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REV.
A

SAE AS4356

FEDERAL SUPPLY CLASS
4720

RATIONALE

AS4356A HAS BEEN REAFFIRMED TO COMPLY WITH THE SAE FIVE-YEAR REVIEW POLICY.

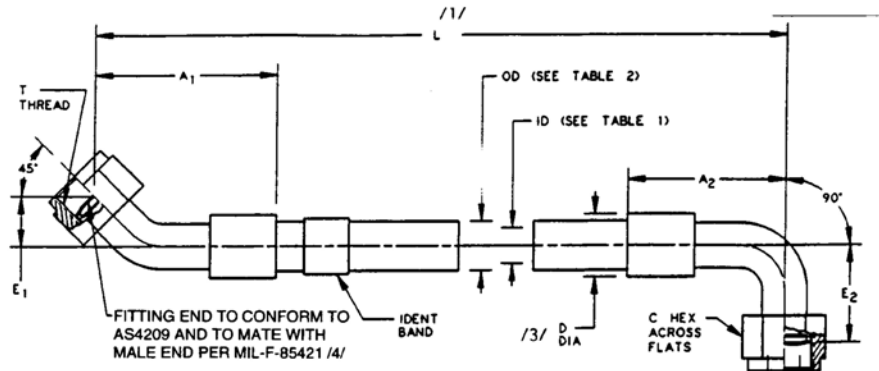


FIGURE 1A

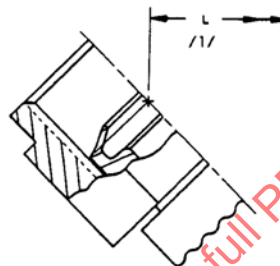


FIGURE 1B
(ENLARGED VIEW)

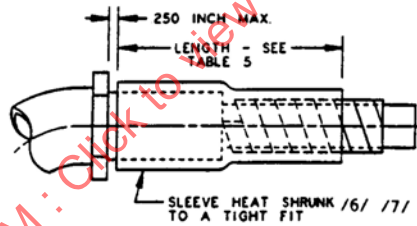


FIGURE 2

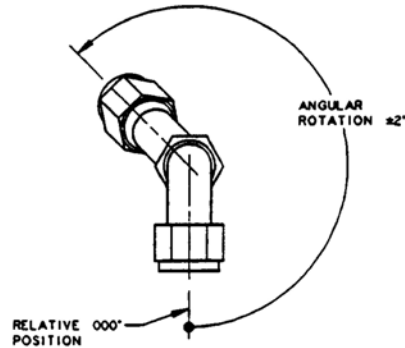
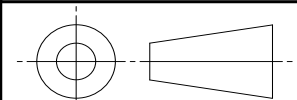


FIGURE 3

SAE values your input. To provide feedback
on this Technical Report, please visit
<http://www.sae.org/technical/standards/AS4356A>

THIRD ANGLE PROJECTION



CUSTODIAN: G-3/G-3D

PROCUREMENT SPECIFICATION: AS604

SAE Aerospace
An SAE International Group

AEROSPACE STANDARD

HOSE ASSEMBLY, POLYTETRAFLUOROETHYLENE,
CRES REINFORCED, 400 °F, 3000 psi, HEAVYWEIGHT,
BEAM SEAL, 45° TO 90°

SAE AS4356
SHEET 1 OF 5

**REV.
A**

AEROSPACE STANDARD

HOSE ASSEMBLY, POLYTETRAFLUOROETHYLENE,
CRES REINFORCED, 400 °F, 3000 psi, HEAVYWEIGHT,
BEAM SEAL, 45° TO 90°

(R) TABLE 1

HOSE ASSEMBLY NO. AND SIZE CODE	SIZE REF	THREAD T PER MIL-S-8879 REF	I.D. MIN	A ₁ MAX	A ₂ MAX	B		D /3/ DIA MAX WITHOUT SLEEVING	E ₁ MIN	E ₂ MAX
						BALL SIZE MIN THRU DIA /2/ MS19059 DASH NO.	B THRU DIA /2/ DIA IN			
AS4356E	.250	4375 - 24UNJS-3B	.212	2.31	2.02	4807	.109	.88	.450	.795
AS4356G	.375	.5625 - 20UNJS-3B	.298	2.59	2.25	4812	.188	1.00	.517	1.000
AS4356H	.500	.7188 - 20UNJS-3B	.391	2.92	2.38	4816	.313	1.20	.513	1.033
AS4356J	.625	.8438 - 18UNJS-3B	.485	3.36	2.94	4818	.375	1.41	.620	1.258
AS4356K	.750	1.0000 - 16UNJS-3B	.602	3.67	3.57	4821	.489	1.69	.760	1.530
AS4356M	1.000	1.2500 - 14UNJS-3B	.852	4.47	4.10	4829	.719	2.00	.890	1.860
AS4356N /15/	1.250	1.5781 - 14UNJS-3B	1.101	4.29	4.13	4834	.875	2.10	.881	2.002

TABLE 2

SLEEVE CODE	SLEEVE MATERIAL	TEMP. LIMIT °F	HOSE OR		HOSE OR		HOSE OR		HOSE OR		HOSE OR		HOSE OR	
			SLEEVE DIAMETER (MAX-MIN) /5/	SIZE /5/	SLEEVE DIAMETER (MAX-MIN) /5/	SIZE /5/	SLEEVE DIAMETER (MAX-MIN) /5/	SIZE /5/	SLEEVE DIAMETER (MAX-MIN) /5/	SIZE /5/	SLEEVE DIAMETER (MAX-MIN) /5/	SIZE /5/	SLEEVE DIAMETER (MAX-MIN) /5/	SIZE /5/
-	(-) INDICATES HOSE ONLY, NO SLEEVE	400	.465/.395	.595/.535	.735/.675	.855/.770	.935/.875	1.090/1.030	.750	1.000	1.410/1.350	1.650/1.560	1.825/1.755	2.000/1.875
A	ABRASION SLEEVE TUBULAR (TFE-AS1291-CODE B) /6/	400	.540/.468	.715/.615	.855/.770	1.025/.960	1.195/1.125	1.515/1.445	1.195/1.125	1.492/1.257	1.750/1.690	2.000/1.875	2.250/2.000	2.500/2.250
B	ABRASION SLEEVE COIL (NYLON AS1294) /7/	275	.509/.413	.684/.584	.809/.721	1.005/.906	1.170/1.062	1.492/1.257	1.170/1.062	1.492/1.257	1.750/1.690	2.000/1.875	2.250/2.000	2.500/2.250
C	FIRE SLEEVE (AS1072 SIL-FG) (15 min) /8/ /9/ /13/	400	.808/.562	.875/.750	1.058/.875	1.250/1.125	1.495/1.250	1.750/1.590	1.495/1.250	1.750/1.590	2.000/1.875	2.250/2.000	2.500/2.250	2.750/2.500
E	ABRASION SLEEVE SHRINK-ON (FEP) /11/	350	.520/.417	.655/.592	.797/.727	.995/.927	1.160/1.086	1.450/1.251	1.160/1.086	1.450/1.251	1.698/1.632	1.948/1.882	2.198/2.132	2.448/2.382
F	ABRASION SLEEVE SHRINK-ON (POLYOLEFIN AS1073 - CODE B) /11/	275	.520/.440	.670/.590	.795/.731	.997/.920	1.174/1.086	1.482/1.251	1.174/1.086	1.482/1.251	1.740/1.680	1.990/1.930	2.240/2.180	2.490/2.430
G	FIRE SLEEVE (AS1072 SIL-FG) (5 min) /8/ /9/ /12/	400	.808/.562	.875/.750	1.058/.875	1.250/1.125	1.495/1.250	1.750/1.590	1.495/1.250	1.750/1.590	2.000/1.875	2.250/2.000	2.500/2.250	2.750/2.500
H	FIRE SLEEVE INTEGRAL SILICONE (15 min) /13/ /14/	400	.700/.640	.880/.820	1.000/.940	1.203/1.143	1.343/1.283	1.656/1.596	1.343/1.283	1.656/1.596	1.906/1.846	2.156/2.096	2.406/2.346	2.656/2.596
J	FIRE SLEEVE INTEGRAL SILICONE (5 min) /12/	400	.705/.645	.880/.820	1.005/.945	1.217/1.143	1.362/1.280	1.748/1.593	1.362/1.280	1.748/1.593	1.998/1.943	2.248/2.193	2.498/2.443	2.748/2.693
K	INTEGRAL ABRASION SLEEVE (BRAIDED) POLYESTER /10/	300	.505/.480	.675/.645	.795/.765	.985/.955	1.150/1.120	1.470/1.440	.985/.955	1.283/1.253	1.533/1.503	1.783/1.753	2.033/1.903	2.283/2.153
L	ABRASION SLEEVE COIL (PTFE-AS1293) /7/	400	.522/.449	.692/.605	.831/.747	1.015/.937	1.172/1.086	1.492/1.281	1.172/1.086	1.492/1.281	1.750/1.690	2.000/1.940	2.250/2.190	2.500/2.440

TABLE 3

HOSE ASSEMBLY LENGTH	AVAILABLE INCREMENTS	TOLERANCE
UNDER 18 in	(NOT LESS THAN) .125 in	±.125 in
18 TO 36 in	(NOT LESS THAN) .250 in	±.250 in
36 TO 50 in	(NOT LESS THAN) .500 in	±.500 in
OVER 50 in	(NOT LESS THAN) 1.000 in	±1%

TABLE 4

HOSE OR SLEEVE CODE	HOSE OR TYPE SLEEVE	UNITS	MAXIMUM WEIGHT LB/IN ¹	MAXIMUM WEIGHT LB/IN ¹	MAXIMUM WEIGHT LB/IN ¹	MAXIMUM WEIGHT LB/IN ¹	MAXIMUM WEIGHT LB/IN ¹	MAXIMUM WEIGHT LB/IN ¹	MAXIMUM WEIGHT LB/IN ¹
			HOSE SIZE .250	HOSE SIZE .375	HOSE SIZE .500	HOSE SIZE .625	HOSE SIZE .750	HOSE SIZE 1.000	HOSE SIZE 1.250
-	HOSE ONLY	LB/IN	.012	.028	.040	.062	.086	.140	.154
A	ABRASION SLEEVE (TFE-AS1291-B)	LB/IN	.003	.004	.004	.005	.007	.009	.011
B	ABRASION SLEEVE (NYLON AS1294)	LB/IN	.001	.002	.003	.003	.004	.005	.007
C	FIRESLEEVE (15 min) AS1072	LB/IN	.007	.010	.011	.015	.017	.021	.025
E	ABRASION SLEEVE (FEP)	LB/IN	.002	.003	.003	.005	.006	.007	.009
F	ABRASION SLEEVE (AS1073B)	LB/IN	.002	.003	.003	.004	.005	.006	.008
G	FIRESLEEVE (5 min) AS1072	LB/IN	.007	.010	.011	.015	.017	.021	.025
H	FIRESLEEVE INTEGRAL (15 min) ON HOSE	LB/IN	.022	.042	.056	.081	.102	.154	.190
J	FIRESLEEVE INTEGRAL (5 min) ON HOSE	LB/IN	.022	.042	.056	.081	.102	.154	.190
K	ABRASION SLEEVE POLYESTER WITH HOSE	LB/IN	.013	.028	.039	.060	.082	.130	.160
L	ABRASION SLEEVE (PTFE-AS1293)	LB/IN	.003	.004	.005	.005	.006	.007	.009
NONE	FIRESLEEVE CLAMP ¹	LB/EA	.020	.020	.025	.026	.026	.033	.038
NONE	FITTING END (45°) ¹	LB/EA	.071	.122	.185	.266	.435	.715	1.310
NONE	FITTING END (90°) ¹	LB/EA	.089	.180	.235	.310	.460	.735	1.330

¹ FIRESLEEVE CLAMP AND FITTING END ARE IN LB EACH.

TABLE 5

HOSE SIZE	LENGTH (INCHES)
.250	2.00 ± .25
.375	2.00 ± .25
.500	2.50 ± .25
.625	2.50 ± .25
.750	3.00 ± .25
1.000	3.00 ± .25
1.250	3.50 ± .25

FLAG NOTES:

- /1/ LENGTH "L" IS A THREE DIGIT NUMBER OF WHICH THE FIRST TWO DIGITS DESCRIBE THE HOSE ASSEMBLY LENGTH IN WHOLE INCHES, AND THE THIRD DIGIT, THE FRACTION OF AN INCH IN EIGHTHS. LENGTH "L" IS MEASURED FROM OUTER CORNER OF SEALING SURFACE AS SHOWN IN FIGURE 1B FOR 45° FITTINGS TO THE CENTERLINE OF THE ELBOW FOR 90° FITTINGS. FOR LENGTH INCREMENTS AND TOLERANCES SEE TABLE 3.
- /2/ A TRUE CIRCULAR CROSS SECTION IS NOT REQUIRED THROUGH THE FITTING I.D. 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 MATE WITH MIL-F-85421 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 AS604 EXCEPT TORQUE VALUES SHALL BE PER MIL-F-85421.
- /5/ DIAMETERS ARE LISTED FOR CLAMP SELECTION. TUBULAR SLEEVES MAY NOT BE A PERFECT ROUND AND SHALL BE MEASURED WITH A DIAMETER TAPE RULER (OFTEN REFERRED TO AS PI-TAPE).
- /6/ TUBULAR ABRASION (TFE) SLEEVES SHALL HAVE AN I.D. NO GREATER THAN HOSE O.D. +.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 M23053/11 (FEP) CLASS 1 OR 2, COLOR CLEAR, PER TABLE 5 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 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 5 AND FIGURE 2, COLOR BLACK. CODE "L" (COIL ABRASION) SLEEVES SHALL BE TERMINATED WITH M23053/5, CLASS 1, COLOR TRANSPARENT. CODE "L" (COIL ABRASION) SLEEVES SHALL BE TERMINATED WITH M23053/12, CLASS 1, COLOR TRANSPARENT, PTFE. (OPTIONAL M23053/11 (FEP) CLASS 1 OR 2, COLOR CLEAR.)
- /8/ THE TABLE 2 SLEEVE DIAMETERS FOR AS1072 SLEEVES APPLY WHEN THE SLEEVE IS COMPRESSED, OR CLAMPED, TO CONTACT THE HOSE. IN THIS CASE A WRINKLE MAY OCCUR OVER APPROXIMATELY 10% OF THE SLEEVE CIRCUMFERENCE.
- /9/ 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 FIRESLEEVE, WHICH EXPOSE THE FIBERGLASS, SHALL BE COATED WITH RTV SILICONE RUBBER.
- /10/ INTEGRAL ABRASION SLEEVE SHALL FORM AN INTEGRAL, PERMANENT PART OF THE HOSE AND SHALL TERMINATE A MAXIMUM OF .125 in FROM THE END OF THE COLLAR.
- /11/ FEP PER M23053/11 AND POLYOLEFIN PER AS1073 SHRINK ABRASION SLEEVES SHALL BE SHRUNK TO A SNUG FIT OVER THE HOSE AND END FITTING COLLARS.
- /12/ ADD "AS1055 TYPE Iib CLASS A-S/P" TO IDENTIFICATION MARKING TO SHOW LEVEL OF COMPLIANCE, "FIRE RESISTANT" (5 min), WITH AS1055.
- /13/ ADD "AS1055 TYPE Iib CLASS B-S/P" TO IDENTIFICATION MARKING TO SHOW LEVEL OF COMPLIANCE, "FIRE PROOF" (15 min), WITH AS1055.
- /14/ THE ENDS OF THE INTEGRAL FIRESLEEVE SHALL BE COVERED WITH SILICONE EXTENDING OVER THE END FITTING SOCKET.
- /15/ PREVIOUS TO THIS STANDARD, THE SIZE 20 END FITTING WAS ORIGINALLY DESIGNATED AS SIZE 21 PROCURED TO INDIVIDUAL MANUFACTURER STANDARDS. THE ORIGINAL -20 THREAD SIZE 1.5156 -14 UNJS DOES NOT EXIST AS A STANDARD PART AND MUST BE PROCURED TO THE ORIGINAL MANUFACTURER'S DRAWINGS. CAUTION MUST BE EXERCISED WHEN PURCHASING -20 SIZE REPLACEMENT PARTS FOR ORIGINAL EQUIPMENT BECAUSE THE -20 SIZE IN THIS SPECIFICATION WILL NOT MATE TO THE OLDER DESIGNS.

GENERAL NOTES:

- 1. MATERIALS: HOSE AND FITTINGS - PER AS604.
- 2. THIS HOSE ASSEMBLY SHALL BE QUALIFIED IN ACCORDANCE WITH PROCUREMENT SPECIFICATION AS604. USERS OF THIS STANDARD ARE ADVISED TO CONTROL SOURCE APPROVAL(S) BY STANDARD PAGE SUPPLEMENT SHEET OR SIMILAR MEANS.

 An SAE International Group	AEROSPACE STANDARD		SAE AS4356 SHEET 4 OF 5	REV. A
	HOSE ASSEMBLY, POLYTETRAFLUOROETHYLENE, CRES REINFORCED, 400 °F, 3000 psi, HEAVYWEIGHT, BEAM SEAL, 45° TO 90°			