

# Reciprocating Compressor Sizing

## Body Shops

To properly size a body shop application, first find the total number of workers in the shop. Second multiply that number by 8. Which is the average amount of cfm used by any one person through out the day. This makes sure that the compressor stays within its desired 50% duty cycle. (or any shop that does a lot of sanding and grinding)

**Example:** Total number of workers - 7

7 People x 8 cfm = 56 cfm

*For this shop to operate within the desired 50% duty cycle you would need **56 cfm** of air delivered.*

## Mechanic Shops.

To properly size a mechanic shop first find the total number of workers in the shop. Second take that number and multiply it by 5. The average amount of cfm used by a mechanic through out the day. This makes sure that the compressor stays within its desired 50% duty cycle.

**Example:** Total Number of workers - 6

6 People x 5 cfm = 30 cfm

*For this shop to operate within the desired 50% duty cycle you would need **30 cfm** air delivered.*

## Symptoms of improperly sized piston compressors

1. Excessive oil carry over
2. Pre-mature valve failure
3. Blown Gaskets
4. Dis-colored discharge tubing

## Compressor Knowledge.

Tanks size does not indicate how much air a compressor makes. The only way you determine volume of air is cfm. All piston compressors should have their oil changed every three months under normal use.

It takes a car an average of 740 running hours to go 30,000 miles (10 oil changes) Under perfect conditions with a maximum of a 50% duty cycle, a piston compressor will run 240 hrs in three months of 9-5 Monday-Friday work. That is the equivalent of changing your oil every 9750 miles in a car.

Over time the vibrations in piston compressors can loosen fittings and bolts, the whole compressor needs checked out when the routine maintenance is performed.

## Total cfm Usage.

To properly size a shop based in total cfm. First get the manufacturer recommended cfm for all the tools that are used on a daily basis in the shop. Second take their total cfm's together and multiply that number by 1.3 to get the total cfm needed for the shop.

### Example:

DA Sander 10 cfm

Air Impact 6 cfm

HVLP Paint Gun 15 cfm

Total 31 cfm

31x2=62 cfm

*For this compressor to operate within the desired 50% duty cycle you would need **62 cfm** of air delivered.*

## Things to remember.

When you are sizing a shop be sure and check for air leaks, in older shops there is generally more air used because of leaks than employees working.

If there are leaks then the customer will need to either upgrade to a larger compressor, or get the leaks fixed before the new compressor is installed. This is to ensure proper duty cycle on the new compressor. Always make sure that the electrical breaker for the compressor is sized appropriately according to local and state electrical code. This helps to ensure proper motor and electrical component life.

All compressors have electrical components so they must be located in a place that water, excessive heat, and heavy dust will not affect them, as this can cause pre-mature failure of these components.

Customers do not complain about too much air, but they will always complain if they do not have enough.

If a customers properly maintained compressor suddenly fails its probably due to its duty cycle being extended past what it is capable of. So be sure to check to see if new employees or equipment have been added that use air. This will ensure that the new compressor has a long and trouble free life.

All Compressor are pre-set and tested at the factory, contact the factory if you feel like anything needs to be changed.

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