

INCH-POUND

A-A-59566

2 July 2001

SUPERSEDING

ZZ-H-561K

26 July 1988

COMMERCIAL ITEM DESCRIPTION

HOSE, RUBBER, AND HOSE ASSEMBLIES, RUBBER, SMOOTH BORE, WATER SUCTION AND DISCHARGE

The General Services Administration has authorized the use of this commercial item description for all federal agencies.

1. **SCOPE.** This commercial item description (CID) covers wire-reinforced hose and hose assemblies for use with water pumps, and will be usable on both suction and discharge sides of the pump.

2. **CLASSIFICATION.**

2.1 Grades, styles, and classes. Water hose shall conform to the following grades, styles, and classes as specified (see 7.2).

Grade A – Weather, oil, and ozone resistant outer cover.

Grade B – Weather and ozone resistant outer cover.

Style A – Hose ends constructed for shank, compression, or internally expanded fittings.

Style C – Hose ends with built-in nipples.

Style D – Hose ends constructed for straight nipples.

Class 1 – General water use inner tube.

Class 2 – Potable water use inner tube.

2.2 Sizes. Hose covered by this CID shall be of the sizes (inside diameter) listed in table I, as specified (see 7.2).

3. **SALIENT CHARACTERISTICS.**

3.1 Description. The following water hose and hose assemblies in this CID are to be used for water pumps on both suction and discharge sides of the pump.

3.2 Interchangeability. All units of the same classification furnished under a specific contract shall be identical to the extent necessary to ensure interchangeability of component parts, assemblies, accessories, and spare parts.

3.3 Materials. Materials used shall be free from defects that would adversely affect the performance or maintainability of individual components or of the overall assembly. Materials not specified herein shall be of the same quality used for the intended purpose in commercial practice.

Beneficial comments, recommendations, additions, deletions, clarifications, etc. and any other data that may improve this document should be sent to: Defense Supply Center Columbus (Attn: DSCC-VAI), 3990 East Broad Street, Columbus, Ohio 43213-5000.

TABLE I. Design and performance requirements.

Nominal size in inches (inside diameter)	1.0 1.25	1.5	2.0	2.5 3.0 3.5	4.0 4.5	6.0 8.0 10.0	12.0
Tolerance, inside dia. (inch), Plus Minus	.031 .031	.031 .031	.063 .063	.063 .063	.063 .250	.063 .250	.063 .250
Thickness, minimum <u>1/</u> Tube Cover	.047 .047	.047 .047	.047 .047	.050 .047	.050 .047	.050 .063	.050 .063
Adhesion, pounds per inch of width, minimum: Between plies and rubber parts Between plies	12 12	12 12	12 12	12 12	12 12	12 12	12 12
Tensile strength (before aging), minimum, lb/in ² Tube Cover	1,000 1,000	1,000 1,000	1,000 1,000	1,000 1,000	1,000 1,000	1,000 1,000	1,000 1,000
Ultimate elongation, minimum percent: Tube Cover	200 200	200 200	200 200	200 200	200 200	200 200	200 200
Hydrostatic test pressure, Minimum, pounds per square inch (psi) Proof test <u>2/</u> Burst test	100 300	100 300	100 300	100 300	100 300	100 300	100 300
Crush resistance (pounds)	200	225	250	325	325	325	400
Length of nipples beyond hose end, inches, minimum	----	----	----	----	4	6(ID)-6 8(ID)-8 10(ID)-8	8

1/ Minimum thickness of tube and cover before buffing.

2/ The hose, complete with couplings or nipples, shall withstand the pressure indicated.

3.4 Design and construction. The hose shall consist of an inner tube of elastomeric material, layer or layers of textile reinforcement, a helical wire reinforcement, additional layer or layers of textile reinforcement (or the textile layer may be interwoven with the helical wire), and an outer cover of elastomeric material. Hose construction shall meet the requirements specified in table I.

3.4.1 Outer cover. The outer cover shall be grade A or grade B as specified (see 7.2).

3.4.1.1 Grade A. The grade A outer cover shall be constructed of an elastomeric material that is weather, oil, and ozone resistant.

3.4.1.2 Grade B. The grade B outer cover shall be constructed of an elastomeric material that is weather and ozone resistant.

3.4.2 Inner tube. The inner tube shall be class 1 or class 2 as specified (see 7.2).

3.4.2.1 Class 1. The class 1 inner tube shall be constructed of an elastomeric material that is suitable for general water use.

3.4.2.2 Class 2. The class 2 inner tube shall be constructed of an elastomeric material that meets the requirements of the Federal Food and Drug Act, Title 21, Code of Federal Regulations 177.2600. It shall meet the extraction requirements of 3.6.3.

3.4.3 Reinforcement.

3.4.3.1 Textile reinforcement. Textile reinforcement shall consist of one or more plies of loomed, woven fabric, braided or spiraled yarn of cotton or synthetic material, evenly and firmly applied. It shall be free of unsightly defects, dirt, knots, lumps, and irregularities of twist. It shall be applied above and below the helical wire reinforcement and shall be well impregnated with an elastomeric material.

3.4.3.2 Wire reinforcement. A helix of wire, completely embedded in an elastomeric material, shall be installed between the upper and lower ply or plies of textile reinforcement, or the helix of wire may be interwoven with the textile reinforcement. The reinforcing wire shall be round, galvanized, coppered, or unfinished (bright) steel wire. The size, tensile strength, and spacing of the wire reinforcement shall be sufficient to meet the requirements specified herein. A sample of the helix wire shall show no defects in the steel when wrapped six full tight turns around a mandrel having a diameter three times the diameter of the wire. The wrapped wire shall show no defects in the steel after wrapping. Cracking or breaking of the wire shall constitute a defect. Flaking or peeling of the galvanized or coppered coating of the wire shall not be considered a defect.

3.4.4 Length and inside diameter. Hoses and hose assemblies shall be furnished in lengths as specified (see 7.2) with a tolerance of ± 2 percent when tested in accordance with the test method in table II. Prior to measurement of length, the sample hose shall be pressurized by 10 pounds per square inch (psi) water pressure for 10 minutes (see 7.4.5). Nipples, fittings, and couplings shall be considered additions to hose length, not part of the length. The inside diameter of the sample hose shall be as specified in table I when measured in accordance with the test method specified in table II.

3.4.5 Tube and cover thickness. The thickness of the tube and cover shall be as specified in table I when measured in accordance with the test method specified in table II. The thickness of the tube and cover shall be measured on specimens removed from each end of a sample hose section.

TABLE II. Test method.

Test	Method	Reference
Hose size, inside diameter	ASTM D380	Table I and 3.4.4
Hose length	ASTM D380	3.4.4
Hydrostatic tests: Proof Pressure:	ASTM D380	Table I and 3.6.1.1
Burst Pressure:	ASTM D380	Table I and 3.6.1.2
Crush resistance	See 3.6.2	Table 1 and 3.6.2
Water extraction	See 3.6.3	3.6.3
Resistance to Oil	ASTM D471	3.6.5
Accelerated Aging	ASTM D573	3.6.6
Ozone resistance	ASTM D518 and D1149	3.6.7
Tube and cover thickness	ASTM D380	Table 1 and 3.4.5
Friction (adhesion)	ASTM D380 and D413	Table 1 and 3.6.8
Tensile strength and ultimate elongation of tube and cover	ASTM D412	Table I and 3.6.4
Helix wire flexibility	See 3.4.3.2	3.4.3.2

3.4.6 Hose ends. Unless otherwise specified (see 7.2), hose ends shall be of a style that is appropriate for the type of fitting or coupling specified (see 3.5). Hose ends shall be finished as specified below.

3.4.6.1 Style A. When style A ends are specified (see 7.2), the helix reinforcement wire shall be terminated at the end of the hose (see figure 1A).

3.4.6.2 Style C. When style C ends are specified (see 7.2), each end of style C hose (4 inches in inner diameter and larger) shall be fitted with nipples conforming to size and dimension of figure 5. Nipples shall be made of steel pipe conforming to ASTM A53; schedule 40 for 4-inch and 6-inch sizes and schedule 30 for 8-inch and 12-inch sizes. Bands on the nipples shall be steel and welded all the way around the pipe. The nipple shall be zinc-coated in accordance with ASTM A53 or otherwise protected at exposed ends from corrosion after machining. The helix reinforcement wire shall extend over the end of the built-in nipple at least 1.5 inches under or over the wire binding the nipple (see figure 1B). At least one ply of fabric shall be between the binding wire and the cover. The nipple shall be secured to the hose by the vulcanization process. The nipple shall extend beyond the end of the hose to the length specified in table I (see figure 1B).

3.4.6.3 Style D. When style D ends are specified (see 7.2), each end of style D hose (4 inches in inner diameter and larger) shall be fitted with clamps and with nipples conforming to figures 1C and 6. Nipples shall be made of steel pipe conforming to ASTM A53. The nipple shall be zinc-coated in accordance with ASTM A53 or otherwise protected at exposed ends from corrosion after machining. The inside diameter of the hose ends shall be large enough to accommodate the outside diameter of schedule 80 iron pipe.

3.5 Fittings and couplings. Hose and hose assemblies shall be fitted with fittings and couplings as specified (see 7.2). Unless otherwise specified (see 7.2), each length of hose, up to and including 4 inches inside diameter, shall be fitted with ribshank or expansion couplings (see 3.5.3) or compression-reattachable couplings (see 3.5.4). Female couplings shall be fitted with a synthetic rubber washer.

3.5.1 Flanges. Unless otherwise specified (see 7.2), each nipple shall be fitted with a standard steel flange for 150 psi working pressure. All steel surfaces shall be zinc-coated in accordance with ASTM D153.

3.5.1.1 Flanges for Navy requirements. When specified (see 7.2), flanges shall be in accordance with the requirements of figures 2, 3, and 4.

3.5.2 Clamps. Clamps shall be furnished and fitted when shank couplings (see 3.5 and 3.5.3) or nipples without built-up bands are specified (see 7.2 for clamp and hose requirements). Clamps conforming to A-A-52506 shall be corrosion-resistant, zinc-coated steel in accordance with ASTM A153, or copper alloy as specified (see 7.2). The clamps shall be capable of holding nipples and couplings in place without leakage or slippage when subjected to the proof pressure specified in table I.

3.5.3 Shank and expansion couplings. Unless otherwise specified (see 7.2), these couplings shall conform to WW-C-624.

3.5.4 Compression-reattachable couplings. Unless otherwise specified (see 7.2), these couplings shall conform to SAE AS38404.

3.6 Performance. Hose and hose assemblies shall conform to all of the mechanical and physical properties of table I when tested as specified herein, and the requirements of 3.6.1 through 3.6.8.

3.6.1 Hydrostatic pressure requirements. Hose and hose assemblies shall be subjected to the hydrostatic pressures specified in table I.

3.6.1.1 Proof pressure. Each hose length, complete with couplings, shall withstand the proof pressure specified in table I for at least 2 minutes when applied in accordance with the test method specified in table II. The hose assembly shall not leak or show any imperfections in either the hose or the fittings. There shall be no indications of slippage or pullout of the fitting from the hose.

3.6.1.2 Burst pressure. Hose and hose assemblies shall withstand the burst pressure specified in table I when applied in accordance with the test method specified in table II. The sample hose or hose assemblies shall not leak or show any imperfections in either the hose or the fittings. There shall be no indications of slippage or pullout of the fitting from the hose.

3.6.2 Crush resistance. Hose crush resistance shall be sufficient, such that during application of the load specified in table I, the smallest outside diameter shall be not less than 85 percent of the original outside diameter. After release of the load, the smallest outside diameter shall be not less than 95 percent of the original outside diameter. Crush resistance shall be determined by centering a 12-inch length of sample hose between 3-inch wide, parallel metal plates in such a way that a 3-inch length of hose is being compressed. The plates shall be brought together at a rate of 2 inches per minute until the specified load has been reached. At this point the distance between plates shall be measured and reported in percentage of the original outside diameter. The load shall be released and the minimum outside diameter of the hose at the center of the compressed area shall be measured and reported in percentage of the original outside diameter.

3.6.3 Extraction of class 2 inner tube. The extractable non-volatile matter in class 2 inner tube shall not exceed 21 milligrams per square inch when the tube is subjected to the following procedure:

- a. Remove a 1-inch ring of rubber inner tube and cut or buff away the outer surface until the surface is smooth.
- b. Cut sufficient length of inner tube to obtain approximately 10 grams (g), based on a minimum thickness of .047 inch.
- c. Subject sample to distilled water, at reflux temperature, for 7 hours in an extraction apparatus as shown in ASTM D297, figure 1.
- d. Filter the solution through No. 40 Whatman filter paper or equivalent and collect the extract in a tared container.

e. Extract the rubber sample in an additional 50-75 cubic centimeters (cm³) of distilled water at a reflux temperature for 2 more hours and repeat step d. Combine the extract solutions and dry the container and residue in an oven at 105±3 °C for 1 hour, cool in a desiccator, and weigh to the nearest milligram. Report the amount of matter extracted from the rubber in milligrams per square inch of sample surface.

3.6.4 Initial tensile strength and ultimate elongation. The tensile strength and ultimate elongation of the hose cover and tube shall be as specified in table I when tested in accordance with the test method specified in table II.

3.6.5 Oil resistance of grade A hose cover. The tensile strength of the cover stock of grade A hose shall not decrease more than 60 percent of the original value when subjected to ASTM D471 No. 3 oil for 70 hours at 100±2 °C in accordance with the test method specified in table II. The maximum permissible volume swell shall be 100 percent. The change in tensile strength and amount of volume swell shall be based on original cross-sectional areas.

3.6.6 Accelerated aging. The tensile strength of the tube and cover after the accelerated aging process in accordance with the test method in table II, except as modified herein, shall not decrease by more than 20 percent of the initial value. The elongation of the tube and cover after similar aging shall not decrease by more than 50 percent. The resistance of the tube and cover to accelerated aging shall be determined as described in ASTM D573, except that the aging shall be 70 hours at 100 °C.

3.6.7 Ozone resistance. The cover stock of grade A or grade B hose shall show no visible cracking under 7X magnification when subjected to ozone in accordance with the test methods specified in table II, except as modified herein. The test shall be in accordance with procedure B of ASTM D518 and ASTM D1149, except that after conditioning for 24 hours in an ozone-free atmosphere, the sample shall be exposed to an atmosphere containing 50 parts per hundred million of ozone for 72 hours at 40°±2 °C.

3.6.8 Adhesion. Hose rubber parts and plies shall show no separation when subjected to the minimum force specified in table I and applied in accordance with the test methods specified in table II. The adhesion shall be determined in accordance with the machine method of ASTM D413.

3.7 Strainers and spanner wrench. When specified (see 7.2), suction strainers and spanner wrenches shall be furnished.

3.8 Identification marking.

3.8.1 General water use hose (class 1). Each length of hose shall be marked in a color that contrasts with the color of the hose cover. Marking shall be accomplished either by inlaying a rubber or suitable material brand, or by applying a suitable composition ink, bonding the marking onto the cover in such a manner that the marking ink cannot be removed except by mechanical means. The marking shall consist of the manufacturer's name or trademark; the quarter and year of manufacture; the words Water-Suction; the symbol "A-A-59566"; the grade, style, and class of the hose; and the words NOT FOR USE WITH POTABLE WATER. Hose shall be marked at regular intervals not exceeding 25 feet. Letters shall be at least .25 inch high. An alternative method of marking may be by application of a continuous embossed strip along the entire length, vulcanizing the hose, and subsequently removing the strip, leaving a continuous relief identification area. When marking is accomplished by this alternative, no color contrast is required.

3.8.2 Potable water use hose (class 2). When class 2 hose is specified (see 7.2), each hose length shall be marked in the same manner as specified in 3.8.1, except that the words POTABLE WATER USE ONLY shall be substituted for NOT FOR USE WITH POTABLE WATER.

4. REGULATORY REQUIREMENTS. The offerer/contractor is encouraged to use recovered material to the maximum extent practicable, in accordance with paragraph 23.403 of the Federal Acquisition Regulation (FAR).

5. PRODUCT CONFORMANCE.

5.1 Product conformance. The products provided shall meet the salient characteristics of this CID; conform to the producer's own drawings, specifications, standards, and quality assurance practices; and be the same product offered for sale in the commercial marketplace. The government reserves the right to require proof of such conformance.

5.2 Examination. The element of examination shall encompass all inspections of material, configuration, performance, and marking requirements. Each hose or hose assembly shall be visually examined for defects and for conformance to requirements that can be checked visually. Each hose length complete with couplings shall be subjected to the proof pressure test specified in 3.6.1.1. The other examinations requiring mechanical or dimensional measurements and testing to determine conformance to salient characteristics shall be accomplished by subjecting hose samples and specimens to the tests and methods listed in section 3 and table II. The tests specified in 3.4.5 and 3.6.3 through 3.6.8 shall be conducted using hose samples or specimens without the helical wire. Unless otherwise specified (see 7.2), sampling shall be in accordance with ANSI/ASQC Z1.4. Any modification necessary, following failure, to meet the specified requirements, shall receive particular attention for adequacy and suitability. Non-compliance with any specified requirement, or the presence of one or more defects, shall constitute cause for rejection.

6. PACKAGING. Preservation, packaging, and marking shall be as specified in the contract or purchase order.

7. NOTES.

7.1 Intended use.

7.1.1 Class 1 hose. Class 1 hose and hose assemblies are intended for mines, construction work, general contracting, and general suction service.

7.1.2 Class 2 hose. Class 2 hose and hose assemblies are intended as a means of conveying potable water in suction and discharge services, such as distillation units and tank farms.

7.2 Ordering data. The contract or order should specify the following:

- a. Title, number, and date of this CID.
- b. Grade, style, and class required (see 2.1, 3.4.1, 3.4.2, 3.4.6 through 3.4.6.3, and 3.8.2).
- c. Size required (see 2.2).
- d. Length required (see 3.4.4).
- e. If hose ends are to be of a style other than that normally appropriate for the type of coupling or fitting specified (see 3.4.6).
- f. Type of fittings or couplings and clamps required (see 3.4.6.2, 3.4.6.3, and 3.5 through 3.5.4).
- g. If other than standard steel flanges for 150 psi pressure are required (see 3.5.1 and 3.5.1.1).
- h. If clamps are to be corrosion-resistant steel, zinc-coated steel, or copper alloy (see 3.5.2).
- i. If shank or expansion couplings are to be other than as specified (see 3.5.3).

- j. If compression-reattachable couplings are to be other than as specified (see 3.5.4).
- k. If suction strainers and spanner wrenches are required (see 3.7).
- l. Sampling plan, if other than as specified (see 5.2).
- m. Level of preservation and level of packing required (see 6.1).

7.3 Addresses for obtaining copies of referenced documents.

7.3.1 Activities outside the Federal Government may obtain copies of federal specifications, standards, and commercial item descriptions as specified in the General Information section of the Index of Federal Specifications, Standards, and Commercial Item Descriptions. The Index is for sale on a subscription basis from the Superintendent of Documents, U.S. Government Printing Office, Washington, DC 20402.

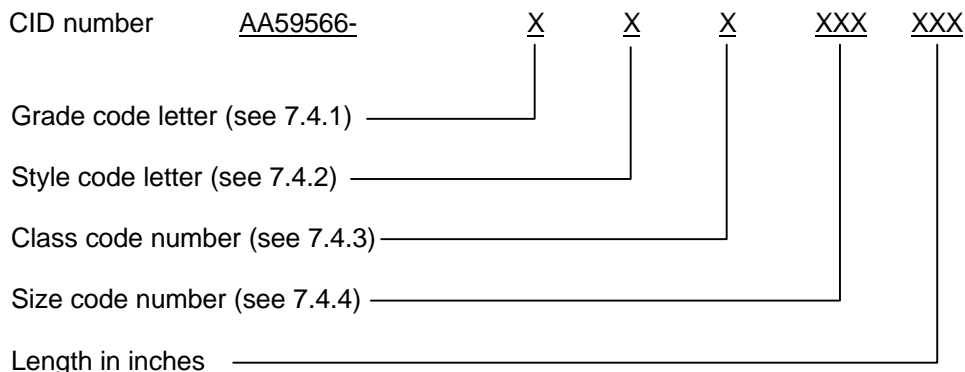
7.3.2 Copies of ASTM standards are available from the American Society for Testing and Materials, 100 Barr Harbor Dr., West Conshohocken, PA 19428-2959.)

7.3.3 Copies of ANSI/ASQC Z1.4 are available from the American National Standards Institute, 11 W. 42nd Street, New York, NY 10036, or from the American Society for Quality, 611 East Wisconsin Ave, Milwaukee, WI 53202-3005.

7.3.4 Copies of SAE standards are available from SAE International, 400 Commonwealth Dr., Warrendale, PA 15096-0001.

7.3.5 The Code of Federal Regulations (CFR) may be obtained from the Superintendent of Documents, U.S. Government Printing Office, Washington, DC 20402.

7.4 Part or identification number (PIN). The following part or identification numbering procedure is for government purposes and does not constitute a requirement for the contractor. The PIN to be used for a hose or hose assembly acquired using this CID is generated as follows:



7.4.1 Hose grade. Hose grade is designated by one code letter (see table III).

TABLE III. Hose grade code letter.

Hose grade	Grade A	Grade B
Hose grade code letter	A	B

7.4.2 Hose style. Hose style is designated by one code letter (see table IV).

TABLE IV. Hose style code letter.

Hose style	Style A	Style C	Style D
Hose style code letter	A	C	D

7.4.3 Hose class. Hose class is designated by a one-digit code number (see table V).

TABLE V. Hose class code number.

Hose class	Class 1	Class 2
Hose class code number	1	2

7.4.4 Hose size. Hose size is designated by a three-digit code number (see table VI).

TABLE VI. Hose size code number.

Hose ID (inches)	1.0	1.25	1.5	2.0	2.5	3.0
Hose size code number	010	012	015	020	025	030

Hose ID (inches)	3.5	4.0	4.5	6.0	8.0	10.0	12.0
Hose size code number	035	040	045	060	080	100	120

7.4.5 Hose length measurement. Hose containing an embedded helical wire tends to shrink abnormally during shipment and storage. Actual length should be determined by measurements of the hose while it is under 10 psi pressure.

7.5 Cross-reference of classifications. The following hoses were previously classified as indicated:

ZZ-H-561G and ZZ-H-561H	ZZ-H-561J and ZZ-H-561K
Grade A	Grade A
Grade B	Grade B
Type I	Not designated
Type II	Not designated
Style A	Style A
Style B	Style A
Style C	Style C
Style D	Style D
Class 1	Class 1
Class 2	Class 2

7.6 Key words.

Oil-resistant
Ozone-resistant
Rubber
Water discharge
Water suction

MILITARY INTERESTS:

Custodians:

Army - AT
Air Force – 99
Navy - SH
DLA – CC

Review Activities:

Air Force – 71
Navy - MC, SA

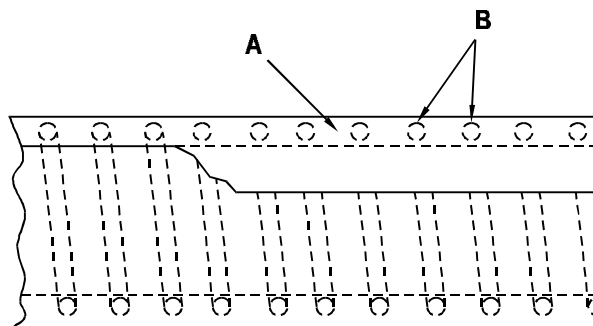
CIVIL AGENCY COORDINATING ACTIVITIES:

DOT - ACO
GSA - FSS
HHS - FEC
USDA - AFS

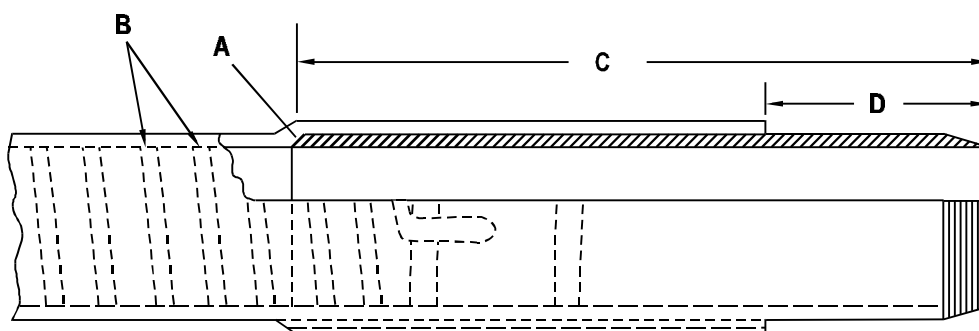
Preparing activity:

DLA - CC

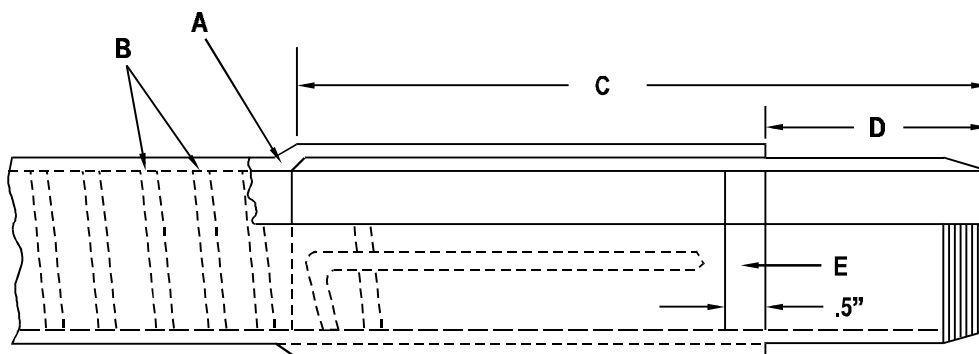
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1A. Hose ends for banded shank, compression, or internally expanded fittings.



1B. Hose ends for built-in nipples.



1C. Hose ends for plain nipples.

- | | |
|--|--|
| A. Rubber and reinforcement plies | D. Length of nipple beyond hose end (see table I). |
| B. Helix wire. | E. Soft rubber end. |
| c. Overall nipple length (see figures 5 and 6) | |

FIGURE 1. Hose end constructions.

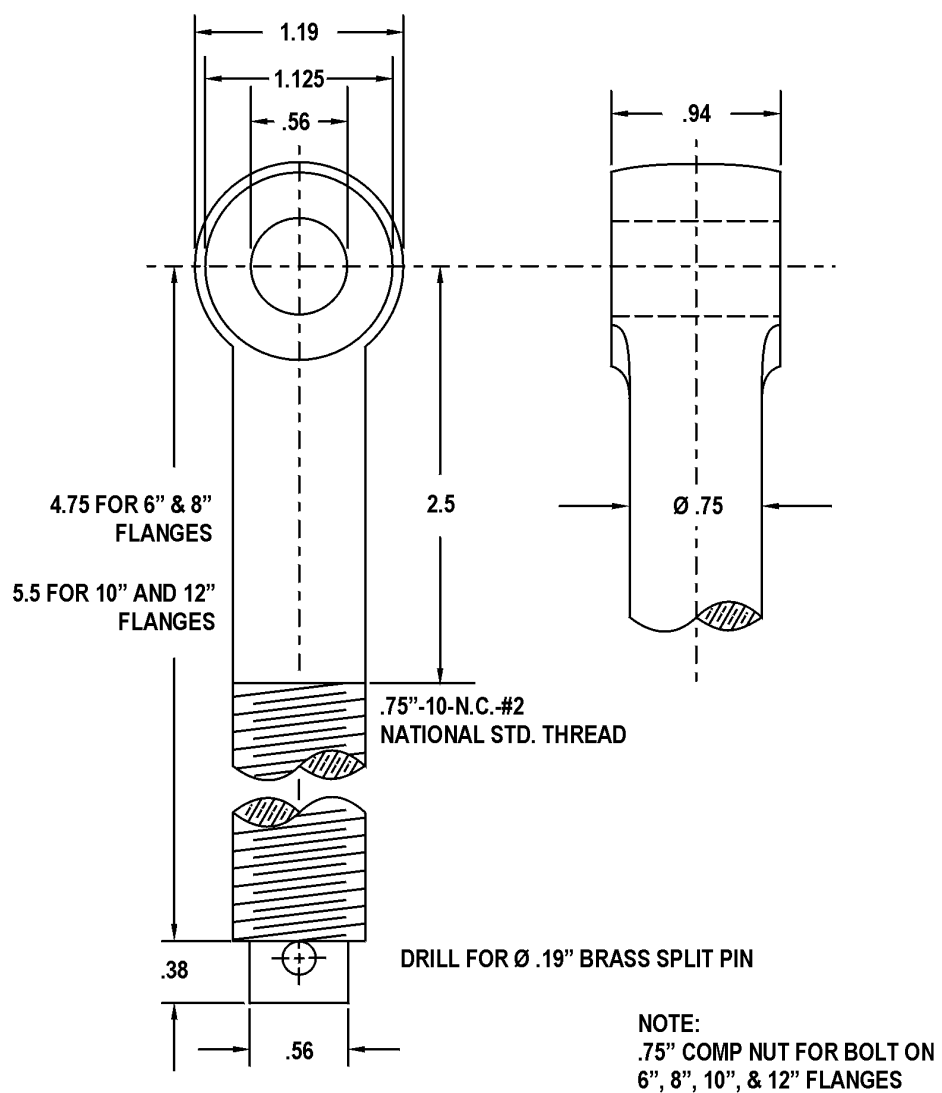
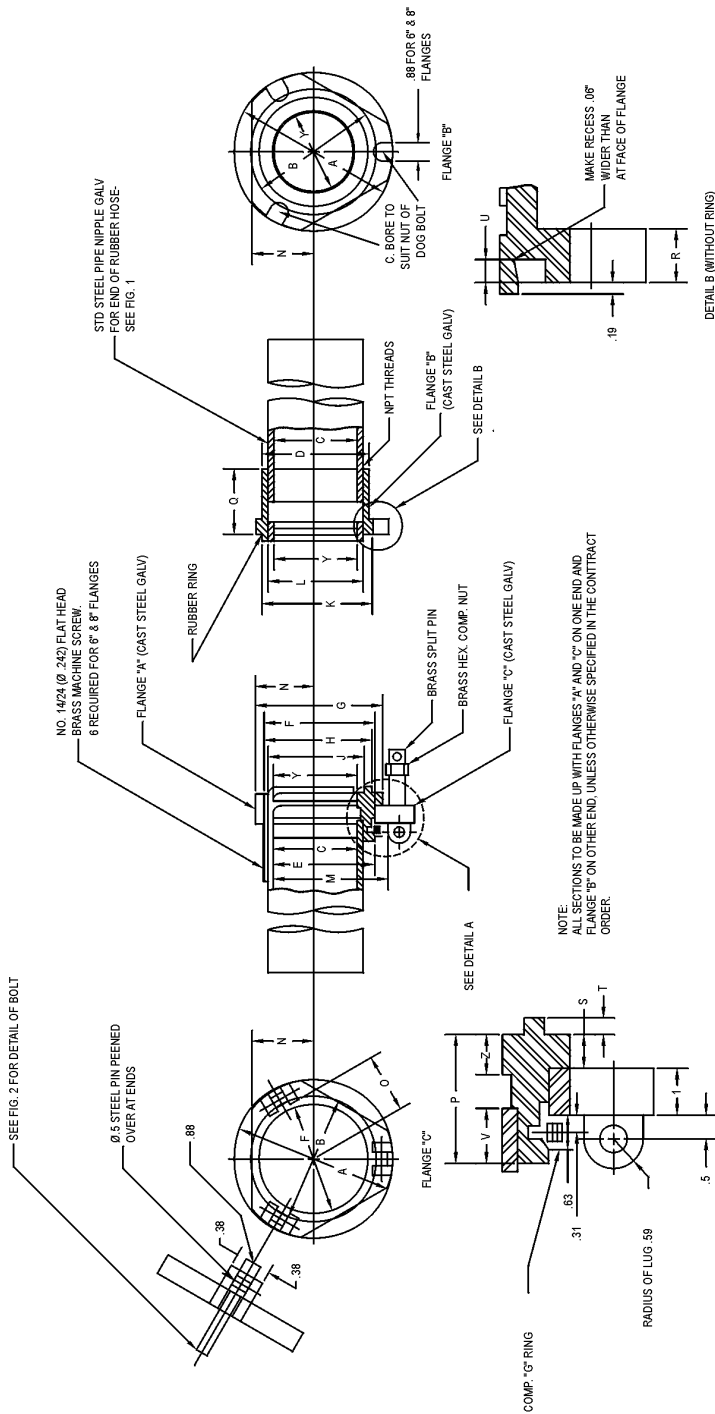


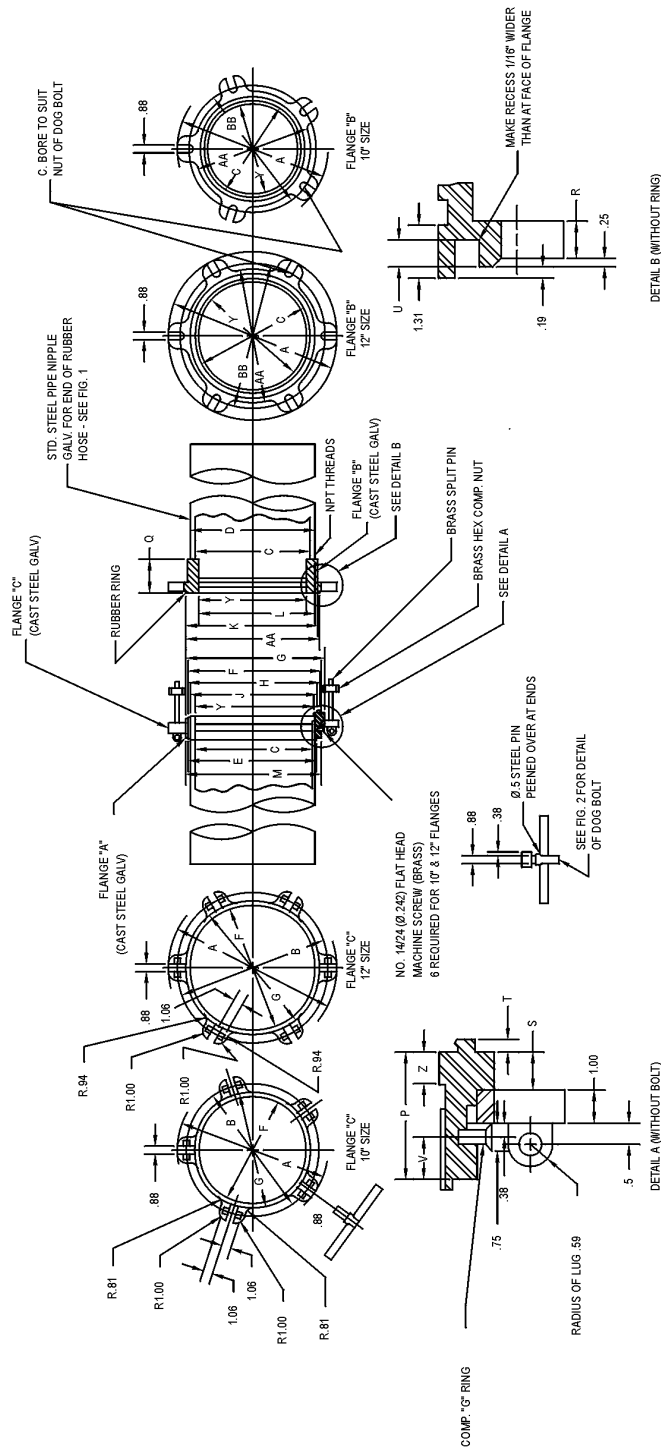
FIGURE 2. Bolt for flange.



NOTE:
ALL SECTIONS TO BE MADE UP WITH FLANGES 'A' AND 'C' ON ONE END AND
FLANGE 'B' ON OTHER END, UNLESS OTHERWISE SPECIFIED IN THE CONTRACT
ORDER.

FLANGE SIZE (INCHES)		FLANGE SIZE (INCHES)	
6	8	6	8
A 11 1/4	13 1/4	J 6 9/16	8 5/8
B 9 1/4	11 1/4	K 7 1/2	9 1/4
C 6 5/8	8 5/8	L 6 1/2	8 1/2
D 7 3/8	9 3/8	M 7 7/8	7 7/8
E 7 3/8	9 3/8	N 4 1/4	4 1/4
F 7 1/2	9 1/2	O 4 3/16	5 3/16
G 8 3/8	10 3/8	P 2 1/2	2 13/16
H 7 7/16	9 1/2	Q 2 5/8	3
		R 1 3/16	7/8
		S 7/16	9/16
		T 5/16	5/16
		U 5/16	3/8
		V 11/16	7/8
		Y 6	3/4
		Z 8	3/4

Flanges 6- and 8-inch.

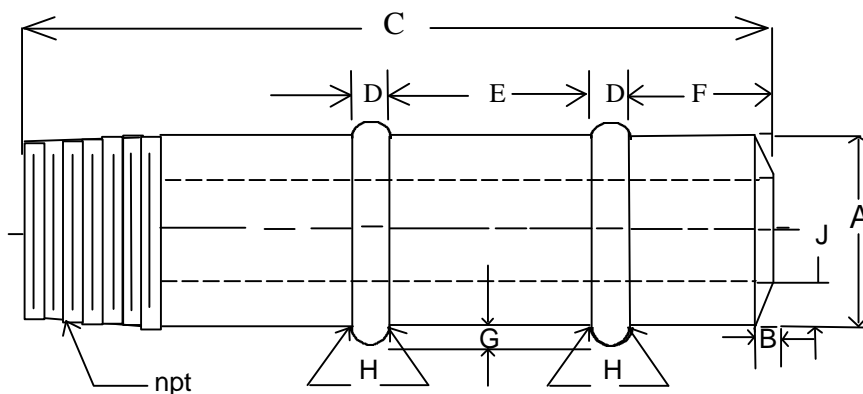


NO. 1424 (Ø.242) FLAT HEAD MACHINE SCREW (BRASS) 6 REQUIRED FOR 10" & 12" FLANGES

NOTE: ALL SECTIONS TO BE MADE UP WITH FLANGES "A" AND "C" ON ONE END AND FLANGE "B" ON OTHER END, UNLESS OTHERWISE SPECIFIED IN THE CONTRACT OR ORDER.

	FLANGE SIZE (INCHES)					
	10	12	10	12	10	12
A	1.6 3/4	1.8 3/4	J 1.1	1.4	1.2	7/8
B	1.4 3/4	1.6 3/4	K 1.1	1.3/16	1.3	15/16
C	1.0 3/4	1.2 3/4	L 1.1	3/16	1.2	13/16
D	1.1 3/4	1.3 3/4	M 1.2	3/8	1.4	3/8
E	1.1 3/4	1.3 3/4	P 3	1/2	3	1/2
F	1.1 7/8	1.3 7/8	Q 3	3/4	3	3/4
G	1.2 7/8	1.4 7/8	R 1	7/8	1	7/8
H	1.1 3/4	1.3 3/4	S	1	7/8	1
T					5/16	5/16
U					3/8	3/8
V					1 3/16	1 3/16
Y					10 7/8	12 7/8
Z					12 7/8	12 7/8
AA					12 7/8	12 7/8
BB					14 1/8	16 1/8

Flanges 10- and 12-inch.



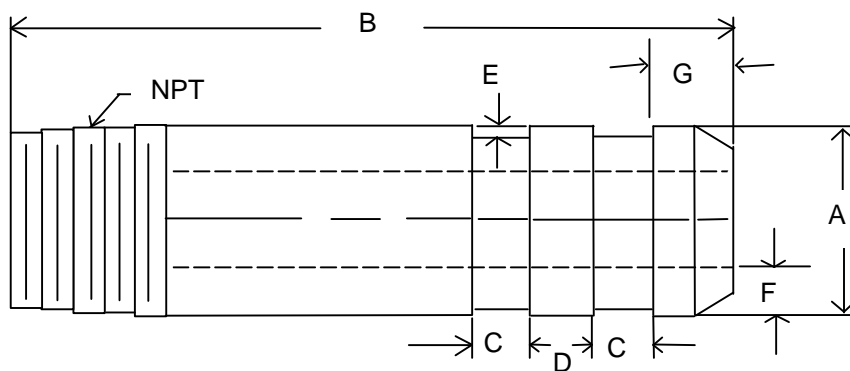
Nipple dimensions in inches

Size	A*	B	C	D	E	F	G	H	J
		±.0625	±.0625	±.09375	±.1875	±.1875	±.0625	±.0625	±.03125
4	4.500	.500	16.0	.75	4	4	.375	.1875	.125
6	6.625	.500	21.0	1.00	5	5	.500	.1875	.125
8	8.625	.500	21.0	1.00	5	5	.500	.1875	.125
10	10.750	.500	23.5	1.25	6	5	.625	.250	.125
12	12.450	.500	24.0	1.50	6	5	.750	.315	.125

*Dimensions conform to ASTM A53, schedule 40.

Note: Nipple bands may have square shoulders.

FIGURE 5. Nipple for Style C hose.



Nipple dimensions in inches

Size	A*	B	C	D	E	F*	G	Groove
		Min	±0.0625	±0.0625	±.03125	±0.03125	±0.0625	Min
4	4.500	15	1.50	1.50	.0625	.337	1.50	2
6	6.625	16	2.0	2.00	.1875	.432	1.50	2
8	8.625	18	2.0	2.00	.1875	.500	1.50	2
10	10.750	20	2.0	2.00	.2500	.500	2.0	2
12	12.450	20	2.0	2.00	.2500	.500	2.0	2

*Dimensions conform to ASTM A53

FIGURE 6. Nipple for Style D hose.