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Piston Versus Rotary Screw Compressors

A Short Comparison for the Collision Market

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Automotive Re-manufacturers

Piston compressors are still the most common type of compressor found in the automotive service industry that includes gas stations, general service, quick lube shops, tire stores, fleet maintenance facilities, dealer fixed operations, and collision repair. For most of these facilities, the relatively low air demand and quality needed make the piston a cost effective choice. Collision repair shops, however, typically use much more compressed air and have higher air quality needs than other automotive service businesses. In these respects, collision repair is similar to manufacturing. In fact, many modern body shops might be more accurately referred to as automotive *re-manufacturers*.



These days, many body shop owners are finding out they have similar compressed air needs to larger industrial facilities and that rotary compressors offer significant operational benefits. Rotary compressors provide an extremely reliable supply of clean, dry compressed air. This may not be as critical for general repair, but collision repair stands apart because the end product is directly affected by air quality. When deciding between rotary and piston compressors, it is important to consider duty cycle and performance, energy efficiency, air quality, maintenance, and installation costs.

Duty Cycle and Flow

An important difference between piston and rotary compressors is their duty cycle. Duty cycle is the percentage of time a compressor may operate without the risk of overheating and causing excessive wear. A piston compressor may provide adequate flow for a short period, but its allowable duty cycle must be considered. Most small piston compressors have an allowable duty cycle of 60-70%. For this reason, piston compressors are usually oversized to allow the compressor to periodically shut down and cool off because of the relatively high operating temperatures. Even with adequate

FIGURE 1: Collision repair shops are unique in the automotive service industry because they often need larger volumes of higher quality air for body work (shown here) and applying high quality automotive finishes.