

What to Look For in a Quality Trash Pump

Many pumps are available in the marketplace today for many different applications, including: sewer bypass, wellpoint dewatering, dewatering excavations, and many others. Determining the best pump to use on a particular application can be a challenging enterprise. Choosing the right pump can mean a profitable job, while on the other hand, choosing the wrong pump can spell trouble and result in costly downtime. Listed below are the some of the features to look for in a quality trash pump.

Priming and Repriming Capability – Many factors can contribute in causing a pump to lose its prime. One factor is the water level dropping in, causing the suction hose and strainer to be exposed and allow air to enter the hose. This causes many pumps to lose prime and stop pumping. Holes, tears, or improper installation of the suction hose can also contribute to the loss of prime. If the pump is not able to regain prime, the project can become unsafe, resulting in damage to equipment and personnel. Choosing the right pump depends upon overall application requirements and customer preference.

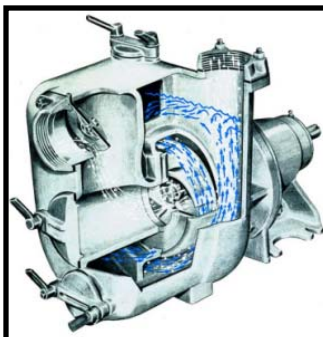
Self-priming, or wet-priming pumps contain a specially designed pump casing, which when filled with water before operation, will prime and reprime automatically without the aid of an auxiliary priming device. Wet prime pumps are capable of handling about 29-cfm of air. Some manufacturers use wet-priming pumps and install a priming device, such as a vacuum pump or a compressor pump to add additional air handling capability for quicker priming and repriming times.

Straight, end-suction centrifugal pumps are reliant on the use of an auxiliary priming device, such as a vacuum pump, compressor pump, or hand device to achieve and maintain prime because they are not capable of handling air on their own. If the priming system should fail, pumping cannot continue until the priming system is repaired.

Dry-priming pumps employ a wet prime, self-priming centrifugal trash pump, or an end-suction centrifugal pump. Dry-priming means that these pumps do not require the pump casing to be filled with water, as do wet-priming pumps, and rely on the air handling capability of their automatic priming systems to remove the air from the suction line, creating a vacuum, and drawing the fluid into the pump casing. This is beneficial especially during freezing temperatures when freezing water in the volute could cause the volute to break, or having your pump far from the nearest water source, where buckets of water would have to be brought to the pump casing just to achieve prime. They are fitted with automatic priming systems such as vacuum pumps or compressor pumps, keeping the pump primed continuously. These add-on accessories are able to provide large air handling capability (especially when installed on wet-priming pumps), quicker priming times, the ability to reprime if priming water is lost, and added versatility that can truly make a difference on the job.



Thompson's 6" Wet Prime Trash Pump



WET PRIME PUMPS WORKING PRINCIPLE

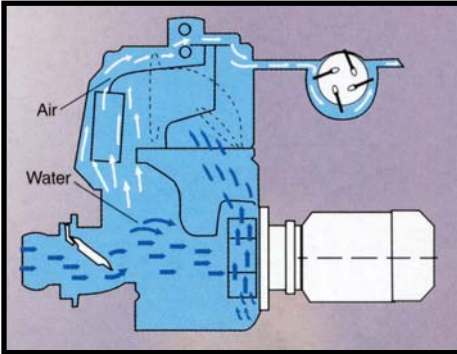
The vacuum produced as the impeller rotates draws air into the pump, where it is mixed with the liquid contained in the pump casing. The air/liquid mixture is driven into the priming chamber where the air separates out and is expelled through the delivery port while the liquid, due to its higher density, falls back and is recirculated.

When all of the air has been evacuated from the suction line, the pump is primed and operates like a normal centrifugal pump. It can also handle a mixture of air and liquid. The check valve mounted in the pump suction port ensures that sufficient liquid remains in the pump casing for repriming. In addition, the check valve prevents the liquid from draining out of the suction line so at restart no time is lost for repriming.



A vacuum-assisted priming system consists of a vacuum pump that is powered by the diesel engine; a set of wire-reinforced supply and return line hoses to provide lubricating oil to the vacuum pump; a discharge check valve to prevent air and pumping effluent from entering the pump during downtimes and; an air separator chamber with a float system to regulate the air as it enters the pump. Some vacuum pumps can provide an extra 78-cfm of air handling capability, and are an excellent addition to a wet-priming pump that has air handling capability on its own.

Thompson's 6" Dry-Prime Vacuum-Assisted Pump with *SUPER SUCTION* Priming System



VACUUM-ASSISTED PRIMING SYSTEM WORKING PRINCIPLE

Before reaching the pump impeller, the water / air mixture passes through a wide cross section tank where the flow rate drops sharply. As a result, the air mixed with the water tends to rise because of the different density and is drawn into the vacuum pump, forcing the water to rise in the separation tank until a point of balance is reached. At this point, the pump almost exclusively handles water since the balance point level is above the impeller. Another feature of the Thompson unit is that Thompson uses a self-priming pump. This means that in addition to the air handling capacity of the vacuum system there is additional air handling from the self-priming pump.

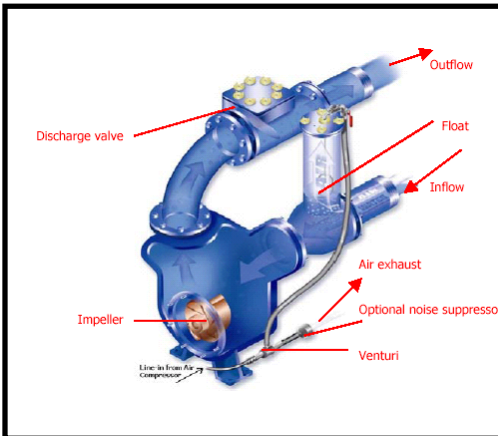
This makes the Thompson *Super Suction* vacuum-assisted unit the fastest priming system in the industry.

A compressor-assisted priming system consists of a compressor that is also powered by the diesel engine; an air separator chamber with a float system to regulate the air as it enters the pump; a discharge check valve to prevent air and pumping effluent from entering the pump during downtimes and; an air eductor, or venturi system, connected to the compressor and the air separator by a series of hoses and used to force the air to create the vacuum in the suction line. The venturi is manufactured to precise specifications and is made to only handle air.

If pumping effluent infiltrates the priming system and escapes out of the venturi, it can cause the venturi to fail and not be able to prime the pump until repaired or replaced. To replace the venturi is a major expense – so it is important to associate with a pump manufacturer who has success in keeping the pumping effluent away from the venturi, such as Thompson's *ENVIROPRIME*® Priming System. Some compressor pumps can provide an extra 14-cfm of air handling capability, and are an excellent addition to a wet-priming pump that has air handling capability on its own.



Thompson's 6" Dry-Prime Compressor-Assisted Pump with *ENVIROPRIME*® Priming System



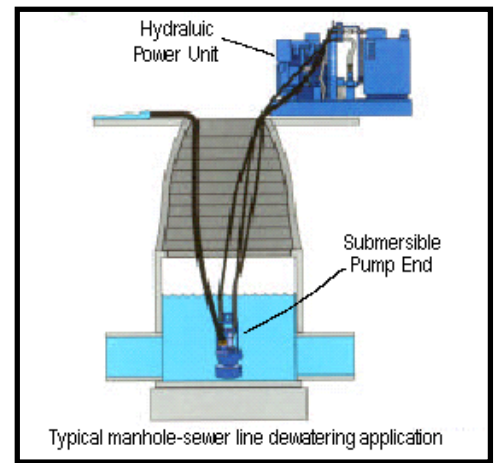
COMPRESSOR-ASSISTED PRIMING SYSTEM WORKING PRINCIPLE

Thompson Pump's exclusive *ENVIROPRIME*® dry-priming system works in conjunction with the compressor/venturi priming system to prevent carry over, or blow-by, of the pumping fluid into the venturi and onto the ground. The compressor delivers compressed air to the venturi, which evacuates air from the pump suction line. As the air is evacuated from the suction line, the pumping fluid begins to travel into the pump and the *ENVIROPRIME*® system.

When the pumping fluid reaches the *ENVIROPRIME*® system, the internal float will rise, closing off the air valve. When the air valve is closed, the pumping fluid will drop in the *ENVIROPRIME*® system preventing any carry over into the venturi. The *ENVIROPRIME*® system also allows the priming system to remove air while the pump is pumping. As air is introduced into the suction line during pumping, the float will lower, allowing the priming system to evacuate the ensuing air. Once the air is evacuated, the cycle will repeat automatically.

Submersible pumps are submersed directly into the pumping effluent and reprime automatically when the water level covers the strainer. Sometimes, submersible pumps are attached to floatation devices, which keeps the strainer of the pump submersed, and therefore, keeps its prime.

Broad Operating Range – The flow rate into an excavation can vary from several hundreds of gallons per minute of water at the beginning stages of the job to a few gallons per minute at the later stages of the job. The right pump must be capable of handling the maximum pumping capacity to lower the groundwater table as well as operating satisfactorily at reduced flow rates to maintain the groundwater table at the desired sub-grade.



Dry Running Mechanical Seal – When the pumping effluent levels reduce, the pumping capacity will typically diminish. During these periods, the pump's capacity can far exceed the seepage rate into the excavation causing the pump to run completely dry. Pumps are available with special seal materials such as tungsten carbide and automatic lubricating systems (grease or oil) to allow the pump to operate during long periods of dry running, operating without pumping effluent entering the pump casing, without damage.

Thompson Pump's Tungsten Carbide Dry Running Mechanical Seal

High Suction Lift Capability – As a site is excavated below the natural groundwater table, there is the potential for a larger quantity of water to enter the excavation. Moreover, the deeper the excavation, the greater the reduction on the pump's capacity. The right pump must be capable of pumping the required capacity at the given suction lift.

Trash Handling Capability – The water entering an excavation is often mixed with sand, rocks, sticks, etc. The right pump must be capable of passing large debris without binding or damaging the pump.

Heavy-Duty Cast Iron Construction – To ensure satisfactory life and reliability when handling trash-laden water, the pump should be constructed of heavy-duty cast iron components.

Inspection Port – Trash handling pumps are fitted with lightweight removable covers allowing easy access to the pumps interior for removal of trash, without disturbing the suction or discharge hoses.

Replaceable Wear Plate – The most expensive component of the pump by far is the pump casing. A quality trash pump incorporates a replaceable wear plate to protect the pump casing from wear and to prolong the life of the pump casing. Some wear plates are even equipped with a rubber lining to further protect the casing against abrasion.



Wear plate with rubber lining

Front Pull-Out Feature – Certain trash pumps are available with a front pull-out design. This design includes a lightweight front cover that allows access to the pump interior for removal of blockage and replacement of the internal pump components in the field without disturbing the suction or discharge hoses.

24-Hour On-Board Fuel Tank – Trash handling pumps for dewatering are required to operate continuously to keep water out of the excavation. This includes at night when the work crews have gone home. For this reason, trash-handling pumps are available with on-board fuel tanks permitting the pump to operate up to 24-hours before refueling. This gives the contractor the luxury of not having to send personnel out during the night to refuel the pump.

Sound Attenuation – Sound attenuated pumps are becoming one of the strict demands of municipalities nationwide. When pumping in a highly populated area, especially when it's required to pump into the night, sound attenuated pumps are necessary. Thompson Pump has spent years perfecting providing pumps with options that help users do their jobs easier. Thompson Pump is the only pump company with a completely removable, modular sound attenuated canopy. This allows the freedom of having the right pump for the job at hand.



The Front Pull-Out feature allows access to the pump interior without disturbing the suction or discharge hoses.

Versatility & Dependability – A quality trash pump must not only have quality components, but they also must be able to be versatile enough to be used on many different applications, and dependable enough to ensure that it will perform well on those applications. Many companies depend on multi-purpose products to be able to keep costs down while being able to use that product in different applications, and increasing their revenue. The same is true with a quality trash pump. Some pump manufacturer's trash pumps perform well on some applications, but do not perform as well on others. For example: a dry-prime trash pump with a self-priming centrifugal pump end and a high air handling capability may be used on a small wellpoint job, and also on a trash or solids application; where as an end suction centrifugal trash pump with a low air handling capability may perform well in a trash or solids application, but may not perform well, or at all, in a small wellpoint application.

THOMPSON PUMP TRASH PUMP COMMON APPLICATIONS:

Construction: Dewatering excavations, canals and sumps; bypassing sewers and bodies of water; groundwater dewatering; water supply from wells or canals; hosing down concrete casings; extended sumping; wellpoint dewatering

Civil Engineering: Sewage pumping; flood drainage; fire fighting; recovery of hazardous liquids

Waste Treatment: Sewer bypasses; pumping polluted hot or corrosive wastewater containing sand, mud or solids in suspension; dosing neutralizing liquids; pumping out settled sludge

Mining: Wash-down operations; tailings; high head/high volume applications

Agricultural: Surface irrigation; liquid manure oxygenation; transfer and spraying fertilizers or manure

Industrial: Transfer of neutral, acid or alkali clean or dirty liquids containing sand, mud or solids in suspension; low viscosity petroleum products