AEROSPACE STANDARD

AS4202	REV. A

Issued 1992-06
Revised 1998-01
Reaffirmed 2015-06

Superseding AS4202

Adapter - Port Connection, Ring Locked Design, Installation and Removal of 8000 psi Systems

RATIONALE

AS4202A has been reaffirmed to comply with the SAE five-year review policy.

1. SCOPE:

1.1 This SAE Aerospace Standard (AS) provides the essential minimum design, installation and removal standard for AS4200 adapter and is applicable when specified on engineering drawings, or in procurement documents.

2. REFERENCES:

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, 400 Commonwealth Drive, Warrendale, PA 15096-0001.

AS568	Aerospace Size Standard for O-rings
AS4200	Adapter Assembly - Port Connection Ring Locked to Beam Seal Fitting 8000 psi
AS4201	Port - Ring Locked Fluid Connection Type 8000 psi Standard Dimensions For

2.2 U.S. Government Publications:

Available from DODSSP, Subscription Services Desk, Building 4D, 700 Robbins Avenue, Philadelphia, PA 19111-5094.

TT-P-1757	Primer Coating, Zinc Chromate, Low-Moisture-Sensitivity

TO PLACE A DOCUMENT ORDER: **Tel: 877-606-7323 (inside USA and Canada)**
Tel: +1 724-776-4970 (outside USA)
Fax: 724-776-0790
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SAE values your input. To provide feedback on this Technical Report, please visit
http://www.sae.org/technical/standards/AS4202A

3. GENERAL DESIGN INFORMATION:

3.1 These adapters provide a semi-permanent male fitting for use in 8000 psi (24,000 psi burst pressure) fluid systems compatible with titanium, at -65 to +450 °F temperature range.

3.2 Adapters per AS4200 and installed per this document into ports per AS4201 shall have a stand-off dimension “P” per Figure 1 and Table 1.

3.3 O-ring size per Table 1 and per AS568 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 and 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 2.

4. DESIGN REQUIREMENTS:

4.1 Minimum data to be specified on engineering drawing or specification.

4.1.1 Port diameter to be at least the minimum specified in AS4201.

4.1.2 Location of port.

4.1.3 Specific port size per AS4201. If tap drill depth is not through, then specify control dimensions.

4.1.4 Specific adapter size per AS4200.

4.1.5 Specific O-ring size and compound (see 3.3).

4.1.6 Install adapter per this document.

4.1.7 Corrosion protection is specified in 5.2.4. If materials or fluids require primer different from zinc chromate primer or if an additional sealant is required, so specify.

4.1.8 Pressure testing of individual units is specified in 6.1. Testing other than that shown shall be specified.

4.1.9 The port material for 8000 psi systems must have a minimum shear strength of 20 ksi to resist the axial load being generated from 24,000 psi burst pressure (based on thread minimum shear engagement area shown in Table 3).

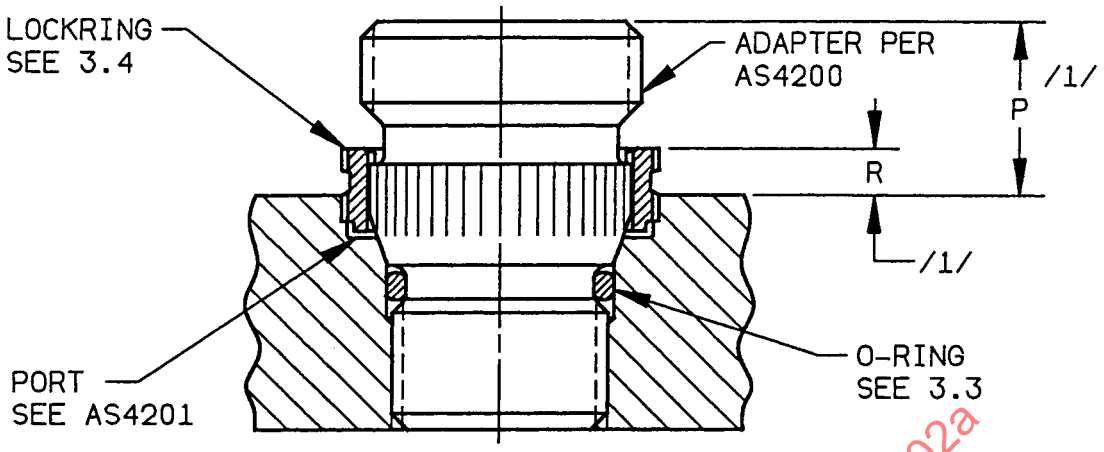

FIGURE 1 - Installed Adapter

TABLE 1 - Installation Dimensions

AS4201 Port Dash Number	AS4200 Adapter Dash Number	O-Ring Size See 3.3	P /1/ ±.020	R Max
02	02	AS568-007	.331	.124
03	03	AS568-008	.362	.124
04	04	AS568-010	.404	.124
05	05	AS568-011	.404	.124
06	06	AS568-012	.430	.130
07	07	AS568-013	.443	.130
08	08	AS568-014	.443	.130
09	09	AS568-015	.507	.130
10	10	AS568-016	.507	.130
11	11	AS568-017	.557	.140

/1/ "P" and "R" dimensions are for design purposes only and represent final stand-off dimensions. Do not use as installation dimensions.

TABLE 2 - Tooling

AS4200 Adapter Dash Number	Porting Tool Number	Basic Broach Tool Number	O-ring Tool Number	Combination Wrench and Drive Tool	Installation Torque lbf.in	Removal Tool
02	RPT02	RFOPB5002	ORT216	RF5002DW	21- 36	RF02LPDE
03	RPT03	RFOPB5003	ORT250	RF5003DW	45 - 60	RF03LPDE
04	RPT04	RFOPB5004	ORT312	RF5004DW	70-100	RF04LPDE
05	RPT05	RFOPB5005	ORT375	RF5005DW	140-170	RF05LPDE
06	RPT06	RFOPB5006	ORT437	RF6006DW	210-270	RF06LPDE
07	RPT07	RFOPB5007	ORT500	RF5007DW	320-400	RF07LPDE
08	RPT08	RFOPB5008	ORT562	RF5008DW	430-540	RF08LPDE
09	RPT09	RFOPB5009	ORT625	RF5009DW	560-660	RF09LPDE
10	RPT10	RFOPB5010	ORT687	RF5010DW	625-750	RF10LPDE
11	RPT11	RFOPB5011	ORT750	RF5011DW	700-820	RF11LPDE

NOTE: These adapters require special tooling for proper installation. Tooling is available from Rosan Products, Santa Ana, CA.--CAGE CODE 83324.

TABLE 3 - Axial Load

Port Number	/1/ Total Thread Minimum Shear Engagement Area in^2	Port "D" Max Per AS4201 in	/2/ Axial Load on Adapter Developed by 24,000 psi Burst Pressure lbf
AS4201-02	.0618	.256	1235
AS4201-03	.0782	.288	1563
AS4201-04	.1096	.341	2192
AS4201-05	.1531	.403	3061
AS4201-06	.2047	.466	4093
AS4201-07	.2598	.525	5195
AS4201-08	.3214	.584	6429
AS4201-09	.4130	.662	8261
AS4201-10	.4981	.727	9963
AS4201-11	.5661	.775	11,322

/1/ Minimum shear engagement area shown is the assembled dimensional value for the overall engaged area of mating port threads (port threads full depth of adapter). It does not represent a dimension of either of the members in an unassembled condition.

/2/ Axial load = Area x Burst Pressure = $\frac{\pi D^2}{4}$ x 24,000

5. INSTALLATION OF ADAPTER AS4200 INTO PORT AS4201:

5.1 O-ring Installation:

5.1.1 Place the O-ring tool (per Table 2) over the small thread of the fitting. Submerge the adapter, O-ring tool and O-ring in the fluid to be used in the working system, or a lubricant compatible with the system fluid and all components. Slide the O-ring over the O-ring tool and onto the fitting. Be sure that the O-ring is not twisted and is properly seated in the groove of the fitting. See Figure 2.

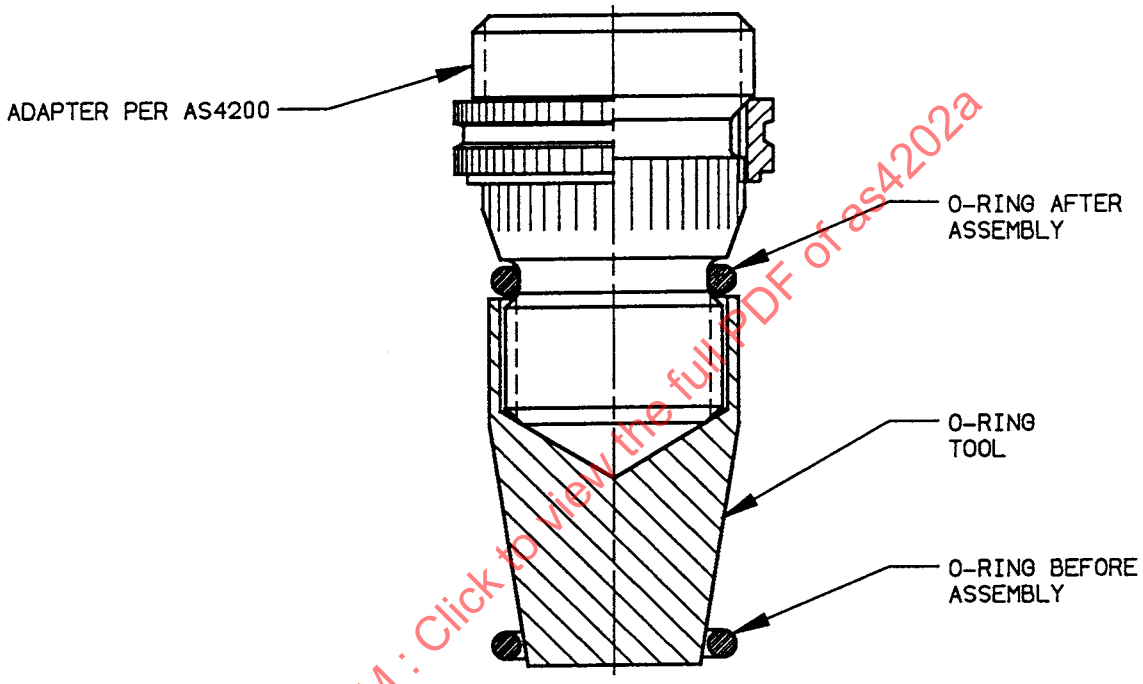

FIGURE 2 - O-ring Installation

5.1.2 Remove the O-ring tool.

5.2 Install adapter assembly into port.

5.2.1 Lubricate the internal surfaces of the port and the entire adapter assembly using the same fluid or lubricant as specified in 5.1.1. Scratches, dings or rough spots are not allowed in O-ring contact area on the adapter or in the port.

5.2.2 Insert the smaller thread of the adapter into port by hand using a clockwise rotation until the adapter is seated. To avoid possible O-ring damage, the adapter should not be rotated in a counterclockwise direction.

5.2.3 Using the applicable combination wrench and drive tool in Table 2, engage the serrations of the tool with the external serrations of the lockring per Figure 3. Place a torque wrench of the proper size over the hex of the wrench and apply a torque equal to the minimum value specified in Table 2. Note the relationship of the lockring serrations with respect to the prebroached serrations in the port. If they match, proceed to 5.2.4. If the lockring serrations do not match the prebroached serrations in the port, continue to slowly torque the adapter toward the maximum value allowed in Table 2 until the serrations match. This will normally take between 3 and 8° of turning, the maximum value need not be reached if the serrations align themselves prior to that value. Do not exceed maximum torque values.

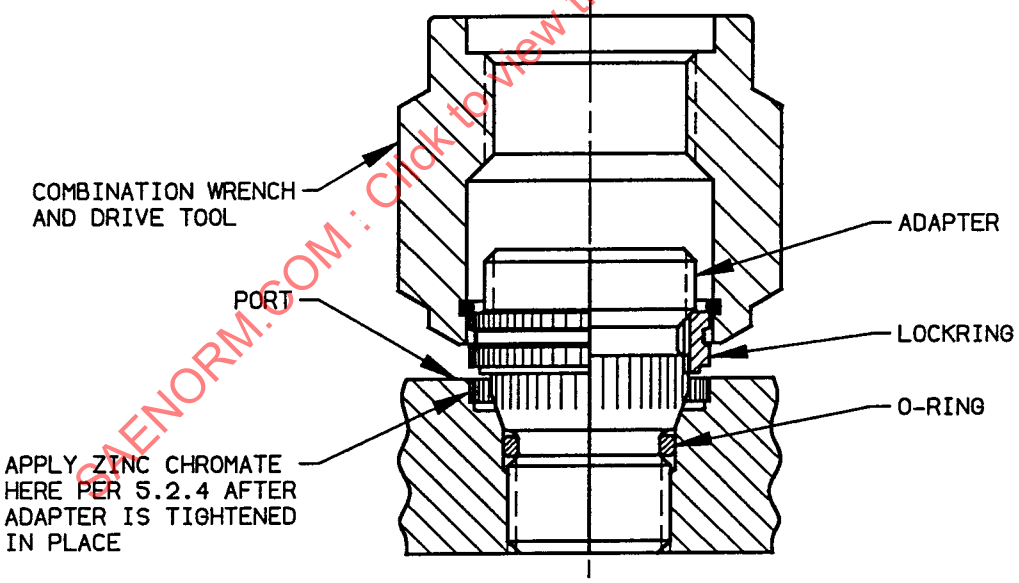

FIGURE 3 - Torquing Adapter Assembly

5.2.4 Apply enough zinc chromate primer (TT-P-1757) with a brush or small syringe to the counterbore area of the port and below the adapter lockring so primer will be extruded out between external serrations of the lockring and serrations in the port when lockring is installed.

NOTE: Using design activity may specify another primer in place of, or in addition to, zinc chromate (see 4.1.7).

5.2.5 While the zinc chromate (or other primer) applied per 5.2.4 is still wet, install the lockring by rotating the threaded end of the combination wrench and drive tool clockwise onto the adapter assembly until it touches the lockring. Using an open end or socket wrench on the tool, turn the tool in a clockwise direction until it bottoms on the port surface as shown in Figure 4. Visually observe that the tool has bottomed.

CAUTION: Any sudden increase in torque prior to bottoming may indicate that the lockring serrations and the port serrations are not aligned. If this occurs, remove wrench and drive tool by turning counterclockwise. Lift the lockring per 7.2. Tighten adapter clockwise per 5.2.3 until serrations in port and the external serrations on the lockring are aligned. Re-install lockring and remove excess primer from surface of port and lockring.

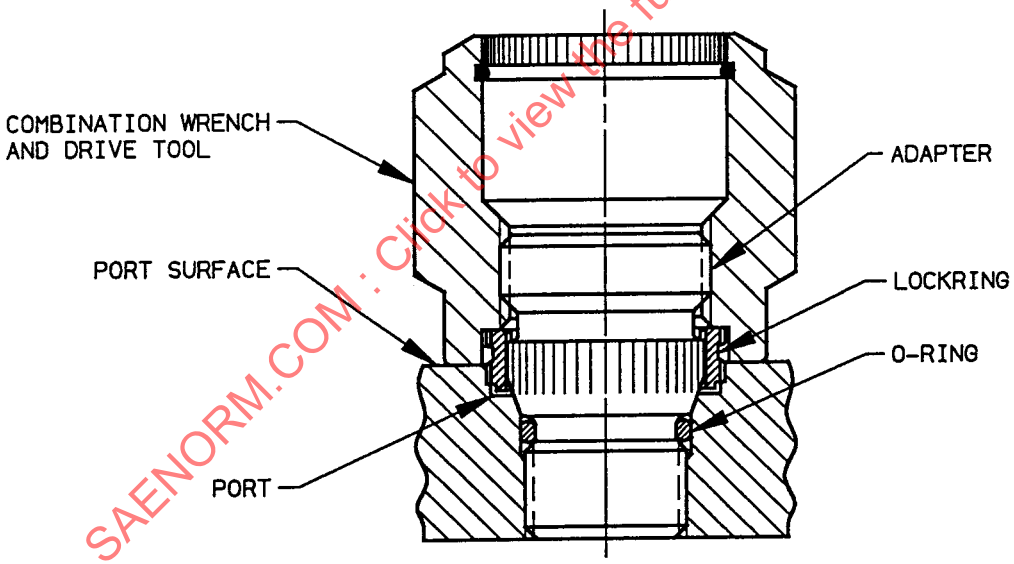

FIGURE 4 - Lockring Installation