

RECOMMENDED PRACTICE  
FOR FIELD INSPECTION & RUNNING PROCEDURES

1. Purpose
  - 1.1. LFS<sup>®</sup> Technologies' recommended practice for the field running and handling procedures that shall be used in-conjunction with all LFS<sup>®</sup> tubing connections; LFS FJ-BN<sup>®</sup> or LFS FJ-HT<sup>®</sup> - U.S. Patent 10,774,959.
  - 1.2. References
    - 1.2.1. API RP 5C1
    - 1.2.2. APE Bul. 5A2
2. Receiving Inspection & Pre-Make-up Procedures
  - 2.1. Upon arrival at wellsite confirm size, weight, grade, and type of connection
  - 2.2. Pipe shall not be stacked higher than five tiers at wellsite
  - 2.3. Dunnage shall be placed between successive layers.
  - 2.4. Thread protectors should remain installed during material movements and handling.
  - 2.5. Avoid rough handling. do not unload pipe by dropping
3. Cleaning / Visual Inspection
  - 3.1. Cleaning
    - 3.1.1. Prior to inspecting the threads, remove the thread protectors from the ends of the joints and remove the dope with a brush dipped in solvent such as Varsol or mineral spirits.
  - 3.2. Visual Inspection

**\*\*Ensure That The Cleaning Process Does Not Cause Environmental Pollution\*\***

    - 3.2.1. View the connection, pin & box, for abnormalities, defect, corrosion, or damage to include scale buildup prior to make-up.
    - 3.2.2. If scale is present, clean out buildup.
    - 3.2.3. If any defect is noticeable, contact service representative.
    - 3.2.4. If visual inspection is conducted during inclement weather, rain or humidity, to deter formation of surface rust apply wd-40 or a light layer of thread compound to ends after inspection.
4. Preparation
  - 4.1. Proper lift sub should be installed prior to lifting LFS FJ-BN<sup>®</sup> or LFS FJ-HT<sup>®</sup> (US Patent 10,774,959).
  - 4.2. Slip type elevator is recommended, and slips are correct size to accommodate size and length of tubing.
  - 4.3. Check for traveling block alignment and rotary hole alignment.
  - 4.4. Ensure all necessary running equipment and accessories are available and in good condition.
  - 4.5. Ensure the thread compound is available.
    - 4.5.1. API 5A modified or Best-O-Life 2000 is recommended unless customer specifies otherwise.
  - 4.6. Power tongs with lead line at 90 degrees and level with tong. Ensure that accurate torque monitoring device is available.
5. Running
  - 5.1. It is required to use stabbing guide applied to the box of the pipe set in the slip.
  - 5.2. Pick up a joint from the rack and / or truck onto the derrick with pin protector installed.
    - 5.2.1. Box protector may be removed prior.
  - 5.3. Remove lift sub and apply even coating of thread compound on the box end.

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- 5.3.1. An even coating is defined as all thread surfaces; root and crest, pin face, & torque shoulder covered with an even coat of thread compound whereas the thread form remains clearly visible.
- 5.4. Remove pin protector.
- 5.5. Lower joint, pin into box ensure alignment before stabbing.
- 5.5.1. Carefully watch pipe swinging, and rotate pipe while pipe is aligned with lower joint.
- 5.5.2. If the connection is mis-stabbed, pick up the joint, clean the pin and the box and re-inspect.
6. Make-up
- 6.1. A torque-turn/time or torque/turn monitoring system should be utilized. Torque monitoring equipment should be capable of resolving torque of 1/100<sup>th</sup> of a turn increments as a minimum but equipment capable of resolving 1/1000<sup>th</sup> of a turn should be utilized when available. The monitoring equipment should be capable of dumping during the make-up by either the computer technician or when maximum parameters are reached. The load cell used with the torque monitoring equipment should be calibrated every four months and traceable to the appropriate national standard.
- 6.1.1. If the optional torque/turn monitoring equipment is utilized, a make-up torque/turn graph should be generated and recorded for every connection.
- 6.2. Position the power tongs approximately 7" above the pin connector. Back-up tongs should be placed below the box connection. Use back-up tongs for the first 10 joints or until sufficient weight is generated in the slips to prevent the entire string from rotating.
- 6.2.1. Do not allow the stabber to rock the tube during make-up.
- 6.3. Make up in high gear is allowed from stabbing to hand-tight but should be continuous and not exceed 30RPM. Make-up speed should not vary excessively and should be continuous with no gear changing after the snub line becomes tight. Make up the connection power-tight using the make-up speeds defined in Table A-1. In no case should the make-up speed exceed 30RPM.
- 6.4. Lower the elevators over the pipe after make-up is complete, not during make-up.
- 6.5. Make-up torque table

Table A-1		3.500"				4.000"			
		FJ-BN	FJ-HT	FJ-BN	FJ-HT	FJ-BN	FJ-HT	FJ-BN	FJ-HT
Pipe Data		L-80	L-80	P-110	P-110	L-80	L-80	P-110	P-110
Nominal Shoulder Torque:	ft*lbf	725	500	725	500	850	1,300	850	1,300
Minimum Make-up Torque:	ft*lbf	2,500	1,700	2,000	2,500	2,500	3,100	3,400	4,100
Optimum Make-up Torque:	ft*lbf	2,800	3,000	3,000	3,800	3,100	3,700	4,300	5,800
Maximum Make-up Torque:	ft*lbf	3,200	3,200	3,500	4,000	3,700	4,400	5,200	6,000
Minimum Yield Torque:	ft*lbf	3,400	3,400	4,000	5,500	4,200	4,800	2,800	8,400
Make-up Loss:	in	2.860	4.000	2.860	4.000	2.860	4.270	2.860	4.270
Target Make-up RPM at shoulder		12				12			

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\*Make-up torque should be affected by various factors, especially for smaller sizes. Start with the optimum torque and check the clearance of the external shoulder.

- a) If the external shoulder is contacted without any Box bell shape or deformation, continue with torque.
- b) If the external shoulder is opened, increase the torque by 50 ft\*lbf.
- c) If Box bell shape or deformation is observed, decrease torque by 50 ft\*lbf.

### 7. Pulling

#### 7.1. Preparation

- 7.1.1. Slip type elevators are required.
- 7.1.2. Use an alignment yoke and weight compensator when pulling casing.
- 7.1.3. Use power tongs with acceptable torque read-out and back-up tongs.
- 7.1.4. A wooden platform must be used for standing back tubing.
- 7.1.5. Clean thread protectors should be available prior to laying down or standing back. As each connection is broken out, protectors shall be installed on each pin.

#### 7.2. Breaking Out

- 7.2.1. Use power tongs with torque adjustment adequate for breakout without damaging pipe. When coming out of the hole, the back-up tong should be placed on the pipe below the connection. Pipe wrenches or chain tongs shall not be used as back-ups.
- 7.2.2. Break out the connection at a speed less than 10RPM.
- 7.2.3. After breaking loose continue to rotate at 10RPM or less until the connection drops down one thread. Remove the power tongs and slowly pick up the joint. The connection will be disengaged and ready for separation in 5-6 turns from the power-tight position.

\*\*Do not spin after the connection has dropped. This can and will cause thread damage\*\*

- 7.2.4. If excessive torque is observed, rotation should be stopped until cause is determined.
- 7.2.5. Care should be exercised to disengage all of the threads before lifting the tubing out of the box. If jumping out of the box occurs, inspect the pin face and threads for damage.

#### 7.3. Standing Back

- 7.3.1. Tubulars should be set on a firm wooden platform when stood back in the derrick.
- 7.3.2. Protect threads from dirt or damage when the tubulars are out of the hole. Thread protectors should be installed on the pin ends when standing back and may be required in the box depending environmental conditions.

#### 7.4. Re-running

- 7.4.1. Clean connections, box & pin, fully and inspect for damage
- 7.4.2. Re-run as per section 5 and 6.

#### 7.5. Laying Down

- 7.5.1. Clean protectors shall be placed on the tubulars before they are laid down.
- 7.5.2. If tubulars are stored or re-used, remove the protectors after laying down, clean, and inspect connections. Coat all exposed threads with water displacing oil followed by Kendex or other acceptable storage compound and install clean thread protectors.