

REV.
B

AS647

FEDERAL SUPPLY CLASS
4720

RATIONALE

THIS DOCUMENT HAS BEEN REAFFIRMED TO COMPLY WITH THE SAE 5-YEAR REVIEW POLICY.

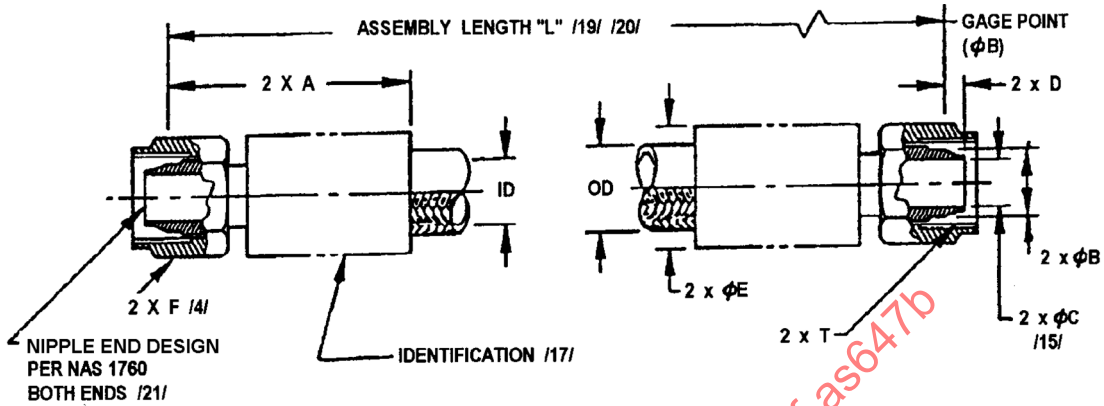


FIGURE 1 - HOSE ASSEMBLY

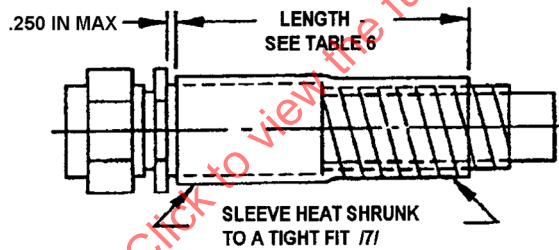


FIGURE 2 - ABRASION SLEEVE ATTACHMENT

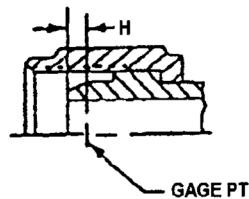
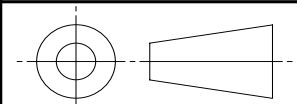


FIGURE 3 - GAGE POINT - SEE TABLE 7 (19/)

THIRD ANGLE PROJECTION



CUSTODIAN: SAE G-3/G-3D

PROCUREMENT SPECIFICATION: (14/ AS1946

SAE Aerospace
An SAE International Group

AEROSPACE STANDARD

(R) HOSE ASSEMBLY, POLYTETRAFLUOROETHYLENE,
METAL BRAID, MEDIUM PRESSURE, FLARELESS,
STRAIGHT TO STRAIGHT

AS647
SHEET 1 OF 8

**REV.
B**

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ISSUED 1992-06 REVISED 2003-09 REAFFIRMED 2007-07

TABLE 1 - DIMENSIONS

Hose Assembly No. & Size /24/	Hose Size (ref)	Fitting Type /25/	Fitting Material /24/ /26/	Thread T per AS8879 (ref)	Hose ID Min (ref)	A Max	B Gage Basic	C Dia Min /15/	Min Ball Dia /15/	D (ref)	E Max Without Slewing /16/	F Hex (ref)
AS647D (-03)	.188	---	---	---	---	---	---	---	---	---	---	---
AS647D (-03)	.188	S	CRES AL TI	.3750-24UNJF-3B .3750-24UNJF-3B .3750-24UNJF-3B	.110 .110 .110	1.20 1.20 1.20	.2340 .2340 .2340	.080 .080 .080	.072 .072 .072	.14 .14 .14	.49 .49 .49	.500 .500 .500
AS647D (-03)	.188	E	CRES AL TI	.4375-20UNJF-3B .4375-20UNJF-3B .4375-20UNJF-3B	.110 .110 .110	1.20 1.20 1.20	.2930 .2930 .2930	.080 .080 .080	.072 .072 .072	.16 .16 .16	.49 .49 .49	.562 .562 .562
AS647E (-04)	.250	R	CRES AL TI	.3750-24UNJF-3B .3750-24UNJF-3B .3750-24UNJF-3B	.173 .173 .173	1.21 1.21 1.21	.2340 .2340 .2340	.080 .080 .080	.072 .072 .072	.14 .14 .14	.55 .55 .55	.500 .500 .500
AS647E (-04)	.250	S	CRES AL TI	.4375-20UNJF-3B .4375-20UNJF-3B .4375-20UNJF-3B	.173 .173 .173	1.21 1.21 1.21	.2930 .2930 .2930	.132 .132 .132	.119 .119 .119	.16 .16 .16	.55 .55 .55	.562 .562 .562
AS647E (-04)	.250	E	CRES AL TI	.5000-20UNJF-3B .5000-20UNJF-3B .5000-20UNJF-3B	.173 .173 .173	1.23 1.23 1.23	.3500 .3500 .3500	.132 .132 .132	.119 .119 .119	.16 .16 .16	.55 .55 .55	.625 .625 .625
AS647F (-05)	.313	R	CRES AL TI	.4375-20UNJF-3B .4375-20UNJF-3B .4375-20UNJF-3B	.235 .235 .235	1.33 1.33 1.33	.2930 .2930 .2930	.132 .132 .132	.119 .119 .119	.16 .16 .16	.63 .63 .63	.562 .562 .562
AS647F (-05)	.313	S	CRES AL TI	.5000-20UNJF-3B .5000-20UNJF-3B .5000-20UNJF-3B	.235 .235 .235	1.35 1.35 1.35	.3500 .3500 .3500	.193 .193 .193	.174 .174 .174	.16 .16 .16	.63 .63 .63	.625 .625 .625
AS647F (-05)	.313	E	CRES AL TI	.5625-18UNJF-3B .5625-18UNJF-3B .5625-18UNJF-3B	.235 .235 .235	1.36 1.36 1.36	.4120 .4120 .4120	.193 .193 .193	.174 .174 .174	.16 .16 .16	.63 .63 .63	.688 .688 .688
AS647G (-06)	.375	R	CRES AL TI	.5000-20UNJF-3B .5000-20UNJF-3B .5000-20UNJF-3B	.298 .298 .298	1.42 1.42 1.42	.3500 .3500 .3500	.193 .193 .193	.174 .174 .174	.16 .16 .16	.70 .70 .70	.625 .625 .625
AS647G (-06)	.375	S	CRES AL TI	.5625-18UNJF-3B .5625-18UNJF-3B .5625-18UNJF-3B	.298 .298 .298	1.45 1.45 1.45	.4120 .4120 .4120	.256 .256 .256	.230 .230 .230	.16 .16 .16	.70 .70 .70	.688 .688 .688
AS647G (-06)	.375	E	CRES AL TI	.7500-16UNJF-3B .7500-16UNJF-3B .7500-16UNJF-3B	.298 .298 .298	1.57 1.57 1.57	.5600 .5600 .5600	.256 .256 .256	.230 .230 .230	.19 .19 .19	.70 .70 .70	.875 .875 .875
AS647H (-08)	.500	R	CRES AL TI	.5625-18UNJF-3B .5625-18UNJF-3B .5625-18UNJF-3B	.391 .391 .391	1.52 1.52 1.52	.4120 .4120 .4120	.256 .256 .256	.230 .230 .230	.16 .16 .16	.83 .83 .83	.688 .688 .688
AS647H (-08)	.500	S	CRES AL TI	.7500-16UNJF-3B .7500-16UNJF-3B .7500-16UNJF-3B	.391 .391 .391	1.64 1.64 1.64	.5600 .5600 .5600	.340 .340 .340	.306 .306 .306	.19 .19 .19	.83 .83 .83	.875 .875 .875
AS647H (-08)	.500	E	CRES AL TI	.8750-14UNJF-3B .8750-14UNJF-3B .8750-14UNJF-3B	.391 .391 .391	1.71 1.71 1.71	.6730 .6730 .6730	.340 .340 .340	.306 .306 .306	.20 .20 .20	.83 .83 .83	1.000 1.000 1.000
AS647J (-10)	.625	R	CRES AL TI	.7500-16UNJF-3B .7500-16UNJF-3B .7500-16UNJF-3B	.485 .485 .485	1.81 1.81 1.81	.5600 .5600 .5600	.340 .340 .340	.306 .306 .306	.19 .19 .19	.97 .97 .97	.875 .875 .875
AS647J (-10)	.625	S	CRES AL TI	.8750-14UNJF-3B .8750-14UNJF-3B .8750-14UNJF-3B	.485 .485 .485	1.90 1.90 1.90	.6730 .6730 .6730	.430 .430 .430	.387 .387 .387	.20 .20 .20	.97 .97 .97	1.000 1.000 1.000
AS647J (-10)	.625	E	CRES AL TI	1.0625-12UNJ-3B 1.0625-12UNJ-3B 1.0625-12UNJ-3B	.485 .485 .485	1.96 1.96 1.96	.8100 .8100 .8100	.430 .430 .430	.387 .387 .387	.23 .23 .23	.97 .97 .97	1.250 1.250 1.250
AS647K (-12)	.750	R	CRES AL TI	.8750-14UNJF-3B .8750-14UNJF-3B .8750-14UNJF-3B	.615 .615 .615	2.10 2.10 2.10	.6730 .6730 .6730	.430 .430 .430	.387 .387 .387	.20 .20 .20	1.17 1.17 1.17	1.000 1.000 1.000
AS647K (-12)	.750	S	CRES AL TI	1.0625-12UNJ-3B 1.0625-12UNJ-3B 1.0625-12UNJ-3B	.615 .615 .615	2.17 2.17 2.17	.8100 .8100 .8100	.548 .548 .548	.493 .493 .493	.23 .23 .23	1.17 1.17 1.17	1.250 1.250 1.250
AS647K (-12)	.750	E	CRES AL TI	1.3125-12UNJ-3B 1.3125-12UNJ-3B 1.3125-12UNJ-3B	.615 .615 .615	2.27 2.27 2.27	1.0620 1.0620 1.0620	.548 .548 .548	.493 .493 .493	.30 .30 .30	1.17 1.17 1.17	1.500 1.500 1.500

Hose Assembly No. & Size /24/	Hose Size (ref)	Fitting Type /25/	Fitting Material /24/ /26/	Thread T per AS8879 (ref)	Hose ID Min (ref)	A Max	B Gage Basic	C Dia Min /15/	Min Ball Dia /15/	D (ref)	E Max Without Sleaving /16/	F Hex (ref)
AS647M (-16)	1.000	R	CRES	1.0625-12UNJ-3B	.851	2.45	.8100	.548	.493	.230	1.52	1.250
			AL	1.0625-12UNJ-3B	.851	2.45	.8100	.548	.493	.230	1.52	1.250
			TI	1.0625-12UNJ-3B	.851	2.45	.8100	.548	.493	.230	1.52	1.250
AS647M (-16)	1.000	S	CRES	1.3125-12UNJ-3B	.851	2.55	1.0620	.778	.700	.300	1.52	1.500
			AL	1.3125-12UNJ-3B	.851	2.55	1.0620	.778	.700	.300	1.52	1.500
			TI	1.3125-12UNJ-3B	.851	2.55	1.0620	.778	.700	.300	1.52	1.500
AS647M (-16)	1.000	E	CRES	1.6250-12UNJ-3B	.851	2.67	1.3160	.778	.700	.300	1.52	2.000
			AL	1.6250-12UNJ-3B	.851	2.67	1.3160	.778	.700	.300	1.52	2.000
			TI	1.6250-12UNJ-3B	.851	2.67	1.3160	.778	.700	.300	1.52	2.000
AS647N (-20)	1.250	R	CRES	1.3125-12UNJ-3B	1.101	2.25	1.0620	.778	.700	.300	2.00	1.500
			AL	1.3125-12UNJ-3B	1.101	2.25	1.0620	.778	.700	.300	2.00	1.500
			TI	1.3125-12UNJ-3B	1.101	2.25	1.0620	.778	.700	.300	2.00	1.500
AS647N (-20)	1.250	S	CRES	1.6250-12UNJ-3B	1.101	2.48	1.3160	1.000	.900	.300	2.00	2.000
			AL	1.6250-12UNJ-3B	1.101	2.48	1.3160	1.000	.900	.300	2.00	2.000
			TI	1.6250-12UNJ-3B	1.101	2.48	1.3160	1.000	.900	.300	2.00	2.000
AS647N (-20)	1.250	E	CRES	1.8750-12UNJ-3B	1.101	2.55	1.5650	1.000	.900	.370	2.00	2.125
			AL	1.8750-12UNJ-3B	1.101	2.55	1.5650	1.000	.900	.370	2.00	2.125
			TI	1.8750-12UNJ-3B	1.101	2.55	1.5650	1.000	.900	.370	2.00	2.125
AS647P (-24)	1.500	R	CRES	1.6250-12UNJ-3B	1.344	2.85	1.3160	1.000	.900	.300	2.28	2.000
			AL	1.6250-12UNJ-3B	1.344	2.85	1.3160	1.000	.900	.300	2.28	2.000
			TI	1.6250-12UNJ-3B	1.344	2.85	1.3160	1.000	.900	.300	2.28	2.000
AS647P (-24)	1.500	S	CRES	1.8750-12UNJ-3B	1.344	2.85	1.5650	1.250	1.125	.370	2.28	2.125
			AL	1.8750-12UNJ-3B	1.344	2.85	1.5650	1.250	1.125	.370	2.28	2.125
			TI	1.8750-12UNJ-3B	1.344	2.85	1.5650	1.250	1.125	.370	2.28	2.125
AS647P (-24)	1.500	---	---	---	---	---	---	---	---	---	---	---

TABLE 2 - TOLERANCES

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

TABLE 3 - HOSE AND SLEEVE CODES

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	FIRE SLEEVE (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	FIRE SLEEVE (AS1072 SIL-FG) (5 min) /8/ /9/ /12/	450
H	FIRE SLEEVE INTEGRAL SILICONE (AS1723) (15 min) /13/	450
J	FIRE SLEEVE 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	.908	1.038	1.288	1.658	1.898
E	MAX	.301	.375	.438	.507	.635	.749	.887	1.288	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	.949	1.074	1.394	1.649	1.957
J	MAX	.641	.641	.704	.766	.891	1.016	1.141	1.454	1.704	2.016
	MIN	.537	.594	.657	.719	.844	.949	1.074	1.394	1.649	1.957
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 - HOSE WEIGHT MAX - ALL OTHERS REF

HOSE OR SLEEVE CODE OR FITTING	FITTING TYPE /25/	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	.045
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	.002	.002	.002	.003	.003	.005	.006	.006	.007
G		LB/IN	.009	.009	.011	.012	.017	.018	.028	.030	.040	.037
H		LB/IN	.016	.018	.020	.023	.030	.037	.045	.085	.107	.132
J		LB/IN	.016	.017	.018	.021	.027	.035	.042	.079	.100	.123
K		LB/IN	.006	.008	.009	.011	.015	.018	.023	.050	.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 STR /26/ A/D - CRES	R	LB/EA	TBD	TBD	TBD	TBD	TBD	TBD	TBD	TBD	TBD	TBD
	S	LB/EA	.040	.055	.075	.085	.155	.235	.330	.535	.995	1.370
	E	LB/EA	TBD	TBD	TBD	TBD	TBD	TBD	TBD	TBD	TBD	TBD
B/E - AL	R	LB/EA	TBD	TBD	TBD	TBD	TBD	TBD	TBD	TBD	TBD	TBD
	S	LB/EA	---	---	---	.050	.073	.117	.164	.255	.473	.638
	E	LB/EA	TBD	TBD	TBD	TBD	TBD	TBD	TBD	TBD	TBD	TBD
C/F - TI	R	LB/EA	TBD	TBD	TBD	TBD	TBD	TBD	TBD	TBD	TBD	TBD
	S	LB/EA	TBD	TBD	TBD	TBD	TBD	TBD	TBD	TBD	TBD	TBD
	E	LB/EA	TBD	TBD	TBD	TBD	TBD	TBD	TBD	TBD	TBD	TBD

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 H (SEE FIGURE 3) /19/

SIZE CODE	H
3	.085
4	.062
5	.058
6	.059
8	.064
10	.078
12	.069
16	.132
20	.090
24	.134

NOTES:

1. CONSTRUCTION AND PERFORMANCE: AS1946, FITTINGS SHALL BE PERMANENTLY ATTACHED TO THE HOSE.
2. OPERATING CHARACTERISTICS: SEE AS1946.
3. MATERIALS:
 - a. HOSE AND FITTINGS - PER AS1946 /26/
 - b. SLEEVES - SEE APPLICABLE STANDARDS, TABLE 3
- /4/ STANDARD COUPLING NUTS SHALL BE IN ACCORDANCE WITH AS21921, AS1790, OR AS4370 AND MATE WITH AS33514, AS4377 OR AS4375 FITTING ENDS. NONSTANDARD COUPLING NUTS MAY BE USED, PROVIDED THEY ARE FUNCTIONALLY EQUIVALENT, AND PROVIDED THEY CANNOT BE REMOVED FROM THE FITTING. NUTS SHALL MEET THE 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 MEASUREMENT TAPE.
- /6/ THE INSTALLED TUBULAR ABRASION SLEEVES AXIAL MOVEMENT 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 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 FOR BOTH SLEEVES AMS-DTL-23053/11 (FEP) CLASS 1 OR 2, COLOR CLEAR).
- /8/ THE TABLE 4 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 FIRE SLEEVE SHALL BE SEALED USING RTV SILICONE RUBBER, PRIOR TO INSTALLATION, TO PREVENT WICKING OF FLUIDS. THE FIRE SLEEVE 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 SILICONE RUBBER.
- /10/ INTEGRAL ABRASION SLEEVE SHALL FORM AN INTEGRAL, PERMANENT PART OF THE HOSE AND SHALL TERMINATE A MAXIMUM OF .250 FROM THE END OF THE COLLAR.
- /11/ FEP AND POLYOLEFIN SHRINK ABRASION SLEEVES SHALL BE SHRUNK TO A SNUG FIT OVER THE HOSE AND END FITTING COLLARS. SLEEVE SHALL COVER A MINIMUM OF ONE HALF THE COLLAR.
- /12/ ADD "AS1055 TYPE IIb CLASS A-S/P" OR "AS150 TYPE VIIbA" TO IDENTIFICATION MARKING TO SHOW LEVEL OF COMPLIANCE, "FIRE RESISTANT (5 min), WITH AS1055 OR AS150".
- /13/ ADD "AS1055 TYPE IIb CLASS B-S/P" TO IDENTIFICATION MARKING TO SHOW LEVEL OF COMPLIANCE, "FIRE PROOF (15 min), WITH AS1055".
- /14/ THIS HOSE ASSEMBLY SHALL BE QUALIFIED IN ACCORDANCE WITH PROCUREMENT SPECIFICATION AS1946. USERS OF THIS STANDARD SHALL PROCURE THIS PRODUCT FROM ACCREDITED MANUFACTURER(S), OR THEIR ACCREDITED DISTRIBUTOR(S), AS LISTED IN THE PERFORMANCE REVIEW INSTITUTE (PRI) QUALIFIED PRODUCTS LIST PRI-QPL-AS1946 FOR THIS STANDARD.