

Technical Bulletin 66

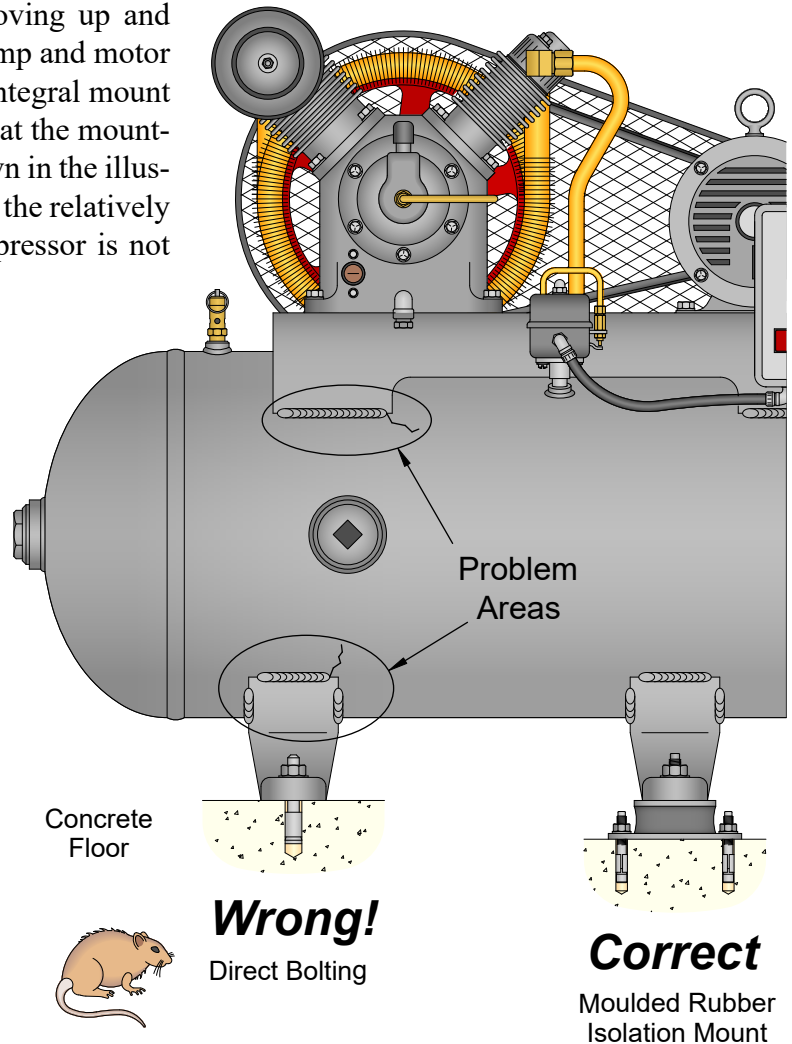
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Receiver Cracking Due to Rigid Mounting

by Brian S. Elliott

During operation, reciprocating air compressors mainly generate low-frequency, high-amplitude vibrations. This is an unavoidable attribute that is a reaction to the pistons moving up and down during pumping. For packaged units, the pump and motor are generally mounted onto a receiver that has an integral mount plate and four mounting feet. The motor plate and at the mounting feet are typically arc welded to the tank, as shown in the illustration. Because of the high equipment loading and the relatively small weld joints, cracking may occur if the compressor is not properly damped. The illustration shows the two areas where cracking will typically develop: at the weld joints for the motor plate and the mounting feet. These joints are exposed to high-stress loading during run times and are susceptible to damage from vibrations.

If the compressor is mounted rigidly to a concrete foundation, then the weld joints must endure the entire vibrational load that the compressor generates. This is such a significant problem that most manufacturers of air compressors stipulate that bolting the compressor directly to the floor will void the tank warranty. To alleviate these high-stress loads, any packaged reciprocating compressor should be mounted on properly designed vibration isolation mounts. The vibration isolation mounts will effectively dampen the vibrations and can lower the stress loading by as much as 95%! This, in turn, effectively stops any risk of cracking. In addition to dampening the stress loading, vibration isolators will significantly reduce transmitted noise from the installed compressor.



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