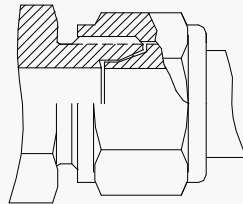


METRIC FLARELESS SEPARABLE FITTING



DESIGN CONCEPT:

The concept of Flareless provides positive sealing and a high degree of sealing reliability for repeated usage. The configuration of Flareless joint consists an acorn shaped fitting nose designed to mate with a 24 degree cone fitting end forming a sealing point.

A gage diameter is provided on the acorn Flareless nose near the sealing diameter for installation reference and inspection purposes. The sealing point is located at the thicker wall area of both mating fitting ends to assure proper sealing with no dimensional movement through repeated usage.

A pilot end was added to the front nose of the acorn Flareless that fits inside the undercut of the 24 degree mating cone. This feature provides fitting alignment to effect positive sealing. In addition, a predetermined bottoming gap distance between mating fitting ends at the pilot nose and the shoulder is for preventing damage on the acorn Flareless nose by over torque on the nut.

Removal of the pilot end to make a shorter fitting is optional when fittings are used in tight areas or lighter weight is required. Either option is in use successfully in the industry.

Shape fittings such as elbow, tee or cross are available in a "Lightweight" version. It saves on an average of 30 % lighter weight than the Standard version.

DESIGN ADVANTAGES:

- X Sealing efficiency eliminates unnecessary down time and high repair cost.
- X Assembly of Flareless connections can be made in place for production and repair applications.
- X Design concept offers self-alignment to effect proper sealing. It offers bottoming feature to protect fitting from damage caused by nut over torque.
- X Fittings are available in Cres, Titanium Alloy and Aluminum Alloy materials which are virtually compatible for use with just about any tube materials.
- C No special tooling is required except standard torque wrenches for fitting installation.

STANDARD PROCUREMENT SPECIFICATIONS FOR FLARELESS FITTINGS

SAE MA2005 or ISO7169 specifications define Form, Fit, Function and Procurement requirements for Flareless fittings.

QUALIFICATION AND APPROVAL STATUS

Airdrome fittings were qualified per MA2005 and ISO7169 specifications. The fittings are approved for use in various military and commercial programs at GTRE, HAL, Ilyushin, Kazan, P&W, etc.

FITTING MATERIAL SELECTION

Fittings and nuts are offered in the following materials for use with various tubing materials, fluid and operating temperature:

MATERIAL AND CODING

Titanium Alloy	Code T	Indicates 6AL-4V per AMS4928.
Cres	Code J	Indicates 304 per AMS-QQ-S-763.
	Code K	Indicates 316 per AMS-QQ-S-763.
	Code R	Indicates 321 per AMS-QQ-S-763.
	Code S	Indicates 347 per AMS-QQ-S-763.
Carbon Steel	Code -	Indicates 4130 per MIL-S-6758 or 4140 per MIL-S-5626.
Aluminum Alloy	Code D	Indicates 2024-T6 or T851 per QQ-A-225/6 for bar/plate stock materials or 2014-T6 per QQ-A-367 for forging fittings.
	Code W	Indicates 7075-T73 per QQ-A-225/9 for bar/plate stock materials or per OO-A-367 for forging material.

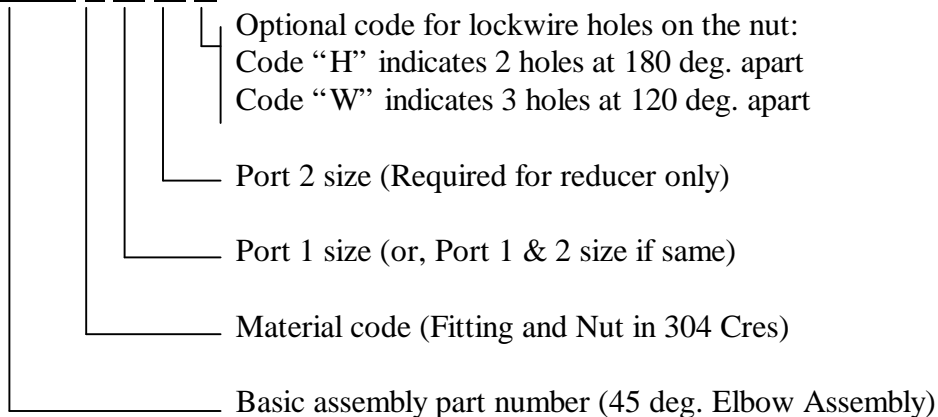
SIZE AND MATERIAL VERSUS OPERATING PRESSURE

Fitting/tubing operating pressures vary according to size and material. The following shows standard size range and corresponding operating pressures:





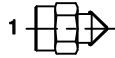


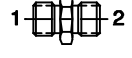

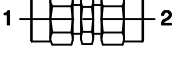

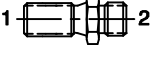

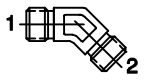
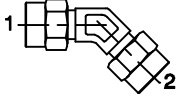
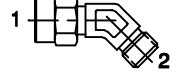
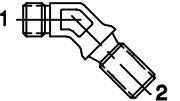
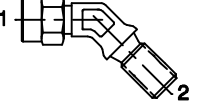
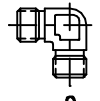
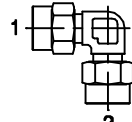
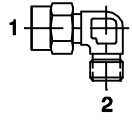
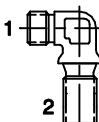
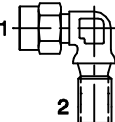
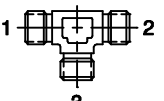
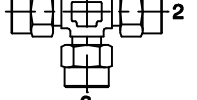
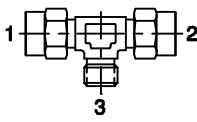
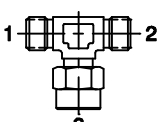
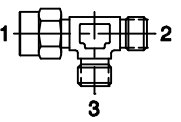
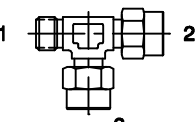
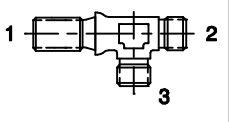
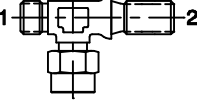
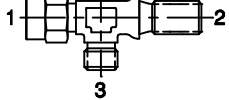
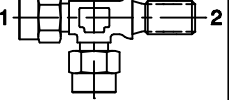
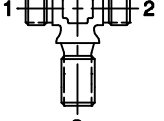
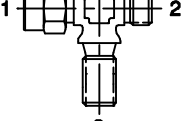
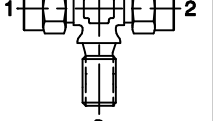
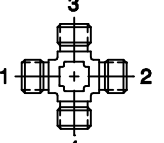
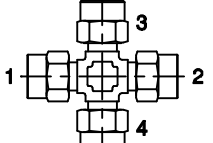
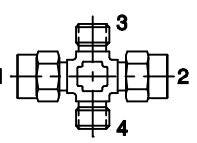
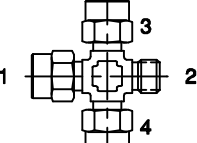
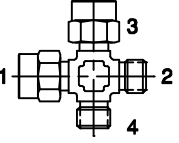
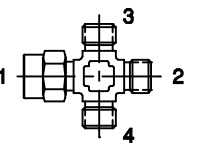
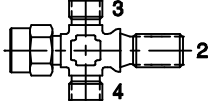
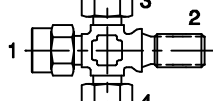
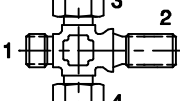
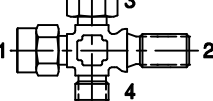
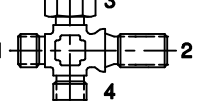
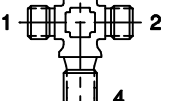
FITTING SIZE	DN	OPERATING PRESSURE (kPa) PER FITTING MATERIAL		
		Ti Alloy	Cres	Alum Alloy
05	5.0	28000	21000	21000
06	6.0	28000	21000	21000
08	8.0	28000	21000	21000
10	10.0	28000	21000	21000
12	12.0	28000	21000	21000
14	14.0	28000	21000	21000
16	16.0	28000	21000	21000
20	20.0	28000	21000	21000
25	25.0	28000	21000	10500
32	32.0	28000	21000	10500
40	40.0	28000	14000	10500

EXAMPLE OF PART NUMBER FOR ORDERING FITTING

AP51313 J 12 08 H



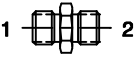



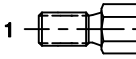
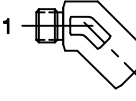
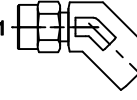
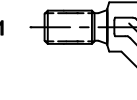
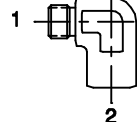
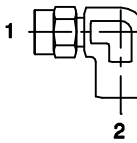
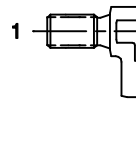
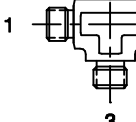
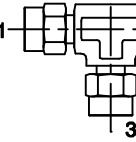
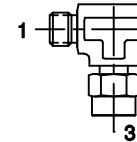
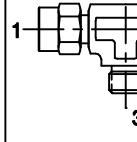
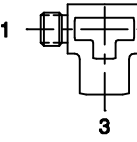
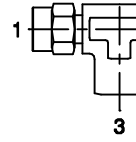
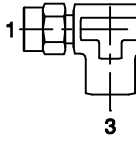
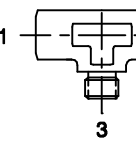
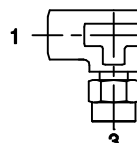
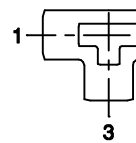
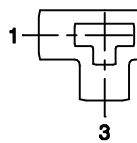
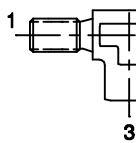
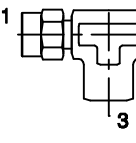
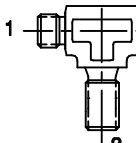
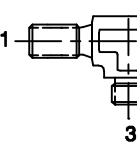
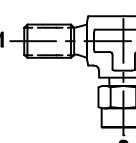
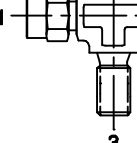
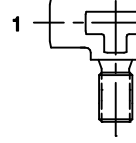
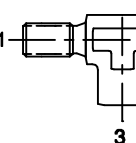
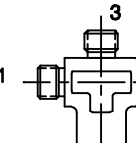
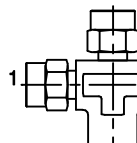
Note: Contact Airdrome Precision Components for special fitting configuration, material and/or size not listed in this catalog.

					
AP51037	AP51032	AP51033	AP51038	AP51030	AP51156
					
AP51031	AP51152	AP51157	AP51159	AP51160	AP51208
					
AP51161	AP51314	AP51333	AP51313	AP51318	AP51320
					
AP51334	AP51332	AP51319	AP51335	AP51315	AP51566
					
AP51557	AP51562	AP51556	AP51559	AP51561	AP51567
					
AP51563	AP51564	AP51565	AP51553	AP51572	AP51573
					
AP51780/AP51777	AP51783	AP51782	AP51778	AP51779	AP51781
					
AP51786	AP51787	AP51788	AP51789	AP51790	AP51791

**Metric 24 deg. Flareless Fittings
and Equivalent Industry Standards**

Fitting Shape	Port Sequence for Airdrome Part No. only (See Example of Part No.)				Airdrome Standard	Aerospace Standard
	1	2	3	4		
Jam Nut					AP51037	MA2118
					AP51032	MA2521
Coupling Nut					AP51033	MA2040
Sleeve	F				AP51038	MA2041
Cap	F				AP51030	MA2036
Plug	M				AP51156	
	M				AP51031	MA2035
Straight	M	M			AP51152	MA2115 *MA2116
	M	M			AP51157	MA2025 *MA2038
	F	F			AP51159	
	F	M			AP51160	
	B	M			AP51208	MA2043 *MA2058
	B	F			AP51161	
45 deg. Elbow	M	M			AP51314	
	F	F			AP51333	
	F	M			AP51313	MA2048
	M	B			AP51318	MA2029
	F	B			AP51320	
90 deg. Elbow	M	M			AP51334	MA2026
	F	F			AP51332	
	F	M			AP51319	MA2050
	M	B			AP51335	MA2030
	F	B			AP51315	
Tee	M	M	M		AP51566	MA2027
	F	F	F		AP51557	
	F	F	M		AP51562	
	M	M	F		AP51556	MA2051
	F	M	M		AP51559	MA2049
	M	F	F		AP51561	
	B	M	M		AP51567	MA2031
	M	B	F		AP51563	
	F	B	M		AP51564	
	F	B	F		AP51565	
	M	M	B		AP51553	MA2034
	F	M	B		AP51572	
	F	F	B		AP51573	
Cross	M	M	M	M	AP51780 *AP51777	MA2028
	F	F	F	F	AP51783	
	F	F	M	M	AP51782	
	F	M	F	F	AP51778	
	F	M	F	M	AP51779	
	F	M	M	M	AP51781	MA2158
	F	B	M	M	AP51786	
	F	B	F	F	AP51787	
	M	B	F	F	AP51788	
	F	B	F	M	AP51789	
	M	B	F	M	AP51790	
	M	M	M	B	AP51791	MA2157

Notes: 1. F = Female Metric 24 deg. Flareless port,
M = Male Metric 24 deg. Flareless port,
B = Bulkhead Metric 24 deg. Flareless male port.
2. * = A different part number assigned for reducers.

 <p>AP51209</p>	 <p>AP51210</p>	 <p>AP51211</p>	 <p>AP51212</p>	 <p>AP51213</p>	 <p>AP51321</p>
 <p>AP51322</p>	 <p>AP51323</p>	 <p>AP51324</p>	 <p>AP51336</p>	 <p>AP51337</p>	 <p>AP51574</p>
 <p>AP51575</p>	 <p>AP51576</p>	 <p>AP51577</p>	 <p>AP51578</p>	 <p>AP51579</p>	 <p>AP51580</p>
 <p>AP51581</p>	 <p>AP51582</p>	 <p>AP51583</p>	 <p>AP51584</p>	 <p>AP51585</p>	 <p>AP51586</p>
 <p>AP51587</p>	 <p>AP51588</p>	 <p>AP51589</p>	 <p>AP51590</p>	 <p>AP51591</p>	 <p>AP51592</p>
 <p>AP51792</p>	 <p>AP51793</p>				

**Metric 24 deg. Flareless to Metric Boss Fittings
and Equivalent Industry Standards**

Fitting Shape	Port Sequence for Airdrome Part No. only (See Example of Part No.)				Airdrome Standard	Aerospace Standard
	1	2	3	4		
Straight	M	M			AP51209	MA2042
	F	M			AP51210	
	F	M			AP51211	MA2037
	F	F			AP51212	
	B	F			AP51213	
45 deg. Elbow	M	F			AP51321	
	F	F			AP51322	
	B	F			AP51323	
90 deg. Elbow	M	F			AP51324	
	F	F			AP51336	
	B	F			AP51337	
Tee	M	F	M		AP51574	
	F	F	F		AP51575	
	M	F	F		AP51576	
	F	F	M		AP51577	
	M	M	F		AP51578	
	F	F	F		AP51579	
	F	M	F		AP51580	
	F	F	M		AP51581	
	F	F	F		AP51582	
	F	M	F		AP51583	
	F	F	F		AP51584	
	B	M	F		AP51585	MA2033
	F	B	F		AP51586	
	M	F	B		AP51587	
	B	F	M		AP51588	MA2032
	B	F	F		AP51589	
	F	F	B		AP51590	
	F	F	B		AP51591	
B	F	F		AP51592		
Cross	M	M	M	F	AP51792	
	F	F	F	F	AP51793	

Note: 1. F = Female Metric 24 deg. Flareless or Metric Boss ports,
M = Male Metric 24 deg. Flareless or Metric Boss ports,
B = Bulkhead Metric 24 deg. Flareless male port.