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A Guide to Compressed Air for Automotive Repair

Ingersoll Rand®

What's Inside

Introduction

The vehicle service and repair industry is very strategic in maintaining its customers' vehicles. The one thing businesses in this industry have in common, is that they all make use of air compressors and can't afford risking serviceability issues due to sub-par compressed air equipment. Although compressed air is a simple source for powering pneumatic tool needs, as well as supplying dry air for air brush painting, there are several important factors that should be kept in mind when building a comprehensive compressed air system.

By leveraging the following best practices, shops can achieve an environment that is efficient, reliable, comfortable and safe, while delivering the very best to their clients.

Choosing the Right Air Compressor for Your Shop

It's a general misconception that automotive shops need more horsepower for additional compressed air output. The airflow requirement is actually the primary measurement of a shop's compressed air needs.

Compressor equipment is more efficient and powerful than ever before. If sized correctly for the application, a compressor can produce the same overall power with less horsepower.

The first step in sizing an air compressor is to analyze the shop's usage profile or flow requirements, then calculate it into cubic feet per minute (CFM). Once this has been completed, you can determine which air compressor is best suited to your needs. There are a few different technologies to choose from for use in automotive shops. Each has its advantages.

Piston/Reciprocating Air Compressors

This technology is offered in Single-Stage and Two-Stage air compressors. The Single-Stage models compress air to a final pressure in one stroke and are generally used for pressures between 70 and 90 psi (max. pressure to 135 psi).

Two-Stage models compress air to an intermediate pressure in the first stage, remove heat compression through an intercooler, and then compress air to a final pressure in a second compression stage. Two-Stage compressors are efficient and are generally used for pressures above 100 psi (max. pressure to 175 psi).

Rotary Screw Air Compressors

This compressor technology is used in jobs that need a higher psi level than the piston/reciprocating air compressors can offer. They have a psi range from 100 psi to 200 psi. They come equipped with a dryer, control panel, oil separator, dual filters (general purpose and high-efficiency) and condensate drain system. They also eliminate up to 80% installation costs of individual air treatment equipment.

Reduce Shop Noise with Rotary Screw Compressors

Noise is common in vehicle service shops. In fact, a reciprocating compressor is almost as loud as a motorcycle or a ride in a convertible on the highway. Working in that condition day-in and day-out can make for an unpleasant working environment. A loud shop environment limits your team members' ability to communicate effectively. Without the ability to adequately hear one another, it can be dangerous and create hazardous situations in the shop. Ingersoll Rand® recognizes that noise effects your working environment and that choosing the right compressor for your operation impacts your bottom line. This is why we offer a variety of compressor options to power your tools and equipment efficiently and limit the additional noise in your shop.

Rotary Screw— as Quiet as a Dishwasher

Think about when you step into a high-performance sports car and rev the engine. There's generally a substantial increase in noise because of the opening of the throttle in the intake when you give the car gas. Of course, the exhaust gets louder due to more combustion and change in RPM; however, the initial noise you hear is the increase in air velocity being drawn into the engine. This is similar to how the noise in a reciprocating compressor is generated. As the piston travels up and down in the cylinder, it generates pulsations that cause the intake and exhaust valves to open and close, generating noise.

Rotary screw compressors are the opposite. They draw in a constant flow of air, eliminating the pulsation experienced in a reciprocating compressor. The mechanical dynamics of a rotary screw compressor make it inherently much quieter. In fact, the Ingersoll Rand R-Series 4-11kW oil-flooded rotary screw compressor generates only 69 decibels (dB), equivalent to the sound of a dishwasher.

If noise is an issue, but upgrading your reciprocating air compressor is not, you can try one of several things to dampen the noise, including relocating the compressor to a different area in your shop; building an enclosure around it and installing sound attenuation panels around the machine to muffle the noise; or include a muffler. You could also remotely plumb the intake filter to dampen the pulsation of the compressor.

PRO tip

If you choose to upgrade your equipment to a rotary screw compressor, it's advisable to keep old compressor tanks for extra capacity and back-up. Even an older, noisy compressor can have a role in the shop.

Get Rid of Air Leaks

Air leaks can be caused by many factors, including poorly maintained equipment and parts, like hoses and fittings. This, along with pressure drop, are two major factors that might be contributing to some waste of the compressor's power consumption. Besides being unsustainable, you may be spending more money than needed on your energy bills because of this waste.

In order to prevent leaking and minimize pressure drops, make sure you are:

- Investing in more efficient equipment and preventive maintenance with higher quality fittings. Consistent use of equipment, such as tire machines and air pumps, inevitably results in wear on seals and diaphragms.
- Installing high quality piping, like Ingersoll Rand's SimplAir® piping is important. It helps to eliminate threaded connections with O-ring seals, avoid corrosion as well as provides proper pressure to the point of use.
- Run preventive maintenance often and know your compressed air system. Ingersoll Rand offers a series of Performance Services consultations that could help you with data in order to make your shop more efficient.

Protect Your investment with Ongoing Preventive Maintenance

Proactively protecting a compressed air system is as essential as selecting the right equipment in the first place. Sticking with original manufacturer (OEM) parts is the best way to prevent premature compressor failure. Non-standard or "will-fit" parts can expose equipment to unnecessary wear and tear that can lead to downtime and higher operating costs.

Regular compressor maintenance doesn't have to be a big deal. Many vehicle service shops conduct basic maintenance in-house. If that's the route you want to take, here are some tips to consider:

Use High-Quality Coolant or Lubricant and Keep an Eye on Lubricant Levels

Low lubrication levels prevent compressors from running at peak performance. Without the proper amount of coolant, rotary screw compressors will overheat. It may be time to check your compressor's coolant levels if the compressor begins to run hot.

When lubrication levels get low, replace it with a high-quality synthetic lubricant specifically designed for rotary screw compressors, like those in the Ingersoll Rand Ultra Lubricants Family. Ultra Coolant lasts nearly eight times longer than conventional lubricants, and provides up to 8,000 hours of operation. Ultra 4K is the best choice if your shop runs about 4,000k hours a year. That way you will only have to worry about coolant change once a year! Their unique varnish-free operation helps increase system efficiency to extend the life of your system by helping to eliminate contaminant build-up inside the machine.

Ingersoll Rand synthetic All Season Select is a great choice for reciprocating compressors. It is specially formulated to ensure a long life of the piston rings and valves. Depending on your compressor, these lubricants will aid in efficiency and minimize wear on your equipment parts.

Dry, Clean Air

Moisture in Filters and Dryers? Not Anymore!

Do you know how to keep your air clean? It's very simple. You just need to monitor your filter regularly and replace it when the filter change indicator says to do so. Particulate filters, like the Ingersoll Rand FA-Series filters, remove unwanted oil, water and dirt from the air system. With clean air, your power tools will have a longer life span.

To eliminate excessive moisture that filters don't catch, add a desiccant or refrigerated dryer to your compressor system. Refrigerated dryers are ideal for mechanical work or areas where the ambient temperature is above freezing. Desiccant dryers are best for applications like paint booths that require extremely dry air or in areas where the air piping is exposed to sub-freezing temperatures.

By adding an Ingersoll Rand dryer to your compressor system, you are ensuring that your operation is running with dry air while saving energy and protecting your equipment.

If you do finishing work, such as air painting, a dryer will be essential to avoid having water coming through your air brush and contaminating the paint. We know how much care you put into the quality of your work and having dry air is essential for great finish quality.

Find a Partner You Can Trust

Ingersoll Rand partners with you to enhance your shop's compressed air system by adding additional high quality, low cost critical equipment; running consultations; as well as maintaining your system to ensure that it runs at peak performance.

We offer a variety of high-quality parts and maintenance kits with everything you need to run preventive maintenance yourself! We also offer maintenance services and CARE programs, like PartsCARE to ensure you always have the quality OEM parts you need for basic maintenance and PlannedCARE with trained technicians who are always ready to help you.

Our main goal is to offer you the highest efficiency and quality, while supporting your business with the very best equipment, accessories and service repair at the lowest cost possible.

Please visit and partner with us!

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