Operating manual

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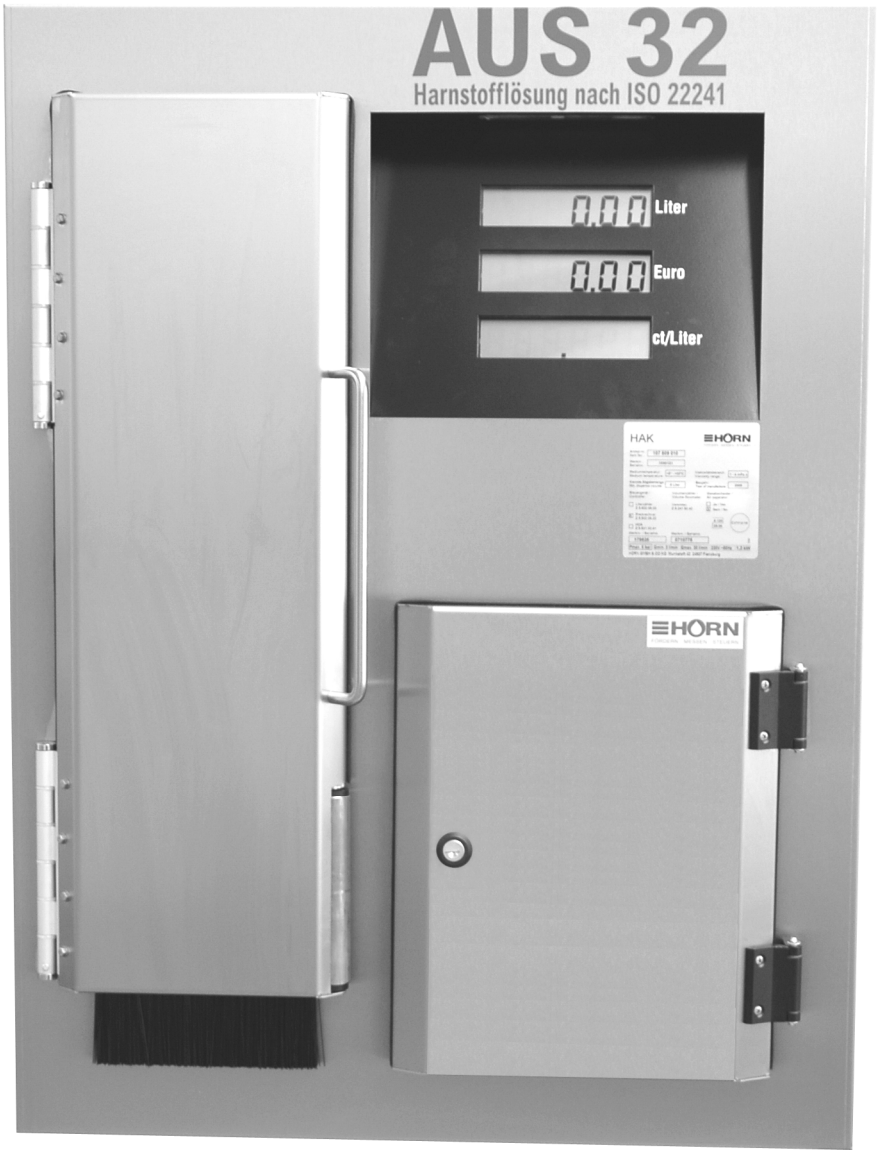

HAK 51030

The operating manual is always to be read before commissioning the equipment. No warranty claim will be granted for faults and damage to the equipment arising from insufficient knowledge of the operating manual.

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Copyright

Exclusion of liability

No warranty claim will be granted for faults and damage to the equipment or to persons arising from insufficient knowledge of the operating manual.

Technical changes reserved.

The German operating manual is the original operating manual. Operating manuals in other languages have been translated from the original operating manual.

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* Description of equipment that is not included in all versions.

1 Safety instructions

The device is a state of the art piece of equipment and has been constructed according to recognised safety specifications. It is nevertheless possible that use of the device will present hazards to the operator or to third parties, or may damage the device or other property. It is therefore essential to act in accordance with these safety instructions, and in particular with those sections identified as warnings.

Warning notices and symbols

In the operating manual, the following signs are used for highlighting important information.

Special information for economical use of the equipment.

Special information or "dos and don'ts" for damage prevention.

Information or “dos and don'ts” for the prevention of damage to persons or equipment.

Appropriate use

The device may only be used if it is in perfect condition, and then only for its intended purpose, in compliance with all safety regulations, with an awareness of the potential risks, and according to the operating manual. Any faults that may impair the safety must be rectified immediately.

The device and its components are only to be used for handling the liquids listed and the purpose described. Using the machine for any other purpose would constitute inappropriate use. The manufacturer is not responsible for any loss arising as a result of this, the risk for this is borne only by the operating company.

Organisational measures

This operating manual should always be kept readily available at the site of operation! Each person concerned with the assembly, commissioning, maintenance and operation of the equipment must have read and understood the entire operating manual. It is essential that the type plate and the warning notices attached to the device are observed, and are maintained in a fully readable condition.

Qualified personnel

The operating, maintenance and assembly personnel must be appropriately qualified for their work. The areas of responsibility, competences and supervision of the personnel must be precisely regulated by the operating company. If the personnel do not have the required knowledge, they must be trained and instructed. The operating company must also ensure that the contents of the operating manual are properly understood by the personnel.

Waters protection

⚠ The device has been designed to handle water hazardous substances. The regulations of the water resources act (WHG = German Water Resources Act) and the ordinance on installations for handling of substances hazardous to water (VawS in Germany) must be adhered to.

Of particular importance is § 19g German Water Resources Act (WHG), which prescribes that facilities to handle water endangering substances are designed, installed, set up, maintained and operated in such a way that pollution or any other sustainable change in the characteristics of water bodies does not occur. The operating company of such a facility is obliged according to § 19i German Water Resources Act (WHG) to continuously monitor his facility for adherence to the above requirements at the location of installation. According to WHG § 19i, only specialist companies certified to §19l WHG may carry out work on systems for water hazardous liquids.

Compressed air

⚠ Only persons with special knowledge and experience with pneumatic systems may carry out work on pneumatic parts and equipment. Prior to any inspection, maintenance or repair work, ensure that the equipment is not under pressure. All lines, hoses and screw joints should regularly be checked for leaks and external damage. Any damage must be rectified immediately.

Hydraulics

⚠ Only persons with special knowledge and experience with hydraulic systems may carry out work on hydraulic parts and equipment. All lines, hoses and screw joints should regularly be checked for leaks and visible external damage. Any damage must be rectified immediately. Any oil spurting out can cause injuries and fire.

The relevant safety regulations for the product must be followed when handling oils, greases or other chemical substances!

Servicing and maintenance

⚠ According to the statutory regulations only specialist companies certified to §19l WHG may carry out work on systems for water hazardous liquids. No alterations, extensions, or conversions of the device with potential impact upon safety are permitted without prior consent of the manufacturer. Spare parts must comply with the technical requirements specified by the manufacturer. This is always assured if genuine spare parts are used.

Electric power

⚠ Work on the electrical equipment may only be carried out by a qualified electrician or by trained persons under the guidance and supervision of a qualified electrician according to electro-technical guidelines. Machine or system components, on which inspection, maintenance or repair work is to be carried out must be de-energised.

2 Product description

2.1 Description

The HAK 51030 dispensing system is an electrically operated dispensing system intended for the refuelling of vehicles and containers with AUS 32 urea solution complying with ISO 22241.

! The HAK 51030 dispensing system may be used exclusively with urea solution. In particular, it must not be used for inflammable liquids!

The HAK 51030 dispensing system is available in versions approved for calibration and in non-calibratable versions. The calibration approval is printed at the end of the operating manual.

The appliance consists of the delivery system, which is mounted completely in a sheet steel frame with a stainless steel front. Components are the feed pump, a calibratable flow meter and the dispensing hose with automatic nozzle. The discharge hose is fitted with automatic retraction.

In the case of the non-calibratable versions, a non-calibratable flow meter is installed.

2.2 Product versions

The HAK 51030 dispensing system is available in the following versions:

107 509 110 - HAK 51030 – litre counter
107 509 120 - HAK 51030 – price calculator – calibratable
107 509 130 - HAK 51030 – HDA 500e automatic dispenser - calibratable
107 509 140 - HAK 51030 - litre counter – not calibratable
107 509 160 - HAK 51030 - HDA 98 automatic dispenser – not calibratable
107 509 170 - HAK 51030 - HDA 250 automatic dispenser – not calibratable

The operating instructions for each particular component must be observed.

2.3 Application area

⚠ **The HAK 51030 dispensing systems are suitable only for the dispensing of urea.**

The temperature range of the delivery liquid may not exceed +30℃ or fall below -7℃.

! The ambient temperature must not fall below -10℃ o r exceed +50℃.

The hydraulic room must be temperature controlled on the customer side such that the temperature does not fall below -7 ℃ or e xceed +30 ℃.

2.4 Technical data

Dimensions	Height:	approx. 900 mm
	Width:	approx. 673 mm
	Depth:	approx. 793 mm
Media temperature:		-7℃ to +30℃
Ambient temperature:		-10℃ to +50℃
Suction connection:		DN25 hose mandrel
Nominal suction height:		3.5 m
Rated delivery rate approx.:		30 l/min
Voltage:		230 V 50 Hz
Power:		max. 1.2 kW
Current:		5.2 A
Protection class:		IP 54
Smallest measuring quantity (calibratable):		5 l
Maximum operating pressure:		5 bar
Viscosity range:		1 mPa to 20 mPa

2.5 Accessories

The following optional extras are available for the HAK 4103:

Fitting kit: 400 W heater	Item No. 233400131
Fitting kit: filling connection	Item No. 233400132
Fastening kit for wall mounting (wall thickness 40-160 mm)	Item No. 233400133

3 Assembly

3.1 Legal information

The HAK 51030 tank system is designed to be mounted inside housings or wall openings provided by the customer. The front panel is designed for outdoor operation. The pumping equipment must be installed in a closed room, protected from the weather. The place of installation must be chosen in such a way that environmental hazards – such as sea water – cannot attack the components.

It should be fitted in a wall opening 835 mm high and 610 mm wide. The wall opening must be finished with, for instance, an all-round sheet metal lining, so that the rubber seal surrounding the HAK 4103 can be seated around the whole of the edge. This is necessary in order to protect the HAK 4103 effectively from the weather.

A mounting kit is available for installing in walls between 40 and 160 mm thick. In addition, the HAK 4103 must be supported at the rear by, for instance, the supporting leg included in the mounting kit. When mounted in other ways, the customer must provide an equivalent installation method.

If the optional heater is used, the customer must check that sufficient heating capacity is available for the area to be heated.

The dispensing system conforms to the requirements under water and industrial legislation as per WHG (Federal German Water Resources Act) and VawS (Ordinance on installations for handling of substances hazardous to water). The local regulations for installation and operation as well as the official approvals are to be observed or to be obtained by the operating company.

⚠ **Installation, commissioning and maintenance may only be carried out by a specialist in accordance with WHG §19l.**

The German water hazard regulations classify AUS 32 urea solution under water hazard class 1 (WGK 1). The place of installation must be chosen in such a way as not to pollute the environment. The following points are amongst those that must be observed:

The regulations of the German Water Resources Act (WHG in Germany) and the ordinance on installations for handling of substances hazardous to water (VawS in Germany) must be followed.

The operator is obliged under WHG §19i to continuously monitor his equipment to ensure that it satisfies the requirements applicable to the place where it is installed and to its operation.

3.2 Suction line

The suction line in the dispenser is equipped with a DN 25 hose mandrel. The dispensing system is intended for connection to both above-ground and underground tanks.

The length of the suction pipe and the suction height have a considerable effect on the output performance of the dispenser. In order to obtain the optimum output performance of the dispenser, the suction line must be kept as short as possible.

The fitting of a corrugated pipe, hose section or a similar compensating element is necessary for a stress-free connection. Otherwise, damage to the lines or excessive noise generation can not be excluded.

When installing the suction line care is to be taken that it does not come into contact with the housing parts.

In all systems, pressure relief of the dispensing system must be possible via the suction line. No further non-return valve without pressure relief may be installed in the suction line.

It must be ensured on the customer side that, for example, due to thermal expansion, no more than 0,5 bar develops in the suction line.

In the case of above-ground tanks, a suitable anti-syphon valve must installed on the customer side.

The nominal diameter of the suction line must be at least DN 25. The suction height should be no more than 3.5 m.

The suction line must be as short as possible to obtain an optimum delivery flow rate.

Since the feed pump of the dispensing system is not self-priming, a valve must be provided at the highest point of the suction line in order to bleed the suction line. This priming point must be located above the feed pump.

3.3 Electrical connection

Work on the electrical equipment of the device may only be carried out by a qualified electrician or by trained persons under the guidance and supervision of a qualified electrician according to electro-technical guidelines.

For trouble-free operation, an electrical connection from the distribution box with residual current circuit breaker must be selected!

The electrical connection is made according to the circuit diagram in the appendix.

4 Operation

4.1 Flushing the Delivery System

Before being used for the first time with AUS 32 urea solution, the entire delivery system must be flushed with deionised water in accordance with ISO 22241. This is the only way to guarantee that the system is sufficiently clean. It may be necessary to analyse the flushing water and to test it for impurities.

☛ **Do not use tap water!**

! **The unit has been rinsed with demineralised water in the factory, hence the storage temperature must not be below 0℃. The unit has to be at a temperature above 5℃ for commissioning.**

4.2 First and subsequent suction without integrated suction pump

4.2.1 Priming the suction line

4.2.2 Priming and commissioning the feed pump and suction line

The pump is a non-self-priming centrifugal pump that requires a primed pump chamber and a completely filled suction line for commissioning.

A valve/plug must be provided on the customer side at the highest point of the suction line (above the feed pump), through which the suction line can be filled with pumping medium or through which the suction line can be primed using an external vacuum pump. As soon as the suction line is full, the plug/valve at the highest point should be opened, followed by the opening of the valve in the pump pressure line, so that medium flows into the pump chamber.

The valve in the pressure line is subsequently closed and the suction line is filled again if necessary and closed.

The pump is now put into operation as described below. Medium is drawn off into a collecting container via the discharge hose and the additional hose in the pressure line (1/2” PVC hose) until the system is free of bubbles.

If there are still larger air bubbles in the suction line when the feed pump is commissioned, the flow will break down and the pump will run dry. In this case the feed pump must be switched off and the filling procedure repeated.

! **The unit has been rinsed with demineralised water in the factory, hence the storage temperature must not be below 0℃. The unit has to be at a temperature above 5℃ for initial commissioning.**

! **Prolonged dry running (> 1 min) must always be avoided, otherwise important components may be destroyed.**

! **Take care to ensure that the pump does not run dry for an unnecessarily long period. A normal priming procedure should not take longer than 5 minutes. If the medium has not been primed within this time, the suction line must be checked for leaks.**

4.3 Normal operation

The following must be observed for normal operation:

! Avoid dry running (> 1 min).

! A defective hose can cause contamination.

! If the nozzle is closed and the pump is filled with medium, the pump may be operated for a maximum of 2 minutes, otherwise excessive heating up may occur, resulting in the destruction of important components.

! After filling, the nozzle must be hung up in the nozzle bracket, and the hose must be fully withdrawn into the roll-up mechanism.

4.3.1 Fuel dispensing procedure in normal operation

A: HAK 51030 with price calculator / litre counter

B: HAK 51030 with HDA automatic dispenser

To draw off urea solution in normal operation, proceed as follows:

1A. Enable the dispenser via the till.

1B. Activate the dispensing system via number code or transponder (see controller operating manual).

2. Switch on the pump by pulling the nozzle out of the holster.

3. Hold the nozzle in the container or the vehicle tank.

4. Pull the fuel lever upwards according to the desired delivery quantity.

! The fuel dispensing procedure must be monitored constantly in order to prevent overfilling of the tank in the event that the automatic nozzle malfunctions.

5. Release the fuel lever when you wish to end the refuelling operation.

6. Pull the nozzle out of the container or the vehicle tank.

7. Replace the nozzle in the nozzle holder.

   The electric pump switches off automatically.

Also observe the operating instructions for the nozzle, the price calculator or of the automatic dispenser.

5 Service and maintenance

5.1 Components

Although the HAK 51030 dispensing system is to a large extent maintenance-free, the following work should be performed regularly in order to ensure reliable operation:

Components	Maintenance work	Weekly	Monthly	In case of stoppages	As required / in case of malfunctions
Automatic nozzle	Clean the outlet pipe and the sensor pipe with warm distilled water	X		X	X
Automatic nozzle	Check the automatic function		X		X
Nozzle holster	Clean with water and non-aggressive household cleaning agent		X	X	X
Discharge hose	Check the discharge hose for damage and increased wear		X		X
Hydraulic components	Check the system visually for tightness	X			X
Hydraulic components	Flush with distilled water			X	
Hose guide rollers	Clean with water and non-aggressive household cleaner; lubricate with spray oil (e.g. WD 40)		X	X	X

The maintenance intervals are maximum times that must be shortened in the case of difficult operating conditions (e.g. heavy use, careless users).

Water hoses or high pressure cleaners must not be used for cleaning tasks. AUS 32 residues can best be removed using warm water and a sponge.

5.2 Type Plate and Warning Signs

! The warning signs attached to the device and the type plate must be well legible. Dirty signs must be cleaned, and replaced if necessary.

5.3 Calibration Marks*

The calibration marks must not be damaged. If the calibration marks are not intact, the device is considered to be non calibrated. In this case it is no longer permitted to dispense to the public, and the device must be recalibrated.

Calibration must be repeated at regular intervals in accordance with applicable regional regulations.

5.4 Nozzle

Check the sensor nozzle regularly at the outlet pipe for fouling and, if necessary, clean with distilled water or a suitable wire. The automatic switch-off mechanism is not operational when the nozzle is clogged.

6 Fault correction

Fault	Possible cause	Corrective action
The pump does not start after drawing the nozzle.	Pump not activated by the external till	Check the activation
The pump runs, but no medium is dispensed; the automatic nozzle switches off again immediately	In the case of an Elaflex nozzle: the tank being filled has no ring magnet in the tank filler pipe	Slip a loose ring magnet over the outlet pipe of the nozzle; install a ring magnet in the tank; replace the nozzle by a model without a magnetic safety device
	Sensor pipe in the nozzle is blocked by urea crystals	Clean the nozzle with warm distilled water
The pump runs but no medium is pumped.	Air entering the suction line; tank empty	Carry out commissioning as described above; refill tank, if necessary
The display of the price calculator / litre counter is not illuminated	Energy-saving lamp is defective	Open the housing, tilt out the price calculator/automatic dispenser and replace the lamp with an identical model

7 Repair and service

The HAM 51030 dispensing system has been manufactured and subjected to a final inspection at our works in accordance with the requirements of our quality management system. No faults were found during this examination. If, nevertheless, problems should occur during operation, you can contact our service technicians through the telephone number below. You can also obtain the item numbers for spare parts there.

Horn Service-Hotline: ***+49 (0) 1805 900 301***
(0,14 €/min on the German landline network)

E-mail: service@horn-teca.de

8 Disposal

The device is to be emptied completely and the liquids properly disposed of in case it is taken out of service.

In case the HAK 51030 is put out of service permanently then it has to be disposed of properly:

- Return old metal for recycling.
- Return plastic parts for recycling.
- Return electronic waste for recycling.

☛ **The water legal regulations are to be followed.**

9 Appendices

9.1 Declaration of conformity

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Konformitätserklärung
Declaration of Confirmity

im Sinne der EG-Maschinenrichtlinie 98/37/EG, Anhang II A
in the sense of the EC machinery directive 98/37/EC, Annex II A

Hiermit erklären wir, dass die Bauart
We herewith declare that the construction type

Bezeichnung: *Designation:*	**HAK**
Maschinentyp: *Machine type:*	**Zapfsäule für wässrige Harnstofflösung** ***Urea pump***
Artikel-Nr: *Item No.:*	**107 509 110; 107 509 120; 107 509 130; 107 509 140; 107 509 160; 107 509 170**

Technische Daten siehe Typenschild und technische Dokumentation
For technical data see type specification plate and technical documentation

in der von uns gelieferten Ausführung folgenden einschlägigen Bestimmungen entspricht:
in the form as delivered by us complies with the following applicable regulations:

- Maschinenrichtlinie 98/37/EG
  Machinery safty 98/37/EC
- EMV-Richtlinie 89/336/EWG
  Electromagnetic compatibility 89/336/EEC
- Niederspannungsrichtlinie 73/23/EWG
  Low voltage equipment 73/23/EEC
- Messgeräterichtlinie **2004/22/EG**
  *Directive measuring instruments **2004/22/EC***

  EG-Baumusterprüfbescheinigungsnummer: **DE-07-MI005-PTB008**

Angewendete harmonisierte Normen:
Applied harmonised standards:

DIN EN 55014 **DIN VDE 0843 T1** **OIML R117-1995** **OIML D11:2004**

28.05.2009
Datum / *Date*

i.V.
.....
Unterschrift / Signature
Dipl.-Ing. Jörg Mohr
Entwicklungsleiter / *Tech. Development Manager*

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9.2 Calibration Approval

Physikalisch-Technische Bundesanstalt

Braunschweig und Berlin

PTB

Innerstaatliche Bauartzulassung

Type-approval certificate under German law

Zulassungsinhaber: *Issued to:*	Horn GmbH & Co. KG Munketoft 42 24937 Flensburg
Rechtsbezug: *In accordance with:*	§ 13 des Gesetzes über das Mess- und Eichwesen (Eichgesetz) vom 23. März 1992 (BGBl. I S. 711), zuletzt geändert am 25.11.2003 (BGBl. I S. 2304)
Bauart: *In respect of:*	Messanlage für besondere Messgüter zur Messung von wässriger Harnstofflösung

Zulassungszeichen: **5.128**
Approval mark: **05.09**

Gültig bis: unbefristet
Valid until:

Anzahl der Seiten: 6
Number of pages:

Geschäftszeichen: PTB-1.5-4017882
Reference No.:

Im Auftrag
By order

Braunschweig, 20.04.2005

Siegel
Seal

PHYSIKALISCH-TECHNISCHE BUNDESANSTALT 53

Dr. Michael Rinker

Merkmale zur Bauart sowie ggf. inhaltliche Beschränkungen, Auflagen und Bedingungen sind in der Anlage festgelegt, die Bestandteil der innerstaatlichen Bauartzulassung ist. Hinweise und eine Rechtsbehelfsbelehrung befinden sich auf der ersten Seite der Anlage.

Characteristics of the instrument type approved, restrictions as to the contents, special conditions and approval conditions, if any, are set out in the Annex which forms an integral part of the type-approval certificate under German law. For notes and information on legal remedies, see first page of the Annex.

R3-0010

9.3 Electric circuit diagram