FEDERAL SUPPLY CLASS
4720

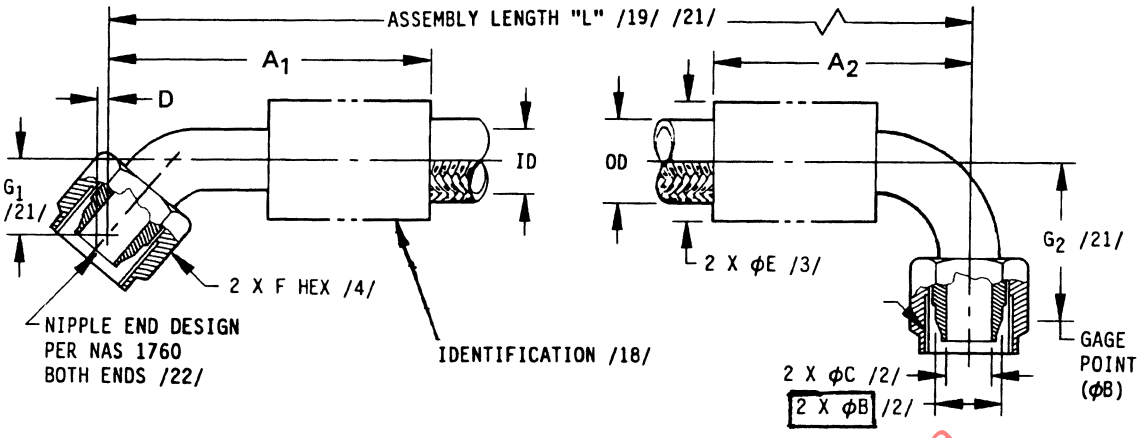


FIGURE 1 - HOSE ASSEMBLY

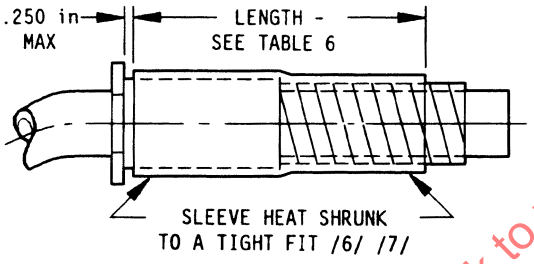


FIGURE 2 - ABRASION SLEEVE ATTACHMENT

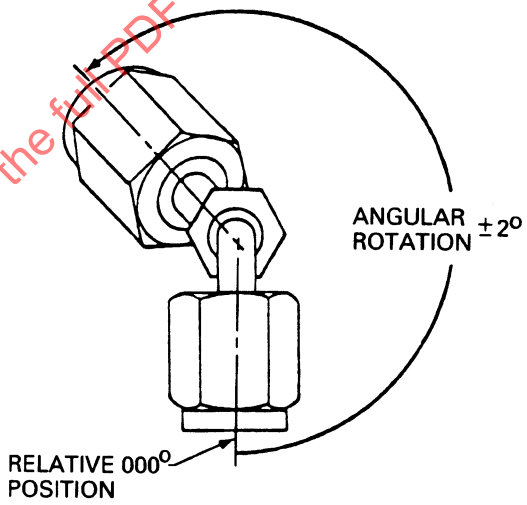


FIGURE 3 - FITTING ANGULAR POSITION /15/

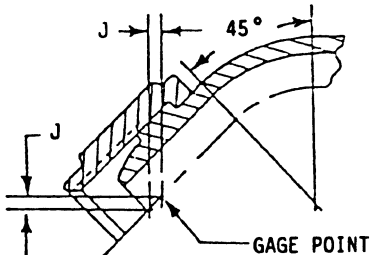
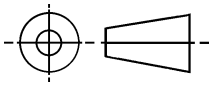


FIGURE 4 - SEE TABLE 7

THIRD ANGLE PROJECTION



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AEROSPACE STANDARD

(R) HOSE ASSEMBLY, POLYTETRAFLUOROETHYLENE, METAL BRAID, MEDIUM PRESSURE, FLARELESS, 45° TO 90°

AS651
SHEET 1 OF 7

REV. A

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AEROSPACE STANDARD

(R) HOSE ASSEMBLY, POLYTETRAFLUOROETHYLENE, METAL BRAID, MEDIUM PRESSURE, FLARELESS, 45° TO 90°

TABLE 1 - DIMENSIONS

BASIC NUMBER AS651 SIZE CODE /26/	(NOMINAL TUBE DIA)	(T) THREAD PER AS8879	ID MIN	A_1 MAX	A_2 MAX	B BASIC	C MIN /2/	(D)	E MAX WITHOUT SLEEVING /3/	(F) HEX ACROSS FLATS	G_1 MIN	G_1 MAX	G_2 MIN	G_2 MAX	BALL SIZE MIN THRU DIA /2/ MS19059 DASH NO.	BALL SIZE MIN THRU DIA /2/
D	.188	.3750-24UNJF-3B	.110	1.66	1.34	.2340	.049	.10	.49	.500	.352	.477	.636	.761	4804	.049
E	.250	.4375-20UNJF-3B	.173	1.73	1.41	.2930	.094	.11	.55	.562	.360	.485	.643	.768	4806	.094
F	.313	.5000-20UNJF-3B	.235	1.91	1.58	.3500	.156	.11	.63	.625	.387	.512	.730	.917	4810	.156
G	.375	.5625-18UNJF-3B	.298	2.12	1.70	.4120	.219	.12	.70	.688	.464	.589	.836	1.023	4813	.219
H	.500	.7500-16UNJF-3B	.391	2.38	1.96	.5600	.281	.13	.83	.875	.497	.744	.968	1.218	4815	.281
J	.625	.8750-14UNJF-3B	.485	2.85	2.37	.6730	.375	.14	.97	1.000	.576	.822	1.279	1.529	4818	.375
K	.750	1.0625-12UNJ-3B	.615	3.12	2.65	.8100	.500	.16	1.17	1.250	.582	.903	1.522	1.772	4822	.500
M	1.000	1.3125-12UNJ-3B	.851	3.50	3.34	1.0620	.750	.21	1.52	1.500	.648	.976	1.541	1.859	4830	.750
N	1.250	1.6250-12UNJ-3B	1.101	4.07	3.67	1.3160	.969	.21	2.00	2.000	.799	1.132	1.931	2.306	4837	.969
P	1.500	1.8750-12UNJ-3B	1.344	4.60	4.19	1.5650	1.188	.26	2.28	2.125	.917	1.307	2.269	2.644	4841	1.188

TABLE 2 - TOLERANCES

HOSE ASSEMBLY LENGTH	TOLERANCE
UNDER 18 in	±.125 in
18 TO 36 in	±.250 in
36 TO 50 in	±.500 in
OVER 50 in	±1%

TABLE 3 - HOSE AND SLEEVE CODES /1/

HOSE OR SLEEVE CODE	SLEEVE MATERIAL	TEMP. LIMIT °F
-	(-) INDICATES HOSE ONLY, NO SLEEVE (AS639)	450
A	ABRASION SLEEVE TUBULAR (PTFE - AS1291 - CODE B) /6/	450
B	ABRASION SLEEVE COIL (NYLON AS1294) /7/	275
C	FIRESLEEVE (AS1072 SIL-FG) (15 min) /8/ /9/ /13/	450
E	ABRASION SLEEVE SHRINK-ON (FEP) /11/	350
F	ABRASION SLEEVE SHRINK-ON (POLYOLEFIN AS1073 - CODE B) /11/	275
G	FIRESLEEVE (AS1072 SIL-FG) (5 min) /8/ /9/ /12/	450
H	FIRESLEEVE INTEGRAL SILICONE (AS1723) (15 min) /13/	450
J	FIRESLEEVE INTEGRAL SILICONE (5 min) /12/	450
K	INTEGRAL ABRASION SLEEVE (BRAIDED) POLYESTER /10/	300
L	ABRASION SLEEVE COIL (PTFE - AS1293) /7/	450

TABLE 4 - HOSE AND SLEEVE OUTSIDE DIAMETERS

HOSE OR SLEEVE CODE	TOLERANCE	HOSE SIZE /5/ .188	HOSE SIZE /5/ .250	HOSE SIZE /5/ .313	HOSE SIZE /5/ .375	HOSE SIZE /5/ .500	HOSE SIZE /5/ .625	HOSE SIZE /5/ .750	HOSE SIZE /5/ 1.000	HOSE SIZE /5/ 1.250	HOSE SIZE /5/ 1.500
-	MAX	.285	.343	.406	.469	.585	.687	.812	1.140	1.390	1.707
	MIN	.234	.304	.367	.430	.546	.641	.766	1.078	1.328	1.637
A	MAX	.390	.473	.524	.620	.715	.818	.955	1.295	1.550	1.841
	MIN	.320	.393	.454	.515	.645	.748	.870	1.210	1.450	1.771
B	MAX	.339	.409	.472	.535	.669	.767	.896	1.224	1.474	1.807
	MIN	.260	.330	.393	.456	.590	.681	.810	1.122	1.372	1.681
C	MAX	.692	.692	.780	.840	.970	1.090	1.220	1.590	1.900	2.190
	MIN	.533	.533	.598	.658	.778	.891	1.016	1.288	1.578	1.887
E	MAX	.301	.375	.438	.507	.635	.749	.887	1.228	1.440	1.761
	MIN	.248	.320	.383	.452	.578	.679	.811	1.146	1.358	1.667
F	MAX	.341	.411	.474	.547	.663	.769	.904	1.244	1.482	1.823
	MIN	.278	.348	.411	.484	.600	.699	.834	1.158	1.396	1.729
G	MAX	.692	.692	.780	.840	.970	1.090	1.220	1.590	1.900	2.190
	MIN	.533	.533	.598	.658	.778	.908	1.038	1.288	1.658	1.898
H	MAX	.641	.641	.704	.766	.891	1.016	1.141	1.454	1.704	2.016
	MIN	.537	.594	.657	.719	.844	.969	1.074	1.394	1.649	1.959
J	MAX	.641	.641	.704	.766	.891	1.016	1.141	1.454	1.704	2.016
	MIN	.532	.594	.657	.719	.844	.969	1.074	1.394	1.649	1.959
K	MAX	.378	.430	.499	.559	.665	.772	.887	1.210	1.460	1.782
	MIN	.320	.390	.450	.510	.625	.726	.841	1.148	1.398	1.712
L	MAX	.375	.445	.508	.571	.687	.789	.914	1.242	1.492	1.809
	MIN	.267	.333	.407	.470	.586	.681	.828	1.138	1.388	1.697

TABLE 5 - MAXIMUM WEIGHT

HOSE OR SLEEVE CODE OR FITTING		UNITS	HOSE SIZE .188	HOSE SIZE .250	HOSE SIZE .313	HOSE SIZE .375	HOSE SIZE .500	HOSE SIZE .625	HOSE SIZE .750	HOSE SIZE 1.000	HOSE SIZE 1.250	HOSE SIZE 1.500
-		LB/IN	.005	.007	.008	.010	.012	.016	.020	.045	.058	.074
A		LB/IN	.003	.004	.004	.006	.007	.008	.010	.014	.020	.031
B		LB/IN	.001	.001	.002	.002	.003	.004	.004	.005	.006	.009
C		LB/IN	.009	.009	.011	.012	.017	.018	.028	.030	.040	.037
E		LB/IN	.001	.002	.002	.002	.003	.004	.006	.007	.007	.008
F		LB/IN	.002	.001	.001	.002	.003	.003	.004	.006	.006	.007
G		LB/IN	.009	.009	.011	.012	.017	.018	.028	.030	.040	.037
H		LB/IN	.018	.018	.023	.024	.032	.038	.045	.079	.100	.124
J		LB/IN	.018	.018	.023	.024	.032	.038	.045	.079	.100	.124
K		LB/IN	.006	.009	.011	.014	.018	.022	.027	.051	.063	.081
L		LB/IN	.003	.004	.004	.005	.008	.009	.011	.018	.022	.028
FIRESLEEVE CLAMP		LB/EA	.015	.016	.018	.019	.021	.023	.025	.029	.033	.037
FITTING END 45° /26/	LB	CLASS I	.051	.065	.080	.112	.172	.266	.360	.590	1.110	1.540
	EA	CLASS II	--	--	--	.055	.080	.110	.165	.275	.470	.640
FITTING END 90° /26/	LB	CLASS I	.053	.065	.080	.099	.231	.328	.425	.659	1.419	1.854
	EA	CLASS II	--	--	--	.055	.080	.110	.165	.290	.485	.685

TABLE 6 - SLEEVE LENGTH

HOSE SIZE	LENGTH
.188, .250, .313, .375	2.00 ± .25
.500, .625	2.50 ± .25
.750, 1.000	3.00 ± .25
1.250, 1.500	4.00 ± .25

TABLE 7 - DIMENSION J (SEE FIGURE 4)

SIZE CODE	J
3	.060
4	.044
5	.041
6	.042
8	.045
10	.055
12	.049
16	.093
20	.064
24	.095

NOTES:

/1/ MATERIALS AND FINISH:

a. MATERIALS:

1. HOSE PER AS639
2. FITTINGS:
   a. CLASS I: ALL CRES OR TITANIUM COMBINATION (450 °F MAX)
   b. CLASS II: COMBINATION ALUMINUM ALLOY AND CRES (275 °F MAX), SIZE 08 AND LARGER
3. BARS AND FORGINGS:
   a. CRES
      1. 304 PER AMS 5639
      2. 321 PER AMS 5645
      3. 347 PER AMS 5646
      4. 17-4 PH PER AMS 5643
      5. 17-7 PH PER AMS 5644
      6. AM-355 PER AMS 5743
   b. ALUMINUM:
      1. 2014-T6 PER AMS 4121
      2. 2024-T6 PER AMS 4112
      3. 6061-T6/T651 PER AMS 4117
      4. 6061-T6 PER AMS 4127
   c. TITANIUM:
      1. 6A1-4V PER AMS 4928
4. TUBING:
   a. ALUMINUM:
      1. 5052 PER AMS 4069
      2. 6061 PER AMS 4082
   b. CRES:
      1. 304 PER AMS 5567
      2. 321 OR 347 PER AMS 5556 OR AMS 5557, AS APPLICABLE
   c. TITANIUM:
      1. 3A1-2.5V PER AMS 4945
      2. 6A1-4V PER AMS 4965
5. SLEEVES: SEE APPLICABLE CODE IN TABLE 3

b. FINISH:

1. ALUMINUM: ANODIZE PER MIL-A-8625, TYPE II, CLASS 2, COLOR YELLOW
2. CRES: PASSIVATED PER AS1946 OR AMS-QQ-P-35, TYPE VII
3. TITANIUM: FLUORIDE PHOSPHATE COATED PER AMS 2486

/2/ A TRUE CIRCULAR CROSS SECTION IS NOT REQUIRED THROUGH THE FITTING ID. HOWEVER, THE APPLICABLE BALL DIAMETER LISTED IN TABLE 1 SHALL PASS THROUGH THE END FITTING AFTER IT IS ASSEMBLED TO THE HOSE.

/3/ DISTANCE ACROSS CORNERS OF THE COUPLING NUT MAY EXCEED THIS DIMENSION.

/4/ STANDARD COUPLING NUTS SHALL BE IN ACCORDANCE WITH AS21921, MS27073 OR AS4370, AND MATE WITH AS33514 FITTING ENDS. NONSTANDARD COUPLING NUTS MAY BE USED, PROVIDED THEY ARE DIMENSIONALLY AND FUNCTIONALLY EQUIVALENT, AND PROVIDED THEY CANNOT BE REMOVED FROM THE FITTING. NUTS SHALL MEET TORQUE TEST REQUIREMENTS PER AS1946.

/5/ DIAMETERS ARE LISTED FOR CLAMP SELECTION. TUBULAR SLEEVES MAY NOT BE A PERFECT ROUND AND SHALL BE MEASURED WITH A DIAMETER TAPE RULE (OFTEN REFERRED TO AS A PI-TAPE).

/6/ TUBULAR ABRASION (PTFE) SLEEVES SHALL HAVE AN ID NO GREATER THAN HOSE OD +.05 in. AXIAL MOVEMENT OF THE SLEEVE INSTALLED ON THE HOSE SHALL NOT EXCEED .05 in. ENDS OF THE TUBULAR SLEEVE SHALL BE TERMINATED WITH A LENGTH OF AMS-DTL-23053/11 (FEP) CLASS 1 OR 2, COLOR CLEAR, PER TABLE 6 AND FIGURE 2.

/7/ COIL ABRASION SLEEVES, WHEN ASSEMBLED ON A STRAIGHT HOSE, SHALL HAVE AN AVERAGE GAP BETWEEN COILS NOT EXCEEDING .05 in. DISPLACEMENT OF THE COILS OF THE SLEEVE, CAUSING A GREATER GAP, SHALL NOT BE A CAUSE FOR REJECTION IF THE COILS CAN BE REPOSITIONED TO MEET THE GAP REQUIREMENTS. ENDS OF THE COIL SLEEVE SHALL BE TERMINATED WITH A LENGTH OF HEAT SHRINKABLE SLEEVING IN ACCORDANCE WITH TABLE 6 AND FIGURE 2. CODE “B” (NYLON COIL) ABRASION SLEEVES SHALL BE TERMINATED WITH AMS-DTL-23053/5 CLASS 1 OR 3, COLOR BLACK. CODE “L” (COIL ABRASION) SLEEVES SHALL BE TERMINATED WITH AMS-DTL-23053/12, CLASS 1, COLOR TRANSPARENT, PTFE. (OPTIONAL AMS-DTL-23053/11 (FEP) CLASS 1 OR 2, COLOR CLEAR.)