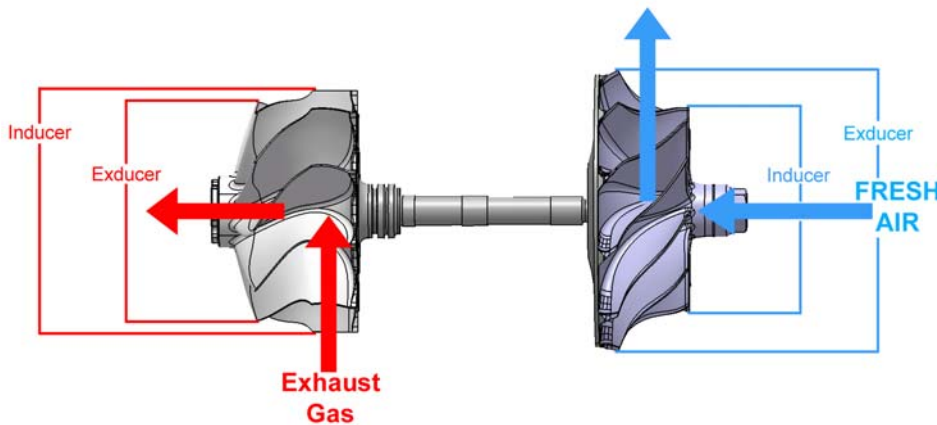


## Wheel trim topic coverage

Trim is a common term used when talking about or describing turbochargers. For example, you may hear someone say "I have a GT2871R '56 Trim' turbocharger. What is 'Trim?' Trim is a term to express the relationship between the inducer and exducer of both turbine and compressor wheels. More accurately, it is an area ratio.

- The inducer diameter is defined as the diameter where the air enters the wheel, whereas the exducer diameter is defined as the diameter where the air exits the wheel.

Based on aerodynamics and air entry paths, the inducer for a compressor wheel is the smaller diameter. For turbine wheels, the inducer it is the larger diameter (see Figure 1.)



**Figure 1.**  
 Illustration of the inducer and exducer diameter of compressor and turbine wheels

**Example 1:** GT2871R turbocharger (Garrett part number 743347-2) has a compressor wheel with the below dimensions. What is the trim of the compressor wheel?

Inducer diameter = 53.1mm

Exducer diameter = 71.0mm

$$Trim = \left( \frac{Inducer^2}{Exducer^2} \right) * 100$$

$$Trim = \left( \frac{53.1^2}{71.0^2} \right) * 100$$

$$Trim = 56$$

**Example 2:** GT2871R turbocharger (part # 743347-1) has a compressor wheel with an exducer diameter of 71.0mm and a trim of 48. What is the inducer diameter of the compressor wheel?

$$\text{Trim} = \left( \frac{\text{Inducer}^2}{\text{Exducer}^2} \right) * 100$$

Exducer diameter = 71.0mm

Trim = 48

$$\text{Inducer}^2 = \left( \frac{\text{Trim}}{100} \right) * \text{Exducer}^2$$

$$\text{Inducer} = \sqrt{\text{Trim}/100} * \text{Exducer}$$

$$\text{Inducer} = \sqrt{48/100} * 71.0$$

$$\text{Inducer} = 49.2\text{mm}$$

The trim of a wheel, whether compressor or turbine, affects performance by shifting the airflow capacity. All other factors held constant, a higher trim wheel will flow more than a smaller trim wheel.

However, it is important to note that very often all other factors are not held constant. So just because a wheel is a larger trim does not necessarily mean that it will flow more.