

Technical Bulletin 41

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Guide to Parallel Compressor Control

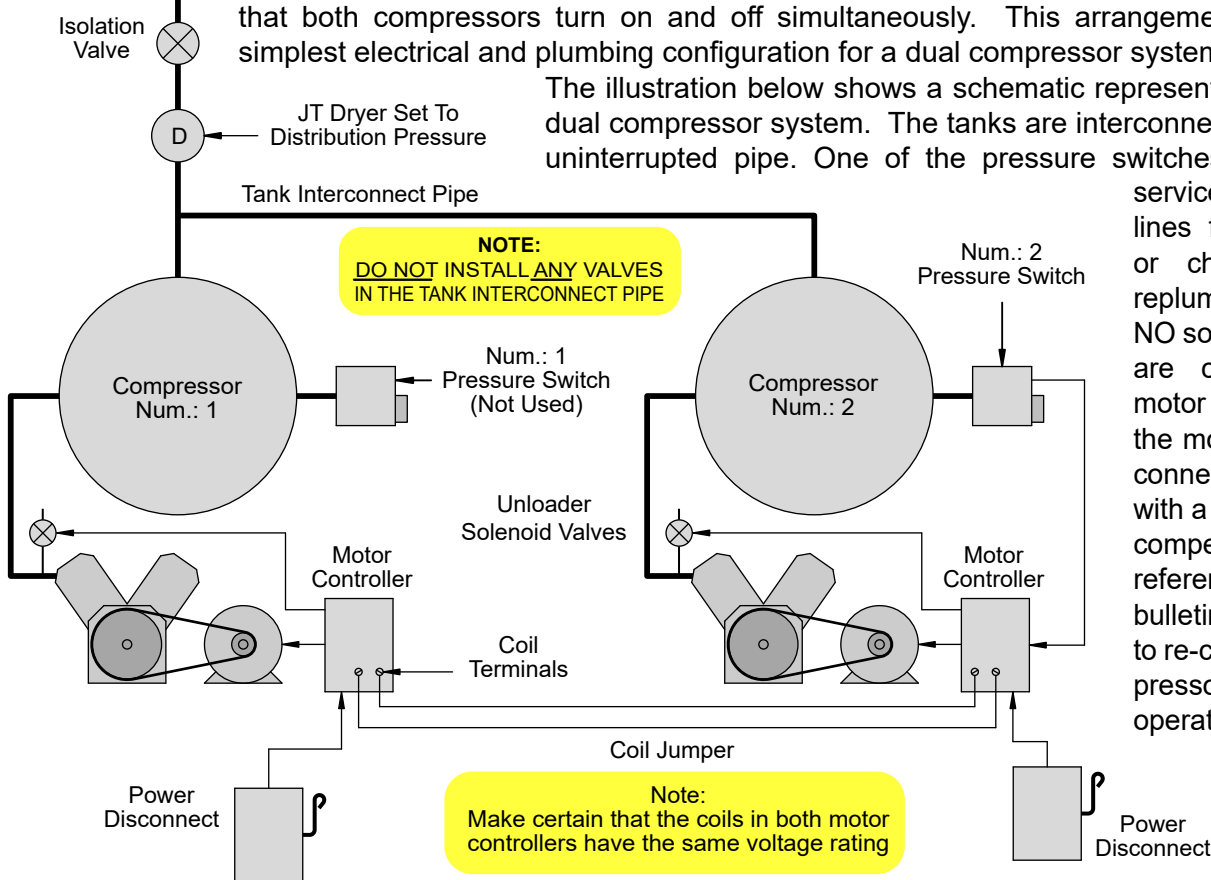
by Brian S. Elliott

Oftentimes, an additional compressor will be added to increase the capacity of a small compression system. In many cases, adding a second compressor can have significant advantages over replacement with a larger unit. Setting up the operation of two compressors can be a little confusing to the average shop owner. Compressor dealers will usually recommend purchasing an expensive toggle or lead/lag controller. Or, in some instances, the older compressor is set up as a peak demand unit only. Both of these approaches have their merits and their faults. However, the merits usually apply to larger systems (40 HP and up) while the faults usually apply to smaller systems (30 HP and smaller). This is especially true when reciprocating compressors are involved.

In the context of smaller compression systems, most of the benefits, such as lower utility costs and balanced wear, are so minimal that the cost of a lead/lag controller will never be paid off. Additionally, the excessive load and subsequent heat buildup associated with a peak demand configuration can actually accelerate the wear on the primary compressor, leading to excessive wear and premature failure of the equipment.

For most multi-compressor systems, utilizing reciprocating compressors not exceeding 30 horsepower, the most cost-beneficial arrangement is a parallel configuration. That is to say that both compressors turn on and off simultaneously. This arrangement represents the simplest electrical and plumbing configuration for a dual compressor system.

The illustration below shows a schematic representation of a parallel dual compressor system. The tanks are interconnected with a single, uninterrupted pipe. One of the pressure switches is taken out of service and the unloader lines from both pumps, or check valves, are replumbed into a set of NO solenoid valves which are controlled by the motor state. The coils of the motor controllers are connected in parallel with a jumper cable. Any competent technician, referencing this technical bulletin, should be able to re-configure your compressors for parallel operation.



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