

AS1638

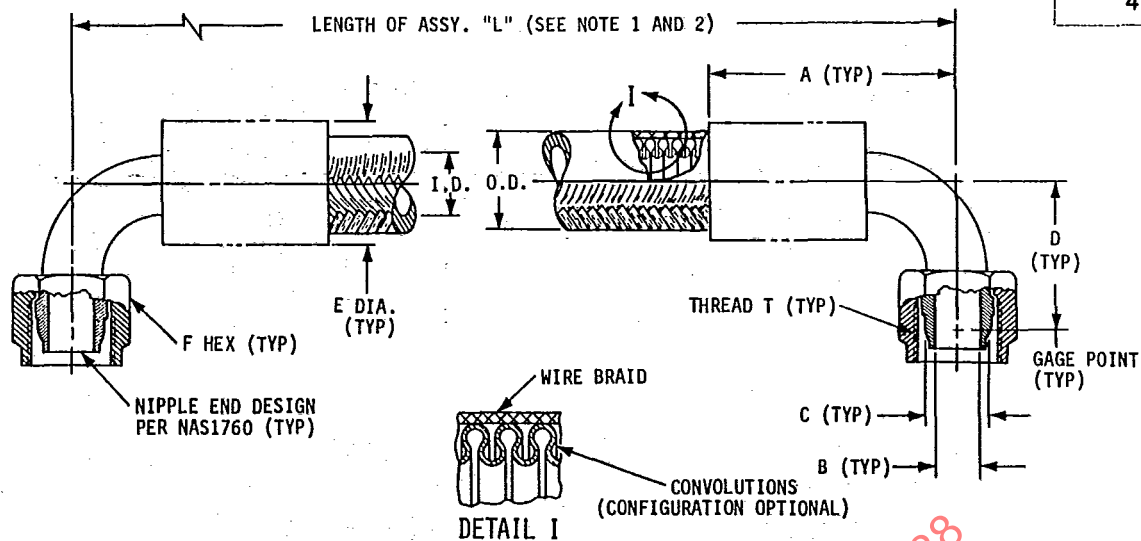


Figure 1

TABLE I.

| HOSE ASSEMBLY NO. AND SIZE CODE | HOSE ASSEMBLY SIZE (REF) | THREAD T PER MIL-S-8879 (REF) | I.D. MIN | A MAX | B GAGE DIA BASIC | C 5 DRILL DIA MIN | D     |       | E 6 DIA MAX WITHOUT SEEVING | F HEX (REF) |
|---------------------------------|--------------------------|-------------------------------|----------|-------|------------------|-------------------|-------|-------|-----------------------------|-------------|
|                                 |                          |                               |          |       |                  |                   | MIN   | MAX   |                             |             |
| AS1638E                         | 1/4                      | .4375-20 UNJF-3B              | .270     | 1.24  | .2930            | .132              | .709  | .779  | .55                         | .56         |
| AS1638G                         | 3/8                      | .5625-18 UNJF-3B              | .355     | 1.63  | .4120            | .256              | .961  | 1.031 | .65                         | .69         |
| AS1638H                         | 1/2                      | .7500-16 UNJF-3B              | .510     | 1.85  | .5600            | .345              | 1.115 | 1.185 | .86                         | .88         |
| AS1638J                         | 5/8                      | .8750-14 UNJF-3B              | .600     | 2.14  | .6730            | .430              | 1.377 | 1.447 | .95                         | 1.00        |
| AS1638K                         | 3/4                      | 1.0625-12 UNJ -3B             | .765     | 2.07  | .8100            | .635              | 1.447 | 1.517 | 1.28                        | 1.25        |
| AS1638M                         | 1                        | 1.3125-12 UNJ -3B             | .980     | 3.03  | 1.0620           | .835              | 1.880 | 1.950 | 1.47                        | 1.50        |
| AS1638N                         | 1-1/4                    | 1.6250-12 UNJ -3B             | 1.220    | 3.89  | 1.3160           | 1.085             | 2.183 | 2.253 | 1.70                        | 2.00        |
| AS1638P                         | 1-1/2                    | 1.8750-12 UNJ -3B             | 1.480    | 4.15  | 1.5650           | 1.310             | 2.653 | 2.723 | 2.00                        | 2.25        |

TABLE II

| HOSE ASSEMBLY LENGTH | AVAILABLE INCREMENTS       | TOLERANCE                 |
|----------------------|----------------------------|---------------------------|
| UNDER 18 INCHES      | (NOT LESS THAN) .125 INCH  | (PLUS OR MINUS) .125 INCH |
| 18 TO 36 INCHES      | (NOT LESS THAN) .250 INCH  | (PLUS OR MINUS) .250 INCH |
| 36 TO 50 INCHES      | (NOT LESS THAN) .500 INCH  | (PLUS OR MINUS) .500 INCH |
| OVER 50 INCHES       | (NOT LESS THAN) 1.000 INCH | (PLUS OR MINUS) 1 PERCENT |

TABLE III

| HOSE OR COVER CODE | HOSE OR TYPE OF PROTECTIVE COVER      | HOSE OR COVER O.D. $\pm$ .032 |      |       |       |       |       |       |       | UPPER TEMP. LIMIT |
|--------------------|---------------------------------------|-------------------------------|------|-------|-------|-------|-------|-------|-------|-------------------|
|                    |                                       | HOSE SIZE                     |      |       |       |       |       |       |       |                   |
|                    |                                       | 1/4                           | 3/8  | 1/2   | 5/8   | 3/4   | 1     | 1-1/4 | 1-1/2 |                   |
| NONE               | HOSE ONLY                             | .445                          | .555 | .755  | .850  | 1.060 | 1.270 | 1.526 | 1.790 | 400               |
| B                  | SPIRAL ABRASION                       | .505                          | .615 | .825  | .935  | 1.140 | 1.330 | 1.630 | 1.890 | 275               |
| D                  | INTEGRAL ABRASION                     | .562                          | .688 | .906  | 1.000 | 1.203 | 1.438 | 1.688 | 1.937 | 325               |
| H                  | INTEGRAL FIRESLEEVE                   | --                            | .830 | 1.010 | 1.170 | 1.360 | 1.510 | 1.750 | 2.000 | 400               |
| N                  | FIRESLEEVE SIL/FG (AS 1072)           | .760                          | .870 | 1.030 | 1.130 | 1.370 | 1.630 | 1.870 | 2.130 | 400               |
| K                  | INTEGRAL ABRASION (BRAIDED) POLYESTER | .500                          | .630 | .840  | .920  | 1.135 | 1.345 | 1.600 | 1.870 | 300               |

|       |   |   |   |   |
|-------|---|---|---|---|
| SHEET | 1 | 2 | 3 | 4 |
| REV.  | A | A | A | A |

CUSTODIAN: SAE G-3/G-3D

PROCUREMENT SPECIFICATION: AS 620

**SAE** The Engineering Resource For Advancing Mobility®

400 COMMONWEALTH DRIVE, WARRENDALE, PA 15098

AEROSPACE STANDARD

HOSE ASSEMBLY, CONVULUTED, TETRAFLUOROETHYLENE, FLARE!

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SHEET 1 OF 4

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TABLE IV PHYSICAL REQUIREMENTS OF HOSE ASSEMBLIES

| HOSE<br>SIZE<br>(REF) | OPERATING<br>PRESSURE<br>MAX.<br>PSI | PROOF<br>PRESSURE<br>MIN.<br>PSI | BURST<br>PRESSURES          |                             | BEND RADIUS<br>AT INSIDE<br>OF BEND<br>INCHES<br>(HOSE ONLY) |
|-----------------------|--------------------------------------|----------------------------------|-----------------------------|-----------------------------|--------------------------------------------------------------|
|                       |                                      |                                  | ROOM<br>TEMP<br>MIN.<br>PSI | HIGH<br>TEMP<br>MIN.<br>PSI |                                                              |
| -04                   | 1000                                 | 2000                             | 4000                        | 2800                        | 1.25                                                         |
| -06                   | 1000                                 | 2000                             | 4000                        | 2800                        | 2.25                                                         |
| -08                   | 1000                                 | 2000                             | 4000                        | 2800                        | 2.88                                                         |
| -10                   | 1000                                 | 1800                             | 3600                        | 2500                        | 3.00                                                         |
| -12                   | 1000                                 | 1800                             | 3600                        | 2500                        | 3.75                                                         |
| -16                   | 1000                                 | 1800                             | 3600                        | 2500                        | 5.00                                                         |
| -20                   | 1000                                 | 1800                             | 3600                        | 2500                        | 6.25                                                         |
| -24                   | 750                                  | 1500                             | 3000                        | 2100                        | 7.50                                                         |

TABLE V NOMINAL WEIGHTS

| HOSE<br>SIZE<br>(REF) | HOSE<br>ONLY<br>LBS/IN. | HOSE WITH SLEEVING LBS/IN.        |                                     |                                       |                                      |                                     | 90°<br>END<br>FITTING<br>LBS EACH | HOSE LENGTH<br>CORRECTION<br>FACTOR-IN. <span style="border: 1px solid black; padding: 0 2px;">8</span> |
|-----------------------|-------------------------|-----------------------------------|-------------------------------------|---------------------------------------|--------------------------------------|-------------------------------------|-----------------------------------|---------------------------------------------------------------------------------------------------------|
|                       |                         | SPIRAL<br>ABRA-<br>SION<br>CODE B | INTEGRAL<br>ABRA-<br>SION<br>CODE D | INTEGRAL<br>FIRE-<br>SLEEVE<br>CODE H | TUBULAR<br>FIRE-<br>SLEEVE<br>CODE H | POLYEST.<br>ABRA-<br>SION<br>CODE K |                                   | 90°                                                                                                     |
| -04                   | .007                    | .010                              | .012                                | --                                    | .017                                 | .008                                | .07                               | .81                                                                                                     |
| -06                   | .010                    | .014                              | .017                                | --                                    | .021                                 | .012                                | .12                               | .89                                                                                                     |
| -08                   | .015                    | .020                              | .025                                | .032                                  | .030                                 | .018                                | .20                               | 1.10                                                                                                    |
| -10                   | .020                    | .025                              | .030                                | .042                                  | .035                                 | .022                                | .31                               | 1.30                                                                                                    |
| -12                   | .025                    | .030                              | .036                                | .050                                  | .042                                 | .026                                | .45                               | 1.56                                                                                                    |
| -16                   | .030                    | .036                              | .050                                | .055                                  | .054                                 | .035                                | .74                               | 2.00                                                                                                    |
| -20                   | .050                    | .060                              | .061                                | .070                                  | .077                                 | .045                                | 1.20                              | 2.01                                                                                                    |
| -24                   | .060                    | .071                              | .075                                | .082                                  | .107                                 | .058                                | 1.74                              | 2.28                                                                                                    |

TABLE VI

| HOSE SIZE | LENGTH (INCHES) |
|-----------|-----------------|
| 04<br>06  | 2.00 $\pm$ .25  |
| 08<br>10  | 2.50 $\pm$ .25  |
| 12<br>16  | 3.00 $\pm$ .25  |
| 20<br>24  | 3.50 $\pm$ .25  |

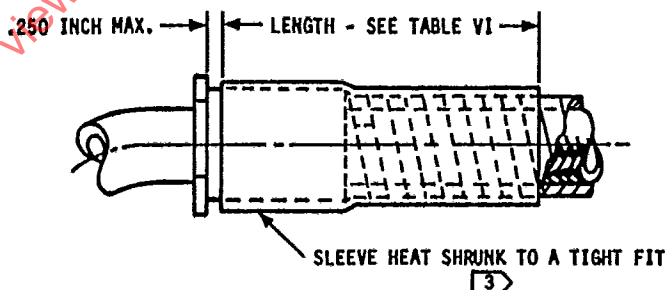


Figure 2

**CONSTRUCTION AND PERFORMANCE:**

THESE HOSE ASSEMBLIES SHALL MEET THE CONSTRUCTION AND PERFORMANCE REQUIREMENTS OF AS 620. FITTINGS SHALL BE PERMANENTLY ATTACHED TO THE HOSE.

**RATED OPERATING CHARACTERISTICS:** SEE AS 620**MATERIALS:** HOSE AND FITTINGS - PER AS 620, TYPE II, CLASS 1 OR CLASS 2 AS SPECIFIED BY PART NUMBER.

SPIRAL ABRASION COVER - BLACK, NYLON COIL PER AS 1294.

INTEGRAL FIRESLEEVE COVER - RED OR BROWN, SILICONE.

INTEGRAL ABRASION COVER - BLACK, INTEGRALLY BONDED SILICONE COMPOSITE.

FIRE SLEEVE, TUBULAR - FIBERGLASS SILICONE PER AS 1072.

INTEGRAL ABRASION SLEEVE BRAIDED POLYESTER.

**MARKING:**

THE HOSE ASSEMBLIES SHALL HAVE ALL IDENTIFICATION MARKING AS REQUIRED BY AS 620, ELECTRO-ETCHED ON A STAINLESS STEEL BAND NOT MORE THAN 1.0 INCH WIDE. THE CHARACTERS SHALL BE A MINIMUM OF 1/16 INCHES HIGH. THE BAND SHALL BE TIGHT ON THE HOSE BUT WITHOUT PINCHING, AND SHALL BE PERMANENTLY ATTACHED. VARIABLE DATA, SUCH AS MANUFACTURING DATE AND "PT" SYMBOL MAY BE ELECTRO-ETCHED ON ONE END FITTING.

(A)

**AEROSPACE STANDARD**

HOSE ASSEMBLY, CONVOLUTED,  
TETRAFLUOROETHYLENE,  
FLARELESS, 90° TO 80°

**AS1638**

SH 2

AS1638

## NOTES:

1. LENGTH "L" IS A FOUR DIGIT NUMBER OF WHICH THE FIRST THREE DIGITS DESCRIBE THE HOSE ASSEMBLY LENGTH IN WHOLE INCHES, AND THE FOURTH DIGIT, THE FRACTION OF AN INCH IN EIGHTS. LENGTH "L" IS MEASURED FROM "GAGE POINT" TO "GAGE POINT." SEE TABLE II FOR AVAILABLE LENGTH INCREMENTS AND TOLERANCES.
2. TO CONVERT "GAGE POINT" TO "GAGE POINT" TO "END" TO "END" MEASUREMENT, ADD TO "L" THE APPROPRIATE TABLE VIII CORRECTION FACTOR FOR EACH END FITTING.
3. SPIRAL ABRASION COVER WHEN ASSEMBLED IN THE STRAIGHT CONDITION ON THE HOSE, SHALL HAVE AN AVERAGE GAP BETWEEN SPIRALS NOT EXCEEDING .05 INCH. DISPLACEMENT OF THE SPIRAL COVER, CAUSING A GREATER GAP, SHALL NOT BE CAUSE FOR REJECTION IF THE SPIRALS CAN BE REPOSITIONED TO MEET THE GAP REQUIREMENT. ENDS OF THE SPIRAL COVER SHALL BE TERMINATED WITH A LENGTH OF MIL-I-23053/5 BLACK POLYOLEFIN TUBING PER TABLE VI AND FIGURE 2.
4. INTEGRAL AND POLYESTER ABRASION COVER SHALL FORM AN INTEGRAL, PERMANENT PART OF THE HOSE AND SHALL TERMINATE A MAXIMUM OF .625 INCH FROM THE END OF THE END FITTING COLLAR.
5. A TRUE CIRCULAR CROSS SECTION IS NOT REQUIRED THROUGH THE END FITTING. HOWEVER, THE APPLICABLE BALL DIAMETER LISTED IN TABLE VII SHALL PASS THROUGH THE END FITTING AFTER END FITTING IS ATTACHED TO HOSE ASSEMBLY.
6. DISTANCE ACROSS CORNERS OF COUPLINGS NUT MAY EXCEED THIS DIMENSION.
7. ADD "AS 1055 TYPE IIB CLASS B-S/P" TO IDENTIFICATION MARKING TO SHOW LEVEL OF COMPLIANCE, "FIRE-PROOF" (15 MINUTES), WITH AS 1055.
8. FOR EACH END FITTING, DEDUCT APPROPRIATE LENGTH FACTOR FROM HOSE LENGTH TO DETERMINE ASSEMBLY WEIGHT.
9. STANDARD COUPLING NUTS SHALL BE IN ACCORDANCE WITH MS21921 OR MS27073. NONSTANDARD COUPLING NUTS MAY BE USED BUT SHALL COMPLY WITH THE REQUIREMENT (b) OF NAS1760 FOR NON-STANDARD NUTS AND SHALL BE RETAINED BY THE END FITTING.
10. THE FITTINGS ORIENTATION DASH NUMBER IS A THREE DIGIT NUMBER DEFINING THE RELATIVE POSITION OF THE END FITTINGS IN 1° INCREMENTS. (EXAMPLE 090 = 90°). FITTING ORIENTATION SHALL BE MEASURED COUNTER CLOCKWISE FROM THE NEAREST END FITTING, WHICH SHALL BE IN THE RELATIVE 000° POSITION (SEE FIGURE 3). WHEN END FITTINGS ARE POINTED IN THE SAME DIRECTION, THIS DASH NUMBER SHALL BE 000.
11. THE CUT ENDS OF THE FIRESLEEVE SHALL BE COATED WITH RTV SILICONE RUBBER, PRIOR TO INSTALLATION, TO PREVENT WICKING OF FLUIDS. THE FIRESLEEVE ENDS SHALL BE SECURED TO THE HOSE ASSEMBLY END FITTINGS WITH CORROSION RESISTANT STEEL BANDS. AFTER INSTALLATION, CRACKS OR VOIDS IN THE FIRE SLEEVE, WHICH EXPOSE THE FIBERGLASS, SHALL BE COATED WITH RTV SILICONE RUBBER.
12. THE CODE "D" BLACK SILICONE COMPOSITE ABRASION SLEEVE IS SUPERCEDED FOR NEW DESIGN BY THE IMPROVED CODE "K" POLYESTER ABRASION SLEEVE.
13. DO NOT USE UNASSIGNED SIZE CODES OR COVER CODES.

TABLE VII

| HOSE<br>SIZE<br>(REF) | SPHERICAL BALL SIZE<br>FOR DETERMINING<br>MINIMUM I.D. 5 |            |
|-----------------------|----------------------------------------------------------|------------|
|                       | MS19059-<br>DASH NO.                                     | DIA<br>IN. |
| -04                   | 1006                                                     | .094       |
| -06                   | 1013                                                     | .219       |
| -08                   | 1015                                                     | .281       |
| -10                   | 1018                                                     | .375       |
| -12                   | 1624                                                     | .562       |
| -16                   | 1631                                                     | .781       |
| -20                   | 1638                                                     | 1.001      |
| -24                   | 1642                                                     | 1.250      |

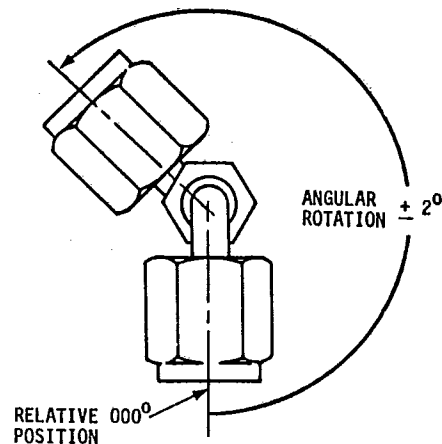


Figure 3

(A)

## AEROSPACE STANDARD

HOSE ASSEMBLY, CONVOLUTED,  
TETRAFLUOROETHYLENE  
FLAMELESS, 50° TO 80°  
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