INCH-POUND

A-A-59227A
1 December 2004
SUPERSEDING
A-A-59227
May 18, 1998

COMMERCIAL ITEM DESCRIPTION

COUPLING ASSEMBLY, HOSE, FIRE FIGHTING

The General Services Administration has authorized the use of this commercial item description as a replacement for Federal Specification WW-C-621 for all Federal agencies.

1. SCOPE. This commercial item description (CID) covers expansion ring couplings, screw-in expander couplings, and self-tightening couplings. The coupling assemblies are used on woven-jacketed rubber- or latex- or rubber-coated, fabric- or thermoplastic resin-lined and unlined fire fighting hoses.

2. CLASSIFICATION. Couplings shall be of the types, styles, and sizes as specified (see 7.2):

Type A - Expansion ring coupling for woven double-jacketed (DJ) and single-jacketed (SJ) fire hose size in inches (millimetre (mm)).

Style 1 (Rocker lug).
- Size 1.5-inch (38 mm) SJ
- Size 1.5-inch (38 mm) DJ
- Size 2.0-inch (51 mm)
- Size 2.5-inch (64 mm) SJ
- Size 2.5-inch (64 mm) DJ
- Size 3- x 2.5-inch (76 x 64 mm)
- Size 3.0-inch (76 mm)
- Size 3.5-inch (89 mm)
- Size 4.0-inch (102 mm)
- Size 4.5- x 4-inch (114 x 102 mm)
- Size 4.5-inch (114 mm)
- Size 5.0-inch (127 mm)
- Size 6.0-inch (152 mm)

Comments, suggestions, or questions on this document should be addressed to: Defense Supply Center Philadelphia, ATTN: DSCP-ITAA, 700 Robbins Ave, Philadelphia, PA 19111-5096 or emailed to dscpg&ispeccomments@dla.mil. Since contact information can change, you may want to verify the currency of this address information using the ASSIST Online database at http://assist.daps.dla.mil.

Style 2 (Pin lug).
- Size 1.5-inch (38 mm) SJ
- Size 1.5-inch (38 mm) DJ
- Size 2.0-inch (51 mm)
- Size 2.5-inch (64 mm) SJ
- Size 2.5-inch (64 mm) DJ

Style 3 (Long handle swivel female section only).
- Size 2.5-inch (64 mm) SJ
- Size 2.5-inch (64 mm) DJ
- Size 3.0- x 2.5-inch (76 x 64 mm)
- Size 3.0-inch (76 mm)
- Size 3.5-inch (89 mm)
- Size 4.0-inch (102 mm)
- Size 4.5- x 4-inch (114 x 102 mm)
- Size 4.5-inch (114 mm)
- Size 5.0-inch (127 mm)
- Size 6.0-inch (152 mm)

Type B - Expansion ring coupling for unlined linen fire hose.

Style 1 (Rocker lug).
- Size 1.5-inch (38 mm)
- Size 2.0-inch (51 mm)
- Size 2.5-inch (64 mm)
- Size 2.0-inch (51 mm) (pin lug)
- Size 1.5-inch (38 mm)
- Size 2.0-inch (51 mm)
- Size 2.5-inch (64 mm)

Type C - Screw-in expander coupling with rocker lugs for woven DJ and SJ and unlined linen fire hose.

No style available for type C.
- Size 1.5-inch (38 mm)
- Size 2.0-inch (51 mm)
- Size 2.5-inch (64 mm)
- Size 3.0-inch (76 mm)
- Size 3.5-inch (89 mm)
- Size 4.0-inch (102 mm)
- Size 5.0-inch (127 mm)
- Size 6.0-inch (152 mm)

Type D - Self-tightening coupling with rocker lugs for woven SJ and unlined fire hose.

No style available for type D.
Size 1.5-inch (38 mm)

3. SALIENT CHARACTERISTICS.

3.1 Material. Materials used shall be free from defects which would adversely affect the performance or maintainability of individual components or of the overall assembly. Unless otherwise specified herein, all equipment, material, and articles incorporated in the work covered by this specification are to be new and fabricated using materials produced from recovered materials to the maximum extent possible without jeopardizing the intended use. The term "recovered materials" means materials which have been collected or recovered from solid waste and reprocessed to become a source of raw materials, as opposed to virgin raw materials. None of the above shall be interpreted to mean that the use of used or rebuilt products are allowed under this specification unless otherwise specified.

3.1.1 Casting brass, forging brass, rod and bar. Cast coupling parts shall be made from copper alloy C83600, C83800, C84400, C84800 as specified in ASTM B 584. Forged coupling parts shall be made from copper alloy C46400 or C48500 as specified in ASTM B 283. Coupling parts made from brass rod and bar stock shall conform to copper alloy C36000 of ASTM B 16.

3.1.2 Brass tubing. Coupling parts made from tubing shall conform to copper alloy C23000, C26000 or C33000 as specified in ASTM B 135. The tube shall be annealed to a soft temper.

3.1.3 Forged or extruded aluminum. Coupling parts made from forged or seamless extruded aluminum shall conform to aluminum alloy 6061-T6 as specified in ASTM B241 and cite ASTM B241 as the appropriate specification for the A-A-59227.

3.1.4 Elastomeric materials. Elastomeric material for gaskets or washers shall be made of natural or synthetic rubber, or a combination of these materials, or polyvinyl chloride having a 70 $\pm$ 5 durometer hardness.

3.2 Design and construction. Coupling assemblies shall consist of the various components specified in 3.2.1, 3.2.2, and 3.2.3 and conform to the respective figures and tables specified herein. The dimensions of couplings (except for those specified in the tables) shall be applicable for hoses conforming to A-A-59226. Coupling threads shall conform to type NH (National Hose) or NPSH (National Pipe Straight Hose) as specified (see 7.2). All parts shall be easily assembled.

3.2.1 Components for types A and B couplings. Coupling parts shall be made of cast brass, forged brass, machined from brass bar stock (see 3.1.l) or from forged or extruded aluminum (see 3.1.3) as specified (see 7.2). Dimensions for type A and B couplings shall conform to figure l and table I. Coupling components shall consist of the following parts (see figure 1):

a. Hose bowl of female section.
b. Swivel nut for female section.
c. Hose bowl of male section.
d. Rubber or plastic gasket fitting the recess of swivel.
e. Expansion rings (one each for male and female section).
f. Tail gasket (one each for male and female section).

3.2.1.1 Expansion ring. Unless otherwise specified (see 7.2), expansion rings shall be made from seamless brass tubing conforming to alloy C23000 (see 3.1.2). The edges of the expansion rings shall be well rounded and free from burrs. The tube shall be annealed to a soft temper.

3.2.1.2 Rocker lugs, pin lugs, and long handle styles. Rocker lugs, pin lugs , and long handles shall be located 180 degrees apart on the swivel and on the male bowl. When specified (see 7.2), three rocker lugs shall be located 120 degrees apart on the swivel and on the male bowl.

3.2.1.3 Combinations of styles. When specified (see 7.2), type A and B couplings may be furnished in any combination of styles (rocker, pin lugs, or long handle).

3.2.1.4 Tailpiece gaskets. Unless otherwise specified (see 7.2), tailpiece gaskets for type A and B couplings shall have a thickness of not less than 0.187-inch (4.7 mm). The outside diameter and inside diameter of gaskets shall conform to the requirements of NFPA 1963, except the outside diameter shall be not less than 0.093-inch (2.4 mm) larger than the outside diameter of the hose.

3.2.1.5 Swivel gaskets. The size of the gaskets shall conform to NFPA 1963.

3.2.2 Component for type C couplings. Type C coupling parts shall be made of cast brass, machined from brass bar stock (see 3.2.1), or forged or extruded aluminum (see 3.2.3) as specified (see 7.2). Dimensions for type C couplings shall conform to the information listed in figure 2 and table II. Coupling components shall consist of the following parts (see figure 2):

a. Hose bowl of female section.
b. Screw-in expander of female section.
c. Swivel nut for female section.
d. Rubber or plastic gasket fitting the recess of swivel.
e. Hose bowl of male section.
f. Screw-in expander of male section.

3.2.2.1 Screw-in expanders. Screw-in expanders shall be machined from brass seamless tubing (see 3.1.2) or from forged or extruded-aluminum (see 3.1.3) as specified (see 7.2). The expanders for 1.5-inch (38 mm) size couplings shall be provided with four equally spaced slots for use with a square key. Expanders for sizes larger than 1.5-inch (38 mm) shall be provided with six equally spaced slots for use with a hexagonal key. Cylinder key-type wrenches for attaching the couplings to hose shall be furnished in the quantity specified (see 7.2).

3.2.3 Components for type D couplings. Type D couplings shall be capable of being installed on 1.5-inch (38 mm) SJ and unlined fire hose by hand without the use of special tools. The design shall be such that the coupling will not leak, slip, or blow off the hose when tested in accordance with UL 236. The coupling shall also be capable of being removed from the hose in the field without the use of special tools. Coupling parts shall be made from forged brass or machined from brass bar stock (see 3.1.1) or from forged or extruded aluminum (see 3.1.3) as specified (see 7.2). Coupling components shall consist of the following:

a. Female section.
b. Swivel nut with rocker lugs for female section.
c. Male section.
d. Rubber gasket fitting the recess of swivel.
e. Suitable device for coupling retention on hose (one each for male and female sections).

3.3 Tolerances. Unless otherwise specified (see 7.2), all machined parts shall have a tolerance of ± 0.0l5-inch (0.38 mm) and nonmachined parts shall have a tolerance of ± 0.063-inch (1.6 mm).

3.4 Mechanical properties.

3.4.1 Hydrostatic pressure. Couplings shall withstand a hydrostatic pressure of 1,000 pounds per square inch gage (psig) (6 895 kilopascal (kPa (gage)) when tested in accordance with UL 236.

3.4.2 Creep resistance. Couplings, when tested in accordance with UL 236, shall not move or leak. Hose with D coupling shall be subjected to 600 psig (4 137 kPa (gage)) for not more than 30 seconds prior to index marking of the hose.

3.4.3 Pull strength. Couplings, when tested in accordance with UL 236, shall not be mechanically damaged at its threaded or swivel connections, or be separated from the hose to which it is attached when a pull load of not less than 2,000 pound-force (8 896 newton) is applied for each inch (25.4 mm) of hose diameter.

3.4.4 Crush resistance. Couplings shall not distort, bind, or become inoperative when subjected to a 3,000-pound-force (13 345 newton) radial compressive load when tested in accordance with UL 236.

3.4.5 Torque resistance. Lugs on couplings shall be able to withstand a 250 foot-pound (339 newton metre) torque without distortion or breakage in accordance with UL 236.

3.4.6 Rough usage resistance. Couplings shall be able to withstand a 6-foot (1 829 mm) drop onto a concrete floor without cracking, distorting, binding, or becoming inoperative when tested in accordance with UL 236.

3.5 Finish. Brass surfaces shall be treated in accordance with the manufacturer's standard practice. Aluminum surfaces shall be hard anodized.

3.6 Marking for identification. Unless otherwise specified (see 7.2), the swivel, nut, or body of coupling assemblies shall be permanently and visibly marked on the outer surface with the manufacturer's name or readily identifiable trademark and country of origin.

3.6.1 Labeled couplings. When specified (see 7.2), couplings shall be approved by and bear listing marks or labels of a nationally recognized testing agency or laboratory adequately equipped and competent to perform testing of fire hose couplings.

4. REGULATORY REQUIREMENTS.

4.1 Materials. The offeror/contractor is encouraged to use recovered materials to the maximum extent practicable, in accordance with paragraph 23.403 of the Federal Acquisition Regulation (FAR). Unless otherwise specified herein, all equipment, material, and articles incorporated in the work covered by this commercial item description are to be new and fabricated using materials produced from recovered materials to the maximum extent possible without jeopardizing the intended use. The term "recovered materials" means materials which have been collected or recovered from solid waste and reprocessed to become a source of raw materials, as opposed to virgin raw materials. Unless otherwise specified, none of the above shall be interpreted to mean that the use of used or rebuilt products are allowed under this commercial item description.

4.2 Metric products. Products manufactured to metric dimensions will be considered on an equal basis with those manufactured using inch-pound units, provided they fall within specified tolerances using conversion tables contained in the latest version of ASTM SI-10 (IEEE/ASTM SI-10), and all other requirements of this commercial item description including form, fit, and function are met. If a product is manufactured to metric dimensions and those dimensions exceed the tolerances specified in the inch-pound units, a request should be made to the contracting officer to determine if the product is acceptable. The contracting officer has the option of accepting or rejecting the product.

5. QUALITY ASSURANCE PROVISIONS.

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

6. PACKAGING. The preservation, packing, and marking shall be as specified in the contract or order.

7. NOTES.

7.1 Source of documents.

7.1.1 Copies of specifications required by suppliers in connection with specific procurement functions should be obtained from the procuring activity or as directed by the contracting officer.

7.1.2 Federal Acquisition Regulation (FAR) is available from the Superintendent of Documents, U.S. Government Printing Office, Washington, DC 20402.

7.1.3 ASTM Standards are available from American Society for Testing and Materials, 100 Barr Harbor Drive, West Conshohocken, PA 19428-2959.

7.1.4 IEEE Standard is available from the Institute of Electrical and Electronics Engineers (IEEE), IEEE Service Center, 445 Hoes Lane, P.O. Box 1331, Piscataway, NJ 08855-1331.

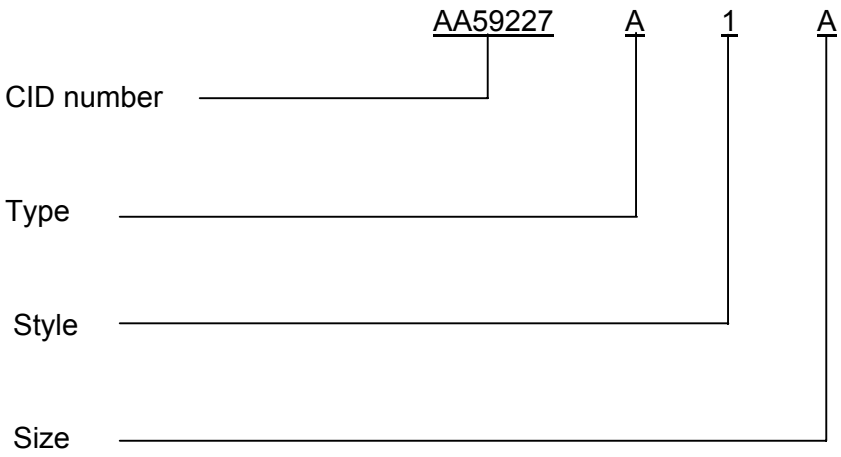
7.1.5 NFPA Standard is available from the National Fire Protection Association, Batterymarch Park, Quincy, MA 02269-9101.

7.1.6 UL standard is available from the Underwriters Laboratories Inc., 333 Pfingsten Road, Northbrook, IL 60062.

7.2 Ordering data. Acquisition documents should specify the following:

a. Title, number, and date of this CID.
b. Type, style and size required (see 2.).
c. Type of threads required (see 3.2).
d. Material required for coupling parts (see 3.2.1, 3.2.2, and 3.2.3).
e. When expansion ring material is other than as specified (see 3.2.1.1).
f. When three rocker lugs are required (see 3.2.1.2).
g. When combinations of coupling styles are required (see 3.2.1.3).
h. When tailpiece gaskets for type A and type B couplings are other than as specified (see 3.2.1.4).
i. Material required for screw-in expanders and number of cylinder key-type wrenches to be provided (see 3.2.2.1).
j. When tolerances of parts are other than as specified (see 3.3).
k. Marking for identification, if other than as specified (see 3.6).
l. When couplings are required to bear listing marks or labels (see 3.6.1).

7.3 Part identification number (PIN). The following part identification numbering procedure is for government purposes and does not constitute a requirement for the contractor. The PIN to be used for items acquired to this description are created as follows:



7.3.1 Example PIN number (see 2.and table III). The above identifies a type A (expansion ring coupling for woven double-jacketed (DJ) and single-jacketed fire hose), style 1 (rocker pin), size A.

TABLE III. Type, style, and size to PIN code.

Coupling type, style and size	PIN
Type A	A
Type B	B
Type C	C
Type D	D
Style 1	1
Style 2	2
Style 3	3
Size 1.5 (38 mm) SJ	A
Size 1.5 (38 mm) SJ	B
Size 2.0 (51 mm)	C
Size 2.5 (64 mm) SJ	D
Size 2.5 (64 mm) DJ	E
Size 3 x 2.5 (76 x 64 mm)	F
Size 3.0 (76 mm)	G
Size 3.5 (89 mm)	H
Size 4.0 (102 mm)	I
Size 4.5 x 4 (114 x 102 mm)	J
Size 4.5 (114 mm)	K
Size 5.0 (127 mm)	L
Size 6.0 (152 mm	M

7.4 Classification cross reference. Classifications used in this CID (see 2.) are identical to those found in the superseded Federal Specification WW-C-621G.

7.5 Supersession data. This CID replaces Federal Specification WW-C-621G, dated February 7, 1990.

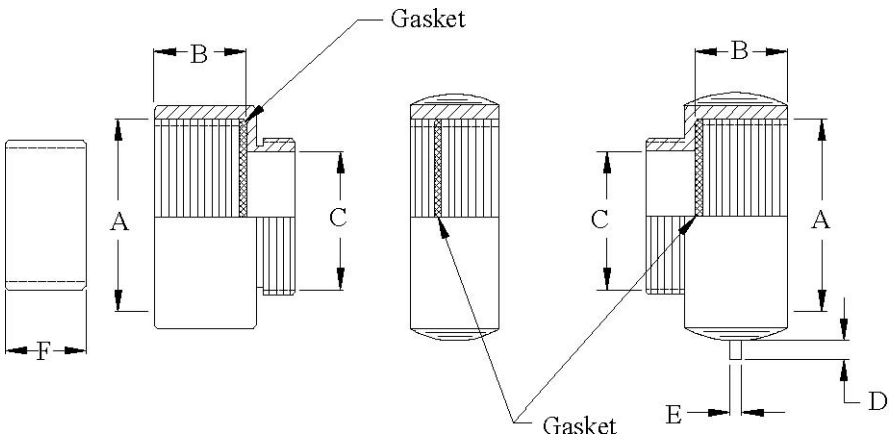
7.6 Subject term (keyword) listing.

Coupling assembly
Expansion ring

TABLE I. Types A and B coupling dimensions.

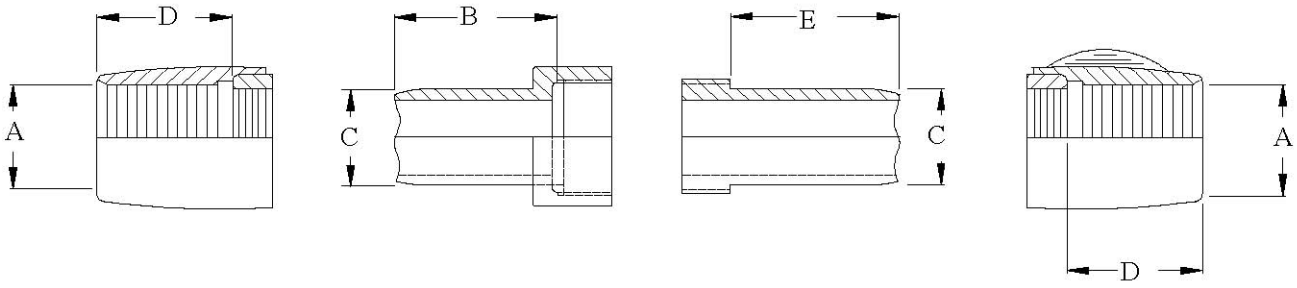
a/ Size of hose inches (mm)	Type A dimensions					Type B dimensions				
	A (min)	B b/	C (min)	D&E	F (min)	A (min)	B b/	C (min)	D&E	F
Size 1.5 (38) SJ	c/	1.25 (32)	1.516 (39)	0.375 (10)	1.0 (25.4)	c/	1.063 (27)	1.516 (39)	0.375 (10)	0.875 (22)
Size 1.5 (38) DJ	c/	1.5 (38)	1.516 (39)	0.375 (10)	1.25 (32)					
Size 2.0 (51)	c/	1.5 (38)	2.016 (51)	0.437 (11)	1.25 (32)	c/	1.188 (30)	2.016 (51)	0.437 (11)	1.0 (25)
Size 2.5 (64) SJ	c/	1.5 (38)	2.516 (63)	0.562 (14)	1.25 (32)	c/	1.437 (39)	2.516 (64)	0.437 (11)	1.25 (32)
Size 2.5 (64) DJ	c/	1.75 (45)	2.516 (63)	0.562 (14)	1.5 (38)	-	-	-	-	-
Size 3 x 2.5 (76 x 64)	c/	2.25 (57)	2.516 (63)	0.562 (14)	1.875 (48)	-	-	-	-	-
Size 3.0 (76)	c/	2.25 (57)	3.016 (77)	0.562 (14)	1.875 (48)					
Size 3.5 (89)	c/	2.25 (57)	3.516 (89)	0.625 (16)	2.0 (51)	-	-	-	-	-
Size 4.0 (102)	c/	2.25 (57)	4.016 (102)	0.625 (16)	2.0 (51)	-	-	-	-	-
Size 4.5 x 4 (114 x 102)	c/	2.25 (57)	4.016 (102)	0.625 (16)	2.0 (51)	-	-	-	-	-
Size 4.5 (114)	c/	2.25 (57)	4.516 (102)	0.625 (16)	2.0 (51)	-	-	-	-	-
Size 5.0 (127)	c/	2.25 (57)	5.016 (127)	0.625 (16)	2.0 (51)	-	-	-	-	-
Size 6.0 (152)	c/	2.25 (57)	6.016 (153)	0.625 (16)	2.0 (51)	-	-	-	-	-

a/ All dimensions in inches (mm).
b/ Tolerance shall be + 0.063--0.0-inch (+2 -0 mm).
c/ Dimension to suit outside diameter of hose.
d/ On 3.0- x 2.5-inch (76 x 64 mm) coupling, thread shall be 2.5 NH-inch and coupling shall be for a 3.0-inch (76 mm) hose.
e/ On 4.5- x 4.0-inch (114 x 102 mm) coupling, thread shall be 4.5 NH-inch and coupling shall be for a 4.0-inch (102 mm) hose.



Expansion ring Female bowl Swivel Male bowl

FIGURE 1. Types A and B coupling components.



Female bowl | Female threaded expander | Swivel | Male threaded expander | Male bowl

FIGURE 2. Type C coupling components.

TABLE II. Type C coupling component dimensions. a/

Size of hose inches (mm) (min)	Type A dimensions				
	A	B	C	D	E
Size 1.5 (38)	b/	1.25 (32)	c/	0.375 (10)	1.0 (25.4)
Size 2.0 (51)	b/	1.5 (38)	c/	0.375 (10)	1.25 (32)
Size 2.5 SJ (64)	b/	1.5 (38)	c/	0.437 (11)	1.25 (32)
Size 3.0 (76)	b/	1.5 (38)	c/	0.562 (14)	1.25 (32)
Size 3.5 (89)	b/	1.75 (45)	c/	0.562 (14)	1.5 (38)
Size 4.0 (102)	b/	2.25 (57)	c/	0.562 (14)	1.875 (48)
Size 5.0 (127)	b/	2.25 (57)	c/	0.562 (14)	1.875 (48)
Size 6.0 (152)	b/	2.25 (57)	c/	0.625 (16)	2.0 (51)

a/ All dimensions in inches (mm).
b/ Dimension to suit outside diameter of hose.
c/ Dimension to suit outside diameter of hose.

MILITARY INTERESTS:

Custodians:
Navy – YD
Air Force – 99

Review Activities:
Navy – SH
Air Force - 84
DLA – CC

CIVIL AGENCY COORDINATING ACTIVITIES:
GSA - FSS
USDA -AFS
DC GOVT - DCG
HHS - FEC

Preparing Activity:
DLA - IS

(Project 4210-0664)

NOTE: The activities listed above were interested in this document as of the date of this document. Since organizations and responsibilities can change, you should verify the currency of the information above using the ASSIST Online database at http://assist.daps.dla.mil.