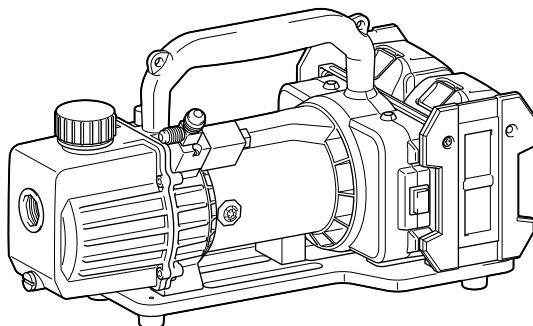
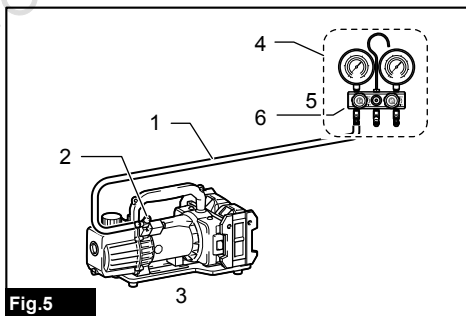
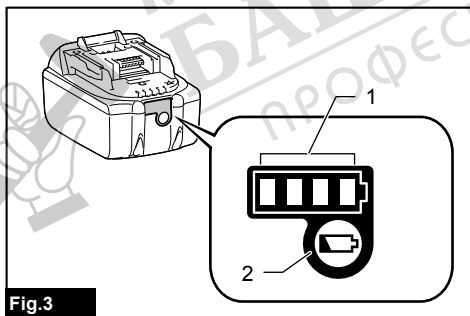
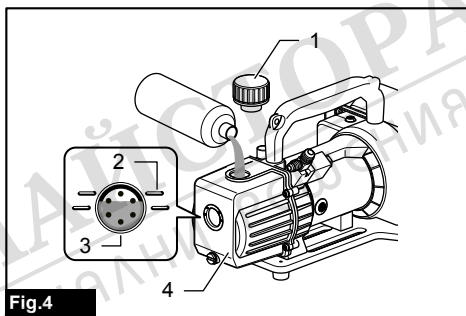
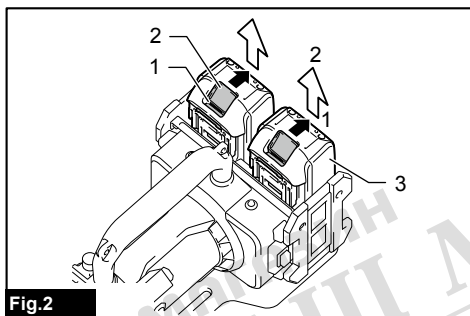
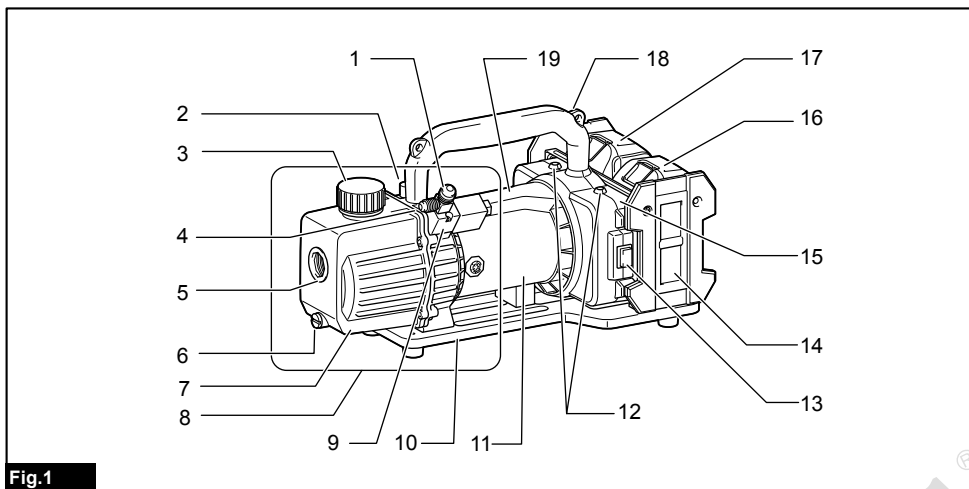


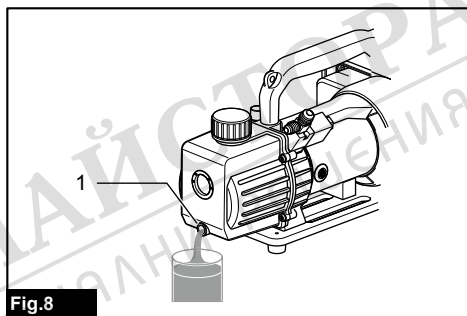
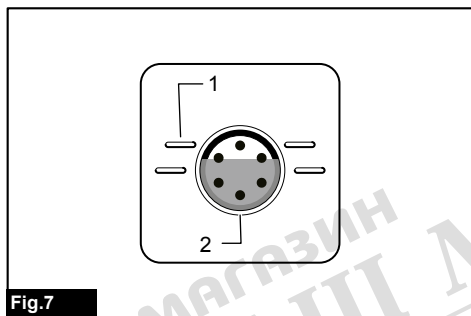
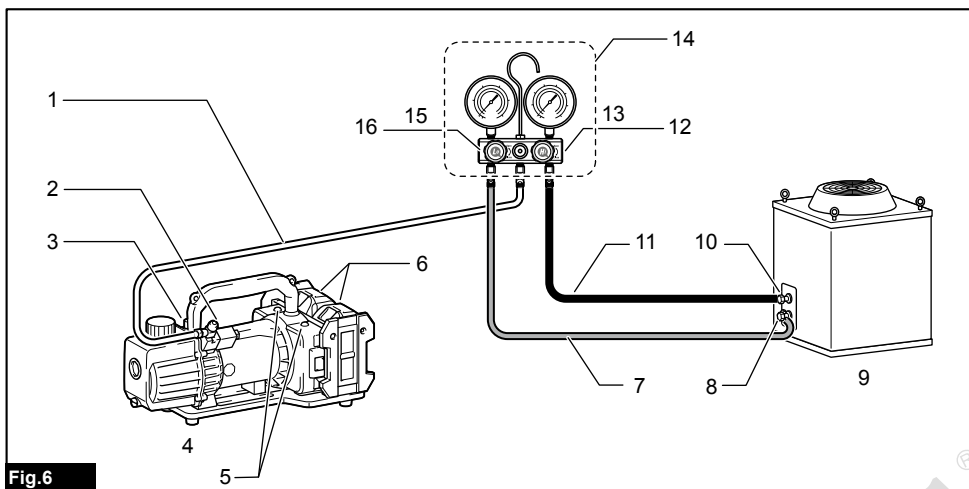


EN	Cordless Vacuum Pump	Instruction Manual	4
FR	Pompe À Vide Sans Fil	Manuel d'instructions	12
DE	Akku-Vakuumpumpe	Bedienungsanleitung	21
IT	Pompa per vuoto senza fili	Istruzioni per l'uso	30
NL	Accuvacuümpomp	Gebruiksaanwijzing	39
ES	Bomba de Vacío Inalámbrica	Manual de instrucciones	48
PT	Bomba de Vácuo a Bateria	Manual de instruções	57
DA	Akku vakuumpumpe	Brugsanvisning	66
EL	Αντλία κενού μπαταρίας	Εγχειρίδιο οδηγιών	74
TR	Akülü Vakumlu Pompa	Kullanma Kılavuzu	83
PTBR	Bomba de Vácuo a Bateria	Manual de Instruções	91
ZHTW	充電式真空幫浦	使用說明書	100
ZHCN	充电式真空泵	使用说明书(保留备用)	106
AR	مضخة تفريغ لاسلكية	دليل التعليمات	119

DVP181







SPECIFICATIONS

Model:	DVP181
Rated voltage	D.C. 18 V
Rated current	14 A
Rated power	250 W
Rated speed	2,800 min ⁻¹
Pump	Two stage rotary pump
Free air displacement	113 L/min
Ultimate vacuum	3 Pa
Oil capacity	300 ml
Intake	5/16", 3/8" flare male
Dimensions	383 mm (L) × 193 mm (W) × 210 mm (H)
Net weight (with the two BL1860B batteries)	8.2 kg

- Due to our continuing program of research and development, the specifications herein are subject to change without notice.
- Specifications and battery cartridge may differ from country to country.
- Weight, with battery cartridge, according to EPTA-Procedure 01/2014

Applicable battery cartridge and charger

Battery cartridge	BL1830B(3.0 Ah) / BL1840B(4.0 Ah) / BL1850B(5.0 Ah) / BL1860B(6.0 Ah)
Charger	DC18RC / DC18RD / DC18RE / DC18SD / DC18SE / DC18SF / DC18SH

- Some of the battery cartridges and chargers listed above may not be available depending on your region of residence.

⚠WARNING: Only use the battery cartridges and chargers listed above. Use of any other battery cartridges and chargers may cause injury and/or fire.

Vacuum pump for air evacuation of closed systems (air conditioners, tanks, etc).

This equipment is specially designed for HVAC&R systems.

The two stages of these pumps make it feasible to achieve the final vacuum level requested.

Big sight glass and low oil level design avoids running without oil and ensures reliable usage.

Besides, the check valve avoids any oil mixture due to the backflow after a power interruption or any other process interruption.

Symbols

The following show the symbols used for the equipment.

Be sure that you understand their meaning before use.



- Read instruction manual.



- Warning: hot surface!
Do not touch around this symbol.
Touching the surface may cause burns or injuries.



- Only for EU countries

Due to the presence of hazardous components in the equipment, waste electrical and electronic equipment, accumulators and batteries may have a negative impact on the environment and human health.

Do not dispose of electrical and electronic appliances or batteries with household waste!

In accordance with the European Directive on waste electrical and electronic equipment and on accumulators and batteries and waste accumulators and batteries, as well as their adaptation to national law, waste electrical equipment, batteries and accumulators should be stored separately and delivered to a separate collection point for municipal waste, operating in accordance with the regulations on environmental protection. This is indicated by the symbol of the crossed-out wheeled bin placed on the equipment.

EC DECLARATION OF CONFORMITY

For European countries only

The EC declaration of conformity is included as Annex A to this instruction manual.

General power tool safety warnings

⚠ WARNING: Read all safety warnings, instructions, illustrations and specifications provided with this power tool. Failure to follow all instructions listed below may result in electric shock, fire and/or serious injury.

Save all warnings and instructions for future reference.

The term "power tool" in the warnings refers to your mains-operated (corded) power tool or battery-operated (cordless) power tool.

Work area safety

1. **Keep work area clean and well lit.** Cluttered or dark areas invite accidents.
2. **Do not operate power tools in explosive atmospheres, such as in the presence of flammable liquids, gases or dust.** Power tools create sparks which may ignite the dust or fumes.
3. **Keep children and bystanders away while operating a power tool.** Distractions can cause you to lose control.

Electrical safety

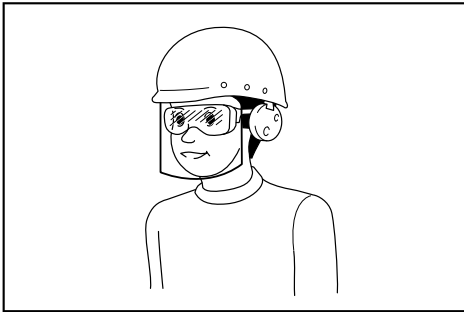
1. **Power tool plugs must match the outlet. Never modify the plug in any way. Do not use any adapter plugs with earthed (grounded) power tools.** Unmodified plugs and matching outlets will reduce risk of electric shock.

2. **Avoid body contact with earthed or grounded surfaces, such as pipes, radiators, ranges and refrigerators.** There is an increased risk of electric shock if your body is earthed or grounded.
3. **Do not expose power tools to rain or wet conditions.** Water entering a power tool will increase the risk of electric shock.
4. **Do not abuse the cord. Never use the cord for carrying, pulling or unplugging the power tool. Keep cord away from heat, oil, sharp edges or moving parts.** Damaged or entangled cords increase the risk of electric shock.
5. **When operating a power tool outdoors, use an extension cord suitable for outdoor use.** Use of a cord suitable for outdoor use reduces the risk of electric shock.
6. **If operating a power tool in a damp location is unavoidable, use a residual current device (RCD) protected supply.** Use of an RCD reduces the risk of electric shock.
7. **Power tools can produce electromagnetic fields (EMF) that are not harmful to the user.** However, users of pacemakers and other similar medical devices should contact the maker of their device and/or doctor for advice before operating this power tool.

Personal safety

1. **Stay alert, watch what you are doing and use common sense when operating a power tool. Do not use a power tool while you are tired or under the influence of drugs, alcohol or medication.** A moment of inattention while operating power tools may result in serious personal injury.
2. **Use personal protective equipment. Always wear eye protection.** Protective equipment such as a dust mask, non-skid safety shoes, hard hat or hearing protection used for appropriate conditions will reduce personal injuries.
3. **Prevent unintentional starting. Ensure the switch is in the off-position before connecting to power source and/or battery pack, picking up or carrying the tool.** Carrying power tools with your finger on the switch or energising power tools that have the switch on invites accidents.
4. **Remove any adjusting key or wrench before turning the power tool on.** A wrench or a key left attached to a rotating part of the power tool may result in personal injury.
5. **Do not overreach. Keep proper footing and balance at all times.** This enables better control of the power tool in unexpected situations.
6. **Dress properly. Do not wear loose clothing or jewellery. Keep your hair and clothing away from moving parts.** Loose clothes, jewellery or long hair can be caught in moving parts.
7. **If devices are provided for the connection of dust extraction and collection facilities, ensure these are connected and properly used.** Use of dust collection can reduce dust-related hazards.
8. **Do not let familiarity gained from frequent use of tools allow you to become complacent and ignore tool safety principles.** A careless action can cause severe injury within a fraction of a second.

- Always wear protective goggles to protect your eyes from injury when using power tools. The goggles must comply with ANSI Z87.1 in the USA, EN 166 in Europe, or AS/NZS 1336 in Australia/New Zealand. In Australia/New Zealand, it is legally required to wear a face shield to protect your face, too.



It is an employer's responsibility to enforce the use of appropriate safety protective equipments by the tool operators and by other persons in the immediate working area.

Power tool use and care

- Do not force the power tool. Use the correct power tool for your application.** The correct power tool will do the job better and safer at the rate for which it was designed.
- Do not use the power tool if the switch does not turn it on and off.** Any power tool that cannot be controlled with the switch is dangerous and must be repaired.
- Disconnect the plug from the power source and/ or remove the battery pack, if detachable, from the power tool before making any adjustments, changing accessories, or storing power tools.** Such preventive safety measures reduce the risk of starting the power tool accidentally.
- Store idle power tools out of the reach of children and do not allow persons unfamiliar with the power tool or these instructions to operate the power tool.** Power tools are dangerous in the hands of untrained users.
- Maintain power tools and accessories. Check for misalignment or binding of moving parts, breakage of parts and any other condition that may affect the power tool's operation. If damaged, have the power tool repaired before use.** Many accidents are caused by poorly maintained power tools.
- Keep cutting tools sharp and clean.** Properly maintained cutting tools with sharp cutting edges are less likely to bind and are easier to control.
- Use the power tool, accessories and tool bits etc. in accordance with these instructions, taking into account the working conditions and the work to be performed.** Use of the power tool for operations different from those intended could result in a hazardous situation.
- Keep handles and grasping surfaces dry, clean and free from oil and grease.** Slippery handles and grasping surfaces do not allow for safe handling and control of the tool in unexpected situations.

- When using the tool, do not wear cloth work gloves which may be entangled. The entanglement of cloth work gloves in the moving parts may result in personal injury.

Battery tool use and care

- Recharge only with the charger specified by the manufacturer.** A charger that is suitable for one type of battery pack may create a risk of fire when used with another battery pack.
- Use power tools only with specifically designated battery packs.** Use of any other battery packs may create a risk of injury and fire.
- When battery pack is not in use, keep it away from other metal objects, like paper clips, coins, keys, nails, screws or other small metal objects, that can make a connection from one terminal to another.** Shorting the battery terminals together may cause burns or a fire.
- Under abusive conditions, liquid may be ejected from the battery; avoid contact. If contact accidentally occurs, flush with water. If liquid contacts eyes, additionally seek medical help.** Liquid ejected from the battery may cause irritation or burns.
- Do not use a battery pack or tool that is damaged or modified.** Damaged or modified batteries may exhibit unpredictable behaviour resulting in fire, explosion or risk of injury.
- Do not expose a battery pack or tool to fire or excessive temperature.** Exposure to fire or temperature above 130 °C may cause explosion.
- Follow all charging instructions and do not charge the battery pack or tool outside the temperature range specified in the instructions.** Charging improperly or at temperatures outside the specified range may damage the battery and increase the risk of fire.

Service

- Have your power tool serviced by a qualified repair person using only identical replacement parts.** This will ensure that the safety of the power tool is maintained.
- Never service damaged battery packs.** Service of battery packs should only be performed by the manufacturer or authorized service providers.
- Follow instruction for lubricating and changing accessories.**

Cordless vacuum pump safety warnings

Read carefully instructions in the literature, strict observance of procedures is main condition for operator safety.

- The vacuum pump is a machine used to evacuate refrigeration and air conditioning equipment and recovery vessels. Do not use it for other applications.** Doing so may result in accidents.
- Always inspect the vacuum pump for oil leaks before use.** Failure to do so may result in fire.
- Check the oil level and condition (deterioration, etc.) to enable safe and efficient work.**

4. Wear safety glasses and gloves when handling refrigerant; avoid contact with refrigerant, blindness and injuries may result to operator.
5. Adequate performance may not be obtained in extremely hot or cold environments.

SAVE THESE INSTRUCTIONS.

⚠WARNING: DO NOT let comfort or familiarity with product (gained from repeated use) replace strict adherence to safety rules for the subject product.

MISUSE or failure to follow the safety rules stated in this instruction manual may cause serious personal injury.

Important safety instructions for battery cartridge

1. Before using battery cartridge, read all instructions and cautionary markings on (1) battery charger, (2) battery, and (3) product using battery.
2. Do not disassemble battery cartridge.
3. If operating time has become excessively shorter, stop operating immediately. It may result in a risk of overheating, possible burns and even an explosion.
4. If electrolyte gets into your eyes, rinse them out with clear water and seek medical attention right away. It may result in loss of your eyesight.
5. Do not short the battery cartridge.
 - (1) Do not touch the terminals with any conductive material.
 - (2) Avoid storing battery cartridge in a container with other metal objects such as nails, coins, etc.
 - (3) Do not expose battery cartridge to water or rain.

A battery short can cause a large current flow, overheating, possible burns and even a breakdown.

6. Do not store and use the tool and battery cartridge in locations where the temperature may reach or exceed 50°C (122°F).
7. Do not incinerate the battery cartridge even if it is severely damaged or is completely worn out. The battery cartridge can explode in a fire.
8. Be careful not to drop or strike battery.
9. Do not use a damaged battery.
10. Follow your local regulations relating to disposal of battery.
11. The contained lithium-ion batteries are subject to the Dangerous Goods Legislation requirements. When disposing the battery cartridge, remove it from the tool and dispose of it in a safe place. Follow your local regulations relating to disposal of battery.
12. Use the batteries only with the products specified by Makita.
13. If the tool is not used for a long period of time, the battery must be removed from the tool.
14. During and after use, the battery cartridge may take on heat which can cause burns or low temperature burns.

15. Do not touch the terminal of the tool immediately after use as it may get hot enough to cause burns.
16. Do not allow chips, dust, or soil stuck into the terminals, holes, and grooves of the battery cartridge. It may result in poor performance or breakdown of the tool or battery cartridge.
17. Unless the tool supports the use near a high-voltage electrical power lines, do not use the battery cartridge near a high-voltage electrical power lines.
18. Keep the battery away from children.

SAVE THESE INSTRUCTIONS.

⚠CAUTION: Only use genuine Makita batteries. Use of non-genuine Makita batteries, or batteries that have been altered, may result in the battery bursting causing fires, personal injury and damage. It will also void the Makita warranty for the Makita tool and charger.

Tips for maintaining maximum battery life

1. Charge the battery cartridge before completely discharged. Always stop tool operation and charge the battery cartridge when you notice less tool power.
2. Never recharge a fully charged battery cartridge. Overcharging shortens the battery service life.
3. Charge the battery cartridge with room temperature at 10°C - 40°C (50°F - 104°F). Let a hot battery cartridge cool down before charging it.
4. When not using the battery cartridge, remove it from the tool or the charger.
5. Charge the battery cartridge if you do not use it for a long period (more than six months).

PARTS DESCRIPTION

► Fig.1:

- | | |
|-------------------------|---------------------------------|
| 1. Intake port 3/8" | 12. LED lamp |
| 2. Gas ballast valve | 13. Power switch |
| 3. Oil fill/Exhaust cap | 14. Battery guard |
| 4. Intake port 5/16" | 15. Battery holder |
| 5. Sight glass | 16. Battery (on the Left port) |
| 6. Drain valve | 17. Battery (on the Right port) |
| 7. Oil tank | 18. Handle |
| 8. Area around pump | 19. Wiring cover |
| 9. Solenoid valve | |
| 10. Base | |
| 11. Motor | |

FUNCTIONAL DESCRIPTION

CAUTION: Always be sure that the pump is switched off and the battery cartridge is removed before adjusting or checking function on the pump.

Installing or removing battery cartridge

CAUTION: Always switch off the pump before installing or removing of the battery cartridge.

CAUTION: Hold the pump and the battery cartridge firmly when installing or removing battery cartridge. Failure to hold the pump and the battery cartridge firmly may cause them to slip off your hands and result in damage to the pump and battery cartridge and a personal injury.

► Fig.2:

1. Red indicator
2. Button
3. Battery cartridge

To remove the battery cartridge, slide it from the pump while sliding the button on the front of the cartridge.

To install the battery cartridge, align the tongue on the battery cartridge with the groove in the housing and slip it into place. Insert it all the way until it locks in place with a little click. If you can see the red indicator on the upper side of the button, it is not locked completely.

CAUTION: Always install the battery cartridge fully until the red indicator cannot be seen. If not, it may accidentally fall out of the pump, causing injury to you or someone around you.

CAUTION: Do not install the battery cartridge forcibly. If the cartridge does not slide in easily, it is not being inserted correctly.

Battery protection system

The pump or battery is equipped with a battery protection system. This system automatically cuts off power to the motor to extend battery life.

The pump will automatically stop during operation if the pump and/or battery are placed under one of the following conditions:

Overloaded:

The pump or battery is operated in a manner that causes it to draw an abnormally high current.

In this situation, turn the pump off and stop the application that caused the pump to become overloaded. Then turn the pump on to restart.

If the pump does not start, the battery is overheated.

In this situation, let the battery cool before turning the pump on again.

Low battery voltage:

The remaining battery capacity is too low and the pump will not operate. In this situation, remove and recharge the battery.

Indicating the remaining battery capacity

Only for battery cartridges with the indicator

► Fig.3:

1. Indicator lamps
2. Check button

Press the check button on the battery cartridge to indicate the remaining battery capacity. The indicator lamps light up for few seconds.

Indicator lamps			Remaining capacity
Lighted	Off	Blinking	
■	□	◐	75% to 100%
■	■	■	
■	■	□	50% to 75%
■	■	□	25% to 50%
■	□	□	0% to 25%
◐	□	□	Charge the battery.
■	■	□	The battery may have malfunctioned.
□	□	■	

NOTE: Depending on the conditions of use and the ambient temperature, the indication may differ slightly from the actual capacity.

NOTE: The first (far left) indicator lamp will blink when the battery protection system works.

OPERATION

The pump does not contain oil when newly purchased. Refer to "Adding oil" and add oil.

WARNING: Operating the pump in the condition without oil added will damage the pump. In addition, the oil tank will become hot and may result in burns or other accidents.

Adding oil

► Fig.4:

1. Oil fill/Exhaust cap
2. Level line
3. Sight glass
4. Oil tank

1. Remove the oil fill/exhaust cap and add the supplied oil via the filler port.

NOTICE: Always use Makita genuine oil in order to maintain pump performance.

2. Add oil until the oil level is between the upper and lower level lines of the sight glass.

NOTICE: The oil level is important. Operating the pump in the condition with the oil level not between the upper and lower level lines may result in malfunction.

Checking performance

► Fig.5:

- | | |
|---------------------------|-------------------|
| 1. Charging hose (yellow) | 4. Manifold |
| 2. Intake port | 5. Low side valve |
| 3. Vacuum pump | 6. Close |
1. Connect the low side valve of the manifold and the intake port of the pump with a charging hose.
 2. Close the low side valve of the manifold.
 3. Turn the pump on. If the pressure of the manifold indicates a vacuum of -0.09 to -0.1 MPa within 30 seconds, the pump is operating properly.
 4. Turn the pump off.

Operation

► Fig.6:

- | | |
|-------------------------------------|---------------------------------------|
| 1. Charging hose (yellow) | 9. Outdoor unit |
| 2. Intake port | 10. Service port (High pressure side) |
| 3. Gas ballast valve | 11. Charging hose (red) |
| 4. Vacuum pump | 12. Close |
| 5. LED lamp | 13. High side valve |
| 6. Battery | 14. Manifold |
| 7. Charging hose (blue) | 15. Low side valve |
| 8. Service port (Low pressure side) | 16. Close |
1. Connect the pump, manifold and outdoor unit with hoses.

NOTE: When the size of the service port on the unit is 1/4", use the supplied different diameter adapter.

2. Check that the high side and low side valves of the manifold are closed.
3. Install the two batteries to the pump. (See "Installing or removing battery cartridge" for the installation method.)
4. Open the gas ballast valve.
5. Turn the pump on. The LED lamp (RED) lights up and the motor operates.
6. Open the low side valve and high side valve of the manifold.
7. Close the gas ballast valve after 5 to 10 minutes.

NOTE: The gas ballast valve is used to remove water (vapour) and condensable gas (taken into the pump during exhaust) from oil. If the condensable gas liquifies and gets into oil, it can cause a decrease in lubricity, and shorten the service life of the pump and seal. When the air enters from the gas ballast valve, the condensed gas remains as it is, and is exhausted with air.

It is recommended to warm up the pump before operation because the more pump temperature is high, the higher gas ballast efficiency can be obtained.

8. When the remaining capacity of the battery (on the Left port) becomes empty, the power supply automatically changes to the battery (on the Right port). Remove the battery L, and replace it with a spare battery. When the remaining capacity of battery R becomes empty, the power supply changes to the battery L again. The pump can be operated for a long time by using the charged spare batteries repeatedly for L-R-L-R.

⚠WARNING: The pump becomes hot during operation and immediately after stopping. Do not touch the area around pump while it is hot. Doing so may result in burns or other accidents.

NOTE: The motor may not operate when it is cold (5°C or less). In these cases, bring the pump indoors and allow it to warm up.

9. When the specified vacuum (refer to the manual provided by the air conditioner manufacturer) is reached, close the low side valve of the manifold. ☺
10. Turn the pump off.

Airtightness test

There are no leaks if the pressure of the manifold does not rise for 5 minutes or more after leaving the pump and manifold.

NOTE: When the battery remaining capacity becomes low, LED lamp goes out and at the same time a long alarm beep start sounding. About two minutes later the motor stops. And then alarm beep changes into a repeated short-time interval beeping which notifies the motor stop and 30 seconds later the beeping stops. However, do not wait until the motor stops (or alarm beep changes to a short-time beeping), and instead close the inlet valve of the pump and the low pressure side valve of manifold.

Check that the pump is turned off, remove the battery, and charge it or replace it with a spare battery.

- Refer to the following table for the battery operation times.

Operation times (guideline)

Battery	Operation times per piece
BL1860B	30 min
BL1850B	25 min
BL1840B	20 min
BL1830B	15 min

- After finishing work, remove the battery and attach the supplied cover.

Transport and storage

- Always drain your vacuum pump of all fluids before shipping to prevent the damage of the container.
- Always cover the intake port with cap to keep any dust from entering the pump.
- Be sure that the pump is kept in a horizontal position.
- The pump is stored in indoor ambient temperature 5°C – 40°C .

NOTICE: When transporting, operating and storing the pump, never place it on its side or upside down. This may cause oil leakage from the oil filler/vent cap.

MAINTENANCE

CAUTION: Always be sure that the pump is switched off and the battery cartridge is removed before attempting to perform inspection or maintenance.

NOTICE: Never use gasoline, benzine, thinner, alcohol or the like. Discoloration, deformation or cracks may result.

To maintain product SAFETY and RELIABILITY, repairs, any other maintenance or adjustment should be performed by Makita Authorized or Factory Service Centers, always using Makita replacement parts.

Stop the pump:

To make pump life longer and smooth start-up, these procedures to shut off pump should be followed.

1. Close the manifold valve between the pump and the system.
2. Remove the hose from the pump inlet.

Cover the inlet port opening to prevent any contamination or foreign particles from entering the port.

Checking the oil

► Fig.7:

1. Level line
 2. Sight glass
- Always check the oil level and condition (deterioration, etc.) before using the pump.

NOTE: Add oil until the oil level is between the upper and lower level lines of the sight glass. The quantity of oil is 300 ml.

NOTE: The oil level is important. If it is not between the upper and lower level lines, it can cause malfunction.

Replacing the oil

► Fig.8:

1. Drain valve
 1. Operate the pump for 1 or 2 minutes to warm up the oil.
 2. Turn the pump off.
 3. Remove the drain valve and drain the oil.
 4. Refer to "Adding oil" and add new oil.
- Dispose of the old oil in accordance with local regulations.

NOTE: It is recommended to change the oil after 20 hours of usage to protect pump components from contaminants pulled into the pump.

When vacuuming on old refrigeration systems, change the oil after every usage.

Vacuum pump oil:

The condition and type of oil used in any high performance vacuum pump are extremely important in determining the ultimate attainable vacuum. It is recommended to use the High Performance Vacuum Pump Oil, which is specifically blended to maintain maximum viscosity at normal temperatures and to improve start up under cold weather.

Cleaning the pump

1. When the oil is extremely dirty, replace the oil and then operate the pump for 3 to 5 minutes.
2. Drain the oil and add new oil.
If the drained oil is still dirty, repeat this cleaning process two or three times.

Troubleshooting

Condition	Possible Cause	Solution
The pump does not start.	<ol style="list-style-type: none"> 1. The battery is not set properly. 2. The ambient temperature is too low. 3. Poor wiring connection. 4. The pump is locked. 5. Motor failure. 	<ol style="list-style-type: none"> 1. Set the battery properly. 2. Warm up the pump in doors. 3. Repair. 4. Repair. 5. Repair.
The pump does not enough vacuum.	<ol style="list-style-type: none"> 1. Leaking from the system. 2. Insufficient oil. 3. Dirty oil. 4. Pump parts are worn out. 5. Damaged fittings, gaskets and seal. 6. Motor failure. 	<ol style="list-style-type: none"> 1. Repair the system. 2. Refill or change oil. 3. Clean the tank and change oil. 4. Repair. 5. Repair. 6. Repair.
Oil leakage	<ol style="list-style-type: none"> 1. Damaged gaskets and shaft seals. 2. Damaged O-ring of oil drain valve. 3. Oil drain valve is loose. 	<ol style="list-style-type: none"> 1. Repair. 2. Replace O-ring. 3. Tighten Oil drain valve.
Abnormal noise	<ol style="list-style-type: none"> 1. Motor failure. 2. Bearing failure. 3. Loose bolts. 4. Pump failure. 5. Air is sucked. 	<ol style="list-style-type: none"> 1. Repair. 2. Repair. 3. Tighten bolts. 4. Repair. 5. Tighten caps and connections. Replace gaskets and O-rings. Replace fittings or re-seal them.

Remark: If these procedures do not solve the problem, contact with your nearest Makita authorized distributor or send your pump to our service center.

OPTIONAL ACCESSORIES

CAUTION: These accessories or attachments are recommended for use with your Makita tool specified in this manual. The use of any other accessories or attachments might present a risk of injury to persons. Only use accessory or attachment for its stated purpose.

If you need any assistance for more details regarding these accessories, ask your local Makita Service Center.

- Shoulder belt
- Vacuum pump oil 300 ml
- Vacuum pump hose
- Vacuum pump valve with gauge
- Makita genuine batteries and chargers

CAUTION: When using the shoulder belt:

- Do not use the shoulder belt if the hook is damaged or deformed.
- The hooks are intended to use with Makita shoulder belt only. Do not attach any other attachment. Using for unintended purpose may cause accident or personal injury.
- The shoulder belt is intended for carrying the pump on your shoulder. Do not use it for other purposes such as anti-drop measure.
- Do not put excessive load to the shoulder belt. Doing so may break the shoulder belt or mounting part and result in personal injury.
- When using the shoulder belt, attach it to the hooks on the handle. Make sure that the shoulder belt is securely attached to the hooks and hold the handle of the pump when carrying it using the shoulder belt.

NOTE: Some items in the list may be included in the tool package as standard accessories. They may differ from country to country.