Aeroquip

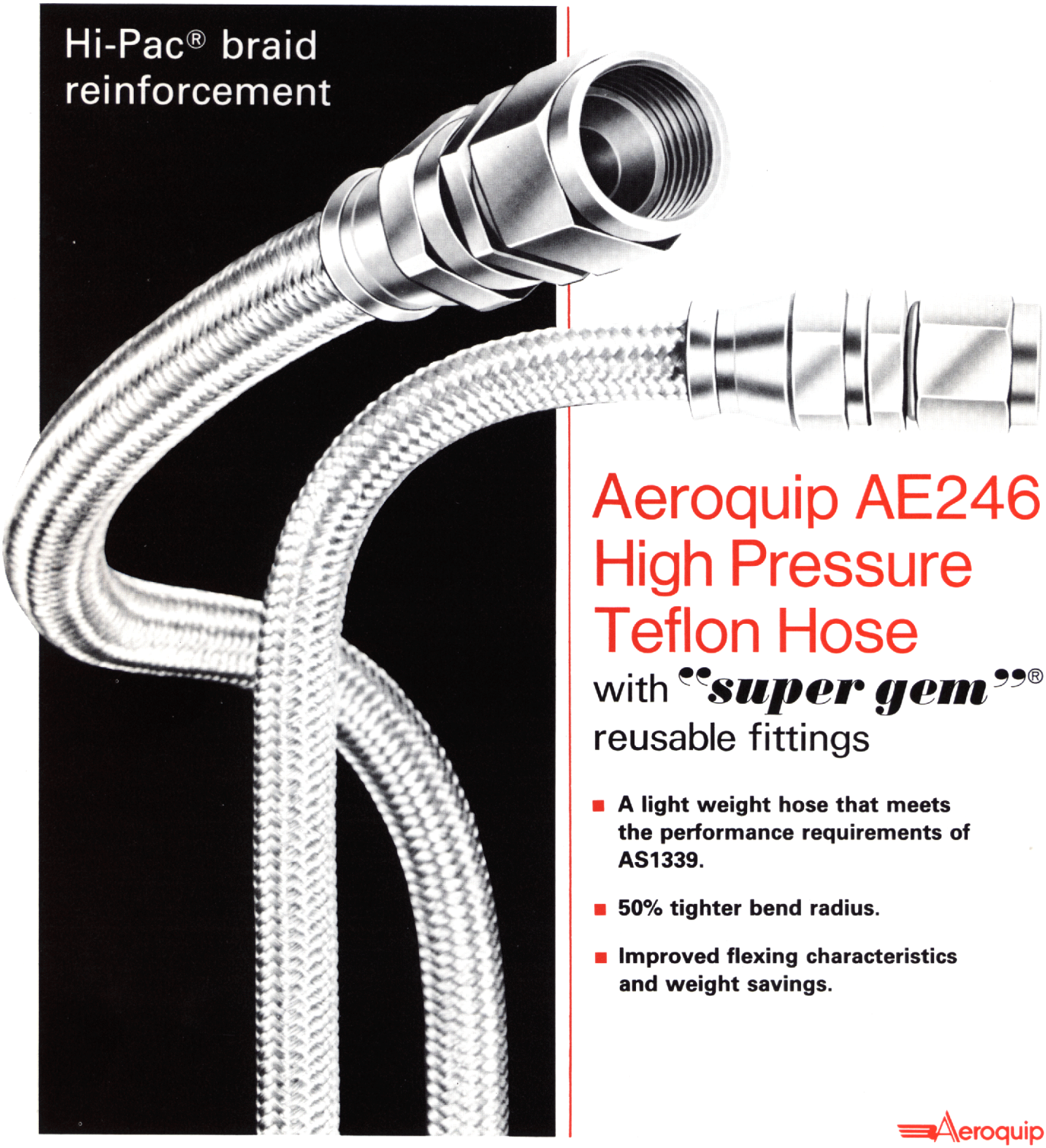
AEROSPACE ENGINEERING BULLETIN

HOSE/FITTINGS

AA

8

Supersedes AEB-212A



Aeroquip AE246 High Pressure Teflon Hose

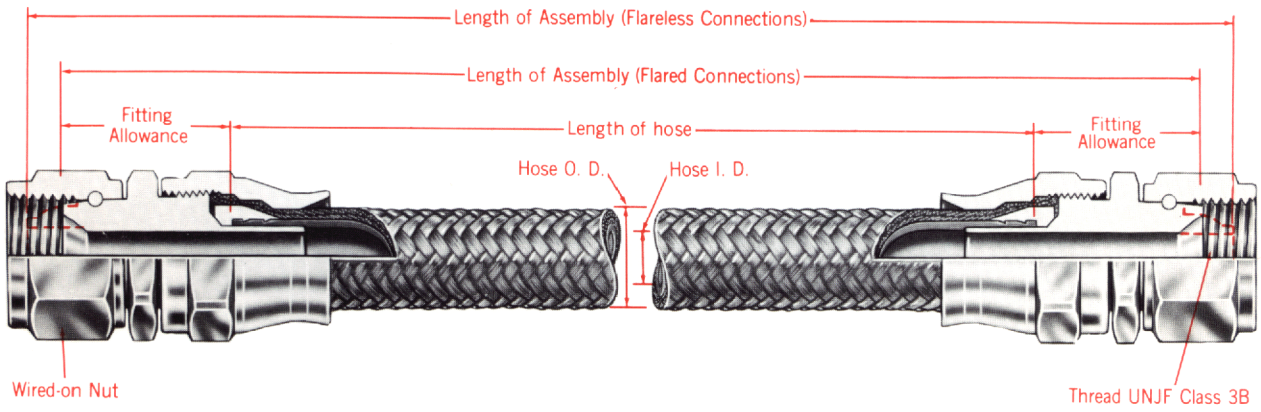
with "super gem"® reusable fittings

- **A light weight hose that meets the performance requirements of AS1339.**
- **50% tighter bend radius.**
- **Improved flexing characteristics and weight savings.**

Aeroquip

AE246 High Pressure Teflon Hose and "*super gem*" Reusable Fittings

Assemblies in accordance with ARP604/ARP1339



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 developed the AE246 Teflon hose with Patented (U.S. Patent #3,463,197) Hi-Pac braiding. This 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 AS1339. AE246 Hose is recommended for normal 3000 psi hydraulic systems with impulse peaks up to 4500 psi.

Because it eliminates unneeded metal reinforcement, Aeroquip AE246 Hose is 40 to 50% lighter in weight than previous high pressure Teflon hose. It also has a much smaller envelope, and has excellent flexing and bend radius characteristics. Aeroquip AE246 Hose has low volumetric expansion, assuring maximum response efficiency in hydraulic systems and brake systems. 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.

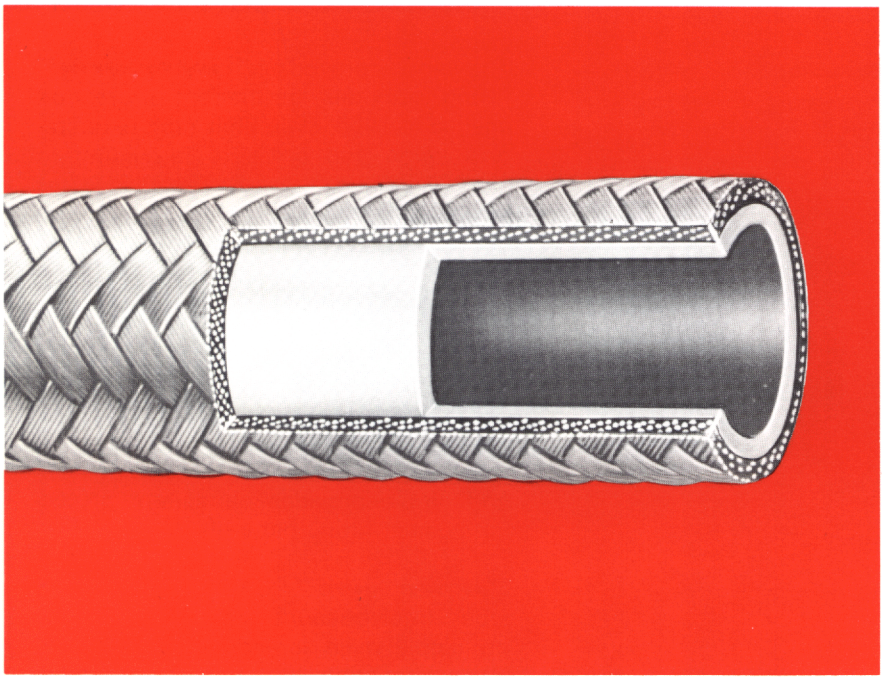
The rate of gas effusion and resistance to capillary leakage of fluid through the hose lines is controlled by a patented extrusion method. Inherent resiliency and toughness are built into the extruded tube by close control factors affecting crystallinity.

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 Aerospace 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 AS1339.

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 microamps in sizes –4, –6, and –8; 12 micro-amps in –10 size and up, with a potential of 1,000 volts.

Teflon is a DuPont trademark



Aeroquip 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.

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.

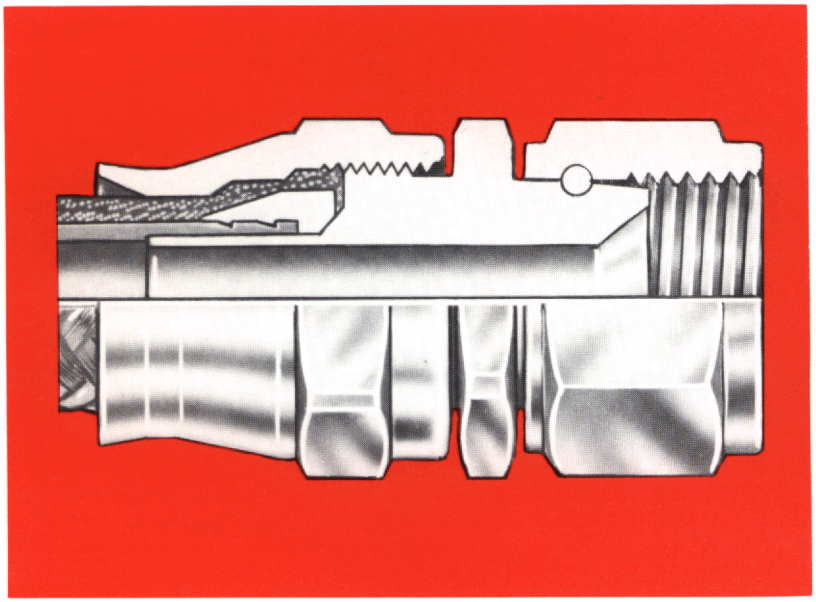
Identification . . . identification bands showing specification number, manufacturer's code number, operating pressure, assembly date and other required information.

AE246 Hose Data

Dash sizes	-4	-6	-8	-10	-12
O.D. Tube Size	¼	⅜	½	⅝	¾
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)	12,000	10,500	10,500	9000	9000
Min. Room Temp. Burst Pressure (psi)	16,000	14,000	14,000	12,000	12,000
Minimum Bend Radius	1.50	2.50	2.88	3.25	3.88
Weight per foot (lbs.)	.113	.168	.235	.290	.436
National Stock No. 4720-01-	028-1350	026-9156	035-6601	026-9158	026-6161

All dimensions in inches.

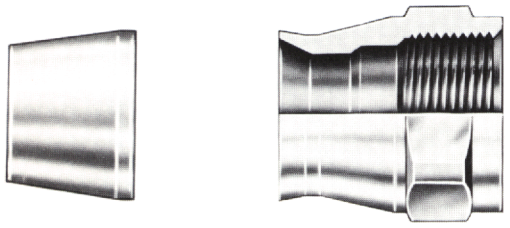
"super gem" Reusable Fittings



The service proven "super gem" fitting provides permanent protection against leakage, even after high temperature aging and pressure impulsing to 250,000 cycles or more. The reason for this performance lies in the separation of the sealing function from the retention function.

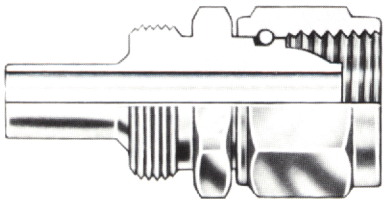
A lip seal is formed by the separation of the tube in an annular chamber. This seal is assisted by the high unit loading of the ridges on the sleeve inner diameter against the tube. A positive grip on the wire reinforcement between socket and nipple provides permanent protecion against fitting blow-off.

"super gem" fittings have a dry lube (molybdenum disulfide) coating on nipple male threads. This is a permanent coating and requires no additional lubrication during assembly. "super gem" fittings are designed for assembly to a gap dimension which indicates a proper assembly.



Sleeve

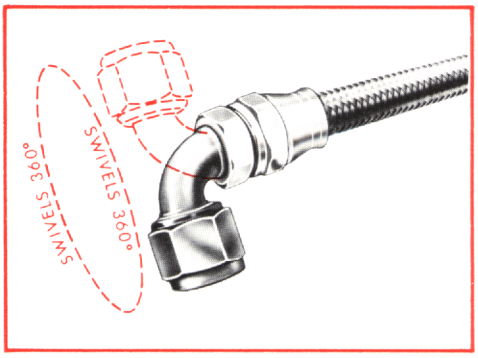
Socket



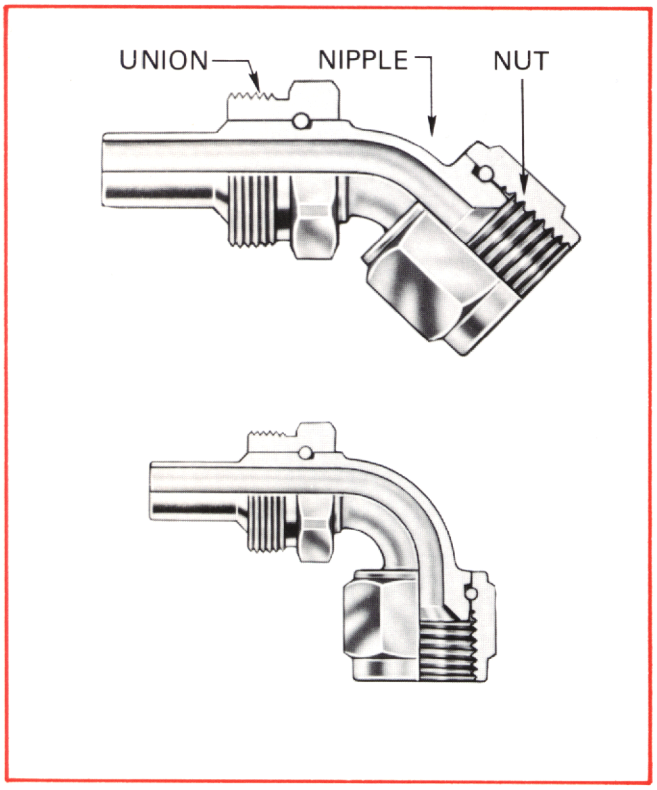
Nipple Assembly

3-Piece Fitting
The Aeroquip High Pressure "super gem" Reusable Fitting consists of 3 pieces; a socket, sleeve and nipple assembly.

"super gem" Fitting standard Material specifications:	Nut—Cres., QQ-S-763 (304).
	Wire—Cres., AMS5685 (305).
	Nipple—Cres., QQ-S-763 (304).
	Sleeve—Cres., AMS5643 (17-4 PH).
	Socket—Cres., QQ-S-763 (304).

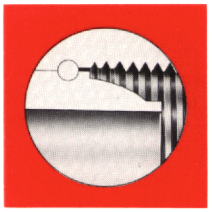


"super gem" adjustable elbow fittings are easily positioned through 360° to the desired relative angle between opposite elbow fittings. Mock-up and prototype installation changes are simplified, as the position angle can be determined on the actual installation and adjusted as necessary.



One Piece, No-Weld Elbow Fittings

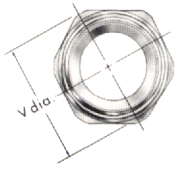
All "super gem" elbow nipples are machined in one-piece from bar stock. The straight configuration is then formed into 45° and 90° end fittings. This results in a no-weld fitting.

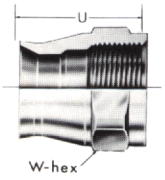


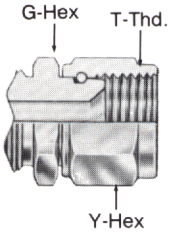
New Flareless Fitting Design

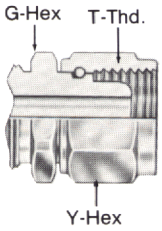
A new flareless fitting design, adopted from the Aeroquip Globeseal™ fitting, is now incorporated in the "super gem" fitting and meets the newly adopted NAS 1760 configuration.

Standard Dimensions





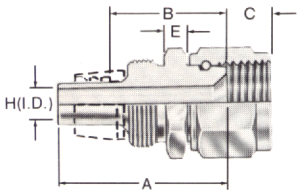
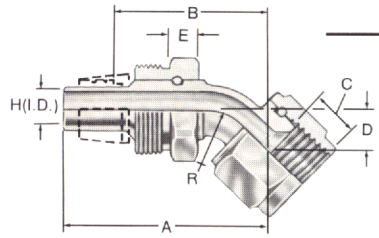
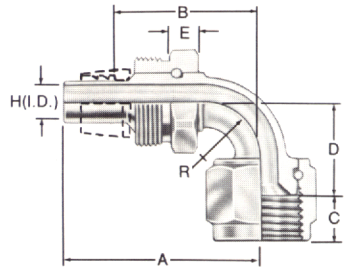
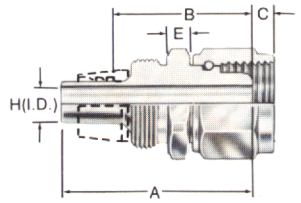
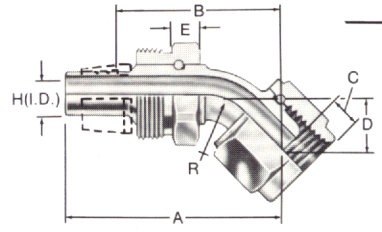
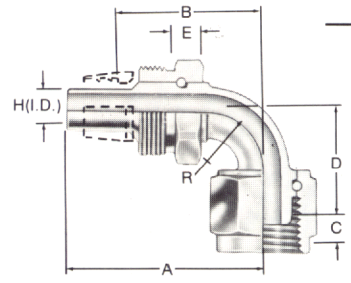




Size	Socket	Sleeve	Socket			Nut		Nipple
			U	Max V	Hex W	Thread T	Hex Y	Hex G
-4	AE18915E	AE18916E	.91	.69	.62	.4375-20 UNJF-3B	.56	.62
-6	AE18915G	AE18916G	.92	.83	.75	.5625-18 UNJF-3B	.69	.75
-8	AE18915H	AE18916H	1.09	.97	.88	.7500-16 UNJF-3B	.88	.88
-10	AE18915J	AE18916J	1.20	1.17	1.06	.8750-14 UNJF-3B	1.00	1.06
-12	AE18915K	AE18916K	1.47	1.45	1.31	1.0625-12 UNJ-3B	1.25	1.31

All dimensions in inches

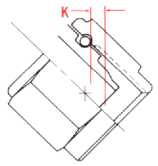
"super gem" Swivel nut fittings

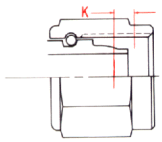
	Hose Part Number	Fitting Assembly Part Number	National Stock Numbers	Nipple Assembly Part Number
Flared (Nipple assembly)				
 Straight Fittings mate with MS33656 end connection	AE246-4	AE18806E	4730-01-026-9143	AE18807E
	AE246-6	AE18806G	4730-01-026-9144	AE18807G
	AE246-8	AE18806H	4730-01-027-2652	AE18807H
	AE246-10	AE18806J	4730-01-026-9145	AE18807J
	AE246-12	AE18806K	4730-01-026-9147	AE18807K
 45° Fittings mate with MS33656 end connection	AE246-4	AE18878E	4730-01-027-2192	AE18879E
	AE246-6	AE18878G	4730-01-027-2646	AE18879G
	AE246-8	AE18878H	4730-01-027-2647	AE18879H
	AE246-10	AE18878J	4730-01-026-9125	AE18879J
	AE246-12	AE18878K	4730-01-027-2648	AE18879K
 90° Fittings mate with MS33656 end connection	AE246-4	AE18880E	4730-01-027-2649	AE18881E
	AE246-6	AE18880G	4730-01-026-9127	AE18881G
	AE246-8	AE18880H	4730-01-026-9128	AE18881H
	AE246-10	AE18880J	4730-01-026-9129	AE18881J
	AE246-12	AE18880K	4730-01-026-9131	AE18881K
NAS 1760 Flareless (Nipple assembly)				
 Straight Fittings mate with MS33514 end connection	AE246-4	AE18926E	4730-01-026-9149	AE18927E
	AE246-6	AE18926G	4730-01-026-9151	AE18927G
	AE246-8	AE18926H	4730-01-027-2653	AE18927H
	AE246-10	AE18926J	4730-01-026-9152	AE18927J
	AE246-12	AE18926K	4730-01-026-9154	AE18927K
 45° Fittings mate with MS33514 end connection	AE246-4	AE18882E	4730-01-027-2650	AE18883E
	AE246-6	AE18882G	4730-01-026-9133	AE18883G
	AE246-8	AE18882H	4730-01-027-2651	AE18883H
	AE246-10	AE18882J	4730-01-026-9134	AE18883J
	AE246-12	AE18882K	4730-01-026-9136	AE18883K
 90° Fittings mate with MS33514 end connection	AE246-4	AE18884E	4730-01-040-4287	AE18885E
	AE246-6	AE18884G	4730-01-040-5532	AE18885G
	AE246-8	AE18884H	4730-01-026-9138	AE18885H
	AE246-10	AE18884J	4730-01-026-9139	AE18885J
	AE246-12	AE18884K	4730-01-026-9141	AE18885K

**Fitting assembly includes nipple assembly, socket and sleeve.*

DISTANCE TO SEALING POINT

K = gauge point location per NAS 1760





FITTING DIMENSIONS

Weight (lbs.)	max A	cut-off B	C	nominal D	E	R	min H	K
.097	1.46	.92	.37		.14		.141	
.142	1.57	1.04	.38		.16		.250	
.222	1.85	1.16	.43		.19		.360	
.333	2.06	1.21	.50		.25		.455	
.574	2.26	1.27	.57		.20		.568	
.127	2.66	2.06	.37	.416	.22	.375	.141	
.196	2.97	2.35	.38	.528	.32	.500	.250	
.314	3.35	2.61	.43	.610	.32	.500	.360	
.442	3.63	2.74	.50	.573	.28	.625	.455	
.748	4.10	3.06	.57	.625	.28	.875	.568	
.127	2.29	1.69	.37	.705	.22	.375	.141	
.196	2.54	1.92	.38	.878	.32	.500	.250	
.314	2.84	2.10	.43	.980	.32	.500	.360	
.442	2.95	2.06	.50	1.176	.28	.625	.455	
.748	3.44	2.40	.57	1.378	.28	.875	.568	
.098	1.69	1.15	.16		.14		.141	.155
.146	1.80	1.26	.17		.16		.250	.164
.234	2.14	1.46	.15		.19		.360	.189
.347	2.35	1.50	.22		.25		.455	.201
.610	2.70	1.71	.15		.20		.568	.228
.130	2.79	2.19	.16	.544	.22	.375	.141	.110
.200	3.13	2.50	.17	.681	.32	.500	.250	.116
.323	3.55	2.81	.15	.815	.32	.500	.360	.134
.454	3.83	2.94	.22	.775	.28	.625	.455	.142
.768	4.38	3.35	.15	.911	.28	.875	.568	.161
.130	2.29	1.69	.16	.925	.22	.375	.141	
.200	2.54	1.92	.17	1.093	.32	.500	.250	
.323	2.84	2.10	.15	1.269	.32	.500	.360	
.454	2.95	2.06	.22	1.460	.28	.625	.455	
.768	3.44	2.40	.15	1.802	.28	.875	.568	

max. A = maximum length of fitting including socket when fitting is assembled on hose.
max. D = nominal drop dimensions-Tolerance is ±.035"
nom. R = radius of elbow measured to centerline.

All dimensions in inches

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

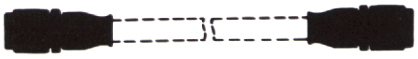
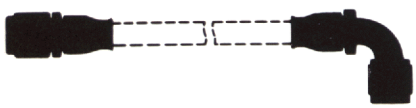
AE246 0000 E 0184

Base number for all straight and single elbow assemblies

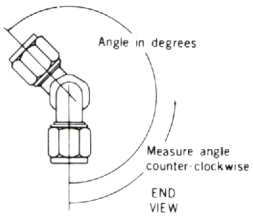
Assembly length in inches always four digits, last digit indicates fractional length in ⅛'s of an inch

SIZE CODE

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

STRAIGHT AND SINGLE ELBOW ASSEMBLIES			SLEEVING (see pages 10 & 11)							
Fitting configuration	Lockwire Holes*	Fitting Ends	None	AE102	AE251	AE208	AE506	AE138	AE546	AE446
 Straight to straight	0	37° Flared	0500	0501	0502	0503	0504	0505	3542	3536
	0	Flareless	0510	0511	0512	0513	0514	0515	3545	3539
	2	37° Flared	0550	0551	0552	0553	0554	0555		
	2	Flareless	0560	0561	0562	0563	0564	0565		
 Straight to 45° elbow	0	37° Flared	0600	0601	0602	0603	0604	0605	3543	3537
	0	Flareless	0610	0611	0612	0613	0614	0615	3546	3540
	2	37° Flared	0650	0651	0652	0653	0654	0655		
	2	Flareless	0660	0661	0662	0663	0664	0665		
 Straight to 90° elbow	0	37° Flared	0700	0701	0702	0703	0704	0705	3544	3538
	0	Flareless	0710	0711	0712	0713	0714	0715	3547	3541
	2	37° Flared	0750	0751	0752	0753	0754	0755		
	2	Flareless	0760	0761	0762	0763	0764	0765		

**Per AS1043*



Elbow position angle expressed in three digits

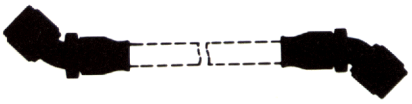
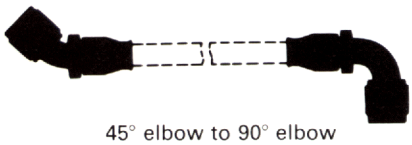
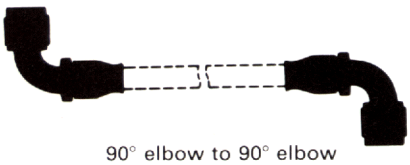
AE4000E0184-225

AE 4000 Series applies to double elbow assemblies

Assembly length always four digits, last digit indicates fractional length in ⅛'s of an inch

SIZE CODE

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

DOUBLE ELBOW ASSEMBLIES			SLEEVING (see pages 10 & 11)							
Fitting configuration	Lockwire Holes*	Fitting Ends	None	AE102	AE251	AE208	AE506	AE138	AE546	AE446
 45° elbow to 45° elbow	0	37° Flared	4108	4109	4110	4111	4112	4113	4715	4709
	0	Flareless	4114	4115	4116	4117	4118	4119	4718	4712
	2	37° Flared	4126	4127	4128	4129	4130	4131		
	2	Flareless	4132	4133	4134	4135	4136	4137		
 45° elbow to 90° elbow	0	37° Flared	4144	4145	4146	4147	4148	4149	4716	4710
	0	Flareless	4150	4151	4152	4153	4154	4155	4719	4713
	2	37° Flared	4162	4163	4164	4165	4166	4167		
	2	Flareless	4168	4169	4170	4171	4172	4173		
 90° elbow to 90° elbow	0	37° Flared	4180	4181	4182	4183	4184	4185	4717	4711
	0	Flareless	4186	4187	4188	4189	4190	4191	4720	4714
	2	37° Flared	4198	4199	4200	4201	4202	4203		
	2	Flareless	4204	4205	4206	4207	4208	4209		

Per AS1043

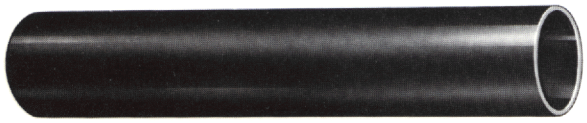
Protective sleeves

To use sleeves shown on this page with AE246 Hose assemblies, see pages 8 and 9 to determine assembly numbers

AE102 (AS1291)

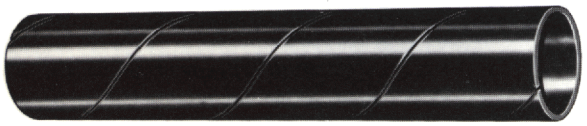
Silicone Coated Fiberglass Fire Sleeve
−65°F. to +450°F.

AE251 (AS1073 Code "B")



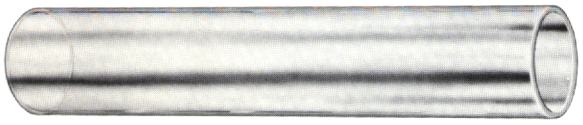
Heat Shrinkable Polyolefin Abrasion Sleeve
—65°F. to +275°F.

AE208 (AS1294)



Nylon Spiral Wrap Abrasion Sleeve
—65°F. to +200°F.

AE506 (AS1291 Code "C")



FEP100 Teflon Abrasion Sleeve
—65°F. to +400°F.

AE138 (AS1295)

Neoprene Tubing Abrasion Sleeve
−65°F. to +250°F.

Hose size	Sleeve size	Sleeve I.D.	Sleeve gauge	Weight lbs./in.
AE246–4	–8	.50	.125	.0093
AE246–6	–11	.69	.125	.0131
AE246–8	–13	.81	.125	.0145
AE246–10	–14	.88	.125	.0155
AE345-12	–16	1.00	.125	.0161
AE246–4	–2	.375	.030	.0018
AE246–6	–1	.375	.030	.0018
AE246–8	–3	.500	.035	.0028
AE246–10	–4	.500	.035	.0028
AE345-12	–5	.750	.040	.0046
AE246–4	–4	.204	.023	.0007
AE246–6	–4	.204	.023	.0007
AE246–8	–10	.436	.032	.0020
AE246–10	–10	.436	.032	.0020
AE345-12	–10	.436	.032	.0020
AE246–4	–9	.421	.018	.0017
AE246–6	–11	.520	.018	.0021
AE246–8	–13	.600	.018	.0024
AE246–10	–14	.702	.018	.0028
AE345-12	–17	.945	.018	.0037
AE246–4	–4	.328	.035	.0020
AE246–6	–8	.453	.035	.0029
AE246–8	–12	.562	.040	.0039
AE246–10	–16	.671	.040	.0046
AE345-12	–22	.843	.050	.0072

NOTE: Use an abrasion sleeve with AE246 Teflon hose in any application where the braid is subject to possible abrasion. See AEB-250 for sleeve details.

All dimensions in inches.

AE546 hose (AE246 hose with Integral Polyester Chafeguard)

Highly abrasion resistant Polyester yarn braided onto hose cover −65°F. to +300°F.
See AEB-221A for further details.

AE446 hose (TSO-C53a Type D, TSO-C75 Type IIIA & IIIB)
(AE246 hose with Integral Silicone Firesleeve)

Silicone firesleeve applied directly onto wire braid cover −65°F. to +450°F.

See AEB-229A for further details.

Hose Size	Hose O.D. (Max.)	(Min. Bend Radius)	Weight lbs/in.
AE546-4	.490	1.50	.0106
AE546-6	.565	2.50	.0142
AE546-8	.680	2.88	.0209
AE546-10	.790	3.25	.0273
AE546-12	.959	3.88	.0420
AE446-4	.640	1.50	.0183
AE446-6	.725	2.50	.0244
AE446-8	.905	2.88	.0355
AE446-10	.965	3.25	.0389
AE446-12	1.179	3.88	.0580

All dimensions in inches.

For complete assembly instructions ask for ASB — 116R.