

AIR COMPRESSOR BUYING GUIDE

CHOOSING THE RIGHT AIR COMPRESSOR FOR YOUR SCREEN PRINTING PRESS

- What type is right for you?
- How much power do you need?
- How should you prepare your shop?



TABLE OF CONTENTS

1

Types of Compressors	2
<u>Reciprocating</u>	2
<u>Rotary</u>	3
<u>Centrifugal</u>	4
How Much Power Do You Need?	5
Other Air Compressor Options	6
<u>Single-stage vs. Multistage Compressors</u>	6
<u>Lubricated and Oil-Free Machinery</u>	7
<u>Cooling Options</u>	8
Adding a Chiller	9
Getting Ready	10

Types of Compressors

There are three types of air compressors: reciprocating air compressors, rotary air compressors and centrifugal air compressors. For screen printing uses, the choice is between reciprocating and rotary air compressors; centrifugal compressors are generally reserved for industrial uses with a constant demand for a high-powered compressor.

RECIPROCATING

In a reciprocating air compressor, a crankshaft moves a piston, or series of pistons, to compress the air. Because of that, reciprocating compressors often are referred to as piston compressors. Air is drawn into a cylinder through an inlet valve, and the pistons move to decrease the volume and increase the pressure of the air. In a single-action reciprocating air compressor, only one side of the piston is used to compress the air. In a double-acting reciprocating compressor, both sides of the pistons work to compress the air

Reciprocating air compressors tend to be less powerful than rotary or centrifugal air compressors. Reciprocating air compressors range from 1 to 15 horsepower, which means it's easy to find a reciprocating air compressor powerful enough to run your screen printing press. They do, however, require intermittent duty; they cannot be run continually. Because of the pistons, they are noisy to operate, and they need to be in an open, uninsulated room to avoid overheating.

Regardless, reciprocating air compressors are a popular option for small to medium screen printing shops because they're often the most affordable option, and they carry plenty of power for most screen printing operations.



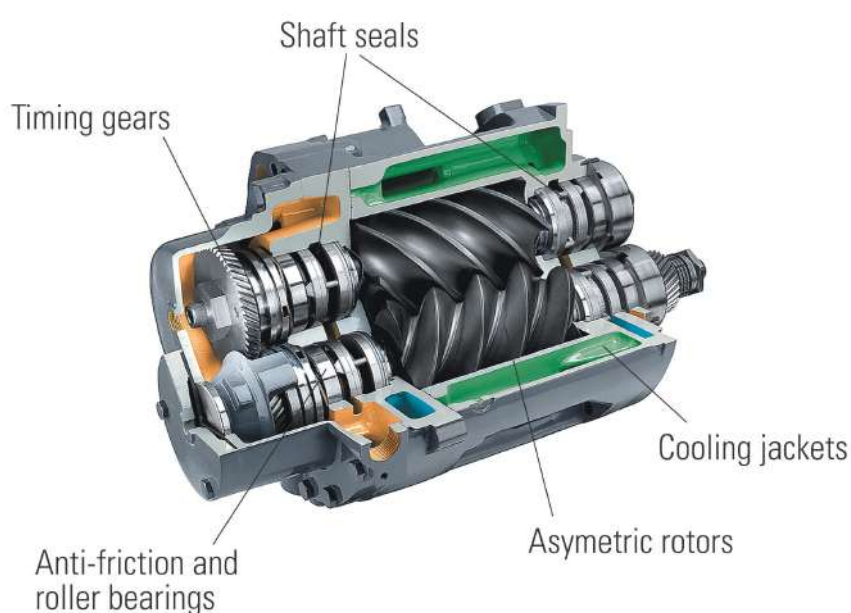
ROTARY

Rotary compressors are the most common compressors used for manufacturing and industrial purposes. The compressors comprise two interlocking rotary screws.

Air enters the compressor through an inlet valve, and as the rotors turn together, the air is compressed between them. Rotary air compressors are more powerful as a whole than reciprocating air compressors. They range from 7.5 horsepower to more than 100 horsepower.

Their inner design makes rotary air compressors the quieter option, as compared with reciprocating air compressors. Their design also means that they aren't prone to extreme overheating the way reciprocating air compressors are. Because of that, rotary air compressors can be run continuously, providing your screen printing press with a continuous, consistent stream of air pressure.

Rotary air compressors are the preferred choice for many screen printing shops. While they usually come with a higher price tag than reciprocating air compressors, the simple mechanical makeup of rotary air compressors makes them easier to install, operate and maintain. The expected lifespan of a rotary air compressor also is significantly longer: You can expect them to operate for 40,000 to 60,000 hours, which equates to 20 to 30 years of full-time operation. That compares with an expected 10- to 15-year lifespan for a reciprocating air compressor.



CENTRIFUGAL

Centrifugal air compressors provide high volumes of compressed air by using the same principles that allow jets to take flight. A funnel-shaped impeller rotates quickly, accelerating air and drawing it inward. The air travels through the impeller and into a diffuser, which slows down and compresses the air.

Centrifugal air compressors are large industrial machines, providing 100 horsepower and up. They are used for large manufacturing applications that need continuous, high-powered air. With that in mind, they are not the choice for most screen printing applications.



HOW MUCH POWER DO YOU NEED?

5

After you've settled on a reciprocating or a rotary air compressor, the most important factor you'll consider when selecting an air compressor to fit your screen printing press is power. You need to find an air compressor that will provide the right output of air so that your press will operate smoothly and efficiently.

There are two primary measures of power that matter when shopping for an air compressor for your screen printing press: horsepower and cubic foot per minute (CFM). For most screen printing presses, you'll need an air compressor of at least 7.5 horsepower. The required CFM will vary from machine to machine, and making sure your compressor fits your press's CFM requirements is absolutely crucial to ensure proper operation.

The Anatol Vector automatic screen printing machine has the lowest air consumption of any automatic press in the industry, needing a smaller compressor than any of its competitors.



CFM measures the airflow provided by your compressor. Your press manufacturer will be able to provide you with the needed CFM for your machine. If you are planning to power multiple machines with your air compressor, you will have to add up the CFM requirement of all machines to determine your shop's total usage. It's best to build in a buffer of at least 25 percent beyond that baseline to ensure that you won't see erratic machine operation due to a lack of airflow.

Another important consideration to keep in mind when choosing how big of an air compressor you will buy for your screen printing shop is your business's future. Air compressors will last for decades. If your goals for your shop include future expansion, you should consider purchasing a larger air compressor that will accommodate a bigger press or multiple presses so that you don't have to upgrade your air compressor every time you upgrade your shop.

OTHER AIR COMPRESSOR OPTIONS

While the two major decisions you'll make regarding your new air compressor will be the type of air compressor you'll purchase and the strength of the air compressor your shop needs, you'll be faced with some other options when looking at individual air compressor models. That includes how many stages your compressor will have, how your air compressor will be cooled and whether you'll choose a lubricated or oil-free compressor.

SINGLE-STAGE VERSUS MULTISTAGE COMPRESSORS

Some air compressors involve one cylinder through which the air is compressed. Others involve multiple cylinders that progressively compress the air inside. Compressors with only one cylinder and one compression stage are referred to as single-stage air compressors. Air compressors that force the air through multiple cylinders that progressively compress the air to higher pressures are referred to as multistage compressors.

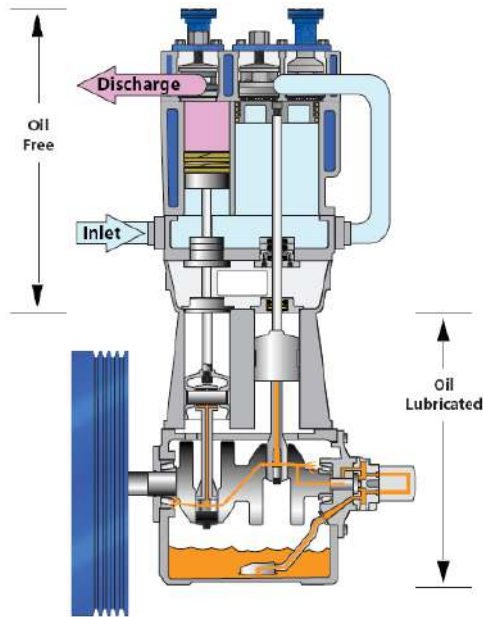
Multistage compressors generally have higher powered compression capabilities. If you choose a reciprocating air compressor, you'll likely need a multistage compressor to achieve the power that your shop requires.



LUBRICATED AND OIL-FREE MACHINERY

As with any type of machinery full of moving parts, air compressors require proper lubrication to avoid damage and promote optimal function. Air compressors come either with self-lubricating systems, or they're made from friction-resistant materials that require no lubrication. The latter types of compressors are referred to as oil-free compressors.

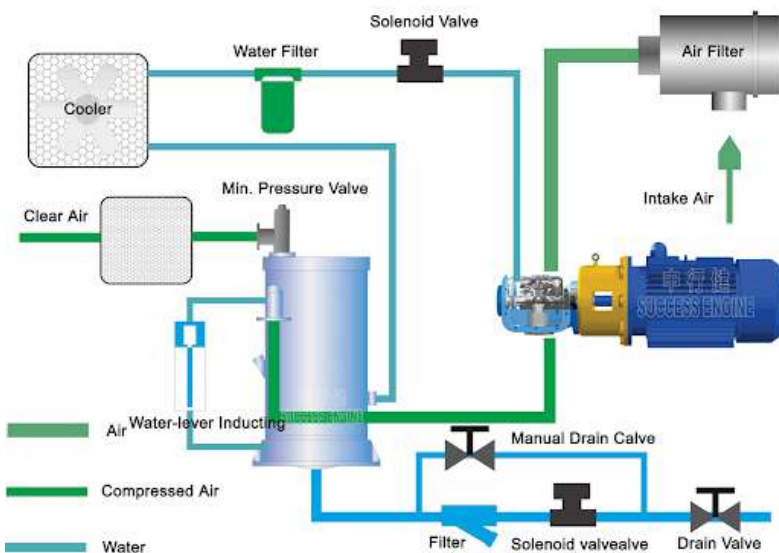
SPLASH SYSTEM LUBRICATION



In a reciprocating air compressor, the machine will either be splash or pressure lubricated. In a splash-lubricated compressor, an oil rod on the bottom of the crankshaft connector dips down into an oil reservoir as the machine operates and splashes oil up onto the moving parts of the compressor.

PRESSURE LUBRICATED SCREW COMPRESSOR

In a pressure-lubricated compressor, an oil pump driven by the crankshaft forces oil into the system. The oil is filtered and then pumped through the crankshaft onto the compressor's bearings and cylinder walls. Splash-lubricated compressors are more common and cheaper, but pressure-lubricated compressors provide a more direct and effective



LUBRICATED AND OIL-FREE MACHINERY

Oil-free reciprocating air compressors are less common, but some shops prefer them because they worry about having oil in a shop filled with items that could be soiled or ruined by it. In oil-free reciprocating compressors, rings made from Teflon or similar friction-resistant materials keep the machine running smoothly without damage. While lubricated systems require regular filter and oil changes, oil-free compressors require regular change outs of their Teflon components.

In a rotary compressor, one of the rotary screws is continually coated with oil to lubricate the entire system. Oil-free rotary compressors have gears to control the movement of the screws. Oil-free rotary compressors are only used in special applications, however, because they are less efficient, more prone to overheating and require more stages to create adequate compression.



COOLING OPTIONS

With their constantly working parts and the high amount of pressure that builds up, air compressors are prone to overheating. When an air compressor overheats, its lifespan drops dramatically, and when overheated air is pumped to your screen printing equipment, it can do damage to the machinery. Because of that, all models of air compressors contain some type of cooling system. When you select your new air compressor, you will have to choose which type of cooling component you prefer: air, water or oil.



In reciprocating air compressors, **water-cooled** elements are perhaps the most common, but you will need to consider the impact of a water-cooled compressor on your shop's utility bills. **Air-cooled** compressors are sometimes touted as the more environmentally friendly option because of their lack of reliance on the water system.

In a typical rotary air compressor, the **oil** that lubricates the rotary screws also serves as a coolant for the compressor. Some manufactures do offer oil-free rotary air compressors with water-cooled elements, but they are rare.

OUTFITTING YOUR NEW AIR COMPRESSOR WITH A CHILLER

The final consideration for your new air compressor is the addition of an aftercooler. The air compression process comes with one primary byproduct: water. That means that the air your compressor pumps out can be incredibly moist. If you pump that compressed air straight into your screen printing press, the high moisture content of the air will cause damage and rust in your press over time. To save your press from rust, operational problems and a decreased lifespan, your air compressor should be fitted with an aftercooler, or chiller.

Chillers remove some of that extreme water content from your compressed air, saving your printing press system. Chillers are fitted between the compressor itself and the compressor's air storage tank. Chillers work by dropping the temperature of the compressed air. When the air is cooled, the water is forced out in the form of condensation. The dry air is then moved on to the storage tank, where it is ready to power your machine. The drying process can be taken one step further with the addition of a refrigerated compressed air dryer.



PREPARING YOUR SHOP FOR YOUR NEW PRESS

Once you've selected an air compressor and chiller for your new printing press, you will need to have your shop set up to prepare for your new equipment. You will want to have everything in place so that your screen printing press can be fully installed once it's been delivered.



The Anatol Titan automatic press uses less air than any other entry-level machine, reducing maintenance and operating costs.

It's advisable to hire a professional contractor to prep your shop's infrastructure for your new equipment and to install your air compressor and chiller. Proper shop preparation means making sure that your shop has electrical outlets that are properly sized for your air compressor and your screen printing press, and that you have adequate pneumatic lines, gas lines and water lines for your equipment. Hiring a professional contractor to do this helps to ensure that all of your new lines are up to local building codes and that they have been installed safely and properly.