FAMA BUYER'S GUIDE

TC042

Stepping, Standing and Walking Surfaces

Prepared by the FAMA Body Subcommittee

This guide does not endorse any manufacturer or product

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Step Surfaces

Introduction

An important component on any fire apparatus design is thoughtful, safe, and durable step surfaces. Steps and step surfaces exist all over the apparatus. Step surfaces can commonly be found on top of front bumper extensions, at cab entry points, at body entry points, on top of the fire apparatus body, at the pump operator position, along the fire pump enclosure/module, and on the apparatus body. Well-designed step surfaces can be the difference between a safe and useful tool and a workplace hazard. The NFPA is increasingly treating the apparatus as a workplace and has, therefore, made specific efforts to define step surface requirements. Chapters 15.7 and 15.8 of the NFPA 1901 *Standard for Automotive Fire Apparatus* and NFPA 1906 *Standard for Wildland Apparatus* address step surfaces and handrails.

Overview

Step surfaces are typically furnished to allow personnel to clean the apparatus, access hose loads, access compartmentation, and enter and depart the driver and crew compartments. Step surfaces take the form of flat platforms, such as around a turn table, on top of a front bumper extension, body tailboard, top mount pump operator platform, and on top of the fire apparatus body. Step surfaces are also integral to stairways seen on heavy rescue bodies. And step surfaces are naturally part of fixed steps, folding steps, and apparatus body ladders.

The NFPA Standard has established criteria for all step surfaces which include surface area dimensions, grip coefficient, and the illumination and identification of step surfaces. A 500 lb. weight capacity also applies. Step spacing and contact points are also addressed by the NFPA. The height of steps and step surfaces from the ground carry additional requirements such as perimeter striping. Basically, if it's on a fire truck and gravity allows you to stand on it, it may be considered a step surface.

Step surfaces are produced from a multitude of materials and product designs. Strength, economy, function, installation, and durability are all factors in the variety of options. The buyer is advised to consider their environment when selecting appropriate step surfaces.

Step Surface Types

There are 3 basic types of step surfaces.

FIXED/FOLDING STEPS

Fixed and folding steps are the most common form of steps on a fire apparatus. For years, manufacturers have been placing steps on the rear of their apparatus bodies. Fixed steps are usually manufactured by the final stage manufacturer. Folding steps are commonly purchased from a component supplier. Fixed steps are generally fabricated from aluminum treadplate that has a knurled texture on top of the treads to provide the NFPA compliant coefficient of friction.

Steps may also be constructed of stainless steel when corrosive conditions exist. When constructed of stainless steel, the step surface is typically CNC cut and punched to form a raised abrasive texture for grip. The manufacturer may also employ sourced materials such as grip strut into their step design.

Folding and flip up steps are usually made of cast aluminum with an NFPA compliant grip texture embossed or cast into the step surface. In all cases, surface area and depth requirements may be applied if an apparatus is expected to be NFPA compliant.

The photo below shows a series of folding steps. These types of steps have been around for years and are required to be within 18" of each other (as indicated) as one ascends the body. They must also be at least 8" deep from edge to toe-kick and accommodate a 5" diameter disc (shown) without any overlap. They are typically constructed of cast steel or aluminum. Surface illumination may be provided by a surface mounted light as shown, or a built-in light as part of the component.

The photo below shows a bolt-on step. The same requirements described above for the folding step apply here. Material used is stainless steel with a raised tread. Surface illumination is provided by a light not shown in photo.

BODY MOUNTED LADDERS

Body mounted ladders have soared in popularity in recent years. Ladders allow a convenient way to climb and descend an apparatus body. Such ladders are frequently constructed of stainless steel or aluminum. They may be fixed on the body or they may employ some sort of telescoping and swing out action to allow easier access and climbing characteristics.

The photo below shows a swing-out drop-down ladder. The first step falls well below the 24" height limit and rung spacing is 14" compared to the 18" limit for steps. Material used is stainless steel with handrails and raised tread.

The photo below shows drop-down ladder steps used to access the Tower platform. The first step is below the 24" height limit and handrails are provided for 3 points of contact. Material used is aluminum with a raised tread. Photo courtesy of Shell Oil.

The photo below shows a fixed set of ladder steps used to access the turn table. Depth and spacing is acceptable. A cab mounted handrail (not shown) provides the required 3 points of contact. Material used is aluminum. Photo courtesy of Shell Oil.

PLATFORMS AND WALKWAYS

Platforms and walkways provide perhaps the broadest assortment of applications. They are found on catwalks above side compartments, at top mount pump control consoles, on aerial turntables and platforms, and on rescue body walkways and staircases to name just a few. Polished knurled treadplate is the go-to material for many apparatus. Other materials may be used as well, provided they meet the customer's desires and/or NFPA step surface standards. If a surface is designated for standing or walking it will meet the NFPA requirements or and may be provided with a yellow or orange border markings

The photo below shows an upper body walkway. Adjacent structure does not necessitate perimeter stripes alongside. However, the threshold is identified by a reflective stripe. Material used is knurled aluminum treadplate.

The photo below shows a pull-out platform used to access the Stokes basket. Height does not necessitate handrails or border stripes. Material used is stainless steel with a raised tread.

The photo below shows border stripes around a catwalk which are required on designated standing and walking surfaces which are more than 48" above the ground and not accompanied by handrails or adjacent structures more than 12" tall. Materials used in this example are knurled polished aluminum treadplate/diamond plate.

The top mount walkway shown below is compliant due to the numerous handrails and appropriate spacing above ground and between steps. The height of the platform would be required to have perimeter stripes if not for the handrails and adjacent structures (cab and pump house). Materials used in this example are knurled polished aluminum treadplate/diamond plate.

Summary

Stepping, standing and walking surfaces come in all shapes, sizes, and materials with the primary design limitations being gravity and the NFPA (both of equal importance). NFPA Step surface standards are addressed in Chapters 15.7 and 15.8 of the NFPA 1901 standard.

Considerations of safety, function and durability should be factors in any decision regarding these surfaces. And while the NFPA has done a lot to ensure that step surfaces are safe, the best evaluation of fit, form, and function will depend upon your department's policies and procedures. Communicate this to your apparatus manufacturer and ensure that your specifications include proper stepping, standing and walking surfaces designated for the intended use.

