

Operator's Guide



ES351

Mechanical Road Sweeper

Part No 01284-1-GB

Revision Level B

General Arrangement **1**

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Foreword

The Johnston ES351 Mechanical Sweeper represents the highest grade of craftsmanship and reliability that makes Johnston probably the world leader in sweeping technology.

This machine is designed for the removal of debris on traffic areas, and should only be driven by trained operatives.

This machine should not be used for sweeping hot or burning substances. In the unlikely event of a fire, normal powder or foam fire fighting equipment can be used on this product.

An operator should receive training in the follow elements:

- 1 Safety Observations/Notices
- 2 Transit driving
- 3 Correct use of body prop
- 4 In cab controls
- 5 External controls
- 6 Sweeping techniques
- 7 Load discharge
- 8 Gutter broom setting changing
- 9 Pick-up broom setting and changing
- 10 Daily and weekly maintenance items
- 11 Driving/operation assessment
- 12 End of day cleaning of body and machine

Johnston Sweepers Limited can provide operator training upon request.

We would point out that it is the employers responsibility to carry out their own Risk Assessment on the equipment in his particular working environment and work application.

This handbook should be carefully studied. In it you will find instructions for the operation and maintenance of your JOHNSTON SWEEPER.

It is vitally important that the operator and maintenance staff have a copy of this book. The life of the machine will depend upon following these instructions in respect of regular maintenance and correct operating methods.

It is important that only GENUINE JOHNSTON SPARE PARTS are used when servicing and maintaining the sweeper. This is especially important for consumables, filters etc, as the use of non-genuine parts may cause premature failure and invalidation of warranty.

When carrying out maintenance or part replacement, additional explanatory illustrations can be found in the Parts Manual, which shows and lists hardware, and availability of spares with the orientation and positions of the various components.

**Safety Notice**

The universal safety symbol is used throughout this manual to indicate information which is essential for health and safety for all operating personnel.

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Every endeavour has been made to ensure that the information contained in this Operator's Guide is correct, but due to continuous product development, the Company reserve the right to alter its contents without notice. This document should not be interpreted as being part of a formal contract.

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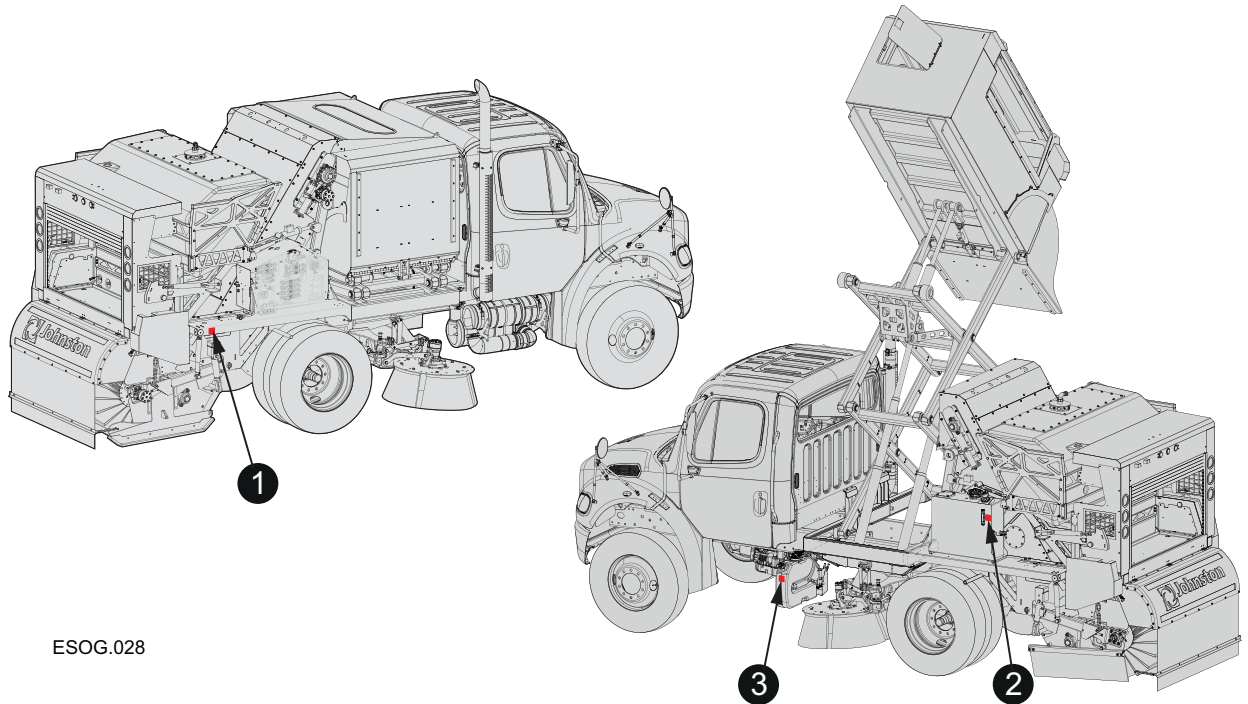
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INTERNATIONAL SYMBOLS

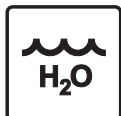
Conforming to ISO 3767

Graphical symbols are used to indicate the water, fuel and hydraulic oil tank filler ports and air cleaner servicing instructions.

Their location and descriptions are shown below.



ESOG.028



1. Water tank filler ports 1 = Hose Pipe



2. Hydraulic oil tank filler



3. Fuel tank - Engine requires Ultra Low Sulfur fuel

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VEHICLE SAFETY LABELS



General safety alert symbol.

Read Operator's Guide.



Crushing of whole body - force applied from above.

Ensure body props are located securely before working under raised scissor frame.



General safety alert symbol.

Keep clear of brushes.



General safety alert symbol.

Stay at least 1 metre distance from the machine.



General safety alert symbol.

Wear ear defenders when working in this area.



General safety alert symbol.

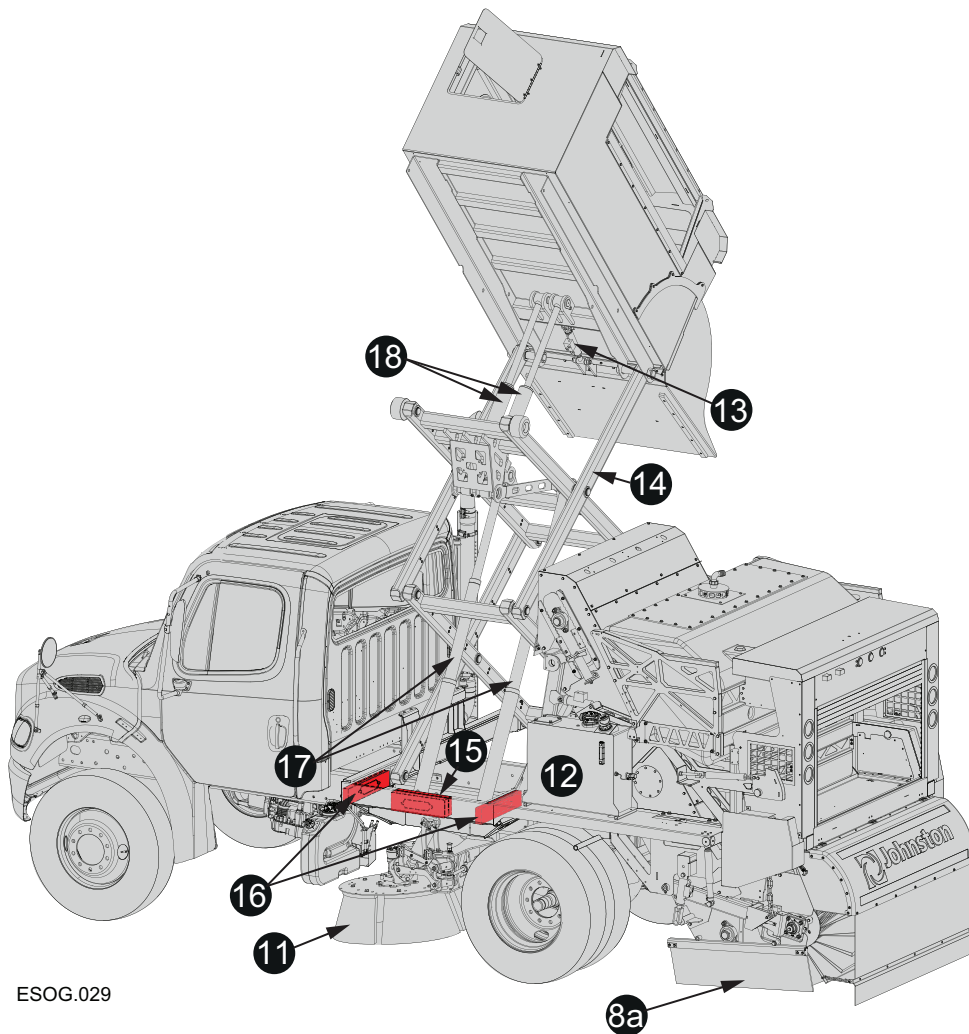
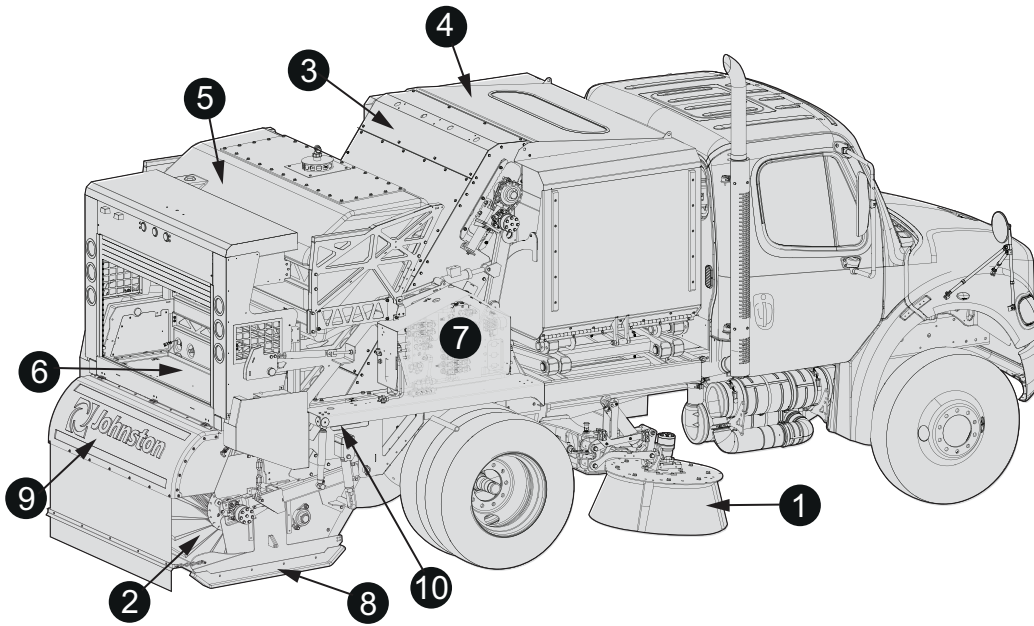
Mechanical entanglement hazards.

CHAPTER**1****General Arrangements****Table of Contents****Subject****Page****General Arrangement**

General Arrangement Drawing

OG1 : 2

GENERAL ARRANGEMENT



ESOG.029

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GENERAL ARRANGEMENT

Item	Component
1	RH Gutter Broom
2	Rear Broom Assembly
3	Elevator Assembly
4	Hopper Assembly
5	Water Tank
6.	Locker (Incorporating) - Oil Coolers, Water Pump, Water Tank Level Switches Reversing Bleeper Rear Lights
7.	Systems Locker (Incorporating) - Hydraulic System Controls Pneumatic System Controls Water System Controls Discharge Audible Warning
8.	Drag Shoes
8a	*Brush Curtain
9.	Rear Broom Cover
10.	Hydrant fill and water tank drain
11.	LH Gutter Broom
12.	Hydraulic Reservoir
13.	Door Cylinder
14.	Scissor Frame
15.	Frame Prop Stowage
16.	Frame Prop Positioning
17.	Frame Cylinders
18.	Hopper Cylinders

*Denones Optional Equipment

CHAPTER

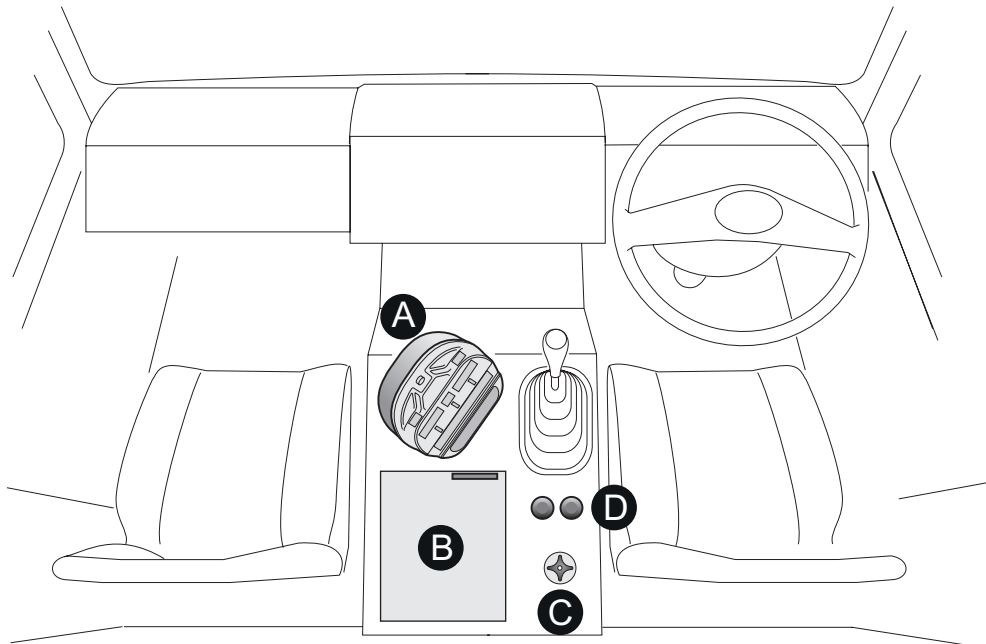
2**Controls****Table of Contents**

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Cab Mounted Controls	OG2 : 3
Switch Panel	OG2 : 4/6
Sweeping Controls	OG2 : 5/7
Fuse Functions	
Fuse Functions	OG2 : 8

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CAB MOUNTED CONTROLS

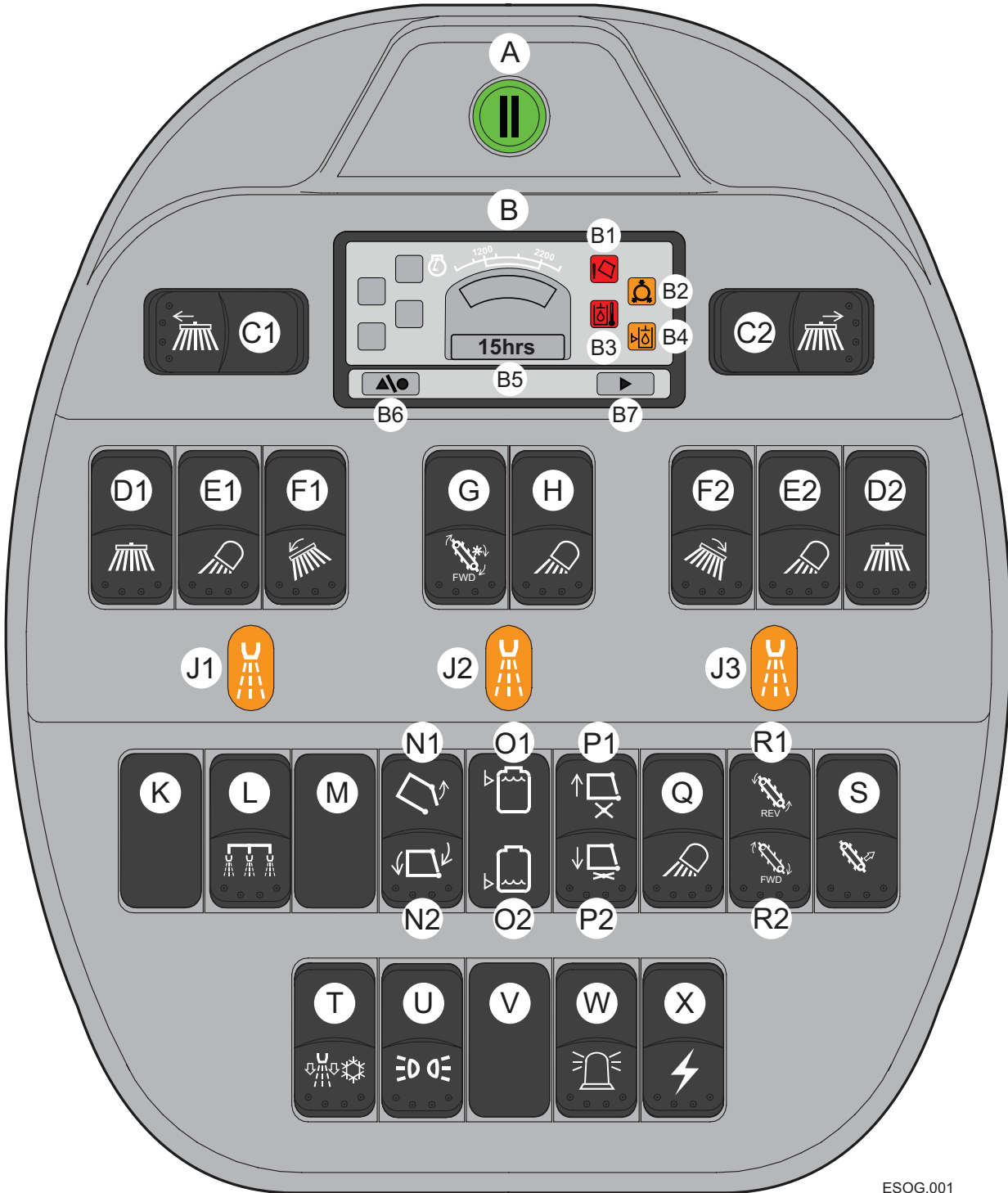


ESOG.002

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Symbol	ID	Description
	A	Switch panel.
	B	Fuse box mounted in relay box. Fuse functions - see page OG2:8.
	C	Gutter broom speed control; clockwise rotation increases brush speed (The in cab version is optional).
	D	Pressure control for each Gutter broom 'Powasave'; clockwise rotation reduces brush pressure.






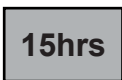









SWITCH PANEL



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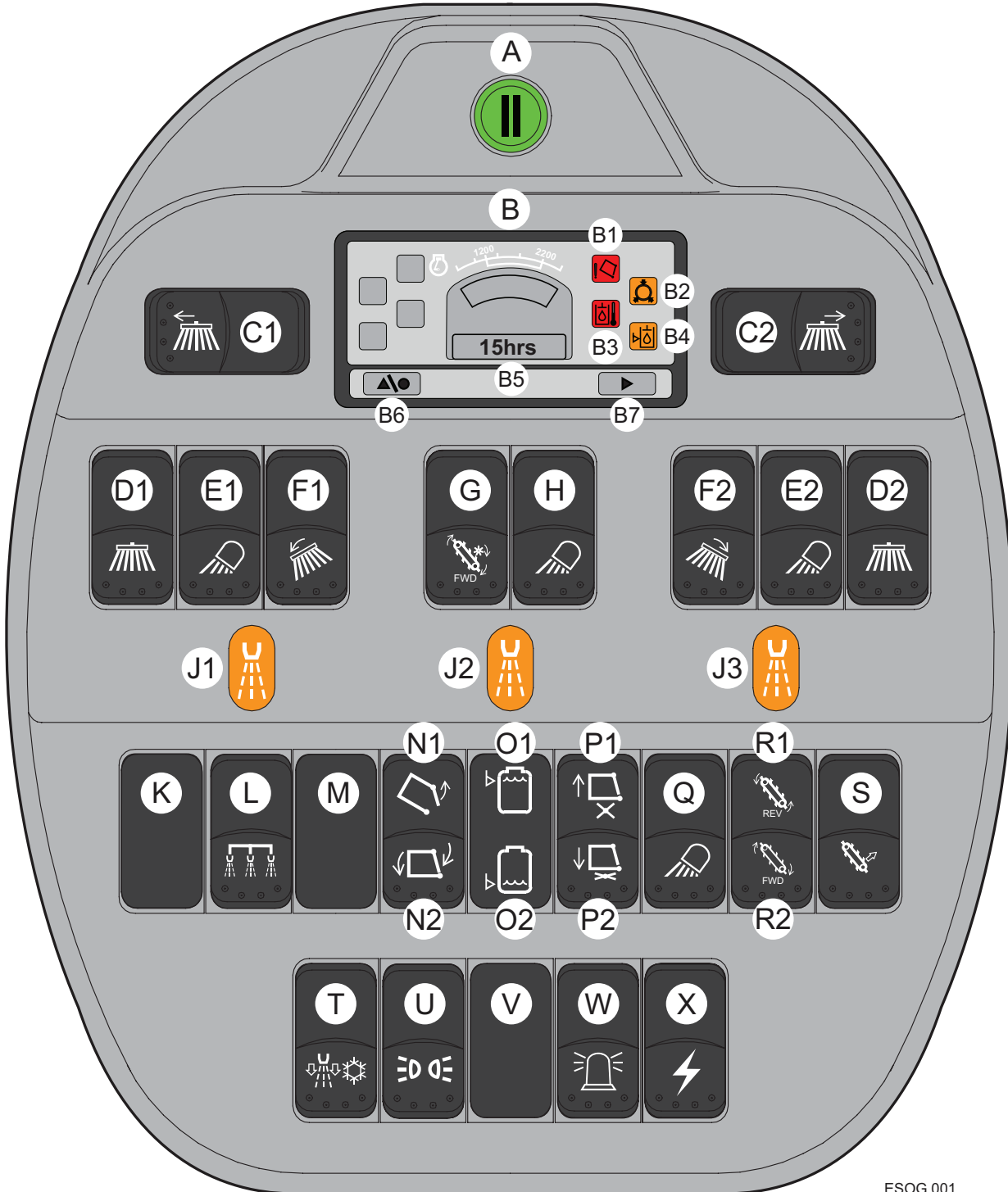
ESOG.001

SWEEPING CONTROLS

Symbol	ID	Description
	A	Programme Button - ON/OFF switch illuminates when pressed and suspends all sweeping and parks brushes. Pressing again reactivates previous settings.
	B1	Hopper Raise - red warning lamp and buzzer.
	B2	Low Air Pressure - amber warning lamp and buzzer.
	B3	Hydraulic Oil Temperature - red warning lamp.
	B4	Hydraulic Oil Low Level - amber warning lamp and buzzer.
	B5	Rear Broom hours worked/clock.
	B6	Push button to select hourmeter reading/clock - cancels after 10 seconds.
	B7	Advance button - advances clock time when in clock setting mode.
	C1	*LH Variabrush - spring centred switch moves brush out or in.
	C2	*RH Variabrush - spring centred switch moves brush out or in.
	D1/D2	LH/RH Gutter Broom 2 position switch - stowed/active illuminated when selected.
	E1/E2	LH/RH Worklamp - 2 position switch OFF/ON illuminated when selected.
	F1	*LH Rotatilt - spring centred switch; alters angle of Gutter broom to suit road camber.
	F2	*RH Rotatilt - spring centred switch; alters angle of Gutter broom to suit road camber.
	G	Elevator/Rear Broom active 2 position switch - stowed/active illuminated when selected. *Denones Optional Equipment

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SWITCH PANEL























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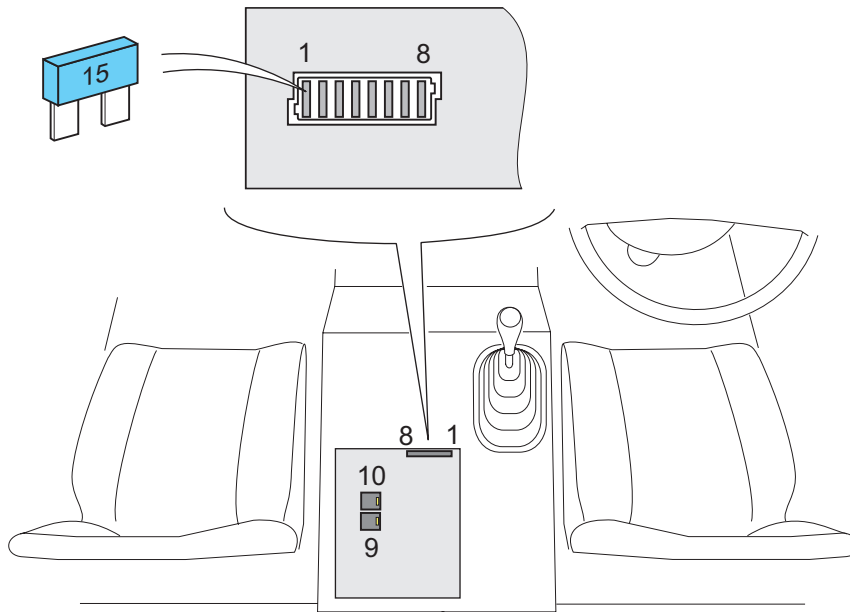
ESOG.001

SWEEPING CONTROLS

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Symbol	ID	Description
	H	Rear Broom Worklamp - 2 position switch OFF / ON, illuminated when selected.
	R1	Elevator Pulse REV, 2 position spring return - When switch 'G' is active, pressing the top of switch R1 Reverses the Elevator.
	R2	Elevator Pulse FWD, 2 position spring return - forward rotation is automatic when sweeping. With hopper raised the Elevator can be pulsed in either direction using R1 or R2.
	S	Elevator Raise, 2 position switch - OFF/ON lowered/raise.
	J1/J2/J3	Water Jets, 2 position switch - OFF/ON illuminated when selected.
	K	<i>Blank.</i>
	L	*Additional Spraybar, 2 position switch - OFF / ON, illuminated when selected.
	O1	Water tank full - to 75%.
	O2	Water tank low level.
	P1	Elevator Retract / Frame Raise - 2 position spring return.
	P2	Frame Lower / Hopper Return / Door Close, (<i>Elevator Engage</i>) 2 - position spring return.
	N1	Hopper Tip / Door Open - 2 position spring return.
	N2	Hopper Return / Door Close - (<i>Elevator Engage</i>) 2 position spring return.
	V	<i>Blank.</i>
	Q	Hopper Work Lamp - 2 position switch off/on, illuminated when selected.
	T	Pressadrain - 2 position spring return Note:- Water tank needs to show empty before the Pressadrain will operate.
	W	Beacons - 2 position switch - OFF / ON. illuminated when selected.
	X	Equipment Ignition - 2 position spring return, illuminated when selected.
	M	<i>Blank.</i>
	U	Additional Warning Lamps - 2 position switch OFF / ON, illuminated when selected.

FUSE FUNCTIONS



ESOG.003

Fuse No.	Function	Amps	Colour
1	Beacons - front	15	Blue
2	Beacons - rear	15	Blue
3	Worklamps	15	Blue
4	Gutter brooms Water pump control	15	Blue
	Rotatilt option	20	Yellow
5	Rear Broom - Elevator	15	Blue
6	Ignition Latch Handbrake Relay Programme button	15	Blue
8	Low Level Water	15	Blue
9	Oil Cooler L/H	20	Yellow
10	Oil Cooler R/H	20	Yellow

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CHAPTER


3

Operation

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TO COMMENCE SWEEPING

1. Start Chassis engine. Ensure the low air pressure warning lamp is extinguished **(B2)**.
2. Engage the PTO using the chassis mounted PTO switch., the chassis rpm will increase to its minimum working speed of 950rpm.
3.  Select the equipment ignition switch **(X)**. This initiates the electrical power to the switch panel.

Note:-

The Elevator automatically rotates for 6 seconds as a system check is performed.

4. Select the Beacons and Worklamps as required.
5.  Ensure programme button **(A)** is not illuminated.
6.  Activate the Rear Broom and Elevator **(G)**.
7.  Activate the Gutter Brooms **(D1/D2)**.
8.  Ensure the water tank has adequate water to enable the work to be completed. The water pump is continuously driven via the hydraulics, so the tank just needs to be full for the system to be ready for use.
9.  Select the water sprays **(J1/J2/J3)** to reduce both dust and wear. It is recommended to always use water even when wet weather conditions prevail.
10. Commence sweeping at a speed between 3-5 mph depending upon the debris being swept. Select 1st gear, adjust the Gutter Broom speed to provide a satisfactory sweeping performance for the conditions
11. Located on the top of the Gutter Broom frame is an adjustable stop plate, releasing the locking pin enables the operator to limit the maximum working width of the Gutter Brooms. By positioning the stop to the preferred position the maximum swept width can be set between three predetermined widths of 8, 10 or 12 feet.
12. Switches **(C1/C2)** (If fitted) enable the operator to vary the sweep width between the mechanical stops.
13. The Gutter Broom ground pressure can be reduced by operating the Powasave regulators **(D)**.

TO INTERRUPT SWEEPING

Pressing the programme button **(A)**, will pause the active sweepgear and raise it to its stowed position. Pressing again reactivates the equipment to its previous settings.

TO TERMINATE SWEEPING

1. Turn off the Gutter Broom switches **(D1/D2)**.
2. Raise the Rear Broom and Elevator **(G)**.
3. Turn off the Water sprays **(J1/J2/J3)**.
4. Turn off the Ignition switch **(X)**.
5. Turn off the chassis mounted PTO switch.

REVERSING ELEVATOR



When sweeping in heavy conditions or when large bulky material is being swept, it is possible that the elevator may stall. In the event of a stalled elevator, an audible warning is activated to alert the operator.

To aid clearing the obstruction, the direction of rotation can be reversed during operation. Holding the top of the elevator pulse switch (**R1**), will automatically reverse the rotation. When the switch is released, normal rotation is resumed.

Note:



When the elevator pulse feature is active the rear broom stops rotating so that no new material is introduced to the elevator while the obstruction is cleared.



When the rear broom and elevator are off, the elevator can be pulsed in either direction to aid cleaning.

LOAD DISCHARGE CONTROLS



Safety Notice







Before carrying out the load discharge operations ensure the following safety aspects are observed

- Ensure the machine is clear of overhead power cables.
- Ensure the machine is standing on firm, level ground, and that no obstructions are located above or on the rear before raising the body.
- Ensure no one is near the load discharge area when opening or closing the door.
- Ensure the safety props are in position, and the frame rests on them securely when it is left in the raised position, or when working under the frame.
- To operate the discharge system, both the parkbrake and neutral have to be selected.
- Do not shunt the load, in order to aid discharge or drive with the body raised.
- Do not raise a loaded body on any gradient greater than 5%, as stability could be affected.
- Do not raise a loaded body when trying to clear an obstruction from the elevator.

The disposal of sweepings should be in accordance with the local waste disposal regulations.

Note:

- All sweep gear switches have to be off before the discharge system can be operated.
- To operate the discharge system both the parkbrake and neutral have to be selected.
- Operating switch (**P1**) will first dis-engage the elevator from the hopper, before the frame starts to raise.
- The frame has to raise, before the hopper tip switch (**N1**) can operate.

Symbol	ID	Description
	P1	Elevator Retract/Frame Raise - Activating the switch will first disengage the elevator before raising the frame. Note: The frame has to be raised before the hopper can be tipped. The required frame height is determined by the operator.
	N1	Hopper Tip/Door Open - This switch operates both hopper tip, and door open functions simultaneously.
	N2	Hopper Return/Door Close - This switch operates both hopper return and door close functions simultaneously.
	P2	Frame lower - This switch simultaneously operates 'hopper return'/'door close' and 'frame lower'. Keeping the switch active when all these are complete, also re-engages the elevator.

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All Copy

LOAD DISCHARGE CONTROLS CONTINUED

Note:

Operating Switch (**P2**) **frame lower**, automatically includes the functions of (**N2**) **hopper return/door close**.

ELEVATOR RE-ENGAGEMENT

E.G.

The elevator is automatically re-engaged when the last condition is met.

If the hopper is returned before the frame is lowered, the frame is the last function which engages the elevator.

If the frame is lowered before the hopper is returned, the hopper return is the last function which engages the elevator.

When the last function is complete, keeping the relevant switch active will automatically re-engage the elevator. When complete, both the warning lamp, and the audible buzzer will go off.

END OF DAY CLEANING



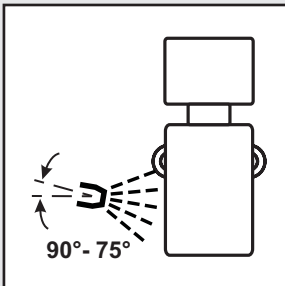
Safety Notice



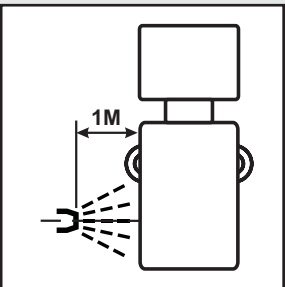
- After the load has been discharged, lower the body to rest on the prop.
- A warning light on the switch panel illuminates, and an audible warning will play when the body is not fully lowered, or the door is not closed correctly.
- Do not face high pressure washdown equipment directly onto ancillary electronic or electrical control systems. Care should also be taken when washing the paintwork.
- The use of needle stick gloves is recommended when working with this equipment.

Special notes for cleaning vehicles with vinyl livery or reflective markings

When using a high pressure wash or similar for cleaning areas of the vehicle with vinyl or reflective markings, subject to the following precautions being taken.



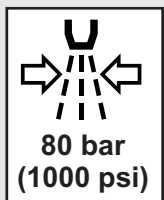
- The spray angle should be maintained between 90° and 75° to the panel ✓



- The nozzle distance should be greater than 1 metre (3 Feet) minimum from the panel ✓



- The spray pattern should be a wide fan pattern ✓



- The nozzle pressure should be 80 bar (1000PSI) maximum ✓
- The water temperature should not exceed 60 °C (140 °F) ✓
- Do not use acid or solvent cleaning solutions ✗

Alternative Methods

- Clean with a sponge or soft cloth using cold or warm water with a soap or detergent, followed by a cold water rinse ✓

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COLD WEATHER PRECAUTIONS



Safety Notice



The machine is designed for operating between -15°C (5°F) and 46°C (115 °F).

WATER DRAINAGE


To avoid the possibility of frost damage when the machine is left during cold weather, it is essential to drain the water system adequately. In order to assist in this procedure, the machine is equipped with a Pressadrain feature.

This feature purges the water system with air, helping to displace any surplus water after the system has been drained.


Note:

The Pressadrain can only be activated when the low level water indicator is on.

1. Drain the water tank. With the chassis running, the PTO engaged, and ignition active, the water jets can be operated to speed up the process.
2. Close the water tank drain tap.
3. Ensuring the air system is fully charged.

4.  Ensure the low level water indicator is on.

5.  Activate the Pressadrain.

6.  Activate water spray switches J1/J2/J3.

7. Open the water tank drain, remove the red drain plug from the filter, and drain any surplus water that has collected. Refit the drain plug.

SWEEPING IN COLD TEMPERATURES

Operating Temperature 0°C (32 °F) To +5°C (41 °F)

For sweeping in cold conditions above freezing, it is possible to use the water system, providing the machine has been left in a warm garage overnight.

Care must be taken to ensure water sprayed onto the road does not freeze.

Operating Temperature 0°C (32 °F) To -15°C (5 °F)

It is possible to use the machine for short periods without water in the tank.

Note:

When operating the equipment without water, dust will be emitted from the area around the brushes and at the top of the elevator. Prolonged use will result in premature wear on some components.

TOWING THE VEHICLE



Safety Notice



- The air system needs to be charged to ensure the sweep gear is raised.

CRANING THE VEHICLE

- The vehicle may be lifted using conventional lifting systems that are slung from the vehicle road wheels. However, it is necessary to ascertain the centre of gravity, as it can be up to 20% from the mid point of the wheelbase. The exact position is dependent upon chassis type and vehicle build. Refer to the chassis handbook.

SETTING CLOCK

The clock (12 hour) can be set with the ignition OFF - clock time should be displayed. Press **B6** and hold. Clock time will flash. Release **B6** and hour mode will flash. Adjust hours by pressing **B7**.

Press **B6** again and minutes will flash; set by pressing **B7**.

When time is correct, press **B6** to revert to clock display.

Note:

Clock setting display cancels after 30 seconds.





B6 Push button to select hourmeter reading/clock - cancels after 10 seconds.



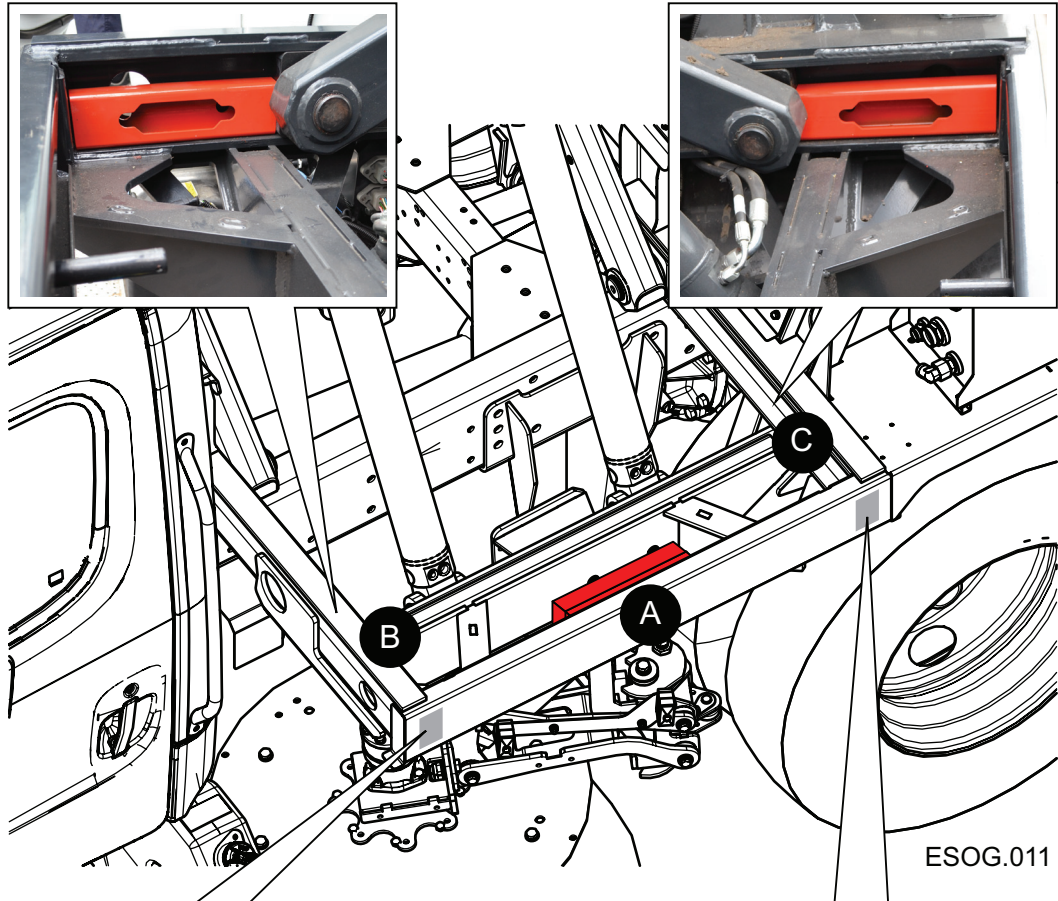
B7 Advance button - advances clock time when in clock setting mode.

SCISSOR FRAME SAFETY PROPS

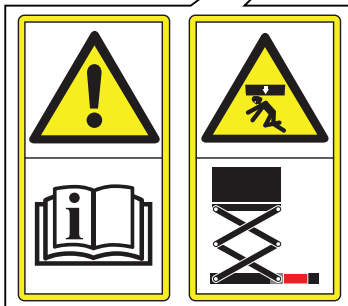

Safety Notice


Ensure safety props are located securely before working under raised scissor frame.

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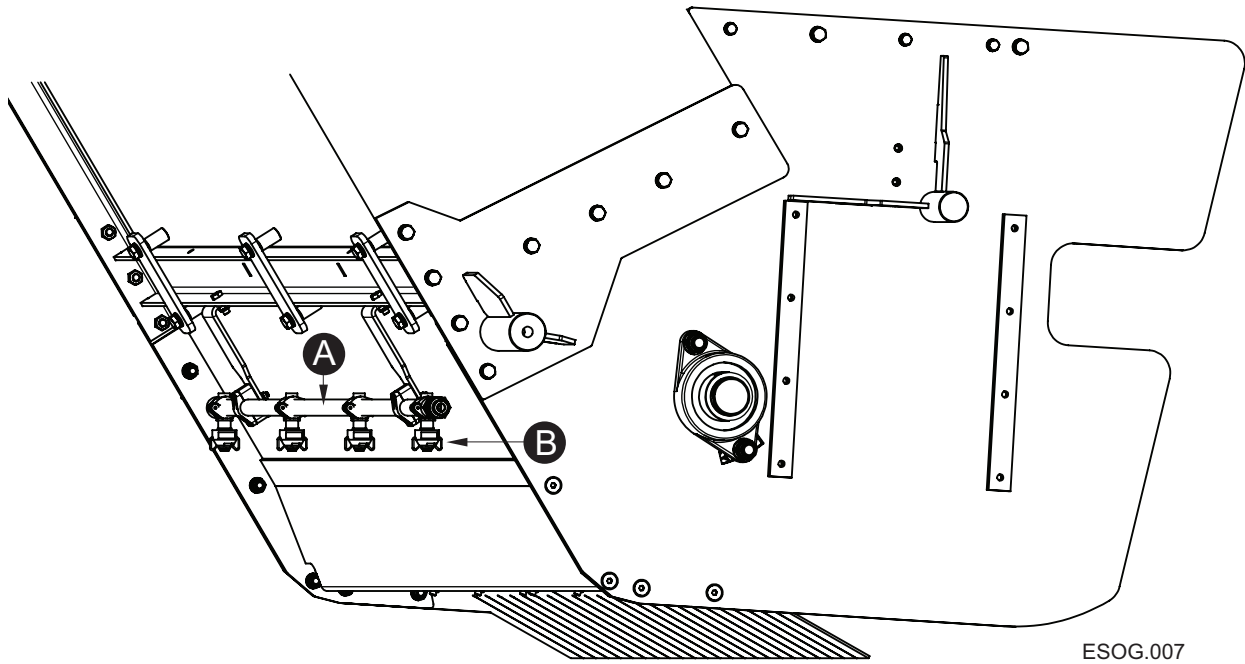
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The two safety props used to secure the scissor frame are stowed inside the front left hand side of the subframe (A). To operate, release the two spring cotters and remove the props. Locate the props on either side of the scissor frame channel (B) & (C). Lower the frame until the ends of the scissor frame are resting on the safety props.

Ensure that the safety props are relocated securely in their stowage position after use.

ADDITIONAL ELEVATOR SPRAY BAR (OPTIONAL)



An additional spray bar is available, which is located on the front of the Elevator.

OPERATION:



Additional spray bar switch **(L)** delivers water to the optional spraybar.

GUTTER BROOM ROTATILT (OPTIONAL)

The angle of the Gutter Broom can be adjusted from the cab when sweeping.

Symbol

Description

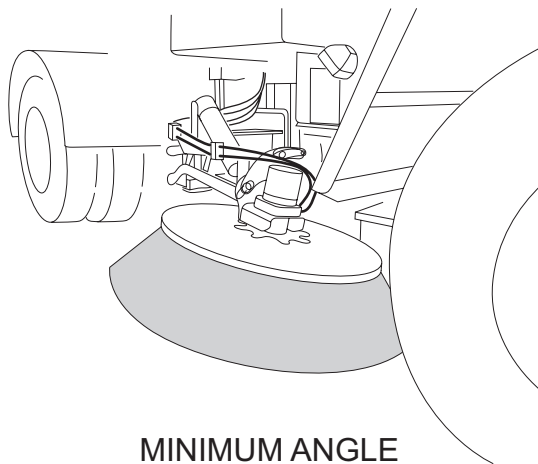


Operating switches **F1/F2** whilst the gutter brooms are operating, pressing the switch one way will increase the angle of the brush on the road; pressing the switch the other way will reduce the angle of the brush on the road.

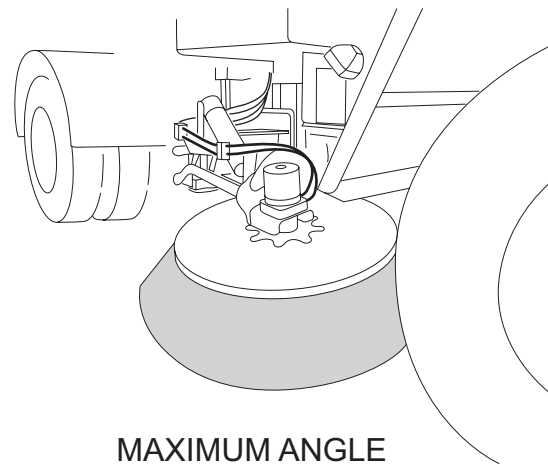
Note:

Rotatilt will only function when gutter broom is operating.

When stowing the channel brush, ensure the brush is not left in an attitude where the brush stock sticks out beyond the vehicle width.



MINIMUM ANGLE



MAXIMUM ANGLE

ESOG.005

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CHAPTER

4

Routine Maintenance

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**Safety Precautions****DO NOT**

- **Disconnect hydraulic or water pipes whilst the engine is running.**

ALWAYS

- **Ensure the machine is standing on firm, level ground and there are no obstructions above or around the machine before raising the hopper.**
- **Ensure that the scissor props are securely located when working underneath the raised hopper.**
- **Keep hands, loose clothing, hair etc, well clear of moving parts.**
- **Use approved safety platforms/gantries when working above ground level. Get a second person to check periodically when only one person is working on access equipment or inside the body.**
- **Ensure the operators and service personnel are fully conversant with the controls and their operation.**
- **Disconnect the vehicle battery when working on the electrical system or when carrying out any welding on the vehicle.**
- **Remove ignition key when working on the vehicle. Ensure all personnel are clear of the vehicle before restarting the engine.**
- **Ensure all guards and covers are refitted after servicing.**
- **Disconnect or isolate the air system before working on any pneumatic items.**

MAINTENANCE SCHEDULE



Daily Maintenance - This can be carried out by a suitably trained operator.

Check and Attend to the following items:

- 1 Top up hydraulic oil level.
- 2 Clean oil cooler radiators.
- 3 Clean water filter.
- 4 Clean water spray jets.
- 4 Check central brush curtain is in position.
- 5 Check all sweeping equipment for wear and or damage.
- 6 Check drag shoes for wear and or damage.
- 7 Check brushes for adjustment and wear - adjust or replace as required.
- 8 Check for oil / water / fuel leakages.
- 9 Check chassis items as recommended in chassis manufacturer's handbook.



Weekly Maintenance - This can be carried out by a suitably trained operator.

Check and Attend to the following items:

- 1 Check routing of electrical and hydraulic services for chafing.
- 2 Lubricate all grease points - see page OG4:10.
- 3 Check condition of all chains and cables.
- 4 Check condition of elevator flights - replace as required.
- 5 Check both elevator drive chain and flight chains for correct adjustment.

EQUIPMENT ADJUSTMENT / MAINTENANCE

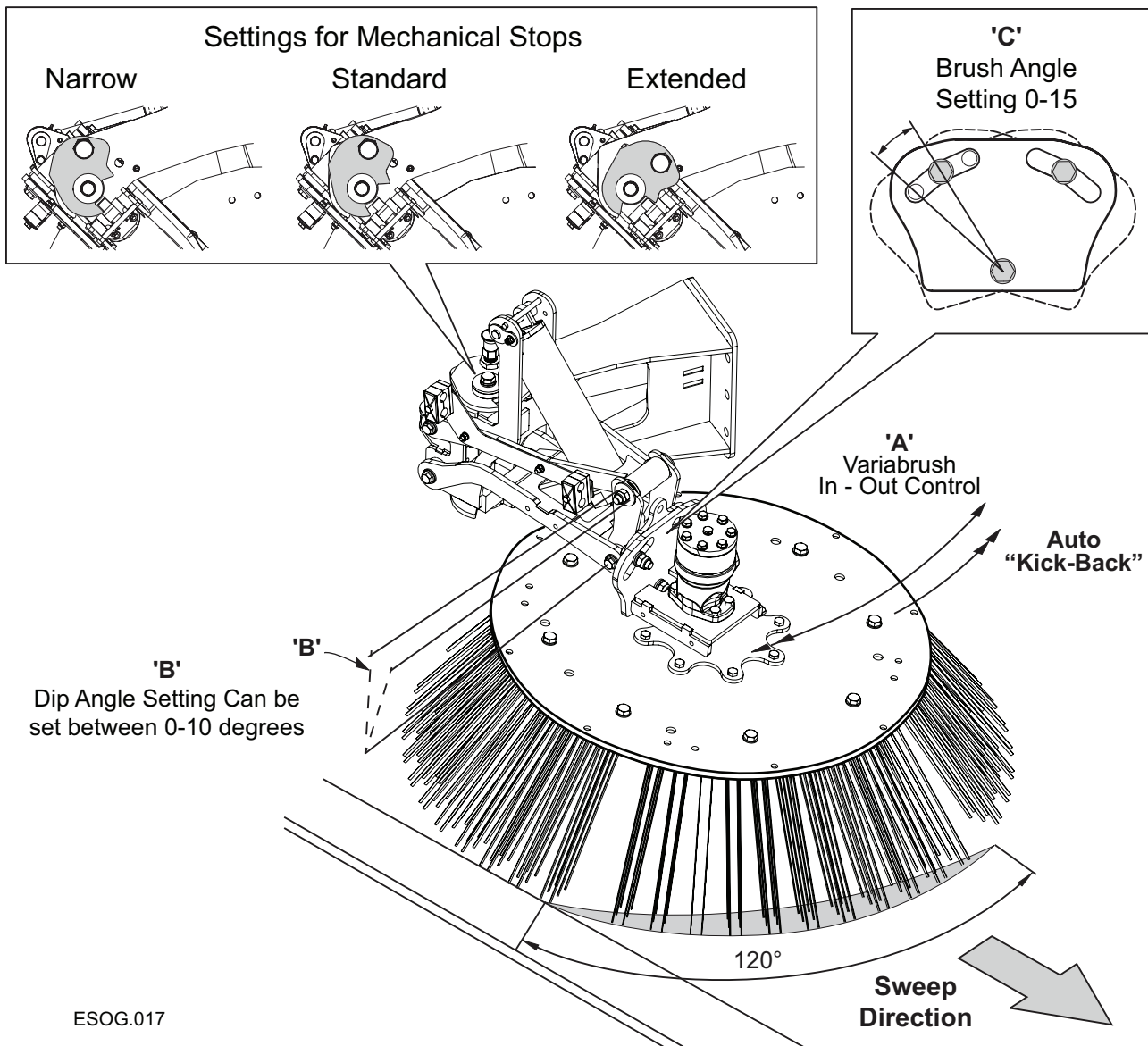
Introduction

This chapter highlights some of the basic adjustment and maintenance procedures required to keep the machine performing efficiently.

Gutter Broom Adjustment

This section highlights the gutter broom adjustment. The machine can sweep with single brush, kerb (nearside) or offside (road side) or simultaneously brushes working. When the offside is deployed it is important to set the brush close into the chassis by using either the mechanical stop or the Variabrush control. Maintain a visual eye on its position when sweeping, so as to avoid other road traffic.

The gutter broom(s) are supported on a forward facing arm that is controlled by its lifting cylinder, which allows for 'float' and 'light sweep' (Powasave) ground pressure control. The gutter broom head drives itself out to the stopped position (variable) by the action of the rotating brush on the ground.



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The operating angle for the gutter broom is set using the manual adjustment points **(B)** and **(C)**. The dip angle **(B)** and the lateral angle **(C)** should be adjusted, so that about 120° of the circumference towards the front kerb is in contact with the road. (When fitted the Rotatilt replaces the need to manually adjust **(C)**)

If a 'light sweep' brush pressure is set, then the brush may not position itself, in this case reset the 'light sweep' regulator for a heavier ground pressure.

The desired swept width should be first set by the adjusting the manual stops located on the top of the pivot frame.

Machines fitted with the 'Variabrush' feature can also be adjusted from the switch panel while sweeping, allowing the brush to be positioned as required throughout the range of the mechanical stops.

The brushes have automatic 'kick-back' should they come into contact with an object during sweeping. The 'dip angle' will maintain optimum brush angle.

Gutter Broom Replacement



Safety Notice



- **The use of Needle stick gloves is recommended when working with this equipment**

Isolate the chassis engine. Turn off the air at the filter regulation unit (item 2 on lubrication diagram).

The brush segmented heads are held to the top flat by 2 off 1/2" bolts per segment (8 in total). Loosen these bolts and remove each segment at a time, replacing with new filled segments as you go.

In this way the brush top drive plate will remain level during the removal and refitting. Whilst refitting the brush segments, check to see that no wire or tine material has been caught up under the brush top plate. Remove as required.

Good quality brush segments are recommended.



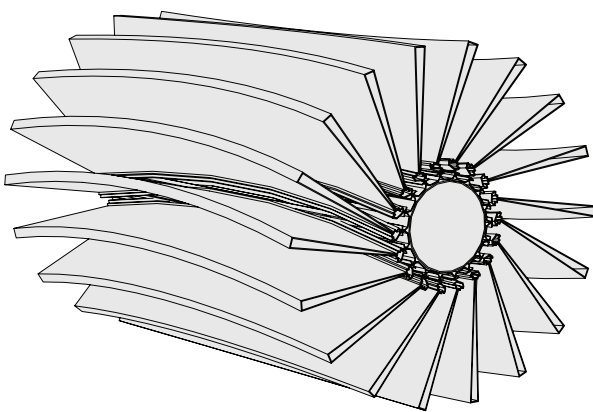
Safety Notice



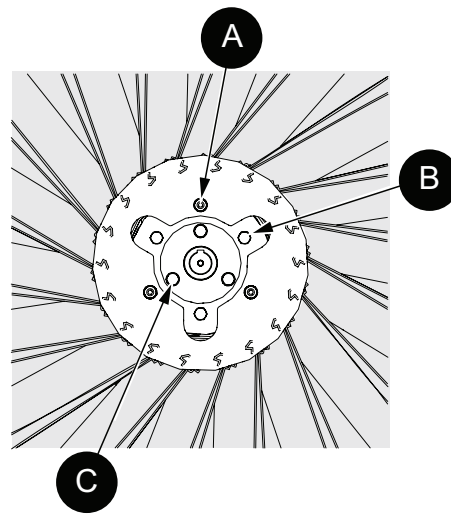
- The use of Needle stick gloves is recommended when working with this equipment

**PICK UP BROOM CONSISTING OF INDIVIDUAL BRUSH STRIPS
REMOVAL AND REPLACEMENT**

A brush strip assembly consisting of 18 individual brush strips.



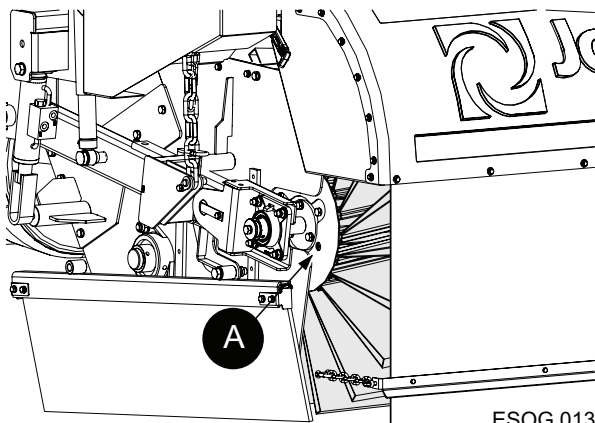
ESOG.022



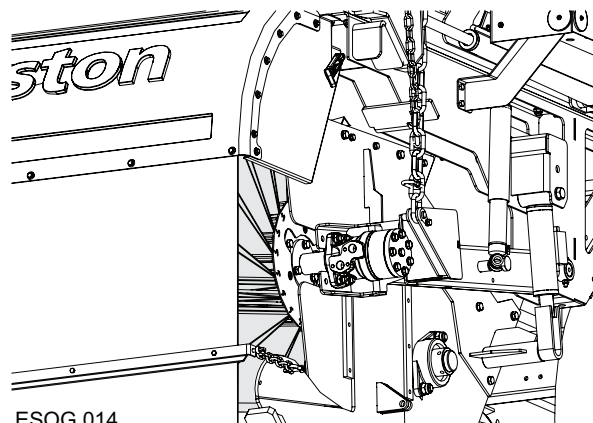
Changing the Brush Strips.

Bearing Side:

- Remove the 3 button head screws (**A**) from the bearing side of the assembly, this will allow the retaining plate to move and to give sufficient clearance to enable the brush strips to slide out of their respective guides. It is recommended that the old strips are completely removed prior to fitting the new ones, this will allow improved access to ensure the guides are clean before fitting the new strips.





ESOG.013



ESOG.014

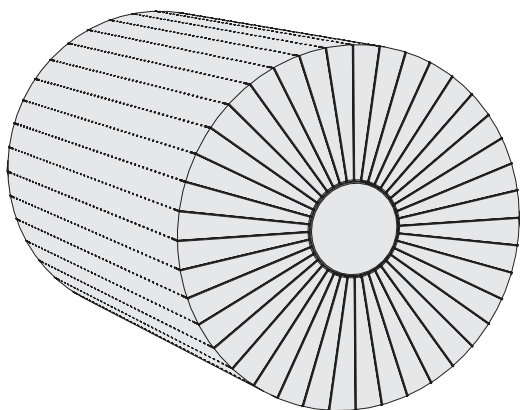
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Safety Notice


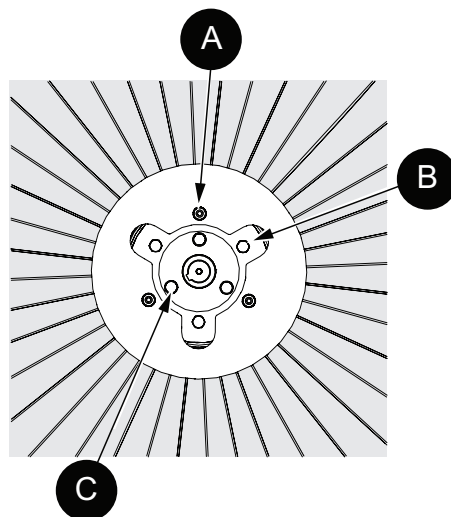
- The use of Needle stick gloves is recommended when working with this equipment

**PICK UP BROOM CONSISTING OF A ONE PIECE MODULAR CONSTRUCTION
REMOVAL AND REPLACEMENT**

A one piece modular brush construction.



ESOG.021



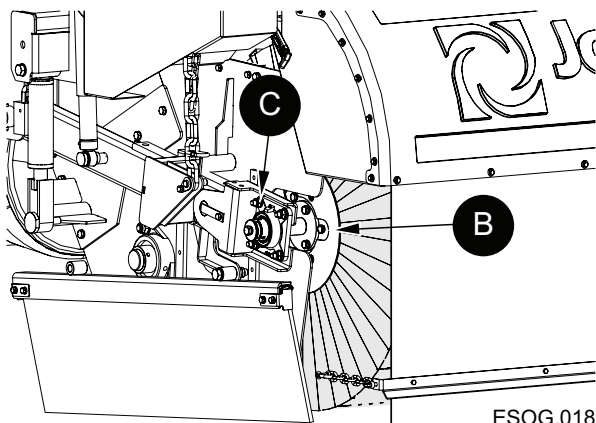
Changing the Modular Brush

Motor Side:

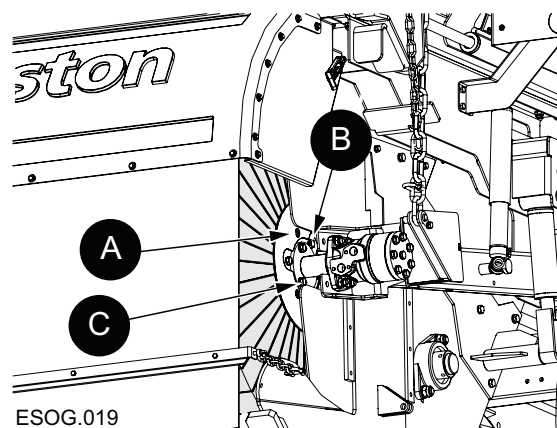
- Remove the 3 button head screws (A) and the 3 set screws (C) from the motor side of the assembly.
- Loosen but do not remove the 3 set screws (B) that secure the drive coupling inside the brush core.

Bearing Side:

- Remove the 4 bolts (C) securing the bearing assembly to the arm, this will allow the brush to be removed.
- Loosen, but do not remove the 3 set screws (B) to allow the brush assembly to be removed.



ESOG.018



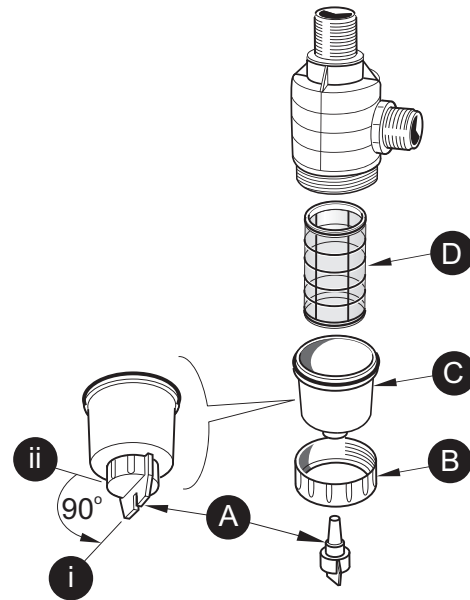
ESOG.019

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WATER FILTER - CLEANING

The water filter for the low pressure pump is located in the rear locker. The filter is equipped with an integral shut off valve to prevent the water tank from draining, should the filter need dismantling for cleaning whilst there is still water in the tank.

- 1 Before dismantling the filter, activate the shut off valve actuator (**A**) located on the bottom of the filter. It has a bayonet type mechanism. Press up, and turn anticlockwise to position (**i**) to shut the valve.
- 2 To access the filter element, unscrew the securing ring (**B**) and remove body section (**C**), complete with shut off valve. The filter element (**D**) can now be withdrawn.
- 3 Clean the element by flushing with clean water or an air line from the inside out. Visually inspect the element for damage and replace if necessary.
- 4 When reassembling the filter, special care should be taken to ensure that the filter element is correctly (squarely) located in the filter body, before tightening the securing ring.
- 5 Refit the shut off valve actuator. Press up and turn clockwise to position (**ii**) to open the valve ready for use.



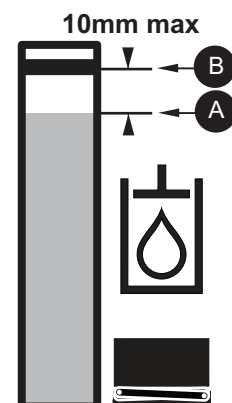
RTOG. 006-1

HYDRAULIC RESERVOIR

OIL LEVEL CHECKING

The correct method for checking the oil level in the hydraulic reservoir, is to ensure the body and frame are fully lowered

The level (**A**) should be 10mm below the Maximum **black** line (**B**) on the gauge. It is important that the correct level is maintained, as under filling can adversely affect the heat dissipation rate of the oil, whilst over filling can cause oil to overflow when the body is lowered. Oil specifications are shown in the lubrication diagram - see this chapter.



CYLINDER MAINTENANCE

Periodically inspect the cylinder rods for damage, blemishes or build up of material such as tar, cement, paint, etc. The rods can be cleaned with fine wire wool and/or spirit to ensure long seal life. When cleaning the machine, avoid playing the washdown hose over the body tip cylinder when in the fully raised condition.

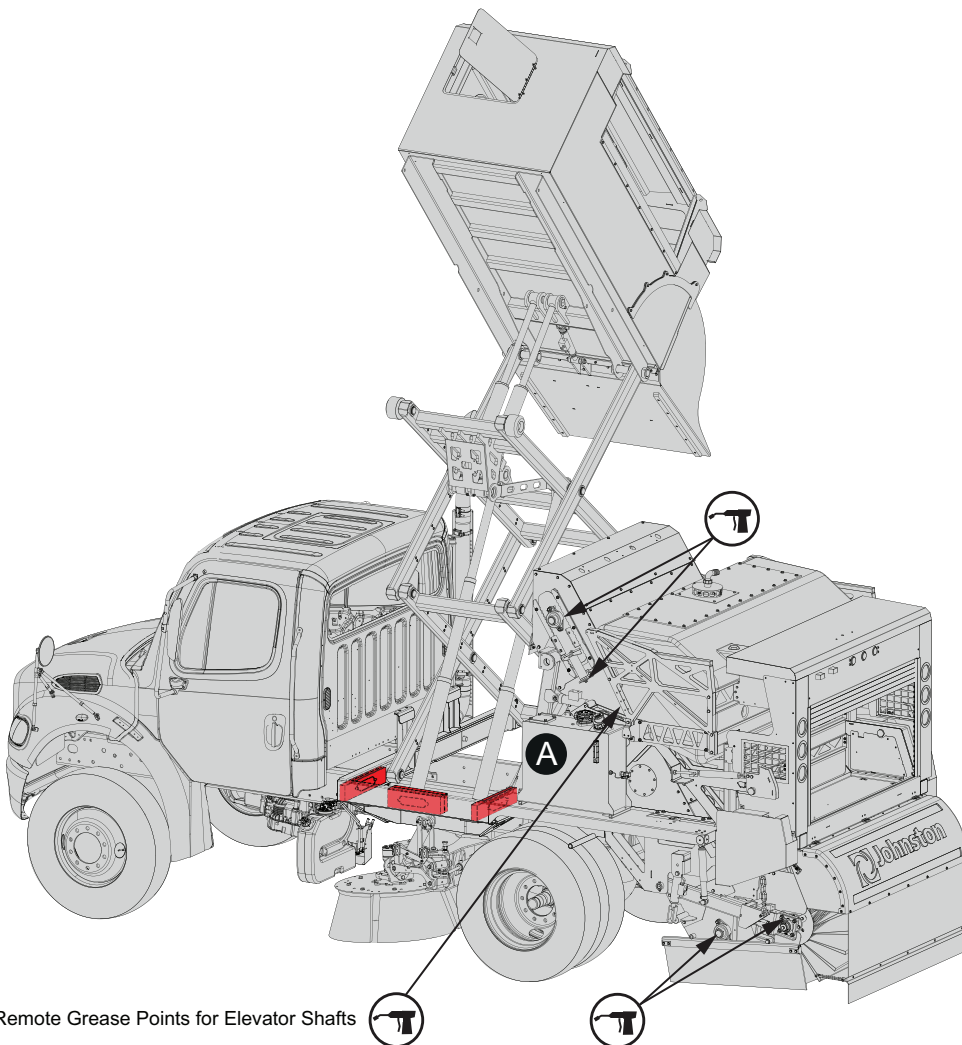
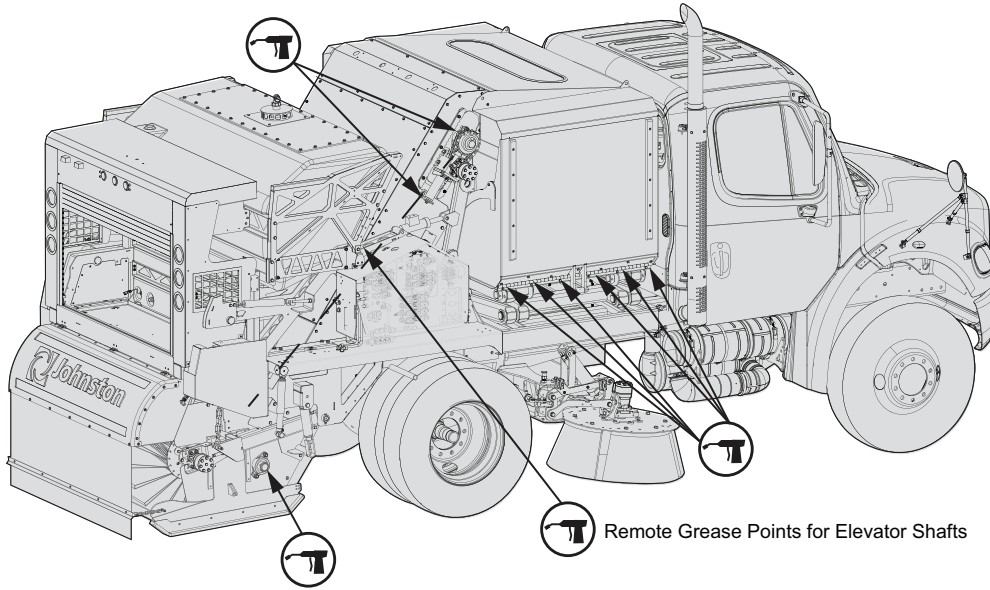
CLEANING THE VEHICLE

Care should be taken when using high pressure steam and washdown equipment, as damage can be caused by playing this equipment onto the engine, electrical control systems, and paintwork, etc..

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LUBRICATION DIAGRAM

Refer to Maintenance Schedules for lubrication intervals




ESOG.10b

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Recommended Lubricants

	Capacity	ISO Oil Grade	Johnston Part No.	Shell	BP	Castrol	Mobil	Chevron Texaco
A Hydraulic System	75L	-	94-12	*Tellus S2V-46	Bartan HV46	Hyspin AWH-M46	DTE 15M	Rando HDZ 46
B Not Applicable								
C Not Applicable								
D Not Applicable		-						
E Not Applicable								
F Drive Splines		-	94-24	Klüberpaste (46 MR 401)				
G Not Applicable		-					-	
H Chassis PAS - Auto Gearbox	See Chassis Handbook	-	39661	Spirax S4 ATF HDX	Autran DXIII	Castrol Dexron II	AFT 220	Havoline Multi-Vehicle ATF
Grease Points		-	94-69	Gadus S2-V 200	Energrease L2	LM Grease	Mobilube MP	Multifak EP
Battery Terminals	-	-	94-69	Petroleum Jelly				

* In cold climates use Tellus S2V-32 - Part Number 94-84

CHAPTER

5**Conformity Certificates****Table of Contents**

Subject	Page
EC Declaration of Conformity Certificates	
Safety Requirements	OG5 : 2
Noise - Engines	OG5 : 3
Noise and Vibration	
Levels	OG5 : 4

EC DECLARATION OF CONFORMITY (CE)

Manufacturer's Name: Johnston Sweepers Limited

Manufacturer's Address: Curtis Road,
Dorking,
Surrey,
RH4 1XF England

declares that:

Product Name: Johnston Road Surface Cleaner

Product Type(s): VT501, VT651, VT801
VS501, VS651, VS801
VT551
RT655
ES351

Product Options: All

Product Serial Number:

conforms to the following standards:

E.C. Council Directive 2006/42/EC and amendments

BS EN 13019 : 2008. Machines for Road Surface Cleaning
Safety Requirements

C.F. Offley
Engineering Director
Johnston Sweepers Ltd.
11/10/2012



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**EC DECLARATION OF CONFORMITY
(NOISE EMISSION IN THE ENVIRONMENT BY EQUIPMENT
FOR USE OUTDOORS: DIRECTIVE 2000/14/EC)**

Manufacturer's Name:	Johnston Sweepers Limited
Manufacturer's Address:	Curtis Road, Dorking, Surrey, RH4 1XF, England.
Technical Documentation maintained by:	Research and Development Department, Johnston Sweepers Limited, Curtis Road, Dorking, Surrey, RH4 1XF, England.

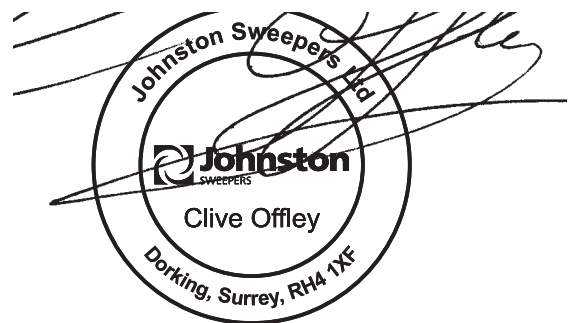
Johnston Sweepers Ltd. hereby declares that the following equipment conforms to the requirements of EC Directive 2000/14/EC:

Description of Equipment:	EC Directive 2000/14/EC, Annex 1, Item 46: Power sweeper
Product Name and Description:	Johnston ES351, Semi-hydrostatic (single engined) chassis-mounted power sweeper.
Maximum Measured Sound Power Level (L_{WA}):	105dB(A)
Guaranteed Maximum Sound Power Level (L_{WA}):	106dB(A)
Conformity Assessment Procedure:	Internal control of production (Ref: Annex V - 2000/14/EC)
Other EC Directives applied to this equipment:	98/37/EC and amendments
Place and Date of this Declaration:	Johnston Sweepers Limited, Curtis Road, Dorking, Surrey, RH4 1XF, England.

January 2015

Signed by:

C.F. Offley
Engineering Director
Johnston Sweepers Ltd



NOISE AND VIBRATION**Safety Notice**

- **Ear defenders are recommended when working around the machine**

Noise Levels

All noise levels are given at maximum engine operating speeds, but in normal operation are likely to be lower than the figures quoted.

In-cab noise levels with the windows closed 68 dB(A) nominal, dependent upon chassis.

External noise levels at one metre distance of the side of the machine, i.e. Wanderhose operation, are 93 dB(A).

Noise levels at 3 metres in front of the machine (manual pavement sweeping into the gutter) are 83 dB(A).

For maximum sound power level see Noise Declaration Certificate.

Vibration

Vibration levels in accordance with 2002/42/EC as amended.

Hand-Arm

The vector sum weighted root mean square acceleration values ($a_{h,w}$) during recommended sweeping/ washing activities do not exceed 2.5 m/s².

Whole Body

The dominant axis weighted root mean square acceleration values (a_w) during recommended sweeping/ washing activities, do not exceed 0.5 m/s².

Conditions of test - body empty and water tanks full on public thoroughfare.

The Control of Vibration at Work Regulations 2005 Directive 2002/44/EEC.

In accordance with the above Regulation the operators of the machine over a typical duty cycle will be subjected to an 8 hour energy equivalent acceleration A(8) below the Exposure Action Level (EAV) for both Hand-arm and Whole Body Vibration.

These Limits are:

Hand-arm: EAV 2.5m/s²

Whole body: EAV 0.5m/s²