AEROSPACE INFORMATION REPORT

AIR5388™

Issued 2001-06
Reaffirmed 2022-09

Unique Wheel and Brake Designs

RATIONALE

AIR5388 has been reaffirmed to comply with the SAE Five-Year Review policy.

INTRODUCTION

Wheels and brakes in current use are generally very similar in design configuration. This has resulted from the sum of experience gained through the years as various designs were tried to meet unique requirements. Typical of modern brakes are the steel and carbon heatsink brakes shown in Figures 1 and 2. They consist of a forged aluminum piston housing, forged steel torque tube and a heat sink consisting of a pressure plate, alternating rotors and stators and a backing plate. Mechanical adjusters are used, generally of an extruding tube design. On carbon-carbon composite heat sink brakes, the adjusters are integral with the piston assemblies. On steel brakes, they are generally separate units. For bogie gears, the brake is bearing mounted on the axle, with one bearing being integral with the piston housing and the second at the mid-length of the torque tube. On two-wheel twin gears, the brake may be either bearing mounted or flange mounted.

Figure 3 shows a typical wheel design. Wheels are typically forged aluminum with an “A” cross-section. To accommodate the large brakes required, the web is normally offset significantly to the outboard side. Fuse plugs and over pressurization protection devices are included.

This Aerospace Information Report describes wheel and brake designs that are not typical, resulting from unique requirements and in some cases working very successfully.

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