



ATI JS2 BI-DIRECTIONAL MECHANICAL OVERRIDE

Scope of Supplement

This supplement is intended to assist those who are involved with the installation, operation and maintenance of ATI Linear Actuators with the optional model “JS2” bi-directional mechanical override with handwheel. 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 JS2 mechanical override on all ATI linear actuators. 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

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	Approved
A	7/01/2015	Initial Release based on IOM1003 Rev C.	DGR/DAR	DPL
B	9/08/2016	Update with App A Fig 2, App B, Table 1	DAR	DPL



General Description

The JS-2 bi-directional mechanical override is capable of extending or retracting the actuator. The override can be used to reposition and/or hold a valve position on loss of supply pressure or loss of control signal. The JS2 may be engaged at any position from full open to full close. The JS2 mechanism is incorporated into the actuator adapter bracket, between the power cylinder and the valve, so it allows for removal and/or service of the cylinder while maintaining manual control of the valve.

Product Operation

CAUTION: Prior to operating the manual override, supply pressure to cylinder ports must be vented to atmospheric pressure.

Refer to one of the drawings in Appendix A for Item references that follow.

1.1 Engage the Override

Rotate the handwheel to position the thrust guide block & engage pin assembly (App. A., Fig. 1, 97 & 98 or Fig. 2, 57 & 70) to align with the hole in the valve stem coupling block. Use the hand knob of the engage pin to insert the engage/disengage pin into the coupling block hole. For threaded engage pins in Figure 1, turn the hand knob until the pin stops against the bottom of the engage pin hole; for engage pins in Figure 2 (see also Appendix B), unlatch the spring pin assembly at the hand knob and push the engage pin into the actuator until the spring pin latches in the engage position.

1.2 Operate the Override

Rotate the handwheel clockwise to extend the actuator (close most valves) and counter-clockwise to retract the actuator (open most valves).

CAUTION: If supply pressure is not vented from cylinder ports, the actuator will pressure lock. Operating the mechanical override will become difficult or impossible until pressure is vented, and any attempt to apply extra torque to the handwheel shaft may damage equipment and create a safety risk.

Note: With the override engaged, the valve stem is locked in place by the JS2 mechanical gearing, and the actuator power stroke is disabled. In this condition, if site safety procedures allow, it is possible to disassemble and repair seals in an actuator cylinder. Follow instructions and safety warnings in the appropriate actuator manual before proceeding.

1.3 Disengage the Override

Adjust the handwheel to relieve any thrust load on the engage/disengage pin, then using the hand knob, retract the engage/disengage pin from the coupling block. For threaded engage pins in Figure 1, turn the hand knob until the pin stops in its fully disengaged position; for engage pins in Figure 2 (see also Appendix B), unlatch the spring pin assembly at the hand knob and pull the engage pin away from the actuator and latch the spring pin in the disengaged position.



Maintenance

Refer to the relevant actuator IOM for general maintenance instructions for the actuator.

Actuators manufactured after the issue of Revision B of this supplement may use studs & nuts to connect the 2-piece adaptation bracket assembly as shown in Figure 2 of Appendix A. Original designs use bolts, see Figure 1 of Appendix A. The high-strength stud & nut design, if properly tensioned, provides for a stiffer connection that may benefit some severe service and control valve applications. These fasteners are factory set and do not require adjustment. Should these be removed for any reason, when re-installed, follow the recommended torque in the original order documentation for that serialized actuator. As a general guide, for A193 B8M Class 2 fasteners, follow the torque recommendation from Table 1 to ensure these fasteners do not stretch in service under maximum load at 150 psig supply pressure and to ensure that the nuts do not loosen in service (refer to “Final Adaptation Bracket Fasteners” in Appendix A, Figure 2).

Table 1: Recommended Torque for Final Adaptation Bracket Fasteners (Min. Ys 95ksi)

Bore Size	Stud Qty	Stud Size	Tension, in-lbf		Tension, Nm	
			MIN	MAX	MIN	MAX
08-12	4	5/8-11 UNC	610	1,400	69	158
14-18	4	3/4-10 UNC	2,000	2,510	226	284
20-22	6					
24-28	8					



APPENDIX A – JS2 ASSEMBLY

Parts list for Figures 1 & 2

Figure 1	Figure 2	Description
81	41	HELIX GEAR
82	42	KEY, HELIX GEAR
83	43	HELIX GEAR SHAFT
84	44	HELIX SHAFT BUSHING
85	45	BALL THRUST BEARING
86	46	GEAR HOUSING CAP
87	47	O RING
88	48	WIPER
89	49	SHCS, GEAR HOUSING CAP
90	50	LOCK WASHER
91	51	THRUST SHAFT BUSHING, UPPER
92	52	THRUST SHAFT BUSHING, UPPER & LOWER
93	53	BALL THRUST BEARING, UPPER & LOWER
94	54	ACME SHAFT BEARING SPACER
95	55	WORM GEAR
96	56	KEY, WORM GEAR
97	57	THRUST GUIDE BLOCK
105	60	HANDWHEEL
105	61	ROLL PIN OR BOLT W/LOCK NUT
106	62	SPEED HANDLE (OPTIONAL)
98-104	70	ENGAGE PIN ASSEMBLY
110	110	ACME THRUST SHAFT
111	111	GUIDE SHAFT

Figure 1, Typical JS2 Assembly, original design (adapted from Drawing 26332)

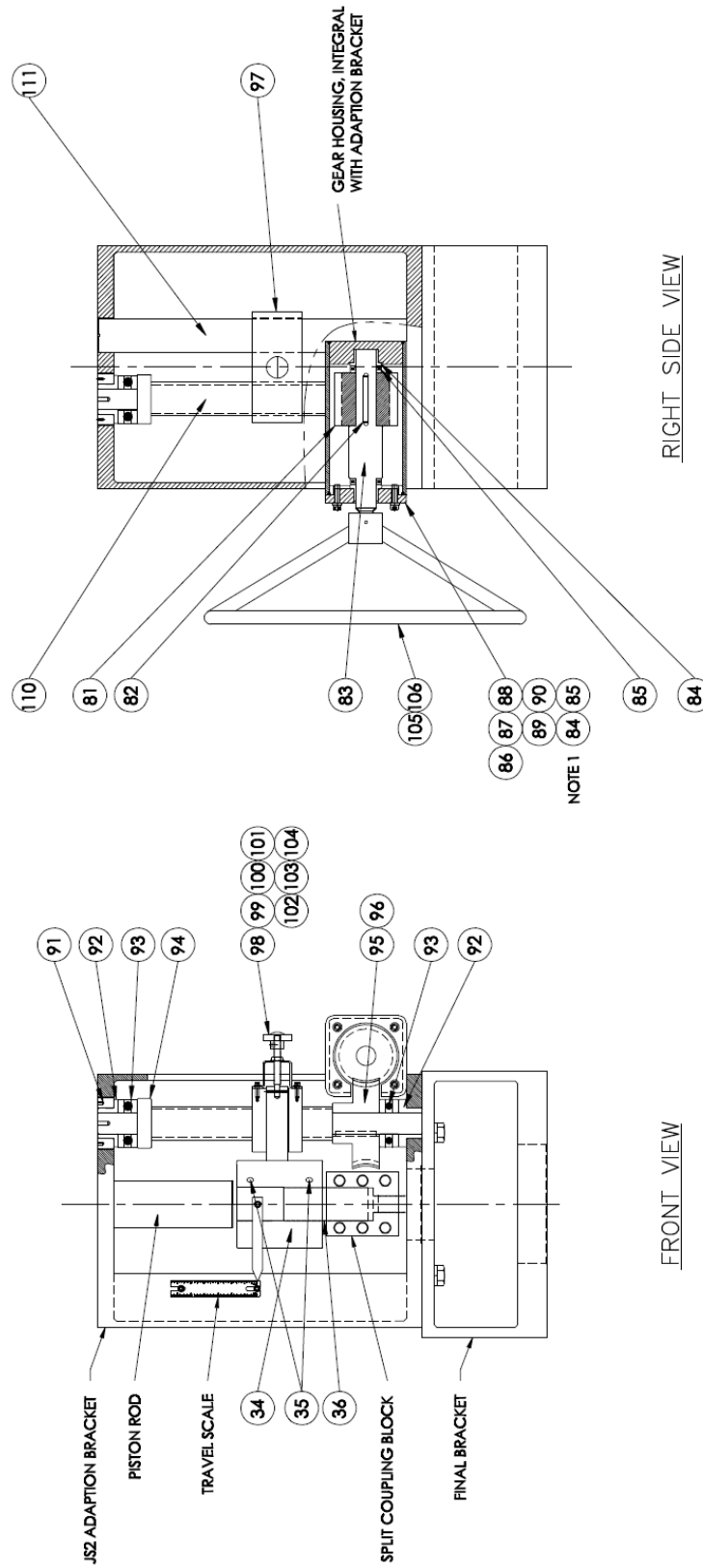
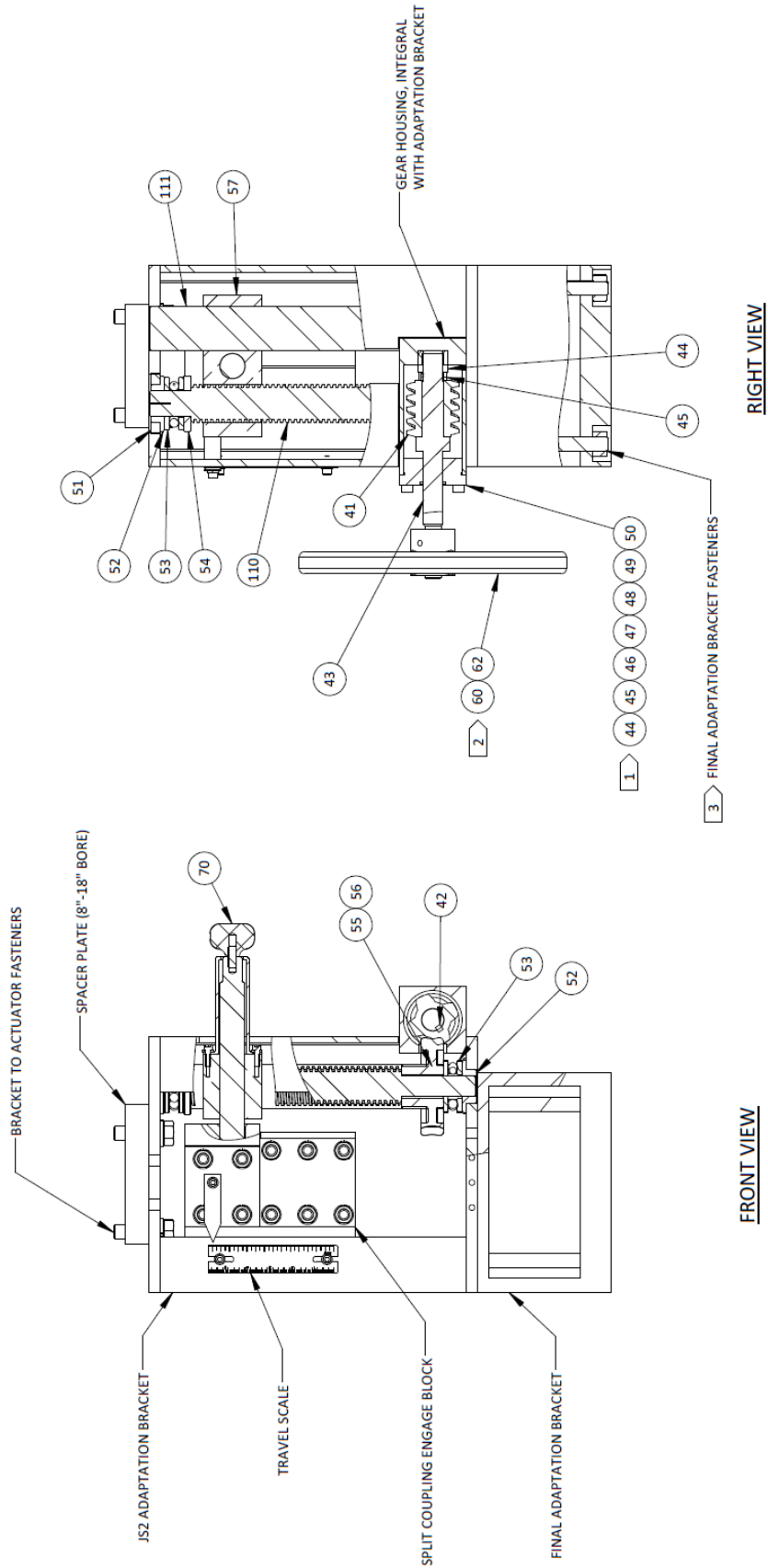


Figure 2, Typical JS2 Assembly, stiffened assembly (adapted from Drawing 29224)



APPENDIX B – ENGAGE PIN ASSEMBLY

Figure 3, Engage Pin Assembly from App. A, Fig. 2, with optional sensor switch
(adapted from Drawing 27392)

