



# MONARCH

COMMERCIAL VEHICLE WASHING MACHINE



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## **SPECIFICATION OF KRE MONARCH 3 BRUSH MACHINE-**

The KWE- Model Monarch Machine is a 3 brush, self-contained, traversing gantry type plant giving a full two pass wash to the vehicle.

The vehicle drives into the wash pad and is stationed at the designated place. The operator must select the wash cycle (i.e.) (1) sides only (2) Special Bus Programme (3) Bus with Luggage Carrier (4) Normal Cycle on the remote panel of Machine and press the relevant start / stop switch. The remote cub control panel (see control device) is located on the right / left portal of Machine and is housed in a water proof cubicle.

### **1. TECHNICAL SPECIFICATIONS:**

Type of Machine:	<b>3 brush rolls over gantry type</b>
Washing Height:	<b>3800 mm</b>
Machine Height:	<b>4460 mm</b>
Machine Width:	<b>4265 mm</b>
Machine Length:	<b>1780 mm</b>
Electric Supply:	<b>380/440 V, 3 Phase 50 cycle with</b>
Neutral. Power Required:	<b>6 kW</b>
Time of Wash Cycle:	<b>6 -7 Minutes</b>
Starting Method:	<b>Push button/vehicle actuated.</b>
Shampoo/ detergent:	<b>Automatic by Electronic Metering</b>
Pump. Water Pressure:	<b>4 bar</b>
Water Consumption:	<b>250 litres approx. depending on size of vehicles.</b>

**Brushes;** **900mm Dia Horizontal & 1000 mm Dia  
Vertical Brushes in 305 mm long, 'X' section profile  
polyethylene brushes. Imported too International**

**GENERAL DESCRIPTION OF OPERATION OF**  
**MONARCH VEHCILE WASHING MACHINE**

The vehicle drives into the wash bay between the guide rails, stopping immediately in front of the Machine. The engine must be stopped and the handbrake firmly applied. The operator selects the mode in sub control panel for a bus without luggage carrier / bus with luggage carrier / sides only and pushes the start button.

The horizontal brush descends to its lowest extremity just above ground level at which point the water pump is switched on. Simultaneously, the side brushes are released and move to their inner operating positions. The machines move towards the vehicle with the brush spray system operating. During the first complete traverse detergent is automatically injected into the spray system. The side brushes, which contact the vehicle first, deviate outwards freely to accommodate the vehicle width. Their outward movement is hydraulically damped to prevent brush bounce. When the horizontal brush contacts the vehicle the Machine pauses, allowing the brush to rise. If while the brush is rising it should contact an overhanging projection, the Machine will automatically "back off" allowing the brush circumnavigates the projection. \* The brush maintains contact with the vehicle surface throughout the wash, ensuring through washing. A free wheel device is incorporated in the brush lowering system, eliminating excessive brush pressure on the vehicle. The control system includes a 'back track system' which reverses the machine should the horizontal brush lose contact while washing down the rear of a vehicle. At the end of the first traverse the horizontal brush is again at its lowest extremity. At this point the Machine stops, the horizontal brush exchanges direction of rotation and the detergent injection system is switched off. After a short delay to allow all detergent to be cleared from the spray system, the Machine commences its return traverse.

A full brush washing operation is again completed, with the brushes in contact with the vehicle and the vehicle thoroughly rinsed with water. On the return of the Machine to its starting position, the spray system is shut off and the horizontal brush raised to its upper limit. When this is reached, all brushes stop rotating allowing a clear passage way for the vehicle to be driven through the Machine and out of the wash bay.

The complete washing operation is fully automatic. The Machine measures the length of the vehicle being washed, travelling only the distance required, there is therefore no wasted operation. Dependent on the vehicle size, approximate times are 3 minutes for a car and 6 minutes for a large commercial vehicle or coach.

**All operation of the machine is controlled and monitored by a Programmable Logic Controller (PLC).**

**\* NOTE :-**

**The programme will be revised so that - the side brush start after the mirror and horizontal brush will deviate go back and then move up leaving partially cleaning of front wind screen.**

**DESCRIPTION OF STANDARD EQUIPMENT**  
**KWE MONARCH**

**Water System:**

A spray system manufactured from S.S pipe is fitted with removable S.S spray jets suitably positioned to ensure complete vehicle coverage. The detergent tank of 5 litres capacity, is contained within the structure, the detergent being injected into the water supply by means of an electronic metering pump. The water pump is supplied with the Equipment is mounted adjacent to the water tank on installation.

**Control Equipment:**

The control panel is housed within a water proof cubicle attached to the left-hand side of the Machine. All components are of the highest quality and of tried and proved design. A Programmable Logic controller (PLC) is used to control and monitor all operations of the Machine. The control panel consist of:

1. Programmable Logic Controller (PLC)
2. Miniature Circuit Breaker (MCB)
3. Contactors
4. Overload relays
5. Wash cycle counter
6. Drive
7. Step Down Transformer
8. Auto Manual Operation Panel

**Brushes:****(a) Horizontal Brush:**

The horizontal brush slides in vertical guides and is counter balanced. The brush shaft is driven by a 1.5 H. P totally enclosed electric motor, directly coupled to a worm reduction gear box.

**b) Vertical Brushes:**

Each vertical brush pivots independently from the frame work of the Machine, both at top and bottom. It therefore, avoids 'swing' which is found in brushes which pivoted only at the top brush is driven by a 1.5 H. P totally enclosed helical worm geared motor. A universal coupling is provided between gear box and brush shaft which ensures correct alignment.

The electric motor is to IP 55 specifications.

**(c) Control of vertical brushes: Latching Units:**

A one-way latching unit controls the brush movement during washing operation. The latching unit automatically locks the side brush arm when deviated from its inner position, preventing its return i.e. it allows the brush arm to move outward only.

At the start of the washing operation the solenoid is energised. The brake plate becomes straight and it allows the brush to move inwards under spring action damped by shock absorber. When wear of the brake plate takes places, adjustment can be made by unscrewing the self-locking nut. A spring on the spindle will return the armature, enabling the correct to be easily obtained.

A shock absorber is provided which allows the movement of the arm smoothly on start of the wash. It assist in maintaining the correct washing pressure. It also absorbs the bounce during the washing operation.

**Self-Centring Mechanism:**

There is a crank arm with a boss, which is fitted on top of the brush frame. On one side of the crank arm are two calibrated springs, which are in a closed position when the brush is in the innermost position. The brush is kept in its outer most position by a latching unit.

**(d) Brushes - General:**

Brushes are 1000, DIA with 'x' section profile bristles in polyethylene material mounted on a PVC pad 300 mm long for easy replaceability repositioning. The brush bristles are flagged at ends to give a soft brush vehicle contact. Each vertical brush will have the number of brush pieces as required to cover the total side of vehicle

**The brushes are imported and are to international standards.**

**(e) Horizontal Brush Raising/ Lowering:**

The raising and lowering of the horizontal brush are controlled by a 0.5 H. P totally enclosed two- speed motor directly coupled to a worm reduction gearbox. The lowering of the brush at the start of the wash and the raising of the brush at the end of the wash are carried out at the fast speed to save operating time. A free wheel device is incorporated in the lowering drive.

**Automatic 'Back track':**

The horizontal brush sensing system is designed to reverse the machine travel should the brush lose contact which washing the rear of the vehicle. This ensures through washing of the dirtiest area.

**Gantry Drive:**

The Machine is driven from both sides, ensuring smooth movement. Each drive consists of a 0.5 H. P totally enclosed motor directly couples to worm reduction gearbox and final chain drive to the driving wheel.

**Track Rails:**

Track rails are of inverted angles section with mounting pads. 1/2" (12mm) diameter by 4" (100mm) long anchor bolts are supplied for fixing the track to the concrete base. Track length is 13'6" (4.1m) longer than the longest vehicle to be washed.

**Water supply:**

A 1" bore reinforced flexible rubber water supply hose connects from the customers supply point to the Machine. All flexible electrical supply cables are strapped to this hose.

**Service Manual:**

A service Manual is provided, detailing all maintenance requirements and including a fault-finding chart.

**Automatic Vehicle Counter:**

To count the vehicles being washed, a six-digit electric counter is mounted in the control panel.