

Cleaning technology - Municipal technology

**Hako**  
Clean ahead



## *Service booklet*

### **Citymaster 1650 (1491)**

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### Hako system maintenance

**Attention**

Before undertaking maintenance work, read and observe the safety instructions in the operating manual!

The Hako system maintenance specifies in single modules the special technical work to be done and the periods of time for the maintenance activities. Parts to be replaced for the individual maintenance tasks are determined and specified in spare parts kits. Hako system maintenance:

- assures the reliable readiness for use of the vehicle (preventive maintenance),
- minimises operating costs, repair costs, costs for maintenance,
- assures long life and readiness for use of the vehicle.

**Hako system maintenance once after 50 operating hours:**

Applies to machines with internal combustion engine drive, 1st oil change, filter, etc. Performance by an expert of an authorised Hako dealer.

**Hako system maintenance once after 250 operating hours:**

Performance by an expert of an authorised Hako dealer.

**Hako system maintenance I (every 500 operating hours):**

Performance by an expert of an authorised Hako dealer by reference to the machine-specific system maintenance with spare parts kit.

**Hako system maintenance II/S (every 1000 operating hours/safety check):**

Performance by an expert of an authorised Hako dealer by reference to the machine-specific system maintenance with spare parts kit. Performance of all legally stipulated safety-relevant tests according to UVV-BGV-TÜV-VDE

## Maintenance certificate

<p><b>Handover</b></p> <p>Equipment Trial run Handover to customer Instruction performed on:</p> <p>at _____ operating hours</p>	<p><b>Hako system maintenance 50 operating hours once</b> Workshop stamp</p> <p>performed on: at _____ operating hours</p>	<p><b>Hako system maintenance 250 operating hours once</b> Workshop stamp</p> <p>performed on: at _____ operating hours</p>	<p><b>Hako system maintenance 500 operating hours once</b> Workshop stamp</p> <p>performed on: at _____ operating hours</p>
<p><b>Hako system maintenance I 1000 operating hours</b> Workshop stamp</p> <p>performed on: at _____ operating hours</p>	<p><b>Hako system maintenance I 1500 operating hours</b> Workshop stamp</p> <p>performed on: at _____ operating hours</p>	<p><b>Hako system maintenance II/S 1500 operating hours</b> Workshop stamp</p> <p>performed on: at _____ operating hours</p>	<p><b>Hako system maintenance I 2000 operating hours</b> Workshop stamp</p> <p>performed on: at _____ operating hours</p>
<p><b>Hako system maintenance II/S 2500 operating hours</b> Workshop stamp</p> <p>performed on: at _____ operating hours</p>	<p><b>Hako system maintenance I 3000 operating hours</b> Workshop stamp</p> <p>performed on: at _____ operating hours</p>	<p><b>Hako system maintenance II/S 3500 operating hours</b> Workshop stamp</p> <p>performed on: at _____ operating hours</p>	<p><b>Hako system maintenance I 4000 operating hours</b> Workshop stamp</p> <p>performed on: at _____ operating hours</p>
<p><b>Hako system maintenance II/S 4500 operating hours</b> Workshop stamp</p> <p>performed on: at _____ operating hours</p>	<p><b>Hako system maintenance I 5000 operating hours</b> Workshop stamp</p> <p>performed on: at _____ operating hours</p>	<p><b>Hako system maintenance II/S 5500 operating hours</b> Workshop stamp</p> <p>performed on: at _____ operating hours</p>	<p><b>Hako system maintenance I 6000 operating hours</b> Workshop stamp</p> <p>performed on: at _____ operating hours</p>
<p><b>Hako system maintenance II/S 6500 operating hours</b> Workshop stamp</p> <p>performed on: at _____ operating hours</p>	<p><b>Hako system maintenance I 7000 operating hours</b> Workshop stamp</p> <p>performed on: at _____ operating hours</p>	<p><b>Hako system maintenance II/S 7500 operating hours</b> Workshop stamp</p> <p>performed on: at _____ operating hours</p>	<p><b>Hako system maintenance I 8000 operating hours</b> Workshop stamp</p> <p>performed on: at _____ operating hours</p>
<p><b>Hako system maintenance II/S 8500 operating hours</b> Workshop stamp</p> <p>performed on: at _____ operating hours</p>	<p><b>Hako system maintenance I 9000 operating hours</b> Workshop stamp</p> <p>performed on: at _____ operating hours</p>	<p><b>Hako system maintenance II/S 9500 operating hours</b> Workshop stamp</p> <p>performed on: at _____ operating hours</p>	<p><b>Hako system maintenance I 10000 operating hours</b> Workshop stamp</p> <p>performed on: at _____ operating hours</p>
<p><b>Hako system maintenance II/S 10500 operating hours</b> Workshop stamp</p> <p>performed on: at _____ operating hours</p>	<p><b>Hako system maintenance I 11000 operating hours</b> Workshop stamp</p> <p>performed on: at _____ operating hours</p>	<p><b>Hako system maintenance II/S 11500 operating hours</b> Workshop stamp</p> <p>performed on: at _____ operating hours</p>	<p><b>Hako system maintenance I 12000 operating hours</b> Workshop stamp</p> <p>performed on: at _____ operating hours</p>

## Maintenance plan

### Maintenance plan for basic vehicle

Hako system maintenance once after 50 operating hours
<b>Engine</b> <ul style="list-style-type: none"><li>• Changing engine oil</li><li>• Changing engine oil filter</li><li>• Replacing the fuel filter</li><li>• Emptying the water trap of the fuel system</li><li>• Checking coolant hoses and radiator</li><li>• Checking coolant level in expansion tank, refilling if necessary</li><li>• Checking combination radiator and radiator grille for dirt, cleaning with compressed air if necessary</li><li>• Checking engine bearings for damage and cracks</li><li>• Checking ribbed V-belt for condition and function</li><li>• Checking generator for soiling and cleaning if required</li><li>• Checking ECO, standard and maximum speed</li><li>• Checking the exhaust system for function and tightness</li><li>• Checking the fuel pipes for function and tightness</li><li>• Checking air suction pipe for function and tightness</li></ul>
<b>Vehicle control</b> <ul style="list-style-type: none"><li>• Reading and evaluating the service information of the vehicle control system and removing faults if necessary</li><li>• Checking the software status, updating if necessary</li></ul>
<b>Electrical system</b> <ul style="list-style-type: none"><li>• Checking horn, lighting and working functions</li><li>• Checking cabling for abrasion points and damage</li><li>• Checking battery charge condition, cleaning and greasing battery poles</li></ul>
<b>Hydraulics</b> <ul style="list-style-type: none"><li>• Changing the return filter</li><li>• Checking the hydraulic oil level, refilling if necessary</li><li>• Checking the lifting cylinder of the front power lift for function and tightness</li><li>• Checking hydraulic pipes for function and tightness</li><li>• Checking the hand pump for function</li></ul>
<b>Chassis and axles</b> <ul style="list-style-type: none"><li>• Checking chassis springs for damage and ease of movement</li><li>• Checking shock absorbers for function and tightness</li><li>• Checking bearing bushes of the axle suspension for cracks and damage</li><li>• Checking buffers for cracks and damage</li><li>• Tighten M14 screws of axle guide and Panhard rod (140 Nm)</li></ul>
<b>Steering</b> <ul style="list-style-type: none"><li>• Checking function and ease of movement</li><li>• Checking steering cylinder for play</li></ul>
<b>Brake</b> <ul style="list-style-type: none"><li>• Checking the service brake for function</li><li>• Checking the brake fluid</li><li>• Checking the brake hoses for damage</li><li>• Checking the parking brake for function</li></ul>
<b>Cab</b> <ul style="list-style-type: none"><li>• Checking air conditioning system for function</li><li>• Checking heating for function</li><li>• Checking window washing agent</li></ul>

**Continuation – Hako system maintenance once after 50 operating hours**

**Wheels and tyres**

- Tightening the wheel nuts
- Checking tyres for damage and air pressure

**Lubrication service**

- Door hinges (4x)
- Front lifting cylinder (4x), front lift (2x) and upper link (2x)
- Steering cylinder (4x)

**Hako system maintenance once after 250 operating hours**

**Engine**

- Reading out the error memory of the engine control unit, deleting sporadic errors, repairing clear errors if necessary
- Checking the load condition of the diesel particulate filter, performing service regeneration if necessary
- Checking the engine oil level, topping up if necessary
- Checking the coolant hoses and radiator for tightness
- Checking the coolant level, topping up if necessary Only refill distilled water or engine coolant!
- Checking the combination radiator and radiator grille for contamination, cleaning with compressed air if necessary
- Checking the motor bearings for damage, cracks and firm seating
- Checking the ribbed V-belt for condition and function
- Checking the generator for contamination, cleaning if necessary
- Checking the exhaust system for function and tightness
- Checking the fuel pipes for function and tightness
- Checking the air suction pipes for function and tightness

**Vehicle control**

- Reading out the entries in the working hydraulics control unit, removing the fault if necessary  
Checking the software status, updating if necessary
- Reading out the entries in the hydrostatic control unit, removing the fault if necessary  
Checking the software status, updating if necessary

**Hydraulics**

- Checking the hydraulic oil level, refilling if necessary
- Checking the hydraulic lines and hydraulic hoses for chafe marks and damage
- Checking the lifting cylinder of the front power lift for function and tightness
- Checking the hydraulic lines for function and tightness

**Chassis and axles**

- Checking the chassis springs for damage and ease of movement (visual inspection)
- Checking the shock absorbers for function and tightness
- Checking the bearing bushes of the axle suspension for cracks and damage (visual inspection)
- Checking the stop buffer for cracks and damage (visual inspection)
- Tightening the screws (M14) of the axle guide and the Panhard rod on the front and rear axle to 140 Nm (8 screws on the axle guide and 2 screws on the Panhard rod)

**Steering**

- Checking the steering for function and ease of movement
- Checking the steering cylinder for play

### Electrical system

- Checking the horn, lighting and working functions
- Checking the cabling for abrasion points and damage
- Checking the battery charge condition, cleaning and greasing battery poles

### Brake

- Checking the service brake for function Performing a brake test
- Checking the brake hoses for damage
- Checking the brake fluid
- Checking the parking brake for function

## Continuation – Hako system maintenance once after 250 operating hours

### Cab

- Checking the air conditioning system for function
- Checking the condenser of the air conditioning system of the cab rear panel for contamination, cleaning with compressed air if necessary
- Checking the heating for function
- Checking the window washing agent

### Wheels and tyres

- Tightening the wheel nuts (180 Nm)
- Checking the tyres for damage, tread depth and air pressure:
- 215/70 R15 (6.0 bar)
  - 225/70 R15 C (standard tyres) (5.0 bar)
  - 255/65 R16 (universal tyres) (3.0 bar)
  - 285/65 R16C (3.2 bar)
  - 320/55-15 T559 (grass tyres) (2.8 bar)
  - 325/60 R15 (2.5 bar)

### Lubrication service

- Door hinges (4x)
  - Front lifting cylinder (4x), front lift (2x) and upper link (2x)
- Steering cylinder (4x)

## Hako system maintenance I (every 500 operating hours)

### Engine

- Changing engine oil
- Changing engine oil filter
- Replacing the fuel filter
- Emptying the water trap of the fuel system
- Changing filter insert of the air filter
- Checking coolant hoses and radiator
- Checking coolant level in expansion tank, refilling if necessary
- Checking combination radiator and radiator grille for dirt, cleaning with compressed air if necessary
- Checking engine bearings for damage and cracks
- Checking ribbed V-belt and tensioning roller for condition and function, replacing if necessary
- Checking ribbed V-belt and belt tensioner of the generator
- Checking V-belt for tension and condition
- Checking generator for soiling and cleaning if required
- Checking ECO, standard and maximum speed
- Checking the exhaust system for function and tightness
- Checking the fuel pipes for function and tightness
- Checking air suction pipe for function and tightness
- Performing service regeneration of the diesel particulate filter. Only vehicles with diesel particulate filters!

**Vehicle control**

- Reading and evaluating the service information of the vehicle control system and removing faults if necessary
- Checking the software status, updating if necessary

**Electrical system**

- Checking horn, lighting and working functions
- Checking cabling for abrasion points and damage
- Checking battery charge condition, cleaning and greasing battery poles

**Hydraulics**

- Checking the hydraulic oil level, refilling if necessary
- Checking the lifting cylinder of the front power lift for function and tightness
- Checking hydraulic pipes for function and tightness
- Checking the hand pump for function

**Continuation – Hako system maintenance I (every 500 operating hours)**

**Chassis and axles**

- Checking chassis springs for damage and ease of movement
- Checking shock absorbers for function and tightness
- Checking bearing bushes of the axle suspension for cracks and damage
- Checking buffers for cracks and damage
- Tighten M14 screws of axle guide and Panhard rod (140 Nm)

**Steering**

- Checking function and ease of movement
- Checking steering cylinder for play

**Brake**

- Checking the service brake for function
- Checking the brake fluid
- Checking the brake hoses for damage
- Checking the parking brake for function

**Cab**

- Checking the air conditioning system for dirt
- Cleaning the cab air filter
- Cleaning the condenser on the cab rear wall with compressed air
- Checking heating for function
- Checking and if necessary refilling the windscreen washing agent level

**Wheels and tyres**

- Tightening the wheel nuts
- Checking tyres for damage and air pressure

**Lubrication service**

- Door hinges (4x)
- Front lifting cylinder (4x), front lift (2x) and upper link (2x)
- Steering cylinder (4x)

**Hako system maintenance II/S (additionally every 1000 operating hours)**

**Engine**

- Changing the safety cartridge

## Maintenance plan

### Hydraulics

- Checking the hydraulic oil. Taking and sending in a sample
- Changing the hydraulic oil filter
- Changing the venting filter of the hydraulic oil tank
- Checking the hydraulic oil level, refilling if necessary

### Cab

- Changing the cab air filter

### Hako system maintenance (additionally every 2000 operating hours)

#### Bowden cable

- Checking the coarse material flap and suction mouth lift for function, ease of movement and zero point

#### Suction fan dirt hopper

Replacing the hydraulic hoses for the suction fan

#### Chassis/Axles

- Replacing the rubber-metal stop buffer for the front axle

### Hako system maintenance (additionally every 2500 operating hours)

#### Engine

- Changing the coolant VW G13

Note:

Even in warm countries, never drive without coolant additive, since the coolant additive protects the engine against corrosion and increases the boiling point of the cooling water! The coolant additive must be at least 40 % and may be a maximum of 60 %. Use only distilled water for mixing!

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### Hako system maintenance (additionally every 3000 operating hours)

#### Hydraulics

- Changing hydraulic oil

## Maintenance plan for vacuum sweeping system

### Hako system maintenance once after 50 operating hours

#### Sweeping unit

- Checking wear and damage
- Checking the sweeping level, adjusting if necessary
- Checking the lifting cylinder and hydraulic pipes for function and tightness
- Checking the spray nozzles, spray nozzle filter and sieve filter of the water system, cleaning if necessary

#### Suction mouth and suction duct

- Checking wear and damage
- Checking the suction mouth setting, adjusting if necessary
- Checking the coarse material flap and suction mouth lift for function and damage
- Checking the suction hose for wear and seating
- Checking the seal between suction duct and dirt hopper

#### Dirt hopper

- Checking the suction fan for speed and contamination
- Checking the V-belt of the suction fan for condition and tension, tensioning or replacing if required
- Checking the lifting cylinder and hydraulic pipes for function and tightness
- Checking the seals of the hopper lid for tightness and damage
- Checking the dirt hopper hand pump for function

**Hako system maintenance once after 250 operating hours**

**Sweeping unit**

- Checking wear and damage
- Checking the sweeping level, adjusting if necessary
- Checking the lifting cylinder and hydraulic pipes for function and tightness

**Suction mouth and suction duct**

- Checking the suction mouth setting, adjusting if necessary (distance: on the side 5 mm, on the rear 10 mm)
- Checking the coarse material flap and suction mouth lift for function and damage
- Checking the swivel heads of the suction mouth lift system for wear and damage, replacing if necessary (spare part no. 01498260 and 01492810)
- Checking the suction hose for wear and seating
- Checking the seal between suction duct and dirt hopper

**Continuation – Hako system maintenance once after 250 operating hours**

**Dirt hopper**

- Checking the suction fan for speed and contamination, cleaning if necessary
- Checking the V-belt of the suction fan for condition and tension, tensioning or replacing if required.
- Checking the lifting cylinder and hydraulic pipes for function and tightness
- Checking the seals of the hopper lid for tightness and damage
- Checking the hand pump for function (lift dirt hopper or loading platform with the hand pump)

**Hako system maintenance I (every 500 operating hours)**

**Sweeping unit**

- Checking wear and damage
- Checking the sweeping level, adjusting if necessary
- Checking the spray nozzles, spray nozzle filter and sieve filter of the water system, cleaning if necessary
- Checking the trailing rubber strap at 3rd rotating brush (3-brush system only) (250)

**Suction mouth and suction mouth duct**

- Checking the suction mouth setting, adjusting if necessary
- Checking the coarse material flap and suction mouth lift for function and damage
- Checking the suction hose for damage and seating
- Checking the seal between suction duct and dirt hopper

**Dirt hopper**

- Checking the suction fan for soiling
- Checking the V-belt of the suction fan for condition and tension, tensioning or replacing if required
- Checking the suction fan for vibration, checking the bearings if necessary
- Checking the impeller for damage and wear, replacing if necessary
- Checking the impact plate of the hopper lid for wear
- Checking the seals of the hopper lid for tightness and damage
- Checking the joints and bearings of the hopper lid
- Checking the exhaust side of the hopper lid for contamination
- Checking the lifting cylinder and hydraulic pipes for function and tightness
- Checking the dirt hopper hand pump for function

### Hako system maintenance (additionally every 1500 operating hours)

#### Sweeping unit

- Checking wear and damage
- Checking the sweeping level, adjusting if necessary
- Replacing the bearing support (only 2-brush system)
- Replacing the flanged bush (only 2-brush system)
- Replacing the bush (only 2-brush system)
- Replacing the comb (only 2-brush system)
- Replacing the complete hose (circulating water) – if necessary

### Hako system maintenance (additionally every 2000 operating hours)

#### Suction mouth and suction mouth duct

- Changing the Bowden cable for the coarse material flap

#### Dirt hopper

- Changing V-belt on the suction fan

## Sweeping system maintenance plan

### Hako system maintenance once after 500 operating hours

#### Front sweeping roller

- Changing the gearbox oil

## Wet cleaning system maintenance plan

### Hako system maintenance once after 500 operating hours

#### Scrubbing deck

- Check the locking device for wear and damage, turn or replace it if necessary





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