

Operator's Guide



V Range Suction Sweepers Incorporating

VT502 • 652 • 802

Twin engine machines

VS502 • 652 • 802

Single engine, Hydrostatic machines

VM502 • 652 • 802

Single engine, Semi-Hydrostatic machines

Part No. 01290-1-GB

Revision Level A

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VT - Twin Engine Specific to Twin engine sweepers.

VS - Single Engine Specific to Single engine Hydrostatic Sweepers.

VM - Mekavak Specific to Single engine Semi-Hydrostatic Sweepers.

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1 Information

FOREWORD

The Johnston V502, 652 and 802 range of Suction 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 spoil on traffic or pedestrian areas, and litter collection using the Wanderhose [Ref. EN 13019], 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 Channel brush setting and changing
- 9 WSB setting and changing
- 10 Nozzle setting and Maxigap operation
- 11 Daily and weekly maintenance items
- 12 Driving/operation assessment
- 13 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 his own Risk Assessment on the equipment in his particular working environment and work application.

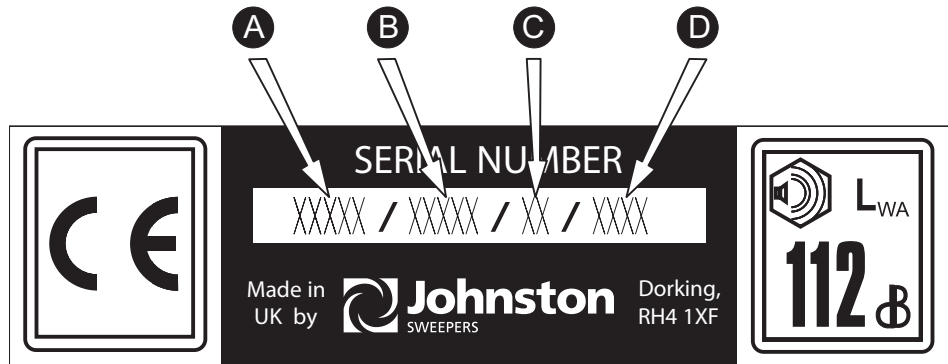
This handbook should be carefully studied. In it you will find instructions for the operation and maintenance of your JOHNSTON SWEEPER.

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.

REPLACEMENT PARTS



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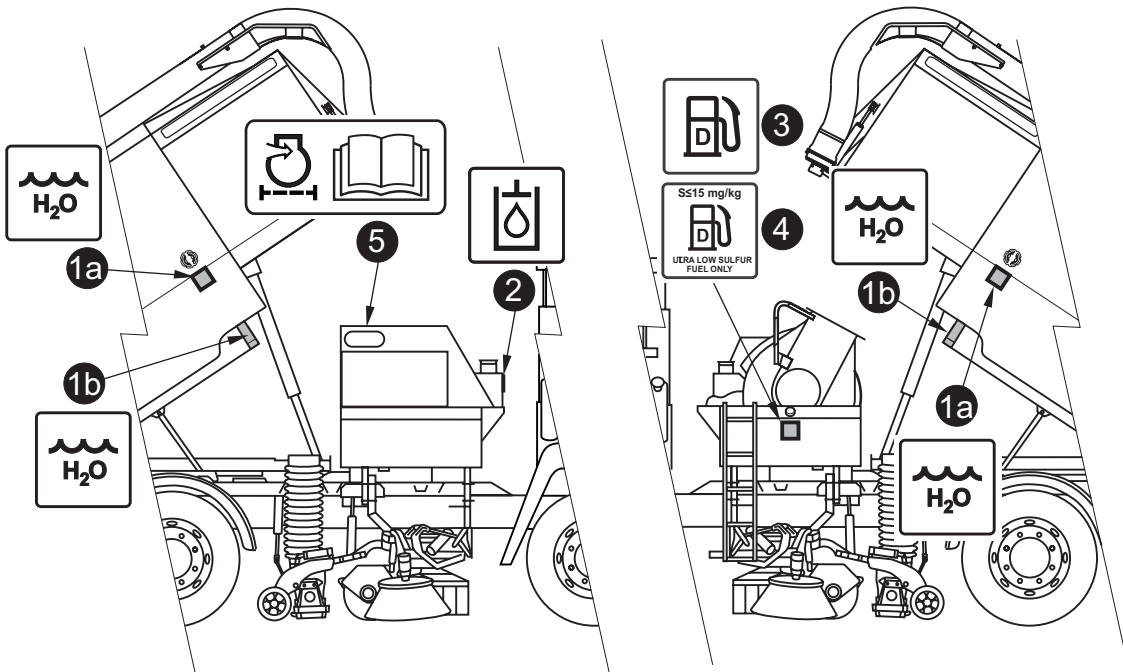
When making enquiries or ordering spare parts the Johnston Serial number should be quoted. The number will be found stamped on a plate similar to that shown below and attached to the rearmost cross-member of the subframe, below the rear door.

Serial number comprises of:

(A)	Model number	VT652 (example)
(B)	EQ number	XXXXXX
(C)	Year of manufacture	XX
(D)	Manufacture sequence number	XXXX

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.

For the latest parts information please refer to our on-line interactive catalogues which are available through our E-Shop. To open an account, please follow the instructions on the Johnston Sweepers website: www.johnstonsweepers.com



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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.

Label	Description
(1)	Water tank filler ports (1a) = Hose Pipe (1b) = Hydrant
(2)	Hydraulic oil tank filler
(3)	Fuel tank filler - Engine requires standard diesel fuel 85kW engine only
(4)	Fuel tank filler - Engine requires Ultra Low Sulfur fuel 55kW & 93 kW engines only
(5)	Engine air cleaner instructions, i.e. use only genuine Johnston replacement air cleaner elements and refer to Chapter 6 of this guide for servicing instructions



CAUTION: Only 55kW & 93 kW engines require Ultra Low Sulfur fuel.
Standard diesel fuel causes fault to SCR system.

2 Safety

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FOR YOUR SAFETY

Basic safety precautions are described in Section 3.

Important operating and safety information is marked with the following **SIGNAL** words:
NOTICE, CAUTION, WARNING and **DANGER**.

SIGNAL WORDS AND SYMBOLS ARE SHOWN AS FOLLOWS:-



SIGNAL WORD

Type and source of hazard.

Measures to be taken to protect against the hazard.

The **NOTICE** signal word does not have the triangle safety alert symbol.

Meanings of signal words used with safety warnings (ISO 3864)

NOTICE: Indicates a hazardous situation with a risk of damage to equipment (ANSI Z535.6).



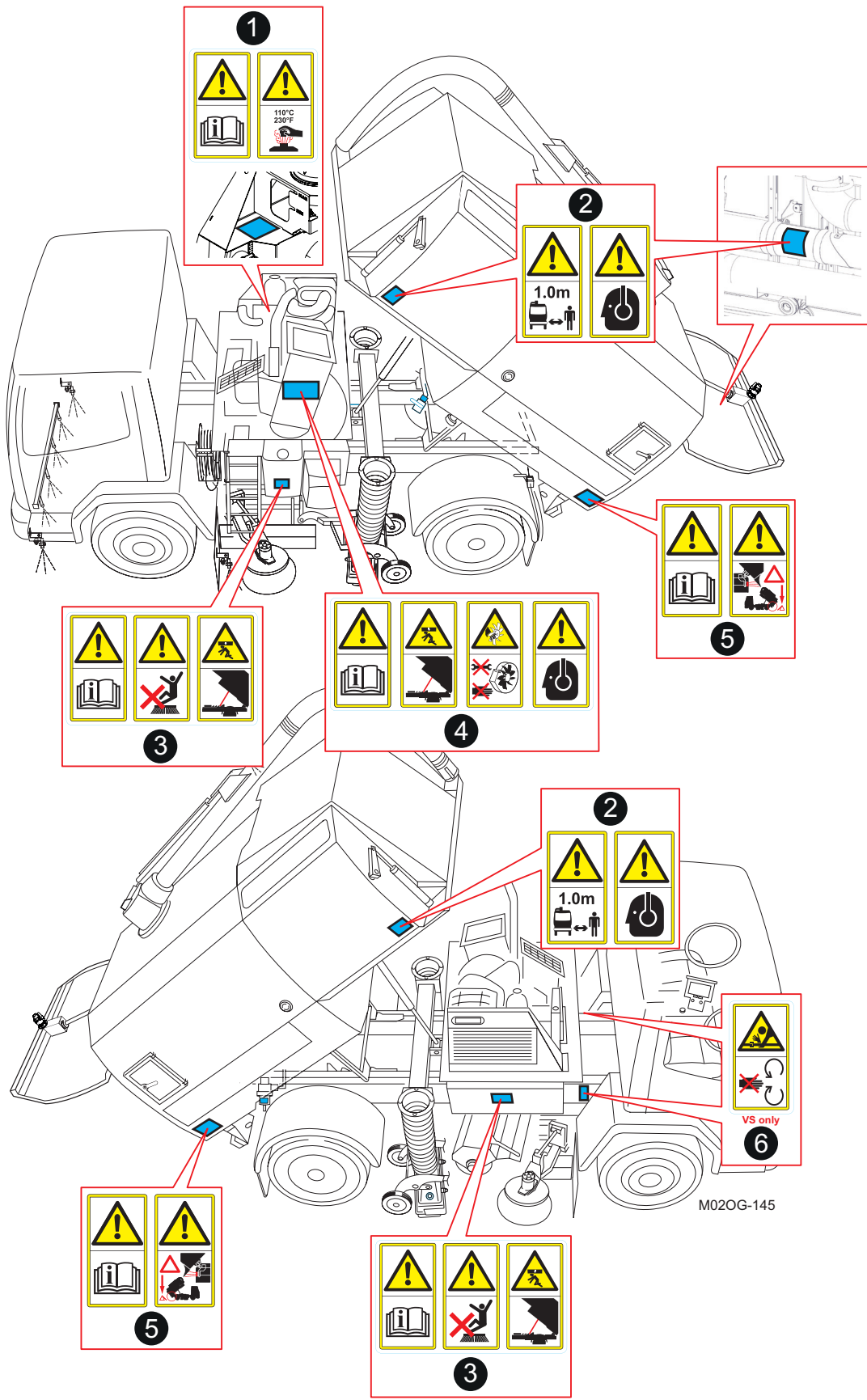
CAUTION: Indicates a hazardous situation with a low level of risk. Indicates a potentially hazardous situation which if not avoided may result in minor or moderate injury.



WARNING: Indicates a hazardous situation with a medium level of risk. Indicates an imminently hazardous situation which if not avoided could result in serious injury or death.



DANGER: Indicates an imminently hazardous situation with a high level of risk which if not avoided, will result in serious injury or death.

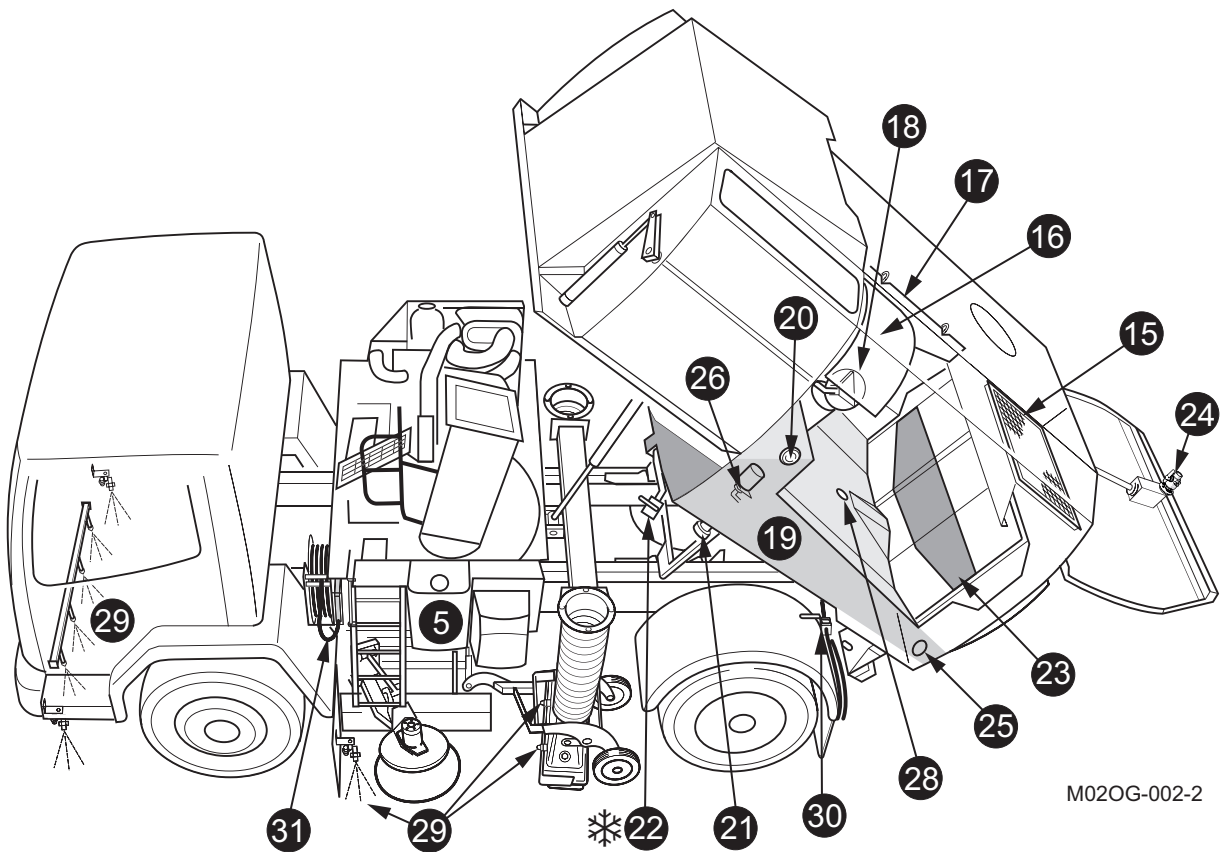
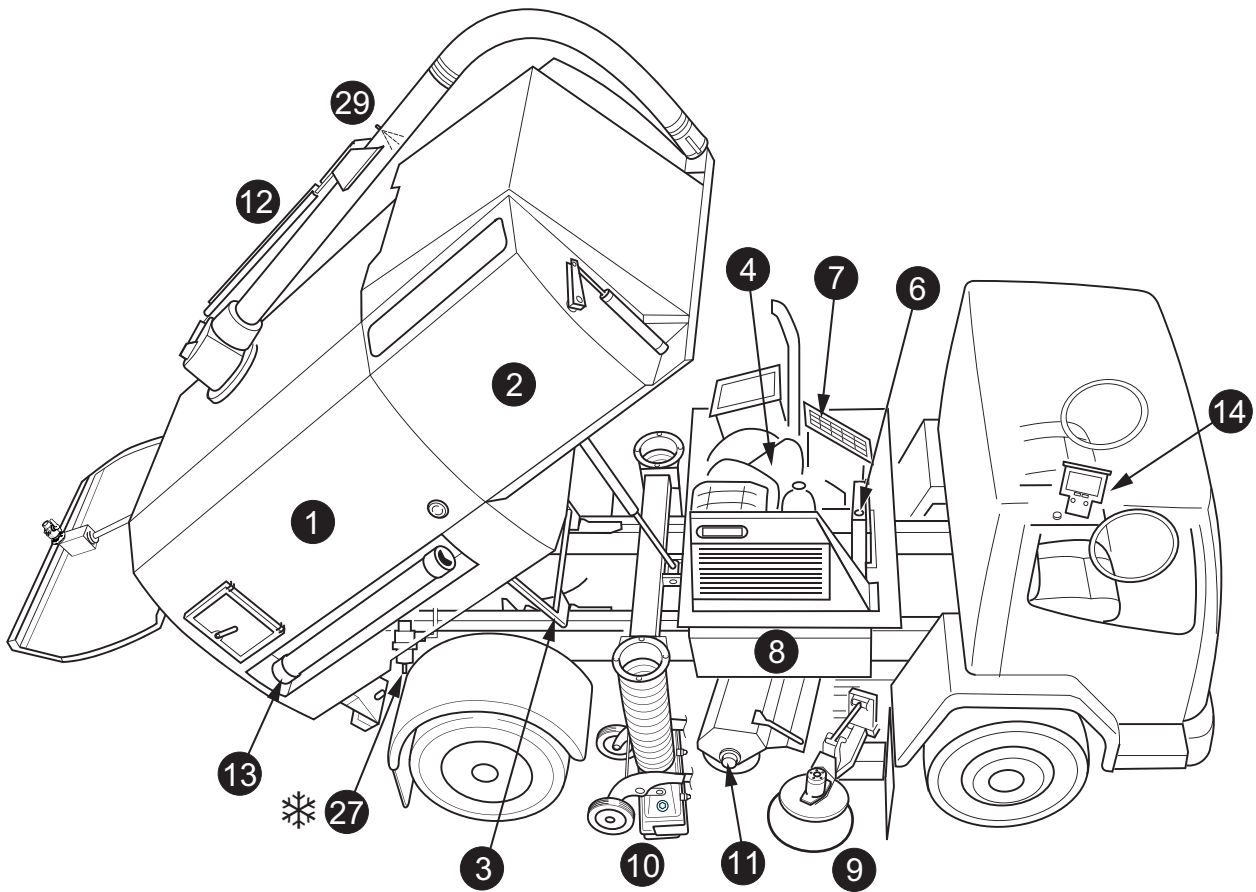


MACHINE WARNING LABELS

Label	Description
(1)	<p>CAUTION Read Operator's Guide. To avoid scalding do not release radiator cap when hot.</p>
(2)	<p>CAUTION Wear ear defenders when working in this area.</p>
(3)	<p>WARNING Read Operator's Guide. Keep clear of brushes. Crushing of whole body - force applied from above Body prop correctly engaged.</p>
(4)	<p>WARNING Read Operator's Guide. Crushing of whole body - force applied from above Body prop correctly engaged Severing of fingers or hand - Impeller blade. Never reach in or drop tools into the fan case Wear ear defenders when working in this area.</p>
(5)	<p>DANGER Use safety warning triangle if body is raised on the highway.</p>
(6)	<p>DANGER VS/VM only: Arm entanglement. Never touch rotating shaft.</p>

- Ensure that all safety labels are always kept clean and visible.
- Replace any missing or illegible safety labels.
- Ensure any safety labels are affixed to replacement parts as required.

3 General Arrangements

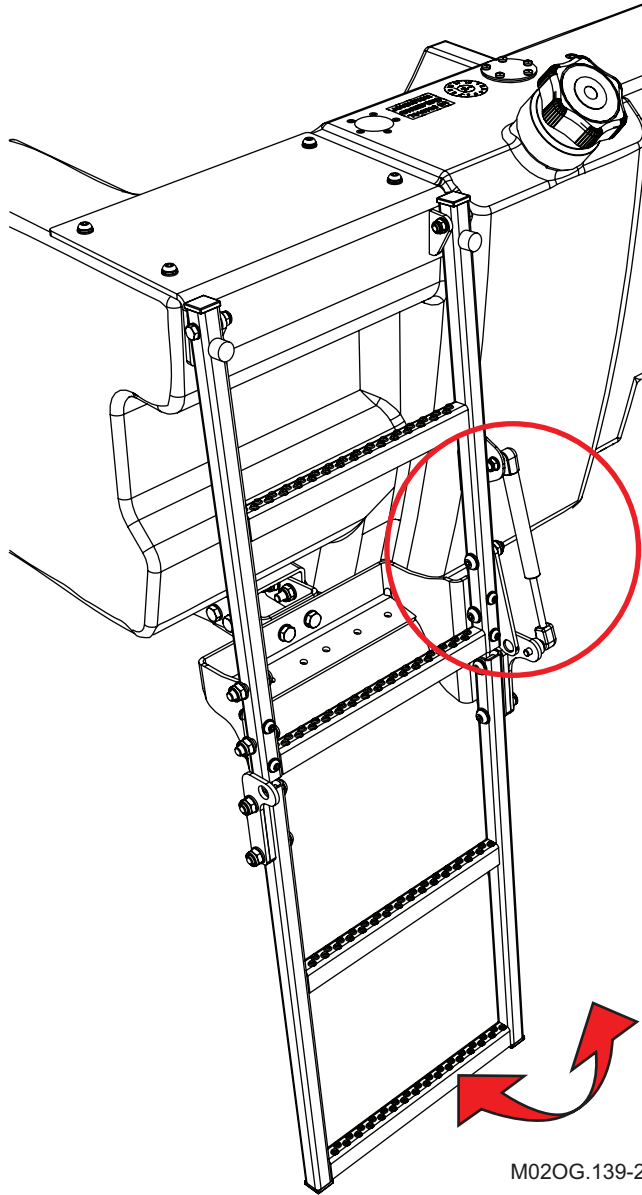


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GENERAL ARRANGEMENTS

Item	Component	Chapter
(1)	Hopper/load compartment	3
(2)	Cowling	6
(3)	Body (hopper and cowl) prop	6
(4)	Auxiliary engine (VT Only)	6
(5)	Fuel tank	6
(6)	Hydraulic oil reservoir	4
(7)	Suction fan case	4
(8)	Systems locker	3
(9)	Channel brush	2
(10)	Suction nozzle	3
(11)	Wide sweep brush	3
(12)	Wanderhose - (option)	6
(13)	Wanderhose extension tubes	6
(14)	Cab Mounted Controls	6
(15)	Filter screens	3
(16)	Wearing plate(s)	3
(17)	Hopper centre baffle - duals only	6
(18)	Intake flaps	6
(19)	Water tank	6
(20)	Water tank filler	6
(21)	Water tank hydrant filler	6
(22)	Water tank drain/flushing valve	6
(23)	Rear door screen	4
(24)	Rear door drainage tap	4
(25)	Water tank flushing ports	2
(26)	Primary suction filter	2
(27)	Secondary suction filter	2
(28)	Extended water tank plug	2
(29)	Water spray jets	2
(30)	Washdown hose	4
	*Wanderhose Water	2
	*Littasnatch Water	2
(31)	*Supawash hose reel	2

❄ Cold Weather Drains



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EQUIPMENT ACCESS



WARNING: Before using the ladder ensure the body is raised and the body prop is securely located in the rack.

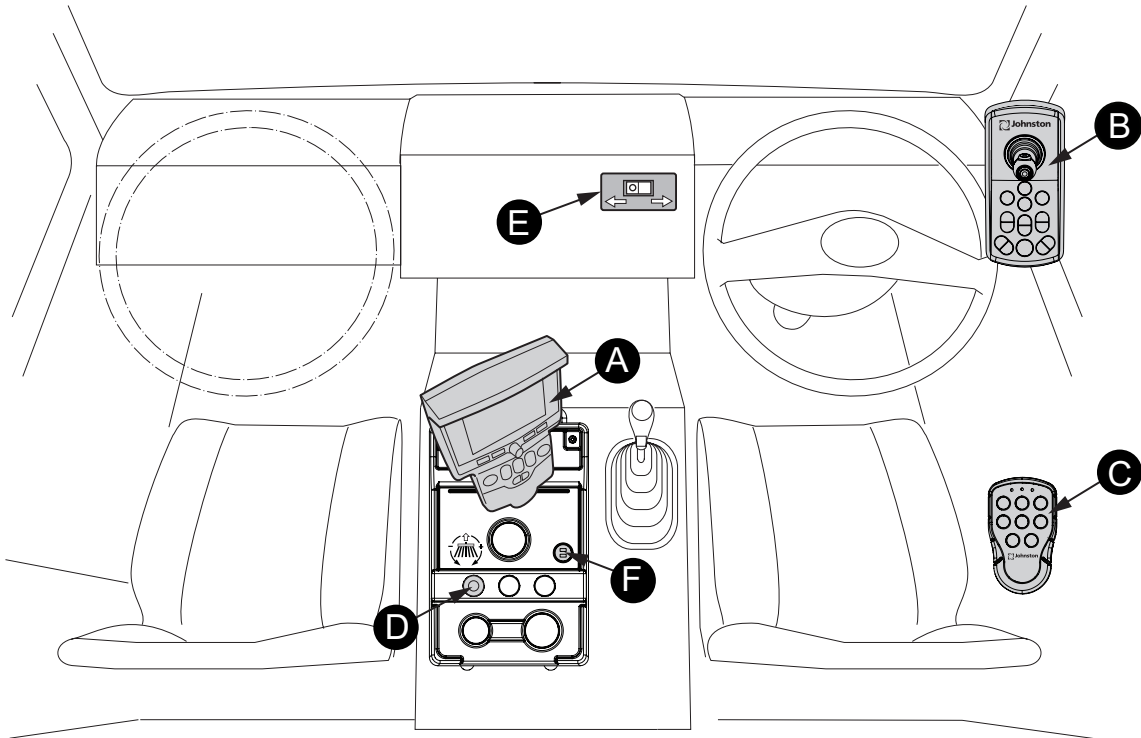
Do not use a faulty ladder.

Always maintain 3 point contact with the ladder.

Always ensure the ladder is securely stowed prior to operating the equipment or driving the vehicle.

To gain access to any equipment mounted above ground level a folding ladder is provided together with appropriate grab handles. With the body raised and supported on the body prop, pull down the ladder from it's stowed position, the gas strut will securer the ladder in its extended position.

4 Controls



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CAB MOUNTED CONTROLS

Item	Description
(A)	Johnston Visual Module (JVM) / Centre Console (see page 26)
(B)	Door Controller (see page 34)
(C)	Multifunctional Wireless Pendant - Body Discharge / Wide Sweep Brush Balance (see page 38)
(D)	Powasave Regulator (see page 38)
(E)	Dual Steer change over (Chassis Dependant)
(F)	USB connection points

VT - JVM































VS - JVM



VM - JVM



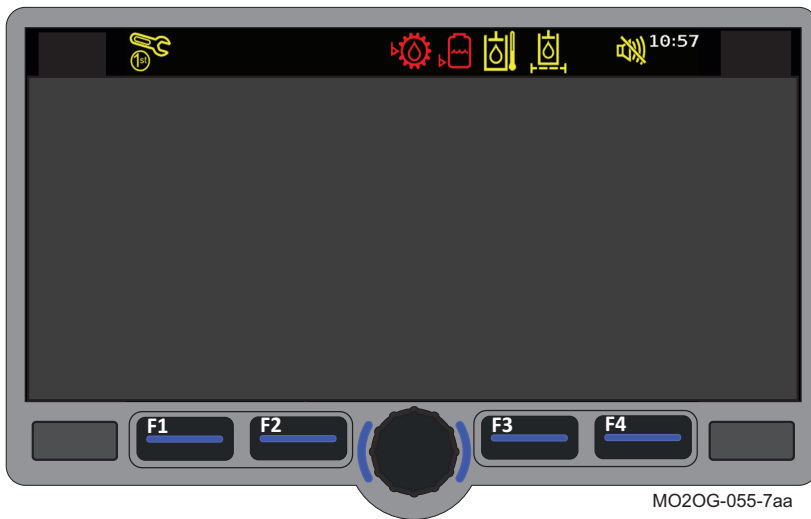
WARNING LED'S

Description	VT	VS	VM
Alternator Charge		x	x
Cruise Control Active	x		
Engine Management		x	x
Transit Drive - Engaged	x		
Air Filter State Indicator		x	x
Work Mode Engaged	x	x	
Hydrodrive - Work Mode Engaged	x		x
Engine no oil pressure		x	x
Engine coolant overheat		x	x
Suction Fan Active	x		
Electrical Faults			
Hydraulic oil low level and audible warning			
Low air pressure and audible warning			
Vehicle overload and audible warning			
Body raise / door locks open and audible warning			

VT - JVM



VS - JVM



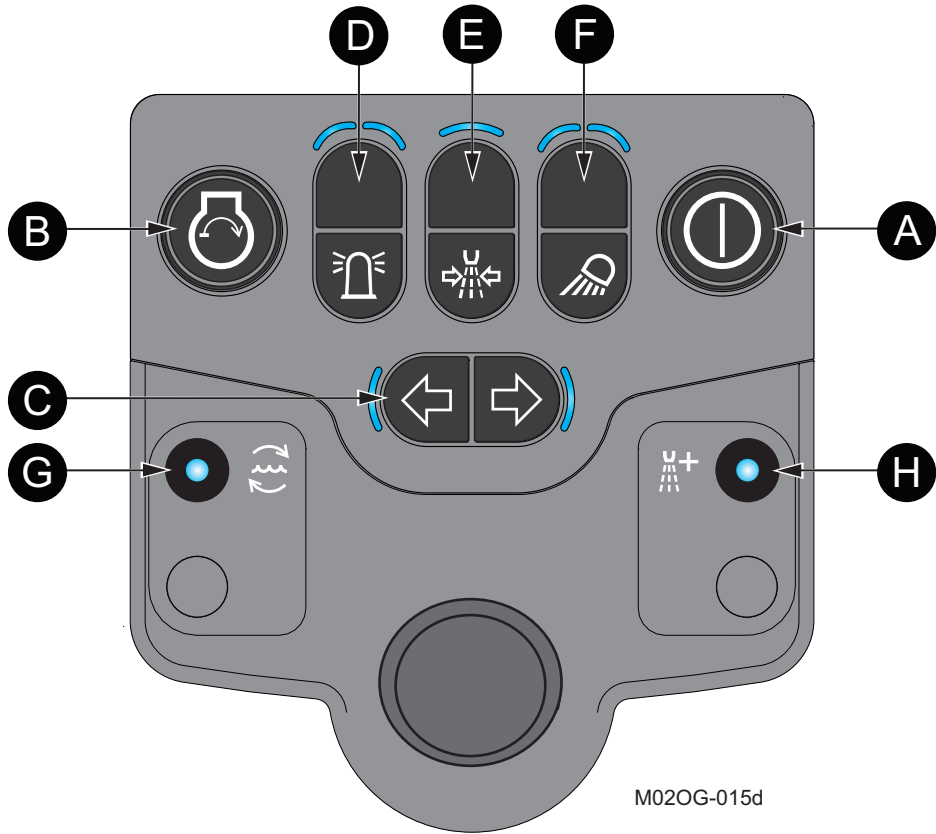
VM - JVM



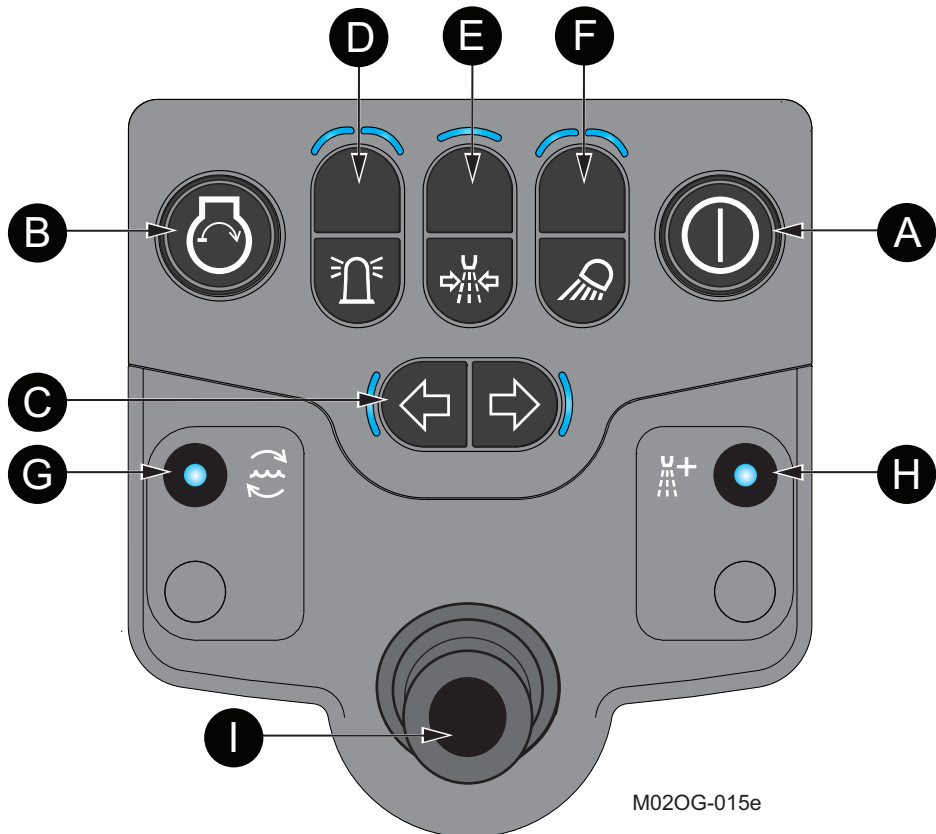
INFORMATION BAR LED'S

Description	VT	VS	VM
Service intervals			
1st 50 Hour			
A 500 Hour			
B 1000 Hour			
C 2000 Hour or 12 Monthly			
D 4000 Hour or 24 Monthly			
Water in Fuel System			
Engine Coolant low level			
AdBlue SCR (Reduction Exhaust System) refresh	90%		
	95%		
	100%		
AdBlue after treatment warning severe			
AdBlue low level warning			
Automatic Refresh Inhibited			
Engine Oil low level / Gearbox Oil Level			
Water Tank low level			
Hydraulic Oil Temperature			
Hydraulic Filter State Indicator			
Low Autolube			
Mute internal buzzer			

VT / VM

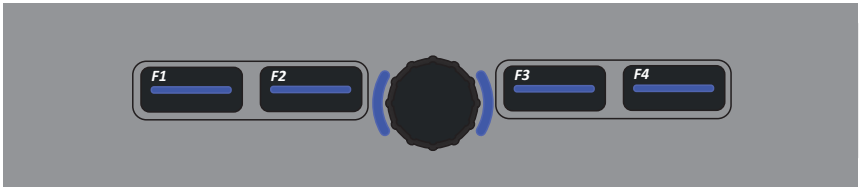


VS













CENTRE CONSOLE

Switch	Description
(A)	Equipment Ignition
(B)	VT - Engine Crank VS - Hydrodrive gearbox select VM - Work Mode select
(C)	Sweep Select
(D)	Beacons
(E)	Supawash
(F)	Worklamps
(G)	Recirculating water
(H)	Additional water
(I)	VS ONLY - Drive Selector



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- A 
- B 
- C 
- D 
- E 
- F 
- G 
- H 
- I 
- J 

SOFT KEYS AND ENCODER**VT / VS / VM**

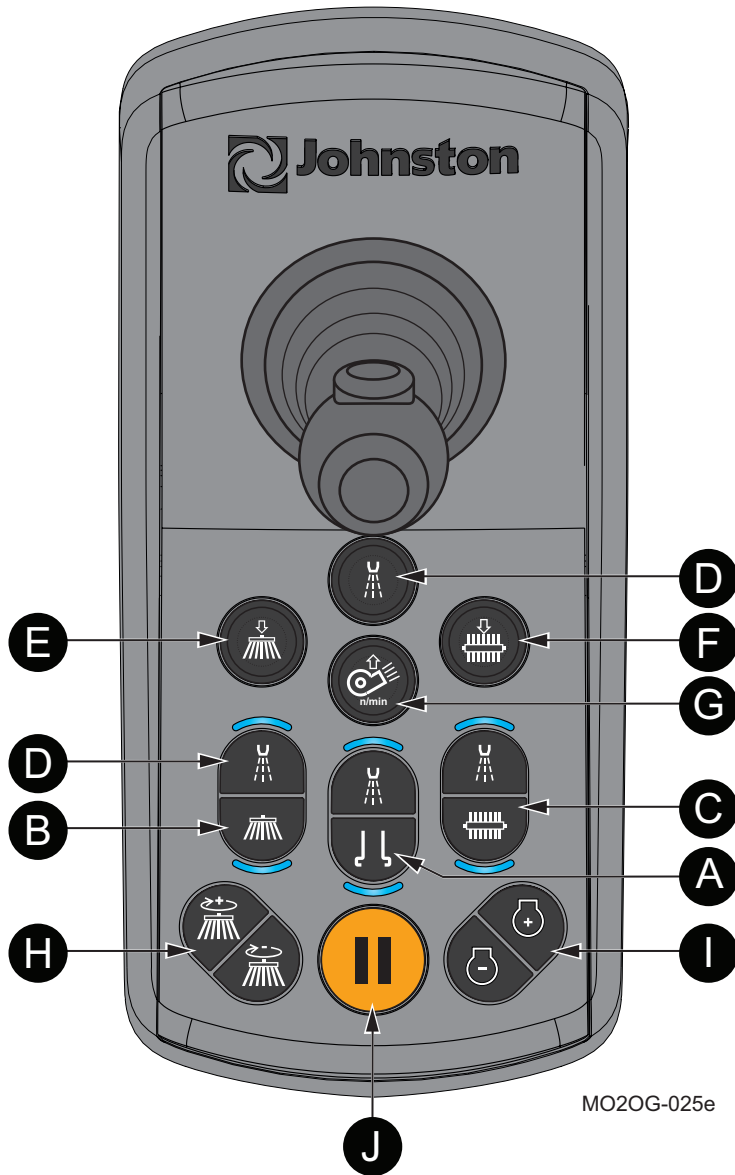
Multifunctional Soft Keys F1 - F4 Icon displayed above key.

Rotary Encoder

Enables both navigation and access of the menus. Press to select.

When the machine is a **VS** the encoder can be utilized to control the optional cruise function.

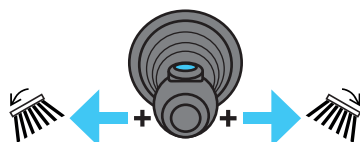
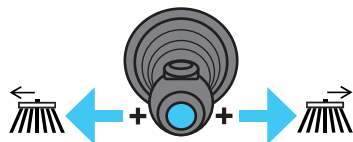
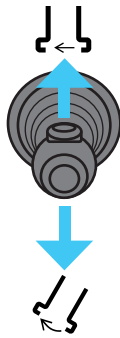
Symbol	Description
(A)	Daily Total Hours
(B)	Grand Total Hours
(C)	Data Logging
(D)	Daily Totals
(E)	Download to USB
(F)	Service Hours
(G)	Reversing Camera
(H)	Camera Full Screen
(I)	Camera Part Screen
(J)	Main Menu



DOOR CONTROLLER

VT / VS / VM

Symbol	Description
(A)	Nozzle Water sprays ON / OFF Raise / Lower Intake flaps open automatically
(B)	Channel Brush Water sprays ON / OFF Raise / Lower
(C)	Wide Sweep Brush Water sprays ON / OFF Raise / Lower
(D)	Gutter sprays ON / OFF
(E)	*Powathrust ON / OFF Increases Channel Brush ground pressure.
(F)	*Powascrub ON / OFF Increases Wide Sweep Brush ground pressure to preset level
VT	
(G)	ECO Mode Override ON / OFF. Allows the engine speed to be increased to 2000 rev/min.
VS / VM	
(G)	ECO Mode Override ON / OFF. Activates fan boost when sweeping. Activates fan only when using Wanderhose.
(H)	Channel Brush Speed Control + Pulse/Hold Increases brush speed - Pulse/Hold Decreases brush speed
(I)	Engine Speed Control + Pulse/Hold Increases engine speed - Pulse/Hold Decreases engine speed
(J)	Pause ON / OFF Suspends active sweep functions and stows equipment Re-activates equipment to the previous settings



MULTIFUNCTIONAL JOYSTICK CONTROLS

Function A - Maxigap/Varagap

Operating the Joystick up Closes the Nozzle

Operating the Joystick down Opens the Nozzle

Function B - Prime Side Channel Brush

Prime-side Channel Brush with Standard feature:

Operating the Joystick left/right positions Prime-side Channel Brush fully In or fully Out.

Prime-side Channel Brush with Optional Variabrush feature:

Operating the Joystick left/right positions Prime-side Channel Brush as required

Function B - Secondary Side Channel Brush

Secondary-side Channel Brush with Standard feature:

Operating the Joystick left/right together with the push button positions the Secondary-side Channel Brush fully In or Out

Secondary-side Channel with Optional Variabrush feature:

Operating the Joystick left/right together with the push button positions the Secondary-side Channel Brush as required

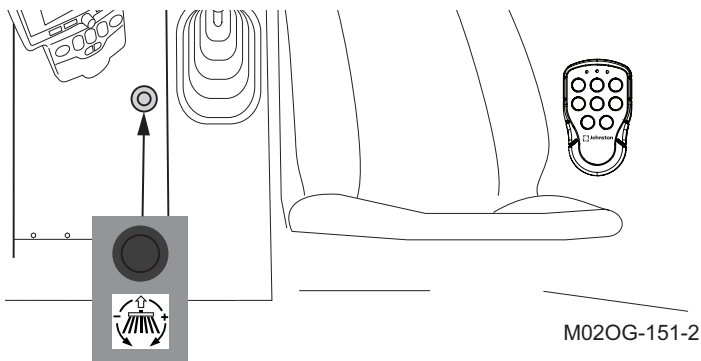
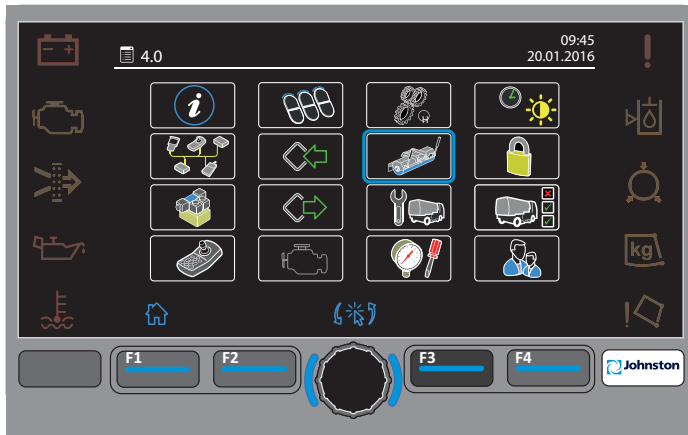
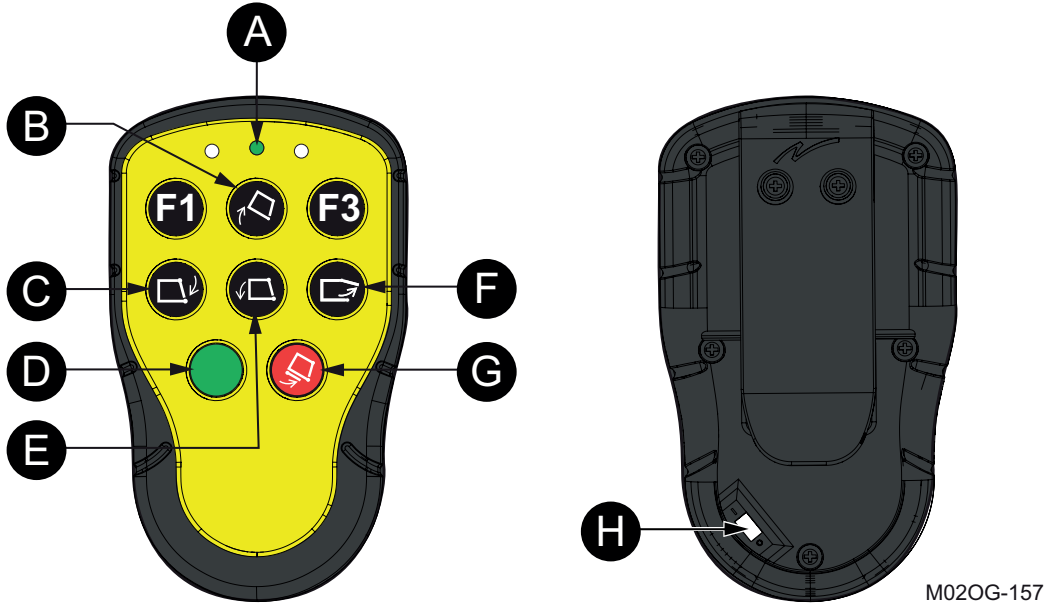
Function C - Prime Side Rotatilt

Prime-side Rotatilt

Moving the Joystick left/right together with the button on the top Moves the Prime-side Rotatilt

Function C - Secondary Side Rotatilt

Secondary-side Rotatilt Moving the Joystick left/right together with both the button on the top and the end moves the Secondary-side Rotatilt



MULTIFUNCTION WIRELESS PENDANT

Function A - Load Discharge

Symbol	Description
(A)	Green LED On - Pendant transmitting signal to receiver. Red LED On - Battery charge low.
(B) + (D)	Raises body
(C) + (D)	Closes rear door
(F) + (D)	Opens rear door
(E) + (D)	Lowers body
(G) + (D)	Stows body prop when body is raised and not resting on it
(D)	Green safety switch must be pressed to enable all discharge functions
(D) + (F1) + Function	Temporarily cancels audible safety warning (bleep)
(H)	Wireless pendant ON-OFF switch.

NOTICE: When opening the rear door from closed position using the auxiliary engine (VT) or when in Hydrodrive (VS), the prime side intake flap will open momentarily to vent the suction and reduce the pressure on the rear door.

NOTICE: To connect a replacement wireless pendant to the JVM system, please contact Johnston Technical Support.

Function B - WSB Balance

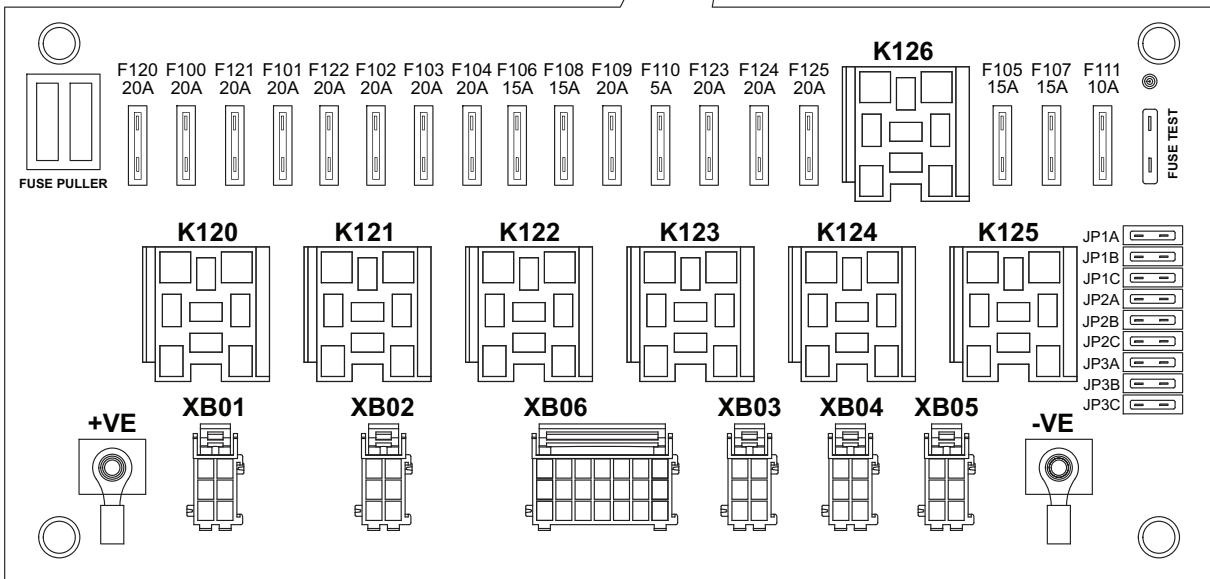
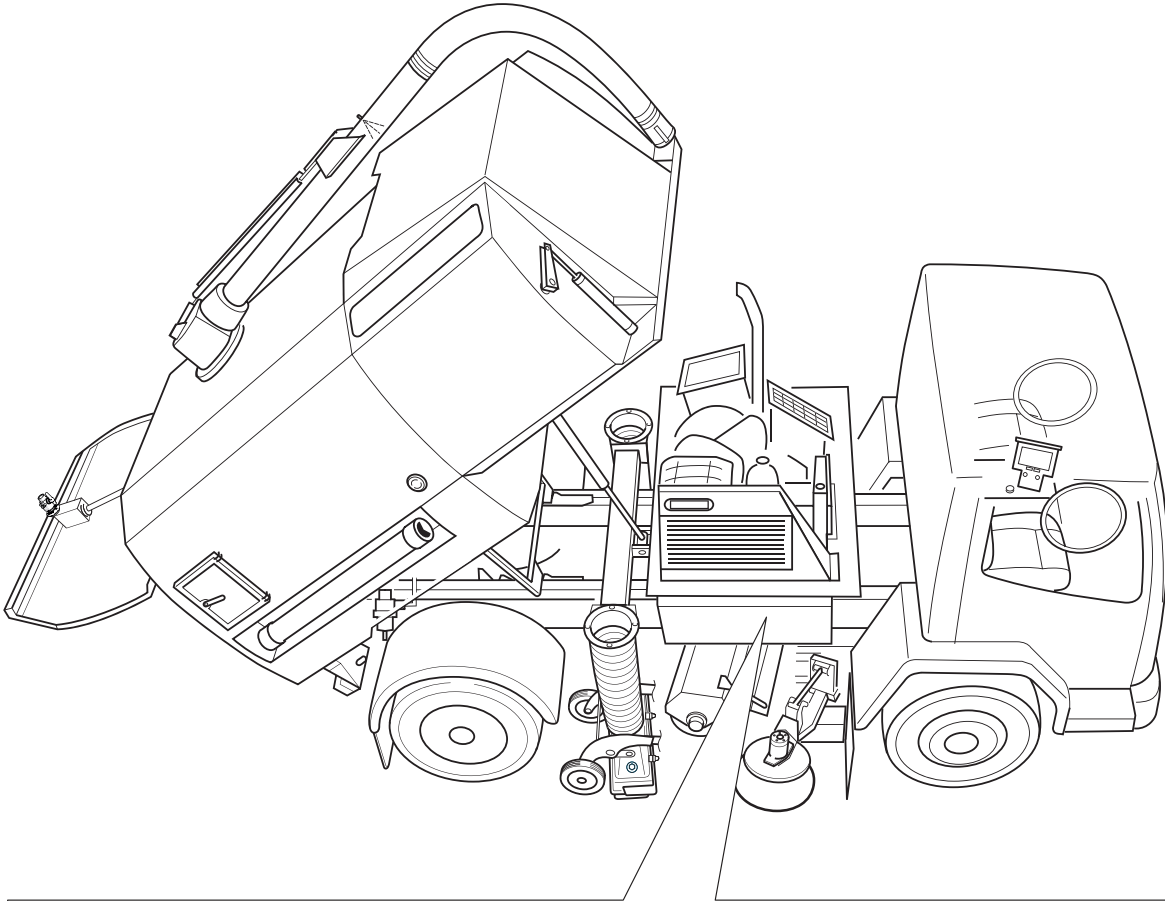
Activating Soft Key F3 on JVM: Opens Main Menu 4.00

- Rotate the central encoder to highlight menu 10, Wide Sweep Brush Balance.
- Press the encoder to select.
- Follow the on screen prompts. (See Chapter 7 JVM)

POWASAVE REGULATOR

* **Powasave;** - In cab regulator sets a Light Sweep to maximise brush life.

With the brush working, turn the regulator Anti-clockwise to set the ground pressure to its maximum, now turn Clockwise to reduce the pressure to the required setting.

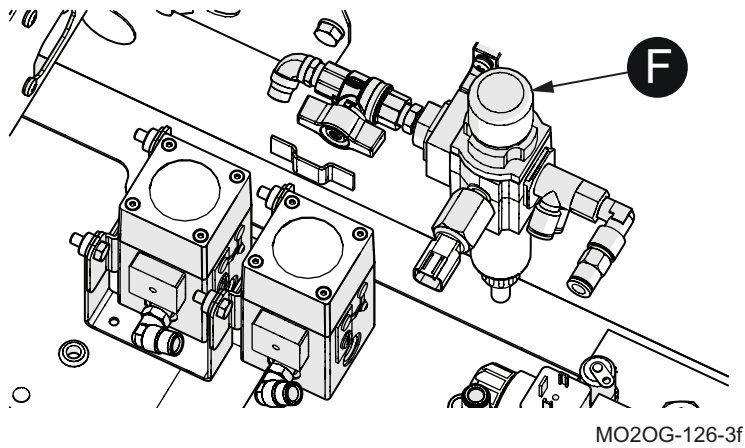
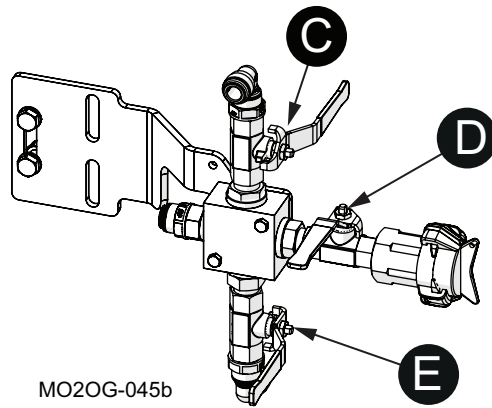
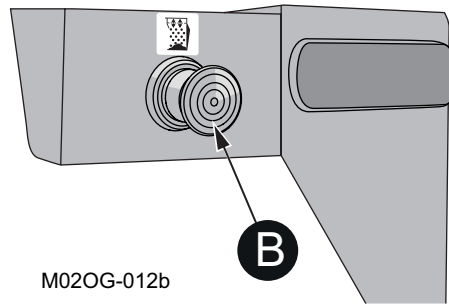
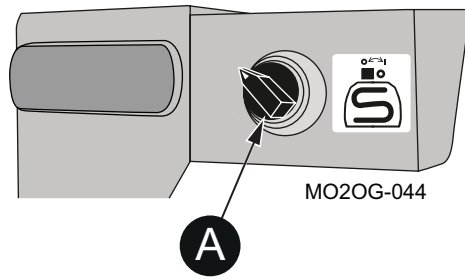


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SYSTEMS WAFER FUSES

Fuse No	Function	AMPS
F120	Left Hand Work Lights	20
F100	Systems Locker Node	20
F121	Right Hand Work Lights	20
F101	Powapak Node	20
F122	Standard Rear Beacons	20
F102	Subframe Node	20
F103	Rotatilt	20
F104	Auxillary Engine	20
F106	Front Systems Node	15
F108	Front Beacon	15
F109	Cab Controls	20
F110	Wide Sweep Brush	5
F123	Additional Rear Beacons	20
F124	Cowl/Engine Work Light	20
F125	Additional Work Light	20
F105	Out-put Chassis Ignition Switched (Rear Powapak)	15
F107	Out-put Chassis Ignition Switched	15
F111	Out-put Chassis Ignition Switched	10

Relay	Function
K120	Left Hand Work Lights
K121	Right Hand Work Lights
K122	Standard Rear Beacons
K123	Rotatilt
K124	Cowl/Engine Work Light
K125	Additional Work Light
K126	Chassis Ignition Switched (Fuses 105 - 107 - 111)



EXTERNAL CONTROLS

Item	Description
A	Littasnatch Rotary Switch Opens/Closes the gate
B	Rear Mesh Shaker Push Button Press to activate
C	Wanderhose Water Manual tap
D	Wash Down Hose Bayonet fitting
E	Littasnatch Water Manual tap
Note: Other external taps are used to isolate water from the following options: Microtrap dust suppression Line cleaning jet Additional nozzle water	
F	Pneumatic Filter Regulator Including: Isolation tap Air Pressure switch

5 Operation



MO20G-015-4b-VT

COMMENCE SWEEPING

VT

Start chassis engine

The JVM, will power up and display the following:-

Sweeper ignition 'Off' JVM displays 'Standby page'
Water Tank Level - Clock - Fuel Tank Level.

Sweeper ignition 'On' Activate using button 'A' JVM displays 'Ignition page'
Water Tank Level - Engine RPM - Fuel Tank Level.

Ensure the low air pressure warning lamp and buzzer are off.

Start auxiliary engine using button 'B'.

Increase engine speed up to 1200 rev/min using button 'I' on the Door Controller.

Selecting the hand of sweep, using button 'C'.

The equipment specification has been factory set within the JVM.

Dual sweep machines without Simultaneous sweep option.

The equipment can only be set to operate on either the Left or Right hand side.

The selected hand of sweep is indicated by the illumination of the switch 'C' located on the centre console. To change the hand of sweep select the side that is not illuminated.

Dual sweep machines featuring Simultaneous sweeping option.

For Single Sweep Operation: The equipment can be set to operate on either side IE: Left or Right hand To change the hand of sweep first select the side that is not illuminated before de-selecting the other side.

For Simultaneous Sweep Operation:

Select the side that is not illuminated, both sides will now be illuminated indicating the Simultaneous sweep mode.

Activating the Sweeping Equipment using the Door Controller:

Pressing the corresponding symbol activates the equipment to its sweeping position, the symbol is displayed on the JVM. The top of the switch activates the corresponding water jets.

Gutter Sprays.

Pressing the top of the switch activates the corresponding gutter spray.

Commence Sweeping:

Select the lowest gear to give a road speed between 2-8 mph (2 to 12 km/h).

Always use the slowest brush and engine speeds consistent with satisfactory cleaning.

Normal engine operating speeds between 1200 - 1500 rev/min.

Eco Mode Override

Enables the engine speed to be increase to maximum 2000 rev/min for when arduous sweeping conditions are encountered.



MO20G-055-4-VS

VS**HYDRODRIVE**

Both the hydrostatic transmission and the sweeping functions take their hydraulic power from the mid-mounted gearbox termed '**HYDRODRIVE**' which is located within the drive-line from the vehicle's gearbox to the rear axle.

(A) Sweeper ignition.

Off - The screen displays 'Standby page'

On - The screen displays 'Water Tank Level - Clock - Fuel Tank Level'

(B) Engages/disengages the Hydrostatic gearbox.

Switching between the normal 'Transit Drive' and the 'Working Hydrodrive'.

To switch between the two modes the following criteria must be met.

- **Chassis gearbox in neutral.**
- **Hand brake applied.**
- **Drive selector in neutral.**

'Hydrodrive' Gearbox Icon

Confirms Hydrodrive has been selected

'Work Mode' Icon

When the machine is ready for sweeping. Variable road speed up to 15kph.

Transit:-

When 'Work Mode' Icon is off.

The machine can be driven Hydrostatically up to 40kph, reducing the need to change back to normal mechanical drive.



MO2OG-055-5b-VM

VM**Start chassis engine**

the JVM, will power up and display the following:-

Sweeper ignition off JVM displays 'Standby page'

Water Tank Level - Clock - Fuel Tank Level

Sweeper ignition on

Activate Sweeper ignition using button 'A' JVM displays 'Ignition page'

Water Tank Level - Engine RPM - Fuel Tank Level

Ensure the low air pressure warning lamp and buzzer are off

Selecting Work Mode

Activate button 'B' to select the Work Mode.

Selecting the hand of sweep

Activate button 'C' to switch between single (left or right) or Simultaneous sweep

Dual sweep machines without Simultaneous sweep option.

The equipment can only be set to operate on either the Left or Right hand side.

The selected hand of sweep is indicated by the illumination of the switch 'C' located on the centre console. To change the hand of sweep select the side that is not illuminated.

Dual sweep machines featuring Simultaneous sweeping option.

For Single Sweep Operation: The equipment can be set to operate on either side, Left or Right hand, to change the hand of sweep first select the side that is not illuminated before de-selecting the other side.

For Simultaneous Sweep Operation:

Select the side that is not illuminated, both sides will now be illuminated indicating the Simultaneous sweep mode.

Activating the Sweeping Equipment using the Door Controller:

Pressing the corresponding symbol activates the equipment to its sweeping position, the symbol is displayed on the JVM. The top of the switch activates the corresponding water jets.

Gutter Sprays.

Pressing the top of the switch activates the corresponding gutter spray.

Commence Sweeping:

Select the lowest gear to give a road speed between 2-8 mph (2 to 12 km/h).

Always use the slowest brush and engine speeds consistent with satisfactory cleaning.

Normal engine operating speeds between 1200 - 1500 rev/min.

Eco Mode Override

Enables the engine speed to be increase to maximum 2000 rev/min for heavy sweeping conditions.

TO TERMINATE SWEEPING

1. Turn off the active switches.
 2. Return the engine speed to idle,
 3. Turn off ignition switch to stop engine.
-



WARNING

Before switching the vehicle's isolator off, it is important to ensure that both the chassis and auxiliary engines have completed their Adblue / DPF purging procedure. Detailed information can be found in both the auxiliary engine handbook and the chassis handbook.

Note:

To interrupt the sweeping, press the pause button. The switch will illuminate and suspend the sweeping modes. - The engine speed will default to 1200 rev/min, deselecting the pause button re-activates the sweeping equipment as previously selected and the engine speed returns to the previous setting.

Water Drainage

If the sweepings are waterlogged, excess water can be drained off using the drain valve attached to the rear door.

Load De-Watering Option

Open the drain de-watering valve mounted on the rear door - See water recirculation option, Chapter 4.

Blocked Nozzle Or Nozzle Duct

If it is apparent that the suction nozzle is not picking up debris it may be that it is blocked or that the body is full.

1. With the machine stationary and the suction still operative on the nozzle, open the Maxigap/Varagap nozzle to increase the airflow and see if the obstruction clears.
 2. If not, raise and lower the nozzle and see if the blockage clears.
 3. If still blocked, switch off the engine(s), open the body access door and check that the mesh screens are clear and that the body is not full.
 4. If the screens are blocked, clean them and providing the body is not full return the machine to service and check the nozzle performance.
 5. If the body is over half full the machine should be emptied at the nearest waste site.
 6. If the screens are clear, the body less than half and debris is still not being picked up, it may be that the nozzle trunking or inlet tube is blocked.
 7. With the vehicle on level ground carefully raise the body and rest it on the lowest body prop position, raising the body any higher may affect the vehicle's stability due to the load moving within the body. Switch off the engine(s).
 8. Clear any obstruction in the nozzle or inlet duct.
-

LOAD DISCHARGE AND AUTO BODY PROP



WARNING

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

Ensure the machine is standing on firm, level ground and there are no obstructions above or to the rear before raising the body.

The rear door must be fully open before raising a loaded body.

Ensure no-one is near the load discharge area when opening or closing the rear door.

Ensure the body rests on the auto prop when the body is left in the raised position, or when working under the body or cowl.

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 tip the body when fully loaded to clear blocked inlet ducts or service the auxiliary engine. Tipping the loaded body without opening the rear door could cause load movement and the vehicle to become unstable.

A safety interlock prevents the body from being tipped without the handbrake being applied.

NOTICE

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

Tipping the Load

Start the chassis to ensure the air pressure is at maximum. - To disengage the Auto prop air pressure is required. Do not lean under the body to release the prop.

The pendant control has a green safety switch which must be pressed to enable each of the discharge functions.

1. Open the rear door by pressing the green safety switch together with the door open switch.
2. Raise the body by pressing the green safety switch together with the body raise switch. - The body prop is automatically deployed to index into the locking rack ensuring a number of possible safety locking elevations for the body.

Lowering the Body

- 1 First raise the body to disengage the body prop from the rack.
- 2 Press the green safety switch together with the auto prop, keeping these held press the body lower switch.
- 3 Press the green safety switch together with the rear door close. After the door has closed continue holding the buttons for 5 seconds to ensure the locks are fully engaged.
- 4 If you have finished sweeping leave rear door partially open to allow moisture to escape and prolong the life of the rear door seal.

END OF DAY CLEANING



CAUTION

After the load has been discharged, lower the body to rest on the prop

A warning light on the JVM illuminates and a audible warning will sound when the body is not fully lowered or the rear door is not closed correctly

Do not direct high pressure washdown equipment, directly onto the engine, or 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

Recommendations

After washing the machine out it is recommended to leave the rear door slightly open to enable any moisture to escape and prolong the life of the rear door seal.

COLD WEATHER PRECAUTIONS

NOTICE

The machine is designed for operating between -15°C and 46°C.

Pressadrain

To avoid the possibility of frost damage to the water system when the machine is left during cold weather, it is essential to drain the system adequately. In order to assist this process the machine is equipped with an automated Pressadrain feature. This feature is accessed via the JVM menu following the on screen instructions the system will automatically purge the water system with air, displacing any surplus water.

1. Drain the water tank. Running Supawash and Low pressure water will quicken the draining process
2. Close the Supawash taps, Wanderhose/Littasnatch water taps (if fitted), and water tank drain taps. Open additional water/line cleaning jet taps on the nozzle (if fitted).
3. Start the Chassis engine.

Using JVM

Select Main Menu (4)

Select Service Menu (11)

Select Pressadrain Menu (5)

4. Follow the on screen instructions.
 5. Run the electronic water valve purge. Ensure air pressure rebuilds if the low air warning light comes on.
 6. Run the manual water taps purge.
 7. Operate the hand lance, Supawash taps, and Wanderhose/Littasnatch water taps one at a time for 5-10 seconds each.
 8. Turn off manual tap water tap purge.
 9. Open the water tank drains again to drain any additional water that has collected and empty the secondary water filter by removing the red drain plug. Refit the drain plug.
-

SWEEPING IN COLD TEMPERATURES

Operating Temperature 0°C To +5°C

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.

Do not use full suction capacity above 1500 rev/min. as the air speed up the nozzle could cause the water to freeze.

Operating Temperature 0°C To -15°C

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

Sweeping can be carried out using low to medium suction 1200 - 1500 rev/min.

NOTICE

When operating the equipment without water dust will be emitted from the fan outlet, and premature wear will be experienced on some components.

TOWING OR CRANING THE VEHICLE



CAUTION

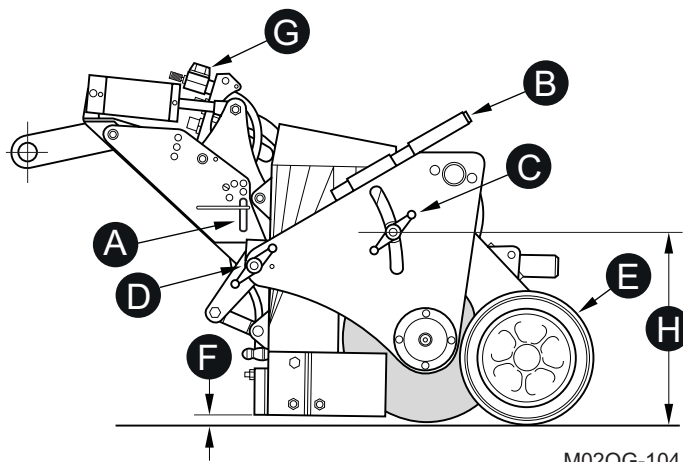
The air system needs to be charged to ensure sweep gear is raised.

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.

6 Optional Equipment



MO2OG-152-2



M02OG-104

COMBIVAC NOZZLE

Water sprays

ON/OFF Illuminated when selected

Nozzle

ACTIVE/STOWED

Nozzle lowers, brush rotates, intake flaps open

The Combivac nozzle contains a rotating brush and may allow higher sweeping speeds in certain working conditions.

The Combivac Nozzle features four water jets as standard, two of which can be isolated by turning off the manual tap **(G)** at the front of the nozzle drawbar. The pressure of the brush on the road is achieved by loosening hand nuts **(C)** and **(D)** and raising or lowering by use of the handle **(B)**. The normal nozzle opening **(F)** is controlled by moving pin **(A)** up or down the adjustment holes to achieve the desired opening (nominal 30mm).

To Operate Nozzle With Brush

Lower nozzle, release hand nuts **(C)** and **(D)** and lower brush to obtain the desired pressure on the road. Retighten nuts **(C)** and **(D)**.

To operate without brush

Lower nozzle, release hand nuts **(C)** and **(D)** and raise the brush assembly using the handle **(B)**. Retighten nuts **(C)** and **(D)**. Brush should be above the road surface.

Nozzle Wheel Adjustment

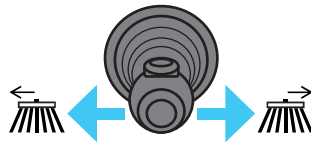
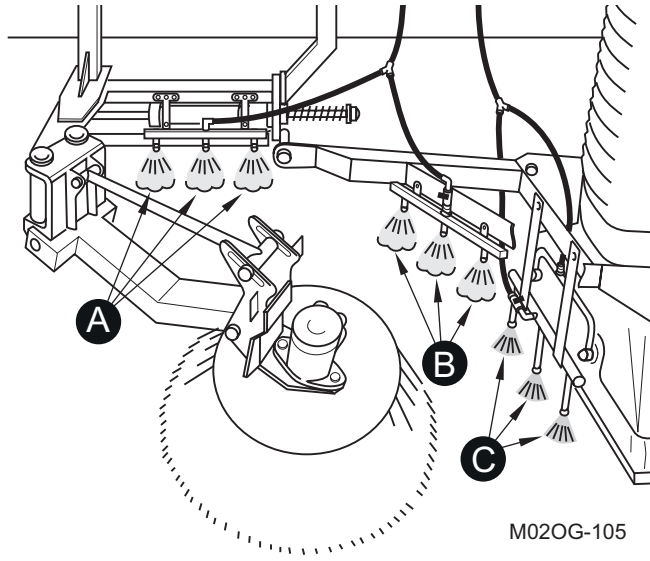
The nozzle wheel **(E)** is adjustable to compensate for wear. Ensure the dimension **(H)** is 365mm when a new brush is fitted.

To Adjust Operating Height

Lower nozzle and operate maxigap. This will remove tension from pin **(A)**. The pin can be moved to the desired hole to set the minimum nozzle opening required.

To Change Brush Segments

- i) Lower nozzle to ground. Remove the outer brush carrier plate by removing the two M10 setscrews from the cross tube and the two hand nuts **(C)** and **(D)**.
- ii) Raise the nozzle and withdraw the brush stock.
- iii) Undo the end plate of the stock and replace brush segments. On re-assembling, remember to fit a spacer at each end of the stock.
- iv) Refitting is the reverse of the above procedure.



MICROTRAP

**CAUTION**

Do not use this option at temperatures below 5°C.

Operation

The standard channel brush water switch activates the PM10 jets (**A & B**).

The standard channel brush jets are activated in conjunction with the gutter spray switch.

Check daily that all additional micro water jets are functioning not blocked.

Taps are provided on spraybars (**B & C**) so that the operator has some adjustment if required.

VARAGAP NOZZLE

The Maxigap cylinder is replaced by a version offering a variable aperture for the nozzle. Moving the lever up closes the nozzle, moving the lever down opens the nozzle. The length of time the lever is held dictates the nozzle gap.

VARIABRUSH

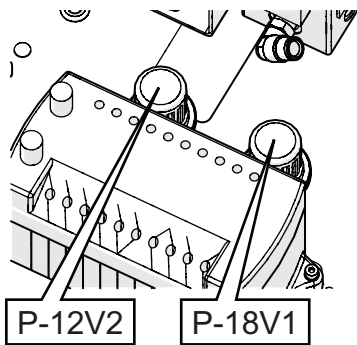
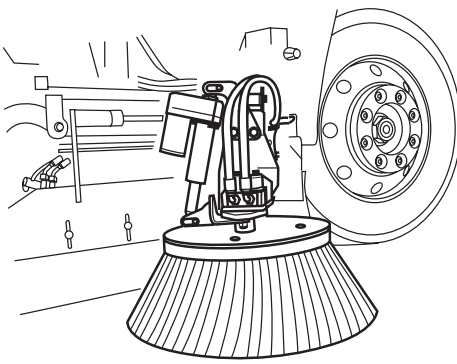
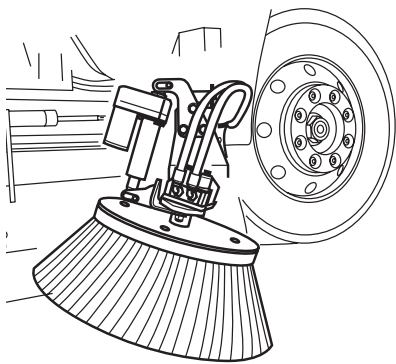
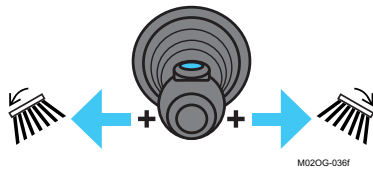
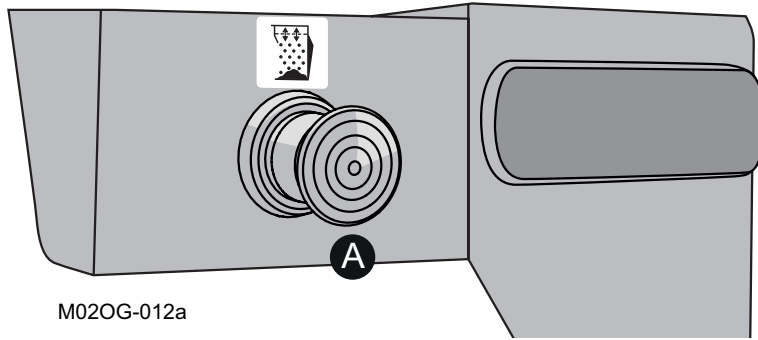
Allows the lateral position of the channel brush to be altered whilst sweeping. Operating the Multifunctional joystick moves the channel brush in/out from its nominal working position.

Standard feature: Operating the Joystick left/right positions Prime-side Channel Brush fully In or fully Out

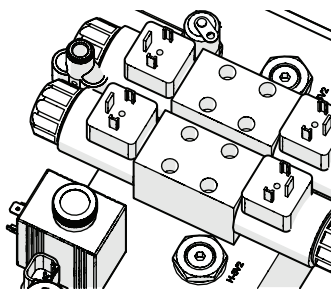
Optional Variabrush feature: Operating the Joystick left/right positions Prime-side Channel Brush as required

Standard feature: Operating the Joystick left/right together with the push button positions the non Prime-side Channel Brush fully In or fully Out

Optional Variabrush feature: Operating the Joystick left/right together with the push button positions the non Prime-side Channel Brush as required



M02OG-127-2



REAR MESH SHAKER

A push button **(A)** is fitted on the nearside at the rear of the body. The auxiliary engine should be set at tickover, or stopped, and with the main engine running press the button for 10 seconds.

Repeat this process two times.

ROTATILT

The angle of the channel brush can be adjusted from the cab when sweeping.

Operation

Operating the Joystick left/right together with the button on the top positions the Prime-side Rotatilt.

Operating the Joystick left/right together with the button on the top and the end positions the non Prime-side Rotatilt.

Note:

The Rotatilt will only function when channel brush is operating.

When stowing the channel brush, ensure the brush angle is reduced so that the brush stock does not protrude beyond the vehicle width.

POWATHRUST & POWASCRUB

Powathrust Operation

P-12V2

The channel brush Powathrust regulator located in the systems locker, is pre-set at 3.5 bar, and provides a means to increase the ground pressure of the brush on the road. The regulator sets the maximum pressure.

The switch located on the door control turns the Powathrust ON/OFF.

With Powathrust active the ground pressure is adjusted using the in cab Powasave regulator.

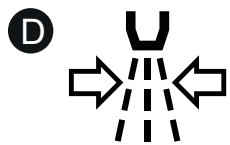
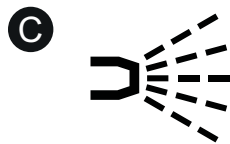
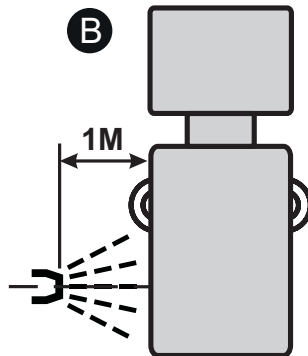
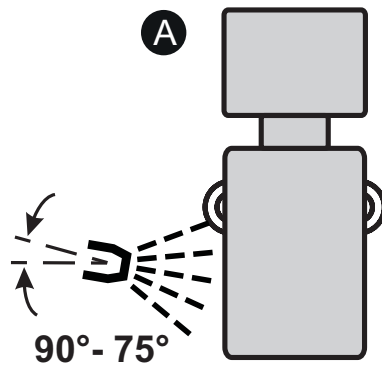
Powascrub Operation

P-18V1

The wide sweep brush Powascrub regulator located in the systems locker, is pre-set at 2 bar, and provides a means to increase the ground pressure of the brush on the road. The regulator sets the maximum pressure.

The switch located on the door control turns the Powascrub ON/OFF.

With Powascrub active the ground pressure is adjusted using the in cab Powascrub regulator.



80 bar
(1000 psi)

M02OG-147

SUPAWASH

**WARNING**

The use of safety goggles is recommended in case of deflected spray/debris.

NEVER direct a high pressure nozzle at the skin as the fluid may penetrate the underlying tissue etc. and cause serious injury.

NOTICE

Care MUST be taken not to damage sign written areas when cleaning. See special notes for cleaning vehicles with vinyl livery below.

ALWAYS keep pressure equipment in good condition and regularly maintained, particularly at joints and unions.

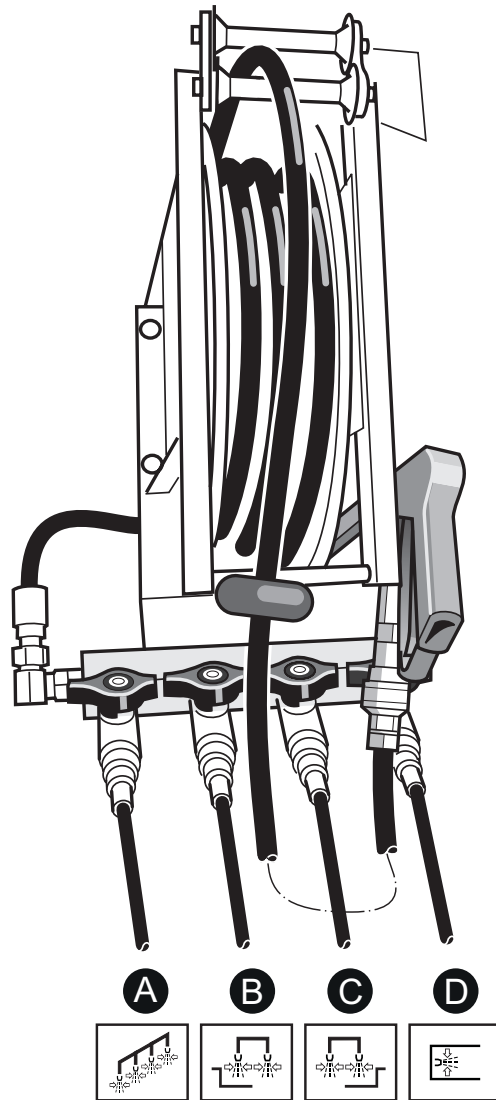
Special notes for cleaning vehicles with vinyl livery or reflective markings

The Supawash handlance or similar can be used for cleaning areas of the vehicle with vinyl or reflective markings subject to the following precautions being taken

Item	Description
(A)	The spray angle should be maintained between 90 and 75 degrees to the panel ✓
(B)	The nozzle distance should be greater than 1 metre minimum from the panel ✓
(C)	The spray pattern should be a wide fan pattern ✓
(D)	The nozzle pressure should be 80 bar (1000PSI) max ✓
•	The water temperature should not exceed 60 °C ✓
•	Do not use acid or solvent cleaning solutions ✗

Alternative Methods

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



MO2OG-009a

Supawash Operation

Description

The equipment comprises a hydraulically driven high pressure water pump, a hand lance together with a 15 metre hose wound onto a recoiling reel, and a front spraybar. Optional nozzle mounted spraybars. The spraybars can be used independently or in conjunction with sweeping.

Operation

The auxiliary engine must be running and the engine speed adjusted as required. Press switch on the Centre Console to activate the water pump.

Hand Lance

Remove the lance from its holster. Two jets are provided at the nozzle; a fan spray and a pencil jet. To change between jets the trigger should be released and the gun rotated through 180°, this will automatically select the alternative jet.

Spraybars

The spraybars are activated by the isolating valves located on the manifold adjacent to the hose reel. The valves should be closed when the hand lance is to be used.

Note:.

The Supawash pump will not operate if the water tank is nearly empty.

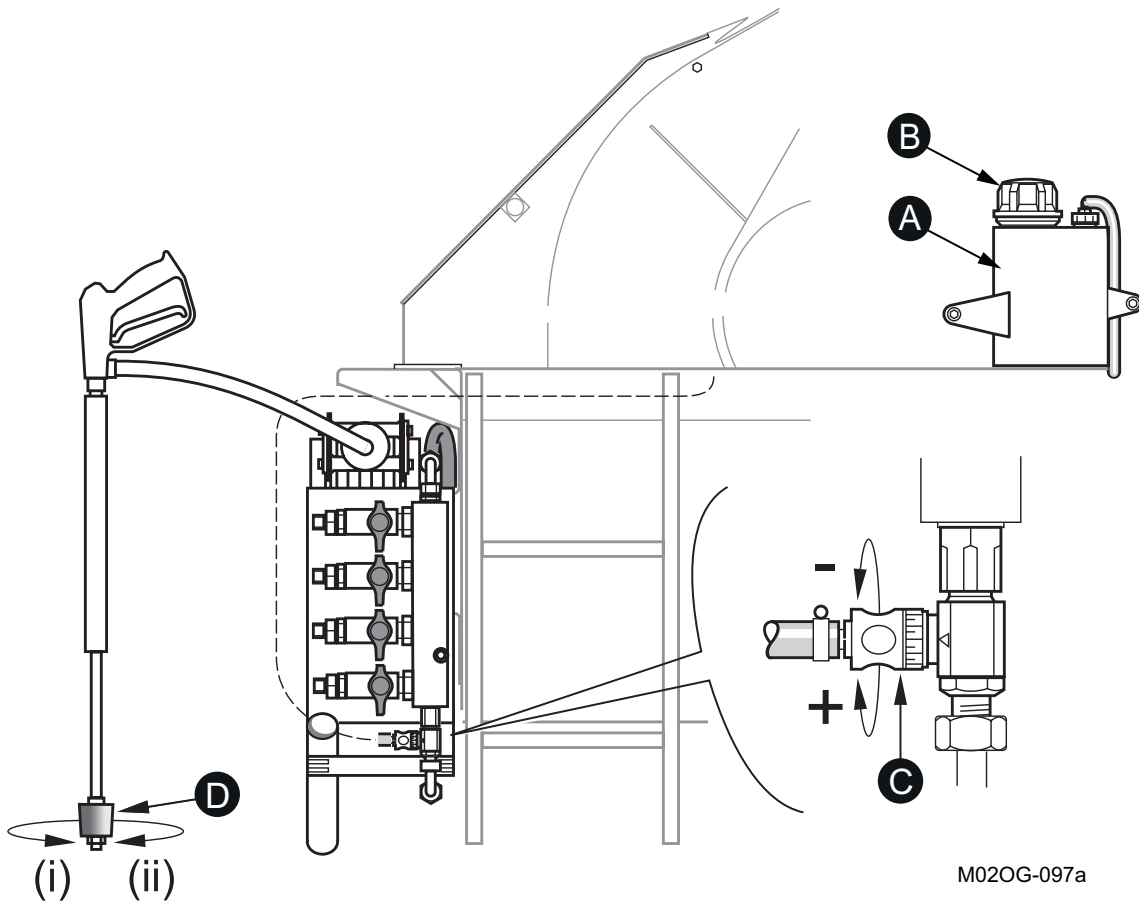
Valve	Description
(A)	Front Spraybar
(B)	LH Nozzle Spraybar
(C)	RH Nozzle Spraybar
(D)	Re circulating Duct Cleaning

If the vehicle is being used exclusively for street washing (no sweeping), the water tank capacity can be extended after firstly thoroughly washing out the body and removing the plug in the body of the floor and installing the optional filter assembly.

The body can be filled with water using the offside hydrant filler (when the machine is equipped with the optional re-circulating water) or via the side access doors to the level of the water tank overflow, thereby extending your on station time.

Note:

The plug must be replaced before sweeping or dirt will enter the water tanks and cause damage/blockages to the water pumps.



M02OG-097a

HAND LANCE DETERGENT INJECTION

**WARNING**

The use of safety goggles is recommended in case of deflected spray/debris.

NEVER direct a high pressure nozzle at the skin as the fluid may penetrate the underlying tissue etc. and cause serious injury.

NOTICE

Care MUST be taken not to damage sign written areas when cleaning. See special notes for cleaning vehicles with vinyl livery below.

ALWAYS keep pressure equipment in good condition and regularly maintained, particularly at joints and unions.

Hand Lance Detergent Injection Note:

This option is only available with Supawash.

Item	Description
(A)	5.5 litre detergent can
(B)	Filler port
(C)	Detergent mix control
(D)	Hand lance control

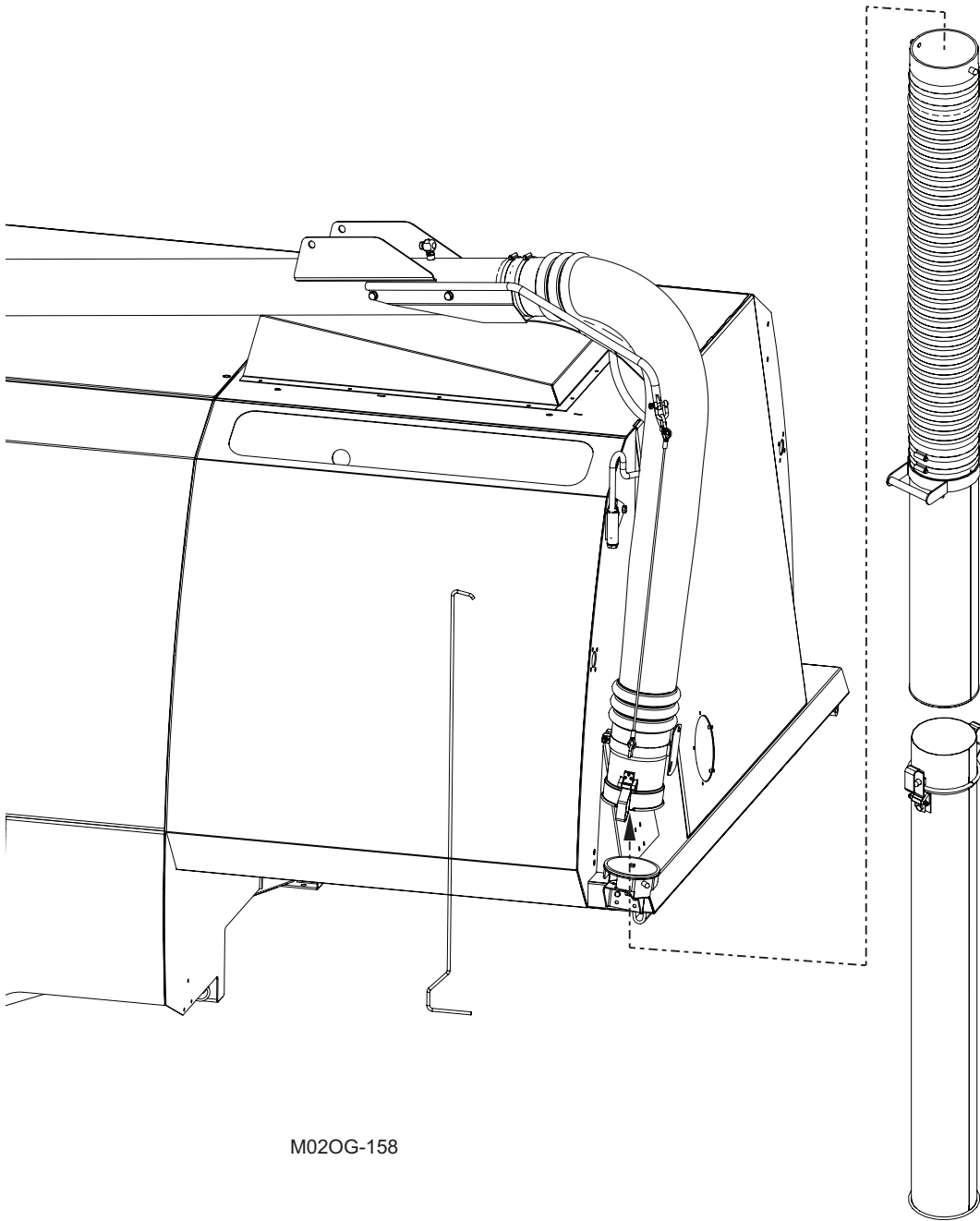
Operation

Fill the detergent can **(A)** with detergent.

Operate the detergent injection control knob **(D)** at the end of the hand lance by turning it clockwise to position **(ii)**.

Pressing the hand lance trigger will allow water to spray from the jet and outer cone of **(D)**. This allows the detergent to be mixed with the water.

The rate of the detergent mix is controlled by valve **(C)**. The detergent will take a few seconds to appear at the lance due to the length of hand lance hose. To stop the detergent turn the knob **(D)** counterclockwise to position **(i)** which returns the hand lance to the normal fan jet.



M02OG-158

WANDERHOSE AND LITTASNATCH

**CAUTION**

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

The use of ear defenders is recommended when working with this equipment.

Preparation

When using either the Wanderhose or the Littasnatch the nozzle ducting(s) should be closed to prevent air passing into the body via the nozzle(s). This is easily effected by not operating either nozzle.

Operation

1. Unclasp the Wanderhose from the bracket at front of body.
2. Clip on extension hose as required.

Note : If the boom is released from the stowage hook before the extension hose is fitted and rises out of reach, it can be retrieved with the grab provided.

VT - Twin Engine

3. Start auxiliary engine and set throttle as required.

VS - Single Engine

3. *Engage Hydrodrive, set engine speed as required and turn on fan.*

VM - Single Engine

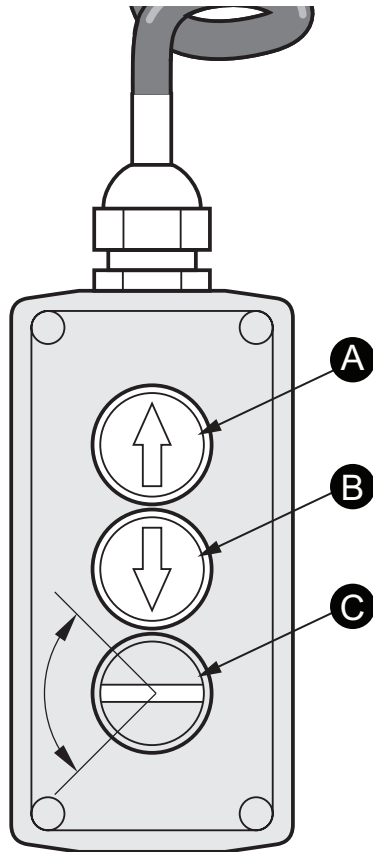
3. *Engage Hydrodrive, set engine speed as required and turn on fan.*

4. Lower boom and release from stowage hook.
5. Turn on Wanderhose water injection using tap at the rear of the body.

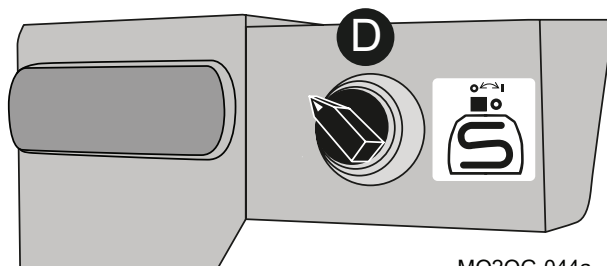
The hose and boom are spring loaded and can be used to the rear, left or right hand side of a stationary vehicle with a single operator. With a second operator, the hose can be used whilst the vehicle is moving slowly. The hose operator should position themselves at the rear of the vehicle, moving onto the footpath to clean around obstructions as they are encountered. Additional extensions can be added to the equipment for cleaning deep drains, gullies and catchpits. The Wanderhose can also be employed effectively on surface flood water.

Note :

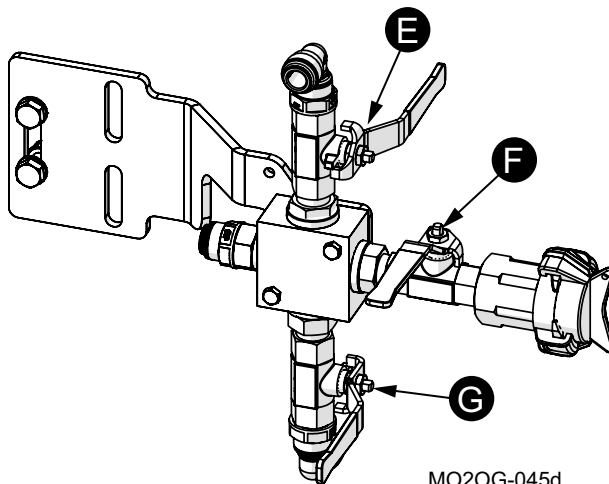
The correct operation of the Wanderhose is achieved by holding the pipe just above the water or debris being picked up.



M02OG-102a



M02OG-044a



M02OG-045d

WANDERHOSE - POWABOOM

The Wanderhose is assembled as 1-3 on previous page for Wanderhose.

1. Apply the vehicle handbrake.
2. Ensure nozzles are in the raised position, so the intake flaps are closed.
3. Using the Wanderhose/Powaboom controller, press switch **(A)** to raise the unit from its stowage position and turn clockwise to the working position.
4. Press switch **(B)** to lower as required.

VT - Twin Engine

5. Switch **(C)** controls the suction fan as follows;
 - Turn switch clockwise to increase engine speed.
 - Turn switch counter clockwise to reduce engine speed.

VS/VM - Single Engine

5. Switch **(C)** controls the suction fan modes as follows;
 - Turn switch clockwise to activate environmental mode.
 - Turn switch clockwise again to activate boost mode.
 - Turn switch clockwise to return to environmental mode.
 - Turn switch counter clockwise to deactivate the suction fan.

LITTASNATCH

The equipment is intended for picking up light objects such as leaves, drink cans, water, etc.

Preparation

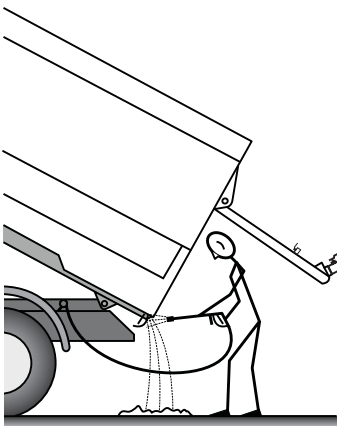
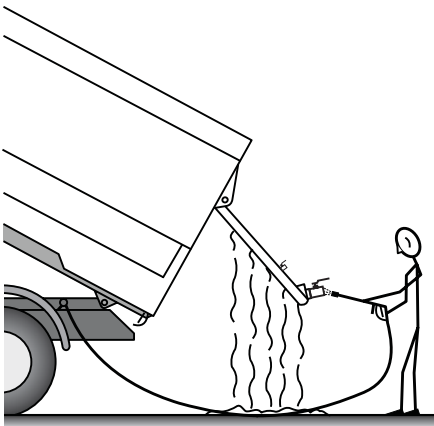
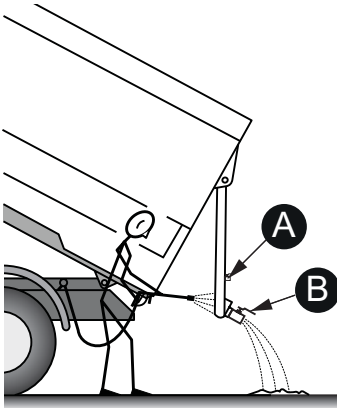
1. Apply the vehicle handbrake.
2. Ensure nozzles are in the raised position, so the intake flaps are closed and the hose is not twisted before operating the valve. This will prevent it snaking around as air passes through it.
3. Operating the rotary switch **(D)** located on the rear of the body opens or closes the Littasnatch gate.
4. Ensure the gate is closed when returning to normal sweeping operation.

Water Injection

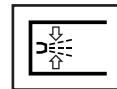
Water injection is controlled from the rear of the machine.

Item	Description
(E)	Wanderhose
(F)	Washdown
(G)	Littasnatch

On completion of work, close the valves and re-stow the hose.



M02OG-049a



WATER RECIRCULATION



CAUTION

Do not use at temperatures below 5°C as the water could freeze in the inlet duct.

This feature allows a first fill of an additional 750 litres of water to be carried within the body, which can be re-circulated back to the body allowing longer on station working. In dry conditions the body should be filled with water via the offside hydrant filler to the level of the tap **(A)** on the rear door.

Operating the switch will allow this water to be re-circulated via the nozzle whilst sweeping.

After Load Discharge

1. Open the de-watering valve **(B)** on the bottom of the rear door.
2. Lower the nozzles and activate the re-circulating water switch.
3. Thoroughly clean the door meshes and the ducting through the body.

Failure to carry out this procedure could lead to blockages in the water ducts.

Recirculation Flushing During Operation

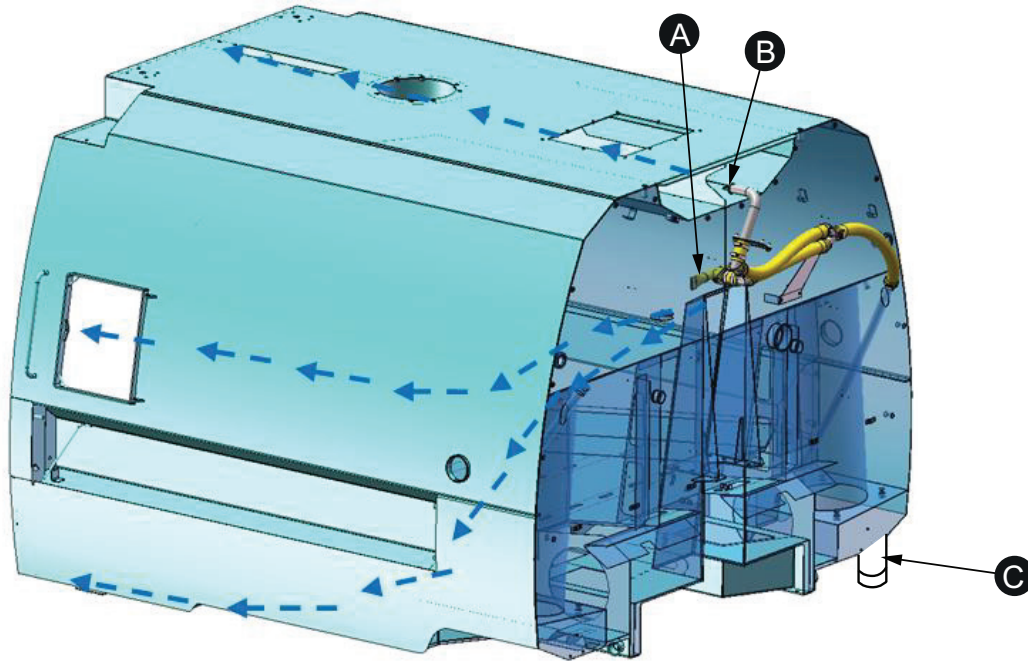
An optional tap located on the Supawash manifold enables the body transfer duct to be flushed through at high pressure.

With the re-circulation switch off and the Supawash activate, the high pressure water will back flush the transfer duct into the body and expel the dirt through the large ball valve on the rear door if opened, or into the body.

With the re-circulation switch on, the pipework from the transfer duct to the nozzle can be flushed out at the same time.

NOTICE

The water recirculation option now includes the Easiclean feature as standard.



M02OG-162

EASICLEAN SYSTEM

**CAUTION**

Do not use at temperatures below 5 degrees C as the water could freeze in the pipe work and system.

This feature utilises special water jets situated at the front of the hopper **(A)** and in the roof top duct **(B)**.

When the Easiclean system is connected to a high pressure water supply or hydrant, the spray jets are highly effective in assisting the wash down process at the end of a shift.

Using the system

After the load has been discharged, lower the body to rest on the prop.

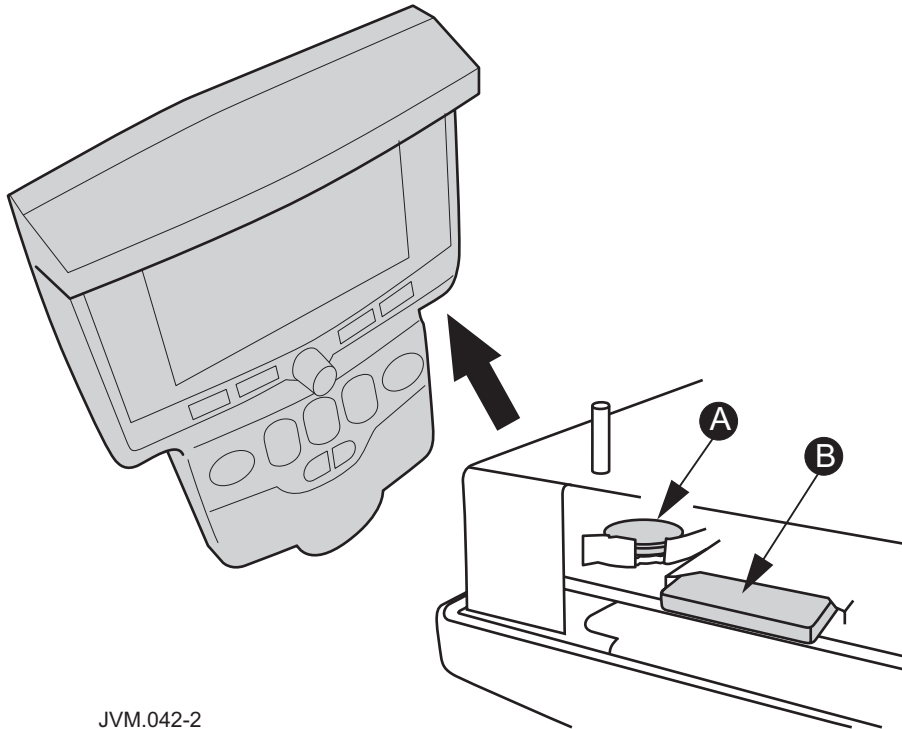
With the rear door open, connect the offside water coupling **(C)** to a high pressure supply or hydrant.

Flush the hopper and inlet duct to remove the bulk of the debris.

Complete the wash down process using the high pressure wash down equipment.

Please refer to the "End of day cleaning" in the Operation section.

7 Johnston Visual Module (JVM)



JVM.042-2

SAFETY NOTICE

**WARNING**

Remove ignition key when working on the vehicle. Ensure all personnel are clear of the vehicle before restarting engine.

NOTICE

Disconnect the battery within 15 seconds of operating the ignition key to the off position.

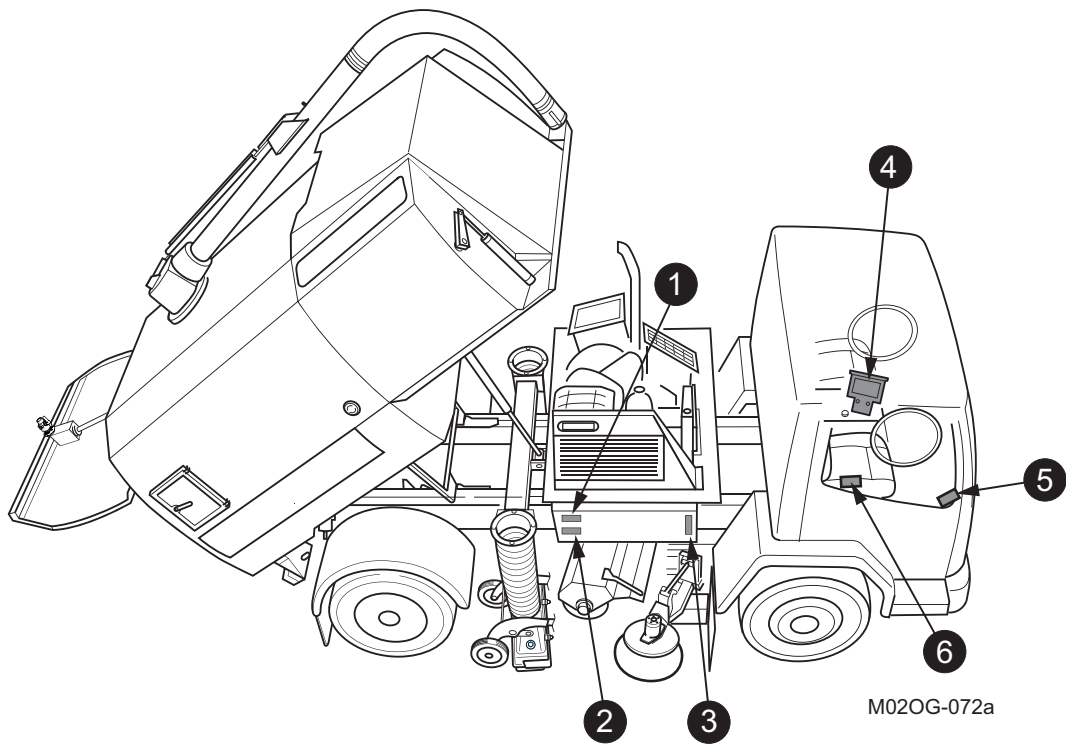
Connect or disconnect any nodes or in cab controllers unless the machine's battery is isolated.

Disconnect the vehicle battery and all the CANbus nodes when working on the electrical system or when carrying out any welding on the vehicle. Failure to observe this can cause damage to the nodes.

JVM DATE AND TIME MEMORY

Incorporated within the JVM is a Battery to support the Time and Date Functions, if the date displayed on the screen is **01-01-2000** this indicates that the Battery requires replacing.

Item	Description
(A)	Battery Location
(B)	SD card location



DESCRIPTION

J-Plex - The Johnston Sweeper Control System

J-Plex II is an electronic road sweeper control system which uses multiplex technology to enable multiple control signals to be combined into one common signal which can then be transmitted and received down a pair of wires (serial communication). This eliminates a substantial number of wires and connections from the vehicle's electrical system, which in turn reduces the size of wiring harnesses and increases reliability. Wiring from Input/Output (I/O) devices such as switches or hydraulic valves is via a local I/O collecting module called a node. On the V502, 652, 802 range of sweepers, the J-Plex control system consists of a Johnston Visual Module (JVM) screen, 2 Key Pad nodes and 3 remote I/O nodes. The JVM acts as the master control unit and communicates between each external node via a CANbus control network.

JVM Provides:

- The operator interface with the powerful diagnostic features provided by J-Plex.
- The ability to check the status of Inputs and Outputs.
- Information regarding the machine operating status, fuel tank contents, etc.
- Data capture - hours sweeping, distance travelled, etc.
- Fully customisable modern sweeping experience.
- Clear display showing current operation status.
- Direct communication with the Chassis.

Operating Instructions:

Throughout the J-Plex, pictorial icons are used to both confirm the current status and when required communicate instructions.

LOCATION OF J-PLEX COMPONENTS

Node	Description
(1)	Powapak
(2)	Subframe
(3)	Systems Locker
(4)	Centre Console
(5)	Door Controller
(6)	Wireless Pendant



SWITCHING ON

JVM Display Screens.

Switching on the vehicle ignition:

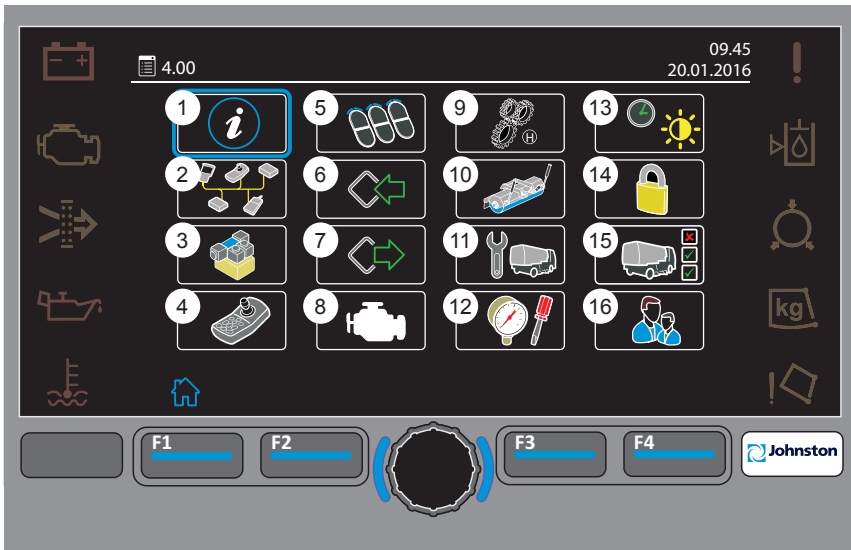
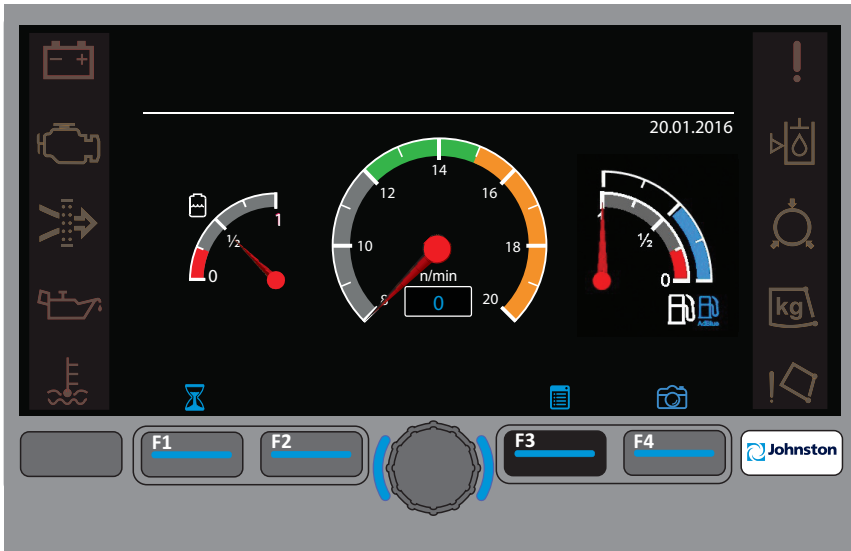
The JVM will display a Splash Screen for 2.5 seconds;

After which the Standby Screen is displayed showing:

Water tank level, Clock and Fuel tank level.

Activating the ignition switch:

Prepares the system for starting the engine and displays the RPM counter.
Relevant soft key functions will be displayed.



Activating Soft Key F3:

Opens the Main Menu 4.00.

MAIN MENU**Menu 4.00**

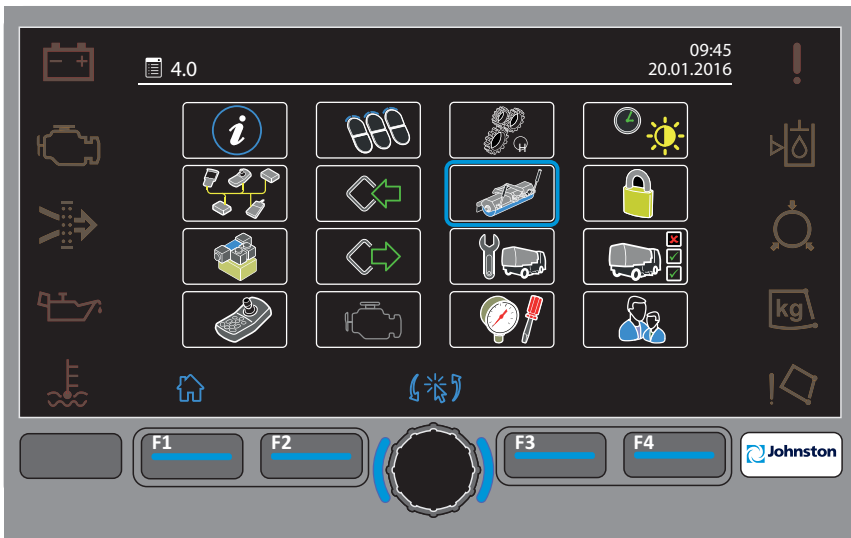
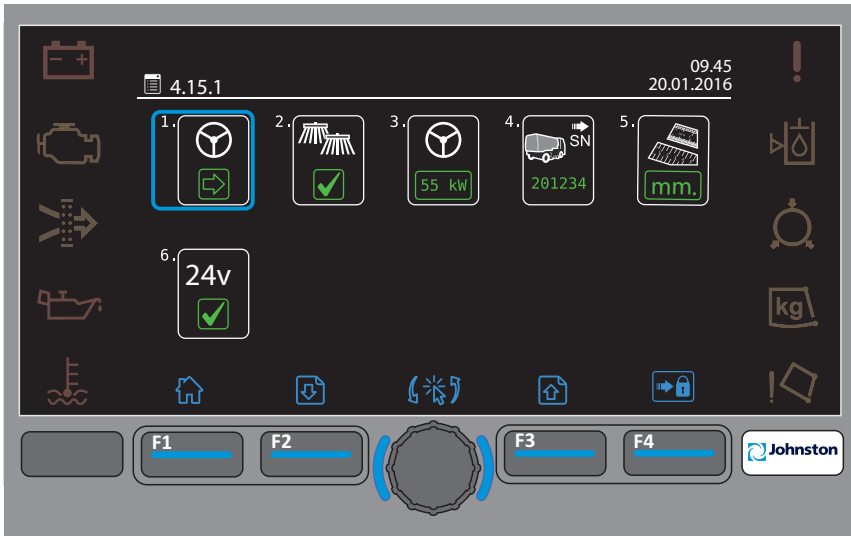
Rotating the central encoder enables navigation of the various menus, with required menu highlighted; press encoder to select.

Main Menu descriptions:

- | | |
|------------------------------|--------------------------------|
| (1) Vehicle Serial Number | (9) Hydrostatic Gearbox Set up |
| (2) CAN Bus Information | (10) Wide Sweep Brush Balance |
| (3) Valve Outputs | (11) Service Menu |
| (4) Door Controller Switches | (12) Set Pressures |
| (5) Switch Inputs | (13) Display Settings |
| (6) Special Inputs | (14) Set Security Level |
| (7) Special Outputs | (15) Machine Setup |
| (8) Engine Information | (16) User Preference Settings |

Menu 4.01 - Vehicle Serial Number

This number should be quoted when contacting Johnston Sweepers for servicing and maintenance issues.



Menu 4.15.1 - Machine Setup

Shows the configuration of the vehicle for all standard (Page 1) and optional equipment (Pages 2-4).

MENU NAVIGATION

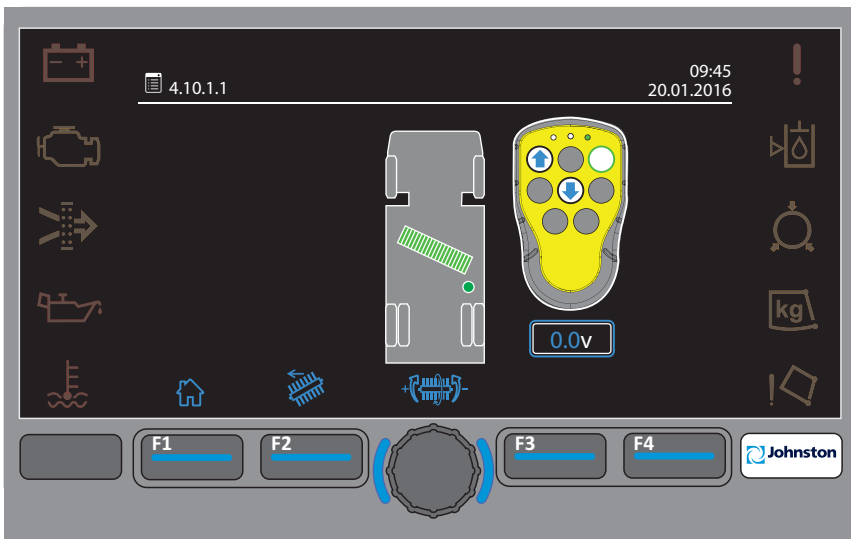
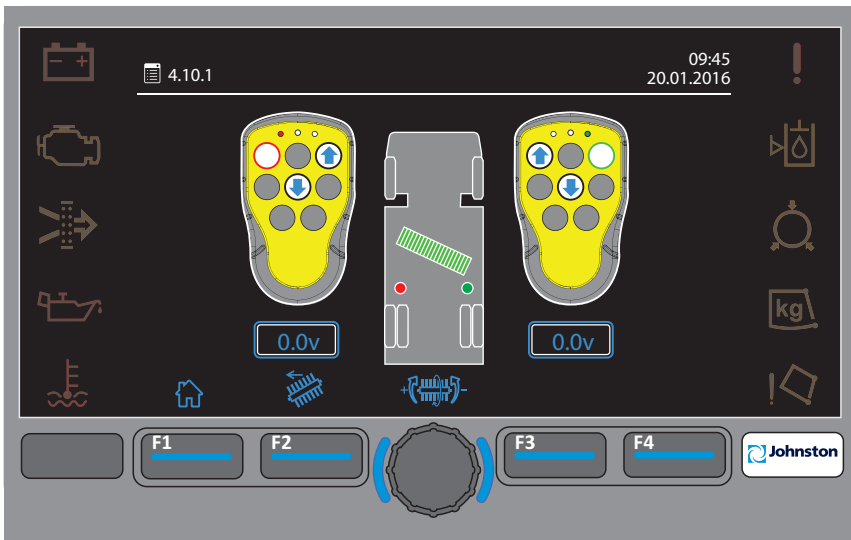
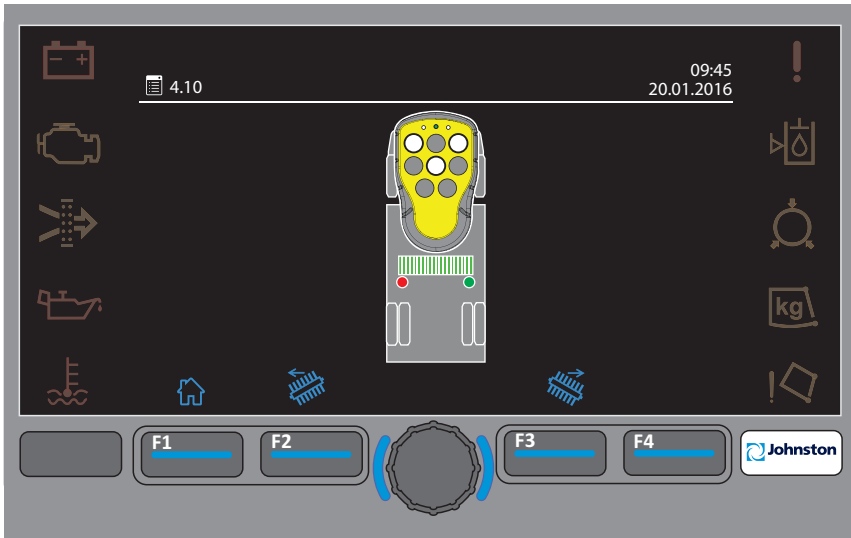
An example of the JVM functionality to set the Wide Sweep Brush Balance.

Activating Soft Key F3: Opens Main Menu 4.00

- Rotate the central encoder to highlight menu 10, Wide Sweep Brush Balance.
- Press the encoder to select.

Menu 4.10.0

The Auxiliary engine needs to be running (VT) or pumps engaged (VM / VS) before the next screen is shown.



Menu 4.10

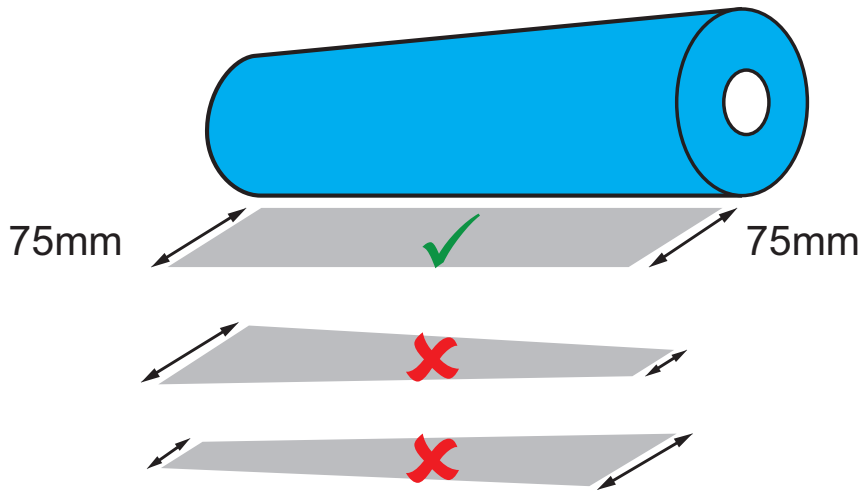
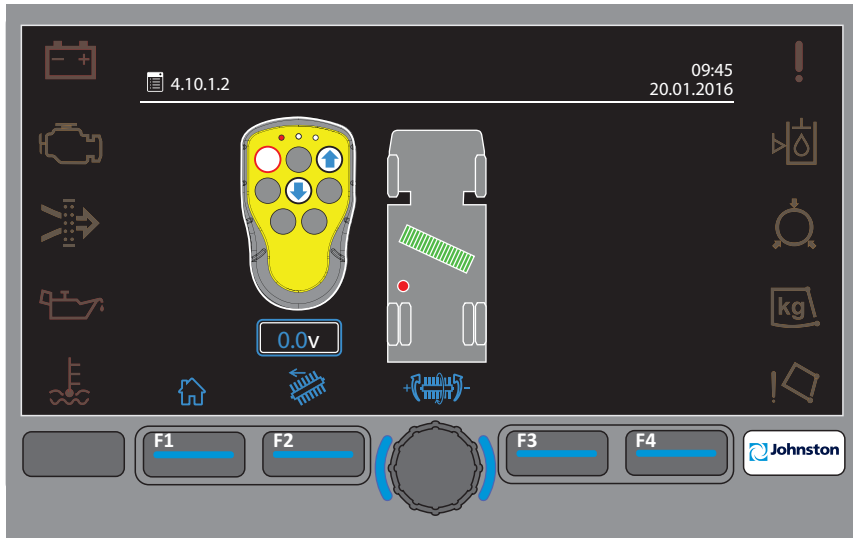
Pendant LED's are used to indicate which cylinders are being adjusted. Select Slew direction using F2 (Left Hand) or F3 (Right Hand). On selection the WSB will rotate and slew in the direction selected. All other sweepgear controls are locked for this process.

Main Menu 4.10.1

Press F3 (Right Hand, icon goes off).
Two pendants are shown to indicated adjustment for Left and Right hand cylinders.
If fitted(Optional) WSB Speed control becomes adjustable with potentiometer.

Menu 4.10.1.1

Select the Right Hand Cylinder by holding down top Right button on pendant. (Red LED goes out). Use raise and lower buttons as indicated to achieve the required setting. Releasing the Right hand button returns the screen to 4.10.1.



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Menu 4.10.1.2

Select the Left Hand Cylinder by holding down top Left button on pendant. (Green LED goes out). Use raise and lower buttons as indicated to archive the required setting.

Releasing the Left hand button returns the screen to 4.10.1.

Press F2 to select LH Slew and repeat process. Pressing F1 exits the menu, and the Wide Sweep Brush turns off and goes to raised position.

Note:- When adjusting the brush it is not unusual to see the voltage settings differ from side to side, the values on the screen are used as references to the settings of the regulators.

Wide Sweep Brush Balance/Adjustment

Brush balance/adjustment should be checked on a regular basis.

On dual sweep machines brush balance/adjustment is necessary for both left and right hand operations.

The adjustments are used to set the brush pressure on the road and counteract uneven (conical) brush wear.

When correctly adjusted the brush should leave a parallel witness mark in the region of 75mm wide over the full length of the WSB when it is operated on a flat surface with the vehicle stationary.

To generate a witness mark:

With the vehicle stationary operate WSB on the desired slew for approximately 30 seconds, switch off WSB, move vehicle and examine witness mark left on the road.

If witness mark is too narrow:

Less regulation is required (Adjust down/Brush heavier).

If witness mark is too wide:

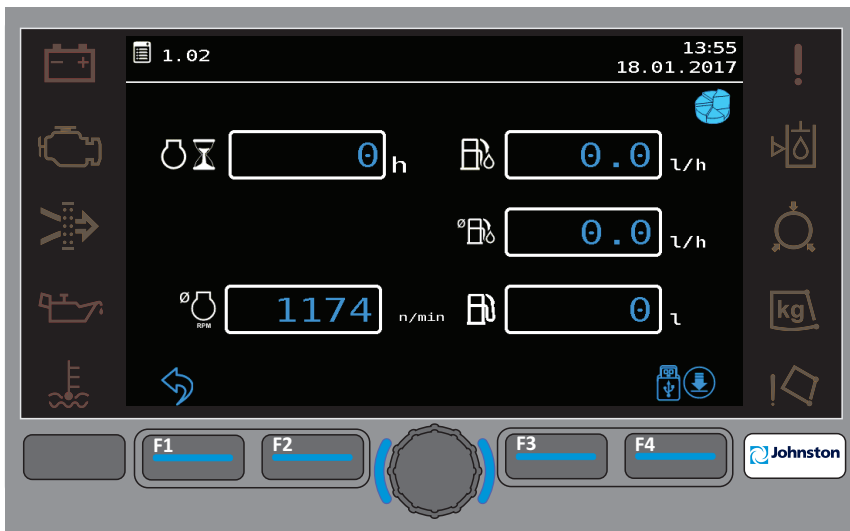
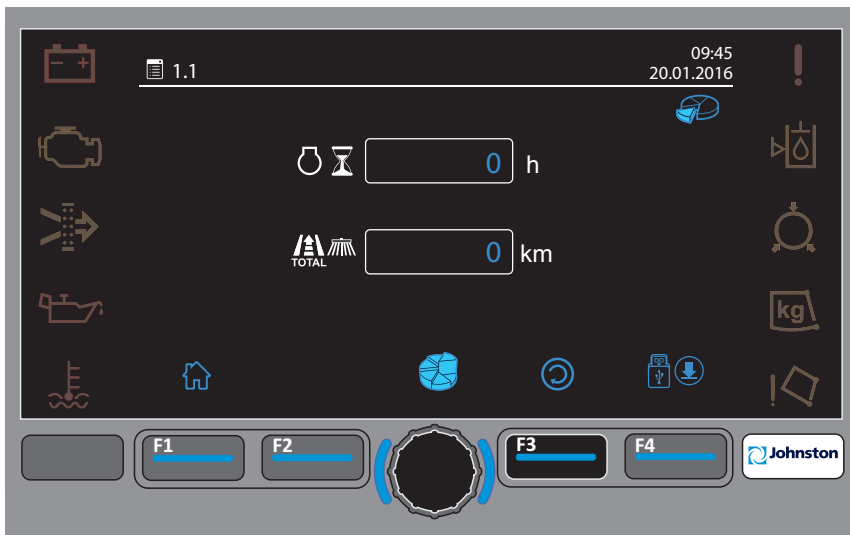
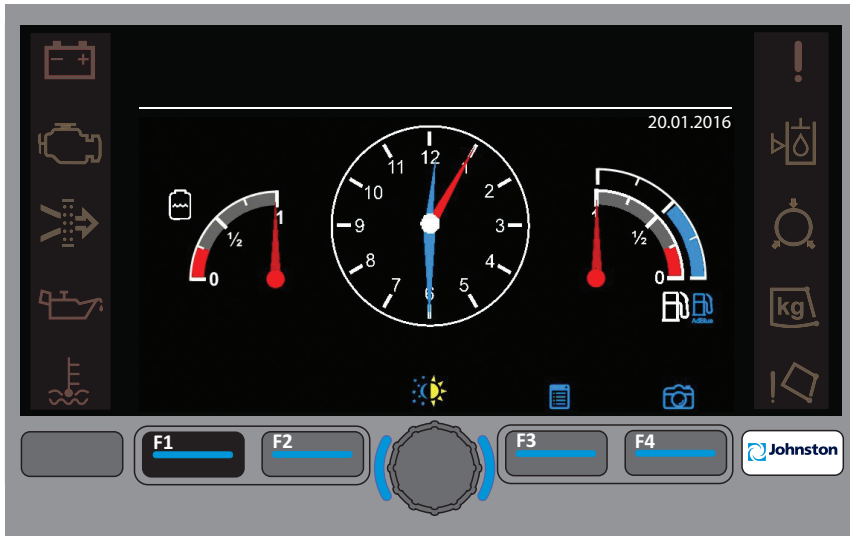
More regulation is required (Adjust up/Brush lighter).

Note:

Ensure the pneumatic system is fully pressurised by running the truck engine whilst carrying out the regulation adjustments.

Correctly adjusted brush leaves a parallel witness mark on road (Nominal 75mm).

Incorrectly adjusted brush leaves wider, narrower, or tapering witness mark on road.



VEHICLE LOGGING (DATA CAPTURE)

Machine Type	Engine	Automatic Real Time Logging	Stored Time Logging
VT	John Deere 86kW	✓	
VT	JCB 55kW	✓	
VT	JCB 85kW		✓
VT	JCB 93kW	✓	
VS			✓

Vehicle Logging (F1 on Base Screen)

Depending on the machine specification the hours are recorded and displayed in two different ways.

Automatic Real Time Logging:

Continuously captures the data and displays it in real time.

Stored Time Logging:

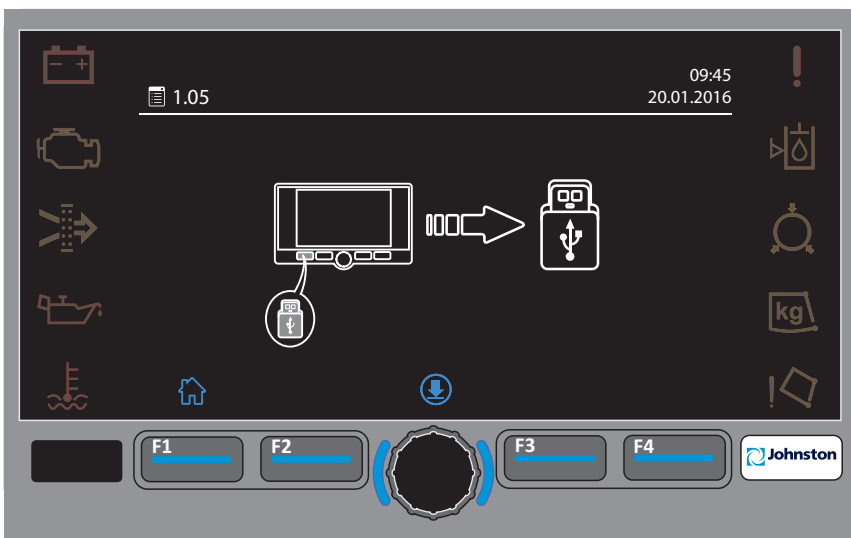
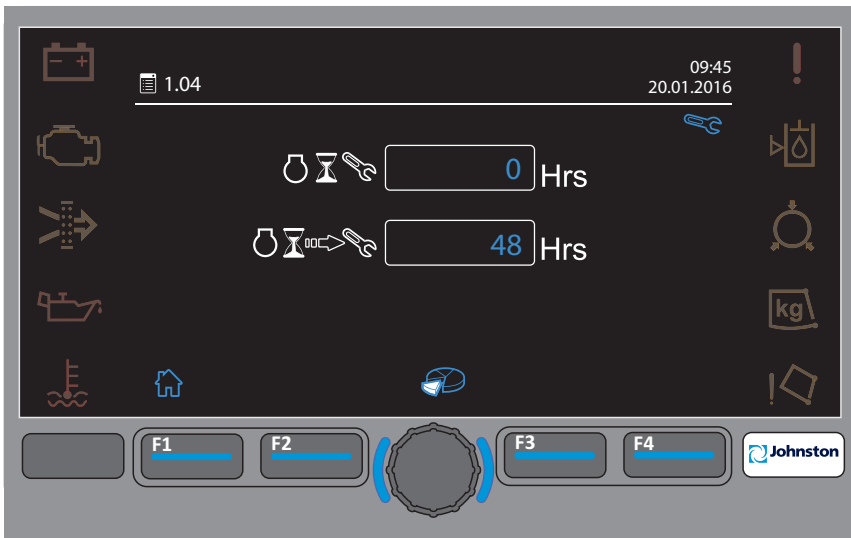
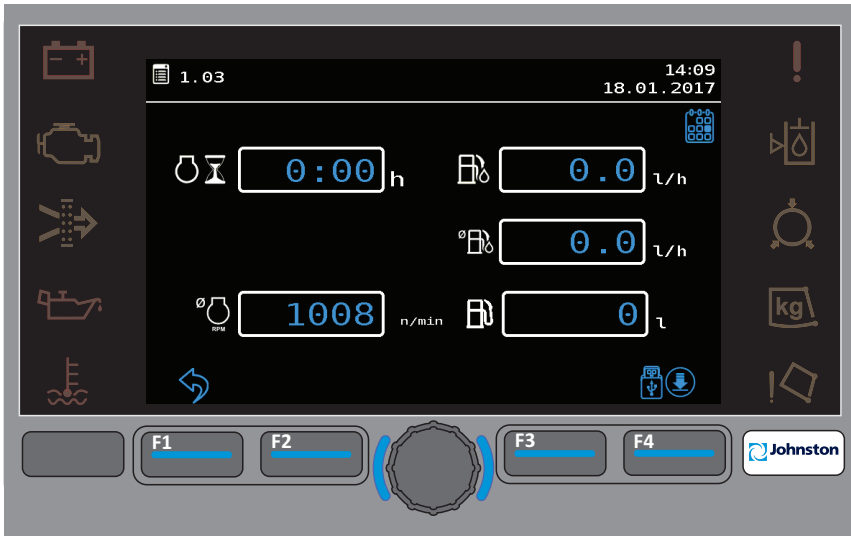
Captures data when ignition is turned off and is displayed on next ignition cycle.

Menu 1.01 - Part Totals

Pressing the reset soft key (F3) will reset the part totals back to zero.

Press encoder to progress through menus.

Menu 1.02 - Grand Totals



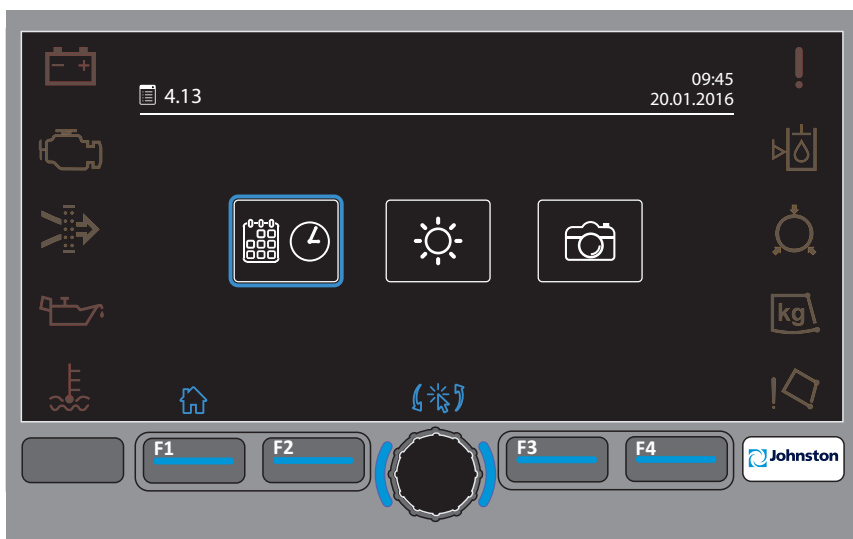
Menu 1.03 - Daily Totals

Menu 1.04 - Service Hours

USB Download (Press F4)

Menu 1.05 - Data Capture

Insert an approved Johnston USB stick into the USB port (located on front of the JVM - bottom left hand side). Press centre encoder on JVM to download Data Capture file.



REVERSE AID CAMERA

5.0 Camera (Press F4 on Base Screen)

Pressing the Camera Maximise soft key (F4) will display the camera in full screen display mode.

Pressing the Camera Minimise soft key will return the camera to normal display mode.

DISPLAY SETTINGS

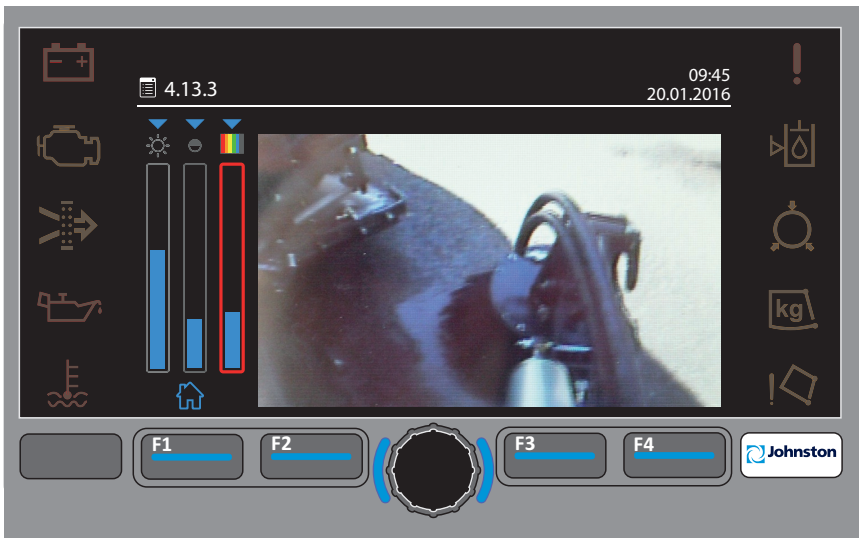
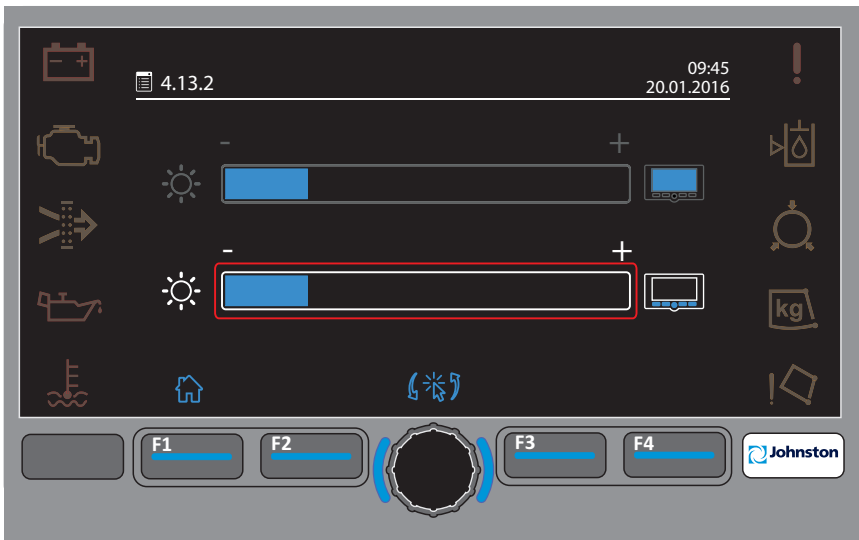
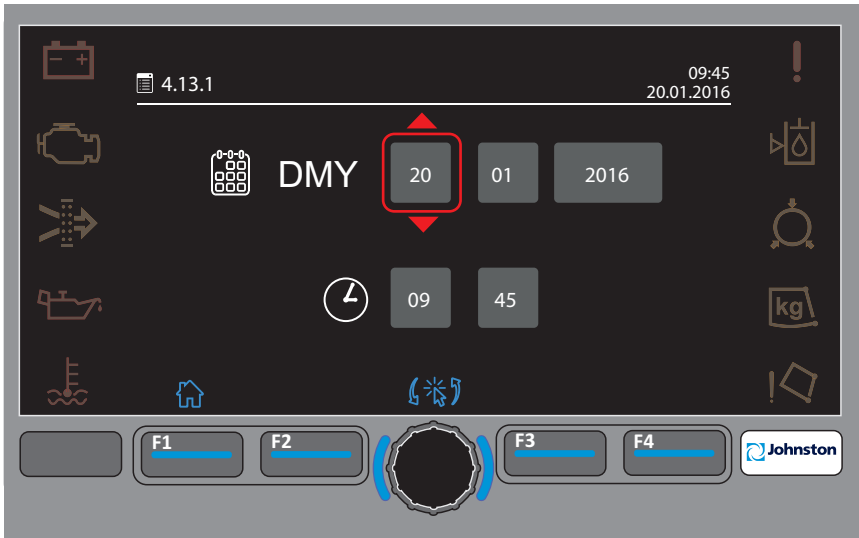
Menu 4.13

Allows the operator to set preferred settings for the following:

4.13.1 Date and Time. 4.13.2 Screen and Buttons Brightness and Contrast.

4.13.3 Camera Brightness, Contrast and Colour Saturation.

Rotate centre encoder to move the halo and press to select display setting menu as required.



Display Settings (continued)**Menu 4.13.1 - Date and Time**

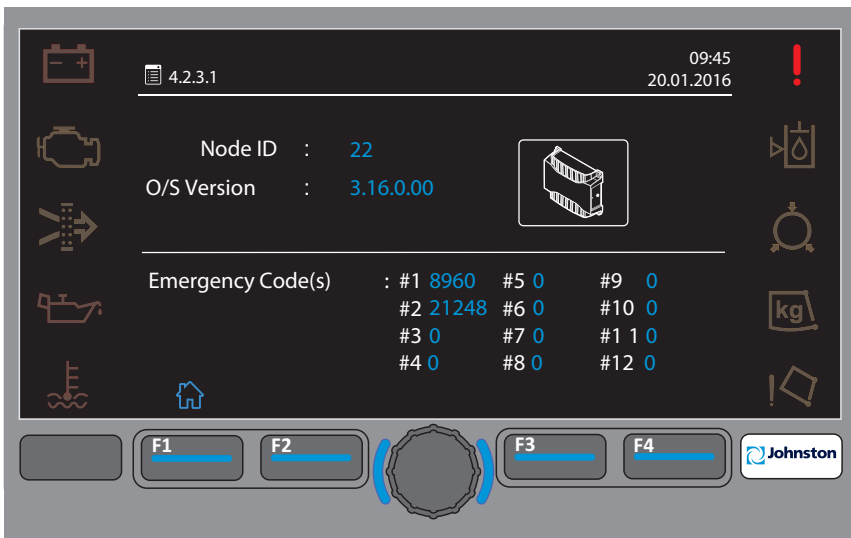
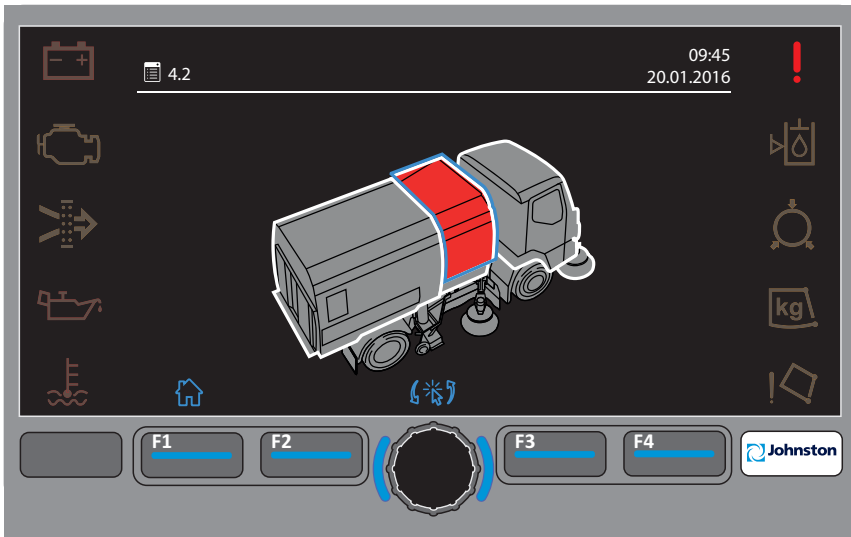
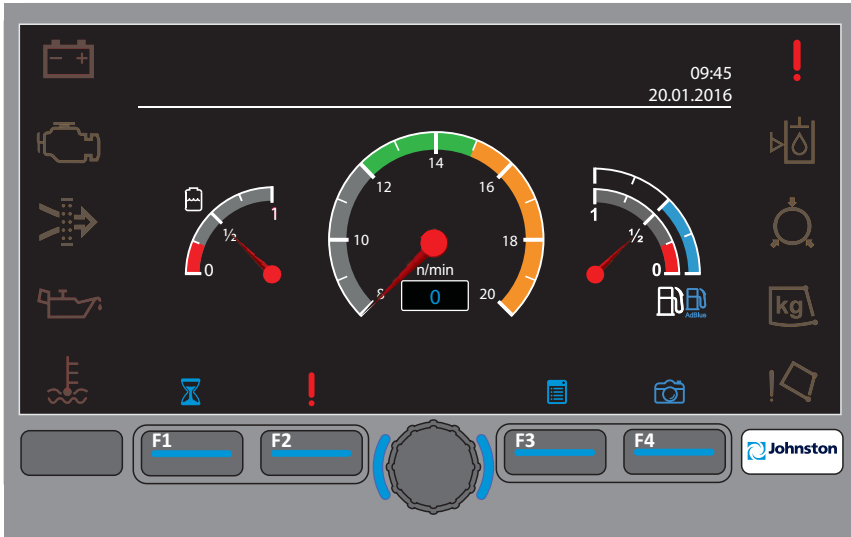
Rotate centre encoder to move halo. Press encoder to select item, halo colour will change to red. Rotate encoder to adjust. Press encoder to store value.

Menu 4.13.2 - Display, Soft Key Brightness

The brightness of both the JVM display and soft keys may be altered as required. Rotate the Encoder to move halo. Press to select item, halo colour will change to red. Rotate Encoder to change setting. Press Encoder to store.

Menu 4.13.3 - Camera Brightness, Contrast and Colour Saturation

Brightness, contrast and colour saturation of the camera may be altered to suit the operator's requirements. Rotate centre encoder to move halo. Press to select item, halo colour will change to red. Rotate encoder to change setting. Press encoder to store.



SYSTEM FAULTS

Should a fault occur in any of the equipment operating systems the fault icon (!) is displayed over soft key **F2**.
Selecting **F2** automatically opens Menu 4.2 (CANbus Network) which highlights the location of the affected Node.

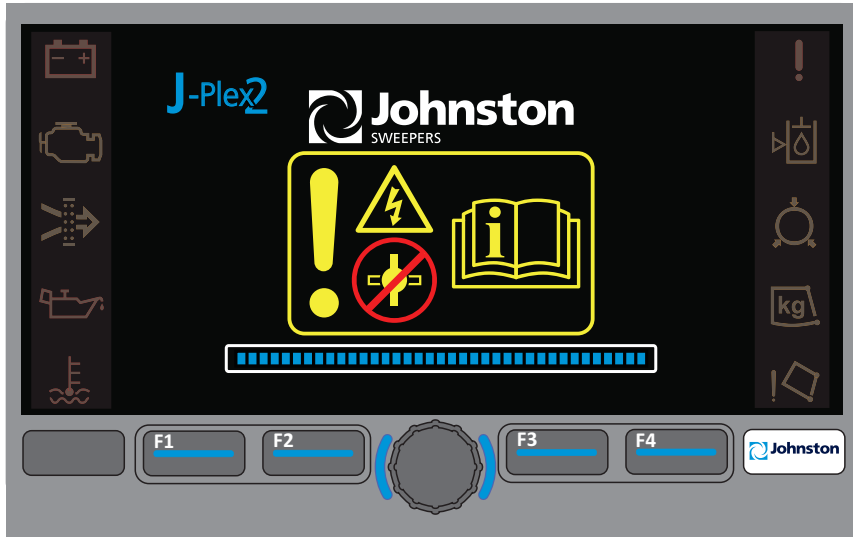
Menu 4.2 - CANbus Network Faults

Rotate the encoder to highlight the indicated area (Powapak).
Press the encoder to display the fault.

Menu 4.2.3.1 - Powapak IO Node

Example:-

Should a fault occur it will be accompanied by one or more emergency codes (EMCY), which will be logged in the system. Shutting down the system will clear the error.



SWITCHING OFF



WARNING

After switching off the vehicle ignition do not isolate the battery system while this screen is shown.

8 Routine Maintenance

MAINTENANCE SCHEDULES**VT - Twin Engine**

NOTICE

Attention is drawn to the recommendations in the Auxiliary Engine Handbook. These procedures should be carried out by qualified service personnel.



Daily Maintenance - This can be carried out by a suitably trained operator. Check the following items:

1. Oil level in hydraulic reservoir - top up if required.
2. Auxiliary engine oil level - top up if required.
3. Auxiliary engine radiator level - top up if required.
4. Auxiliary engine radiator is not obstructed. Always clean from engine side.
5. Filter state indicator - service air filter if red.
6. Mesh screens in body are clean and fitted correctly.
7. Centre baffle is in position - duals only.
8. Mechanical damage to brush gear and report damage to supervisor.
9. Brushes for adjustment and wear - adjust or replace as required.
10. Spray jets for correct operation - clean if necessary.
11. Liquid leakages.
12. Chassis items as recommended in chassis manufacturer's handbook.



Weekly Maintenance - This can be carried out by a suitably trained operator. Attend to/check the following:

1. Oil level in 'Z' drive gearbox - top up if required.
2. Fan/engine bay is clean of oil etc.
3. Auxiliary engine drive belt tensions.
4. Suction fan impeller, wear plates and intake flap for wear, renew if necessary.
5. Routing of electric and hydraulic services for chafing.
6. Lubricate all grease points - see page OG6:16.
7. Water pump suction filters.
8. Oil level and condition in Supawash pump if fitted.



50 Hour Service - To be carried out by workshop personnel. Attend to/check the following:

1. Drain and refill 'Z' drive gearbox.
2. Drain and refill Supawash pump (if fitted).

VT - Twin Engine



Service A - Every 500 Hours - To be carried out by workshop personnel.

1. Change auxiliary engine oil and renew filter.
2. Clean fuel pre-filter bowl (John Deere).
3. Renew the fuel filter element.
4. Renew auxiliary engine air cleaner elements.
5. Check auxiliary engine throttle control and engine idle for correct operation.
6. Clean duct in body roof.
7. Check the fluid flywheel oil level.
8. Check auxiliary engine coolant concentration gives -39°C frost protection.
9. Check Supawash pump (if fitted) for the correct operation of jets and any plunger seal leaks. Service as necessary.



Service B - Every 1000 Hours - To be carried out by workshop personnel.

1. Carry out 500 hour service; plus:
2. Renew hydraulic return filter element.
3. Renew water pump suction filters.
4. Check valve clearances on the auxiliary engine if applicable.
5. Replace fuel pre-filter.
6. Carry out a visual inspection for the security of body mounts, pivot pins and equipment. - Ensure torque identification marks are aligned - re-torque as required (See torque chart in maintenance manual)



Service C - Every 2000 Hours or 1 Year - To be carried out by workshop personnel.

1. Carry out 1000 hour service; plus.:
2. Clean/replace suction filters and refill hydraulic reservoir.
3. Drain and refill 'Z' drive gearbox.
4. Replace Auxiliary engine drive belts.
5. Drain and refill Supawash pump (if fitted).



Service D - Every 4000 Hours or 2 years

1. Carry out 2000 hour service; plus.:-
2. Drain and refill fluid flywheel.

NOTICE

Used oils and filters should be disposed of in accordance with local waste disposal regulations.

VS - Single Engine

NOTICE

Attention is drawn to the recommendations in the Auxiliary Engine Handbook. These procedures should be carried out by qualified service personnel.



Daily Maintenance - This can be carried out by a suitably trained operator. Check the following items:

1. Oil level in hydraulic reservoir - top up if required.
2. Oil cooler radiator is not obstructed. Always clean from fan-side to outside.
3. Chassis engine air cleaner - service when shown by restriction indicator.
4. Mesh screens in body are clean and fitted correctly.
5. Centre baffle is in position - duals only.
6. Mechanical damage to brush gear and report damage to supervisor.
7. Brushes for adjustment and wear - adjust or replace as required.
8. Spray jets for correct operation - clean if necessary.
9. Liquid leakages.
10. Chassis items as recommended in chassis manufacturer's handbook.



Weekly Maintenance - This can be carried out by a suitably trained operator. Attend to/check the following:

1. Oil level in 'HYDRODRIVE' gearbox - top up if required.
2. Powapak bay is clean of oil etc.
3. Suction fan impeller, wear plates and intake flap for wear, renew if necessary.
4. Routing of electric and hydraulic services for chafing.
5. Lubricate all grease points - see page 116.
6. Water pump suction filters - see page 14.
7. Oil level and condition in Supawash pump if fitted.



50 Hour Service - To be carried out by workshop personnel. Attend to/check the following:

1. Change hydrodrive gearbox oil.
2. Renew transmission pump filter.
3. Drain and refill Supawash pump (if fitted).

VS - Single Engine

Service A - Every 500 Hours - To be carried out by workshop personnel.

1. Renew transmission pump filter.
2. Clean duct in body roof.
3. Check Supawash pump (if fitted) for correct operation of jets and any plunger seal leaks. Service as necessary.



Service B - Every 1000 Hours - To be carried out by workshop personnel.

1. Carry out 500 hour service; plus
2. Renew hydraulic return filter element.
3. Renew water pump suction filters.
4. Change oil in 'HYDRODRIVE' gearbox.
5. Carry out a visual inspection for the security of body mounts, pivot pins and equipment. - Ensure torque identification marks are aligned - re-torque as required (See torque chart in maintenance manual)

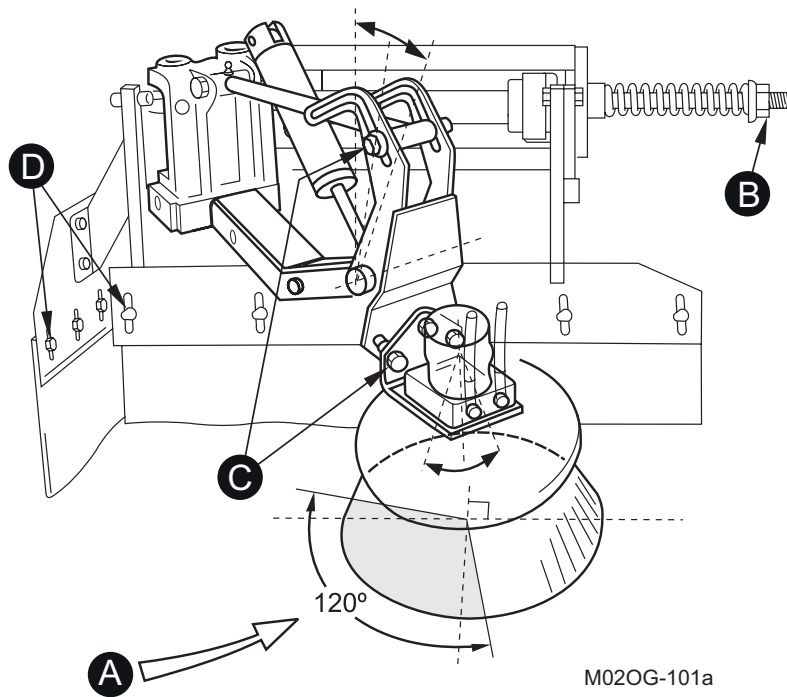


Service C - Every 2000 Hours or 1 Year - To be carried out by workshop personnel.

1. Carry out 1000 hour service; plus
2. Clean suction filter and refill hydraulic reservoir.
3. Drain and refill Supawash pump (if fitted).

NOTICE

Used oils and filters should be disposed of in accordance with local waste disposal regulations.



EQUIPMENT ADJUSTMENT / MAINTENANCE



CAUTION

The use of needle stick gloves is recommended when working with this equipment.

Ensure the auxiliary engine is not running and isolated before brush adjustment or replacement is attempted.

Introduction

This chapter highlights some of the basic adjustment and maintenance procedures required to keep the machine performing efficiently. For more detailed information refer to the Technical Manual.

Channel Brush Adjustment

The brush is supported on a pivoting arm which allows it to float against the kerb and fold back on impact.

The 'kick back' resistance **(A)** is adjusted by the compression spring nut **(B)** at the rear of the brush assembly.

The brush angle adjustment.

Is set, using adjusters **(C)**, so that about 120° of circumference towards front and kerbside is in contact with the road.

Rubber curtain adjustment.

These should be set just clear of the ground using adjusters **(D)**. Adjustment should be effected with brush in working position. A cab control is provided to vary the speed of the brush, also the ground pressure by means of the Powasave control.

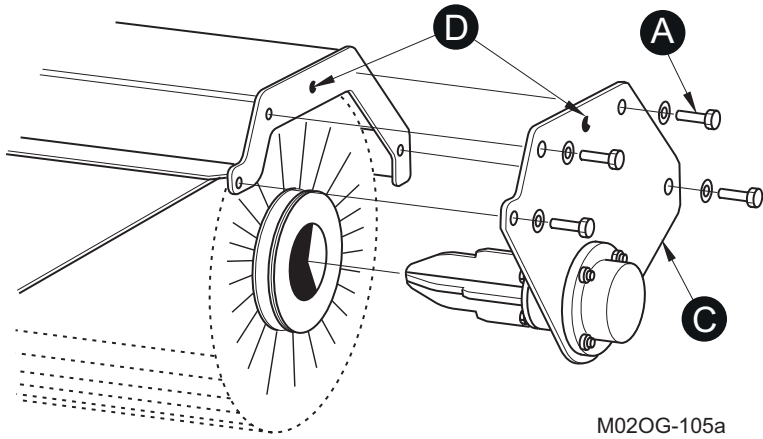
Channel Brush Replacement

Removal

It is preferable to have the brush arm in the working position with chassis engine inert and air supply isolated. Loosen the four flange nuts securing brush stock assembly to the drive plate. turn slightly to align nuts with holes in plate and remove brush.

Refitting

Reverse of removal procedure. Any loops of steel tines which project above the head of the stock should be hammered flush before offering up the brush stock assembly to the driving plate. Loosen flange nuts on brush stock, align brush with holes in drive plate, rotate in the opposite direction of brush rotation and tighten nuts.



M02OG-105a

Wide Sweep Brush Stock Replacement



CAUTION

The use of needle stick gloves is recommended when working with this equipment.

Lower WSB for Replacement/Adjustment

To lower the nozzle first, turn on the ignition and then turn off the axillary engine. All nozzles will now lower to the ground.

Removal

With the brush in the lowered position remove the 4 bolts **(A)** from the end plate **(C)** opposite the hydraulic motor.

Withdraw the plate assembly and remove the brush.

Refitting

Slide new brush under the wide sweep brush carriage. Engage the core on the motor drive dog. Refit the end plate assembly turning it if necessary to engage the bearing drive dog. *Line the end plate up with the carriage and refit the 4 securing bolts **(A)**.

*A location hole **(D)** is provided for a tapered bar to locate and hold the end plate assembly in place, while bolts **(A)** are being located.

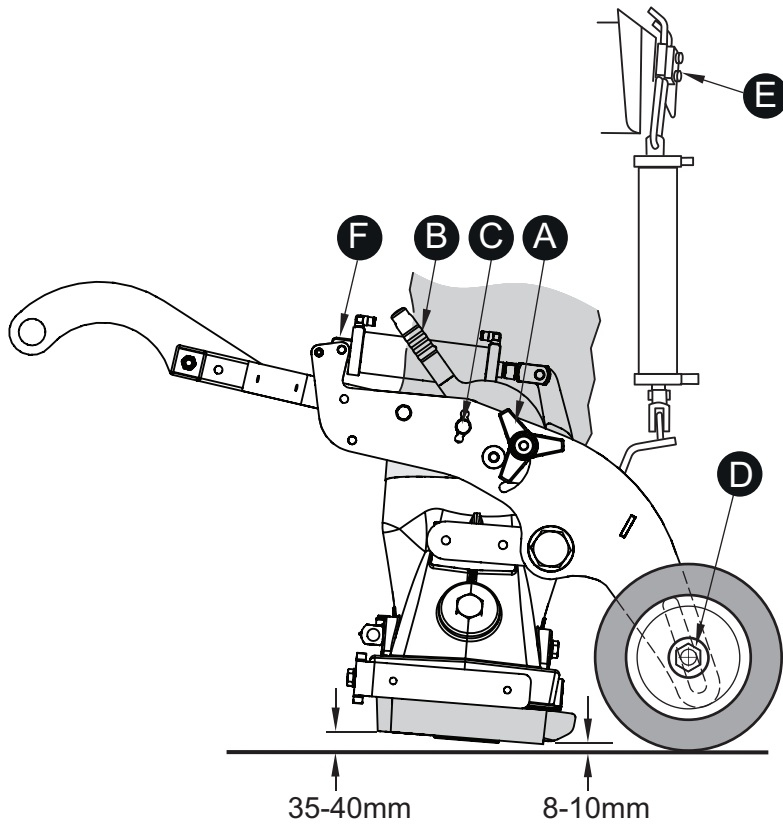
Wide Sweep Brush Adjustment

The Wide Sweep Brush balance control system has been designed so as not to require any regular adjustment by the operator.

The system uses electronic proportional regulators which are factory set to optimise the sweeping performance and life of the brush.

Should the brush show signs of wearing conically then the adjustment should be checked it is recommended that this is carried out by trained personnel. The adjustment procedure can be found in chapter 5 of this guide.

It is recommended that the adjustment is checked following brush replacement.



M02OG-053b

Nozzle Adjustment



CAUTION

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

In order to maximise the performance of the machine it is important that a working clearance is maintained between the nozzle rubbers and the road surface. The following settings are recommended as a guide although some conditions may require a tighter front nozzle setting. Adjustment is carried out with the Maxigap/Varagap in the closed position.

Lower Nozzle for Adjustment

To lower the nozzle first, turn on the ignition and then turn off the axillary engine. All nozzles will now lower to the ground.

Rear Nozzle Rubber

Recommended ground clearance 8-10mm.

Adjustment

Raise or lower the carriage wheels **(D)** as required.

Front Nozzle Rubber

Recommended ground clearance 35-40mm.

Adjustment

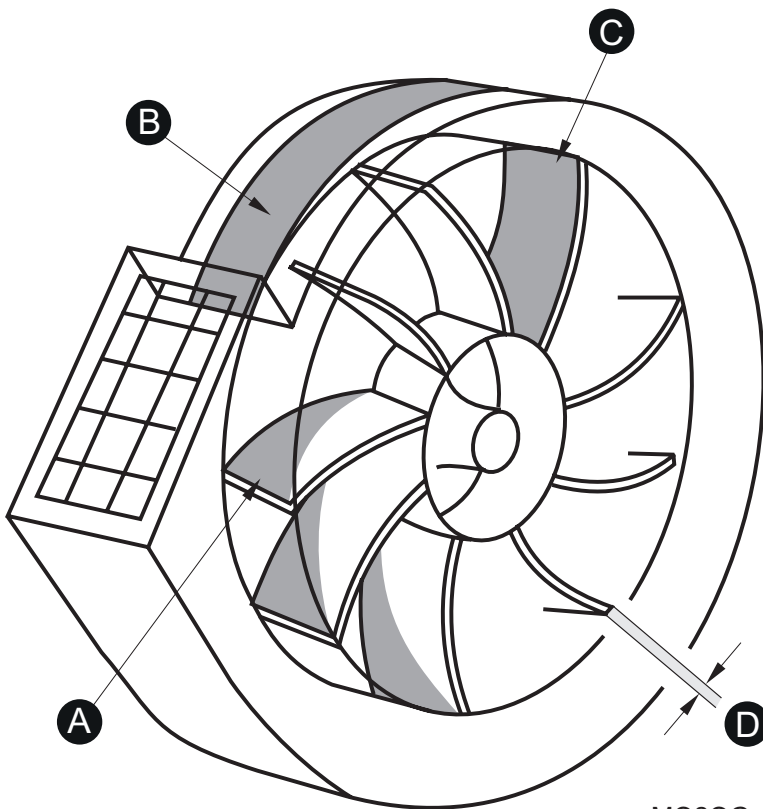
The nozzle opening angle can be adjusted by loosening the hand wheel **(A)** and then moving the lever **(B)** forwards to increase, or backwards to decrease.

The rear nozzle rubber should always be approximately 8-10mm from the ground to allow for the road camber. An average gap setting between the front nozzle rubber and the ground has been found to be 35-40mm for most sweeping conditions. These adjustments may become necessary as nozzle rubbers and tyres wear.

There must always be sufficient extension (75-100mm) capability in the nozzle trunking and the nozzle lift cylinder to ensure that the nozzle does not become suspended when passing over road surface depressions. The attachment of the nozzle lift cylinder to the trunking bracket may be adjusted downwards by the clamped 'U' bolt **(E)**.

Additional adjustment is provided to alter the draw bar height/position. Normally the centre hole is utilised. Repositioning setscrew **(C)** into a lower hole raises the front of the nozzle, or into a higher hole lowers the front of the nozzle.

The Maxigap feature **(F)** opens the nozzle aperture to allow for the ingestion of bulky objects.



MO2OG-46a

Suction Fan Impeller and Casing**VT - Twin Engine**

**DANGER**

Ensure the auxiliary engine is not running and isolated before fan maintenance or replacement is attempted.

**WARNING**

The fan impeller is finely balanced as an assembly in manufacture. NEVER remove or replace the hub.

VS/VM - Single Engine

**DANGER**

Ensure the engine is not running and isolated before fan maintenance or replacement is attempted.

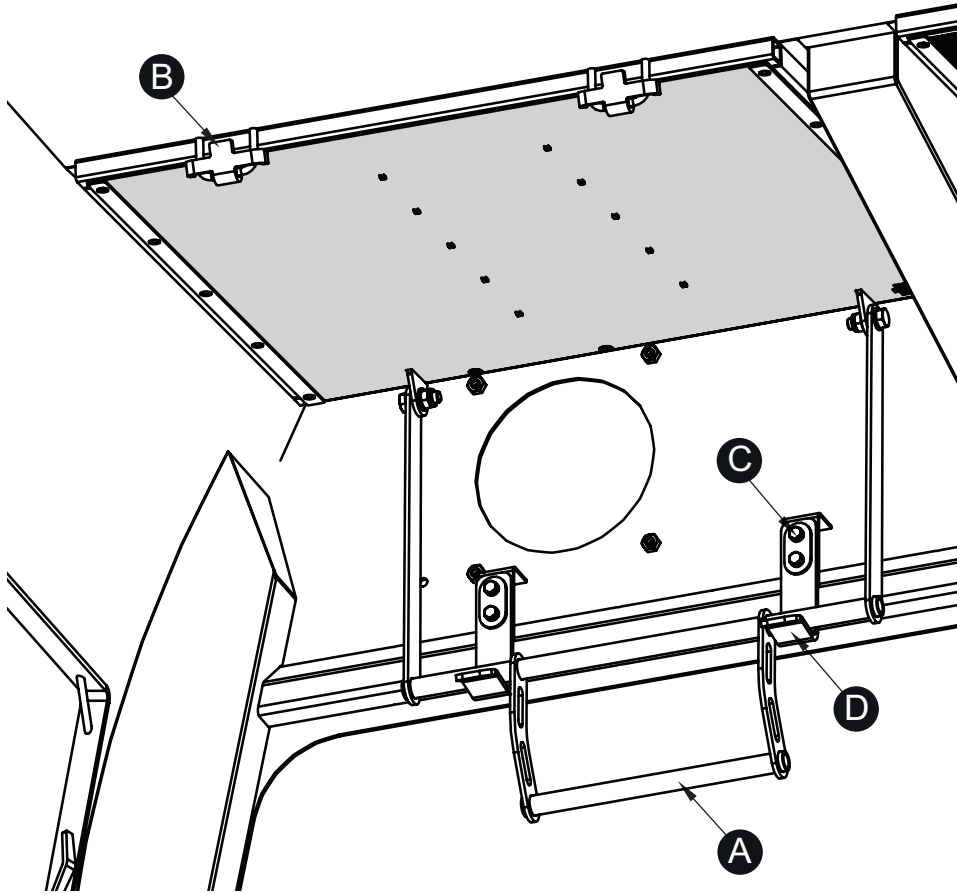
**WARNING**

The fan impeller is finely balanced as an assembly in manufacture. NEVER remove or replace the hub.

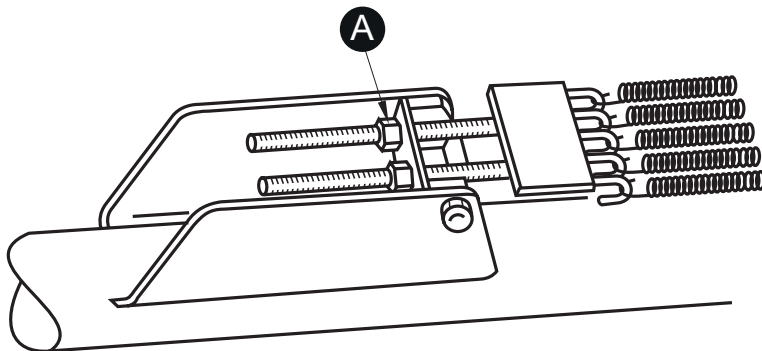
In operation the impeller and casing can be subjected to wear in the form of erosion resulting from dust or small abrasive particles passing through the fan system and must be inspected in accordance with the Weekly Maintenance Schedule.

In cases where excessive dust could pass through the system, these inspections should be made more frequently, the blades should be clean of any debris (**C**) to prevent dirt build up and premature failure due to vibration.

If the impeller is subjected to excessive wear, disintegration could occur whereby the front shroud plate detaches itself from the driving plate as a result of the high rotational forces. Any wear occurring to the impeller is usually shown up as a thinning of the blades generally in a broad wear pattern (**A**). Once apparent thinning of the impeller blades is observed, the impeller must be replaced when any blade thickness (**D**) is less than 2mm. If perforation of the fan case is observed (**B**) due to wear erosion, this should also be replaced.



M02OG-161



M02OG-100a

Filter Screens and Roof Duct

**CAUTION**

Ensure the screen is lowered slowly. If the mesh is allowed to 'free fall' and bounce off of the baffle, there is a possibility of it being dislodged from the hinge point.

Filter Screen Removal and Refit

The body filter screens and roof duct must be kept clean, otherwise suction performance can be affected. The screens should be lowered when cleaning.

Ensure the release handle (A) is held while lowering:-

Pushing the release handle (A), unlocks the screen(s) and enables them to be lowered against the panel. If fitted disconnect the air pipe to the mesh shaker unit.

The screens can now be lifted out of the hooks (B) for thorough cleaning.

With the screens removed and the body raised (resting on its safety prop), wash out all debris from the roof duct which runs along the top of the body, Care should be taken not to get excessive water in the fan case.

When refitting a screen, ensure a close fit to the body is maintained to prevent debris from entering the fan.

Adjustment:-

The mesh handle (A) should be located in the latches (D) and pushed up so the retaining face mates with the body. The latches (D) should also be pushed up on the slotted brackets until they touch the handle and then tighten the four M8 screws (C).

Wanderhose Adjustment

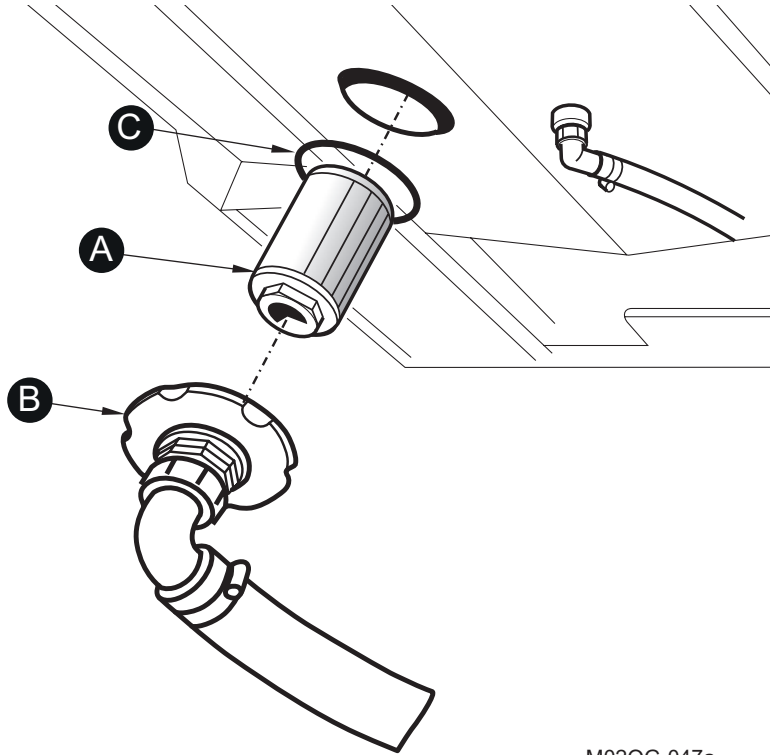
**CAUTION**

Safety platform/gantry to be used for this procedure

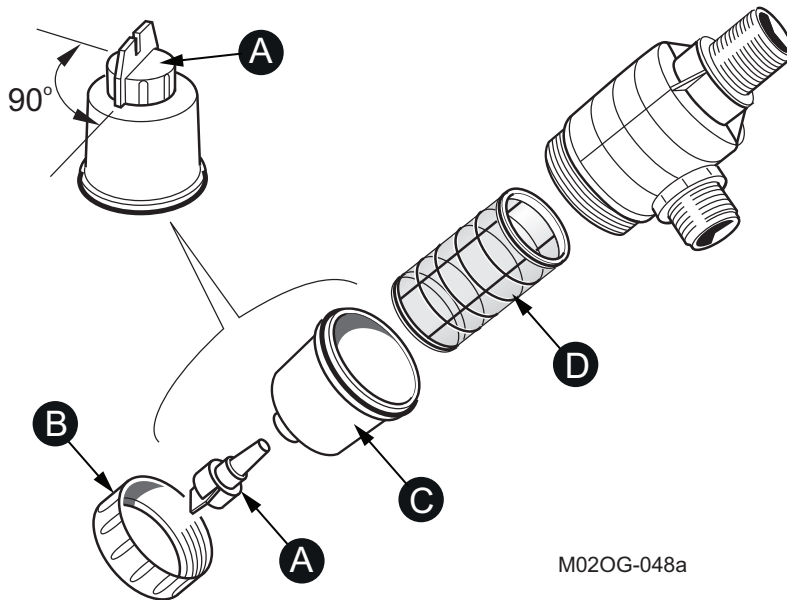
Adjustment

The balance of the Wanderhose can be adjusted. This is done by tightening or slackening the nuts (A) on the two spring jack studs and should only be done with the extension hose assembly attached.

Adjustment is correct when the Wanderhose boom tends to rise when released and only a small effort is required to lower it. When the Wanderhose without the extension assembly is stowed, this adjustment should give effective capacity in the stowage hook.



M02OG-047a



M02OG-048a

WATER SYSTEM

The water system is protected by both a primary and secondary water filter.

Primary Filter

The primary filter is located within the water tank attached to the underside of the body. Its purpose is to prevent foreign particles entering the water system which could cause malfunction of the water system. Access to filter **(A)** is gained by first draining the tank using the flushing valve located on the side of the body, raise the body and engage the safety prop. Unscrew the cap **(B)** to reveal the filter attached.

The filter can be cleaned in situ or, preferably, removed from the cover and washed under a tap from inside to out. The cover is sealed with a sealing washer **(C)** and it is wise when refitting the cover to clean both cover and the washer thoroughly and then smear with grease. The grease will help retain the sealing washer.

Periodically, whilst cleaning the filter, it is advisable to flush out the tank. This is done by leaving off the cap, lowering the body and using a high pressure hose through the two port holes in the rear panel adjacent to the rear door. When replacing the port hole caps, again smear with grease and ensure the sealing washer is present. Refit the filter, cap, and close flushing valve(s).

Secondary Water Filter

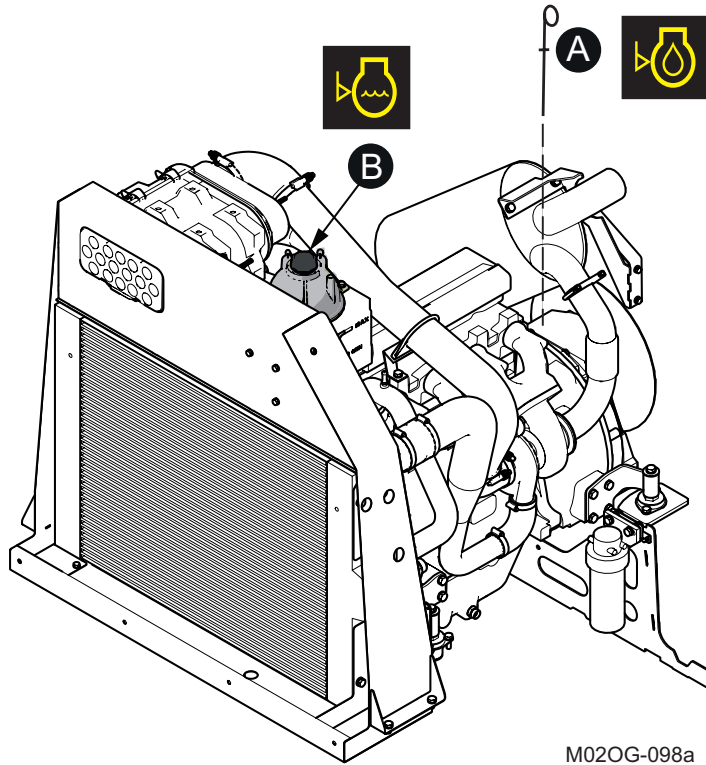
- 1 Before dismantling the filter, activate the shut off valve actuator **(A)** located in the filter housing. It has a bayonet type mechanism. Press in and turn anti-clockwise to activate the shut off valve.
- 2 To access filter element, unscrew the securing ring **(B)** around the outside of the filter housing **(C)** and remove. 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, ensure that the filter element is correctly located in the filter housing before tightening the securing ring.
- 5 Refit the shut off valve actuator. Pushing in and turn clockwise to open the valve ready for use.

Filling

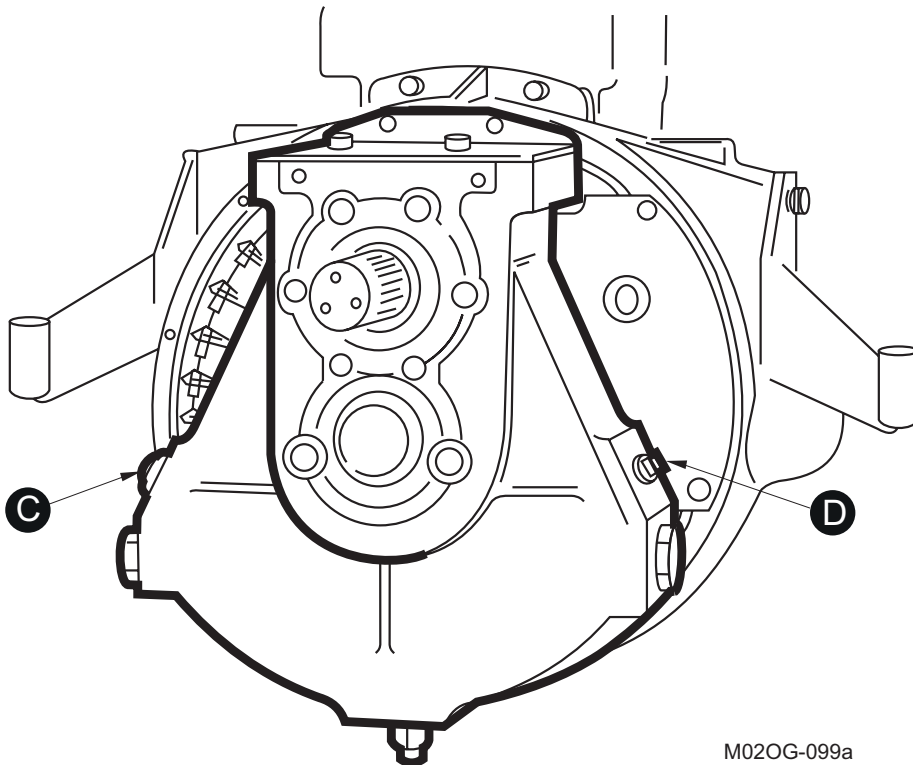
The water tank can be filled with a hose pipe via fillers located on either side of the body or, alternatively, hydrant connection is provided adjacent to the nozzle trunking. This facility is provided with a filter cartridge to prevent particles entering the tank. The filter is mounted vertically allowing particles to be back washed and fall out once the hydrant hose is released.

Water system draining

An automated Pressadrain feature is fitted to this machine - see page 50.



M02OG-098a



M02OG-099a

POWAPAK

VT - Twin Engine only

Fluid Levels

**WARNING**

Ensure the body prop is located and care is taken when using the walkways

Engine Oil

Checking the Oil Level - Check Daily

The engine oil level is electronically monitored, if low it is displayed via the icon on the Information Bar of the JVM. The oil level can be manually checked using the dipstick **(A)**. The recommended oil is shown in the lubrication chart at the end of this chapter.

Checking the Coolant Level - Check Daily

The coolant level **(B)** is electronically monitored, if low it is displayed via the icon on the Information Bar of the JVM. Ensure the engine is cool before topping up the level.

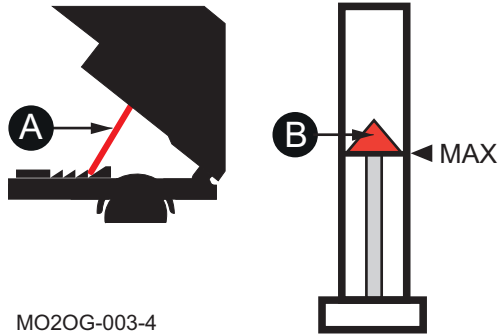
Cold Weather Precautions

The cooling system must be filled with equal quantities of antifreeze and water to maintain a minimum concentration of 50%, i.e. -39°C. Any top ups must therefore be done with a 50% mixture of antifreeze and water. The concentration level should be checked at the 500 hour service interval as failure to observe this can cause corrosion of the engine block.

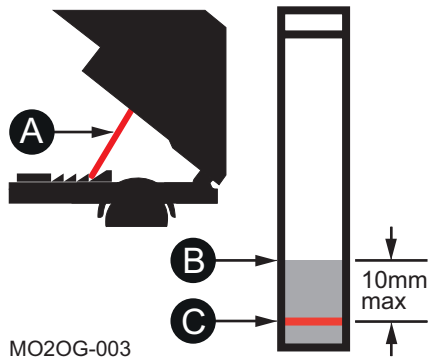
'Z' Drive Gearbox**Checking the Oil Level**

The sight glass **(C)** allows a quick reference and, if the oil level is not visible on the window, the level requires topping up.

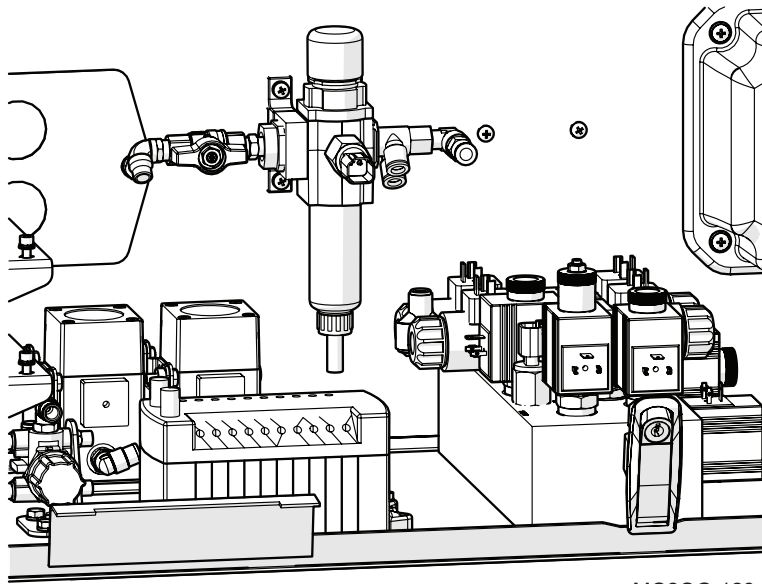
The level plug **(D)** should be removed and oil top up until it comes out of the port, allow the oil to drain out until the level has settled and re-fit the plug.



MO2OG-003-4



MO2OG-003



MO2OG-128a

VT - Twin Engine

Hydraulic Reservoir

Checking Oil Level

Raise the body and engage the body prop **(A)** in its highest position.

The bottom of the level indicator **(B)** should not be higher than the Maximum line as shown 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. The recommended oil is shown in the lubrication chart at the end of this chapter.

VS/VM - Single Engine

Hydraulic Reservoir

Checking Oil Level

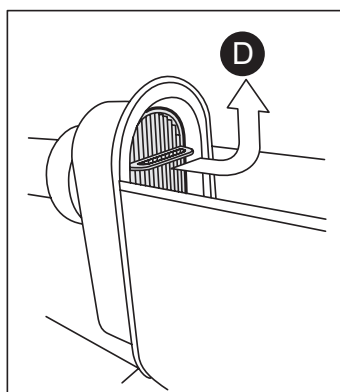
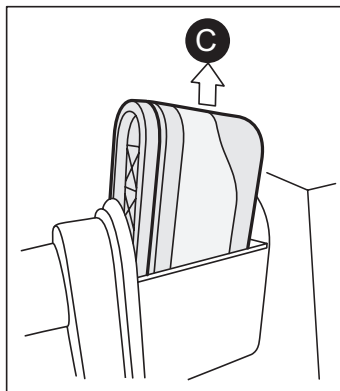
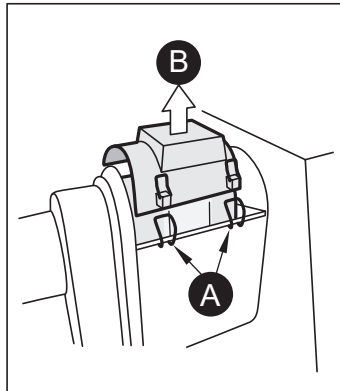
Raise the body and engage the body prop **(A)** in its highest position. The level **(B)** should be 10mm above the lower red line **(C)** on the gauge. It is important that the correct level is maintained as under filling can adversely affect the heat dissipation rate of the oil, whilst over filling can cause oil to overflow when the body is lowered. The recommended oil is shown in the lubrication chart at the end of this chapter.

Pneumatic Filter Regulator Unit

The filter regulator unit comprises an isolation tap and pressure regulator.

The air is isolated and drained by turning the gate valve on the unit.

The air filter features an automatic drain.



M02OG. 141a

VT - Twin Engine only

NOTICE

Ensure that the elements, lid and clips are correctly fitted and that the air intake pipe and clips to the engine are in good condition and fully sealed.

Air Cleaner Restriction Indicator

A filter condition is electronically monitored and when restricted the icon is displayed on the JVM, giving a positive indication of when the air cleaner element needs replacing and so eliminates haphazard servicing. It should be attended to immediately.

Note:

The indicator does not show the amount of dust present in the dust cap. When the air cleaner requires servicing the warning icon will be illuminated. After servicing the indicator will automatically reset.

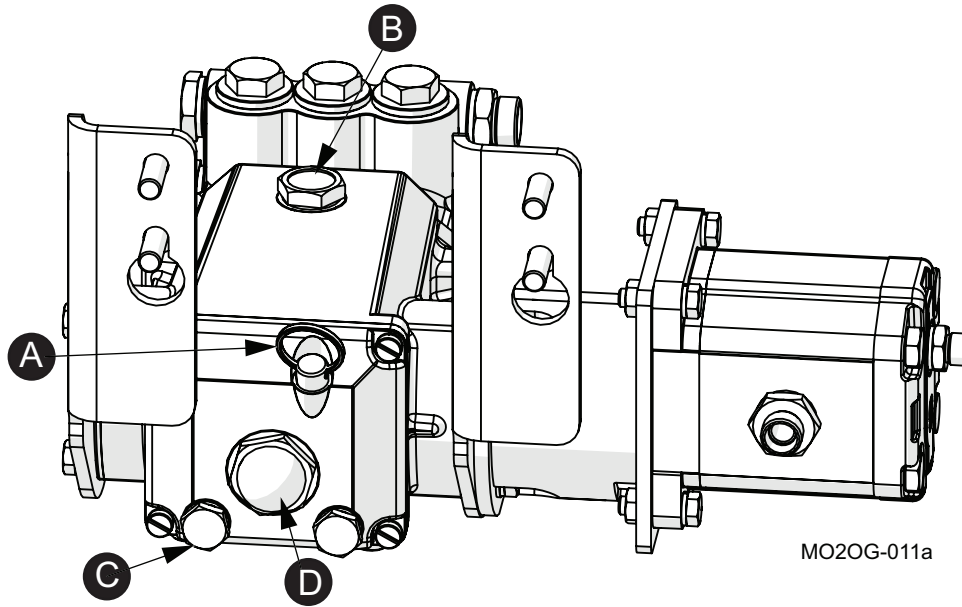
Air Cleaner

The air cleaner elements must be replaced at the intervals given in the Maintenance Schedule or if the filter restriction indicator is showing red between these scheduled services.

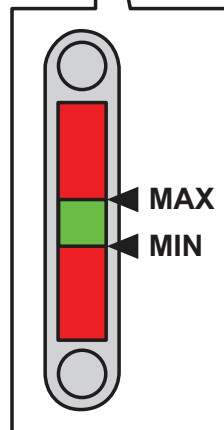
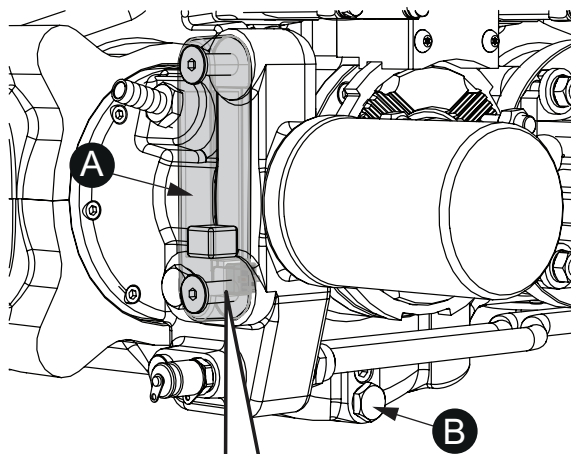
To access the air cleaner elements, lift the retaining clips **(A)** to remove the lid **(B)**. Remove the main filter element **(C)** by first pushing the filter down and tilting it towards the radiator and then lift it out. There is a small safety element **(D)** within the main filter body, this should be replaced every third time the main element is changed. Re-assemble the air cleaner ensuring all parts are correctly positioned and fitted. Refit the lid **(A)** ensuring a good seal against water ingress.

Cylinder Maintenance

Periodically inspect the cylinder rods for damage, blemishes or build up of material such as tar, cement, paint etc. Particular attention should be given to the wide sweep brush slew cylinder on dual sweep machines and the channel brush lift cylinder. 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.



M02OG-011a



M02OG-138a

Supawash Pump

The oil level in the Supawash pump should be checked weekly. There is a sight level glass and dipstick at the front end of the pump.

It is recommended that the oil is changed after the first 50 hours of operation and then changed at every C Service.

Checking the Oil Level

The water pump is mounted adjacent to the central cross-member.

The pump oil level should be checked weekly using dipstick **(A)**.

A visual check may also be made through sight glass window **(D)**.

The oil is filled via port **(B)**. The oil colour should be clear, if it is frothy/milky then water has entered the oil and it should be changed immediately and the cause investigated. The recommended oil is shown in the lubrication chart at the end of this chapter.

Note:

(C) is the pump oil drain plug.

VS - Single Engine only

Hydrodrive Gearbox - Fluid Levels



WARNING

Ensure the chassis engine is turned off before carrying out this check

Checking the Oil Level

The HGB2 Gearbox oil level is monitored electronically in addition to a visual indicator.

Turn on the chassis ignition do not start the engine.

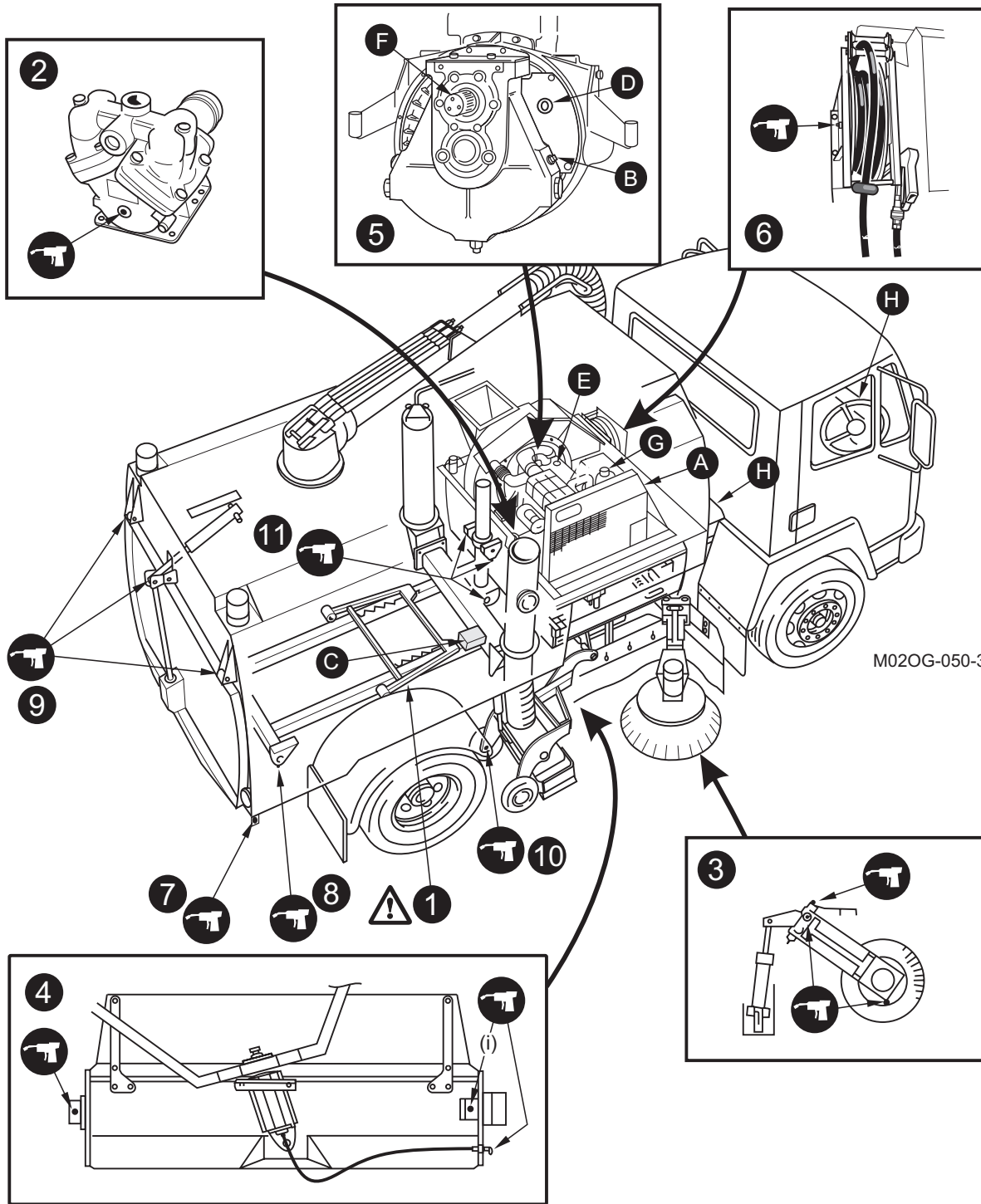
When the JVM is active the system will monitor the gearbox oil level. If the level is low it is displayed via the icon on the Information Bar **(C)** together with an audible bleeper. A visual check may also be made through the sight glass window **(A)**

Changing the Oil

Change the oil after the first 50 hours operation, thereafter as indicated in the Maintenance Schedule. The recommended oil is shown in the lubrication chart at the end of this chapter.

Draining the Oil

The oil is best drained whilst warm using the drain plug **(B)**, located on the rear of the gearbox.




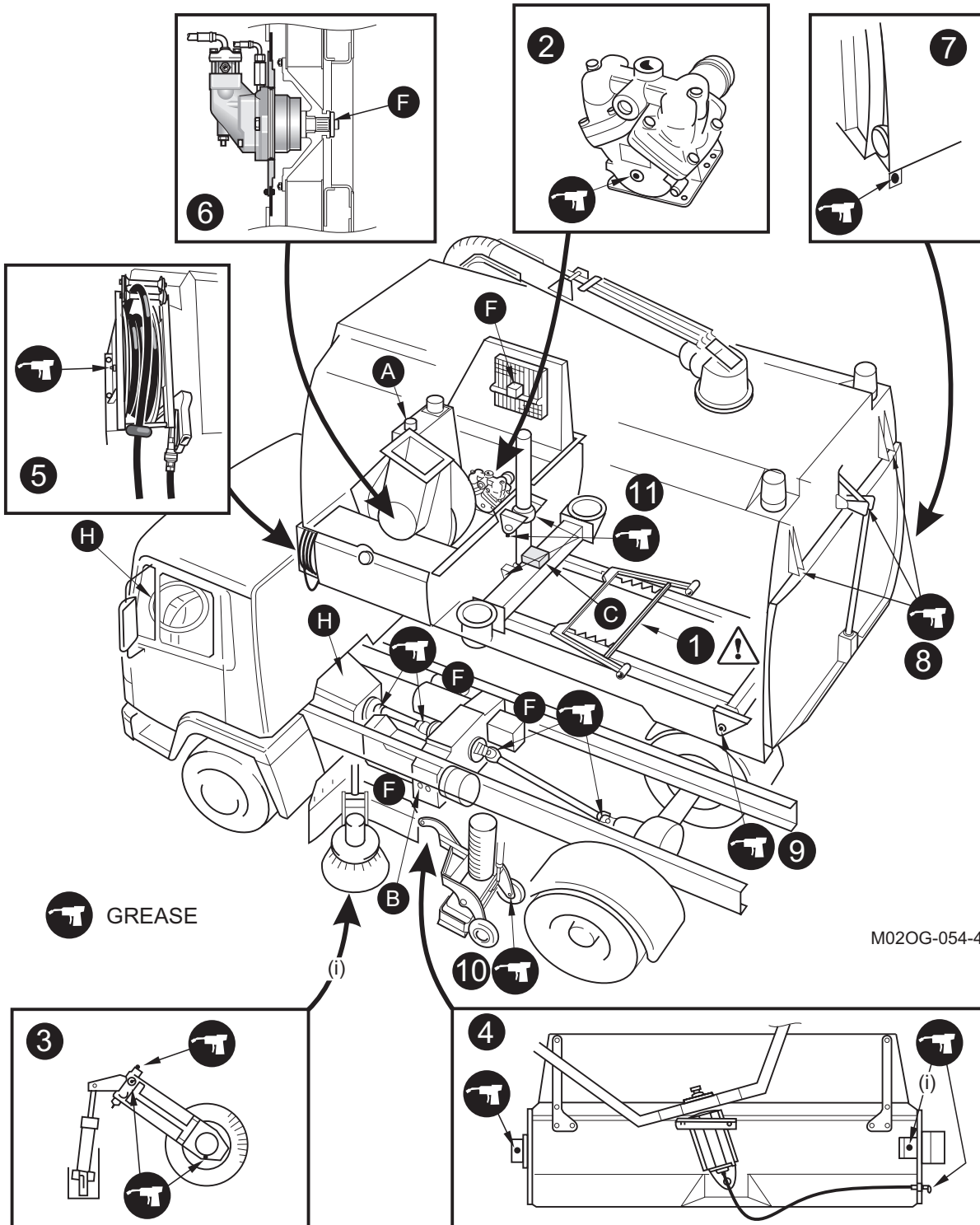
LUBRICATION DIAGRAMS

VT - Twin Engine

Refer to Maintenance Schedules for lubrication intervals

Item	Description	Item	Description
(1)	Body Prop - Ensure autoprop has engaged when body is raised.	(6)	Supawash hose reel.
(2)	Water pump.	(7)	Wanderhose - (i) Rotate boom to distribute grease around bearing
(3)	Channel brush - (i) Grease when renewing brush stock.	(8)	Hopper tip pivot pin
(4)	Wide sweep brush - (i) Grease when renewing brush stock.	(9)	Rear door
(5)	'Z' drive gearbox and Fluid Coupling.	(10)	Nozzle wheel
		(11)	Body raise cylinder


Approved Lubricants				
	Capacity	ISO Oil Grade	Johnston Part No.	Fuchs
(A) Hydraulic System	65L	-	94-12	-
(B) Gearbox	2.5L	API GL-4	94-67	-
(C) Supawash Pump	0.37L	API GL-4	94-67	-
(D) Fluid Flywheel	4.85L	-	94-12	-
(E) Engine	14L	ACEA E3 - E5	94-23	-
(F) Drive Splines	-	-	94-24	Klüberpaste (46 MR 401)
(G) Antifreeze	15L	-	39664	-
(H) Chassis PAS - Auto Gearbox	See Chassis Handbook	-	39661	-
Grease Points		-	94-69	-
Battery Terminals	-	-	-	Petroleum Jelly
<p>The above oils are those approved by Johnston Sweepers. Other manufacturer's oils must be of equivalent grade.</p>				

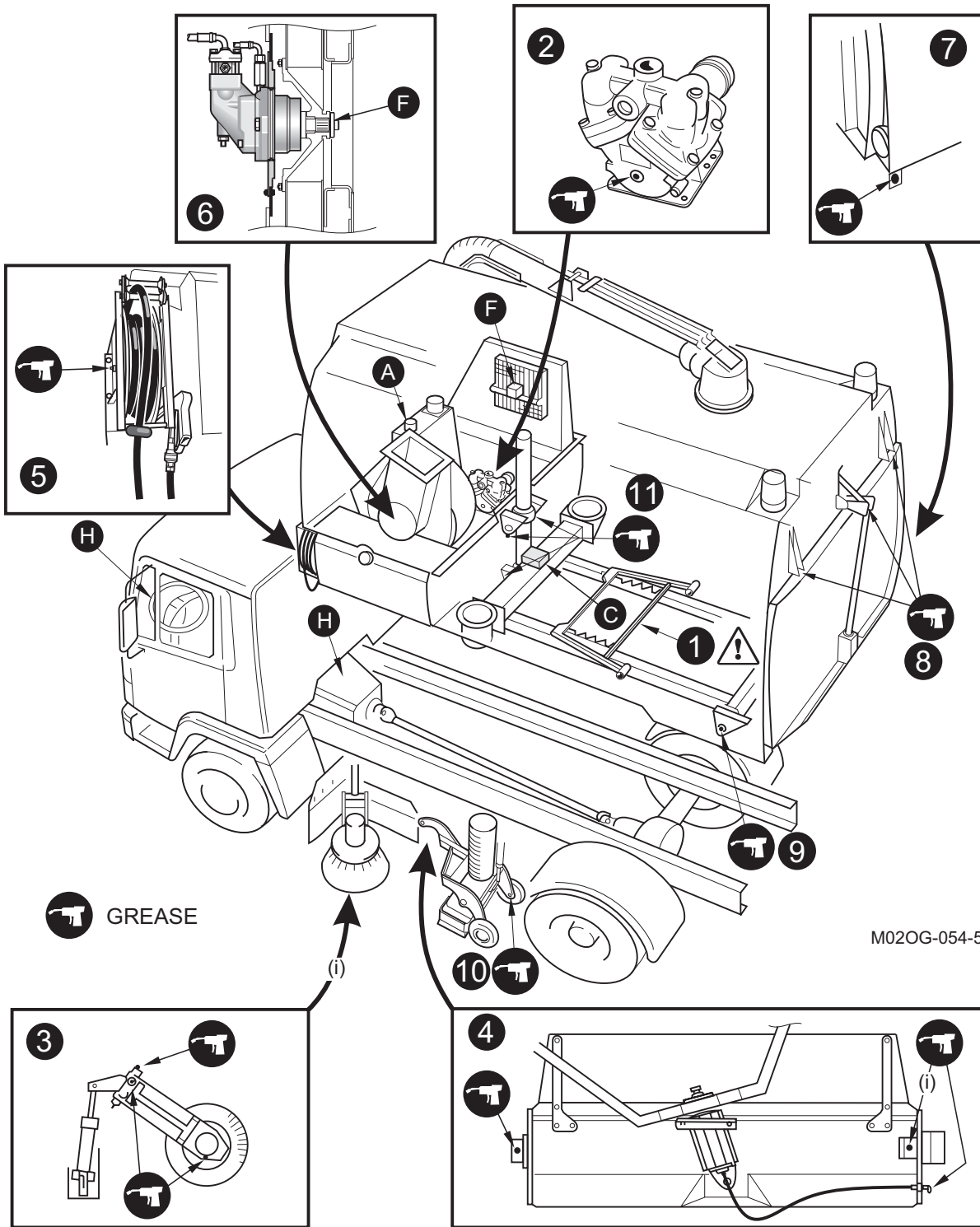


VS - Single Engine

Refer to Maintenance Schedules for lubrication intervals

Item	Description	Item	Description
(1)	Body Prop - Ensure autoprop has engaged when body is raised.	(6)	Drive Splines lubricate during assembly.
(2)	Water pump.	(7)	Wanderhose - (i) Rotate boom to distribute grease around bearing
(3)	Channel brush - (i) Grease when renewing brush stock.	(8)	Rear door
(4)	Wide sweep brush - (i) Grease when renewing brush stock.	(9)	Hopper tip pivot pin
(5)	Supawash hose reel.	(10)	Nozzle wheel
		(11)	Body raise cylinder


Approved Lubricants				
	Capacity	ISO Oil Grade	Johnston Part No.	Fuchs
(A) Hydraulic System	75L	-	94-12	-
(B) Gearbox	7.5L	API GL-4	94-67	-
(C) Supawash Pump	0.37L	API GL-4	94-67	-
(D) Fluid Flywheel Not Applicable	-	-	-	-
(E) Engine Not Applicable	-	-	-	-
(F) Drive Splines	-	-	94-24	Klüberpaste (46 MR 401)
(G) Antifreeze Not Applicable	-	-	-	-
(H) Chassis PAS - Auto Gearbox	See Chassis Handbook	-	39661	-
Grease Points		-	94-69	-
Battery Terminals	-	-	-	Petroleum Jelly
The above oils are those approved by Johnston Sweepers. Other manufacturer's oils must be of equivalent grade.				



VM - Single Engine

Refer to Maintenance Schedules for lubrication intervals

Item	Description	Item	Description
(1)	Body Prop - Ensure autoprop has engaged when body is raised.	(6)	Drive Splines lubricate during assembly.
(2)	Water pump.	(7)	Wanderhose - (i) Rotate boom to distribute grease around bearing
(3)	Channel brush - (i) Grease when renewing brush stock.	(8)	Rear door
(4)	Wide sweep brush - (i) Grease when renewing brush stock.	(9)	Hopper tip pivot pin
(5)	Supawash hose reel.	(10)	Nozzle wheel
		(11)	Body raise cylinder

Approved Lubricants				
	Capacity	ISO Oil Grade	Johnston Part No.	Fuchs
(A) Hydraulic System	75L	-	94-12	-
(B) Gearbox	NA	NA	NA	-
(C) Supawash Pump	0.37L	API GL-4	94-67	-
(D) Fluid Flwheel Not Applicable		-		
(E) Engine Not Applicable				
(F) Drive Splines		-	94-24	Klüberpaste (46 MR 401)
(G) Antifreeze Not Applicable		-		
(H) Chassis PAS - Auto Gearbox	See Chassis Handbook	-	39661	-
Grease Points		-	94-69	-
Battery Terminals	-	-		Petroleum Jelly
The above oils are those approved by Johnston Sweepers. Other manufacturer's oils must be of equivalent grade.				

9 Conformity Certificates

EC DECLARATION OF CONFORMITY CERTIFICATES

EC DECLARATION OF CONFORMITY (C E)

Manufacturer's Name: Johnston Sweepers Limited

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

Declares that:

Product Name: Johnston Road Surface Cleaner

Product Type(s): VT502, VT652, VT802
VS502, VS652, VS802
ES351, RT655

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

Clive Offley
Engineering Director
Johnston Sweepers Ltd.
04/09/2018



**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 VS502, VS652 and VS802
hydrostatic (single engined) chassis-mounted
power sweeper.

Maximum Measured Sound Power Level (L_{WA}): 109dB(A)

Guaranteed Maximum Sound Power Level (L_{WA}): **110dB(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.

04/09/2018

Signed by:
Clive Offley
Engineering Director
Johnston Sweepers Ltd



**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 VT502, VT652 and VT802
chassis-mounted powered sweeper, with
JCB 55KW - Stage 3b/Tier 4 Final

Maximum Measured Sound Power Level (L_{WA}): 109dB(A)

Guaranteed Maximum Sound Power Level (L_{WA}): **110dB(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.

04/09/2018

Signed by:
Clive Offley
Engineering Director
Johnston Sweepers Ltd



**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 VT502, VT652 and VT802
chassis-mounted powered sweeper, with
JD 86KW - Stage 3a/Tier 3
JCB 85KW - Stage 3a/Tier 3
JCB 93KW - Stage 4/Tier 4 Final

Maximum Measured Sound Power Level (L_{WA}): 111dB(A)

Guaranteed Maximum Sound Power Level (L_{WA}): 112dB(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.

04/09/2018

Signed by:
Clive Offley
Engineering Director
Johnston Sweepers Ltd



PM10 EMISSION

Tests conducted by SGS Institut Fresenius GmbH

We hereby declare this Road Sweeper* has been tested and certified according to the EUnited PM2.5 PM10-Test for Road Sweepers and European Standard EN15429-3: 2015 Sweepers - Part 3: Efficiency of particulate matter collection - Testing and Evaluation. The performance level stated has been confirmed by EUnited Municipal Equipment.

Johnston Sweepers Limited
 Manufacturer

V Range
 Model

Curtis Road, Dorking, Surrey
 Address


V502, V652, V802
 Type / Version

England, RH4 1XF
 Address

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 Serial Number

04/09/2018
 Date of Issue

 Authorized Signature 

*as defined in European Standard EN15429-1: 2007 Sweepers – Part 1: Classification and Terminology

NOISE AND VIBRATION

**WARNING**

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

