



AEROSPACE ENGINEERING BULLETIN

HOSE/FITTINGS

AEB
209A

Supersedes
AEB-173 Rev. 2

Aeroquip AE246 High Pressure

with advanced technology
Hi-Pac™ braid reinforcement

featuring:



Up to **50% lighter** in weight



Considerably **smaller** envelope size



50% tighter bend radius



Improved **flexing** characteristics



Proven high **performance**



Sizes: -4, -6, -8, -10, -12

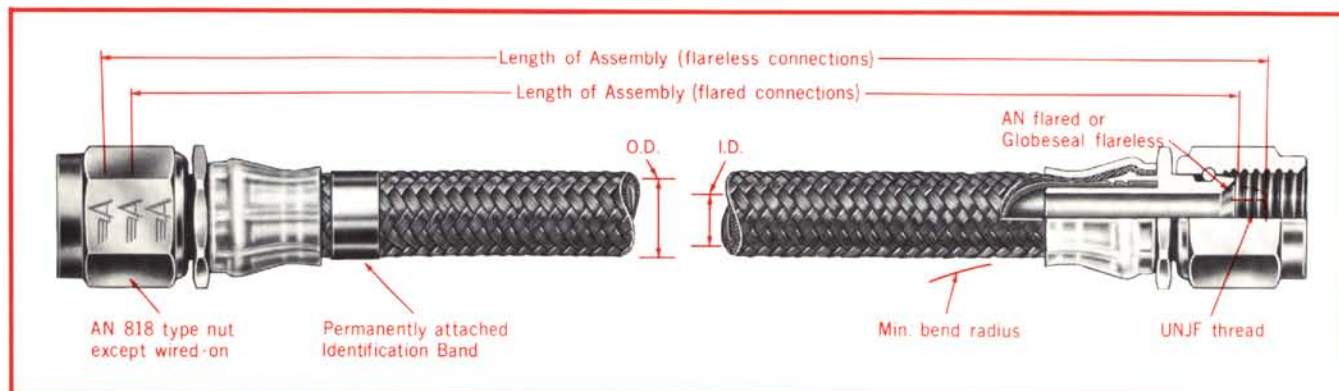


Proven **"super C"™** crimped fittings

Aeroquip AE246 Teflon Hose with Hi-Pac braid—densely packed small diameter wires absorb stress more uniformly resulting in a stronger wire braid with less metal

AE246 High Pressure Teflon Hose and "super-C"[™] Crimp Fittings

Assemblies in accordance with ARP604, ARP1339 and MIL-H-38360 Amendment 1.



Aeroquip advanced technology designed, tested and proved a revolutionary new high pressure Teflon hose. Using the most modern methods of wire braiding calculations and hose stress analysis, Aeroquip engineering developed the AE246 Teflon hose with Hi-Pac braiding. This single wire braid contains densely packed small diameter wires braided over a minimum thickness Teflon tube in such a way that exceptional performance is possible. This hose exceeds all requirements of MIL-H-38360 and has been tested successfully at 4000 psi for up to 600,000 cycles at 400°F. AE246 Hose is now available to the aerospace industry with Aeroquip's full recommendation for normal 3000 psi hydraulic systems and selected 4000 psi hydraulic systems with impulse peaks up to 5000 psi.

AE246 Hose is 40 to 50% lighter in weight than previous high pressure Teflon hose. It also has a much smaller envelope, is visibly smaller in diameter, and has excellent flexing and bend radius characteristics. Aeroquip Teflon hose has low volumetric expansion, assuring maximum response efficiency in ballistic ejection systems, brake systems, etc., where there can be no softness under shock load. Because the tube is smooth and homogeneous, it is able to withstand the high velocity, sudden pressure surges and temperature rises encountered in these systems.

The rate of effusion of gases and resistance to capillary leakage of fluid through the hose lines is controlled by a patented extrusion method used to produce Aeroquip Teflon hose liners. Inherent resiliency and toughness are built into the extruded tube by close control of factors affecting crystallinity. The extruded tube has a tough, smooth, waxlike texture which resists erosion. No materials of a sticky or viscous nature will stick to its surface. It has essentially zero moisture absorption, and this, together with its chemical inertness and anti-adhesive characteristics, make it ideal for missile fluid systems where maintenance of a low dew point is necessary.

Testing Procedures: AE246 Hose was thoroughly tested to meet or exceed the requirements of MIL-H-38360A (Amendment 1 for conductive hose). Tests were conducted at 4000 psi with 5000 psi surge peaks. Two varying levels of vibration were applied at one end while the other end was flexed for 300,000 cycles. Then the ends were reversed and the procedure repeated. Temperatures varied from room temperature to +400°F. The hose was also tested and met the requirements of all other conditions prescribed in this specification including aging tests and salt corrosion testing.

Conductivity: New AE246 Hose has a Teflon tube which is designed to

eliminate electrostatically induced hose failures. The tube is capable of conducting a direct current equal to or greater than 6 micro-amps in sizes -4, -6 and -8; while in size -10 and -12 it will conduct a direct current equal to or greater than 12 micro-amps with a potential of 1,000 volts.

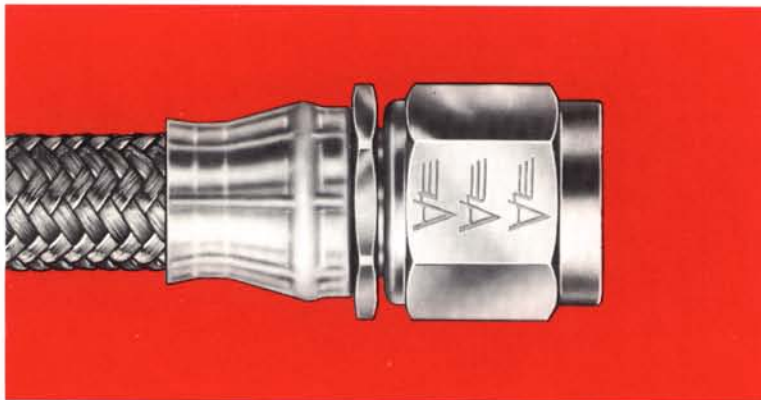


AE246 Hose consists of a thin wall Teflon inner tube and a Hi-Pac outer braid consisting of densely packed small diameter stainless steel wires braided in a uniform pattern. For hose data, see page 3.

Application: High pressure and high temperature service. Teflon hose is unaffected by fuels, lube oils, coolants or solvents commonly used in aircraft applications. Superior vibration resistance, low volumetric expansion and high temperature resistance makes it ideal for hydraulic systems.

Operating temperatures: -67° F. to +400° F., fluid and ambient.

Identification... Identification bands showing specification number, manufacturers code number, operating pressure, assembly data and other required information.

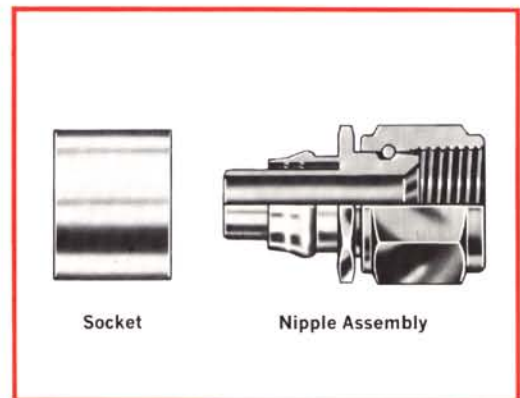


Aeroquip **"super-C"** fittings provide permanent protection against leakage, even after high temperature aging and impulsing to 250,000 cycles or more. Their reliable performance is due to the independence of the sealing function from the retention function. The service proved **"super-C"** fittings also feature corrosion resistant materials and reduced envelope dimensions. Its weight saving construction makes it the lightest fitting available in most sizes.

Standard and Special Styles

"super-C" fittings are available in both flared and flareless types to mate with MS33656 and MS33514 end connections. In addition, elbow fittings are available in standard 45° and 90° styles. Special elbows, crosses, tees, "y"'s, adapters and bosses can be supplied for custom installations.

"super-C" Fitting Standard Material Specifications:	Nut—Cres., QQ-S-763 (304).
	Wire—Cres., AMS5685 (305).
	Nipple—Cres., QQ-S-763 (304).
	Socket—Cres., QQ-S-763 (304).



Two-piece fittings

Aeroquip **"super-C"** permanently attached fittings consist of a nipple assembly and a socket which become an integral assembly when attached to AE246 Hose.

"super-C" standard elbow fittings for AE246 Hose are now made using the one-piece elbow concept. This simplifies the production process and gives you a high quality elbow with a minimum of manufacturing cost.

AE246 Hose Data

	Dash sizes→	-4	-6	-8	-10	-12
O.D. Tube Size		1/4	3/8	1/2	5/8	3/4
Hose I.D. (min.)		.212	.298	.391	.485	.602
Hose O.D. (max.)		.390	.475	.605	.720	.884
Operating Pressure (psi)		3000	3000	3000	3000	3000
Proof Pressure (psi)		6000	6000	6000	6000	6000
Min. Hi. Temp. Burst Pressure (psi)		12000	10500	10500	9000	9000
Min. Room Temperature Burst Pressure (psi)		16000	14000	14000	12000	12000
Min. Bend Radius		1.50	2.50	2.88	3.25	3.88
Weight per foot (lbs.)		.113	.168	.235	.290	.463

all dimensions in inches

“super-C” Crimp Fittings

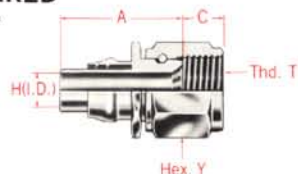


Socket*

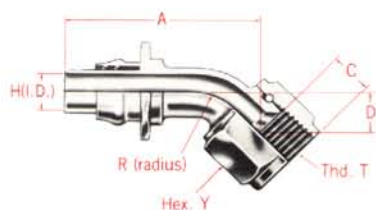
AE18444—Letter/size

Hose Dash Size	-4	-6	-8	-10	-12
Letter Code	E	G	H	J	K

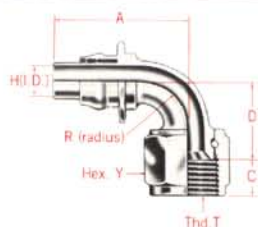
FLARED 37°



Hose size	Nipple* assembly	Max. A	C	Nominal D	R	Min. H	Thread T	Hex. Y	Weight lbs.
AE246-4	AE18442E	1.16	.37	—	—	.141	.4375-20UNJF-3B	.56	.057
AE246-6	AE18442G	1.24	.38	—	—	.250	.5625-18UNJF-3B	.69	.077
AE246-8	AE18442H	1.40	.43	—	—	.360	.7500-16UNJF-3B	.88	.143
AE246-10	AE18442J	1.72	.50	—	—	.455	.8750-14UNJF-3B	1.00	.209
AE246-12	AE18442K	1.88	.57	—	—	.568	1.0625-12UNJ-3B	1.25	



AE246-4	AE18844E	2.08	.37	.416	.375	.141	.4375-20UNJF-3B	.56	.065
AE246-6	AE18844G	2.29	.38	.528	.500	.250	.5625-18UNJF-3B	.69	.100
AE246-8	AE18844H	2.61	.43	.610	.500	.360	.7500-16UNJF-3B	.88	.190
AE246-10	AE18844J	3.09	.50	.573	.625	.455	.8750-14UNJF-3B	1.00	.284
AE246-12	AE18844K	3.44	.57	.625	.875	.568	1.0625-12UNJ-3B	1.25	



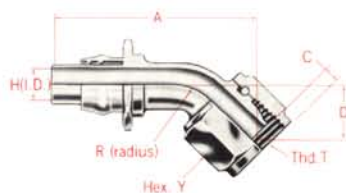
AE246-4	AE18845E	1.71	.37	.705	.375	.141	.4375-20UNJF-3B	.56	.065
AE246-6	AE18845G	1.85	.38	.878	.500	.250	.5625-18UNJF-3B	.69	.100
AE246-8	AE18845H	2.10	.43	.980	.500	.360	.7500-16UNJF-3B	.88	.190
AE246-10	AE18845J	2.42	.50	1.176	.625	.455	.8750-14UNJF-3B	1.00	.284
AE246-12	AE18845K	2.79	.57	1.378	.875	.568	1.0625-12UNJ-3B	1.25	

GLOBE SEAL™ FLARELESS

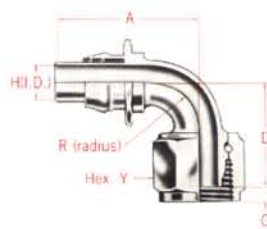
Per NAS 1760



AE246-4	AE18446E	1.45	.15	—	—	.141	.4375-20UNJF-3B	.56	.060
AE246-6	AE18446G	1.55	.16	—	—	.250	.5625-18UNJF-3B	.69	.083
AE246-8	AE18446H	1.74	.14	—	—	.360	.7500-16UNJF-3B	.88	.154
AE246-10	AE18446J	2.11	.22	—	—	.455	.8750-14UNJF-3B	1.00	.227
AE246-12	AE18446K	2.17	.15	—	—	.568	1.0625-12UNJ-3B	1.25	



AE246-4	AE18846E	2.26	.15	.593	.375	.141	.4375-20UNJF-3B	.56	.068
AE246-6	AE18846G	2.50	.16	.738	.500	.250	.5625-18UNJF-3B	.69	.106
AE246-8	AE18846H	2.84	.14	.845	.500	.360	.7500-16UNJF-3B	.88	.200
AE246-10	AE18846J	3.36	.22	.843	.625	.455	.8750-14UNJF-3B	1.00	.302
AE246-12	AE18846K	3.73	.15	.911	.875	.568	1.0625-12UNJ-3B	1.25	



AE246-4	AE18847E	1.71	.15	.994	.375	.141	.4375-20UNJF-3B	.56	.068
AE246-6	AE18847G	1.85	.16	1.174	.500	.250	.5625-18UNJF-3B	.69	.106
AE246-8	AE18847H	2.10	.14	1.312	.500	.360	.7500-16UNJF-3B	.88	.200
AE246-10	AE18847J	2.42	.22	1.557	.625	.455	.8750-14UNJF-3B	1.00	.302
AE246-12	AE18847K	2.79	.15	1.802	.875	.568	1.0625-12UNJ-3B	1.25	

*Socket must be ordered separately under Aeroquip Part Number AE 18444 (Letter size code same as nipple assembly)

All dimensions in inches.

Protective sleeves

To use sleeves shown on this page with AE246 Hose assemblies, see pages 6 and 7 to determine assembly numbers

	Hose size	Sleeve size	Sleeve I.D.	Sleeve gauge	Weight lbs./in.
AE102/624  AEROQUIP-AE102/624-SIZE Silicone Coated Fiberglass Firesleeve -65°F. to +450°F.	AE246-4	-8	.50	.125	.0093
	AE246-6	-11	.69	.125	.0131
	AE246-8	-13	.81	.125	.0145
	AE246-10	-14	.88	.125	.0155
	AE246-12	-16	1.12	.125	.0200
AE251 (900961)  Heat Shrinkable Polyolefin Abrasion Sleeve -65°F. to +275°F.	AE246-4	-2	.375	.030	.0018
	AE246-6	-1	.375	.030	.0018
	AE246-8	-3	.500	.035	.0028
	AE246-10	-4	.500	.035	.0028
	AE246-12	-5	.750	.040	.0046
AE208 (900005)  Nylon Spiral Wrap Abrasion Sleeve -65°F. to +200°F.	AE246-4	-4	.204	.023	.0007
	AE246-6	-4	.204	.023	.0007
	AE246-8	-10	.436	.032	.0020
	AE246-10	-10	.436	.032	.0020
	AE246-12	-10	.436	.032	.0020
AE506 (900179)  FEP100 Teflon Abrasion Sleeve -65°F. to +400°F.	AE246-4	-9	.421	.018	.0017
	AE246-6	-10	.484	.018	.0019
	AE246-8	-13	.600	.018	.0024
	AE246-10	-14	.702	.018	.0028
	AE246-12	-17	.945	.018	.0037
AE138 (646)  AEROQUIP AE 138-SIZE Neoprene Tubing Abrasion Sleeve -65°F. to +250°F.	AE246-4	-4	.328	.035	.0020
	AE246-6	-8	.453	.035	.0029
	AE246-8	-12	.562	.040	.0039
	AE246-10	-16	.671	.040	.0046
	AE246-12	-22	.843	.050	.0072

NOTE: Use an abrasion sleeve with AE246 Teflon hose in any application where the braid is subject to possible abrasion.

Aeroquip now offers two new sleeve styles. AE546 hose with integral polyester chafeguard and AE446 hose with integral silicone firesleeve.

For more information on these advanced hose styles, contact your nearest Aeroquip distributor, Aeroquip sales engineer or Aeroquip.

Ask for AEB-221A on the integral polyester chafeguard and AEB-229A for the integral silicone firesleeve.

All dimensions in inches.

Part numbering system makes it easy for you to order AE246 Hose assemblies

Straight and single elbow assemblies

In order to properly specify the correct hose assembly you need, please use the simple numbering system shown on these two pages. Straight and single elbow assemblies are identified by the number on this page beginning with AE246, and double elbow assemblies are identified by a number beginning with the number AE4XXX as shown on the right hand page. Any assembly you wish to specify can be ordered using one of the two numbers on these pages.

AE2460000E0184


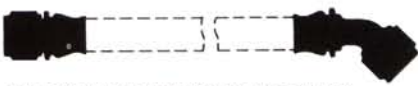
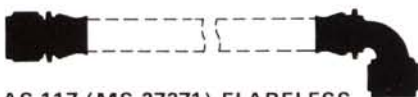
Base number for all straight and single elbow assemblies

Assembly length in inches
always four digits, last digit indicates
fractional length in 1/8's of an inch

SIZE CODE

Hose Dash Size	-4	-6	-8	-10	-12
Letter Code	E	G	H	J	K

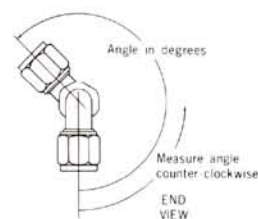
SLEEVING (see page 5)

Fitting configuration	Lockwire holes*	Fitting ends	None	AE102/624	AE251	AE208	AE506	AE138
AS 153 (MS 27363) FLARED	0	37° flared	0000	0001	0002	0003	0004	0005
	0	Flareless Globeseal	0010	0011	0012	0013	0014	0015
AS 115 (MS 27369) FLARELESS	2	37° flared	0050	0051	0052	0053	0054	0055
Straight to straight	2	Flareless Globeseal	0060	0061	0062	0063	0064	0065
AS 154 (MS 27364) FLARED	0	37° flared	0100	0101	0102	0103	0104	0105
	0	Flareless Globeseal	0110	0111	0112	0113	0114	0115
AS 116 (MS 27370) FLARELESS	2	37° flared	0150	0151	0152	0153	0154	0155
Straight to 45° elbow	2	Flareless Globeseal	0160	0161	0162	0163	0164	0165
AS 155 (MS 27365) FLARED	0	37° flared	0200	0201	0202	0203	0204	0205
	0	Flareless Globeseal	0210	0211	0212	0213	0214	0215
AS 117 (MS 27371) FLARELESS	2	37° flared	0250	0251	0252	0253	0254	0255
Straight to 90° elbow	2	Flareless Globeseal	0260	0261	0262	0263	0264	0265

*Per AS1043.

ASXXX numbered hose assemblies per ARP1339.

Double elbow assemblies



Elbow position angle expressed in three digits

AE 4000E0184-225


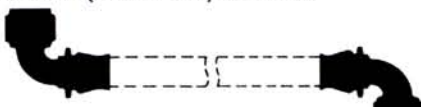
AE4000 series applies to double elbow assemblies

Assembly length always four digits, last digit indicates fractional length in 1/8's of an inch

SIZE CODE

Hose Dash Size	-4	-6	-8	-10	-12
Letter Code	E	G	H	J	K

SLEEVING (see page 5)

Fitting configuration	Lockwire holes*	Fitting ends	None	AE102/624	AE251	AE208	AE506	AE138
AS 156 (MS 27366) FLARED	0	37° flared	4000	4001	4002	4003	4004	4005
	0	Flareless Globeseal	4006	4007	4008	4009	4010	4011
AS 118 (MS 27372) FLARELESS	2	37° flared	4018	4019	4020	4021	4022	4023
45° elbow to 45° elbow	2	Flareless Globeseal	4024	4025	4026	4027	4028	4029
AS 157 (MS 27367) FLARED	0	37° flared	4036	4037	4038	4039	4040	4041
	0	Flareless Globeseal	4042	4043	4044	4045	4046	4047
AS 119 (MS 27373) FLARELESS	2	37° flared	4054	4055	4056	4057	4058	4059
45° elbow to 90° elbow	2	Flareless Globeseal	4060	4061	4062	4063	4064	4065
AS 158 (MS 27368) FLARED	0	37° flared	4072	4073	4074	4075	4076	4077
	0	Flareless Globeseal	4078	4079	4080	4081	4082	4083
AS 120 (MS 27374) FLARELESS	2	37° flared	4090	4091	4092	4093	4094	4095
90° elbow to 90° elbow	2	Flareless Globeseal	4096	4097	4098	4099	4100	4101

*Per AS1043.

ASXXX numbered hose assemblies per ARP1339.

Engineering data

Size comparison

Outside diameter of AE246 Hose compared to AE206 and AE207 Teflon hose (inches)

AE207



AE206



AE246



Size	AE246 O.D.	AE206 O.D.	AE207 O.D.
-4	.390	.455	.477
-6	.475	.550	.570
-8	.605	.727	.722
-10	.720	.865	.922
-12	.884	—	1.070

Weight comparison

There is also a significant weight savings in the hose fittings compared to previously manufactured fittings. AE246 vs AE206 High Pressure Teflon Hose (lbs./ft.)

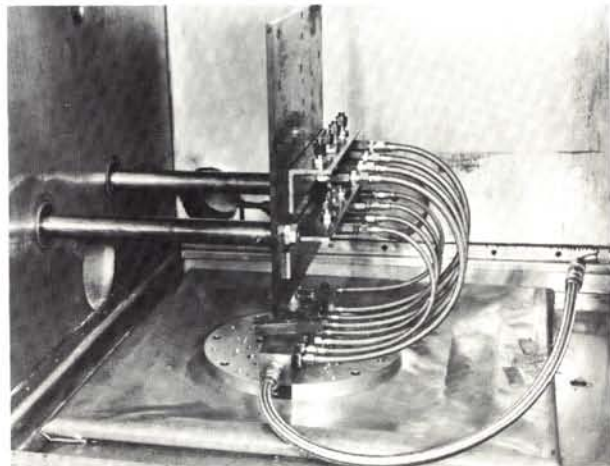
Size	AE246	AE206	AE207
-4	.113	.193	—
-6	.168	.275	—
-8	.235	.414	—
-10	.290	.527	.611
-12	.463	—	.877

Force required to obtain minimum bend radius

AE246 Hose compared to AE206 Hose

Size	AE246		AE206	
	Bend radius(in.)	Force (lbs.)	Bend radius(in.)	Force (lbs.)
-4	1.50	.6	3.00	.8
-6	2.50	.8	5.00	1.0
-8	2.88	1.8	5.75	2.0
-10	3.25	6.0	6.50	6.0
-12	3.88			

Flexing test under pressure



AE246 Hose Assemblies have been thoroughly tested on the test rig shown above under controlled pressure, impulse peaks, temperature and flexing, in order to meet or exceed MIL-H-38360.



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