



# HYDROTECH

Operation manual

## Hydrotech Chemical cleaning Trolley - HCT



Series no.: .....



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- A. Technical specifications
- B. Spare parts list
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- D. Pump manual

## **1. INTRODUCTION**

This manual contains instructions for the operation of the Hydrotech Chemical cleaning Trolley - HCT.

Pay attention to all warning symbols that appear in this manual. If this information is ignored it may result in serious personal injury and/or damage to equipment.

The manual must always be available to the personnel working with the equipment.

It is important that:

- ▶ The manual and other relevant documents are kept throughout the whole life of the equipment.
- ▶ The manual and other relevant documents are a part of the equipment.
- ▶ All personnel affected must read the manuals carefully.

## 2. SAFETY INSTRUCTIONS

The Hydrotech Chemical cleaning Trolley - HCT is designed for safe operation provided it is installed correctly and used in accordance with the enclosed instructions. The equipment must be installed correctly and adapted in accordance with local regulations. This equipment is designed for use by one or more operators. You must read the relevant sections of this manual before using the equipment.

The equipment is intended to be used in conjunction with Hydrotech filter units/control systems.

- ▶ Pay attention to all warning symbols that appear in this manual. If this information is ignored it may result in serious personal injury and/or damage to equipment.
- ▶ Assume all electrical equipment to be live.
- ▶ Assume all hoses and pipes to be pressurised.
- ▶ The equipment may be used only by authorised personnel with the appropriate protective equipment. This also applies to service/maintenance work on the equipment.
- ▶ A risk zone of 3m in all directions around the chemical cleaning trolley must be marked out and fenced off from unauthorised personnel when the system is in operation. Only authorised personnel may be inside this area, wearing the appropriate protective equipment for the purpose. The power cable, signal cable and the hose between the chemical cleaning trolley and the filter must be clearly marked to minimise the risk of tripping over them.
- ▶ The protective cap on the hose must always be in place when moving the chemical cleaning trolley.
- ▶ Before maintenance work is carried out, the signal cable from the filter control system and the power cable must be disconnected. The tank and the pipe system must be drained and flushed with clean water to ensure that no chemicals remain in the system.
- ▶ When handling the chemical cleaning trolley, whole body protection and respiratory equipment is required and work involves: filling of containers, connection, start-up, flushing and post-flushing the system.
- ▶ Only pre-diluted chemicals may be used.
- ▶ Local safety regulations must be followed.

### 2.1 Warning symbols

Warning symbols are used in this manual to draw attention to potentially dangerous situations:



***Information that warns you of a potential risk of personal injury and/or damage to equipment.***

Warning stickers (see Figure 2.1) are affixed to the chemical cleaning trolley container to warn personnel and remind them that corrosive/harmful chemicals may be used in the system.



**Figure 2.1**

## 2.2 CE marking

This equipment is CE marked (see Figure 2.2), which ensures that the equipment is designed, manufactured and described in accordance with the requirements set out in the EU Machinery directive.



Figure 2.2

## 2.3 Conversion

The CE marking does not include any components that are not approved by Hydrotech AB and which are used in conversion/reconstruction of the equipment.

The warning symbols and CE marking must be attached where they are fully visible. If any part of the equipment with a warning symbol is replaced, a new symbol must be attached in the same position. Damaged symbols and CE markings must be replaced immediately.

## 2.4 Demands on personnel

Only personnel trained for the equipment and conversant with local regulations may perform service and maintenance, in order to avoid personal injury and damage to the equipment. Service and maintenance personnel may only handle those parts of the equipment they have been trained for.

## 2.5 Emergency stop

The emergency stop/main switch is in the Hydrotech control cabinet (see example of a Hydrotech control cabinet in Figure 2.3).

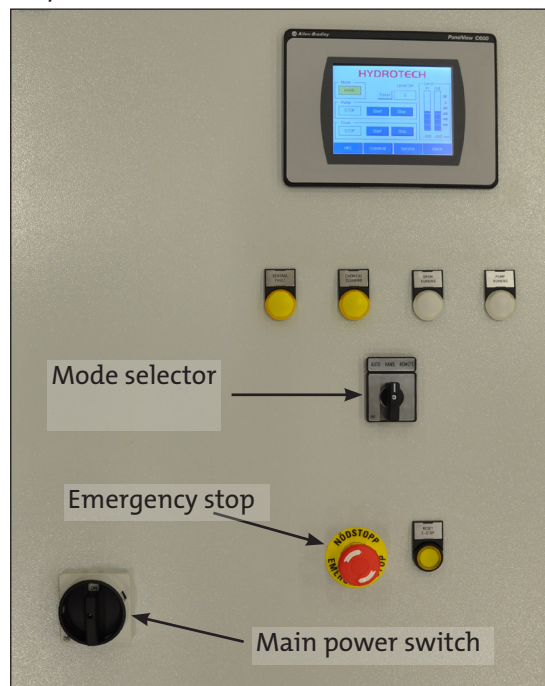
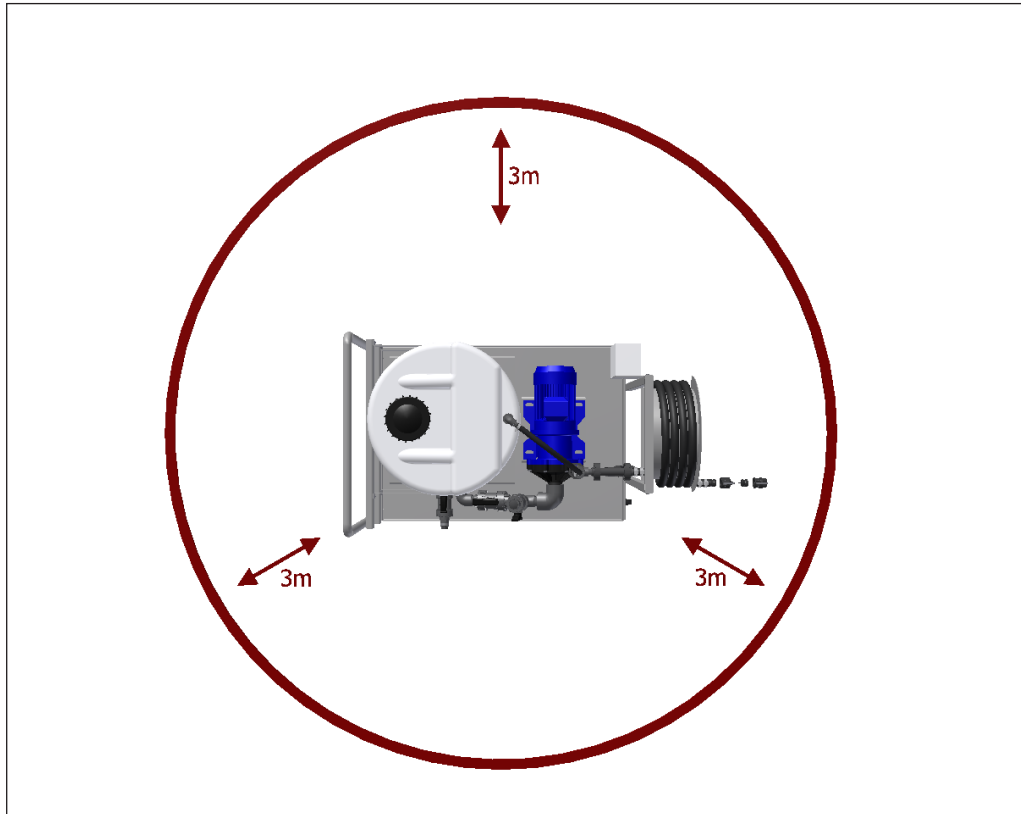


Figure 2.3 Example of a Hydrotech control cabinet.

## 2.6 Risk zone

A risk zone of 3 m in all directions around the chemical trolley must be marked out and fenced off from unauthorised personnel when the system is in operation. Only authorised personnel may be inside this area, wearing the appropriate protective equipment for the purpose. The power cable and the hose between the chemical cleaning trolley and the filter must be clearly marked to minimise the risk of tripping over them.



**Figure 2.4** Risk zone

### **3. HYDROTECH CHEMICAL CLEANING TROLLEY - HCT**

#### **3.1 Reception**

Once the equipment has been delivered and received it must be checked for transport damage. Document any transport damage before further handling of the equipment. The consignment note and manual are attached to the equipment. Check all parts against the consignment note. Some parts may be delivered unassembled. Handle fragile parts with care.

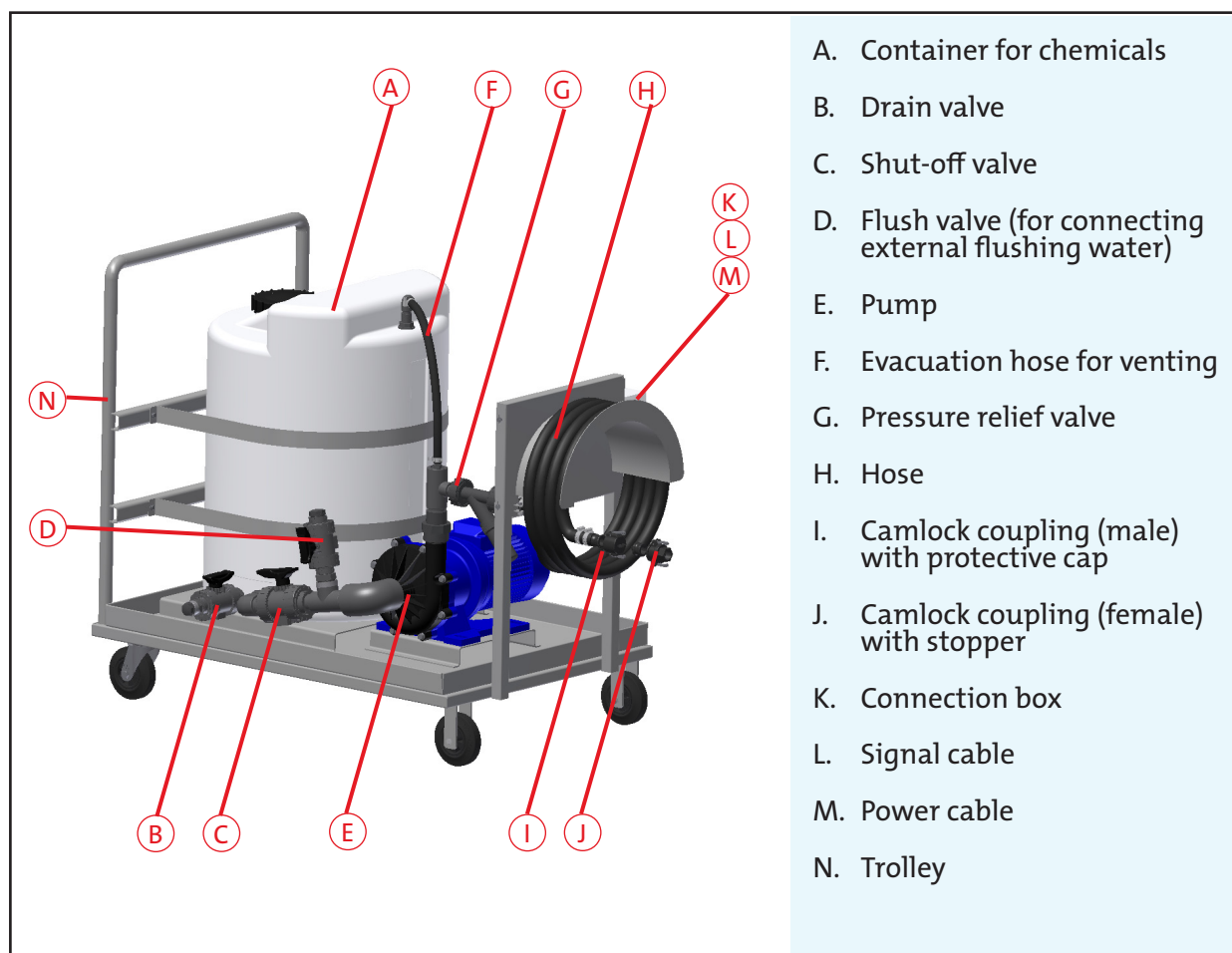
#### **3.2 Storage**

Some precautions must be taken to prevent damage to equipment if a long storage time is necessary (several weeks or more).

- ▶ The equipment should preferably be stored indoors, in a frost-free area.
- ▶ The equipment must be protected against direct sunlight if stored outdoors. Heat and UV radiation can damage the equipment.



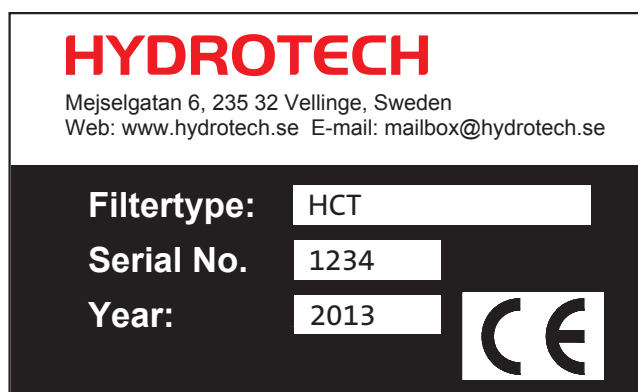
### 3.3 Overview of components included



**Figure 3.1** Components included

### 3.4 Identification of equipment

Filter type, serial number and year of manufacture are stated on the marking plate. The filter type and serial number are also stated on the front of this manual.



**Figure 3.2** The rating plate for the equipment.

## 4. START UP AND OPERATION



*The equipment may be used only by authorised personnel with the appropriate protective equipment.*

### 4.1 Chemical cleaning products

Long-term clogging of the filter media can be caused by iron, calcium or organic fouling, among other things. This clogging can normally be removed through chemical cleaning. Three proven products that do not affect the life of the filter media are dilute hydrochloric acid (HCl), dilute sodium hypochlorite (NaClO) and dilute sodium hydroxide (NaOH).



*The use of other types of cleaning agents can cause damage to equipment.*

### 4.2 Filling of containers

The chemical cleaning trolley HCT is equipped with a 150 l container (see Figure 3.1). Care must be exercised when filling the chemicals in the container since some of the chemicals that must be handled are corrosive. When filling the chemicals, use the barrel pump or fill via the bottom valve in the chemical storage tank (see Figure 4.1). Check and ensure that the drain valve, shut-off valve and flush valve are closed before starting to fill the chemicals.



*Only pre-diluted chemicals may be used in the chemical cleaning trolley container.*



*Figure 4.1 Storage tank for chemicals with barrel pump and bottom valve.*



*The cleaning products must not be mixed. If, for example, HCl and NaClO are mixed this produces toxic chlorine gas. HCl and NaOH are highly corrosive. For safety advice, see applicable local regulations.*

### 4.3 Start up and operation

1. Place the chemical cleaning trolley on a flat/stable surface by the filter to be cleaned and lock the brakes on the two rear wheels of the trolley.
2. Mark out the risk zone in accordance with section 2.6
3. Check that the shut-off valve, drain valve and flushing valve are all in the closed position.
4. Make a visual check of the hoses and pipe system for any damage/leaks.
5. Connect the hose to the chemical connection on the filter and check that there are no kinks/blocks in the hose.
6. Check that the chemical container is filled with sufficient volumes of cleaning chemicals for the intended number of cleaning cycles. (Contact Hydrotech if you do not have the relevant information for the filter model in question.)



***The liquid level in the chemical containers must always be above the pump inlet to avoid the pump running dry. If the pump runs dry, this may lead to serious damage to the pump.***

7. Connect the signal cable to the filter control cabinet.
8. Plug in the power cable.
9. Mark the cables and hoses as in section 2.6
10. Open the shut-off valve and make a visual check of the system for any damage/leaks. In the event of any damage/leaks they must be rectified and the cleaning cycle interrupted.
11. Select the number of cleaning cycles to be carried out and start the cleaning cycle on the filter control cabinet (see instructions in the relevant filter manual/control manual).
12. Check the rotation direction of the pump. The pump rotation must be clockwise when seen from the pump motor fan. The correct rotation direction is indicated by an arrow on the pump type plate. If the rotation direction is incorrect, it must be rectified and the cleaning cycle interrupted.
13. After the cleaning cycle is completed, close the shut-off valve.
14. Plug in the pressurised external flush water to the flush water valve.
15. Open the flush valve and check the system for leaks. In the event of any leaks, they must be rectified and the cleaning cycle interrupted.
16. Flush the system until all cleaning chemicals have been removed from the pump, downstream pipe system, hoses and the filter chemical unit.
17. Close the flush valve and disconnect the external flushing water.
18. Disconnect the hose from the filter chemical connection and replace the protective cover on the hose.
19. Disconnect the power cable and signal cable.



***The protective cap on the hose must always be in place when moving the chemical cleaning trolley.***

#### 4.4 Adjusting the pressure relief valve

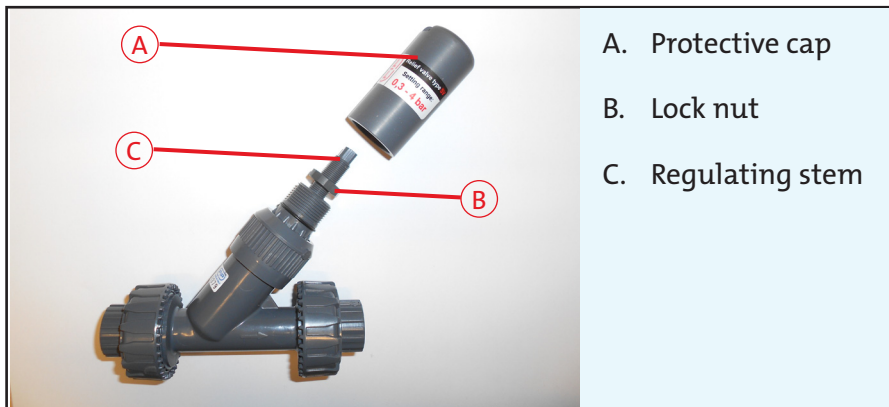
The Hydrotech chemical cleaning trolley is equipped with a pressure relief valve. This is installed in the pipe system on the pressurised side of the pump. The pressure relief valve is adjustable between 0.3-4 bar back pressure and is used to avoid the cleaning chemicals from flowing through the system by gravity, if the filter chemical unit is at a lower level than the liquid level in the trolley's chemical container. If the pre-set back-pressure needs to be adjusted this can be done by removing the protective cap (A) on the pressure relief valve and then loosening the locknut (B) to enable the back-pressure to be set using the regulating stem (C). When the regulating stem has been adjusted to the desired position, the regulating stem (C) is locked with the locknut (B) and the protective cap (A) is refitted.



***Before any maintenance work is carried out, the signal cable from the filter control system and the power cable must be disconnected. The tank and the pipe system must be drained and flushed with clean water to ensure that no chemicals are left in the system.***



**Figure 4.2** Pressure relief valve



**Figure 4.3** Adjusting the pressure relief valve.

## 5. FUNCTION

### 5.1 Intended use

The equipment is designed and manufactured for the chemical cleaning of filter media in Hydrotech filters. The equipment may only be used with Hydrotech filters and control systems.

### 5.2 Non-intended use

Unless approved in writing by Hydrotech, no other cleaning chemicals may be used than those described in this manual.

### 5.3 Functional description

A concise description of the function is given below.

1. Cleaning chemicals are gravity fed from the container to the pump, which then pressurises the system.
2. The cleaning chemicals are pumped into the filter chemical unit through the chemical cleaning trolley's pipe system and hose.
3. The cleaning chemicals are applied to the filter media via the nozzles on the chemical unit.
4. The filter media is flushed clean using the filter flush water pump.
5. After the cleaning cycle is completed, the pump and downstream pipe system (on the chemical cleaning trolley), including the hose and chemical unit, must be flushed clean with external flushing water via the flushing valve.





User guide in original

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