ABOUT BGL

The BGL Bertoloto & Grotta Ltda is a 100% Brazilian company and leader in fasteners for industrial bearings, sleeves for bearings, lock and precision nuts, lockwashers as well as hydraulic nuts, hook spanners, extension tube and hydraulic pumps, nationwide.

With over 60 years of tradition, the company has the philosophy of quality, agility and ethics, what ensures high standards of quality, credibility and precision, that is, attributes recognized worldwide.
INTRODUCTION

This manual is part of the equipment and must be carefully read in complete form before performing any operation of the pump. The manual should also be kept in an easily accessible place for future reference.

The pump manual is addressed directly to the users of this equipment and reflects the ideal technical conditions of use of equipment with all important informations.

In case of any questions not listed in this manual, consult us before the technical procedures of installation and use of the pump.

The company BGL assumes no responsibility for the product under the following conditions:

- Improper use of equipment by unqualified operators;
- Improper installation;
- Lack of maintenance of equipment;
- Alteration or unauthorized intervention in the equipment;
- Use of inadequate or non-original parts for this equipment model.
HYDRAULIC PUMP PRESENTATION

The company BGL has developed manual hydraulic pumps with three capabilities that meet all types of mounting and dismounting of bearings and bushings.

The use of these pumps goes further, allowing the mechanic of maintenance to use them for a variety of needs, according to the maintenance activities of machinery and equipments.

The hydraulic pump BGL is an equipment of two speeds of flow. The first stage is a flux of high velocity and low pressure. The second stage has characteristic of low velocity and high pressure and is automatically adjusted with increasing load resistance in the hydraulic system, enabling the increase of force without provoking more effort for the equipment operator. The pump also has a security valve that limits the pressure to prevent damage of the equipment. This valve is controlled by a manual relief valve mounted on the side of the pump head with only a threaded hole for outlet/inlet oil.

COMPONENTS OF THE HYDRAULIC PUMP BGL

- High pressure hose (3 meters) with quick release element with thread ¼” BSP at both ends;
- Tank filled with hydraulic oil 68 HLP;
- Manometer scale MPA and PSI;
- Quick release ¼” BSP;
- Nipple threads ¼” BSP;
- Steel carrying case to store the pump;
- Instruction manual.
IMPORTANT INSTRUCTIONS ON RECEIPT OF THE PRODUCT

Always perform inspection of the package and all received material, in order to identify any damage in the product due to transport.

INFORMATION REGARDING PRODUCT RISK

This is a warning symbol. All times that this symbol is displayed, this means possible hazard to persons or bigger or smaller damage for the equipment. The type of hazard and its respective precautions to be taken are indentified in the following text symbol.

DANGER: EVERY TIME THIS NOTICE IS IGNORED, SERIOUS RISKS EXIST TO PEOPLE AND/OR DAMAGES TO THE EQUIPMENT.

WARNING: EVERY TIME THAT THIS NOTICE IS IGNORED, THERE ARE RISKS FOR PEOPLE AND/OR DAMAGES TO THE EQUIPMENTS.

It is recommended to the product user to follow these recommendations carefully. The manufacturer assumes no liability for damages or injuries resulting from an inappropriate use of the product.

1. GENERAL INSTRUCTIONS

USE

- Mount or dismount bearings in conjunction with the hydraulic nut type HMV..E;
- Disassembly of bearings on hydraulic adapter sleeves;
- Dismantling of bearing of parallel hole in axis with preparation for oil injection (BGL provides a full catalog of the above indicated items in the page http://www.bgl.com.br/catalogo/enus/index.html);
- In combination with any appropriate hydraulic cylinder for the purpose of raising and lowering loads as well as impulse operation where a single actuator drive is required;
- The hydraulic hand pumps is driven to operators with high technical qualifications. The responsibility of operator training on the use of the equipment is charged to the buyer.
2. DESCRIPTION OF THE HYDRAULIC PUMP
(Terms of use)

TECHNICAL CHARACTERISTICS

Identify the model and maximum pressure in the label on the pump body.

Check the table next to the Hydraulic Pump that it applies to your needs, considering the pressure and quantity of oil required.

REQUEST HAIR CODES
BH 100-0.7, BH 160 e BH 160-4.8

NOTE
Recommended hydraulic oil 68 HPL

<table>
<thead>
<tr>
<th>Code</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>MBH 160</td>
<td>Hydraulic Pump Hose 100 to 160 MPa</td>
</tr>
<tr>
<td>MABH 100</td>
<td>Hydraulic Pump Manometer 100 MPa</td>
</tr>
<tr>
<td>MABH 160</td>
<td>Hydraulic Pump Manometer 160 MPa</td>
</tr>
<tr>
<td>NIPLE 1/4 BSP</td>
<td>Parallel NIPPLE 1/4&quot; BSP</td>
</tr>
<tr>
<td>NIPLE ER</td>
<td>Quick Coupling NIPPLE 1/4&quot; BSP</td>
</tr>
</tbody>
</table>
The pumps have double piston and flux velocities that move with different diameters. When there is no load, the piston with larger section pushes the oil into the hydraulic circuit, allowing thereby a rapid approach for load (first stage, low pressure and high velocity of flux). Under load, this section is automatically disabled by a specific valve. Continuing the pumping with the load on the piston with smaller section, what allows to achieve the maximum pressure with reduced effort on the lever (second stage, high pressure and low flux velocity).

**WARNING:** THE TANK OF THE MANUAL HYDRAULIC PUMP MUST HAVE SUFFICIENT AMOUNT OF OIL TO COMPLETE THE CIRCUIT IN WHICH THE PUMP IS ATTACHED (INCLUDING FLEXIBLE HOSE AND CYLINDER).

**DANGER:** DO NOT FILL THE TANK DURING THE USE OF HYDRAULIC SYSTEM. FOR EXAMPLE, TO FILL THE COURSE OF THE CYLINDER THAT NEEDS MORE VOLUME THAN THE CAPACITY OF PUMP SUPPLYING. IN THIS CASE, WHEN THE PISTON REVERSES THE COURSE AND THE OIL RETURNS BACK TO TANK, THE VOLUME OF TANK WILL BE INSUFFICIENT FOR THE TOTAL QUANTITY OF OIL ADMITTED IN THE HYDRAULIC CIRCUIT.

**WARNING:** REMEMBER THAT THE OIL CONTAINED IN THE TANK OF THE HYDRAULIC HAND PUMP IS NOT UNDER PRESSURE, BUT BECOMES SO WHEN THERE IS A CIRCUIT FEEDING.
3. SUPPLY AND RETURN OF OIL

The direction of oil circulation of the pump for the hydraulic circuit (supply), and subsequently to the pump circuit (return) is regulated by the relief valve mounted on the pump head.

The pumps are equipped with relief valve of two-ways (“by-pass”) to operate single-acting cylinders of return by gravity or spring. The pump head has only one input/output connection. When the manual relief valve is fully tightened clockwise, the repeated action of the lever will introduce oil into the hydraulic circuit. When this valve is loosed in the counterclockwise direction, the oil returns to the reservoir.

4. CORRECT USE OF THE PUMP

The pump should be positioned on a flat and stable table to prevent a falling over during the operations. The relief valve should be operated manually. Do not use pliers or spanner wrenches.

The tank cover, Item 02 of the drawing (page 38), also serves as a vent. This cover be closed (fully tightened) for carrying the pump and positioned in the intermediate position for use, thus allowing the entering of air in the reservoir, to avoid formation of pressure or vacuum when the oil returns back.

5. PRESENCE OF AIR IN THE SYSTEM

DANGER: THE PRESENCE OF AIR IN THE SYSTEM CAN PROVOKE SERIOUS DAMAGES

Before placing the cylinder under load, it is absolutely necessary to remove air from the system.

FOLLOW THE INSTRUCTION BELOW:

- Pump until the piston is fully extended;
- Reversing the cylinder so that the piston be supported on a bench or floor;
- Keep the pump higher than the cylinder;
- Open the relief valve of the pump;
- Pressing the rear of the cylinder to assist the piston retract. The air will flow from the cylinder and hose to the oil reservoir of the pump without causing inconveniences.

6. OPERATING INSTRUCTIONS

**WARNING:** EQUIPMENT OF HIGH PRESSURE MAY DEVELOP ELEVATED FORCES ACCORDING TO ITS DIMENSIONS. GREAT ATTENTION IS REQUIRED IN THE OPERATION OF THIS EQUIPMENT.

**DANGER:** MAKE SURE THAT ALL COMPONENTS OF THE SYSTEM ARE APPROPRIATE FOR THE PRESSURE REQUIRED.

Before any operation is started, check the oil level within the reservoir of the pump. Such level must be approximately 1 cm from the oil inlet. Add oil if required. Make sure that this reservoir is not completely filled, thereby preventing oil leakage through the entrance of the pump reservoir during the operation when an increase of oil volume can occur.

It is recommended to use only 68-HLP hydraulic oil.

**EQUIVALENTS:**

**PETROBRÁS-LUBRAX INDUSTRIAL:** HR-68-EP;
**CASTROL:** HYSPIN AWS 68;
**IPIRANGA:** IPITUR AW 68;
**SHELL:** TELLUS 68;
**TEXACO:** RANDO HD 68.

If you need to add large amounts of oil to the pump, it is recommended that reservoir be drained for cleaning with solvent, and subsequently filled with new oil.
**WARNING:** DO NOT USE FLEXIBLE HOSES FOR PURPOSES OF TRANSPORTATION OR TRAILER.

**WARNING:** THE HOSES MUST BE PLACED IN STRAIGHT CONDITION AND WITHOUT OBSTRUCTIONS. ENSURE THAT THE CURVE RADIUS IS GREATER THAN 60 MM. THE HOSES MUST NOT HAVE ANY DIRECT CONTACT WITH SHARP OBJECTS. KEEP CLEAN HOSES AND AWAY FROM FLAMES AND HEAT SOURCES.

The connections thread are ¼” BSP (male). When performing the clamping, do not use the extension of the spanner wrench. The excess of tightening causes damage of threads.

Use liquid teflon or thread lock of low torque to seal the thread and not a tow. The tow yarns can contaminate the hydraulic system.

Chips or dirty oil can cause scratches on the inside of the hydraulic cylinder and provoke damages to the valves and coupling accents, enabling the operation of the equipment.

**DANGER:** MAKE SURE THAT THE QUICK RELEASE ELEMENT IS CLEAN BEFORE ITS CONNECTING. DEBRIS CAN INTERFERE WITH CORRECT CONNECTION AND LOCKING OF ONE WITH ANOTHER AS WEEL CAUSE A RESTRICTED FLOW OF OIL.

**WARNING:** MISUSE OF THE EQUIPMENT REDUCES ITS LEVEL OF RELIABILITY AND MAKES INVALID ITS WARRANTY.

**WARNING:** ANY MAINTENANCE ACTIVITY MUST BE PERFORMED BY QUALIFIED PERSONNEL. ERRORS IN THESE ACTIVITIES CAUSES LOSS OF THE ABOVE MENTIONED WARRANTY.

**ADJUSTMENT OF PRESSURE:** A HYDRAULIC PUMP HAS A SAFETY VALVE ADJUSTED TO WITHSTAND THE MAXIMUM OF RECOMMENDED PRESSURE.

**DANGER:** DO NOT SET UP SUCH VALVE IN HIGHER VALUES THAN THAT ADJUSTED IN FACTORY.
## 7. SOLUTIONS OF PROBLEMS

<table>
<thead>
<tr>
<th>PROBLEMS</th>
<th>PROBABLE CAUSE</th>
<th>SOLUTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>The piston does not move forward</td>
<td>The relief valve of the pump is open or closed incorrectly.</td>
<td>Check</td>
</tr>
<tr>
<td></td>
<td>There is air in the system or oil in incorrect volume.</td>
<td>Eliminate air in circuit and restore the oil level.</td>
</tr>
<tr>
<td></td>
<td>The capacity of the hydraulic cylinder is lower than the lifting load.</td>
<td>Replace the cylinder.</td>
</tr>
<tr>
<td>The piston does not have enough course or goes forward with bumps</td>
<td>There is air in the system.</td>
<td>Eliminate air in the system.</td>
</tr>
<tr>
<td></td>
<td>There is no oil in the pump.</td>
<td>Fill once again the oil level of the pump.</td>
</tr>
<tr>
<td></td>
<td>The piston rod may be bent or deformed, locking in the guide bushing or in the cylinder.</td>
<td>Check or repair the cylinder.</td>
</tr>
<tr>
<td></td>
<td>The need of oil of the hydraulic cylinder is greater than the capacity of reservoir.</td>
<td>Replace the pump with another of higher capacity.</td>
</tr>
<tr>
<td>The piston does not maintain the load</td>
<td>The relief valve can be damaged.</td>
<td>Check and verify with equipment supplier for maintenance.</td>
</tr>
<tr>
<td></td>
<td>Possible leakage in the seal of the cylinder.</td>
<td>Replace seals.</td>
</tr>
<tr>
<td></td>
<td>Oil leaking through the connection of the flexible hose.</td>
<td>Check and eventually replace them.</td>
</tr>
<tr>
<td>The return of the piston is not complete or there is a slow movement</td>
<td>The relief valve of the pump is not fully open or closed.</td>
<td>Open completely.</td>
</tr>
<tr>
<td></td>
<td>The quick release element is not completely connected.</td>
<td>Connect properly so that balls lock each other and make the flow of oil.</td>
</tr>
<tr>
<td>Oil leakages</td>
<td>The return of the cylinder (if any) may be broken or loose and the inner walls of the cylinder worn.</td>
<td>Check/fill the oil level again, contact the vendor for maintenance.</td>
</tr>
<tr>
<td></td>
<td>The seals can be broken or worn.</td>
<td>Replace them.</td>
</tr>
</tbody>
</table>

**NOTE**

In cylinders with gravity return is necessary to exert external force to retract the piston, always with the relief valve open.

It is recommended to keep in stock a repair kit for pump replacement.
8. INFORMATION ABOUT SECURITY AND HYDRAULIC FLUID

IDENTIFYING HAZARDS

To People: Frequent contact with oil can cause skin irritation. Accidental ingestion of oil followed by vomiting can provoke mucosal injury. Inhalation of the product in form of smoke or vapor can irritate the respiratory system.

To The Environment: Product with non-biodegradable characteristics.

FIRST AIDS

Inhaled as Fumes or Vapor: Remove people from exposure quickly. Do not ingest any substance and rapidly go to the doctor.

Skin Contact: Immediately wash with soap and water in abundance.

Eye contact: flush eyes with running water and go to the doctor.

MEASURES IN CASE OF FIRE

Fire Extinguishers: Carbon dioxide, sodium bicarbonate, water and nebulizer of alcohol resistant to foam.

Banned Extinguishers: Do not use water jets to prevent overheating.

ACCIDENTAL LEAKAGE

Personal Precautions: Wear appropriate clothing

Environmental Precautions: Do not allow that the product enter into the drains and channels of waste water. If this happens, alert authorities.

Methods of Cleaning: Block oil leakage with earth or sand. Collect the oil manually with suction pump or absorbent material and dispose the waste according to environmental laws.

HANDLING AND STORAGE

Hand Protection: Use gloves of neoprene or nitrile rubber.

Eye Protection: Use goggles.

Skin Protection: Use dust cover, replacing this if contaminated.

Storage: Store the equipment away from heat and oxidizing agents. Keep this equipment in a ventilated area with temperatures between 5 to 30ºC.
9. DRAWING HYDRAULIC PUMP

Pump BH 100-0.7 MPa
Manometer: 100 MPa 14 psi x 1000
Capacity Reservoir: 0.9 l
Total Weight [Pump + Accessories + Packing]: 5 kg
Thread of Item 11: 1/4" BSP

Pump BH 160 MPa
Manometer: 160 MPa 23 psi x 1000
Capacity Reservoir: 2.2 l
Total Weight [Pump + Accessories + Packing]: 17.2 kg
Thread of Item 11: 1/4" BSP

Pump BH 160-4.8 MPa
Manometer: 160 MPa 23 psi x 1000
Capacity Reservoir: 4.8 l
Total Weight [Pump + Accessories + Packing]: 24.6 kg
Thread of Item 11: 1/4" BSP

Digital Manometer Code MABH 100 DIG
SCOPE AND WARRANTY PERIOD

The company BGL ensures the hydraulic pumps against fabrication defects under normal conditions of use, within a period of 06 (six) months from the date indicated in the invoice. In case of defect or malfunction of any kind, it is necessary to immediately send the hydraulic pump for an analysis to BGL.

WARRANTY CONDITIONS

The warranty excludes any devices attached to the hydraulic pump and will not be applied to:

- Defects or damages provoked by abnormal use;
- Defects resulting of tests, modifications of any types, as well as repair activities performed by the customer in unauthorized service. The maintenance, disassembly or intervention of the pump and its accessories by the client characterizes the loss of the warranty;
- Defects caused by use of oil out of technical specifications or impure;
- Defects as consequence from the violation and alteration of the relief valves of low and high pressure.