TPS TECHNITUBE RÖHRENWERKE GMBH

TPS-Topseal

Running Procedure

Pipe Preparation & Running Procedures
(Carbon Steel)

Contents

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1. Introdution

Running TPS-Topseal premium connections is characteristic of running several alternate premium connections that are common in the market. TPS recommend the following basic steps:

- Equipment & Pipe Preparation
- Accurate Alignment
- Stabbing & Make-up
- Graph Verification

2. Equipment & Pipe reparation

2.1 Equipment

TPS-Topseal connections are to be made up using suitable equipment that is designed for each specific task and verified as fit for purpose in line with both local regulations and rig procedures.

The TPS-Topseal does not have a 'make-up triangle' on the pipe as point of reference when running. Successful make-up is achieved by applying torque to set values together with achieving a compliance shoulder torque, shoulder turns and shoulder slope requirements.

The required make-up equipment shall have monitoring equipment that can identify and record the applied torque and turns together with the shoulder point and the delta turns achieved.

TPS specify the use of a calibrated torque turn units that produce a make-up graph in order that the integrity of the connection can be validated at the point of make-up.

2.2 Pipe Preparation

The degree of pipe preparation work to be carried out at the rig site is dependent upon the supply chain control and the confidence levels on the risks associated with that control of the supply chain.

The following are recommended good practices some of which may be performed before arrival at the rig site dependent of the supply chain control

a) Verify the pipe size, weight, grade, connection type and quantities received against the schedule that has to be run.
b) Clean all storage compound from the connections
c) Inspect both pin and coupling connections
d) Drift each pipe Full length
e) Fit stop collars and centralizers
f) Tally each joint
g) Apply correct running compound to Pin & Box Connections (See Appendix 2)
h) Refit clean thread protectors unless running is imminent.

3. Accurate Alignment

It is essential that the rig has capability to align the pin and coupling connections thus preventing cross threading and potential damage to the seal.

Where the rig does not have remotely operated equipment to achieve this alignment it may be achieved through a Stabbing operator positioned on the stabbing board or a stabbing arm to centrally position the box connection on the pipe.

4. Stabbing & Make up

There are three (3) stages:

a) Initial Stabbing
b) Running In
c) Make-up to final Torque

4.1 Initial Stabbing

To further minimize potential damage to threads or seal area, stabbing guides should be positioned on the coupling end that is receiving the pin connection.

The driller should maintain a clear un-interrupted vision of the stabbing process.

The objective is to stab on the threads to enable make-up, so care must be taken not to lower the pin connection into the box too quickly.

Remove the guide once stabbing has been achieved.

The next two turns are critical to verify that initial stabbing has been successful and that the threads are properly engaged.

a) It is recommended that for small diameter pipe these first two turns are completed using a strap wrench of a chain tong.
b) For larger diameters where the power tong is required is should be in high gear at low speed.
c) A back out and re-entry is required if any torque build up detected during these two turns.

Any severe stabbing damage would be cause for rejection.

Rocking the pipe is not recommended to engage the threads, rotating the pipe in reverse till the threads drop is the recommended method.

4.2 Running In

When the threads are confirmed as properly engaged the power tong can be engaged running may commence.

Recommended speeds:

a) Running In Tubing: High Gear @ < 30rpm

b) Running In Casing: High Gear @ < 15rpm

4.3 Final Make-up:

The required make-up and tolerance window is detailed in the TPS-Topseal Torque Tables document. The make-up torque is a factor of size, weight and grade and as such attention must be paid to the tabulated values in our procedure QP 17-03

Recommended speeds:

a) Low Gear @ maximum 5rpm

The change from running in speed to lower speed detailed above shall be made as resistance to the torque is detected on monitoring equipment.

Thread interference typically occurs as some 60% of the pin threads are covered by the coupling.

4.4 Verification of Graph

The following four aspects of the graph shall be compliant with the requirements tabulated below.

	Aspect	Requirement
1	Final Torque	Optimum Torque +/-10%
2	Shoulder Torque	5% to 70% of the Optimum Torque
3	Delta Turns (Final Turns – Shoulder Turns)	0.10 (max) Turns
4	Shoulder Slope	$\frac{\text{(Final Torque – Shoulder Torque)}}{\text{(Optimum Torque x Delta Turns)}} > 5$

Appendix 1 of this document provides several graphical representations on acceptable graphs and suggested solutions to graphs that indicate make-up problems.

5. Appendix 1: Evaluating TPS-Topseal Torque Graphs

Figure 1 Features of Standard Graph with Acceptable Curve

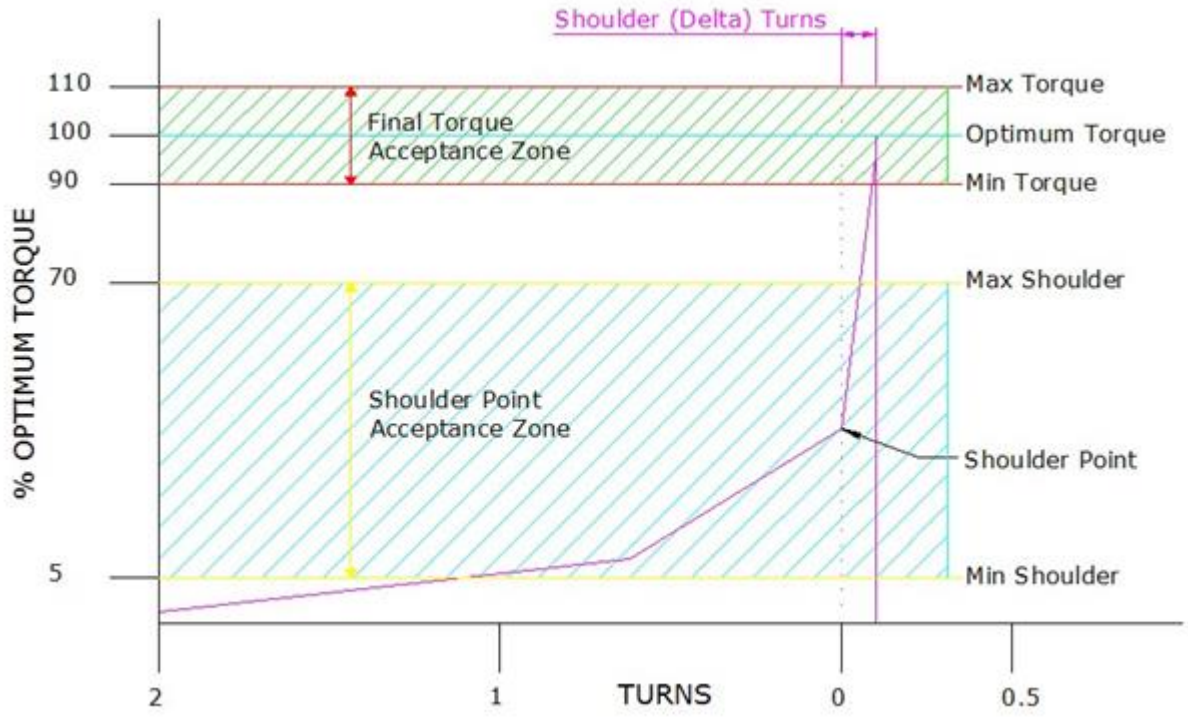
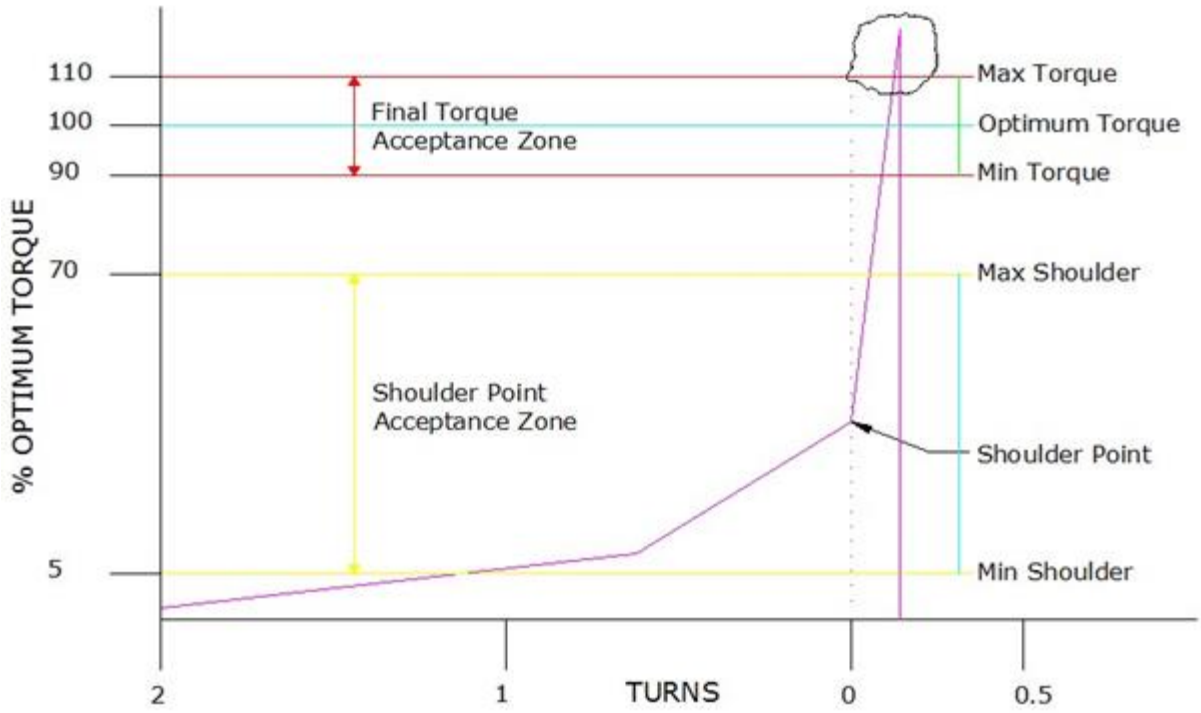
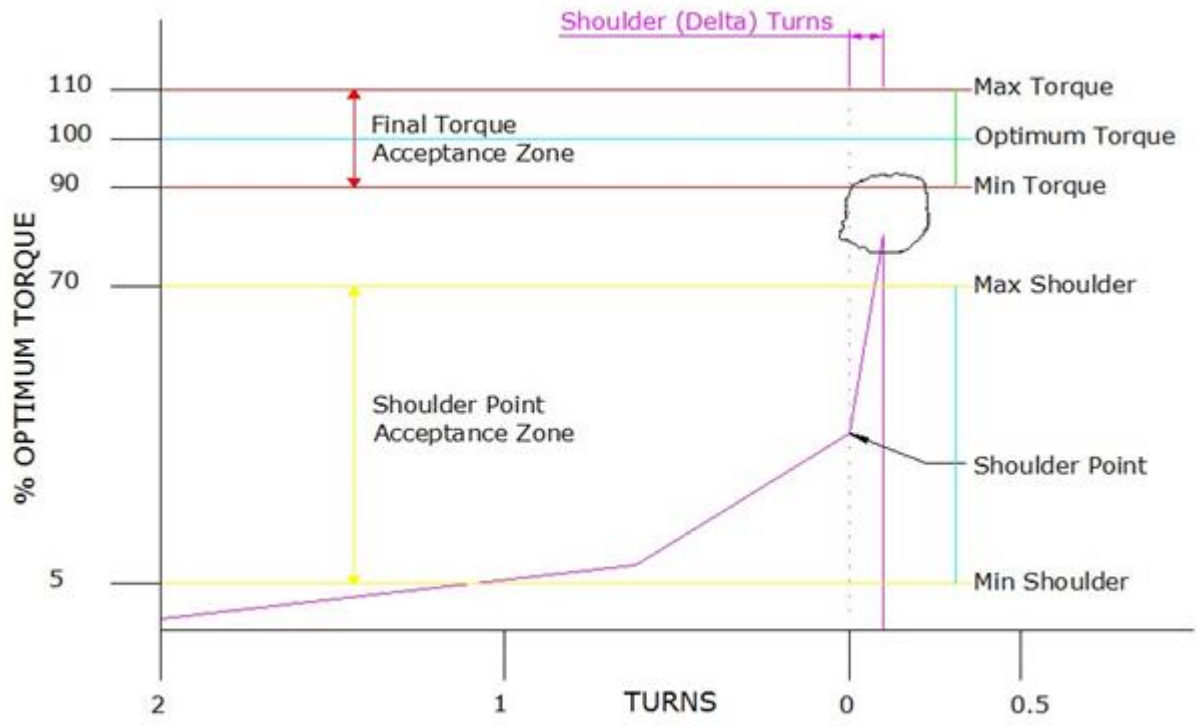


Figure 2: High Final Torque



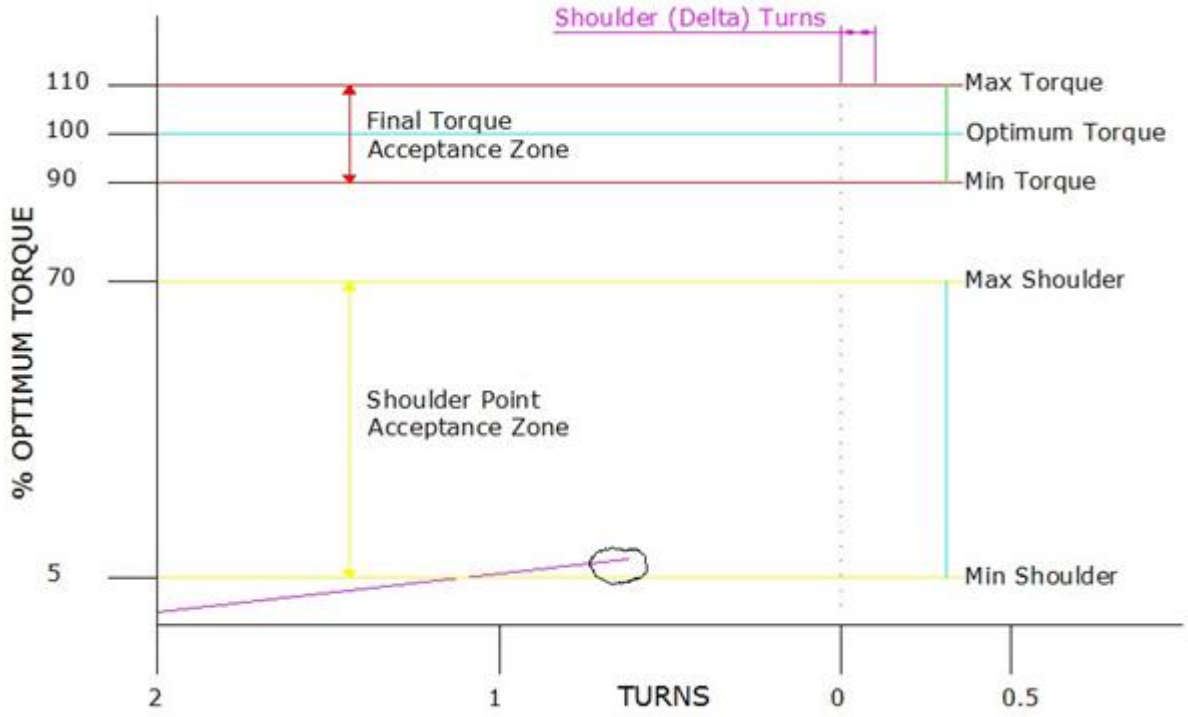
Possible Causes	Recommended Action
• Load Cell out of calibration • Incorrect dump valve setting • Excessive power to Tong	1. Break out 2. Clean Threads & seals 3. Visually inspect for any deformation on the coupling torque shoulder. 4. If the results from the inspection are acceptable, re-apply running compound and make-up again.

Figure 3: Low Final Torque after Shoulder



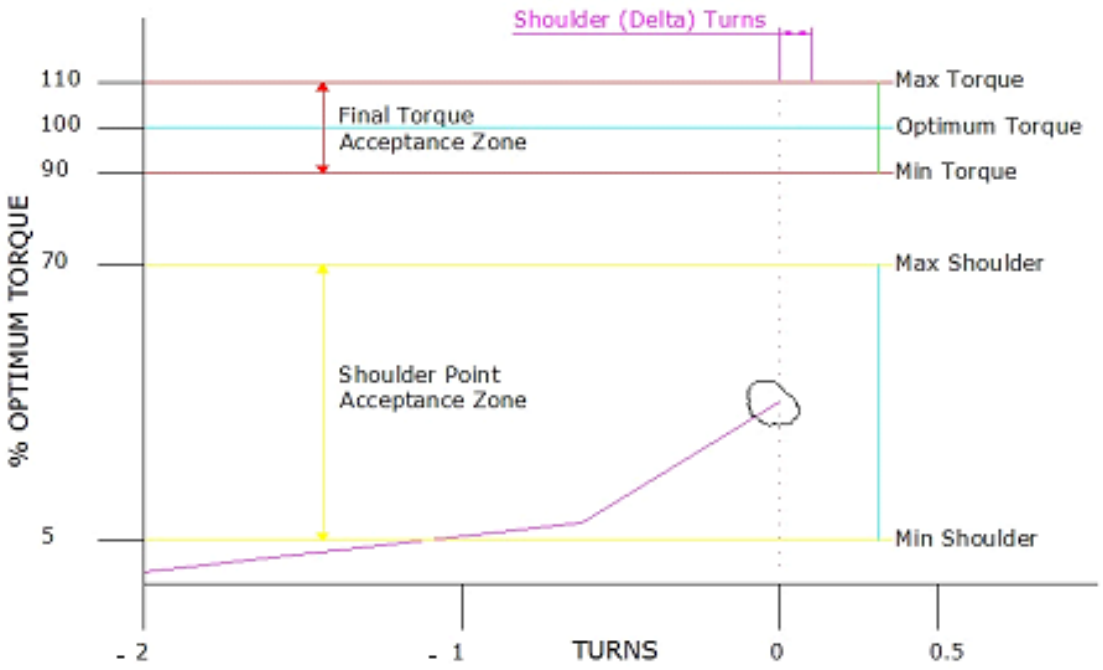
Possible Causes	Recommended Action
• Incorrect Dump valve setting • Low gear not achieved • Make-up stopped prior to completion	1. Break out 2. Clean Threads & seals 3. Visually inspect for any deformation or galling. 4. If the results from the inspection are acceptable, re-apply running compound and make-up again.

Figure 4: Low Torque with No Seal and No Shoulder Contact



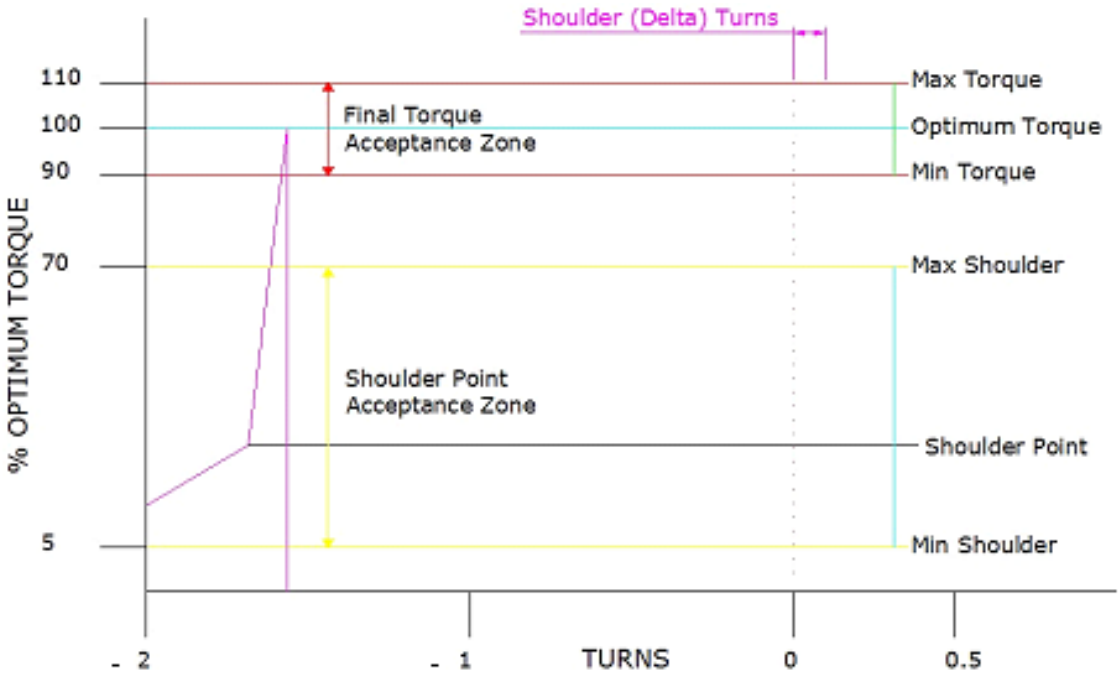
Possible Causes	Recommended Action
• Incorrect Dump valve setting • Low gear not achieved • Make-up stopped prior to completion	1. Break out 3 turns 2. Remake

Figure 5: Low final Torque with Seal but no Shoulder contact



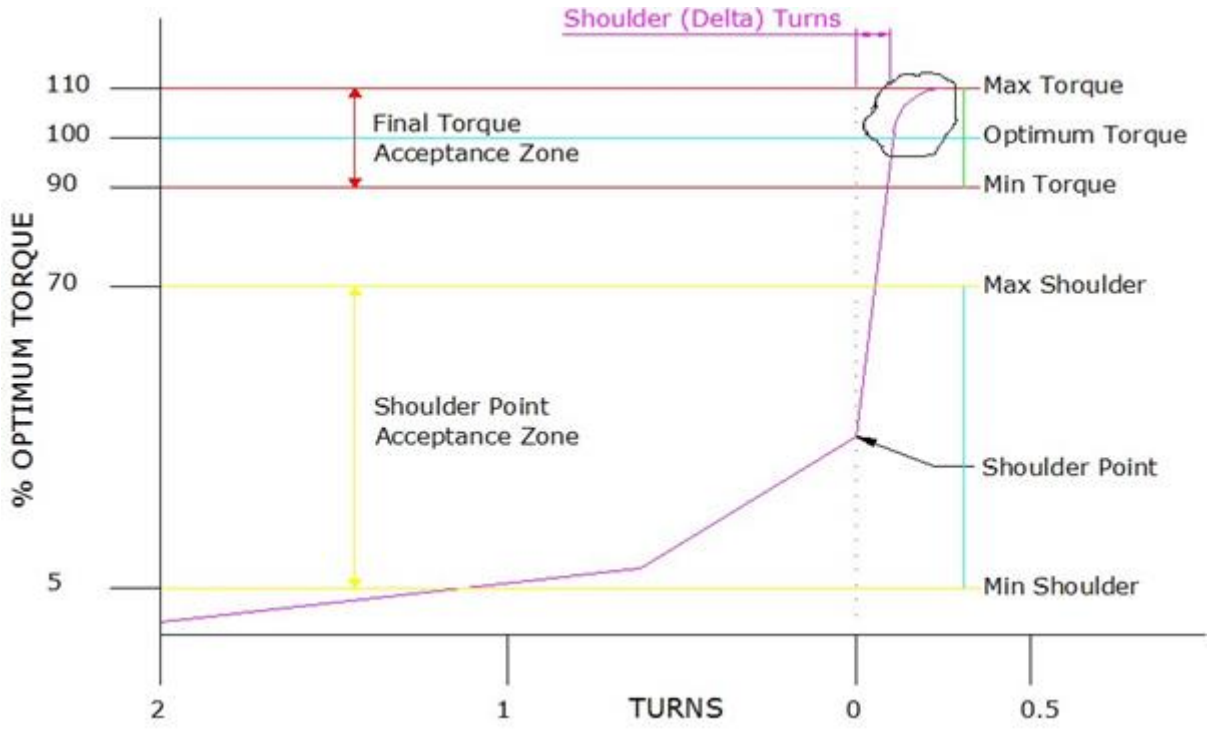
Possible Causes	Recommended Action
• Incorrect Dump valve setting • Low gear not achieved • Make-up stopped prior to completion	1. Break out 2. Clean Threads & seals 3. Visually inspect for any deformation or galling. 4. If the results from the inspection are acceptable, re-apply running compound and make-up again.

Figure 6: No Thread Interference



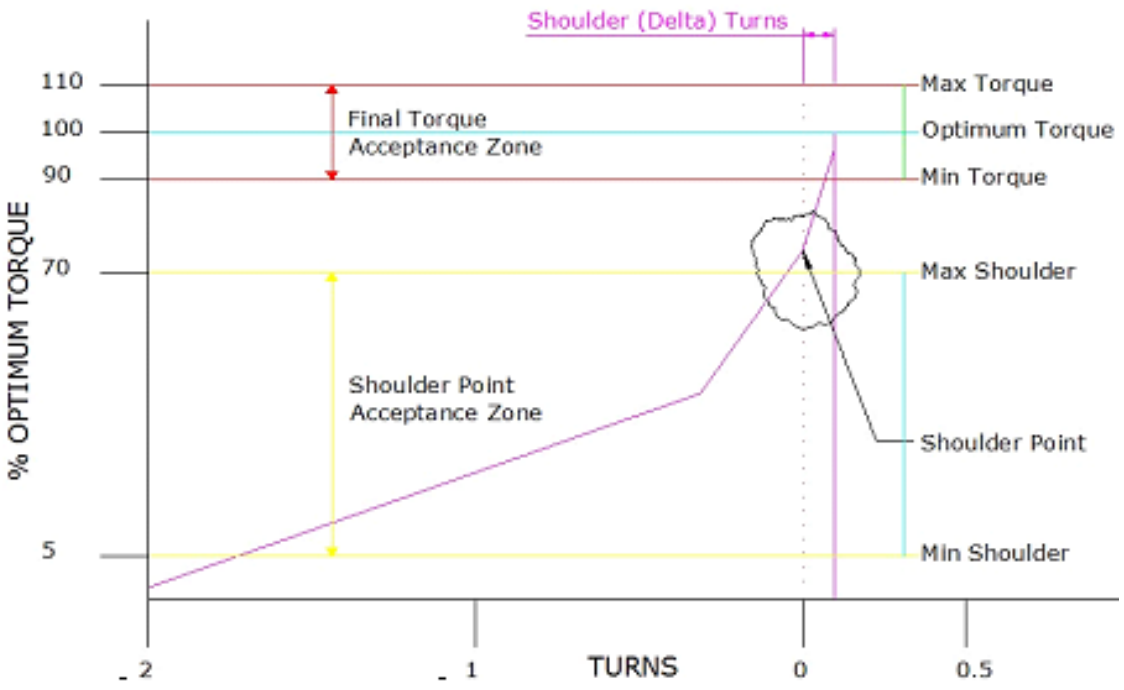
Possible Causes	Recommended Action
• High reference torque setting • Repeated make-up attempt without backing out	1. Break out, clean and perform visual inspection 2. Visually inspect for any deformation or galling. 3. If the results from the inspection are acceptable, re-apply running compound and make-up again.

Figure 7: Plastic Deformation (Yielding)



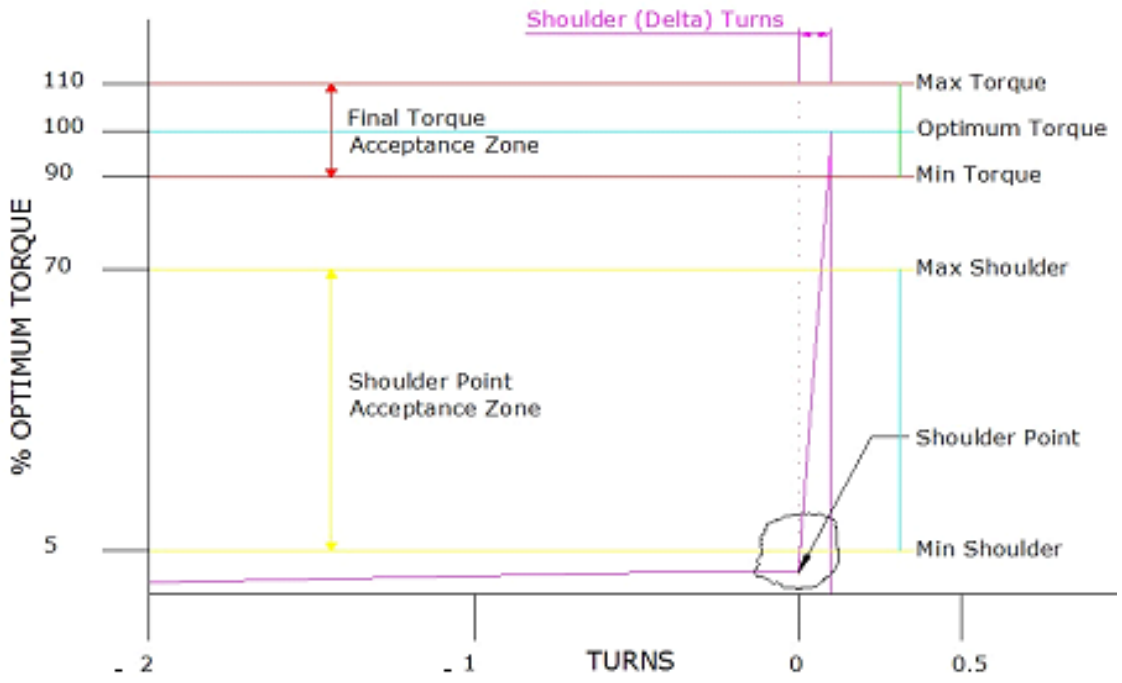
Possible Causes	Recommended Action
• Load cell not in calibration • Incorrect connections and/or weights • Incorrect Torque Values used	1. Break out, clean and perform visual inspection 2. Visually inspect Torque shoulder of the coupling for deformation 3. If the results from the inspection are acceptable, re-apply running compound and make-up again.

Figure 8: High Shoulder Torque



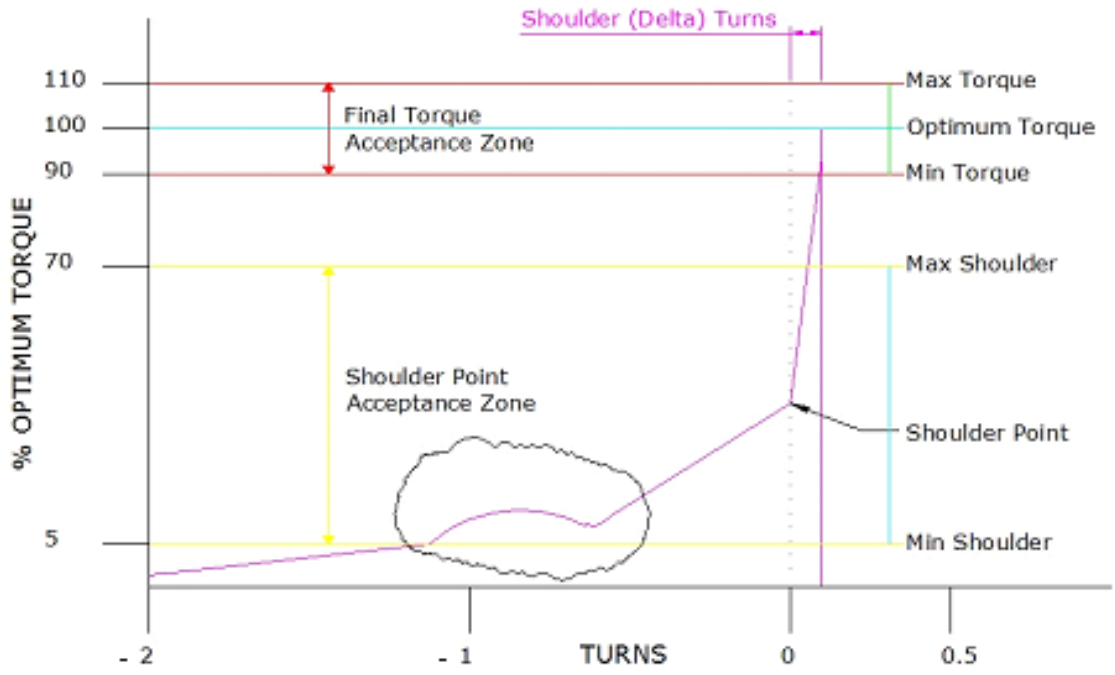
Possible Causes	Recommended Action
• Wrong torque • Wrong running compound • Running compound contamination • Storage compound on the threads • Insufficient thread compound • Load cell problem • Galled Threads • Running Speed too high	1. Break out, clean and perform visual inspection 2. If the results from the inspection are acceptable, re-apply running compound and make-up again.

Figure 9: Low Shoulder Point



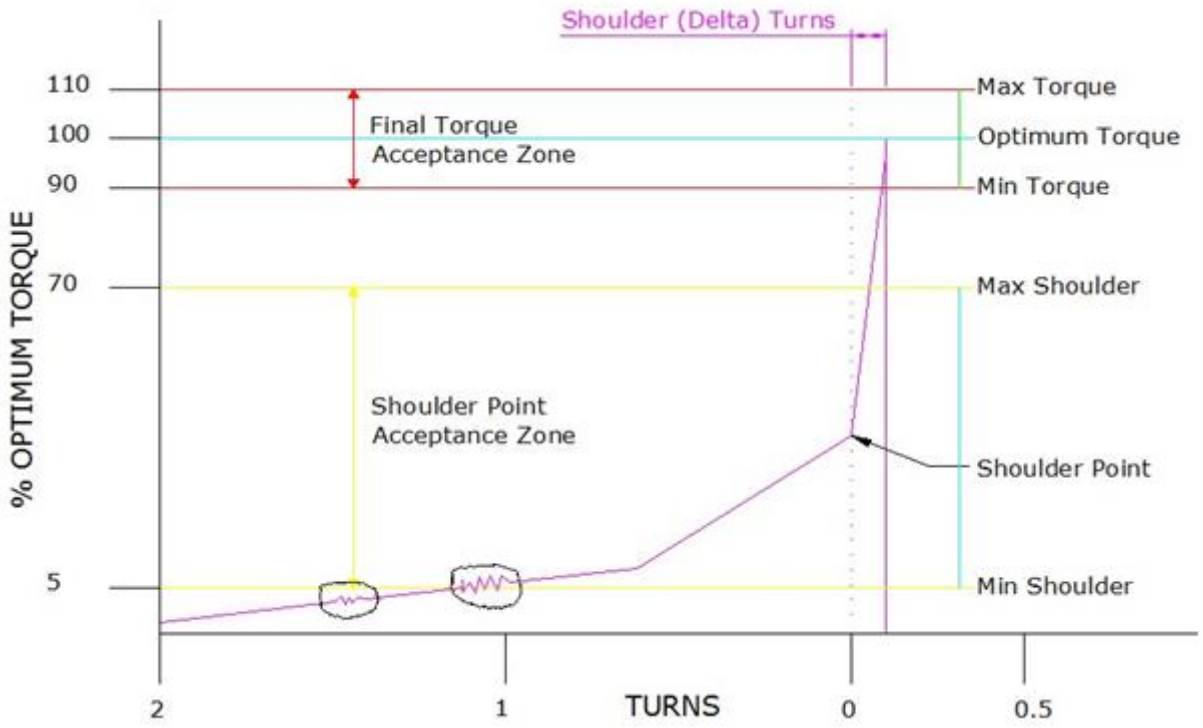
Possible Causes	Recommended Action
• Wrong torque • Wrong running compound (low friction) • Running compound contamination • Storage compound on threads • Load cell problem • Low thread interference	1. Break out, clean and perform visual inspection 2. If the results from the inspection are acceptable, re-apply running compound and make-up again.

Figure 10: Humping below the Shoulder Point



Possible Causes	Recommended Action
• Running compound excess • Dirt between threads • Friction running compound >1 • Running compound contamination • Poor Stabbing	1. Break out the connection to verify that the hump effect is produced by an excess of running compound thus ensuring no damage has been caused. 2. If the results are confirmed, re-apply running compound and make-up again.

Figure 11: Irregular Thread Infearance



Probable Causes	Recommended Action
• Poor Alignment • Hydraulic Issues • Jaws Slipping • Blocks interfering with elevators • Electrical issues	1. Break out, clean and perform visual inspection 2. If the results from the inspection are acceptable, re-apply running compound and make-up again.

6. Appendix 2

6.1 Recommended Running Thread Compounds

- API Modified Thread Compound that is compliant with API 5A3 Annex A
- Jet Lube: Seal Guard ECF
- Bestolife: 4010 NM
- Bestolife: 3010 NM Special

The user shall ensure the specification including temperature rating of the above selected compound is compatible with anticipated conditions.

6.2 The quantities detailed in Table 1 below provides sufficient thread compound for the following:

Casing: 3 make-ups + 2 break outs

Tubing: 10 make-ups + 9 breakouts

Recommended Volume of Thread Compound for TPS-Topseal

Nominal OD	Weight	Volume of Thread Compound	
(in.)	(lb.ft)	(cm^3)	(in.)
2.875″	6.40	3	0.2
2.875″	7.80 to 10.50	4	0.2
3.500″	7.70 to 10.20	4	0.2
3.500″	12.70 to 14.30	6	0.4
3.500″	15.50	7	0.4
4.500″	10.50 to 15.10	6	0.4
4.500″	17.00 to 18.90	8	0.5
4.500″	21.50 to 23.70	9	0.5
5.000″	All	14	0.9
5.500″	All	16	1

Note: The volume detailed in Table 1 = Total volume applied to a pin & box connection.
Example 5.500″ TPS-Topseal: 8 cm^3 on pin + 8 cm^3 on box = 16 cm^3