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MOTORIZED KNAPSACK MISTBLOWERS MERCURY K-45 / MERCURY K-90

GUARANTEE CONDITIONS

- The manufacturer guarantees that the machine described in the guarantee certificate is free from faults and defects deriving from material and production.
- The manufacturer guarantees the machine for 24 months from the date of delivery. Within this period the company undertakes to repair or replace free of charge any parts that present recognized defects in construction.
- All charges for labour and inspection are at the buyer's expense, as are any costs incurred for sending spare parts. Any services requested from the manufacturer may be accepted or rejected at the company's discretion.
- All spare parts changed under guarantee must be sent, carriage paid, to the head office of the manufacturer within a maximum period of 30 days, on pain of invalidity of the guarantee.
- Any repairs or replacements carried out or any tampering with the machine during the guarantee period without the authorization of the manufacturer cause the guarantee to become invalid. The guarantee does not cover parts which on account of their nature or purpose are subject to deterioration and wear, or which have been damaged due to insufficient maintenance or incorrect use. In no case may the buyer claim refunds for damages of any kind, arising in any way as a result of use of the machine.

DELIVERY OF THE MACHINE

The machine must be checked immediately on delivery to ensure that it is complete with all its components; should this not be the case, our competent office must be informed at once.

The atomizer is supplied in a cardboard box measuring 65x42x39 cm. For ease of packing, some parts are supplied loose in the box and must be assembled following these instructions:

- Connect the ventilator unit to the lance (11 - Fig. 2) using the connecting curve (9 - Fig. 2) and securing it with clamps (8 - 10 - Fig. 2).
- Insert the liquid down-pipe (7 - Fig. 2) in the fungicide tank, ensuring that the pipe is firmly fitted to avoid leaks.
- Connect the spraying jet (15 - Fig. 2) to the lance (11 - Fig. 2) and secure it with a clamp (14 - Fig. 2), then insert the liquid pipe (13 - Fig. 2).
- Fit the throttle control with stop switch (16 - Fig. 2) onto the brackets on the frame, inserting the retaining pins in the couplings.

CONDITIONS AND LIMITS OF USE

Motor-driven portable atomizers have been designed to atomize and pulverize products anywhere and for any necessity. As well as for treating crops and plantations, the atomizer is also particularly suitable for all disinfection jobs.

Warning: incorrect use or uses different from that indicated may cause severe damage or accidents to both persons and things.

GENERAL SAFETY RULES

- It is forbidden to allow use of the machine by people less than sixteen years of age or who are not competent in use of the machine.
- Fuel is highly inflammable and must be kept in containers suited for the purpose.
- Always fill the fuel tank (12 - Fig. 2) in the open air. Never smoke when carrying out these operations.
- Never remove the caps (1 - 12 - Fig. 2) of the tanks if the motor is running or still warm.
- If there has been any leakage of fuel, do not start the motor but shift the machine, with the motor turned off, to an area free from gas and combustible liquids before carrying out the operation.
- Never run the motor in enclosed areas. The exhaust gases contain carbon monoxide, which is an odorless and deadly poison.
- Never transport the motor with fuel in the tank.
- Never run the motor without the silencer.
- Never run the motor if there are piles of grass, leaves or other inflammable materials near the silencer.
- Never use the motor in thick woods, among bushes or other areas with uncultivated vegetation.
- When the machine is being used there must be no other people within a radius of 20 meters from the work area.
- Prevent involuntary switching on of the motor by removing the spark plug before carrying out maintenance jobs.
- Pull the start cord slowly until you feel a certain resistance; then pull the cord rapidly so as to avoid recoil and prevent injury to the hands and arms.
- Use freshly blended fuel. Old petrol may cause rubbery deposits in the fuel and lead to leakage.
- Check the feeding system and connections frequently to ensure there are no leaks or cracks; if necessary, replace any damaged parts.
- Never remove protection devices and guards even for a short time, in particular the protective grid on the fan and the protective casing on the silencer.
- Always wear suitable protective clothing, especially during preparation of the product, treatment, when cleaning the jets and filters, emptying the tank and washing the machine.
- Avoid inhaling the gases produced inside tanks.
- **During treatments it is advisable to wear a mask and special ear-plugs or earphones.**
- When carrying out treatments it is obligatory to prevent antiparasitic compounds from reaching buildings, public or private land, houses, roads, sports facilities, public or private waters or other places normally frequented by people. Treatments close to these areas must be carried out when there is no wind and if possible during the early hours of the morning or late evening, also complying with the regulations on noise production.
- Before lifting the machine onto your shoulders, ensure that the harness is securely fixed and has no tears or signs of wear. If it is damaged in any way, change or repair it so that it does not break during use, causing physical harm to the operator.
- **If any difficulties arise during operation, or if you are in any doubt as to how to proceed, switch the motor (3 - Fig. 9) off immediately, thus blocking machine operation.**
- Whenever the machine is to be put away, empty the fuel tank and accurately wash out the chemical compound tank so as to prevent the formation of encrustations and/or the release of toxic gases in the storeroom.
- **Always consult this Use and Instructions manual in case of necessity.**

INSTRUCTIONS FOR USE

• Starting up the atomizer equipped for liquids

- 1) Ensure that the distribution valve (1 - Fig. 10) is in closed position.
- 2) Fill the tank with the chemical compound, which has been prepared beforehand, until it reaches a height about 2cm below the bottom of the loading strainer (2 - Fig. 2). The atomizer must be placed on a horizontal surface before carrying out this operation.
- 3) Start the motor, following the instructions given in the chapter "Instructions on use of the motor".
- 4) Lift the atomizer onto your shoulders. The position of the atomizer on your shoulders must be adjusted so that the tank is at a maximum distance of 3-4 cm. from the nape of your neck (Fig. 8). This adjustment must be performed by pulling the shoulder straps (1 - Fig. 9). The anatomical shape of the back piece has been specially studied to ensure that the center of gravity of the atomizer is as close as possible to the center of gravity of the operator who is carrying it, thus ensuring better balance and minimum fatigue.
- 5) Increase the number of motor revs by turning the throttle (2 - Fig. 9); for the first 30 working hours do not exceed 3/4 of the opening distance. Open the distribution valve (1 - Fig. 10), which allows perfect adjustment of the liquid flow; depending on the thickness of the crops, the operator must adjust the valve in the most suitable position.

Warning: if there is any need to lift the distribution pipe to spray fairly tall crops, never hold the diffuser in a vertical position, but always slightly tilted; do not allow the nozzle fitted on the tap to be higher than the level of mixture in the liquid tank.

• Calibration of the atomizer

Correct calibration of the atomizer may considerably reduce leaks due to drifting, with a consequent active saving, without reducing the biological action.

Warning: The chemicals used in agriculture may be dangerous. It is important to follow the manufacturer's instructions scrupulously so as to avoid overdoses or underdoses which would cause damage to the environment and to the crops.

• Calculating the amount distributed

To perform precise and effective treatment, it is necessary to ensure that the recommended quantity of chemicals in litres per hectare is distributed; this quantity is generally printed on the packages of the products by the manufacturer.

A test may be carried out using pure water, calculating the size of the surface treated in a given time.

For example: apply a treatment of 60 lt/ha knowing that the surface treated in 1 min is 20 m long and 5 m wide. This gives:

- surface treated in 1 min is equal to $20\text{ m} \times 5\text{ m} = 100\text{ m}^2$.
- time taken to treat 1 ha (10,000 m²) is equal to $10,000\text{ m}^2 : 100\text{ m}^2 = 100\text{ min/ha}$.
- atomizer distribution in lt/min is equal to $60\text{ lt/ha} : 100\text{ min/ha} = 0.6\text{ lt/min}$.

Conclusion: to apply a treatment of 60 lt/ha the operator must regulate the distribution valve on position 1, with which he will obtain a distribution of 0.6 lt/min and cover, in 1 minute, a length of 20 m and an arc 5 m wide.

The distribution of the liquid may be regulated by means of the valve (1 - Fig. 10), depending on the position chosen, which may be from 0 to 5:

- | | | | |
|----------------------|----------------------|----------------------|----------------------|
| Pos. 0 = 0 lt/min; | Pos. 1 = 0.6 lt/min; | Pos. 2 = 1.2 lt/min; | Pos. 3 = 1.8 lt/min; |
| Pos. 4 = 2.4 lt/min; | Pos. 5 = 3.0 lt/min. | | |

There are certain basic principles common to the majority of situations, which enable the best results to be achieved without causing harm to the operator and the environment.

- Read the labels and follow the instructions or ask for advice on the doses, the technique to be applied, the clothing to wear, the right time for use and the safety interval.
- Consider the weather conditions, in particular the wind, which may cause drifting. This may render the product ineffective if it does not strike its target, and may become dangerous if the drift causes it to blow back on the operator, on other crops, on rivers, animals or houses.

• Testing operation

Before carrying out the first treatment it is advisable to perform a test with clean water.

- to check that the machine is working correctly;
- to check the correct setting in litres per hectare;
- to get familiar with the machine.

• Preparing the chemicals

Warnings: Keep the products in ventilated premises with a door fitted with a lock, inaccessible to children and to unauthorized persons. Place warning notices on the outside indicating the danger zone.

Before preparing the mixture to be sprayed:

- 1) Calculate the exact amount of antiparasitic product needed for the area to be treated, so as to be able to prepare the exact quantity of product to be sprayed. Antiparasitic products must be kept in their original packages, supplied with their own labels.
- 2) Ensure that the atomizer has been correctly set up and calibrated.
- 3) Carefully read the instructions concerning:
 - the use of the antiparasitic product to be applied, especially as regards conditions of use and the correct preparation of the dose as shown on the package.
 - operation of the atomizer.

Warnings: When mixing antiparasitic products it is always necessary to check that they are physically, chemically and biologically compatible with one another.

- 4) During preparation of the product, ensure that there are no children or unauthorized persons in the vicinity or anyone without suitable protection. Always wear protective clothing. Do not eat, drink or smoke.
- 5) After preparing the product, carefully wash your hands and face.
- 6) As soon as packages that contained antiparasitic products have been emptied they must be washed and rinsed with clean water.
 - the wastewater must be poured into the distribution tank (tank for antiparasitic products).
- 7) The empty packages must be kept inside the premises used for storing antiparasitic products until they can be handed over to the authorized collection service.

• Procedure for transforming the atomizer into a pulverizer (duster)

- 1) Unscrew the cap from the tank (1 - Fig. 2) and remove the strainer (2 - Fig. 2), taking care to slip out the plastic tube (3 - Fig. 2) fitted on the strainer.
- 2) Unscrew the two ring nuts (4 - 5 - Fig. 2) located at the bottom of the tank and remove the two plastic caps; on one of these there are two small rubber pipes for liquid descent (7 - Fig. 2) and for air input to the tank (6 - Fig. 2).
- 3) Take the pipe (1 - Fig. 3) and place it in the tank, holding it in the position shown in the drawing, next to the left output hole of the tank.
- 4) Fit the rubber washers (2 - 4 - Fig. 3) onto the pipe (3 - Fig. 3).

- 5) Take the pipe (3 - Fig. 3) and place it in the output hole.
- 6) Screw on the ring nut (5 - Fig. 3) and tighten it firmly.
- 7) Fit the flexible pipe (7 - Fig. 3) onto the pipe (3 - Fig. 3).
- 8) Fit the clamp (6 - Fig. 3) onto the end of the pipe (7 - Fig. 3) and tighten it firmly.
- 9) Fit the bottom end of the pipe (7 - Fig. 3) onto the valve (21 - Fig. 3).
- 10) Fit the clamp (8 - Fig. 3) onto the end of the pipe (7 - Fig. 3) and tighten it firmly.
- 11) Fit the rubber washers (9 - 11 - Fig. 3) onto the pipe (10 - Fig. 3).
- 12) Take the pipe (10 - Fig. 3) and insert it in the hole on the right of the tank.
- 13) Screw on the ring nut (12 - Fig. 3) and tighten it firmly.
- 14) Fit the flexible pipe (14 - Fig. 3) onto the pipe (10 - Fig. 3).
- 15) Fit the clamp (13 - Fig. 3) onto the end of the pipe (14 - Fig. 3) and tighten it firmly.
- 16) Fit the bottom end of the pipe (14 - Fig. 3) onto the valve (21 - Fig. 3).
- 17) Fit the clamp (15 - Fig. 3) onto the end of the pipe (14 - Fig. 3) and tighten it firmly.
- 18) Take the flexible pipe (19 - Fig. 3) and fit one end onto the butterfly valve (21 - Fig. 3) and the other end onto the curve (17 - Fig. 3).
- 19) Fit the clamps (18 - 20 - Fig. 3) onto the flexible pipe and tighten them firmly.
- 20) Fit the flexible pipe (23 - Fig. 3) onto the valve (2 - Fig. 3).
- 21) Fit the clamp (22 - Fig. 3) onto the end of the flexible pipe (23 - Fig. 3) and tighten it firmly.
- 22) Fill the tank with powder, fit the cap (1 - Fig. 2) on the tank and tighten it firmly.

Warnings: In both the liquid and the powder version, the tank can be filled with the motor running. It is important to ensure that the distribution valve (1 - Fig. 10) and the butterfly valve (1 - Fig. 11) are in fully closed position.

• Starting up the pulverizer

- 1) Ensure that the butterfly valve (1 - Fig. 11) is in closed position.
- 2) Dry out the inside of the tank, then fill it with powder without exerting any pressure.
 - Do not allow the level of powder inside the tank to fill it more than 3/4 full.
 - Before filling the tank, ensure that there are no lumps or traces of damp in the powder; if there are any it must be sieved.
- 3) Start the motor, following the instructions.
- 4) Lift the machine onto your shoulders (Fig. 8).
- 5) Increase the number of motor revs by turning the throttle (2 - Fig. 9); for the first 30 working hours do not exceed 3/4 of the opening distance.
- 6) Open the butterfly valve (1 - Fig. 11), adjusting the quantity of powder to be distributed to suit the treatment that is to be carried out.

• Instructions on the operation and good use of the motor

The two-stroke motor works with lubrication supplied by the blended fuel; the oil necessary for the motor is transported with the petrol into all the points that require lubrication. So there is no need for separate greasing or lubrication of the motor. However it is very important to ensure that the doses of the mixture are correct. A blend that is too poor in oil may cause severe damage to the motor; a blend that is too rich quickly causes a considerable amount of carbon deposits, leading to a fall in yield of the motor. We recommend a 4 % blend of oil and petrol. Example: to one litre of super grade petrol add 40 cc. of oil; to 10 litres of super grade petrol add 400 cc of oil; to 25 litres of super grade petrol add 1000 cc (1 litre) of oil. As fuel use only super grade petrol and for lubrication only well-known brands of special oils for two-stroke motors. In no case should you use a type of oil intended for other purposes, such as machine engine oil or gear oil with a very low flash point, which would cause rapid deterioration of the motor.

• Position for starting the motor

- 1) Place the atomizer on the ground or on a flat surface.
- 2) Hold the atomizer in position with one hand and pull the starter with the other. Be careful never to pull the start cord out to its full length (1 - Fig. 6), as this would damage the self-winding spring. To hold the atomizer firmly on the ground while starting, place one foot on the support bracket (2 - Fig. 6).

• Starting the motor when cold

- 1) Turn on the fuel cock (1 - Fig. 4), shifting the lever to open position "A".
- 2) Turn the switch (3 - Fig. 9) to ON.
- 3) Shift the choke lever (1 - Fig. 5) to closed position "C".
- 4) Turn the throttle lever (2 - Fig. 9) from a quarter to one third of a turn.
- 5) Start the motor.
- 6) Regulate the number of revs by turning the throttle (2 - Fig. 9).
- 7) Keep the motor turning over at a constant speed for a few minutes.
- 8) Turn the throttle to maximum so that the choke lever clicks (1 - Fig. 5) into open position "A", then lower the number of revs to normal running speed.

• Starting the motor when warm

- 1) Turn on the fuel cock (1 - Fig. 4), shifting the lever to vertical position.
- 2) Turn the switch (3 - Fig. 9) to ON.
- 3) Turn the throttle lever (2 - Fig. 9) about half way.
- 4) Start the motor.
- 5) Regulate the number of revs by turning the throttle (2 - Fig. 9).

• Stopping the motor

Turn off the fuel cock (1 - Fig. 4), shifting the lever to horizontal position "C".

Warning: To facilitate restarting of the motor, it is always advisable to turn off the fuel cock and to let the fuel run out naturally, keeping the motor running until it stops of its own accord.

ATTENTION: To stop the motor in an emergency, turn the switch (3 - Fig. 9) to OFF

• **Procedure for a flooded motor**

If the motor is flooded, proceed as follows:

- 1) Ensure that the switch (3 - Fig. 9) is in ON position.
- 2) Turn off the fuel cock (1 - Fig. 4), shifting the lever to horizontal position "C".
- 3) Remove the spark plug (Fig. 12).
- 4) Turn the throttle (2 - Fig. 9) to maximum.
- 5) Pull the start cord (1 - Fig. 6) about fifteen times so as to turn the motor.
- 6) Clean the spark plug (Fig. 13) and replace it (Fig. 12), then repeat the normal starting procedure.

• **Adjusting the idling speed**

To adjust the motor revs, turn the screw on the carburetor (1 - Fig. 7); turn in a clockwise direction to increase the number of revs. At idling speed the number of motor revs must be about 2100 - 2200 rpm.

• **Noise production**

In view of the high level of noise produced by the machine, it is obligatory to use hearing protection devices.

Maximum level of continuous acoustic pressure: **MERCURY K-45** HP3 92,1 dB (A); **MERCURY K-90** 93,7 dB (A).

Maximum level of acoustic power produced: **MERCURY K-45** 101,9 dB (A); **MERCURY K-90** 103,5 dB (A).

TRANSPORT

When transporting the machine over short or long distances, it is advisable to drain the fuel tank and chemicals tank completely so as to avoid leakage. During transport the machine should always be kept in a vertical position, as there is always some residue of fuel in the motor, which could leak out and impregnate and/or damage the components of the atomizer. When shifting the machine, always lift it by the harness or grip the back-piece. Avoid lifting it in other points such as the tank, motor unit or spraying unit, as this could break or damage some of the components.

Warning: Before transporting the machine, wait until the motor unit has cooled down so as to avoid burning yourself or damaging material in the vicinity of the machine.

MAINTENANCE

ATTENTION: All maintenance or repairs must be carried out only after having completely washed the machine and the spraying circuit. Maintenance and repair jobs must be carried out with the machine switched off.

When maintenance or overhauling jobs are required, use only original spare parts so as to guarantee maximum reliability of the atomizer.

- Every 20 working hours check all the fuel and chemical pipes to ensure that there are no cracks and that the clamps have not worked slack.
- Every 30 working hours clean the fuel air intake filter with a jet of compressed air. Do not use solvents or other inflammable compounds.
- Every 40 working hours clean the carburetor and the spark plug, checking that the distance between the electrodes is between 0.5-0.6 mm (Fig. 13).
- When using the machine, especially when restarting it, be very careful not to touch the motor or the exhaust accidentally as they may cause severe burns on account of their high temperature.

ADVICE FOR STORAGE

If the atomizer is not to be used for a long period, proceed as follows:

- 1) Remove all the blended fuel from the tank and from the carburetor. Wash out the liquid tank very accurately.
- 2) Clean the atomizer well and eliminate any encrustations of dust or chemicals.
- 3) Remove the spark plug. Pour a few drops of oil for two-stroke motors in through the spark plug hole (the same oil used for the blended fuel). Pull the start cord two or three times, then replace the spark plug.
- 4) Store the atomizer in a cool dry place, out of the reach of children.

TROUBLESHOOTING

The motor will not start	
The petrol cock is turned off	Turn on the cock.
No fuel in the tank	Fill the tank
The air hole in the cap of the tank is closed	Open the air hole with a pin
The fuel pipe is clogged	Clean or change the pipe
Clogged fuel in the petrol cock or in the fuel input pipe	Clean the filters
The carburetor nozzle is clogged	Clean the nozzle with a jet of air
Dirty carburetor	Clean it, removing all encrustations, and blow with a jet of air
The float pin is blocked	Clean the pin and make it mobile
Start cord detached or damaged	Secure or replace the cord
Dirty or damaged spark plug	Clean away any encrustations and check the distance between the electrodes, which must be 0.5-0.6 mm., Change the spark plug if necessary; the thermal value for spark plugs varies between 175 and 225. (We recommend BOSCH WK 175T1)
The motor runs irregularly or stops	
Dirty carburetor pipe	Clean the pipe, the petrol cock filter and the fuel input pipe filter
The main nozzle is clogged	Clean or replace the nozzle
Loose spark plug	Tighten the plug and do not forget the gasket
Spark plug covered with soot	Clean or change the spark plug
Start cord detached or damaged	Secure or replace the cord
The motor runs on four strokes	
Carburetor nozzle (main nozzle) too wide	Replace the nozzle with a narrower one
Faulty carburetor float	Change it
Start cord detached or damaged	Secure or replace the cord

Motor yield is low	
Carburetor pipe or filter, faulty pipe, loose connections	Clean and secure the pipes. Change them if there are any cracks or defects
Sponge air filter in the carburetor is dirty	Clean or change the filter
Dirty carburetor	Dismantle and clean the carburetor
Air infiltration in the cylinder head, in the cylinder flange or in the carburetor flange caused by faulty gaskets or loose screws	Replace the gaskets, tighten the screws and the nuts
Oil carbon deposits in the motor or in the exhaust	Clean the motor, the carburetor and change the exhaust
The motor crackles or there is knocking in the carburetor	
Motor ignition is faulty	Have the ignition regulated in a specialized workshop
On the spark plug there is a bridge of soot between the two electrodes	Clean away any encrustations and check the distance between the electrodes, which must be 0.5-0.6 mm.
The thermal value of the spark plug is too low	Change the spark plug; the thermal value for spark plugs varies between 175 and 225. (We recommend BOSCH WK 175T1)
Fuel is not reaching the motor	Check the carburetor and replace it if necessary. Clean the main nozzle and, if necessary, fit a nozzle with a wider opening.
The motor overheats	
The fuel mixture is not suitable due to lack of oil and/or unsuitable oil	Drain the fuel tank and pour in a 4% blend. Always be sure to use oil of well-known brands for preparing the blended fuel.
The fuel nozzle is too narrow	Replace it with a wider nozzle
Motor ignition is not regular	Have the ignition regulated by a specialized workshop
The exhaust device is clogged	Clean the exhaust, avoiding the use of solvents or inflammable liquids, or replace it if necessary
Dirty ribbing on the head or cylinder	Clean the cylinder and the motor, paying particular attention during reassembly
Noise	
Knocking noise when the motor is running at full power	Unsuitable fuel. Replace it with 4% blended fuel and remove the deposits of oil carbon from the motor.
Rattling noise	The elastic rings (segments) of the pistons are blocked. Clean the segments or replace them and clean their seats on the piston.

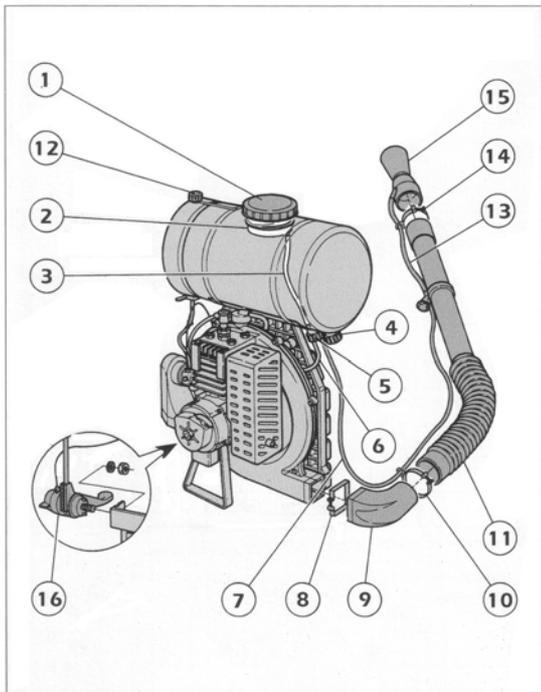


FIG. 2

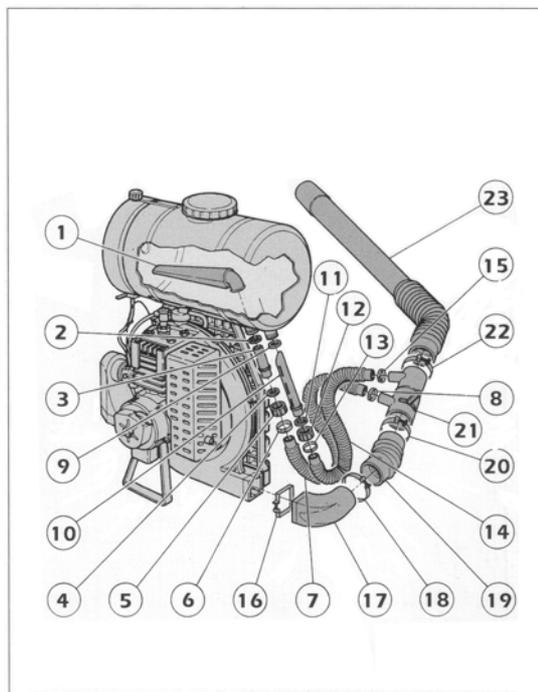


FIG. 3

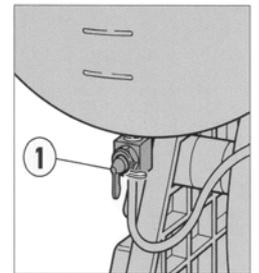


FIG. 4

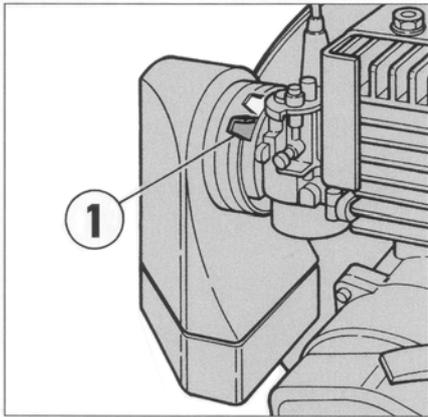


FIG. 5

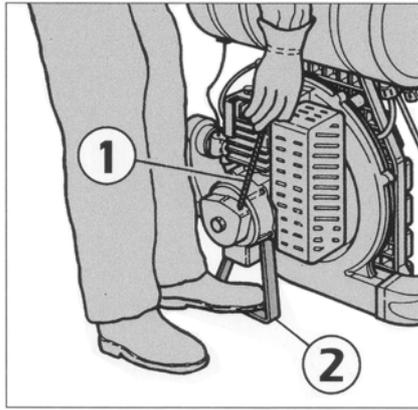


FIG. 6

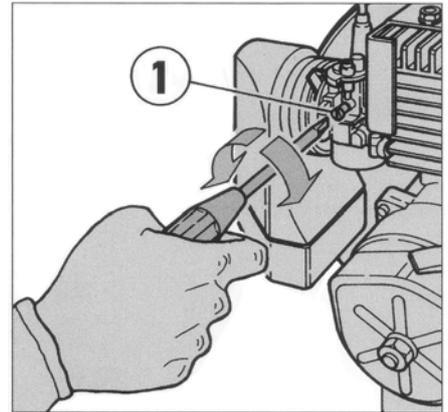


FIG. 7

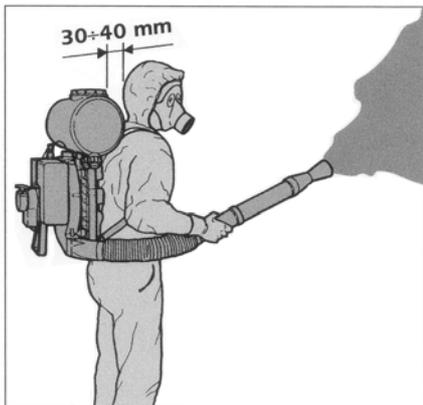


FIG. 8

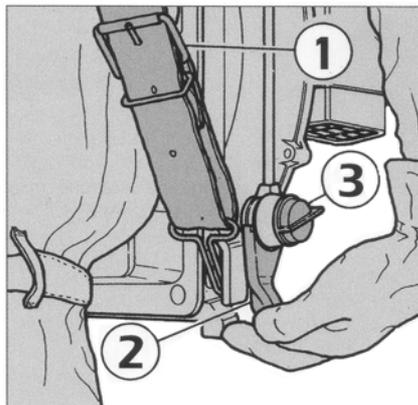


FIG. 9

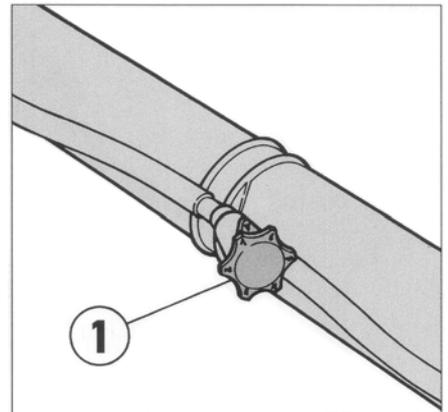


FIG. 10

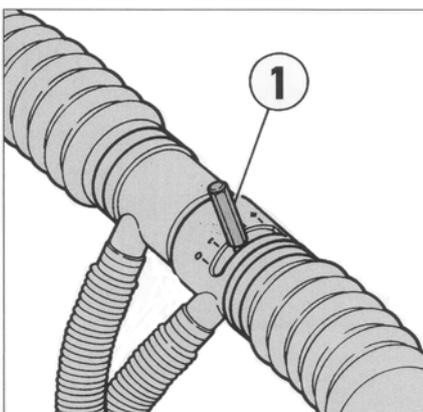


FIG. 11

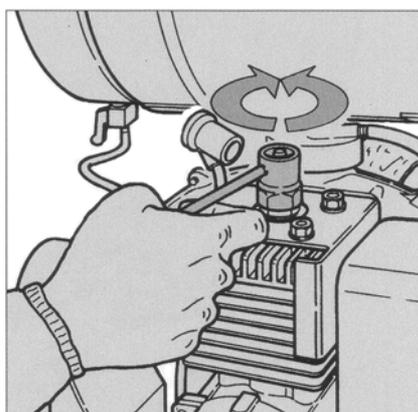


FIG. 12

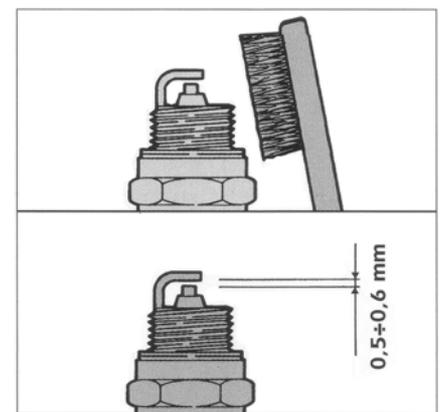


FIG. 13