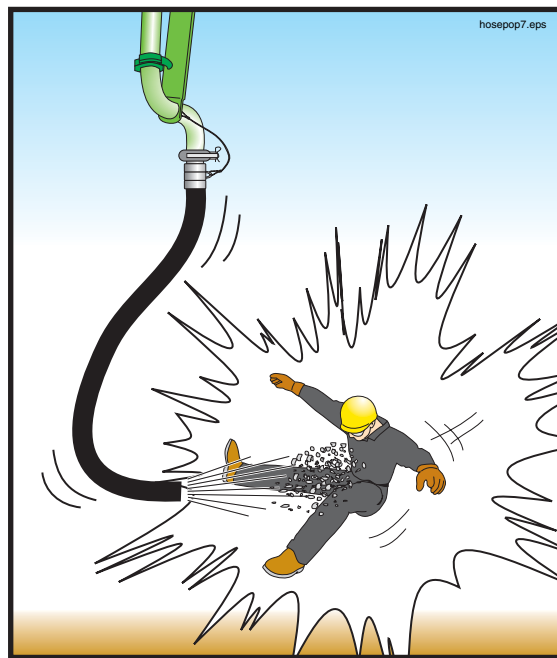


Figure 77

Remove everyone from the discharge area whenever the pump is first starting, restarting after moving, or if air has been introduced into the line

16.14

⚠ WARNING

When initially priming the delivery system, when restarting after moving, when restarting after adding or removing hoses, or whenever air has been introduced into the line, warn everyone to stay away from the discharge until concrete runs steadily and there is no movement of the delivery system. Personnel should stay back a reasonable and prudent distance beyond the reach of the end hose or point of discharge (Figure 77). Air will be in the line when first starting,

when restarting after moving, when a blockage has been successfully removed by “rocking” the concrete, and after the line has been taken apart or opened for any reason.

16.15

⚠ WARNING Never use compressed air to clear a blockage! The operator is responsible for knowing the safe blockage removal procedures. It is unsafe and unnecessary to use compressed air. If the pump pressure can’t move it, air pressure won’t either.

16.16

⚠ WARNING Never stand on, sit on, or straddle a pipeline while it’s in use, or whenever it is pressurized. Pipeline wears out with each stroke of the pump. If the pipe bursts, you want to be to the side of it, not on top of it (Figure 78).



Figure 78
Never straddle or sit on
a pressurized pipeline

16.17

⚠ WARNING Expulsion hazard! (See Figure 79.) Never open a pipeline that is under pressure. The pump must be run in reverse for at least two strokes and then stopped before opening a pipeline. If the pipeline is pressurized with air, do not open it. The operator is responsible for knowing how to safely release the air pressure.

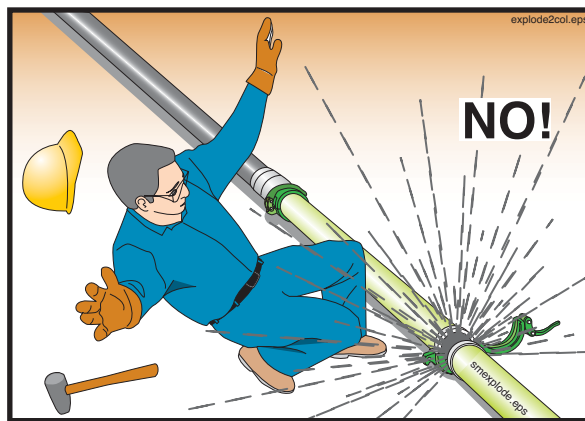




Figure 79
Never open a pressurized pipeline

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16.18  **WARNING** Be careful when handling pipeline or any other heavy object. Learn how to lift without using your back. Get assistance if needed.

16.19  **WARNING** Crushing/amputation hazard! Never put your hands, feet, or any other body part into the water box, concrete valve, or hopper when the hydraulic system is operational or ready to operate! Never stand on the hopper grate! (See Figure 80.)

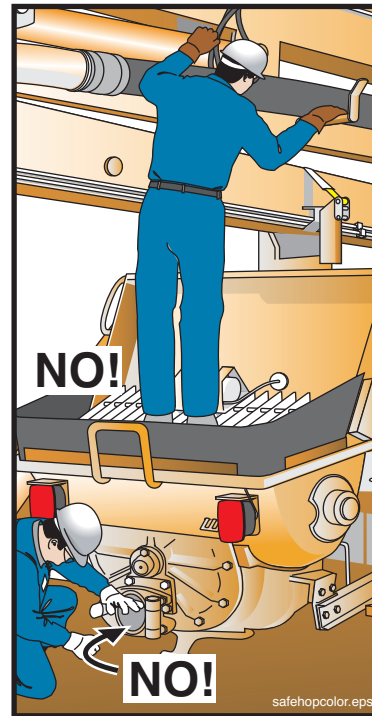


Figure 80
Never put your body in the machine!


16.20  **WARNING** Never lift or remove the hopper grate for any reason (Figure 81).



Figure 81
**Lifting hopper grate exposes the
agitator and the concrete valve**

16.21

⚠ WARNING Do not remove the water box covers or grates when the machine is stroking (Figure 82). Do not remove the water box cover (to add water, for example), until the operator has disabled the machine. Replace the covers before the operator restarts the pump.

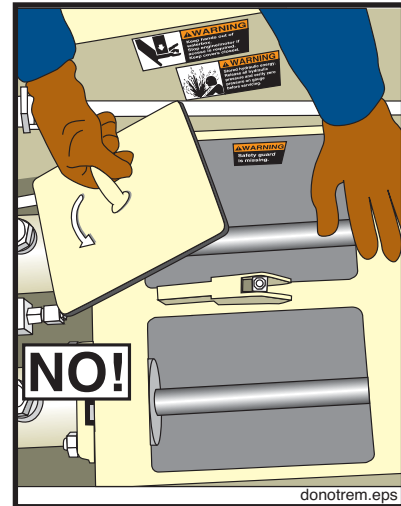


Figure 82
Do not remove the water box covers when the machine is stroking

16.22

⚠ WARNING Mount or dismount the pump or truck using the *3 Point Rule*. One hand and two feet or two hands and one foot are to be in contact with a secure surface at all times (Figure 83).

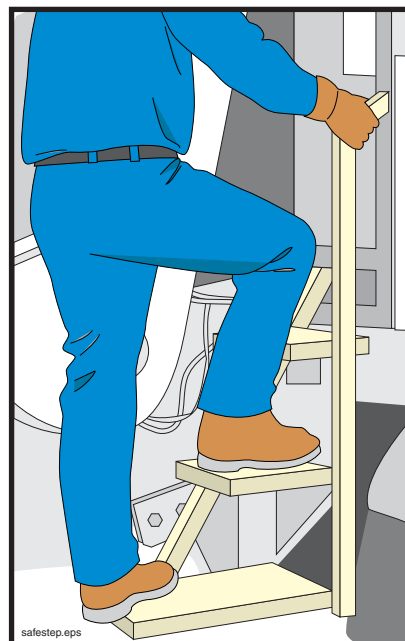


Figure 83
The 3 Point Rule

16.23

⚠ WARNING Keep unauthorized personnel off of the pump.

17. Safety Rules For The Placing Crew

17.1

⚠ DANGER **Electrocution hazard!** If the pump or boom becomes energized with high voltage and you are in contact with **any** part of it, you are at **risk of electrocution!** You should monitor the movement of the boom and **alert the operator if the boom comes within 17 feet of an electrical wire.** (See Figure 84.)

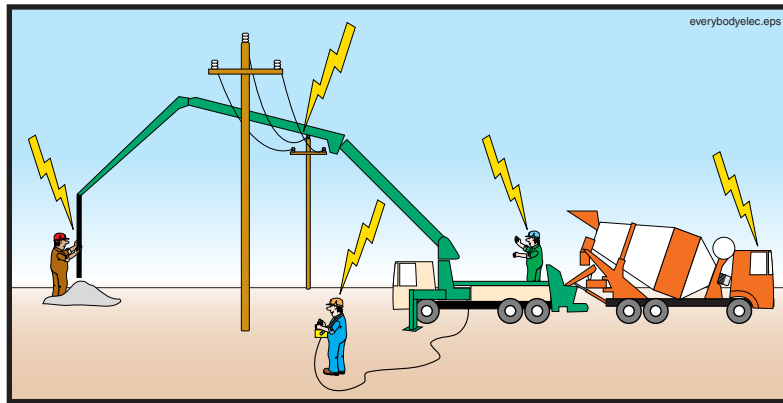


Figure 84

If the pump becomes energized, everything that touches the pump is also energized

17.2

⚠ DANGER When overhead wires are in the area that the boom will be moving to complete a pour, a spotter must be employed whose only job is to warn the operator if the boom comes within 17 feet of the wires. The spotter must understand the responsibilities assigned, and must be able to judge a 17 foot distance. (Figure 85.)

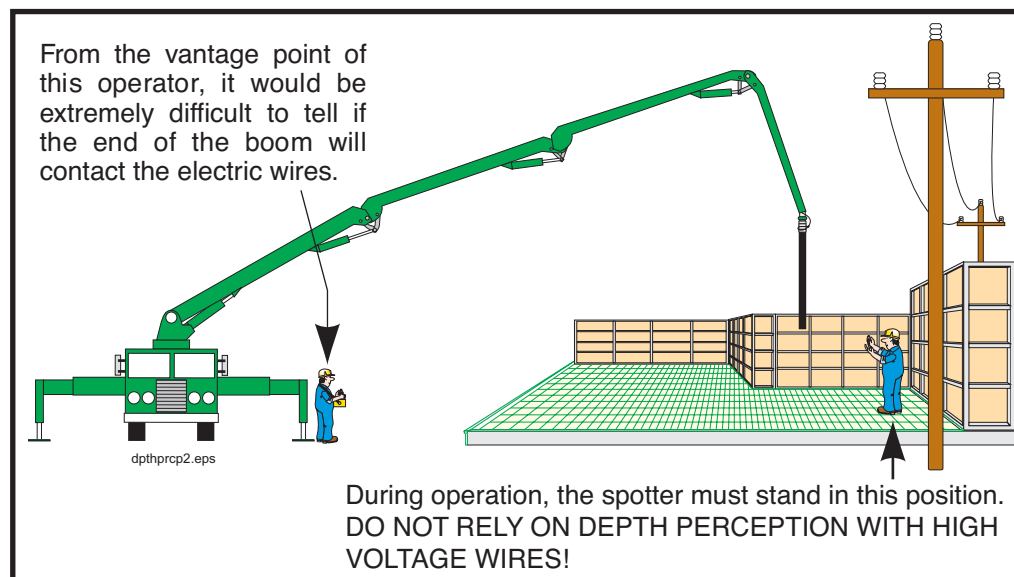


Figure 85

Use a spotter near obstructions or wires

17.3

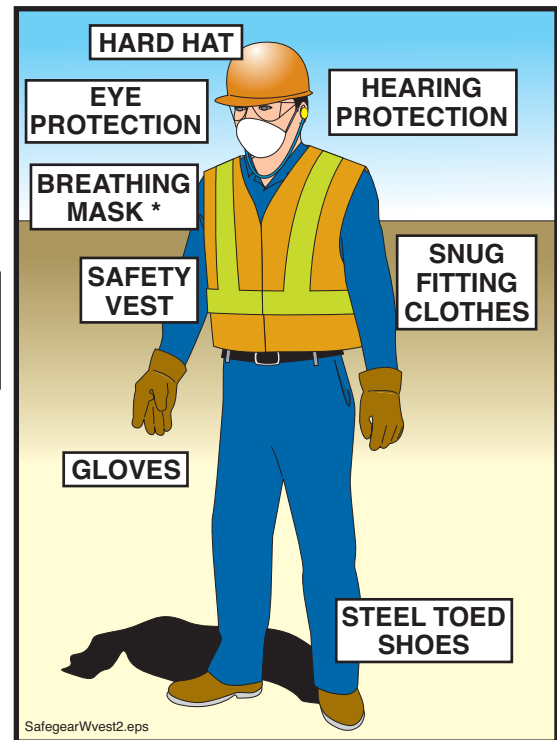
⚠ WARNING Keep an eye on the movements of the boom, even when there are no electrical wires nearby. Alert the operator if he is nearing any obstruction or hazard. Where job site safety is concerned, two sets of eyes and ears are better than one.

17.4

⚠ WARNING Wear Personal Protective Equipment (P.P.E.) when working around a concrete pump (Figure 86). The gloves should resist concrete lime burns. If you will be working **in** the concrete, protect your feet and hands with rubber boots and gloves.

* Breathing mask needed when cement dust (or other toxic dust) is present in the air.

Figure 86
Wear Personal Protective Equipment (P.P.E.)



17.5

⚠ WARNING When the operator is initially priming the delivery system, restarting after moving, restarting after adding or removing pipes or hoses, or any time that air has been introduced into the delivery system, stand a reasonable and prudent distance away from the tip hose or point of discharge. Do not get near the discharge until material runs steadily and there is no movement of the delivery system. (Figure 87). Compressed air in the line can cause rubber hose to move violently. If the operator tells you that air is coming in the delivery system, proceed as follows:

- Get to ground level (if in a high place) and remain well away from the discharge or at least take cover.
- Stay away from the discharge. Be sure that **all** the air is gone before getting near the point of discharge again. It is the operator's job to know when it's safe to go back to normal pumping.



Figure 87
Stay away from the point of discharge
when starting or restarting, and when
there's air in the pipeline

- 17.6 **⚠ WARNING** Never use compressed air to clear a blockage! It is unsafe and unnecessary. If the pump pressure can't move it, air pressure won't either. Stand away from the discharge and the line if anyone attempts to use compressed air in this manner.
- 17.7 **⚠ WARNING** Do not look into the end of a plugged hose or pipe!
- 17.8 **⚠ WARNING** When the pump crew is using compressed air to clean the boom or system pipeline, stay away from the discharge area. **Never try to hold down a pipe or hose that is being cleaned with air.**
- 17.9 **⚠ WARNING** Never open a pressurized pipeline (Figure 88). The pump operator must release the pressure before you open the line. If the line is pressurized with compressed air, let the operator release the pressure and verify that the air has escaped before you proceed.

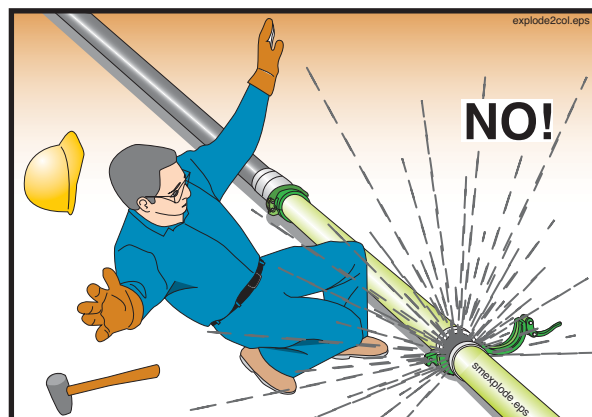


Figure 88
Never open a pressurized pipeline

- 17.10** **⚠ WARNING** After removing pipe sections you must **reassemble using gaskets and clamps**. Pipelines assembled without gaskets will leak cement and water, which can cause a blockage.
- 17.11** **⚠ WARNING** Concrete is being moved through the delivery system by pressure. Failure of a pipe, clamp, hose, or elbow is possible. For this reason, spend as little time as possible standing under the boom, and wear protective clothing.
- 17.12** **⚠ WARNING** The hose man should not hug the hose, but hold it with both hands, to allow the hose to move freely (Figure 89).



Figure 89
Do not hug the boom hose

- 17.13** **⚠ WARNING** The hose man should not walk backwards (Figure 90). Walking forward will allow him to see obstacles and avoid tripping.

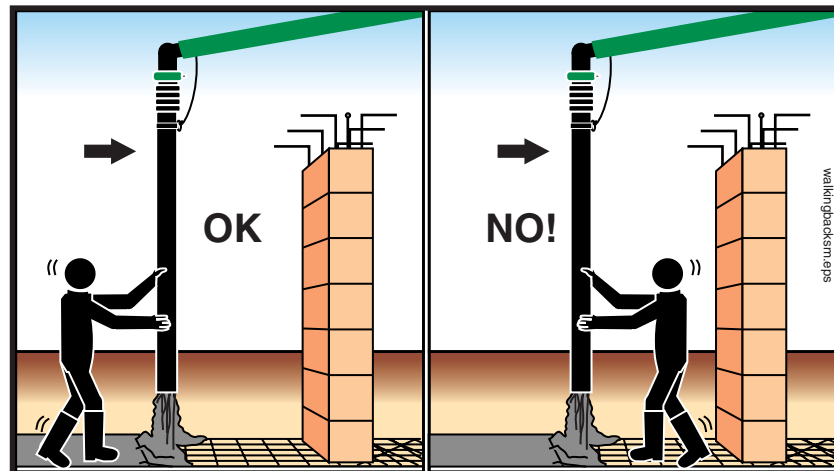


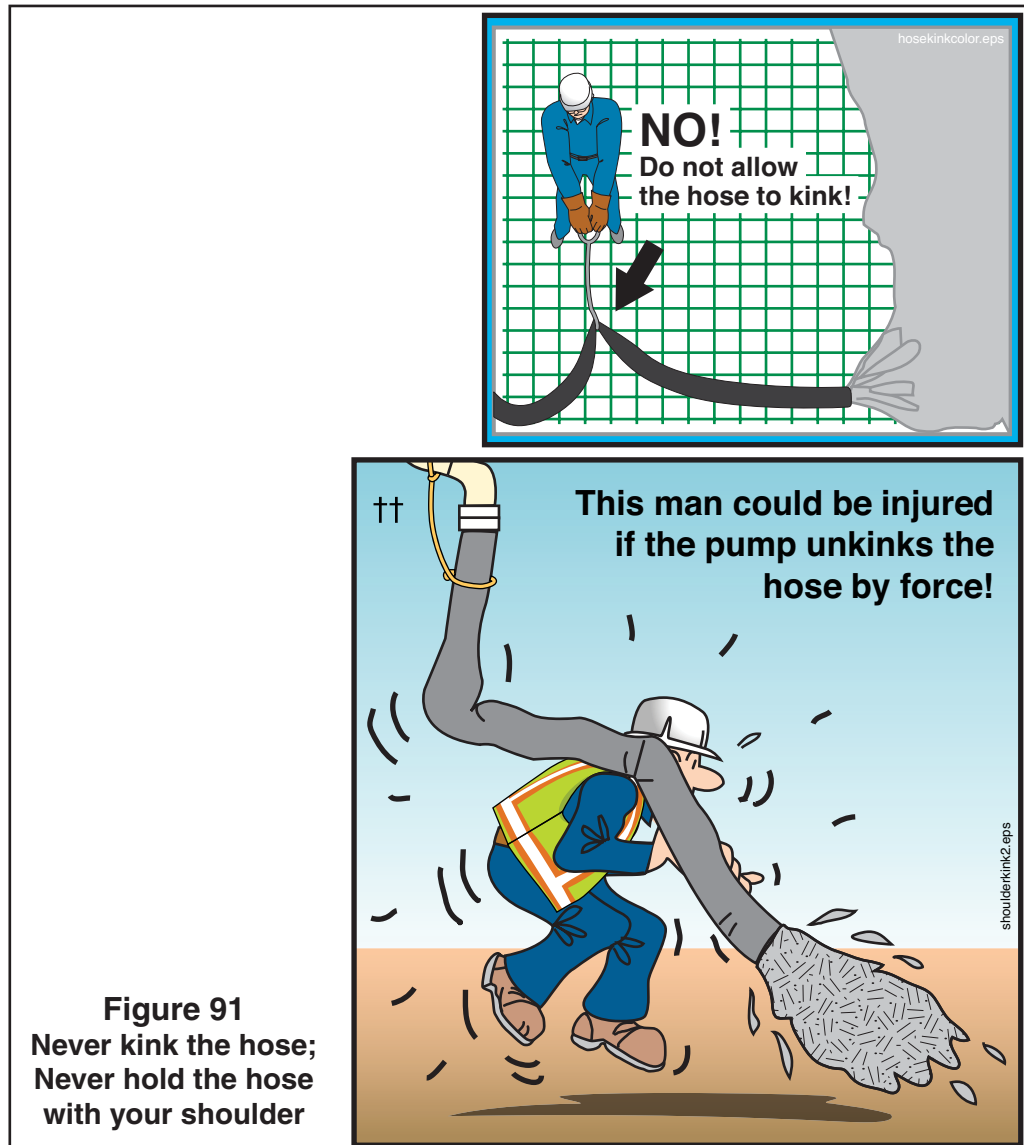
Figure 90
Do not walk backwards, stay out of the path of the boom

- 17.14** **⚠ WARNING** The hose man should never position himself between the boom or boom hose and any fixed object like a wall or column (Figure 90).

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17.15

⚠ WARNING Do not kink the end hose. Kinking will cause the pump to create maximum concrete pressure. The pump may unkink the hose by force! (See Figure 91.)



17.16

⚠ WARNING Never try to support the tip hose with your back or shoulders. Let the hose hang from the boom (Figure 91).

17.17

⚠ CAUTION Be careful when handling pipeline or any other heavy object. Learn how to lift without using your back. Get assistance if needed.

17.18

⚠ WARNING Crushing hazard! Never position your hands or any body part between the end of the delivery system and a fixed object (e.g., between the tip hose and the concrete form) (Figure 92). Watch for clamps lowering with the line, because they have a larger diameter than the pipes/hoses they connect.

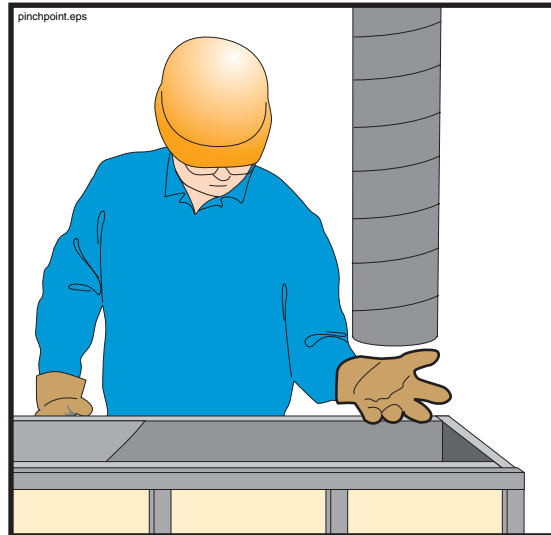


Figure 92
Watch out for the pinch points

17.19

⚠ WARNING Do not allow the boom hose to get lower than two feet above the deck to prevent the boom hose from hitting the feet of the hose man, and to prevent the hose opening from being blocked by the deck, which could cause the hose to whip.

17.20

⚠ WARNING Falling hazard! When pouring columns, slabs, or walls above ground, secure yourself from falling.

17.21

⚠ WARNING Never stand on, sit on, or straddle a pipeline while it's in use, or whenever it is pressurized (Figure 93). Pipeline wears out with each stroke of the pump. If the pipe bursts, you want to be to the side of it, not on top of it.



Figure 93
Never straddle or sit on a
pressurized pipeline

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17.22

⚠ WARNING To avoid confusion and conflicting signals, only one person should signal the pump operator except for the stop signal, which may be given by anyone.

17.23

⚠ WARNING Before the pour begins, the hose man, the operator and the spotter should agree on the hand signals (Figure 94).

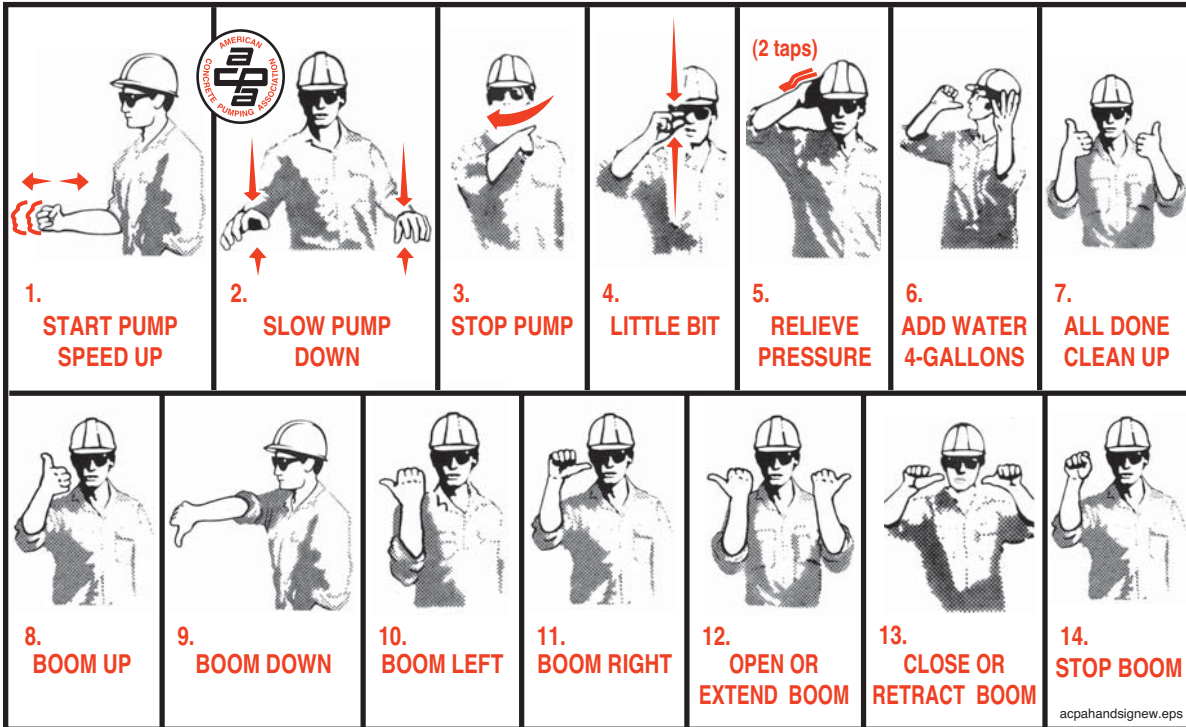


Figure 94
ACPA recommended hand signals

Information contained in this Safety Manual is not intended to supercede the manufacturer's recommendations or company policies.



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