

SCARAB
Sweepers



Scarab Monic
With Omidrive

OPERATOR'S MANUAL

M/c Serial No:



OPERATOR'S MANUAL

SCARAB MONIC

with **Omnidrive**

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SAFETY FIRST

It is important in the interests of your health and safety that the following points are observed at all times:

- **ALWAYS USE THE HOPPER PROP TO SUPPORT A RAISED HOPPER AND NEVER WORK UNDER A RAISED HOPPER UNLESS THE PROP IS IN POSITION.**
- **DO NOT DRIVE THE VEHICLE WITH THE HOPPER RAISED.**
- **BEFORE WORKING ON THE MACHINE:
POSITION THE VEHICLE ON FIRM, LEVEL GROUND,
APPLY THE HANDBRAKE,
STOP THE ENGINE,
REMOVE THE IGNITION KEY.**
- **BEFORE OPERATING EITHER THE HOPPER-TIP OR REAR DOOR CONTROLS, ENSURE THAT THERE IS SUFFICIENT CLEARANCE AND THAT IT IS SAFE TO DO SO.**
- **BEFORE STARTING ENGINE ENSURE THAT ALL CONTROLS ARE SWITCHED OFF AND THAT THE VEHICLE IS IN NEUTRAL.**
- **BEFORE DRIVING THE VEHICLE ENSURE THAT ALL RELEVANT VEHICLE CHECKS HAVE BEEN CARRIED OUT, THAT ALL EQUIPMENT IS STOWED AND THAT THE BRUSHES HAVE BEEN RAISED.**
- **DO NOT OVERLOAD THE HOPPER.**
- **IN THE EVENT OF AN OIL LEAK (YELLOW WARNING LAMP) STOP THE ENGINE & INVESTIGATE THE CAUSE** (NOTE THAT THE BRUSH SYSTEM WILL SHUT DOWN AUTOMATICALLY UNTIL THE OIL LEVEL IN THE TANK HAS BEEN RESTORED TO NORMAL).
- **HIGH PRESSURE WATER CAN BE HAZARDOUS, ALWAYS WEAR GOGGLES OR SUITABLE EYE PROTECTION WHEN OPERATING THE HIGH-PRESSURE WATER PUMP AND WHEN USING THE LANCE. DO NOT DIRECT THE WATER JET AT OTHER PERSONS. BEWARE OF ELECTRICAL INSTALLATIONS ON PUBLIC BUILDINGS & LAMP POSTS Etc. AND EXERCISE EXTREME CAUTION, FAILURE TO COMPLY CAN RESULT IN SERIOUS INJURY.**

REMEMBER when in doubt, **ASK!**

- *These Health & Safety Points are repeated, preceding the appropriate text, throughout this manual.*

SCARAB MONIC

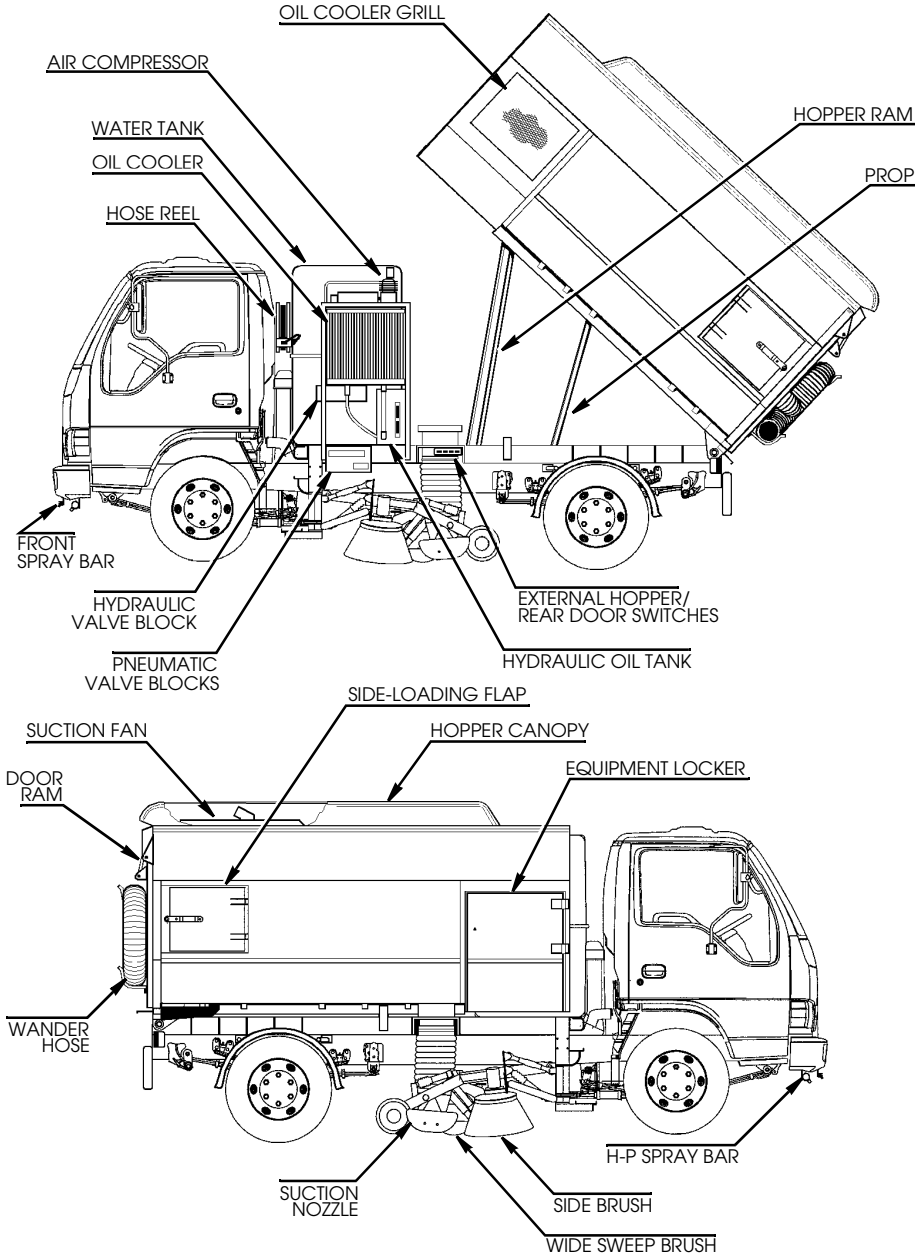


Fig. 1 - Main Features of the Scarab Monic (LHD)

ROUTINE MAINTENANCE

CAUTION:

If the suction fan vibrates, stop the engine and remove the ignition key. Clean the fan blades manually. Failure to do so will result in damage to the fan motor, bearings and to the hopper.

DAILY VEHICLE CHECKS

It is important that the following checks are conducted as stated. This will ensure optimum performance of the machine at all times.

CAUTIONS:

1. Ensure that the oil cooler is kept clean. If the hydraulic oil exceeds its max. working temperature a warning buzzer will sound in the cab and the warning light on the control panel will turn RED. The vehicle must be stopped and the engine switched off IMMEDIATELY. Failure to do so will result in damage to pumps and motors.
2. In the event of an oil leak in the hydraulic system, the warning light on the control panel will turn YELLOW and the brush system will automatically shut down. If this situation occurs, immediately stop the vehicle's engine and investigate the cause. The brush system will not operate until the hydraulic oil level is replenished.

Before Driving The Vehicle

1. Check the vehicle's general condition for safety, including lighting equipment and beacons.
2. Check the tyres for damage and for correct inflation pressures.
3. Check the following fluid levels against the chassis manufacturers' recommendations and top up as required:
Engine coolant, Engine oil, Brake fluid and Screen wash.
4. Check that the hydraulic oil is at the correct level. (See Caution). If correct oil level is not maintained, the sweeping system automatically shuts down until the oil level is replenished).
5. Check for hydraulic oil leaks (See Caution).
6. Check that the oil cooler is clean and that the cooling fan operates correctly. (See Caution). If the oil overheats, a red warning will light and an alarm buzzer will sound in the cab).
7. Check the brushes, rubber skirts and suction box seals for wear. Remove any items such as string that are entangled around them.
8. Check the suction box ground-clearance and adjust as necessary. **(Note: It is important that the nozzle height is as stated in Fig. 2, otherwise suction power will be lost).**
9. Check water spray jets for blockages.
10. Check that all equipment is correctly stowed and that the brushes and suction box are in the raised position.

At The End Of Each Day

1. Wash the vehicle paying particular attention to the hopper screens and the area above them. Avoid the application of high pressure water to electrical connections or damaged paintwork.
2. Wash the oil cooler, ensuring that the fins are clean (See Caution).
3. Always leave vehicle with the hopper partially raised and rear door slightly open, to aid draining and for air circulation in the hopper.
4. Grease all brush linkages and the suction nozzle wheels.
5. Remove water strainer elements and clean as necessary.

In Frosty Weather

1. Remove the water strainer elements.
2. Drain the water tank.
3. Open the drain taps on the water pumps.
4. Switch on the water sprays and run the low pressure pump until dry.

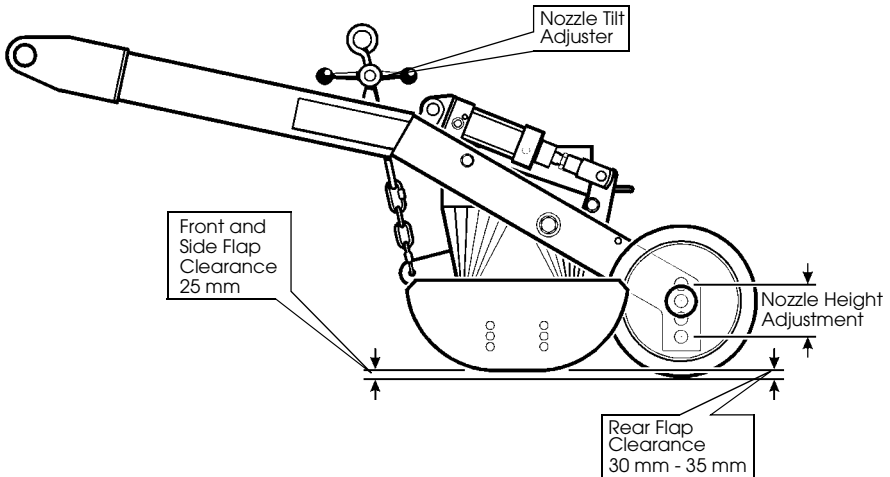


Fig. 2 - Clearances for Suction Nozzle Flaps

Monthly (300 hour) Maintenance Checks

1. Carry out all Daily Checks.
2. Check entire machine for damage or wear, and service as required.
3. Check all hopper and subframe-to-chassis mountings.
4. Clean the suction fan blades.
5. Check seals on hopper-door & suction-tubes.
6. Clean the pneumatic system water-separator. Top up the lubricator.

Continued...

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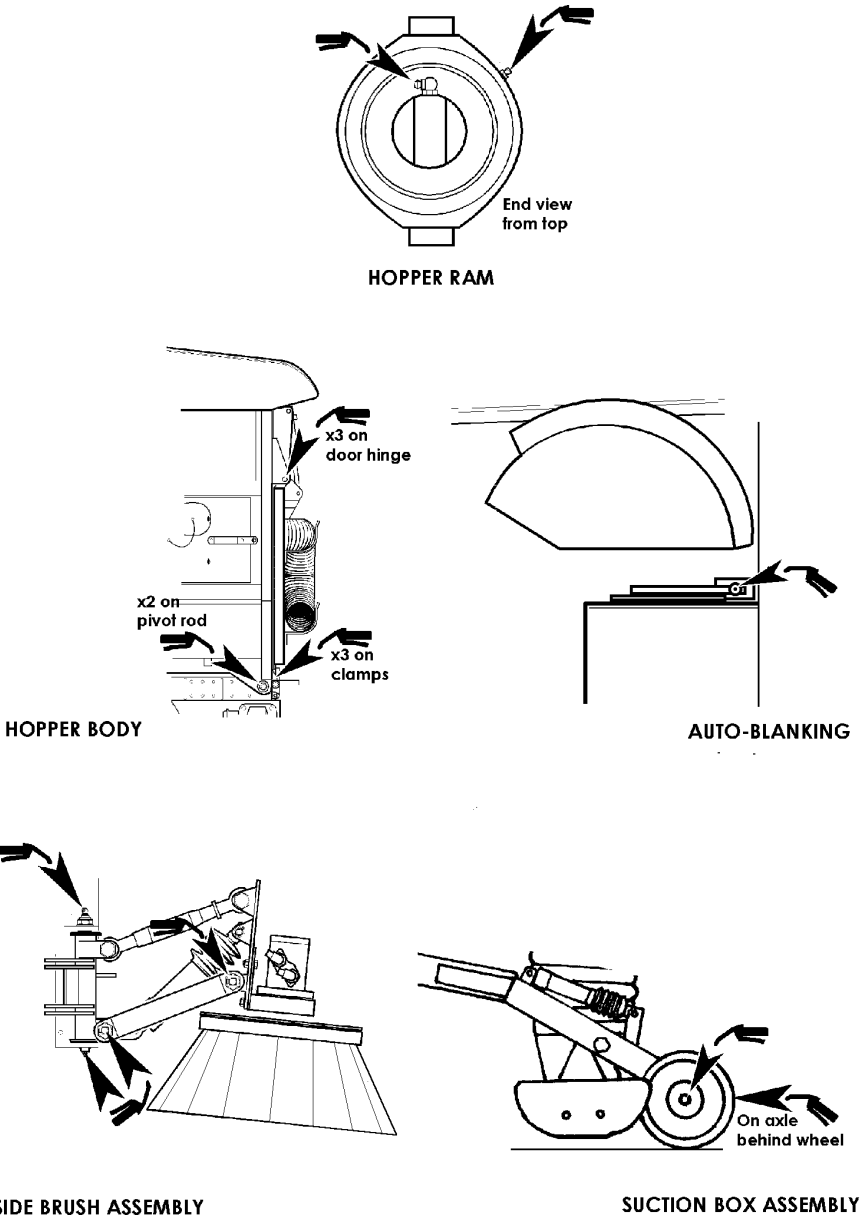


Fig. 3 Manual Grease-point Locations

Monthly (300 hour) Maintenance Checks (Continued)

7. Raise and prop the hopper. Run fan and brushes at normal speed. Check return filter on oil tank, if in the RED zone, replace element.
8. Check wiring and hoses for security and for signs of chafing. Rectify as necessary.
9. Check for wear in suction tubes & deflectors.
10. Check oil level in the high-pressure pump, top up as necessary.
11. Clean the vehicle's air cleaner (It will be necessary to check the air cleaner more often when working in very dusty conditions).
12. Refer to chassis manufacturer's handbook. Carry out chassis service procedures as directed.
13. Only use genuine Scarab Spare Parts. Use of Non-Scarab parts might invalidate the warranty.

Annual (2000 hour) Service

It is recommended that only qualified Scarab Service Engineers should carry out this service procedure.

1. Carry out the monthly (300 hour) maintenance checks.
2. Change the hydraulic oil.
3. Replace the hydraulic system return-filter, located in the tank.
4. Change the oil in the high-pressure water pump.

REMEMBER, IF IN DOUBT, ASK

HYDRAULIC SYSTEM

The hydraulic pumps are driven directly from the vehicle's engine and require no maintenance. The system is protected by high temperature and low oil-level switches, which function as follows:

1. **Temperature Switch.** For the overheat protection function; actuates a RED warning lamp and sounds an in-cab alarm buzzer in the event that the hydraulic oil temperature reaches 90° C.
2. **Low Oil-level Switch.** Actuates a YELLOW warning light in the cab, automatically stops the sweeping system if the oil level drops below minimum safety limit (e.g. in the event of a severe leak).
3. A hand-operated pump is fitted, so that the hydraulic services can be operated manually, in the event of a total hydraulic failure, and for refilling the hydraulic tank. To operate any hydraulic service, turn the vehicle's ignition ON; depress the required switch and use the hand-pump to complete the task.

SWEEPING CONTROLS

The sweeping controls are located on the central control console and on a door/dash-mounted control box.

1. **Sweep Mode Switch.** Switches power to the control panel when it is turned clockwise, to position **1** (Sweep Mode). This gives a sweep-speed range of 0 - 15 mph (0 - 25 kph). A green light illuminates to indicate **Panel ON/Sweep Mode** status (see 22.). When the switch is turned to Position **0** - Drive Mode (speed range 0 - 55 mph/ 0 - 88 kph) the green light will extinguish.

CAUTION:

Always turn the Sweep Mode Switch to 0 after sweeping operations.

2. **Engine-speed Adjust.** This is a rotary potentiometer used to preset engine-speed for sweeping, it has a bezel marked 1 to 10. Turning clock-wise increases engine speed.

NOTE:

The normal operating speed range for the engine to give maximum suction power and brush speeds is 1700 rpm . Increasing engine speed will give greater flexibility, for example on hills. For light sweeping duties, however, it is possible to use engine speeds lower than 1500 rpm.

3. **Suction Fan Switch.** This is a three-position switch. Press the **Top** of the switch to turn the fan OFF, the **Central** position gives normal suction. Press the **Bottom** to give BOOST SUCTION for heavy-duty sweeping (only operates at the higher engine speeds).
4. **Side Brush Switch.** This is a two-position switch. Press the **Top** of the switch to turn the brush(es) OFF, press the **Bottom** to turn the brush(es) ON.
5. **Side Brush Thrust ***. This is a two or three-position switch depending on whether down thrust only or up and down thrust is fitted:
 - (a) **Down Thrust Only.** Press the **Top** of the switch to turn OFF the pressure, press the **Bottom** to turn ON the pressure. Used in conjunction with the Pressure Regulator.
 - (b) **Up and Down Thrust.** Press the **Top** of the switch to apply upward thrust, press the **Bottom** to apply down thrust. The **Central** position locks the pressure setting. Used in conjunction with the Pressure Regulator.
6. **Widesweep Switch.** This is a two-position switch. Press the **Top** of the switch to turn the brush OFF. Press the **Bottom** to turn the brush ON.
7. **Widesweep Thrust ***. This is a two-position switch. Press the **Top** of the switch to turn the Widesweep pressure OFF. Press the **Bottom** to increase Widesweep pressure. Used in conjunction with the Pressure Regulator and Gauge mounted externally on the side of the machine.

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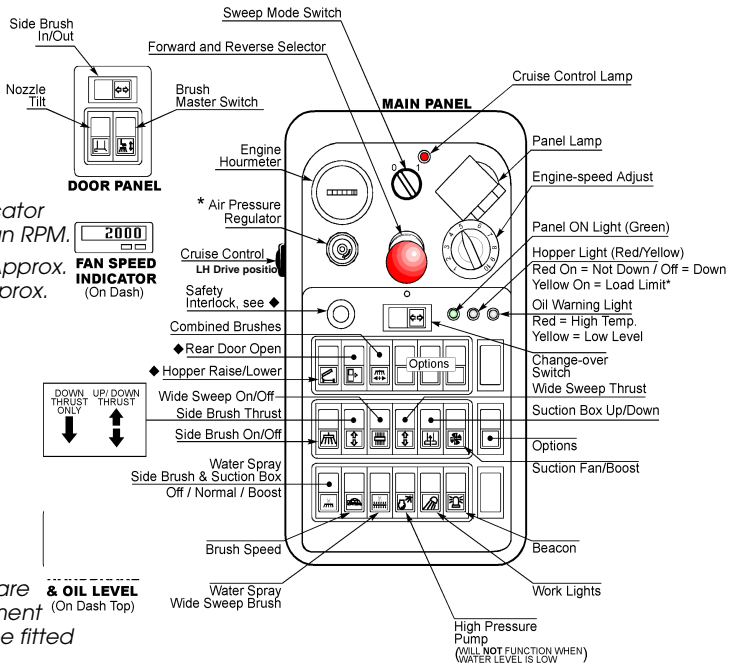
8. **Suction Box Switch.** This is a two-position switch. The Suction Box is **RAISED** by pressing the **Top** of the switch and **LOWERED** by pressing the **Bottom** of the switch.
9. **Water Spray Switch (Side Brush/Suction Box).** This is a three-position switch. Press the **Top** of the switch to turn the water **OFF**, the **Central** position gives **NORMAL** water spray. Press the **Bottom** of the switch for **BOOST** water (only necessary in very dusty conditions).
10. **Water Spray Switch (Wide Sweep Brush).** This is a two-position switch. Press the **Top** of the switch to turn the water **OFF**, press the **Bottom** to turn the water **ON**.
11. **Brush Speed Switch.** This is a three-position switch controlling brush speed. Press the **Top** of the switch for **SLOW**, the **Central** position for **MEDIUM** and the **Bottom** of the switch for **HIGH** speed.
12. **High-pressure Pump Switch.** This is a two-position switch. The pump is turned **OFF** by pressing the **Top** of the switch and **ON** by pressing the **Bottom** of the switch. It will illuminate when it is **ON** to indicate that the pump is running.

NOTE:

The H-P pump will automatically cut out when the water tank is empty.

NOTE:

Fan Speed Indicator shows suction fan RPM.
 Normal = 2000 Approx.
 Boost = 2200 Approx.



NOTE:

Items marked * are **OPTIONAL EQUIPMENT** and might not be fitted to all Machines.

Fig. 4(a) - Sweeping Control Panel Layout

- 13. Work Lights Switch.** This is a two-position switch. Press the **Top** of the switch to turn the lights OFF, press the **Bottom** to turn the lights ON. Only the side that is sweeping will be illuminated.
- 14. Beacon Switch.** This is a two-position switch which operates the Beacons, they are turned OFF when the **Top** of the switch is pressed and ON when the **Bottom** of the switch is pressed. The switch insert illuminates to indicate when the beacons are operating.
- 15. Safety Interlock.** This is a button mounted adjacent to the hopper and hopper door switches. These controls will only function while the Safety Interlock is pressed and held down.
- 16. Hopper Raise/Lower Switch.** This is a two-position switch (used in conjunction with the Safety Interlock) to raise/lower the hopper for discharging the load, or maintenance purposes. Press the **Top** of the switch TO RAISE the hopper, press the **Bottom** to LOWER the hopper. A RED indicator lamp illuminates until the hopper is fully in the DOWN position (see 18.).
- 17. Rear Door Switch.** This switch is used, in conjunction with the Safety Interlock, to open the rear door of the hopper. The switch is detented to the Off position. Pressing the **Top** of the switch OPENS the Rear Door. The door is CLOSED by means of an external switch mounted on the side of the machine (Refer to Fig. 6).
- 18. Hopper Warning Lights.** These are combined in a single unit which functions as follows:
Hopper not fully down - The light illuminates RED.
Axle load indicator (optional) - illuminates YELLOW when safe load limit is reached
- 19. Options.** There are six switch positions reserved for use by additional optional equipment.
- 20. Changeover Switch.** This is a three-position switch, used to select either LH or RH sweeping (operating the switch also swivels the wide sweep brush to the appropriate attitude and selects the appropriate suction box and work-lights). Pressing the **LH side** of the switch selects LH sweeping, pressing the **RH side** of the switch selects RH sweeping. When the switch is placed in the **Central** position, both suction nozzle air-flaps will close. This permits full suction power to be used when operating the wander hose.
- 21. Combined Brushes Switch*.** This is an optional control on dual sweep machines. It is a two-position switch which enables the machine to sweep on both sides simultaneously. When the **Top** of the switch is pressed the system is OFF (i.e. sweeping on the left or right only, as selected). When the **Bottom** of the switch is pressed, combined brush sweeping is turned ON.
- 22. Panel ON Light.** This is a green indicator light which illuminates when the control panel is switched ON (see Sweep Mode Switch).

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23. **Oil Warning Light.** This light has two functions. It will illuminate RED to indicate a High oil temperature or YELLOW to indicate a Low oil level.
24. **Engine Hourmeter.** Records when engine is running.
25. **Panel Lamp.** This lamp provides non-glare (red) panel illumination and is operated by a built-in switch located on the end of the unit.
26. **Air-pressure Gauge (Side Brush)*.** This is used, in conjunction with the pressure regulator (see 27.) to set the required amount of thrust to the side brush(es).
27. **Air-pressure Regulator (Side Brush)*.** This is used, in conjunction with the pressure gauge (see 26.) to set the required amount of thrust to the side brush(es).

NOTE:

Side brush and wide sweep thrust is limited to a maximum pressure of 2 bar.

28. **Side Brush IN/OUT Switch.** This is a two-position switch. Press the **LH side** of the switch to swing the side brush(es) OUT and the **RH side** of the switch to swing the side brush(es) IN.

NOTE:

Items marked * are Optional Equipment and might not be fitted to all Machines.

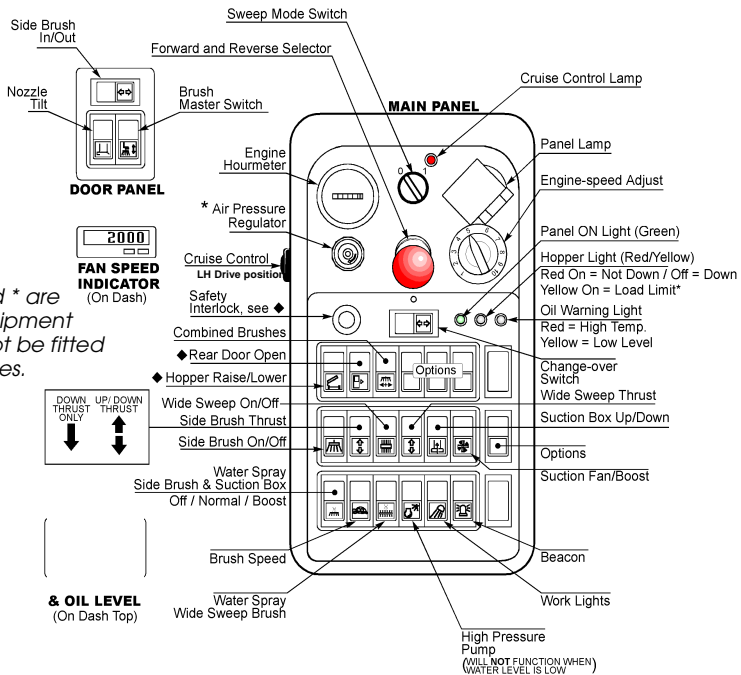


Fig. 4(b) - Sweeping Control Panel Layout

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- 29. Suction-nozzle Tilt Switch.** This is a three-position switch. Press the **Top** of the switch for MOMENTARY TILT (nozzle will remain tilted as long as the switch remains depressed). Press the **Bottom** for PERMANENT TILT, the nozzle will then remain tilted until OFF is selected by returning the switch to the **Central** position.
- 30. Brush Master Switch.** This is a three-position switch. Press the **Top** of the switch to STOP & RAISE all sweeping equipment. Press the **Bottom** to LOWER & START the sweeping equipment configuration pre-selected on the control panel (including water sprays and worklights).

DRIVING

1. Ensure that the Forward/Reverse lever is in the NEUTRAL position (the vehicle will NOT start when in gear).
2. Turn the Ignition Key to the second position, the glowplug lamp on the instrument panel will illuminate.
3. Wait for the glowplug lamp to extinguish and start the engine.

NOTE:

There are two driving modes, Normal & Sweep, these are selected using the Sweep Mode Switch.

Position 0 = Drive Mode (speed range 0 - 56 mph / 0 - 90 kph)

Position 1 = Sweep Mode (speed range 0 - 15 mph / 0 - 25 kph)

4. Turn the Sweep Mode switch to position **0**.
5. Engage FORWARD/REVERSE as desired and release the handbrake
6. Use accelerator and brake conventionally to move the vehicle.

SWEEPING

CAUTIONS:

The vehicle must be brought to a complete standstill and the handbrake applied BEFORE the Sweep Mode switch is operated to turn ON the sweeping control-panel.

1. Stop the vehicle and apply the handbrake.
2. Switch on the work-lights and beacons as required.
3. Engage NEUTRAL.
4. Turn the Sweep Mode switch to Position **1** to select SWEEP.
5. Use the engine speed adjust knob to set engine speed to suit the prevailing sweeping conditions (nominal setting = 1700 rpm).
6. Operate the Changeover Switch to select either LH or RH sweeping, or operate the Combined Brushes Switch to enable simultaneous LH and RH sweeping
7. Select an appropriate sweeping equipment configuration.
8. Select Suction Fan ON, selecting **Normal** or **Boost** as required

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(remember that Boost only operates at the higher engine speeds).

9. Operate the Brush Master Switch (on the door panel) to deploy the selected sweeping equipment.
10. Engage FORWARD.
11. Operate the accelerator in the normal manner to move vehicle.

NOTE:

If the accelerator is released, the vehicle will come to rest automatically.

12. When Reverse is selected in Sweep Mode, all sweeping equipment in use will stop and lift automatically. This will revert to the selected sweeping configuration when FORWARD is re-selected. Operate the Brush Speed and Brush Pressure controls as necessary to achieve optimum performance for the prevailing conditions.

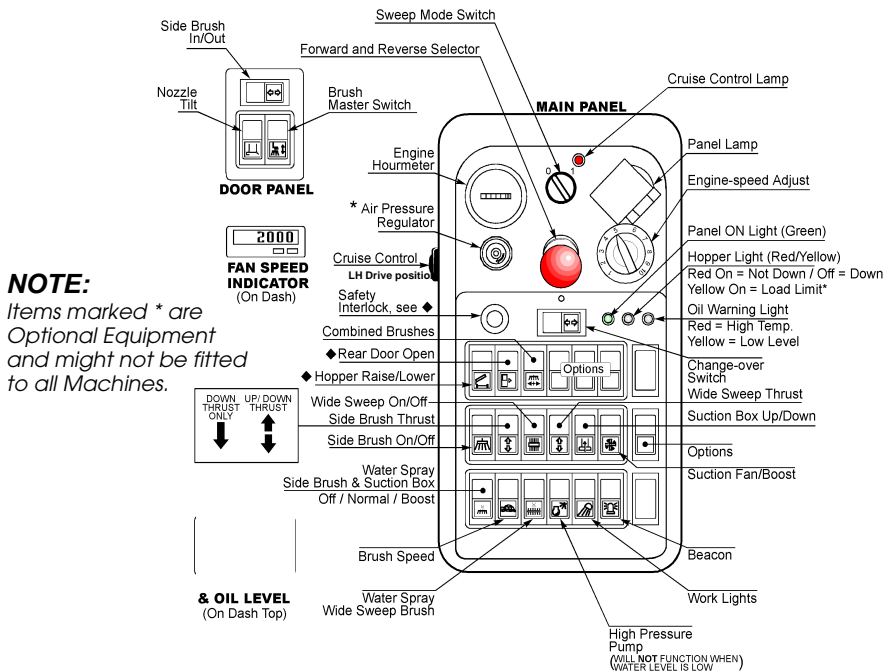


Fig. 4(c) - Sweeping Control Panel Layout

13. Upon completion of the sweeping run, operate the Brush Master Switch to stop and raise the sweeping equipment permanently to the stowed position (the selected sweeping equipment configuration will remain selected and may be redeployed by returning this switch to the ON position).

14. Turn off the suction fan.

CRUISE CONTROL

15. To ENGAGE - Press the Cruise Control Button (Red indicator lamp illuminates). The Drive system will maintain the current road speed until disengaged.
16. To DISENGAGE - Press the Cruise Control Button or apply the brakes.

NOTE:

Cruise Control operates only when the vehicle is in Sweep Mode

OPERATING THE HOPPER



WARNING

THE HOPPER PROP MUST ALWAYS BE USED WHEN THE HOPPER IS RAISED. FAILURE TO DO SO COULD RESULT IN SERIOUS INJURY.

BEFORE RAISING THE HOPPER, ENSURE THAT THE VEHICLE IS ON FIRM, LEVEL GROUND AND THAT THERE ARE NO OVERHEAD OBSTRUCTIONS.

DO NOT DRIVE THE VEHICLE WHILE THE HOPPER IS RAISED.

RAISING THE HOPPER

1. When inside the cab, press and hold down the Safety Interlock and TOP of the Hopper Switch simultaneously. As the hopper starts to rise, the RED hopper warning light will illuminate.
2. When outside the vehicle, press and hold down the hopper RAISE switch, located in the yellow switch block on the nearside of the vehicle.
3. When the hopper is fully raised, deploy the hopper prop by locating the free-end in its pocket (Refer to Fig. 5).

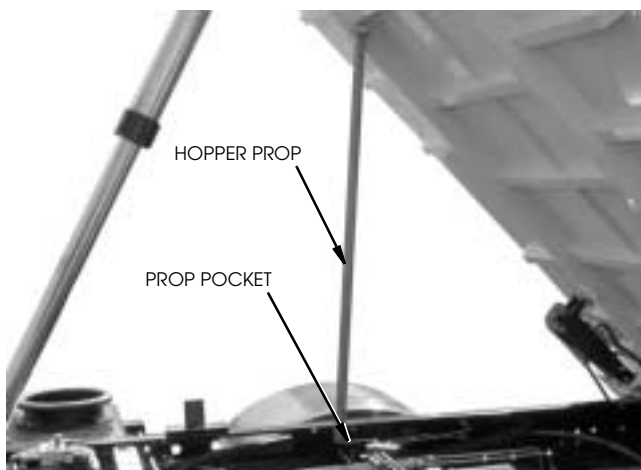


Fig. 5 - Correct Use of the Hopper Prop

LOWERING THE HOPPER

4. Stow the prop.
5. When inside the cab, press and hold down the Safety Interlock and BOTTOM of the Hopper Switch simultaneously until the hopper is completely lowered.
6. When outside the vehicle, press and hold down the hopper LOWER switch, located in the yellow switch block on the nearside of the vehicle.

NOTE:

The hopper warning light will stop illuminating *ONLY* when the hopper is in the fully lowered position.

In the event of a hydraulic system failure, use the auxiliary hand-pump fitted on the side of the vehicle, to raise the hopper manually (Refer to Fig. 6). The hopper is lowered by turning the pressure-release knob on the pump body.

OPERATING THE REAR DOOR

1. Ensure that there is sufficient room for the door to open fully.
2. From inside the cab, press the Safety Interlock and Door Switches simultaneously (Refer to Fig. 4(c)). It is also possible to open the rear door using the externally mounted controls (Refer to Fig. 6).
3. For safety reasons, the rear door cannot be closed using the in-cab controls. To close the door, press and hold down the externally mounted door closing switch on the nearside of the vehicle (Refer to Fig. 6).
4. Check that the door latch has locked correctly.

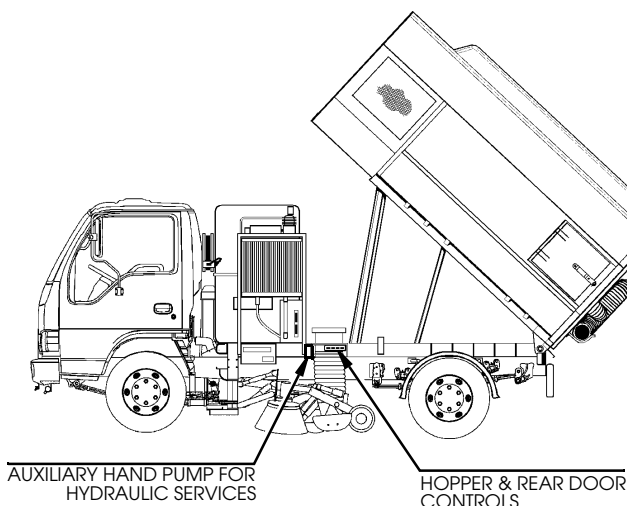


Fig. 6 - Location of External Controls

WANDER HOSE

1. Remove the blanking plate from one of the wander hose apertures in either the hopper rear door, or the appropriate side loading flap.
2. Attach the wander hose. If required, the wander hose can be used at the same time as the other sweeping equipment.

NOTE:

For maximum suction, however, such as when clearing drains, set engine speed to at least 1700 rpm and blank off the suction nozzles by selecting the **Central** position on the Changeover Switch (Refer to Fig. 4(c)).

HIGH PRESSURE PUMP



WARNING

HIGH PRESSURE WATER CAN BE HAZARDOUS, ALWAYS WEAR GOGGLES OR SUITABLE EYE PROTECTION WHEN OPERATING WITH HIGH PRESSURE WATER. EXERCISE EXTREME CARE WHEN USING THE LANCE, DO NOT DIRECT THE JET AT OTHER PEOPLE.

WHEN CLEANING PUBLIC BUILDINGS OR STREET FURNITURE, ENSURE THAT NO ELECTRICAL CONNECTIONS ARE EXPOSED.

FAILURE TO COMPLY CAN RESULT IN SERIOUS INJURY.

CAUTIONS:

Do not direct the high pressure jet directly at damaged paintwork or at electrical connections, this could result in damage to the vehicle.

1. Ensure that there is sufficient water in the water tank.
2. Switch on the high pressure pump (will not operate if water level is too low).
3. Set engine speed to 1700 rpm.
4. If the machine is fitted with a front spray bar, a valve is fitted on the chassis to supply the spray bar in addition to the hand-lance.

RECOMMENDED LUBRICANTS AND CONSUMABLE PARTS

Description	Specification/Qty.	Scarab Pt No/Volume
Hydraulic Oil.....	Derwent 32 hydraulic oil.....	005005 / 5 litres
Grease Points.....	multi-purpose grease (Super Lithium 2).....	005007 / 400 g
High Pressure Pump.....	Motor Oil 15W/50.....	005001 / 5 litres
Pneumatic Lubricator.....	Scarab Pneumatic Lubricant.....	005046 / 50 ml
Wide Sweep Brush Discs.....	35 off.....	023471
Wide Sweep Spacers.....	34 off.....	023472
Side Brush.....	1 off.....	023470
Side Brush Rubber Skirt(2 slot).....	1 off.....	012216
Side Brush Rubber Skirt (3 slot).....	1 off.....	010247
Suction Tube.....	1 off.....	013028
Suction Nozzle Flaps, Front/Rear*.....	2 off.....	013023
Suction Nozzle Flap Side*.....	1 off.....	013283
*Suction Nozzle flap Kit.....	Set of 3.....	024550

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Suction Nozzle Skid Plate	1 off.....	013277
Suction Nozzle		
Hopper Seal	1 off.....	013601
Rear Door Seal.....	1 off.....	010544
Wander Hose	1 off.....	010119
Hydraulic Return Filter Element.....	1 off.....	013125
Water Filter Elements.....	1 off.....	023862
Wide Sweep Front Skirt.....	1 off.....	022516

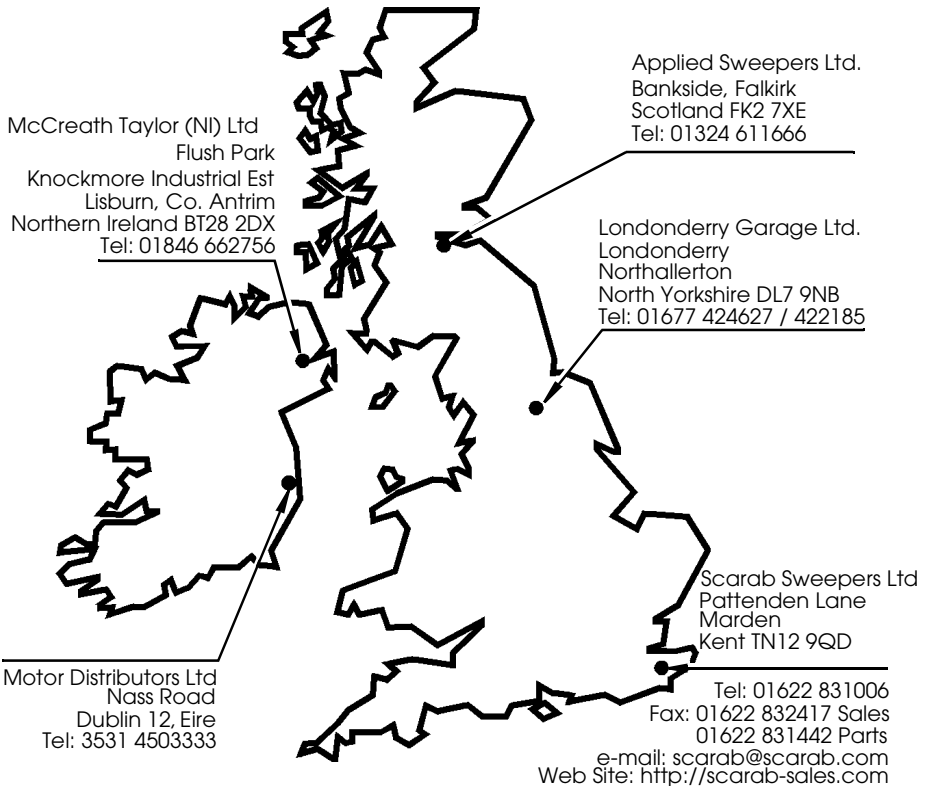


Fig. 7 - Parts & Service Providers - UK and Ireland

OPERATOR'S NOTES

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