

Piston wash pumps keep maritime ships operating smoothly

Maritime shipping has been a primary driver for worldwide commerce for thousands of years. Today, it continues to support the global economy. Thus, shipping companies focus on creating efficiencies to operate vessels profitably.


Having the right piston pumps onboard the ship saves time at port and at sea. One of the drivers of operational costs is the time needed to prepare ships, load and unload cargo, and clean ships for new cargo. The time a tanker or barge spends docked is determined by the on- and off-board facilities. The type and availability of cargo unloading and loading systems on hand, including the onboard pumps needed for cleaning and maintaining cargo holds, bilges and ballast tanks can save time, and therefore, reduce dockage fees.

Ships at sea need piston wash pumps for various duties, such as washing decks and walkways, cleaning spills and washing down walls in preparation for painting. Having the right pump onboard is critical, as no other alternatives are immediately available, especially when cleaning up oil, fuel or chemical spills, and conducting routine maintenance.



▶ Piston wash pumps are effective in cleaning many areas of a ship:

- Cargo areas and holds
- Galleys
- Septic treatment spaces
- Refrigeration areas
- Pools and spas
- Paint and preparation rooms
- Decks
- Damage control rooms
- Hydraulic rooms
- Ship exterior



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Piston wash pumps are adaptable, portable, flexible and easy to maintain and repair. They are easy to setup, use and store, and can be adjusted or modified for multiple applications. They are also cost effective for both frequent and infrequent usage.

Piston wash pumps are an excellent choice for cargo hold cleaning and stripping, but there are many other areas where they are used, including engine rooms, pump rooms, galleys, septic treatment spaces, refrigeration rooms, pool and spa areas, paint and preparation rooms, deck areas and cargo transfer points, just to name a few. Piston pump packages can be preconfigured with the appropriate motor, mount, controls and downstream accessories that are ideal for any of these maritime applications.

➤ **Cargo tank cleaning**

Following the discharge of cargo, the deck crew uses piston wash pumps to clean cargo tanks in preparation for the arrival of new cargo. Depending on the ship, a tank cleaning system can be either portable or fixed. Portable piston wash pumps are connected by a hose to a deck water main and introduced into the tank through a tank cleaning hatch. Ingersoll Rand manufactures piston wash pumps for its ARO® brand that come complete with a suction and high-pressure jet hose that can be mounted on a heavy-duty cart for easy on-deck transport.

➤ **Getting the right piston pump and package**

As with most equipment, it's important to get the right pump for the job. The pump should be designed to meet the most critical needs and the many diverse maritime applications, with the performance, reliability and the ability to easily integrate with existing onboard systems. There are four factors to consider when selecting the right wash pump configuration for an application. They include the type of fluid, viscosity or thickness of the fluid, required flow rate and required output pressure.

Piston pumps can handle many types of fluids, such as oil, chemicals, paint and coatings; many of these fluids can be abrasive and cause corrosion. Piston pump plunger rods and cylinder tubes made with ceramic coating and polished stainless steel exterior construction will help extend pump life by resisting abrasions, rust and corrosion.

The proper pump stroke displacement will ensure the best flow rate and output. The pump should be configured for the desired flow rate and pressure, while operating at less than maximum speed to minimize fatigue and wear on the parts.

ARO piston wash pumps are capable of handling a variety of fluids, such as water and solvents, because they are available with different pressure ratios and displacement rates. Knowing the fluid's viscosity and required flow rate makes it easier to choose the right pump for the application. Two-ball piston pumps, for example, are versatile and well-suited for spraying lower volumes of low to medium-viscosity materials, while four-ball piston pumps are designed for higher volumes of low-viscosity fluids.

ARO has a universal lower-end pump connection that provides interchangeability between various sized air motors and lower ends, allowing for various pumping ratios. This also allows the motor to be upgraded without having to buy a new pump. The pump ratio is determined by the actual area difference between the air motor piston and the lower end plunger rod. For example, an 11:1 ratio denotes the pump air motor piston has 11 times the effective area of the fluid handling piston. Higher ratio pumps produce higher fluid pressures which allows them to move higher viscosity fluids and transfer fluids longer distances. At 100 psi of inlet pressure, an 11:1 pump produces 1,100 psi of fluid outlet pressure. A 23:1 pump would produce 2,300 psi of fluid outlet pressure, given the same air inlet pressure.

Pre-assembled application packages remove much of the guesswork for maritime industries when it comes to choosing the right pump for the job. ARO piston wash pump packages can be configured with a wall-mount bracket, suction tube assembly and a spray wand.

▶ **Piston wash pumps get the job done**

The high demands of the maritime industry require the utmost reliability, flexibility, performance and serviceability in pumps that handle numerous water and fluid conditions onboard. Achieving cost efficient, low maintenance and highly productive fluid control requires reliable piston wash pumps that are capable of handling a wide variety of materials, while offering flexibility of use.

The overall investment in a piston pump is not only the initial pump purchase, but also includes factors such as downtime, employee productivity, parts and servicing costs. Piston pumps can optimize the time and costs in preparing, unloading cargo and cleaning ships. Whether reducing dockage fees, or saving time at sea when cleaning spills and performing routine maintenance, piston wash pumps offer the versatility and efficiency needed for maritime duties.