IOM Supplement IOMS005

ATI HD Threaded Coupling Valve Stem Connection

Scope of Supplement

This supplement is intended to assist those who are involved with the installation, operation and maintenance of ATI Linear Actuators with an HD-style Threaded Coupling between the actuator piston rod and the valve stem. This supplement shall be used only in conjunction with a relevant ATI Installation, Operation & Maintenance Manual (IOM) and with any other applicable manuals and supplements that apply to a Product.

Applicable Product

This manual is intended as a guide for the Threaded Coupling. Failure to read and comply with installation, operation and maintenance instructions may result in bodily injury or equipment damage and will void the manufacturer's warranty.

Company Contact

For any questions or clarification, or for details on your nearest ATI Authorized Representative, contact ATI.

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Reference Documents

This IOM Supplement is referenced in the following standard IOM's and may be referenced in additional documents.

- IOM 1001 ATI Pneumatic Spring-Return Extend (SRE) Actuator
- IOM 1002 ATI Pneumatic Spring-Return Retract (SRR) Actuator
- IOM 1003 ATI Pneumatic Double-Acting (DA) Actuator
- IOM 1004 ATI Hydraulic Spring-Return Extend (SRE) Actuator
- IOM 1005 ATI Hydraulic Spring-Return Retract (SRR) Actuator
- IOM 1006 ATI Hydraulic Double-Acting (DA) Actuator
- IOMS 002 JS2 Bi-directional Mechanical Override

Safety Warnings

THIS SUPPLEMENT IS NOT A COMPLETE INSTALLATION, OPERATION AND MAINTENANCE MANUAL (IOM). USERS MUST FOLLOW INSTRUCTIONS AND GUIDELINES OF A COMPLETE IOM TO PREVENT PERSONAL INJURY, PROPERTY DAMAGE, AND DAMAGE TO THE PRODUCT.

DO NOT INSTALL, OPERATE, OR MAINTAIN AN ATI PRODUCT UNLESS TRAINED AND QUALIFIED IN PRODUCT AND ACCESSORY INSTALLATION, OPERATION AND MAINTENANCE.

Revision Record

Rev #	Issue Date	Description	Reviewed By	Approved By
A	7/01/2015	Initial Release based on IOM1003 Rev C.	DGR/DAR	DPL
B	1/20/2017	Add Appendix B	DAR	DPL

General Description

The HD-style Threaded Coupling is a 1-piece fabricated block with a threaded insert and a locking nut that connects an actuator piston rod to a valve stem.

Product Operation

The Threaded Coupling connects the actuator piston rod and the threads of the valve stem. Set screws are used to lock threads into the coupling to provide a stiff and strong connection between the valve and actuator.

HD Threaded Couplings include standard provision for adjustable, external stops for both ends of travel. External stops are typically adjustable approximately +/- 1/2 inch up to 1 inch.

HD Threaded Coupling with Stops

Refer to drawing *Figure 1* in "Appendix A – Coupling & Insert Installation" for item references that follow.

To connect a threaded coupling to the actuator and to a valve in the closed position (piston rod extended):

1. Position the subject valve to the full closed position (tight shut off).
2. Remove the valve hand wheel and hand wheel drive assembly. (See valve manufacturer's assembly/disassembly instructions).
3. Position the actuator in the full closed (piston rod (Item 1) fully extended) position. (This can be done by installing a block valve in the closing port and applying air pressure).
4. Remove the coupling block assembly (Item 2) by removing the coupling block bushing retaining cap screw and lock washer (Items 3 & 4) from the coupling block.
5. Remove the pin spanner wrench (Item 5) from inside the adaption bracket.
6. Position spanner wrench (Item 5) in holes located in the coupling block bushing (Item 6) and turn counter clockwise until completely out of the coupling block. It is not necessary to remove the piston rod insert (Item 7) or set screw (Item 8).
7. Position the actuator in the full open position.
8. Remove position indicator guide (Item 9) screws (Item 10) and lock washers (Item 11).
9. Remove position indicator (Item 12) and stud (Item 13).
10. Position actuator and adaption bracket to final adaption or valve as per application. Attach with appropriate fasteners to recommended torque specs.
11. Position coupling block assembly over valve stem and thread on clockwise for right hand threads or counter clockwise for left hand threads. Thread down on valve stem until bottom of coupling block assembly is within 1/8" to ¼" of the bottom of the adaption bracket. It is not necessary to remove threaded insert (Item 15).
12. Align the coupling block assembly to locate the position indicator hole with centerline of the adaption bracket.
13. Position the actuator in the full closed position (piston rod (Item 1) fully extended) position very slowly to install piston rod into the coupling block assembly.
14. Reinstall coupling block bushing (Item 6) with pin spanner wrench (Item 5). NOTE: DO NOT FULLY TIGHTEN UNTIL STEP 16 IS COMPLETED.
15. Reinstall position indicator (Item 12) and stud (Item 13).
16. Reinstall position indicator guide (Item 9) screws (Item 10) and lock washers (Item 11).
17. Tighten coupling block bushing (Item 6) with pin spanner wrench (Item 5), then install coupling block bushing retaining cap screw and lock washer (Items 3 & 4).
18. Cycle actuator and check for full open and full close. Adjustment may be necessary.

19. Adjustment may be made by repositioning the stop adjustment bolts (Item 14).
20. Reinstall pin spanner wrench on inside adaptation bracket.

HD Threaded Coupling without Stops

If the application allows and the valve design is suitable to withstand full thrust load of the actuator at all maximum supply pressure, then threaded stops (Items 14) may be omitted.

For many rising-stem valves, for actuator designs without adjustable mechanical stops, the actuator can be installed so that the upper head of the power cylinder acts as an internal stop for the actuator piston, protecting the valve stem from an overload condition with the actuator retracted at maximum supply pressure.

If stops are omitted, to limit corrosion, threaded holes in the coupling may be filled with grease or plugged with short bolts.

HD Threaded Coupling with JS2 mechanical override

Refer to drawing *Figure 2* in "Appendix A – Coupling & Insert Installation" for the stem coupling instructions for the optional JS2 mechanical override.

Refer to IOMS002 for additional details on the optional JS2 mechanism.

APPENDIX A – COUPLING & INSERT INSTALLATION

Figure 1, HD-series Coupling with Adjustable Stops (adapted from Drawing 6045)

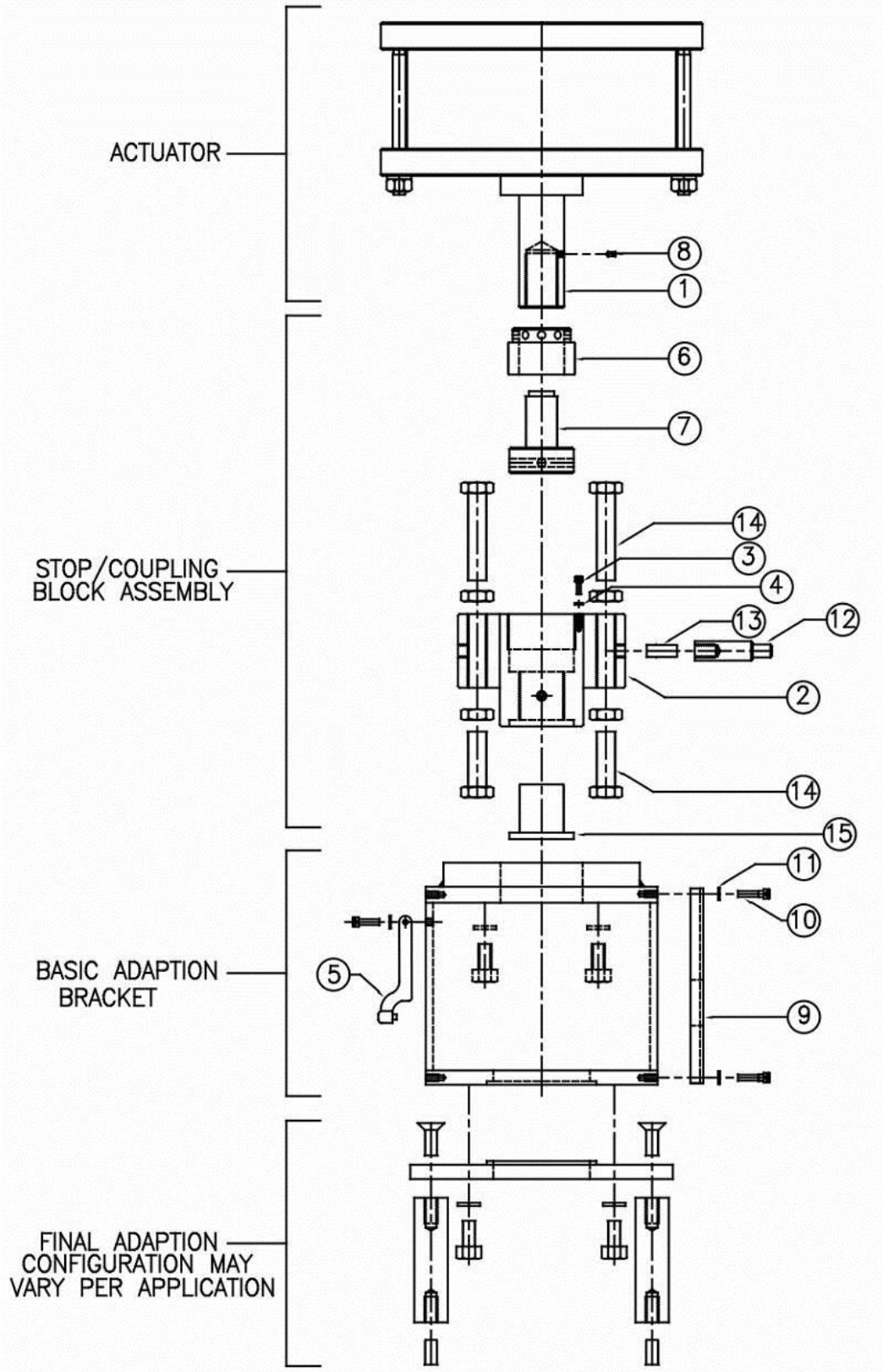
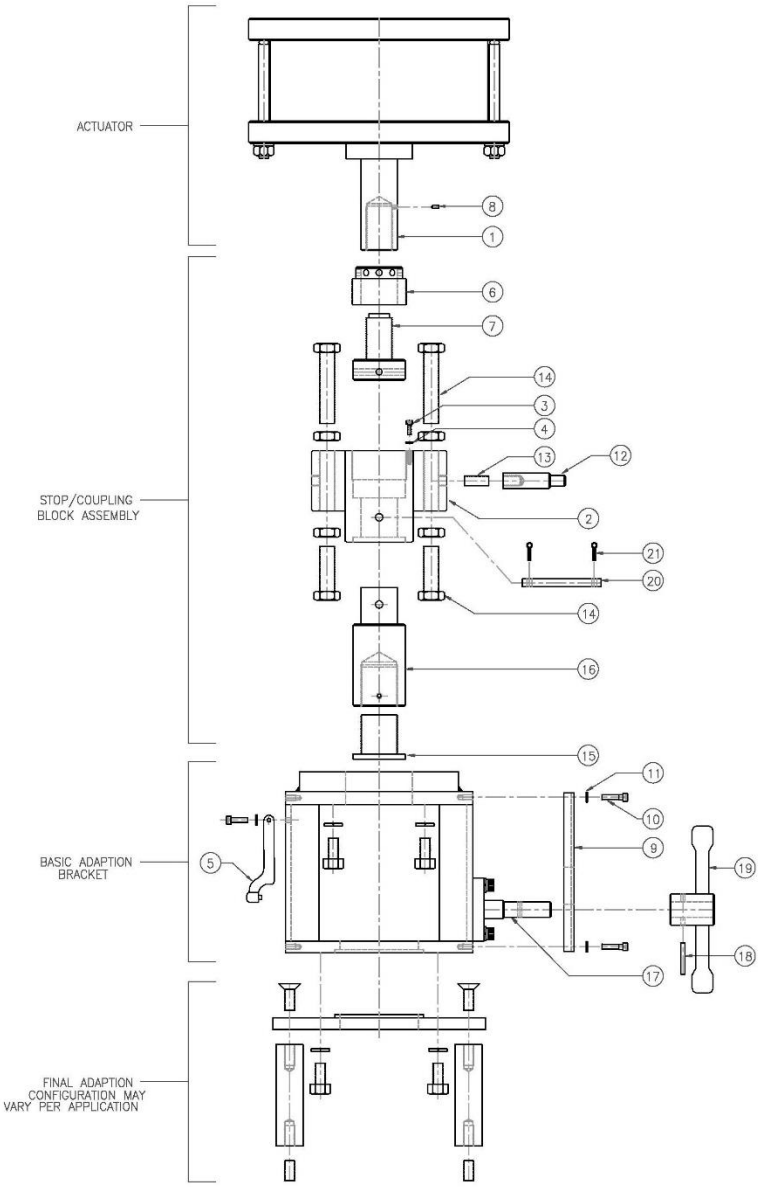


Figure 2, HD-series JS2 Coupling with Adjustable Stops (adapted from Drawing 6045)



To connect a threaded coupling to the actuator and to a valve in the closed position (piston rod extended):

1. Ensure the valve is in the fully closed position.
2. Remove the valve hand wheel and hand wheel drive assembly. (Refer to the valve manufacturer's assembly/disassembly instructions).
3. Position the actuator in the fully extended position.
4. Remove the coupling block (Item 2) by removing the coupling block bushing retaining cap screw and lock washer (Items 3 & 4) from the coupling block.
5. Remove the pin spanner wrench (Item 5) from inside the adaption bracket.
6. Position spanner wrench (Item 5) in holes located in the coupling block bushing (Item 6) and turn counter clockwise until completely out of the coupling block. It is not necessary to remove the piston rod insert (Item 7) or set screw (Item 8).
7. Position the actuator in the fully retracted position. (Apply air pressure to retract port.)

8. Remove position indicator guide (Item 9) screws (Item 10) and lock washers (Item 11).
9. Remove position indicator (Item 12) and stud (Item 13).
10. Position actuator and adaptation bracket to final adaption or valve as per application. Secure with specified fasteners, tighten and torque to recommended specs using the ATI Torque Guide found in IOMS004.
11. Install the threaded insert (Item 15) into the coupling block extension (Item 16). Install set screw to Coupling block extension.
12. Thread the coupling block extension assembly (Item 15 + 16) onto the valve stem.
13. Ensure adequate thread engagement onto the valve stem. Place coupling block assembly inside the adaptation bracket. Then position the coupling block assembly over the coupling block extension assembly (Item 15 + 16).
14. Lower the coupling block assembly (Item 2) to the coupling block extension (Item 16).
15. Align the through holes on the coupling block (Item 2) and coupling block extension (Item 16).
16. Install the drive pin (Item 20) into the through hole and secure in place with cotter pins (Item 21).
17. Locate the position indicator hole with centerline of the adaption bracket.
18. Position the actuator in the fully extended position very slowly to install piston rod into the coupling block assembly.
19. Reinstall coupling block bushing (Item 6) with pin spanner wrench (Item 5). (Note: do not fully tighten until step 21 is completed.)
20. Reinstall position indicator (Item 12) and stud (Item 13).
21. Reinstall position indicator guide (Item 9) screws (Item 10) and lock washers (Item 11).
22. Tighten coupling block bushing (Item 6) with pin spanner wrench (Item 5), then install coupling block bushing retaining cap screw and lock washer (Items 3 & 4).
23. Cycle actuator and check for full open and full close. Adjustment may be necessary.
24. Adjustment may be made by repositioning the stop adjustment bolts (Item 14).
25. Reinstall pin spanner wrench on inside adaptation bracket.

APPENDIX B – MOUNTING ACTUATORS TO WEDGE GATE VALVES

The guidelines below are to ensure the valve, and not the actuator, is stopping the travel in the closed direction.

Double Acting (DA)

1. Set the regulated pressure to 50% of the customer pressure.
2. Retract close stops until they do not touch.
3. Stroke the valve to the closed position and let the pressure build to the 50% point.
4. Adjust the close stops finger tight against the bracket.
5. Stroke to full open position.
6. Adjust stops finger tight against bracket.
7. Extend actuator and turn open stops out two turns.
8. Adjust pressure regulator to customer pressure and stroke test the actuator.

Spring Return Extend (SRE)

1. Set regulator pressure to customer supply pressure.
2. Retract open stops until they do not touch.
3. Stroke valve open.
4. Adjust open stops finger tight.
5. Retract lower stops until they do not touch.
6. Vent air and allow spring to fully close valve.
7. Turn open stops out two turns.
8. Adjust the close stops finger tight against the bracket.
9. Stroke test the actuator.

Spring Return Retract (SRR)

1. Set regulator pressure to customer supply pressure.
2. Retract close stops until they do not touch.
3. Stroke the actuator to the close position and let pressure build.
4. Adjust close stops finger tight.
5. Retract upper stops until they do not touch.
6. Vent actuator allowing it to stroke full open.
7. Adjust open stops finger tight.
8. Stroke actuator closed and extend the upper stops two turns.
9. Stroke test the actuator.