

INCH-POUND

A-A-59565

3 July 2001

SUPERSEDING

ZZ-H-500C

10 September 1987

Amendment 1

20 March 1992

## COMMERCIAL ITEM DESCRIPTION

### HOSE, RUBBER, AND HOSE ASSEMBLIES, RUBBER: PNEUMATIC (YARN OR FABRIC REINFORCED)

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 rubber hose and rubber hose assemblies with yarn, cord, or fabric reinforcement intended for light duty air applications.

2. **CLASSIFICATION.**

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

3.0 **SALIENT CHARACTERISTICS.**

3.1 **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. The term "recovered materials" means materials that 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 is allowed under this specification, unless otherwise specified (see 7.2).

3.1.1 **Rubber.** Materials used for cover, tube, and intermediate layer of fabric friction shall be made from natural rubber, synthetic rubber, or a blend of natural and synthetic rubber, and shall meet the requirements of this specification. Such material is hereafter referred to as rubber. Cover material shall be ozone and oil-resistant (see 3.9 and 3.10). The rubber compound used in construction of the hose shall be free from all substances that might affect the quality of the hose.

3.1.2 **Reinforcement.** The fabric, yarn, or cord used for reinforcement shall be made from high-grade cotton or synthetic fiber sufficiently strong to enable the hose to meet the hydrostatic burst pressure requirement. The materials shall be free from mechanical defects.

Beneficial comments recommendations, additions, deletions, clarifications, etc. and any data that may improve this document should be sent to: Defense Logistics Agency, Defense Supply Center, Columbus (DSCC-VAI), P.O. Box 3990, Columbus, OH 43216-5000.

3.2 Configuration. The rubber pneumatic hose and rubber hose assemblies (yarn or fabric reinforced) shall conform to the following requirements.

3.2.1 Hose. The hose shall consist of:

- a. An inner rubber tube
- b. Reinforcement plies
- c. An outer rubber cover

3.2.2 Tube and cover. The tube and cover shall be smooth, free from pitting, uniform in quality and thickness, and free from defects that may cause injury. This requirement is not intended to exclude a "wrapped finish" appearance or corrugated finish on the cover.

3.2.3 Reinforcement plies. Reinforcement plies of yarn or cord may be applied over the tube by braiding, knitting, or helical winding. When multiple plies of braided or knitted yarn or cord are used, a distinct layer of rubber compound shall be used between the plies to facilitate adhesion to one another and to the tube and cover. When plies of square woven fabrics are used, the plies shall be applied on a bias of approximately 45° and shall overlap not less than .5 inch. The plies of fabric shall be well frictioned with suitable rubber compound to enable adhesion to each other, to the inner tube, and to the outer as specified in table I.

3.3 Couplings. Coupling, when required, shall be in accordance with A-A-59553, A-A-50431, A-A-59439, or standard brass air hose stems and ferrules (on hoses up to and including ½-inch inside diameter), as specified (see 7.2). Synthetic rubber washers shall be supplied with female couplings. Couplings shall be able to withstand the hydrostatic proof test pressure specified in table I.

3.4 Clamps. Unless otherwise specified (see 7.2 ), hose assemblies shall be furnished with type A, C, D, or F hose clamps conforming to A-A-52506, or furnished with an interlocking type clamp.

3.5 Length. The length of hose, up to and including 1-inch diameter, shall be 25 feet or multiples thereof up to 500 feet; the length of hose 1-1/4 and 1-1/2 inches in diameter shall be 25 feet or multiples thereof up to 250 feet; the length of 2-inch diameter hose shall be 25 feet or 50 feet (see 7.2).

3.5.1 Tolerance. A tolerance of  $\pm 2$  percent in length shall be permitted.

3.6 Physical requirements. The hose shall conform to the requirements specified in table I, when tested in accordance with the applicable test method in table II, with any modification specified herein.

3.6.1 Tensile strength and elongation. The tensile strength and elongation of the hose tube and cover, before aging, shall be as specified in table I, when tested in accordance with the test method specified in table II.

3.6.2 Adhesion. The minimum force required for separation of cover and plies, tube and plies, or between plies (if applicable) shall be as specified in table I, when tested in accordance with the test method specified in table II.

3.6.3 Proof pressure, coupled assemblies. Hose fitted with couplings shall withstand the proof pressure specified in table I for at least one minute, when applied in accordance with the test method specified in table II. Water shall be used as the test media. Leakage or other evidence of defects shall be cause for rejection.

3.6.4 Burst Pressure. The hose shall withstand the burst pressure specified in table I when applied in accordance with the test method specified in table II. Water shall be used as the test media. Leakage or other evidence of defects shall be cause for rejection.

TABLE I. Physical requirements for hose and hose assemblies.

Hose sizes, inside diameter (inches)	1/4	5/16	3/8	7/16	1/2	5/8	3/4	1	1-1/4	1-1/2	2
Tolerance, $\pm$ , of hose inside diameter	.031	.031	.031	.031	.031	.031	.031	.062	.062	.062	.062
Wall Thickness, inch, (min.)											
Tube	.040	.040	.040	.047	.047	.047	.047	.047	.063	.063	.063
Cover	.047	.047	.047	.047	.047	.047	.047	.047	.047	.047	.047
Hydrostatic Test Pressure, psi (min)											
Proof test (Hose with coupling) <sup>1/</sup>	300	300	300	300	300	250	250	250	250	250	250
Burst test (Hoses only)	1000	1000	1000	900	900	700	700	700	600	600	600
Adhesion, lbs./inch (min)											
Cover and plies:	8	8	8	8	8	8	8	8	8	8	8
Tube and plies:	8	8	8	8	8	8	8	8	8	8	8
Between plies (when applicable)	8	8	8	8	8	8	8	8	8	8	8
Tensile strength, psi (min)											
Cover:	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000
Tube:	750	750	750	750	750	750	750	750	750	750	750
Ultimate elongation, percent (min)											
Cover :	200	200	200	200	200	200	200	200	200	200	200
Tube:	150	150	150	150	150	150	150	150	150	150	150

<sup>1/</sup> Hose fitted with universal quick-acting couplings conforming to A-A-59553 shall withstand a 165-pound force per square inch (psi) hydrostatic proof test pressure.

TABLE II. Test methods.

Physical Requirement	Test Method	Reference
Hose size inside diameter	ASTM D380	table I
Thickness of tube and cover	ASTM D380	table I
Tensile strength and elongation	ASTM D380 ASTM D412	table I
Oil resistance	ASTM D380	3.9
Adhesion	ASTM D413	table I
Ozone resistance	ASTM D1149	3.10
Hydrostatic pressure		
Proof pressure	ASTM D380	table I, 3.6.3
Burst pressure	ASTM D380	table I, 3.6.4
Accelerated aging	ASTM D573	3.7
Low temperature		
Brittleness (-40° F)		table I, 3.8
Hose length	ASTM D380	3.5

3.7 Accelerated aging. Hose specimens shall be subjected to accelerated aging in accordance with the test method specified in table II, except that the time for aging shall be 70 hours at a temperature of 212 °F. After aging, the tensile strength shall be not less than 80 percent of the values specified in table I, and ultimate elongation shall be not less than 50 percent of the values specified in table I.

3.8 Low temperature requirement. The hose shall not fracture or crack when hose specimens are bent 180° over a mandrel (10 times outside diameter of the hose) and conditioned for 5 hours at  $-40\text{ °F} \pm 3.6\text{ °}$ . After conditioning, while at the same temperature, the hose shall be straightened and then bent 180° in the opposite direction over the same mandrel. Time consumed in bending shall be held to a maximum of 30 seconds. The hose shall show no cracks at the completion of this test. After completion of this examination, the sample shall be subjected to the hydrostatic straight bursting test of ASTM D380. Water shall be used as the test media. Failure of the hose at a pressure below the minimum burst pressure specified in table I shall be cause for the rejection of the lot.

3.9 Resistance to oil. After exposure to oil, the increase in volume of the tube and cover shall not exceed 100 percent.

3.10 Ozone resistance. After exposure to ozone, the rubber cover shall show no visible cracking under 2X magnification.

3.11 Marking of hose. Each length of hose shall be marked in a color that contrasts with the color of the hose cover. The marking shall be accomplished either by inlaying a rubber or suitable material, or by applying a suitable composition ink, bonding the marking onto the cover so that the marking 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 word PNEUMATIC, the maximum working pressure, and the symbol A-A-59565. Hose 50 feet in length or over shall be marked at least every 25-foot intervals, with letters at least 3/16-inch high. Hose less than 50 feet in length or coupled assemblies shall have at least one marking.

3.11.1 Marking, alternate method. An alternate method of marking may be the application of a continuous embossed strip along the entire length, vulcanizing the hose with subsequent removal of the strip, leaving a continuous relief identification area. A second alternate method of marking is the indentation of a continuous printed legend along the entire length of the hose, applied immediately following extrusion of the hose, prior to vulcanization. Identification shall be as specified in 3.11 and

repeated at maximum intervals of 36 inches. When the marking is accomplished by this alternate method, no color contrast is required.

3.12 Workmanship. The quality of workmanship shall be such as to produce hose and hose assemblies that are in accordance with the requirements of this CID.

4. **REGULATORY REQUIREMENTS**. The offeror/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 Responsibility for inspection. The contractor is responsible for the performance of all inspections (examinations and tests).

5.2 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.

5.3 Examination. Each hose or hose assembly shall be visually and dimensionally examined for compliance with requirements. Examination regarding testing to determine conformance to salient characteristics shall be accomplished by subjecting hose sample specimens to the tests and methods specified in table II. 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. This element of inspection shall encompass all examinations of material, configuration, performance, and marking requirements. Non-compliance with any specified requirement, or the presence of one or more defects, shall constitute cause for rejection.

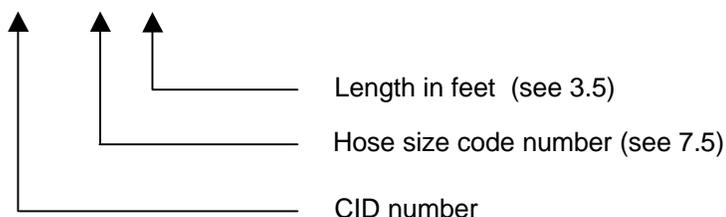
#### 6. PACKAGING.

6.1 Packaging. Preservation, packing, and marking shall be as specified in the contract or purchase order (see 7.2).

#### 7. NOTES.

7.1 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.

AA59565-XX-XXX



7.1.1 Example of part or identification number: The PIN AA59565-06-25 specifies a 3/8 inch ID hose 25 feet long.

7.2 Ordering Data. Acquisition documents should specify the following:

- Size of hose required (see 2.1 and 7.1).
- Use of recovered materials, or of used or rebuilt products, if other than specified (see 3.1).
- If couplings are required and type of coupling required (see 3.3).

- d. If special type of clamp is required (see 3.4).
- e. Length of hose required (see 3.5 and 7.1).
- f. Sampling plan, if other than as specified (see 5.3).
- g. Packaging requirements (see 6.1).

### 7.3 Addresses for obtaining copies of referenced documents.

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

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

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

7.3.4 Activities outside the Federal Government may obtain copies of general 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.

7.4 Working pressure. The maximum working pressures for the hose covered by this CID are shown in table III.

TABLE III. Maximum working pressure.

Inner diameter (inches)	Maximum working pressure (psi)
1/4	200
5/16	200
3/8	200
7/16	150
1/2	150
5/8	125
3/4	125
1	125
1-1/4	100
1-1/2	100
2	100

7.5 Hose size code number. Hose size is designated by a two-digit code number as indicated in table IV.

TABLE IV. Hose size code number.

Hose size code no.	04	05	06	07	08	10	12	16	20	28	32
Hose ID (inches)	1/4	5/16	3/8	7/16	1/2	5/8	3/4	1	1-1/4	1-1/2	2

7.6 Subject term (key word) listing.

Cover, outer  
Ozone-resistant  
Plies, reinforcement  
Rubber, natural  
Rubber, synthetic  
Tube, inner

MILITARY INTERESTS:

Custodians:

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

Review activities:

Army – AT  
Air Force - 82  
Navy - MC, SA

CIVIL AGENCY COORDINATING ACTIVITIES:

DOT – ACO  
HHS – FEC  
GSA-FSS

Preparing activity:

DLA – CC

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