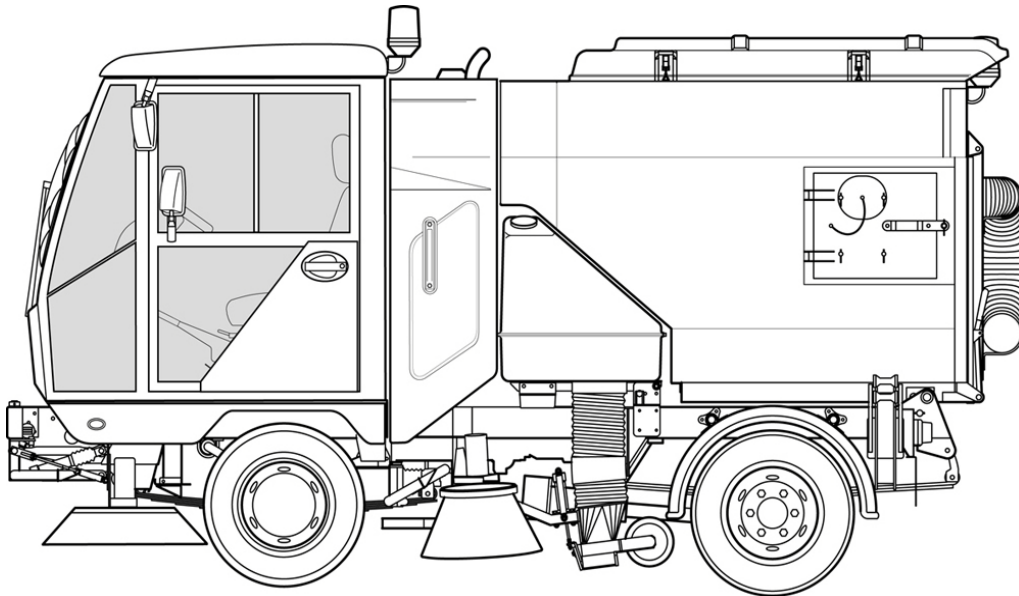


## SCARAB MINOR VM *Hydrostatic*



The **Scarab Minor VM Hydrostatic** Sweeper is one of the most powerful compact urban road and precinct sweepers, incorporating the latest in technology and design. The Minor is powered by a VM Motori 3.0 litre turbo-charged diesel engine to reduce both fuel consumption and exhaust emissions. The Scarab hydrostatic drive system gives the vehicle a travel speed of 65 kph and a gradeability of 25% (1in 4). The hydraulic drive is controlled by a proven electronic system that optimises the engine power, to give very smooth acceleration/deceleration and variable governed engine speed for sweeping with the additional benefit of cruise control. The sweeper is mounted on a 3500/4200 kg<sup>1</sup> GVW sprung chassis. The standard vehicle is supplied with a fully equipped cab, power steering and servo-assisted brakes.

Technical innovation and advanced design make the Scarab Minor VM an extremely versatile compact urban/precinct sweeper, capable of undertaking most arduous sweeping tasks including those normally undertaken by larger truck-mounted sweepers.

**CAB:** The fully appointed rubber mounted and sound insulated custom cab is manufactured from corrosion resistant steel. A gas-strut assisted tilt mechanism and safety prop afford easy and safe access to the engine for servicing. Standard features include cloth covered adjustable driver's and passenger's seats, laminated windscreen, a rear window and sliding side-windows plus a glazed lower panel in each door.

**CHASSIS:** The Scarab Minor VM chassis has been designed specifically for sweeper applications. Constructed from high tensile steel channel-section to withstand the abuse of operation under the most severe conditions, it is fully sprung with shock absorbers and anti-roll bars on front and rear axles. Single front wheels and twin rear wheels give the chassis a very low footprint loading when operating on paving slabs and other surfaces. Power steering and servo-assisted front disc and rear drum brakes are also standard equipment.

**FRONT AXLE:** Heavy-duty steel 'I' beam rigid steer axle plated at 1800 kg, fitted with wheel hubs mounted on taper roller bearings, the kingpins being on needle bearings.

**REAR AXLE:** Heavy duty unit, plated at 2600 kg and fitted with fully-floating hubs and hypoid differential with a ratio of 5.13 : 1.

**BRAKES:** Servo assisted hydraulic vertical split layout, incorporating load apportioning valve on rear axle. Cable operated parking brake to rear wheels. 276 mm diameter front disc brakes and 254 mm diameter x 70 mm drum brakes on rear.

**WHEELS AND TYRES:** Front axle - Single 14 x 5.5 J 6-stud wheels, rear axle - Twin 14 x 5.5 J 6-stud wheels with 195R14 tubeless radial tyres all round.

<b>CAB EQUIPMENT &amp; FITTINGS</b>	
<b>MIRRORS</b>	<b>2 REAR VIEW + 2 SWEEPING</b>
<b>WINDSCREEN WIPERS</b>	<b>TWIN SELF-PARKING TYPE</b>
<b>STEERING COLUMN-MOUNTED CONTROLS</b>	<b>INDICATORS - HORN - HEADLIGHTS FLASH, DIP &amp; MAIN BEAM - SIDE-LIGHTS AND WINDSCREEN WASH-WIPE CONTROL LEVER FOR SELECTING FORWARD / NEUTRAL / REVERSE</b>
<b>INSTRUMENTATION</b>	<b>ERGONOMICALLY DESIGNED PANEL CONTAINING: GAUGES FOR FUEL - COOLANT TEMPERATURE &amp; ALL WARNING LIGHTS SCARAB CANbus SWEEPING CONTROL PANEL WITH LCD SCREEN TO INDICATE: ENGINE HOURS - ENGINE SPEED - SWEEP SPEED - FAN SPEED - SWEEP DISTANCE</b>
<b>VENTILATION</b>	<b>3-SPEED FRESH-AIR HEATING &amp; VENTILATION SYSTEM</b>
<b>MISCELLANEOUS</b>	<b>CENTRALLY LOCATED PARKING BRAKE - DRIVER &amp; PASSENGER SUN VISORS DRIVER &amp; PASSENGER INERTIA-REEL SEATBELTS - INTERIOR LIGHT - UNDER-SEAT TOOL BOXES STEREO RADIO/CD PLAYER - HAZARD WARNING LIGHTS</b>

**ELECTRICAL SYSTEM:** Negative earth - 12 volt 110 Ah maintenance-free battery. The VM engine is equipped with a 105 Amp Alternator and a 2.3 kW Starter Motor. The system is fully colour coded and is protected by an in-cab fuse box. Full Road Lighting - Reverse Bleeper - Rotating Beacons.

**ENGINE:** A range of turbocharged VM Motori diesel engines designed to meet local emission regulations and operating requirements, ensuring ease of maintenance, reduced fuel consumption and exhaust emissions.

**TRANSMISSION:** Scarab-designed continuously variable hydrostatic transmission, comprising hydraulic pump coupled directly to engine, powering a hydraulic motor driving the rear axle via a propeller shaft. Vehicle speed is controlled by a single electronic foot pedal through an electronic processor, which accurately matches engine speed to the hydrostatic drive, ensuring smooth acceleration and maximum economy. The drive system has two operating modes, as above, for driving and a sweeping mode that enables the engine rpm to be set to optimum for brush and suction fan drive. The foot pedal then only controls the vehicle sweeping speed via the hydrostatic system. An anti-stall device is fitted to prevent overloading the engine. Forward and reverse are selected by a single control lever mounted on the steering column. Cruise-control is fitted to sweep mode for added convenience.

**HYDRAULIC SYSTEM:** All hydraulic power is supplied by tandem-mounted pumps directly connected to the rear of the transmission pump. The first is a variable displacement axial piston pump with automatic control of output and pressure for driving the suction fan. The second is a gear pump, with output controlled by a valve block mounted behind the cab, to power all sweeping equipment. All services to the brushes and rams are controlled from the CANbus panel in the cab. The hydraulic system is protected by 10 micron filters to ensure long life to all components and has an oil cooler on the vehicle gantry. Where possible the hydraulic system is routed in steel pipes to ensure a long service life.

**SUCTION FAN:** The suction fan is mounted in the hopper top with a direct drive axial-piston hydraulic motor with an operating speed of 2000 rpm. The fan is a dynamically balanced multi-blade centrifugal unit of 700 mm diameter giving a nominal air flow up to 6000 c.f.m. Mounting the suction fan in the hopper top makes the Scarab Minor extremely efficient, significantly reducing the overall power demands on the engine.

**SUCTION NOZZLE:** A rugged 490 mm wide steel construction mounted in a trailed frame on 200 mm diameter rubber tyred wheels and fitted with replaceable and adjustable rubber flaps. A 200 mm diameter flexible suction hose connects the nozzle to the hopper via a steel suction tube. Flap/ground clearance is 15 - 20 mm giving excellent flap life and less need for adjustment. The nozzle front-flap lifts to allow large objects such as cans, bottles or brick rubble to be swept. Three manually-adjustable water spray jets are fitted for dust suppression.

**SIDE BRUSH:** A 500 mm diameter steel-tined brush with direct-drive hydraulic motor, fitted with trailed linkage, kick-back protection, hydraulic rams for brush in/out and raise/lower. A water spray jet provides local dust suppression and a work light is fitted to assist operation in poor light.

**FRONT BRUSHES:** Two 700 mm diameter front brushes with polypropylene bristles, both with direct-drive hydraulic motors. Fully floating on trailed linkages to prevent damage. The nearside brush is adjustable for swing-in and out from the cab to vary sweeping width. Each brush has a dust suppression water spray jet and a work light, to assist operation in poor light.

**WIDESWEEP:** Comprises 320 mm diameter polypropylene elements with a direct-drive hydraulic motor. Fully floating with shock absorbers to prevent bounce, and fitted with trailed linkage to ensure parallel, even brush wear. Integral dust flap.

**WATER PUMP:** An electric commercial-duty, self-priming, multi-chamber diaphragm pump, fully protected from thermal overload. Fitted with suction filter, pressure regulator and solenoid valves operated from the instrument panel for the front spray bar, brushes and suction nozzle. Output is rated at 12 litres per minute @ 50 p.s.i. (3.5 bar).

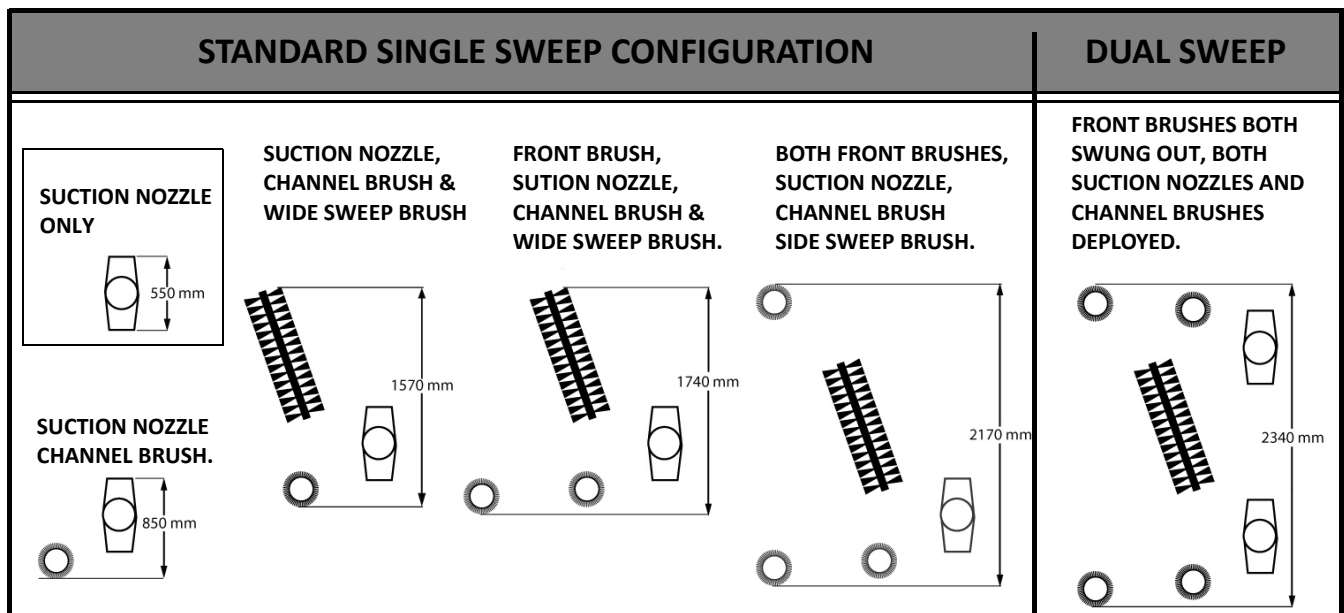
**WANDER HOSE:** A 3 metre long x 150 mm diameter, lightweight, flexible suction hose (includes an aluminium entry tube) for cleaning awkward areas or gullies. The hopper incorporates connection points on the rear door and at either side of the body. The wander hose can be used simultaneously while sweeping, or on its own for more powerful suction.

**HOPPER:** Constructed from corrosion and abrasion resistant stainless steel including the hopper top and fan case. It is fitted with large access doors on either side for hand-loading of bulky objects. Hydraulic tipping ram for safe discharge. Easily removed filter screens with a large surface area constructed from pleated, perforated steel. Hopper capacities are 2.0 m<sup>3</sup> for the standard hopper and 1.6 m<sup>3</sup> for Hi-Tip hoppers (hopper capacities are measured in accordance with European standard EN15429).

**WATER TANK:** A 420 litre corrosion resistant glass-reinforced plastic (GRP) water tank mounted behind the cab with a large filling cap and optional hydrant filling facility, fitted with suction strainer and sight gauge.

**PAINTING:** Two-pack system single colour. Optional multi-colour and sign writing.

## SWEEPING WIDTHS



The side brush, widesweep brush and both front brushes can be operated independently, providing a wide variety of sweeping widths and patterns enabling the Scarab Minor to adapt to a wide range of differing surface and sweeping conditions.

TECHNICAL DATA		PRINCIPAL DIMENSIONS	
<b>ENGINE</b> <i>According to operating area</i>	<b>VM R754 Euro 5</b> <b>4 - CYLINDER INTERCOOLED TURBO-CHARGED HDI DIESEL</b>	<b>HOPPER CAPACITY</b> <i>STANDARD</i> 2.0 m <sup>3</sup> <i>OPTIONAL HI-TIP</i> 1.6 m <sup>3</sup>	
		<b>VEHICLE HEIGHT</b>	<b>2245 mm</b>
		<b>VEHICLE WIDTH</b>	<b>1650 mm</b>
		<b>VEHICLE LENGTH</b>	<b>4230 mm</b>
		<b>TURNING CIRCLE</b>	<b>8.5 m (kerb - kerb)</b>
<b>COOLING SYSTEM</b>	<b>LIQUID COOLED, HYDRAULIC FAN</b>	<b>GVW</b>	<b>3500 / 4200 kg<sup>1</sup></b>
<b>AIR CLEANER</b>	<b>CYCLONIC WITH MAIN &amp; SAFETY ELEMENT</b>	<b>GTW</b>	<b>4900 kg</b>
		<b>UNLADEN WEIGHT</b>	<b>2650 kg<sup>2</sup></b>
<b>EXHAUST</b>	<b>VERTICAL STACK</b>	<b>FRONT AXLE PLATED WEIGHT</b>	<b>1800 kg</b>
<b>FUEL SYSTEM</b>	<b>60 LITRE FUEL TANK WITH IN-LINE FILTER AND WATER SEPARATOR</b>	<b>REAR AXLE PLATED WEIGHT</b>	<b>2600 kg</b>
<b>TRAVEL SPEED</b>	<b>0 - 65 k/h (40 mph)</b>	<i>1 = UK Public Works only (contact Sales Dept for conditions).</i>	
<b>SWEEP SPEED</b>	<b>0 - 16 k/h (10 mph)</b>	<i>2 = Dependent upon specification and options selected.</i>	

## OPTIONS:

### High-tip Hopper

**High-pressure Water Pump.** 21 litres per minute @ 150 bar with 13 metres of hose on retractable hose reel and hand lance. Can also be fitted with front spray bar with 5-nozzles providing a spray pattern 1.75 m wide, with adjustable height if required

**Streetwash Conversion.** Includes 1000 litre water bag, stainless steel 9-nozzle spray bar providing a spray pattern 1.75 m wide and in-cab controls for spray bar lift and slew.

**Detergent Injection Kit** for the hand lance (Available only with high pressure water system.)

**Hydrant Adaptor, Standpipe, Key and 3 m of 2 inch (50 mm) Layflat Hose**

**Spare Wheel** (loose or with carrier) - **Extra Beacons** (or alternative types, e.g. Xenon)

**Sweep / Wash Facility - Dual-sweep Version - Tool Basket** (on front of hopper)

**In-cab Air Conditioning - Driver and Passenger Head Restraints**

**Fire extinguisher - First Aid Kit - Cab Fan**

Other options and operator specific requirements available upon request.

Scarab Sweepers are dedicated to continuous product development and as such we reserve the right to change this specification without prior notice.  
To ensure latest information contact Sales Department

### 1. Public Works vehicles only



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