Holzfforma®

for the working man

THE HOLZFFORMA **SR420 56.5cc Mistblower**

THE HOLZFFORMA

SR420

3RD GENERATION OF MACHINERY

CONTENTS

Guide to Using this Manual

Pictograms

All the pictograms attached to the machine are shown and explained in this manual.
The operating and handling instructions are supported by illustrations.

Symbols in text

The individual steps or procedures described in the manual may be marked in different ways:

- Step or procedure without direct reference to an illustration.

Description of step or procedure that refers directly to the illustration and contains item numbers that appear in the illustration.
Example:

Loosen the screw **(1)**

Lever **(2)** ...

In addition to the operating instructions,this manual may contain paragraphs that require your special attention.Such paragraphs are marked with the symbols described below:

Warning where there is a risk of an accident or personal injury or serious damage to property.

Warning where there is a risk of damaging the machine or individual components.

Note or hint which is not essential for using the machine, but may improve the opetator's umderstanding of the situation and result in better use of the machine.

Note or hint on correct procedure in order to avoid damage to the environment.

* Equipment and features

This instruction manual refers to several models with different features. Components that are not installed in all models and related applications are marked thus. Such components are available as special accessories from your dealer.

Engineering improvements

Philosophy is to continually improve all of its products. As a result, engineering changes and improvement are made from time to time. If the operating characteristics or the appearance of your machine differ from those described in this manual, please contact your dealer for assistance.

Therefore, we cannot be responsible for changes, modifications or improvements not covered in this manual.

Safety Precautions

Special safety precautions must be observed when working with the power tool.

It is important that you read, fully understand and observe the following safety precautions and warnings.

Careless or improper use of any blower may cause serious or fatal injury.

Have your dealer show you how to operate your blow et.Observe all applicable local safety regulations,standards and ordinances.

Minors should never be allowed to use a blower.

Bystanders, especially children, and animals should not be allowed in the area where a blower is in use.

The operator is responsible for avoiding injury to third parties and damage to their property.

Do not lend or rent your blower without the owner's manual. Be sure that anyone using your blower understands the information contained in this manual.

You must be fit to work with a blower

- Rested, healthy and in good physical and mental condition
- If you get tired,take a break in good time
- Do not operate the blower if you are under the influence of any substance (drugs, alcohol, etc.)which might impair vision, dexterity or judgment.

Only attachments supplied are expressly approved for use with your specific model are authorized.

Other attachments must not be used because of the increased risk of accidents.

Excludes all liability for personal injury and damage to property caused while using unauthorized attachments.

Wear proper clothing and equipment

Clothing must be sturdy and snug-fitting,but allow complete freedom of movement - a safety coverall is recommended.

Avoid loose-fitting jackets,scarfs, neckties, jewelry,flared or cuffed pants,unconfined long hair or anything that could get into the air intake.

Wear sturdy boots with nonslip soles. Steel-toed safety boots are recommended.

Wear safety glasses,goggles or a face shield.

Wear sound barriers (ear plugs or ear mufflers) to protect your hearing.

Wear heavy-duty, nonslip gloves, preferably made of chrome leather.

Always shut off the engine before refueling.

Gasoline is an extremely flammable fuel. Do not smoke or bring any fire or flame near the fuel.

Do not fuel a hot engine - fuel may spill and cause a fire.

Remove the fuel filler cap on the unit carefully so as to allow any pressure build-up in the tank to release slowly.

Fuel your blower, in well-ventilated areas, outdoors only. Wipe off any spilled fuel before starting and check for leakage. Take care not to get fuel on your clothing. If this happens, Change immediately.

Unit vibrations can cause an improperly tightened fuel cap to loosen or come off and spill quantities of fuel.

In order to reduce risk of fuel spillage and fire, tighten fuel cap as speeifred.

On units with a screw cap: Tighten the cap by hand with as much force as possible. On units with hinged handle on the fuel cap: Tighten as described in chapter "Fueling".

Check for fuel leakage while refueling and during operation. If fuel leakage is found, do not start or run the engine until leak is fixed.

Store gasoline and oil in properly labelled, approved safety-type cans.

Transporting the unit

Always stop the engine.

Transporting in a vehicle: Properly secure your unit to prevent turnover, fuel spillage and damage. When the unit is not in use(work break), put it dowm so that it does not endanger others.

Before starting

Check the following points:

- Throttle trigger must move freely and spring back to idle position when released.
- Stop switch must move easily to"OFF"
- Tightness of spark plug boot-if boot is Loose, sparks may occur and ignite the escaping fuel vapor!

Starting

- Start the engine at least 3 m (10 ft) from the fueling spot, outdoors only.
- To reduce the risk of breathing toxic fumes, never start or run your unit in confined spaces.
- Place the unit on firm ground in an open area.
- Make sure you have good balance and secure footing.
- Hold the unit securely.

Your blower is a one-person unit. Do not allow other persons to be near the running unit - even when starting.

For specific starting instructions, see chapter"Starting" in the owner's manual.

During opetation

Warning!

Your blower produces toxic exhaust fumes as soon as the engine is running. These gases (e.g. carbon monoxide) may be colorless and odorless. To reduce the risk of serious or fatal injury from breathing toxic fumes, never run the blower indoors or in poorly ventilated locations.

Ensure proper ventilation when working in trenches, hollows or other confined areas.

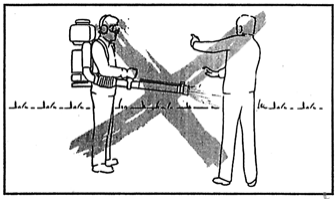
To reduce the risk of igniting highly combustible fuel vapor and causing a fire, never smoke while working with or standing next to the blower.

Always hold your unit firmly- make sure you always have a firm and secure footing.

Examine the work area: Do not direct

the air blast towards bystanders

since the air flow can blow small objects at great speed.



Take care in slippery conditions

- On ice, in wet or snow
- On slopes or uneven ground

Watch out for obstacles:

Roots, ditches, holes or rubbish which could cause your to trip or stumble.

Spraying attachment

⚠ In the interests of the general oublic and the environment it is essential to observe all general safety regulations when handling and using plant protection products and other chemicals.

Follow the safety precautions and instructions given by the manufacturer of the plant protection products.

Change clothing immediately if it becomes soaked with plant proteciton chemical or spay solution.

⚠ To reduce the risk of inhaling poisonous fumes from chemicals and exhaust gases, do not operate the mistblower in confined spaces. Always wear a respirator when working in well- ventilated greenhouses, in dense, high stands and performing any work with dangerous dusting chemicals. Be alert to the wind directi-on. Do not work into the wind. Walk forwards only when the unit is running.

After finishing work, drain and clean the container. Do not empty residual spray solution or flushing fluids into waterways, gullies, sinks, drainage ditches or shafts. Dispose of properly in accordance with local waste disposal regulations.

Always drain and clean the container before transporting the mistblower in a vehicle.

⚠ In an emergency, release the quick-action buckles, slip out of the harness and throw off the machine.

Vibrations

Prolonged use of the unit may result in vibration-induced circulation problems in the hands (whitefinger disease).

No general recommendation can be given for the length of usage because it depends on several factors.

The period of usage is prolonged by:

- Hand protection (wearing warm gloves)
- breaks

The period of usage is shortened by:

- Any personal tendency to suffer from poor circultaion (symptoms: frequently cold fingers, itching).
- Low outside temperatures.
- Gripping force (a tight grip hinders circulation).

Continual and regular users should monitor closely the condition of their hands and fingers. If any of the above symptoms appear, seek medical advice.

Maintenance and repairs

Do not attempt any maintenance or repair work not described in your owner's manual.

Have such work performed at your service shop only.

Never modify your power tool in any way as this could result in serious injury.

Always stop the engine and disconnect the spark plug boot before doing any maintenance or repair work or cleaning the machine.

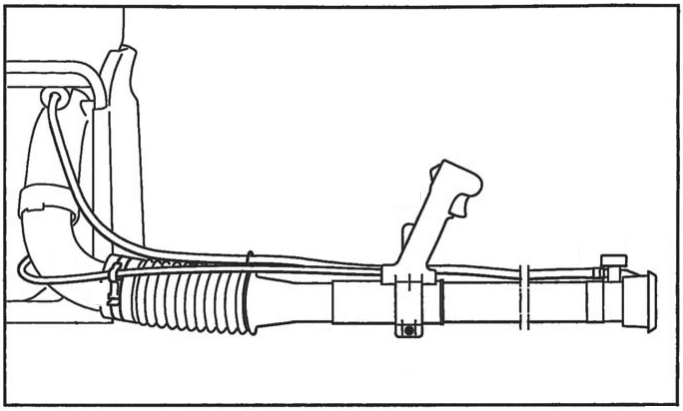
Exception: Carburetor and idle adjustments.

Always clean dust and dirt off the machine after finishing work.

Do not service or store your unit near any fire or flame!

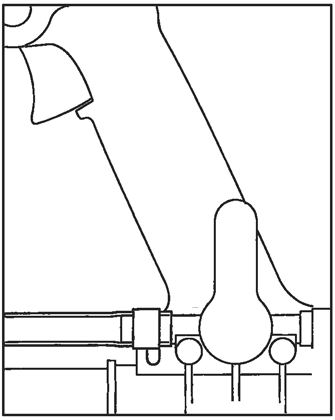
- Check fuel cap regularly for leaks.
- Use only a approved spark plug (see Specifications) and make sure it is in good condition.
- Inspect ignition lead (insulation in good condition, secure connection).
- To reduce the risk of fire due to ignition outside the cylinder, move the stop switch to **OFF** or **ON** before turning the engine over on the starter with the spark plug boot removed or the spark plug unscrewed.
- Check condition of muffler periodically.
- To avoid **risk of fire and hearing loss,** do not operate your unit if the muffler is damaged or missing.
- Never touch a hot muffler or burn will result.

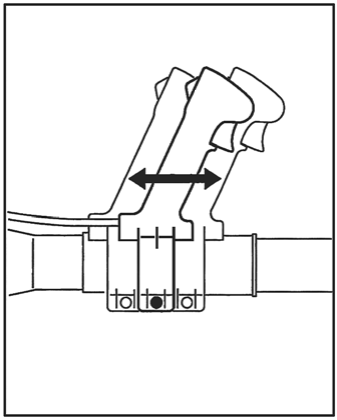
Assembing the Unit



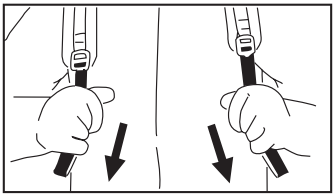
Mounting the spraying attachment

- Push the extension tube into the pleated hose as far as it will go.
- Rotate the tube to the left (counter-clockwise) as far as stop and leave it in that position until you have completed the following adjustments.
- Turn the control handle counterclockwise to the horizontal position.
- Now rotate the extension rube counterclockwise until the metering unit points in the same direction as the control handle.
- Tighten down clamp screw (see "Adjusting the control handle").
- Attach liquid hose to the pleated hose with the retainer .





- Push the free end of the liquid hose over the stub on the stop cock and secure in position with the hose clip .
- Close the stop cock (move lever to vertical position).
- Fill up with water and check all hose connections for leaks.



Adjusting the control handle

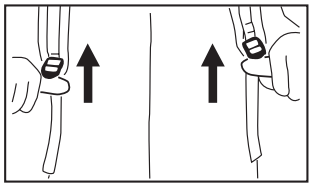
- Put the unit on your back.
- Release the clamp screw .
- Slide the control handle along the pleated hose to the most comfortable position.
- Retighten the clamp screw .

Adjusting the harness straps

- Pull the ends of the straps downward to tighten the harness.

Fuel

Your engine requires a mixture of gasoline and engine oil. The quality of these constituents and the mix ratio have a decisive influence on the function and service life of the engine.



Loosening the harness straps

- Lift the tabs of the two sliding adjusters.
- Adjust the straps so that the backplate is held firmly and comfortably against your back.

Unsuitable fuels or lubricants or mix ratios other than those specified may result in serious damage to the engine (piston seizure,rapid rate of wear, etc.).

Gasoline

Use only regular branded gasoline with a minimum octane rating or 90. If the octane rating of the regular grade gasoline in your area is lower, use premium fuel - leaded or unleaded.

For health and environmental reasons,you should give preference to unleaded gasoline.

If your machine is equipped with a **catalytic converter,** you must use **unleaded gasoline.**

A few tankfuls of leaded gasoline will greatly reduce the efficiency of the catalytic converter.

Engine oil

Use only quality two-stroke engine oil.

Other quality two-stroke engine oils must conform to classification TC.

Poor quality gasoline or engine oil may damage the engine, sealing rings, hoses and the fuel tank.

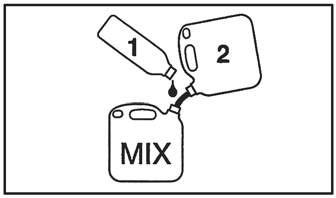
Mixind fuel

Avoid direct skin contact with gasoline and avoid inhaling gasoline vapour.

- Use a canister approved for storing fuel. Pour oil (1) into the canister first, then add gasoline (2) and mix thoroughly.

Mix ratio

Two-stroke engine oils (classification TC): 25 parts gasoline to 1 part oil



Fueling

Storing fuel

Fuel mix ages:
Only mix sufficient fuel for a few months work. Store in approved safery-type fuel canisters in a dry and safe location.

- Thoroughly shake the mixture in the canister before fueling your machine.

Pressure may build up in the canister - open it carefully.

- Clean the fuel tank and canister from time to time.

Dispose of cleaning fluid properly at authorized disposal location.

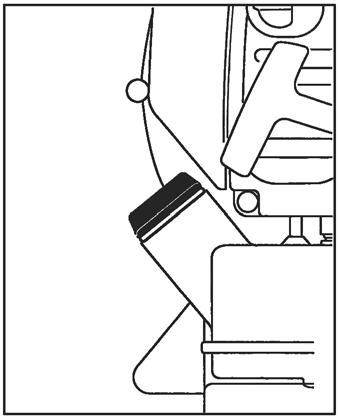
- Before fueling, clean the filler cap and the area a around it to ensure that no dirt falls into the tank.
- Position the unit so that the filler cap is facing up.

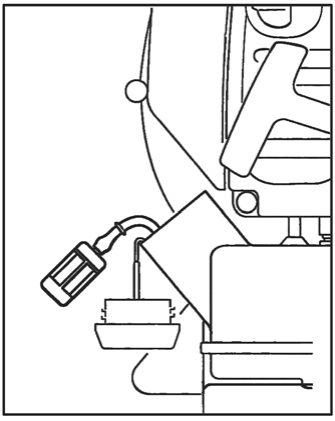
Take care not to spill fuel while fueling and do not overfill the tank.

⚠ After fueling, tighten down filler cap by hand as securely as possible.

Change the fuel pickup body once every year

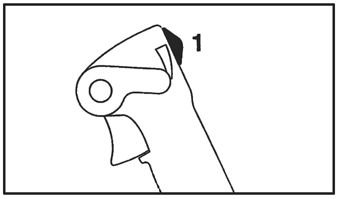
- Drain the fuel tank.
- Use a hook to pull the fuel pickup body out of the tank and take it off the hose.
- Push the new pickup body into the hose.
- Place the pickup body in the tank.

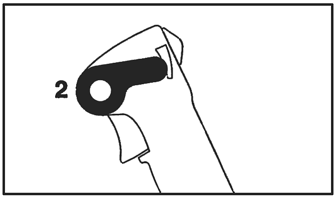




see "Guide to Using this Manual"

Starting / Stopping the Engine





- Observe safety precautions - see chapter" Safety Precautions".
- Slide the stop switch **(1)** to ON
- Move the setting lever **(2)** to the center position - **this is the starting throttle position**

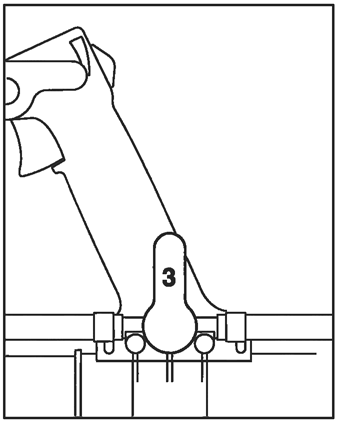
Note:

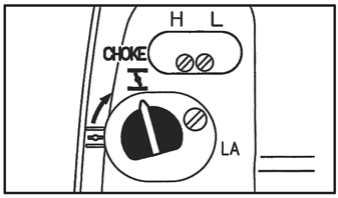
The setting lever can be used to select any throttle opening between idle speed (lower stop) and full throttle (upper stop).

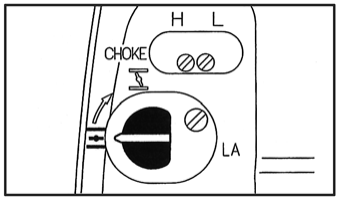
Set the lever to idle position before switching off the engine.

Before starting

- Move stop cock lever **(3)** to upright position.



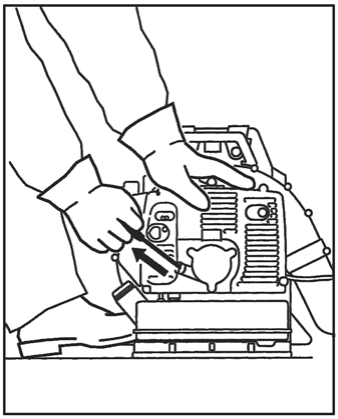




- If the engine is cold, turn the choke knob to
- If the engine is warm, turn the choke lever to

Also use this position is the engine has been running but is still cold.

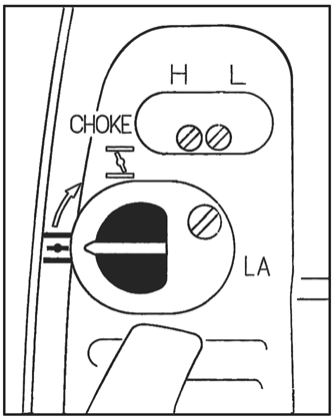
- Put the unit on the ground. Check that bystanders are well clear of the general work area and the nozzle.
- Make sure you have a firm footing: Hold the unit with your left hand on the housing and put one foot again stthe base plate to prevent it slipping.
- Pull the starter grip slowly with your right hand until you feel it engage and give it a brisk strong pull. Do not pull the starter rope out all the way as it might otherwise break.
- Do not let the starter grip snap back.

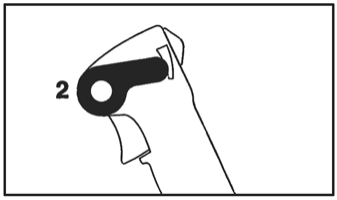


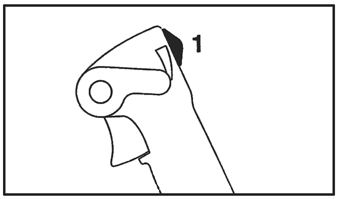
- Guide it slowly back into the housing so that the starter rope can rewind properly.

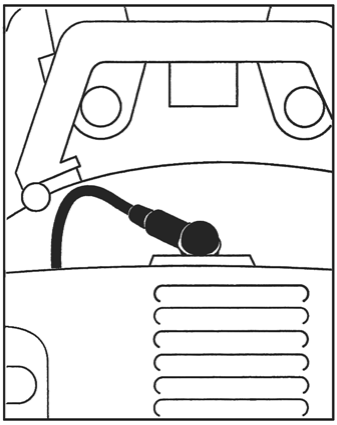
When engine begins to fire:

- If engine is **cold:**
  Turn choke knob to ⇳ and continue cranking until engine runs.
- If engine is **warm:**
  Continue cranking until engine runs.









As soon as engine runs:

- Move the setting lever **(2)** to the lower stop so that the engine settles down to idle speed.

To shut down the engine:

- Slide the stop switch **(1)** to **OFF**

At very low outside temperatures: Allow engine to warm up

As soon as engine runs:

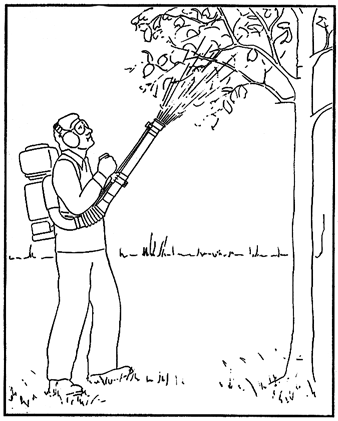
- Move the setting lever to the lower stop - the engine settles down to idle speed.
- Open throttle slightly - warm up engine for a short period.

If the engine does not start:

If you did not turn the choke knob to ⇳ quickly enough after the engine began to fire, the combustion chamber is flooded.

- Pull off the spark plug boot.
- Unscrew and dry off the spark plug.

- Set the stop switch to **OFF**
- Open the throttle fully.
- Pull the starter rope several times to clear the combustion chamber.
- Fit the spark plug and reconnect the spark plug boot.
- Move the stop switch to **ON**
- Turn the choke knob to even if the engine is cold.
- Now start the engine.



Fuel tank run until dry and then refueled

- Pull the starter rope several times to prime the fuel line.

Operating Instructions

During break-in period

A factory new machine should not be run at high revs (full throttle off load) for the first three tank fillings. This avoids unnecessary high loads during the bresk-in period. As all moving parts have to bed in during the bresk-in period, the frictional resistances in the engine are greater during this period. The engine develops its maximum power after about 5 to 15 tank fillings.

During operation

After a long period of full-throttle operation, allow engine to run for a while at idle speed so that the heat in the engine can be dissipated by flow of cooling air. This protects engine- mounted components (ignition, carburetor) from thermal overload.

After finishing work

Storing for short period:
Wait for engine to cool down. To avoid condensation, fill the fuel tank and keep the unit in a dry place until you need it again. Storing for a long period: see chapter"Storing the Machine".

Using the Mistblower

The mistblower is carried as a backpack and designed for single-handed operation.

It is ideal for spraying plant protection products.

Furthermore, the unit is suitable for spreading granulate, e. g. fertilizers and fish feed, and grass seed (special accessory).

Filling the Container

Mix chemical solutions outdoors or in well-ventilated rooms only. After preparing the spray solution, empty and thoroughly rinse all containers used for the products. Calculate the amount of chemical solution required so that none is left over.

Never spray undiluted chemicals!

It is essential to observe the safety precautions and instructions given by the manufacturer of the plant protection products.

When filling the machine's container with water, close the stop cock and take particular care to avoid foaming and overflowing.

Never store chemical solution in machine's container for several days.

⚠ Even the smallest traces of plant protection chemicals in open waterways are a danger to the environment.Do not submerge filling hoses in the chemical solution since there is a risk of chemica being suced into the water pipe (e.g. drinking water supply) in the event of a sudden drop in line pressure (vacuum).

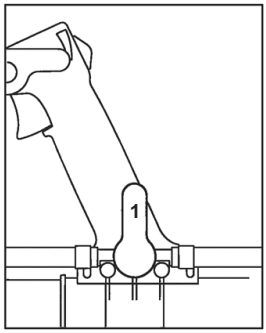
Metering Unit

The stop cock (1) on the control handle opens and closes the solution feed hose.

- Turn lever to horizontal position for maximum flow.
- Turn lever to upright position to shut off flow.
- The discharge rate can be infinitely varied by turning the metering knob on the nozzle.

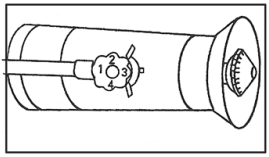
Metering knob position "1" is the minimum spray solution flow rate and "4" the maximum.

The required number on the metering knob must be lined up with the molded lug.



Check operation of metering unit at regular intervals (without pressure pump)

- Place the unit on the ground.
- Fill the container with water up to 10 liter mark.
- Set metering knob to “4”.
- Start the unit (baffle removed).
- Hold the spray tube horizontally, run the engine at full throttle, spray the contents of the container down to the 5 liter mark and note the time taken.



The time required to spray 5 liters fluid should be between 80 and 100 sec.

If the time required is longer, check the metering unit for contamination and clean if necessary. Also check carburetor setting and correct if necessary.
If there is no noticeable improvement, contact your dealer for assistance.

Mistblowing

The mistblower uses air as an additional transport medium for the active ingredient. An engine-powered fan produces a powerful, concentrated airstream to which the solution (active ingredient in a carrierliquid) is added via a metering system. The solution is atomized into very fine droplets and discharged at high velocity by the airstream.

Depending on the design of the atomizer, it is possible to produce droplets with a size of approx. 50 to 250 µm. The large number of fine droplets and the airstream's excellent penetration of the crop ensure high efficiency. This means that the quantity of carrier liquid (normally water) can be reduced, i.e. a higher concentration of active ingredient can be used in the solution.

Considerably less energy is required to accelerate air than water. Therefore, low-volume mistblowers are more efficient (long range with relatively low) engine power and low weight).

Determining and mixing required quantity of solution

Step 1:

Determine the surface area to be treated in square meters (m^2).
In the case of ground crops, simply multiply the length of the field by its width. The surface area of high-growing plants is calculated approximately by measuring the length of the rows and the average height of the foliage. The result is multiplied by the number of rows and then by two if both sides.have to be treated.

Step 2:

Refer to the instructions supplied with the active ingredient to establish the required quantity (usually quoted for 1 hectare [ha]) and the concentration (mix ratio) of the solution. Manufacturers normally quote the concentration required for high-pressure spraying.
Low-volume mist-blowing achieves about four times the yield of high-pressure spraying.
If the manufacturer's instructions do not contain any data for low-volume mistblowing, reduce the amount of carrier liquid (water) accordingly to obtain the required concentration of active ingredient.

Step 3:

Multiply the quantity of solution required for 1 hectare by the surface area calculated in Step 1. The result is the quantity of solution needed for the surface area to be treated. The surface area in hectares is obtained by dividing the number of square meters by 10000.

Example:

A field 120 meters long and 30 meters wide has to be treated with a pesticide.

Area:

$$\mathbf{120\ m \times 30\ m = 3.600\ m^2}$$

$$\frac{3{,}600\ m^2}{\frac{10{,}000\ m^2}{1\ ha}} = 0.36\ ha$$

According to the maker's instructions, 0.6 liters of pesticide are required per hectare to obtain a concentration of 0.1% for high-pressure spraying.

A concentration of 0.1% means a mix ratio of 1 part pesticide to 1,000 parts water. In this case 0.6 liters pesticide would have to be mixed with 600 liters water.

In low-pressure mistblowing only one quarter of the water is sufficient for the same amount of active ingredient (pesticide).

The quantity of solution per hectare is therefore:

$$\frac{0.61 \times \frac{1000\ T_W}{1\ T_O}}{4} = 150\ l$$

T_W= parts water

T_O= parts active ingredient

The quantity of solution required for our 0.36 hectare field is:

$$\frac{\text{150 l}}{\text{1 ha}} \text{ x 0.36 ha = 54 l}$$

Note

Increasing the strength of the mixture by a factor of 4 was assumed for our example. Other mix ratios are possible in practical applications.
The graph makes it easier to determine the quantity of solution required. Use a ruler and pencil to mark in your own applications.

Example:

Determine the active ingredient to be applied to a surface area of 3,600 m^2 if dosage per hectare is 600 g.

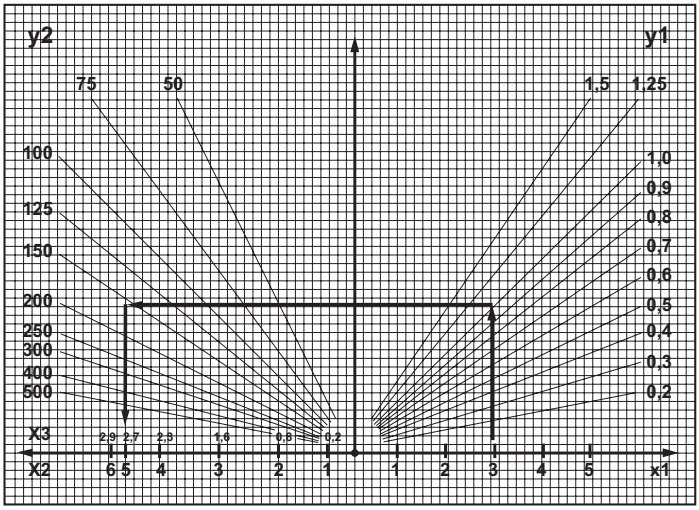
$$\frac{\text{600g x 3,600 m}^2}{\text{10,000 m}^2} = \text{216 g}$$

Determine the water required for a solution application rate of 150 l/ ha and a surface area of 3,600 m^2.

$$\frac{\text{150 l x 3,600 m}^2}{\text{10,000 m}^2} = \text{54 l}$$

The quantity of active ingredient (216 g) mixed with the amount of water (54 l) produces the solution.

Check the graph so see if there is a suitable metering knob position for the selected walking speed and working width. If not, either reduce the quantity of water or increase the walking speed.



x1= Working width (m)
x2= Metering knob position
x3= Discharge rate (l/min)

y1= Walking speed (m/s)
y2= Qty of solution per hectare (l/ha)

Preparations for mistblowing

Before starting work it is necessary to determine the following points which have an influence on the liquid discharge rate per unit area and the
distribution of the active ingredient in the crop.

- Working width
- Walking speed
- Unit's discharge rate per unit time
- Position of spray tube (angle from horizontal)

Among other factors, the **working width** is dependent on the crop and is determined by the distance betwee n the rows of trees, shrubs and bushes. In the case of low-growing crops, the best working width is up to 4 meters, but can be up to 5 meters if the user adjusts his walking speed accordingly. The working width should be marked with stakes to help avoid deviations.

The **walking speed** can vary greatly from user to user. For this reason it is advisable to do a trial run with the machine fueled and the container filled with water, and make a note of the time taken (stop watch). While walking, the spray tube should be operated (swung back and forth) as it will be during the real run described below.

This trial run is also used to check the selected working width, i.e. the greater the distance, the slower the walking speed. Check the distance walked in one minute.

Rule of thumb:

Normal length of stride is about 0.7 to 0.9 m, but can be up to 1.0m. Measuring the distance is better than counting the number of steps. Dividing the distance in meters by the time in minutes gives you the walking speed in meters per minute(m/min).

The **discharge rate per unit time**
(l/min) is infinitely variable on the machine's metering unit. The required discharge rate is determined by the area to be treated,the quantity of solution,the working width and the walking speed. It can be calculated using the following equation:

$$\frac{V_a\ (l) \times v_b\ (m/min) \times (b/m)}{A\ (m^2)} = V_c\ (l/min)$$

Where:

V_a= Quantity of solution v_b= Walking speed V_c= Discharge rate b = Working width A = Area

Important:

All values must be inserted in the equation in the units specified.Note that hectares have to be mulitiplied by 10,000 to obtain square meters.

Assuming a working width of 3 m and a walking speed of 60 m/min (1 m/s), the calculation of the above example would be as follows.

$$\frac{541 \times 60\ m \times 3\ m}{1\ min \times 3{,}600\ m^2} = 2.7\ l/min$$

In this case the metering unit on the mistblower would have to be set to 2.7l/min. If the value is not marked directly on the scale, select an intermediate settion. The settings for the metering unit and the associated discharge rates can be taken from the instructions for use.

The following table can be used as an rough guide for selecting discharge rates. If the required quantity of solution per hectare is not listed, use the next higher or lower values in the table to work out the correct proportions for your application.

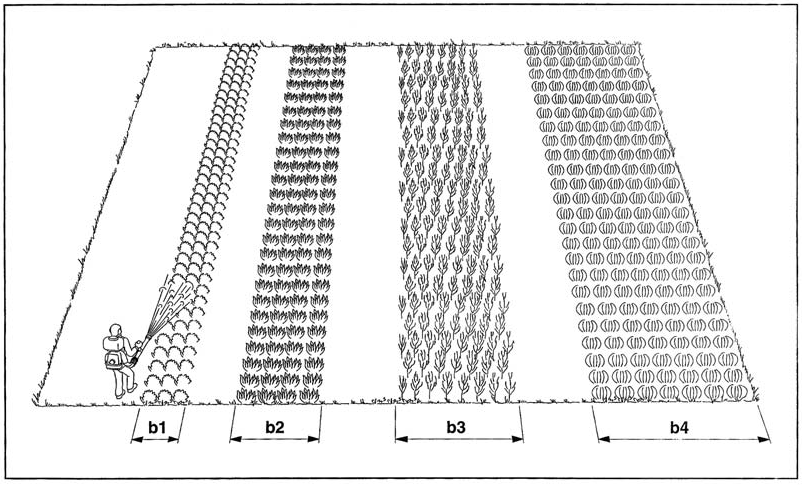
The table also shows the quantities of solution required per hectare at different working widths for given discharge rates. They are based on a walking speed of 1m/s or 60 m/min.

Discharge rate	Solution required (l/ha) at working width			
(l/min)	1 m	2 m	3 m	4 m
0.8	133	67	44	33
1.6	267	133	89	67
2.3	383	192	128	96
2.6	433	217	144	108
2.9	483	242	161	121

In our example the quantity of solution per hectare is 150 liters and the working width 3 m. In the "3m"column, the value 150 is between 144 and 161.

The difference between 150 and 161 is about twice as much as between 150 and 144, The metering unit therefore has to be set somewhere between 2.6 and 2.9. Allowing for the proportional difference, the setting should be 2.7, which corresponds to the calculated˚value.

The discharge rate is also influenced by the position of the spray tube. The discharge rates quoted are averages for the horizontal and 30˚upward positions, There is a noticeable reduction in discharge rate when the upward angle of the spray tube is increased, e.g. mistblowing high trees. A pressure pump (special accessory)is recommended when the spray tube is used at angles of more than30˚. It helps maintain a constant discharge rate in all spray tube positions.



Working width:

b1 = 1 m		
(l)	(l/min)	d
50	0.3	1
75	0.45	1
100	0.6	1-2
125	0.75	2
150	0.9	2

b2 = 2 m		
(l)	(l/min)	d
50	0.6	1-2
75	0.9	2
100	1.2	2-3
125	1.5	3
150	1.8	3-4

b3 = 3 m		
(l)	(l/min)	d
50	0.9	2
75	1.35	3
100	1.8	3-4
125	2.25	4
150	2.7	5

b4 = 4 m		
(l)	(l/min)	d
50	1.2	2-3
75	1.8	3-4
100	2.4	4
125	3	6
150	3.6	6

d = Metering knob setting

Note

The values in the table refer to a walking speed of 1 m/s and an area of 1 hectare in each case.
The table is intended to provide a rough guide.
Use the enclosed graph for special applications.

Using the mistblower

In mistblowing, the solution flows from the elevated container down through the open stop cock and metering nozzle to the spray tube. The jet of solution is injected into the airstream, atomized and discharg ed. The airstream is permeated more or less uniformly with the very fine droplets.

The factors which influence the liquid discharge rate per unit area are either fixed by the setting (discharge rate per unit time) or determined by the operator. Walking speed and working width can vary. These variati ons can result on considerable differences in the quantity of active ingredient applied per unit area. In addi tion, the wetting effect can be altered by the direction and strength of the wind.

Great care must be taken with active ingredients which can harm plants and the environment if applied in too high a dosage.

Too low a dosage may fail to achieve the desired effect.

To limit these variations, always run the machine at full throttle with the stop cock fully open. Accelerate the engine up to full throttle first and then open the stop cock. Note that the discharge rate is controlled by the metering unit, not the stop cock.

The normal walking speed for low- growing crops is 1m/s. It may be necessary to walk slower when mistbl- owing higher crops.

To achieve greater working widths or treat open and high-growing crops, the spray tube must be moved quickly back and forth or up and down.

In order to extend the mistblower's vertical reach (tall trees), the spray tube must be held steady or moved only very slowly to ensure that the spray mist is properly formed and stable.

Influence of walking speed and working width on discharge rate and amount of solution required

Practical experience has shown that walking speed can vary by 5 to 6 meters/ min. A slower walking speed means that it is necessary to reduce the discharge rate or the amount of solution and vice versa. Walking 6 m/min slower than the specified 60 m/min (1m/s) represents a reduction of 10%.

In our example the setting of the metering unit would have to be reduced by 10%, from 2.7 to 2.43 l/min. If this is not done, the quantity of slolution required would increase 10%, from 54 liters to 59.4 liters.

The variation in working width can be considerable, especially if the field has not been marked with stakes. A reduction of working width at a given walking speed means that the discharge rate would have to be reduced or the amount of solution increased and vice versa. An 0.5 m reduction, after having calculated for a working width of 3 m, represents a reduction of 17%.

In our example the setting of the merering unit would have to be reduced by 17%, from 2.7 to 2.24 l/min, If this is not done, the quantity of solution required would increase 17%, from 54 liters to 63.2 liters. If both these variations occurred at the same time, the setting of the metering unit would have to be reduced by 27%, from 2.7 to 1.97 l/min, because the quantiry of solution required would otherqise incerase 27%, from 54 liters to 68.6 liters.

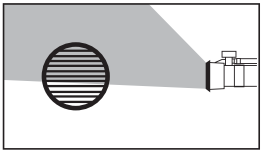
Use of standard accessories / special accessories

Pressure pump (special accessory)

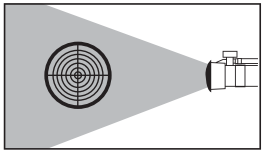
The pressure pump is recommended for applications in which the spray tube has to be held at an upward angle of more than 30° It helps maintain a constant discharge rate in all apray tube positions. Furthermore, active ingredients which tend to settle in the container are held in suspension by constant agitation of the solution.

Detachable nozzle and baffle screens (standard accessories)

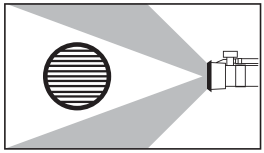
It may be necessary to change the normal cone-shaped patern and direction of the spray jet for certain crops and applications. A detachable nozzle and various baffle screens are used for this purpose.



The **deflector baffle screen** diverts the spray jet at an angle. It can be used for under-leaf treatment of low-growing crops.

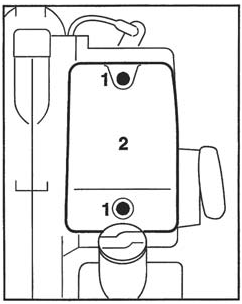


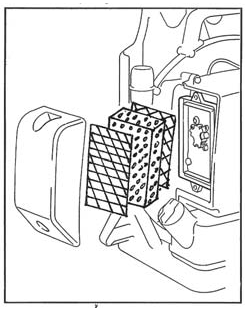
The **tapered baffle screen** causes the solution to be discharged, finely atomized in a short, broad and dense cloud.



The **dual deflector baffle screen** splits the spray jet into two and thus allows two rows of plants to betreated simultaneously.

Cleaning the Air Filter





Dirty air filers reduce engine power increase fuel consumption and make starting more difficult.

If there is a noticeable loss of engine power

- Turn choke knob to
- Release the screws (1) and pull off the filter cover (2).
- Remove the filter from the cover and inspect it - if it is dirty or damaged, clean the filter or fit a new one.
- Install the main filter and prefilter elements in the filter cover.
- Fit the cover on the filter base and tighten it down firmly.

Carburetor

General Information

Your carburetor comes from the factory with a standard setting.

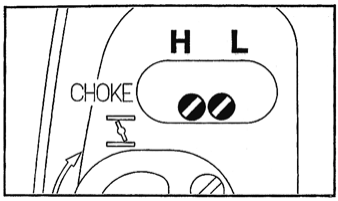
This setting provides an optimum fuel-air mixture under most operating conditions.

The high speed screw alters the engine's power output and the maximum off-load engine speed.

If the setting is too lean there is a risk of engine damage due to insufficient lubrication and overheating.

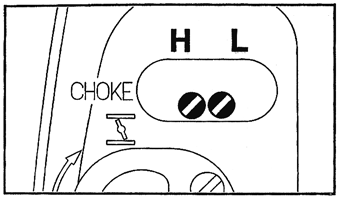
Standard Setting

Carburetor with limiter caps



- Shut off the engine.
- Screw down the high speed screw (H) and low speed screw (L) counterclockwise as far as stop (no more than 1/4 turn).

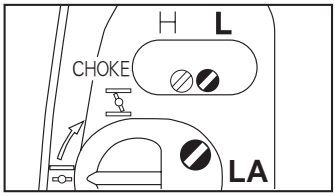
Carburetor without limiter caps



- Shut off the engine.
- Carefully screw both adjusting screws down onto their seats (clockwise).
- Open the high speed screw (H) one full turn.
- Open the low speed screw (L) one full turn.

Adjusting Idle Speed

Engine stops while idling



- Carry out standard setting on low speed screw.
- Turn the idle speed screw **(LA)** clockwise until the engine runs smoothly.

Erratic idling behavior, poor acceleration

- Carry out standard setting on low speed screw.
- Turn low speed screw **(L)** counterclockwise until the engine runs and accelerates smoothly.

It is usually necessary to change the setting of the idle speed screw **(LA)** after every correction to the low speed screw **(L).**

Fine Tuning for Operation at High Altitude

A slight correction of the setting may be necessary if engine power is not satisfactory when operating at high altitude:

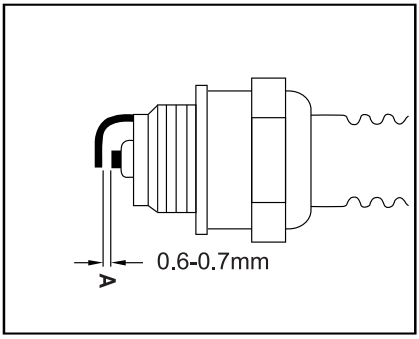
- check the standard setting.
- Warm up the engine.
- Turn the high speed screw **(H)** slightly clockwise (leaner). On models with limiter caps, turn high speed screw **(H)** 1/4 turn, but no further than stop.

If the **setting is too lean** there is a **risk of engine damage** due to insufficient lubrication and overhe ating.

Checking the Spark Plug

If engine is down on power, difficult to start or runs poorly at idle speed first check the spark plug.

- Remove the spark plug - see "Starting / Stopping the Engine"
- Check electrode gap (A) and readjust if necessary - see "Specifications".

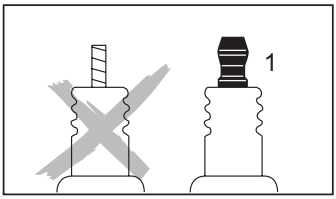


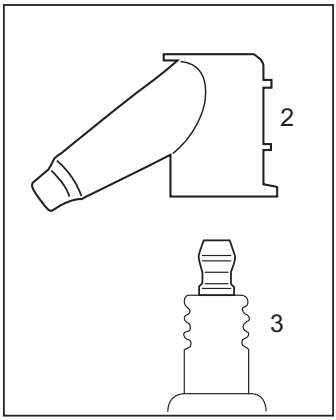
Rectify the problems which have caused fouling of spark plug:

- To much oil in fuel mix.
- Dirty air filter.
- Unfavorable running conditions.

Fit a new spark plug after about 100 operating hours – or sooner if the electrodes are badly eroded.

To reduce the risk of arcing and fire:





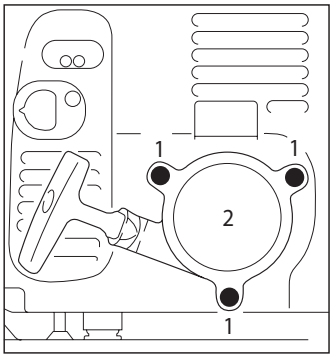
- If the spark plug comes with a detachable adapter nut (1), screw it on firmly.
  On all spark plugs:
- Always press the boot **(2) firmly** on to the spark plug **(3)**.

Engine Running Behavior

If engine running behavior is unsatisfactory even though the air filter is clean and the carburetor properly adjusted, the cause may be in the muffler.

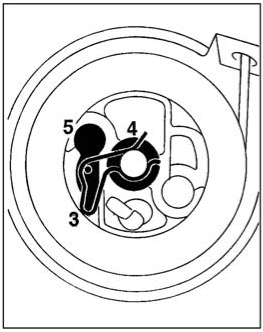
Have the muffler checked for contamination (coking) by dealer.

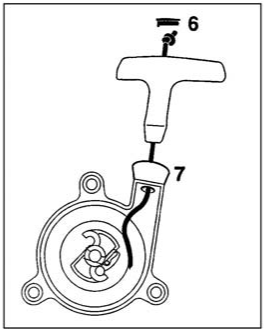
Replacing Starter Rope and Rewind Spring

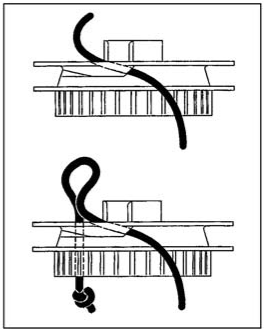


Replacing the starter rope

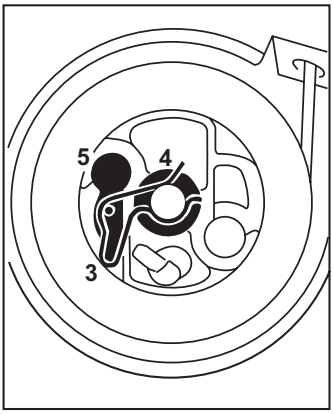
- Remove the screws **(1).**
- Take the starter cover**(2)** off the engine.

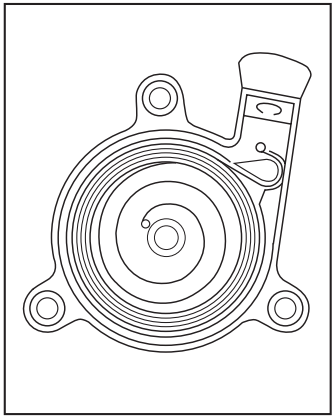






- Remove the spring clip **(3)**.
- Remove the rope rotor with washer **(4)** and pawl **(5)**.
- Ease the cap (6) out of the starter grip.
- Remove remaining rope from the rotor and grip.
- Tie a simple overhand knot in the end of the new starter rope (see Specifications) and then thread the rope through the top of the grip and the rope bush **(7)**.
- Refit the cap in the grip.
- Thread the rope through the rotor and secure it in the rotor with a simple overhand knot.





- Fit the pawl **(5)** in the rotor and slip the washer (4) over the starter post.
- Use a screwdriver or suitable pliers to install the spring clip (3) on starter post and over the peg on the] pawl-the spring clip must point clockwise - see illustration.
  Go to "Tensioning rewind spring".

Replacing a broken rewind spring

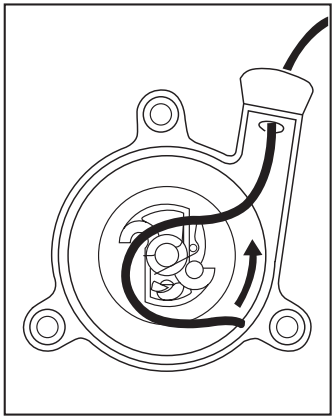
- Lubricate the new spring with a few drops of non-resinous oil.
- Remove the rope rotor as described in "Replacing the starter rope".
- Remove parts of old spring.
- Fit new spring housing – bottom plate must face downward. Engage outer spring loop over the lug.
- Refit the rope rotor.
  Go to "Tensioning rewind spring".

  If the spring pops out and uncoils during installation: Refit it in the spring housing in the counter-clockwise direction – start outside and work inward.

Tensioning rewind spring

Make a loop in the unwound starter rope and use it to turn the rope rotor six full revolutions in the direction of the arrow (see illustration).

- Make a loop in the unwound starter rope and use it to turn the rope rotor six full revolutions in the direction of the arrow (see illustration).
- Hold the rotor steady –.straighten the twisted rope.
- Release the rotor and let go of rope slowly so that it winds onto the rotor.
- The starter grip must sit firmly in the rope guide bush. If the grip droops to one side: Increase spring tension by one additional turn.



When the starter rope is fully extended it must be possible to rotate the rotor at least another half turn. If this is not possible, the spring is overtensioned and could break. Take one turn of the rope off the rotor.

- Fit the starter cover on the enging.
- Tighten down the screws firmly.
- Move the stop switch to **OFF**

Storing the Machine

For periods of about 3 months or longer

- Drain and clean the fuel tank in a well ventilated area.
- Drain and clean the container.
- Run engine until carburetor is dry – this helps prevent carburetor diaphragms sticking together.
- Thoroughly clean the machine– pay special attention to the cylinder fins and air filter.
- Store the machine in a dry, high or locked location - out of the reach of children and other unauthorized persons.
- Do not expose the container to direct sunlight for unnecessarily long periods. UV rays can make the container material brittle, which could result in leaks or breakage.

Maintenance Chart

The following maintenance intervals apply to normal operating conditions only. If your daily working time is longer than normal or operating conditions are difficult (very dusty work area etc.), shorten the specified intervals accordingly.		before starting work	after finishing work or daily	after each refueling stop	weekly	monthly	every 12 months	if problem	if damaged	if required
Complete machine	Visual inspection (conditon, leaks)	x		x						
	Clean		x							
Control handle	Check operation	x		x						
Air filter	Clean							x		
	Replace								x	
Filter in fuel tank	Check							x		
	Replace						x			x
fuel tank	Clean					x				
Carburetor	Check idle setting	x		x						
	Readjust idle									x
Spark plug	Readjust electrode gap							x		
Cooling air intakes	Clean				x					
Spark arresting screen in muffler	Check									x
	Clean or replace							x		
All accessible screws and nuts (notadjusting screws)	Tighten									x
Container with hose	Visual inspection (condition, leaks)	x								
Metering unit	Check							x		
Anti-vibration elements	Visual inspection	x								
	Have replaced by dealer							x	x	

Minimize Wear and Avoid Damage

Observing the instructions in this manual helps reduce the risk of unnecessary wear and damage to the power tool.

The power tool must be operated, maintained and stored with the due care and attention described in this owner's manual.

The user is responsible for all damage caused by non-observance of the safety precautions, operating and maintenance instructions in this manual. This includes in particular:

- Alterations or modifications to the product not approved by dealer.
- Using attachments, Power Tool Attachments or cutting tools not approved by dealer.
- Using the product for purposes for which it was not designed.
- Using the product for sports or competitive events.
- Consequential damage caused by continuing to use the product with defective components.

Maintenance Work

All the operations described in the "Maintenance Chart" must be performed on a regular basis. If these maintenance operations cannot be performed by the owner, they should be performed by an authorized servicing dealer.

If these operations are not carried out as specified, the user assumes responsibility for any damage that may occur. Among other things, this includes:

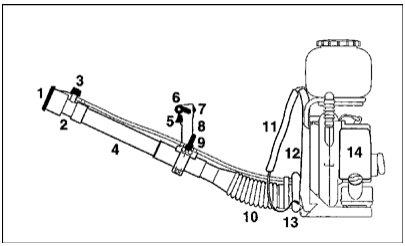
- Damage to the engine due to neglect or deficient maintenance (e.g. of air and fuel filters), incorrect carburetor adjustment or inadequate cleaning of cooling air inlets (intake ports, cylinder fins).
- Corrosion and other consequential damage resulting from improper storage.
- Damage and consequential damage resulting from the use of parts other than original replacement parts.
- Damage resulting from maintenance or repair work performed by authorized servicing dealers.

Parts Subject to Wear and Tear

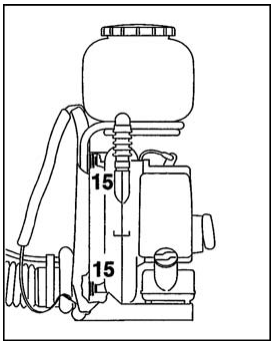
Some parts of the power tool are subject to normal wear and tear even during regular operation in accordance with instructions and, depending on the type and duration of use, have to be replaced in good time.
Among other parts, this includes:

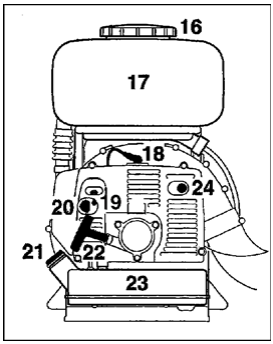
- Filters (air, fuel)
- Fanwheel
- Starter mechanism
- Spark plug
- Components of anti-vibration system

Parts and Controls



1 Baffle screen
2 Standard nozzle
3 Metering knob
4 Extension tube
5 Throttle trigger
6 Setting lever
7 Stop switch
8 Control handle
9 Stop cock
10 Pleated hose
11 Harness
12 Back plate
13 Back padding
14 Air filter





15 Antivibration elements
16 Container filler cap
17 Container
18 Spark plug boot
19 Carburetor adjusting screws
20 Choke knob
21 Fuel filler cap
22 Starter grip
23 Fuel tank
24 Muffler

Specifications

Single cylinder two-stroke engine

Displacement:	56.5 cm^3
Bore:	46 mm
Stroke:	34 mm
Idle speed:	2.800 rpm
Engine power:	2.5 kw
Weight:	10.5kg
Ari flow rate:	1060 m^3/h

Spraying attachment

Container capacity:	14 l
Size of filler strainer mesh:	1 mm
Discharge rate	0.14-3.03 l/min (infinitely) variable)
Quantity left in container:	0.1 l (design related)

Rewind Starter

Starter rope:
3.5 mm dia.
x 960 mm

1) Weighted equivalent level includes idling and racing with the same duration of exposure

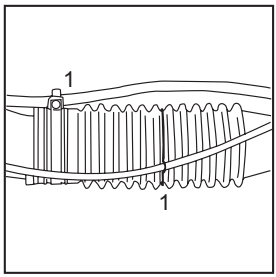
Ignition System

Type:	Electronic magneto ignition
Spark plug:	TORCH L7T
Electrode gap:	0.5 mm
Spark plug thread:	M 14 x 1.25; 9.5 mm long

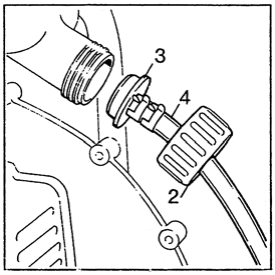
Fuel System

Carburetor:	All position diaphragm carburetor with integral fuel pump
Air filter:	Paper element
Fuel tank capacity:	1.5l
Fuel mix:	see chapter "Fuel"

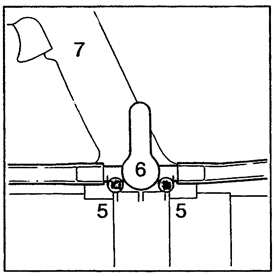
Assembly Instructions Dusting



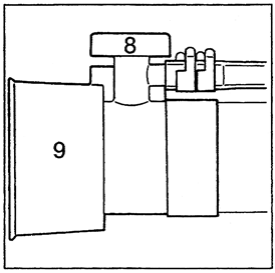
Remove retainer(1) from the pleated hose.



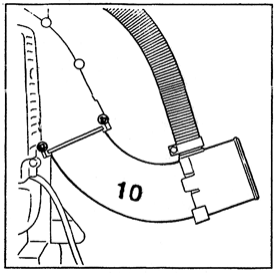
Unscrew the union nut (2) and pull out the reducer (3) with hose(4).



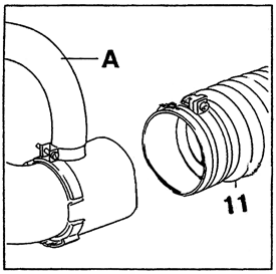
Release and rmove screws (5).Take the shut-0ff coke remove (6) off the cotrol handle (7).



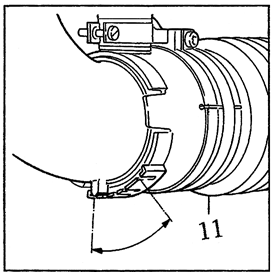
Unscrew metering knob (8) of standard nozzle(9).



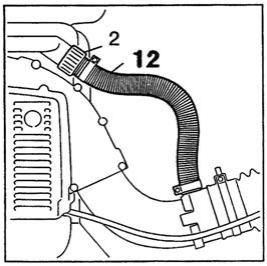
Push the assembled elbow (10) supplied with the attachment into the fan hosing as far as stop.



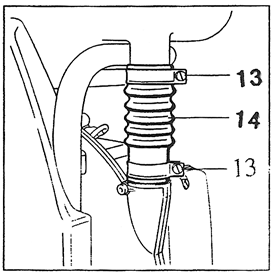
Push pleated hose (11) over the stub (A) as far as it will go.



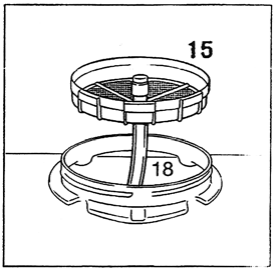
Rotate the pleated hose (11) that the marks in the positions shown in the illustration the pleated hose in this position, make sure the control handle is vertical and tighten it down firmly.



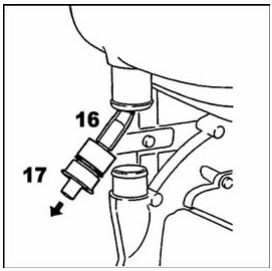
Push the stub (12)into the cotainer. Fit the union nut (2) and screw it in tightly.



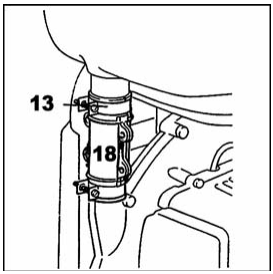
Unsrew the hose clamps (13) on the bellows (14) (hose clamps are used again).



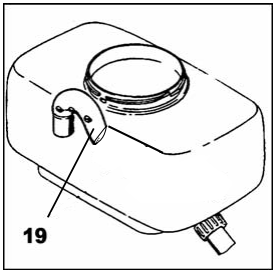
Unscrew the container's cap. Pull the container (15) off the hose (16).



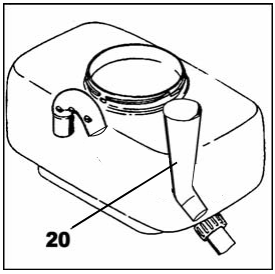
Push the reducer (17) out of the container (from inside) and remove it together with the hose (16).



Join up the twos haft shells (18) and secure them to the container and fan housing with the hose clamps (13).



Fit the air agitator tube (19) in the container.



The funnel (20) must be fitted in the container to achieve extra fine distribution to achieve extra fine distribution for dusting applications. Remove the funnel before filling the container with granulated matenial. Fit the cap on the container.

Technical Specifications For:

The Holzfforma SR420 Mistblower

Displacement:	56.5CC
Fan potation speed(r/min):	7500
Power (kw):	2.5
Range(m):	≥15
Tank capacity (L):	14
Fuel mixture ratio:	25:1
Weight(N.W./G.W.) (KG):	10.5/13