



# LF™ DRILLS

Commissioning Checklist

# LF™ DRILLS CHECK LIST

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## Commissioning Procedure

Ensure you have a copy of the sales order with you to review content with the customer (no pricing to be listed on your copy) prior to starting the commissioning process.

### COMMISSIONING PROCESS

#### Drilling Safety

Refer to the Drilling Safety guide in front of the parts book.

Train drill crew in safe drilling procedures and practices.

Ensure that all safety guards are left installed on the equipment, the site is kept clean with no tripping hazards, train in rod handling, fuel storage etc.

#### **ADVISE OPERATOR**

##### **NEVER:**

- travel up or down with the feed carriage when the head has been opened
- use the leveling jacks to pull stuck rods
- store the overshot inside the mast behind the feed cylinder

#### Drill Inspection

Upon receipt of the drill the first thing to do is visually inspect the rig for any obvious damage or oil leaks that may have occurred during shipping. With the customer present inspect all items received. Using the packing lists check off all items and quantities received. Note any shipping errors.

#### Drill Introduction

Discuss drill depth capacities, power unit HP/ KW rating, torque ratings etc. Describe the drill components, weights etc. Cover all tech data information with the customer and drill crew.

(Refer to the tech data in the operation and service manual)

(continued on following page)

## LF™ DRILLS CHECK LIST (continued)

### Operation, Engine Maintenance, Hydraulic System Maintenance, etc.

(Refer to the operation and service manual)

Using the table of contents as a guide read and discuss all sections of this manual with the drill crew.

### Ordering Parts

Review the parts book with the customer discuss drill warranty, part numbering system, how to locate items in the parts book, procedure for ordering parts etc.

### Drill Setup & Anchoring

Ensure that the drill is properly anchored before the drilling operation begins.

[Refer to the anchoring procedure in the operation and service manual (if published)]

### Drill Startup

Prior to starting the engine, ensure that all shut off valves on the suction lines are tagged in the **open position**.

- Check the hydraulic reservoir oil level
- Check the engine oil level.
- Check the coolant level in the radiator.
- Check the oil level in the W-11 pump
- Check the main winch oil level
- Check the battery water level in each cell
- Check the oil level in the PQ rotation unit and four speed transmission after raising the mast to the vertical position
- Check all the fastening hardware on the drill mast, base frame, power unit etc. to ensure that they have not become loose in shipment.

## □ Drilling Operations

Before the drilling starts, allow the driller to operate the drill to become familiar with the directional controls, speeds of functions, etc.

Train driller in chuck jaw installation, foot clamp slip installation, etc.

Explain how to determine the bit weight pressure (review chart in Operations Manual).

## □ Corebarrel and Diamond Products Training

Refer to the coring catalogue to train the drill crew in core barrel and diamond product selection, use and maintenance.

*(It is a good idea to leave a copy of the coring catalogue with the customer.)*

Train in core barrel options such as landing indicator, water retention, types of bits and casing shoes etc.

*(continued on following page)*





## LF™ DRILLS CHECK LIST (continued)

### Service Tools Required for Commissioning

Basic hand mechanics hand tool kit, hydraulic test gauges with connecting hoses, hydraulic flow meter, digital tachometer, infrared temperature sensor. Also an assortment of JIC test fittings, tees, etc. (supplied with tool kit).

Train customer in use of these tools.

#### **NOTE:**

Explain to the customer that the drill has been fully tested at the factory using calibrated tools and instruments before shipping. The testing documents are available on request.

### PQ Drill Head

Review the separate drill head and chuck assembly instructions in the operation and service manual the customer's mechanic and drill crew.

Demonstrate how to change the chuck jaws and bushings and how to identify proper jaw and bushing sizes by part number.

Refer to the hydraulic schematic and the hydraulic adjustment procedures to train the customer on the hydraulic system explaining the flow path from pumps, valves etc.

## □ Primary Hydraulic System Explanation/Pressure Settings

The primary pump sends oil thru the high pressure filter to the load sensing main valve bank. The pump compensator is set at 4500 PSI, load sensing standby pressure is 300 PSI. The main valve controls oil to the rotation circuit, fast feed circuit, main hoist and wire line hoist circuit.

The main relief valve in the main valve bank is set at 4800 PSI. This relief adjustment is factory set and should not be tampered with. The load sense relief valve for the fast feed is fixed at 3000 PSI for A & B ports. The wire line winch load sense relief is fixed @ 2500 PSI for A & B ports. These valves are internal in the work sections and factory set. Oil returns from the main valve to the return manifold, then to the oil cooler, then to the main return filter to the reservoir.

## □ Secondary Hydraulic System

Oil from the secondary pump is sent to the water pump flow control valve in the control panel. Oil from the flow control valve is sent to the water pump hydraulic motor. Return oil from the water pump hydraulic motor passes thru the main return filter to the hydraulic reservoir. Since the secondary pump is load sensing the water pump flow and pressure can be regulated by turning this control valve. Pump compensator pressure setting is 3,000 PSI and load sensing standby pressure is 300 PSI. The case drain oil is sent to the case drain return manifold, then to hydraulic reservoir.

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# LF™ DRILLS CHECK LIST (continued)

## Auxiliary Hydraulic System

The secondary pump sends oil to the secondary manifold for the chuck, rotation speed control, rod clamp, fine feed, rod making / breaking, mud mixer, head side shift and set up valve (all hydraulic rams). The secondary pump compensator pressure is 2000 PSI.

**Pressure adjustments on the secondary valves are as follows:**

- PQ Chuck - 1400 PSI
- Rod Clamp - 750 to 850 PSI
- Mud Mixer Sequence Valve - 1900 PSI

Oil returns from the auxiliary manifold to the return manifold, to the return filter to the reservoir.

Oil from the auxiliary pump case drain is sent to the case drain return manifold and then to the reservoir.

## Main Winch Brake Release Valve

The main line brake is released electronically, when the fine feed valve is actuated in “the down” feed position.

## Rod Handling

To prevent damage to the spragg clutch in the main line winch it is important to instruct the driller to properly tension the hoisting cable before opening the chuck. If the rods are allowed to drop against the hoist cable each time the chuck is opened the resulting shock load may prematurely damage the spragg bearing in the main line winch.

## PQ Rotation Unit

Review the separate drill head and chuck assembly instructions in the operation and service manual with the customer’s mechanic and drill crew

Particular attention should be made to first checking the oil level in the PQ head when the mast is in the vertical position as per the operation and service manual. Once the mast is set at the required drilling angle the level should be noted. The rotation unit’s lube system is controlled by a pump/motor combination, which run on separate hydraulic circuits.

The motor operates off the auxiliary circuit @ 2000PSI. It drives the lube pump.

The pump is protected by a suction filter, metered oil on the pump’s outlet at 2 ½ GPM is controlled by a PCFC (pressure compensated flow control) valve, through a flow meter and then into an oil cooler. Leaving the cooler oil returns to the head box to be re-circulated by the lube pump.



## □ PQ Chuck

All grease fittings on the chuck should be lubricated daily. The fittings that lubricate the chuck jaw ramps must be lubricated when the chuck is in the open position.

Demonstrate how to change the chuck jaws and bushings and how to identify proper jaw and bushing sizes by part number

## □ Drill Maintenance

Follow recommended service intervals and oil specifications in the operation and service manual. For information on the power unit servicing refer to the power unit maintenance manual.

## □ Complete and Submit Warranty Registration Check List

Fill out the form on the following page and send to Boart Longyear for warranty consideration.





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# WARRANTY REGISTRATION CHECK LIST

Once the drill commissioning has been completed fill out the warranty registration check list below. Fold in half, seal, add correct postage and mail to Boart Longyear, fax to 385-234-3095 or scan and email to warranty@boartlongyear.com. **Warranty registration must be completed and on file to obtain warranty consideration.**

**Customer Name:** \_\_\_\_\_ **Company:** \_\_\_\_\_

**Customer Address:** \_\_\_\_\_

**Rig Model:** \_\_\_\_\_ **Rig Serial Number:** \_\_\_\_\_

**Drill Site:** \_\_\_\_\_ **Date In Service:** \_\_\_\_\_

- Drilling Safety**
- Drill Inspection**
- Drill Introduction**
- Operation, Engine Maintenance, Hydraulic System Maintenance etc.**
- Ordering Parts**
- Drill Setup & Anchoring**
- Drill Startup**
  - Check the hydraulic reservoir oil level
  - Check the engine oil level.
  - Check the coolant level in the radiator.
  - Check the oil level in the W-11 pump
  - Check the main winch oil level
  - Check the battery water level in each cell
  - Check the oil level in the PQ rotation unit and four speed transmission after raising the mast to the vertical position
  - Check all the fastening hardware on the drill mast, base frame, power unit etc. to ensure that they have not become loose in shipment.
- Drilling Operations**
- Corebarrel and Diamond Products Training**
- PQ Drill Head**
- Primary Hydraulic System Explanation/Pressure Settings**
  - Pump Compensator Set at \_\_\_\_\_
  - Load Sensing Standby Pressure \_\_\_\_\_
  - Main Relief Valve in the Main Valve Bank Set at \_\_\_\_\_
  - Load Sense Relief Valve for the Fast Feed for A & B Ports Fixed at \_\_\_\_\_
  - Wire Line Winch Load Sense Relief Fixed at \_\_\_\_\_
- Secondary Hydraulic System**
  - Pump Compensator Pressure Setting \_\_\_\_\_
  - Load Sensing Standby Pressure \_\_\_\_\_
- Auxiliary Hydraulic System**
  - Pump Compensator Pressure Setting \_\_\_\_\_
  - PQ Chuck \_\_\_\_\_
  - Rod Clamp \_\_\_\_\_
  - Mud Mixer Sequence Valve \_\_\_\_\_

## COMMISSIONING SIGN OFF

The commissioning technician is responsible for checking off all boxes beside headings as training progresses. Also signing off that the customer has been fully trained on the safe operation and maintenance of the drill rig. The customer is responsible for signing off that he fully understands and is satisfied with all aspects of the training provided.

**Commissioning Date** \_\_\_\_\_ **Technician Signature** \_\_\_\_\_

**Customer Name** \_\_\_\_\_ **Customer Signature** \_\_\_\_\_

# TECHNICAL SUPPORT GROUP

## BOART LONGYEAR GENUINE PARTS

Each Boart Longyear drill rig is a highly engineered system, rugged and reliable, with every part designed and built to precise specifications. To maintain quality and maximize efficiency, it is critical to use only genuine Boart Longyear parts. Parts repair and rebuild services are offered as a more efficient replacement parts option for major components.

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Adelaide: +61 08 8375 8375  
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[www.boartlongyear.com](http://www.boartlongyear.com)

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