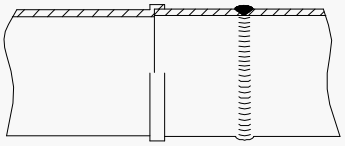
METRIC ORBITAL WELD PERMANENT FITTING



DESIGN CONCEPT:

Weld fitting design offers smallest envelope, lightest weight and strongest joint among all other mechanical fitting joints. Navy test results showed an average welded joint has a durable fatigue life up to 150 % higher than mechanically attached fitting joints. No wonder this concept is widely used in commercial and military programs worldwide.

The weld fitting end design has the simplest geometrical contour with an integral T-ring. It provides alignment for the fitting and tubing and is also a filler material for welding.

Fitting and tubing ends shall be cleaned prior to welding, one of the simplest cleaning methods is to spray acidtone to the weld joint and it will quickly evaporates.

Weld fittings are easily to be welded by Orbital weld tooling with electronic memories to reproduce accurate repeated weld each time. It minimizes X-ray inspection to a large degree. Different tooling is available for bench production weld or portable welding. The unified welded joint provides a positive fluid sealing.

DESIGN ADVANTAGES:

X Unified weld joint offers positive sealing.

X Offers smallest envelope, lightest weight and strongest fitting joint.

X Electronic memories produce accurate repeated weld each time.

X Weld tooling requires lowest maintenance cost by replacing tunston only.

X Integral T-ring offers self-alignment for fitting and tubing butting to support proper welding.

STANDARD PROCUREMENT SPECIFICATIONS FOR ORBITAL WELD FITTINGS

SAE MA2005, MA2060, MA2094, MA4510 and/or ISO7169 are applicable specifications define Form, Fit, Function and Procurement requirements for Orbital Tube Weld fittings.

QUALIFICATION AND APPROVAL STATUS

Airdrome fittings were qualified to meet necessary portions of MA2005, MA2060, MA2094, MA4510 and ISO7169 requirements. The fittings are approved for use in various space, military and commercial programs at Allison, GTRE, etc.

TOOLING

Various welding equipment manufacturers offer Orbital Weld tooling and training.

FITTING MATERIAL SELECTION

The Adapters or Permanent Orbital Tube Weld fittings are offered in the following applicable materials for use with various tubing materials, fluid and operating temperature:

MATERIAL AND CODING

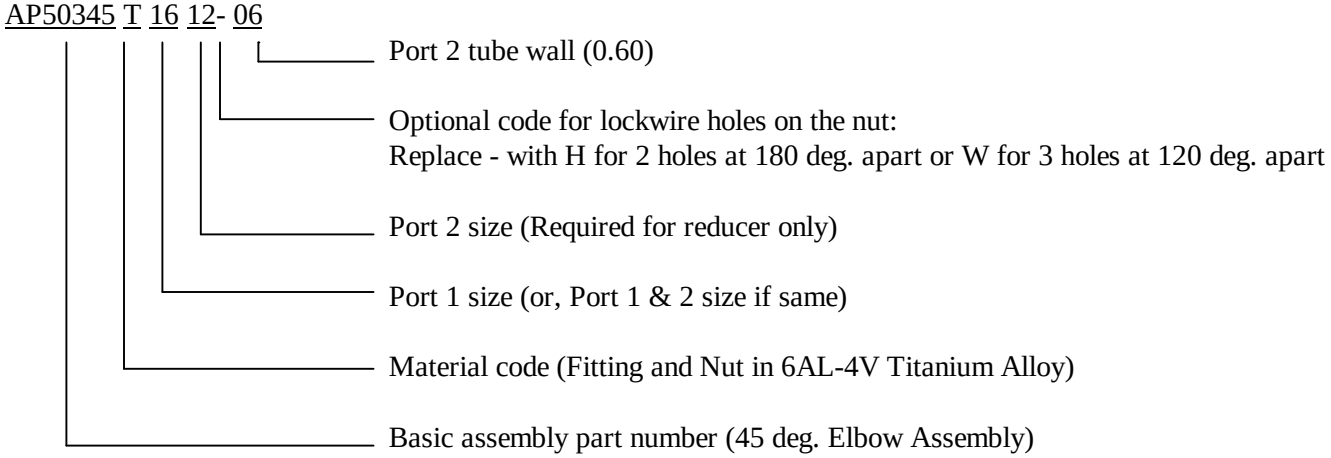
Titanium Alloy	Code T	Indicates 6AL-4V per AMS4928 (all except DualISeal parts) and AMS4965 (for DualISeal parts only).
Cres	Code J	Indicates 304 per AMS-QQ-S-763 (all except DualISeal parts).
	Code K	Indicates 316 per AMS-QQ-S-763 (all except DualISeal parts).
	Code N	Indicates Inconel 718 per AMS5663.
	Code P	Indicates 17-4PH, H-1075 cond., per AMS5643.
	Code R	Indicates 321 per AMS-QQ-S-763 (all except DualISeal parts).
	Code S	Indicated 347 per AMS-QQ-S-763 (all except DualISeal parts).
	Code V	Indicates 15-5PH, H-1075 cond., per AMS5659.
	Code JL	Indicates 304L per AMS-QQ-S-763 (all except DualISeal part).
	Code KL	Indicates 316L per AMS-QQ-S-763 (all except DualISeal part).
	Code -	Indicates 21-6-9 per AMS5656.
Aluminum Alloy	Code D	Indicates 6061-T6 per QQ-A-225/8 (all but DualISeal part).

SIZE, MATERIAL AND TUBE WALL VERSUS OPERATING PRESSURE

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

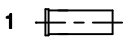
		OTHER SEPARABLE WELD fittings			DUAL lSEAL SEPARABLE WELD fittings	
		OPERATING PRESSURE (kPa) PER FITTING MATERIAL			OPERATING PRESSURE (kPa) PER FITTING MATERIAL	
FITTING SIZE	DN	Ti Alloy	Cres	Alum Alloy	Ti Alloy	Cres
03	3.0	28000	21000	10500	28000	21000
04	4.0	28000	21000	10500	28000	21000
05	5.0	28000	21000	10500	28000	21000
06	6.0	28000	21000	10500	28000	21000
08	8.0	28000	21000	10500	28000	21000
10	10.0	28000	21000	10500	28000	21000
12	12.0	28000	21000	10500	28000	21000
14	14.0	28000	21000	10500	28000	21000
16	16.0	28000	21000	10500	28000	21000
18	18.0	28000	21000	10500	28000	21000
20	20.0	28000	21000	10500	28000	21000
25	25.0	28000	21000	10500	28000	21000
32	32.0	28000	21000	10500	28000	21000
40	40.0	14000	14000	10500	14000	14000

EXAMPLE OF PART NUMBER FOR ORDERING FITTINGS



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

AP52003



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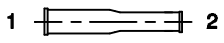

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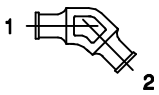

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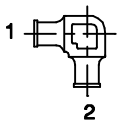

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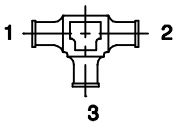

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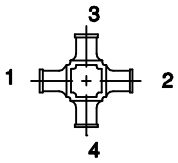
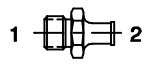
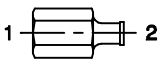
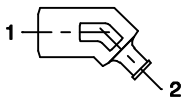
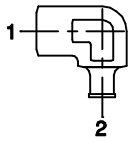
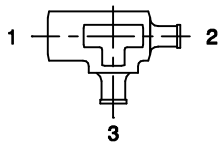
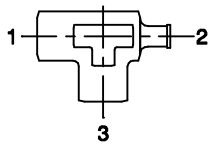
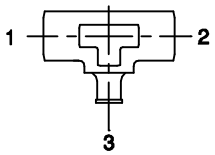
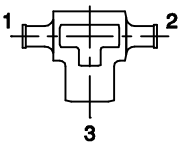
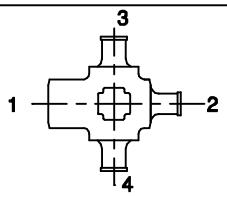
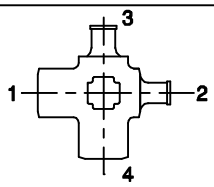
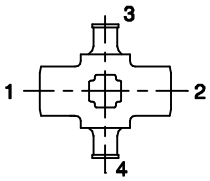
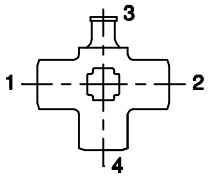


AP52776

Metric Orbital Tube Weld Fittings and Equivalent Industry Standards

Fitting Shape	Port Sequence for Airdrome Part No. (See Example of Part No.)				Airdrome Standard	AECMA Standard	Aerospace Standard
	1	2	3	4			
T-Ring	W				AP52003	EN3688	MA2062
						EN3689	
Cap	W				AP52004		
Straight	W	W			AP52003		MA2066
45 deg. Elbow	W	W			AP52346	EN3563	
90 deg. Elbow	W	W			AP52329	EN3562	MA2069
Tee	W	W	W		AP52553		MA2070
Cross	W	W	W	W	AP52776		MA2071

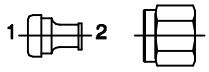
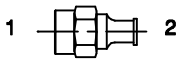
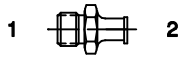
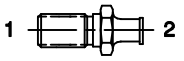
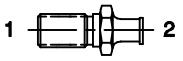
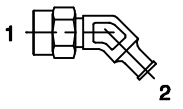
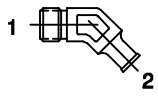
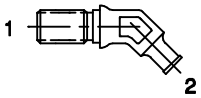
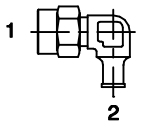
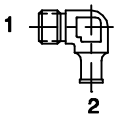
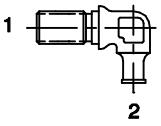
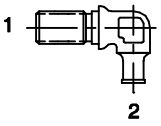
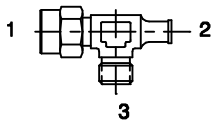
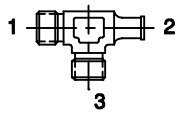
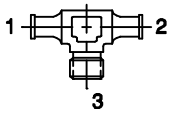
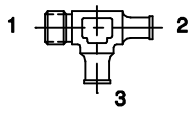
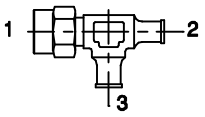
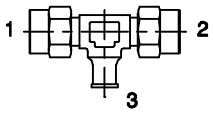
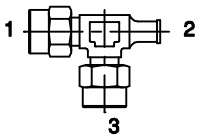
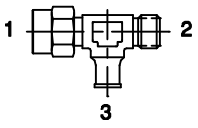
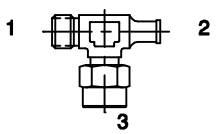
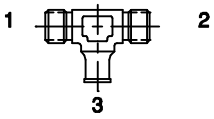
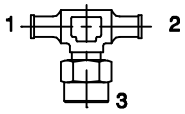
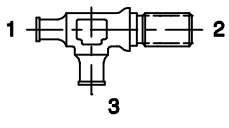
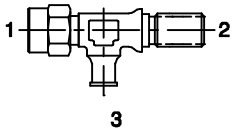
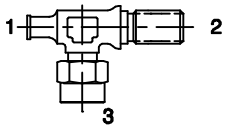
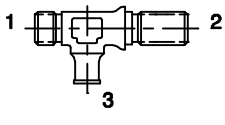
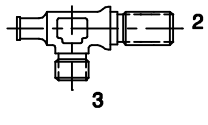
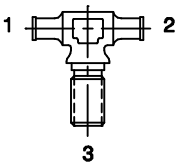
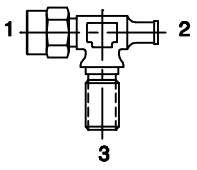
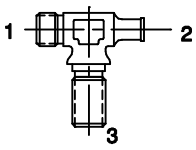
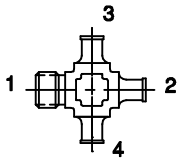
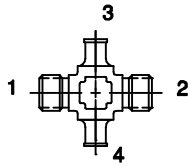
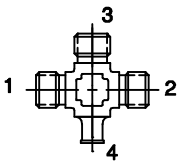
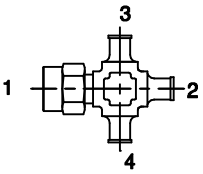
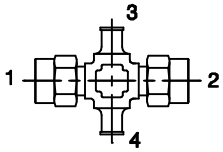
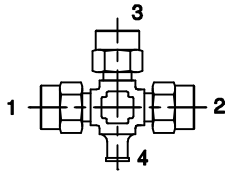
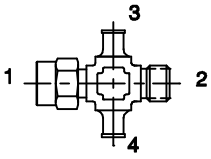
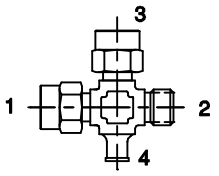
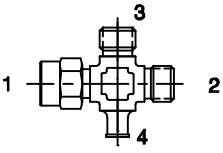
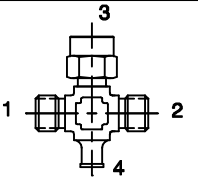
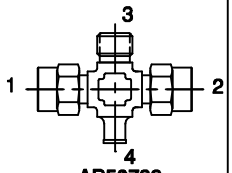
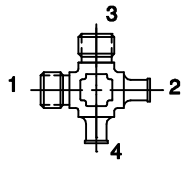
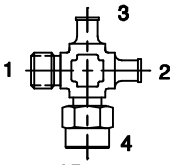
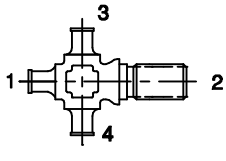
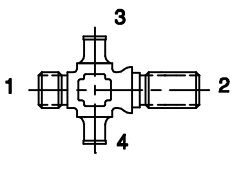
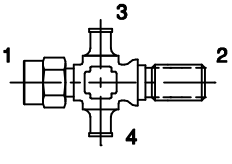
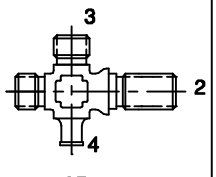
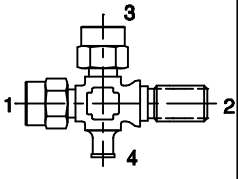
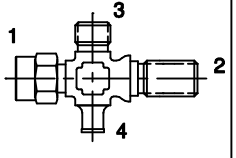
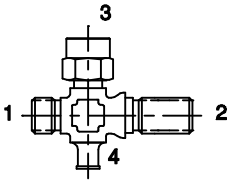
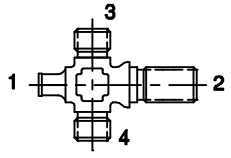
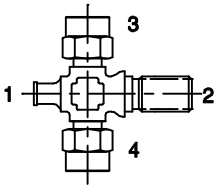
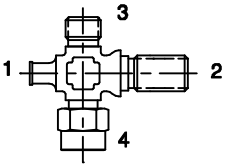
Notes: 1. W = Metric Orbital Tube Weld port.
2. The AP, EN and MA have the same configurations but are not interchangeable fittings.

 AP52105	 AP52106	 AP52347	 AP52348	 AP52574	 AP52575
 AP52576	 AP52577	 AP52777	 AP52778	 AP52779	 AP52780

Metric Orbital Tube Weld to Metric Boss Fittings

Fitting Shape	Port Sequence for Airdrome Part No. (See Example of Part No.)				Airdrome Standard
	1	2	3	4	
Straight	M	W			AP52105
	F	W			AP52106
45 deg. Elbow	F	W			AP52347
90 deg. Elbow	F	W			AP52348
Tee	F	W	W		AP52574
	F	W	F		AP52575
	F	F	W		AP52576
	W	W	F		AP52577
Cross	F	W	W	W	AP52777
	F	W	W	F	AP52778
	F	F	W	W	AP52779
	F	F	W	F	AP52780

Note: 1. F = Female Metric Boss port,
M = Male Metric Boss port,
W = Metric Orbital Tube Weld port.

 AP50133 AP50020	 AP50174	 AP50131	 AP50114	 AP50180	 AP50345
 AP50358	 AP50359	 AP50340	 AP50341	 AP50343	 AP50360
 AP50573	 AP50574	 AP50575	 AP50576	 AP50577	 AP50578
 AP50579	 AP50580	 AP50581	 AP50582	 AP50583	 AP50584
 AP50585	 AP50586	 AP50587	 AP50588	 AP50589	 AP50590
 AP50591	 AP50789	 AP50790	 AP50791	 AP50792	 AP50793
 AP50794	 AP50795	 AP50796	 AP50797	 AP50798	 AP50799
 AP50800	 AP50801	 AP50802	 AP50803	 AP50804	 AP50805
 AP50806	 AP50807	 AP50808	 AP50809	 AP50810	 AP50811

Metric Orbital Tube Weld to Metric Dual Seal Fittings and Equivalent Industry Standards

Fitting Shape	Port Sequence for Airdrome Part No. only (See Example of Part No.)				Airdrome Standard	AECMA Standard	Aerospace Standard
	1	2	3	4			
Sleeve	F	W			AP50133	EN3243 *EN3561	MA2301
Coupling Nut					AP50020	EN3265	MA2276
Straight	F	W			AP50174		
	M	W			AP50131	EN3242	MA2300
	B	W			AP50114	EN3247	MA2306
	B	W			AP50180	EN3691	
45 deg. Elbow	F	W			AP30345	EN3256	
	M	W			AP50358		
	B	W			AP50359		
90 deg. Elbow	F	W			AP50340	EN3252	
	M	W			AP50341	EN3251	
	B	W			AP50343	EN3254	
	B	W			AP50360	EN3693	
Tee	F	W	M		AP50573		
	M	W	M		AP50574		
	W	W	M		AP50575		
	M	W	W		AP50576		
	F	W	W		AP50577		
	F	F	W		AP50578		
	F	W	F		AP50579		
	F	M	W		AP50580		
	M	W	F		AP50581		
	M	M	W		AP50582		
	W	W	F		AP50583		
	W	B	W		AP50584		
	F	B	W		AP50585		
	W	B	F		AP50586		
	M	B	W		AP50587		
	W	B	M		AP50588		
	W	W	B		AP50589		
	F	W	B		AP50590		
	M	W	B		AP50591		
Cross	M	W	W	W	AP50789		
	M	M	W	W	AP50790		
	M	M	M	W	AP50791		
	F	W	W	W	AP50792		
	F	F	W	W	AP50793		
	F	F	F	W	AP50794		
	F	M	W	W	AP50795		
	F	M	F	W	AP50796		
	F	M	M	W	AP50797		
	M	M	F	W	AP50798		
	F	F	M	W	AP50799		
	M	W	M	W	AP50800		
	M	W	W	F	AP50801		
	W	B	W	W	AP50802		
	M	B	W	W	AP50803		
	F	B	W	W	AP50804		
	M	B	M	W	AP50805		
	F	B	F	W	AP50806		
	F	B	M	W	AP50807		
	M	B	F	W	AP50808		
	W	B	M	M	AP50809		
	W	B	F	F	AP50810		
	W	B	M	F	AP50811		

Notes: 1. F = Female Metric Dual Seal port,
M = Male Metric Dual Seal port,
B = Bulkhead Metric Dual Seal male port,
W = Metric Orbital Tube Weld port.
2. * = A different part number assigned for reducers.