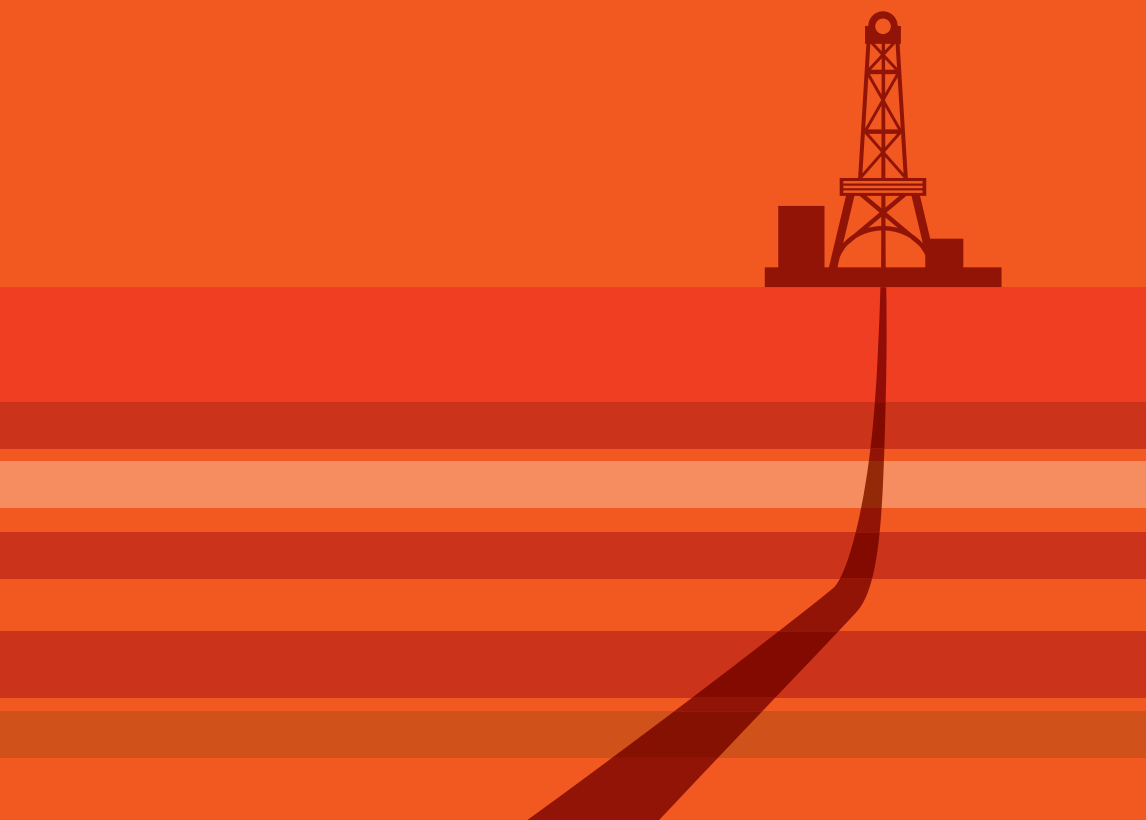
INTERPIPE

RUNNING MANUAL



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INTRODUCTION

We are glad to introduce INTERPIPE tubular goods (OCTG) Running Manual.
INTERPIPE offers a range of high-quality tubular products with Premium connections for oil and gas wells.

Rev. 1.0.0.

INTERPIPE PREMIUM PRODUCT LINE

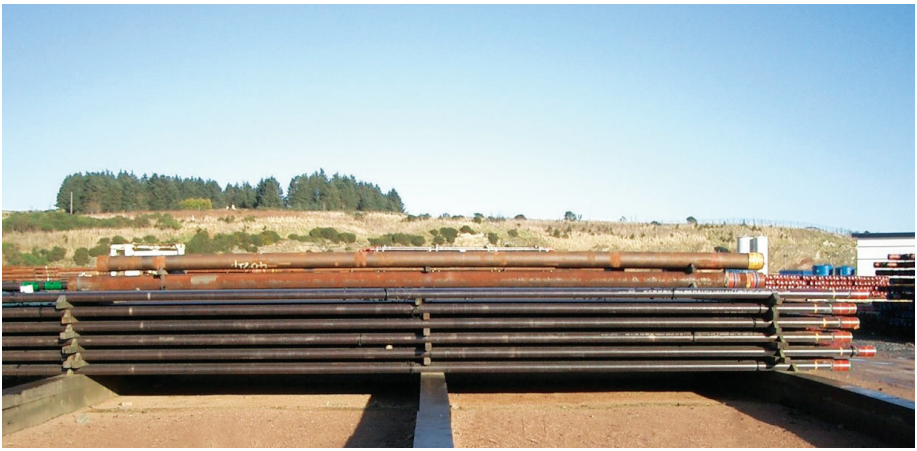
Type of connection	Connection	Discription
T&C*	INTREPID, INTREPID-M	Gas-tight premium connections for high performance in combined loads.

* — Threaded & Coupled

STORAGE

PROPER STORAGE OF OCTG PIPES IS CRUCIAL. TO AVOID DAMAGES, PIPES SHOULD BE STORED PROPERLY:

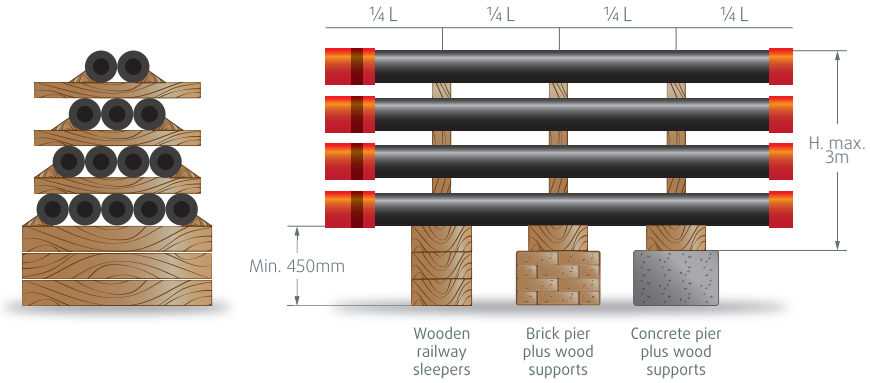
- Tubular products made from carbon and chromium steels must be stored separately from each other to eliminate contact between them.
- Threads of pipes' pin and box must be protected from damages during transportation and storage by thread protectors at all times.



Pic. 1

- Do not store pipes directly on the ground, rails, steel or concrete floors.
- Pipe racks must be placed at a height not less than 18 inches (450 mm) from the ground level to prevent ingress of surface water, dirt or other contaminants (see pic. 1).
- To prevent any risk of collapse, the loaded racks must be capable of sustaining the weight of the entire quantity of joints, without bends and depression of supports.
- Under first tier of pipes, bundles or transport frames must be laid on top of at least three wooden separators with thickness of 4" x 4" (100mm x 100mm).
- Between each rows of pipes, place separators or «pipe cradles» with thickness of 2" x 2" (50mm x 50mm) perpendicularly to the pipe.
- Place wooden separators at a distance of about 1/4 the length of the pipe from each end, as shown below (see pic. 2).

- Each row of pipes must be equipped with safety stops on the ends, to prevent inadvertent rolling of the pipes.
- The height of the stack of tubes on the rack shall not exceed 10 feet (3 meters) (see pic. 2).



Pic. 2

- Pipes of the same type OD, wall thickness, group strength should be placed at the same rack. Do not mix pipes of different grades when storing, as this makes it more difficult to locate them for pre-running inspections and can lead to grade mixing in the well.

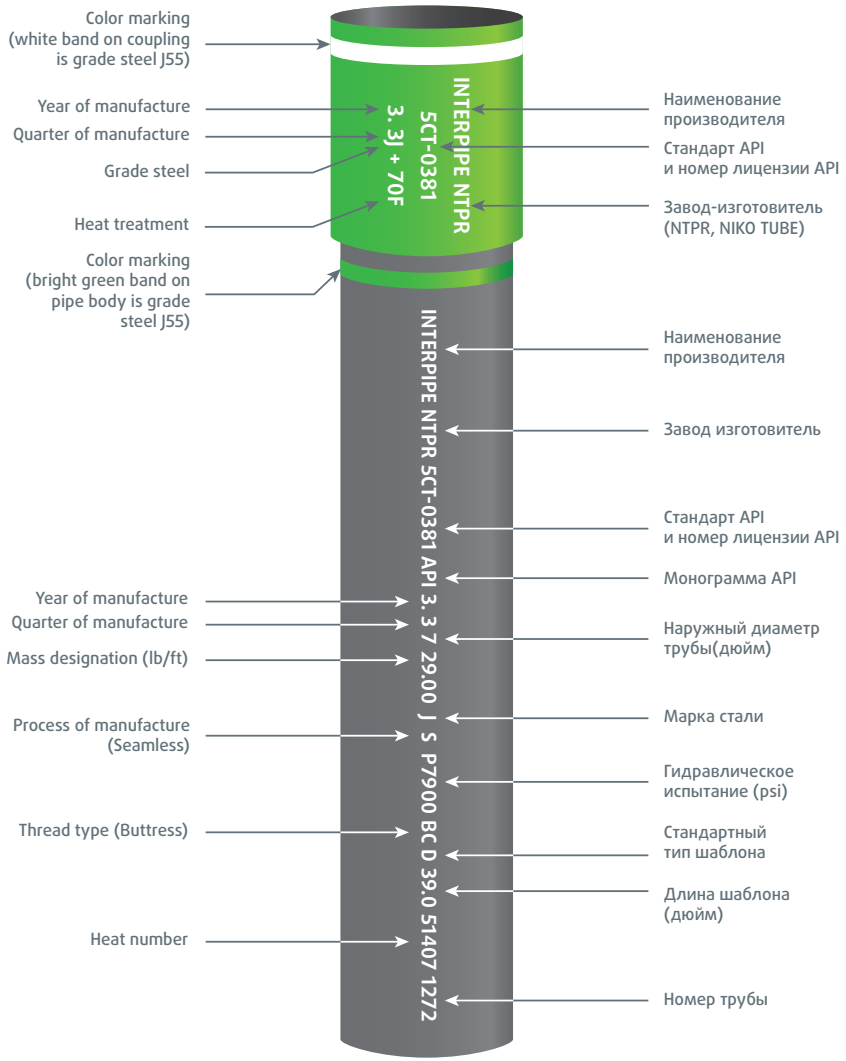
MAIN RECOMMENDATIONS

OCTG YARD STORAGE

- ✓ Inspect delivered pipe for obvious transit damage;
- ✓ Check bores and storage compound on delivered pipes;
- ✓ Check the pipe bodies for corrosion every 6 months;
- ✓ Inspect 5% of connections and compound every 6 months;
- ✓ During prolonged storage pipes must be rolled to prevent corrosion in places of contact with the wooden supports.

MARKING

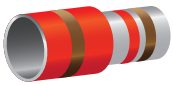
- Information about tubular products and its manufacturing process is applied on the pipe body and couplings (dimension, material, threaded connection, test pressure, seamless or welded, manufacturing mill, heat number, etc.). This code can be modified as specified in the agreement with the customer.



Pic. 3

API Color Identification

- To determine different grades of steel, manufacturers use a color bands on pipe body and couplings (see table 1, table 2).
- The tables 1, 2 show the color code of each product according to API specification. This code can be modified as specified in the agreement with the customer.

STEEL GRADES	COUPLING			BODY				COLOR CODE
	BODY	BANDS		BANDS				
		1 st.	2 nd.	1 st.	2 nd.	3 rd.	4 th.	
H40(*)	Black	-	-	Black	-	-	-	
J55 tubing	Bright green	-	-	Bright green	-	-	-	
J55 casing	Bright green	White	-	Bright green	-	-	-	
K55	Bright green	-	-	Bright green	Bright green	-	-	
M65	Red	Brown	-	Bright green	Blue	-	-	
N80 1	Red	-	-	Red	-	-	-	
N80 Q	Red	Green	-	Red	Bright green	-	-	
L80 1	Red	Brown	-	Red	Brown	-	-	

* — Optional: bare

Table 1

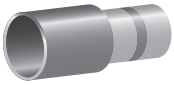
STEEL GRADES	COUPLING			BODY				COLOR CODE
	BODY	BANDS		BANDS				
		1 st.	2 nd.	1 st.	2 nd.	3 rd.	4 th.	
C90 1	Purpre	-	-	Purpre	-	-	-	
C90 2	Purpre	Yellow	-	Purpre	Yellow	-	-	
T95 1	Silver	-	-	Silver	-	-	-	
T95 2	Silver	Yellow	-	Silver	Yellow	-	-	
C95	Brown	-	-	Brown	-	-	-	
P110	White	-	-	White	-	-	-	
Q125 1	Orange	-	-	Orange	-	-	-	
Q125 2	Orange	Yellow	-	Orange	Yellow	-	-	
Q125 3	Orange	Green	-	Orange	Green	-	-	
Q125 4	Orange	Brown	-	Orange	Brown	-	-	

Table 2

BUMP RINGS

- Bump rings reduce the risk of damage to your OCTG products during transportation and handling operations (see pic. 4).

Pic. 4

- Each casing / tubing joint must have at least three bumps rings at the same distance from each other. Install bump rings on integral joints is an effective method of protection from damage throughout the supply chain.
- To protect and prevent loosening the thread protectors during transportation, check the thickness of the bump rings, it's must be larger than the diameter of the coupling and thread protector installed on the pipe.
- Work hardening and ferrous contact can lead to galvanic corrosion during heavy handling, installation of bump rings is cost-effective preventive measure against these damages.
- To eliminate the risk of injury to the fingers during removal and installation of 'snap on/off' versions of bump rings, be careful when performing these operations.
- Rope versions bump rings are not recommended, as they quickly wear out and can trap contaminants.

THREAD PROTECTORS

MAIN RECOMMENDATIONS

THREAD PROTECTORS SHALL BE INSTALLED:

✓ Prior to any pipe movement;

✓ When pipes are on the rack;

✓ On rejected pipe after applying storage compound.

- Thread protectors designed to protect the pin and box threads of the pipe from damage during transportation and handling, to reduce the ingress of dust and water to the threads during transportation and storage. Standard storage period shall be considered as approximately one year with random thread check after 6 months. Change storage dope, if necessary (see pic. 5).

Pic. 5

- Thread protectors must match with the type and size of connections for which they are designed.
- Installed protectors must be properly tightened at all times.
- Thread protectors which are not specific to the type and/or size of connection can lead to injuries when falling.
- Be careful when removing thread protectors, do not damage below installed connections and/or thread protectors.
- During inspection of connections, place the thread protectors on a clean and dry surface.
- After inspection of connections immediately refit clean and dry thread protectors.
- Remaining undamaged thread protectors can be reused or disposed in accordance with the rules and regulations of the customer.

PIPE PREPARATION

THE FOLLOWING ACTIONS SHOULD BE TAKEN BEFORE RUNNING:

- Check received tubular goods (size, weight, grade, thread type, quantity).
- Transport packaging should be removed.
- Check the full length of pipes by drift mandrel.
- Remove storage grease from connections by using appropriate cleaning methods.
- Inspect the pin and box connections.
- Inspect the pipe body for bends and end kinks by rolling the pipe.
- Check dimensions and tally of the pipes. Prior to pipe running it is significant to get an accurate length of each pipe and of the auxiliary equipment.
- Reinstall clean and dry thread protectors just before running.

MAIN RECOMMENDATIONS

VISUAL INSPECTION AND CLEANING MUST BE CARRIED OUT IN A SAFE AND COMFORTABLE ENVIRONMENT:

✓ Pipes should be laid out in a single tier on racks of sufficient height;

✓ Sufficient space must be on the rack to allow each joint of pipe to be rolled at least 2 full rotations;

✓ The working area should be flat, stable, dry and clear of all obstacles and debris.

- The pipes should be lifted from the pipe rack to the rig floor:

- By attaching single joint elevator beneath coupling;

- By tugger line to pull the pipe;

- By using pick-up and lay down machines.

- To protect pin thread against damage when lifting pipe to the rig floor, it is highly recommended to use thread protector or quick-detachable CLEPO-protector.

DRIFTING

- Always use the correct drift mandrels sizes. The sizes of the drift mandrels are given in API dimensional requirements or specified special drift requirements (see table 3).
- If drifting is completed without your presence, check the dimensions of the drift mandrels.
- Drift the bore of the pipes before cleaning and inspection of connections.
- Completely remove loose mill scale and accumulated debris from the pipe ID from box to pin using compressed air.
- Drift from box to pin. Take care not to damage connections when inserting a drift into a pipe and during drifting process.
- The pipe that does not pass the drift test must be marked with a red paint band in the place where the drift is sticking and must be put aside, in a special stack of damaged pipes for further investigation. Mark the pipe "No drift" to eliminate confusion with other types of damage.
- Cleaned, dried pin and box protectors should be installed.

API standard drift mandrel size (min.)

Products & sizes (ø")	Length		Diameter	
	in.	mm.	in.	mm.
Casing and liners				
Smaller than 9 5/8"	6	152	d - 1/8	d -3.18
9 5/8" to 13 3/8"	12	305	d - 5/32	d - 3.97
Larger than 13 3/8"	12	305	d - 3/16	d - 4.76
Tubing				
2 7/8" and smaller	42	1.067	d - 3/32	d - 2.38
3 1/2" and larger	42	1.067	d - 1/8	d - 3.18

Table 3

d = Nominal pipe body internal diameter.
Tables C. 28 and E.28 in the last version of API 5 CT should be checked.

CLEANING

MAIN RECOMMENDATIONS

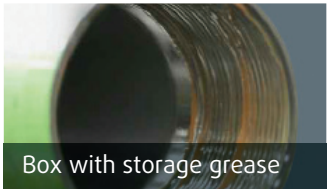
- ✓ Storage grease does not have the correct lubrication properties for making up connections.
- ✓ Make sure that storage grease is removed and connections are cleaned before visual inspection.
- ✓ Do not use diesel and oil-based products for connections cleaning. That can lead to wrong make-up.

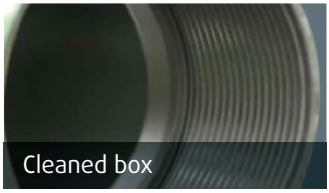
Cleaning methods:
– Hot water under high pressure with detergent solution.
– Steam.

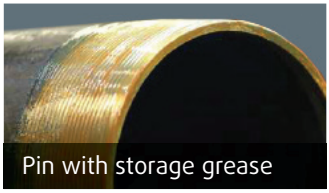
• Blow out/wipe out all water from the thread roots and from the bottom of the box.

• It is forbidden to use wire brush or barite to clean connection. That can lead to connection/seal damage.

• To clean thread protectors use the same methods as for cleaning connections.


Box with storage grease


Cleaned box

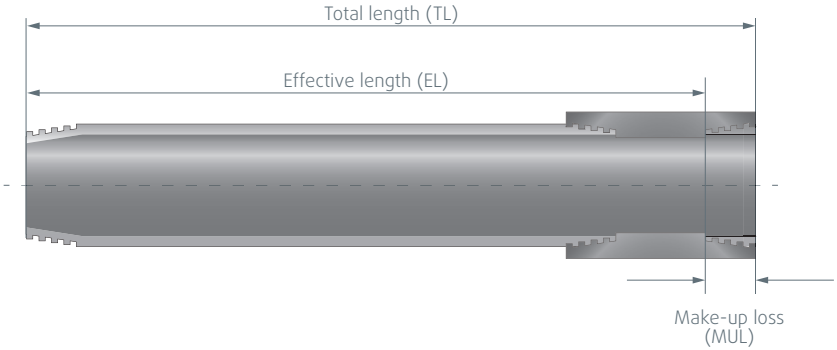

Pin with storage grease


Cleaned pin

• When making up connections in low temperatures, make sure there is no moisture remaining on the connection, ice can lead to wrong make-up.

• Using safety glasses or a full face visor helps to prevent serious injuries when applying a high pressure washer.

PIPE MEASURING



EL = TL - MUL

Pic. 6

- Total joint length shall be measured.
- Remove protectors before measuring, then reinstall immediately after measuring each pipe.
- Use a calibrated steel tape.
- It is very important to have accurate information about the size of the make-up loss length for each connection type.
- Each pipe which will be run into the well must be measured accurately. Pay attention when performing the tally of total length string, use the effective length of each pipe (see pic. 6).

INSPECTION

MAIN RECOMMENDATIONS

INSPECTION OF CONNECTIONS SHALL BE VISUAL ONLY, WITHOUT USING ANY TYPE OF MEASURING DEVICES.

Visual inspection should always be carried out:

- ✓ In daylight hours.
- ✓ By competent person.

Check that each connection to be inspected is free from:

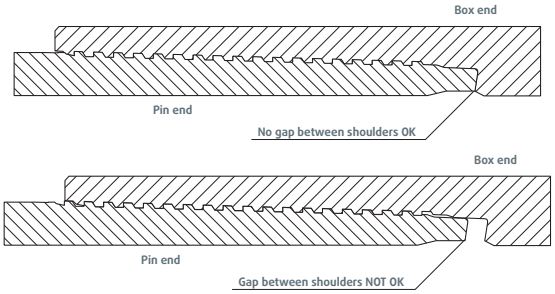
- ✓ Any rust.
- ✓ Handling or transport damage: mashed or dented box and pin ends, out of roundness, dents on thread areas, tears or gouges on pipe and coupling OD.
- ✓ Longitudinal / transverse cuts or scratches on seal surfaces.
- ✓ Burrs, razor edges, and feather edges.

Additional checking of made up mill ends:

- ✓ No gap between coupling shoulder and pin nose, coupling should be made-up tightly (see pic. 7).
- ✓ No yield on the shoulder of the coupling and pin nose, this damage occurs when exceeding the maximum torque (see pic. 8).
- ✓ No step at the shoulder, check weight of installed coupling to the pipe body (see pic. 9).

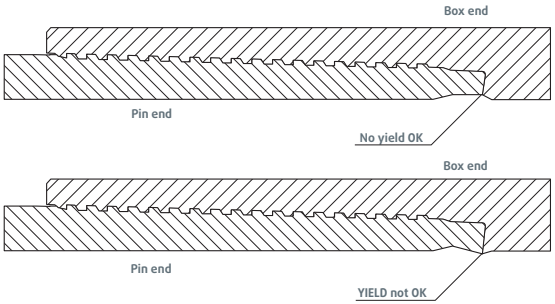
- Provide the final inspection at the rig site or at the deck (if there is no chance to damage connections on the way to the rig floor) or directly on the rotary table itself.
- Good condition of the pipes coming from the mill may deteriorate in the process of improper storage and/or transportation. When pipes returned from previous wells, or traded, they have other type of damages.
- Special attention in the inspection of premium connections must be paid to the seal area. If you find even minor damage to the seal area, the pipe should be put aside and it should be reported correctly. Further evaluation and field repair should be performed by Field Services Specialist.

No gap between coupling shoulder and pin nose, coupling should be made-up tightly.



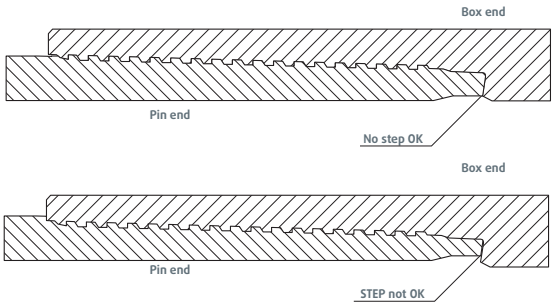
Pic. 7

No yield on the shoulder of the coupling and pin nose, this damage occurs when exceeding the maximum torque.



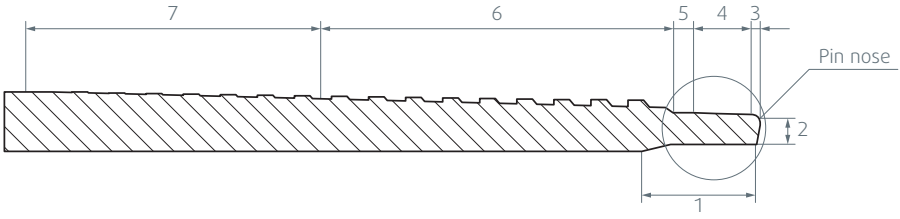
Pic. 8

No step at the shoulder, check weight of installed coupling to the pipe body.



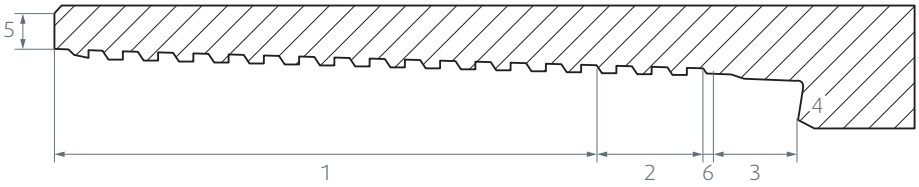
Pic. 9

• The diagrams below describe the parts of a typical INTERPIPE PREMIUM threaded and coupled connection.



PIN:

1. Internal bore
2. Torque shoulder
3. Radius beetwen seal and shoulder
4. Seal area
5. Cylindrical part
6. Perfect thread length
7. Imperfect thread length

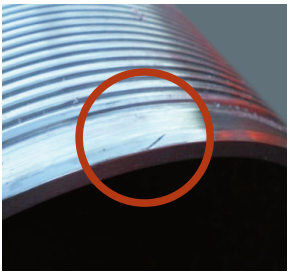


BOX:

1. Perfect thread length
2. Imperfect thread length
3. Seal area
4. Torque shoulder
5. Face
6. Seal radius

• When inspecting the pin and box ends, check damages, which are shown in the following pictures:

Impact loads cause dents, dings or mashes. (connection should be rejected)

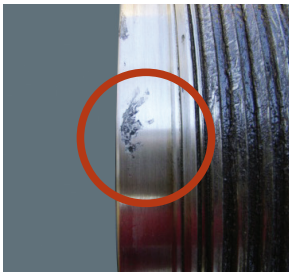


Poor alignment and make-up cause galling. (connection should be rejected)



Improper storage causes rust, corrosion or pitting. (connection should be rejected)





• Install clean and dry thread protectors in good condition after finishing inspection.

RUNNING DOPE

PRIOR TO RUNNING OF CASING/TUBING, CHECK THE AMOUNT OF RUNNING COMPOUND AT THE RIG SITE NECESSARY TO COMPLETE THE JOB.

- Check the validity of running compound specified on the container. Using running compound with expired date is not recommended. For each job it is recommended to use a new container of running compound.
- Running compound must be well mixed before use. Take care that the compound does not contain any foreign particles.
- To eliminate the negative effect on the anti-galling performance of the running compound never use contaminated thread compound (liquids, solids particles, etc.).
- Dilution of the running compound with oil, diesel or water is prohibited. This may affect the friction factor of the compound which could lead to the connection being overtorqued or undertorqued.
- It is recommended to use API Modified RP 5A3 running dopes (all manufacturers). User takes all the risks in case if another type of running compound is used.
- For comfortable use of running compound at low temperatures, the compound could be slightly warmed up. While using running compound regularly, stir it.

MAIN RECOMMENDATIONS

✓ Correct «doping» is the key to the successful performance of the connection.

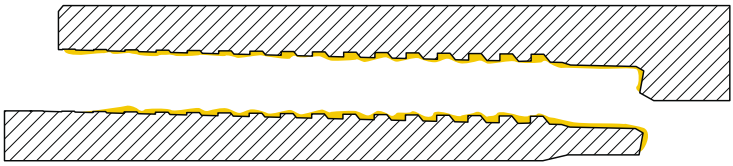
✓ Prior to applying running compound and make-up, it is necessary to check the connections to ensure that there is no damage or corrosion.

Pic. 10

- Use a flat nylon brush for applying running compound to the pin end. Use a brush with long bristles for applying running compound to the bottom of the box (see pic. 10). Usage of metallic brushes or spatulas to apply the thread compound is prohibited.

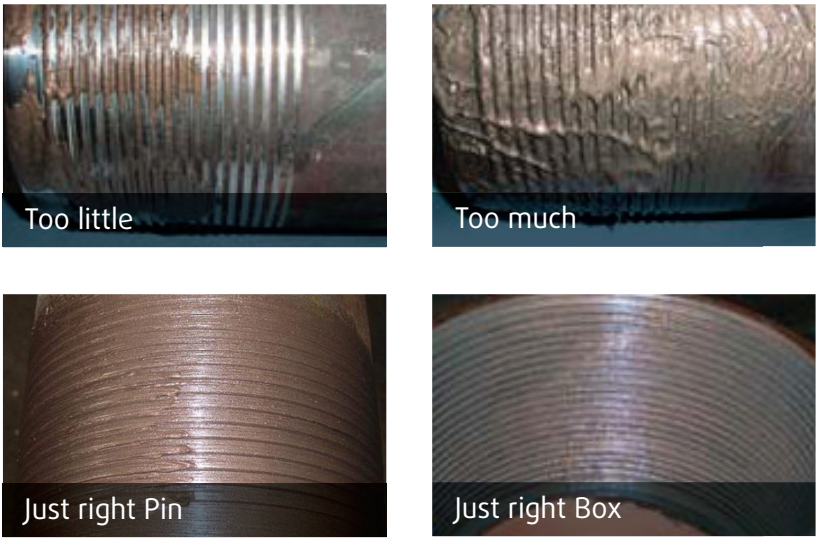
• All the thread, seal and shoulder areas must be covered with a uniform layer of the-required amount of running compound.

• After applying running compound, the thread profile should be clearly visible. In the-following illustration, running compound is shown in yellow (see pic. 11).



Pic. 11

• The pictures (see pic. 12) below show bad and good application of thread compound.



Pic. 12

Torque Factor Interpretation.

• To calculate the applicable Torque values, the following formula should be applied:
– Torque Factor * Tabulated Torque Value = Applicable Torque Value.

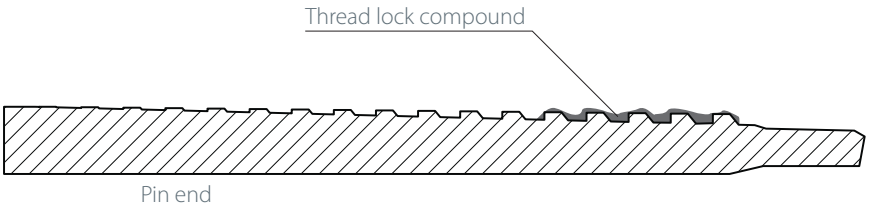
APPLYING THREAD LOCK COMPOUND

- To create higher torque for the shoe track on a liner or casing string, it is necessary to use thread locking compound.

MAIN RECOMMENDATIONS

CORRECT THREAD LOCK APPLICATION:

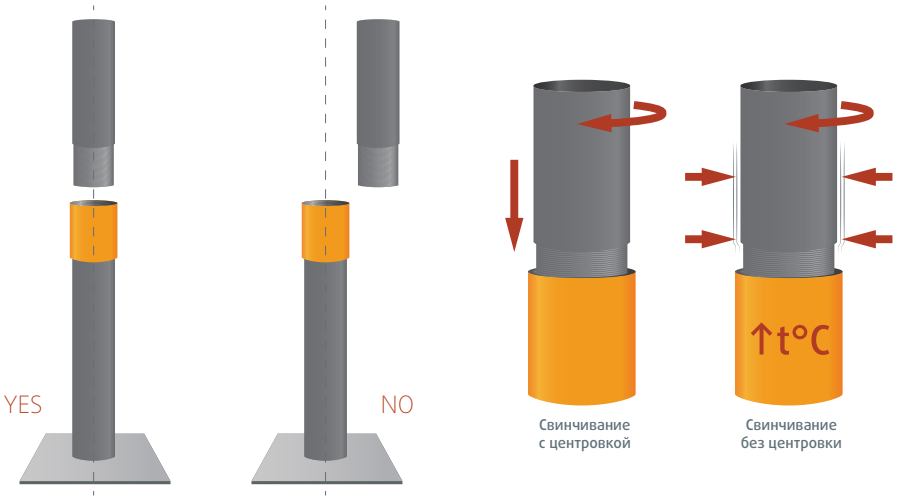
- ✓ Pin and box shall be thoroughly cleaned and dried;
- ✓ Apply thread compound on the box internal seal area, but not on threads;
- ✓ Mark on the pin end the make-up loss to check final make-up position;
- ✓ Do not apply thread lock compound on the seal or shoulders. Thread lock should be applied to first 5 threads of pin (see pic. 13);
- ✓ A metal or wooden spatula shall be used to cover 360° thread circumference;
- ✓ Thread roots shall be completely filled;
- ✓ Make up as soon as possible using low RPM and low gear;
- ✓ Check final make-up position.



Pic. 13

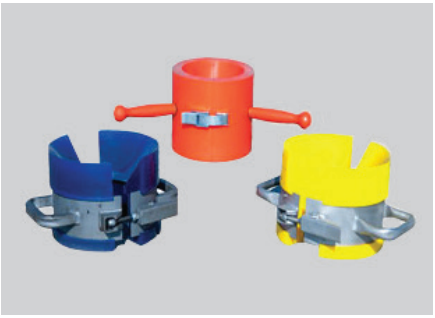
RUNNING OF OCTG PIPES

- For successful make-up of the connections select the accurate torques (data sheets are available upon request).
- Stabbing is finished when the connection pin end is placed into the box. This operation must be performed with caution to avoid damage to the connection.
- When pulling the pipes from the racks to the rig floor, it is highly recommended to use thread protectors on the pin end. Remove thread protectors from the pin end just before stabbing.
- The amount and distribution of running compound must be checked. Remove excess thread compound from threads.
- Ensure good alignment between two pipes to prevent make-up problems and cross threading. Suspend the pin end over the box to check centerline and adjust, if necessary (see pic. 14).



Pic.14

- Be careful when stabbing the pin end into the box, do not damage seal area. To minimize this risk, over the box connection use a plastic or rubber stabbing guide (see pic. 15). Control stabbing process, lower pin into box gradually. If a fault occurs when stabbing, check alignment and slowly rotate the pipe in reverse until the threads drop. Do not roll pin into box.



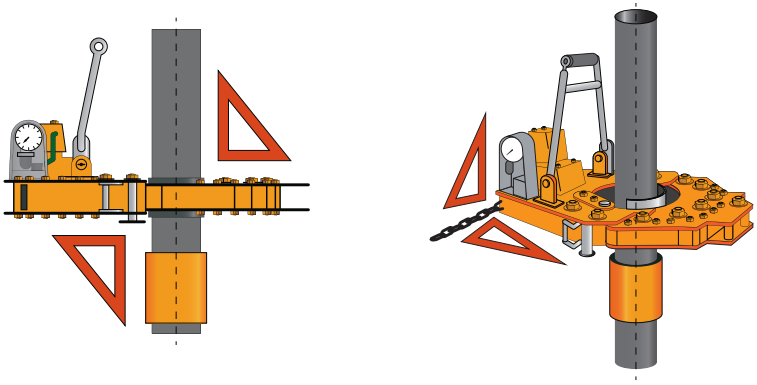
Pic.15

- Make sure that the threads have been engaged only after stabbing guide has been removed, the first or two turns are critical for threads (see table. 5).

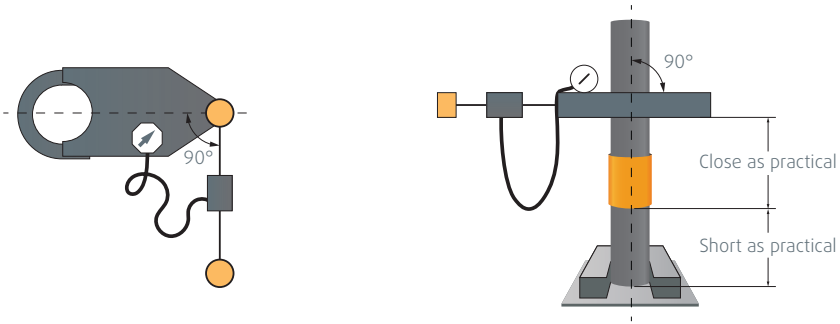
Material	Initial Stabbing	Running In	Final make-up
Carbon steel	Low speed (high gear) or by hand using chain tong or strap wrench	High gear (<30 rpm for tubing or <15 rpm for casing)	Low gear with maximum speed of 5 rpm

Table. 5

- Make-up connections at optimum make-up torque.
- Certified power tongs must be used to apply the final recommended torque values to connections. Pipe wrenches, rig tongs and spinning chains are not recommended for final torque application.
- For break-out of the connections required torque is higher than the recommended torque values for make-up. Power tongs must be capable to provide break-out torque, which ia 30% greater than the recommended make-up torques.
- Attach the power tong lead line to a backup post at a 90° angle to the power tongs; check size tong and back-up dies and position on the pipe body. The dies must be clean and grip properly to the pipe body (see pic. 16, 17).



Pic. 16

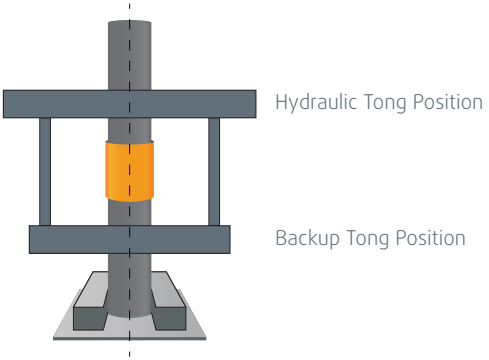


Pic. 17

MAIN RECOMMENDATIONS

- ✓ Place tong as close to connection as possible;
- ✓ Back up on pipe for make up;
- ✓ Back up on coupling for break out.

• The jaws of the power tong and back-up tong must have correct size (see pic. 18).



Pic. 18

• When making-up different weights and/or different grades use the lower of the two torque values.

• Rotation speed must be constant. Misalignment causes irregular speeds of make-up (break-out). Break out connections made up at irregular speeds and inspect for potential damages.

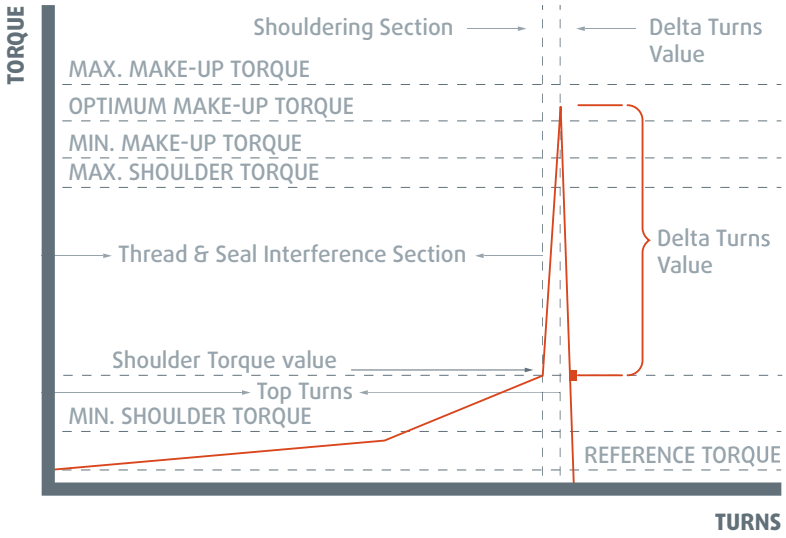
• During wind or rig motion decrease the make-up rotation speed to avoid connection damage.

• Downshift power tong at nearly one turn before connection shouldering.

• Maximum make-up torque value can be used in cold weather condition due to running compound viscosity change.

MAKE-UP GRAPHS

• For all INTERPIPE PREMIUM connections, it is strongly recommended to use torque/ turn monitoring and recording equipment.



Graph 1

• The classic graph indicates the following (see Graph 1):

- The shoulder torque value must be within the minimum shoulder torque and maximum shoulder torque ranges.

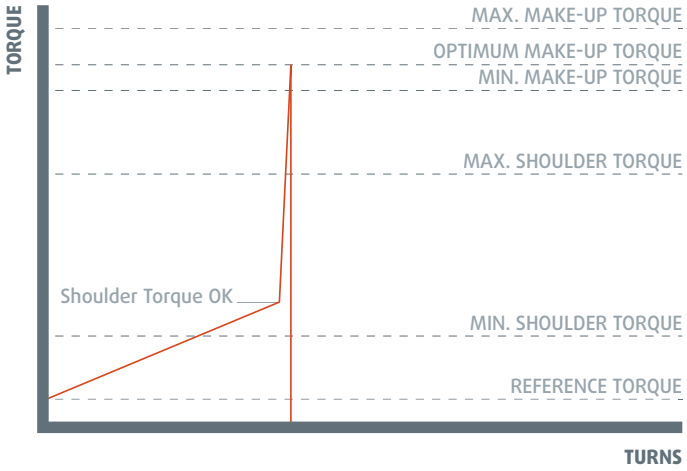
- The final torque value must be within the indicated torque space (beetwen minimum make-up torque and maximum make-up torque lines).

- Shoulder torque point on each graph should show a value close to that determined visually.

• All make-up graphs should have the pipe tally number, time and date;

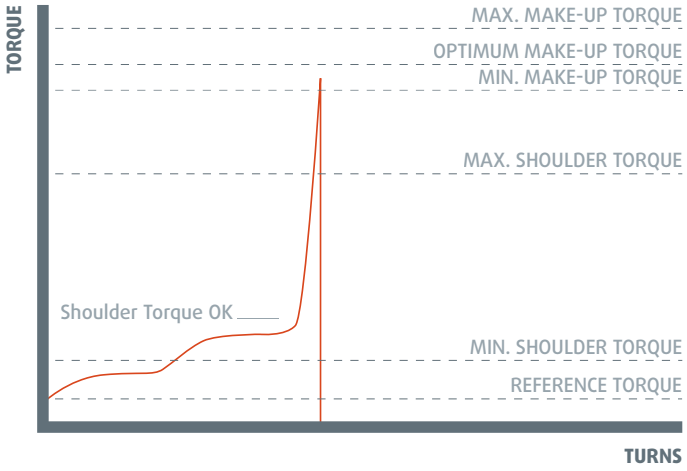
• Any reason of rejection should be recorded, if graph is not accepted;

• Any graph with deviations should be examined (break-out and inspect connection).



Graph 2

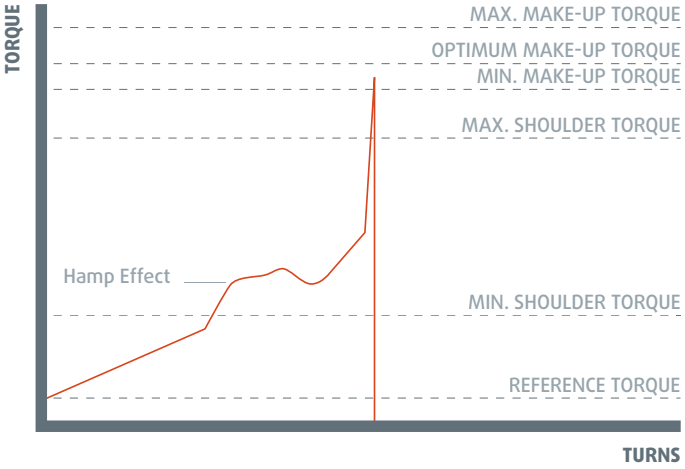
Type of curves	Possible causes	Consequences	Recommendations
Acceptable (see graph 2)	To achieve acceptable curves, use Running Manual recommendations.		



Graph 3

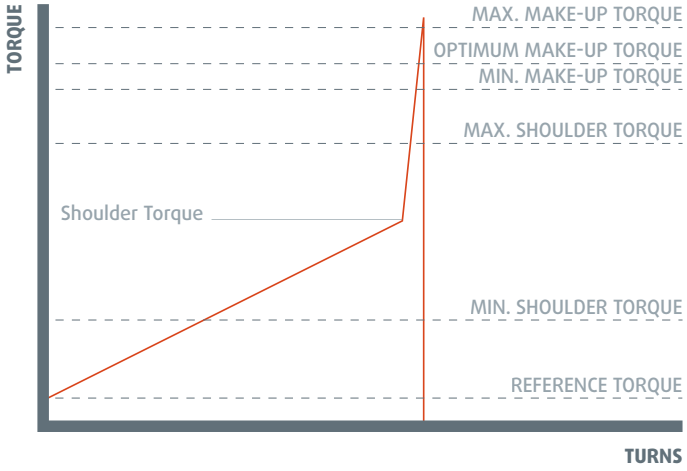
Type of curves	Possible causes	Consequences	Recommendations
Acceptable (see graph 3)	Minor vacillations in the thread interference section are acceptable.		

MAKE-UP GRAPHS



Graph 4

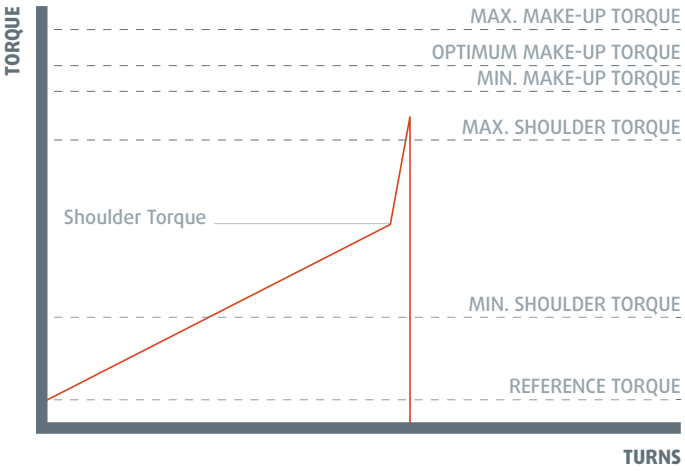
Type of curves	Possible causes	Consequences	Recommendations
Acceptable curve with hump effect (peak below the shoulder point) (see graph 4)	1. Too much running compound. 2. Dirt between threads. 3. Running compound is not homogenized and/ or contaminated. 4. High friction of the running compound. 5. Minor misalignment. 6. Bad stabbing. 7. Elevators are beating on coupling face.	1. Too much thread compound in down hole. 2. Contamination impact. 3. Leaking seal.	1. Break out the first two connections to check the amount of running compound. 2. Clean the connection. 3. Perform visual inspection of threads and seal. 4. If OK remake-up.



Graph 5

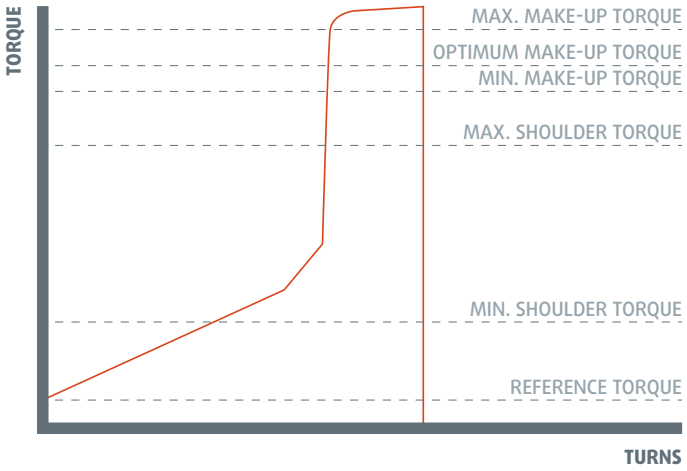
Type of curves	Possible causes	Consequences	Recommendations
Non-acceptable (high final torque) (see graph 5)	1. Bad callibration of load cell. 2. Dump valve problem. 3. Tong operator error. 4. Power tong is too powerfull. 5. Poor tong installation.	1. Too much stress. 2. Galling on thread and/or seal.	1. Break out completely. 2. Clean the connection. 3. Perform visual inspection of threads and seal. 4. Drift internal bore to detect deformations, if possible. 5. If OK, re-apply running compound and make-up with correct torque.

MAKE-UP GRAPHS



Graph 6

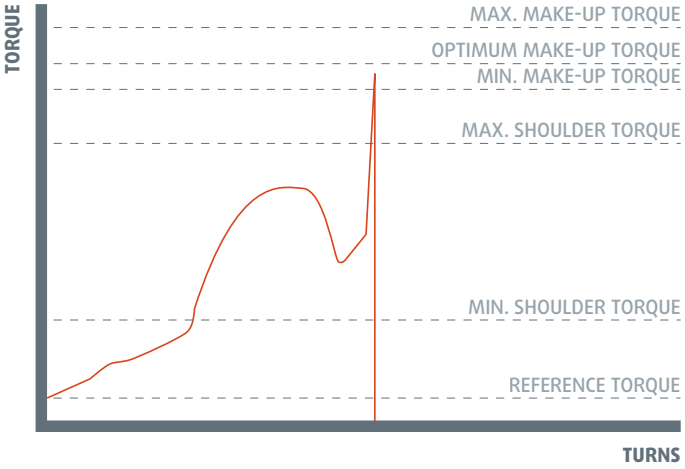
Type of curves	Possible causes	Consequences	Recommendations
Non-acceptable (low final torque) (see graph 6)	1. Bad callibration of load cell. 2. Dump valve problem. 3. Tong operator stopped make-up. 4. Torque interruption. 5. Back-up slip.	1. Back-out connection. 2. Hazard of leak.	1. Break out completely. 2. Clean the connection. 3. Perform visual inspection of threads and seal. 4. If OK, re-apply running compound and remake-up.



Graph 7

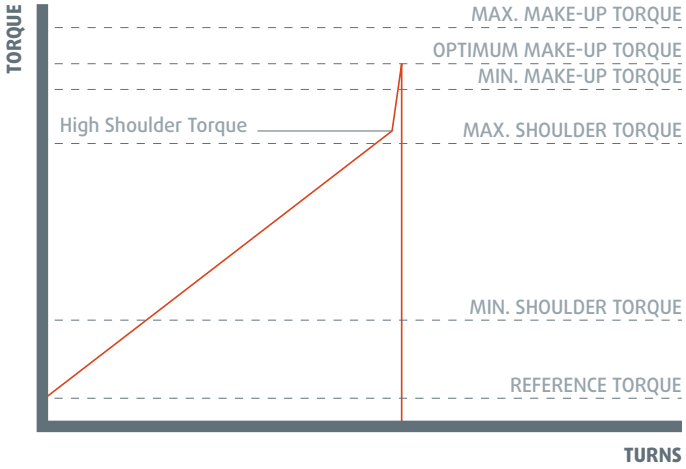
Type of curves	Possible causes	Consequences	Recommendations
Non-acceptable (yielding of the connection) (see graph 7)	1. Over torque (incorrect torque values). 2. Big diffrence in connections weight and grade. 3. Bad callibration of load cell. 4. Dump valve problem. 5. Tong operator error. 6. Wrong power tong arm length. 7. Wrong connection type.	1. Hazard of jump-in. 2. Hazard of leak. 3. Tools could not pass. 4. No drift after make-up.	1. Break out completely. 2. Clean the connection. 3. Perform visual inspection of internal bore (drift internal bore to detect deforma-tions, if possible). 4. If OK, re-apply running compound and remake-up. 5. If not OK, reject pin and box joints.

MAKE-UP GRAPHS



Graph 8

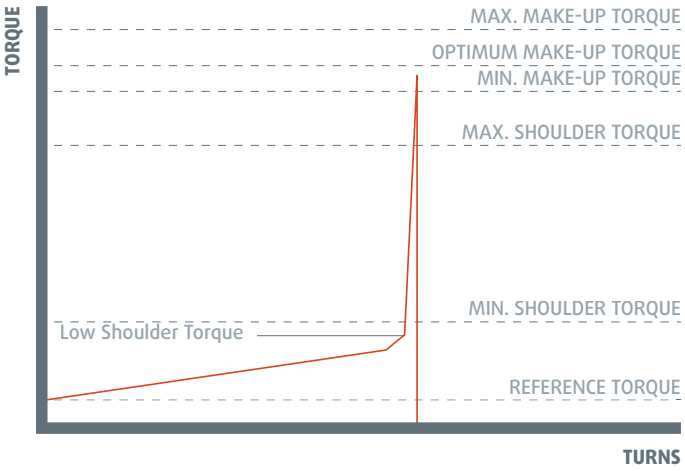
Type of curves	Possible causes	Consequences	Recommendations
Non-acceptable curve with hump effect (peak above the shoulder point) (see graph 8)	1. Too much running compound. 2. Dirt between threads. 3. Running compound is not homogenized and/ or contaminated. 4. High friction of the running compound. 5. Minor misalignment. 6. Bad stabbing. 7. Minor thread damage.	1. Too much thread compound in down hole. 2. Well contamination. 3. Leaking seal. 4. Thread, seal, shoulder damage.	1. Break out the first two connections to check the amount of running compound. 2. Clean the connection. 3. Perform visual inspection of threads and seal. 4. If OK, remake-up.



Graph 9

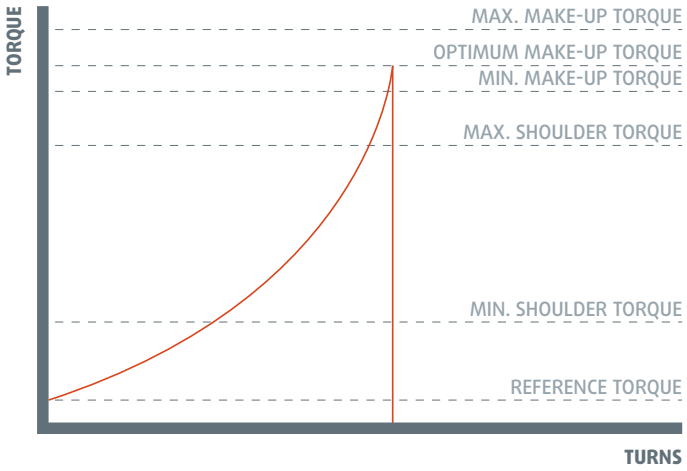
Type of curves	Possible causes	Consequences	Recommendations
Non-acceptable (high shoulder torque) (see graph 9)	1. Incorrect torque 2. Wrong running compound. 3. Dirt between threads. 4. Running compound is contaminated. 5. Presence of storage compound. 6. High thread interference.	1. Risk of leak due to connection pre-load.	1. Break out the connection. 2. Clean the connection. 3. Perform visual inspection of threads and seal. 4. Check the amount and distribution of running compound. 5. If OK, remake-up.

MAKE-UP GRAPHS



Graph 10

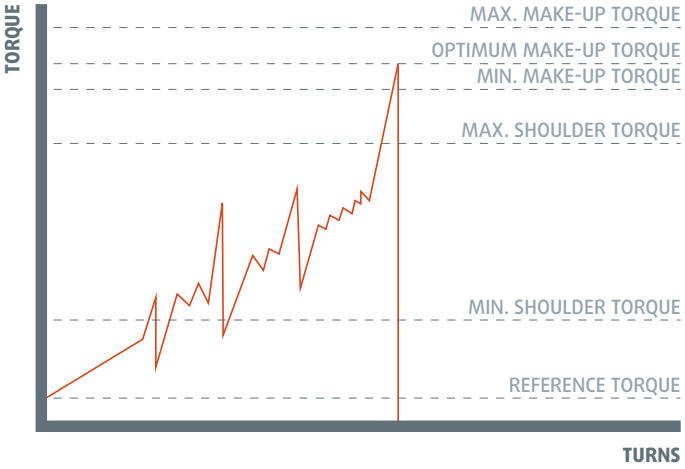
Type of curves	Possible causes	Consequences	Recommendations
Non-acceptable (low shoulder torque) (see graph 10)	1. Incorrect torque. 2. Wrong running compound (friction factor < 1.0). 3. Load cell problem. 4. Running compound is contaminated. 5. Presence of storage compound. 6. Low thread interference. 7. Running compound is too hot and not stired. 8. Wrong connection types.	1. Hazard of back-out. 2. Jump-out threads. 3. Hazard of leak.	1. Break out the connection. 2. Clean the connection. 3. Perform visual inspection of threads and seal. 4. Check the amount and distribution of running compound. 5. If OK, remake-up.



Graph 11

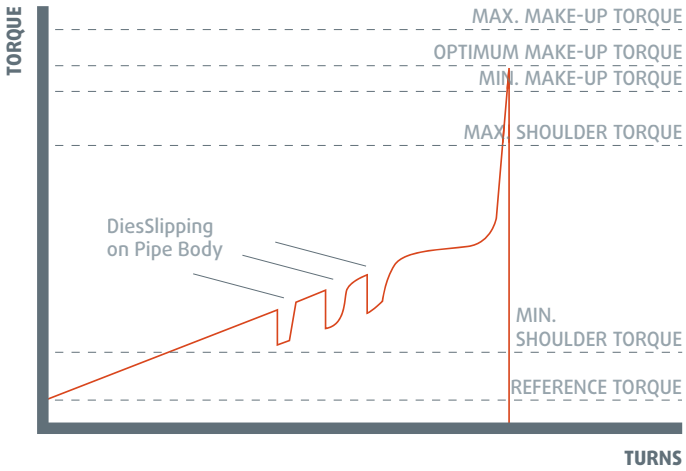
Type of curves	Possible causes	Consequences	Recommendations
Non-acceptable (torque shoulder is not defined) (see graph 11)	1. Cross threading. 2. Wrong running compound and the amount of running compound. 3. Incorrect torque. 4.Threads are dirty. 5. Load cell problem. 6. Misalignment. 7. Damaged threads.	1. Hazard of back-out. 2. Jump-out threads. 3. Hazard of leak. 4. Galling.	1. Break out the connection. 2. Clean the connection. 3. Perform visual inspection of threads and seal (drift internal bore to detect deformations, if possible). 4. Check the amount and distribution of running compound. 5. If OK, remake-up.

MAKE-UP GRAPHS



Graph 12

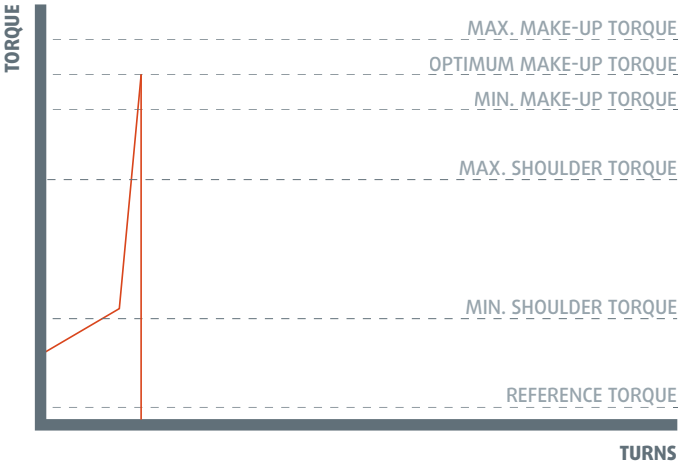
Type of curves	Possible causes	Consequences	Recommendations
Non-acceptable (irregular thread interference) (see graph 12)	1. Damages of thread. 2. Running com-pound contamination. 3. Incorrect torque. 4.Threads are dirty. 5. Load cell problem. 6. Bad alignment. 7. Spider, or slips, or back-up tong dies slip during make-up. 8. Problems with hydraulic or electric power systems.	1. Hazard of back-out. 2. Jump-out threads. 3. Hazard of leak. 4. Galled threads. 5. Serious thread damage.	1. Break out the connection. 2. Clean the connection. 3. Perform visual inspection of threads and seal. 4. Re-apply running compound. 5. If OK, remake-up.



Graph 13

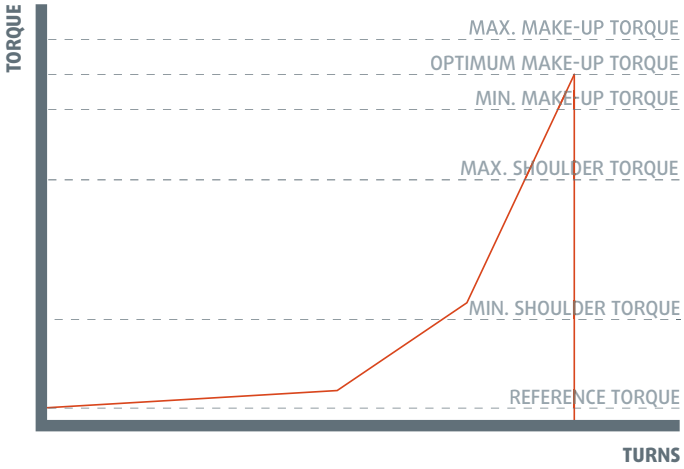
Type of curves	Possible causes	Consequences	Recommendations
Non-acceptable (too much jaw slips) (see graph 13)	1. Jaw dies bad grip. 2. Dirty or worn tong dies, or slips dies, or spider dies. 3. Spider movement 4. String weight is not enough for suitable slips grip.	1. Risk of damage of pipe body.	1. Break out the connection. 2. Clean the connection. 3. Perform visual inspection of threads and seal. 4. Re-apply running compound. 5. If OK, remake-up. 6. Slight jaw slip can be accepted.

MAKE-UP GRAPHS



Graph 14

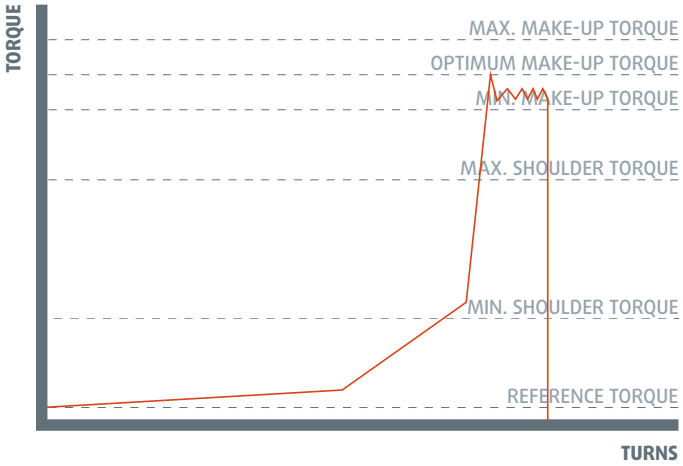
Type of curves	Possible causes	Consequences	Recommendations
Non-acceptable (no thread interference) (see graph 14)	1. Incorrect reference torque. 2. Second attempt at make-up without full back-out.	1. Without thread engagement it is hard to find out what may have happened.	1. Break out the connection. 2. Clean the connection. 3. Perform visual inspection of threads and seal. 4. Re-apply running compound. 5. If OK, remake-up.



Graph 15

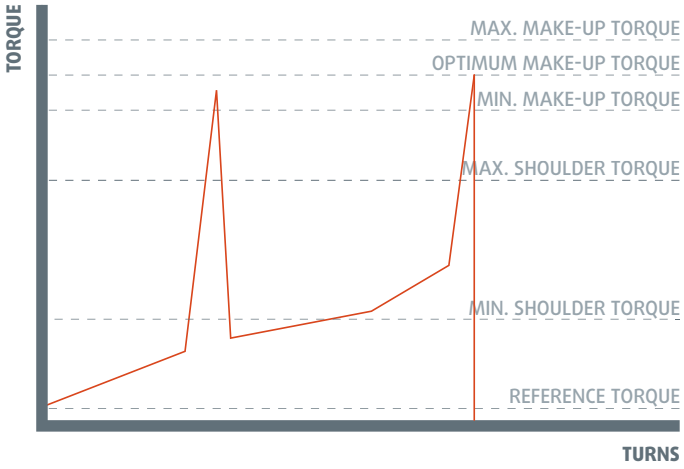
Type of curves	Possible causes	Consequences	Recommendations
Non-acceptable (high turns after shoulder) (see graph 15)	1. Incorrect pipe diameter for turns counter. 2. Coupling rotation at mill side. 3. Incorrect shoulder detection.	1. Hazard of leak. 2. Hazard of back-out.	1. Break out the connection. 2. Clean the connection. 3. Perform visual inspection of threads and seal. 4. Re-apply running compound. 5. If OK, remake-up.

MAKE-UP GRAPHS



Graph 16

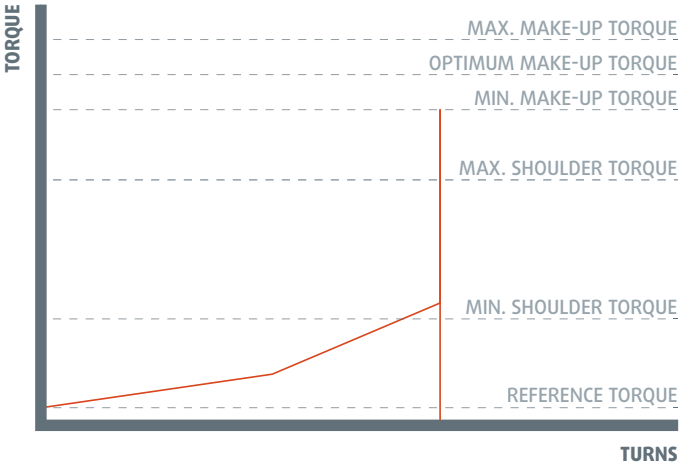
Type of curves	Possible causes	Conse-quences	Recommendations
Non-acceptable (drop torque during shouldering) (see graph 16)	1. Inappropriate dies. 2. Too low hydraulic pressure for jaws. 3. Rotary table spinning. 4. Pipe body is contaminated or too much paint.	1. Risk of damage of pipe body.	1. If pipe body is not damaged and the cause is grips slipping, in this case, make-up is acceptable. When the reason is unidentified, then: 2. Break out the connection. 3. Clean the connection. 4. Perform visual inspection of threads and seal. 5. Re-apply running compound. 6. If OK, remake-up.



Graph 17

Type of curves	Possible causes	Consequences	Recommendations
Non-acceptable (spike in graph) (see graph 17)	1. Changing gear is too late. 2. Radio or electrical interference. 3. Elevators hitting on pipe body.	1. No consequence for connection. 2. Customer will refuse.	1. Break out the connection. 2. Clean the connection. 3. Perform visual inspection of threads and seal. 4. Re-apply running compound. 5. If OK, remake-up.

MAKE-UP GRAPHS



Graph 18

Type of curves	Possible causes	Consequences	Recommendations
Non-acceptable (delta turn is very low) (see graph 18)	1. Sticking of turn counter.	No information after shouldering due to lack of recording of turn.	1. Break out the connection. 2. Clean the connection. 3. Perform visual inspection of threads and seal. 4. Re-apply running compound. 5. If OK, remake-up.

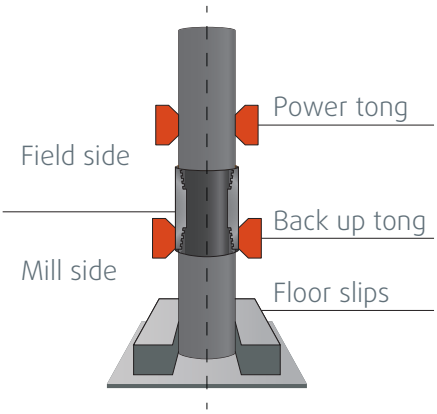
LOWERING

- Lower pipes carefully. Setting string in the floor slips must be cautious to avoid shock loading.
- Care must be taken to ensure the casing fill up tool does not damage box connections or leave drilling or completion fluids or debris on the connections.
- Check size jaws rotary slips to grip properly the pipe body.
- Set elevator slips well and beneath the connection area.

PULLING

BREAK-OUT

- Usage of weight compensator is highly recommended to prevent thread damage.
- Stabbing operator shall be on the stabbing board in the derrick to hold the box end if not using automatically pipe alignment system.
- Set pipe as low as possible in the slips to prevent pipe bend.
- For coupled connections apply back up tong in middle of coupling (see pic. 19). Never beat on a connection to help breakout.
- Pipe must be vertical and rotated easily during break-out.
- Slowly apply the torque required to break-out the connection using low gear. Rotation speed should be not higher than 15 RPM.



Pic. 19

- Stop rotation immediately when the pin “jumps” in the box.
- Do not lift the exposed pin thread through the tong, threads can be damaged. Apply a stabbing guide in this process to avoid damages of connections.
- When connection is broken out it should be cleaned from contaminates.
- Use the proper cleaning method (the methods described in the cleaning chapter).
- Visual inspection of pin and box threads, seals and shoulders shall be conducted.
- Apply proper storage compound on clean and dry pin and box connections.
- Clean and undamaged thread protectors must be installed.
- DAMAGED AND REJECTED connections must be properly marked (damages described in the inspection chapter).
- Field Service Specialist of our company wil help you to define the severity of damages, if necessary, arrange connections field repair.

FIELD SERVICE

We recommend you the support, assistance of our field services specialists during storage, handling, running of INTERPIPE PREMIUM connections, to ensure optimum efficiency and the highest performance of our products.

Field service specialist will perform:

- Verification of accessories and pup joints of the main string.
- Verification of interchangeability with size, weight, connection type.
- Visual inspection of pipe body to detect mechanical damage (external, internal).
- Visual inspection of threads to detect damage of pin, box.
- Inspection of proper doping of pin, box.
- Providing customers all technical information about INTERPIPE PREMIUM products.
- Field repair of connections, if necessary.
- Proper alignment of pipe, before making up, using stabbing guide.
- Inspection of proper make up.
- Consulting, training of drilling crews (OCTG pipe handling, storage, casing, tubing run, safety rules).
- Providing inspection and running reports to customer after the job is finished.

Pic. 20

SOME APPLICABLE NORMS FOR INTERPIPE PRODUCTS

API 5CT Specification for casing and tubing.

API RP5C1 Recommended Practice for Care and Use of Casing and Tubing.

API RP5B1 Gauging and Inspection of Casing, Tubing, and Line Pipe Threads

API RP5A3 Recommended Practice on Thread compounds for Casing, Tubing, and Line Pipe.

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