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SUPER POWER PUSHER OPERATION AND SERVICE MANUAL



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SAFE OPERATION

This machine should only be operated by staff, who have been trained in its use and are familiar with the controls, attachments and features.

Super Pusher is intended for pedestrian control. Riding on the Super Pusher is not permitted.

Suitable for use in well illuminated areas only.

COMMISSIONING

Prior to use for the first time the machine should be visually inspected. Should any faults be noticed the machine must be returned to the manufacturer. It is recommended that the batteries are given an initial overnight charge.

HAZARDS

Although the batteries supplied with the machine are of a “sealed for life” type there is a small possibility that acid leakage may occur if the casings have been damaged. Use of protective clothing and eye protection is recommended when handling batteries. The energy levels that can be delivered by these batteries can cause fire. Metal objects must not be allowed to bridge the battery terminals. Explosive hydrogen gas may be liberated. Do not allow naked lights near to batteries.

MAINTENANCE

The SUPER PUSHER contains few user-serviceable parts. User servicing is limited to tyre inspection, drive chain tensioning/lubrication and battery exchange.

The machine should be returned to the manufacturer for any major repairs.



Safety:

- Do not use this machine in explosive atmospheres.
- Ensure visibility. Use only in well-illuminated areas.
- Keep metal objects away from battery terminals
- Remove batteries if machine is placed in storage
- Use protective clothing when handling batteries
- Ensure safe practices are employed if changing attachments.

MAINTENANCE & ROUTINE CHECKS - INSPECTION OF MECHANICAL PARTS

1) DAILY :

The machine should be given a brief visual inspection. Any defects noted should be rectified prior to use.

The handlebar control assembly includes a throttle return spring. Freedom of movement and return to centre (off) position should be established prior to switching the machine on.

2) EVERY WEEK:

The “Belly switch” anti-trap function must be tested by moving the machine towards the operator and depressing the switch. The machine must move away from the operator and stop. No movement may then be possible until the machine has been re-set.

Note: this test must be performed with good clearance behind the operator.

3) PERIODIC :

The chain sprocket keyways of the “drive train” are liable to wear in normal use.

These keys should be examined for wear and replaced if this becomes excessive.

Examination should take place at a minimum of 6 months for the sprocket keyways**.

**This should take place during chain tension and lubrication work.

Attempt to rotate the drive sprockets observing any movement relative to the spindle.

The hinged lid of the SUPER PUSHER allows access to batteries and the charger.

BATTERIES: removal, replacement and re-charging

BATTERIES SHOULD ONLY BE REPLACED BY A SIMILAR TYPE.

Standard fitment is : (3x) Sonnenschien A512C/80A



CAUTION! Each battery weighs approximately 30Kg. Use safe lifting practice.

Removal of batteries will alter the weight distribution of the SUPER PUSHER and will affect its balance. Ensure the machine is safely chocked/blocked to avoid tipping if the batteries are to be removed.



Lead Acid Batteries must be handled with care. Use protective clothing and eye protection when handling batteries.



Batteries under charge may liberate EXPLOSIVE HYDROGEN GAS.

Note: If batteries are to be charged in a dedicated charging area, or room, a “**NO SMOKING**” sign should be displayed.

Life expired batteries must be disposed of in an environmentally safe manner. If in doubt, consult your local authorities regarding safe disposal.

FUSES



Fuses must only be replaced by the same type and rating.

1. (UK 220V) mains plug is fitted with a 3A fuse.
2. Battery charger output fuses are 15A.
3. DC control fuse 1.25" 3A

LUBRICATION

The chain should be lubricated once a year (more if usage is heavy) with SAE30 oil. Do not over lubricate.

CLEANING

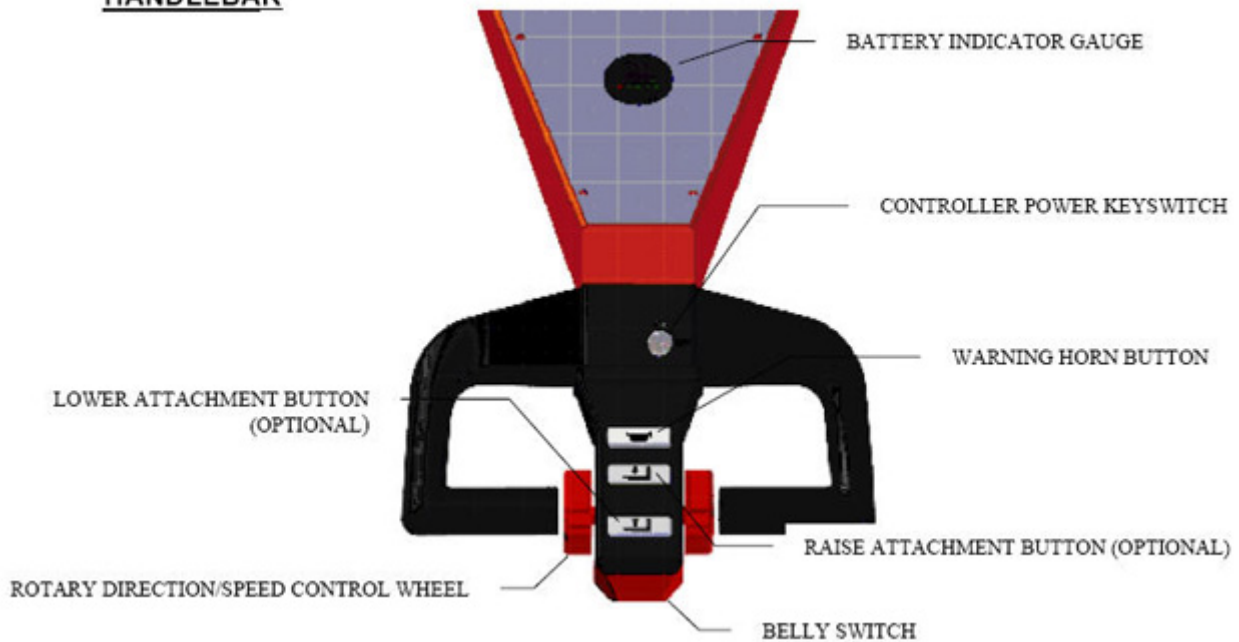
Avoid excessive penetration of water into the handlebar control assembly and electronics.

Remove heavy soil with a soap/water solution.

Do not use pressure washers.

CONTROLS AND OPERATION

HANDLEBAR



MAIN DC POWER SWITCH

The Controller Power Key-switch immediately in front of the handlebar assembly controls supply of power to the control electronics. This controller supply key-switch must also be turned to the on position before the machine will function.

REMOVE THIS KEY IF THE MACHINE IS TO BE LEFT "OUT OF SERVICE"

Turn "off" while the machine is not being used.

ROTARY CONTROLS-SPEED & DIRECTION OF MOVEMENT

Forward and reverse movement of the SUPER POWER PUSHER is controlled by the rotary thumbwheels positioned inboard of the handles. These are spring loaded to automatically return to the stop position. The thumbwheels are connected internally – movement of either wheel will initiate movement.

Machine Speed is dependant on the amount of rotation.

Rotate the thumbwheel in a forward motion (away from the operator) to make the SUPER POWER PUSHER move forward (away from the operator). Reverse rotation (towards operator) will make the SUPER POWER PUSHER move backwards (towards the operator).

POWER INDICATOR (BDI)

AN LED battery state indicator is fitted in the top handle plate. 3 green LED's indicate full charge. A reduced number of LED's lit through GREEN to RED indicate progressive discharge.

This indicator should illuminate once the power is turned on. The SUPER POWER PUSHER can be used while yellow indication is shown.

Note: The electronic control unit fitted to the SUPER PUSHER contains a power saving timer. If the power switch has been turned on, but the machine has not been used for 25 minutes or more the circuit will shut down. To use the machine again the key-switch must be turned OFF then ON again. The key-switch should be turned to the "off" position if machine is "in use" but with no demand.

ANTI-CRUSHING SAFETY FEATURE: (“BELLY SWITCH”)

A switch pad is fitted in the handlebar assembly facing the operator. Should the machine be reversing towards the operator, gentle depression of this switch will immediately cause the SUPER POWER PUSHER to switch to a forward motion and stop when the switch pressure is removed.

This is to prevent the operator being accidentally crushed by the SUPER POWER PUSHER and the load while reversing.

Note: The machine will stop permanently. It will be necessary to turn the power switch OFF and ON again before the machine will function normally if this feature has been activated.

AUDIBLE ALERT

SUPERPOWER PUSHER is fitted with an “automotive-type” electric horn for warning of approach. The horn switch is placed at the centre/top of the handlebar assembly. Press to sound.

ANTI-RUNAWAY FEATURE

The controller fitted to the SUPER POWER PUSHER is able to detect movement due to the “Back EMF” created by the DC motor. Should the voltage increase to a certain level the controller will apply an opposite voltage to stop the movement.

This occurs even when the power switch is OFF (or no batteries are fitted).

BATTERY CHARGING

The SUPER PUSHER can be fitted with either a 110VAC or 240VAC input GUEST model 2631 triple-output battery charger intended for.

Charging this unit in any manner other than by the charger provided may result in serious damage.

Batteries supplied with the SUPER PUSHER are of a heavy-duty sealed valve regulated type. Life and performance depends upon keeping them charged at all times. They should not be stored in a discharged condition.

CHARGER



The above photograph shows the Guest 2631 as installed in the SUPER PUSHER. It is located under the hinged lid of the battery compartment. In-line 15A fuses are fitted. Only use replacements of the same type and rating.

DO NOT ATTEMPT TO MOVE THE SUPER PUSHER WHILST "ON-CHARGE" USE OF AN EARTH FAULT PROTECTED MAINS SUPPLY IS REQUIRED. REPLACE FUSES ONLY WITH THE SAME TYPE AND RATING.

LED indicators are provided for all three 12V batteries, which are connected in series to supply the SUPER PUSHER. These batteries are individually connected to the three charger outputs.

When the RED LED is illuminated the battery is discharged. The charger is recharging at the "Bulk" charging rate of 10A. Voltage is between 11.8 and 14 volts.

When both LED's are illuminated the charger is recharging at an absorption rate between 3 and 6 amperes. Voltage will be approximately 14V.

In either case, if the LED's remain ON for more than 48 hours refer to the troubleshooting section.

The charger circuitry is designed to prevent overcharging.

CHARGER TROUBLESHOOTING

Symptom / possible cause	Solution
1) LED's do not illuminate	
No mains supply	Check supply and mains fuse
Charger fault	Return charger to Supplier.
2) LED's illuminate but batteries do not charge.	
Batteries may be defective	Replace if necessary
Loose connections	Check and tighten
Charger output shut down due to overload / short circuit or Blown Fuse	Eradicate cause & replace blown fuses, with same type and rating
3) Charging time excessive in hot weather	
Charger has shut down due to overheating	Move machine to a cooler environment with better ventilation
4) Red LED permanently ON (48Hrs+)	
Dead short or overload Remove mains and then isolate the batteries from the charger. Green LED should illuminate when Mains is restored. If not the charger may be defective.	Return Charger to supplier. Change battery. Do not attempt to charge additional or larger batteries.
5) Green LED permanently ON (48Hrs+)	
Fuse(s) blown	If fuses and connections are sound, return charger to supplier.
Faulty connection	If fuses and connections are sound, return charger to supplier.
6) Red & Green LED's permanently ON (48Hrs+)	
Battery damaged or unable to reach full charge. Poor electrolyte or cell damage.	Check and replace battery

INSTRUCTIONS FOR ACCESS TO MOTOR AND DRIVE

1. Consult the exploded drawings to identify parts referred to by (ITEM number)
Open the main body lid (21) and secure safely in the open position (or remove it).
2. Disconnect and remove all cables from the batteries, first noting their positions and fuses to ensure correct re-assembly.

CAUTION!

Each battery weighs approximately 30kgs. Use safe lifting practices. Removal of the batteries will alter the weight distribution of the SUPER PUSHER and will affect its balance. Ensure the machine is safely chocked/blocked to avoid tipping if the batteries are to be removed.

3. Remove the three batteries. Note: safe handling of batteries.
4. Un-fasten and remove the charger (3).
5. Un-bolt and remove the battery support plate (22). The motor/gearbox (1) will now be visible. Chain adjustment is provided at the motor/gearbox.
6. Slacken the 3/8 inch bolts retaining the motor/gearbox and move the assembly until the maximum chain displacement is 1/2 inch at the centre of the chain runs. Avoid un-equal chain tension.
7. Re-tighten the mounting retaining bolts to 62 Ft-Lbs.
8. Re-assemble parts in the reverse order to above ensuring all bolts/screws are tightened correctly with all washers re-fitted.
9. Re-fit the batteries ensuring the correct terminal/wire relationship. Do not use tools to bridge the battery terminals.

Note: If the drive chains are badly worn contact the manufacturer for replacements. Drive chains must be replaced as matched pairs.

REPLACEMENT PARTS

Always give the following information when ordering parts:

1. Serial Number of the SUPER PUSHER
2. Part Number
3. Part Name
4. Quantity Desired

Do not use item numbers when ordering parts – always use PART NUMBERS.

PARTS LIST REFERRING TO EXPLODED DRAWINGS

Item No.	Part No.	Description
1	502-001	Transaxle
2	502-002	Controller
3	502-003	Battery Charger
4	502-004	Contactoer
5	502-007	Battery Indicator
6	300316 / MMBB000441	C2 / C5 Handset
10	502-005	Axle Bearing
11	502-007	Axle Sprocket
12	502-008	Transmission Sprocket
13	502-009	Drive Chain
14	502-0010	Decal
15	502-0014	PB Switch/Bracket Assembly
16	502-117	Handle Assembly
17	502-118	Handle Top Plate-Stainless Steel
18	502-119	Handle Bottom Plate-Aluminum
19	502-103	Main Body Front/Sides
20	502-104	Main Body Frame
21	502-105	Main Top Cover
22	502-106	Battery Tray
23	502-107	Left Chain Guard
24	502-108	Right Chain Guard
25	502-109	Axle Housing
26	502-1010	Axle Shaft
28	502-114	Axle Sprocket Key 1"
29	502-115	Axle Sprocket Key 1-1/2"
30	502-125	P7 Tire
31	502-127	Rear Castor Plate
32	500-079	Castor

Exploded View

