


CRAMER
Top-Technique for the Garden

FOLIAGE- and WASTE- VACUUM-CLEANER

Operating Instructions

Design: 03

You have purchased the following model (as marked)	LS 3500	LS 5000	LS 5000 H
Maschine-Nr.			

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1. Scope of Application

(The digits in text correspond to the item numbers on spare part list.)

- This machine is approved for use as a foliage and garden waste vacuum (by converting the machine into a foliage blower) as described in these operating instructions.
- The machine must not be used for any other purpose. The manufacturer shall not be liable for damage resulting from improper use of the equipment. In such cases the user shall bear sole responsibility.
- Proper use includes observation of the operating, maintenance and repair instructions given by the manufacturer.
- Only personnel who are familiar with the machine and possible dangers should be allowed to operate or repair the machine.
- The relevant accident prevention regulations and generally recognized safety rules shall be observed.
- Unauthorized changes to the machine relieve the manufacturer from any liability for damages that might result therefrom.

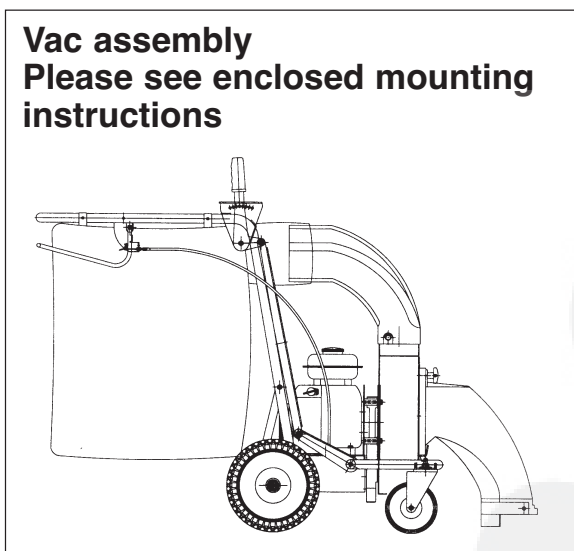


Fig. 1

2. Description

The machine comes pre-assembled except for the foliage bag (8) and the suction nozzle (25/32). The suction nozzle and bag should be fitted as shown in Fig. 1.

The vacuum body has 4 wheels (9/36/46a+b/47); hard rubber steering wheels at the front (9/47) to resist damage by thorns, cushion tyred wheels at the rear (36/46).

The drive consists of a 2.6 or 3.75 kW Honda petrol

engine. Model LS 3500 does not have a wheel drive, model LS 5000 features a wheel drive. The working width is 80 cm. A hand lever (27) is provided on the steering handle to adjust the suction height of the nozzle (3).

The machine can be converted into a foliage blower (see 4. Operation for further details).

For further technical data please refer to the table in Section 7.

3. Safety Instructions

1. Always check machine for roadworthiness and operating safety prior to use.
2. Observe all valid safety and accident prevention regulations in addition to these operating instructions.
3. Read and understand these operating and maintenance instructions and make sure that you are familiar with the control elements and their proper use.
4. Do not allow personnel to use the machine until they have read these instructions. Save instructions for future reference and ordering of spare parts.
5. Make yourself familiar with all features and control elements and with their functions prior to operating the machine.
6. Persons below the age of 14 should not use the machine.
7. Keep persons, especially children and pets, away from the working area of the machine.
8. To operate this machine the manufacturer recommends wearing the following:
 - safety glasses or other suitable eye protection;
 - sturdy shoes;
 - no loose fitting clothing that might get caught in the machine.
9. Protect the machine against rolling away and use by unauthorized personnel.
10. Prior to starting the machine make sure that there is enough fuel in the tank. Never refill fuel in enclosed buildings when the engine is running or hot. Wipe off all spilt fuel before starting, or wait until spilt fuel vapours have vanished.
11. Except when filling petrol, the petrol cap should always be firmly fitted on the tank. When handling fuel, avoid naked flames, smoking and sparks. Store fuel in appropriate containers only.
12. Prior to carrying out cleaning, repairs or inspections make sure that all moving parts have

completely stopped. The engine ignition lever should be set to »0« position so that the engine cannot be started accidentally. In addition, the gas lever must be in »Stop« position.

13. Never leave the machine unattended while the engine is running.
14. Never run the engine in closed rooms: Danger of intoxication!
15. Do not place hands or feet under the suction nozzle or near rotating parts.
16. The area to be vacuumed should be clear of stones, wires etc. which could be picked up by the rotor and flung in any direction, causing injury to the operator or bystanders.
17. Do not vacuum materials that could clog the rotor.
18. Always switch off the engine and wait until the rotor has stopped completely before doing the following:
 1. Removing the foliage bag or clearing a blockage in the infeed channel, or
 2. Removing the suction nozzle or clearing a blockage in the suction nozzle
 3. Repairs, adjustments or removal of foreign items.
19. When using the foliage vacuum as a foliage blower, the protective cover at the rotor inlet has to be properly fitted. The blower should not be pointed at persons.
20. The foliage bag should be cleaned at regular intervals to guarantee proper filter performance.
21. Never empty the foliage bag when the engine is running.
22. Never replace the suction nozzle or suction tube while the engine is running.
23. Use only manufacturer's approved accessories and original spare parts.
24. Only qualified personnel should be allowed to carry out repairs and maintenance.

4. Operation

As mentioned in section 2 the machine is pre-assembled in the works with the exception of the foliage bag and suction nozzle.

Fit the suction nozzle (3) and foliage bag (8) as shown in Fig. 1, paying particular attention to the adjustment of the Bowden cable (25/32) for the switch bar (31) to prevent slipping of the engine clutch.

The engine is started by means of a recoil starter, after first having set the ignition lever to »1« and the gas lever to »start«. For further information, please

refer to the attached instructions of Honda.

The suction power of the rotor (51) is largely dependent upon the height of the suction nozzle, (3) i.e. the heavier the material to be picked up, the lower it should be (right down for moist foliage and higher for dry foliage).

The front and sides of the foliage bag (8) are fitted with air-permeable filter material. The upper and rear surface is less permeable out of consideration for the operator. When large volumes of air are sucked in, i.e. with a high position of the suction nozzle, additional filter surfaces can be created by opening the zips on the right and left.

The foliage bag is full when the machine tends to tip backwards, lifting the suction nozzle (3) at the front. In this case the foliage bag (8) should be emptied by opening the circumferential zip on the back and emptying it by means of the handle provided on the front side. The opened part of the bag can be folded up out of the way by means of a Velcro fastener.

Model LS 3500 has to be pushed over the surfaces to be cleaned. Model LS 5000/LS 5000 H has a self-propelled drive which is started by means of the switch bar (31) on the steering handle. Model LS 5000/LS 5000 H features free-wheeling ball bearings for curve negotiating ability (38).

How to convert the foliage vacuum (3) into a foliage blower: Unscrew the suction nozzle and the outlet connecting piece (7). To cover the two openings, fit the guard (59) supplied as an accessory. Then pull back the locking plate (24) at the back to release the lock and turn the rotor body (51) by approx. 90 deg. (in counter-clockwise direction seen from the front of the machine).

Caution: rotation in the wrong direction might damage cable to contact switch (5).

5. Maintenance Instructions

Strong vibrations arise when vac is on. It is therefore necessary to check screw tightness after a few working hours.

Always set the ignition lever of the engine to »0« prior to carrying out maintenance or repairs. To clean the foliage bag (8), release the bag from the outlet (7) connecting piece and undo the retaining straps. The filter material of the foliage bag will eventually become clogged. In this case, turn the bag inside out and shake it out completely, or wash foliage bag in a water bath or by rinsing with water; industrial cleaning is also possible.

From time to time the suction nozzle (3) at the front of the machine should be dismantled and the blower rotor (14) inspected for damage caused by foreign items.

Check the air pressure of the rear wheels (36/46a+b) occasionally according to the technical data.

The drive engine should be serviced as described in

the attached instructions of Honda.

All bearing points of the foliage vacuum have self-lubricating ball bearings and do not have to be lubricated.

Model LS 5000/LS 5000 H: check drive after a longer period of working time (depending on the type of ground the vac is used on). Loosen the four screws holding the bottom plate to uncover the complete driving mechanism (45/66). Wear may have loosened the wheel driving chain (41/74). To adjust

distance again, loosen shaft bearings (42) and turn bearings (42) in slot. Tighten screws carefully.

The air filter of the drive engine should be cleaned or washed out frequently because handling foliage always involves a lot of dust.

6. Spare parts

A spare parts drawing and spare parts list is attached. Please identify the required spare parts according to the drawing and state the article numbers given in the spare parts list on all orders.

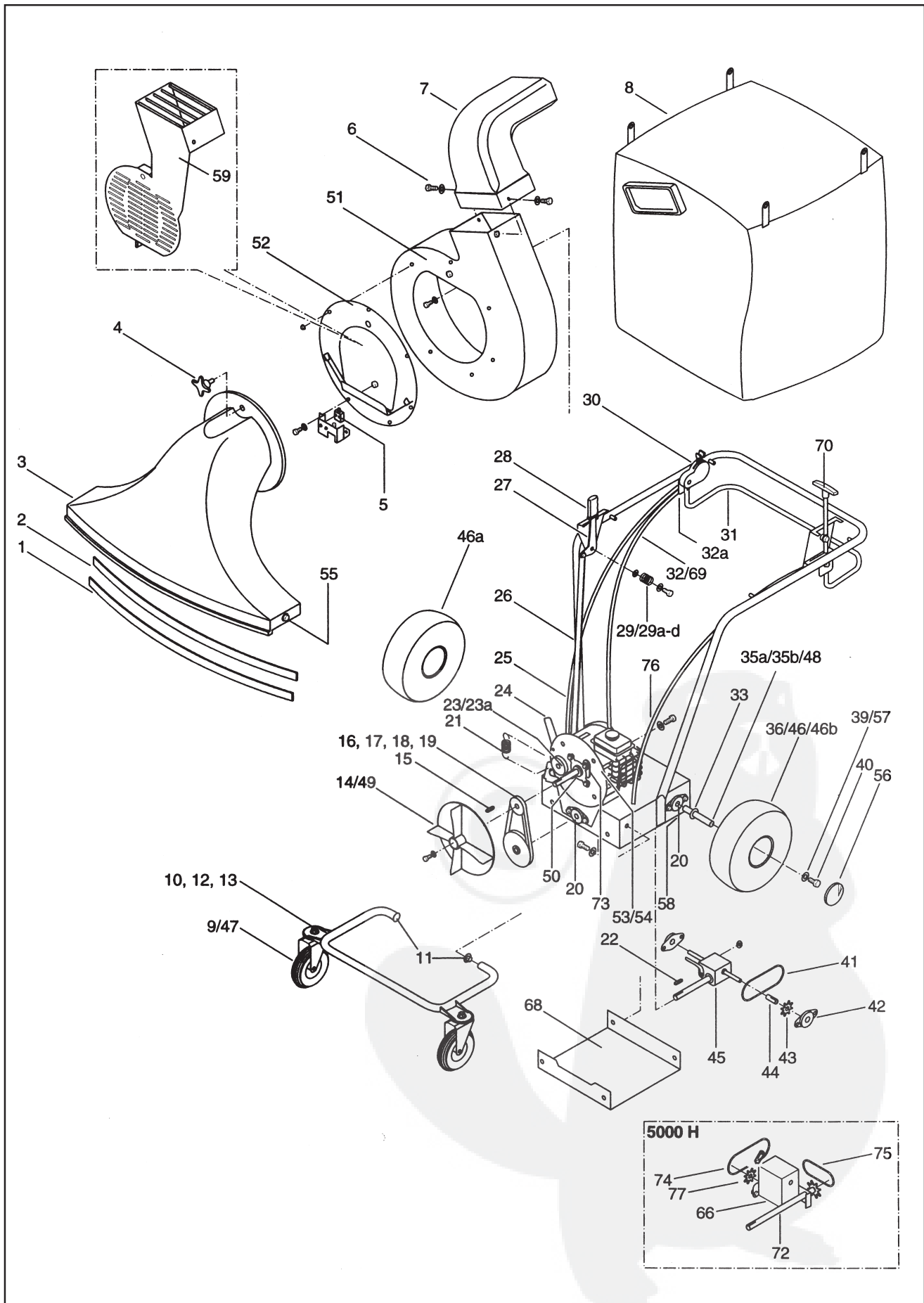
7. Troubleshooting

Fault:	Cause:	Solution:
1. Engine won't start	<ul style="list-style-type: none"> - Ignition switch on engine in »0« position 	<ul style="list-style-type: none"> - Turn ignition switch to »1« position
2. No engine power	<ul style="list-style-type: none"> - Fuel tank empty - Sparking plug defective - Fuel line blocked or water in petrol - Air filter soiled 	<ul style="list-style-type: none"> - Refill fuel - Exchange sparking plug - Empty fuel line and tank and refill new petrol - Clean (rinse) air filter
3. Engine gets too hot	<ul style="list-style-type: none"> - Carburettor not adjusted correctly - Insufficient engine oil 	<ul style="list-style-type: none"> - Adjust carburettor acc. to Honda instructions - Top up with engine oil
4. No suction power	<ul style="list-style-type: none"> - Foliage bag too full - Filter area of foliage bag soiled - Suction nozzle blocked 	<ul style="list-style-type: none"> - Empty foliage bag - Wipe filter areas (dry clean if necessary) - Clean suction nozzle
5. Wheel drive slip	<ul style="list-style-type: none"> - Gear clutch is slipping 	<ul style="list-style-type: none"> - Shorten Bowden cable for switch bar by shifting clamping piece

8. Technical Data

	Model 3500	Model 5000	Model 5000 H
Drive:	Petrol engine type Honda 3.5 HP/2.6 kW	Petrol engine type Honda 5 HP/3.75 kW	Petrol engine type Honda 5 HP/3.75 kW
Consumption:	1.1 l/h	1.5 l/h	1.5 l/h
Noise level without load:	66 db(A)	66 db(A)	66 db(A)
full load:	91 db(A)	91 db(A)	91 db(A)
Tyres front:	dia. 180 x 45	dia. 180 x 45	dia. 180 x 45
rear:	dia. 300 x 400-4	dia. 300 x 400-4	dia. 300 x 400-4
Air pressure, rear tyres:	1,8 bar	1,8 bar	1,8 bar
Weight (kg):	67	70	75
Dimensions:			
L (mm)	157	157	157
W (mm)	70	70	70
H (mm)	105	105	105
Bag capacity:	240	240	240
Working width (cm):	80	80	80
Wheel drive:	no	yes	yes

9. Spare Parts Drawing



10. Spare Parts List

			LS 3500	LS 5000	LS 5000 H
Item	Description	No. of drawing	Art.-No.	Art.-No.	Art.-No.
1	Rubber strip	670.01-01-006	99.5.7000	99.5.7000	99.5.7000
2	Clamping strip	670.01-01-005	99.5.7001	99.5.7001	99.5.7001
3	Suction nozzle LS		99.5.7002	99.5.7002	
4	Star-grip nut	M10x25	99.5.7078	99.5.7078	99.5.7078
5	Contact switch		99.5.7004	99.5.7004	
6	Hexagon bolt	DIN 933-M10x25	99.5.7005	99.5.7005	99.5.7005
7	Outlet connecting piece		99.5.7006	99.5.7006	
8	Foliage bag		99.5.7007	99.5.7007	
9	Steering wheel assy (steel-rim)		99.5.7008	99.5.7008	
10	Lock nut	DIN 985-M12	99.5.7009	99.5.7009	99.5.7009
11	Plastic bushing	670.01-01-002	99.5.7010	99.5.7010	99.5.7010
12	Washer	DIN 125-Ø13	99.5.7011	99.5.7011	99.5.7011
13	Hexagon bolt	DIN 933-M12x35	99.5.7012	99.5.7012	99.5.7012
14	Rotor (20 mm ø) LS 5000	670.01-11		99.5.7013	99.5.7013
15	Feather key	DIN 6886-A5x5x63	99.5.7014	99.5.7014	99.5.7014
16	Top pulley	SPZ 50x1		99.5.7015	99.5.7015
17	Taper bushing	PN 20-1610		99.5.7016	99.5.7016
18	Bottom pulley	SPZ 150x1		99.5.7017	99.5.7017
19	V-belt	XPZ 687		99.5.7018	99.5.7018
20	Flange bearing	RA 20		99.5.7019	99.5.7019
21	Tension spring			99.5.7020	
22	Feather key	A5x5x25		99.5.7048	99.5.7048
23	Tightener	670.01-09		99.5.7021	
23a	Tightener	675.01-09			99.5.7088
24	Locking plate	670.01-25	99.5.7022	99.5.7022	99.5.7022
25	Bowden cable (gas lever)			99.5.7023	
26	Adjusting rod	670.01-12	99.5.7024	99.5.7024	99.5.7024
27	Adjusting lever	670.01-13	99.5.7025	99.5.7025	99.5.7025
28	Handle	30x4	99.5.7026	99.5.7026	99.5.7026
29	Compression spring	590.01-01-009	99.5.7027	99.5.7027	99.5.7027
29a	Washer	DIN 125-Ø8.4	99.5.7028	99.5.7028	99.5.7028
29b	Hexagon bolt	DIN 933-M8x35	99.5.7029	99.5.7029	99.5.7029
29c	Washer (plastic)		99.5.7030	99.5.7030	
29d	Nut	DIN 985-M8	99.5.7031	99.5.7031	99.5.7031
30	Gas lever assy			99.5.7032	
31	Switch bar	670.01-14		99.5.7033	99.5.7033
32	Bowden cable (drive)			99.5.7034	
32a	Adjustment-screw		99.5.7077	99.5.7077	
33	Circlip	DIN 471-20x1.2	99.5.7035	99.5.7035	99.5.7035
35a	Shaft with sprocked wheel	675.01-16			99.5.7090
35b	Shaft with sprocked wheel	670.01-16		99.5.7100	
36	Cushion-tyred wheel (plastic-rim)	99.5.7038			
39	Washer	DIN 9021-Ø8.4		99.5.7041	99.5.7041
40	Hexagon bolt	DIN 933-M8x20		99.5.7042	99.5.7042
41	Chain	670.01-01-008		99.5.7043	
42	Flange bearing	RA 20		99.5.7019	99.5.7019
43	Sprocket wheel	670.01-10-002		99.5.7045	99.5.7045
44	Split taper pin	DIN 1481-4x16		99.5.7046	99.5.7046
45	Gearbox	670.01-10-004		99.5.7047	
46	Cushion tyred wheel (steel-rim)		99.5.7060	99.5.7060	
46a	Cushion tyred wheel (steel-rim) right with bearing and free-wheel		99.5.7101	99.5.7101	
46b	Cushion tyred wheel (steel-rim) left with bearing and free-wheel		99.5.7102	99.5.7102	
47	Steering wheel (plastic-rim)	99.5.7061			
48	axle	660.01-06	99.5.7062		
49	Rotor ø 18 mm LS 3500	660.01-07	99.5.7075		
50	Distance-bush	660.01-01-002	99.5.7076		
51	Housing	670.03-02	99.5.7071	99.5.7071	99.5.7071
52	Frontplate housing	670.02-20	99.5.7067	99.5.7067	99.5.7067
53	Motorplate LS 3500	660.02-02	99.5.7072		
54	Motorplate LS 5000	670.02-05		99.5.7073	99.5.7073
55	Screw for protection	DIN 603-M8x20	99.5.7070	99.5.7070	99.5.7073
56	Starlock-cap	D20	99.5.7079		
57	Washer	DIN 125-Ø21	99.5.7080		
58	Split taper pin	DIN 1481-6x40	99.5.7081		
59	Safety-guard	670.02-18	1429 423	1429 423	1429 423
60	Suction tube with accessories	670.01-28	1429 417	1429 417	1429 417
66	Gearbox	675.01-10			99.5.7089
68	Chain protection wheel shaft	675.01-15			99.5.7091
69	Bowden cable (drive)	675.01-14			99.5.7092
70	Operating handle	675.01-06			99.5.7093
72	Shaft for blower	675.01-12			99.5.7095
73	Pulley guide incl. sprocket	675.01-08			99.5.7096
74	Chain - Gearbox	675.01-01-003			99.5.7097
75	Chain for rotor drive	675.01-01-004			99.5.7098
76	Regulating device (operating handle)	675.01-13			99.5.7099
77	Sprocket - Gearbox H (pos. 66)	675.01-10-003			99.5.7104