LEE OILFIELD SERVICE LTD.

HYDRAULIC FJ TESTING JAR

DESIGN SPECIFICATIONS

TOOL SIZE		CONNECTION	MAKE UP LENGTH	STROKED LENGTH	RATED WORKING PRESSURE	MAXIMUM JARRING LOAD	MAXIMUM PULL AFTER FULLY OPEN	MAXIMUM TORQUE
OD	ID							
3-5/8"	1.800"	2-7/8 CAS	71-3/8"	81-3/8"	10,000 psi	30,000 lbs	170,000 lbs	5,500 ft/lbs
92.07 mm	45.72 mm		1,812.92 mm	2,066.92 mm	68.95 Mpa	13,344 daN	75,616 daN	7,453 Nm
3-3/4"	1-1/4"							
95.25 mm	31.75 mm							
3-3/4"	1-1/2"							
95.25 mm	38.10 mm							
3-7/8"	1-7/8"	2-7/8 CAS	73"	83"	10,000 psi	45,000 lbs	220,000 lbs	7,500 ft/lbs
98.42 mm	47.62 mm		1,854.20 mm	2,108.20 mm	68.95 Mpa	20,016 daN	97,856 daN	10,163 Nm
5"	1-1/4"	3-1/2 IF	75"	83"		75,000 lbs	360,000 lbs	11,700 ft/lbs
127.00 mm	31.75 mm		1,905.00 mm	2,108.20 mm		33,360 daN	160,128 daN	15,854 Nm
5"	2.300"	3-7/8 CAS	72-3/8"	82"	15,000 psi	75,000 lbs	300,000 lbs	16,000 ft/lbs
127.00 mm	58.42 mm		1,838.32 mm	2,082.80 mm	103.42 Mpa	33,360 daN	133,440 daN	21,680 Nm

NOTE: All specifications are accurate within 15%. Other sizes available upon request.

The seals provided in the Lee Oilfield jars are rated for 400 degrees Fahrenheit in fluid and 375 degrees Fahrenheit dry. The Lee Oilfield jars are compatible in H2S service.

It is not good practice to run jars until they quit working. Whenever tools are being laid down, fresh water should be sprayed in the ports and into the bottom sub to clean out any contaminants.

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HYDRAULIC FJ TESTING JAR

Lee Oilfield Hydraulic Jars are designed and manufactured for use in fishing, milling, coring, formation testing, scraping and washing over where the utmost in dependability is essential. Lee Oilfield hydraulic jars have been designed to provide maximum bore where necessary and to incorporate such important features as:

a. the inner jarring mechanism is not exposed to torsional stresses;
b. the design incorporates a self compensating pressure ring;
c. floating sleeve valve enabling rapid resetting without damage to jar;
d. floating sleeve valve provides for a uniform hydraulic bypass thus eliminating frictional heat problems;
e. a 4.5 inch free stroke is provided for maximum impact;
f. jars for use up to 450 degrees are available on special request.

DESCRIPTION

The Lee Oilfield Service Ltd. Hydraulic Testing Jar is included as part of a tool string to help remove stuck tools. When the work string is stretched by the overpull at the jar, the jar then releases on upward impact to the stuck point.

The Lee Oilfield Service Hydraulic Testing Jar provides a temporary resistance when you pull over string weight to give additional pipe stretch. When you have over pulled the desired amount, wait for the jar to move through its restricted stroke. The jar will then release and free travel 4 to 5 inches and the knocker will contact the anvil, providing an upward impact at the stuck point. Impact is approximately 3 times the amount of overpull on the working string.

MAXIMUM JARRING LOAD

Maximum Jarring load is the maximum amount of pull to fire the jar. Exceeding this pull can cause the jar to fail and even damage parts.

NOTE: Calculated string weight for jarring load is only the weight above the jar.

MAXIMUM PULL AFTER FULLY OPEN

The maximum pull you can apply to the jar when it is fully open in extreme situations.

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MAKING UP TOOLS (Jar Placement)

Always use a jar clamp to keep the jar in the fully open position while making up the downhole assembly. Failure to do so may result in a number of undesirable consequences when the jar trips while running in the hole.

(1) Shear devices in tension responsive tools like safety joints may release.
(2) Charges in TCP guns may be misaligned.
(3) Electronic or mechanical pressure recorders may be damaged. In some instances, gauges have been turned off by the shock of the jars tripping.

Note: Remove the jar clamp when the tool assembly is started through the table and the jar is in a position to go below the table next. When tripping out of the hole, the jar will be fully extended so replace the clamp onto the jar as soon as the jar is above the table.

TOOL OPERATION

(1) Place the jar on top of the safety joint. Do not exceed the recommended jarring or pulling values. Exceeding these values can result in tool damage.
(2) The Lee Oilfield Service jars reset easily and as quickly as you lower the working string they will reset for the next jarring cycle.
(3) Because of the piston and cylinder design of the Lee Oilfield jar the temperature of the hydraulic oil in the jar will not exceed the hole temperature, therefore giving consistent time of the firing of the jar.

SERVICE AREA

Service area should be clean and all service equipment in proper condition. Be sure to wear proper safety apparel (steel toe boots, safety glasses and any other safety gear required by service shop standards).

PRELIMINARY TEST

Prior to disassembly of a jar which has been used and is returned for service, it should be tested as to how it is functioning. Compare the test results with the records on the last service record. If the jar fails to test out at the same timing as when previously serviced, or if it opens more than 2 inches before the hydraulic chamber begins to pressure up, it is because you have lost some oil or the tool could be gassed up internally. If you suspect that the jar may be pressured up internally, slide the safety ring over the jar and slowly remove a fill plug with the allen wrench through the hole in the safety ring, to bleed off any internal pressure.

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SERVICE INSTRUCTIONS

DISASSEMBLY

NOTE:
All threads are right hand. Do not use pipe wrenches to break body joints. Use proper chain tongs.

1. With the body joints broken, and the jar in the closed position, clamp the female spline area in the vise. Remove the bottom sub. Install the break out nubbin onto the flats at the end of the mandrel. Break and unscrew the mandrel from the male spline. Slide the male spline out of the female. Loosen vise and clamp onto the bowl area. Remove the female spline. Using the service punch, push the mandrel out through the box end of the bowl.

2. Place the mandrel onto soft V blocks and tap the pressure ring off the mandrel with a soft face hammer or a block of wood. Remove the snap ring from behind the valve seat, loosen set screws in valve seat. Unscrew and remove the valve seat. Remove the valve.

3. Service of valve, valve seat and mandrel. With the mandrel on the soft V blocks, slowly rotate the mandrel by hand and check the run out of the mandrel at the o-ring area under the valve seat. It should not exceed .008. If the run out is more, the mandrel can be straightened. If you have to straighten a mandrel, care should be taken to not damage the coated surfaces. Measure OD of mandrel for collapse or stretch. Examine the faces of the valve and valve seat. If they are pitted or damaged they must be lapped smooth by using a fine sand paper on a lapping block surface or, if the pitting is to deep you can machine to clean up but only remove enough material to clean up. After machining, lap on fine sand paper and lapping block. This is a mechanical seal area and it has to be smooth.

4. Remove all old seals from the rest of the parts. Wash and clean them thoroughly. When you clean the bowl be sure to wipe the inside dry and then blow it out with air to remove any lint or small particles that may have been left inside. Inspect all parts for thread damage and cracks.

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SERVICE INSTRUCTIONS

ASSEMBLY

1. Slide the valve over the mandrel with notched end first. Install new o-rings onto the mandrel. Lightly dope the threads on the valve seat area and seal area. Screw the valve seat onto the mandrel and torque to specs. Install new set screws in the valve seat and tighten. Slide snap ring over the mandrel and be sure it is seated properly into the groove in the mandrel.

2. Install new seals in the throat of the bowl and oil them lightly. Clamp the bowl in the vise. Slide the mandrel pin first into the box end of the bowl. When the pin of the mandrel reaches the seals in the bowl, begin to rotate the mandrel and at the same time push the mandrel to prevent damage to the seals as the mandrel threads pass through the seals. Expose about 8 inches of the mandrel past the pin of the bowl.

3. Dope the pin of the mandrel and the pin of the bowl. Screw the female spline onto the bowl.

4. Loosen the vise and clamp onto the female spline.

5. Install new seal in small box of male spline. Dope the outside area of the male spline and slide the male into the female until it contacts the pin of the mandrel. Rotate the mandrel and engage until the mandrel and male threads are screwed together by hand.

6. Replace all the seals on and in the pressure ring in the sequence illustrated in o-ring placement page. Oil the pressure ring lightly inside and outside.

7. Install pressure ring onto the mandrel and slide it into the bowl until the pressure ring is fully in the coated area of the bowl.

8. Place the torque nubbin onto the end of the mandrel and torque to specs.

9. Open the jar fully by tapping on the end of the mandrel with the service punch supplied.

10. Place jar clamp over the male spline and tap the male spline back against the clamp.

11. Install new o-ring on bottom sub and dope the threads. Screw the bottom sub into the bowl and torque the body joints to specs.

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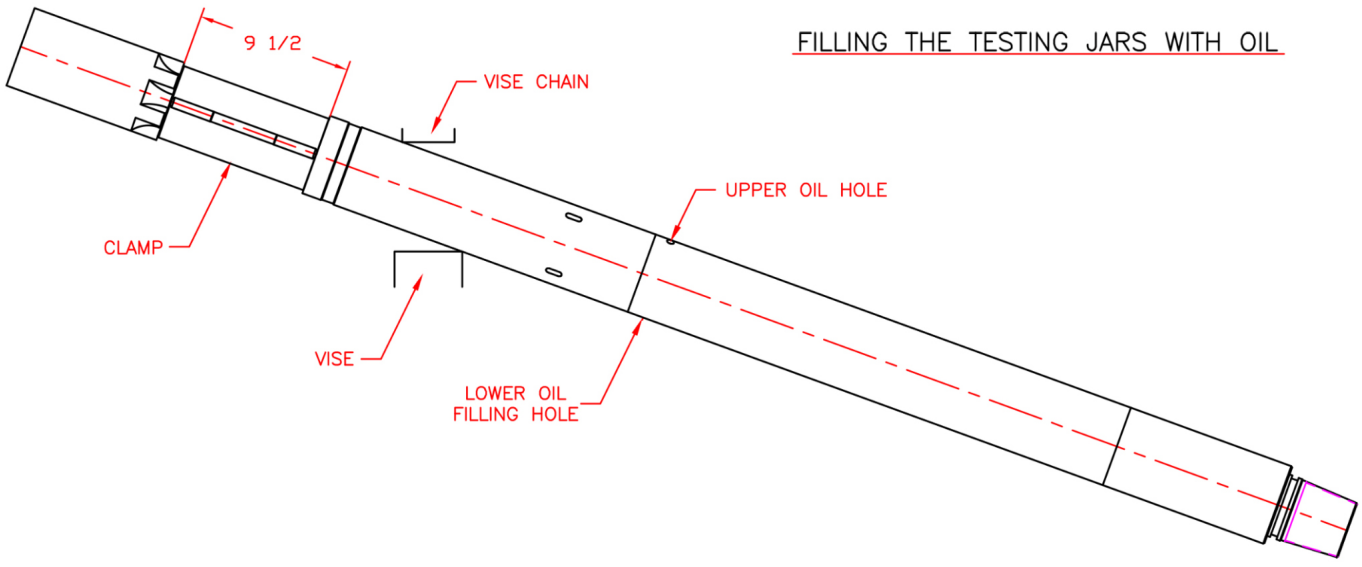
SERVICE INSTRUCTIONS

FILLING THE JAR WITH OIL

1. Loosen vise and angle the jar, pin down, with one of the filler holes on top as illustrated.
2. Screw the filler plug fitting into the lower hole and attach the oil filler line to the fitting.
3. Begin pumping oil into the jar slowly, allowing the air to come out of the upper hole. It helps to tap the bowl gently to assist any air bubbles to move up through the oil as you fill. When you have only oil coming out of the upper hole stop pumping. Need to let jar sit for 3 to 5 minutes to let air out.
4. With a new o-ring on the plug, screw the plug into the upper hole, and tighten with allen key.
5. Continue pumping oil into the jar, pushing the pressure ring against the pin of the bottom sub. If you can not get any more strokes of the pump that means the pressure ring is already in position against the bottom sub.
6. Remove the filler line from the fitting and then remove the filler plug and screw in the oil plug with new o-ring and tighten with allen key.
7. Wipe off all excess oil on the outside of the jar.



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JAR TIMING

1. Remove the clamp from the male spine.
2. Place the jar in a hydraulic press and pull the desired amount and wait for the jar to release. You will have approximately 4.5 inches of restricted stroke and the jar will then release and free travel for approximately 5 inches. If the jar opens more than 1.5 inches before it begins to pressure up you probably do not have a good fill.

		SERVICE MAKE-UP TORQUE VALUES			PULL TESTING			
TOOL SIZE		BODY JOINTS	MALE SPLINE/ MANDREL	VALVE SEAT/ MANDREL	PULL TEST RECOMMENDED 3 TIMES	APPROX. MINS TO RELEASE	LOW PULL	APPROX. MINS TO RELEASE
OD	ID							
3-5/8”	1.800”	3,000 ft/lbs	900 ft/lbs	200 ft/lbs	30,000 lbs	3 - 4 mins		
92.07 mm	45.72 mm	4,065 Nm	1,220 Nm	271 Nm	13,344 daN			
3-3/4”	1-1/4”							
95.25 mm	31.75 mm							
3-3/4”	1-1/2”							
95.25 mm	38.10 mm							
3-7/8”	1-7/8”	4,500 ft/lbs	1,200 ft/lbs	250 ft/lbs				
98.42 mm	47.62 mm	6,098 Nm	1,626 Nm	339 Nm				
5”	1-1/4”	7,000 ft/lbs	2,000 ft/lbs	280 ft/lbs	55,000 lbs	1.5 - 3 mins	14,000 lbs	4 - 5 mins
127.00 mm	31.75 mm	9,485 Nm	2,710 Nm	379 Nm	24,464 daN		6,227 daN	
5”	2.300”	10,000 ft/lbs	1,400 ft/lbs	300 ft/lbs	40,000 lbs	4 - 5 mins	14,000 lbs	40 mins
127.00 mm	58.42 mm	13,550 Nm	1,897 Nm	407 Nm	17,792 daN		6,227 daN	

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