Application Data

Important Safety Information

Read this page before using any of the information in this catalog. This catalog is designed to be used as a guide in selecting the proper hose for the applications listed herein. It contains many cautions, warnings, guidelines, and directions for the safe and proper use of Boston hose. All these directions and footnotes should be read and understood before specifying or using any of these hoses.

Throughout this catalog, potentially harmful situations are highlighted with the following symbols.

 This symbol is used to indicate imminently hazardous situations which, if not avoided, will result in serious injury or death.

 This symbol is used to indicate potentially hazardous situations which, if not avoided, could result in serious injury or death.

 This symbol is used to indicate potentially hazardous situations which, if not avoided, may result in property or equipment damage.

Some of the most common problems in the chemical hose industry result from improper hose and coupling selection, improper assembly techniques, failure to correctly inspect and test hose assemblies, and improper cleaning practices and hose assembly storage techniques.

In turn, these situations can lead to material leakage, spraying, spattering, end blow-offs, explosions, and other situations that may result in serious personal injury and property damage.

Personal injuries caused by improper hose assembly specification, installation, and usage could include cuts and abrasions, serious burns, irreparable eye damage, or even death. Therefore, for your safety and the safety of others working around you, Eaton strongly urges you to read and comply with all safety information printed in this publication.

 **WARNING:** Failure to properly follow the manufacturer's recommended procedures for the care, maintenance and storage of a particular hose may result in its failure to perform in the manner intended and may result in serious injury, death, and damage to property.

 **WARNING:** Testing can be dangerous and should be done only by trained personnel using proper tools and procedures. Failure to follow such procedures might result in serious injury, death, or damage to property.

Consult the coupling manufacturer to make sure you choose the correct coupling and proper assembly for the application, or contact Eaton Technical Support.

Before using any hoses in this catalog, consult the safety section in this catalog, and Chemical Compatibility Chart on page 21 or Boston Hose Chemical Resistance Guidelines. If you do not have the most recent copy, contact Eaton Customer Support at 1-888-258-0222.

Selection of Hose

Selection of the proper Boston hose for an application is essential to the proper operation and safe use of the hose and related equipment. Inappropriate hose selection may result in hose leakage, bursting, or other failure which may cause serious bodily injury or property damage from spraying fluids or flying projectiles. To avoid serious bodily injury or property damage resulting from selection of the wrong hose, you should carefully review the information in this catalog. Some of the factors to consider in proper hose selection are:

- hose size
- hose length
- hose ends
- fluid conveyed
- bends
- temperature
- hose pressure
- static head pressure
- installation design

These factors and the supplemental information contained in this catalog should be considered in selecting the proper hose for your application. If you have any questions regarding the proper hose for your application, please contact Eaton at 1-888-258-0222.

Application Data

Important Safety Information

Proper Selection of Hose Ends

Selection of the proper Boston hose end or coupling is essential to the proper operation and safe use of hose assemblies and related equipment. Inadequate attention to the selection of the end fittings may result in hose leakage, bursting, or other failure which may cause serious bodily injury or property damage from spraying fluids or flying projectiles. In order to avoid serious bodily injury or property damage resulting from selection of an incompatible hose end or coupling, you should carefully review the information in this catalog. Some of the factors which are involved in the selection of the proper hose couplings are:

- fluid compatibility
- temperature
- installation design
- hose size
- corrosion requirements
- fluid conveyed

The given hose and hose end selection factors and the other information contained in this catalog should be considered by you in selecting the proper hose end fitting for your application.

If you have any questions regarding the use of hose/hose ends, please contact Eaton Technical Support at 1-888-258-0222.

Hose Installation

Proper installation is essential to the proper operation and safe use of the hose assembly and related equipment.

Improper hose assembly installation may result in serious injury or property damage caused by spraying fluids or flying projectiles. In order to avoid serious bodily injury or property damage resulting from improper hose assembly installation carefully review the information in this catalog. Some of the factors to be considered when installing a hose assembly are:

- hose elongation or contraction
- proper bend radius/hose routing under pressure
- elbows and adapters to relieve strain
- protection from rubbing or abrasion high temperature sources
- protection against excessive movement
- twisting from pressure spikes/surges

These hose assembly installation factors and the other information in this catalog should be considered by you before installing the hose assembly. If you have any questions regarding proper hose installation, please contact Eaton Technical Support at 1-888-258-0222.

Hose Maintenance

Proper maintenance of the hose is essential to the safe use of the hose and related equipment. Hose should be stored in a dry place. Hose should also be visually inspected. Any hose that has a cut or gouge in the cover that exposes the reinforcement should be retired from service. Hoses should also be inspected for kinking or broken reinforcement. If the outside diameter of the hose is reduced by 20% or more, the hose should be repaired or removed from service. Inadequate attention to hose maintenance may result in hose leakage, bursting, or other failure which may cause serious bodily injury or property damage from spraying fluids, flying projectiles, or other substances.

Coll-O-Crimp Hose, Hose Ends and Assembly Equipment Compatibility

The Coll-O-Crimp Equipment Package, Coll-O-Crimp Hose Ends and Coll-O-Crimp Hose have been engineered and designed as a complete hose assembly system. Each component of the Coll-O-Crimp hose assembly system is compatible with other Coll-O-Crimp components to which it relates. Component compatibility, along with the use of quality components, insures the production of reliable hose assemblies when assembled properly. The use or intermixing of fittings and hose not specifically engineered and designed for use with each other and Coll-O-Crimp equipment is not recommended and may result in the production of unsafe or unreliable hose assemblies. This can result in hose assembly leakage, hose separation or other failures which can cause serious bodily injury or property damage from spraying fluids, flying projectiles, or other substances.

Important Steam Hose Safety Information!

WARNING: Exposure to steam is hazardous. If not properly controlled, steam can cause property damage, serious bodily injury, or death. In order to avoid property damage, serious injury, or death, you must select the proper steam hose for the given application. Also, proper installation, usage and maintenance of the steam hose you select will contribute to increased operator safety.

WARNING: Failure to properly follow the manufacturer's recommended procedures for the care, maintenance and storage of a particular hose may result in its failure to perform in the manner intended and may result in serious injury, death, and damage to property.

WARNING: Only specially trained persons should engage in applications or testing procedures that require particular skills. Failure to do so may result in damage to the hose products or to other property and more importantly, may result in serious injury.

WARNING: Steam heat is hotter than 212°F (boiling water) and increases in temperature as pressure increases. See safety information in this catalog.

STEAM HOSE BENEFITS

10:1 Safety Factor (Burst: Working Pressure)

- Safer operation
- Longer hose life

Heat Resisting Patrex or EPDM Tubes

- Boston products' exclusive elastomers with superior heat resistance provide for longer service life...and will resist flaking rubber particles (popcorning) and will handle most steam cleaner detergents.

Hi-Strength Steel Wire Braided Reinforcement

- Keeps the hose limber and easy to handle. Adds versatility...hot water cleaning to high pressure process steam service.

EPDM or Oil Resistant

- Stand up to the dragging, scuffing and abuse found in many applications.

Covers

- Ensures maximum service life and value. Exceptional aging, weathering, and heat resisting properties keep the hose flexible and easy to use.

Permanent Branding for Easy Identification

- The name of the hose and the working pressure are molded into the hose cover...can't rub off. This lets the operator know that the hose is for steam service.

The Boston Brand Reputation for Quality

- Your assurance of dependable performance.

Hose

Steam Service Safety Tips

Make Your Selection With Safety in Mind

- Be sure to select a hose identified as steam hose.
- Hose identification should be in the form of permanent branding on the hose outer cover, not just on the package.
- You must identify the type of service the steam hose is required to accomplish.
  - a) Is the hose manually handled?
  - b) What is the anticipated frequency of use?
  - c) What is the actual pressure of the steam service?
  - d) Is it subject to surges or peak pressures?
  - e) What is the temperature of the steam?
  - f) Saturated (wet) or superheated (dry) steam?
  - g) What are the external conditions in the area where the hose will be used?
- You should recognize that spillage or accumulations of corrosive chemicals or petroleum based materials externally can have a deteriorating effect on the hose cover.

Making Sure the Hose is Installed Properly

- Be certain to use hose couplings designed for steam hose service. Follow the coupling manufacturer's instruction for coupling attachment. Check tightness with each use.
- Avoid extreme flexing of the hose near the coupling. If necessary use elbows in the piping system to assure a straight line connection with the hose.
- Installing and using a shut-off valve between the steam source and the hose will maximize service life and operator safety, and we consider such a value mandatory for safe operation.
- The use of spring guards can relieve some of the acute flexing encountered in heavy manual handling applications.
- Provide a suitable means of storing the hose when not in use. A permanent rack or tray will minimize the damage to the hose in storage. Do not hang the hose on a hook, nail, or other device which could cut or damage the hose.

Common Sense with Steam Hose

- Provide operators with adequate safety clothing. Include gloves, rubber boots, full length protective clothing and eye protection. The objective is to provide protection from scalding burns resulting from splash back of steam or hot water.
- Ensure that the work area is free of tripping hazards and other clutter.
- Check the tightness of the coupling with each use.
- Do not allow the hose to remain pressurized when not in service. Turning off the pressure can provide dramatic increases in steam hose service life.
- Periodic maintenance of steam hose can pay big dividends. All steam hoses are expected to wear out in time. It is important to continually be on the lookout for hose that has deteriorated to the point where it can no longer provide safe service. The following guidelines can help in that determination.

Operators should be aware of the obvious signs of trouble.

They include:

- Cover blisters or lumps
- Cuts or gouges in the outside of the hose which expose the reinforcement
- Hardened or inflexible hose
- Steam leakages at the coupling ends or anywhere along the length of the hose
- Flattened or kinked areas which have damaged the hose
- A reduction of steam flow indicating that the tube is swelling

When any of the above abnormalities appear it is good safety sense to immediately remove the hose from service. Once removed, the hose can be carefully inspected before further use. Steam hose failures occur near the ends due to flexing and strain at the couplings. In those cases the hose can frequently be cut back and recoupled, providing additional service life. Hose used in continuous high pressure/ temperature service should be inspected periodically for signs of tube hardening. In most cases it is necessary to remove a coupling for tube inspection.

Hose

Steam Service Safety Tips

Selection Factors

There are many facts that have to be known about an application before a steam hose can be specified. Some of the most important considerations are:

- Steam pressure
- Steam temperature
- Whether the steam is superheated or saturated
- Magnitude of surges in temperature or pressure
- External conditions where the hose will be used
- How often the hose will be used
- Duration of each use
- How long the hose will be idle
- Whether manual handling will be required

It is helpful to read the lay line on steam hose. Every hose designed for steam use should be marked with the manufacturer's name, hose type and operating pressure. If this information is not visible on the lay line, don't use the hose for steam. Many steam hoses are also date-coded with the date of manufacture. This information helps spot hoses that should be replaced due to age. While many industrial hoses have a built-in safety factor of 4:1 (they can withstand pressures four times greater than the rating on the cover), steam hoses have a minimum safety factor of 10:1, per standards of the Rubber Manufacturers Association. This factor emphasizes the extreme dangers present with steam use. A hose should never be used to carry pressures higher than it is rated to handle, in spite of the safety factor.

Hose couplings are extremely important when steam is being handled. The potential for serious injury is significant if a coupling blows off under pressure. High temperatures and pressures inside steam hose act like a pressure cooker and cause the inside and outside diameters to shrink during use. Couplings must be specifically designed to combat this effect. Only couplings designed for steam hose should be used, because they include several crucial features:

- Proper material for steam, usually plated steel
- Bite-the-wire permanently attached coupling or Bolt-on clamp which can be retorqued repeatedly
- Ground-joint connection to avoid static charge buildup
- Strength to resist slippage due to hose shrinkage

Hose

Steam Hose Recommendations

The Boston Wolf Coupling offers significant advantages over the traditional bolt-style steam hose end. The Wolf ferrule is designed to grip the hose reinforcement to provide long-lasting coupling retention. This design avoids the problem of "cold flow" by involving the reinforcement as part of the coupling retention method rather than relying on the compression of the rubber cover by a bolt-style coupling. By using the Wolf Permanent Attach Coupling, the requirement for periodically retightening a bolt-style clamp is avoided. Additionally, there are no clamps to get hung up on obstacles in the plant.

1 Install an OSHA approved safety cable on the hose at every junction to prevent whipping of the end if the coupling should disconnect.

2 Ensure continuous static grounding of the hose at each coupling.

3 If the clamps are a bolt-on style, tighten them to the correct torque before use. Use calibrated torque wrenches, not impact or other types.

4 Repairs on steam hoses and couplings should be done only by fully qualified distributors or fabricators.

5 All workers near the hose should wear full protective safety gear including gloves, safety shoes, full-length protective clothing and protective glasses or goggles.

6 Perform a complete safety check before the steam is turned on. Inspect the area and remove all unnecessary objects and debris. Inspect the hose for gouges, kinks, worn areas, loose couplings and other potential safety problems.

7 Install a shut-off valve between the source of steam and hose assembly.

8 Use spring guards to protect the hose from kinking when handling of the hose is required.

9 Avoid excessive flexing of the hose, particularly near couplings. Flexing can weaken the assembly.

10 Examine connections to the steam source. Use straight connections instead of bending the hose. Install pipe elbows to ensure either straight vertical connections pointing downward, or a 45° downward angle that allows the hose to gently contact the ground without too much flexing.

11 Be aware of the danger of hammer effect and take steps to prevent it. Hammer effect is caused by spikes of extreme pressure; it can damage hose assemblies and break couplings free. The usual causes are blockage, pinched-off flow or valves being opened or closed too fast. Make personnel aware of both the danger and causes, and urge them to avoid actions that can cause the hammer effect.

12 When finished using steam, always close the pressure valve from the steam source. In addition to providing an extra safety margin, this action can extend the working life of the hose.

13 Add an extra measure of safety by ensuring that all steam hose connections are incompatible with other hoses in the plant or by color-coding for different applications. Manufacturers can often cooperate with these requests and suggest good color-coding systems.

14 Train workers to look for signs of problems during usage, such as steam leakage, loose clamps, hose shrinkage, cover damage or exposed reinforcement.

Hose

Steam Service Hose

Refer to warnings and safety information on pages 3-4 and pages 115-118.

Boston 200 L.L.

Tube: EPDM

Reinforcement: Wire, 1 Braid

Cover: EPDM/Pinpricked

Color: Black

Temperature Range: +388°F

Type Of Branding: Ink Print

Working Pressure: 200 PSI (Depending on coupling) 10:1 Safety Factor

Type Of Coupling: Boston Wolf Permanent Crimp Couplings or Interlocking. Clamps—Interlocking, (2 Bolt, 4 Bolt).

Features:

- EPDM cover
- EPDM tube
- Continuous ink print and date code
- Minimum 10-to-1 safety factor
- Long lengths

Advantages:

- Heat, age, ozone and weather resistant.
- Excellent heat resistance
- Handles most steam cleaning detergents
- Easy identification
- Meets safety standards of RMA
- Economical
- Fewer couplings

Markets:

- Chemical/Petroleum Industry
- Industrial Cleaning Markets
- Lumber/Woodworking
- Plywood Manufacturing
- Pulp Processing
- Ship Building
- Food Industry

Applications:

- Transfer of steam for processing products and cleaning equipment
- Transfer of steam for cleaning of equipment, tanks, buildings, etc.
- Transfer of hot water and steam

PRODUCT NUMBER	NOMINAL I.D. (IN.)	(MM)	BRAID	NOMINAL O.D. (IN.)	(MM)	APPROX. LBS. WEIGHT PER 100 FT	MAXIMUM WORKING PRESS. (PSI)	MTO* MIN. ORDER QTY.	STANDARD LENGTH (FT)
H602706-350R	3/8	9.5	1	13/16	20.6	25	200	3,000	350
H602708-350R	1/2	12.7	1	15/16	23.8	28	200	—	350
H602712-350R	3/4	19.1	1	1-3/16	30.2	40	200	3,000	350

Not to be used as a pressure washer hose

**MTO - Made to Order*

Hose

Steam Service Hose

Refer to warnings and safety information on pages 3-4 and pages 115-118.

Boston Concord 250

Tube: EPDM

Reinforcement: Wire, 2 Braid

Cover: EPDM/Pinpricked

Color: Black (BK), Available in Red (RD)

Temperature Range: +450°F

Type Of Branding: Ink Print

Working Pressure: 250 PSI (Depending on coupling) 10:1 Safety Factor

Type Of Coupling: Boston Wolf Permanent Crimp Couplings or Interlocking. Clamps—Interlocking, (2 Bolt, 4 Bolt).

Features:

- EPDM cover
- EPDM tube
- Continuous ink print and date code
- Minimum 10-to-1 safety factor
- Available with red cover (made-to-order)
- Date code

Advantages:

- Heat, age, ozone and weather resistant.
- Excellent heat resistance
- Handles most steam cleaning detergents
- Easy identification
- Meets safety standards of RMA
- Color coding
- Safety & maintenance records

Markets:

- Chemical/Petroleum Industry
- Industrial Cleaning Markets
- Ship Building
- Food Industry
- Lumber/Woodworking
- Plywood Mfg./Cardboard
- Pulp Processing

Applications:

- Transfer of steam for processing products and cleaning equipment
- Transfer of steam or hot 200˚F detergent-type solutions for cleaning of equipment, tanks, buildings, etc.
- Transfer of steam to melt glues, waxes, etc.

PRODUCT NUMBER`	NOMINAL I.D. (IN.)	(MM)	BRAID	NOMINAL O.D. (IN.)	(MM)	APPROX. LBS. WEIGHT PER 100 FT	MAXIMUM WORKING PRESS. (PSI)	STANDARD LENGTH (FT)
H956808	1/2	12.7	2	1-1/32	26.2	46	250	50(BK,RD)
H956812	3/4	19.1	2	1-11/32	34.1	70	250	50(BK,RD)
H956816	1	25.4	2	1-9/16	39.7	96	250	50(BK,RD)

Not to be used as a pressure washer hose

Hose

Steam Service Hose

Refer to warnings and safety information on pages 3-4 and pages 115-118.

Boston Concord 250 O.R.

Tube: EPDM

Reinforcement: Wire, 2 Braid

Cover: Special Oil Resistant Compound/Pinpricked

Color: Black (BK) or Red (RD)

Temperature Range: +450°F

Type Of Branding: Ink Print

Working Pressure: 250 PSI (Depending on coupling) 10:1 Safety Factor

Type Of Coupling: Boston Wolf Permanent Crimp Couplings or Interlocking. Clamps—Interlocking, (2 Bolt, 4 Bolt).

Features:

- Special cover
- EPDM tube
- Continuous ink print and date code
- Minimum 10-to-1 safety factor
- Date code

Advantages:

- Oil resistant.
- Excellent heat resistance
- Handles most steam cleaning detergents
- Easy identification
- Meets safety standards of RMA
- Safety & maintenance records

Markets:

- Chemical/Petroleum Industry
- Industrial Cleaning Markets
- Ship Building
- Food Industry
- Lumber/Woodworking
- Plywood Mfg./Cardboard
- Pulp Processing

Applications:

- Transfer of steam for processing products and cleaning equipment
- Transfer of steam or hot 200˚F detergent-type solutions for cleaning of equipment, tanks, buildings, etc.
- Transfer of steam to melt glues, waxes, etc.

PRODUCT NUMBER	NOMINAL I.D. (IN.)	(MM)	BRAID	NOMINAL O.D. (IN.)	(MM)	APPROX. LBS. WEIGHT PER 100 FT	MAXIMUM WORKING PRESS. (PSI)	MTO* MIN. ORDER QTY.	STANDARD LENGTH (FT)
H968208	1/2	12.7	2	1-1/32	26.2	46	250	3000	50(BK,RD)
H968212	3/4	19.1	2	1-11 /32	34.1	70	250	3000	50(BK,RD)
H968216	1	25.4	2	1-9/16	39.7	96	250	3000	50(BK,RD)

Not to be used as a pressure washer hose

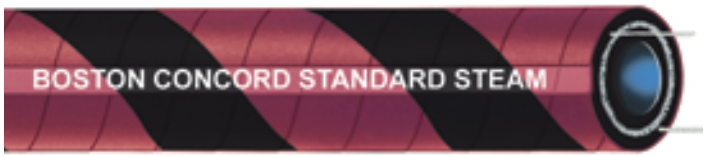
**MTO - Made to Order*

Hose

Steam Service Hose

Refer to warnings and safety information on pages 3-4 and pages 115-118.

Boston Concord Standard Steam & Concord Standard Steam-Spiral Stripe



Tube: Patrex (Chlorobutyl)

Reinforcement: Wire, 2 Braid, 2 Stainless Steel Static Wires

Cover: EPDM/Pinpricked

Color: Black (BK), Black and Red Stripe (RD)

Temperature Range: +450°F

Type Of Branding: Impression

Working Pressure: 250 PSI (Depending on coupling) 10:1 Safety Factor

Type Of Coupling: Interlocking. Clamps—Interlocking, (2 Bolt, 4 Bolt).

Features:

- EPDM cover
- Patrex (Chlorobutyl) tube
- Continuous impression brand and date code
- Minimum 10-to-1 safety factor
- Built in separate static wire
- Barber pole striped cover (RD)

Advantages:

- Heat, age, ozone and weather resistant.
- Excellent heat resistance
- Handles most steam cleaning detergents
- Easy identification
- Safety & maintenance records
- Meets safety standards of RMA
- Assures safe grounding
- Safety
- Color code system

Markets:

- Chemical/Petroleum Industry
- Industrial Cleaning Markets
- Ship Building
- Lumber/Woodworking
- Plywood Mfg./Cardboard
- Pulp Processing

Applications:

- Transfer of steam for processing products and cleaning equipment
- Transfer of steam or hot 200˚F detergent-type solutions for cleaning of equipment, tanks, buildings, etc.
- Transfer of steam to melt glues, waxes, etc.

PRODUCT NUMBER	NOMINAL I.D. (IN.)	(MM)	BRAID	NOMINAL O.D. (IN.)	(MM)	APPROX. LBS. WEIGHT PER 100 FT	MAXIMUM WORKING PRESS. (PSI)	STANDARD LENGTH (FT)*
H008408	1/2	12.7	2	1-1/8	28.6	55	250	50(BK,RD)
H008412	3/4	19.1	2	1-3/8	34.9	78	250	50(BK,RD)
H008416	1	25.4	2	1-5/8	41.3	100	250	50(BK,RD)
H008420	1-1/4	31.8	2	1-15/16	49.2	135	250	50(BK,RD)
H008424	1-1/2	38.1	2	2-3/16	55.6	155	250	50(BK,RD)
H008432	2	50.8	2	2-11/16	68.3	194	250	50(BK,RD)

Not to be used as a pressure washer hose

** 225 - 295 foot reels available as Made to Order*