Maximum Allowable Piston Speed

Ariel compressors are designed to be operated at full speed for most natural gas applications. Slower piston speeds may be necessary based upon the application. Factors that affect lowering the operating piston speed include gas mole weight, higher discharge pressures, desire for better efficiency and client preferences.

Piston speed can be calculated with the following equation:

$$PS = \frac{2 \times Stroke \times RPM}{12}$$

PS = Average Piston Speed, feet per minute

This equation calculates average piston speed, which is the basis for piston speed related ratings. Instantaneous piston speed is different, since the piston accelerates from zero velocity at the end of the stroke, and obtains a maximum velocity during the stroke.

Some larger bore cylinders have limited piston speeds due to the higher inertia. For maximum piston speed see individual cylinders in the DataBook.

For non-lube applications, allowable piston speeds are reduced. See application guidelines for non-lube applications for more information.