



Check Valve (Next Generation) A-180 and A-183 Series

Installation, Operation & Maintenance (IOM) Manual

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1 Introduction

1.1 Valve Dimensions and Details

Item	Qty.	Part Name
1	1	Guide
2	1	Retainer
3	1	Seat
4	1	Body
5	1	Spring
6	1	Seat Seal
7	1	O-Ring
8	1	Insert
9	1	Gasket

CAUTION: Spring loaded assembly.
NOTE: Use assembly tool T-180 to install/remove guide.

Table 1-1 Valve Component Details

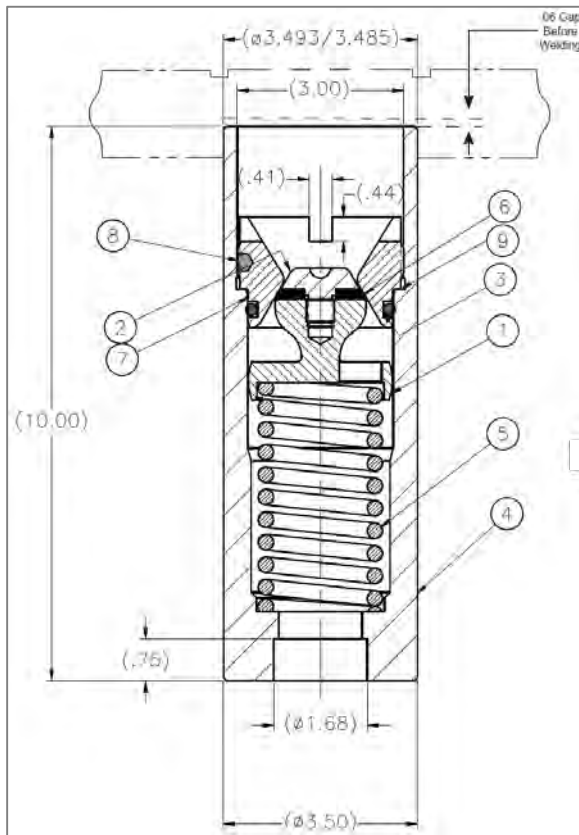


Figure 1-1 Valve Components – A-180

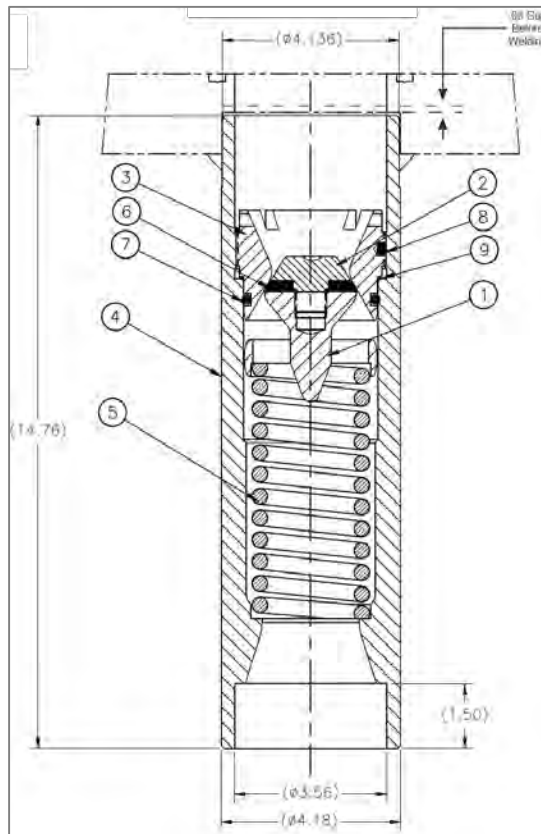


Figure 1-2 Valve Components – A-183

2 Installation

2.1 Installation Weld Procedure



NOTICE: Conform to all regulations and your company's installation and testing instructions when installing this valve. It is not the intention of this pamphlet to conflict with or supersede those requirements.

2.1.1 Insert the check valve assembly in the socket in the bottom of the cover plate.



TIP: Prior to welding, position the body so there is a 0.06" gap at the bottom of the socket.

2.1.2 Filler Metal Selection



NOTICE:

Fit-Up: Adding filler metal to fill gaps puts more heat into the part, so good fit-up is important. It's impossible to add a lot of filler metal and keep energy out of the part.

Filler Metal: The filler metal diameter should be thinner than the base metal. If it's thicker than the base metal, too much heat is needed to melt the filler metal. The filler metal should also match the base metal alloys in order to maintain consistent mechanical and corrosion properties.

Tungsten Size: Use the right tungsten diameter based on your amperage.

Stainless Steel	Filler Rod Used	Stainless Steel	Filler Rod Used
301	308	310S	310
302	308	314	310, 312
302S	308	316	316
304	308	316L	316
304L	308	317	347
305	308, 310	321	347
308	308	330	347
309	309	347	347
309S	309	348	347, 348
310	310		

Table 2-1 Filler Rod Selection

2.1.3 Apply the check valve to cover plate groove, applying tack welds on the outside of the check valve body at the groove weld.



Figure 2-1 Tack Weld



NOTICE

NOTICE: Use an AWS approved FCAW or SMAW Welding Procedure Specification (WPS) with ER308 type electrodes (per AWS A5.20 or A5.1 electrode specification).

- 2.1.4 Check the valve body to be square to the bottom surface of the cover plate. Verify 3.23 ± 0.05 dimension.

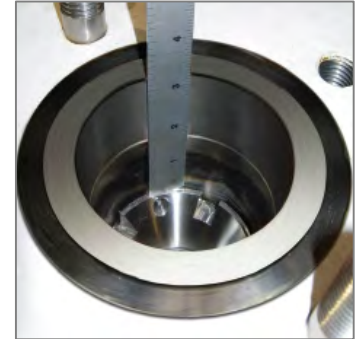


Figure 2-2 Verify Dimensions

- 2.1.5 If assembly is positioned within tolerances, make seal weld all around and final fillet weld.

Weld the outside fillet weld, taking care to adhere to the maximum interpass temperature to avert body distortion.



Figure 2-3 Fillet Weld



CAUTION

CAUTION: It is important to control material deformation caused by heat. Do not exceed the maximum interpass temperature of 300 degrees Fahrenheit for the welding of the check valve to the pressure plate.

- 2.1.6 Chip and wire brush all slag and foreign material from each applied pass. Remove all undercuts and slag.



NOTICE

NOTICE: All welded surfaces and adjacent joining base metal surfaces shall be free of cracks, inclusions, undercuts and porosity. For quality assurance, perform final visual inspection.

- 2.1.7 Allow weld to cool to below maximum interpass temperature and then remove welded “dogs” (if applicable).
- 2.1.8 For quality assurance, visually inspect and dye penetrant inspect per AAR C-III, Appendix W, Sect. 11.3 to confirm the weld applied is free of any surface defects.
- 2.1.9 Perform and document localized Post Weld Heat Treatment (PWHT) if necessary.

3 Testing

3.1 Testing Procedure

3.1.1 Follow your company's procedure for testing.

3.1.2 There are three (3) primary areas to check.

- Valve seat
- Seal between seat and body below 3"-12UN or 3-1/2"-12UN thread
- Weld joint between valve body and cover plate

3.1.2.1 If it does not seal completely, disassemble valve per Maintenance instructions.

4 Valve Disassembly

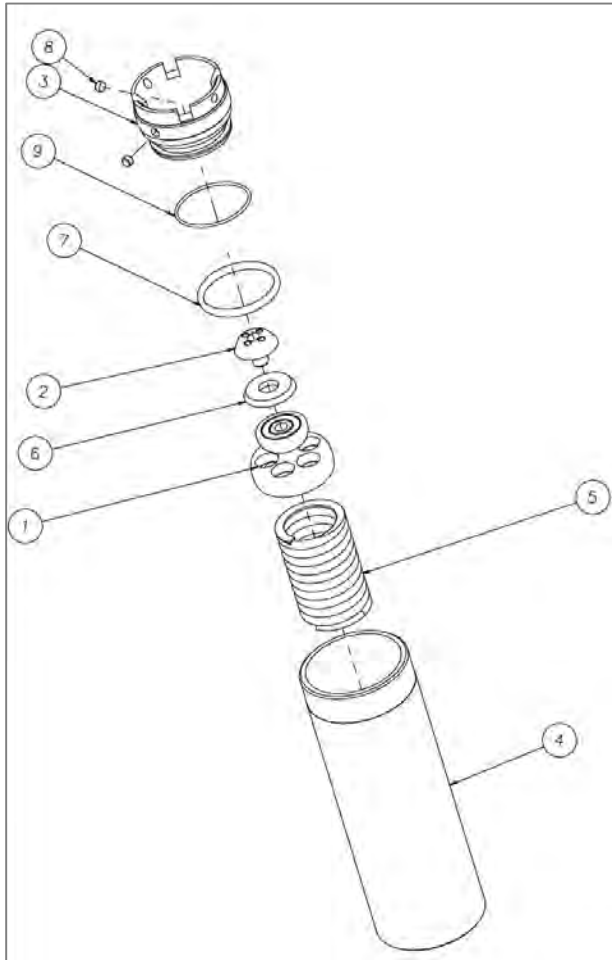


Figure 4-1 Check Valve Exploded View

4.1 Disassembly on Cover Plate

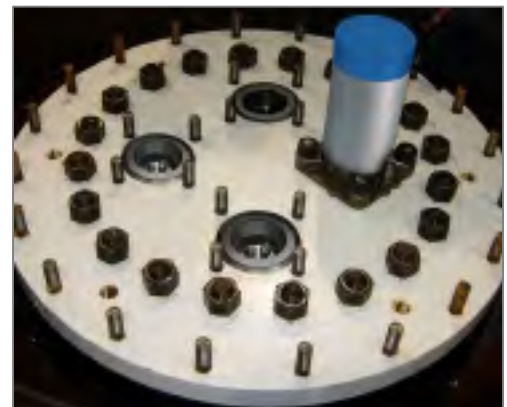


Figure 4-2 Fillet Weld



CAUTION: When valves are disassembled by an AAR registered facility, all work must be done in a clean and debris-free environment.

- 4.1.1 Remove the angle valve from the cover plate.
- 4.1.2 Use the T-A-180 tool to disassemble the valve.



Figure 4-3 T-A-180 Tool

- 4.1.3 Install bushing in the check valve seat with the cross protrusion engaged in four (4) slots located on top of the seat.



Figure 4-4 Install Bushing

- 4.1.4 Install the tool over bushing. Make sure it fits in the groove in the cover plate and fasten to the plate with two (2) 3/4-10 heavy hex nuts.



Figure 4-5 Install Tool Over Bushing

- 4.1.5 Rotate the tool handle clockwise until the $\text{\textcircled{ø}}3/4$ threaded rod makes contact with the stop.



CAUTION: Tool is under spring load.

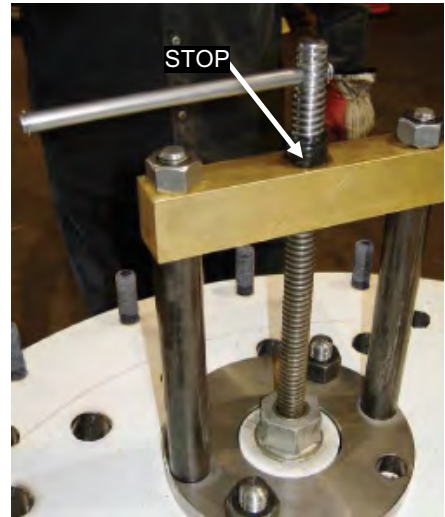


Figure 4-6 Rotate the Tool Handle Clockwise



CAUTION: When valves are disassembled by an AAR registered facility, all work must be done in a clean and debris-free environment.

- 4.1.6 Use 1-5/8 open end wrench to remove valve seat. Position the wrench on 1-5/8 hex in the bushing. Slowly rotate bushing counterclockwise to disengage from the body.
- 4.1.7 After the seat is disengaged, carefully rotate the tool handle counterclockwise until there is no spring load on the threaded rod. Continue rotating the handle until rod clears the bushing.



Figure 4-7 Remove Valve Seat and Disengage

4.1.8 Remove the bushing and tool.

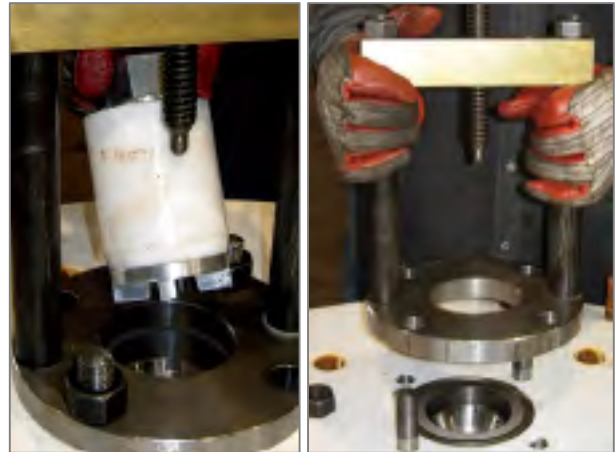


Figure 4-8 Remove Bushing and Tool

4.1.9 Remove valve seat using screwdriver or hooks and lift the through two (2) \varnothing .28 holes.



Figure 4-9 Remove Valve Seat

4.1.10 Remove plug assembly.



Figure 4-10 Remove Plug Assembly

4.1.11 Remove spring.



Figure 4-11 Remove Spring

4.2 Inspection

- 4.2.1 Carefully look at the 60° tapered valve seat. The Teflon seal seals on this surface so any nicks, scratches, product deposits or other imperfections will permit pressure to pass around the seal. Running your fingernail over this surface should be adequate to sense any imperfections. Minor scratches may be removed with Scotch Bright. Seat should be replaced if scratches cannot be removed.

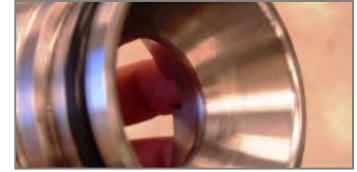


Figure 4-1 Inspect Valve Seat

- 4.2.2 Inspect the threads as removal of the seat from the body could develop burrs. If burrs are found, the threads can be cleaned by using a thread repairing tap and die. For the A-180 model check valve, use a 3-12UN-2A die and 3-12UN-2B tap. For the A-183 model check valve, use 3-1/2-12UN-2A die and 3-1/2-12UN-2B tap. Replace seat if threads are damaged.



Figure 1-2 Inspect Seat Threads

- 4.2.2.1 Inspect the outside surface of the O-ring for any cracks, embrittlement or abnormal swelling of surface discontinuities.

- 4.2.3 Replace Teflon gasket. Gasket cannot be re-used.

- 4.2.3.1 In the plug assembly, inspect the outside surface of the Teflon seal for surface discontinuities, gouges or imbedded debris. Replace Teflon seal. Use 3/4 wrench for A-180 and 11/8 wrench for A-183. Apply 55 ft-lb torque for A-180 and 70 ft-lb torque for A-183.



Figure 1-3 Replace Gasket and Inspect Plug Assembly

- 4.2.4 Clean inside diameter of valve body using soft cloth. No scratches, gouges, rust or other imperfections are allowed in the O-ring seal surface and gasket seal surface.

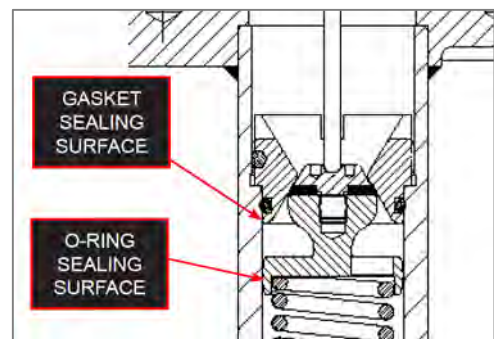


Figure 1-4 Inspect and Clean Gasket and O-Ring Sealing Surfaces

4.3 Reassembly Procedure on Cover Plate

4.3.1 To reassemble valve on cover plate, reverse disassembly steps using T-A-180 tool.

4.3.2 If lubricant is permitted for application, select a compound that is compatible with lading and lubricate threads, O-ring groove and O-ring in the seat assembly prior to valve reassembly. Tighten the seat until it stops. Do not use excessive force.



Figure 0-1 Lubricate If Needed and Tighten Seat

4.3.3 Remove installation tool and verify seat position (3.23 ± 0.05 dimension).



Figure 0-2 Inspect Valve Seat

4.3.4 Test assembly.

