



**SCARAB MONIC** *omnidrive*

**Truck-mounted Road Sweeper**



# **OPERATOR'S MANUAL**

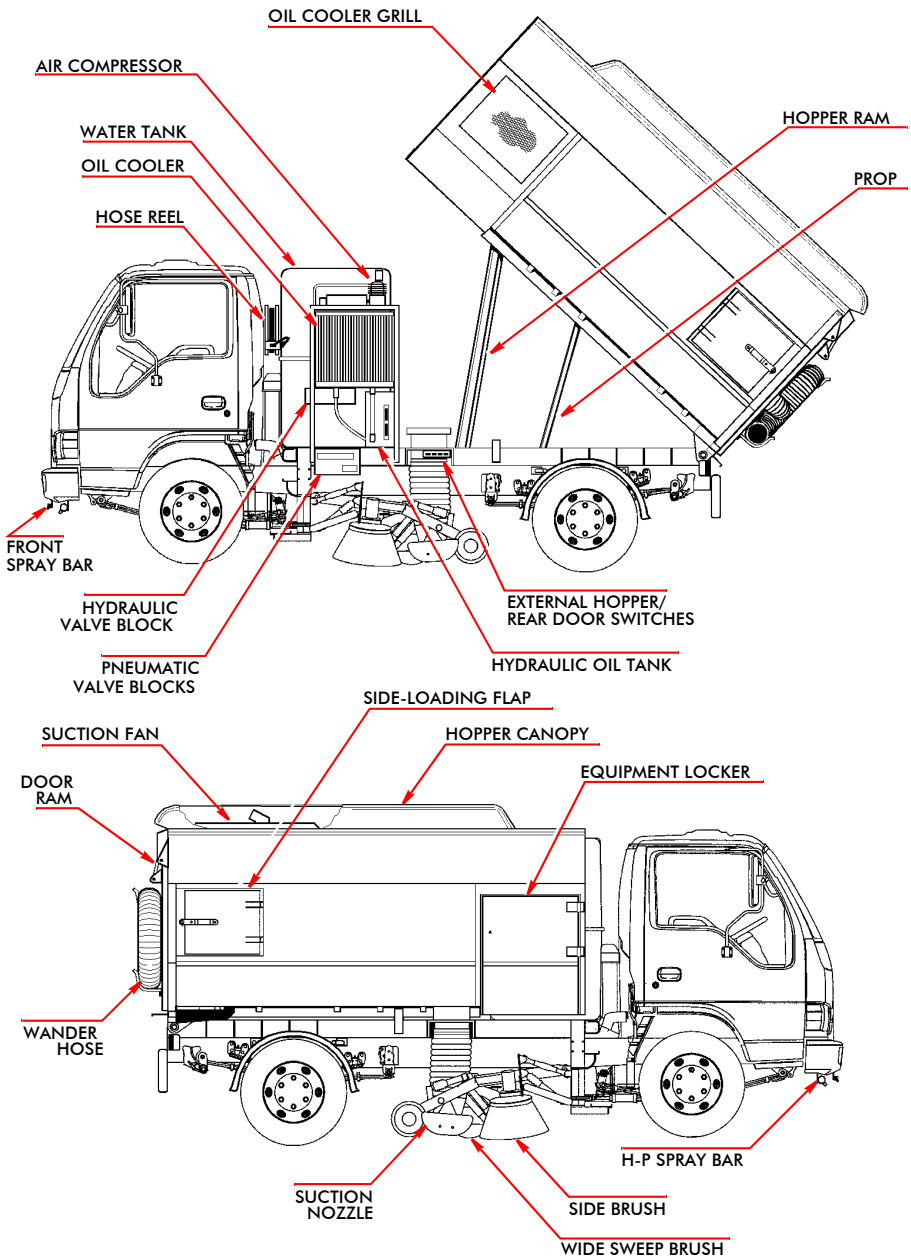
*CANbus Version*



This document contains important Health & Safety advice and must remain with the vehicle at all times

M/c Serial No:

# MAIN FEATURES OF THE SCARAB MONIC





# OPERATOR'S MANUAL

## SCARAB MONIC

### with Omnidrive

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This manual is published by the Technical Publications Department of Scarab Sweepers Limited and every effort is made to ensure that the information it contains is correct at the time of publication. Due to a policy of continuous development, however, the Company reserves the right to alter the specification and to supply when so altered without reference to illustrations and descriptions in this manual.

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# SCARAB MONIC

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## SAFETY FIRST

**THIS OPERATOR'S MANUAL CONTAINS ESSENTIAL INFORMATION AND MUST REMAIN WITH THE VEHICLE AT ALL TIMES.**

**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 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.

THE HAZARD SYMBOL  IDENTIFIES SAFETY RELATED TEXT THROUGHOUT THIS DOCUMENT. OCCASIONALLY THIS IS SUPPLEMENTED WITH ACTIVITY-SPECIFIC HAZARD SYMBOLS AS FOLLOWS:

 REAR DOOR,  HOPPER RAISE,  RELEASE PRESSURE FIRST,  HEAT

THE FOLLOWING ADDITIONAL SAFETY SYMBOLS ARE ALSO USED:

 EYE PROTECTION,  PROTECTIVE FOOTWEARE AND  GLOVES,

 USE THE HOPPER PROP,  DO NOT DRIVE WITH HOPPER RAISED,

 SITE ON FIRM, LEVEL GROUND BEFORE RAISING HOPPER.

THE SYMBOL  IS USED WHEN A VISUAL INSPECTION IS REQUIRED.

**REMEMBER FAILURE TO COMPLY WITH HEALTH & SAFETY ADVICE  
COULD RESULT IN SERIOUS INJURY.  
IF IN DOUBT, ASK!**

## ROUTINE MAINTENANCE

### 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. **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.**
2. **Ensure that the oil cooler is kept clean. If the hydraulic oil exceeds its max. working temperature a buzzer will sound in the cab and a warning will be displayed on the control panel LCD. The vehicle must be stopped and the engine switched off IMMEDIATELY. Failure to do so will result in damage to pumps and motors.**
3. **In the event of an oil leak in the hydraulic system, a buzzer will sound in the cab and a warning will be displayed on the control panel LCD. 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

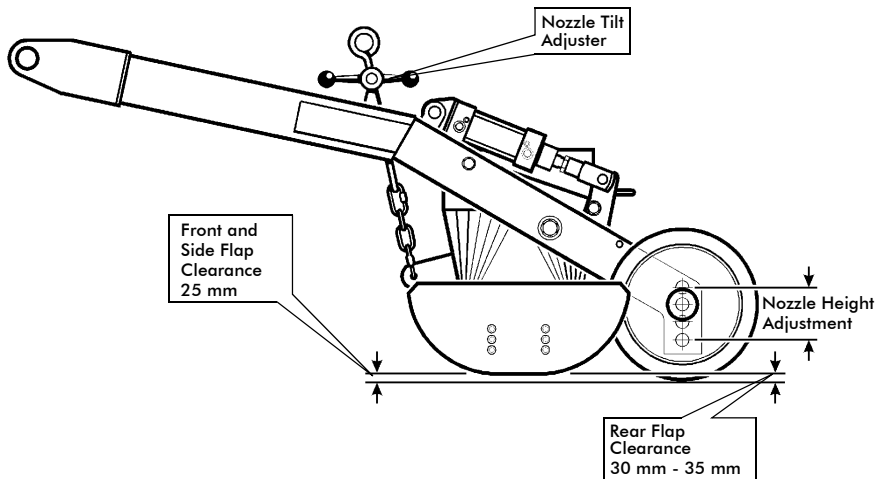
1. Check the vehicle's general condition for safety, including lighting equipment and beacons.
2. Check the tyres for damage and for correct inflation pressures.
3. Check the following fluid levels against the chassis manufacturers' recommendations and top up as required:  
**Engine coolant, Engine oil, Brake fluid and Screen wash.**
4. Check that the **Hydraulic Oil Level** is correct . (See Caution). If the 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).
7. Check that the suction fan is clean and runs smoothly. Report any observed faults/vibration immediately to an appropriate person.
8. Check the brushes, rubber skirts and suction box seals for wear. Remove any items such as string that are entangled around them.
9. Check the suction box ground-clearance and adjust as necessary.
10. Check water spray jets for blockages.
11. 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.



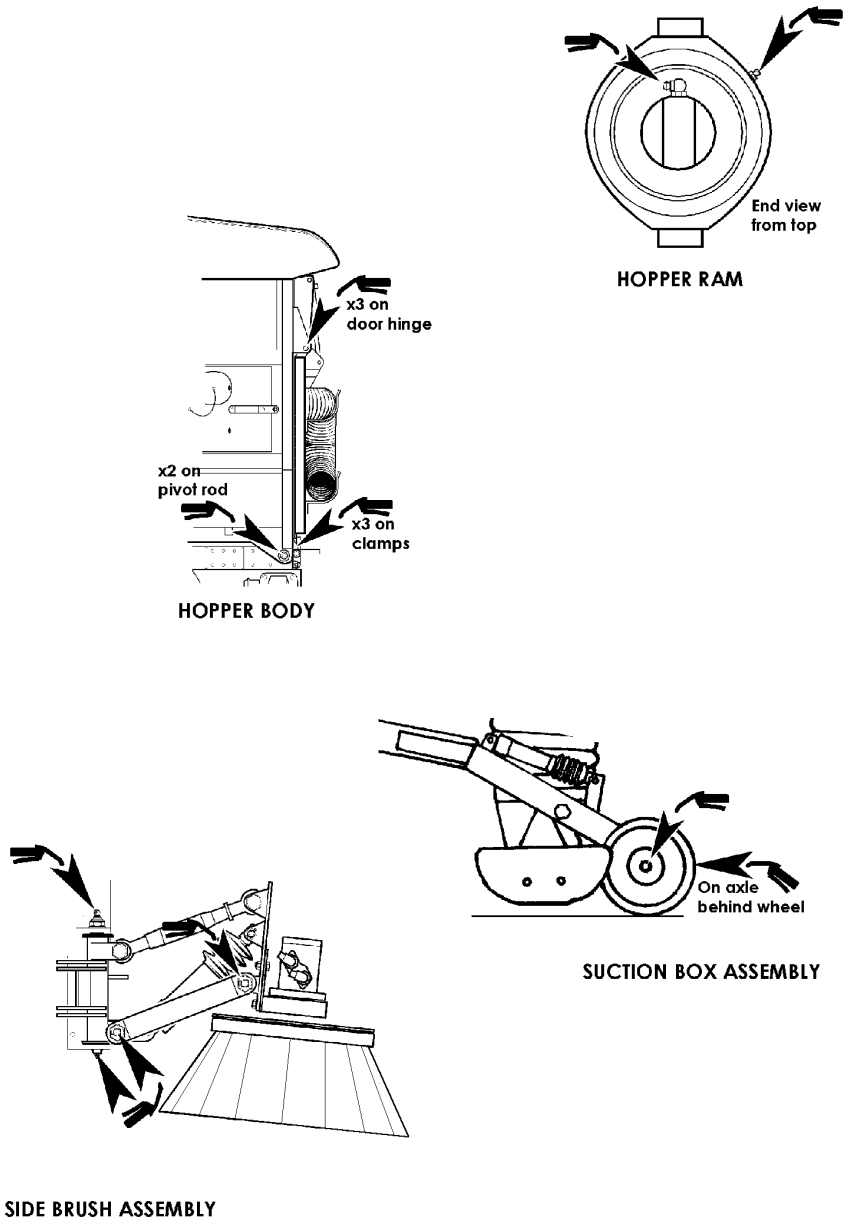
**Fig. 1 - Clearances for Suction Nozzle Flaps**

## Monthly (300 hour) Maintenance Checks

1. Carry out all Daily / Weekly 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 (refer to Page 28).
5. Check seals on hopper-door & suction-tubes.
6. Clean the pneumatic system water-separator. Top up the lubricator.



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**Fig. 2 Manual Grease-point Locations**

**Continued...**

## Monthly (300 hour) Maintenance Checks (Continued)

7. Raise and prop the hopper. Run fan and brushes at normal speed. Replace return filter in the oil tank.
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.** In the event that the hydraulic oil temperature reaches 90° C, a buzzer will sound in the cab and a warning will be displayed on the CANbus panel LCD.
2. **Low Oil-level Switch.** If the oil level drops below minimum safety limit (e.g. in the event of a severe leak) **while the engine is running** a buzzer will sound in the cab and a warning will be displayed on the CANbus panel LCD. The sweeping system will be automatically disabled at this point.  
If the engine is NOT running the warning will be displayed and sweeping system disabled as before but no buzzer will sound.
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.
















# SCARAB MONIC

## SWITCH OPERATING SYMBOLS

MAIN SWEEPING PANEL SWITCHES (FROM LEFT TO RIGHT & TOP TO BOTTOM)	
	WARNING BEACONS / LIGHT BAR - ON/OFF
	HIGH-PRESSURE WATER PUMP ☼
	NOT APPLICABLE
	PANEL STANDBY MODE / SWEEP MODE
	HIGH-PRESSURE FRONT SPRAY BAR - RAISE/LOWER ☼
	CRUISE CONTROL
	LEFT/RIGHT HAND SIDE BRUSH - ON/OFF
	LEFT/RIGHT HAND SUCTION NOZZLE - RAISE/LOWER
	WIDE SWEEP BRUSH - ON/OFF
	LEFT/RIGHT HAND SIDE BRUSH AND SUCTION NOZZLE WATER SPRAYS - ON/OFF
	LEFT/RIGHT HAND SUCTION NOZZLE - EXTRA WATER SPRAY OPTION - ON/OFF ☼
	WIDE SWEEP BRUSH WATER SPRAY - ON/OFF
	LEFT/RIGHT HAND WORK LIGHTS
	SIDE BRUSH PRESSURE - UP ☼
	SIDE BRUSH PRESSURE - DOWN ☼
	WIDE SWEEP BRUSH PRESSURE - UP ☼
	WIDE SWEEP BRUSH PRESSURE - DOWN ☼
	SUCTION FAN - ON/OFF

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## SWITCH OPERATING SYMBOLS

	INCREASE BRUSH SPEED 1 (125 RPM)
	NOT APPLICABLE
	NOT APPLICABLE
	HOPPER UP (REQUIRES SAFETY INTERLOCK TO BE HELD DOWN)
	SAFETY INTERLOCK FOR HOPPER & DOOR CONTROLS
	SUCTION FAN - BOOST SETTING
	INCREASE BRUSH SPEED 2 (150 RPM)
	NOT APPLICABLE
	REAR-MOUNTED WORK LIGHTS
	HOPPER DOWN (REQUIRES SAFETY INTERLOCK TO BE HELD DOWN)
	HOPPER DOOR OPEN (REQUIRES SAFETY INTERLOCK TO BE HELD DOWN)
<b>AUXILIARY PANEL (DOOR POD)</b>	
	SIDE-BRUSH SWING IN/OUT
	NOZZLE TILT (MOMENTARY MODE)
	MASTER SWITCH
	NOZZLE TILT (LOCKING MODE)
⊕ = OPTIONAL EQUIPMENT	

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## LCD SCREEN INFORMATION

UPPER ROW	AUXILIARY ENGINE SPEED / WATER TEMPERATURE / AUX FUEL LEVEL (%)	
LOWER ROW	SUCTION FAN SPEED / ANY ACTIVE WARNINGS (SEE BELOW)	
	COMMON WARNINGS (number & text) & OPERATING CONDITIONS	BUZZER
	1: LOW OIL LEVEL, STOP (Engine running / All switches disabled *)	YES
	6: LOW OIL LEVEL (Engine NOT running / All switches disabled *)	NO
	2: HIGH OIL TEMP (Panel is ON / Engine running)	YES
	4: LOW WATER (Panel is ON / H-P pump switch is disabled)	NO
	5: HOPPER UP	NO
	7: HAND BRAKE ON (reacts as soon as wheels turn if handbrake is on)	YES
	11: LOAD INDICATOR (optional)	NO
	DRIVE MODE (IGN ON / PANEL OFF)	
UPPER ROW	SCARAB SWEEPERS / ENGINE SPEED	
LOWER ROW	FAN SPEED / ROAD SPEED	
<p>* When 'all switches disabled' the work-lights will remain active.            Drive will continue to operate while line pressure is sufficient. This should enable the machine to be moved to a suitable stopping place.</p>		

## OPERATING ADVICE

PLEASE REMEMBER, The information provided in this handbook is designed to ensure that the Scarab sweeper operates both safely and efficiently.

A poorly maintained machine will become unreliable, inefficient and potentially dangerous. Always observe the recommended maintenance and safety related advice provided.

Many supposed operating problems can be traced to a lack of simple daily maintenance. Going out to sweep in a machine that has blocked screens, a dirt encrusted suction fan or poorly adjusted suction nozzles or brushes is not only a waste of time; it is also a waste of fuel.

Unless it is wet or raining, ALWAYS use the low-pressure water spray system when sweeping. This will not only reduce the amount of dust generated, it will also ensure more efficient collection of material. This is because wet material is heavier and will drop more readily from the air stream inside the hopper. If swept *dry* more of the the finer material will pass through the screens, wearing out the fan blades on its way back to the environment behind you.

# SCARAB MONIC

## DESCRIPTION OF SWEEPING CONTROLS

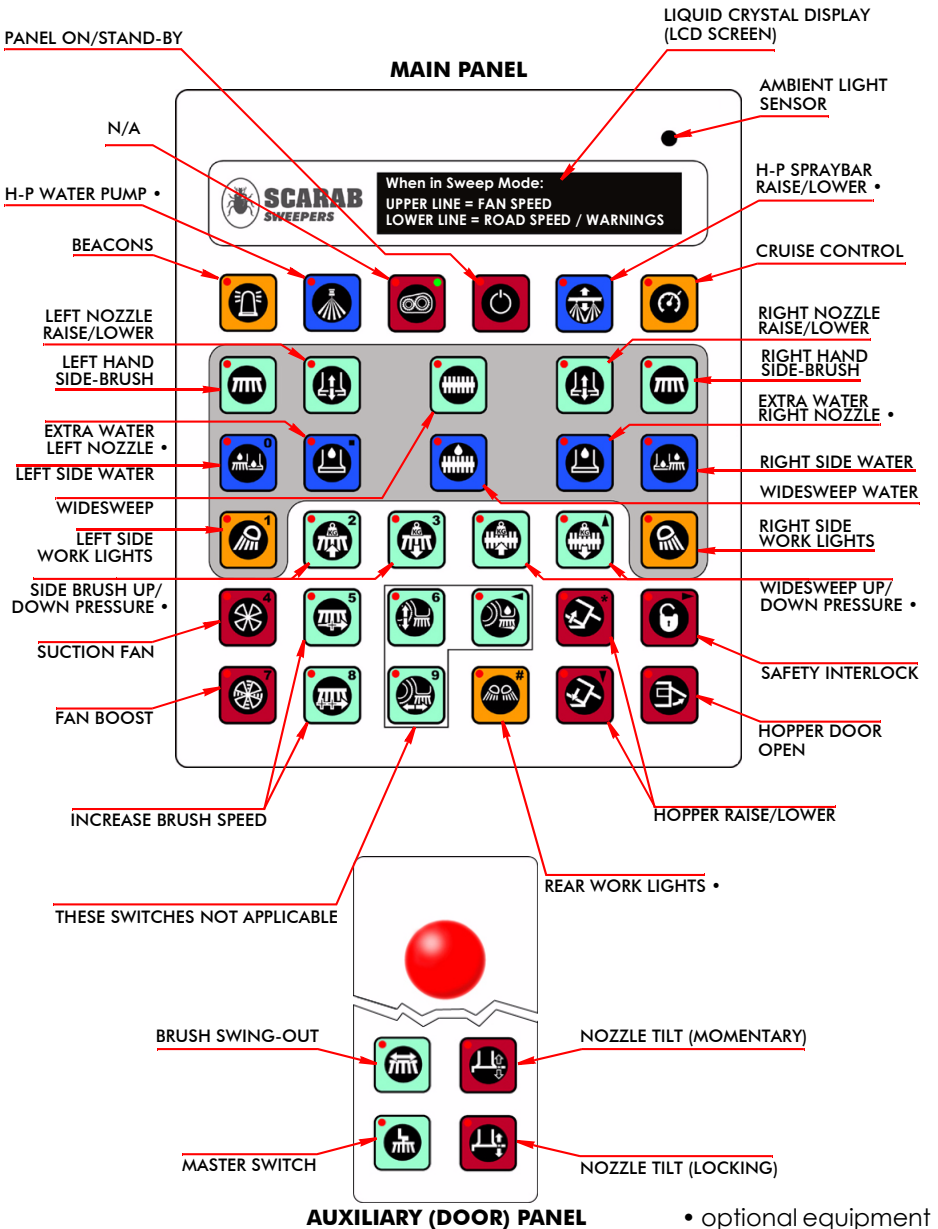


Fig. 3 Sweeper Control Panel Layout

## CONTROL PANELS (\* INDICATES OPTIONAL EQUIPMENT)

The CANbus system comprises two control panels (main and auxiliary) and a number of control nodes (normally seven). The system controls and monitors all sweeper functions. The main panel contains a CPU which holds all the program information and also logs operating system errors. This greatly simplifies the process of identifying and curing operating faults. The control nodes are located adjacent to the sub-systems they control. The CANbus control panels use touch switches; these are covered by a flexible overlay to identify their functions. The various types of switch function are grouped in two ways.

Firstly they are colour coded as follows:

- ORANGE** = Electrical functions such as lighting.
- RED** = Critical functions (e.g. Hopper Raise).
- PALE GREEN** = Sweeping functions.
- BLUE** = Water Spray functions.

Secondly, switches that control functions that are available either on/or with both sides of the machine, e.g. side brushes and widesweep, are grouped with left, right and centre function controls being positioned accordingly on the panel. These are positioned within the light grey area in the centre of the control panel.

Each switch has a red LED located at its upper left hand corner. This illuminates when the switch is ON (latched) or PRESSED (non-latching).

Most switches are of the latching type (press once to turn ON and again to turn OFF) however there are a number of non-latching switches. These will only function while they are held down and are as follows:

- (a) Safety Interlock
- (b) Hopper Body RAISE
- (c) Hopper Body LOWER
- (d) Rear Door OPEN
- (e) Momentary Nozzle Tilt

Apart from switches for the sweeping equipment, the main panel also incorporates an LCD screen and a light-sensor.

The LCD provides real-time information relevant to the operating status of the machine, in the form of warnings or feed-back, and acts as the interface when using the self-diagnostic facility.

The light-sensor automatically controls the panel/LCD back-lighting to ensure legibility in low ambient light conditions.

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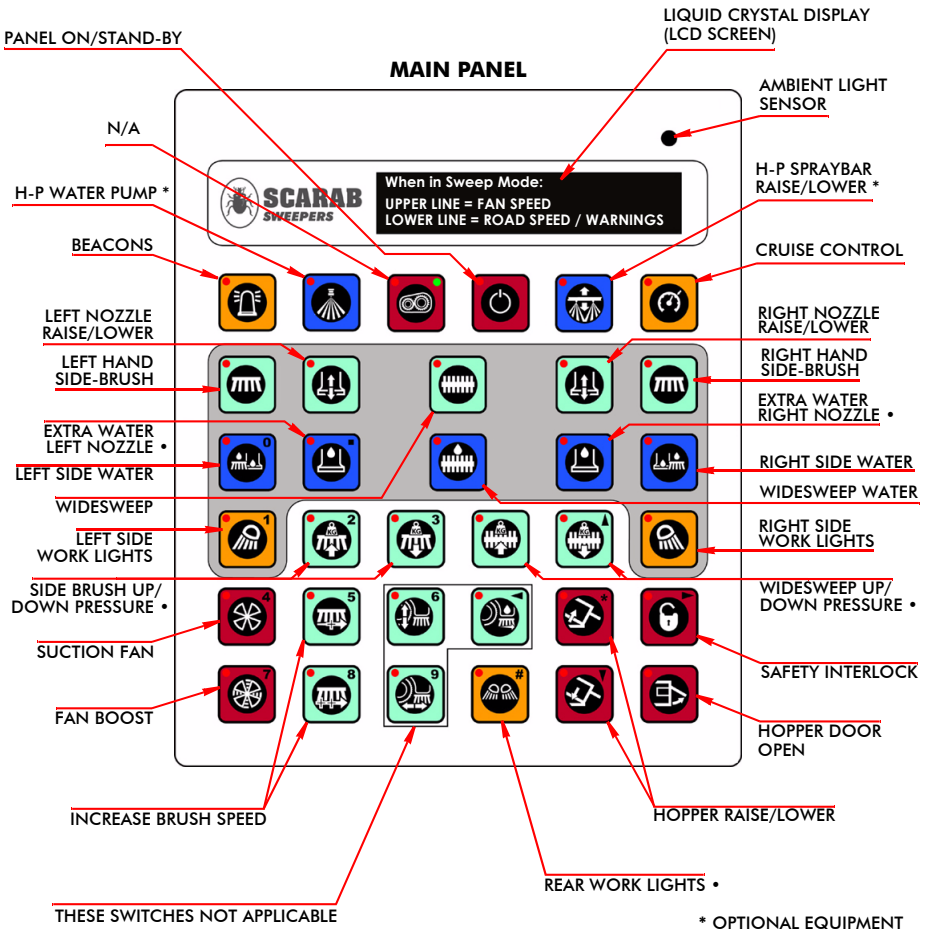


Fig. 4 Sweeper Control Panel Layout

## MAIN PANEL SWITCH DESCRIPTIONS

Switch functions are described from Left to Right and Top to Bottom.

**BEACON SWITCH** - Press to operates all hazard beacons fitted to the vehicle. Red LED illuminates when active.

**HIGH-PRESSURE WATER PUMP SWITCH \*** - Press to start the H-P water pump. The red LED will illuminate when the feature is selected. *Please note that the pump will not operate if the water level in the tank is insufficient.*



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**HYDROSTATIC GEARBOX SWITCH** - Not used in this application - backlight disabled.

**PANEL STAND-BY MODE / SWEEP MODE SWITCH** - Press to turn the sweeper panel ON or OFF. Red LED illuminates when sweep mode is selected. If the panel is left on when the ignition is turned OFF, it will resume in this mode the next time the ignition is turned ON. Engine will automatically resume at previous Sweep Mode speed setting.

**FRONT H-P SPRAY BAR RAISE/LOWER \*** - *With the high-pressure water pump running:* Press the switch to lower the H-P spray bar. The red LED illuminates when it is in the lowered position.

**LEFT HAND SIDE-BRUSH SWITCH** - Press to start the side-brush. The red LED illuminates when the feature is selected. Brush will not deploy until the Master Switch is activated. On single-sweep machines the non-sweeping side's switch-backlight and LED will not illuminate. See also side brush SWING IN/OUT switch.

**LEFT HAND SUCTION NOZZLE RAISE/LOWER SWITCH** - Press to lower the suction nozzle. Red LED illuminates when the feature is selected. The nozzle will not deploy until the Master Switch is activated. On single-sweep machines the non-sweeping side's switch-backlight/LED do not illuminate.

**WIDESWEEP BRUSH SWITCH** - Press to start the widesweep brush. The red LED illuminates when the feature is selected. The brush will not deploy until the Master Switch is activated.

**RIGHT HAND SUCTION NOZZLE RAISE/LOWER SWITCH** - Press to lower the suction nozzle. The red LED illuminates when the feature is selected. The nozzle will not deploy until the Master Switch is activated. On single-sweep machines the non-sweeping side's switch-backlight and LED will not illuminate.

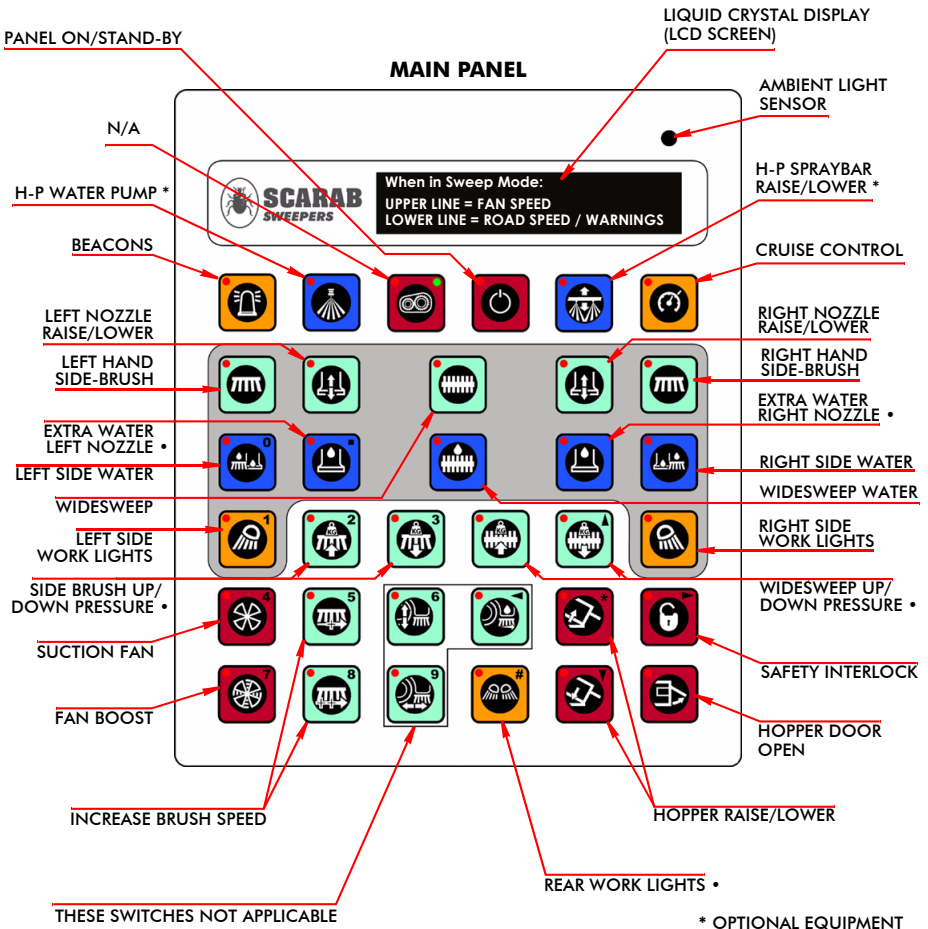
**RIGHT HAND SIDE-BRUSH SWITCH** - Press to start the side-brush. The red LED illuminates when the feature is selected. Brush will not deploy until the Master Switch is activated. On single-sweep machines the non-sweeping side's switch-backlight and LED will not illuminate. See also side brush SWING IN/OUT switch.

**LEFT HAND SIDE-BRUSH/NOZZLE WATER SWITCH** - Press to start the dust-suppression water jets for the side-brush and suction nozzle. The red LED illuminates when the feature is selected. Water spray will not function unless the Master Switch is activated.

**LEFT HAND SUCTION NOZZLE - ADDITIONAL WATER SWITCH \*** - Press to start the additional water jets for the suction nozzle. The red LED illuminates when the feature is selected. The feature will not function unless the Master Switch is activated.

**Continued...**

# SCARAB MONIC



**Fig. 5 Sweeper Control Panel Layout**

**WIDE SWEEP WATER SWITCH** - Press to start the dust-suppression water jets for the widesweep brush. The red LED illuminates when the feature is selected. Water spray will not function unless the Master Switch is activated.

**RIGHT HAND SUCTION NOZZLE - ADDITIONAL WATER SWITCH \*** - Press to start the additional dust-suppression water jets for the suction nozzle. The red LED illuminates when the feature is selected. The water jets will not function unless the Master Switch is activated.

# SCARAB MONIC

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**RIGHT HAND SIDE-BRUSH/NOZZLE WATER SWITCH** - Press to start the dust-suppression water jets for the side-brush and suction nozzle. The red LED illuminates when the feature is selected. The water spray jets will not operate until the Master Switch is activated.

**LEFT HAND WORK-LIGHTS** - Press to turn the work-lights ON. The red LED illuminates when the feature is selected.

**SIDE-BRUSH 'UP' PRESSURE SWITCH \*** - Press to allow a controlled amount of pressure to the bottom of the brush lift ram(s) and reduce the brush's surface pressure. Use in conjunction with the air-pressure regulator. The red LED illuminates when the feature is selected. Brush pressure will not function unless the Master Switch is activated.

**SIDE-BRUSH 'DOWN' PRESSURE SWITCH \*** - Press to allow a controlled amount of pressure to the top of the brush lift ram(s) and increase the brush's surface pressure. Use in conjunction with the air-pressure regulator. The red LED illuminates when the feature is selected. Brush pressure will not function unless the Master Switch is activated.

**WIDESWEEP 'UP' PRESSURE SWITCH \*** - Press to allow a controlled amount of pressure to the bottom of the brush lift ram(s) and reduce the brush's surface pressure. Use in conjunction with the air-pressure regulator. The red LED illuminates when the feature is selected. Brush pressure will not function unless the Master Switch is activated.

**WIDESWEEP 'DOWN' PRESSURE SWITCH \*** - Press to allow a controlled amount of pressure to the top of the brush lift ram(s) and increase the brush's surface pressure. Use in conjunction with the air-pressure regulator. The red LED illuminates when the feature is selected. Brush pressure will not function unless the Master Switch is activated.

**RIGHT HAND WORK-LIGHTS** - Press to turn the work-lights ON. The red LED illuminates when the feature is selected.

**SUCTION FAN SWITCH** - Press to start the fan. The red LED illuminates when the fan is ON. The fan speed (2000 rpm) will be displayed on the LCD screen. This switch remains active when the fan-boost switch is pressed.

**BRUSH SPEED (+) SWITCH** - Press to increase brush speed to 125 rpm. The red LED illuminates when the feature is active. Press again to return to normal brush speed (If Brush Speed (++) is selected when this feature is active Brush Speed (+) will be automatically deselected). Brush speed will not function unless the Master Switch is activated.

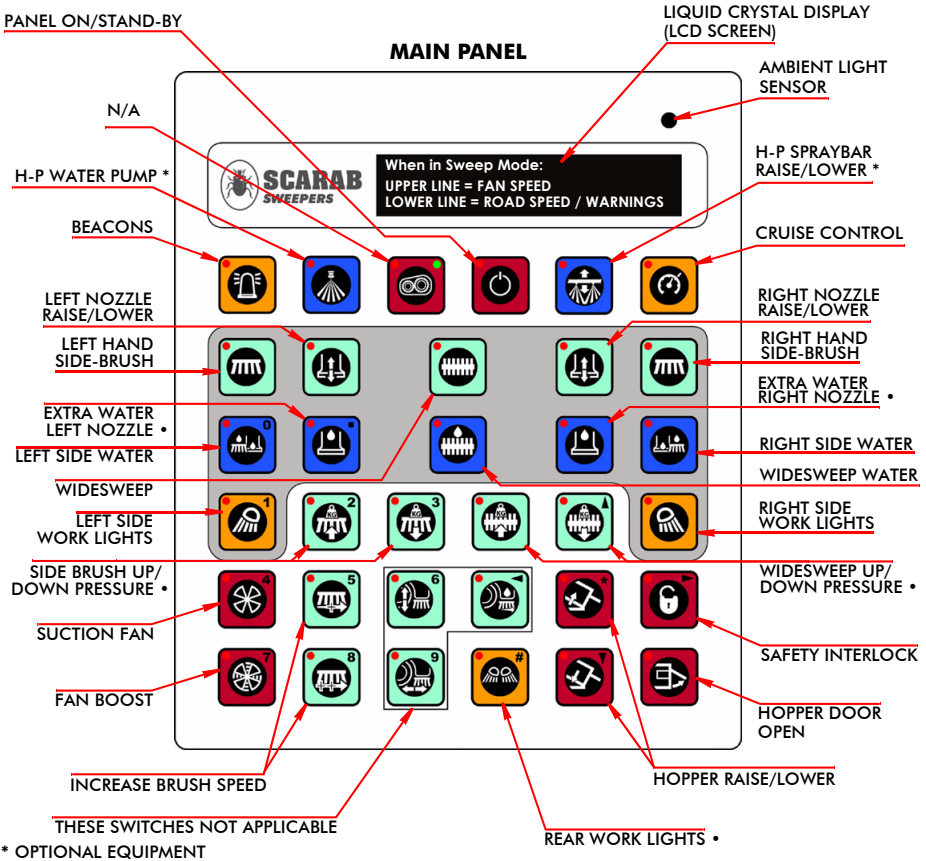
**HOPPER RAISE SWITCH** - Press and hold down simultaneously with the safety interlock switch to raise the hopper. the red LED illuminates as soon as the hopper starts to rise. *Will only operate if vehicle is in Sweep Mode.*

**NOTE:**

For externally mounted hopper controls refer to Page 22.

**Continued...**

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**Fig. 6 Sweeper Control Panel Layout**

**SAFETY INTERLOCK SWITCH** - Press and hold while operating the in-cab hopper RAISE/LOWER or rear door OPEN switches. The red LED illuminates when the switch is activated. *Will not operate unless the vehicle is in Sweep Mode.*

**SUCTION FAN 'BOOST' SWITCH** - Press to activate the fan boost mode. This increases fan speed from 2000 rpm to 2200 rpm. The red LED illuminates while the feature is selected and the fan speed indicated on the LCD will change to show 2200 rpm. Press again to revert to normal fan speed.

**BRUSH SPEED (++) SWITCH** - Press to increase brush speed to 150 rpm. The red LED illuminates when the feature is active. If this feature is selected when Brush Speed (+) is already active it will automatically deselect Brush Speed (+).

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Press again to revert to normal brush speed. *Brush speed will not function unless the Master Switch is activated.*

**REAR WORK-LIGHTS SWITCH \*** - Press to turn on the rear-mounted work-lights. The red LED illuminates while the feature is active. *Will not operate unless vehicle is in Sweep Mode.*

**HOPPER LOWER SWITCH** - Press and hold down simultaneously with the safety interlock switch to lower the hopper. the red LED will remain illuminated until the hopper is fully in the lowered position. *Will not operate unless the vehicle is in Sweep Mode.*

**REAR DOOR OPEN SWITCH** - Press and hold down simultaneously with the safety interlock switch to open the rear door. The red LED illuminates when the switch is operated. *Will not operate unless the vehicle is in Sweep Mode.*

**NOTE:**

For externally mounted rear door controls refer to Page 24.

## THE LCD SCREEN

The LCD Screen provides the operator with information on fluid level/temperature warnings and confirmation of sweeping operation such as fan speed (refer to Page 11 for details).

## AUXILIARY SWITCH PANEL (Located Adjacent To Driver's Door)

**SIDE BRUSH SWING IN/OUT SWITCH** - Press to swing brushes OUT and again to swing brushes IN.

**NOZZLE TILT SWITCH (MOMENTARY MODE)** - Press and hold to tilt the suction nozzle when larger items, such as bottles or rubble are encountered. The red LED illuminates when the switch is activated. Release the switch to revert to the normal nozzle position.

**NOZZLE TILT SWITCH (LOCKING MODE)** - Press to tilt the nozzle permanently to the raised position. The red LED illuminates while the feature is active. Press again to return the nozzle to the normal position.

**BRUSH MASTER SWITCH** - Press to deploy all sweeping equipment selected on the main control panel. The red LED illuminates while the feature is active. Press again to stop and raise all active items of sweeping equipment.

**FORWARD/REVERSE LEVER** - Move the lever in the desired direction to activate the hydrostatic transmission.

**Continued...**

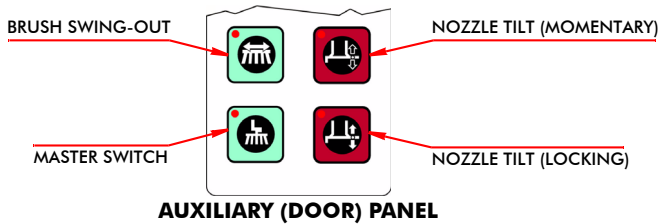


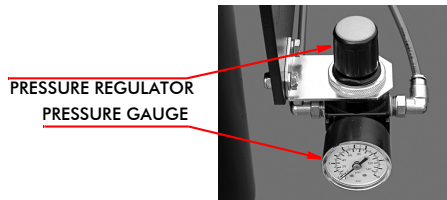
Fig. 7 Auxiliary (Door) Panel Layout

## ADDITIONAL CONTROLS & INSTRUMENTS

**AIR-PRESSURE REGULATOR \*** - Used to adjust the amount of up/down-thrust applied to the brush(es) ☐.

**AIR-PRESSURE GAUGE \*** - Indicates the amount of pressure being applied to the brush(es) ☐.

☐ Side-brush regulators/gauges are mounted inside the cab. Widesweep regulators/gauges are located externally on chassis, at the rear of the near-side suction spigot mount.



**Externally mounted widesweep pressure controls shown. The side-brush controls are similar but mounted in the cab and positioned according to cab layout / customer preference.**

## DRIVING

### NOTE:

There are two driving modes, Normal & Sweep, these are selected using the ON/STAND BY switch on the control panel.

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

*Sweep Mode (speed range 0 - 15 mph / 0 - 25 kph)*

1. Ensure that the Forward/Reverse lever is in the NEUTRAL position (otherwise the vehicle will NOT start).
2. Turn the Ignition Key to the second position, the glowplug lamp on the Isuzu instrument panel will illuminate.
3. Wait for the glowplug lamp to extinguish and start the engine.
4. Ensure that the ON/STAND BY switch is OFF (LED not illuminated).
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, apply the handbrake and engage NEUTRAL.
2. Press the ON/STAND BY switch to activate the control panels and select sweep mode.
3. Switch on the beacons and work-lights as required.
4. Use the engine speed adjust knob to set engine speed to suit the prevailing sweeping conditions (nominal setting = 1700 rpm).
5. Select an appropriate sweeping equipment configuration.
6. Select Suction Fan ON, selecting **Normal** or **Boost** as required (remember that Boost only operates at the higher engine speeds).
7. Press the Brush Master Switch (on the auxiliary panel) to deploy the selected sweeping equipment.
8. Press the brush swing-out button (you can sweep with side brushes swung IN if required).
9. Engage FORWARD.
10. Operate the accelerator in the normal manner to move vehicle.



### NOTE:

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

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.

11. Operate the Brush Speed and Brush Pressure controls as necessary to achieve optimum performance for the prevailing conditions.
12. Upon completion of the sweeping run, press 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).
13. Turn off the suction fan.

## CRUISE CONTROL

1. To ENGAGE - Press the Cruise Control Button (Red LED will illuminate). The Drive system will maintain the current road speed until disengaged.
2. To DISENGAGE - Press the Cruise Control Button (red LED will extinguish) or apply the brakes.

### NOTE:

Cruise Control operates only when the vehicle is in Sweep Mode.

## DISCHARGING THE HOPPER (TIPPING)

### OPERATING THE REAR DOOR

The Rear Door controls are sited both inside the cab and externally. The in-cab controls are located on the sweeper control panel. The external controls are located on the sub-frame above the nearside suction nozzle. They are grouped, in a single switch box, with the hopper controls.



#### **WARNING:**

**BEFORE OPERATING THE DOOR ENSURE THAT ALL PERSONNEL ARE CLEAR OF THE IMMEDIATE AREA.**

#### **CAUTION**

**Ensure that the suction fan is turned OFF and that there is room for the door to open fully.**

#### **OPENING**

##### **NOTE:**

To be able to open or close the rear door, the auxiliary engine must be running. For safety reasons, it is not possible to CLOSE the door using the in-cab controls. Use the external controls.

##### **In-Cab Controls**

1. Press and hold down the Safety Interlock switch, while simultaneously operating the door OPEN switch until the door is fully open. The red LEDs on both switches will illuminate while the switches are being pressed; they will extinguish when the switches are released



##### **External Controls**

1. Press and hold down, the door OPEN button until the door is fully open.



#### **CLOSING**

##### **CAUTION:**

**Before closing the door, ensure that the seal, and mating faces on the hopper, are free from any foreign matter that might damage the seal or adversely affect the sealing function.**

1. Press and hold the door CLOSE switch until the door is fully closed and the door-locking ram has completed its locking cycle.



##### **NOTE:**

For safety reasons it is not possible to close the door from within the cab.



## OPERATING THE HOPPER



### WARNING

**UNLESS DISCHARGING A LOAD, THE HOPPER PROP MUST ALWAYS BE USED WHEN THE HOPPER IS IN THE RAISED POSITION. 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.**

The hopper controls are sited both inside the cab and externally as follows:

In-cab controls are located on the sweeper panel.

The external controls are located on the sub-frame above the nearside suction nozzle. They are grouped, in a yellow 4-gang switch box, with the rear-door controls.

### NOTE:

To be able to raise or lower the hopper, the auxiliary engine must be running.

### In-cab Controls

- To raise the hopper proceed as follows:

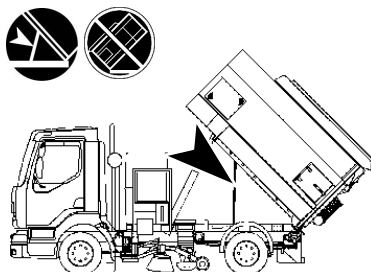
- Press and hold down the Safety Interlock switch while simultaneously pressing the hopper UP switch until the hopper is in the fully raised position. As the hopper starts to rise, the red 'hopper warning' LED will illuminate and remain lit while the hopper is raised.



- Deploy the safety prop, ensuring that its foot is securely located in its sub-frame pocket.

- To lower the hopper proceed as follows:

- Fold the hopper safety prop into its stowage position flush with the hopper base frame.

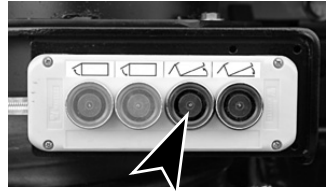


- Press and hold down the Safety Interlock switch while simultaneously pressing the the hopper DOWN switch until the hopper is fully in the lowered position. The red 'hopper warning' LED will not extinguish until the hopper is completely down.



## External Controls

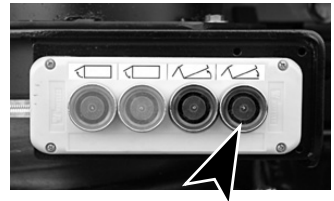
1. To raise the hopper proceed as follows:
  - (a) Press and hold the hopper UP switch until the hopper is in the fully raised position. The hopper warning light (RED), on the sweeper panel, will illuminate and remain lit while the hopper is up.
  - (b) Unless discharging, deploy the hopper safety prop, ensuring that its foot is securely located in its pocket on the sub-frame



### **WARNING**

**WHEN OPERATING THE HOPPER-LOWER CONTROLS, ENSURE THAT NO PART OF YOUR PERSON, PARTICULARLY YOUR HAND IS IN THE PATH OF THE DESCENDING HOPPER.**

2. To lower the hopper proceed as follows:
  - (a) fold the hopper safety prop into its stowage position flush with the hopper base frame. If an automatic safety prop is fitted, this will swivel into its stowage position before the hopper starts to move down.
  - (b) Press and hold the hopper DOWN switch until the hopper is in the fully lowered position. The red 'hopper warning' LED on the control panel switch will not extinguish until the hopper is completely down.



## USING THE AUXILIARY HYDRAULIC PUMP

In the event of hydraulic system failure, an auxiliary hydraulic pump is fitted, to enable the rear door and hopper to be operated manually. This is located on the Left Hand side of the vehicle, adjacent to the hopper suction spigot. The pump handle is stowed in the cab. It should be noted that it will require a substantial number of pumping cycles to complete either operation.

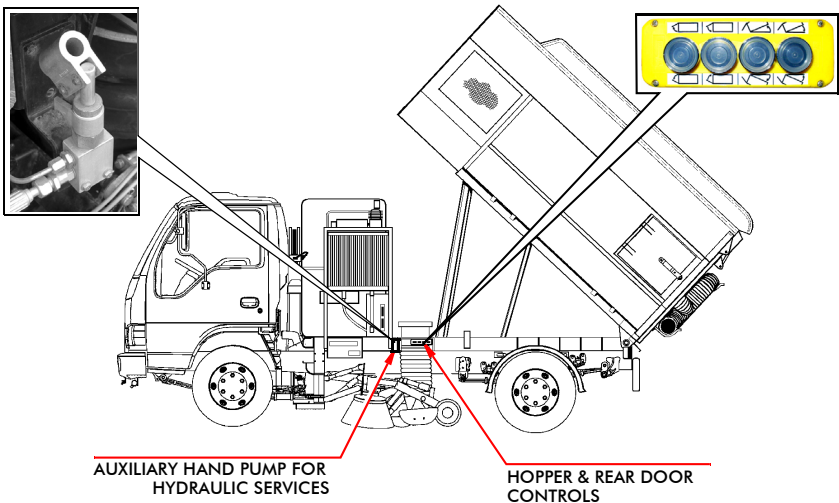
### REAR DOOR

#### CAUTION:

**Electrical power is required to use the auxiliary pump for this purpose.**

#### NOTE:

On Right Hand Drive machines, it will be necessary to enlist the assistance of a second person for the following operations..



**Fig. 8 - Location of External Controls**

### To Open The Rear Door

For this procedure, both the vehicle's ignition and the CANbus panel should be ON.

1. If OFF, turn the vehicle's ignition ON.
2. Press the ON/STAND-BY switch to activate the control panel. The red LED on the switch and all other switch back-lights will illuminate.
3. Operate the auxiliary pump, simultaneously pressing and holding the Door Open button (see NOTE) until the door is in the required position.



## To Close The Rear Door

1. Turn the vehicle's ignition ON.
2. Press the ON/STAND-BY switch to activate the control panel. The red LED on the switch and all other switch back-lights will illuminate.



### CAUTION

**Before closing the door, ensure that the door seal, and mating faces on the hopper, are free from any foreign matter that might damage the seal or adversely affect the sealing function.**

3. Operate the auxiliary pump, simultaneously pressing and holding the Door Close button, until the door is fully in the closed position.



## HOPPER (ELECTRICAL SYSTEM OPERATIONAL)



### WARNING

**THE HOPPER PROP MUST ALWAYS BE USED WHEN THE HOPPER IS IN THE RAISED POSITION. 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.**

## To Raise The Hopper

1. Ensure that the vehicle is in Neutral and that the ignition is ON.
2. Press the ON/STAND-BY switch to activate the control panel. The red LED on the switch and all other switch back-lights will illuminate.
3. Operate the hand-pump while simultaneously pressing and holding the Hopper Raise button, until the hopper has been raised sufficiently to deploy the safety prop.
4. Deploy the hopper safety prop.

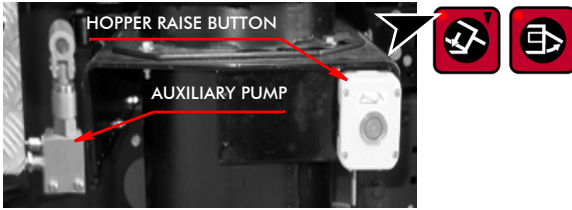


## To Lower The Hopper

The hopper ram is a double-acting unit and will require pumping all the way down.

1. If OFF, turn the vehicle's ignition ON.
2. Press the ON/STAND-BY switch to activate the control panel. The red LED on the switch and all other switch back-lights will illuminate.
3. Ensure that the tap (if fitted) on the pump body is screwed IN.
4. Stow the hopper safety prop.
5. Operate the hand-pump while simultaneously pressing and holding the Hopper Down button, until the hopper has been completely lowered. The red hopper warning LED in the cab will not extinguish until the hopper is completely down.





**NOTE:**

On Right Hand Drive machines only, an additional Hopper Raise button is positioned next to the pump.

**Fig. 9 Additional Hopper-Raise button on Right-Hand Drive machines**

## HOPPER (ELECTRICAL SYSTEM INOPERATIVE)

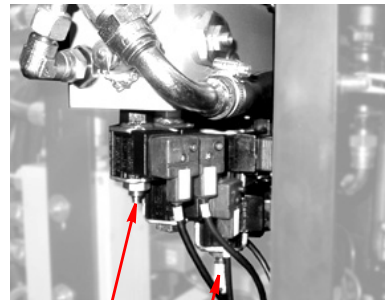
### To Raise The Hopper

1. Remove the inspection cover on the left-hand side of the hopper.
2. Locate the main hydraulic valve block mounted below the oil cooler assembly.

**NOTE:**

The following steps require two people.

3. Lift and turn the manual over-ride on the hopper Raise/Lower valve, to lock it in the UP position.
4. Push IN (and hold, using a coin for comfort) the manual over-ride on the Unloader Valve.
5. Fit the pump handle and operate the pump until the hopper is high enough to deploy the safety prop.
6. Deploy the hopper safety prop.



### To Lower The Hopper

1. Stow the hopper safety prop.
2. Locate the main hydraulic valve block mounted below the oil cooler assembly.

**NOTE:**

The following procedure two people.

On right hand drive machines, it will be necessary to enlist the assistance of a second person for Step 5.

3. Remove the valve block access panel on the hopper body.
4. If necessary, turn and release the manual over-ride on the hopper Raise/Lower valve to the DOWN position.
5. Push IN (see above) the manual over-ride on the Unloader Valve.
6. Fit the pump handle and operate the pump until the hopper has been completely lowered. Then refit the access panel cover.

## WANDER HOSE

1. Remove the locking pin securing the planking plate in the wander hose inlet on the rear door and slide the plate fully in a downward direction to open inlet.
2. Ensure that the suction nozzles are de-selected (to seal the suction tubes and provide greater suction pressure to the wander hose) unless you wish to combine both functions but remember that this will result in reduced suction pressure to both functions.

### NOTE:

For maximum suction such as when clearing drains, set engine speed to at least 1700 rpm and seal the suction tubes by de-selecting the suction nozzles.

3. Unlimber the wander hose and start the suction fan.
4. When finished, stow the wander hose, stop the suction fan, slide the blanking plate fully in an upward direction to seal the wander hose inlet and insert the locking pin to secure the plate in position.

## 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 (it will NOT operate if the 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. This should be adjusted to direct flow to either appliance as required.

## CLEANING THE SUCTION FAN AND SCREENS

**WARNINGS:** FAILURE TO COMPLY COULD RESULT IN SERIOUS INJURY.



1. **BEFORE WORKING ON THE MACHINE POSITION IT ON FIRM, LEVEL GROUND, APPLY HANDBRAKE AND, IF REQUIRED, RAISE THE HOPPER, STOP ENGINE & REMOVE IGNITION KEY.**
2. **ALWAYS USE THE HOPPER PROP TO SUPPORT A RAISED HOPPER.**
3. **THE FAN IS AN EXTREMELY HEAVY ROTATING MASS. NEVER ATTEMPT TO SLOW OR STOP ITS ROTATION BY USING THE HANDS OR BY INSERTING ANY ITEM INTO THE FAN CHAMBER, EVEN AT LOW SPEEDS.**
4. **BEFORE REMOVING THE SUCTION FAN ACCESS PANELS, ENSURE THAT THE ENGINE IS OFF AND THAT THE IGNITION KEY HAS BEEN REMOVED.**
5. **ALWAYS WEAR SUITABLE EYE & HAND PROTECTION WHEN USING THE LANCE.**

# SCARAB MONIC

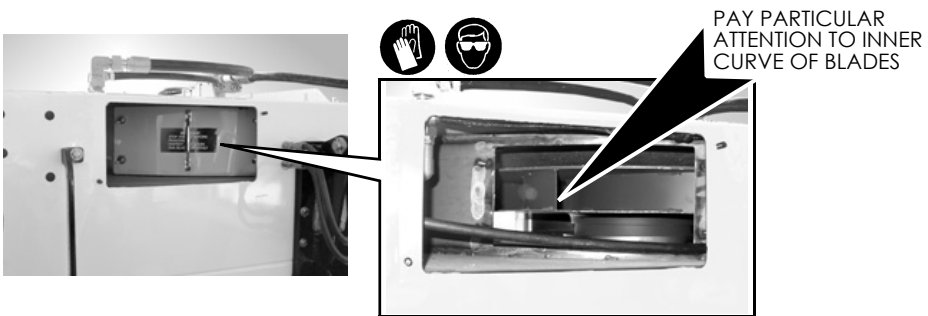
1. Remove the outer inspection cover from the hopper and the inner cover from the fan housing to expose the fan (Refer to Fig. 10).

**NOTE:**

If the hopper screens are lowered it will allow displaced material, from the fan cleaning, to drop into the hopper.

A steam-cleaner or high-pressure water from a remote source will greatly assist in cleaning severely contaminated fans. It will be necessary to prevent the fan from rotating while using pressurised water or steam.

2. Using the special scraper, thoroughly clean all parts of the fan.
3. Clean the screens using the scraper and, where necessary, steam or high-pressure water.
4. Refit the inspection covers and screens and lower the hopper.



**Fig. 10 Inspecting & Cleaning the Suction Fan**

5. Refit the inspection covers and screens and lower the hopper.

**WARNING:**



**LOOSE PARTICLES FROM THE CLEANING PROCESS CAN BE EJECTED VIA THE HOPPER COVER WHEN THE FAN IS RESTARTED, ENSURE THAT ALL PERSONNEL ARE CLEAR BEFORE RESTARTING.**

6. Start the auxiliary engine, activate the control panel and set the engine speed to its normal operating level.
7. Start the suction fan.
8. Direct additional water onto the screens below the fan inlet cone until only clean water is being expelled from the fan casing.

## SIDE BRUSHES & SKIRTS

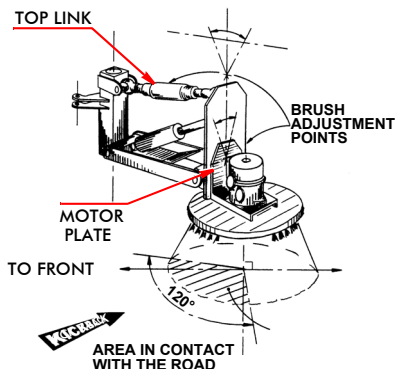


### WARNING:

**DO NOT ATTEMPT TO ALTER THE BRUSH SETTINGS WHILE THE BRUSH IS ROTATING.**

An effective set-up ensures good sweeping performance. These settings produce excellent results in most conditions. Experience will determine if other settings are better suited to specific conditions.

1. The brush should be angled so that it sweeps with its outer leading edge. About 33% (120°) of its circumference should be in contact with the road surface.
2. The skirt adjacent to the brush, which positions material for the suction nozzle, should also be in good condition and set so that it just clears the ground.



**Fig. 11 Brush Tilt Adjustment**

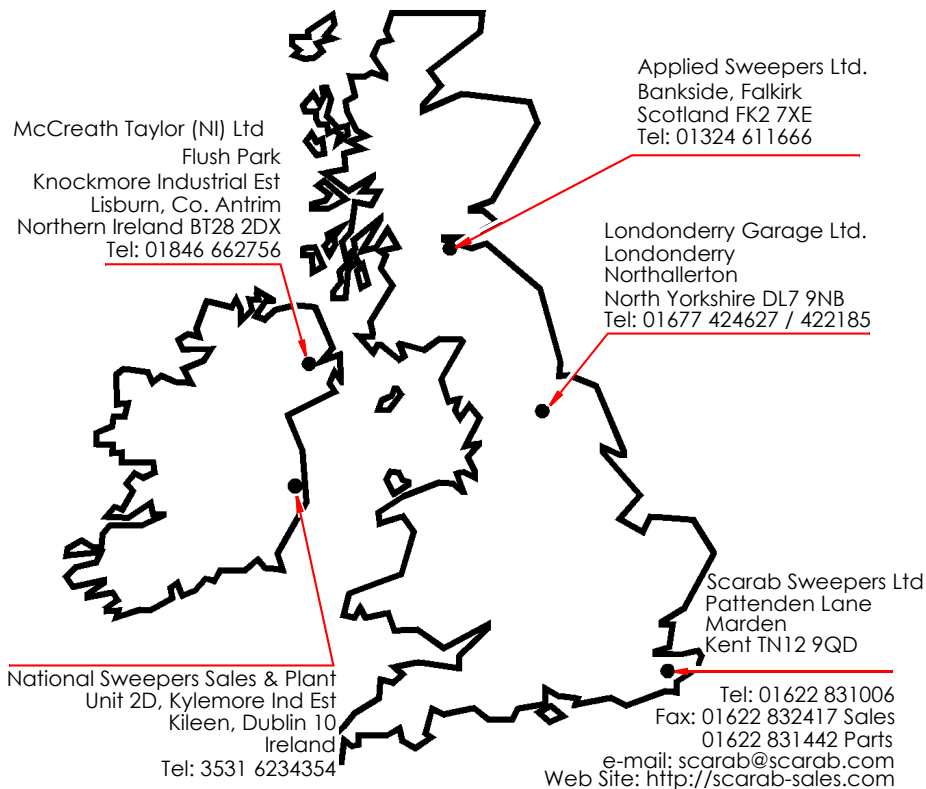
## RECOMMENDED LUBRICANTS AND CONSUMABLE PARTS

<i>Description</i>	<i>Specification/Qty.</i>	<i>Scarab Pt No/Volume</i>
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
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



# SCARAB MONIC

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**Fig. 12 - Parts & Service Providers - UK and Ireland**

## **OPERATOR'S NOTES**

## **OPERATOR'S NOTES**

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