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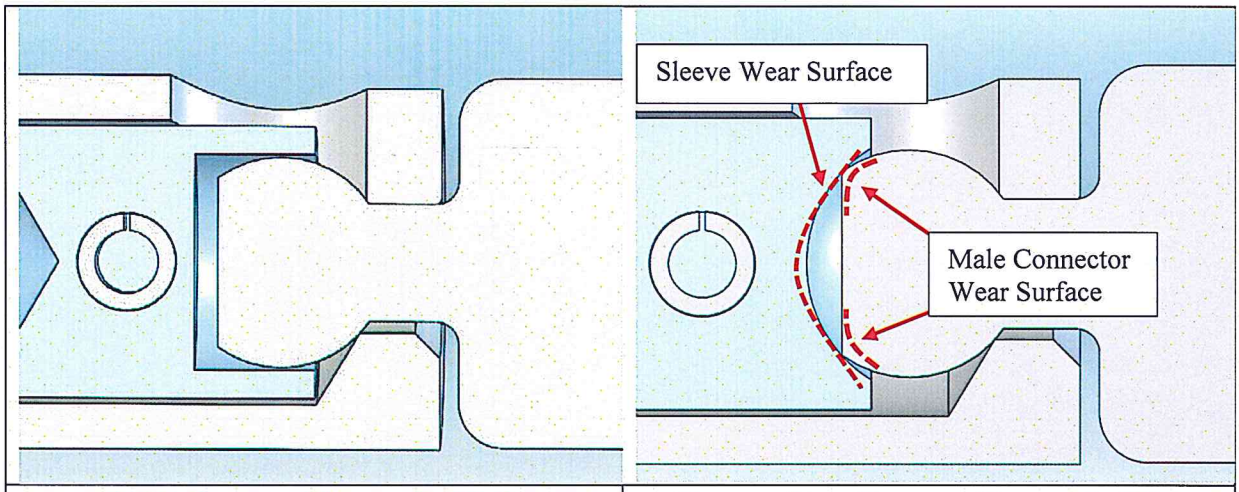
Accelerated Drive Cable Connector Wear Related to Use of Non-QSA Source Assemblies

QSA Global has noticed in internal investigations that the use of some non-QSA Global source assemblies, with our drive cables, has caused more aggressive wear on the ball of the drive cable connector. This wear can shorten the effective working life of the drive cable assembly as it will cause a failure when performing the NO-GO gauge checks on the drive cable ball.

The design of some competitors' source connectors can apply a constant force to the top of the drive cable ball in order to keep the source locked in place. QSA connector sub-assemblies ensure the source connection is maintained without needing to apply a constant pressure to the top of the ball. This constant force applied to the top of the drive cable ball causes wear on that surface that ultimately cause it to fail the NO-GO test.



QSA Source Sleeve & Male Connector	Competitor Source Sleeve & QSA Global Male Connector

Figure 1: Connection Comparison

The competitor source connection design relies upon spring pressure to push the connector sleeve onto the top of the ball to prevent disconnection during exposures. This design provides a constant compressive force applied to the top of the drive cable ball. The competitor's source connector sleeve causes more aggressive wear to the sharp edge feature on the top of the ball from the continued angular motion of the male connector in the source assembly during operation (See Figures 1, 3, 4 and 5).

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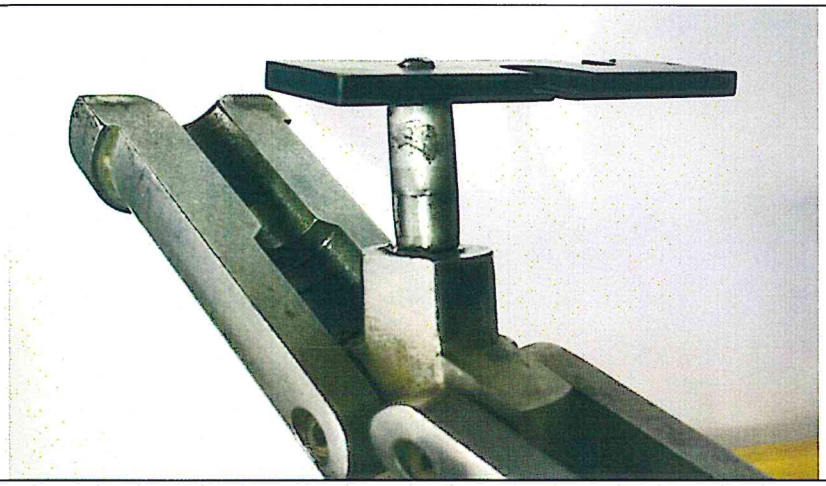

Figure 2: NO-GO gauge test FAILURE indicating excessive wear on drive cable connector ball diameter

The Figure 3 photograph shows a competitor's source assembly obtained after use with a QSA Global control and drive cable assembly. The inside of the source connector shows clear signs of galling. This wear was caused by the drive cable ball moving within the source connector during source exposure/retraction operations.

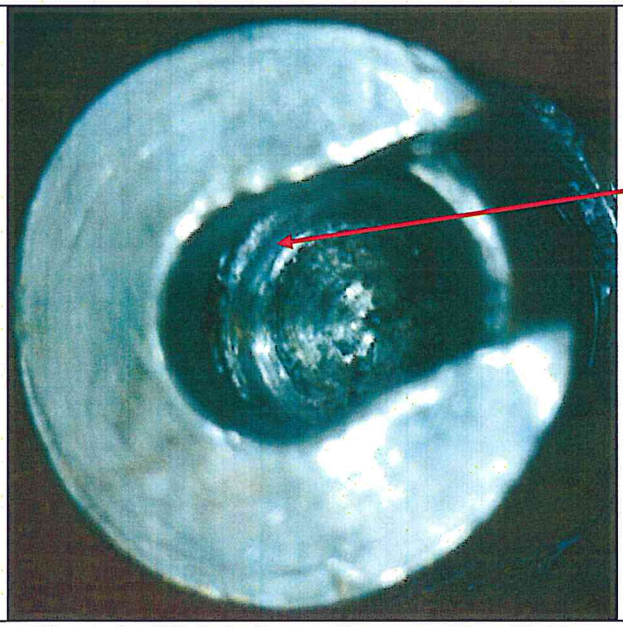

Figure 3: 550 Style Source Connector Wear/Galling

Use of QSA Global source designs with QSA Global controls/equipment does not cause this

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accelerated wear. In the QSA design, the source connector sleeve completely surrounds the drive cable ball without applying any compression force to the ball to maintain a secure and reliable connection (see Figure 1).

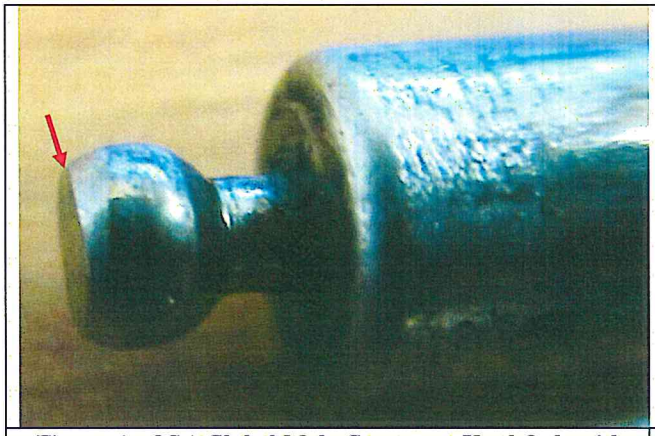

Figure 4: QSA Global Male Connector Used Only with QSA Global 550 Style Source Assemblies (e.g., A424-9)

Figure 5: Accelerated Wear of QSA Global Male Connector Used with Competitor Style Source Assemblies

The male connector seen in the left-hand photo, Figure 4, was only used in conjunction with QSA Global A424-9 source assemblies. The right hand photo, Figure 5, is a returned male connector used, at times, with a competitor manufactured source assembly. The male connector utilized intermittently with a competitor source contains a discernible rounded edge at the top of the ball. Meanwhile, the male connector picture on the left (used only with QSA Global source assemblies and subjected to over 500,000 cycles) still possesses a noticeable sharp edge at the top of the ball.

Another known contributor to premature wear and/or damage to the male drive cable connector occurs when connecting the male drive cable connector to the source assembly connector without opening the source connector sleeve before trying to insert the drive cable connector. As specifically stated in the Model 880 and SENTRY operations manuals, ALWAYS manually move the sleeve of the female connector of the source assembly to the OPEN position when connecting and disconnecting the control cable from the source assembly. QSA has specific warnings against the practice of an operator forcing the male drive cable connector ball at an angle into the opening of the source assembly female connector, WITHOUT first sliding the sleeve to the OPEN position when performing the connection.

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The act of applying excessive force to avoid sliding the source assembly sleeve to the OPEN position during the connection process initiates and accelerates the premature wearing of the sharp edge of the male connector ball. Also, failing to manually move the sleeve open during connection or disconnection places significant stress on the neck of the male connector. This stress can lead to a break of the male connector at the neck feature which can result in a source disconnect/retrieval.

The dimensions and shape of the ball on the male connector are critical to maintaining the integrity of a secure connection in addition to preventing misconnections of the remote controls assemblies to the exposure device locking mechanism. Use of non-QSA Global source assemblies with QSA Global radiography systems, can contribute to more aggressive wear on safety critical components such as the drive cable connector and the source wire connector components.

Based on the information in this service bulletin, QSA Global does not recommend using non-QSA Global source assemblies in radiography systems consisting of QSA manufactured projectors, controls assemblies, and guide tube assemblies. Use of a non-QSA Global source assemblies, *even if only once in the lifetime of the QSA drive cable assembly*, may lead to increased wear and decreased useful working life of the drive cable and male connector of the controls assembly.

Contact QSA Global, Inc. SENTINEL Customer Service at 1-800-225-1383 if you have any questions regarding this bulletin or would like additional assistance.