



**TKC 8 RD, TKC PLUS 8RD,  
TKC 4040, TKC 4040 HOI,  
TKC BUTTRESS  
and TKC CWC  
ANCILLARY  
SPECIFICATIONS**

SECTION	V	
Prepared	RBI	08/19/14
Mgr Engr	AJW	08/28/14
GM QA	GJR	08/26/14
REVISION	005	08/18/14

<b>SUBJECT:</b>	<b>COUPLING MAKE-UP</b>
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**1.0 SCOPE**

1.1 This document sets forth the specification for the mill end make-up or bucking of **TKC 8RD, TKC PLUS 8RD, TKC 4040, TKC 4040 HOI, TKC BUTTRESS and TKC CWC.**

**2.0 DEFINITION**

2.1 Make-up shall be defined as the power tight application of a coupling or box connector to a pin connector.

**3.0 EQUIPMENT**

3.1 The following list of equipment is required in the making-up or the bucking-on of couplings to pin connectors.

3.1.1 Appropriate size, grade, type box connector, or coupling to match the pipe and pin connector.

3.1.2 An adequate supply of clean, uncontaminated thread compound.

**NOTE: Hunting recommends Best-O-Life 2000, Best-O-Life PTC, OCR 325, Seal-Lube (LTF 4444 HTM 1001), and Jet Lube EnviroSAFE as the tested and approved thread compounds for Hunting semi-premium, thread sealing products.**

**NOTE: Hunting does not recommend API modified thread compound for Hunting proprietary connections. However, when an API modified thread compound is specified by the end user, Hunting has standardized on Best-O-Life 72732/72733 as the API modified thread lubricant used for connection qualification testing. Using another thread lubricant may substantially change the recommended torque range listed on the sales data sheet.**

**NOTE: Due to increased surface area, for sizes larger than 3 1/2", use LTF 4444; for 3 1/2" and smaller, use HTM 1001.**

**NOTE: For Seallube application see "Seallube Application Procedure".**

3.1.3 Thread lubricant application brushes (Model 58235 moustache brush recommended.)

3.1.4 Power tongs capable of producing the required torque at 5 - 14 RPM.

3.1.5 Molybdenum disulfide spray or equivalent (Molykote).

**NOTE: The power and back-up tongs shall have sufficient dies, evenly spaced around the coupling and pipe circumferences, so that an even gripping pressure is applied, both axially and circumferentially, to prevent distortion to the connection.**

**NOTE: Power and back-up tong dies shall be clean, not worn down, and shall not leave marks exceeding 0.015" in depth. Excessive marks or sharp bottom marks must be removed. Removal shall be by filing only; grinding is prohibited.**



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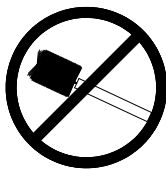
- 3.1.6 Latest Hunting sales drawing with specified torque values for the appropriate size, weight and grade product of **TKC 8RD, TKC PLUS 8RD, TKC 4040, TKC 4040 HOI, TKC BUTTRESS and TKC CWC.**
- 3.1.7 **OPTIONAL** - Torque turn monitoring system.
- 3.1.8 Torque Gage

**4.0 CERTIFICATION**

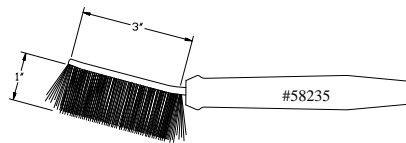
- 4.1 The torque unit shall be calibrated for accuracy every four (4) months.

**5.0 MAKE-UP PROCEDURE**

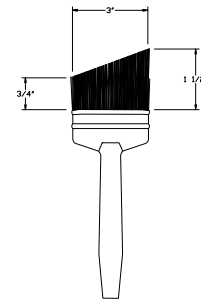
- 5.1 Thoroughly clean and visually inspect both sides of the connection to be made-up.
  - 5.1.1 Ensure that the pin thread start and full form threads are free from tears and burrs.
  - 5.1.2 Ensure that the coupling or box connector is free from burrs or tears on the starting threads and throughout the full form thread length.
  - 5.1.3 Both connectors shall be free of any debris such as chips, shavings, dirt or other foreign particles that could create galling or damage to the connection during make-up.
- 5.2 Apply a moderate, even coating of thread lubricant, per Section 3.1.2 NOTES of this procedure, to cover the full box/coupling threaded surface.



Do Not Use  
Bottle Brush



Preferred Moustache Brush #58235



Alternate Acceptable  
Modified Paint Brush

**NOTE: A moderate, even coating of thread compound is defined as all thread surfaces, root and crest, and pin face/torque shoulder covered with an even coating of thread compound.**

**NOTE: Adjust the amount of lubricant applied to the pin and coupling connectors to cause a gradual increase in torque throughout the make-up. An indicator of connection overlube is during the last one-half of a turn to final make-up position there is no gradual increase of torque even though the pin is continuing to advance into the coupling.**

- 5.3 Apply the box or coupling to the pin end by hand to the hand-tight position.
- 5.4 Position the connection in the power tongs.



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5.5 Apply the specified torque to the connection at 5-14 RPM. Make-up speed should not exceed 14 rpm after the hand tight position is reached. Make-up speed should not vary excessively during final make-up and should be continuous with no gear changing.

<u>TARGET MAKE-UP RPM</u>		
<u>5 PITCH</u>		
2 3/8"	- 14	RPM
2 7/8"	- 12	RPM
3 1/2"	- 10	RPM
4"	- 8	RPM
4 1/2"	- 8	RPM

<u>TARGET MAKE-UP RPM</u>		
<u>8 PITCH</u>		
2 3/8"	- 14	RPM
2 7/8"	- 12	RPM
3 1/2"	- 10	RPM
4"	- 8	RPM
4 1/2"	- 8	RPM
5"	- 10	RPM
5 1/2"	- 9	RPM
7"	- 7	RPM
7 5/8"	- 6	RPM
8 5/8"	- 6	RPM
9 5/8"	- 5	RPM

5.6 **OPTIONAL Make-up Torque/Turn Monitoring**

5.6.1 Optional Torque-Turn Equipment - A torque-turn /time or torque/turn monitoring system may 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 four (4) months, traceable to the appropriate national standard.

5.6.2 If the optional torque/turn monitoring equipment is used, a make-up torque/turn graph should be generated for every connection.

**NOTE: If an appreciable amount of thread lubricant is being pushed to the tube ID and/or the tube OD during make-up, too much thread lubricant is being applied to the connection.**

**NOTE: If torques are high or low, adjust the thread compound application to give good make up torque curves. For high torque, apply more compound. For very high torque, apply Molybdenum disulfide to both pin and box connectors prior to the application of the thread compound.**



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5.6.3 Make up as follows:

a) **5 Pitch (TKC 4040, TKC 4040 HOI, TKC BUTTRESS and TKC CWC)**

aa) **EXAMPLE:** 2 3/8" 4.60# J-55 TKC Plus 4040  
Average shoulder torque value = 1000 ft./lbs. of torque

After the average shoulder torque value has been determined, add the optimum delta torque value from the Hunting sales data sheet, to the average shoulder torque value for optimum final make up torque values.

ab) **EXAMPLE:** 2 3/8" 4.60# J-55 TKC Plus 4040  
Average shoulder torque value = 1000 ft./lbs. plus optimum delta torque value 540 ft./lbs. = 1540 ft./lbs. optimum make-up torque value.

**NOTE:** For minimum and maximum final make-up torque value, follow the same procedure adding to the average shoulder torque to the minimum delta torque value on the sales data sheet for minimum final make-up torque value and the maximum delta torque on the sales data sheet to obtain the maximum.

ac) **EXAMPLE:** 2 3/8" 4.60# J-55 TKC Plus 4040  
Average shoulder torque value = 1000 ft./lbs. of torque plus minimum delta torque 320 ft./lbs. = 1320 ft./lbs. final minimum make-up torque.

ad) **EXAMPLE:** 2 3/8" 4.60# J-55 TKC Plus 4040  
Average shoulder torque value = 1000 ft./lbs. of torque plus maximum delta torque 760 ft./lbs. = 1760 ft./lbs. final maximum make-up torque.

b) **8 Pitch (TKC 8 RD, TKC PLUS 8 RD)**

ba) Identify the minimum torque recommended in API 5C1 for the product to be made-up. (The torque Table 3A found in API 5C1 is not part of API recommended practice 5C1)

**EXAMPLE:** 2 7/8" 6.50# N-80 EUE 8rd  

Minimum	Optimum	Maximum	API recommended torque value
1,730ft/lbs	2,300ft/lbs	2,880ft/lbs	in 5C1 Torque Table 3A



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bb) Add the API 5C1, Table 3A minimum recommended torque to the minimum delta torque specified on the Hunting Sales Data Sheet.

**EXAMPLE:** 2 7/8" 6.50# N-80 EUE 8rd  
 Minimum      Optimum      Maximum      Delta torque specified on the  
 1,250ft/lbs    1,705ft/lbs    2,140ft/lbs    Hunting Sales Data Sheet

Minimum API 5C1 Torque Table 3A, 1,730ft/lbs plus Minimum Delta 1,250ft/lbs = 2,980ft/lbs make-up torque (to be used as a guide only at this point)

cc) Make-up approximately 10% of the string in low speed using the torque value calculated in a & b above as a total make-up torque, paying special attention to the torque gage to determine at what point the needle begins to rise suddenly (this indicates that the connection has shouldered). The amount the needle moves prior to the sudden rise in torque is referred to as the shoulder torque and should be recorded in order to obtain the average shoulder torque for calculation purposes. The amount the needle moves after it has shouldered is the delta torque being applied to the shoulder. The combination of the shoulder torque and the delta torque is the final make-up torque.

**EXAMPLE:** 2 7/8" 6.50# N-80 EUE 8rd  
 10% of string make-ups

1. 2,000ft/lbs	2. 2,350ft/lbs	3. 2,500ft/lbs
4. 3,500ft/lbs	5. 3,800ft/lbs	6. 2,500ft/lbs
7. 1,850ft/lbs	8. 3,600ft/lbs	9. 2,300ft/lbs
10. 2,900ft/lbs		

**NOTE:** The torque value calculated in a & b above is to be used as a guide only, actual torque obtained may be higher or lower.

ad) After making up approximately 10% of the string determine the average shoulder torque value.

**EXAMPLE:** 2 7/8" 6.50# N-80 EUE 8rd  
 Average shoulder torque value = 2,730 ft/lbs of torque

ae) After the average shoulder torque value has been determined, add the optimum Delta torque value from the Hunting Sales Data Sheet, to the average shoulder torque value for optimum final make-up torque value.

**EXAMPLE:** 2 7/8" 6.50# N-80 EUE 8rd  
 Average shoulder torque value 2,730ft/lbs plus optimum delta torque value 1,705ft/lbs = 4,435ft/lbs optimum make-up torque value.



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af) After determining the optimum make-up torque value, determine the difference between the minimum delta torque value and the optimum delta torque value and subtract the difference from the optimum make-up torque value for minimum final make-up torque value.

**EXAMPLE:** 2 7/8" 6.50# N-80 EUE 8rd  
Minimum delta torque value 1,270ft/lbs minus optimum delta torque value 1,705ft/lbs = 435ft/lbs. The Difference between minimum delta and optimum delta 435ft/lbs minus 4,435ft/lbs optimum final make-up torque value = 4,000 ft/lbs. Minimum final make-up torque value.

ag) Determine the difference between the maximum delta torque value and the optimum delta torque value and add the difference to the optimum make-up torque value for maximum final make-up torque value.

**EXAMPLE:** 2 7/8" 6.50# N-80 EUE 8rd  
Maximum delta torque value 2,140ft/lbs minus optimum delta torque value 1,705ft/lbs = 435ft/lbs.. The Difference between maximum delta and optimum delta 435ft/lbs plus 4,435ft/lbs optimum final make-up torque value = 4,870 ft/lbs. Maximum final make-up torque value.

Minimum	Optimum	Maximum	Established final make-up
4,000ft/lbs	4,435ft/lbs	4,870ft/lbs	torque values.

**6.0 MAKE-UP ACCEPTANCE AND REJECTION**

- 6.1 For an acceptable make-up, torque requirements must be met.
  - 6.1.1 The torque applied to the connection must meet the minimum published torque. The maximum torque may be exceeded on thick wall accessories.
- 6.2 Connections which do not meet the criteria of Paragraph 6.1 should be set aside and a Hunting representative contacted as soon as possible.
- 6.3 Following buck-up, the ovality or out-of-roundness shall be within the specified manufacturing tolerances for the product when measured on the open end of the coupling.
- 6.4 End drift the made-up connection in accordance with the Hunting "**Full Length Drift/End Drift Inspection Procedure**" (Generic).

**7.0 REWORK**

- 7.1 If the connection does not shoulder, remove the coupling, clean and visually examine both pin and box for damage. If no damage is found remake up as directed in Section 5.0 and inspect as directed in Section 6.0 of this document. The amount of the thread lubricant may be altered and a higher make-up torque (up to maximum recommended torque) may be used.
- 7.2 Connections which will not meet the criteria of Section 6.0 should be set aside and a Hunting representative contacted.



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**8.0 RUNNING PROCEDURE FOR ACCESSORIES MADE UP USING THREAD LOCKING COMPOUND / LUBRICANT**

- 8.1 Using steam, soap and hot water, or safety solvent, remove all thread storage or running compound from both pin and box connectors.
- 8.2 Ensure that the thread and sealing surfaces are clean, dry, and free of oil, grease, or residues.
- 8.3 On thread sealing connections, apply the Hunting recommended thread compound on the first three (3) thread of the pin and last three (3) threads of the box (area of the perfect threads engagement).
- 8.4 Just prior to make up, the thread locking lubricant shall only be applied on the pin threads (not on the box), on the area that has not been covered by the approved thread compound.
- 8.5 When making up accessories like float equipment, hangers, thick wall accessories, and others, shoulder torques might be higher than normal due to relationship of the friction factors of the thread locking lubricant in comparison with the API Modified thread compounds and the wall thickness.
- 8.6 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.