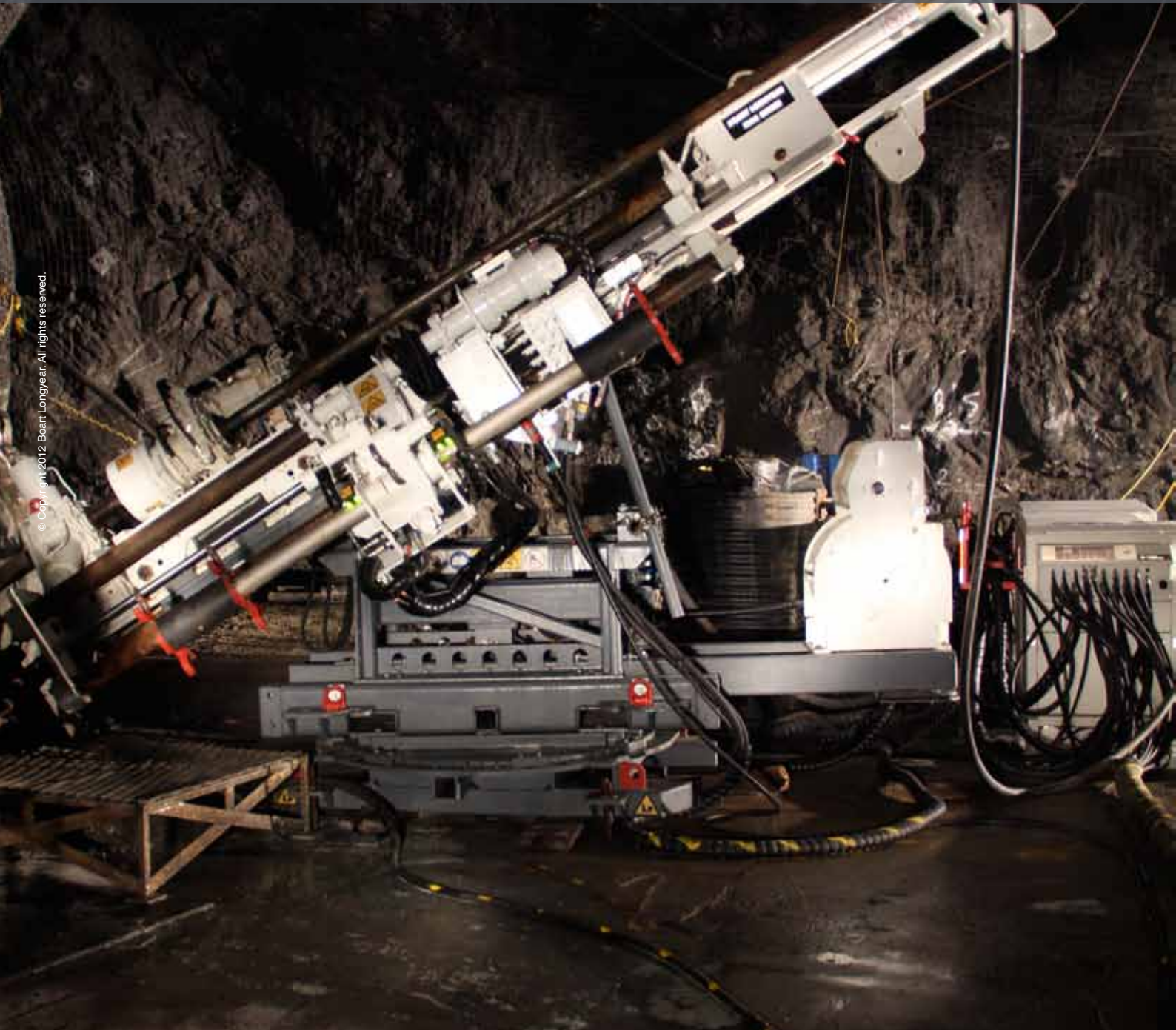




LM™ DRILLS

Commissioning Checklist

LM™ DRILLS CHECK LIST



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.

□ 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)

□ 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.

(continued on following page)

LM™ DRILLS CHECK LIST (continued)

□ 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

- Grease rig completely before use.
- Turn on water and adjust flow to 20-30 LPM.
- Check the hydraulic reservoir oil level.
- Check electric motor direction. Fans should turn clockwise when viewed from end. Shut down if charge pressure PT 7 does not reach 1-1.5 bar within 10 seconds.
- Ensure emergency stop is working correctly.
- Check the oil level in the fluid pump.
- Check the oil level in the rotation unit.
- Check all the fastening hardware on the feed frame, 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 jaw 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.

□ Service Tools Required for Commissioning

Basic 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 optional 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.

□ 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 310 BAR/4500 PSI (LM90) or 285 BAR/4130 PSI (LM45/55/75), 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 330 BAR (4790 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 280 BAR (4060 PSI) for A & B ports. The wire line winch relief is fixed @ 165 BAR (2400 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.

□ Chuck

All grease fittings on the chuck should be lubricated daily.

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 page 10 and send to Boart Longyear for warranty consideration.

□ LM Valve Pressures

- V1 Wireline Circuit – 105 Bar (2400 PSI)
- V7 Rod Holder Circuit – 140 Bar (2030 PSI)
- V9 Pilot Control Circuit – 35-45 Bar (510 - 650 PSI)
- V11 Chuck Circuit – 70-80 Bar (1015 - 1160 PSI)

(continued on following page)

LM™ DRILLS CHECK LIST (continued)

□ PT Selector

- PT1 Main Pump Discharge Pressure
- PT2 Rotation Circuit Pressure
- PT3 Rod Holder Pressure
- PT4 Load Sensing
- PT5 Chuck Pressure
- PT6 Pressure - Pilot Pressure
- PT7 Charge Pressure

□ Hydraulic System

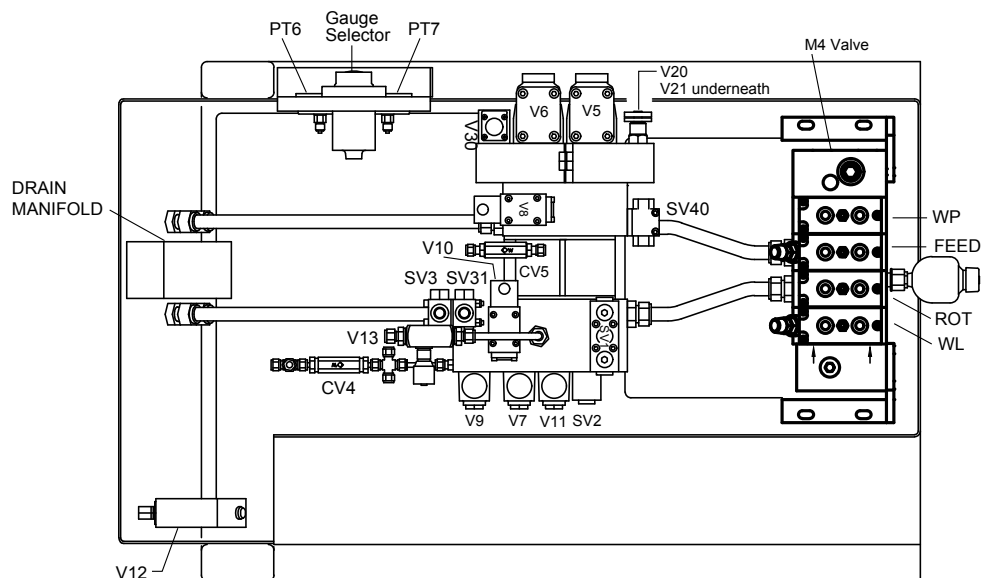
The Hydraulic System comprises a low pressure control circuit and a high pressure, load sensing function circuit.

The low pressure control circuit allows for the use of small diameter, low pressure hoses between the Control Panel and the Power Pack, which increases the manoeuvrability of the Control Panel.

The high pressure system is controlled by pilot operated valves in the Hydraulic Module in the Power Pack, and directs oil from the Main Pump to the Drill Head as required.

The hydraulic system is pre-set in the factory and tested on a dynamometer to ensure that all settings are correct. No attempt should be made to alter them in the field. The maximum oil flows and pressures are set to ensure the full load current of the electric motor is not exceeded.

□ Module Valve Identification



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, Hydraulic System Maintenance etc.**
- Ordering Parts**
- Drill Setup & Anchoring**
- Drill Startup**
 - Check the hydraulic reservoir oil level.
 - Check the oil level in the fluid pump.
 - Check the oil level in the rotation unit.
 - Check all the fastening hardware on the feed frame, base frame, power unit etc. to ensure that they have not become loose in shipment.
- Drilling Operations**
- Corebarrel and Diamond Products Training**
- Drill Head**
- LM Valve Pressures**
- PT Selector**
- Hydraulic System**
- Module Valve Identification**

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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