



Two-Step Field Running and Handling

TSHP | TSHD | TSHP-SR | TSHD-SR

Purpose

This controlled data sheet provides field handling, preparation, make-up, pulling and seal-ring guidance for the listed Two-Step tubing connections. It is intended for trained personnel working under an approved well-site program, the applicable connection data sheet and the operator's safety management system.

SAFETY AND DOCUMENT CONTROL Before use, confirm that this is the current approved revision and verify all connection-specific torque, lubricant, dimensional and accessory requirements. Stop work whenever the equipment, connection condition or observed make-up response differs from the approved program.

Required references

- API RP 5C1 - Care and Use of Casing and Tubing.
- API Bulletin 5A2 and all applicable current API requirements.
- Current approved connection sales data sheet and torque limits.
- Current visual thread inspection and steel-imperfection specifications.
- Current approved thread-compound list and field-service instructions.

Essential equipment

- Fresh, unopened approved thread compound and a clean stirring tool.
- #58235 moustache brush or a modified paint brush that permits controlled application; do not use a bottle brush.
- Current field-service kit, visual inspection criteria and applicable product data sheet.
- Molybdenum disulfide spray; optional water-displacing oil for temporary corrosion protection.
- Correct handling plugs, stabbing guides, alignment yoke and weight compensator.
- Calibrated torque monitoring equipment and a correctly ranged load cell.
- Slip-type elevators, slips, power tongs, back-up tongs and an independent pull/force gauge where required.
- For SR products: correct seal-ring installation tool, spare seal rings and a non-sparking dead-blow tool.

THREAD COMPOUND Use only a currently approved compound. Do not use lubricants containing large particles on metal-to-metal sealing connections; unsuitable compounds may compromise sealing integrity.

1 Field handling precautions

- Do not stack tubulars higher than five tiers at the rig.
- Separate layers with wooden dunnage so that no weight rests on the connections.
- Keep thread protectors installed whenever tubulars are moved or handled.
- Identify each joint and preserve the approved running sequence when a mixed string is used.
- Never use a welding torch to remove a protector. Use the approved removal tool.
- Avoid rough handling and never unload pipe by dropping it.
- Do not handle more than three joints unless they are packaged or bundled.
- When hooks are used, approved liftable protectors must be installed and securely fastened.

LIFTING Use a spreader bar with a double-wrapped choker sling at each end when crane-handling long tubulars. Use rope slings to control pipe during manual unloading and keep each joint parallel to the stack.

Material-specific precautions

- Use non-metallic rack protection for corrosion-resistant alloy material.
- Prevent impacts that could locally increase hardness and susceptibility to sulfide stress cracking.
- The pipe owner must communicate all special handling requirements before work begins.
- Prevent joints from gathering momentum or striking their ends during rack movement.

2 Pre-job preparation

- Confirm all running and accessory equipment is present, serviceable and correctly sized.
- Review the running program with the drilling supervisor and relevant operator representative.
- Verify accessory connection type and manufacturing origin. Do not mix incompatible Two-Step connections in the same string.
- Use correctly adjusted slip-type elevators. Bottleneck or shoulder-type elevators are not recommended.
- Check travelling-block and rotary-hole alignment.
- Use only fresh compound from previously unopened containers and mix it thoroughly.
- Position the power-tong snub line level with the tong and at 90 degrees.

TORQUE EQUIPMENT Use a correctly ranged, traceably calibrated load cell. Calibration should be current within four months. Set reference torque to zero before make-up.

3 Cleaning and inspection

All connections must be thoroughly cleaned, dried and inspected at the rig immediately before running.

- 3.1 Remove pin and box protectors. Clean the connections and protectors thoroughly. Pre-install handling plugs in the first joints where required, then reinstall dry protectors.
- 3.2 Remove all storage or running compound with an approved solvent and a non-metallic bristle brush. Wipe or blow out remaining solvent; ensure no bristles remain.
- 3.3 Inspect and clean the tubular bore. Where compressed air is permitted, blow from box to pin.
- 3.4 Drift pipe and accessories box-to-pin with a clean, correctly sized mandrel. Protect the box shoulder, seal and threads. Use chrome, nylon or other approved non-metallic drift material for CRA.
- 3.5 Inspect each connection using the current approved visual-thread and steel-imperfection acceptance criteria. Segregate and disposition nonconforming joints.
- 3.6 Do not leave threads exposed for more than two hours without corrosion protection. For delays of two to twelve hours, apply a light approved corrosion-inhibiting oil. For longer delays, reapply approved compound and reinstall clean protectors.

ENVIRONMENT Control and collect cleaning solvents, displaced compounds and contaminated materials in accordance with the site environmental plan.

4 Running and stabbing

- Keep handling plugs and/or thread protectors installed whenever tubulars are moved.
- Move joints to the V-door with a pick-up machine, or with approved slings or a pick-up line attached at the box end.
- Lift with elevators or the approved pick-up line. Do not remove the handling plug until the fill-up line has been removed.
- When a casing running tool is used, install the connection-specific internal tool guide or handling plug.
- Clean and re-inspect each connection while it hangs in the derrick; remove compound, drilling fluid, solvent and moisture.
- Apply a light-to-moderate, even coating of molybdenum disulfide spray to pin and box where required by the approved connection program.

CONNECTION-SPECIFIC TOOLS Using an internal guide or handling plug not designed and approved for the connection and application may result in connection damage, property damage, injury or death.

5 Compound application and make-up

Apply a very light, uniform coat of approved thread compound to the box connection. On the pin, apply compound only to the 14-degree and 30-degree seal surfaces unless the current approved connection specification states otherwise.

AVOID OVER-APPLICATION Excess compound may damage the connection or SR seal ring, particularly at high make-up speed. Threads, roots, crests, seals and thread form must remain clearly visible through the coating.

Application tools

Do not use	Preferred	Acceptable alternative
Bottle brush	#58235 moustache brush	Modified paint brush permitting controlled application

Stabbing

- Use an alignment yoke.
- Place the correct stabbing guide on the box.
- Stab the pin concentrically into the box.
- After a mis-stab, lift the joint, clean and re-inspect both connection members before retrying.

Tong positioning and initial joints

- Place back-up tongs below the box connection for the first ten joints or until sufficient string weight prevents rotation.
- Position the power tong approximately seven inches above the pin connection.
- For CRA, start the connection by hand or with an approved strap wrench.
- Do not permit the stabber to rock the tube during make-up.

SHOULDERING Two-Step is free-running with minimal interference before the 30-degree torque shoulder. Closely control speed as the pin shoulders into the box. A typical 3-1/2 inch TSHP shoulder torque is approximately 250 ft-lb; this example is not an acceptance limit. Use the current approved data sheet.

Target make-up speed

Size	Carbon material	CRA material
2-1/16 in	10 rpm	8 rpm
2-3/8 in	9 rpm	7 rpm
2-7/8 in	8 rpm	6 rpm
3-1/2 in	7 rpm	5 rpm
4 in	6 rpm	5 rpm
4-1/2 in	5 rpm	5 rpm

SPEED LIMIT Make up in low gear using a smooth, continuous speed. Never exceed 12 rpm; never exceed 8 rpm on CRA. Do not change gears during make-up.

6 Torque-turn monitoring and acceptance

- A torque-turn/time or torque-turn system may be used and is recommended where required by the running program.
- The system should resolve rotation to at least 1/100 turn; 1/1000 turn resolution is preferred where available.
- Use an enhanced live display and configure manual and automatic dump functions to the approved limits.
- Generate and retain a make-up graph for every connection when monitoring equipment is used.
- Lower elevators only after make-up is complete.
- Before the job, the operator representative shall review the current connection data sheet and acceptance window.

OUTSIDE THE WINDOW Break out and visually inspect any connection made above the maximum final torque or below the minimum final torque. If no damage is found and the applicable criteria permit, clean, reapply compound and make up again.

- Inspect external mated shoulders for bellng or deformation following an over-torque event.
- Power- and back-up-tong dies must be clean and serviceable. Marks must not exceed 0.015 inch in depth.
- Remove excessive or sharp-bottomed marks by filing only. Grinding is prohibited.

7 Pulling and breaking out

Preparation

- Use slip-type elevators, safety clamps and the correct lifting/handling plug.
- Use an alignment yoke and weight compensator.
- Use power tongs with a suitable torque read-out and back-up tongs.
- Provide a firm wooden platform for standing back tubing.
- Have clean thread protectors ready and install a protector on each pin immediately after breakout.

CRA Standing back CRA material is not recommended. Follow the operator's approved material-specific handling program.

Breaking out

- Place the back-up tong on the pipe body below the upset transition. Do not use pipe wrenches or chain tongs as back-ups.
- Break initial torque at less than 10 rpm. Continue at 10 rpm or less until the connection drops one thread.
- The connection normally disengages in four to six turns from the power-tight position.
- Do not spin after the connection drops; doing so may cause thread damage or galling.
- For CRA, break initial torque with power tongs and back out with an approved strap wrench.
- Stop rotation if excessive torque is observed and determine the cause before continuing.
- Fully disengage threads before lifting. If the connection jumps from the box, inspect the pin face and flank seal.

8 Standing back, re-running and storage

Standing back

- Stand tubulars on a firm wooden platform.
- Protect exposed threads from dirt and damage. Install pin protectors and box protectors where conditions require.

Re-running

- Fully clean both connection members and inspect for damage.
- Repeat the approved running, compound and make-up process.

Laying down and storage

- Install clean protectors before tubulars are laid down.
- For storage or re-use, remove protectors after laying down, clean and inspect connections, apply an approved water-displacing oil followed by an approved storage compound, and reinstall clean protectors.

9 Optional seal ring

The seal ring fits in the machined box groove and provides continuity of corrosion resistance for coated pipe. Confirm presence and correct seating before running.

- Inspect the groove for dents, dings, burrs and debris.
- Place one correct-size seal ring on the dedicated installation tool.
- Insert the self-centering tool until the ring contacts the circumference of the 14-degree seal and aligns with the groove.
- Hold the tool firmly and strike it with the approved non-sparking dead-blow tool to press the ring into place.
- Confirm the PTFE seal is fully seated without loops or protrusions into the box ID.

SIZE-SPECIFIC TOOL Seal-ring installation tools are connection-size specific. Do not substitute another tool.

10 Accessories using thread-locking compound

- Remove all storage or running compound from pin and box using steam, soap and hot water, or an approved safety solvent.
- Ensure thread and sealing surfaces are clean, dry and free of oil, grease and residue.
- On metal-to-metal seal connections, apply the currently approved running compound to the seal area of both pin and box.
- Immediately before make-up, apply thread-locking lubricant only to the pin-thread area not covered by the approved running compound; do not apply it to the box.
- Accessories such as float equipment, hangers and thick-wall components may shoulder above normal torque because of lubricant friction and wall thickness.
- Aim accessory make-up at the maximum recommended torque. Published torque may be exceeded only when the approved program permits and must never exceed 80% of published minimum yield torque.

Operational hold points

Hold point	Minimum verification
Before handling	Protectors secure; lifting equipment and dunnage accepted; material-specific requirements communicated.
Before cleaning	Approved solvent, waste controls and non-metallic brushes available.
Before stabbing	Connection clean, dry and inspected; correct guide and handling plug confirmed.
Before make-up	Compound approved and correctly applied; tong position, load cell, rpm and torque window verified.
After make-up	Final torque/turn accepted; graph retained where required; shoulders show no deformation.
Before re-run	Both members cleaned and reinspected; any damage dispositioned by authorized personnel.

Legal and technical disclosure

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