
USACE / NAVFAC / AFCEA / NASA UFGS-23 22 13.35 40 (February 2011)

Preparing Activity: NASA Superseding
 UFGS-23 22 13.35 (May 2010)

UNIFIED FACILITIES GUIDE SPECIFICATIONS

References are in agreement with UMRL dated July 2012

SECTION TABLE OF CONTENTS

DIVISION 23 - HEATING, VENTILATING, AND AIR CONDITIONING

SECTION 23 22 13.35 40

STEAM TRAPS

02/11

PART 1 GENERAL

- 1.1 REFERENCES
- 1.2 GENERAL REQUIREMENTS
- 1.3 SUBMITTALS

PART 2 PRODUCTS

- 2.1 MATERIALS
- 2.2 TRAP APPLICATION
- 2.3 TRAP-SIZING CRITERIA
- 2.4 TRAP TYPE, CONSTRUCTION, AND MATERIALS
 - 2.4.1 Type IB
 - 2.4.2 Type F&T
 - 2.4.3 Type T

PART 3 EXECUTION

- 3.1 TRAP INSTALLATION
- 3.2 COMPONENT INSTALLATION

-- End of Section Table of Contents --

USACE / NAVFAC / AFCEA / NASA UFGS-23 22 13.35 40 (February 2011)

Preparing Activity: NASA Superseding
UFGS-23 22 13.35 (May 2010)

UNIFIED FACILITIES GUIDE SPECIFICATIONS

References are in agreement with UMRL dated July 2012

SECTION 23 22 13.35 40

STEAM TRAPS 02/11

NOTE: This specification covers the requirements
for steam traps.

Adhere to UFC 1-300-02 Unified Facilities Guide
Specifications (UFGS) Format Standard when editing
this guide specification or preparing new project
specification sections. Edit this guide
specification for project specific requirements by
adding, deleting, or revising text. For bracketed
items, choose applicable items(s) or insert
appropriate information.

Remove information and requirements not required in
respective project, whether or not brackets are
present.

Comments, suggestions and recommended changes for
this guide specification are welcome and should be
submitted as a Criteria Change Request (CCR).

PART 1 GENERAL

NOTE: Show schedule of normal condensing rate in
the drawings. Specify the equipment and capacity
safety factor. Number each trap sequentially with
the prefix ST. Thermodynamic traps are not
acceptable due to pressure limitations.

1.1 REFERENCES

NOTE: This paragraph is used to list the
publications cited in the text of the guide
specification. The publications are referred to in
the text by basic designation only and listed in
this paragraph by organization, designation, date,
and title.

Use the Reference Wizard's Check Reference feature when you add a RID outside of the Section's Reference Article to automatically place the reference in the Reference Article. Also use the Reference Wizard's Check Reference feature to update the issue dates.

References not used in the text will automatically be deleted from this section of the project specification when you choose to reconcile references in the publish print process.

The publications listed below form a part of this specification to the extent referenced. The publications are referred to within the text by the basic designation only.

ASTM INTERNATIONAL (ASTM)

| | |
|-----------------|---|
| ASTM A105/A105M | (2011a) Standard Specification for Carbon Steel Forgings for Piping Applications |
| ASTM A216/A216M | (2008) Standard Specification for Steel Castings, Carbon, Suitable for Fusion Welding, for High-Temperature Service |
| ASTM A278/A278M | (2001; R 2011) Standard Specification for Gray Iron Castings for Pressure-Containing Parts for Temperatures Up to 650 degrees F (350 degrees C) |

1.2 GENERAL REQUIREMENTS

NOTE: If Section 23 00 00 AIR SUPPLY, DISTRIBUTION, VENTILATION, AND EXHAUST SYSTEMS is not included in the project specification, applicable requirements therefrom should be inserted and the following paragraph deleted.

Section 23 00 00 AIR SUPPLY, DISTRIBUTION, VENTILATION, AND EXHAUST SYSTEMS applies to work specified in this section.

Submit [manufacturer's catalog data](#) for steam traps in accordance with referenced standards contained in this section.

Submit [installation drawings](#) for steam traps in accordance with the manufacturer's published instructions.

Submit [listing of product installation](#) for steam traps, indicating at least [five][_____] installed units, similar to those proposed for use, that have been in successful service for a minimum of [five][_____] years.

1.3 SUBMITTALS

NOTE: Review Submittal Description (SD) definitions in Section 01 33 00 SUBMITTAL PROCEDURES and edit

the following list to reflect only the submittals required for the project.

The Guide Specification technical editors have designated those items that require Government approval, due to their complexity or criticality, with a "G." Generally, other submittal items can be reviewed by the Contractor's Quality Control System. Only add a "G" to an item, if the submittal is sufficiently important or complex in context of the project.

For submittals requiring Government approval on Army projects, a code of up to three characters within the submittal tags may be used following the "G" designation to indicate the approving authority. Codes for Army projects using the Resident Management System (RMS) are: "AE" for Architect-Engineer; "DO" for District Office (Engineering Division or other organization in the District Office); "AO" for Area Office; "RO" for Resident Office; and "PO" for Project Office. Codes following the "G" typically are not used for Navy, Air Force, and NASA projects.

Choose the first bracketed item for Navy, Air Force and NASA projects, or choose the second bracketed item for Army projects.

Government approval is required for submittals with a "G" designation; submittals not having a "G" designation are [for Contractor Quality Control approval.] [for information only. When used, a designation following the "G" designation identifies the office that will review the submittal for the Government.] Submit the following in accordance with Section 01 33 00 SUBMITTAL PROCEDURES:

SD-03 Product Data

Manufacturer's Catalog Data[; G][; G, [_____]]

SD-02 Shop Drawings

Installation Drawings[; G][; G, [_____]]

SD-07 Certificates

Listing of Product Installation[; G][; G, [_____]]

Steam Traps[; G][; G, [_____]]

Trap Bodies and Components[; G][; G, [_____]]

PART 2 PRODUCTS

2.1 MATERIALS

Ensure that traps exposed to weather are freezeproof.

Submit certificates for [steam traps](#) and [trap bodies and components](#) showing conformance with the referenced standards contained in this section.

2.2 TRAP APPLICATION

| <u>SERVICE</u> | <u>TRAP TYPE</u> |
|--|---|
| Steam mains, risers, branches | Type IB, inverted bucket with thermostatic air vent where necessary |
| Steam mains, risers, and branches, weather-exposed and subject to freezing | Refer to drawings |
| Steam coils associated with fans | Type F&T, float and thermostatic |
| Steam coils not associated with fans and not subject to freezing | Type T, thermostatic |
| Hot-water converter | Type F&T, float and thermostatic |
| Flash tank | Type IB, inverted bucket |

2.3 TRAP-SIZING CRITERIA

Size traps in steam mains, risers, and branches to provide an actual capacity, under normal operating conditions, of not less than three times the normal condensing rate.

Size traps draining underground steam mains to provide an actual capacity, under normal operating conditions, of not less than four times the normal condensing rate.

Size traps in steam mains, risers, and branches, weather-exposed and subject to freezing, to provide an actual capacity, under normal operating conditions, of two times normal condensing rate and duplex. Provide two identical traps, sized appropriately at each drainage point.

Size traps draining steam coils under modulating control to provide an actual capacity, under conditions normal to the system and including [3.5 kilopascal 1/2-pound per square inch \(psi\)](#) coil pressure, of two times normal condensing rate and capable of opening at maximum coil steam pressure.

Size traps in all other services to provide an actual capacity, under normal operating conditions, of three times normal condensing rate.

Trap safety factors are minimal. Increase safety factor where necessary to ensure proper system drainage for a given application. Do not decrease without written approval.

2.4 TRAP TYPE, CONSTRUCTION, AND MATERIALS

Provide trap bodies and components with a primary working steam pressure (wsp)-rating equal to or in excess of the maximum wsp of the steam system

to which they are applied.

Provide cast iron trap bodies for pressures 860 kilopascal 125-psi wsp and under in accordance with ASTM A278/A278M, Class 30.

Provide welded end connection trap bodies of [cast steel in accordance with ASTM A216/A216M, Grade WCB] [forged carbon steel in accordance with ASTM A105/A105M].

Ensure traps have permanent external identification of service indicating rating and orifice size.

[2.4.1 Type IB

NOTE: Select applicable type of trap and delete
those not used in project.

Provide inverted bucket traps with AISI 300 Series corrosion-resistant steel floats and operating mechanisms, and hardened 13 percent chrome corrosion-resistant steel seats and valves.

Provide bimetallic type thermostatic elements.

Design traps to permit removal and replacement of all operating and wearing parts without disturbing piping connections to trap body.

Provide strainers as an integral part of the body.

Provide bodies with plugged priming and draining openings.

Provide test cocks.

] [2.4.2 Type F&T

Provide float and thermostatic traps with AISI 300 series corrosion-resistant steel, heliarc-welded floats and operating mechanisms, and hardened 13 percent chrome corrosion-resistant steel seats and valves.

Balance thermostatic elements, pressure type, with corrosion-resistant alloy bellows charged with a fluid that provides the most rapid response to changes in temperature.

Make bellows suitable for service with condensate having a pH of 6.0.

Design traps to permit removal and replacement of all operating and wearing parts without disturbing piping connections to trap body.

Design bellows to permit removal while hot without overexpansion and shield from direct blast of steam and condensate.

Fit bodies with drain plug.

] [2.4.3 Type T

Balance thermostatic traps, pressure type, with corrosion-resistant alloy bellows charged with a fluid that provides the most rapid response to change in temperature.

Make bellows suitable for service with a condensate having a pH of 6.0. Shield bellows from direct blast of steam and condensate and design to permit removal while hot without overexpansion.

Provide hardened valves and valve seats made of 13 percent chrome corrosion-resistant steel.

Design traps to permit removal and replacement of all operating and wearing parts without disturbing piping connections.

]PART 3 EXECUTION

3.1 TRAP INSTALLATION

Install traps in accordance with the manufacturer's instructions.

3.2 COMPONENT INSTALLATION

Install trap components in accordance with the manufacturer's instructions.

-- End of Section --