

INCH-POUND

MIL-DTL-52471/3D
30 September 2019
SUPERSEDING
w/AMENDMENT 1
MIL-DTL-52471/3C
15 November 2018

DETAIL SPECIFICATION SHEET

HOSE ASSEMBLIES, RUBBER, HYDRAULIC PRESSURE-TYPE, TYPE 100RE, FOUR-WIRE BRAIDED REINFORCEMENT OR MULTIPLE WIRE BRAIDED STEEL WIRE REINFORCED HOSE

This specification is approved for use by all Departments and
Agencies of the Department of Defense.

The requirements for acquiring the product described herein shall consist of this specification sheet
and MIL-DTL-52471.

ENGINEERING DATA:

SAE-J517 type 100R10 hose specified in MIL-DTL-52471/6-12, -20, -24, and -32 hose has been
canceled. For users of 100R10 hose and fittings that are no longer being manufactured reference
table VIII for suggested hose replacements.

This hose assembly document is being retained so replacement parts can be ordered from this slash
sheet. The intent is to allow users the ability to use PIN's in this slash sheet to assemble hose
assemblies. Manufacturers will use the appropriate substitute hose and fittings to make a hose
assembly to meet the mating requirements of the fittings listed in tables II through VI, and shall meet
the performance requirements of SAE-J517, and mark it in accordance with MIL-DTL-52471/3.

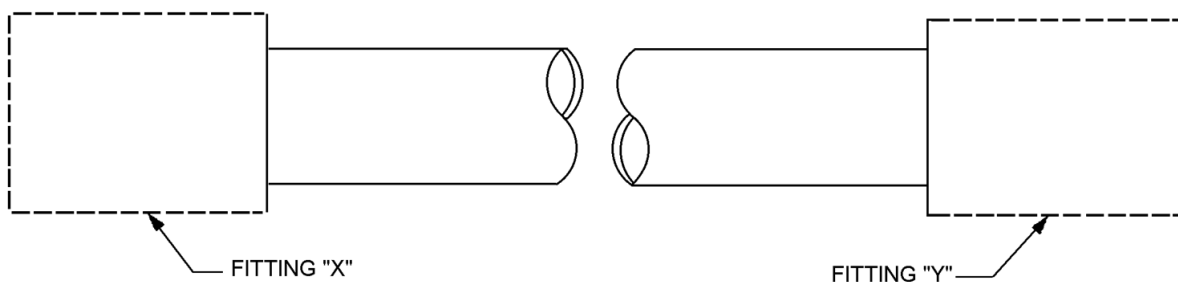


FIGURE 1. Hose assembly, fitting identification.

Operating pressure. Hose assembly shall operate at pressures shown in table I.



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TABLE I. Hose assembly operating pressure. 1/ 2/ 3/

Hose dash number	Hose ID			Operating pressure max psi (MPa)
	Inch fraction	Inch decimal	mm	
-12	3/4	.750	19.05	5000 (34.5)
-16	1	1.000	25.40	4000 (27.6)
-20	1-1/4	1.125	28.58	3000 (20.7)
-24	1-1/2	1.500	28.10	2500 (17.2)
-32	2	2.000	50.80	2500 (17.2)

1/ This table is referenced from SAE-J517 100R10 which is discontinued by SAE, therefore see table VIII.

2/ Dimensions are in inches.

3/ Metric equivalents are given for information only.

Hose assembly code number. The purpose of this slash sheet is to provide hose assembly code numbers for determining the hose diameter, fitting X, fitting Y, and bend angles (when applicable) as shown in tables II through VI. The bend angles are called "style codes" and consist of hose assembly styles as specified in MIL-DTL-52471.

TABLE II. 3/4-inch hose assemblies.

Hose ID Inch fraction Inch decimal (mm)	Hose PIN 1/ reference only	Fitting X (see figure 1)		Fitting Y (see figure 1)		Assembly code number 3/
		PIN reference only	Bend angle 2/	PIN reference only	Bend angle 2/	
3/4 .750 (19.05)	M52525/6-12 discontinued	M52525/13-12-12	0°	M52525/13-12-12	0°	C001
				M52525/14-12-12	45°	C002
				M52525/15-12-12	90°	C003
		M52525/14-12-12	45°	M52525/14-12-12	45°	C004
				M52525/15-12-12	90°	C005
				M52525/15-12-12	90°	C006

1/ Part or Identifying Number (PIN).

2/ Reference MIL-DTL-52471 for hose assembly bend angles and displacement angles used in the PIN.

3/ A suffix indicating plating finish shall be specified with the assembly code number, see table VII.

Example: C001C

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TABLE III. 1-inch hose assemblies.

Hose ID Inch fraction Inch decimal (mm)	Hose	Fitting X (see figure 1)		Fitting Y (see figure 1)		Assembly code number <u>2/</u>
	PIN reference only	PIN reference only	Bend angle <u>1/</u>	PIN reference only	Bend angle <u>1/</u>	
1 1.000 (25.40)	M52525/6-16 discontinued	M52525/13-16-16	0°	M52525/13-16-16	0°	C101
				M52525/14-16-16	45°	C102
				M52525/15-16-16	90°	C103
				M52525/43-16	0°	C104
				M52525/44-16	45°	C105
				M52525/45-16	90°	C106
				M52525/14-16-16	45°	C108
				M52525/15-16-16	90°	C109
		M52525/14-16-16	45°	M52525/43-16	0°	C110
				M52525/44-16	45°	C111
				M52525/45-16	90°	C112
				M52525/15-16-16	90°	C114
		M52525/15-16-16	90°	M52525/43-16	0°	C115
				M52525/44-16	45°	C116
				M52525/45-16	90°	C117
				M52525/43-16	0°	C119
		M52525/43-16	0°	M52525/44-16	45°	C120
				M52525/45-16	90°	C121
		M52525/44-16	45°	M52525/44-16	45°	C123
				M52525/45-16	90°	C124
		M52525/45-16	90°	M52525/45-16	90°	C126

1/ Reference MIL-DTL-52471 for hose assembly bend angles and displacement angles used in the PIN.

2/ A suffix indicating plating finish shall be specified with the assembly code number, see table VII.

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TABLE IV. 1-1/4 inch hose assemblies.

Hose ID Inch fraction Inch decimal (mm)	Hose PIN reference only	Fitting X (see figure 1)		Fitting Y (see figure 1)		Assembly code number 2/
		PIN reference only	Bend angle 1/	PIN reference only	Bend angle 1/	
1-1/4 1.125 (28.58)	M52525/6-20 discontinued	M52525/13-20-20	0°	M52525/13-20-20	0°	C201
				M52525/14-20-20	45°	C202
				M52525/15-20-20	90°	C203
				M52525/43-20	0°	C204
				M52525/44-20	45°	C205
				M52525/45-20	90°	C206
				M52525/14-20-20	45°	C208
				M52525/15-20-20	90°	C209
				M52525/43-20	0°	C210
		M52525/14-20-20	45°	M52525/44-20	45°	C211
				M52525/45-20	90°	C212
				M52525/15-20-20	90°	C214
		M52525/15-20-20	90°	M52525/43-20	0°	C215
				M52525/44-20	45°	C216
				M52525/45-20	90°	C217
				M52525/43-20	0°	C219
		M52525/43-20	0°	M52525/44-20	45°	C220
				M52525/45-20	90°	C221
		M52525/44-20	45°	M52525/44-20	45°	C223
				M52525/45-20	90°	C224
		M52525/45-20	90°	M52525/45-20	90°	C226

1/ Reference MIL-DTL-52471 for hose assembly bend angles and displacement angles used in the PIN.

2/ A suffix indicating plating finish shall be specified with the assembly code number, see table VII.

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TABLE V. 1-1/2 inch hose assemblies.

Hose ID Inch fraction Inch decimal (mm)	Hose	Fitting X (figure 1)		Fitting Y (figure 1)		Assembly code number 2/
	PIN reference only	PIN	Bend angle 1/	PIN	Bend angle 1/	
1-1/2 1.500 (38.10)	M52525/6-24 discontinued	M52525/13-24-24	0°	M52525/13-24-24	0°	C301
				M52525/14-24-24	45°	C302
				M52525/15-24-24	90°	C303
				M52525/23-24	0°	C304
				M52525/24-24	45°	C305
				M52525/25-24	90°	C306
				M52525/14-24-24	45°	C308
				M52525/15-24-24	90°	C309
				M52525/23-24	0°	C310
		M52525/14-24-24	45°	M52525/24-24	45°	C311
				M52525/25-24	90°	C312
		M52525/15-24-32	90°	M52525/15-24-32	90°	C314
				M52525/23-24	0°	C315
				M52525/24-24	45°	C316
				M52525/25-24	90°	C317
				M52525/23-24	0°	C319
		M52525/43-24	0°	M52525/24-24	45°	C320
				M52525/25-24	90°	C321
				M52525/24-24	45°	C323
		M52525/44-24	45°	M52525/25-24	90°	C324
		M52525/45-24	90°	M52525/25-24	90°	C326

1/ Reference MIL-DTL-52471 for hose assembly bend angles and displacement angles used in the PIN.

2/ A suffix indicating plating finish shall be specified with the assembly code number, see table VII.

TABLE VI. 2-inch hose assemblies.

Hose ID Inch fraction Inch decimal (mm)	Hose PIN reference only	Fitting X (see figure 1)		Fitting Y (see figure 1)		Assembly code number 2/
		PIN reference only	Bend angle 1/	PIN reference only	Bend angle 1/	
2 2.000 (50.80)	M52525/6-32 discontinued	M52525/43-32	0°	M52525/23-32	0°	C401
				M52525/24-32	45°	C402
				M52525/25-32	90°	C403
		M52525/44-24	45°	M52525/24-32	45°	C405
				M52525/25-32	90°	C406
		M52525/45-32	90°	M52525/25-32	90°	C408

1/ Reference MIL-DTL-52471 for hose assembly bend angles and displacement angles used in the PIN.

2/ A suffix indicating plating finish shall be specified with the assembly code number, see table VII.

Fitting materials and finishes shall be in accordance with MIL-DTL-52525, material and plating designators are specified in table VII.

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TABLE VII. Material and finish identification codes. 1/ 2/

PIN code material/plating finish	Material	Plating finish
A	Aluminum alloy 6061 or 7075	Anodize in accordance with MIL-A-8625, type II.
AN		Anodize in accordance with MIL-A-8625, type II and NAVAIR trivalent chromium pretreatment (TCP) in accordance with MIL-DTL-81706, type II, class 1A. TCP Applied after anodizing.
BN		Bare aluminum with NAVAIR TCP in accordance with MIL-DTL-81706, type II, class 1A.
C	Steel <u>2/</u>	Cadmium plating in accordance with SAE-AMS-C-81562, type II, class 3 or SAE-AMS-QQ-P-416, type II, class 2. <u>1/ 5/ 8/</u>
YC	Chrome-molybdenum steel alloy 4130	Cadmium plating in accordance with SAE-AMS-C-81562, type II, class 3 or SAE-AMS-QQ-P-416, type II, class 2. <u>1/ 5/ 8/</u>
G	Steel <u>2/</u>	Zinc plating with colorless passivate in accordance with ASTM B633, type VI, Fe/Zn 8. <u>3/</u>
YG	Chrome-molybdenum steel alloy 4130	
H	Steel <u>2/</u>	Zinc phosphate finish in accordance MIL-DTL-16232, type Z, class1.
YH	Chrome-molybdenum steel alloy 4130	
J	Steel <u>2/</u>	Zinc plating with a colored chromate conversion in accordance with ASTM B633; type II, Fe/Zn 8, or ASTM B695, type II, class 8. <u>3/ 5/</u>
YJ	Chrome-molybdenum steel alloy 4130	
K	Nickel-copper alloy UNS N04400	No additional finish.
M	High-chromium nickel alloy UNS N06690	No additional finish.
N	Steel <u>2/</u>	Zinc-aluminum in accordance with ASTM F1136/F1136M, grade 3, NC. <u>4/</u>
YA	Chrome-molybdenum steel alloy 4130	
YN	Steel <u>2/</u>	Zinc-nickel in accordance with SAE-AMS2417, type 2, grade B. <u>4/ 7/</u> .
P	Steel <u>2/</u>	Zinc plating with colorless passivate in accordance with ASTM B633, type V, Fe/Zn 8. <u>3/</u>
YP	Chrome-molybdenum steel alloy 4130	
S	Corrosion resistant steel	No additional finish. Passivation in accordance with SAE-AMS2700, type 6 or 7.
T	Titanium	Anodize in accordance with SAE-AMS2488, type 2. <u>6/ 9/</u>
TF		Fluoride phosphate in accordance with SAE-AMS2486. <u>6/ 9/</u>
U	Steel <u>2/</u>	Zinc-aluminum in accordance with ASTM F1136/F1136M, grade 3, NC. <u>4/</u>
V		Zinc-nickel in accordance with SAE-AMS2417, type 2, grade B. <u>4/ 7/</u>
W	Steel <u>2/</u>	Any zinc plating above. <u>3/ 5/</u>
YW	Chrome-molybdenum steel alloy 4130	
Z	Steel	Zinc plating in accordance with ASTM B695, type II, class 8. <u>3/ 5/</u>

1/ Embrittlement test need not be run.2/ All steels except 4130.3/ Not for use in aircraft. Requires approval from the Program Office for all applications. Zinc-plated materials should be avoided in hydraulic systems with water-glycol fluids. Reference ASTM MNL37 - Fuels and Lubricants Handbook.4/ Hexavalent chromium free. Finish shall be RoHS compliant.5/ These finishes have a chromate conversion coating or chromic acid rinse which includes hexavalent chromium and are not recommended.6/ A pretreatment, a modification of the fluoride treatment, or a post treatment shall be applied so the final color of the fittings shall be similar to SAE-AMS-STD-595 colors 36076 through 36293.7/ The zinc-nickel alloy plate shall contain 12% to 16% nickel. The coating thickness shall be 315µ inches (8µm) minimum.8/ Cadmium shall not be used in oxygen or potable water systems. Cadmium is prohibited from use in NAVSEA-owned shipboard systems in accordance with the requirements of T9070-AL-DPC-020/077-2, unless otherwise approved by NAVSEA.9/ Titanium shall not be used in oxygen or potable water systems.

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Supersession data. Table VIII shows the suggested replacement hoses for the discontinued SAE-J517 type 100R10 hose.

TABLE VIII. Alternate hose types to SAE-J517 type 100R10.

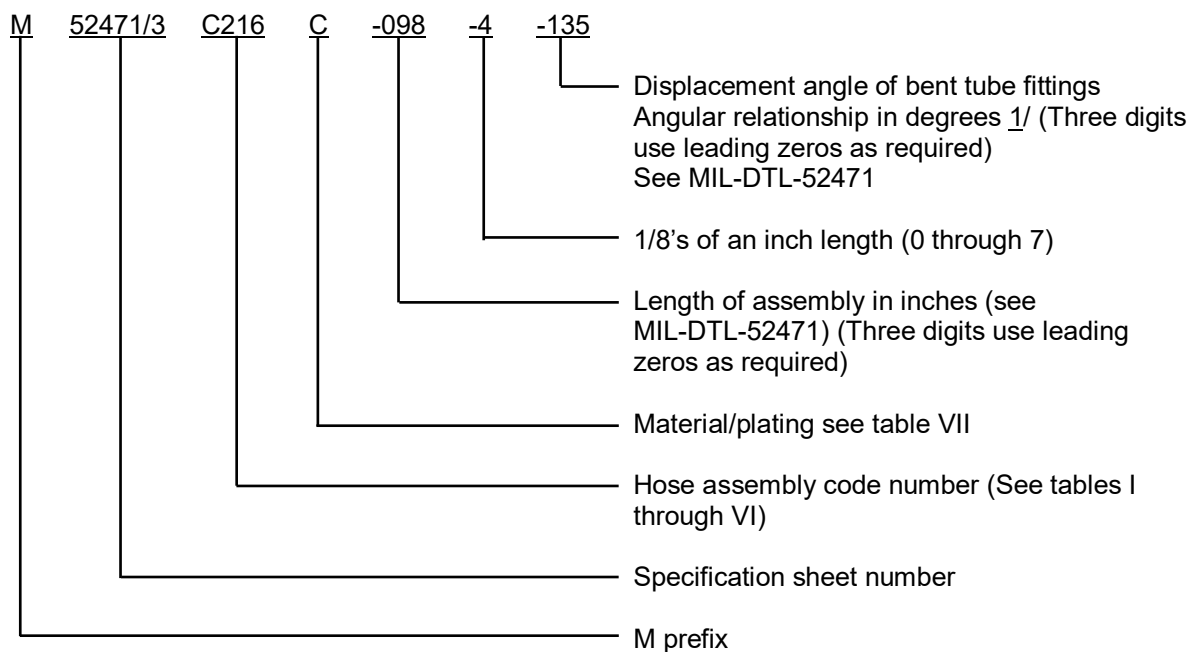
Hose ID dash number	J517 alternate 100R10	Operating pressure psi (MPa), [ISO]	Reinforcement
-12	100R13-12	5000 (34.5), [35.0]	Multiple spiral steel wire reinforced
-16	100R13-16	4000 (27.6), [28.0]	Multiple spiral steel wire reinforced
-20	100R12-20	3000 (20.7), [21.0]	Multiple spiral steel wire reinforced
-24	100R12-24	2500 (17.2), [17.5]	Four-spiral-wrap reinforcement
-32	100R12-32	2500 (17.2), [17.5]	Four-spiral-wrap reinforcement

REQUIREMENTS:

The hose assemblies shall be specified on figure 1 and tables I through VII.

Connector fittings for hose assemblies shall be in accordance with MIL-DTL-52525.

PIN example: The PIN consists of the letter "M" the specification sheet number, an assigned code number for the hose assembly, material/plating designator, hose assembly length, and angular relationship of fittings, when applicable.



^{1/} Not applicable for assemblies with straight fittings.

PIN example: M52471/3-C116-098-4-135, describes a hose assembly consisting of 100R13-16 hose, fitting X M52525/15-16-16, bend angle 90°, fitting Y M52525/44-16, bend angle 45°, steel with cadmium plating, 98 1/2 inches long, and a displacement angle of 135°.

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To the users of this document, it is recommended that the use of carbon steel material with cadmium plating be used only when the other materials and finishes specified in this document cannot meet performance requirements.

Cadmium is prohibited from use in NAVSEA-owned shipboard systems in accordance with the requirements of T9070-AL-DPC-020/077-2, unless otherwise approved by NAVSEA.

Class I and II ozone depleting substances (ODS) shall not be used in MIL-DTL-52471/3 or any referenced procedures.

Referenced documents shall be of the issue in effect on date of invitations for bid.

Legacy information. MIL-DTL-52525/23, /24, and /25 are reusable -split-flange fittings. This style of fitting is no longer available and have been replaced by permanent crimp type fittings specified in MIL-DTL-52525/43, /44, and /45.

Changes from previous issue. Marginal notations are not used in this revision to identify changes with respect to the previous issue, due to the extent of the changes.

Referenced documents. In addition to MIL-DTL-52471, this document references the following:

MIL-A-8625	SAE-AMS-STD-595/36118	SAE-AMS-C-81562
MIL-DTL-16232	SAE-AMS-STD-595/36134	SAE-AMS-QQ-P-416
MIL-DTL-52525	SAE-AMS-STD-595/36152	SAE-AMS2417
MIL-DTL-81706	SAE-AMS-STD-595/36170	SAE-AMS2486
ASTM B633	SAE-AMS-STD-595/36173	SAE-AMS2488
ASTM B695	SAE-AMS-STD-595/36176	SAE-AMS2700
ASTM F1136/F1136M	SAE-AMS-STD-595/36231	SAE-J517
ASTM MNL37	SAE-AMS-STD-595/36251	T9070-AL-DPC-020/077-2
SAE-AMS-STD-595/36076	SAE-AMS-STD-595/36270	
SAE-AMS-STD-595/36081	SAE-AMS-STD-595/36280	
SAE-AMS-STD-595/36099	SAE-AMS-STD-595/36293	

CONCLUDING MATERIAL

Custodians:

Army - AT
Navy - SH
DLA - CC

Preparing activity:

DLA - CC

(Project 4720-2019-032)

Review activities:

Army - CR4, GL
Navy - CG, SA

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 <https://assist.dla.mil>.