



METRIC AEROSPACE STANDARD

MA2114™**REV. B**

Issued 1985-02
Reaffirmed 2015-08
Revised 2017-03

Superseding MA2114A

(R) Adapter - Port Connection, Ring Locked Installation and Removal of

RATIONALE

Add applicability to MA2119, including addition of Table 1B with associated dimensions and O-ring sizes and installation instructions. Correction of Figures 1 and 3 references. Add user definition requirement if torque values desired are other than those listed in Table 2B. Addition of alternate tooling numbers in Table 2B and addition of individual wrench and drive tool part numbers. Add alternate tool suppliers. Update 5.2.4 to recognize use of other sealants/primers and discourage use of Zinc Chromate primer. Update 5.2.5 for installation torque limits.

AECMA interest: Future revisions of this standard shall be coordinated with AECM C-4.

1. SCOPE

This SAE Aerospace Standard provides the essential minimum design, installation and removal standard for MA2111, MA2112, MA2113, and MA2119 adapters, and is applicable when specified on engineering drawings or in procurement documents.

2. APPLICABLE DOCUMENTS

The following publications form a part of this document to the extent specified herein. The latest issue of SAE publications shall apply. The applicable issue of other publications shall be the issue in effect on the date of the purchase order. In the event of conflict between the text of this document and references cited herein, the text of this document takes precedence. Nothing in this document, however, supersedes applicable laws and regulations unless a specific exemption has been obtained.

2.1 SAE Publications

Available from SAE International, 400 Commonwealth Drive, Warrendale, PA 15096-0001, Tel: 877-606-7323 (inside USA and Canada) or +1 724-776-4970 (outside USA), www.sae.org.

AMS3276	Sealing Compound, Integral Fuel Tanks and General Purpose, Intermittent Use to 360 °F (182 °C)
MA2010	Packing, Preformed – O-Ring Seal Standard Sizes and Size Codes, Metric
MA2110	Port, Ring Locked Design Standard Dimensions For
MA2111	Fitting Assembly, Adapter Ring Locked Port Connection To 8°30' Beam Seal 28000 kPa, Metric
MA2112	Adapter, Assembly - Port Connection Ring Locked To 24° Flareless Tube End, Metric

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Documents
Document Sharing Hub

MA2113 Adapter, Assembly - Port Connection Ring Locked To 60° Flareless Tube End, Metric

MA2119 Adapter, Assembly - Port Connection Ring Locked To 60° Flareless Tube End, Metric

2.2 U.S. Government Publications

Copies of these documents are available online at <http://quicksearch.dla.mil>.

MIL-PRF-23377 Performance Specification: Primer Coatings: Epoxy, High-Solids

2.3 SSPC Publications

Available from the SSPC, 800 Trumbull Drive, Pittsburgh, PA 15205, Tel: 412-281-2331, <http://www.sspc.org>.

SSPC-PAINT-25 Zinc Oxide, Alkyd, Linseed Oil Primer for Use Over Hand Cleaned Steel

3. GENERAL DESIGN INFORMATION

3.1 These adapters provide a semi-permanent male fitting primarily for use in 28000 kPa fluid systems compatible with titanium.

3.2 Adapters per MA2111, MA2112, and MA2113 installed per this document into bosses and ports per MA2110 shall have a stand-off per dimension "P" Figure 1 and Table 1A. Adapters per MA2119 shall have a stand-off per dimension "P" Figure 1 and Table 1B.

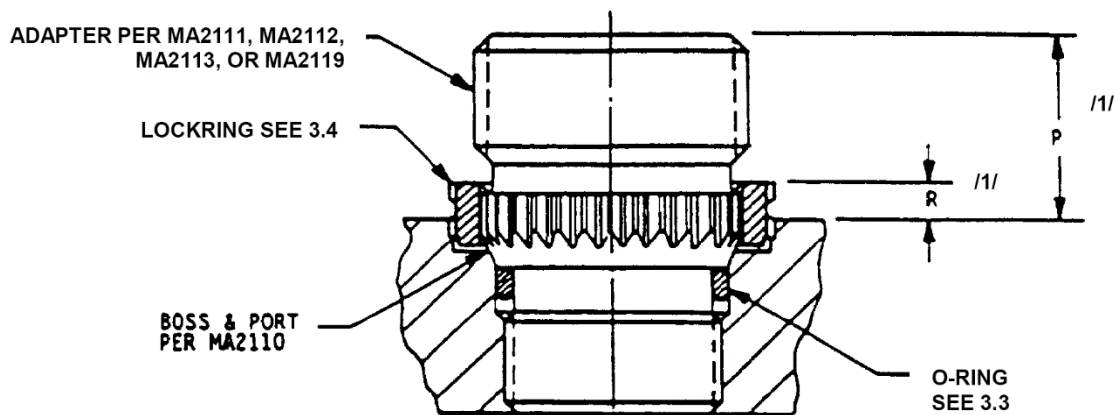


Figure 1 - Installed adapter

Note /1/: "P" and "R" dimensions are for design purpose only and not to be used as installation data.

Table 1**Table 1A - Dimensions, MA2111, MA2112, MA2113**

Port Number	O-ring Size See 3.3	Adapter Dash Number			P ±0.50			R Max
		MA2111	MA2112	MA2113	MA2111	MA2112	MA2113	
MA2110-077	A0045	05	05	04	10.80	12.60	10.80	3.20
MA2110-098	A0060	06	06	06	12.75	13.85	12.75	3.65
MA2110-125	A0080	08	08	-	15.00	15.35	--	4.10
MA2110-136	A0095	10	10	08	15.00	16.30	15.00	4.10
MA2110-153	A0112	12	12	10	15.00	16.30	15.00	4.10
MA2110-170	A0132	14	14	12	15.20	16.30	15.20	4.10
MA2110-192	A0150	16	16	14	15.20	16.30	15.20	4.10
MA2110-214	A0170	18	--	16	15.00	--	15.00	4.10
MA2110-231	A0190	20	20	18	15.60	16.90	15.60	4.10
MA2110-253	A0212	22	--	20	15.60	--	15.60	4.10
MA2110-295	A0236	25	25	--	16.00	18.00	--	4.10
MA2110-320	A0265	28	--	--	16.00	--	--	4.10
MA2110-350	A0300	32	--	--	16.00	--	--	4.10
MA2110-381	A0335	--	32	--	--	19.10	--	4.60
MA2110-452	A0387	--	40	--	--	19.10	--	4.60

Table 1B - Dimensions, MA2119

Adapter Dash Number MA2119	Port Number	O-ring Size See 3.3	P ±0.50 MA2119	R Max
08-06	MA2110-125	A0080	18.50	4.10
10-06	MA2110-136	A0095	18.50	4.10
10-08	MA2110-136	A0095	20.30	4.10
12-06	MA2110-153	A0112	18.55	4.10
12-08	MA2110-153	A0112	20.35	4.10
12-10	MA2110-153	A0112	20.35	4.10
14-06	MA2110-170	A0132	18.55	4.10
14-08	MA2110-170	A0132	20.35	4.10
14-10	MA2110-170	A0132	20.35	4.10
14-12	MA2110-170	A0132	20.35	4.10

- 3.3 O-ring size per Table 1A or 1B and per MA2010 must be used. The O-ring compound shall be specified by the using design activity and shall be selected based on system fluid and temperature.
- 3.4 The lockring is driven into the mating port serrations after the adapter has been torqued. This prevents the adapter from rotating in the port during coupling nut assembly or disassembly and also eliminates the necessity of lock wiring the adapter. Only one wrench is required to install or remove the coupling nut.
- 3.5 Adapter removal is accomplished by lifting the lockring out of the port using a removal tool per Table 2B.

Table 2

Table 2A – Installation tooling

Port Number	Porting Tool Number		Broach Tool Number		O-ring Tool		Combination Drive Tool and Wrench Number, MA2111, MA2112, AND MA2113	
	Option 1	Option 2	Option 1	Option 2	Option 1	Option 2	Option 1	Option 2
MA2110-077	RPTM077	MPTM077	RFMOPB077	MFMOBP077	ORTM0610	MORTM0610	RFM077-1010DW	MFM077-1010DW
MA2110-098	RPTM098	MPTM098	RFMOPB098	MFMOBP098	ORTM0810	MORTM0810	RFM098-1212DW	MFM098-1212DW
MA2110-125	RPTM125	MPTM125	RFMOPB125	MFMOBP125	ORTM1010	MORTM1010	RFM125-1415DW	MFM125-1415DW
MA2110-136	RPTM136	MPTM136	RFMOPB136	MFMOBP136	ORTM1212	MORTM1212	RFM136-1615DW	MFM136-1615DW
MA2110-153	RPTM153	MPTM153	RFMOPB153	MFMOBP153	ORTM1415	MORTM1415	RFM153-1815DW	MFM153-1815DW
MA2110-170	RPTM170	MPTM170	RFMOPB170	MFMOBP170	ORTM1615	MORTM1615	RFM170-2015DW	MFM170-2015DW
MA2110-192	RPTM192	MPTM192	RFMOPB192	MFMOBP192	ORTM1815	MORTM1815	RFM192-2215DW	MFM192-2215DW
MA2110-214	RPTM214	MPTM214	RFMOPB214	MFMOBP214	ORTM2015	MORTM2015	RFM214-2415DW	MFM214-2415DW
MA2110-231	RPTM231	MPTM231	RFMOPB231	MFMOBP231	ORTM2215	MORTM2215	RFM231-2715DW	MFM231-2715DW
MA2110-253	RPTM253	MPTM253	RFMOPB253	MFMOBP253	ORTM2415	MORTM2415	RFM253-3015DW	MFM253-3015DW
MA2110-295	RPTM295	MPTM295	RFMOPB295	MFMOBP295	ORTM2715	MORTM2715	RFM295-3315DW	MFM295-3315DW
MA2110-320	RPTM320	MPTM320	RFMOPB320	MFMOBP320	ORTM3015	MORTM3015	RFM320-3615DW	MFM320-3615DW
MA2110-350	RPTM350	MPTM350	RFMOPB350	MFMOBP350	ORTM3315	MORTM3315	RFM350-3915DW	MFM350-3915DW
MA2110-381	RPTM381	MPTM381	RFMOPB381	MFMOBP381	ORTM3615	MORTM3615	RFM381-4220DW	MFM381-4220DW
MA2110-452	RPTM452	MPTM452	RFMOPB452	MFMOBP452	ORTM4220	MORTM4220	RFM452-5020DW	MFM452-5020DW

Table 2B – Installation and removal tooling

Port Number	*Alternate Fitting Wrench Tool Number, Required for MA2119		*Alternate Lockring Drive Tool Number, Required for MA2119		Installation Torque N-m	Removal Tool Number	
	Option 1	Option 2	Option 1	Option 2		Option 1	Option 2
MA2110-077	RFM6828-077W	MF6828-077W	RFM6828-077D	MF6828-077D	5.0 - 6.0	RFM077LPDE	MF6828-077D
MA2110-098	RFM6828-098W	MF6828-098W	RFM6828-098D	MF6828-098D	9.0 - 12.0	RFM098LPDE	MF6828-098D
MA2110-125	RFM6828-125W	MF6828-125W	RFM6828-125D	MF6828-125D	20.0 - 24.0	RFM125LPDE	MF6828-125D
MA2110-136	RFM6828-136W	MF6828-136W	RFM6828-136D	MF6828-136D	34.0 - 40.0	RFM136LPDE	MF6828-136D
MA2110-153	RFM6828-153W	MF6828-153W	RFM6828-153D	MF6828-153D	48.0 - 56.0	RFM153LPDE	MF6828-153D
MA2110-170	RFM6828-170W	MF6828-170W	RFM6828-170D	MF6828-170D	58.0 - 66.5	RFM170LPDE	MF6828-170D
MA2110-192	RFM6828-192W	MF6828-192W	RFM6828-192D	MF6828-192D	69.0 - 78.0	RFM192LPDE	MF6828-192D
MA2110-214	RFM6828-214W	MF6828-214W	RFM6828-214D	MF6828-214D	82.0 - 91.5	RFM214LPDE	MF6828-214D
MA2110-231	RFM6828-231W	MF6828-231W	RFM6828-231D	MF6828-231D	98.0 - 108.0	RFM231LPDE	MF6828-231D
MA2110-253	RFM6828-253W	MF6828-253W	RFM6828-253D	MF6828-253D	106.0 - 117.0	RFM253LPDE	MF6828-253D
MA2110-295	RFM6828-295W	MF6828-295W	RFM6828-295D	MF6828-295D	120.0 - 132.0	RFM295LPDE	MF6828-295D
MA2110-320	RFM6828-320W	MF6828-320W	RFM6828-320D	MF6828-320D	137.0 - 152.0	RFM320LPDE	MF6828-320D
MA2110-350	RFM6828-350W	MF6828-350W	RFM6828-350D	MF6828-350D	159.0 - 177.0	RFM350LPDE	MF6828-350D
MA2110-381	RFM6828-381W	MF6828-381W	RFM6828-381D	MF6828-381D	180.0 - 200.0	RFM381LPDE	MF6828-381D
MA2110-452	RFM6828-452W	MF6828-452W	RFM6828-452D	MF6828-452D	212.0 - 235.0	RFM452LPDE	MF6828-452D

NOTE: These fitting adapters require special tooling for proper installation. 'Option 1' tooling part numbers listed above are available from Alcoa Fastening Systems, Fullerton, CA - CAGE Code 66776, and equivalent alternate 'Option 2' tooling part numbers are available from McKinnon Industries, a Shur-Lok Company, Irvine, CA - CAGE Code 65085. *Alternate fitting wrench and lockring drive tools that conform to MA2114 installation requirements are required for installation of reducer adapters per MA2119 and are available from the aforementioned suppliers.

4. DESIGN REQUIREMENTS

4.1 Minimum data to be specified on Engineering drawing or Specification.

4.1.1 Boss diameter to be at least the minimum specified in 4.1.9, Table 3.

4.1.2 Location of port.

4.1.3 Specific port size per MA2110. If tap drill depth is not through, then specify control dimensions.