

**Anderson Greenwood
Instrumentation Products****ENGINEERING DOC. NO. 25.1618.004****TITLE INSTALLATION, OPERATION & MAINTENANCE INSTRUCTIONS -
KEYBLOK**

<u>Revised</u>	0	1	2				
<u>Prepared By</u>	M. DAWBER	M. DAWBER	M. DAWBER				
<u>Approved By</u>	A. EDWARDS	A. EDWARDS	A. EDWARDS				
<u>Date</u>	11.4.94	14.7.94	23.8.95				

INSTALLATION, OPERATION & MAINTENANCE INSTRUCTIONS

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1.0 INTRODUCTION

The Keyblok range of ball valves and manifolds are of a soft seated fire safe design. The machined seat is fully encapsulated within a metal housing with fire tested back up seat. Graphite static seals are standard throughout ensure 'fire test' requirements, while seat materials and end connections vary to suit each application. For maximum pressure-temperature ratings see applicable matrix.

2.0 INSTALLATION

- 2.1 To increase probability of trouble free service ensure proper care and attention during installation process.
- 2.2 Unpack valve or manifold and check tag nameplate or body stamping for correct part / identification number.
- 2.3 Check valve or manifold tag nameplate for flow direction to ensure correct installation. If valve schematic is not given on valve body, refer to relevant General Assembly drawing.
- 2.4 Immediately prior to valve installation check the piping to which the valve or manifold is to be connected for cleanliness and freedom from foreign materials.

2.5 Threaded Valve Installation

Pipe or fitting connections must be made up tight. Threaded pipe joints depend on a good intimate fit between the male and female pipe threads usually with the use of a thread tape or sealant.

- 2.5.1 Check the threads on both the valve and the mating pipe for both form and cleanliness.

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2.5.2 Do not use substantial wrenching force on a tapered pipe joint until it is apparent that threads are properly engaged. Taper pipe threads are inherently loose fit at entry.

2.5.3 When tightening a tapered thread into the ball valve end adaptor, a wrench should be used to hold the end adaptor to ensure that it is not undone during installation.

2.6 Weld Joint Valve Installation.

Welding joints properly made provide a structural and metallurgical continuity between the pipe and the valve. All welding should be in accordance with the appropriate installation code.

2.7 Flange Joint Valve Installation

Prior to assembly, mating flanges should be checked to ensure size and rating. Flanges should be assembled using correct gasket or seal ring and bolting as specified in ANSI B16-S.

3.0 OPERATION

Ball valves and manifolds which have been matched to a typical service application and properly installed in its piping system can be expected to have long service life with a minimum of attention. However, valves have moving and wearing parts and depend on long term preservation of highly finished surfaces on certain working parts for satisfactory performance.

3.1 The handle of the valve has been designed to provide an adequate force to operate the valve with the maximum pressure differential across the valve. The use of an additional mechanical device to operate the valve is not necessary and not recommended as this may result in damage to the valve.

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- 3.2 All ball valve handles indicate the flow path through the valve, i.e. with a handle parallel to the flow line indicates that the valve is in the open position. While a handle perpendicular to the flow line indicates that the valve is in the closed position.
- 3.3 Ball valves with a pressure differential across requires handle torque to match the pressure loading being applied. The higher the pressure, the greater the force required to fully open or fully close the valve.
- 3.4 Soft seated ball valves are a simple open close device, they should not be used as a throttling device (i.e. valve should not be used with ball in mid position). Even when in storage soft seated ball valves should **ALWAYS** be left in either the fully open or fully closed position.

4.0 BALL VALVE AND MANIFOLD MAINTENANCE

Valves which remain in one position for long periods of time may be subject to some degree of inoperability due to the loss of effective lubricants in threads, ageing of seats and seals, surface corrosion of moving parts or accumulation of harmful solids. In some applications it may be desirable to schedule periodic partial or full cycle exercising of these valves.

4.1 If seat replacement is needed, safe practice requires depressurising the valve before removal from the process connection. The valve should then be transferred to a clean area, and appropriate seal repair kit obtained.

4.2 Ball Valve Seats and Seals Replacement

Although body details and end adaptor configurations may vary, the basic build up of the ball valves remain the same.

4.2.1 Refer to appropriate general arrangement drawing.

4.2.2 Remove all end adaptor locking pins or cam locks from valve body.

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4.2.3 Unscrew end adaptor counter clockwise to remove from valve body.

Rotate ball valve into the open position.

4.2.4 Remove handle, spring washer and stem ring by unscrewing locknut.

4.2.5 Remove outer seat assembly and ball from cavity. Carefully push stem into valve cavity and withdraw from valve. Second seat assembly can then be removed.

4.2.6 Remove two stem seals from internal and external recesses.

4.3 Ball Valve Cavity Re-Build

Ensure that seal repair kit is correct for valve being serviced and that all components are included.

Basic seal repair kit comprises the following:-

- 2 off seat assemblies
- 2 off stem seals
- 2 off housing static seals
- 1 off secondary static seal

NOTE: Assembly area and tooling should be clean to prevent the ingress of dirt into the valve.

4.3.1 Ensure that all components are clean and free from burrs. Keyblok ball valves are of a soft seat design which can easily be damaged.

4.3.2 Inspect all graphite seals for cracks and handle with care as they can easily be damaged.

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- 4.3.3 Carefully insert the two housing static seals into the seat assemblies ensuring no damage to the seals occurs. Utilisation of a simple pressing jib has proved to be beneficial.
- 4.3.4 Insert one of the stem seals into the internal recess of the valve body.
- 4.3.5 Load one of the seat assemblies into the bottom of the valve cavity. Ensure that seat travels easily down the cavity and sits flush at the bottom. Any interference of seat housing diameter with the body cavity bore shall be cause for rejection.
- 4.3.6 Carefully load the stem internally from the valve cavity into the stem hole, ensuring no damage to previously loaded stem seal takes place.
- 4.3.7 Insert second stem seal into external groove, over protruding stem and locate stem ring centrally about the stem seal.
- 4.3.8 Rotate stem by hand to ensure smooth operation. Stem should turn freely with no 'high spots'.
- 4.3.9 Fit handle onto stem shank.
- 4.3.10 Check the fit of the handle to the stem, there should be no backlash or lateral movement between the two. Ensure that handle to stem flats are aligned.
- 4.3.11 Locate the spring washer and locknut to stem and tighten locknut to 8 lbs./ft.
- 4.3.12 Re-check operation and alignment of sub-assembly.
- 4.3.13 With the valve handle in the closed position insert the ball into the cavity ensuring full location with the stem spigot. Ensure also that ball sits centrally within the valve cavity.

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4.3.14 For valves with cavity relief hole in ball (i.e. unidirectional valves) check orientation of equalise hole. 3 mm hole in ball shall always face upstream.

4.3.15 Insert second seat assembly into valve cavity.

4.3.16 Carefully locate secondary static seal onto valve end adaptor taking care not to fracture the seal.

4.3.17 With the valve in the fully closed position fasten end adaptor into body hand tight. Operate valve to the fully open position to check the alignment of the handle, stem and ball within the valve cavity. If satisfactory, fully tighten end adaptor to 120 lb./ft. Check that the end adaptor is sitting flush to the valve body i.e. full metal to metal contact.

4.3.18 Assemble cam lock or pin end adaptor, depending upon end adaptor type.

4.3.19 Finally fit handle stop pin and carefully check handle to ball alignment.

VALVE IS NOW READY TO TEST IN ACCORDANCE WITH W.I. 74.