

Technical Bulletin 51

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Actual Air Compressor Horsepower

by Brian S. Elliott

The horsepower rating for compressors should be an indicator of the compressed air output. It has however, become a common practice to rate so called “commercial” or “home” compressors by their motor horsepower. i.e. A compressor that has an output of 12 SCFM @ 125 PSI is a true 2.8 HP compressor, even though the graphics may advertise “6 HP”. This 6 HP rating is the horsepower of the motor, not the compressed air output. In an effort to present the image of a larger compressor for less money, many companies boldly advertise the motor HP rather than the air compression horsepower. This has a tendency to skew the customer’s perception into thinking that they are getting a lot of compressor for a little price. This is not true and can be a very expensive way to learn about compressed air.

When evaluating any compressor it is very important to base your evaluations on SCFM (CFM) and not the motor horsepower. To further illustrate this, lets compare a true 5 HP industrial compressor with a contractor grade 6 HP compressor available from the home improvement center.

1.The 5 HP industrial compressor costs \$1,300.00 and produces 16.9 SCFM @ 175 PSI. $16.9 \times .282^* = 4.77$
Actual horsepower of compressed air. $\$1,300.00 \div 4.77 \text{ HP} = \272.54 per HP.

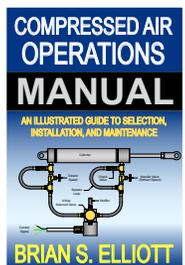
2.The 6 “Peak” HP contractor compressor costs \$679.00 and produces 4 SCFM @ 90 PSI. $4.0 \times .195^* = .78$
Actual horsepower of compressed air. $\$679.00 \div .78 \text{ HP} = \529.62 per HP.

As you can see, the industrial compressor really is a 5 HP compressor and represents a much better compressed air value. On the other hand, the 6 HP contractor compressor is really a 3/4 HP compressor! A far cry from what you were probably expecting.

Additionally, many of these lesser compressors have what is termed “compressor rated motors”. This can also be a little confusing to the customer. “Compressor Rated Motor” is a relatively new term which actually refers to a low duty cycle motor. These motors are not suitable for continuous operation. They are capable of outputting their power for only short times and require a longer “off” period for cool down. Low duty cycle motors are considerably less expensive to manufacture and have the added advertising advantage of a high HP rating. Coupled with the lesser actual compressed air output and the low duty cycle motor, it is not difficult to imagine that the compressor may be forced to operate well above its maximum rated capabilities. This will have the effect of greatly reducing the life of your compressor. Once again, a costly education in compressed air.

* From Technical Bulletin Num.: 59 Titled: *Horsepower Required to Compress Air*

Comprehensive information on compressed air systems is provided in the book “**Compressed Air Operations Manual**” by Brian S. Elliott, ISBN: 0-07-147526-5 Published by the McGraw-Hill Book Co.



Air Options, Inc.
P.O. Box 35984
Houston, Texas 77235-5984
Ph.: 713-721-9619
E.Mail: Info@Air-Options.com

www.Air-Options.com

AIR-OPTIONS, INC.

Advanced Technologies for Compressed Air