HSC® - 006a

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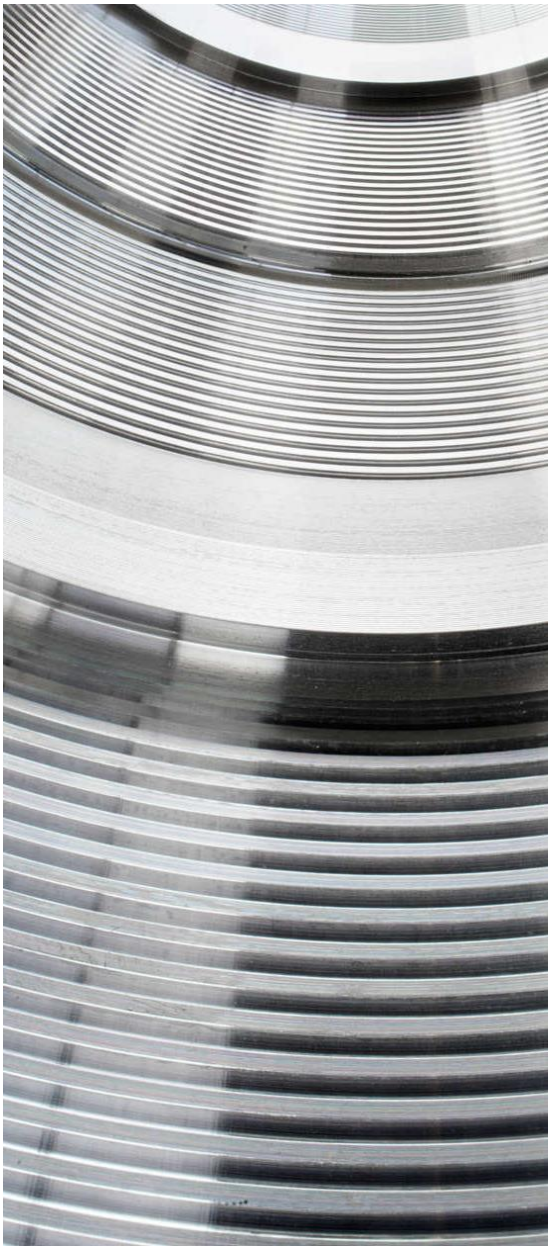
HSC® RECOMMENDED TRANSPORTATION, HANDLING AND RUNNING PROCEDURES FOR CARBON STEEL TUBING AND CASING

PURPOSE & SCOPE

To describe the procedure used by HSC® to assure that all HSC® tubing and casing is handled and run in such a manner as to limit possible damage to connections and pipe.

This procedure, along with HSC® Quality Manual will be the basis for assuring that all guidelines and procedures are documented and implemented, and that the primary duties and responsibilities of HSC® are followed by HSC® personnel.

QUALITY RECORDS
Complete all necessary paperwork and service reports. Report any problems to operations manager. Follow the attached guidelines



CONTENTS

THE FOLLOWING WILL BE USED AS SPECIFIC GUIDELINES SET FORTH BY HSC® (HIGH SEALED COUPLED) FOR THE RUNNING AND HANDLING OF TUBING AND CASING.

1/ TRANSPORTATION & OFFLOADING

1.1 MARINE TRANSPORTATION

1. Prior to loading, place three supports on the deck. The supports should be positioned as to prevent bending of the tubulars.
2. Load the tubulars so that all of the box ends are on the same end of the boat.
3. For each additional tier, place stripping material directly over the first set of supports.
4. Wooden or plastic chocks should be securely placed on the stripping on each side of every tier.
5. Load binders should be placed directly over the supports, and should be secured tight enough to prevent rolling and shifting.
6. The tubulars should be handled as outlined in Section 1.2
7. The tubulars should be in a position on the vessel so that contact with corrosive materials will be limited

1.2 MARINE OFFLOADING

1. Before moving the tubulars, ensure that thread protectors are securely in place on all connections.
2. The use of hooks is NOT recommended. The use of a spreader bar and rated slings or straps should be used.
3. The quantity of pipe moved per lift should be limited to a quantity that can be fully controlled and safely handled. (usually 2-3 joints)
4. Raise the load slowly so that the bundle will tighten as gently as possible.
5. Care should be taken so that the tubulars will not be bumped into any objects.
6. Place the tubulars so that the box ends are closest to the V-Door.
7. **DO NOT** allow the pipe to be dropped. Set the load down gently.
8. Remove the slings or straps.
9. When rolling the tubulars, **DO NOT** allow a joint to contact another joint with momentum, even if thread protectors are in place.
10. The tubulars should rest on at least three supports. Metal beams should be stripped with wood. **DO NOT** place tubulars directly on a flat deck.
11. For each additional tier, place stripping material directly over the first set of supports.
12. Chocks should be securely placed on stripping on each side of every tier.
13. The tubulars should not be stacked more than 2.5 meters high.

1.3 TRUCK TRANSPORTATION

1. Prior to loading, place three supports on the bed of the trailer. The supports should be positioned as to prevent bending.
2. Load the tubulars so that all of the box ends are on the same end of the truck.
3. For each additional tier, place stripping material directly over the first set of supports.
4. The tubulars should be limited on each tier so that chafing from the side rails will not occur.
5. The flat portion of the side rails should be facing the tubulars.
6. Wooden or plastic chocks should be placed on the stripping on each side of every tier.
7. Load binders should be placed directly over the supports, and should be secured tight enough to prevent rolling and shifting.
8. After a short distance, re-tighten all load binders which have loosened as a result of shifting.
9. The tubulars should be handled as outlined in Section 1.4

1.4 LAND OFFLOADING

1. If a crane is to be used, refer to guidelines in Section 1.2
2. If a forklift is to be used, position the truck so that the boxes will be close to the V-Door and the tubulars can be transported with as little movement as possible.

3. **DO NOT** allow the joint to contact another joint with momentum.

4. **DO NOT** move more pipe than can be fully controlled and safely handled.

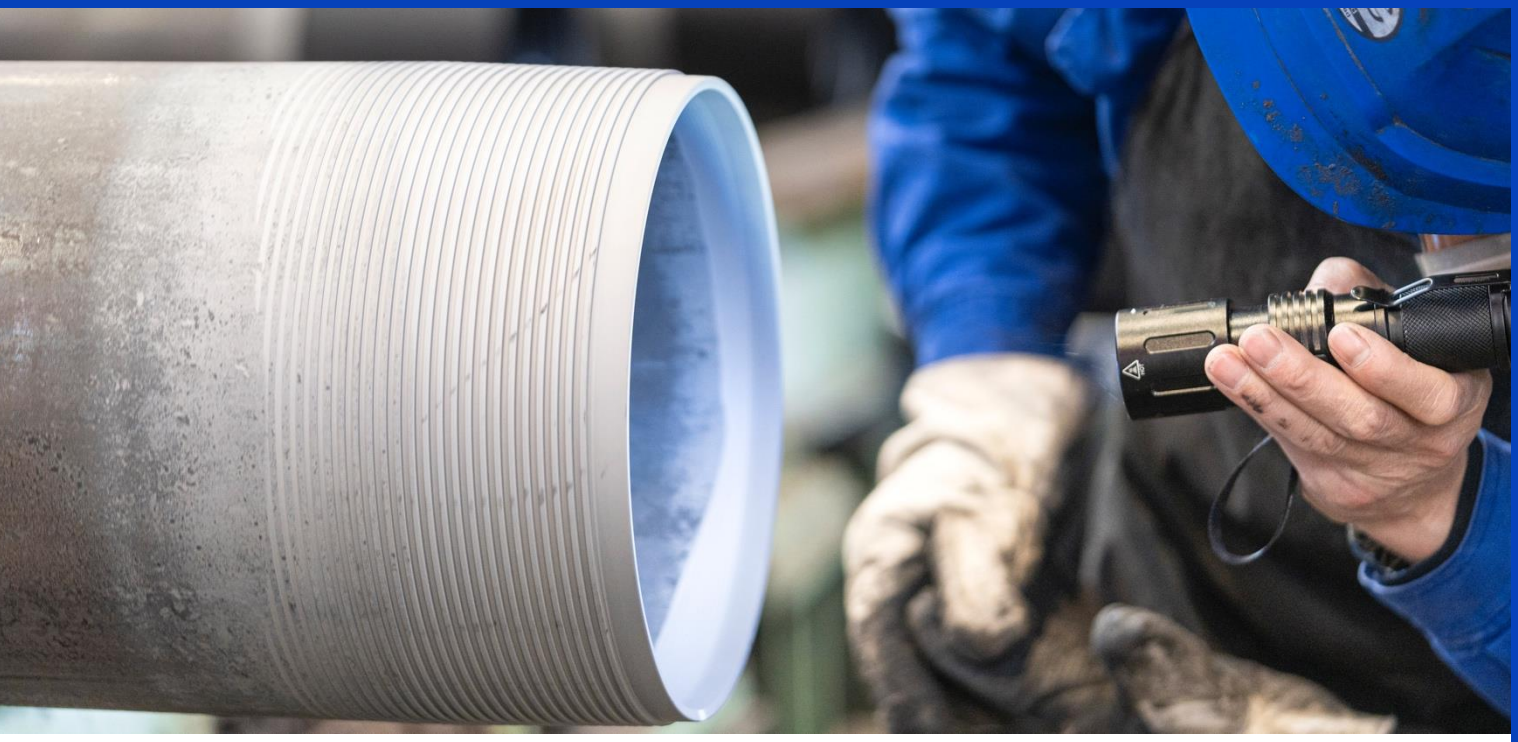
5. Place the tip of the forks lower than the pipe rack and roll off one joint at a time. Again, DO NOT allow one joint to contact another joint with momentum.

6. If no forklift is on location, place three or more boards (enough to safely support the weight) against the truck and roll off one joint at a time using the boards as a ramp. **DO NOT** allow the joint to roll freely; allow for sufficient personnel to safely control the joint.

Note: <u>All pipe must be handled with care:</u> Using end hooks are only acceptable if the appropriate thread protector is used. Body slings are to be used in preference to end hooks.

2/ PRE-RUNNING PREPARATION

2.1 TUBING AND CASING PREPARATION



1. While the tubulars are on the rack, remove the pin and box end protectors.
2. If a drift check is to be performed, it should be performed prior to cleaning.
3. Thoroughly clean and dry the connections. If any debris is present, repeat. **DO NOT** use diesel as a cleaning solvent. This will leave an oil film on the connection and it is harmful to the environment.
4. Visually inspect the threads.
5. Minor damage to the threads can be repaired at this time with a fine triangular file. No repair is to be carried out on the seal area. Joints with irreparable damage should be marked accordingly and laid aside.
6. Records should be kept on all repairs or rejects on reject reports attached. Refer seal damage to HSC® inspector. Do not attempt to repair with hand tools.
7. Check the inside of the tubes for any foreign material. If any is present, remove with compressed air.
8. Verify correct mill end make-up
9. Any out of roundness should be closely evaluated, as this can greatly reduce the collapse strength.
10. If resilient seals are to be installed they should be installed at this time. Seals should only be placed in clean, dry connections.
11. Clean and dry pin and box and place clean protectors back on the connections.

TUBULAR PREPARATION SHOULD BE LIMITED TO QUANTITIES THAT WILL BE RUN WITHIN A REASONABLE TIME SPAN, TO REDUCE THE POSSIBILITY OF RUSTING AND PITTING.

2.2 CALCULATION OF RUNNING LENGTH

When lengths of HSC® Premium or HICOM™ threaded OCTG are made-up; one thread length of every joint is "buried" in the mating coupling, so that the RUNNING LENGTH is the overall TALLY LENGTH less the length of one pin thread for each pipe length. **If pipe is to be tallied the makeup loss must be recorded on the service report.**

FOR HSC® HICOM ™

O.D. (inches)	Makeup loss (inches)
2 3/8	2.205
2 7/8	2.205
3 1/2	2.830
4	2.997
4 1/2	3.164
5	3.730
5 1/2	3.730
6 5/8	3.730
7	3.730
7 5/8	4.130
7 3/4	4.130
8 5/8	4.530
9 5/8	4.930
9 7/8	4.930
10 3/4	5.330
11 3/4	5.330
11 5/8	5.330
13 3/8	5.330
13 5/8	5.330
14	5.330

FOR HSC® Premium

O.D. (inches)	Makeup loss (inches)
2 3/8	2.514
2 7/8	2.829
3 1/2	3.274
4	3.528
4 1/2	3.969
5	4.724
5 1/2	4.85
6 5/8	4.965
7	5.228
7 5/8	5.406
8 5/8	5.545
9 5/8	5.545
10 3/4	5.589
11 3/4	5.589
13 3/8	5.642

INFORMATION TAKEN FROM HSC® TECHNICAL CATALOGUE & HICOM ™ TECHNICAL CATALOGUE

2.3 RIG SITE PREPARATION

1. The travelling block should be aligned with the well bore.

2. Verify that the wear bushing has been pulled or that the I.D. is sufficient to pass all string components.

3. Verify that the B.O.P.'s have been fitted with the proper size rams.

2.4 RUNNING AND HANDLING EQUIPMENT

ALL HANDLING EQUIPMENT SHOULD PROVIDE MAXIMUM PROTECTION AGAINST TUBULAR DAMAGE. IN ORDER TO DO SO, ALL THE EQUIPMENT SHOULD PROVIDE THE LONGEST PRACTICAL OR NECESSARY DIE SURFACE. ALL DIES SHOULD BE NON-DIRECTIONAL.

1. Ensure that the slips are in good working condition, are fitted with the proper size dies, and will accommodate the weight of the string.

2. Ensure that the elevators are in good working condition, are fitted with the proper size dies, and will accommodate the weight of the string. **DO NOT use bottleneck elevators.** For tubing, slip type elevators are recommended, and for casing spider type elevators are recommended.

3. The power tongs should be rated for the torque that is to be applied. They should be fitted with the correct type and size of dies. The snub line should be at a 90° angle with the tongs and level.

4. A calibrated power tong torque gauge should be placed in the snub line. For optimum performance, optimum torque applied to the connection being run should be approximately half of the gauge scale. The handle length of the power tongs should match the handle length for the torque gauge. P.S.I. gauges are not suitable for running production tubing.

5. For tubing, hand held or integral hydraulic backups should be used. For casing, rig backup tongs are usually used. They should all be in good working order, fitted with correct size and type of dies, and should be rated for the torque that is to be applied.

6. A stabbing board should be utilised to maintain vertical alignment throughout stabbing and makeup. A stabbing yoke may also be used.

7. Lift plugs should be utilised for connection and personnel protection. They should be inspected for overall condition and checked manually to insure proper fit.

8. A stabbing guide should be used whenever possible. It should be in good working order and provide adequate connection protection when stabbing. It should be checked manually for proper fit.

9. Thread compound with a correction friction factor of 1.0 should be on location in sufficient quantities. The appropriate applicators should also be present.

10. A safety clamp should be available. It should be in good working condition and sized for the tubing and casing accessories.

11. For tubing, a safety valve rated for the maximum anticipated pressure should be on location. If the valve connections are not compatible with the tubing connections, crossovers to all connections being run should be present.

12. A pickup line in good working condition should be used. It may be constructed of nylon for tubing, and a flexible steel cable for casing. Insure that whatever material is used it is rated for the use.

13. If rabbits are to be used during the running, they should be measured to insure the O.D.'s are the correct size. The rabbits should be manually inserted into the pipe to insure proper fit. Care must be taken not to damage the seal area of the pin and box

2.5 TUBING AND CASING STRING ACCESSORIES

IT IS PREFERABLE TO MAKE IN-STRING TUBING ACCESSORIES UP IN ASSEMBLIES. THIS CAN BE PERFORMED AT ANY ASSEMBLY MAKEUP FACILITY. THE ASSEMBLY CAN BE MADE UP TO FULL TORQUE (FOR THE MAKEUP TORQUES A COMPUTERISED CONNECTION MAKEUP MONITORING SYSTEM IS RECOMMENDED). IT MAY ALSO BE FULL LENGTH DRIFTED AND PRESSURE TESTED. THIS WILL VIRTUALLY ELIMINATE RIG DOWN TIME AND CONNECTION DAMAGE FROM PROBLEMS ASSOCIATED WITH DIFFERENT O.D.'S AND LENGTHS OF THE ACCESSORIES.

1. All accessories that are to be part of the string should be located and checked against the string design.

2. Any accessories that are not present, or do not conform to the string design should be brought to the attention of the appropriate end user representative.

3. All accessories that are similar, yet slightly different, should be noticeably marked to indicate the position that they are to be run in the string.

4. All accessories should be drifted if possible. Accessories with restricted I.D.'s may also be drifted, if arrangements have been made to have reduced size mandrels present.

5. Note if any accessories will require additional makeup or handling equipment.

6. Thoroughly clean and dry all accessory connections.

7. Visually inspect the threads.

8. Verify correct mill end makeup.

9. Minor damage to the threads can be field repaired at this time with a fine triangular file, but no repair to be carried out on the seal area.

10. Any connections that cannot be field repaired should be marked accordingly. Replacement accessory(s) should be ordered, or the damaged part should be re-threaded, time permitting.

11. If the resilient seal rings are to be installed they should be at this time.

12. Clean dry protectors should be placed back on the connections.

13. If the accessories will not be run in a reasonable time, storage compound should be applied.

3/ Running and Pulling singles

3.1 RUNNING

OCCASIONALLY IT IS FOUND THAT THE TORQUE METER/LOAD CELL IS CALIBRATED FOR A POWER TONG WITH A RADIUS ARM OTHER THAN THE ONE BEING USED. IN SUCH INSTANCES ADJUSTMENT HAS TO BE MADE TO THE FEATURES READ-OUT ON THE TORQUE GAUGE.

$$\text{TORQUE APPLIED} = \frac{\text{(GAUGE READING) X (ACTUAL TONG ARM LENGTH)}}{\text{TONG ARM LENGTH (MARKED ON GAUGE)}}$$

ONLY TORQUE VERSUS TURNS TO BE USED, NOT TORQUE VERSUS TIME

1. Gently roll one joint at a time into the pickup trough. Insure that the thread protectors are snugly in place. Transport the joint to the rig floor. If a pickup/laydown unit is not present, transport the pipe to the V-Door as outlined in Section 1.2 , 1-8

2. Remove the box end protector(s).

3. A clean handling plug should be installed. This will reduce the possibility of the pipe slipping out of the pickup line, and reduce the possibility of the test tool or the elevators damaging the connection.

4. If the pipe is to be rabbited/drifted during the run the rabbit/drift should be placed in the tube after installation of the handling plug. If the rabbit/drift is not clean, it should be cleaned and dried prior to placing it in the joint. Care must be taken as not to damage the seal area of the pin and box seal. Should the rabbit/drift stop in the tube, it should be broken free by easily pushing or tapping an object from either end. **DO NOT** use an object that will inflict damage to the tube or connections. **DO NOT** beat or tap the outside or end of the pipe with any hard object.

5. Attach the pickup line and raise the joint at a moderate speed, for both safety and tubular protection.

6. Remove the pin end protector and the rabbit/drift.

7. If any debris is present, the pin connection should be wiped, or blown clean.

8. Inspect threads and seal of pin end connection and apply a thin uniform coating of a modified API thread compound (correction friction factor of 1.0) in a controlled manner over the threads, the seal area and the torque shoulder. If moly-coat is to be applied prior to doping, it should be sprayed lightly and evenly and allowed to dry thoroughly prior to doping.

9. Remove the lift plug from the box end in the rotary.

10. If any debris is present, the box connection should be wiped, or blown clean.

11. Inspect threads and seal of box end connection and apply a thin uniform coating of a modified API thread compound (correction friction factor of 1.0) in a controlled manner over the threads, the seal area and the torque shoulder. If moly-coat is to be applied prior to doping, it should be sprayed lightly and evenly and allowed to dry thoroughly prior to doping.

12. Place the stabbing guide over the box end connector.

13. Slack off the joint in the pickup line. The joint should be lowered slowly as to minimise starting thread damage.

14. When running tubing the stabber should stab the joint and hold it as close to true vertical at all times. **Note:** The connection should be started slowly by hand to prevent connection damage and be advised not to hold the lift plug. Doing so might cause the lift plug to unscrew when turning the tubing.

15. Remove the stabbing guide and the pickup line.

16. Apply power tongs and begin makeup at no more than fourteen R.P.M.'s for regular weights and twelve R.P.M.'s for heavy weight tubing and casing. If torque is achieved prematurely, stop make-up immediately and check vertical alignment. Attempt make-up again. If premature torque is still present, back out the connection and check for damage. if there are more than three rejects on the same connection the pin and box shall be rejected. As torque is encountered in an acceptable makeup, tong speed should be slowed to three to five R.P.M.'s The makeup graph should be visually verified on the Torque/Turn computer system, if applicable. Peak torque should be achieved as slowly as possible, observing the shape of the torque/turn graph as the torque increases. This will allow the torque to be transmitted through the mechanics of the tongs and be applied to the connection.

ONLY TORQUE VERSUS TURNS TO BE USED, NOT TORQUE VERSUS TIME

RECOMMENDED HSC® TORQUES MUST BE APPLIED AS STATED IN HSC® PREMIUM OR HICOM™ TECHNICAL CATALOGUE OR AS STATED ON THE HSC® WEBSITE.

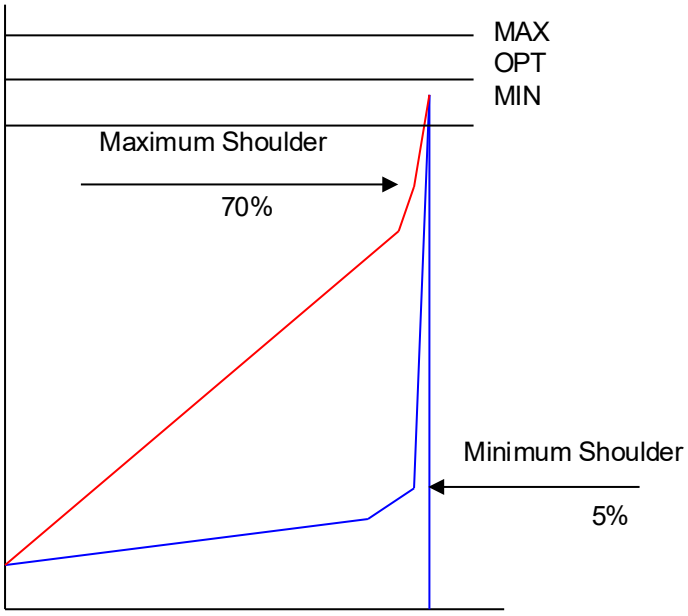
NOTE: FOURTEEN R.P.M.'S = 4.3 SECONDS PER ROTATION

TWELVE R.P.M.'S = 5 SECONDS PER ROTATION

FIVE R.P.M.'S = 12 SECONDS PER ROTATION

ONCE FINAL TORQUE IS REACHED, INSPECT THE GRAPH TO THE FOLLOWING CRITERIA:

SHOULDER TORQUE CRITERIA:



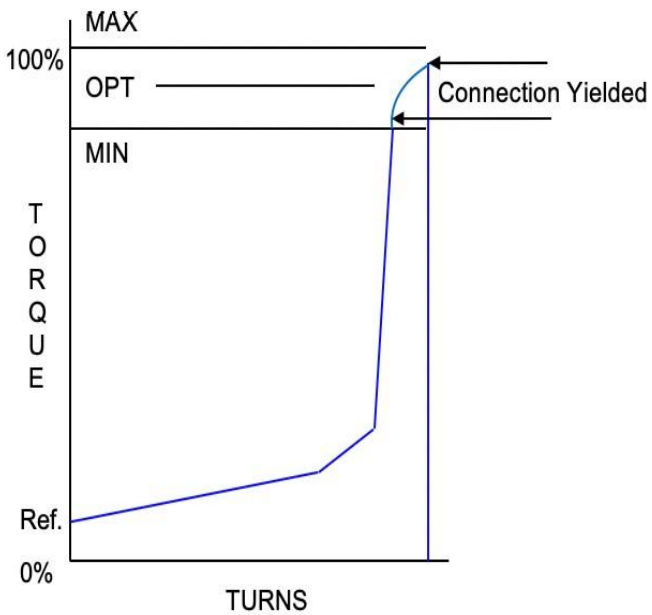
Minimum Shoulder Torque:
5% of Final Torque

Maximum Shoulder Torque:
70% of Final Torque

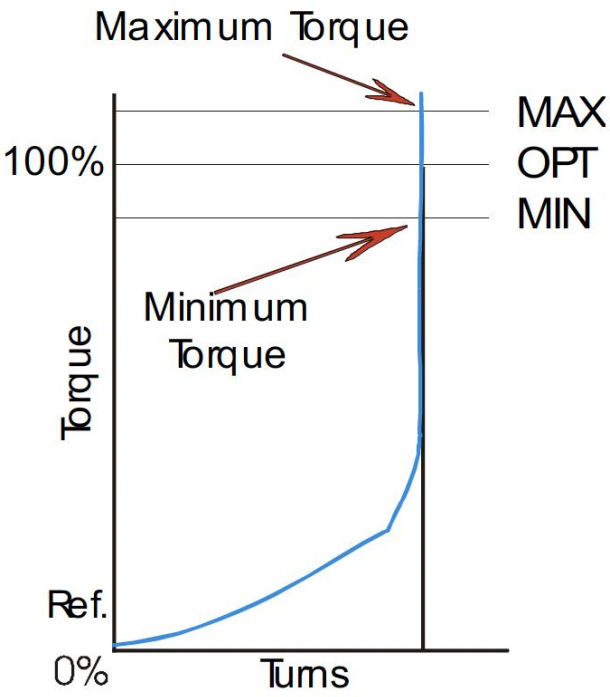
No make-up shall be accepted if the graph shows the shoulder torque to be either higher or lower than 70% or 5%, respectively. If the shoulder of the make-up does not fall within the HSC tolerance, the connection shall be broken-out and inspected for defects. If the pin and box are accepted re-makeup shall be carried out. This process must not be carried out more than 3 times.

YIELDED CONNECTION CRITERIA:

The connection shall be rejected if the make-up graph shows any signs of yielding as displayed above. Yielding is recognised when the line on the graph, from the shoulder point up until final torque, turns from its vertical direction. No re-inspection shall take place following a yielded graph and the connection shall be rejected outright.



FINAL TORQUE CRITERIA:



No make-up shall be accepted if the graph shows the final torque to be either higher or lower than the minimum or maximum recommended torque (shown above). If the final torque of the make-up does not fall within the HSC tolerance the connection shall be broken-out and inspected for defects. If the pin and box are accepted re-makeup shall be carried out. This process must not be carried out more than 3 times.

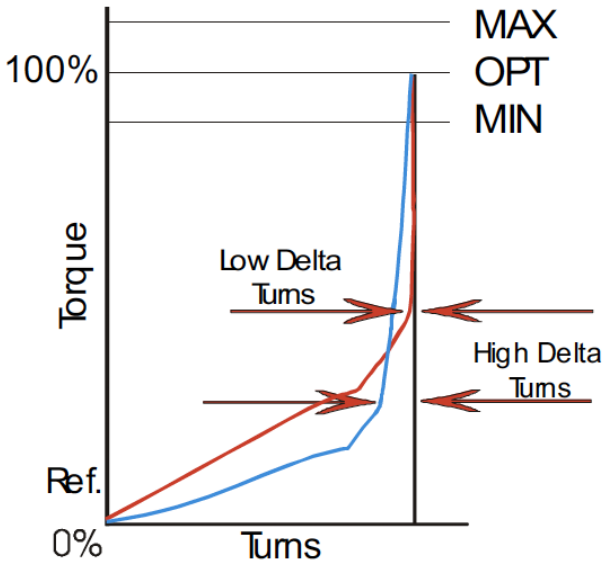
DELTA TURNS AFTER SHOULDER CRITERIA:

Maximum Delta Turns after shoulder is in accordance with the connections TPI (Threads Per Inch) as follows:

5TPI (5” – 13 3/8”)
– 0.10 Maximum Turns

6TPI (3 ½” – 4 ½”)
– 0.12 Maximum Turns

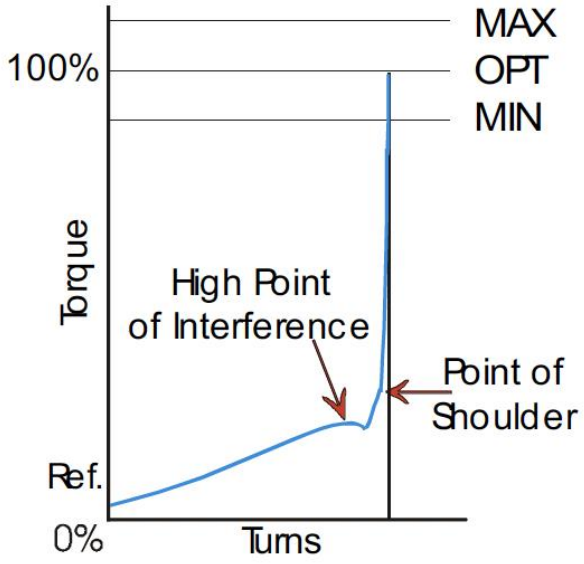
8TPI (2 3/8” – 2 7/8”)
– 0.16 Maximum Turns



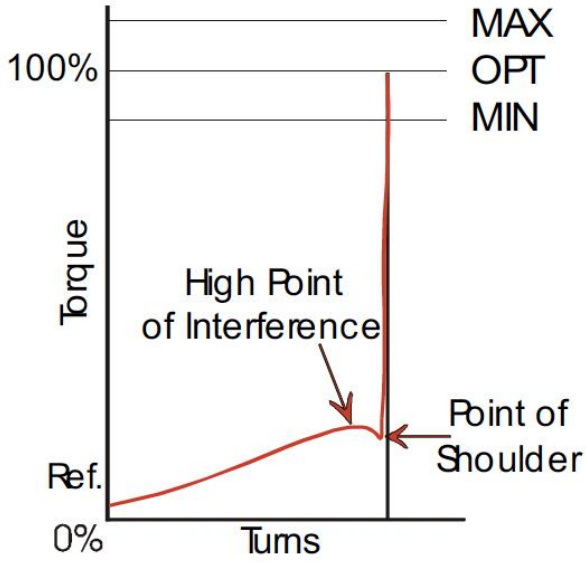
No make-up shall be accepted if the graph shows the Delta turns to be higher than the turns stated above after shouldering, as shown above. If the Delta turns of the make-up does not fall within the HSC tolerance the connection shall be broken-out and inspected for defects. If the pin and box are accepted re-makeup shall be carried out. This process must not be carried out more than 3 times.

DIPPING PRIOR TO SHOULDERING CRITERIA:

ACCEPTANCE:



REJECTION:



IF A DIP OCCURS IN THE GRAPH PRIOR TO SHOULDERING DURING MAKE-UP:

Make-up shall be **accepted** if the graph shows the shoulder torque has a higher torque value than the high point of the dipped area in the thread/seal interference (shown above on left). Make-up shall be **rejected** if the graph shows the shoulder torque has a lower torque value than the high point of the dipped area in the thread/seal interference (shown above on right).

If the make-up does not fall within the above HSC tolerance the connection shall be broken-out and inspected for defects. If the pin and box are accepted re- makeup shall be carried out. This process must not be carried out more than 3 times.

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IMPORTANT NOTE: IF THE HSC CONNECTION HAS TO BE BROKEN OUT, THE PIN AND COUPLING MUST BE INSPECTED BY THE OPERATOR FOR ANY GALLING, YIELDING OR ANY DAMAGE TO THE THREAD, SEAL AND SHOULDER AREA BEFORE MAKING-UP AGAIN.

1. Print out graph and save graph with any necessary comments on each make-up carried out. Records of all make-ups must be recorded for future reference. The graph print out must include actual shoulder torque, actual final torque, turns after shouldering, pipe number, coupling number, make-up number, date of make-up, connection details (size, weight, etc) and the name of the operator in charge at the time.
2. If testing tubing above the rotary, insert the internal test tool, or apply the external test unit. You should not perform this step until full torque has been applied to the connection.
3. After full torque has been achieved, latch the elevators as gently as possible and raise the block at a slow speed. If the block is raised too rapidly, swaging of the pipe might occur.
4. Pull the slips and lower the string.
5. Stop downward movement of the string and set the slips. Assure that the slips are set correctly and gently slack of the weight. Applying weight too rapidly may be the cause of mashed or swaged tubulars.
6. Attach the pickup line to the next joint to be run and unlatch the elevators from the last joint run. Raise the block at a moderate speed.
7. If testing tubing below the rotary, insert the internal test tool. To prevent connection damage, leave the handling plug completely made up until the testing tool has been removed from the tubing.

3.2 PULLING SINGLES

1. Install lift plug, gently latch the elevators around the joint in the rotary and raise the block at a slow even speed.
2. Stop movement of the string and set the slips on the pipe. Assure that the slips are set correctly and gently set the string weight on the slips.
3. Unlatch the elevators and raise them above the joint to be backed out.
4. Have the stabber hold the joint to be backed out as close to vertical as possible.
5. Apply the power tongs and slowly apply torque until the connection breaks. Back out the connection slowly (5-14 R.P.M.'s) until it becomes loose. Remove the power tongs and finish backout by hand.
6. Attach the pickup line.
7. Latch the stabbing guide around the box end to reduce jump out damage.
8. Gently raise the joint. If the joint does not appear to be free, turn anti/counter clockwise one half turn and try to lift again.
9. Dope the pin connection thoroughly and install a clean thread protector.
10. Slowly lay the joint down in the V-Door or the lay-down trough.
11. Remove the pickup line and the lift plug.
12. Dope the box end threads, seal and shoulder thoroughly and install a clean thread protector.
13. Transport the tubular as outlined in Section 1.

4/ Running and Pulling stands

4.1 RUNNING STANDS

1. Gently latch the elevators on a stand and raise the stand.
2. Remove the pin protector and clean the pin connection.
3. Inspect threads and seal of pin end connection and apply a thin uniform coating of a modified API thread compound (correction friction factor of 1.0) in a controlled manner over the threads, the seal area and the torque shoulder.
4. Clean the box connection in the rotary.
5. Inspect the box connection end connection and apply a thin uniform coating of a modified API thread compound (correction friction factor of 1.0) in a controlled manner over the threads, the seal area and the torque shoulder and install the stabbing guide over the box.
6. Slowly lower the stand.
7. Remove the stabbing guide and allow the block to subside as much as possible.
8. Start the connection slowly by hand to prevent connection damage.
9. Apply the power tongs and begin makeup no more than twelve R.P.M.'s. If the stand begins to "belly", place a stabber on the stabbing board to help maintain vertical alignment.
10. Apply torque as outlined in Section 3.1-16.
11. Remove the power tongs.
12. Raise the block slowly and remove the slips.
13. Lower the string and stop downward movement. Set the slips and gently lower the string weight on the slips.
14. If the tubing is to be internally tested, install a lift plug prior to inserting the test tool. **Do not** remove the lift plug until the test tool has has been removed.

4.2 PULLING STANDS

1. Gently latch the joint in the rotary and raise the block at a slow even speed until the elevators are supporting the full string weight.
2. Stop movement of the string at the desired breaking point. Set the slips and gently lower the string weight on the slips.
3. Allow the block to subside as much as possible and apply the power tongs.
4. Slowly apply torque until the connection breaks. Back out the connection slowly (5-14 R.P.M.'s) until it "hops" once. Remove the power tongs.
5. **Note:** If the stand tends to "belly", place a stabber on the stabbing board to help maintain vertical alignment.
6. Latch the stabbing guide around the box end to reduce jump out damage.
7. Slowly raise the stand. If the connection does not appear to be free, slack off, turn the connection anti/counter clockwise one half turn, and try to lift again.
8. Apply a clean pin protector and rack the stand back.

5/Procedure Notes

When inspecting HSC® tubular goods on a rig site, it is not uncommon to find connections that are damaged, but not severe enough to justify rejection. You may opt to lay these joints aside in order to have the best condition tubulars in the well. When this situation is encountered on a rig site it will be the operator representative's decision whether to run the joint or lay it aside.

Rig Site Marking Guidelines for Damaged Connections

Pin end connection reject: One red paint band on pin end and one red paint band in the centre of the tube. Description of the damages written on the joint with a permanent metal marker.

Pin end connection questionable: One yellow tape band on pin end and one yellow tape band in the centre of the tube. Description of the damages written on the joint with a permanent metal marker.

Box end connection reject: One red paint band on box end and one red paint band in the centre of the tube. Description of the damages written on the joint with a permanent metal marker.

Box end connection questionable: One yellow tape band on box end and one yellow tape band in the centre of the tube. Description of the damages written on the joint with a permanent metal marker.

Tube body reject: Two red paint bands in centre of tube, damaged area circled with a permanent metal marker, and damage description written on the joint with a permanent metal marker.

Tube body damage: Two yellow tape bands in centre of tube, damaged area circled with a permanent metal marker, and damaged description written on the joint with a permanent metal marker.

6/ Yard and Rig Site Visual Inspection

HSC® PREMIUM AND HICOM™ CONNECTIONS

Arrive on location and authenticate that pipe is the correct size, weight and grade to be inspected.

This can be done using the information on the work order in conjunction with the pipe-stencilling, grade bands, connections, and the I.D./O.D. of the pipe.

Make sure that the pipe is cleaned sufficiently.

The pipe should be free from all dope, drilling fluids and other debris. If pipe is not cleaned thoroughly, you could miss minor defects.

Make sure that the lighting and the weather conditions are such that you can perform the class of inspection that is required. If they are not adequate for your inspection, then this should be brought to the operations groups attention.

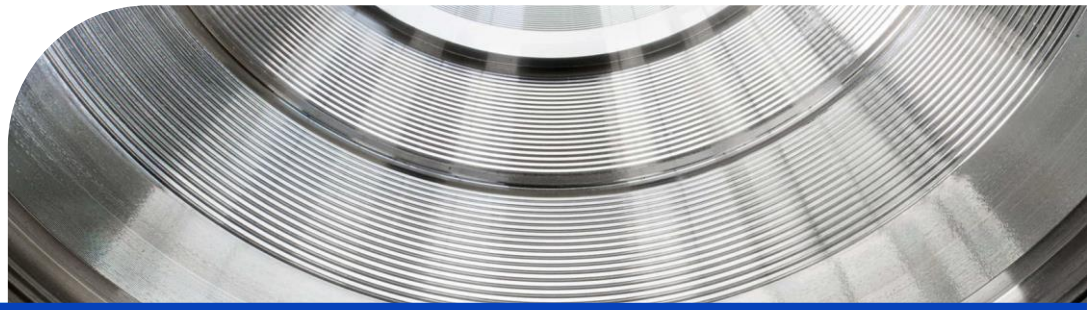
Threads should be inspected for:

Excessive handling damage
Galling or tearing
Pits and/or corrosion
Fatigue cracks, particularly near the last engaged threads on the pin

Inspect metal-to-metal seal and torque shoulders for:

Longitudinal cuts and/or scratches across more than 50% of the seal(s)
Pits and/or corrosion
Dents and/or mashed areas
Galling or wear
Rolling or yielding of torque shoulder
Yielding of pin nose/or pin seal
Any combination of a-f adjacent to each other

ANY QUESTIONS NOT COVERED IN THIS PROCEDURE SHOULD BE ADDRESSED WITH THE HSC® TECHNICAL DEPARTMENT.



MAKING THE RIGHT CONNECTION

Contact Us

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