Waterkracht BV
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Self-supporting hot water high pressure cleaner on trailer

Hudson 315 BHT®

High pressure system mounted in a “Waterkracht” single-axle trailer, complete with surge brake and mudguards. The trailer is waterproof, made of polyester and has a sealed bottom. The other components of this trailer are made of stainless steel and aluminium. By using durable materials, the lifetime of the trailer is considerably longer compared to conventional trailers.

The high pressure system consist an Aquabar high pressure pump which is directly connected to an industrial - liquid cooled - Kubota diesel engine. Standard, the Hudson is equipped with a “Waterkracht-zero pressure control system” which ensures that; when closing the gun, the whole high pressure group is unpressurized. By using a heat exchanger, which is connected to the primary cooling system of the engine and to the suction side of the high pressure pump, the fuel consumption of the installation is considerably reduced.

The used heating module provides the unique and patented Boiling Hot water Technology© and has the lowest carbon emission of known burners. With a value of 33 ppm this burner meets the very strict German Bimsch standard. The German Bimsch standard is used for freight traffic with acces to the city centre. A copy of this test report is added to the delivery of this trailer. This wil provide you a competetive advantage to customers who give a priority to responsible entrepreneurship.

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General information

Boiling Hot water Technology

The unique and patented Boiling Hot water Technology© (Patent No: 1015139) is standard on all Hudson trailer models. The mass of the water and the deep-cleaning effect of the boiling hot water ensures a better cleaning result compared to the conventional 80°C (175°F) hot water or the 140/160°C (300°F) steam method. The Boiling Hot water Technology also saves time and water, by increasing the temperature to a maximum, the factor time is reducing extremely. The reason for this is because water can transfer 27 times more energy compared to steam.

Integrated water tank

The clever built-in water tank provides a water supply of 750 litres. This means you are less dependent of a fixed water connection.

Anti-scale dosing system

If the hot water high pressure system is used in areas with relatively high calcium in the water, then we recommend to adjust an anti-scale dosing (12Volt) system. In operation, a very small percentage liquid anti-scale is added to the water, it has the ability to prevent the areas in the water-heating system - as much as possible - for calcification. An anti-scale dosing (12 Volt) system is standard equipped on the trailer. Although this is not a 100% guarantee, practice has shown that it works.

Quality

Waterkracht BV is NEN-EN-ISO 9001:2008 certified. In addition, the high pressure cleaning systems are produced according to applicable CE-directives and the high-pressure hoses are tested and certified due to the standard S.I.R.-guidelines (http://www.sir-safe.nl/en).

Video

For more information about our Boiling Hot water Technology please watch the video below. This video shows the differences between hot water, steam and our patented Boiling Hot water Technology©.

Watch the video on bit.ly/1N6nZDY

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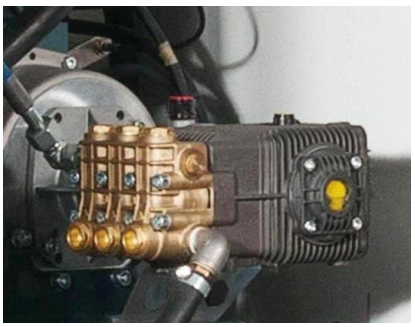
Technical information Hudson 315

System capacity:

Water delivery performance	: 15 litres /minute maximum.
Design pressure	: 280 bar.
Working pressure	: adjustable to 280 bar.
Water temperature	: adjustable to 98°C (208°F), or Boiling Hot water Technique.

High pressure pump



Type	: High pressure three-piston-pump.
Brand - type	: Aquabar 300/15.
Capacity	: Max. 300 bar - 15 litre/min.
Input speed	: Up to 1500 rpm.
Asked drive capacity	: Max. 8,5 kW / 11,5 HP.
Pomp drive	: by gear reduction box.
Material valves	: Stainless steel.
Plungers Material	: Ceramic.
Pump head material	: Brass.

Pressure group

Pressure system	: Type Zero.
Safety valve	

Diesel engine

Type	: Water cooled 2-cylinder diesel engine.
Maximum rpm	: 3200 rpm.
Maximum power	: 10,3 kW / 14 HP.
Brand	: Kubota.
Type	: Z602.

Heating system

Type	: Diesel- fuelled high-pressure coil.
Heating capacity	: Sufficient for 15 litre/min. up to 100°C (208°F).
Model	: Ecoboiler - 12 volts.
Maximum working pressure	: 350 bar.

Reservoirs

Water tank	: Plastic water tank, capacity 750 litres, complete with a water supply filter, float valve, filter base, drain and cover.
Diesel tank	: Plastic diesel tank capacity 80 litres, fitted with lockable filler cap, drain, and a fuel filter.

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Technical information Hudson 315

Specifications trailer

The trailer is equipped with a heavy nose wheel. The high pressure system can operate with all the doors closed.

- Length : 2,50 meters.
  : 3,95 meters, including drawbar.
- Width : 1,35 meters.
  : 1,83 meters, including mudguards.
- Height : 1,30 meters.
  : 1,72 meters, including base.
- Weight : 860 kg empty weight.
  : 1300 kg maximum license plate weight.
  : 1500 kg maximum gross vehicle weight.
- Doors : Two side doors, for engine compartment.
  : Two rear doors, for work compartment.
- Colour : Standard white.
- Sound level : 82 dB.

Operation

The Hudson has a touch-screen control panel, which is very easy to use and is less susceptible to interferences, due to an minimum of electrical components. The touch-screen display includes the following features:

- Start/stop.
- Cold water, hot water or boiling hot water.
- Support for service and maintenance.
- Lower pressure and higher pressure adjustment.
- Electronic rpm control.
- Fuel level meter.
- Electronic manometer.
- Water level indicator.
- Operating hours meter.
- Emergency stop button.

Safety features

The high pressure system stops in case of:

- To high coolant temperature of the diesel engine.
- To high temperature in the water tank.
- To low water level in the water tank.
- To low diesel engine oil pressure.
- Operation of the emergency button.

Delivery of the system includes

- Information card "first aid for high pressure wounds". This card is in a plastic sleeve in the operating room. In case of a high-pressure injury, this card should be hand over to the emergency physician.
- Plastic case in which the instruction, log book and maintenance manual of the machine are stored.
- Clear operating instructions on the central touch-screen and optional wireless remote control.

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Available Options

Accessory kit

- 1 x industrial fingertip- hp-gun, equipped with a swivel and M24-male quick coupling for the high-pressure hose and a M24-female quick coupling for the exchangeable lance.
- 1 x stainless steel lance with a length of 800 mm, with stainless steel nozzle holder, patented flat nozzle and M24-male quick coupling for connection to the hp-gun.
- 25 meter HST10 high-pressure hose with M24-female quick coupling.
- Stainless steel bracket for maximum 2 lances.
- Stainless steel bracket for hp-gun.

Hose reels

Water supply hose reel

- Type T53.
- Aluminium.
- Manual operated.
- Axial coupling.
- 25 meter ¾" Tricoflex- water hose with Geka-quick coupling.
- Including fixing point.

High-pressure hose reel

- Type T52.
- Aluminium.
- Manual operated.
- Axial coupling.
- 25 meters HST10 high-pressure hose mounted on a high-pressure hose reel instead of the standard 15 meters hose.

Extra hose rack, including 15 meters high-pressure hose

Extra high-pressure hose to work nearby the trailer. This high-pressure hose can also be used as extension hose. This allows you to reach greater distance without moving the trailer.

Wireless remote control

This wireless remote control, with a range of 80 meters, has got the same functions as the touch-screen display, except the service and maintenance support. Very convenient if you are working at height or on a large distance from the trailer.

Version SIR-guidelines (industrial cleaning foundation)

The machine can be equipped according SIR-guidelines, which includes:

- Emergency stop mounted on a robust hose reel with 80 meters of e-cable, which is connected to the control of the unit.
- Grounding hose reel, with 15 meters of e-cable and clamp.
- The safety valve will be set and sealed.
- The high-pressure pistols, couplings and lances will be tested, receive a unique number and test certificate with the results.

Spark-arriser

Stainless steel cover to catch sparks from the diesel engine and the burner.

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Course high-pressure cleaning

To get your staff familiar with the high-pressure technology, Waterkracht offers you the opportunity to organize a course in which both the basic concepts of high pressure washing and the Boiling Hot water Technique® and maintenance of the new machine is included. Safety for the user and passers is also an issue.

After the course, participants will get a personalized "Certificate of Participation", important for the enhancement and motivation of your staff.

Other options

Of course there are various other options available such as: additional high-pressure lances, high-pressure pistols, floor cleaners, filter systems etc. to customize your Hot Aqua Blaster. Ask us for the extra possibilities.

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Explanations

Calculation fuel savings

Water temperature in the water tank	12°C
Water temperature after the heat exchange	24°C -
Temperature savings	12°C

(litres per minute) 15 x (temperature savings) 12°C x 60 (minutes) = 10.800 Kcal/hour
860 Kcal/hour = 1kW
10.800 : 860 = 12,6 kW
The caloric value of 1 litre diesel oil =7,4 kW
12,6 kW : 7,4 kW = 1,7 litre fuel saving per hour

Explanation of the Boiling Hot water Technology®

- The environmental friendly cleaning method of the Hot Aqau Blaster, with the unique patented Boiling Hot water Technique, is based on the “thermo shock” effect.
- High energy water drops, with a water temperature of 100 to 102º C, will blast on the pollution.
- The power of these water drops combined with the high temperature is responsible for the unbelievable, remarkable cleaning and disinfecting result.
- With this technique, compared with conventional methods, a better cleaning result can be obtained with considerably less water consumption and operating pressure.
- The operating pressure can be regulated variably by touch-screen display. What previously was impossible and is now achievable! A single cleaning system, from “as soft as silk” to “as strong as an lion”.

Calcification by water hardness

The water hardness is usually expressed in German hardness (°dH) and, in the Netherlands, should not be too hard nor too soft. The hardness of drinking water should be between 5.6 and 14°dH. When heating water and/or pumping warm water, the present calcium- end (magnesium) salts in the water will transform into the solid calcium carbonate (magnesium carbonate); the harder the water the more scale is formed. Upon heating systems, calcic deposits on the water-sharing parts like the inside of the high-pressure coil, but possibly also in the connection hoses and/or pipes, etc.

Lime deposits have a negative effect on the heating capacity, also liming can cause that the coil is partially or completely clogged and needs to be replaced. Waterkracht BV can never be held responsible for this cause.

Heat exchange

Type of water	Specific heat Kj/kg*K	Heat transfer coëfficiënt W/mK	Heat volume Kj/kg
Water 100°C (1 bar)	4,18	0,682	418
Stoom 100°C (1 bar)	2,08	0,025	2674

* Water can transfer 27 times more energy compared to steam.