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SPECIAL INFORMATION LEAFLET No. 948
PRODUCT SAFETY NOTICE

A. **ONE-TIME CHECK OF BTRU SEAR AND CORRECT ASSEMBLY OF RESTRICTOR CLAMPS ON STORED ENERGY FIRING UNITS DURING FUNCTION & LEAK TESTING OF EJECTION SEATS**

EFFECTIVITY:

B. **This Special Information Leaflet (SIL) is applicable to the following Ejection Seats only:**

All Mk. 16 ejection seat types *(1)

(1) **Exception to applicability: This Special Information Leaflet is not applicable to Mk. 16A. Mk. 16AX, Mk. F16F and Mk. US16E ejection seat types.**

C.1 Stored energy firing units subject to this Special Information Leaflet, as applicable to ejection seat types, are:

C.1.1 Automatic Backup Unit (ABU).
C.1.2 Barostatic Time-Release Unit (BTRU).
C.1.3 Time-Delay Unit (TDU).

C.2 Martin-Baker have been made aware by an Operator of an issue whereby a Barostatic Time-Release Unit (BTRU) was found partially cocked during seat arming. The sear retaining the spring-loaded firing pin was found to be protruding past the face of the threaded plug – see Figure 1 for a typical example of an incorrectly cocked sear. When correctly cocked, the face of BTRU the sear should not protrude past the face of threaded plug – see Figure 2 for typical example of a correctly cocked sear.

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C.3 Investigations conducted by Martin-Baker found that, during ejection seat function & leak test as part of scheduled maintenance, it was possible to move the sear to a partially cocked condition under gas pressure when using an incorrectly installed BTRU sear restrictor clamp, the face of the sear coming to rest against the inner face of the restrictor clamp. See Figure 3 and 4 for examples of incorrectly installed restrictor clamp allowing sear protrusion post function & leak test.

C.4 Figure 5 provides guidance on correct installation of restrictor clamps, typical to ABU, BTRU and TDU assemblies.

C.5 The consequence of an incorrectly cocked stored energy firing unit, as reported in a recent mishap event, is a potential un-commanded initiation of the parachute deployment and automatic harness release systems.

C.6 All Customers and Maintainers are reminded to ensure restrictor clamps are correctly fitted when completing function & leak test procedures and of the following:

THE ABU, BTRU AND TDU ARE STORED ENERGY FIRING UNITS; MAKE SURE YOU FOLLOW THE COCKING PROCEDURES IN THE RELEVANT MARTIN-BAKER TECHNICAL PUBLICATION. IF A STORED ENERGY FIRING UNIT IS INCORRECTLY COCKED, IT CAN FIRE WITHOUT EXTERNAL INPUT. IF A STORED ENERGY FIRING UNIT FIRES WITHOUT EXTERNAL INPUT, IT CAN KILL OR CAUSE INJURY.

D. WORK REQUIRED

D.1 TIMING FOR EMBODIMENT OF THIS INSTRUCTION

WARNING:

FOLLOW ALL APPLICABLE WARNINGS AND CAUTIONS IN THE RELEVANT MARTIN-BAKER TECHNICAL MANUAL WHEN UNDERTAKING WORK DEFINED IN THIS SPECIAL INFORMATION LEAFLET.

WARNING:

ENSURE ALL SAFETY DEVICES ARE SET TO THE SAFE FOR MAINTENANCE POSITION BEFORE COMPLETING WORK DETAILED HEREIN. IF THE CARTRIDGES ARE FIRED, THE OPERATION OF THE EJECTION SEAT SYSTEMS CAN KILL OR CAUSE INJURY.

WARNING:

THE ABU, BTRU AND TDU ARE STORED ENERGY FIRING UNITS; MAKE SURE YOU FOLLOW THE COCKING PROCEDURES IN THE RELEVANT MARTIN-BAKER TECHNICAL PUBLICATION. IF A STORED ENERGY FIRING UNIT IS INCORRECTLY COCKED, IT CAN FIRE WITHOUT EXTERNAL INPUT. IF A STORED ENERGY FIRING UNIT FIRES WITHOUT EXTERNAL INPUT, IT CAN KILL OR CAUSE INJURY.

D.1.1 **On receipt of this Special Information Leaflet**: One-time only action **at next opportunity**, on aircraft, inspect ejection seats for correct cocking of the BTRU sear only as below:

NOTE: The design of ABU and TDU restrictor clamps have been assessed by Martin-Baker and it is considered that the designs are significantly less susceptible to loose installation or non-aligned fitment. As such, it is advised that ABUs (as applicable to ejection seat type) and TDUs are excluded from the one-time only action detailed below.

WARNING:

WITH THE EJECTION SEAT SAFETY DEVICES SET TO THE 'SAFE FOR MAINTENANCE' POSITION THE OPERATION OF STORED ENERGY FIRING UNITS (ABU, BTRU, TDU) IS NOT INTERDICTED. IF A STORED ENERGY FIRING UNIT IS INCORRECTLY COCKED, IT CAN FIRE WITHOUT EXTERNAL INPUT. IF A STORED ENERGY FIRING UNIT FIRES WITHOUT EXTERNAL INPUT, IT CAN KILL OR CAUSE INJURY.

D.1.1.1 Ensure that the safety devices are set to the Safe for Maintenance position. Refer to relevant procedures in the applicable Martin-Baker technical publication.

WARNING:

REMAIN CLEAR OF THE PARACHUTE CONTAINER WHEN CONDUCTING INSPECTION OF THE BTRU SEAR ON AIRCRAFT. THE CONSEQUENCE OF AN INCORRECTLY COCKED STORED ENERGY FIRING UNIT IS A POTENTIAL UN-COMMANDED INITIATION OF THE PARACHUTE DEPLOYMENT AND AUTOMATIC HARNESS RELEASE SYSTEMS. IF A STORED ENERGY FIRING UNIT FIRES WITHOUT EXTERNAL INPUT, IT CAN KILL OR CAUSE INJURY.

D.1.1.2 Using a strong light, inspection mirror, endoscope inspection camera or similar; inspect the position of the BTRU sear. A correctly cocked device is as detailed below:

D.1.1.2.1 The BTRU sear is cocked when the end of the sear is level with the surface of the threaded plug (no protrusion). See Figure 2 for details.

NOTE (1): By design, it is permissible for the BTRU sear to be sub-flush when fully cocked.

NOTE (2): It may be necessary to motor the seat bucket and mechanism using the seat raising actuator to achieve inspection of the BTRU sear. Following all Warnings and Cautions, operate the seat raising actuator in accordance with procedures in the relevant Martin-Baker technical manual. Do not operate the seat raising actuator for more than one minute in any five minute period.

D.1.1.3 If inspection of the sear position of the BTRU installed on the ejection seat is satisfactory:

D.1.1.3.1 Following all applicable Warnings and Cautions: complete all actions necessary in accordance with the relevant Martin-Baker technical publications to return the ejection seat to operational use.

D.1.1.3.2 Record satisfactory completion of this Special Information Leaflet, SIL No. 948, in all applicable engineering documentation.

D.1.1.4 If inspection of the sear position is not satisfactorily passed – either examination results are inconclusive or protrusion of the sear is evident, reset the sear as below:

WARNING:

WITH THE EJECTION SEAT SAFETY DEVICES SET TO THE 'SAFE FOR MAINTENANCE' POSITION THE OPERATION OF STORED ENERGY FIRING UNITS (ABU, BTRU, TDU) IS NOT INTERDICTED. IF A STORED ENERGY FIRING UNIT IS INCORRECTLY COCKED, IT CAN FIRE WITHOUT EXTERNAL INPUT. IF A STORED ENERGY FIRING UNIT FIRES WITHOUT EXTERNAL INPUT, IT CAN KILL OR CAUSE INJURY.

D.1.1.4.1 Ensure that the safety devices are set to the Safe for Maintenance position. Refer to relevant procedures in the applicable Martin-Baker technical publication.

WARNING:

REMAIN CLEAR OF THE PARACHUTE CONTAINER WHEN CONDUCTING RESET OF THE BTRU SEAR ON AIRCRAFT. THE CONSEQUENCE OF AN INCORRECTLY COCKED STORED ENERGY FIRING UNIT IS A POTENTIAL UN-COMMANDED INITIATION OF THE PARACHUTE DEPLOYMENT AND AUTOMATIC HARNESS RELEASE SYSTEMS. IF A STORED ENERGY FIRING UNIT FIRES WITHOUT EXTERNAL INPUT, IT CAN KILL OR CAUSE INJURY.

D.1.1.4.2 Using finger pressure or a non-metallic tool, push the sear flush with the face of the threaded plug.

NOTE (1): A sear is correctly cocked when the sear is level with the face of the threaded plug.

D.1.1.4.3 Repeat inspection at step D.1.1.2 above to confirm presence of correctly cocked BTRU sear.

D.1.1.4.4 Following all applicable Warnings and Cautions in the relevant Martin-Baker technical manual: complete all actions necessary in accordance with the relevant Martin-Baker technical publications to return the ejection seat to operational use.

D.1.1.4.5 Record satisfactory completion of this Special Information Leaflet, SIL No. 948, in all applicable engineering documentation.

D.1.1.5 If remedial actions above cannot be completed satisfactorily following identification of an incorrect or inconclusive sear condition, contact Martin-Baker via your usual technical channels for guidance.

D.1.2 For ejection seats removed from aircraft for maintenance: complete steps D.1.4 and D.1.5 below as part of the maintenance activity.

D.1.3 For ejection seats in inventory and not installed or undergoing maintenance activity: complete steps D.1.4 (as required, dependent on maintenance due date) and D.1.5 below prior to seat installation.

D.1.4 **At next and all subsequent scheduled ejection seat maintenance**:

WARNING:

FOLLOW ALL APPLICABLE WARNINGS AND CAUTIONS IN THE RELEVANT MARTIN-BAKER TECHNICAL MANUAL WHEN UNDERTAKING WORK DEFINED IN THIS SPECIAL INFORMATION LEAFLET.

WARNING:

THE ABU, BTRU AND TDU ARE STORED ENERGY FIRING UNITS; MAKE SURE YOU FOLLOW THE COCKING PROCEDURES IN THE RELEVANT MARTIN-BAKER TECHNICAL PUBLICATION. IF A STORED ENERGY FIRING UNIT IS INCORRECTLY COCKED, IT CAN FIRE WITHOUT EXTERNAL INPUT. IF A STORED ENERGY FIRING UNIT FIRES WITHOUT EXTERNAL INPUT, IT CAN KILL OR CAUSE INJURY.

D.1.4.1 On installation of restrictor clamps to the ABU, BTRU and TDU (as applicable to ejection seat type) in preparation for seat function & leak tests, referring to Figure 5 below, the following actions shall be taken:

D.1.4.1.1 Ensure the correct restrictor clamp, by part number as referenced in the applicable Martin-Baker technical publication, is used to restrict the sear movement of the subject stored energy firing unit (ABU, BTRU or TDU).

D.1.4.1.2 Align the restrictor clamp with the stored energy firing unit. Install with the inner face of the restrictor clamp square to and flat against the face of the sear.

D.1.4.1.3 Correctly align and install the restrictor clamp adjustable block to the stored energy firing unit body.

NOTE: It shall be ensured that correct assembly of the restrictor clamp is not impeded by fouling contact with adjacent component parts/assemblies of the ejection seat.

D.1.4.1.4 Tighten the adjuster hand tight.

D.1.4.1.5 Check the restrictor clamp for looseness and misalignment with the face of the sear prior to function & leak test (step D.1.4.1.2 above and Figure 5 below).

D.1.4.2 On completion of function & leak test and post removal of the restrictor clamp, inspect BTRU and TDU sears are correctly cocked visually and with fingers to confirm flushness requirements with the threaded plug are met.

NOTE (1): The BTRU sear is cocked when the end of the sear is level with the surface of the threaded plug. By design, it is permissible for the BTRU sear to be sub-flush when fully cocked.

NOTE (2): By design the sear of the TDU is nominally flush with the face of the threaded plug. Marginal protrusion of the TDU sear only is acceptable provided the TDU sear has been retracted fully within the TDU body.

D.1.4.3 On completion of function & leak test and post removal of the restrictor clamp, inspect ABU sear is correctly cocked visually and with fingers to confirm flushness requirements with the ABU body are met.

NOTE: The ABU sear and threaded plug is cocked when it abuts the face of the ABU assembly.

D.1.5 **At next and all subsequent ejection seat arming – new, additional inspection (QA)**:

WARNING:

FOLLOW ALL APPLICABLE WARNINGS AND CAUTIONS IN THE RELEVANT MARTIN-BAKER TECHNICAL MANUAL WHEN UNDERTAKING WORK DEFINED IN THIS SPECIAL INFORMATION LEAFLET.

WARNING:

THE ABU, BTRU AND TDU ARE STORED ENERGY FIRING UNITS; MAKE SURE YOU FOLLOW THE COCKING PROCEDURES IN THE RELEVANT MARTIN-BAKER TECHNICAL PUBLICATION. IF A STORED ENERGY FIRING UNIT IS INCORRECTLY COCKED, IT CAN FIRE WITHOUT EXTERNAL INPUT. IF A STORED ENERGY FIRING UNIT FIRES WITHOUT EXTERNAL INPUT, IT CAN KILL OR CAUSE INJURY.

D.1.5.1 Inspect, visually and with fingers, for correct cocking of the sear **before** installation of the cartridge to the ABU, BTRU and TDU assemblies (as applicable to ejection seat type). (QA). Ensure the sear is correctly cocked as detailed below:

D.1.5.1.1 The ABU sear and threaded plug is cocked when it abuts the face of the ABU assembly.

D.1.5.1.2 The BTRU sear is cocked when the end of the sear is level with the surface of the threaded plug.

NOTE: By design, it is permissible for the BTRU sear to be sub-flush when fully cocked.

D.1.5.1.3 The TDU sear is cocked when the end of the sear is level with the surface of the threaded plug.

NOTE: By design the sear of the TDU is nominally flush with the face of the threaded plug. Marginal protrusion of the TDU sear only is acceptable provided the TDU sear has been retracted fully within the TDU body.

E. SUBSEQUENT ACTIONS

E.1 Martin-Baker request return of inspection results at D.1.1 above to the email address below.

E.2 Martin-Baker technical publications will be reviewed and amended (as required) in line with D.1.4 and D.1.5 above.

PSD/948
10th April 2025

Customer enquiries are to be sent to SILEnquiries@martin-baker.co.uk

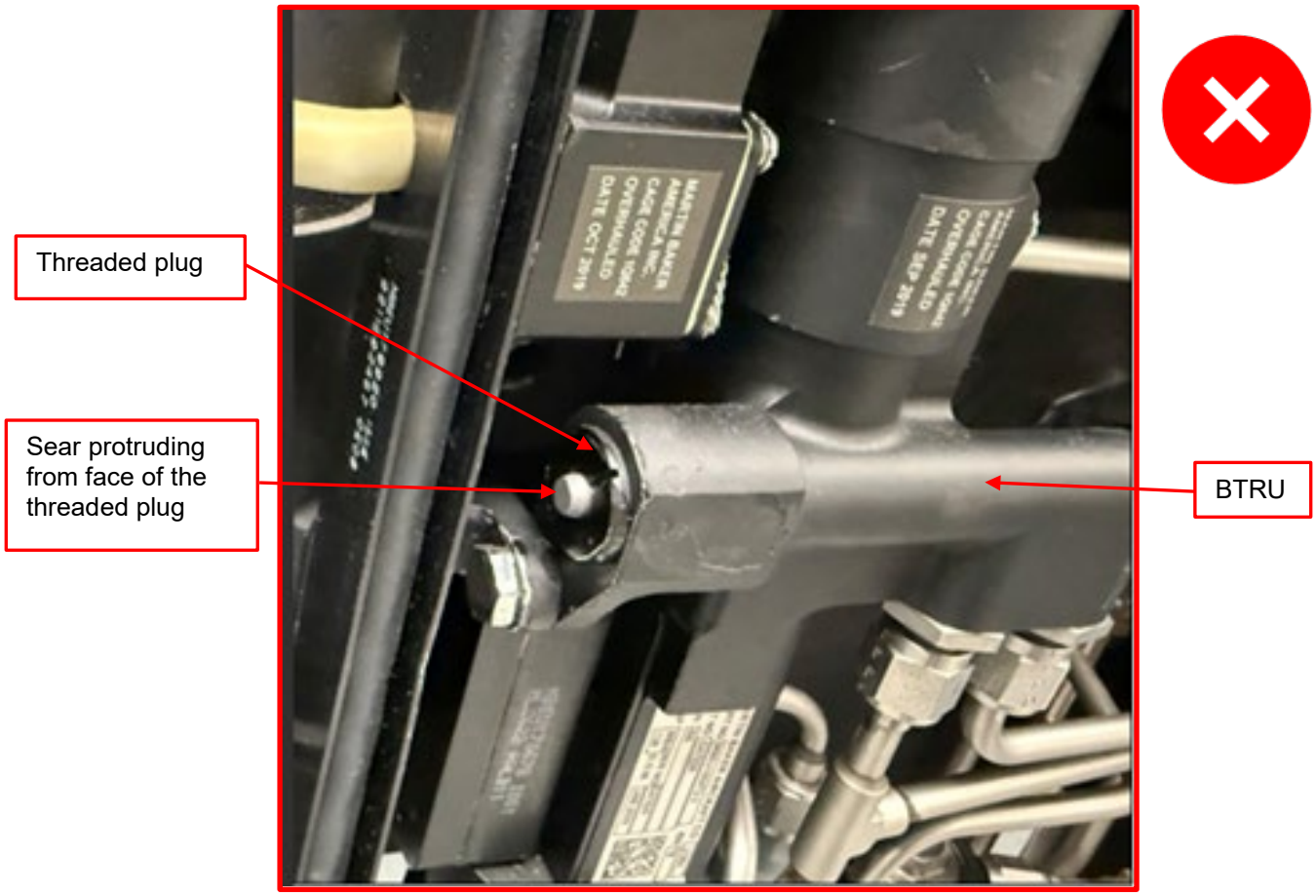
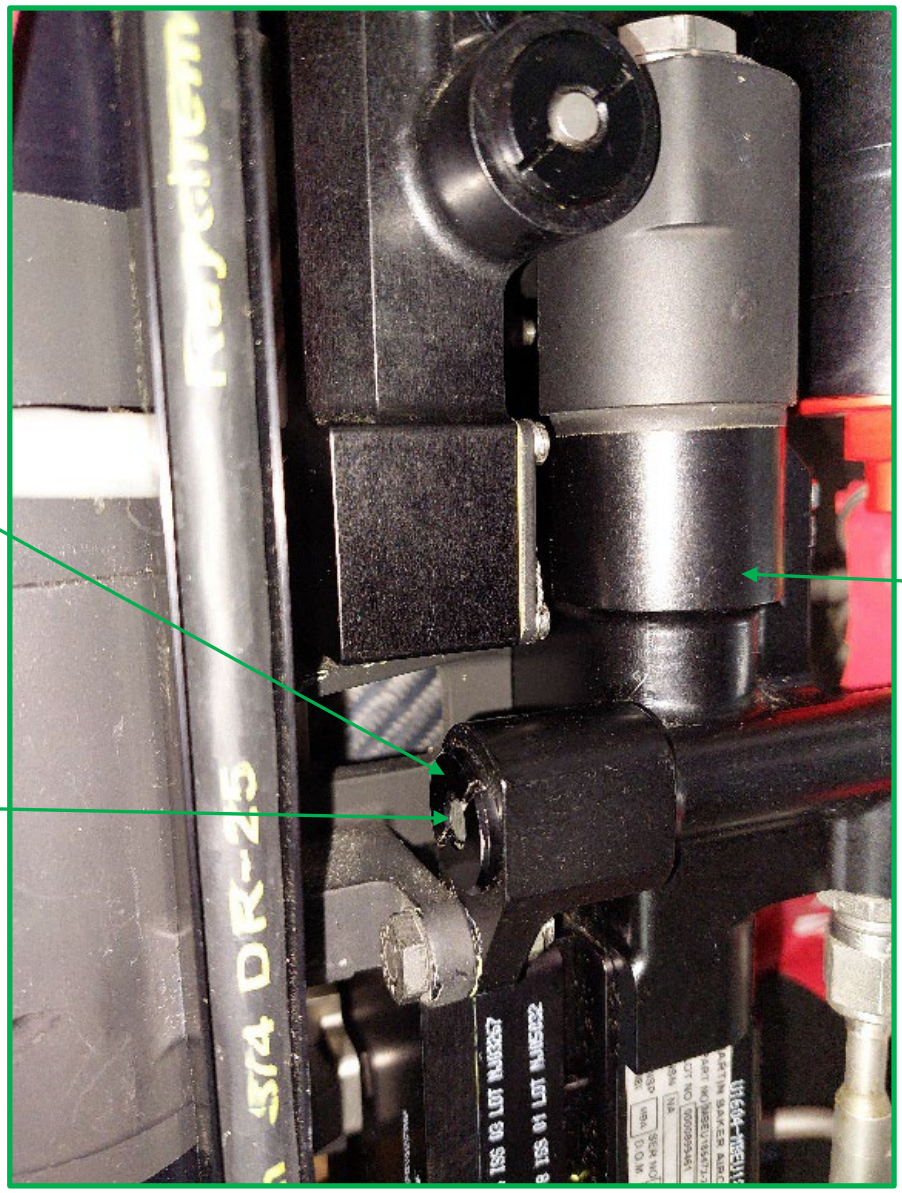


Figure 1 – Incorrectly Cocked Sear – BTRU (Typical)

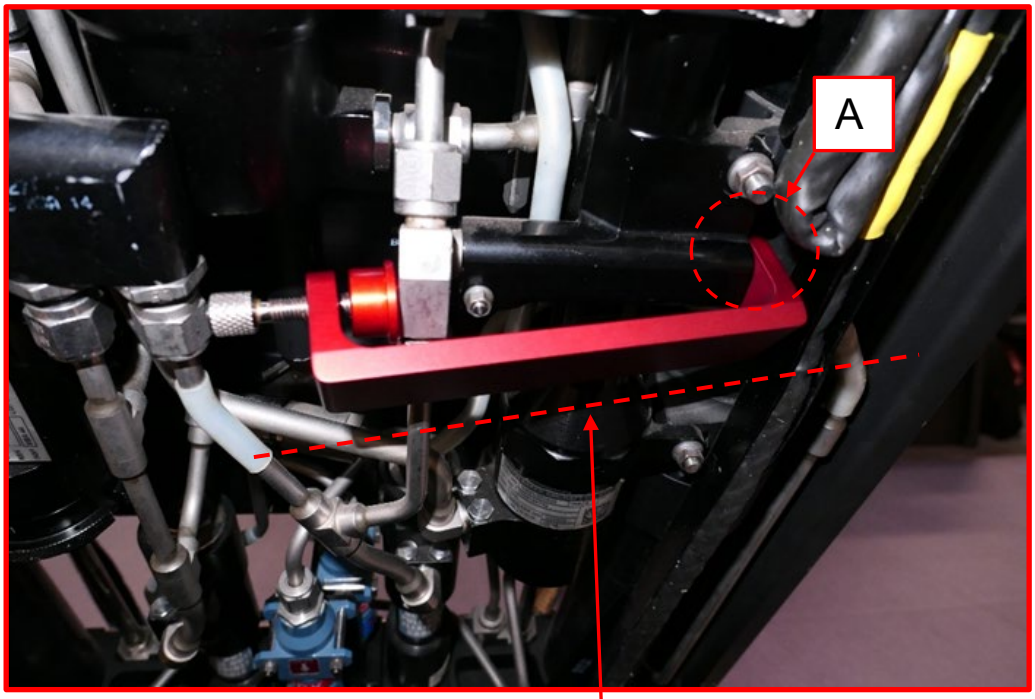


NOTES:

1) The BTRU sear is cocked when the end of the sear is level with the surface of the threaded plug.

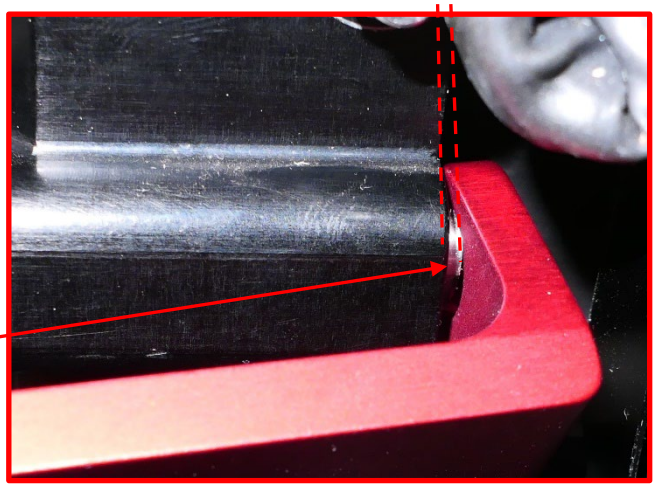
2) By design, it is permissible for the BTRU sear to be sub-flush when fully cocked.

Figure 2 – Correctly Cocked Sear – BTRU (Typical)



Restrictor clamp loosely assembled and/or at an angle, offset to the stored energy firing unit, allowing sear extraction – i.e. restrictor clamp **not** in correct alignment with the sear.

Gap between inner face of the restrictor clamp and face of sear allowing sear extraction.



Sear protrusion. Sear abutting inner face of restrictor clamp on application of gas pressure.

Figure 3 – Incorrect Installation of the Restrictor Clamp (Typical)

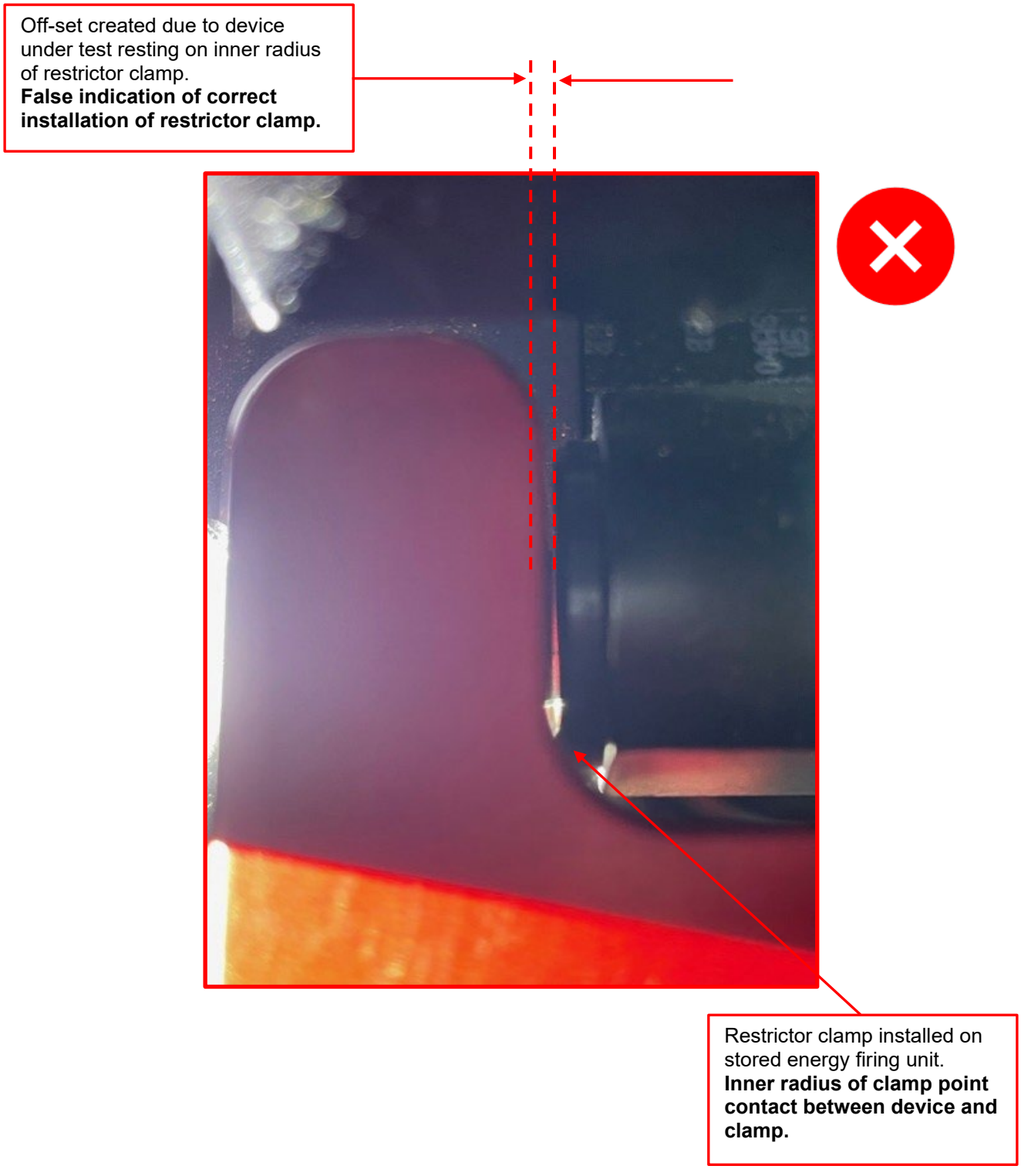


Figure 4 – Incorrect Installation of the Restrictor Clamp (Typical)

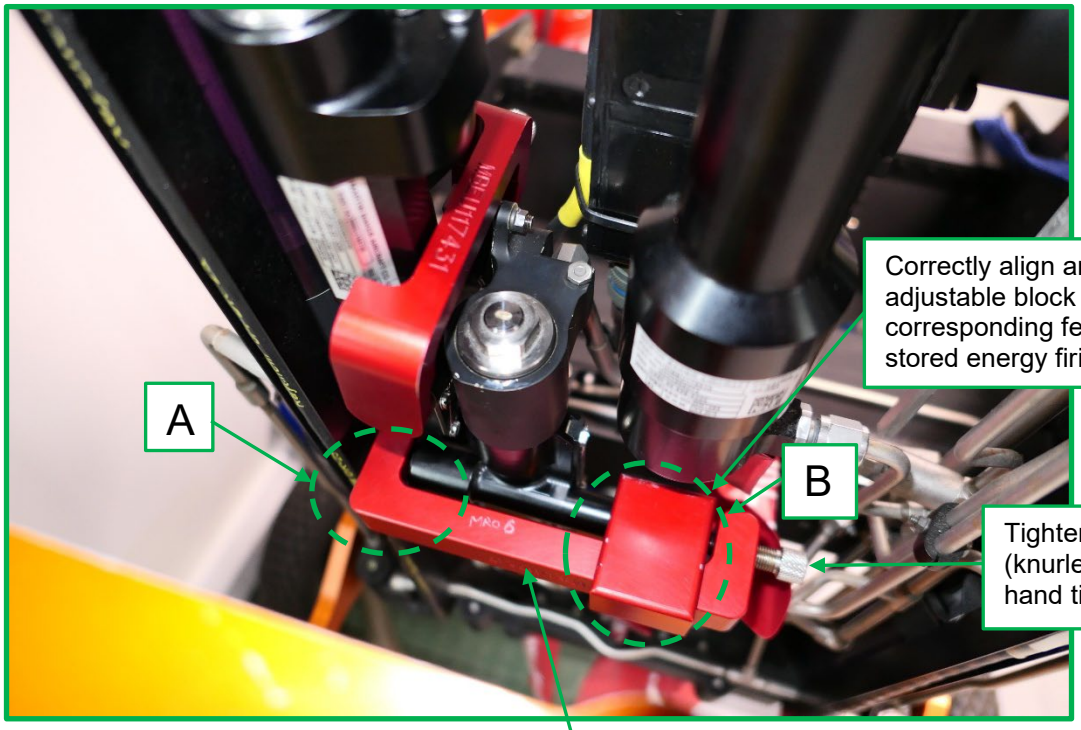


Figure 5 – Correct Installation of the Restrictor Clamp (Typical)