Safety Bulletin

Do Not Use a Boom as a Crane

Why Can't I Use My Boom As A Crane?

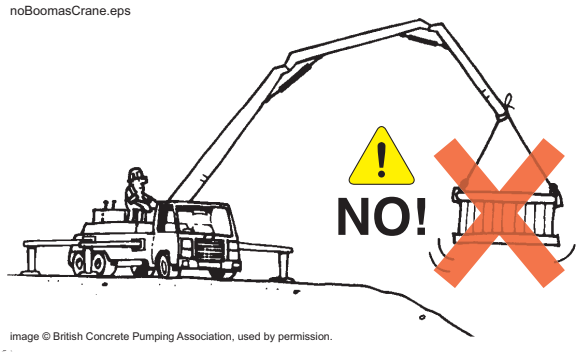
Jim Bury and Robert Edwards ©2010
Edited By ACPA

During the times when a piece of equipment is not in service, it is understandable that the owner would want to find ways to earn money by keeping it busy. This has led to evidence in 2010 that some owners of truck-mounted concrete boom pumps have used them in applications that would normally be performed by a crane. Some have even gone so far as to advertise that the service of lifting other equipment is available for a specified fee.

Recently, displayed on a pumping-related web site, was a photograph of a boom pump lifting and placing roof trusses. Comments addressing the issue ranged from expressing disdain for the practice to strongly defending it. It is possible that less-experienced operators saw the discussion and concluded that using the boom as a crane is a gray area that is left up to the discretion of the owner/operator. It is for this reason that an ACPA safety bulletin has been written to reestablish the rule that forbids the practice, as well as explain the reasons behind it.

For any operator who is not sure about the practice of using your placing boom as a crane, here is the rule: (ACPA Safety Manual, version 6.0.1)

8.16 WARNING! Do not use the boom as a hoist or crane!



That's it. No exceptions, easy to remember. Just ***don't*** do it. The same message is found in every manufacturer's documentation and every concrete pumping safety standard in the world. Now that the rule has been clarified, here are the 'why not?' explanations:

1. **Prohibited By All Manufacturers** - Concrete boom pump manufacturers forbid the practice and void their warranty accordingly. Every part of the equipment is designed with a known load and boom configuration that takes into account the worst-case scenario when used as directed. This also helps determine the outrigger size and spread for stability. Any use of a placing boom for lifting variable loads may cause cracking, bending, or deformation of multiple components as well as move the center of gravity beyond the tipping point of the machine.
2. **Unseen Damages Occur** - The results of damage caused by overloading or side loading may not appear until long after the initial abuse occurs. Depending on the part, damage can be a subtle hairline crack or an invisible, but permanent, deformation of the material. In both cases, because the unexpected damage has occurred, even the proper use of the boom in the most demanding but otherwise acceptable applications could result in a catastrophic failure. Then, as the boom is lying on the ground and the ambulance arrives to help the injured, the operator may think, "That just broke out of the blue. I wasn't doing anything out of the ordinary." Unfortunately, at that moment, the operator is just harvesting the seeds they or another operator planted in the past.
3. **No Crane-Style Load Chart** - Use of any boom as a crane requires that it be manufactured, tested, maintained, and operated according to the requirements of the American National

Standard ASME B30.22. Concrete pump placing booms simply do not comply. If they did, then the maximum weight it could lift at every possible boom configuration would need to be calculated, documented, and supplied to the operator in the form of a load chart. In addition, information on where and how to attach the rigging would need to be identified and designed for that purpose. These items are absent from all concrete pump placing booms because it was never considered in the design phase since lifting variable loads is beyond the operational intent of the boom.

4. **Exposure To Multiple Forces** - Vertical loading of the boom tip is limited to the weight that was anticipated by the designers (ex: concrete-filled end hose) and is often communicated to the operator through labels or other documentation. The simple lifting of unexpected items may or may not exceed this limit; however there are several factors which must be considered:
    a. Crane-like lifting activities often include a side-to-side swaying motion. The momentum of the load could easily exceed that of an end hose and impart a side loading into the boom. Concrete booms and the outrigger supporting structure are not designed for such sideways and twisting forces, even the simple act of dragging hoses can cause either an immediate accident or permanent damage.
    b. The intended use includes a single-ended end hose that has little chance of getting caught on anything. Alternative loads present multiple problems, such as catching on obstructions, which would increase the loading on the equipment in a vertical and/or horizontal direction.
    c. In the case of the roof truss or any large object, anyone helping to guide it could trip or lose their balance. The tendency to pull the hanging load in an attempt to stay upright would also add a rapid vertical and/or horizontal load into the equipment above and beyond that of the hanging load. It is also important that hose men are reminded to not hang on the hose or let their weight be imposed on the boom.
5. **No Rigging Attachment Points** - If a rigging attachment point has purposely not been supplied on the boom arm, where would you attach the variable load? Pipeline hangers are designed with the same criteria as the boom. Pipe clamps are designed for circumferential forces and keeping the line pressure in; they cannot be expected to support large sideward forces. Pipes and elbows decrease in strength with every yard of concrete that flows through them, and they were never intended for a lifting application. Damaging any of these parts could cause a failure while you're moving a suspended load or the next time you pressurize the pipe with concrete.
6. **No Free–Turning Swivel** - Proper rigging cannot be made for the boom of a concrete pump. For safe handling, crane applications require a free-turning swivel on a hook that allows for the load to be turned horizontally into position for placement. Without this, placement in any orientation different from when the load was lifted would add an unsafe twisting of the supporting lines.

In summary, there are legitimate reasons why all new concrete boom pumps are supplied with multiple warnings about not using them as a crane. Industry standards and some government entities have also recognized the danger that this type of misuse represents and have included those warnings in their regulations. The ACPA has included this topic in its operator certification program in order to stress its importance. The stakes are too high, the timing of the resulting negative consequences is unpredictable, and those who suffer may be completely innocent and unrelated to the abusive act. It isn't worth the money you could possibly get from the job. For the sake of all the workers and their families who depend on a structurally sound boom…**just *don't* do it.**

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