SUBJECT: VISUAL THREAD INSPECTION

1.0 SCOPE

1.1 This document sets forth the broad guidelines for the field visual thread inspection of Hunting Connection Technology (HCT) **WEDGE-LOCK PRODUCT LINE** connection by independent inspection agencies.

1.2 This document applies to the following connections: **WEDGE-LOCK FLUSH**, **WEDGE-LOCK SEMI-FLUSH** and **WEDGE-LOCK HT**.

2.0 DEFINITION

2.1 Visual thread inspection shall be defined as the inspections that may be performed on Hunting's proprietary connections without the use of proprietary thread element gages.

3.0 PIN/FIELD END INSPECTION

3.1 Pin Face

3.1.1 Ensure that the pin nose radius is fully blended and is free from sharp edges or burrs.

3.1.2 Visually inspect the pin face for surface irregularities. Minor dents or dings to the pin face are allowed and can be repaired by lightly filing to remove all protrusions. Dents or dings on new connections that are sufficiently deep to cause a raised area or protrusion on the seal surface are rejectable. The repair of such conditions during the running of the connection is at the discretion of Hunting's service representative.

3.1.3 The pin face, ID chamfer and OD chamfer are to be smooth and free from burrs.

3.2 Seal Surface

3.2.1 Visually inspect the internal and external seal surface for galls, burrs, dents or dings. If any of the mentioned defects are found on the seal surface, the connection shall be rejected. The repair of such conditions during the running of the connection is at the discretion of Hunting's service representative.

3.2.2 Repair of a new seal surface by wire brushing, sanding or filing is unacceptable. Acceptable repair methods include polishing with 000 and 0000 steel wool, medium or fine grit Scotch Brite. All repairs shall be covered with a dry film lubricant such as molybdenum disulfide spray.

3.3 Pilot and Turned Diameters

3.3.1 Visual inspect the pilot and turned diameters for irregularities. Minor dings, dents, galls or burrs to the pilot and turned diameters can be repaired by polishing with 000 and 0000 steel wool, medium or fine grit Scotch Brite or medium/fine grit sandpaper. Dents or dings that are sufficiently deep to cause a raised area or protrusion on the seal surface are rejectable.

NOTE 1: When the repairing of the pilot and turned diameters are taking place, ensure that the seals are well protected to avoid any damage.

3.4 Threaded Area

3.4.1 Visually inspect the full form thread for damage. Small areas of impact damage or galls occurring during handling must be repaired. Field repairable thread damage on new connectors shall not exceed ¼ revolution circumferential length or 0.010" in depth. All repairs shall be covered with a dry film lubricant such as molybdenum disulfide spray.

3.4.2 Allowable corrosion pitting in the full form thread area shall be ¼" revolution or 0.010" in depth as defined in the **ANCILLARY SPECIFICATION FOR STEEL IMPERFECTIONS**.

3.5 External Shoulder

3.5.1 Visually inspect the external shoulder. The shoulder shall be free from protrusions due to corrosion pitting or impact damage and free from burrs for 360°.

4.0 BOX/ MILL END INSPECTION

4.1 Internal Shoulder

4.1.1 Visually inspect the internal shoulder. The shoulder shall be free from protrusions due to corrosion pitting or impact damage and free from burrs for 360°.

4.2 Seal Surface

4.2.1 Visually inspect the internal and external seal surface for galls, burrs, dents, or dings. If any of the mentioned defects are found on the seal surface, the connection shall be rejected. The repair of such conditions during the running of the connection is at the discretion of Hunting's service representative.

4.2.2 Repair of a new seal surface by wire brushing, sanding, or filing is unacceptable. Acceptable repair methods include polishing with 000 and 0000 steel wool, medium or fine grit Scotch Brite. All repairs shall be covered with a dry film lubricant such as molybdenum disulfide spray.

4.3 Pilot and Turned Diameters

4.3.1 Visual inspect the pilot and turned diameters for irregularities. Minor dings, dents, galls or burrs to the pilot and turned diameters can be repaired by polishing with 000 and 0000 steel wool, medium or fine grit Scotch Brite or medium/fine grit sandpaper. Dents or dings that are sufficiently deep to cause a raised area or protrusion on the seal surface are rejectable.

NOTE 2: When the repairing of the pilot and turned diameters are taking place, ensure that the seals are well protected to avoid any damage.

4.4 Threaded Area

4.4.1 Visually inspect the full form threaded area for damage. Small areas of impact damage or galls occurring during handling must be repaired. Field repairable thread damage on new connectors shall not exceed ¼" revolution in circumferential length or 0.010" in depth. All repaired areas should be covered with a dry film lubricant such as molybdenum disulfide spray.

4.4.2 Allowable corrosion pitting in the full form thread area shall be ¼" revolution or 0.010" in depth as defined in the **ANCILLARY SPECIFICATION FOR STEEL IMPERFECTIONS**.

4.5 Box Face

4.5.1 Visually inspect the box connection face and OD chamfer for impact damage. Impact damage that has caused the external seal to be indented is cause for rejection. Minor impact damage may be repaired by a light filing.

5.0 CONNECTION GAGING

5.1 The gaging of Hunting's proprietary connections shall only be performed by an approved Hunting Representative.

6.0 STORAGE / THREAD COMPOUND

6.1 Upon completion of visual thread inspection verify appropriate storage or thread compound is being applied to both ends of the tube.

7.0 LONG TERM STORAGE

7.1 For long term storage (more than 30 days), the connections shall be properly protected with a storage compound and properly tightened thread protectors. Hunting recommends the use of Kendex, PLUSCO 303 or Korr-Guard as the approved storage compound. Storage compounds shall be utilized for the length of time as specified by the storage compound manufacturer.

7.2 Remove the thread protectors. Clean the connections using soap and water (preferably). Thoroughly dry the connectors and thread protectors.

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NOTE 3: Care must be taken to ensure that the cleaning process does not cause environmental pollution.

7.4 Verify that the connection is clean and free from contaminants.

7.5 Verify that there is no visual damage on the thread and seal areas of the connection. If any damage is found, please contact Hunting's QA Department.

7.6 Apply Kendex, PLUSCO 303 or Korr-Guard on all areas of the connection. Ensure consistent, uninterrupted application of storage compound, areas without storage compound are not allowed. Failure to do so may lead to oxidation or pitting of the areas not covered by the storage compound.

7.7 Clean the thread protectors. The protectors shall be free from debris, dirt, oil, and any other contaminant.

7.8 Apply the thread protectors and verify that they are tight.

8.0 RIG PREP

8.1 When prepping pipe to go to the rig location, ensure that you have plenty supply of fresh molybdenum disulfide Banner Moly-G-Spray / Dow Corning Molykote ® D-321R / Dow Corning Molykote ® 3402-C LF Anti-Friction Coating Liquid. Additionally, ample supply of fresh water displacing corrosion inhibitor; Hunting recommends CRC-3-36, CRC SP-350 (Product Code 03262).

NOTE 4: For corrosion resistant alloys (CRA), the preferred molybdenum disulfide for rig prep is Dow Corning Molykote ® D-321R.

8.2 Remove the thread protectors.

8.3 Clean the connections using soap and water (preferably). Thoroughly dry the connectors and thread protectors.

NOTE 5: Care must be taken to ensure that the cleaning process does not cause environmental pollution.

8.4 Verify that the connection is clean and free from contaminants.

8.5 Verify that there is no visual damage on the thread and seal areas of the connection. If any damage is found, please contact Hunting's QA Department.

8.6 Apply a thin and even coat of molybdenum disulfide (Banner Moly-G- Spray or Dow Corning Molykote ® D-321R) on the connections (pin and box). The whole thread and seal area shall be covered with an even coat. Allow the molybdenum disulfide to dry before proceeding to the next step.

8.7 Apply the water displacing corrosion inhibitor (CRC-3-36 or CRC SP 350) on the entire area of the connectors. A thin and even coat shall be applied.

8.8 Clean and dry the thread protectors. The protectors shall be free from debris, oil and any other contaminant.

8.9 Apply the thread protectors and verify that they are tight.

NOTE 6: Failure to follow these directions can be detrimental to the connections.

9.0 REJECTION

9.1 Any thread that does not meet the specified requirements shall be considered a reject.

9.2 All rejects shall have the entire thread area painted red.

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9.3 All rejects shall be clearly identified as “reject” to protect against out-of-tolerance material being shipped as prime material.

9.4 Rejection may be reworked by removing the defective condition and re-threading the parts within the appropriate tolerances.

9.5 Any discrepancies shall be clarified and dispositioned by HCT Quality Assurance Department before any further processing or delivery.