FAMA BUYER'S GUIDE

TC063

Wheels

Prepared by the FAMA Chassis Subcommittee

This guide does not endorse any manufacturer or product

Contents

Introduction....3
Overview....3
Wheel Cost—with and without accessories....5
Wheel Weight Capability....5
Wheel Life....5
Wheel Maintenance....6
Conclusion....6

Buyer's Guide
Wheels

Introduction

The decision for aluminum or steel wheels for fire apparatus is typically a matter of load, dollars and aesthetics. When specifying a fire apparatus, wheel choice does have an impact on overall cost of the unit. Prior to 1980, a majority of apparatus delivered came standard with steel wheels. Today aluminum wheels are more common, even with the increased cost.

Across industries, the biggest advantage with aluminum wheels is the weight savings. For example, long haul trucks need to shave as much weight as possible to maximize load and mpg. The less the truck weighs, the more freight it can carry. More freight results in greater revenue, providing return on their wheel investment. Weight is not the primary consideration for fire apparatus, where weight is less critical.

We will present the key considerations to help departments make an informed decision on which wheel type is right for them.

Overview

Types of Wheels

Aluminum Wheel

Steel Wheel

Aluminum Super Single

Steel Super Single

There are 5 primary categories of wheels used on fire apparatus:

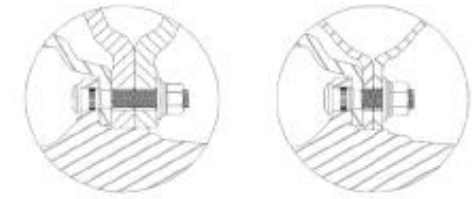
- Aluminum disc wheels (for front and rear axles)
- Steel disc wheels (for front and rear axles)
- Super single aluminum disc wheels (for heavier rated front axles only)
- Super single steel disc wheels (for heavier rated front axles)
- Cast spoke steel wheels (for front and rear axles)

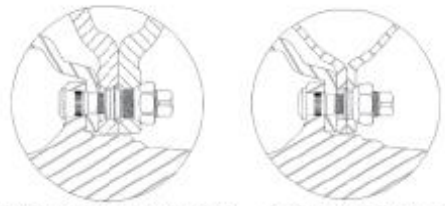
Buyer's Guide
Wheels

The size of apparatus often determines the type of wheel.

- Class 5-6 vehicles with 16", 17.5" and 19.5" rims most often come with steel wheels, however aluminum wheels are now becoming more readily available. These vehicles also come with full stainless steel wheel simulators and or axle/nuts covers, either standard, or as an option.

- Larger class 7-8 vehicles with 20", 22", 22.5" & 24.5 or super single wheels can be specified with either steel or aluminum wheels. It is extremely important the wheels meet the expected vehicle load rating. Typically, steel and aluminum wheels both meet all the load ratings require for emergence vehicles.

 Hub Piloted Aluminum Hub Piloted Steel	**Hub Piloted Wheels (newer technology)** • Current standard on all fire trucks. • Hub piloted wheels are designed for positive piloting with the hub at the center hole, or bore, of the wheel. • Wheels of this type have straight through bolt holes with no ball seat or spherical countersink. • Only one nut on each stud is used to fasten single or dual wheels to the vehicle.

 Stud Piloted Aluminum Stud Piloted Steel	**Stud Piloted Wheels (older technology)** • Used on trucks prior to the late 1990s. • Stud-piloted wheels are designed for centering by the nuts on the bolts/studs. • RH and LH fasteners are required. Wheels of this type have spherical countersinks at each stud hole and use ball seat lug nuts.

Wheel Cost—with and without accessories

Departments will need to weigh aesthetics and budget when specifying more expensive aluminum wheels. In addition, many departments accessorize the wheels. For aluminum or steel wheels, this includes an axle cover and lug nut covers for each wheel. With steel wheels, departments also have the option of adding a full stainless steel wheel cover or simulator to the wheels.

Wheel Weight Capability

Aluminum wheels do weigh less than steel. The typical 22.5 aluminum wheel weighs 47 pounds. The same steel wheel weighs in at 76 pounds. As indicated, the weight probably will not be the driving factor in a purchase decision. In addition, there are lighter steel wheels now on the market that may save 10 to 12 pounds per wheel compared to regular steel wheels. The maximum load however is the most important factor when deciding which wheels to go with.

Wheel Sizes	Steel Max Load Rating	Aluminum Max Load Rating
22.5" x 7.50	6,600-7,100 lbs.	7,300 lbs.
22.5" x 8.25"	7,400-8,000 lbs.	7,400-8,100 lbs.
22.5" x 9.00"	10,000 lbs.	10,000-10,200 lbs.
22.5" x 12.25"	11,400-11,500 lbs.	11,000-12,300 lbs.
22.5" x 13.00	11,000-13,000 lbs.	11,000-13,000 lbs.

Wheel Life

With today's wheel advancement in manufacturing and finish, both aluminum and steel wheels are designed, with proper care, to last the life of your apparatus. Optional finishes are available on both steel and aluminum wheels to protect the wheel from corrosion and maintain appearance. It is important to check the wheel manufacturer's warranty for both the wheel and the finish.

Wheel Maintenance

As with any part of the apparatus, it is important to periodically check, clean and maintain the wheels. Steel wheels will require less cosmetic maintenance than aluminum wheels. Aluminum wheels are usually more resistant to corrosion than steel wheels. Steel wheels with full stainless steel covers eliminate repainting the steel wheels and wheel covers are typically easy to maintain a polish. Aluminum wheels typically require more effort to keep polished over time.

Important areas to look for when inspecting wheels:

- Wheel torque retention
- Curbing damage
- Rim flange wear
- Irregular wear
- Cracks in the disc or weld
- Bent flanges
- Flange wear
- Surface pitting or corrosion
- Flatness and wear of disc mounting/mating surfaces
- Fastener degradation
- Any accessories installed are properly secured

Conclusion

When selecting wheels, cost and maintenance are extremely important factors for the safe and ongoing operation of any emergency apparatus vehicle. It is important to specify the correct wheel based on load, budget, long-term maintenance and appearance. When specifying wheels, take the time to research the wheel manufacturer, finish options and warranty.