



**RECOMMENDED
PRACTICE
WEDGE LOCK PRODUCT
LINE**

Approved	Initials	Date
Prepared	RBI	06/29/20
Engineer	SJH	06/30/20
GM QA	GJR	06/29/20
Revision	014	07/01/20

SUBJECT: FIELD RUNNING AND HANDLING PROCEDURES

1.0 SCOPE

- 1.1 This document sets forth Hunting's recommended practice for the field running and handling procedures that should be used in conjunction with all Hunting **WEDGE LOCK PRODUCT LINE** tubing and casing connections.

2.0 REFERENCES

- 2.1 The following documents were used for reference in the preparation of this document:
- 2.1.1 API RP 5C1
 - 2.1.2 API BUL. 5A2

3.0 EQUIPMENT

- 3.1 The following list of equipment should be on location when Hunting **WEDGE LOCK PRODUCT LINE** tubing or casing connections are run:
- 3.1.1 Ample supply of fresh molybdenum disulfide spray. Hunting recommends Jet Lube Moly Mist or Banner Moly-G-Spray / Dow Corning Molykote (R) D-321R or Molykote 3402- C LF Anti-Friction Coating Liquid.

NOTE 1: Liquid molybdenum disulfide shall be mixed frequently and well prior to use.

- 3.1.2 Ample supply of fresh water displacing corrosion inhibitor; Hunting recommends CRC - 3-36, CRC SP-350 (Product Code 03262).

WARNING: Do not use any thread lubricant such as API Modified or Best-O-Life P.T.C. thread compound when running this connection. Such lubricants can cause hydraulic thread lube entrapment resulting in low break out torques.

- 3.1.3 Hunting's field service kit.
- 3.1.4 Appropriate sales data sheet. SEE ABOVE WARNING.
- 3.1.5 **VISUAL THREAD INSPECTION**, Ancillary Specification.
- 3.1.6 **STEEL IMPERFECTIONS**, Ancillary Specification.
- 3.1.7 **OPTIONAL** - Torque turn monitoring equipment.
- 3.1.8 Appropriate size and weight handling plug.
- 3.1.9 Appropriate size and weight stabbing guide.
- 3.1.10 Power tongs with torque capacity 30% above make-up torque or anticipated operating torque should be supplied, as break out torques could be substantially higher.

NOTE 2: Running operations involving rotating or pulling the casing string, can increase the amount of torque stored in the connection. Running operations should be considered when selecting the torque capacity for the make-up / break out equipment.

- 3.1.11 Tong jaws with the ability to evenly contact a majority of the pipe OD are recommended.
- 3.1.12 Use low stress/ non-marking, non-ferrous inserts for chrome and CRA pipe

NOTE 3: For **WEDGE LOCK PRODUCT LINE only, single joint elevators shall be bored to box turned O.D. + 0.030 + 0.050" and a minimum yield of 110 KSI.**



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4.0 FIELD RUNNING AND HANDLING PROCEDURES

4.1 Precaution

- 4.1.1 Tubulars should not be stacked higher than five tiers at the rig. (API RP 5C1).
- 4.1.2 Layers should be separated by wooden dunnage so that no weight rests on the connections. (API RP 5C1)
- 4.1.3 Thread protectors should always remain in place when moving or handling tubulars.
- 4.1.4 If a mixed string is to be run, ensure proper identification to accommodate sequence of running.
- 4.1.5 Do not use a welding torch to remove thread protectors.
- 4.1.6 Avoid rough handling. Do not unload pipe by dropping.
- 4.1.7 Do not handle more than three joints unless the pipe is packaged or bundled.
- 4.1.8 Never use hooks on the ends of pipe without liftable protectors. When liftable protectors are not available, handle with nylon slings or wire rope slings only.

4.2 Preparation

- 4.2.1 Ensure that all necessary running equipment is available and in good condition.

NOTE 4: Following a thorough review of running/accessory equipment, discuss running procedures with Drilling Supervisor.

- 4.2.2 Slip type elevators of proper size, in good repair and with the setting plate adjusted properly, should be used.

NOTE 5: Hunting does not recommend the use of bottleneck or shoulder type elevators.

- 4.2.3 Ensure that slips are of the correct size to accommodate the size, weight and length of the tube.
- 4.2.4 Ensure that the safety clamp is the correct size and in serviceable condition.

EXAMPLE: The safety clamp should be used above the table slips up to a string weight of 20 tons (40,000 pounds).

NOTE: Not to exceed the load limit of the safety clamp.

- 4.2.5 Check for traveling block alignment and rotary hole alignment.
- 4.2.6 Ensure that an ample supply of molybdenum disulfide spray is available. Only fresh, previously unopened cans of moly spray shall be used. Shake well before spraying or mix well prior to using.

NOTE 6: Hunting recommends Banner Moly-G, Jet Lube Moly Mist lubricant or Dow Corning Molykote (R) D321R or Molykote 3402- C LF Anti-Friction Coating Liquid as the acceptable molybdenum disulfide spray, CRC – SP -350 (Product Code 03262) and CRC - 3-36 as the acceptable corrosion inhibitor.

- 4.2.7 A stabbing board or a yoke may be required to offer stability for ease of make-up.
- 4.2.8 Ensure that the power tong snub line is at 90° and level with the tong.



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NOTE 7: Ensure that an accurate torque monitoring device (Martin-Decker torque gauge) is available, the load cell is for use in the required torque range and arm length of tong being used. **The load cell must have been calibrated within the past six (6) months.**

4.3 Cleaning and Thread Inspection
All tubular connections shall be thoroughly cleaned and dried prior to end drifting and visual inspection.

4.3.1 Before running, remove protectors from both the pin and box ends. Clean each connector and protectors, preferable with soap and water. Thoroughly dry the connectors and protectors.

NOTE 8: Care must be taken to ensure that the cleaning process does not cause environmental pollution.

4.3.2 Check and clean the inside of the tubulars to eliminate any foreign material that may fall into the box while stabbing. If compressed air is available, air blast from box to pin.

NOTE 9: Ensure that there are no bristles left on the threads from cleaning.

4.3.3 Drift the pipe and accessory equipment with a clean, properly sized mandrel. Drift shall be performed box to pin, being careful not to damage the box torque shoulder, seal, or threads when placing the mandrel in the joint.

4.3.4 Inspect the threaded connections using Hunting's **VISUAL THREAD INSPECTION** guidelines and **ANCILLARY SPECIFICATIONS**.

NOTE 10: Repair as required by **VISUAL THREAD INSPECTION** and/or **STEEL IMPERFECTION ANCILLARY SPECIFICATIONS**.

4.3.5 If any joint shows obvious ovality, it should not be run.

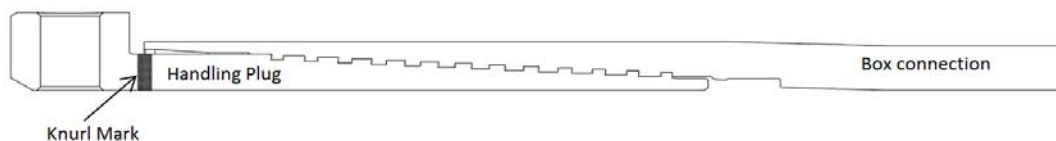
4.3.6 **Spray a light, uniform coating of molybdenum disulfide. After the moly has dried apply a light spray of corrosion inhibitor on thread and seal surfaces. Pre-install the handling plug and reinstall a clean, dry pin protector to the first joint being run.**

4.4 Running

4.4.1 Handling plugs and/or thread protectors must be in place whenever tubulars are moved.

WARNING: Prior to lifting **WEDGE LOCK PRODCUT LINE** handling plugs must be made-up to the knurl hand tight without the assistance of make-up bar or snapping of handling plug and securely engaged in the box. See Figure 1. Failure to do so may cause the handling plug to disengage, which may result in the pipe falling. This may cause connection damage, property damage, bodily injury, or loss of life.

Figure # 1





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NOTE 11: Handling plugs without make-up knurling indicator shall be made – up by hand with a gap of no more than 0.190" from box face to lifting flange no make – up bars shall be used in making up the **WEDGE LOCK PRODUCT LINE** handling plug.

- 4.4.2 Joints should be moved to the V-door via a pick-up machine. If a pick-up machine is unavailable, joints should be moved to the V-door by slings or a pick-up line attached to the box end.
- 4.4.3 Elevators or pick-up line with or without single joint elevators may be used to lift the joint up in the derrick. The single joint elevators shall be bored to box O.D. + .0030 + 0.050" and a minimum yield of 110 KSI, for the appropriate size and weight to be run.

NOTE 12: Do not remove handling plug from box until mud line is removed after filling.

- 4.4.4 Remove protector and handling plug and re-inspect each connector as it hangs in the derrick.
 - 4.4.5 Visually inspect the pin and box seals for removal of moly spray and re-apply as required.
 - 4.4.6 Use an alignment yoke to assist make-up.
 - 4.4.7 Stab the pin connector into the box connector utilizing the appropriate size and weight stabbing guide.
 - 4.4.8 If the connection is mis-stabbed, pick up the joint, clean the pin and the box and reinspect.
- 4.5 Make-up
- 4.5.1 Torque-Turn Equipment.
A torque-turn/time or torque/turn monitoring system should be utilized. Monitoring equipment should be capable of resolving torque to 1/100th of a turn increments as a minimum but equipment capable of resolving torque to 1/1000th of a turn should be utilized when available. An enhanced computer display should be part of the torque-turn monitoring equipment and should be utilized to monitor make up. The monitoring equipment should be capable of dumping during the make-up by either the computer technician or when maximum parameters are reached. As the torque enters the acceptable window, the technician should be able to depress a function key to manually terminate the make-up. The system should be capable of automatic dumping as input parameters are met. The load cells used with the torque monitoring equipment should be calibrated every six (6) months, traceable to the appropriate national standard.
 - 4.5.2 Back-up tongs should be placed below the box connection. (Refer to Reference 1 below)
Use back-up tongs for the first 10 joints or until sufficient weight is generated in the slips to prevent the entire string from rotating.
 - 4.5.2.1 It is recommended not to grip over box connections.

NOTE 13: It is recommended to use a proper jaw / insert size with enough contact area with the pipe to minimize the insert marks.



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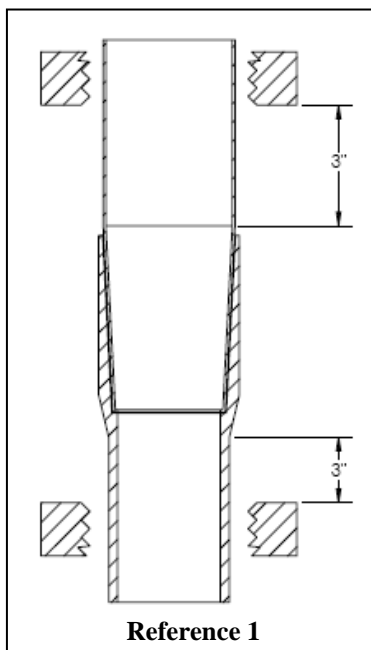
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NOTE 14: Power and backup tong dies SHALL be clean and not worn down. The maximum acceptable insert mark depth on Carbon steel pipe shall not exceed 0.015". For 9-13 Cr pipe shall not exceed 0.012". For sour service and CRA material shall not exceed 0.009". Excessive marks or sharp-bottomed marks should be removed. Removal may be by filing only.

NOTE 15: Insert marks are NOT allowed over the WEDGE LOCK PRODUCT LINE Box connection. It is highly recommended to avoid gripping over the WEDGE LOCK PRODUCT LINE Box transition area as this will lead to uneven deep insert marks. Refer to NOTE 2 for acceptance criteria.

NOTE 16: The below Reference 1 shows the location of tong jaws during make up of the WEDGE LOCK PRODUCT LINE connections.



NOTE 17: In the event of horizontal makeups all ordinary procedures apply.

- 1) A Scribe Line across the connection shall be painted.
- 2) Any time the Scribe is no longer aligned the connection shall be retorqued in accordance to the appropriate sales data sheet and Field Running and Handling Procedures. The end user may request for the connection to be rechecked for torque at any time between the initial makeup and the run in hole procedure.
- 3) The care and transportation of the doubles and the connections is the responsibility of the end user.



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NOTE 18: When making up the connections with CRT (casing running tool), no dump valve SHALL be used, a 5 to 8 second torque hold shall be applied and a weight compensator shall be used.

NOTE 19: Do not allow the stabber to rock the tube during make-up.

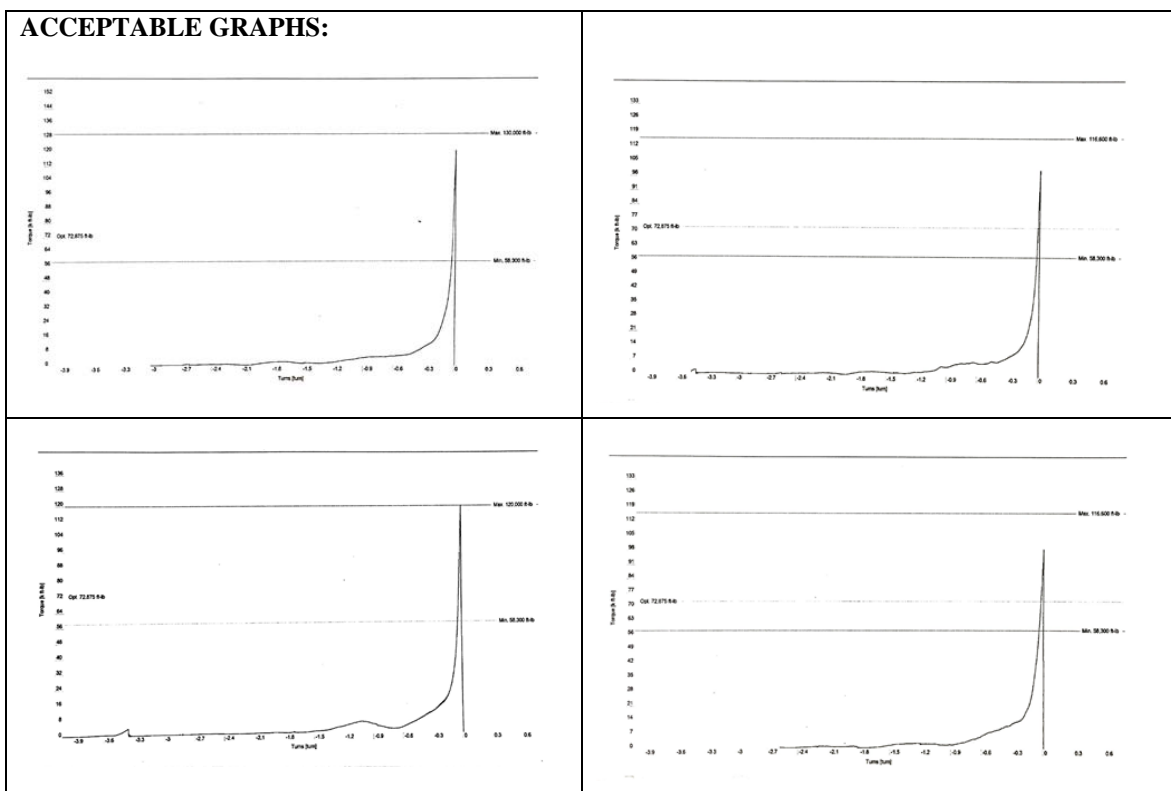
4.5.3 Make up in high gear is allowed from stabbing to hand-tight and not exceed 5 RPM. Make-up speed should not vary excessively and should be continuous with no gear changing after the snub line becomes tight. Make up the connection power-tight using the make-up speeds specified in the accompanying chart. In no case should the make up speed exceed 5 RPM.

NOTE 20: For reference, all connections are designed with a gap at the external shoulder when made up power tight.

NOTE 21: If no gap is found, the connection shall be rejected

NOTE 22: See following examples of acceptable and unacceptable make-up graphs.

ACCEPTABLE GRAPHS:

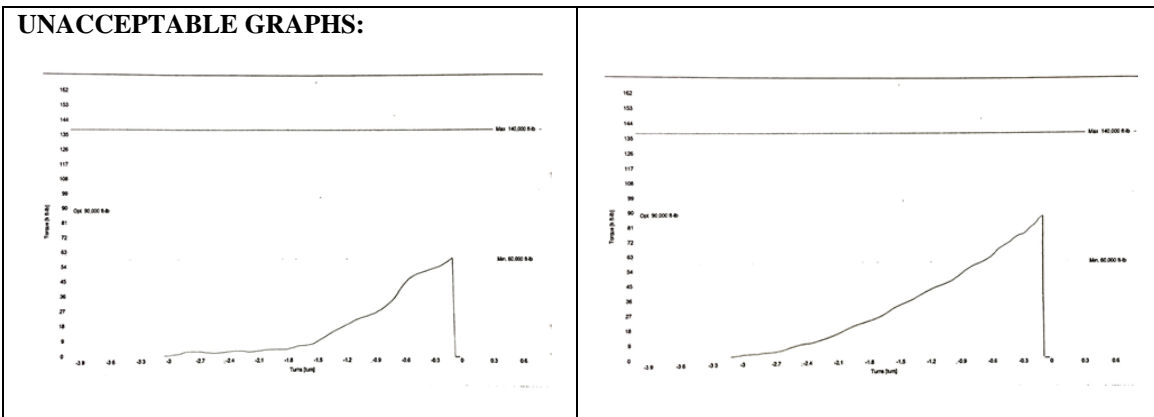




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TARGET MAKE-UP RPM

2.875"	-	5 RPM	13.375"	-	4 RPM
3.500"	-	5 RPM	13.625"	-	4 RPM
4"	-	5 RPM	13.750"	-	4 RPM
4.500"	-	5 RPM	13.875"	-	4 RPM
5"	-	5 RPM	14"	-	4 RPM
5.500"	-	5 RPM	14.150"	-	4 RPM
6.625"	-	5 RPM	14 1/16"	-	4 RPM
7"	-	5 RPM	16"	-	3 RPM
7.625"	-	5 RPM	16.040"	-	3 RPM
7.750"	-	5 RPM	16.100"	-	3 RPM
8.625"	-	5 RPM	16.150"	-	3 RPM
9.625"	-	5 RPM	16.200"	-	3 RPM
9.750"	-	5 RPM	16.250"	-	3 RPM
9.875"	-	5 RPM	17 7/8"	-	3 RPM
10.750"	-	5 RPM	18"	-	3 RPM
11.750"	-	5 RPM	18 5/8"	-	3 RPM
11.875"	-	5 RPM	20"	-	3 RPM

- 4.5.4 If torque/turn monitoring equipment is used, a make-up torque/turn graph should be generated for every connection.
- 4.5.5 Lower the elevators over the pipe after make-up is complete, not during make-up.
- 4.5.6 In the event torque/turn or torque turn/time equipment is used at the rig site, the following procedure should be used to set acceptance criteria:
 - a) Prior to the job, the operating company representative should review the Hunting sales data sheet for the connections. Torque acceptance limits should be in the range shown on Hunting's sales data sheet.



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- b) Those connections falling outside the acceptable make-up window should be broken out and checked for damage. If no damage is found, the connection may be made up again. Re-apply moly spray as suggest in Section 4.3.6.
- c) A torque curve showing a small wave shall be acceptable. However, the connection with an excessive wave in the torque curve shall be broken out and visually inspected. If no damage is found, the connection may be made up again.
- d) Final torque in excess of the maximum acceptable final torque or less than the minimum acceptable final torque should be broken out and visually inspected. If no damage is found, the connection may be made up again.

4.6 Pulling

4.6.1 Preparation

- a) Slip type elevators are required.
- b) Use an alignment yoke and weight compensator when pulling casing.
- c) Use power tongs with acceptable torque read-out and back-up tongs.
- d) A wooden platform must be used for standing back tubing. (Refer to API 5C1)
- e) Clean thread protectors should be available prior to laying down or standing back. As each connection is broken out, protectors shall be installed on each pin.
- f) The connection may require significantly more break out torque when compared to make up torque. Operations beyond normal make up conditions and the amount of time the string has been sitting in the well are factors that could cause higher break out torques. These conditions are inclusive of, but not limited to rotating, reciprocating, jarring, well temperature and applying weight to the casing string.

NOTE 23: Safety clamps and handling plugs must be used during pulling.

4.6.2 Breaking Out

- a) During pulling operations, the back-up tong should be placed on the pipe below the connection including the box transition. (Refer to the Reference 1 in Section 4.5.2) Pipe wrenches or chain tongs shall not be used as back-ups.
- b) Break out the connection at a speed less than 5 rpm.
- c) After breaking the connection continue to rotate at 5 RPM or less. Remove the power tongs after 4 ½ turns and slowly pick up the joint. The connection will be disengaged and ready for separation in 4 ½ turns from the power tight position.
- d) Ensure all of the threads are disengaged before lifting the tubing/casing out of the box. Do not jump out of the box. If this occurs, inspect the pin face and threads for damage.
- e) If excessive torque is noted, rotation should be stopped until cause is determined.

NOTE 24: Prior to lifting pin out of the box, it is recommended to use a stabbing guide.

4.6.3 Standing Back (Tubing or Casing)

- a) Tubulars should be set on a firm wooden platform when stood back in the derrick.
- b) Protect threads from dirt or damage when the tubulars are out of the hole. Thread protectors **SHALL** be installed on the pin members when standing back and may be required in the box when conditions warrant.



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- 4.6.4 Re-Running
 - a) Clean connection members fully and inspect for damage.
 - b) Re-run as per 4.4 and 4.5.

- 4.6.5 Laying Down (Casing)
 - a) Clean protectors shall be placed on the tubulars before they are laid down.
 - b) If tubulars are stored or re-used, remove the protectors after laying down, clean and inspect connections. Spray a light, uniform coat of molybdenum disulfide, followed by a light coat of corrosion inhibitor, on thread and seal surfaces. Install clean thread protectors.

5.0 RUNNING PROCEDURE FOR ACCESSORIES MADE UP USING THREAD LOCKING COMPOUND / SEALLUBE / LUBRICANT

- 5.1 Using steam, soap and hot water, or safety solvent, remove all thread storage or running compound from both pin and box connectors.

- 5.2 Ensure that the thread and sealing surfaces are clean, dry, and free of oil, grease, or residues.

- 5.3 On metal-to-metal seal connections, apply the Hunting recommended thread lubricant to the external seal area on both elements (pin and box connectors).

- 5.4 Just prior to make up, the thread locking lubricant/seallube shall only be applied on the first three threads and internal seal on pin connectors only (not on the box), on the area that has not been covered by the approved thread lubricant.

- 5.5 When making up float equipment, hangers, thick wall accessories, and others, torques might be higher than normal due to the wall thickness.

- 5.6 The make up torque of the accessories should be aimed to the maximum recommended torque. Therefore, if necessary, the published torque may be exceeded but in any case shall not exceed 80% of the published minimum yield torque.

NOTE 25: If necessary, to place back-up tongs over box connection Hunting Northpoint (281) 442-7382 shall be called for acceptance limits of tong dies depth over box connection.