



## High Pressure Cleaning Equipment: choosing the right equipment for your vessels

High pressure cleaning equipment has become an essential piece of machinery onboard vessels. A large proportion of the cleaning and maintenance tasks encountered in the daily operation of a vessel can be tackled by such equipment.

The most commonly used high pressure cleaners in the maritime industry vary from pressure of 100 bars up to 800 bars. Units with pressure below 350 bars are suitable for all cleaning tasks plus spot surface preparation work, whereas the higher pressure units are for larger scale surface preparation work.

When purchasing a high pressure cleaner it is important that you think further than 'pressure' alone. Various factors will influence the result of the surface preparation jobs and all need to be carefully evaluated in order to secure the best investment for the tasks in question. In this article we highlight several factors such as cleaning power, water temperature, accessories and detergents, which all have to be considered prior to making your purchase.



### 1. The Cleaning Power:

When companies ask us about a high pressure cleaner, the majority only specify what pressure they require plus what power source they need (e.g. electric diesel, air operated, etc.) A typical enquiry reads;

1 x high pressure cleaner 220 bar, 3x440V/60Hz

However, the most important data for a high pressure cleaning unit is the cleaning power (cleaning impact) which is the combination of the **operating** (not max.) pressure and the water flow **at that pressure**. The formula to calculate the Cleaning Impact is;

$$\text{Cleaning Power} = 0,024(\text{water flow l/min}) \sqrt{\text{operating pressure (bar)}/0.98}$$

The Cleaning Power is the force available to clean and remove compounds and residues on the surface. Hence, it is important to understand that pressure alone is not a measurement how efficient a high pressure cleaner is.

To illustrate why the water flow also has to be brought into the equation we can take the following example;



- (i) High Pressure Cleaner 220 bar and 16 l/min
- (ii) High Pressure Cleaner 180 bar and 19 l/min

When working out the Cleaning Impacts for these two units, the first one (i) equates to 5,6 kg/force where as the second one (ii) works out at 6,1 kg/force. In other words, even though the second unit has considerable less operating pressure than the former one, the cleaning impact is almost 10% higher and is hence equally more efficient.

## **2. Temperature of the water:**

When carrying out a cleaning job, the temperature of the water has a great influence on the result, especially when tackling greasy and oily surfaces. The large majority of units found on board are classified as cold water cleaners – meaning they have no means of heating the water. However, such units are designed to take inlet water up to 60°C - 85°C, so if hot inlet water is available, the time taken to complete the job is greatly reduced and the end result much improved due to the higher temperature of the water.

Hot water cleaners are also available, but the most efficient ones with an 'open' diesel burner are not always the most suited for marine use due to the burner and weight. However, where extremely hot water is required (or even steam) such units are the only option.

## **3. Accessories:**

Another factor that greatly influences the cleaning/surface preparation result is the accessories used with the High Pressure Cleaner. Over the years the high pressure units have become very versatile with the possibility of using numerous accessories tailor-made for specific tasks. The nozzle technology has been greatly improved. For example, using a power-speed (turbo) nozzle with a rotating concentrated jet (adding a mechanical effect to the cleaning) will increase the performance some 30-50% compared to a fixed nozzle with a fan jet.

Additionally it is possible to add sand to the water stream which converts the unit to an efficient water/sand blaster. This is commonly used in the surface preparation work and speeds up the process considerably.

Other useful accessories are various brushes, floor cleaners, chemical/foam applicators, pipe cleaners and lances in various lengths – all contributing to the owner getting maximum usage of their investment in a high pressure cleaner.

## **4. Detergents:**

The cleaning task becomes much more effective if detergents are used in the cleaning process. The appropriate detergent is sprayed on at low pressure and left to work for 3 to 15 minutes – depending upon the ambient temperature. The detergents may be applied through an injector on the high pressure cleaner or by a concentrate sprayer. Finally the surface gets washed down by high pressure water.

To summarise, water under pressure is one of the most efficient, powerful, and versatile tools in the fight against any type of dirt, and is a very useful tool in surface preparation work. However - prior to any purchase, carefully evaluate your needs on board to ensure



you acquire the right type of equipment and accessories to meet these challenges.

A full range of High Pressure Cleaners with accessories and the necessary detergents is available through the Wilhelmsen Ships Service network. We will be happy to guide you to choose the correct equipment to suit your vessel's needs.

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