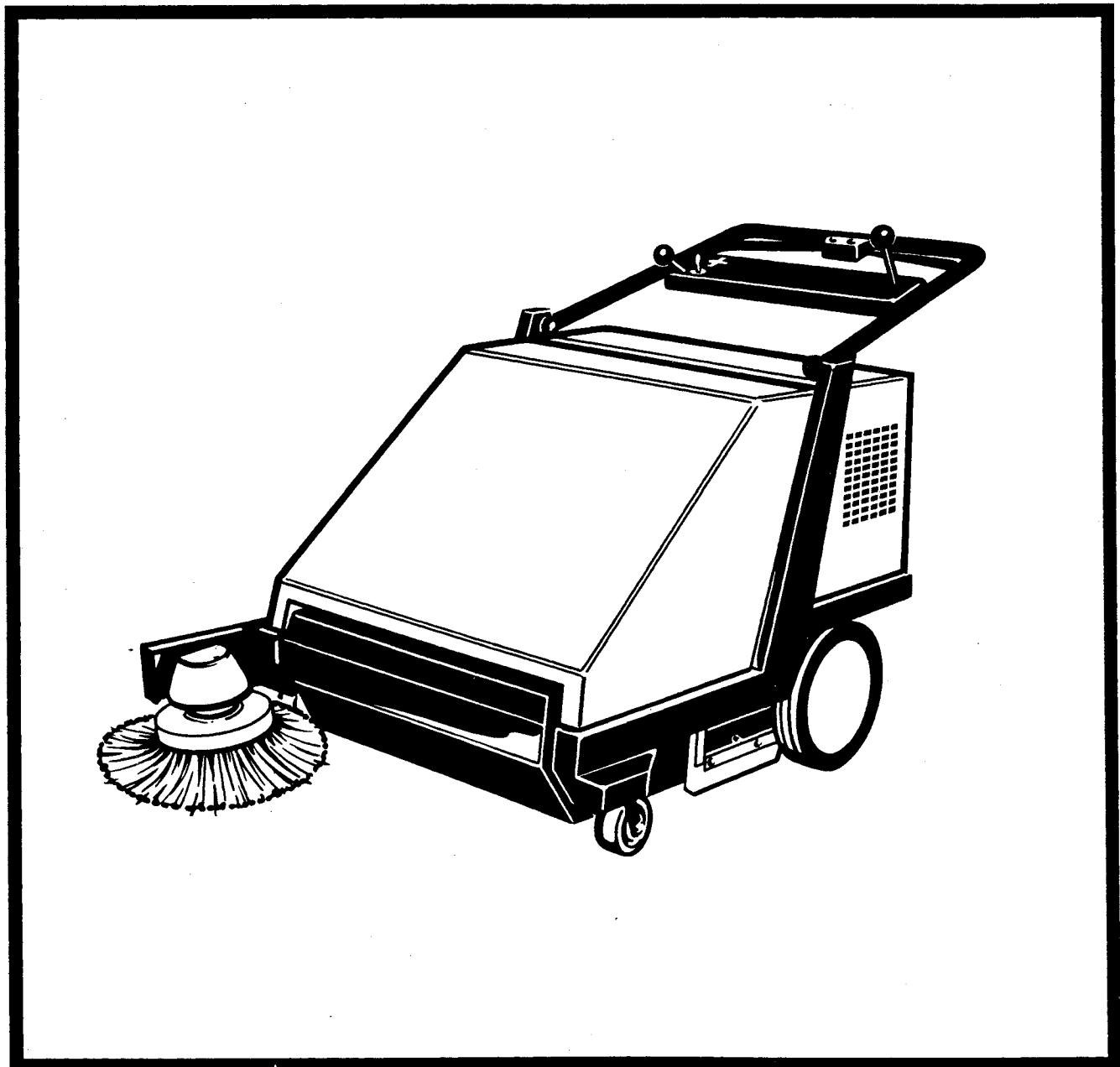


Instruction Manual


800 G/E
(6210/6213)

■ OPERATION ■ SERVICE ■ PARTS ■ CARE



Revised 5/95

Minuteman[®]

It is our desire that the good qualities of the 800 V/E should justify the confidence you demonstrated us by making this purchase. We have tried to supply you with an efficient and reliable machine. Before taking your 800 V/E into operation, please read carefully the operating manual. The manual will inform you in detail about operation of the unit and provides valuable advice for service and maintenance. The symbol  has been used throughout in this operating manual to identify the sections concerning your safety.

Please pass all safety instructions on to the other persons operating this machine.

Prior to starting-up this machine, read the operating manual carefully and adhere to the instructions it contains.



Please comply with the general safety instructions and the provisions for the prevention of accidents (refer to section 2.4).

Provisions for use

The 800 V/E has been designed exclusively for sweeping of floors surfaces, e.g. factories, warehouses, parking spaces and pedestrian areas, i.e. to collect dry and humid matter. Any use of the machine other than described above shall be deemed to be improper use; the manufacturer cannot be held responsible for damage resulting from such improper use.

The use according to the intended fields of application includes also that the operating, maintenance and repair conditions specified by the manufacturer are adhered to.

The 800 V/E may be used, serviced and repaired only by persons who are familiar with the unit and who have been informed of possible dangers.

The appropriate provisions for the prevention of accidents, as well as the other generally acknowledged regulations referring to safety and working medicine must be adhered to.

If modifications at the machine are made without the manufacturer's prior approval, the latter cannot be held responsible for damage resulting from such unauthorized modifications.

The 800 V/E (standard model) meets the requirements of application grade "U".

Acceptance of the machine

As soon as the machine arrives, please check whether any damage has occurred in transit. This will be refunded to you if you have the damage confirmed immediately by the Railway Officer or by the Forwarding Agent, and send the statement of damage together with the bill of lading to Minuteman International, Inc. 111 South Rohlwing Road, Addison, Illinois 60101.

Warranty documents

All Minuteman machines are covered by a warranty which has been laid down in our terms and conditions. In your own interest, please be sure to properly fill in and sign the guarantee registration card on acceptance of the machine.

Valid as from chassis No.: 6210.3.3246.2 800 V
6213.3.3166.2 800 E

In case of possibly necessary repair works, please make sure that only genuine Minuteman spare parts are used, since only genuine Minuteman spare parts will guarantee that your machine is constantly and reliably ready to operate.

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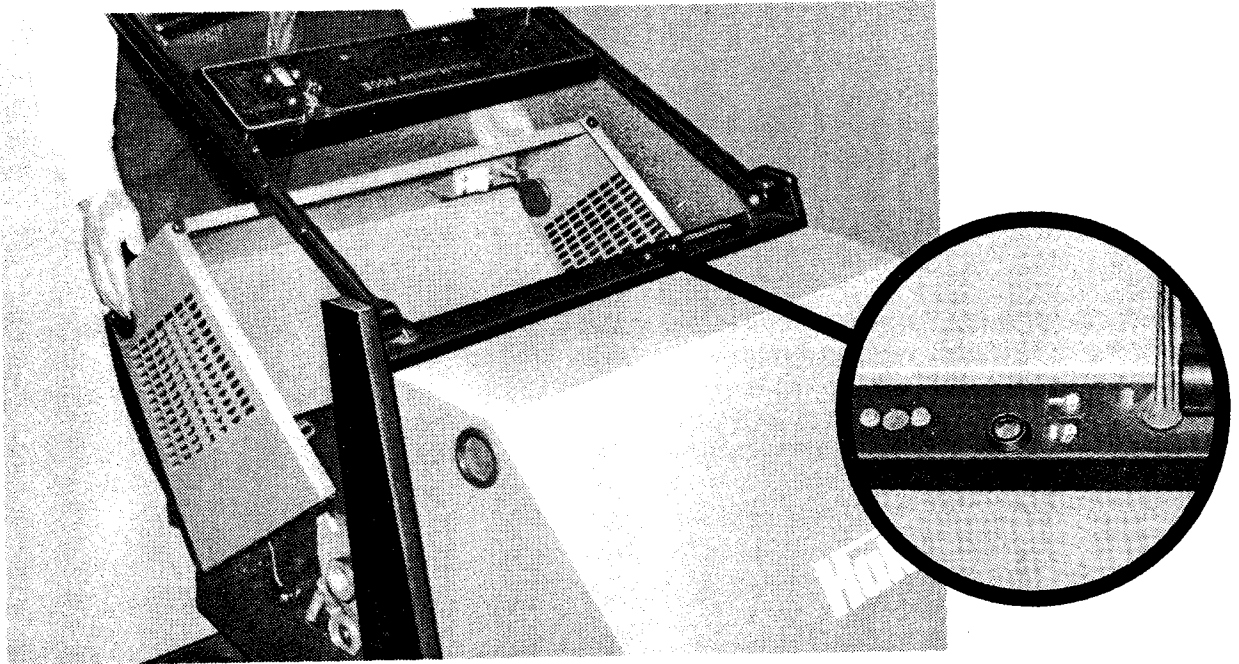
Please note positively that Minuteman cannot accept any legal claims which are referred to the explanations given in this manual.

1.0 How to take the machine into operation

Prior to shipment, the 800 Sweeper was subject to careful inspection and to an operational test. To facilitate packing, the side broom has been removed and the handlebar has been pivoted over the machine. The side broom is stored in the dust hopper (attachment, refer to Section 3.11.1). Slew the handlebar back, and fasten it in the desired vertical position by means of screws.

1.1 Rear and front shields

The rear and front shields are lockable. To open and close them, use the square wrench supplied with the machine.



800 V (6210)

1.2 Fuel and engine oil

Fuel

- Top up with regular-grade gasoline (non-leaded).
(Filling capacity: approx. 0.8 US gal./3 l)

Engine oil

- Engine oil has been filled in by the factory. To be on the safe side, check the oil level (refer to section 3.2).

Note: Use only clean oil and clean fuel, and store them only in approved and closed vessels.



Fuel tanks may be filled only when the engine does not run. Do not smoke and do not handle open flames when filling fuel tanks and when working at or next to components containing fuel.

800 E (6213)

1.3 Batteries

The 800 E is equipped with the following batteries:
2 batteries, each of 12/50 Ah₅ (60 Ah₂₀) GiS (Minuteman PN 6248).

1.4 How to put the batteries into operation

The batteries have been dry-charged in the factory, but they have not yet been filled. The steps how to put the batteries into operation are described in detail in the battery documents which are supplied with each battery kit, so that they need not be repeated in this manual. Moreover, the battery documents contain valuable advice on service and maintenance of the batteries.



When working at the electrical equipment, make sure to pull the battery connector!

When handling batteries, in particular when checking the acid level, make sure not to use any open flames. The charging area must be sufficiently ventilated.

Make sure that spilled battery acid never gets into the sewage system without being neutralized previously. Adhere to the legal provisions and the local regulations.

1.5 Initial charge of the batteries

To achieve an optimum output and a maximum service life, the batteries must be given the initial charge after being filled. The method of operation of the battery charger is described in detail in the instruction manual supplied with each charger.

Note: The batteries and chargers are matched; therefore only use the batteries and chargers specified by us. So we can accept full warranty only if these units are used.

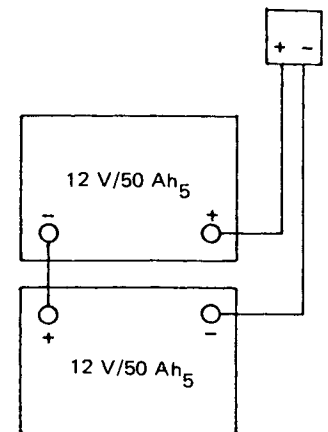
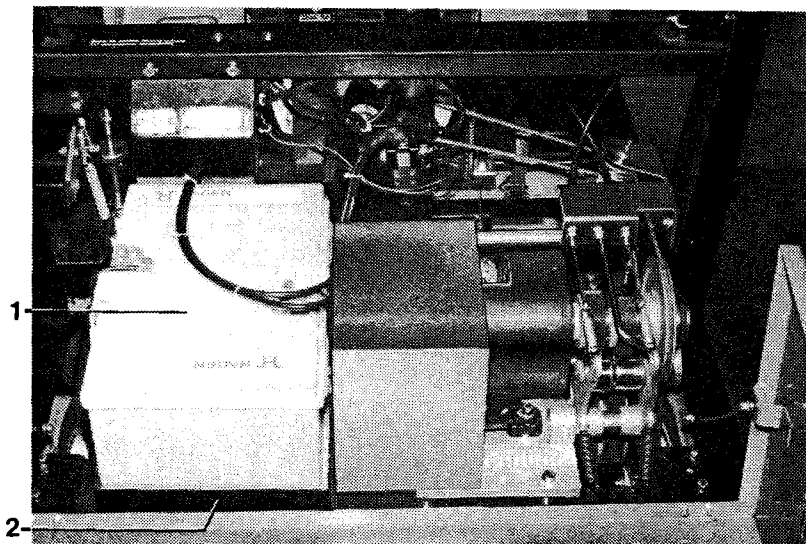
1.6 Battery charger

Battery charger 1 x 24 V/10A (7425) for 800 E with 2 batteries (6248) or
Battery charger 2 x 24 V/10A (6249) for 800 E with 4 batteries (6248)

Either charger is a continuous charging unit as per WA characteristics, pursuant to DIN 41774, with automatic shut-off and overload protective device.

1.7 Installation of batteries (model equipped with 2 batteries)

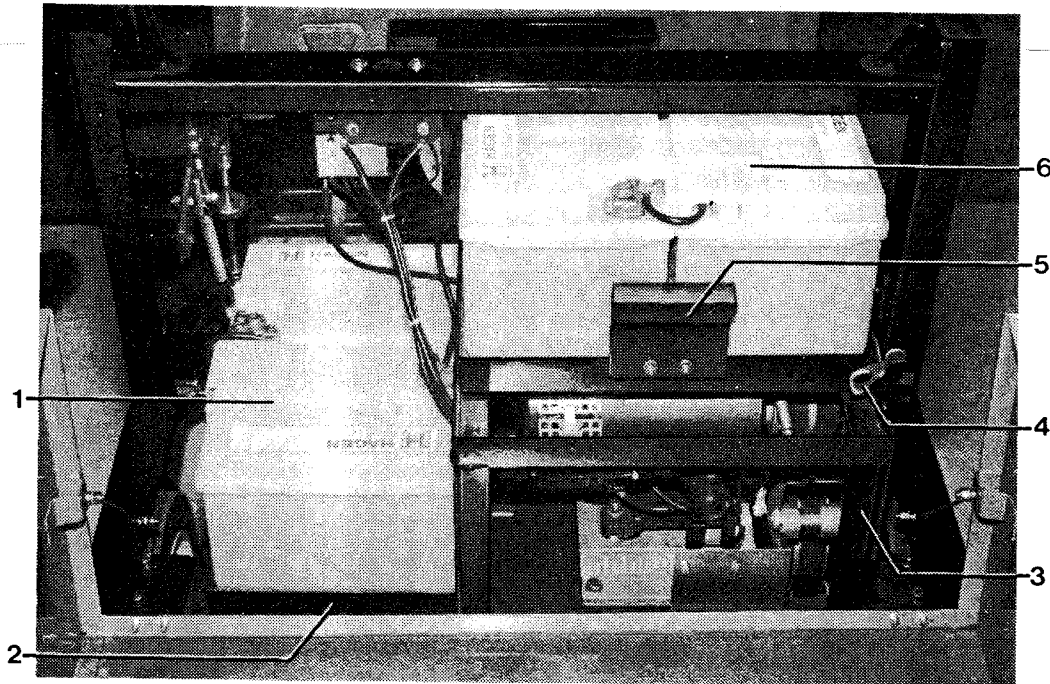
- Open front and rear shields
- Place batteries (1/1) in the battery well (1/2) as per Figure 1.
- Connect the batteries using the cables enclosed, as per Figure 1, or according to the electric circuit diagram.



1.7.1 Installation of batteries (model equipped with 4 batteries)

A modification kit "battery extension" (6297) is required to equip the 800 E for operation with 4 batteries.

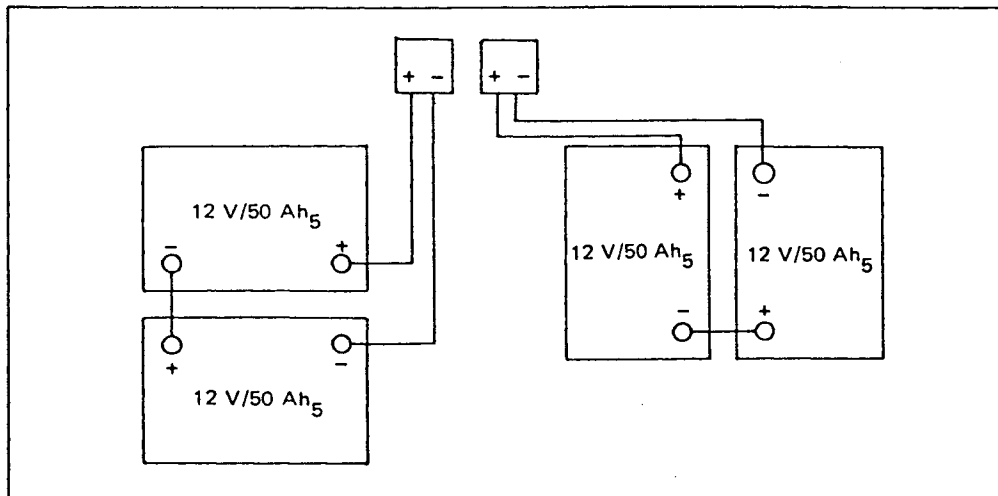
- Open front and rear shields.
- Install battery carrier (II/3) as per Figure II and fasten it at the chassis using the 5 bolts M 6 x 18.
- Place battery well (II/5) in the battery carrier (II/3).
- Place batteries in the battery well (II/5) according to Figure II and connect the cables according to the circuit diagram.
- Push battery well (II/5) forward and block it using the locking bar II/4).



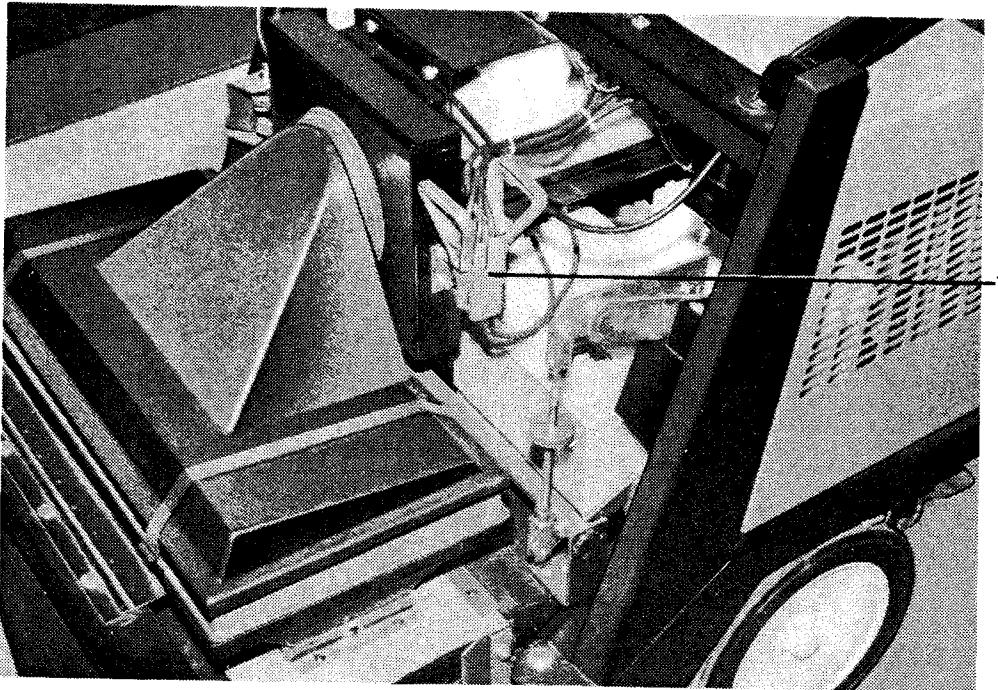
- 1 Batteries (bottom) 2 x 12V/50 Ah₅
2 Battery well
3 Battery carrier
4 Locking bar
5 Battery well
6 Batteries (top) 2 x 12V/50 Ah₅

II

Circuit diagram for models equipped with 4 batteries



- Connect the charging plugs of the battery cables to the charging cable of the charger and start the initial charging procedure (as per Section 1.5).
- After the batteries are charged, connect the charging plug (III/1) to the appliance connector. Thus the electrical connection is established and the 800 E is ready to operate (Figure II shows the model equipped with 4 batteries).

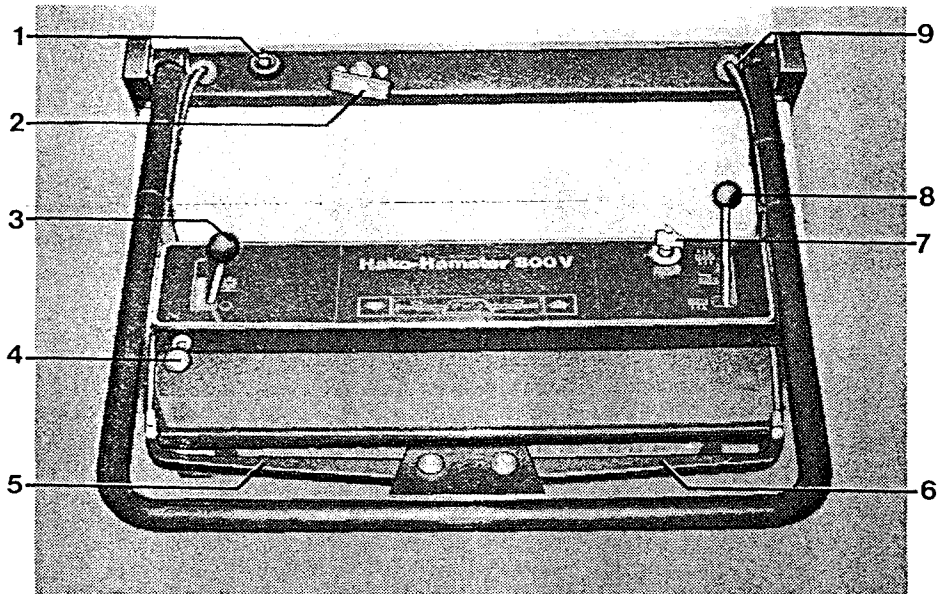


III

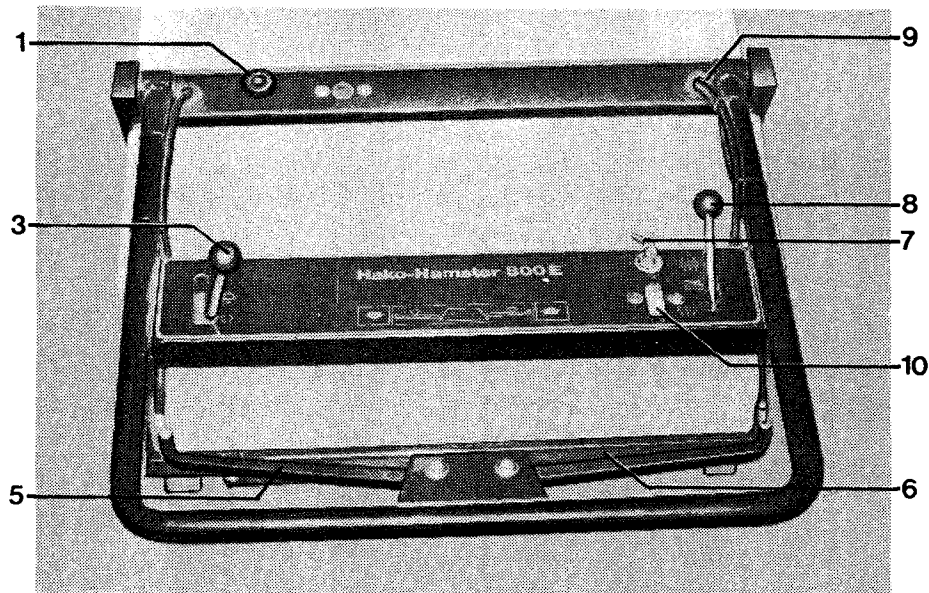
2.0 Operation

2.1 Controls

800 V



800 E

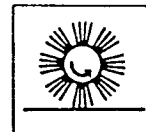


- | | | | |
|---|--|----|---|
| 1 | Lid closure | 7 | Key-actuated switch |
| 2 | Light-duty reversing starter
(only 800 V) | 8 | Lever for vibratory device and
dust extraction |
| 3 | Lever for sweeping roller | 9 | Screw for vertical adjustment
of handlebar |
| 4 | Choke control knob
(only 800 V) | 10 | Battery charge indicator
(only 800 E) |
| 5 | Reversing control lever (left-hand) | | |
| 6 | Forward driving control lever (right-hand) | | |

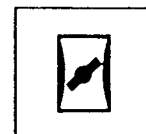
1 **Lid closure**
- Serves to unlock or to lock the front and the rear shields.

2 **Light-duty reversing starter**
- Serves to start the engine.
Pull starter cable out until you can feel the starter clutch is engaged; then start the engine by pulling the cable out by jerks, and let it slowly slide back into the casing. If the engine does not start, repeat this procedure.
Note: After the engine has been started, the service speed is automatically adjusted by a speed governor.

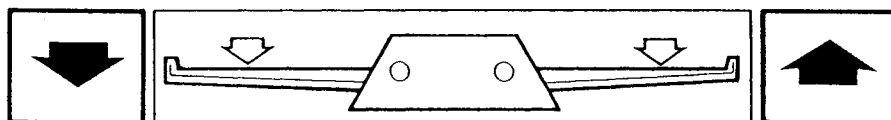
3 **Lever for sweeping roller**
- Serves to lower and lift the sweeping roller, and to switch it ON and OFF.
• To lower the sweeping roller = Unlock lever by pushing it first slightly to the left, then forward
• To lift the sweeping roller = Pull lever back and engage it



4 **Choke control knob (cold starting assistance)**
- Serves to actuate the choke
• Knob pulled out = Choke closed
Note: Do not actuate the choke when the engine has its operating temperature.



5 **Reversing control lever (left-hand)**
- Serves to engage and to disengage the reverse speed.
• Pull lever towards handlebar = Engaged
• Release lever = Disengaged
The machine stops (deadman's circuit).
Note: The reverse speed remains engaged only as long as the travel control lever is actuated.



6 **Forward travel control lever (right-hand)**
- Serves to engage and to disengage the forward speed.
• Pull lever towards handlebar = Engaged
• Release lever = Disengaged
The machine stops (deadman's circuit).
Note: The forward speed remains engaged only as long as the travel control lever is actuated.



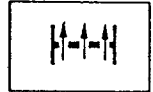
7 **Key-actuated switch**
- Serves to switch the ignition ON and OFF (engine stalling device), as well as to protect it against unauthorized operation.

8

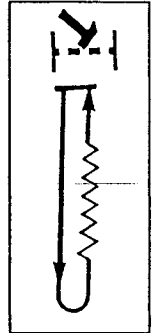
Lever for vibratory device and dust extraction

- Serves to actuate the vibratory system (dedusting of the filter element), and to disconnect the dust extraction.

- Dust extraction switched on.



- Vibratory device (unlock lever and let it bounce back; repeat this step several times).



- Dust extraction switched OFF:



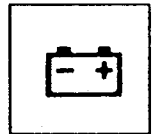
Note: When sweeping wet areas or wet garbage, and whenever driving the machine without sweeping, make sure that the dust extraction is switched OFF.

9

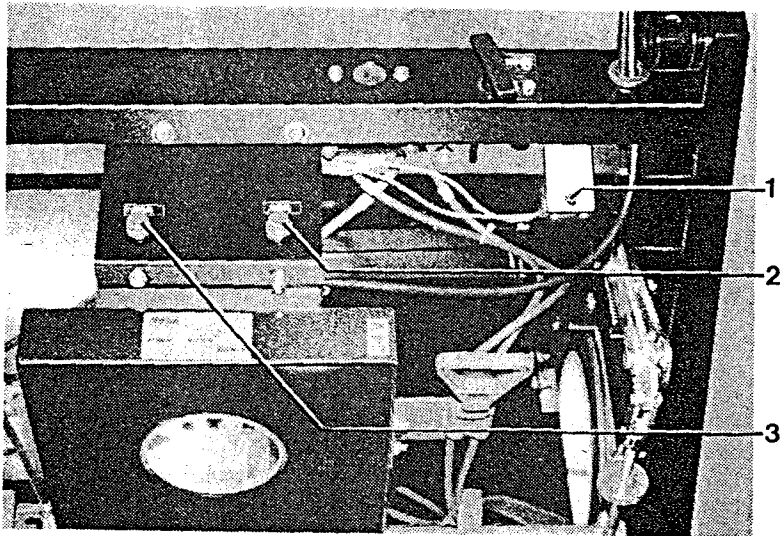
Screw for vertical adjustment of handlebar

- Serves to adjust the height of the handlebar.

- Green area = Battery charged, 800 E ready to operate
- Blue area = Battery capacity less than 50%; stop operation of 800 E before the red area is reached.
- Red area = Recharge battery



Note: The 800 E may be put into operation again only after the hand of the indicator has reached the green area again.



- 1 Contact switch
- 2 Circuit breaker 15 A
- 3 Circuit breaker 30 A

1 Contact switch

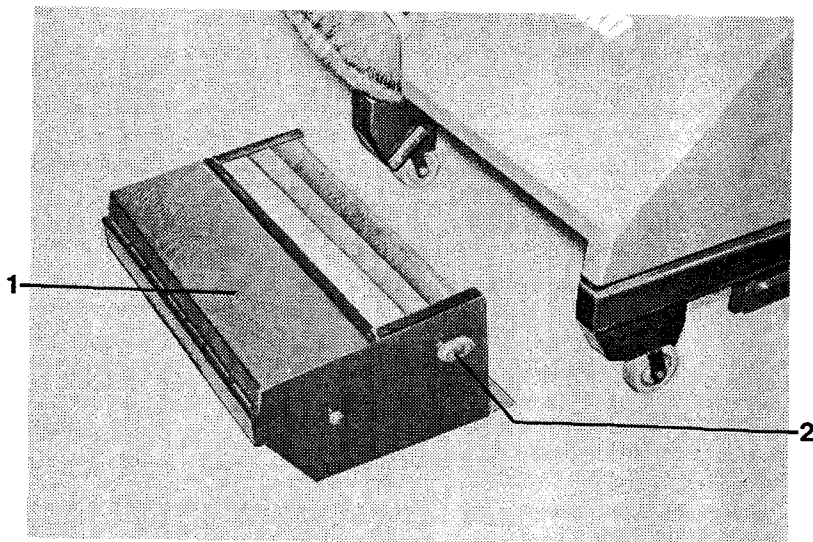
- The drive motor is automatically switched OFF by this contact switch when the front or rear shield is opened.

2 Circuit breaker 15 A

- Serves to protect the relay circuit

3 Circuit breaker 30 A

- Serves to protect the drive motor



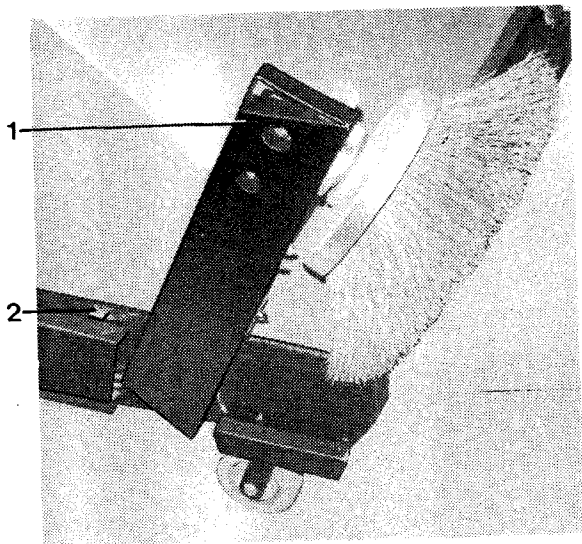
- 1 Dust hopper
- 2 Supporting pin

1 Dust hopper

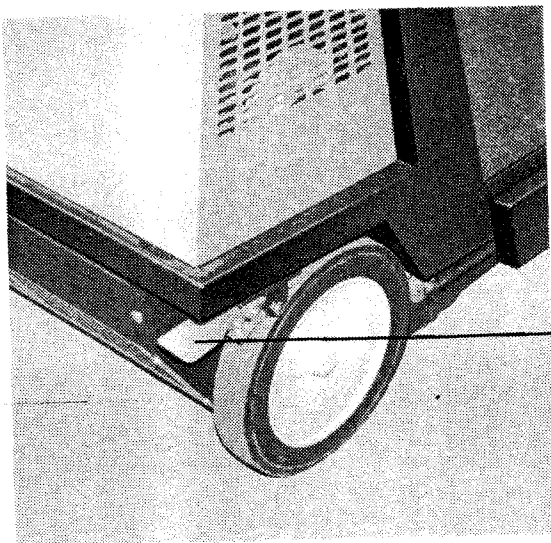
- Serves for collection of the garbage. The sweeping roller rotates contrary to the driving direction, throwing the swept matter directly into the dust hopper.

2 Supporting pins

- Serve to support the dust hopper which is suspended in floating arrangement on the left and right of the frame, and which can be lifted forward and out easily for dumping purposes.



1 Side broom arm
2 Locking mechanism



3 Parking brake pedal
(left and right)

1 Side Broom

-Lowering the side broom
To lower the side broom, actuate the locking mechanism by means of your foot; then the side broom will drop into its working position and - provided the sweeping roller is switched on - it starts to turn.

- Lifting the side broom
Lift the side broom until the locking mechanism is engaged.

2 Locking mechanism

- Serves to lock the lifted side broom.

3 Parking brake pedal (left and right)

- Serves to actuate the parking brake.

2.2 Operation of the machine

The driver has to read the operating instructions carefully. All the control levers are marked with easily understood symbols which facilitate your getting acquainted to them. The first driving attempts should be made in a free area or on a free lane, until the operator is well familiar with the individual controls and their method of operation.

Please adhere to the following safety instructions:

The use of the 800 Sweeper is on principle subject to the precautions applicable in general to operation and handling of motor vehicles and fuels.

It is not admissible to use the 800 Sweeper for passenger transport. The warning and instruction plates attached to the 800 Sweeper give you important advice for safe operation.

They must be complied with for reasons of safety.

Prior to use, the 800 Sweeper and its working attachments must be checked for proper condition, including working safety. Never operate the 800 Sweeper without the effective protective equipment.



800 V (6210)

Before starting the engine

Open the rear shield and check the following items:

- Engine oil level
- Air cleaner cartridge
- Fuel supply

Starting the engine



Before the engine is started, all drive assemblies must be disconnected on principle.

- Open the fuel cock (there is no need for it to be closed every day).
- Close the rear shield.
- All control levers must be in zero position. Actuate the parking brake.
- Turn the key switch to the right in position "I".
- Pull the choke control knob (only when the engine is cold).
- Actuate the reversing starter; as soon as the engine runs, push choke control knob back.

Stalling the engine

- Set all control levers in their neutral position.
- Turn key-actuated switch to the left (in position "0").

800 E (6213)

To switch the electric motor ON and OFF:

- Close the rear shield.
- Turn key-actuated switch to "I" = the electric motor starts to operate.
- Turn key-actuated switch to "O" = the electric motor stops.

Note: If the electric motor stops during operation, or if it does not start when it is switched on, the protective switch might have been triggered. Actuate the push-button.

Sweeping by means of the 800



When sweeping in confined areas, make sure to provide for a sufficient ventilation.

When working in dusts dangerous to health, operate without using the side broom.

Dust dangerous to health must be disposed of safely, without endangering any persons.

The operator should wear a protective mask as specified.

- Start the engine or switch the motor ON.
- Release the parking brake.
- Lower sweeping roller and swivel side broom into working position.
- Actuate the travel control levers.
- Switch the dust extraction ON.

Note: The dust extraction must be switched OFF on principle when wet areas are swept, when wet matter is collected or when the unit travels without sweeping.

- Actuate vibratory system regularly in very dusty operating conditions.
- Empty dust hopper at regular intervals.

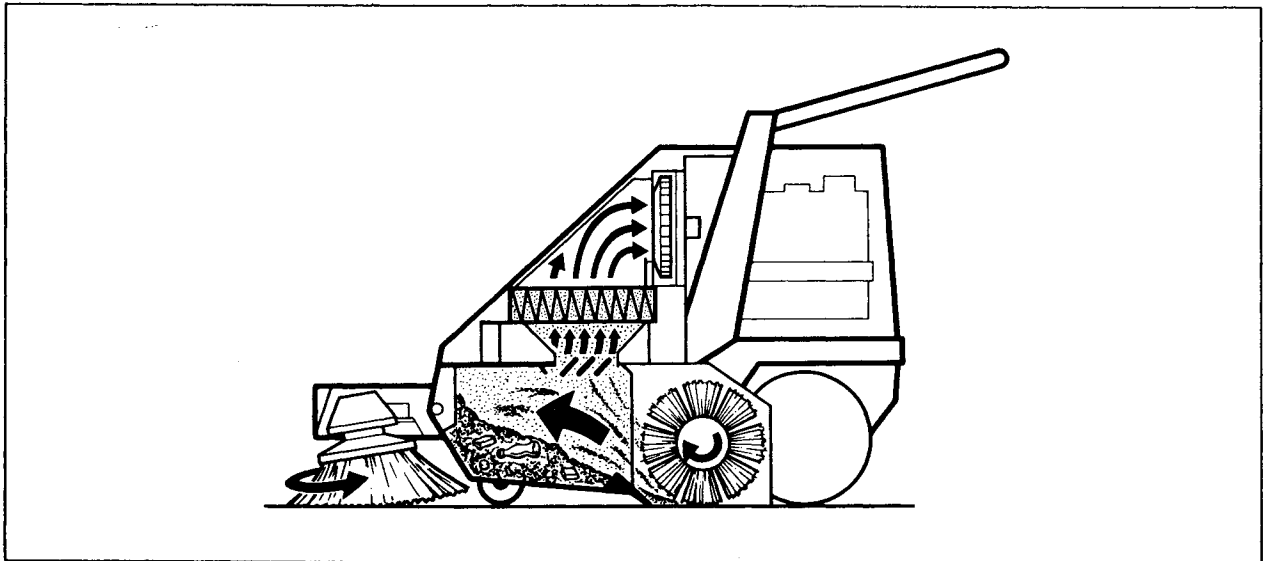
2.3 Method of operation of the 800

The side broom sweeps curbs and edges, taking dirt and debris into the path of the main broom; thus the unit needs not be moved too closely to shelves, walls and machines etc., so that the clearance required for steering is provided without any problems.

The main broom rotates contrary to the direction of travel and throws the swept matter **directly into the dust hopper**. The dust hopper is attached in floating arrangement in the frame in front of the main broom, by means of two pins, and can be emptied easily by lifting out in forward direction. The dust hopper can move upwards when driving over big matter, thus escaping obstacles, e.g. bottles.

The fine dust raised by the main broom is sucked by the vacuum blower against the plate-type filter and separated there. The fine dust settles at the bottom of the filtering surface. Due to the working movements, the major part is shaken off and drops into the dust hopper. The dust hopper is installed below the filter system. For operation in particularly dusty conditions or when extremely adhesive dust is swept, the filter system is equipped with a vibratory unit.

The 800, thanks to the wheel drive assembly via a differential gear, features excellent steering characteristics, even when negotiating curves. The maneuverability thus achieved, and the possibilities obtained from forward driving and reversing, allow for using the 800 virtually anywhere.



2.4 General safety instructions and provision for the prevention of accidents

Apart from the instructions contained in this operating manual, the general safety instructions and provisions for the prevention of accidents as provided by law, must be adhered to, e.g. DIN 57700, part 205. Do not put the operating manual aside without reading it, even if you have already operated similar vacuum sweepers previously. Allow yourself the time required to do so, in order to save time at a later moment. It is indispensable to get acquainted to all attachments and controls, as well as their functions, before operating begins. Once work has started, there will be no time left to do so.

- Vacuum sweepers may be operated only by appropriate persons who have been trained in operating this machine, who have testified their capability to do so the owner of the unit or to his authorized representative, and who have been ordered explicitly by him to operate this machine.
- The unit may be used only in areas approved by the owner or his representative for the operation of the vacuum sweeper.
- Never leave the machine unattended while the engine/motor is running.
- The operator may leave the machine only after the engine/motor has been stalled, the machine has been protected against unintended movement, the parking brake has been engaged and the ignition key has been removed.

- To protect the machine against unauthorized use, remove the ignition key.
- When transporting the machine, stall the engine/motor.
- The operator has to use the machine according to its intended fields of application. When driving, he has to take account of the local conditions and to pay attention to other persons, in particular to children, in the zone of operation.
- It is not admissible to stay in the zone of danger.
- The warning and instruction plates attached to the machine give important advice about safe operation.
- The machine and its working attachments must be checked prior to operation with regard to proper condition and operating safety. If the machine is not in good condition, it must not be used.
- It is not admissible to transport passengers.
- Before starting the engine/motor, disconnect on principle all drive assemblies.
- When sweeping in confined areas, provide for a sufficient ventilation.
- When working in dusts dangerous to health, operate without side broom.
- Dusts dangerous to health must be disposed of safely, without endangering persons. The operator should wear a protective mask as specified.
- The fuel tanks may be filled only while the engine does not run. When filling fuel tanks or when working at or near components containing fuel, do not smoke and do not handle open flames.
- Moreover, perfect maintenance of the machine presents an essential protection against accidents.
- When cleaning and servicing the machine, and when replacing parts, stall the engine/motor and remove the ignition key.
- Use appropriate tools for maintenance, installation and repair works, etc.
- As to safety, spare parts must be at least equivalent to genuine Minuteman parts.
- When working at the electrical equipment, make sure to disconnect the battery plug.
- Oils, fuels and filters must be disposed of as specified.

Safety Instructions for handling batteries

- Pay attention to the operating instructions of the battery manufacturer. They must be available to the operators at any time.
- Never leave discharged batteries unattended for an extended period of time, but recharge them as soon as possible.
- Add distilled water only. When the battery cells are in perfect condition, do not top up with battery acid.
- In order to avoid leak currents, keep the batteries constantly in dry and tidy condition; protect them against contamination, e.g. metal powder.
- Do not put metallic objects or tools on the batteries; danger of short-circuits and explosions.
- Spilled battery acid must never get into the public sewage system without being neutralized. Adhere to the legal provisions and appropriate local regulations.
- Battery acid is strongly corrosive (keep away from children).
When checking the acid level, wear protective glasses.
Should battery acid have splashed into your eyes, rinse approximately 15 minutes with water and consult a doctor immediately. When handling batteries, use appropriate protective equipment (e.g. protective gloves, finger stalls, etc.).
- When handling batteries, in particular when checking the acid density, make sure not to use any open flames (danger of explosion).
- In order to avoid injuries to health, it is not admissible to eat, smoke or drink in battery charging stations and charging areas. After having finished work at the batteries, wash your hands thoroughly.
- The charging area must be properly ventilated.
- Batteries must neither be connected nor disconnected when energized.

3.0 Maintenance works and adjustments

800 V (6210)

3.1 Engine

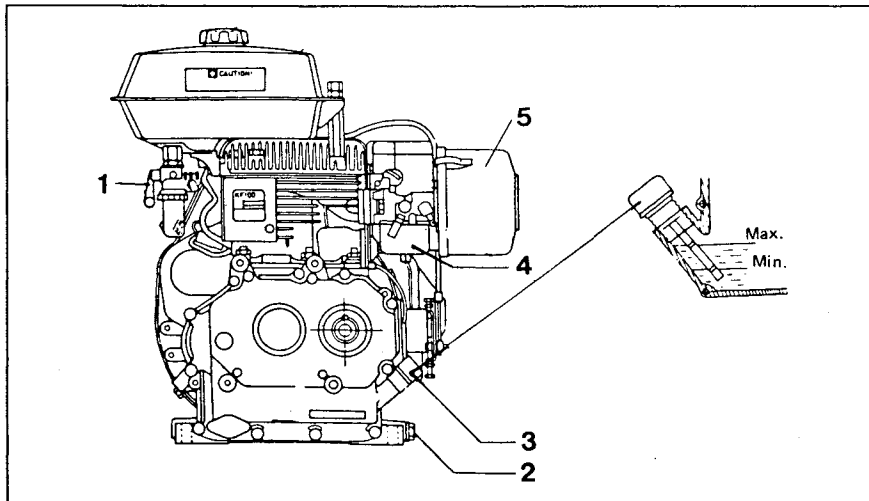
The engine is an easy-to-maintain and sturdy four-stroke engine. The maintenance works which are to be effected at regular intervals are described here below.



When cleaning and servicing the machine and when replacing parts, stall the engine and remove the ignition key.

Make sure to use appropriate tools for maintenance, repair and installation, etc.

As to safety, spare parts must be at least equivalent to genuine Minuteman parts.



- 1 Fuel stop cock
- 2 Oil drain plug
- 3 Oil filter socket with dipstick
- 4 Carburetor
- 5 Air cleaner

3.2 Engine oil level inspection

Perform oil level inspection while the machine is placed in horizontal position, and not immediately after having stalled the engine. The oil level must reach the max. mark on the dipstick (3) at the oil filler socket; if necessary, top up immediately.

3.3 Change engine oil

Change the engine oil for the first time after 25 service hours, then after every 50 service hours. The oil drain plug is installed at the engine base (2).

Note: Change engine oil while engine has its service temperature.

Engine oil: SAE 15W-40; Filling capacity: 0.13 US gal. (0.5 l).

3.4 Air cleaner

The air cleaner (5) is installed direct at the engine. The filter element must be cleansed after every 50 service hours, and at shorter intervals when the unit operates in very dusty ambient conditions. Replace the filter as required. Remove the filter element as described below:

- Unscrew the locking assemblies and pull the filter case cover off.
- Remove the filter sponge ring and the filter element and clean them in dry condition; if necessary, replace them.

Note: A clogged filter element causes a decrease of the engine power output and heavy smoke development of the engine. Never allow the engine to operate without filter element.

3.5 Fuel system

The fuel tank is installed on the engine, and has a capacity of approximately 0.8 US gal. (3 l) of non-leaded regular gasoline. A stop cock (1) is installed below the tank; it should be closed only when the unit is put out of operation for an extended time. The filter strainer and the filter glass must be cleansed as required.

3.6 Carburetor

The throttle carburetor is automatically controlled by an integral speed governor, thus keeping the engine speed level independently of the working load. The carburetor has been set in the factory. Adjustments at the carburetor and the speed governor may be effected only by qualified mechanics trained in our factory.

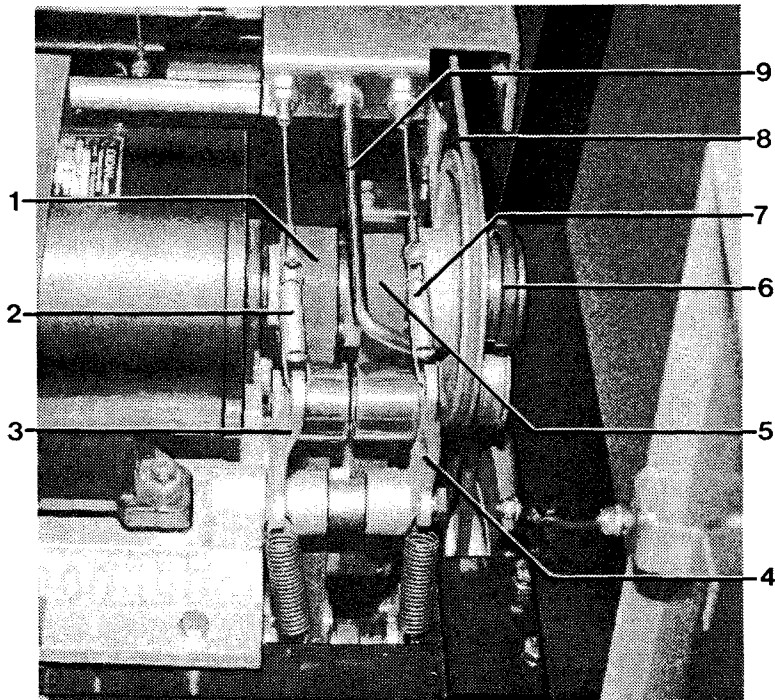
3.7 Travel drive assembly

The travel drive is transmitted via special drive belts which are tensioned via idler pulleys when the control lever for forward driving or reversing has been actuated. The power transmission further is effected by roller chains to the differential axle with the drive wheels. The differential does not require any maintenance.

3.7.1 Renewal of the drive belts

- Open the front and the rear shields.
- Remove Vee belt (IV/6) driving the sweeping roller, and the drive belts (IV/8) driving the vacuum blower, from the engine pulley.
- Unhinge the pull springs (IV/2 + 7) for the idler pulley lever (IV/3 + 4) from the cable eyelets of the control Bowden cables.
- Remove the rear shield at the bottom.
- Detach the drive belts.

For installation, proceed by inverse sequence of operations.

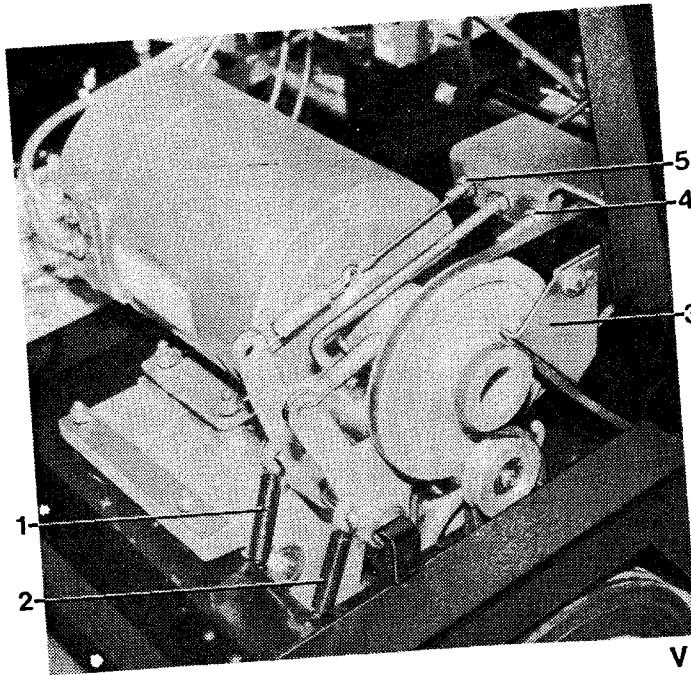


IV

- 1 Drive belt for forward travel
- 2 Pull spring for idler pulley lever (forward)
- 3 Idler pulley lever (forward)
- 4 Idler pulley lever (reversing)
- 5 Drive belt for reversing
- 6 Vee belt driving main broom
- 7 Pull spring for idler pulley lever (reversing)
- 8 Drive belt for vacuum blower
- 9 Stop for reversing

3.7.2 Readjustment of the Bowden cables

The readjustment of the Bowden cables for the travel drive assembly is effected by means of the set-screws (V/4 + 5). When the driving control levers are in their zero position, the pull springs (V/1 + 2) should be tensioned just slightly.



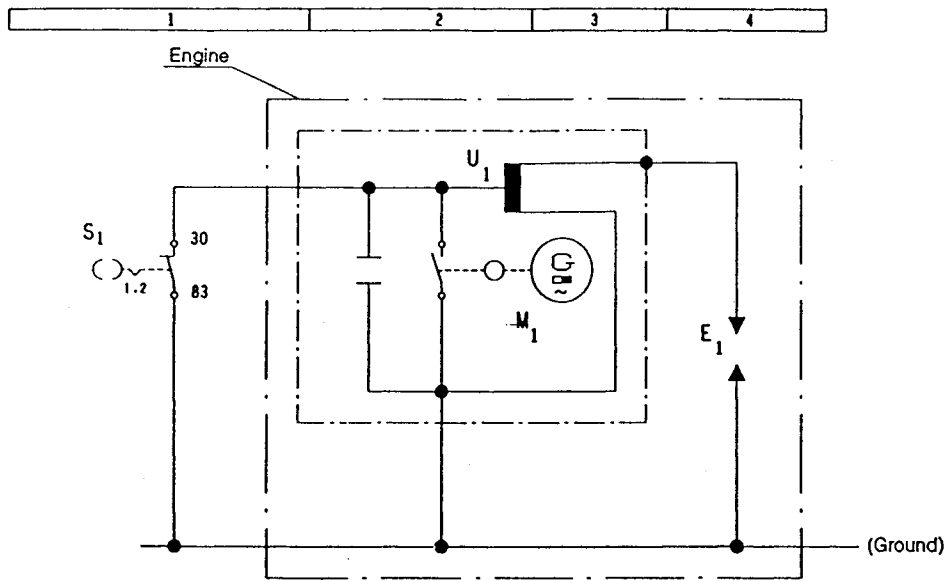
- 1 Pull spring for Bowden cable (forward)
- 2 Pull spring for Bowden cable (reversing)
- 3 Vee belt assembly
- 4 Set-screw for Bowden cable (reversing)
- 5 Set-screw for Bowden cable (forward)

3.8 Electrical equipment of 800 E (6213)

The 800 E is equipped with a DC motor requiring little maintenance. The power is supplied by 2 batteries of 12 V/50 Ah₅ (60 Ah₂₀) (GiS) each, or by batteries of 12 V/50 Ah₅ (60 Ah₂₀) (GiS) each.

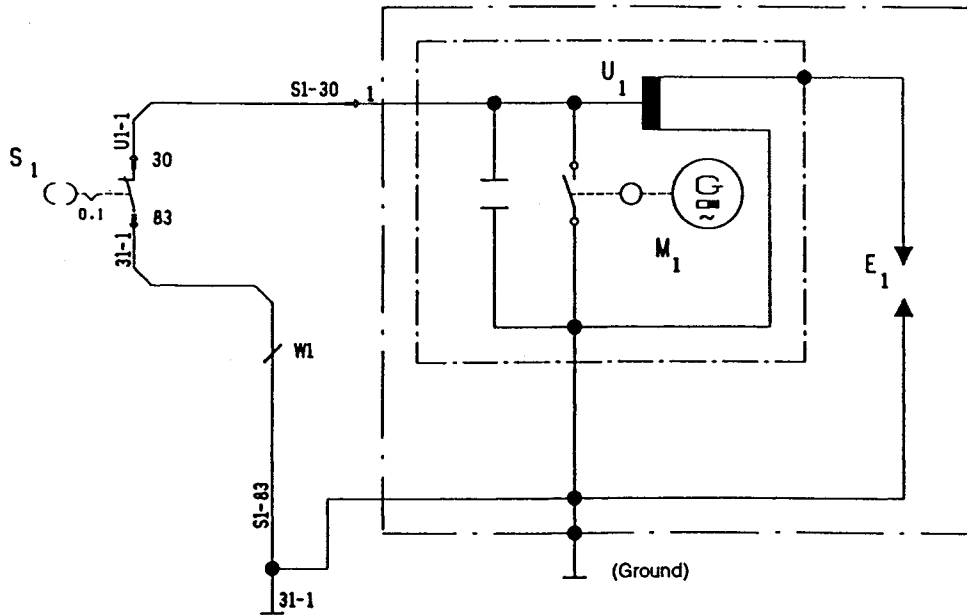
The batteries require constant care and maintenance. All details on this matter are included in the instructions supplied with the batteries. Since the service life of the battery depends largely on maintenance, you should, in your own interest, adhere to those instructions. For further details concerning the electrical equipment, please refer to the circuit diagram, Section 3.8.1.

3.8.1 Electric Circuit Diagram - 800 V



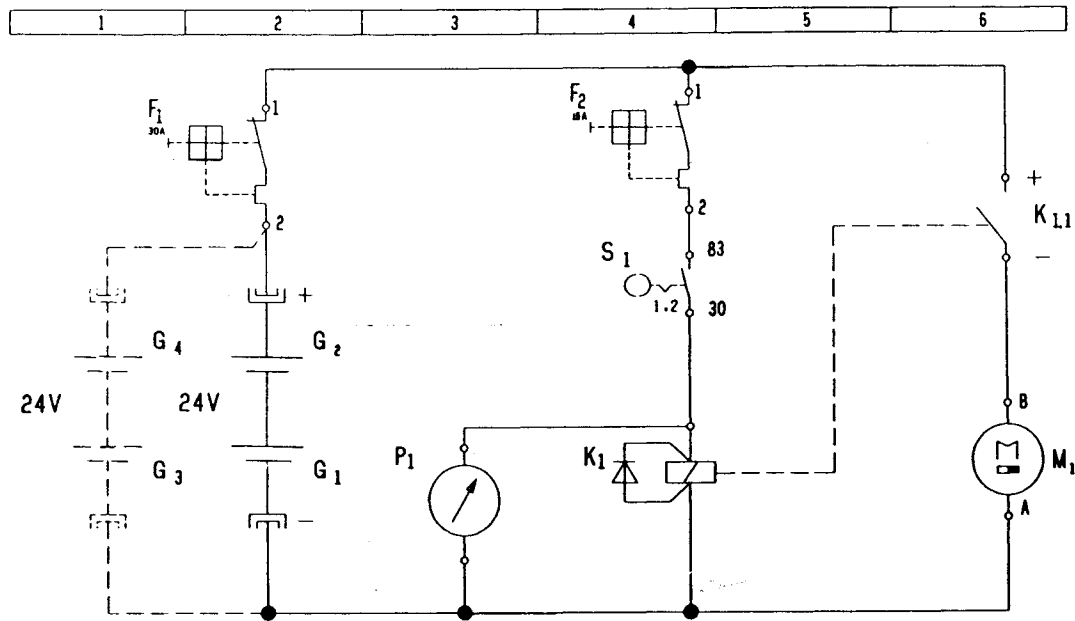
BMK	Functional Description	Current path
S1	Key-actuated switch	1
U1	Magneto	2
M1	Combustion engine	3
E1	Spark plug	4

3.8.2 Schematic Diagram - 800 V



BMK	Functional Description
S1	Key-actuated switch
U1	Limit switch
M1	Combustion engine
E1	Spark plug

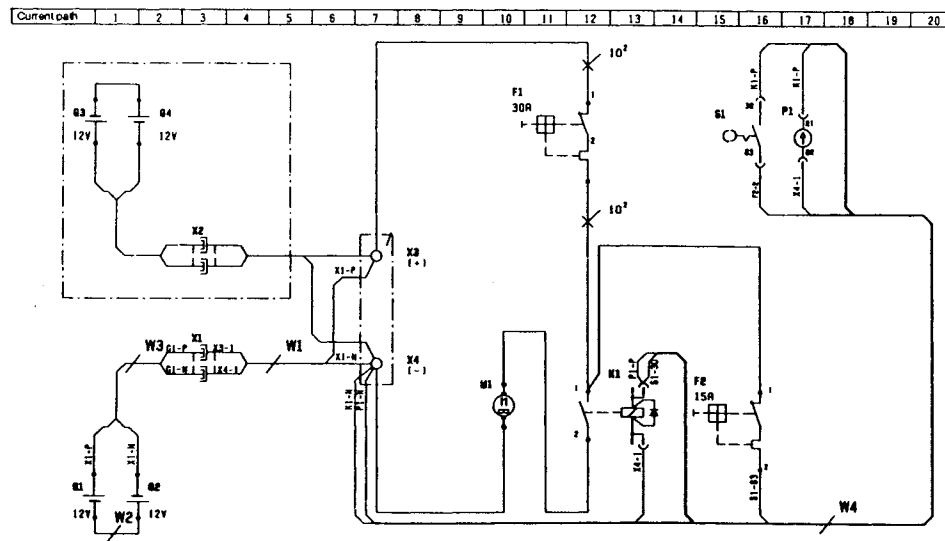
3.8.3 Electric Circuit Diagram - 800 V



BMK	Functional Description	Current path
G 1/G 7	Grid plate battery 12 V 50 Ah	1; 2
S 1	Key-actuated switch	4
P 1	Volt meter	3

BMK	Functional Description	Current Path
F 1/F 2	Thermal release 30 A/15 A	2; 4
K 1	Magnetic switch	6
M 1	Drive motor	6

3.8.4 Schematic Diagram - 800 V



BMK	Functional Description	Current path
G 1	Battery, 12 V	1
G 2	Battery, 12 V	1
G 3	Battery, 12 V	1
G 4	Battery, 12 V	1
F 1	Main fuse, 30 A	12
F 2	Control fuse, 15 A	16
K 1	Magnetic switch	13

BMK	Functional Description	Current Path
M 1	Drive motor	10
P 1	Volt meter	17
S 1	Key-actuated switch	16
X 1/X 2	Battery plug	3
X 3	Distribution unit, plus	7
X 4	Distribution unit, minus	7

3.9 Main broom (sweeping roller)

The main broom comprises 10 rows of bristles; the 800 V is equipped with Perlon bristles, whereas the 800 E has natural bristles (Fibre Arenga); this broom is divided. Width of main broom: 23.6" (600 mm); diameter: 9.8" (250 mm). Due to the sense of rotation, the dirt is swept forward into the dust hopper. For particularly resistant dirt, a sweeping roller with polyester bristles is available (PN 6229).

3.9.1 Main broom drive assembly

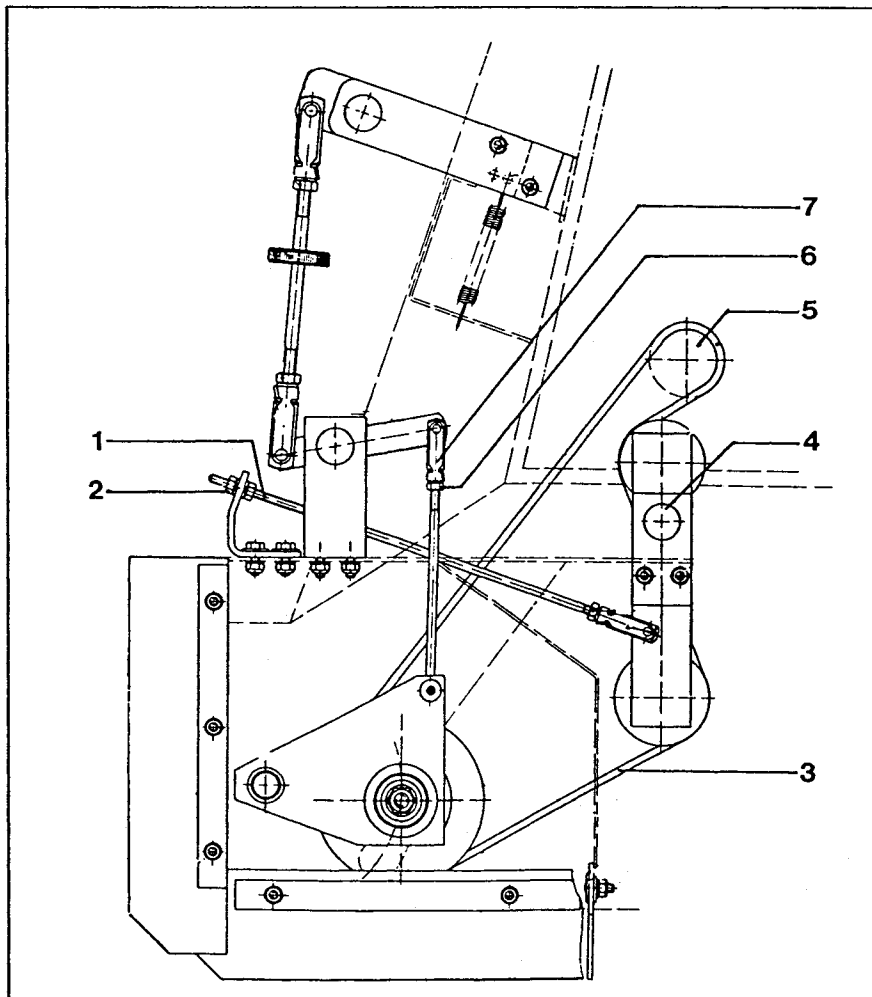
The main broom is lowered by gravity, after the hand lever at the arm handlebar has been actuated. When the main broom is lowered, the Vee belt is tensioned and the main broom drive assembly is engaged.

3.9.2 Renewal of Vee belts driving the main broom

- Remove dust hopper.
- Lower main broom.
- Remove toothed belt driving the side broom, as per Section 3.11.3.
- Lift main broom again.
- Detach Vee belt assembly (V/3).
- Remove Vee belt.

For installation, reverse disassembly procedure. The clearance between the whole Vee belt and the Vee belt assembly must be 0.8 to 0.12" (2-3 mm).

Note: To readjust the sweeping path, check the Vee belt tension and if necessary, retighten the Vee belt.



- 1 Tension cord
- 2 Hex nut
- 3 Vee belt
- 4 Idler pulley lever
- 5 Roller
- 6 Hex nut
- 7 Fork head

VI

3.9.3 Adjustment of sweeping path

An adjusting device enables the adaptation to the varying sweeping conditions. For normal operation and with a view to minimizing wear, the main broom should be adjusted as described below. Check the broom adjustment on a level surface as follows:

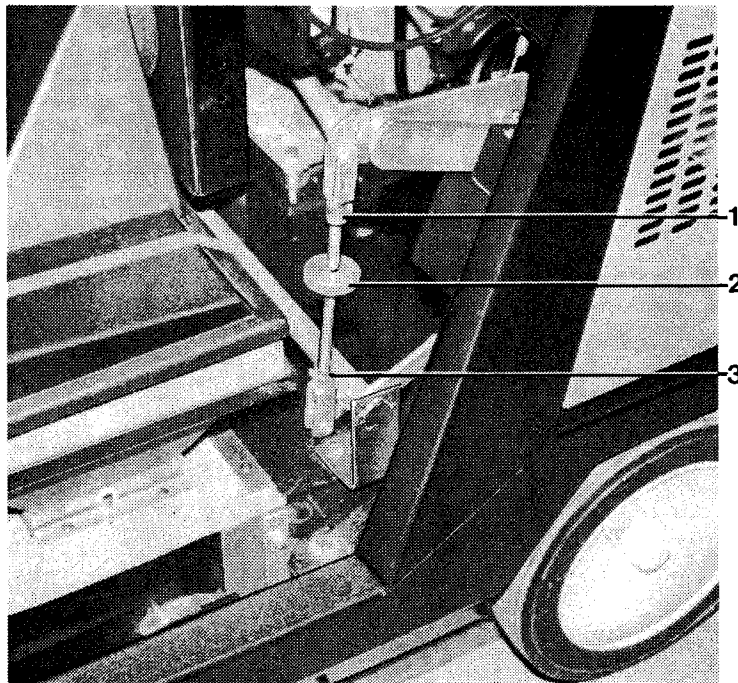
- Lower main broom and make it rotate for a short time while the machine does not move.
- Lift main broom and move the 800 just a little forward.

If the main broom is correctly set, a parallel line of sweep should be visible on the floor (sweeping path). The sweeping path width should be approximately 2" (50 mm) with the 800 V, and 1.2" - 1.6" (30-40 mm) with the 800 E. If the pressure on the bristles is too strong, this line is wider; if it is too weak, this line is correspondingly narrower.

The sweeping path width is adjusted by means of the adjusting wheel (VII/2) as follows:

- Lower main broom.
- Loosen hex. nuts (VI/2) on the tension rod (VI/1) and shift tension rod until the Vee belt is released of the idler pulley lever (VI/4).
- Loosen locknuts (VI/1 + 3) of the fork heads.
- Turn adjusting wheel (VII/2) to the left = sweeping path narrower.
- Turn adjusting wheel (VII/2) to the right = sweeping path wider.
- Retighten the locknuts.
- Retighten the Vee belt using the tension rod (VI/1).

Note: Tighten the Vee belt just as much as necessary, so that the lifted main broom is not rotated.



VII

If the swept line is tapered, i.e. on the one end wider than on the other end, adjust it as follows:

- Remove the spring bolt from the fork head (VI/7) and loosen the locknut (VI/6.) (Adjust on the left side of the machine).
- Adjust the fork head by turning the rod to the left or right, until a parallel line of sweep appears on the floor.

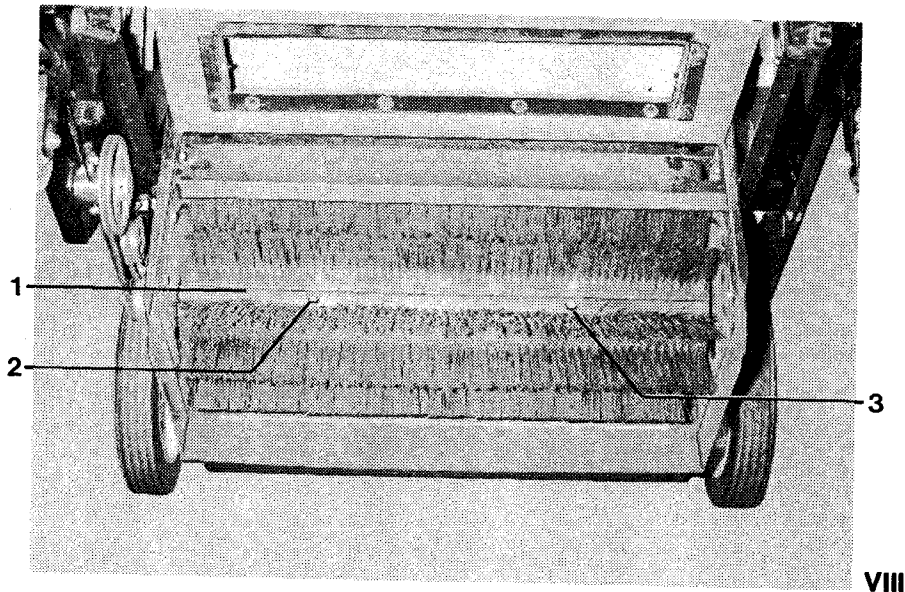
Note: Check and, if necessary, adjust the tension of the Vee belt driving the main broom.

3.9.4 Removal of the main broom

Remove the main broom as described below:

- Remove the dust hopper.
- Tilt the 800 backwards, so that it rests on the arm handlebar.
- Unscrew the hex. socket screw (VIII/2 + 3) (Allen key 0.24"/6 mm).
- Remove the main broom halves (VIII/1).

Note: After having installed a new main broom, check the sweeping path and the Vee belt tension and, if necessary, adjust them as described in Section 3.9.2 and 3.9.3.

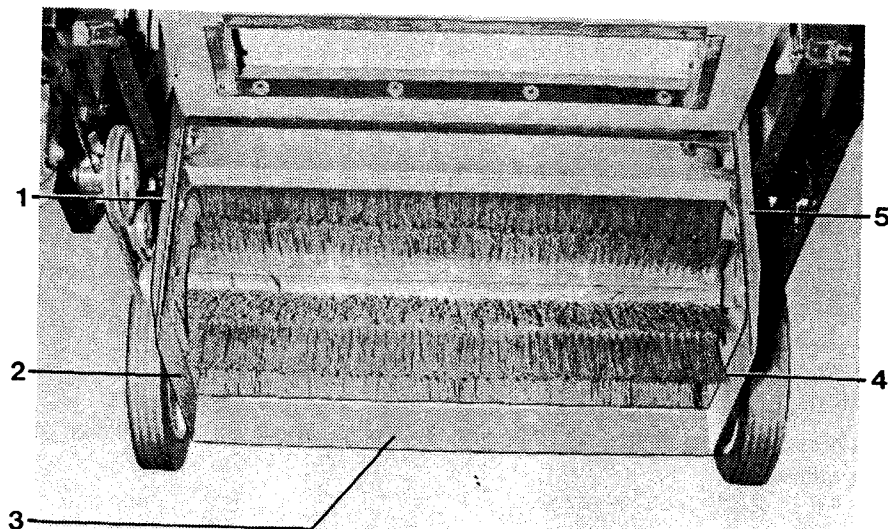


VIII

3.10 Sealing strips for broom compartment

The perfect condition of the sealing strips (IX/1-5) is indispensable for the proper operation of the sweepers, in particular with a view to achieving the specified vacuum in the broom compartment, a tidy sweep pattern and to minimizing wear at the sealing strips.

The sealing strips at the broom compartment as well as the sealing strip at the orifice of the dust hopper must be checked at regular intervals for wear and damage. Renew defective sealing strips immediately.



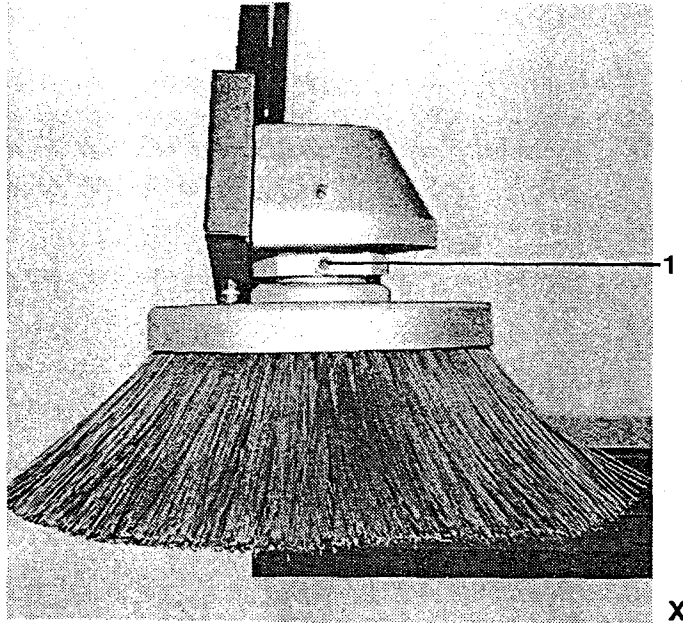
IX

3.11 Side broom

The side broom is positioned vertically and must be pivoted forward for sweeping operation. Thus the round belt is tensioned simultaneously, and the side broom drive is engaged. The side broom is automatically adapted to the floor. It is useful to tilt the side broom upwards, while the 800 is moved from one room to the other without sweeping, or in abnormal dust conditions, as the dust extraction is not effective in the area of the side broom.

3.11.1 Removal of the side broom

To replace the side broom, pivot the side broom arm upwards. After having loosened the 3 bolts, remove the side broom from the broom plate, pulling it down. The side broom's supporting surface can be readjusted, depending on the wear of the bristles, when the side broom plate on the drive shaft is lowered (release clamp screw X/1).



3.11.2 Replacement of the round belt

The round belt of the side broom gearbox is removed as described below:

- Remove dust hopper.
- Pivot side broom arm upwards and remove side broom as per Figure X.
- Remove belt pulley cover (rubber strip).
- Remove round belt first of all from the drive pulley; then pull it from the side broom and guide pulleys; then pull it off the side broom arm in forward direction, subsequently mount the new belt.

Note: To tension the round belt, shift the side broom gearbox while the side broom arm is lowered.

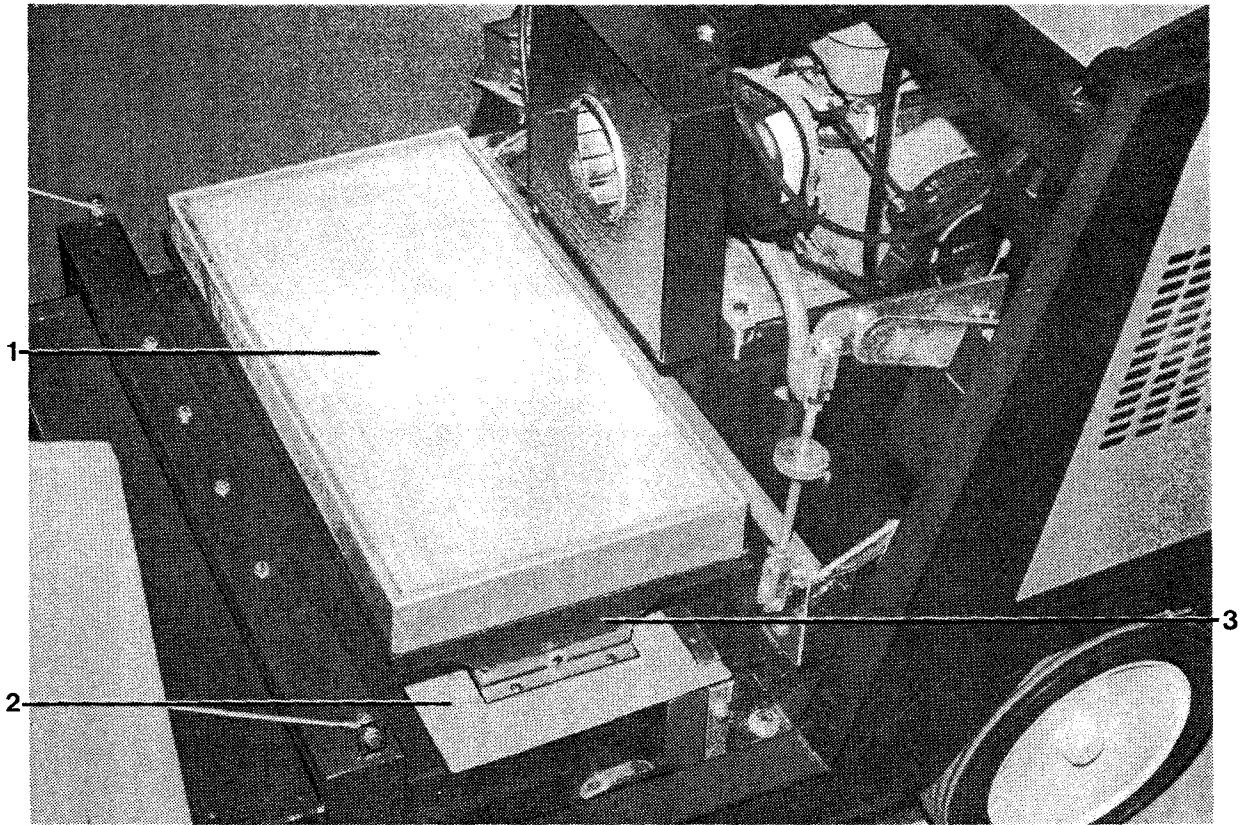
3.11.3 Replacement of the toothed belt

To remove the toothed belt connecting the twin belt pulley on the broom shaft to the drive belt pulley for the side broom, proceed as follows:

- Remove dust hopper.
- Lower main broom.
- Press idler pulley back; remove toothed belt and replace it by a new one.

3.12 Filter system - dust extraction

The filter system with the vacuum blower is installed above the dust hopper.



XI

The filter box (XI/3) and the chassis are sealed against each other by sealing stripper (XI/2). The filter box (XI/3) is connected with the chassis in floating condition, so that the filter element (XI/1) can be shaken off as the manual lever at the arm handlebar is actuated.

To remove the filter element (XI/1), proceed as follows:

- Stall the drive engine/motor.
- Remove the filter box cover after having removed the two remaining brackets.
- Remove filter element (XI/1) and tap it slightly, removing the dust.

Note: Make sure that the filter element is not inserted side-inverted!



Dusts dangerous to health must be disposed of so as not to endanger persons. The operator should wear a protective mask as specified.

3.12.1 Replacement of the drive belt for the vacuum blower

- Open front and rear shields.
- Remove Vee belt for the main broom drive from the motor/engine belt pulley (switch main broom drive OFF).
- Remove drive belt from the engine/motor belt pulley.
- Unscrew fan impeller housing on top, and loosen bolts at the bottom a little.
- Remove drive belt via the fan impeller and pull out through the circulating roller support. Installation is effected by inverse sequence of operations.

Note: To tighten the drive belt, shift the vacuum blower in the oblong holes.

4.0 Technical Data

4.1 800 V (6210)/800 E (6213)

Dimensions and weights of the machine

Overall length	62.60"	1590 mm
Overall width	36.42"	925 mm
Height (lowest handlebar working position)	38.98"	990 mm
Track width (front/rear)	30.87/29.53"	784/750 mm
Deadweight (6210/13), ready to operate	332.5/497.6 lbs.	151/226 kg w/2 batteries
Battery weight (6248)	37.43 lbs.	17 kg (each)

Traveling and sweeping performances

Traveling speed (6210/13) forward	2.98/2.79 mph	4.8/4.5 km.p.h.
reversing	2.73/2.61 mph	4.4/4.2 km.p.h.
Sweeping path with/without side broom	23.62/32.09"	600/815 mm
Theoretic sweeping performance		
with side broom, up to	3,830 sq. yds./h	3200 m ² /h
without side broom, up to	2,870 sq. yds./h	2400 m ² /h
Gradability (6210/13)		20/15%

Filter system

Filter surface, approximately	16.14 sq. ft.	1.5 m ²
Number of filter elements	1 ea. (PN 25-106)	
Application grade	"U"	

Vacuum blower

Speed	3000 rpm	
Vacuum in broom compartment	0.35 to 0.43" CW	9 to 11 mm CW
Air volume flow	16,243 cu. ft./h	460 m ³ /h

Main broom

Length/diameter	23.62/9.84"	600/250 mm
Speed (6210/13), approx.	540/500 rpm	
Sweeping path (6210/13)	1.57 - 1.97"	40 - 50 mm
	1.18 - 1.57"	30 - 40 mm
Number of bristle rows	10	
Standard bristles (6210/13)	Perlon, 0.03"/0.8 mm/natural bristles	

Ground clearance of the sealing strips at broom compartment

Sealing strip, front/rear	Touches the floor	
Sealing strip, left/right	0.04/0.06"	1 to 1.5 mm

Side broom

Diameter	14.96"	380 mm
Speed (6210/13)	Approx. 85/80 rpm	

Dust hopper

Actual amount of dust retained, approx.	7.9 US gal.	30 l
Hopper capacity	13.2 US gal.	50 l
Ground clearance	0.98 to 1.18"	25 to 30 mm

Tires (cushion tires)

Steering rollers, front (dia./width)	3.94/1.18"	100/30 mm
Rear wheels (dia./width)	11.02/1.97"	280/50 mm

4.2 Engine - 800 V (6210)

Manufacturer/Type	Kawasaki/FA 130G-BS50
Operation/No. of cylinders	Four-stroke/1 cylinder
Bore/Stroke	2.44/1.69" / 62/43 mm
Piston displacement	7.87 cu. in./129 cm ³
Power output	1.5 kw (2 hp)
Speed in no-load condition	2500 rpm
Speed at reduction gearbox	1250 rpm
Speed governed	Automatically
Fuel/Tank capacity	Regular gasoline (non-leaded); 0.79 US gal./0.5 l
Engine oil/filling capacity	SAE 15W/40 / 0.13 US gal./0.5 l
Ignition	Electronic flywheel magneto Ignition
	Spark plug: NGK BPR 4 HS
	Contact gap: 0.03"/0.8 mm
Carburetor	Float carburetor with throttle valves
	Carburetor setscrew: 1 1/2 rotations
Air cleaner	Filter element with sponge ring
Tappet clearance (intake/exhaust valves) when engine is cold	0.005 - 0.007"/0.004-0.009" (0.12 - 0.18/0.1 - 0.24 mm)

4.2.1 Electric drive assembly - 800 E (6213)

DC motor/service voltage	24V
Power consumption	0.745 kw/1070 rpm
Rated input	41 A

Battery kit

Battery	12V/50 Ah ₅ (60 Ah ₂₀), GiS each
Number	2 or 4

Noise emission value

The sound pressure level at maximum volume flow, measured to DIN 45635, part 1, at the operator's position amounts to:

800 V (6210): 75 dB (A)
800 E (6213): 70 dB (A)

5.0 Maintenance

5.1 Maintenance works

Compliance with the maintenance works recommended by us will give you the certitude of always having machine at your disposal which is ready to work and in proper operating condition. It is better to take precaution than to repair damage. And it is less expensive. If your own workshop is not in a position to perform the work according to the maintenance schedule, our authorized dealer will be glad to submit you a quotation for a service contract. Please refer to the machine number indicated on the nameplate or on the warranty card whenever you have questions or place orders of spare parts. The nameplate is mounted at the fan impeller fairing.

When performing cleaning or service work at the machine, and when replacing parts, stall the engine/motor and remove the ignition key.

Use appropriate tools for maintenance, repair and installation works, etc.

Spare parts must present at least the same safety characteristics as genuine Minuteman parts. When working on the electrical equipment, make sure that the battery plugs are removed previously.

5.2 Maintenance schedule 800 V/E	Type	Daily	Service Hours		
			every 50	every 100	every 200
Check engine oil level; if necessary, add SAE 15W-40	V	•			
Check fuel level; if necessary, add regular gasoline	V	•			
Empty dust hopper	V/E	•			
Check battery acid level; if necessary, add distilled water	E	•			
Charge batteries	E	•			
Change engine oil (0.13 US gal./1.5 l engine oil SAE 15W-40)	V		•	•	•
Clean air filter; if necessary, replace filter element	V		•	•	•
Check engine visually for seepage of oil	V		•	•	•
Check sweeping roller and side broom for good condition; if necessary, renew	V/E		•	•	•
Check sweeping track adjustment; if necessary, correct	V/E		•	•	•
Check all sealing strips for good condition; if necessary, replace	V/E		•	•	
Replace spark plug	V			•	•
Check flat belts, roller chains and Vee belts for correct tension and wear; if necessary, retighten or replace	V/E			•	•
Check Bowden cable adjustment for travel drive control lever; if necessary, readjust	V/E			•	•
Check parking brake; if necessary, adjust	V/E			•	•
Check dust extraction and filter system for leakages; replace defective filter element, PN 25-106	V/E			•	•
Check vibratory system for proper operation	V/E			•	•
Check vacuum blower for proper operation	V/E			•	•
Check suspension of dust hopper	V/E			•	•
Check battery acid density	E			•	•
Remove steering roller; grease wheel and pivot bearing	V/E				•
Check tread surfaces of wheels	V/E				•
Clean electric motor, eliminating carbon dust; check carbon brushes for easy operation and wear; if necessary, renew					•
V = 800 V (6210) E = 800 E (6213)					