Ergofokus
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USER MANUAL IN ORIGINAL
ADJUSTABLE-HEIGHT
WORKBENCH ñL&Dò

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1 General Information

You have in your possession a hydraulic adjustable-height workbench used mainly to adjust work surfaces to ergonomically suitable heights.

1.1 Function of the System

Ljunggren & daughtersôhydraulic workbench works on the principle of two communicating vessels. One of the vessels is in the pump (4) under the bench, while the other (cylinder) is in one of the bench legs (6); the vessels are connected by a plastic hose (5).

When the bench is to be raised, the necessary amount of oil is quite simply pumped out of the vessel in the pump (4), through the hose (5) to the cylinder in the bench leg (6) and the bench is thereby pushed upward.

When the bench is to be lowered, an underpressure is generated in the pump (4) by means of its piston (3) being pulled back. The oil in the cylinder is then forced back through the hose into the pump by means of the overpressure generated by the weight of the bench.

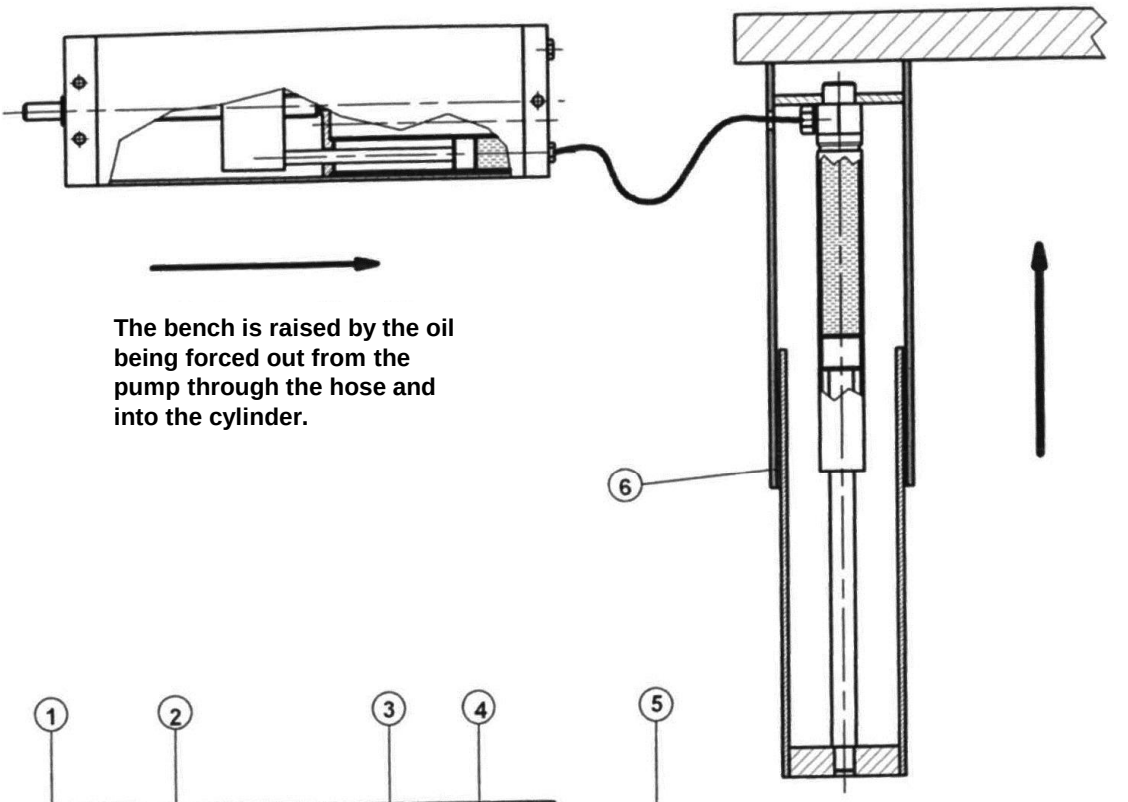
The vessels inside the pump are mechanically connected to each other by a plastic nut (2) so that all bench legs are at the same height and that they remain at the same height regardless of whether one bench leg bears a greater load than the others do.

The motion in the system is created when the screw (1) that goes through the plastic nut is turned, either by means of a manual crank or with the help of an electric motor device.

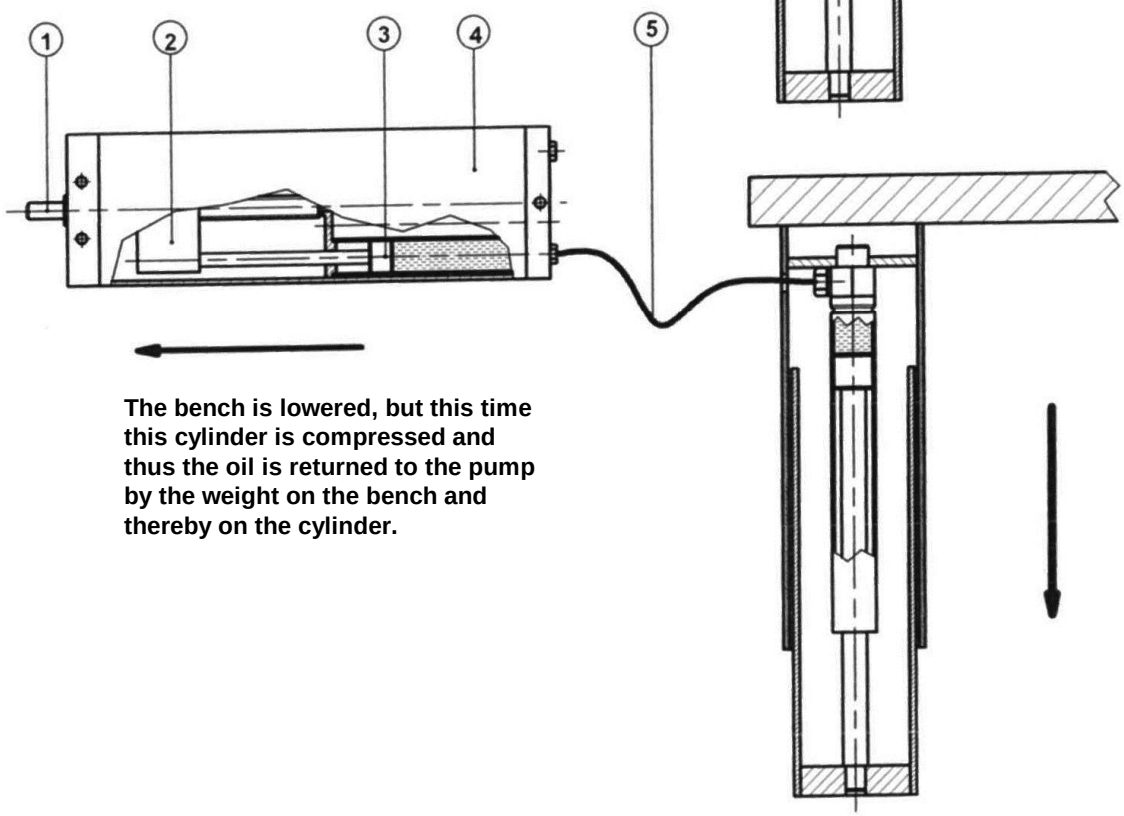
By varying the pump and cylinder diameters, different lift forces and speeds are obtained. *See Product Specification, page 14.*

1.2 Product Warranty

Ljunggren & daughtersôworkbench is covered by a warranty against manufacturing defects for a period of 24 months following the date of manufacture.
Ljunggren & daughtersôwarranties will only be honoured provided that the workbench has been used in the manner intended and as long as it has not be disassembled or subjected to any kind of tampering.



The bench is raised by the oil being forced out from the pump through the hose and into the cylinder.



The bench is lowered, but this time this cylinder is compressed and thus the oil is returned to the pump by the weight on the bench and thereby on the cylinder.

2 Prohibitions – Warnings - Requirements

2.1 General Information

- The workbench must not be continuously raised and lowered, *i.e.,* a maximum of 2 minutes of operation should be followed by at least 8 minutes of idle time.
- This operating manual must always be available for reference at the workbench.
- The transformer must only be connected to outlets of the same voltage as indicated on its rating plate.
- The workbench may only be moved when it is not bearing a load. In the meantime, any wheels must be in locked mode.
- Make sure that the control unit is always kept in its holder so that no accidental motion occurs as a result of someone touching the panel.
- When the workbench is to be attached to a wall using a wall bracket, the wall must be reinforced with a batten measuring 100 x 50 mm to which the retaining screws can be anchored. Hexagon-head wood screws measuring at least L = 100 diam = 10 mm must be used as retaining screws.

2.2 Hazard Notices

- The hose must not be against sharp edges, non-chamfered holes, moving parts or the like.
- Electrical cables / connecting cables that are not correctly laid in upon installation may be pinched and conduct electricity to the bench. There is also a risk that electrical cables / connecting cables may contact sources of heat in the kitchen.
- The workplace must be arranged so that no risk of tipping or falling occurs.
- Nearby counters, benches or the like shall have smooth walls that minimise the risk of crush injuries when raising the bench. The bench must stand on a flat horizontal surface.
- Keep hands and other body parts away from the bench when it is being raised or lowered. There is a risk of being crushed between the benchtop and other nearby edges.
- The maximum load on the workbench must not be exceeded, statically or dynamically.
- The workbench must not be subjected to the effects of any mechanical, thermal, chemical, electromagnetic or electrical fields (for example, high-power cables), beyond the limits indicated in this user manual.
- If the workbench is used in a location where there is a risk of damage to property or injury to persons by a movement caused by the system, it is then incumbent upon the occupant to ensure that the appropriate safety devices are used in order to prevent such damages and injuries from occurring.
- In the event of an oil leak or spill, wipe up the spilled oil immediately and clean with an oil-solubilising cleaning agent (*e.g.,* dish detergent or washer fluid) to prevent the risk of slipping.

2.3 Use of the Machine

This system is intended to be used in adjusting the height of work locations.
The workbench must not be used as:

- A means of transport, either for goods or for persons.
- A jack or for lifting things or persons.
- A safety device
- A clamping device
- A counterstay
- A pressing machine

It is expressly forbidden to use the system in environments that exceed the limits indicated in this operating manual.

2.4 Maintenance and Repair

- The workbench shall be placed in such a manner that cleaning is facilitated, that bacteria do not accumulate and that dirt traps are not formed.
- The motor unit and control panel must not be subjected to water flushing. They can be wiped off with wet rags, as needed.
- The hydraulic system must always be free of any load and the motor unit must be without electrical current when any work is being done on them.
- Residual oil resulting from assembly or repair of the hydraulic system shall be treated as environmentally hazardous waste, even if it has been deemed not to entail a risk of injury or damage during normal handling.
- Ljunggren & daughtersôproduct liability only extends to products that were defective coming from the factory. Ljunggren & daughtersôproduct liability will be disclaimed in part or in whole if the user does not follow the care instructions or uses spare parts that are not original.

For each repair, there is a written set of instructions available in order to minimise the risk of error; request such instructions when you order the spare parts and read them thoroughly before you begin effecting repairs.

In order for a product warranty to be valid following a repair, the following conditions apply:

- Only original parts may be used when making any repairs.
- No modifications may be made to products such as the pump, cylinder, motor, transformer or circuit board.
- Any repairs shall be made according to the enclosed instructions.
- The workbench must continue to be used only in accordance with the specified data.

3 Operatorôs Manual

3.1 Function of the System

Ljunggren & daughtersôhydraulic workbench works on the principle of two communicating vessels. One of the vessels is in the pump (4) under the bench, while the other (cylinder) is in one of the bench legs (6); the vessels are connected by a plastic hose (5).

When the bench is to be raised, the necessary amount of oil is quite simply pumped out of the vessel in the pump (4), through the hose (5) to the cylinder in the bench leg (6) and the bench is thereby pushed upward.

When the bench is to be lowered, an underpressure is generated in the pump (4) by means of its piston (3) being pulled back. The oil in the cylinder is then pushed back through the hose into the pump by means of the overpressure generated by the weight of the bench.

The vessels inside the pump are mechanically connected to each other by a plastic nut (2) so that all bench legs are at the same height and that they remain at the same height regardless of whether one bench leg bears a greater load than the others do.

The motion in the system is created when the screw (1) that goes through the plastic nut is turned, either by means of a manual crank or with the help of an electric motor device.

The system is not intended for continuous operation!

3.2 Operation

The height is adjusted either by using a manual crank or with the aid of an electric motor.

The crank is tiltable can be readily folded in and hidden under the benchtop when not in use.

The electric motor device is operated by means of a control unit consisting of two buttons.
One for upward adjustment and one for downward adjustment of the bench.
One of the buttons must be kept depressed in order to the system to move. Thus, the system does not feature any automatic operation.

3.3 Safety

The transformer must only be connected to outlets of the same voltage as indicated on its rating plate.

The workbench and hydraulic system must never be uncoupled or repaired while under hydraulic pressure or when connected to the electrical mains.

3.4 Starting and Stopping

The workbench and the hydraulic system have no particular starting and stopping instructions, as operation is merely a matter of an on-off function.

3.5 Problems during Starting, Operation or Stopping

If a problem occurs during any of the phases, immediately release the button on the control unit; then pull the plug out of the wall or pull the transformer cable out from the motor unit. Then refer to the ñTroubleshootingò section further on in this user manual.

3.6 Consumable Supplies

In the event of an oil leak or spill, wipe up the spilled oil immediately and clean with an oil-solubilising cleaning agent (*e.g.,* dish detergent or car washer fluid) to prevent the risk of slipping.
Discard spilled oil and other contaminated objects at a suitable collection point or similar facility for proper handling. The oil must NOT be discharged into the sewer or be disposed with other refuse.

First Aid Procedure Concerning Oil:

Eyes:	Rinse immediately with large amounts of water for several minutes.
Skin:	Wash thoroughly with soap and water or with some other suitable skin cleanser as quickly as possible.
Inhalation:	Move away from the exposure to fumes.
Ingestion:	Seek medical aid and indicate the name of the product. Do NOT induce vomiting.

3.7 Maintenance

The hydraulic system is maintenance-free given ordinary use and thus needs no servicing.

Normal cleaning of the hydraulic system shall be done using a mild oil-solubilising cleaning agent (*e.g.,* dish detergent or car washer fluid).

The motor unit and control panel must not be subjected to water flushing. They can be wiped off with wet rags, as needed.

Powerful cleaning agents containing, for example, acids, ammonia or lye must not be used.

3.8 Handling of User Manual

It is important that all those assembling and using the workbench read through and have access to this user manual. It must be kept in close proximity to the workbench (the system).

4 Assembly - Disassembly - Reparation

All work done to the hydraulic system, be it assembly, disassembly, repairs or any other work must be done while the bench is not under pressure (not loaded) and is disconnected from any electrical power source. Other points that pertain to all the work on the system include the following:

- The hose must not be against sharp edges, non-chamfered holes, moving parts or the like.
- The minimum curvature radius is 30 mm.
- Wherever there is a risk of the hose in anyway being at risk of damage, it must be built-in or shielded.
- The workplace must be arranged so that no risk of tipping or falling occurs.

4.1 Disassembly or Scrapping of the System

Hydraulic oil must be disposed of at a suitable destruction or processing facility in the event of leakage or when the workbench is scrapped. The rest of the workbench consists of fully recyclable and thereby environmentally friendly parts.

4.2 Reparation and Spare Parts

The hydraulic system must always be free of any load and the motor unit must be without electric current when any work is being done on them.

The following parts on the motor device can be replaced:

- Electric motor
- Circuit board
- Fuse circuit board
- Transformer
- Control unit
- Limit switch

The only repair measure available for the cylinder or pump is simply to replace the entire unit; they must not be taken apart. This is to prevent the risk of malfunction. All these parts are supplied as spare parts from Ljunggren & daughters AB or its representative.

For each repair, there is a written set of instructions available in order to minimise the risk of error; request such instructions when you order the spare parts and read them thoroughly before you begin effecting repairs.

Kindly state the designation from the product's rating plate when ordering.

In order for a product warranty to be valid following a repair, the following conditions apply:

- Only original parts may be used when making any repairs.
- No modifications may be made to products such as the pump, cylinder, motor, transformer or circuit board.
- Any repairs shall be made according to the enclosed instructions.

- The workbench must continue to be used only in accordance with the specified data.

Residual oil resulting from assembly and repairs to the hydraulic system shall be treated as environmentally hazardous waste, even if it has been deemed not to entail a risk of injury or damage during normal handling.

Ljunggren & daughtersôproduct liability is extends only to products that were defective coming from the factory. Ljunggren & daughtersôproduct liability will be disclaimed in part or in whole if the user does not follow the care instructions or uses spare parts that are not original.

4.3 Cylinder-Pump Coupling

1. Cut the hoses to the desired lengths; use a utility knife to obtain a clean and square cut.

2. Unscrew the pressure nut on the first cylinder and remove the sealing ball with the help of a magnet.

3. Thread on the pressure nut and then the compression ring on the hose (if you have a C01 cylinder, thread on the black plastic cap *first*.)

4. Push the hose down into the connection hole on the cylinder, bring the compression ring down and tighten the pressure nut to 10 Nm. Be careful to keep the hose in ñplaceò while you tighten the pressure nut.

N.B.! The cylinder must not be fastened in the tube or piston during tightening.

5. If you have a C01 cylinder, push the black plastic cap down on the cylinder.

6. Hold the cylinder vertically with the connection upward, keep the end of the hose down in an oil bottle and push the cylinder piston in all the way. On the C01-cylinder, the piston runs evenly with the housing; however, on the C02 – C04 cylinders, the piston sticks out 12 mm when the cylinder is fully compressed.

7. Do not allow the end of the hose to hang down or lie against anything for an extended amount of time. If you do, you run the risk of introducing air into the system.

8. Repeat steps 2-7 with the rest of the cylinders.

9. Place the pump vertically with the hose connections upright.

10. Unscrew the pressure nuts in the pump and use a magnet to remove the sealing balls located in the connection holes.

11. Crank/run the system ½ turn or until you see that there is oil in the open connection holes on the pump.

12. First thread on the pressure nut and then the compression ring onto the hose from the cylinder, connect it the same way to the pump as to the cylinder, and tighten to 10 Nm.

13. Repeat step 12 with the remaining cylinders.

14. Crank/run the system halfway and check to see that the cylinders start to move simultaneously and that they extend equally as much outward and with a smooth motion. Also, make sure that the cylinders do not seem to be ñspongyò when under pressure.

If one or more of the cylinders seems ñspongyò, follow ò*Refilling of Individual Cylinders*ò and try again according to the above instructions.

15. Put the cylinder and pump in place. Secure any loosely hanging hoses.

The system is now ready for use.

N.B.!

- Make sure that the cylinder is completely emptied of oil before being connected to the pump, or else the hydraulic system will be destroyed.

- Make sure that the connections are tightened to 10 Nm, or else there is a risk of oil leaking.

4.4 Refilling of Individual Cylinders

Start by removing the load from the system (workbench) by jacking it up or placing the workbench to the side.

1. Crank/run the system (WITHOUT A LOAD) until the defective cylinder has moved 30-40 mm outward.

2. If possible, remove the pump from the bench and place it vertically with the hose connections upward; if this is not possible, make sure that the end of the pump with the hose is placed higher than the oppose end. *N.B.! Be careful not to damage the hoses, min. curvature radius: 30 mm.*

3. Unscrew the affected cylinderõs hose connection on the pump.

4. Keep the end of the hose below the level of the oil in the oil bottle we sent to you and slowly extract the piston. The oil is sucked in by means of the vacuum created. Keep the piston in the extracted position for 1-1½ min.

5. Hold the cylinder vertically with the hose collection upward (if necessary, unscrew the cylinder from the bench) and push the piston in until air-free oil comes out of the hose.

Tip! This is best seen if the end of the hose is kept below the level of the oil in the bottle.

6. Repeat steps 4 and 5 until the piston in this cylinder sticks out approximately 50 mm farther than those in the ñworkingò cylinders.

7. Crank/run the system approximately ½ turn or until oil comes out of the open connection hole on the pump.

8. Connect the hose to the pump.

9. Crank/run the pump back to the bottom position while at the same time you push the piston in on the refilled cylinder. Then push the pistons in on the other cylinders.

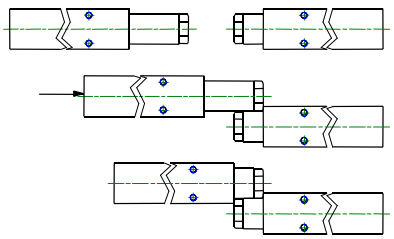
10. With the pump at the bottom position, the piston in the refilled cylinder will stick out farther than the pistons in the other cylinders.

11. Unscrew the hose connection from the pump again and press out the excess oil into the oil bottle by pushing the piston in to the bottom for a crank-operated system, and by pressing the piston in until the protruding section is as long as those in the other cylinders for a motor-operated system. *Tip! For a motor-operated system, set the piston as shown in the diagram when you press the oil out.* Reconnect the hose in the pump and tighten it to 10 Nm.

12. Crank/run the system halfway and check to see that the cylinders start to move simultaneously and that they extend equally as much outward and with a smooth motion. Also, make sure that the refilled cylinder does not seem ñspongyò when under pressure. Repeat the above steps as needed until the hydraulic system is working properly again.

13. Put the cylinder and pump back in place.

The workbench with the hydraulic system is now ready to be used again.



4.5 Troubleshooting Chart Hydraulic System

- The motor can be heard and the coupling rotates, but the workbench is not moving.

Cause	Measure
The shearing pin has broken.	Order instructions on ñReplacement of Shearing Pin on the Motor Unit:ò
Pump broken	Order instructions on ñReplacement of Pump:ò

- The motor can be heard and the coupling does not rotate.

The worm-gear motor is broken	Order instructions on ñReplacement of Electric Motorò

- The motor cannot be heard (no current to the circuit board)

Cause	Measure
Transformer overloaded	Unplug the transformer cord from the wall outlet and plug it back in; the fuse is thereby reset.
Transformer broken	Replace transformer.

- The motor cannot be heard, but the relay can be heard clicking (no current to the motor)

Cause	Measure
The circuit board is broken	Order instructions on òReplacement of Circuit Boardò

- The motor cannot be heard, but the relay can be heard clicking (current to the motor)

Cause	Measure
The motor is broken	Order instructions on ñReplacement of Electric Motorò
Limit switch broken	Order instructions for ñReplacement of Limit Switchò

- The motor cannot be heard and no relay can be heard clicking (no current to the motor)

Cause	Measure
The circuit board is broken	Order instructions on ñReplacement of Circuit Boardò

Short circuit in the circuit board.	Order instructions on ñReplacement Circuit Board Fuseò

- The workbench can only be run in one direction.

Cause	Measure
The circuit board is broken	Order instructions on ñReplacement of Circuit Boardò
Limit switch broken	Order instructions for ñReplacement of Limit Switchò

- The workbench moves downward too which (the motor speeds)

Cause	Measure
Electrical resistor broken	Replace electrical resistor.

- Cylinder leakage

Cause	Measure
Hose connection loose	Order instructions for ñDescription of Refilling Individual Cylindersòand replace the parts in the coupling.
The cylinder is broken	Order instructions on ñReplacement of Cylinderò

- Pump leakage

Cause	Measure
Hose connection loose	Order instructions for ñDescription of Refilling Individual Cylindersòand replace the parts in the coupling.
Pump broken	Order instructions on ñReplacement of Pumpò

- Hose breakage

Cause	Measure
Hose damaged	Order instructions on ñReplacement of Hoseò

N.B.! When making repairs, the hydraulic system (workbench) must always be unloaded and the motor unit not powered.

5 Product Specification

Product:
Ljunggren & daughterôs hydraulic adjustable-height workbench.

Model:
L&D Bench with MF44150 pump, AB2300 cylinder, MOMF motor, MDS230 ECU, MBOX9 control unit and TUBM hose

Functional Principle of the System:
Single-acting hydraulic system with manual crank operation or electric motor operation.

Operating Conditions:
The workbench is not made to be continuously raised and lowered, *i.e.,* a maximum of 2 minutes operation should be followed by at least 8 minutes of idle time.
The hydraulic system can be sensitive to corrosive environments. Prior to using it in such environments, kindly contact Ljunggren & daughters AB.

Maximum Load on Various System Combinations:
These loads must not be exceeded.

Pump with 18 mm diameter in the pressure element

Cylinder diameter	1-leg System	2-leg System	3-6-leg Systems
14 mm	115 kg	230 kg	350 kg
16 mm	150 kg	300 kg	450 kg
18 mm	200 kg	400 kg	600 kg

Pump with 20 mm diameter in the pressure element

Cylinder diameter	1-leg System	2-leg System	3-6-leg Systems
14 mm	115 kg	230 kg	285 kg
16 mm	150 kg	300 kg	350 kg
18 mm	200 kg	400 kg	450 kg

These values only apply when one cylinder is used in each leg of the bench. When other solutions are used, *e.g.,* two cylinders per bench leg, other maximum loads apply.
Contact Ljunggren & daughters AB or their representatives for more information.

Physical Dimensions:
See the enclosed technical drawings of the hydraulic system and the workbench.

Temperature Ranges:
Operation: 0 to +45 degrees C
Transport: – 20 to + 60 degrees C
After being transported at temperatures below 0 degrees C, the workbench must rest within the premises at operating temperature for at least three hours prior to being used.

Electrical Supply:
Frequency: 50 – 60 Hz
Primary voltage: 230 V AC (also available in 110 – 115 V AC)
Secondary voltage: 29 V AC
Secondary current (at maximum load): 12 A
Maximum power consumption: 350 W
Fuse 1 in transformer: Thermal fuse 152 degrees C. (Destructive, not replaceable)
Fuse 2 in transformer: PTC thermal fuse. (Reset when plug is pulled)

EMC Requirements:
Sources of interference with emissions of electromagnetic or electrical fields (for example, high-current cables) that are stronger than what is allowed according to the applicable EMC directives must not be located in the vicinity motor-pump unit.

Hydraulic System:
Hose, exterior diameter: 4.5 mm
Hose, material: PA12 (Nylon)
Hose, min curvature radius: 30 mm
Hose, other:
The hose must be shielded from mechanical, thermal, chemical and other damage. If necessary, the entire hose must be built into a protective casing.

Hydraulic oil: Castrol Hyspin AWS 15
Oil volume 4-leg system – stroke 300 mm: 0.25 litre
Oil volume 6-leg system – stroke 300 mm: 0.35 litre
Oil flashpoint (closed): Above 140 degrees C

In case of oil leakage:
Wipe up the spilled oil immediately and clean with an oil-solubilising cleaning agent (*e.g.,* dish detergent or car washer fluid) to prevent the risk of slipping.
Discard spilled oil and other contaminated objects at a suitable collection point or similar facility for proper handling. Oil must NOT be poured down the drain.

First Aid Procedure Concerning Oil:

Eyes:	Rinse immediately with large amounts of water for several minutes.
Skin:	Wash thoroughly with soap and water or with some other suitable skin cleanser as quickly as possible.
Inhalation:	Move away from the exposure to fumes.
Ingestion:	Seek medical aid and indicate the product code. Do NOT induce vomiting.

Suitable Fire Fighting:
Carbon dioxide extinguishers, powder, foam extinguishers or water mist. Do not use water streams.

Cleaning:
Only mild cleaning agents may be used, for example, car washer fluid.
The motor unit and control panel must not be subjected to water flushing.
They can be wiped off with wet rags, as needed.
Powerful cleaning agents containing, for example, acids, ammonia or lye must not be used.

Environmental Considerations:
As mentioned above, hydraulic oil must be disposed of at a suitable destruction or processing location in the event of leakage or when the workbench is scrapped. The rest of the workbench consists of fully recyclable and thereby environmentally friendly parts.

Warranty:
Ljunggren & daughtersôworkbench is covered by a warranty against manufacturing defects for a period of 12 months following the date of manufacture.
Ljunggren & daughtersôwarranties will only be honoured provided that the workbench has been used in the manner intended and as long as it has not be disassembled or subjected to any kind of tampering.

EC Declaration of Conformity for Machinery

Ljunggren and Daughters AB Backes väg 3
784 54 Borlänge
Sweden

Declares under its sole liability that the workbench designated as:

L&D Workbench
Serial number_____

Satisfies the ñEssential Health and Safety Requirements on the Design and Manufacture of Machinery and Safety Componentsò according to the European Parliamentôs and Councilôs Directive 2006/42/EC

Borlänge, on _____

Sara Ljunggren

Ergofokus
Ergonomics in focus since 2001

L&D WORKBENCH

In various designs:





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