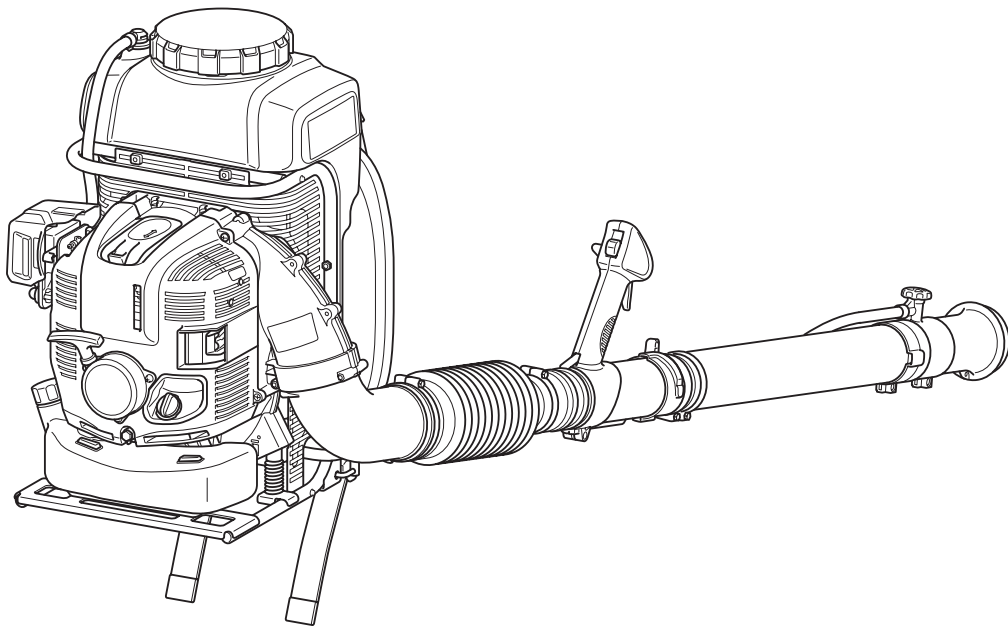




Instruction Manual



PM7650H

⚠ WARNING:

Read this instruction manual carefully before putting the petrol mist blower into operation and strictly observe the safety regulations!

Save instruction manual for future reference.

English

Thank you very much for selecting the MAKITA petrol mist blower. We are pleased to be able to offer you the MAKITA petrol mist blower, which is the result of a long development program and many years of knowledge and experience.

The mist blower models PM7650H combines the advantages of state-of-the-art technology with ergonomic design. They are of handy, compact and represent professional equipment for a great variety of applications.

Please read, understand and follow this booklet, which refers in detail to the various points that will demonstrate its outstanding performance. This will assist you to safety obtain the best possible results from your MAKITA mist blower.

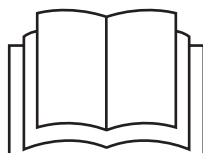


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SYMBOLS

It is very important to understand the following symbols when reading this instructions manual.

	WARNING/DANGER		Fuel (Gasoline)
	Read, understand and follow instruction manual		Engine-manual start
	Forbidden		Emergency stop
	No smoking		First aid
	No open flame		Recycling
	Protective gloves must be worn		ON/START
	Keep the area of operation clear of all persons and pets		OFF/STOP
	Wear eye and ear protection		Severing of fingers or hand, impeller blade
	Hot surfaces - Burns to fingers or hands		

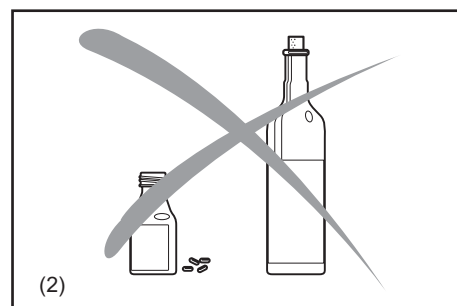
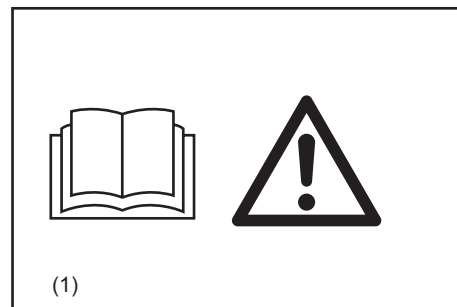
IMPORTANT SAFETY INSTRUCTIONS

⚠ WARNING: Read all safety warnings and all instructions. Failure to follow the warnings and instructions may result in electric shock, fire and/or serious injury.

Save all warnings and instructions for future reference.

General Instructions

- To ensure correct and safe operation, the user must read, understand and follow this instruction manual to assure familiarity with the handling of the mist blower (1). Users insufficiently informed will risk danger to themselves as well as others due to improper handling.
- It is recommended only to loan the mist blower to people who have proven to be experienced with mist blowers.
- Always hand over the instruction manual.
- First-time users should ask the dealer for basic instructions to familiarize oneself with the handling of a mist blower.
- Children and young persons aged under 18 years must not be allowed to operate the mist blower. Persons over the age of 16 years may however use the tool for the purpose of being trained only while under the direct supervision of a qualified trainer.
- Use mist blowers with the utmost care and attention.
- Operate the mist blower only if you are in good physical condition.
- Perform all work conscientiously and carefully. The user has to accept responsibility for others.
- Never use the mist blower while under the influence of alcohol or drugs (2).
- Do not use the unit when you are tired.
- Save these instructions for future referral.



Intended use of the tool

- Use right tool. The mist blower is only intended for spraying liquid chemicals and other liquids to control pests and weeds in fruit, flower and vegetable gardens, on trees and bushes and on other plants, such as coffee, tobacco and cotton. It is also useful in the maintenance of young trees for, e.g., controlling the bark beetle and other pests and plant diseases. Never use for any other purpose.
- Only use plant protection products that are specifically approved for use with mist blowers by their manufacturer and that meet all applicable safety regulations, standards and ordinances.

Get information from your dealer on how to operate your mist blower. Observe all applicable local safety regulations, standards and ordinances.

All operating and servicing people should be trained and familiarized with the proper handling procedures for the chemical products being used, as well as with first aid/emergency care, and liquid chemical disposal regulations.

⚠ WARNING:

Your mist blower is only for professional use. Do not lend or rent your mist blower without the instruction manual. Make sure that anyone using it understands the information contained in this instruction manual.

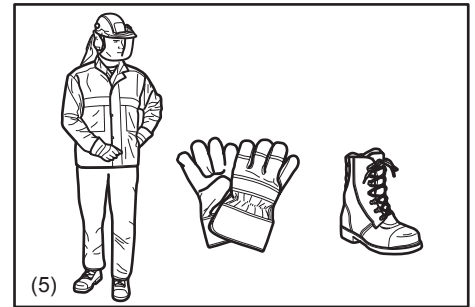
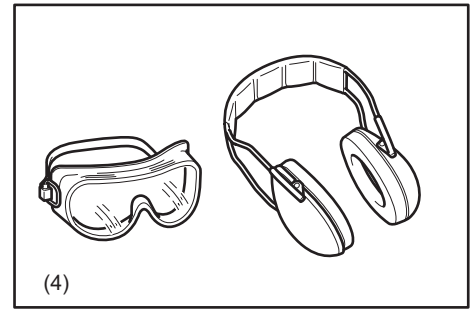
Personal Protective Equipment

- To reduce the risk of injury when using chemical products, wear proper protective apparel when filling, using and cleaning the mist blower. Always follow all of the chemical manufacturer's instructions with respect to proper eye, skin and respiratory protection. They may differ from and exceed the following precautions.
- When using toxic chemicals, the operator and any bystanders may need to wear a properly fitted respirator approved by NIOSH/MSHA for the chemical being used. Refer to the chemical product label. Breathing toxic chemicals can cause serious or fatal injury.
- The clothing worn should be functional and appropriate, i.e. it should be tight fitting but not cause a hindrance. Do not wear jewelry, clothing or long hair which could be drawn into the air intake. (3)
- In order to avoid head-, eye-, hand- or foot injuries as well as to protect your hearing the following protective equipment and protective clothing must be used during operation of the mist blower.



Pay particular attention to the following regulations

- Clothing must be sturdy and snug-fitting, but allow complete freedom of movement. Avoid loose-fitting jackets, flared or cuffed pants, scarves, unconfined long hair or anything that could be drawn into the air intake.
Wear long pants to protect your legs.
Do not wear shorts. (5)
- Mist blower noise may damage your hearing. Wear sound barriers (ear plugs or ear muffs) to protect your hearing. Continual and regular users should have their hearing checked regularly. (4)
- Always use rubber/chemical-resistant gloves when working with the mist blower. Good footing is most important. Wear rubber/chemical boot. (5)
- Proper eye protection is a must. Even though the discharge is directed away from the operator, ricochets and bounce-backs can occur during mist blower operation. (4)
- Never operate a mist blower unless wearing goggles or properly fitted safety glasses with adequate top and side protection which comply with ANSI Z 87.1 (or your applicable national standard).



HANDLING OF CHEMICALS

- Some chemicals used with your mist blower may contain toxic and/or caustic substances. Such chemicals can be dangerous and cause serious or fatal injury to persons and animals and/or severe damage to plants and the environment. Avoid direct contact with chemicals.
Follow the chemical manufacturer's instructions with respect to any contact with its product.
- Read the manufacturer's label and instruction manual each time before mixing or using the chemical and before storing or disposing of it.
Do not rely on your memory.
Careless or improper use may cause serious or fatal injury.
- Carefully read the labels on chemical containers before use.
Chemicals are classified into categories of toxicity.
Each category will have unique handling characteristics.
Familiarize yourself with the characteristics for the category of the chemical you are using.
Chemicals may be used only by persons trained in their handling and the appropriate first-aid measures.
- Chemicals may be harmful to persons, animals and the environment if improperly used. In addition, it is advisable not to use some chemicals that are caustic, corrosive or poisonous in your mist blower.
- Mix only compatible pesticides. Wrong mixtures can produce toxic fumes.
When handling and spraying chemicals, make sure you are operating in accordance with local, state, and federal environmental protection rules and guidelines. Do not spray when it is windy. To help protect the environment, use only the recommended dosage - do not overuse.
Pay special attention when using near watersheds, waterway, etc.
- Avoid opening mouth such as eating, drinking, or smoking while handling chemicals or while you are spraying. Never blow through nozzles, tubes, pipes or any other component by mouth. Always handle chemicals in a well-ventilated area while wearing appropriate protective clothing and safety equipment.
Do not store or transport chemicals together with food, drink, or medicines, and never reuse a chemical container for any other purpose.
Do not transfer liquid chemicals to other containers, especially food and/or drink containers.
- In case of accidental contact or ingestion of chemicals or in case of contamination of clothing, stop working and immediately consult the chemical manufacturer's instructions.
If doubtful about what to do, ask a poison control center or doctor for advice without delay.
Keep the product's label ready to read to or show the persons you consult.
Clean all chemical spills immediately.
Dispose of any residue observing state, federal or your nation's laws and regulations.
- Keep chemicals out of reach of children, other unauthorized people and animals.
When not in use, store chemicals in a safe and locked place. Follow the manufacturer's recommendations for proper storage.

Preparing chemicals

- Prepare chemical solutions according to the chemical manufacturer's instructions.
- Prepare solution only enough for the job at hand so that no solution is left over.
- Mix chemicals only by following instructions - wrong mixtures can produce toxic fumes or explosive mixtures.
- Never spray undiluted chemicals.
- Prepare solution and fill the container outdoors only in a well-ventilated place.

Storage

- Do not store spray solution in the container for more than one day.
- Always store and transport spray solution only in approved containers.
- Never store or transport the spray solution in containers intended for foods, drinks or animal feed.
- Do not store or transport spray solution with foods, drinks or animal feed.
- Keep spray solution out of the reach of children, other unauthorized people and animals.
- Store the spray solution in a locked place secured against unauthorized use.

Disposal

Never dispose of residual chemicals or contaminated rinsing solutions in waterways, drains, sewers, street gutters, manholes or the like.

When disposing of contaminated rinse, observe all applicable laws, regulations and ordinances.

Strictly observe the precautionary instructions of the chemical manufacturer.

Filling the Container

- Tighten all connections and check to be sure the pipes as well as a tube are securely attached and in good condition. Keep the solution discharge button on the control handle closed.
Before using the mist blower with chemicals, fill it with fresh water to assure that you have assembled it properly and practice spraying. Also, check for any leaks at this time. When thoroughly familiar with the mist blower operation, follow normal operating procedures.
Fill your mist blower in well-ventilated areas, outdoors.
- Do not use:
 - flammables in the mist blower, which may cause explosion resulting in serious or fatal injury;
 - caustic or corrosive materials in the mist blower, which could result in damage to the unit;
 - liquids with a temperature above 120 degrees F (50 degrees C) to reduce the risk of scalding and damage to the unit.

To fill the solution tank, place the mist blower on a level surface. To reduce the risk of contaminating the surrounding environment, be careful not to overfill the solution tank with chemical solution.

To reduce the risk of injury, do not fill the mist blower while wearing it on your back.

If you fill the solution container with a hose attached to a central water supply, be sure the end of the hose is out of the solution to reduce the risk of backflow, i.e. the chemicals being sucked into the water supply in the case of a sudden vacuum.

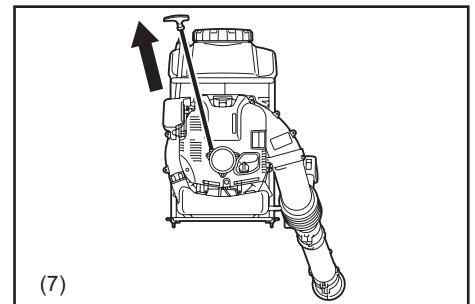
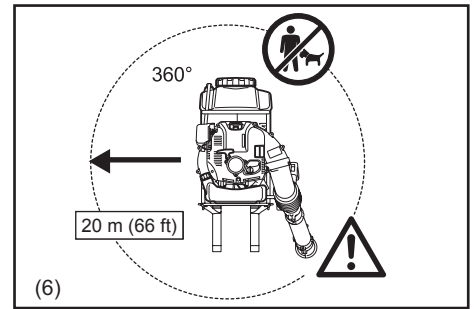
Calculate the correct amount of chemical solution so that it is used up at one time, with no extra solution left over in the tank.

After filling, fit the solution tank cap and tighten it down firmly.

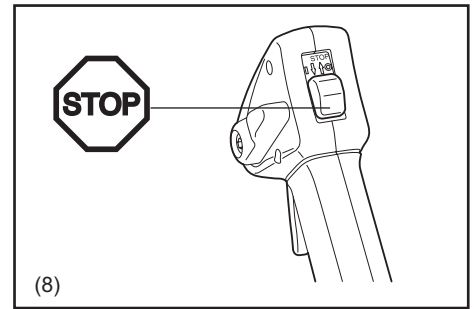
- Check for leakage while refilling and during operation. A leak from the solution tank or a loose fitting could soak your clothing and come into contact with your skin.

Starting up the mist blower

- Please make sure that there are no children or other people within a working range of 20 meters (66 ft), also pay attention to any animals in the working vicinity. Never use the mist blower in urban areas.
- Before operating, always check that the mist blower is safe for operation: Check the security of the throttle lever. The throttle lever should be checked for smooth and easy action. Check for proper functioning of the throttle lever lock. Check for clean and dry handles and test the function of the I-O switch. Keep handles free of oil and fuel.
- To reduce the risk of leakage and skin contact with chemicals, check that the container cap and all connections in the path of the spray are tight, and be sure the hose is securely attached and in good condition. Keep the solution discharge button closed.
- Check that the spark plug cap is securely mounted on the spark plug - a loose plug cap may cause arcing that could ignite combustible fumes and cause a fire.
- Check condition of harness straps and replace damaged or worn straps.
- Adjust shoulder strap to suit your size before starting work. In an emergency, you may slip out of the shoulder strap and throw off the machine quickly. Practice slipping out of the harness a number of times before using the machine in order to become accustomed to it. Do not throw off the machine while practicing as it could damage the machine.
- When you pull the starter handle, do not wrap the starter rope around your hand. Do not let the starter handle snap back, but guide the starter rope to rewind it properly. Failure to follow this procedure may result in injury to your hand or fingers and may damage the starter mechanism.
- The assistance of another person may be needed in placing the mist blower on your back after starting. In order to reduce the risk of injury to the assistant from thrown objects, chemical spray/liquid or from contact with hot exhaust fumes, keep the engine at idle speed during this brief period, and do not let your assistant stand in the area of the outlet nozzle or exhaust. Otherwise, the mist blower should be started and operated without assistance.
- Start the mist blower only in accordance with the instructions.
- Do not use any other methods for starting the engine (7)!
- Use the mist blower and the tools supplied only for applications specified.
- Start the mist blower engine only after the entire tool has been assembled. Operation of the tool is permitted only after all the appropriate accessories are attached.
- The engine is to be switched off immediately if there are any engine problems.
- Use the mist blower for single-handed operation with the right hand on the control handle. Carry as a backpack with the shoulder straps over both shoulders. To reduce the risk of loss of control, never carry the mist blower with the strap(s) over one shoulder.
- When working with the mist blower, always wrap your fingers tightly around the handle, keeping the control handle cradled between your thumb and forefinger. Keep your hand in this position to have your machine under control at all times. Make sure your control handle is in good condition and free of moisture, pitch, oil or grease. Always ensure a safe, well-balanced footing.
- In order to keep the solution tank upright and reduce the risk of spillage, do not bend at the waist. Bend only at the knees and support yourself as required to ensure proper balance. Remember that a mist blower filled with liquid has a significant amount of weight. Use extra caution when bending, leaning or walking.
- Operate the mist blower in such a manner as to avoid inhalation of the exhaust gases. Never run the engine in enclosed rooms (risk of suffocation and gas poisoning). Carbon monoxide is an odorless gas. Always ensure there is adequate ventilation.
- Your mist blower is not insulated against electric shock. To reduce the risk of electrocution, never operate this mist blower in the vicinity of any wires or cables (power, etc.) which may be carrying electric current. Do not spray on or near electrical installations.

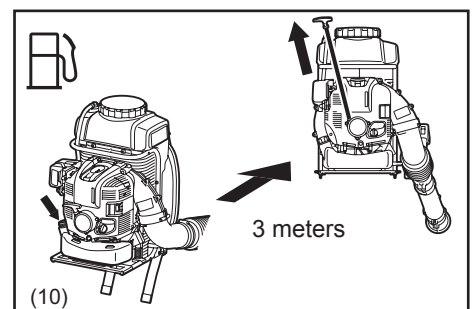
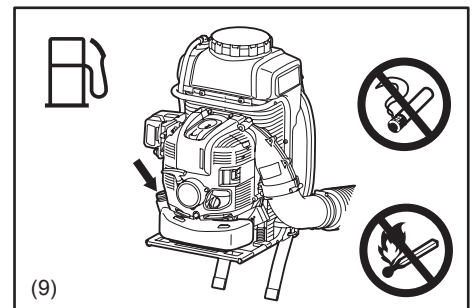


- Switch off the engine when resting and when leaving the mist blower unattended. Place it in a safe location prevent danger to others, setting fire to combustible materials, or damage to the machine (8).
- Never lay the hot mist blower onto dry grass or onto any combustible materials.
- Do not place the mist blower on the ground when operating at high speed, because small objects such as sand, grass, dust, etc. may be pulled into the air intake and damage the fan wheel.
- During work breaks, do not leave the mist blower in the hot direct sunlight or near any heat source.
- All protective parts and guards supplied with the machine must be used during operation.
- Never operate the engine with a faulty exhaust muffler.
- Shut off the engine during transport (8).
- Position the mist blower safely during car or truck transportation to avoid fuel leakage.
- When transporting the mist blower, ensure that the fuel tank and liquid/chemical container is completely empty.
- Keep children, uninterested people and pets away from areas that have just been sprayed.
After the use of some chemicals, especially agricultural pesticides, a notice must be posted on the treated area that a "Restricted Entry Interval" (REI) is in effect. See the chemical product's label and any applicable governmental regulations.



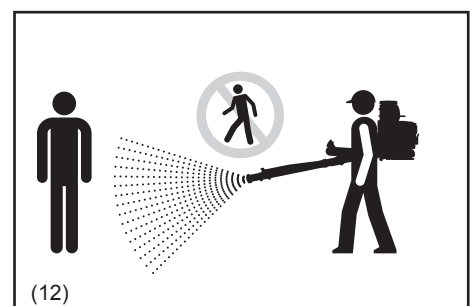
Refueling

- Shut off the engine (8) during refueling, keep well away from open flame (9) and do not smoke.
- Avoid skin contact with petroleum products. Do not inhale fuel vapor. Always wear protective gloves during refueling. Change and clean protective clothing at regular intervals.
- Take care not to spill either fuel or oil in order to prevent soil contamination (environmental protection). Clean the mist blower immediately after fuel has been spilled. Allow wet cloths to dry before disposing in properly, covered container to prevent spontaneous combustion.
- Avoid any fuel contact with your clothing. Change your clothing immediately if fuel has been spilled on it (fire hazard).
- Inspect the fuel cap at regular intervals making sure that it stays securely fastened.
- Carefully tighten the locking screw of the fuel tank. Change locations to start the engine (at least 3 meters away from the place of refueling) (10).
- Never refuel in closed rooms. Fuel vapors accumulate at ground level (risk of explosions)
- Only transport and store fuel in approved containers. Make sure stored fuel is not accessible to children.
- Do not attempt to refuel a hot or a running engine.



Method of operation

- Use the mist blower only in good light and visibility. During cold seasons beware of slippery or wet areas, ice and snow (risk of slipping). Always ensure a safe footing (11).
- Never work on unstable surfaces or steep terrain (11).
- If you are unfamiliar with the risks associated with the particular chemical you use, review the product label and/or material safety data sheet for that substance and/or consult the material manufacturer/supplier. You may also ask your employer, governmental agencies such as the EPA, OSHA and NIOSH and other sources for information on hazardous materials. The state of California and some other authorities, for instance, have published lists of substances known to cause cancer, reproductive toxicity, etc. (11).
- To reduce the risk of personal injury, do not direct air blast towards bystanders, since the high pressure of the air flow could injure eyes and could blow small objects at great speed (11).
- Never spray in the direction of humans, animals or property which might be injured or damaged by spraying (12).
- Never insert any foreign object into the air intake of the machine or into the nozzle of the mist blower. It will damage the fan wheel and may cause serious injury to the operator or bystanders as a result of the object or broken parts being thrown out at high speed.
- Pay attention to the direction of the wind, i.e., do not work against the wind.
- To reduce the risk of stumbling and loss of control, do not walk backward while operating the machine.
- Always shut off the engine before cleaning or servicing the unit or replacing parts.

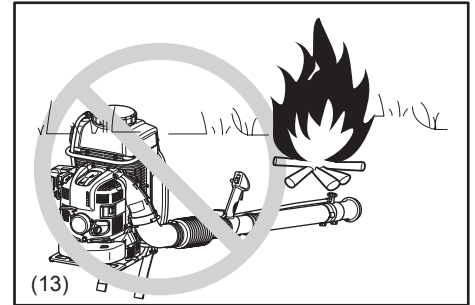


After finishing work

- Always wash yourself thoroughly with soap and water after spraying or handling chemicals. Shower immediately, and wash all protective clothing separately from other items.
Follow any additional recommendations of the chemical manufacturer.
Always clean dust and dirt off the mist blower.
- Empty, rinse and clean solution tank and assembly after each use. This helps to prevent the solution from crystallizing, which could later cause clogging and chemical damage to the unit. In addition, residual chemicals may have undesirable effects during subsequent spraying with a different type of chemical (e.g., residual herbicide may damage or kill plants being sprayed with a pesticide). Do not store the mist blower with spray solution in the solution tank.

Maintenance instructions

- Be kind to the environment. Operate the mist blower with as little noise and pollution as possible. In particular check the correct adjustment of the carburetor.
- Clean the mist blower at regular intervals and check that all screws and nuts are securely tightened.
- Never service or store the mist blower in the vicinity of open flames, sparks, etc. (13).
- Always store the mist blower in a well-ventilated locked room and with an emptied fuel tank and the emptied solution tank.



Observe and follow all relevant accident prevention instructions issued by the trade associations and by insurance companies. Do not perform any modifications to the mist blower as this will risk your safety.

The performance of maintenance or repair work by the user is limited to those activities as described in this instruction manual. All other work is to be done by Authorized Service Agents.

Use only genuine spare parts and accessories supplied by MAKITA.

Use of non-approved accessories and tools means increased risk of accidents and injuries. MAKITA will not accept any liability for accidents or damage caused by the use of any non-approved attachment or accessories.

First Aid

In case of accident make sure that a well-stocked first-aid kit is available in the vicinity of the operations. Immediately replace any item taken from the first aid kit.

When asking for help, please give the following information:

- Place of accident
- What happened
- Number of injured persons
- Extent of injuries
- Your name



Packaging

The MAKITA mist blower is delivered in a protective cardboard box to prevent shipping damage. Cardboard is a basic raw material and is therefore consequently reusable or suitable for recycling (waste paper recycling).

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.

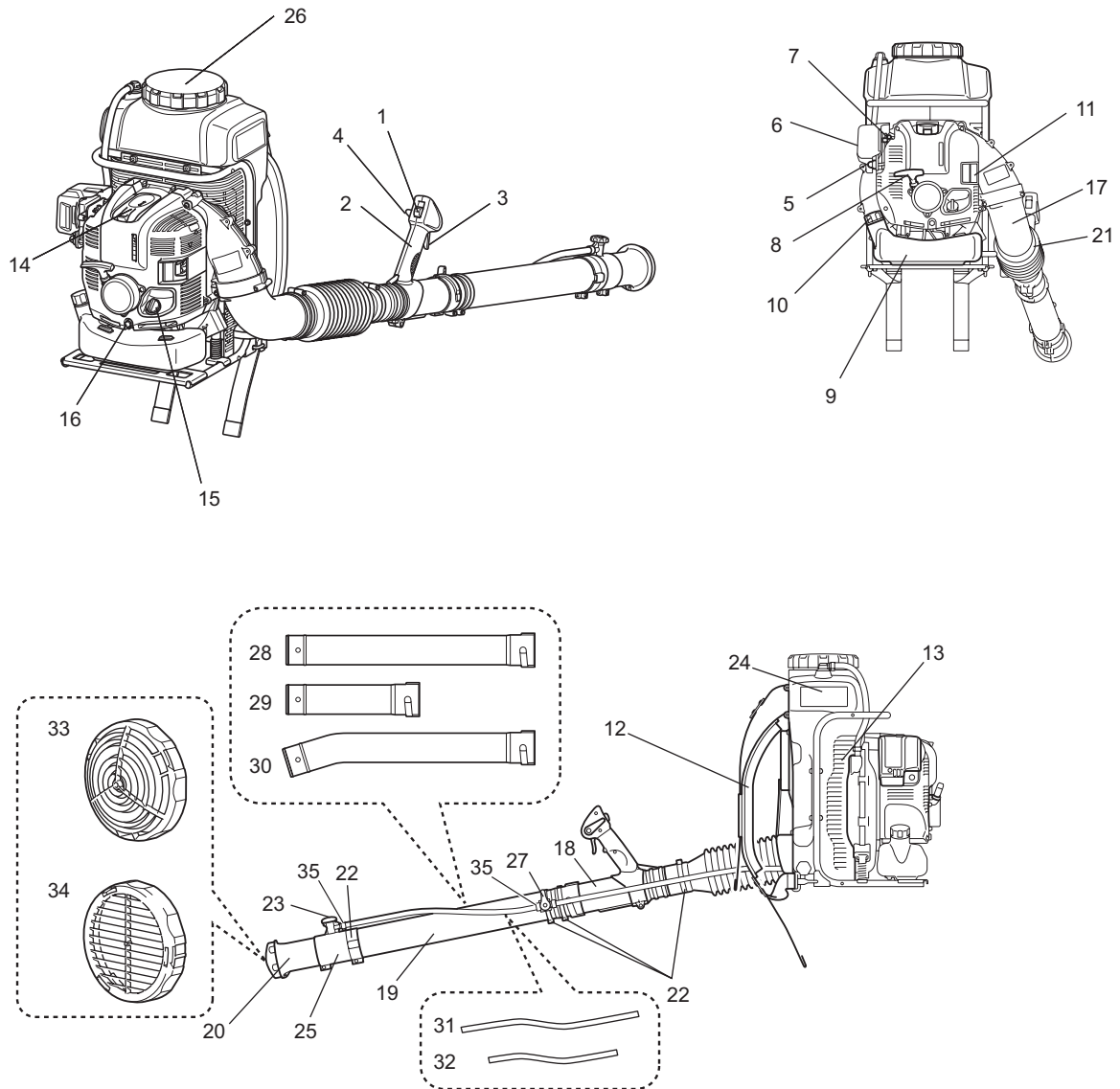
TECHNICAL DATA

Model		PM7650H
Mass	(kg)	13.9 (30.7 lbs)
Dimension (without blower pipe L x W x H)	(mm)	420 × 440 × 595 (16-17/32 × 17-5/16 × 23-7/16 in)
Max. engine speed	(min ⁻¹)	7,400
Idling speed	(min ⁻¹)	2,800
Engine displacement	(mL)	75.6 (4.61 cu.in)
Fuel		Automobile gasoline
Fuel tank capacity	(L)	1.8 (60 fl.oz)
Engine oil		SAE 10W-30 oil of API Classification, Class SF or higher (4-stroke engine for automobile)
Engine oil volume	(L)	0.22 (7.4 fl.oz)
Carburetor (Diaphragm-carburetor)		WALBRO WYK
Ignition system		Solid state ignition
Spark plug		NGK CMR6A
Electrode gap	(mm)	0.7 – 0.8 (0.028 – 0.031 in)
Chemical tank capacity	(L)	15.0 (507 fl.oz)
Spray range (Horizontal / Vertical)	(m)	16 (53 ft) / 13 (43 ft)
Max air velocity	(m/s)	85
Max air volume with nozzle	(m ³ /h)	845

Note:

1. Use the oil and spark plug specified by MAKITA.
2. This specification is subject to change without prior notice.
3. Use the level line 10 l as a guide line for the gross weight 25 kg of the mist blower including the solution.

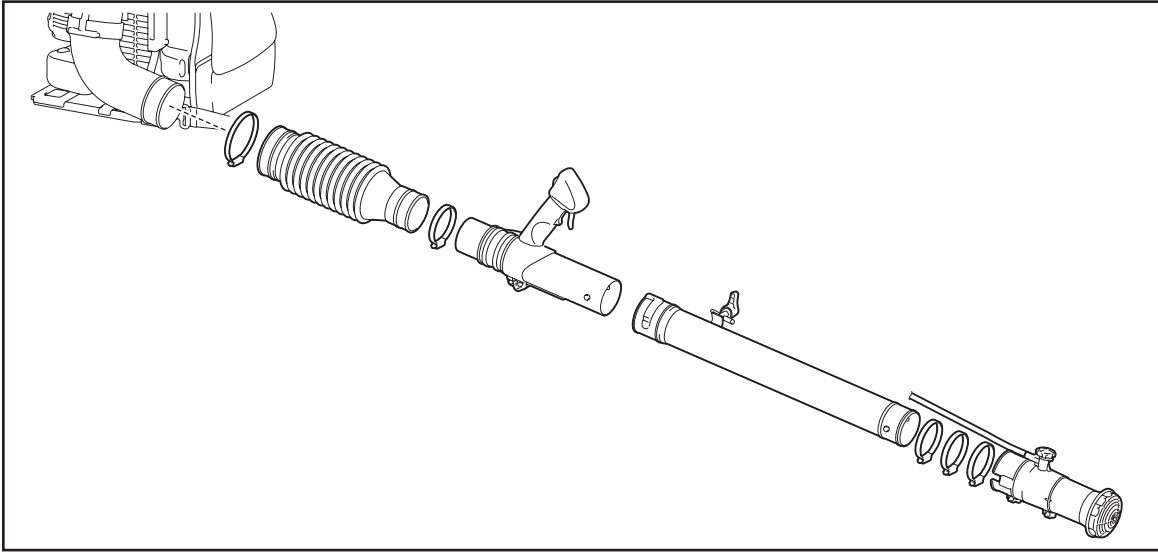
DESIGNATION OF PARTS



	DESIGNATION OF PARTS		DESIGNATION OF PARTS		DESIGNATION OF PARTS		DESIGNATION OF PARTS
1	Stop switch	10	Fuel tank cap	19	Straight pipe	28	Straight pipe (long) (optional accessory)
2	Control handle	11	Muffler	20	Top nozzle	29	Straight pipe (short) (optional accessory)
3	Trigger lever	12	Shoulder strap	21	Hose band diameter 100	30	Bent pipe (optional accessory)
4	Cruise control lever	13	Air inlet net	22	Hose band diameter 76	31	Tube (long) (optional accessory)
5	Primer pump	14	Plug cover	23	Liquid adjustment knob	32	Tube (short) (optional accessory)
6	Element cover	15	Oil cap	24	Solution tank	33	Dispersion cover (optional accessory)
7	Choke lever	16	Oil drain bolt	25	Second nozzle	34	Deflector (optional accessory)
8	Starter handle	17	Elbow	26	Solution tank cap	35	Hose clamp
9	Fuel tank	18	Swivel pipe	27	Solution discharge lever		

Optional accessory may come with your mist blower, depending on your country.

ASSEMBLY INSTRUCTIONS



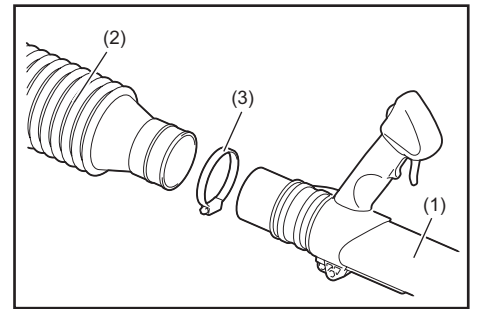
Assembling mist blower pipes

⚠ CAUTION:

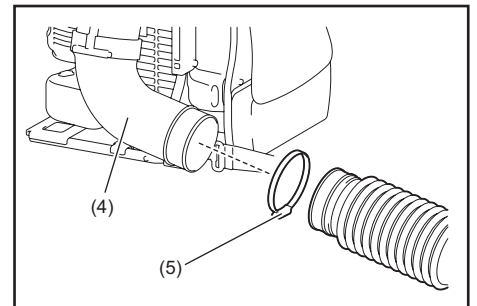
- Before performing any work on the mist blower, always stop the engine and pull the spark plug connectors off the spark plug.
- Always wear protective gloves!
- Start the mist blower only after having assembled it completely.
- Make sure that all the hose bands are tight after assembly.

NOTE:

- Make the band's bolt heads come outer side when you tighten them as illustrated.

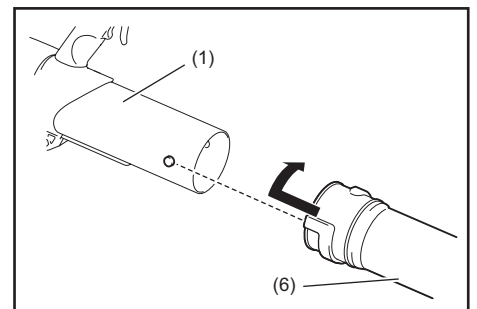


1. Assemble the swivel pipe (1) with the flexible pipe (2).
Tighten them with the 76 mm diameter band (3).



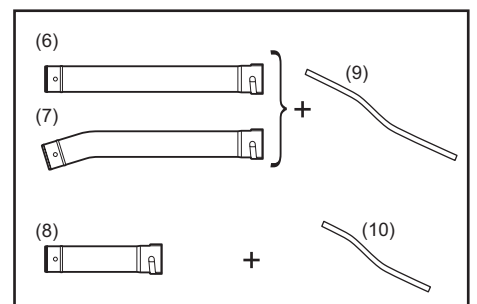
2. Assemble the flexible pipe with the elbow (4) of the mist blower.
Tighten them with the 100 mm diameter band (5).

3. Assemble the straight pipe (6) with the swivel pipe (1).
Align the groove of the straight pipe with the projection on the swivel pipe, and turn the straight pipe until it clicks.

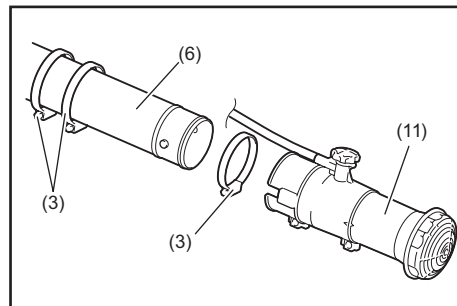


NOTE:

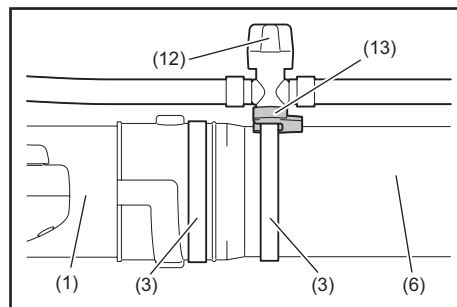
- The straight pipe stated above means the following three pipes and can be substituted depending on your work need.
 - Straight pipe (long) (6)
 - Bent top pipe (7)
 - Straight pipe (short) (8)
- When using the straight pipe (long) (6) or the bent pipe (7), use with tube (long) (9).
- When using the straight pipe (short) (8), use with tube (short) (10).
- To replace a tube, the hose clamps need to be removed and assembled. Use pliers or a similar tool, if necessary.
- ⚠ CAUTION: When replacing the tube, be careful not to damage it.
- Only one or combination of the above pipes is supplied as a standard equipment with your mist blower, which may differ from country to country.
- The remaining types of pipes may need to be obtained as optional accessories.



- Set two 76 mm diameter bands (3) on the pipe loosely (those bands are used for tightening the swivel pipe and straight pipe, and tightening the solution discharge lever later). Assemble the second nozzle (11) with straight pipe (6). Tighten them with another 76 mm diameter band (3).



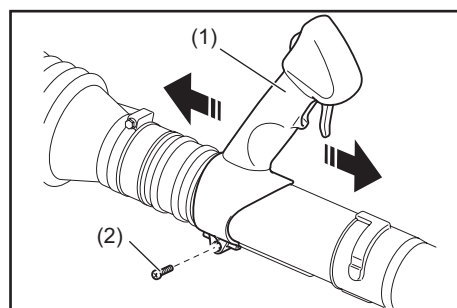
- Put the solution discharge lever (12) onto the pipe. Make sure that the open side of the lever's base (13) faces the swivel pipe. Tighten them with the 76 mm diameter band (3). And then, tighten the swivel pipe (1) and straight pipe (6) with another the 76 mm diameter band (3).



- Make sure all clamps are tight.

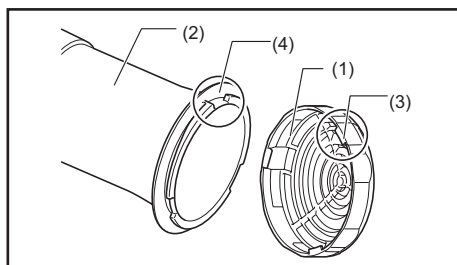
Adjusting and securing the control handle

- Put the machine on your back and adjust the shoulder strap (see "Adjusting the shoulder strap").
- Slide the control handle (1) along the tube to the most comfortable position.
- Secure the control handle by turning the knob (2).

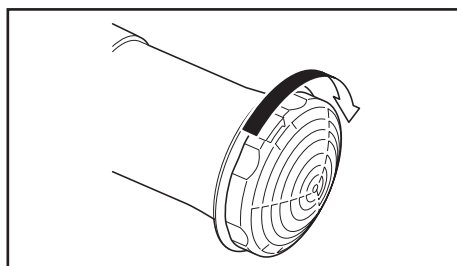


Installing and removing the dispersion cover (optional accessory)

To install the dispersion cover (1), mount the dispersion cover on the top nozzle (2) so that its protrusion (3) is aligned with the notch (4) in the top nozzle.



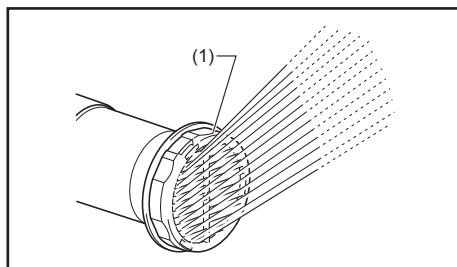
Secure the dispersion cover by turning it fully clockwise.



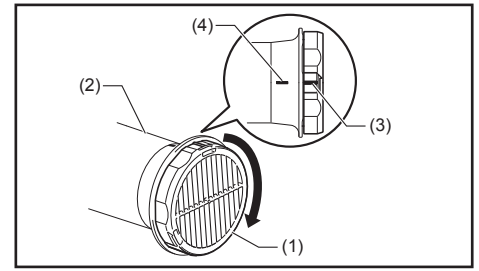
To remove the dispersion cover, follow the above procedure in reverse.

Installing and removing the deflector (optional accessory)

The deflector (1) allows chemicals to be sprayed upward. This helps treatment for low-growing plants and the underside of leaves of plants.



To install the deflector (1), mount the deflector on the top nozzle so that the "I" mark (3) on it is aligned with the "I" mark (4) of the top nozzle (2). Secure the deflector by turning it fully clockwise.



To remove the deflector, follow the above procedure in reverse.

Changing the nozzle to a different-amount-solution-discharge nozzle (optional accessory)

When a different amount of solution needs to be sprayed, change the nozzle to one with a different discharge hole.

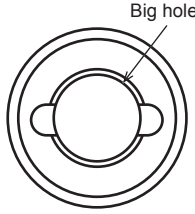
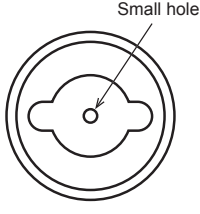
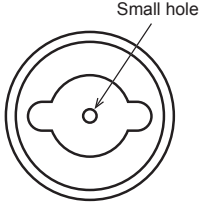
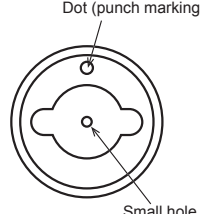
NOTE: Standard nozzle may differ from country to country.

Type of nozzle

Type of nozzle	Hole diameter	Appearance	Viscosity of chemical	Example of chemical	Discharge rate (L/min)
Nozzle 4.5	4.5 mm	Brass with big hole (gold color)	Various		0.3 - 2.5 (depending on the knob position)
Nozzle 0.8	0.8 mm	Aluminum (silver color)	High	MALATHION (Mix with oil.)	0.14
Nozzle 0.7	0.7 mm	Brass (gold color)	Low	Aqua K-Othrine (Mix with water.)	0.075
Nozzle 0.5	0.5 mm	Brass with a dot (gold color)	Low	Cipermetrinato (Mix with water)	0.060

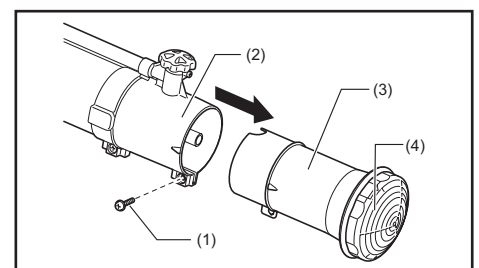
* The discharge rate shown in the table is a guide line in case of use of water only. It varies by the liquid being used.

Appearance of Nozzle

Nozzle 4.5	Nozzle 0.8	Nozzle 0.7	Nozzle 0.5
Brass 	Aluminum 	Brass 	Brass 

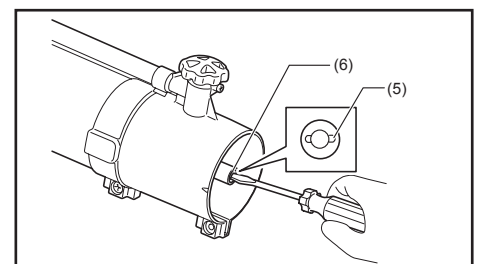
To replace the nozzle:

1. Remove the screw (1) from the second nozzle (2) and then remove the top nozzle (3) and dispersion cover (4).

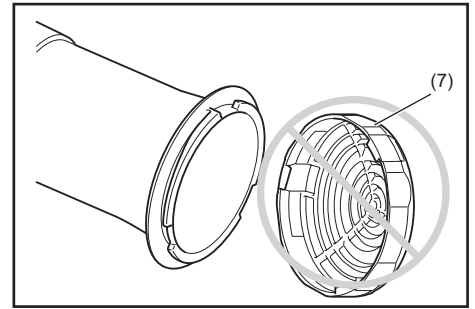


2. Fit a slotted screwdriver to the slit (5) in the nozzle and remove the nozzle cap (6) by turning it fully counterclockwise.

3. Mount another nozzle with a different discharge hole.



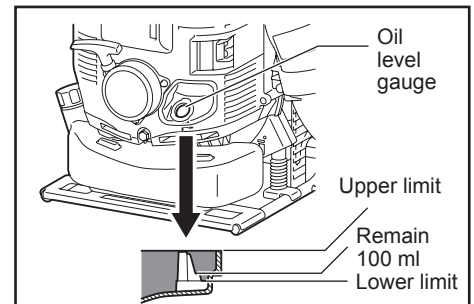
4. If you use nozzle other than nozzle 4.5, remove the dispersion cover (7) or deflector (optional accessory).



BEFORE STARTING THE ENGINE

1. Checking and Refilling Engine Oil

- 1) Follow the procedure below when the engine oil is cold i.e. the mist blower has not been running.
 - Inspection: Set the blower down on a level surface and remove the oil cap. Verify that the oil level is within the upper and lower limit marks on the oil level gauge. If the oil is not up to the 100 mL level, fill up with new oil.
 - Adding Oil: Set the mist blower down on a level surface and remove the oil cap. Fill the oil up to the upper limit of the oil level gauge.
- 2) On average, engine oil normally needs to be added after every 20 hours of operation. This interval for every change in oil corresponds to refueling the mist blower approximately 10-15 times.
- 3) Please change the oil whenever it becomes dirty or significantly changes color. (Refer to P. 23 for the oil change procedure and frequency.)



Recommended oil: MAKITA genuine oil or SAE10W-30 oil of API type SF grade or better (4 stroke motor oil for automobiles)
Oil capacity: Approximately 0.22 L (220 ml)

CAUTION:

- If the mist blower is not stored in an upright position, the oil may flow from the level gauge into the engine and give a false reading when checking the oil level. This may result in inadvertently overfilling whenever adding engine oil. Always store in an upright position.
- If the upper oil level limit is exceeded, this can result in the oil becoming dirty and white smoke from burning excess oil.

Check Point #1: Concerning the oil cap when adding oil

- Wipe off dirt and grime around the opening before removing the oil cap.
- Remove the oil cap and place it on a clean surface so that it does not accumulate any sand, dirt, or other foreign bodies. These may stick to the cap and adulterate the engine oil if proper care is not taken. Dirty oil containing sand, dirt, or foreign bodies may cause excessive wear on the engine due to improper lubrication and result in a breakdown.

Check Point #2: If oil is spilled when adding oil

- Oil spillage on the outside on the mist blower may result in the engine oil becoming dirty or adulterated. Therefore, please wipe off any oil spillage before starting the engine.

2. Fuel supply

⚠ WARNING:

- When supplying the fuel, be sure to observe the following instructions to prevent ignition or fire:
 - Fuel supply must be made in a place free of fire. Never bring the fire (smoking, etc.) near to the place of fuel supply.
 - Stop the engine and allow the engine to cool down before fuel supply.
 - Open the fuel tank cap full of fuel slowly. The fuel may sprout out under internal pressure.
 - Take care not to spill the fuel. Any spilled fuel must be wiped clean.
 - Carry out fuel supply in a well-ventilated place.
- Handle the fuel with care.
 - Fuel sticking to the skin or entering an eye may cause allergies or irritation. When any physical abnormality is detected, consult the medical specialist immediately.

STORAGE PERIOD OF FUEL

Fuel should be used up within a period of 4 weeks, even if it is kept in a special container in a well-ventilated shade. If a special container is not used or if the container is not covered, fuel may deteriorate in one day.

Storage of machine and refill tank

- Keep the machine and tank at a cool place free from direct sunshine.
- Never keep the fuel in the cabin or trunk.

FUEL

The engine is a four-stroke engine. Be sure to use an automobile gasoline (regular gasoline or premium gasoline).

Points for Fuel

- Never use a gasoline mixture which contains engine oil. Otherwise, it will cause excessive carbon accumulation or mechanical troubles.
- Use of deteriorated oil will cause irregular startup.

When refueling the fuel, be sure to stop the engine and make sure that the engine cools down.

REFUELING METHOD

- Loosen the tank cap a little so that there will be no difference in atmospheric pressure.
- Detach the tank cap, and refuel, discharging air by tilting the fuel tank so that the refuel port will be oriented upward. (Never refill fuel full to the oil refill port.)
- After refueling, securely tighten the tank cap.
- If there is any flaw or damage on the tank cap, replace it.
- The tank cap will wear. Replace the tank cap every two to three years.

OPERATION

1. Starting

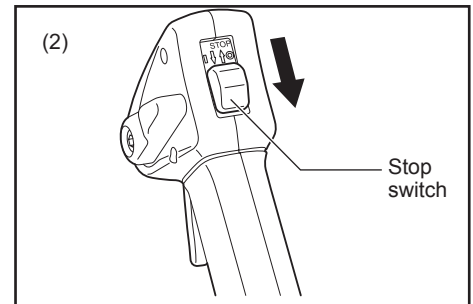
⚠ WARNING:

- Never attempt engine start in a place where the unit was refueled. When starting the engine, keep a distance of at least 3 m (10 feet).
 - Otherwise, it will may cause ignition or fire.
- Exhaust gas from the engine is toxic. Do not operate the engine in a poorly-ventilated place, such as in a tunnel, building, etc.
 - Operating the engine in the poorly-ventilated place may cause poisoning by exhaust gas.
- In case of detection of any abnormality in sound, odor, vibration after start, stop the engine immediately and carry out inspection.
 - If the engine is operated without attending such abnormality, an accident may occur.
- Make sure that the engine stops when the stop switch is set to "O" position.

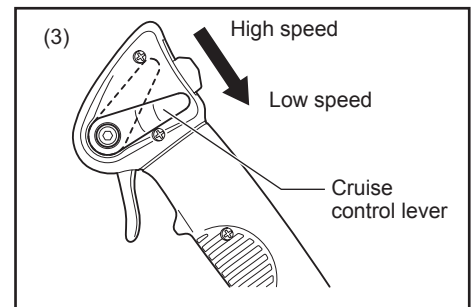


1) When the engine is cold, or when the fuel it refueled

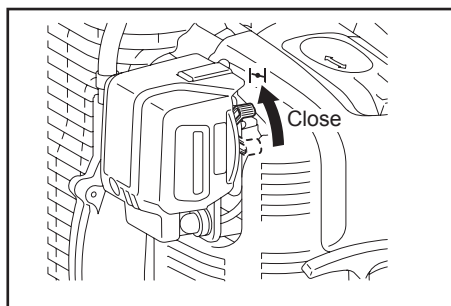
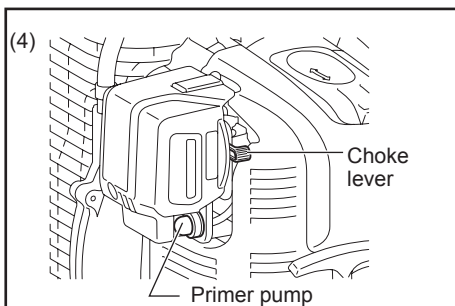
- (1) Set this machine on a flat space.
- (2) Set the stop switch to "I" position.



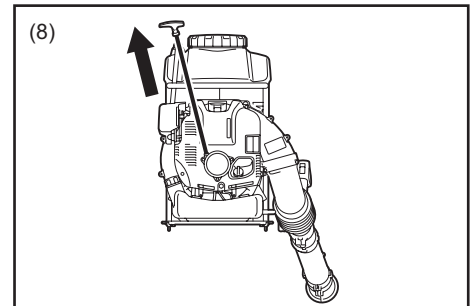
(3) Verify that the cruise control lever is in the low-speed position.



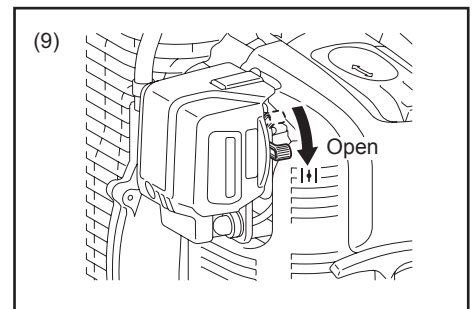
- (4) Continue to push the primer pump until fuel enters into the primer pump.
 - In general, fuel enters into the carburetor by 7 to 10 pushes.
 - If the primer pump is pushed excessively, an excess of gasoline returns to the fuel tank.



- (5) Lifting the choke lever of the air cleaner right side, close the choke lever.
- (6) Hold the element cover with a left hand to prevent the engine from moving, settle down to take the stable position.
- (7) Pull out slowly the starter handle till a certain resistance is felt. Return the starter handle backward once from this position, then pull it out with force.
 - Never pull the rope to the full.
 - Once the starter handle is pulled, never release your hand immediately. Hold the starter handle until it returns to its original point.
- (8) When the engine starts, open the choke lever.
 - Open the choke lever progressively while checking the engine operation. Be sure to open the choke lever to the full in the end.
 - In cold or when the engine is cooled down, never open the choke lever suddenly. Otherwise, the engine may stop.



- (9) Continue warm-up operation for 2 to 3 minutes.
- (10) Rotation of the engine speed stabilizes and when from low speed making at high-speed rotation, if reaches the point where it accelerates smoothly, it is completion of warming-up.



Note:

- The engine may be damaged if the choke lever is moved further beyond the "CLOSE" position.
- If the engine stops with an explosion sound or if the engine started, but stopped before operation of the choke lever, return this lever to the "OPEN" position and pull the starter handle several times to start the engine again.
- If the operator keeps pulling the starter handle several times with the choke lever left in the "CLOSE" position, the engine may be difficult to start because of over-suction of the fuel.
- In case of over-suction of the fuel, remove the spark plug and pull the handle several times rapidly to discharge any excess fuel. Dry the spark plug electrode.
- When the throttle valve does not return to a position in contact with the idling adjusting screw even if the throttle lever is set to the low speed, correct the control cable catching state to ensure proper return of the valve.

- 2) When the engine is warm
 - (1) Place the engine on a flat ground.
 - (2) Press the primer pump several times.
 - (3) Make sure that the choke lever is open.
 - (4) Hold the element cover with a left hand to prevent the engine from moving, settle down to take the stable position.
 - (5) Pull out slowly the starter handle till a certain resistance is felt. Return the starter handle backward once from this position, then pull it out with force.
 - (6) When the engine is difficult to start, open the throttle valve by about 1/3.

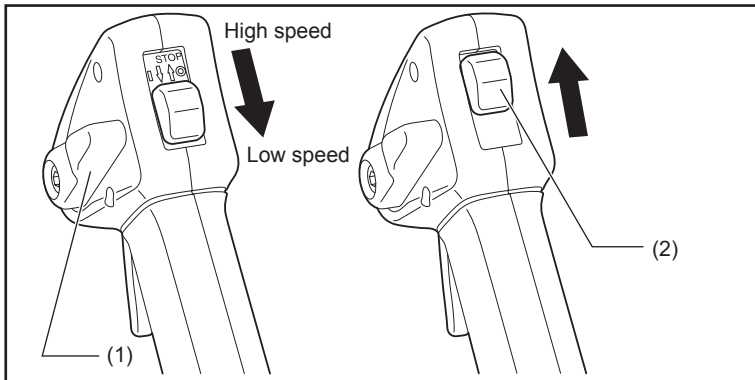
2. Stopping

1) When the cruise control lever is a low-speed position.

Release the trigger lever to reduce the engine speed, and set the stop switch to the "O" position.

2) When the cruise control lever (1) is except a low-speed position.

Set the cruise control lever to the low-speed position, reduce the engine speed, and set the stop switch (2) to the "O" position.



ADJUSTMENT OF IDLING

⚠ DANGER:

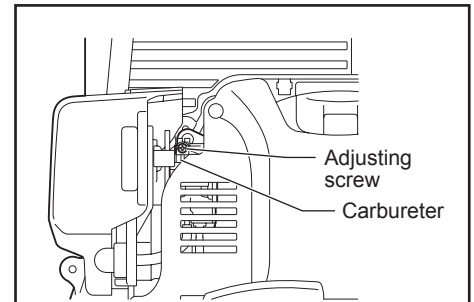
The carburetor is the adjustment being completed at the time of factory shipment. Please do not adjust other than idling adjusting. When adjustment becomes necessary, please consult your dealership or an authorized service agent.



Checkup of low-speed rotation

Set the low-speed rotation to 2,800 min⁻¹.

- If it is necessary to change the rotation speed, regulate the adjusting screw, with Phillips screwdriver.
- Turn the adjusting screw to the right, and the engine rotation will increase. Turn the adjusting screw to the left, and the engine rotation will drop.



OPERATION METHOD

1. Installing the strainer

The mist blower is provided with the strainers at the solution tank opening and the pipe inlet head.

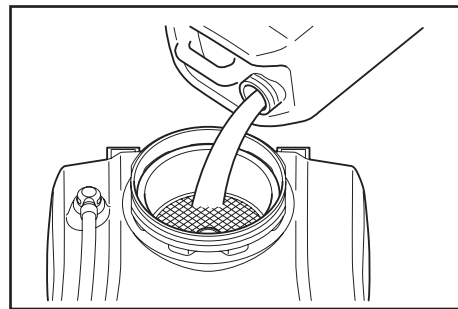
Always make sure the strainer is installed in place.

To install the strainer, push it in place.

To remove the strainer, pry it out of place.

⚠ WARNING:

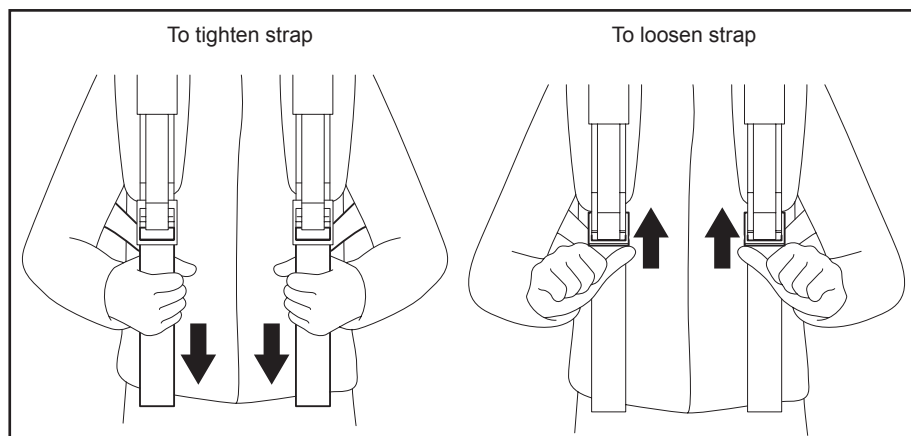
- Tighten the tank cap firmly. Failure to tighten the tank cap may cause solution leakage, pressure reduction and the like.



2. Adjusting the shoulder strap

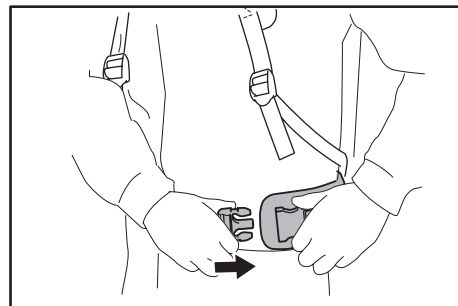
Adjust the shoulder strap to a length that is comfortable to work while carrying the mist blower.

Adjust as shown in the figure.



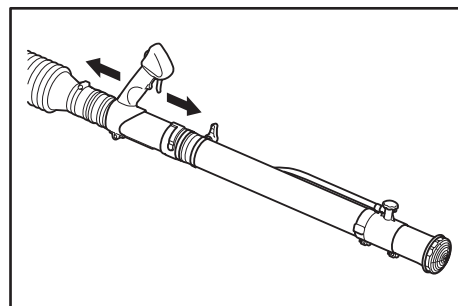
Hip belt (optional accessory)

The hip belt (optional accessory) enables the operator to carry the appliance more stably.



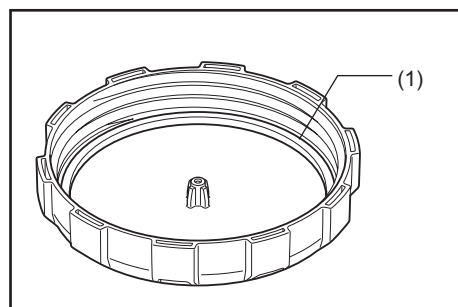
3. Adjusting the control handle

Move the control handle along the swivel pipe to the most comfortable position.

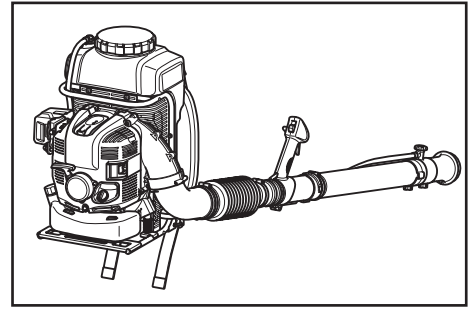


4. Filling the solution tank

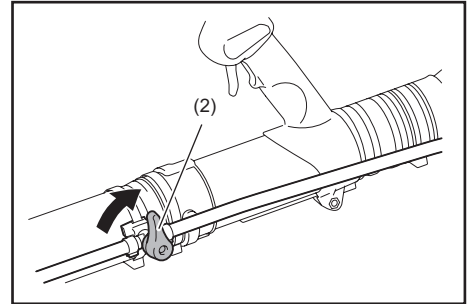
1) Keep the gasket (1) in good condition and lubricated with grease and clean.



2) Put the mist blower on a flat surface.



3) Before filling the solution tank, be sure to close the solution discharge lever (2).

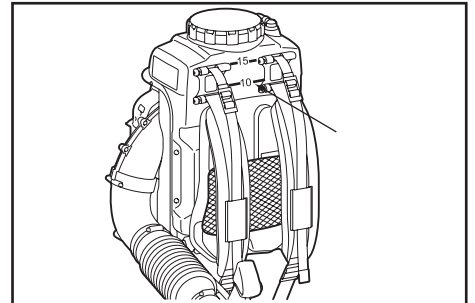


4)-1 For Brazil:

The solution tank is capable of 15 liters of solution.
When the tank is full, the total weight including solution is nearly 30 kg. Adjust the solution pouring volume so that the mist blower with solution in tank does not overweigh and can be within an operator's strength.
When the total product weight of 25 kg or less after filling is needed, use the level line on the side of the solution tank at or below 10 l as a guideline.

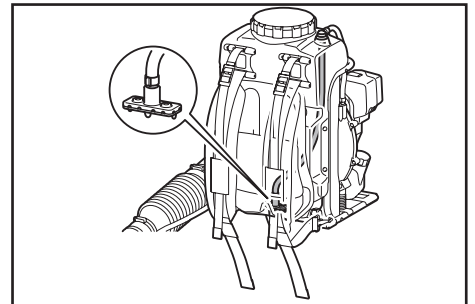
4)-2 For countries other than Brazil:

The solution tank is capable of 15 liters of solution.
When the tank is full, the total weight including solution is nearly 30 kg.
Adjust the solution pouring volume so that the mist blower with solution in tank is not overweighted and can be within an operator's strength.
When 10 liters of solution is poured (that is, when the poured solution level points 10 l marking on the side of the tank), the total product weight is nearly 25 kg.



5. Solution mixing function

The solution mixing device inside the solution tank allows solution to be mixed with air bubbles coming out of it during spraying operation.



6. Mist blower operation

While operating the mist blower, adjust the throttle bar so that the wind force is appropriate for the work location and conditions.

Low speed: 2,800/min

High speed: 7,400/min

The cruise control lever allows the operator to maintain a constant engine RPM without operating the trigger lever.

Lifting the cruise control lever increases engine RPM.

Lowering the cruise control lever decreases RPM.

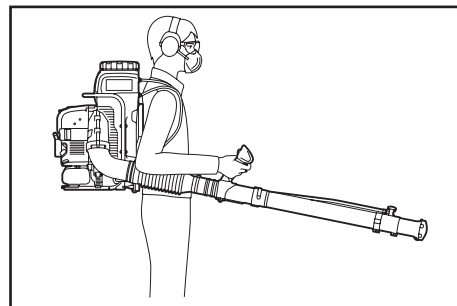
Adjusting engine RPM when the cruise control lever is being used:

When increasing RPM:

- Pull the trigger lever to increase engine RPM. Engine RPM returns to its original setting when the trigger lever is released.
- Increasing the RPM in this manner also increases the cruise control setting. The cruise control lever lifts simultaneously as the trigger lever is pulled, and the new cruise control setting will be maintained at the higher RPM.

When decreasing RPM:

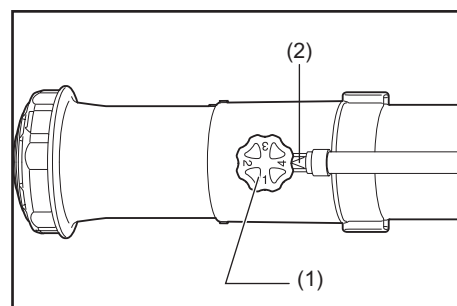
- Lower the cruise control lever to the low-speed position



Liquid adjustment knob

Liquid adjustment knob allows a wide range of different discharge rates.

Turn the liquid adjustment knob (1) on the second nozzle to obtain the desired discharge rate so that the number on the liquid adjustment knob is aligned with the triangle marking (2).



Discharge rate

Spray holding the straight pipe with the angle of 0 degrees to - degrees to the horizontal.

Knob position	Discharge rate (L/min) (mean value)			
	With Nozzle 4.5	With Nozzle 0.8	With Nozzle 0.7	With Nozzle 0.5
1	0.3	Not used		
2	1			
3	1.6			
4	2.5	0.14	0.075	0.060

* The discharge rate shown in the table is a guide line in case of use of water only. It varies by the liquid being used.

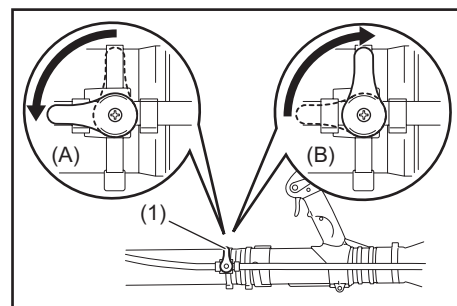
Note:

- Use the figures shown in the above table as a guide line for operation and these may be changed according to the density of chemical solution used in the solution tank.

Solution discharge lever

To start the solution feeding (A), turn the solution discharge lever (1) horizontally to the pipe.

To stop the solution feeding (B), turn the solution discharge lever vertically to the pipe.



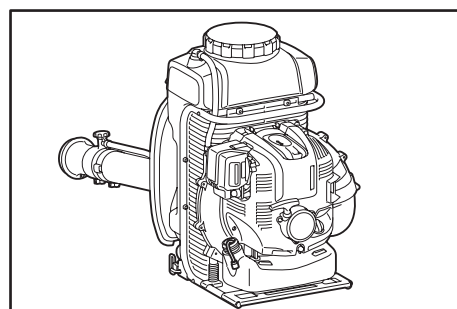
7. TRANSPORTING THE MIST BLOWER

Please keep the mist blower in an upright position whenever transporting or storing. (Refer to the figure.)

Transporting or storing in a position that is not upright may cause oil to spill inside the mist blower engine. This may result in oil leaks and white smoke from burning oil, and the air cleaner may become dirty with oil.

⚠ DANGER:

When transporting and storing the mist blower, be sure to stop the engine.

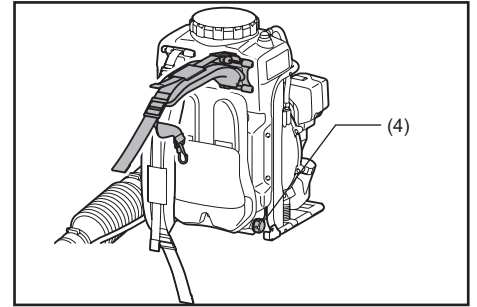
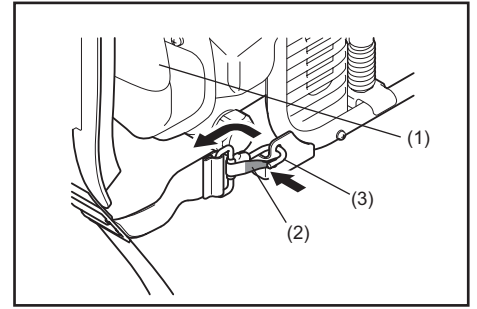


1) Draining the solution tank

To clean the solution tank (1), remove the shoulder strap (2) from the hook (3) by pressing the bottom of the buckle to open it and then taking it off. Clean the tank inside with water. And then remove the draining cap (4) to drain the waste water after cleaning.

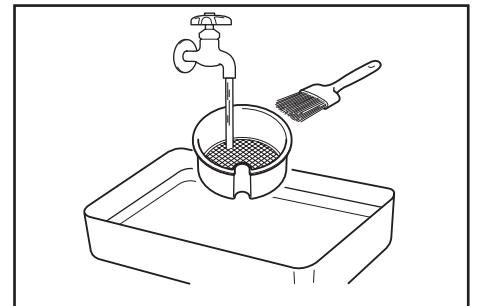
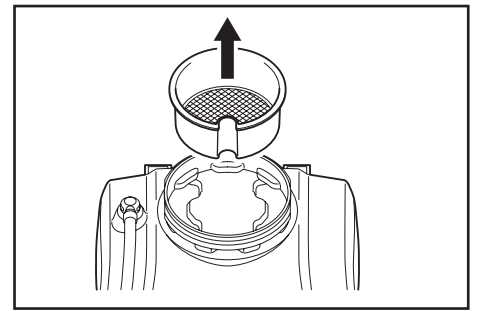
⚠ CAUTION:

- After draining, be sure to attach the strap to the hook.



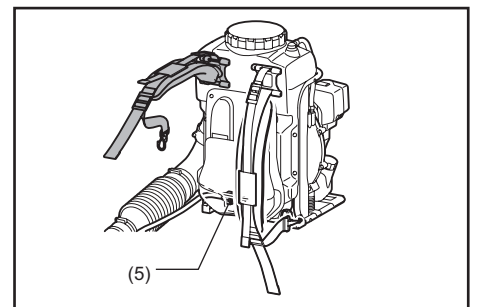
2) Cleaning the strainer at the top of solution tank

Remove the tank cap, take out the strainer from inside the tank and then clean it after use.



3) Cleaning the strainer at the solution tank-tube joint

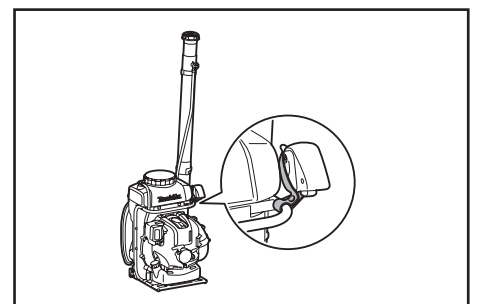
Loosen and remove the cap which comes out with the strainer (5). Clear dust and particles with water away from the strainer.



4) Retaining the straight pipe with a supplied hand strap

When storing the mist blower, retain the straight pipe with a supplied hand strap tied to the frame.

Retaining the pipe in this position will be easy to transport the unit.



INSPECTION AND MAINTENANCE

⚠ DANGER:

- Before inspection and maintenance, stop the engine and allow it to cool. Remove also the spark plug and plug cap.
 - If inspection or maintenance is attempted immediately after engine stop or with the plug cap left attached, the operator may suffer burn or an accident due to careless startup.
- After inspection and maintenance, make sure that all parts are assembled. Then, proceed to operation.



NOTICE:

- Never use gasoline, benzene, thinner, alcohol or the like. Discoloration, deformation or cracks may result.

1. Replacement of engine oil

Deteriorated engine oil will shorten the life of the sliding and rotating parts to a great extent. Be sure to check the period and quantity of replacement.

⚠ DANGER:

- In general, the engine main unit and engine oil still remain hot just after the engine is stopped. In replacement of oil, make sure that the engine main unit and engine oil are sufficiently cooled down. Otherwise, there may remain a risk of burn. In addition just after of the engine stops all the oil may not return to crank case. Do not check the oil level right after engine stops.
- If the oil filled above the limit, it may be contaminated or may catch fire with white smoke.

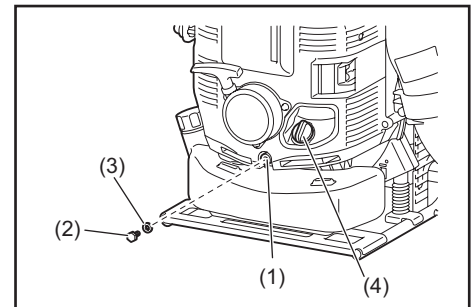
Interval of replacement: Initially, every 20 operating hours, and subsequently every 50 operating hours

Recommended oil: SAE10W-30 oil of API Classification SF Class or higher (4-stroke engine oil for automobile)

Oil Change Procedure

Please follow these steps when changing the oil:

- (1) Set the mist blower down on a level surface.
- (2) Place a waste oil container under the drainage hole (1) to catch the oil as it drains out. The container should have a capacity of at least 220 ml to be able to catch all of the oil.
- (3) Loosen the oil drain bolt (2) to let the oil drain out. Be careful not to allow oil to get on the fuel tank or other parts.
 - ⚠ **CAUTION:** Be careful not to lose the gasket (aluminum washer) (3). Place the oil drain bolt (2) in a location where it will not accumulate dirt.
- (4) Remove the oil cap (4). (Removing the oil cap (4) allows the oil to drain easily.)
 - ⚠ **CAUTION:** Be sure to set the oil cap (4) down in a location where it will not accumulate dirt.
- (5) As the level of the oil being drained decreases, tilt the mist blower over on to the side with the drain so that the oil will completely drain out.
- (6) After the oil has completely drained out, tighten the oil drain bolt (2) securely. If the bolt is not tightly fastened, this may result in an oil leak.
 - ⚠ **CAUTION:** Do not forget to put the gasket (aluminum washer) (3) back on when reattaching the drain plug.
- (7) Adding oil during the oil change procedure is performed in the same manner as the separately explained procedure for adding oil whenever the level is insufficient. Always add oil by filling from the opening under the oil cap.
(Specified oil level: Approximately 220 ml)
- (8) After filling with oil, tighten the oil cap (4) securely to prevent oil leaks.



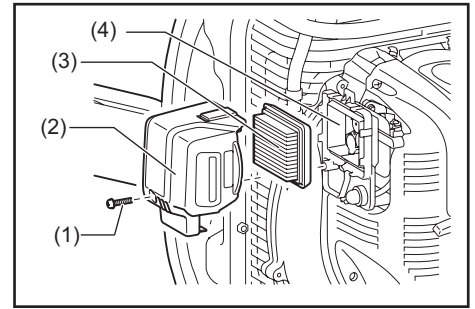
Points in replacement of engine oil

- Never discard replaced engine oil in garbage, earth or sewage ditch. Disposal of oil is regulated by law. In disposal, always follow the relevant laws and regulations. For any points remaining unknown, contact Authorized Service Agent.
- Oil will deteriorate even when it is kept unused. Perform inspection and replacement at regular intervals (replace with new oil every 6 months).

2. Cleaning of air cleaner

⚠ WARNING: INFLAMMABLES STRICTLY PROHIBITED
Interval of Cleaning and Inspection: Daily (every 10 operating hours)

- (1) Loosen the knob bolt (1).
 - (2) Remove the air cleaner cover (2).
 - (3) Take out the element (3) and remove any dirt with the brush.
- Note:** The element is a dry type and should not get wet. Never wash with water.
- (4) Replace the element with a new one if it is damaged or very dirty.
 - (5) Wipe off any oil that has come into contact with the breather with a rag or cloth.
 - (6) Install the element in the cleaner case (4).
 - (7) Attach the air cleaner cover and tighten the knob bolt.



⚠ DANGER:

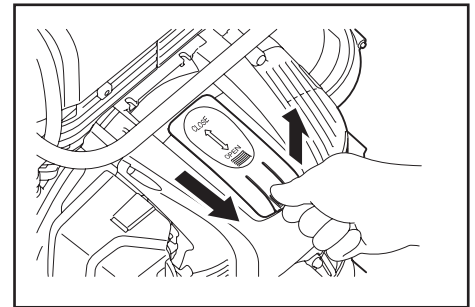
- Clean the element several times a day, if excessive dust adheres to it.
- If operation continues with the element remaining not cleared of oil, oil in the air cleaner may fall outside, resulting in oil contamination.

3. Checking the spark plug

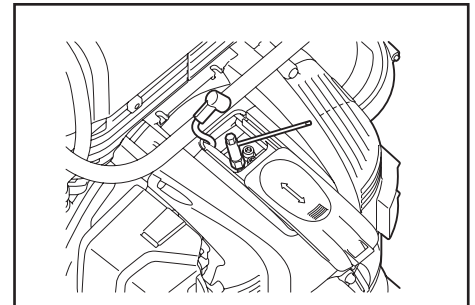
⚠ CAUTION:

- When removing the spark plug, clean the spark plug and cylinder head first, so that no dirt, sand, etc will enter the cylinder.
- You must remove the spark plug after the engine has cooled down in order to avoid damaging the threaded hole in the cylinder.
- The spark plug must be installed properly into the threaded hole. If installed at an angle, the threaded hole in the cylinder will get damaged.

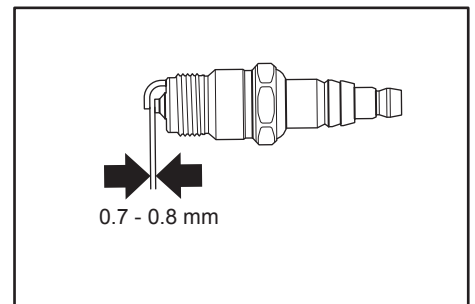
- (1) Opening/closing the plug cover
To open the plug cover, pull up on the seam of the plug cover projection and slide in the direction of the "OPEN" indication as shown in the figure at right. When closing the cover, slide the cover in the "CLOSE" direction till the click under the plug cover projection rides over the engine cover. Finally, push in the projection.



- (2) Removing the spark plug
Use an attached box wrench to remove or install the spark plug.
- (3) Checking the spark plug
The clearance between two electrodes of spark plug (see the figure) is 0.7 to 0.8 mm. Adjust to the correct clearance when it is too wide or too narrow. Clean thoroughly or replace the spark plug if it has accumulated carbon or contaminated.



- (4) Replacing the spark plug
For replacement, use NGK-CMR6A.



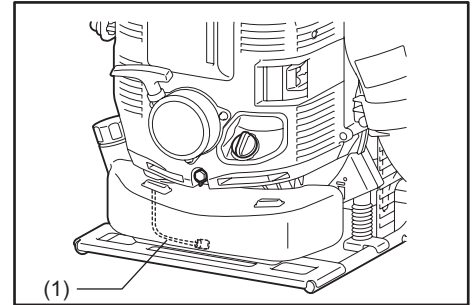
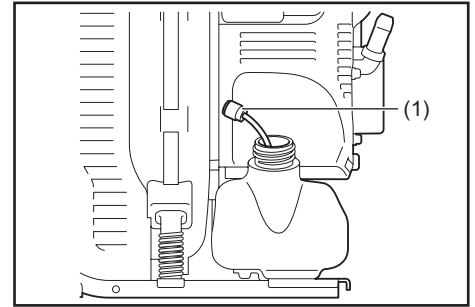
4. Cleaning the fuel filter

- Clogged fuel filter may cause difficulty of start-up or failure of engine speed increase.
- Check the fuel filter regularly as follows:
 - (1) Remove the fuel tank cap, drain the fuel to empty the tank. Check the tank inside for any foreign materials. If any, wipe clean such materials.
 - (2) Pull out the fuel filter (1) with wire through the oil filling port.
 - (3) If the fuel filter surface is contaminated, clean it with gasoline. Foul gasoline must be disposed of according to the method specified by each local authority. Excessively foul filter must be replaced.
 - (4) Reset the fuel filter in the fuel tank and tighten firmly the fuel tank cap.

Note:

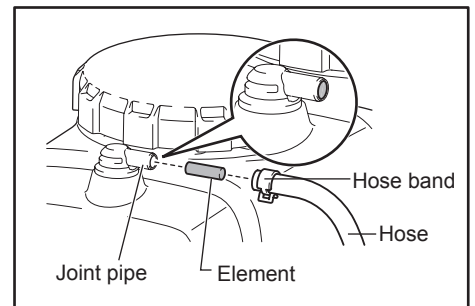
When resetting the fuel filter in the tank, return it to the position as shown in the figure.

For replacement, contact your dealership or an authorized service agent.



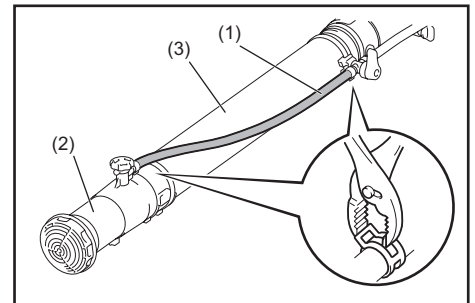
5. Cleaning the joint pipe cleaner element

- (1) Remove the hose band and the hose.
- (2) Pull out the element and remove any dirt from it with a brush.
If it is difficult to pull out the element, use a slender stick to catch it out.
- (3) Replace the element with a new one if it is damaged or very dirty.
- (4) Press the element into the joint pipe until the element tail is flush with its port end.
- (5) Install the hose and secure it with a hose band.



6. Replacement of solution hose

- Check the solution hose (1) frequently. Damaged hose may result in leakage of chemical solution. Replace the hose if necessary as follows.
 1. Remove the nozzle (2) from the pipe (3).
 2. Loosen the hose band, and then replace the old hose with new one.



7. Inspection of bolts, nuts and screws

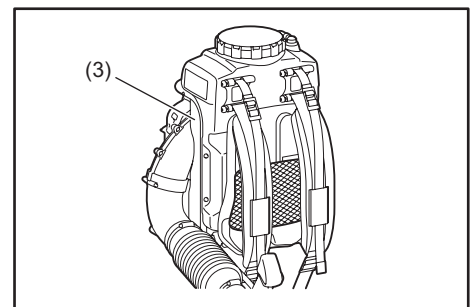
- Retighten loose bolts, nuts, etc.
- Check for fuel and oil leakage.
- Replace damaged parts with new ones for safety operation.

8. Cleaning of parts

- Keep the engine always clean.
- Keep the cylinder fins free of dust or dirt. Dust or dirt adhering to the fins will cause seizure.
- Blowing air is taken in from the air inlet net (3). When airflow has dropped down during operation, stop engine and inspect the air inlet net for blocking by obstacles.
- Note that failure to remove any such obstacles may result in the engine becoming overheated and damaged.

⚠ WARNING:

Never use the mist blower without the net of the mist blower. Before each use, check that the net is attached in place and is free from any damage.



9. Replacement of gaskets and packings

In reassembling after the engine is dismantled, be sure to replace the gaskets and packings with new ones.

Any maintenance or adjustment work that is not included and described in this manual is only to be performed by Authorized Service Agents.

STORAGE

1. Draining the fuel

⚠ WARNING:

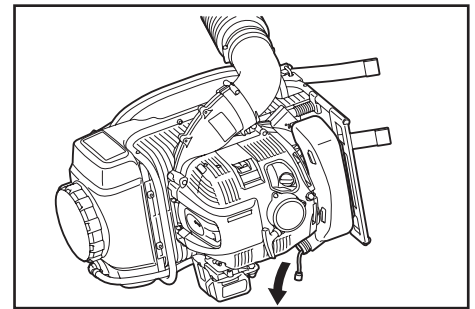
- When draining the fuel, be sure to stop the engine and confirm that the engine cools down.
 - Just after stopping the engine, it may still be hot with possibility of burns, inflammability and fire.

⚠ DANGER:

- When the machine is kept out of operation for a long time, drain up all fuel from the fuel tank and carburetor, and keep it at a dry and clean place.

Drain up fuel from the fuel tank and carburetor according to the following procedure:

- (1) Remove the fuel tank cap, and drain fuel completely.
 - If there is any foreign matter remaining in the fuel tank, remove it completely.
- (2) Pull out the fuel filter from the refill port using a wire.
- (3) Push the primer pump until fuel is drained from there, and drain fuel coming into the fuel tank.
- (4) Reset the filter to the fuel tank, and securely tighten the fuel tank cap.
- (5) Then, continue to operate the engine until it stops.
- (6) Remove the spark plug, and drip several drops of engine oil through the spark plug hole.
- (7) Gently pull the starter handle so that engine oil will spread over the engine, and attach the spark plug.
- (8) During storage, please keep the machine upright.
- (9) Keep the drained fuel in a special container in a well-ventilated shade.



2. Draining the solution tank

⚠ WARNING:

- When draining the solution tank, be sure to stop the engine and confirm that the engine cools down.
 - Just after stopping the engine, it may still be hot with possibility of burns, inflammability and fire.

Before storing the mist blower, drain the solution tank by referring to the section titled “TRANSPORTING THE MIST BLOWER”.

3. Cleaning the strainer at the top of the solution tank

When storing the mist blower, always clean the strainer at the top of solution tank. To clean the strainer, refer to the section titled “TRANSPORTING THE MIST BLOWER”.

4. Cleaning the strainer at the solution tank-tube joint

When storing the mist blower, always clean the strainer at the solution-tank-tube joint.

To clean the strainer, refer to the section titled “TRANSPORTING THE MIST BLOWER”.

⚠ DANGER:

- When storing the mist blower, be sure to stop the engine.

Fault location

Fault	System	Observation	Cause
Engine not starting or with difficulty	Ignition system	Ignition spark O.K.	Fault in fuel supply or compression system, mechanical defect
		No ignition spark	STOP-switch operated, wiring fault or short circuit, spark plug or connector defective, ignition module faulty
	Fuel supply	Fuel tank filled	Incorrect choke position, carburetor defective, fuel supply line bent or blocked, fuel dirty.
	Compression	No compression when pulled over	Cylinder bottom gasket defective, crankshaft seals damaged, cylinder or piston rings defective or improper sealing of spark plug
	Mechanical fault	Starter not engaging	Broken starter spring, broken parts inside of the engine
Warm start problems		Tank filled ignition spark existing	Carburetor contaminated, have it cleaned
Engine starts but dies	Fuel supply	Tank filled	Incorrect idling adjustment, carburetor contaminated Fuel tank vent defective, fuel supply line interrupted, cable or STOP-switch faulty
Insufficient performance	Several systems may simultaneously be affected	Engine idling poor	Air filter contaminated, carburetor contaminated, muffler clogged, exhaust duct in the cylinder clogged

Operating time Item		Before operation	After lubrication	Daily (10h)	30h	50h	200h	Shutdown/ rest	Corres- ponding P
Engine oil	Inspect	○							14
	Replace					○ ^{*1}			23
Tightening parts (bolt, nut)	Inspect	○							25
Fuel tank	Clean/inspect	○							–
	Drain fuel							○ ^{*3}	26
Throttle lever	Check function		○						–
Stop switch	Check function		○						16
Low-speed rotation	Inspect/adjust			○					18
Air cleaner	Clean			○					24
Ignition plug	Inspect			○					24
Cooling air duct	Clean/inspect			○					25
Fuel pipe	Inspect			○					25
	Replace						◎ ^{*2}		–
Fuel filter	Clean/replace					○			25
Clearance between air intake valve and air discharge valve	Adjust						◎ ^{*2}		–
Oil tube	Inspect						◎ ^{*2}		–
Engine overhaul							◎ ^{*2}		–
Carburetor	Drain fuel							○ ^{*3}	26

*1 Perform initial replacement after 20h operation.

*2 For the 200 operating hour inspection, request Authorized Service Center or a machine shop.

*3 After emptying the fuel tank, continue to run the engine and drain fuel in the carburetor.

TROUBLESHOOTING

Before making a request for repairs, check a trouble for yourself. If any abnormality is found, control your machine according to the description of this manual. Never tamper or dismount any part contrary to the description. For repairs, contact Authorized Service Agent or local dealership.

State of abnormality	Probable cause (malfunction)	Remedy
Engine does not start	Failure to operate primer pump	Push 7 to 10 times.
	Low pulling speed of starter rope	Pull strongly.
	Lack of fuel	Feed fuel.
	Clogged fuel filter	Clean
	Bent fuel tube	Straighten fuel tube
	Deteriorated fuel	Deteriorated fuel makes starting more difficult. Replace with new one. (Recommended replacement: 1 month)
	Excessive suction of fuel	Set throttle lever from medium speed to high speed, and pull starter handle until engine starts. If engine will not start still, remove spark plug, make electrode dry, and reassemble them as they originally are. Then, start as specified.
	Detached plug cap	Attach securely
	Contaminated spark plug	Clean
	Abnormal clearance of spark plug	Adjust clearance
	Other abnormality of spark plug	Replace
	Abnormal carburetor	Make request for inspection and maintenance.
	Starter rope cannot be pulled	Make request for inspection and maintenance.
Abnormal drive system	Make request for inspection and maintenance.	
Engine stops soon Engine speed does not increase	Insufficient warm-up	Perform warm-up operation
	Choke lever is set to "CLOSE" although engine is warmed up	Set to "OPEN"
	Clogged fuel filter	Clean
	Contaminated or clogged air cleaner	Clean
	Abnormal carburetor	Make request for inspection and maintenance.
	Abnormal drive system	Make request for inspection and maintenance.
	Detached throttle wire	Attach securely
Engine does not stop ↓ Run engine at idling, and set choke lever to CLOSE.	Detached connector	Attach securely
	Abnormal electric system	Make request for inspection and maintenance.

When the engine does not start after warm-up operation:

If there is no abnormality found for the check items, open the throttle by about 1/3 and start the engine.

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