

PRODUCT: GEN4 Thermal Management Blower



Overview:

The GEN4 Blower is the latest generation high speed, automotive-grade brake, and tire cooling blowers. Our advanced thermal management system is an industry first in combining performance, reliability, and dynamic functionality for the automotive racing industry.

Dynamically control your fan speed with the optional billet aluminum potentiometer for variable fan speed at your fingertips or simply choose our billet aluminum on/off switch for a single speed.

Select between 7A, 12A, or 15Amp pre-programmed speed settings.

Key features include:

- Automotive-grade electronics enclosure / IP66 rated
- Aerodynamically designed for the highest CFM output and dynamic pressure
- Designed and developed from CNC billet 6061 & 7075-grade aluminum

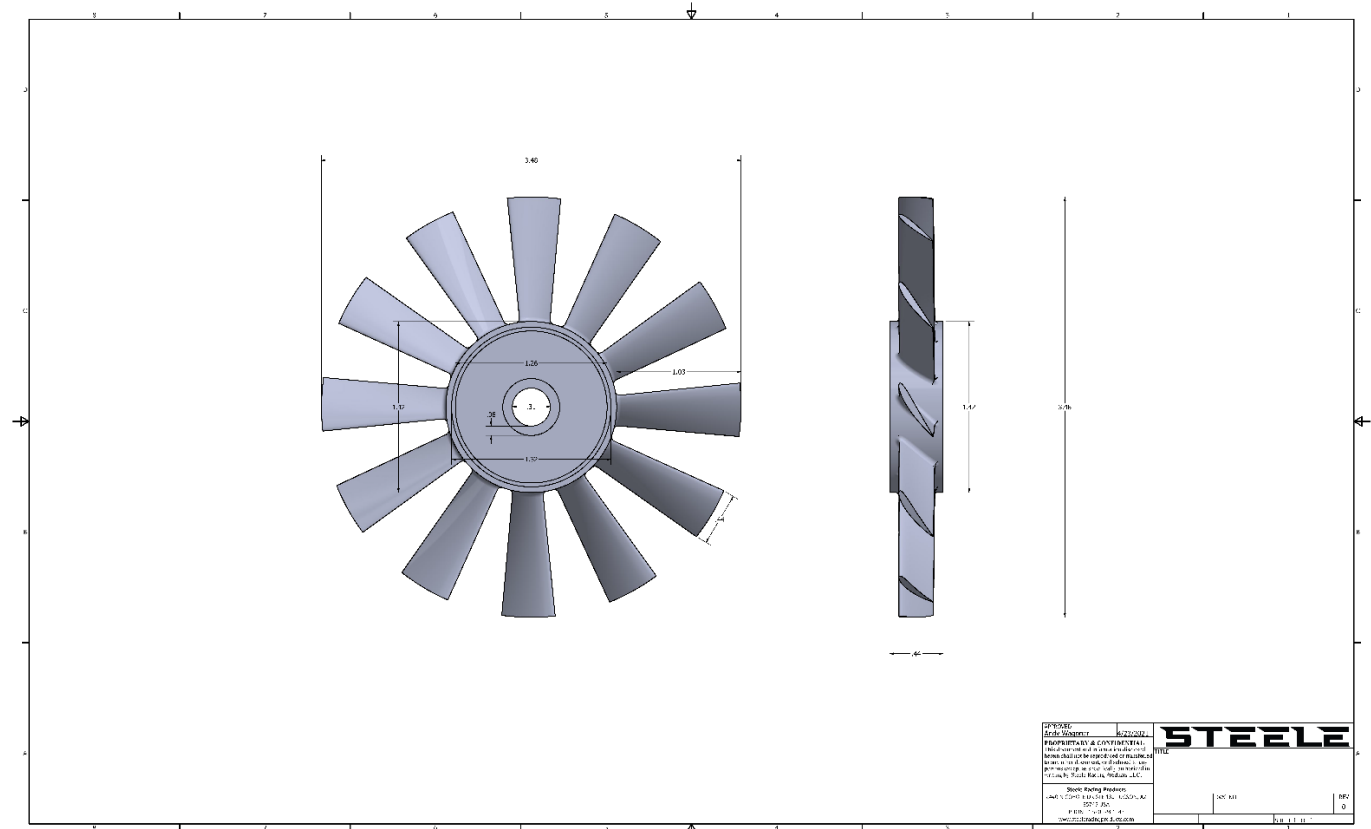
The SRP Gen4 Blower comes standard with the following:

- Gen4 Blower (choose between 7A, 12A, or 15Amp blowers)
- Turn-Key out of the box at pre-programmed amperage setting
- 8'ft power/ground cable with mating 2-pin Deutsch connectors
- Built-in reverse polarity for circuit protection
- Gradual speed increase on start to protect electrical spikes

Optional Add-on parts:

- Flange mount reducer - 3.5" to 3.0" exit port
- Inline mount reducer - 3.5" to 3.0" exit port
- 10'ft billet aluminum on/off switch
- 10'ft billet aluminum potentiometer for variable fan speed

DRAWINGS: GEN4 ROTOR - (7075 Aluminum Alloy AA7075 T6)



Protective Coatings:

Type III hardened anodizing

Material Strength:

- Density (ρ) 2.81 g/cc (0.102 lb/cu in)

Mechanical properties

- Tensile strength (σ) 572 MPa (83.0 ksi)
- Hardness—Rockwell 87 HRB

Thermal properties

- Melting temperature (T_m) 477 °C (891 °F)
- Thermal conductivity (k) [1] 196 W/m*K
- Linear thermal expansion coefficient (α) $2.36 \cdot 10^{-5} \text{ K}^{-1}$
- Specific heat capacity (c) 714.8 J/kg*K

Electrical properties

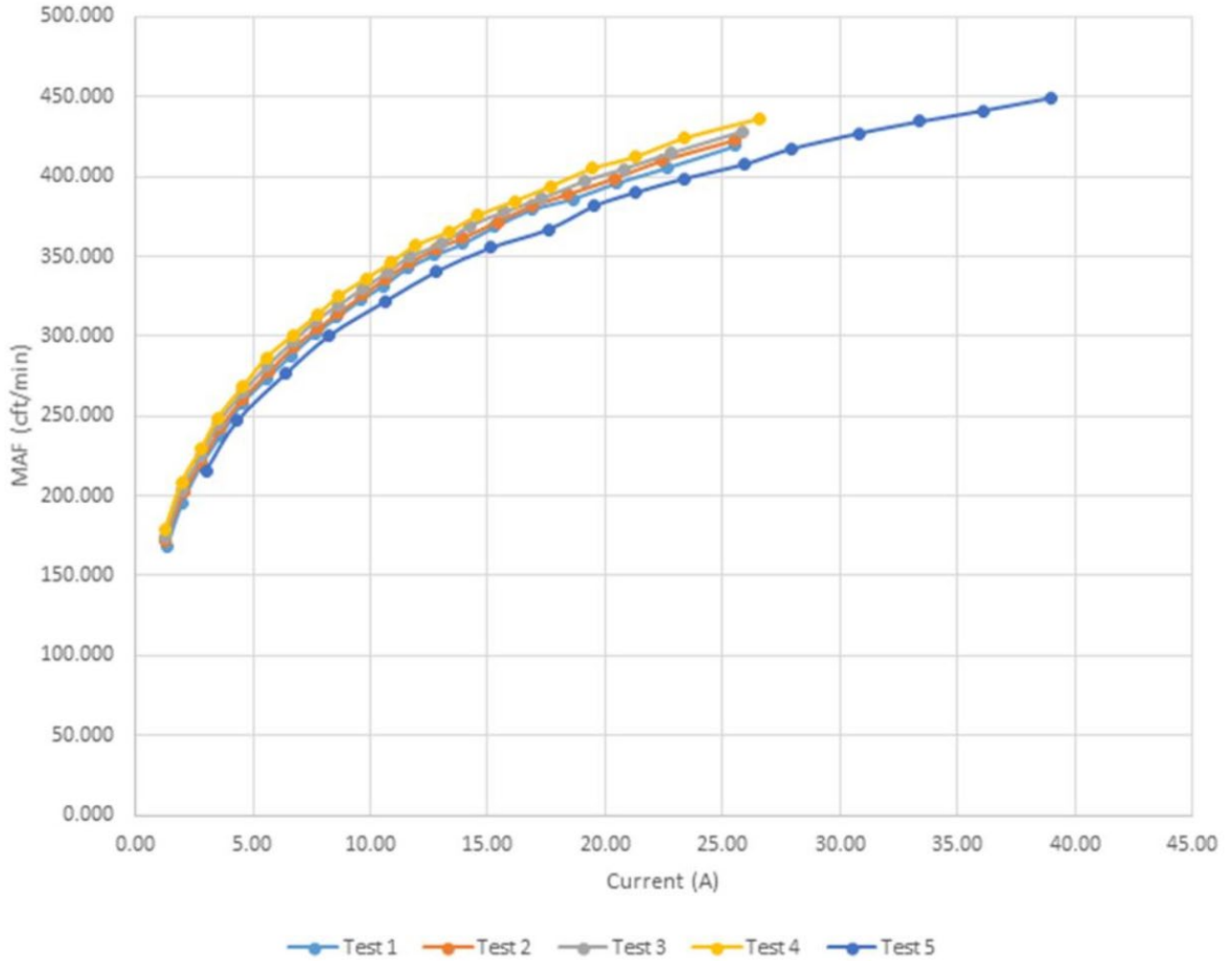
- Volume resistivity (ρ) 51.5 nOhm*m

General Specifications:

GEN4 Blower	Parameters
General Dimensions Inline Reducer (inches)	3.95 to 2.95
General Dimensions Flange Adapter (inches)	4.52 to 3.95
Gen4 Diameter (inches)	3.75
Gen4 Controller Box (inches)	2.41 x 1.06 x 2.41
Lifetime (duty-cycle)	50000
Variable Speed	Yes
Reverse Polarity Protection	Yes
Operating Voltage	10v - 16v
Weight (lbs.)	0.8
GEN4 STANDARD FAN	Performance
Air Flow MAX (cfm)	534
MAX Pressure (in.H ₂ O)	4.71
Current (amps)	0-25
Operating Temp Range (F)	from -40 - +205F
GEN4 SUPERFAN	Performance
Air Flow MAX (cfm)	751
MAX Pressure (in.H ₂ O)	6.15
Current (amps)	0-60
Operating Temp Range (F)	from -55 - +305F

Test Data: Onboard Vehicle Data Acquisition – MAF/current

- Test 1: Brake blower
- Test 2: Tire blower
- Test 3: Brake blower
- Test 4: Tire blower
- Test 5: Gearbox blower



Data Analysis

Equation and Calculation Information

Volumetric flow data was collected using two different equations for each duct size. The data shown in Table 2 illustrates this.

$$Flow\ Velocity = \sqrt{\frac{Z * P_{Dynamic}}{Pair}}$$

$$Volumetric\ Flow = Velocity * Area$$

Table 2 Calculation Constants	
Cross sectional area of 3.0" duct	= 0.0491 (ft^2)
Cross sectional area of 3.5" duct	= 0.0721 *ft^2)

Flow is assumed to be incompressible within the control volume. This assumption is generally assumed valid for flows with a velocity of Mach .3 or less. The greatest flow velocity recorded was equal to Mach .15 (GEN4 operating at 22 amps with 3 feet of 3.0” ducting) thus making the incompressible flow valid.

The operational test results of airspeed are shown in the data below.

GEN4 Airspeed (MPH) Comparison of previous generation blower		
Current / Amps	GEN3	GEN4
3	34 MPH	38 MPH
7	52 MPH	67 MPH
12	66 MPH	85 MPH
15	72 MPH	93.7 MPH
Max (approx. 18 - 22 amps)	76 MPH	110 MPH

Custom Blower Control Interface (GUI) – Upon Request

