MILITARY SPECIFICATION

VALVES, CYLINDER, GAS

(FOR COMPRESSED OR LIQUEFIED GASES)

GENERAL SPECIFICATION FOR

This amendment forms a part of Military Specification MIL-V-2D, dated 9 September 1970, and is mandatory for use by all Departments and Agencies of the Department of Defense.

PAGE 2

1.3, line 10, add sentence: "Frangible disk for 1800 psi service pressure shall be supplied." Line 18, delete "2400 psi." and substitute "2400-2500 psi."

PAGE 3

1.3, line 6, delete "V9-541-4" and substitute "V39-541-1"; line 10, delete "V9-541-2" and substitute "V39-541-2."

PAGE 4

* 2.1, under "SPECIFICATIONS, Federal," delete:

"QQ-P-416	- Plating Cadmuim (Electrodeposited).
QQ-S-624	- Steel Bar, Alloy, Hot-Rolled and Cold-Finished (General Purpose).
QQ-S-628	- Steel Bars and Forgings, Graphic.
QQ-S-634	- Steel Bar, Carbon Cold-Finished (Standard (Quality).
WW-P-404	- Pipe, Steel, (Seamless and Welded, Black and Zinc Coated) (Galvanized)."

and add

"QQ-T-570	- Tool Steel, Alloy.
RR-C-271	- Chains and Attachments, Welded, Weldness, and Roller Chain."

2.1, under "SPECIFICATIONS, Military," add:

"MIL-P-46036	- Plastic Sheets, Rods, Tubes and Discs, Polychlorotrifluoroethylene."

FSC 8120

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PAGE 5

* 2.1 under "STANDARDS, Federal" add

FED-STD-H28 - Screw-Thread Standards for Federal Services.

* 2.1 under " STANDARDS, Military" delete:

"MIL-STD-417 - Rubber Components, Vulcanized, General Purpose, Solid (Symbols and Tests)."

and add:

MIL-STD-1188 - Commercial Packaging of Supplies and Equipment."

PAGE 6

* 2.2, under "American Society For Testing Materials" add:

"ASTM A 53 - Pipe, Steel, Black and Hot-Dipped, Zinc-Coated Welded and Seamless.
ASTM A 108 - Steel Bars, Carbon, Cold-Finished, Standard Quality.
ASTM A 331 - Steel Bars, Alloy, Cold-Finished.
ASTM D 2000 - Elastomeric Materials for Automotive Applications."

* 2.2 Delete all reference to "National Bureau of Standards"

PAGE 6

* 2.2 Delete "NATIONAL MOTOR FREIGHT TRAFFIC ASSOCIATION, INC., AGENT" and all references.
Delete "UNIFORM CLASSIFICATION COMMITTEE, AGENT" and all references.

2.2, at end of paragraph, add:

"NASA-MARSHALL SPACE FLIGHT CENTER

MSFC-SPEC-101A - Flammability, Odor, Toxicity Requirements and Test Procedures For Materials In Gaseous Oxygen Environments.

(Application for copies should be addressed to George C. Marshall Space Flight Center, Huntsville, AL 35810, ATTN: Marshall Documentation Repository, A and TS-MS-D.)"

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PAGE 7

* 3.4, line 3, at end of sentence add:

"(See 6.7)"

PAGE 7

* 3.4.1.1, line 2, delete "composition 13, A13, or 360" and substitute "413.0, A412.0, or 360.0."

* 3.4.3.1, line 1, delete "class B" and substitute 836, 838, 842 or 844."

* 3.4.3.4, line 1, delete "composition 3, or QQ-B-626, alloy number 480" and substitute "alloy number 485."

* 3.4.3.5, line 2, delete "composition B" and substitute "alloy number 274."

* 3.4.4.1, line 1, delete "QQ-B-679, composition 2" and substitute "QQ-C-465, alloy number 630."

PAGE 8

* 3.4.4.3, line 1, delete entirely and substitute: "Aluminum-silicon. Aluminum-silicon bronze shall conform to QQ-C-465, alloy number 642."

* 3.4.4.6, line 2, after QQ-W-321, add alloy number 510."

After 3.4.8.4, add:

"3.4.8.5 Polychlorotrifluoroethylene. Polychlorotrifluoroethylene plastic shall conform to MIL-P-46036."

* "3.4.9, line 1, delete "MIL-STD-417, type R, class RS, grade RS 820A_1B_1DB7" and substitute "ASTM D 2000, designation 4BA820A14C12F19Z1Z2 with Z, or special requirements as follows: Z1 - equivalent to suffix D of ASTM D 2000 Table IV, with load at 20 percent deflection to be 475 ± 100 psi; Z2 - compression set after 22 hours at -50° F shall be 70 percent (maximum) after 30 minutes recovery at -50° F, as per ASTM D 1229, with specimens initially compressed 30 percent."

* 3.4.10.1, line 1, delete QQ-S-634, grade 1045" and substitute "ASTM A108, UNS G10450."

PAGE 9

* 3.4.10.4.1, Add:

"3.4.10.4.1 Corrosion-resisting, sheet and strip stock. Corrosion-resisting steel sheet and strip stock shall conform to QQ-S-766. classes as specified herein."

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* 3.4.10.5, line 1, delete "QQ-S-682, class B or E" and substitue "QQ-T-570, type 06 or A 10.

* 3.4.10.6, line 1, delete "QQ-S-624, composition 4820" and substitute "ASTM A 331, UNS G48200.

* 3.4.10.7, line 1, delete "WW-P-404, black, seamless, grade A, class A53AS" and substitute "ASTM A 53, type S, grade A, schedule number 40.

PAGE 11

Table II, line 3, Two-piece stem valves, under Overtorque, delete "300" and substitute "200".

PAGE 12

* 3.9.1.1, line 1, delete "Handbook H28" and substitute "FED-STD-H28."

* 3.9.1.2, line 2, delete "H28" and substitute "FED-STD-H28."

* 3.9.1.5, line 6, delete "Handbook H28" and substitute "FED-STD-H28."

PAGE 13

3.9.1.5, lines 6 through 10, delete the last sentence and substitute:
"When the valve has a threaded outlet, the wrench flats shall be accessible for the use of conventional cylinder valve wrenches in both manual and power applications without damage or deformation to any components of the valve."

PAGE 14

* 3.9.1.6, line 3, delete "Handbook H28" and substitute "FED-STD-H28."

PAGE 15

3.9.7.1, line 4, delete "10 percent overfill" and substitute "filling pressures 10 percent above the permanently marked service pressure in accordance with DOT CFR 173.302, (c)."

PAGE 16

* 3.9.7.1.2, line 4, delete "Handbook H28" and substitute "FED-STD-H28."

3.9.7.2, line 6, delete "Handbook H28" and substitute "FED-STD-H28."

PAGE 17

* 3.9.7.6.1, line 5, delete "Handbook H28" and substitute "FED-STD-H28."

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PAGE 18

3.9.8, delete and substitute:

"3.9.8 Outlet cap and plug. When specified, valves with threaded outlets shall have a permanent metal mating plug or cap in accordance with figures 1a and 1 b. The metal plug or cap shall be supplied with retaining chain and clip to secure the plug or cap to the valve. The metal plug or cap shall effectively seal the valve against leakage when tested as specified herein."

3.9.8.1, line 8, delete period after "threads" and add: "in accordance with figures 1a and 1b."

3.10, lines 1, 2, and 3, delete first sentence and substitute: "Unless otherwise specified, the overall length of the valve shall not be greater than 5 inches."

Page 19

3.12.1, lines 1 and 2, delete first sentence and substitute: "The valve shall be permanently marked by etching, stamping, embossing, or by a vinyl or polyester pressure sensitive transfer. The use of noncorrosive metal tags or durable plastic tags is not acceptable for valve identification in lieu of marking."

3.12.1, line 7, delete "Metal decals" and substitute "Decals,".

3.12.1(c), line 1, delete "Valves" and substitute "Unless otherwise specified, valves."

3.12.1.1, line 2, after first sentence insert: "The material used in all medical valves shall be in accordance with MSFC-SPEC-101A."

3.12.3, line 4, delete "valves." and substitute "valves, or when the fusible metal is poured into place in the valve body in accordance with the applicable specification sheet."

3.13, line 2, delete "for medical valves which" and substitute "that unless otherwise specified, valves for medical use."

* 3.13, line 3, delete "class 2" and substitute "class 1". Line 6, after "QQ-N-290" delete to end of sentence and substitute "class 1, grade G for brass and steel valve bodies."

PAGE 20

3.14.1.1, at end of paragraph delete the period and add: "except the outlet cap shall be supplied with a retaining chain and ring as specified in 3.9.8."

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3.14.1.1.1, line 10, after "corrosion." add new sentence: "The plating of the stem may be eliminated when either polyethylene, polyamide, or polytetrafluoroethylene plastic is used as a packing material."

PAGE 21

3.14.1.1.4, line 9, between "off" and "corrosion" add: "free-cutting brass, naval brass or."

PAGE 23

*3.14.3, line 2, delete ", class 60." and add ".".

*3.14.3.1, line 8, after "service." add new sentence: "Style III, class 06, shall further resist leakage when used in low pressure service."

3.14.3.1.1, lines 6 and 7, delete: ", as specified in the applicable specification sheet and".

PAGE 24

3.14.4.1.1, line 20, delete "rubber" and substitute "plastic, rubber,".

PAGE 25

* 4.2(c) delete "preparation for delivery" and substitute "packaging."

PAGE 26

4.4.2, delete and substitute:

"4.4.2 Tests. Sampling for test shall be in accordance with MIL-STD-105, inspection level S3. A unit is defined as one valve. Samples selected shall be tested as specified in 4.4.2.1 and 4.4.2.2. AQL shall be 0.4 defects per hundred units."

PAGE 27

4.4.2.4, line 5, delete "4.5.2.20" and substitute "4.5.2.18".

PAGE 31

*After 4.5.2.6 add:

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* "4.5.2.6.1 Special low pressure cycling for style III. When used for low pressure service, style III shall be subjected to the following test. With the outlet capped, place each of four valves in a pressurized cycle machine. Set the closing torque as specified for style III valves in table II. The machine should stop on opening just short of back seating. Adjust the inlet pressure to 50 psi plus or minus 5 psi. Cycle the valve continuously for 1000 cycles. Leak test the stem for one full cycle at 250 cycles, at 500 cycles and at 750 cycles. At 1000 cycles, raise the outlet pressure to 600 psi and leak test the stem for one full cycle. Repeat procedure for a total of 5000 cycles for each valve. Leakage at any test shall constitute failure of this test."

4.5.2.7, line 4, delete "table II" and substitute "table I".

PAGE 35

* 4.6, line 1, delete "preparation for delivery" and substitute "packaging."

* 4.6.1.3

128. Delete "or incomplete for level A, B, or C" and substitute "incomplete, or missing."

* 5. Delete Section 5 in its entirety, and substitute:

"5. PACKAGING

* "5.1 Preservation. Preservation shall be level A or commercial, as specified (see 6.2).

* "5.1.1 Level A. Each valve shall be preserved in accordance with MIL-P-116, method IC-1. Multiple quantities of valves shall be further packed in multiples of 10 or 12 in fiberboard boxes conforming to PPP-B-636, W5c or W6c. The boxes shall be provided with fiberboard dividers to prevent the valves from contacting each other.

* 5.1.2 Commercial. Commercial preservation shall be in accordance with MIL-STD-1188.

* 5.2 Packing. Packing shall be level A, level B, or commercial, as specified (see 6.2).

* 5.2.1 Level A. Valves of like description, preserved as specified in 5.1, shall be packed in close-fitting boxes conforming to PPP-B-601, overseas type, style I or J. The boxes shall be closed and strapped in accordance with the appendix to the box specification.

* 5.2.2 Level B. Valves of like decription, preserved as specified in 5.1, shall be packed in close-fitting boxes conforming to PPP-B-636, V3c. The boxes shall be closed and reinforced as specified in the appendix to the box specification

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* 5.2.3 Commercial. Commercial packing shall be in accordance with MIL-STD-1188.

* 5.3 Marking. In addition to any special marking required by the contract or purchase order, marking for military levels of protection shall be in accordance with MIL-STD-129. Commercial marking shall be in accordance with MIL-STD-1188."

PAGE 37

6.2, delete and substitute:

"6.2 Ordering data. Procurement documents should specifiy the following:

(a) Title, number, and date of this specification.
(b) Title, number, and date of applicable specification sheet.
(c) Valve type designation (see 1.3).
(d) When a metal outlet cap or plug with chain and retaining ring is required or when a plastic dust cap is acceptable (see 3.6 and 3.9.8).
(e) Service pressure required (see 3.8.1.1).
(f) Cylinder diameter when a dip tube is specified on applicable specification sheet (see 3.9.6).
(g) When a dip tube assembled to the valve and secured as specified is required (see 3.9.6).
(h) When overall length of valve other than as specified is acceptable (see 3.10).
(i) When marking of valves other than as specified is required (see 3.12.1(c)).
(j) When chromium over nickle plated valves are not required for medical application (see 3.13)."
* (k) Degree of preservation and degree of packing required (see 5.1 and 5.2)."

6.3, lines 11 and 12, delete "US Army Mobility Equipment Command, Research Development, and Engineering Directorate, ATTN: AMSME-RZH-HK," and substitute "US Army Mobility Equipment Research and Development Command, ATTN: DRDME-HM,".

PAGE 38

6.5, table V, line 4, MIL-V-2/4, delete, "V4-201" and substitute "V4-621".

PAGE 39

6.5, table V, line 29, MIL-V-2/26, delete "07-581-1" and substitute "07-591-2".

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Add new paragraphs:

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"6.6, International standardization. Certain provisions covering the pin-index system for medical valves in this specification are the subject of international standardization agreement, QSTAG-236. When amendment, revision, or cancellation of this specification is proposed which effects or violates the international agreement concerned, the preparing activity will take appropriate reconcilitation action through international standardization channels including departmental standardization offices, if required."

*"6.7 Recycled material. It is encouraged that recycled material be used when practical as long as it meets the requirements of the specification (see 3.4)."

The margins of this amendment are marked with an asterisk to indicate where changes (additions, modifications, corrections, deletions) from the previous amendment were made. This was done as a convenience only and the Government assumes no liability whatsoever for any inaccuracies in these notations. Bidders and contractors are cautioned to evaluate the requirements of this document based on the entire content irrespective of the marginal notations and relationship to the last previous amendment.

Following page 42 add figures 1a and 1b.

Custodians:
Army - ME
Navy - SH
Air Force - 68

Review activities:
Navy - AS
DLA - GS

User activities:
Army - AV
Navy - YD, MC

Preparing activity:
Army - ME

Project 8120-0377

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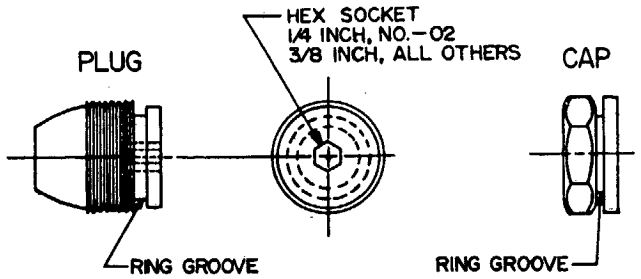
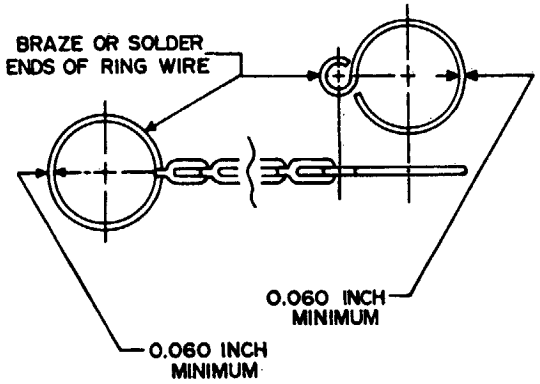
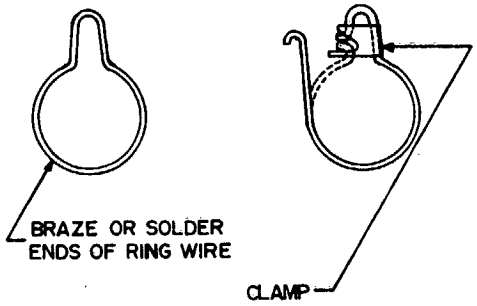


RETAINING RINGS WITH CHAIN

ALTERNATE CONFIGURATIONS





CAPS

NUMBER	MIL-V-2/NO.	OUTLET CONNECTION NO.
-200	3	200
-280	27	280
-300	23	300
-320	15, 16	320
-350	18, 19, 29	350
-540	39, 41	540
-620	4, 22, 50	620
-640	43	640
-660	20, 21	660
-1320	37	1320
-1340	5, 48	1340
-000	33	000
-67u	51	67u

PLUGS

NUMBER	MIL-V-2/NO.	OUTLET CONNECTION NO.
-240	7, 8, 9, 10	240
-510	1, 2, 14, 24, 44	510
-580	11	580
-590	6, 26, 46	590

(The part number for a specific cap or plug shall include MIL-V-2 plus the applicable dash number above.)

FIGURE 1a. CAP AND PLUG

X-2365A

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NOTES:

1. MATERIAL: THE CAP OR THE PLUG SHALL BE OF THE MATERIAL SPECIFIED FOR THE RESPECTIVE MIL-V-2/ DETAIL SPECIFICATION VALVE COMPOSITION CLASSIFICATION. THE RETAINING RINGS SHALL BE OF ROUND COPPER ALLOY WIRE, CONFORMING TO QQ-W-321, ALLOY NUMBER 240, HALF HARD TEMPER. THE CHAIN SHALL CONFORM TO RR-C-271, TYPE II, CLASS 6 OR 7 BRASS, WITH NO FEWER THAN 18 LINKS PER FOOT AND A BREAKING LOAD OF NOT LESS THAN 30 POUNDS. CHAIN LENGTH SHALL BE 3 INCHES PLUS 1/2 AND MINUS 0 INCH.

2. THREADS: CAP AND PLUG THREADS, PLUG NOSE, AND OTHER CONNECTION DETAILS AS SPECIFIED HEREIN SHALL BE IN ACCORDANCE WITH EITHER H28, OR ANSI STANDARD B57.1.

3. CAPS: CAPS SHALL HAVE A HEXAGONAL WRENCHING SURFACE. THE DIMENSION ACROSS THE HEX FLATS SHALL NOT BE GREATER THAN THAT FOR THE RESPECTIVE VALVE OUTLET CONNECTION HEX NUT SPECIFIED IN THE REFERENCES OF NOTE 2 ABOVE.

4. LENGTH AND CONFIGURATION: THE OVERALL LENGTH AND CONFIGURATION OF THE CAP OR PLUG SHALL BE SUCH THAT WHEN TIGHTENED TO A SEAL ON THE RESPECTIVE VALVE OUTLET (WITH ANY POSSIBLE ORIENTATION OF THE CAP'S HEXAGONAL ACROSS-CORNERS DIMENSION), THE CAP OR PLUG DOES NOT PROJECT MORE THAN 1-1/2 INCHES FROM THE CENTER LINE OF THE VALVE INLET CONNECTION THREADS AS SPECIFIED IN THE REFERENCES OF NOTE 2 ABOVE.

5. RETAINING RING: ONE RETAINING RING SHALL BE CLOSED AROUND THE CAP OR PLUG RING GROOVE. THE DEPTH AND THE WIDTH OF THE RING GROOVE AND THE PERIPHERAL CLEARANCE BETWEEN THE RETAINING RING AND THE BOTTOM OF THE RING GROOVE SHALL BE SUCH THAT THE RETAINING RING IS NOT ABLE TO SLIP OUT OF THE GROOVE AND TURNS FREELY IN THE GROOVE.

6. SECOND RETAINING RING: THE SECOND RETAINING RING SHALL BE SIZED TO FIT LOOSELY AROUND THE VALVE BODY IMMEDIATELY ABOVE THE INLET THREADS OF THE LARGEST INLET CONNECTION SPECIFIED FOR THE GROUP OF MIL-V-2 VALVES TABULATED ABOVE. WHEN THE CAP OR PLUG IS SUPPLIED SEPARATELY FROM A VALVE, THE RETAINING RING FOR ENCIRCLING THE VALVE SHALL BE FASTENED TO THE CHAIN AND LEFT OPEN WITH A CLAMP HAVING PROVISIONS FOR CRIMPING TO CLOSE THE RING AFTER INSTALLATION ON A VALVE.

7. FIBER DISC: THE CAP SHALL HAVE A FIBER DISC INSERT TO SEAL AGAINST THE RESPECTIVE VALVE OUTLET. THE DISC SHALL BE INSTALLED SO AS NOT TO BE ABLE TO FALL OUT OF THE CAP. THE DISC MATERIAL SHALL BE COMPATIBLE WITH THE INTENDED COMPRESSED GAS USAGE.

8. O-RING: THE PLUG MAY BE DESIGNED FOR AN O-RING SEAL. THE O-RING SHALL FIT IN A CIRCUMFERENTIAL GROOVE ON THE PLUG NOSE, AND THE PLUG NOSE SHALL OTHERWISE BE IN ACCORDANCE WITH NOTE 2 ABOVE.

FIGURE 1b. NOTES

X-2366

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