

BETTIS ACTUATOR & CONTROLS

SERVICE INSTRUCTIONS

OPERATION, TESTING,

REMOVAL AND INSTALLATION

OF SAF-T-LOK TO A MODEL

CB520-SR80 *

* This procedure is for Bettis Saf-T-Loks mounted on
Bettis Actuator Serial Numbers 1-1738-17 thru 1-1738-34

PART NUMBER: 124576

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SECTION 1.0 - INTRODUCTION

- 1.1 **SAFETY STATEMENT:** Products supplied by Bettis, in its "as shipped" condition, are intrinsically safe if the instructions contained within this Service Instruction are strictly adhered to and executed by well trained, equipped, prepared and competent personnel.

WARNING: for the protection of personnel working on Bettis products, this procedure should be reviewed and implemented. close attention should be noted to the **WARNINGS, CAUTIONS and NOTES** contained in this procedure.

WARNING: This procedure should not supersede or replace any customers plant safety or work procedures. If a conflict arises between this procedure and the customers procedures the differences should be resolved in writing between an authorized customers representative and a authorized Bettis representative.

DEFINITIONS:

WARNING: If not observed, user incurs a high risk of severe damage to Bettis product and/or fatal injury to personnel.

CAUTION: If not observed, user may incur damage to Bettis product and/or injury to personnel.

NOTE: Advisory and information comments provided to assist personnel in implementing this procedure.

- 1.2 **TOOLS:** All required tools are American Standard inch. Two large adjustable wrenches, 8" or 12" and 1/2" drive socket set with Allen sockets.

- 1.3 **ASSEMBLY DRAWING:** Saf-T-Lok assembly drawing part number 123790.

1.4 **GENERAL NOTES**

WARNING: On spring return actuators, the Saf-T-Lok is not intended to lock the actuator in any other position than it's fail position.

WARNING: Bettis Corporation hereby allows deviation from standard commercial practice specific utilization of a Bettis Saf-T-Lok in Nuclear Power Plant. The deviation which allows the Saf-T-Lok to be utilized to retain an actuator condition whereas the spring is partially or fully compressed is being allowed under certain circumstances as follows.

1. This procedure should be used only with Bettis actuator serial numbers 1-1738-17 through 1-1738-34.
2. Bettis' agents, sub-agents, and customers who handle, install, adjust or repair and operate this equipment shall be provided these instructions.

WARNING(CONT'D): The actuator shall bear a tag appropriately located, warning operators, maintenance personnel, and other persons, to procure and read instruction part number 124576 from Bettis Corporation prior to performing any work. Alternately plant operating procedures shall be implemented and provide the same warning. The following information shall be included. The actuator mounted on the Saf-T-Lok shall be capable of its maximum valve output rotation without any interference from adjustments of the Saf-T-Lok. No adjustments, repair, or removal of the actuator is permitted without this condition being met. It shall be confirmed that each Saf-T-Lok adjustment has been retracted and releases the actuator to allow full and free valve rotation prior to any work being performed on this assembly.

This wording may be amended in the operator/owner instruction provided the intent is not altered.

- 1.4.1 Numbers in parentheses (), indicate the bubble number (reference number) used on assembly drawing and parts list.

SECTION 2.0 - SAF-T-LOK OPERATION

2.1 ENGAGEMENT OF THE LOCK SCREW:

- 2.1.1 Make sure that the actuator is in the proper position for locking. NOTE: Refer to the warning in step 1.3.
- 2.1.2 Unlock and remove the lock cover assembly (170).
- 2.1.3 Loosen the hex jam nut (70).
- 2.1.4 Turn the hex head set screw (100) counter clockwise until it is clear of the lock screw (50).
- 2.1.5 Turn the lock screw (50) clockwise until resistance is encountered, then tighten lock screw (50) to approximately 100 foot pounds.
- 2.1.6 Tighten the hex head set screw (100).
- 2.1.7 Tighten the hex jam nut (70).
- 2.1.8 Replace the lock screw cover (170).
- 2.1.9 Lock the lock screw cover (170) in place and tag if desired.

2.2 DISENGAGEMENT OF THE LOCK SCREW:

- 2.2.1 Make sure that there is no torque being applied to the Saf-T-Lok by the actuator or the valve.
- 2.2.2 Unlock and remove the lock cover assembly (170).
- 2.2.3 Loosen the hex jam nut (70).
- 2.2.4 Loosen the hex head set screw (100) and turn the lock screw (50) counter clockwise until it is clear of the lock screw (50).
- 2.2.5 Turn lock screw (50) counter clockwise until the lock screw loses thread engagement with housing (10).
- 2.2.6 Tighten the hex head set screw (100).
- 2.2.7 Tighten the hex jam nut (70).
- 2.2.8 Replace the lock screw cover (170).
- 2.2.9 Lock the lock screw cover (170) in place and tag if desired.
- 2.2.10 The actuator is ready for normal service.

SECTION 3.0 - ACTUATOR REMOVAL FROM SAF-T-LOK

3.1 GENERAL NOTES

WARNING Prior to separating the actuator from the Saf-T-Lok the actuator must be in the full fail position. Failure to ensure compliance with this warning may cause the Actuator, Saf-T-Lok or other component to suddenly spin in a dangerous and uncontrolled manner.

- 3.1.1 Remove all supply pressure. Insure that the actuator is in the full fail position.
- 3.1.2 The actuator may be heavy and require a means of assistance in lifting it from the Saf-T-Lok/valve assembly.
- 3.1.3 Measure the exposed length of the actuator stop screws and record each.
- 3.1.4 Record the orientation of the actuator, and mark appropriately.

3.2 SEPARATION OF ACTUATOR FROM SAF-T-LOK

- 3.2.1 Locate the stop screw that relieves the spring forces (refer to Stop Screw Location Table).
- 3.2.2 Back out and remove the actuator housing stop screw.
- 3.2.3 While supporting the actuator remove the four hex cap screws (200) from Saf-T-Lok housing (10)/from the adapter plate (270).
- 3.2.4 Remove the actuator from the Saf-T-Lok.
- 3.2.5 Remove the ferry head cap screws (160) from the adapter plate and remove the Saf-T-Lok from actuator. NOTE: This step is not required if the actuator is only being removed and then re-installed on the same Saf-T-Lok.

SECTION 4.0 - INSTALLING ACTUATOR TO SAF-T-LOK

4.1 REINSTALLING ACTUATOR TO ORIGINAL SAF-T-LOK

- 4.1.1 Before starting with this section refer to Section 3.0 (Actuator Removal From Saf-T-Lok) paragraph 3.1 (General Notes) and complete steps 3.1.1 through 3.1.4.
- 4.1.2 Install the actuator on the Saf-T-Lok in the position recorded or marked in step 3.1.4.
- 4.1.3 Install the hex head cap screws (200).
- 4.1.4 Return the actuator stop screws to the length noted in step 3.1.3 and align the marks on the torque shaft/housing.
- 4.1.5 Reconnect all supply pressure.
- 4.1.6 Replace lock cover assembly (170) and lock into place if desired.

4.2 INITIAL INSTALLATION OF ACTUATOR ON SAF-T-LOK

- 4.2.1 Before starting with this section refer to Section 3.0 (Actuator Removal From Saf-T-Lok) paragraph 3.1 (General Notes) and complete steps 3.1.1 through 3.1.4.
- 4.2.2 Install the adapter plate (270) to the actuator and fasten using the ferry head cap screws (160).
- 4.2.3 Install the actuator on the Saf-T-Lok.
- 4.2.4 Install the four hex head cap screws (200).
- 4.2.5 Return the actuator stop screws to the length noted in step 3.1.3 and align the marks on the torque shaft/housing.

- 4.2.6 Reconnect all supply pressure.
- 4.2.7 Replace lock cover assembly (170) and if desired lock into place.

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