

# Typical Above-Grade Valve Assemblies

Romtec Utilities  
Technical White Paper

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## Typical Above-Grade Valve Assemblies



**Figure 1: Triplex 450 hp Turbine Pumps & 12-Inch ID Above-Grade Valve Assembly**

### Introduction

Above-grade valve assemblies come in all sizes, and Romtec Utilities is uniquely capable of designing, manufacturing, and supplying virtually every size for any type of requirement. The application for above-grade valve assemblies range from the retrofit and repair of existing systems to constructing new systems where there is a reason or preference to have the valve assembly above-grade versus using a below-grade vault.

### Above-Grade vs. In-Ground

The majority of valve configurations in wastewater and stormwater are in-ground as opposed to above-grade. In-ground valve assemblies are typically installed below the frost depth of the region and are not susceptible to freezing. Using a below-grade vault structure can provide the complete assembly with security.

These valve assemblies are also popular because all the valves and associated mechanical components are below-grade and not visible.

All this changes when a pump station is designed for typical industrial process water or clean water pumping. In these types of systems, the majority of the applications are best suited for above-grade valve assemblies that are readily accessible. In these industries, a pump station will typically be located in a plant where mechanical components and process piping are already above-grade. Additionally, most plants employ security for the entire plant and would not be concerned about the security of a particular system.

## Pumps and Valve Assemblies

Certain pump types will discharge above-grade as opposed to below. When these pumps are selected, it's easy and typical to assemble the system valves in an above-grade configuration. This is often the case when using pumps such as vacuum assisted self-priming pumps, vertical sump pumps, or turbine pumps. Each of these pumps and the associated valve assemblies are typically used for specific scenarios where above-grade discharge is beneficial to the pump station.



**Figure 2: Above-Grade Discharge with Vacuum Assisted Self-Priming Pumps**

Vacuum assisted self-priming pumps can easily be manufactured into a skid to retrofit or rehabilitate existing wastewater lift stations. When this method is used, it makes sense to locate the valve assembly above-grade with the skid. The process eliminates the need for any major excavation when retrofitting an existing wastewater lift station. This leads to big cost savings over trying to locate the valve assembly in-ground.

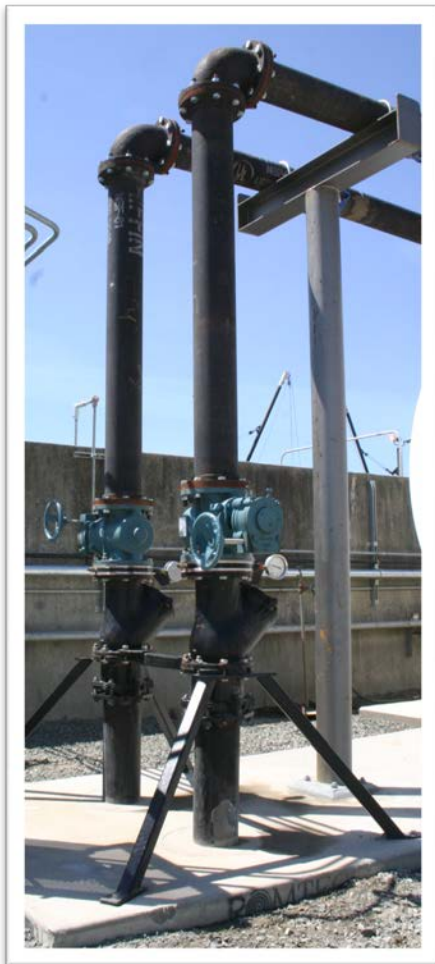
Vertical sump pumps are terrific for handling grit and suspended particles as well as corrosive water types that are typical in industrial processes. This is because the motor is not submerged in the water and the shaft



and impeller can be manufactured out of or corrosion resistant materials like stainless steel. When this type of pump is used on a typical industrial pumping system, the valve assembly will be better suited to the system located above-grade.

Turbine pumps are best suited for clean water pumping. These pumps will typically be used in a pump station in the agriculture industry for irrigation or in the groundwater collection systems. Turbine pumps typically pump a high volume of water with large piping and valves. The size of the valve components and the fact that the pumps discharge above-grade make in-ground valve assemblies impractical when designing a typical turbine pump lift station.

### Typical Cost Savings



**Figure 3: Vertically Integrated Above-Grade Valves**

Aside from being handy, there is often a considerable reduction in cost with above-grade valve assemblies. The cost of the excavation, vault structures, hatches, and sump pumps can easily be eliminated in an above-grade valve configuration. However, cost savings are not always achievable because above-grade valve assemblies must include some form of reliable frost protection. There are several typical scenarios that lead to cost savings with above-grade valve assemblies.

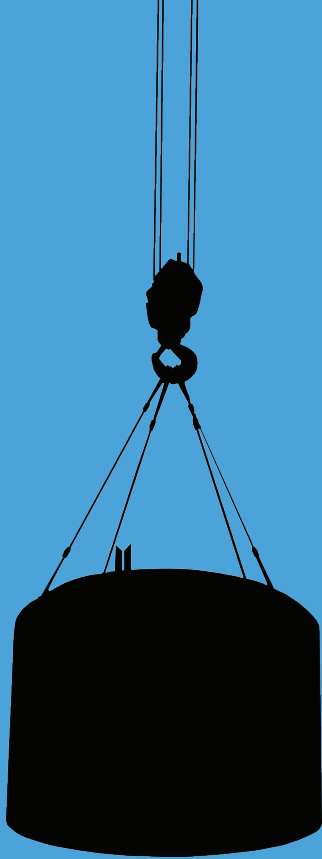
The first scenario is an existing building that can house the complete valve and mechanical assembly. That is to say all the discharge piping, meters, valves, and junctions. There is substantial cost savings when a building exists that can protect these components from freezing because there will be no large structural requirements relative to the valve or meter assemblies.

The next scenario is when the valves and piping are large. Large valve and mechanical assemblies require large vaults when located in the ground. Costs increase very quickly as the size of in-ground structural components increase. In typical

pump stations with large valves assemblies, it is easier and more cost effective to locate the entire assembly above-grade.

**Conclusion:**

Above-grade valve assemblies are great solutions in certain circumstances. They are convenient and also inexpensive to configure. The biggest drawback is temperature because above-grade components can easily freeze. The other major drawback is site traffic. Above-grade components restrict vehicular or large equipment access on the site. If neither of these drawback are a concern at your location, Romtec Utilities believes that above-grade valve assemblies are “the way to go!”



# About Romtec Utilities

Romtec Utilities, Inc. designs, manufactures, supplies, and installs site specific packaged pump stations. Our pump stations include detailed drawings and specifications in the CSI format with all structural, mechanical, communication, and electrical plans. Our documentation also includes a complete bill of materials, a well-defined scope of work and services, and a complete system warranty. Our complete packaged systems serve commercial, municipal, state, federal, agricultural, and industrial applications for virtually any type of water-pumping system.

Romtec Utilities, Inc. began operation in 2000 in Roseburg, Oregon. The US economic conditions at that time fostered the growth of a booming housing market, and Romtec Utilities did a lot of business working with developers and public agencies who needed packaged lift stations. Romtec Utilities distinguished itself by offering quality designs, fast lead times, and an ability to get projects approved and installed quickly.

In the wake of the 2008 Financial Crisis, the market changed and so did Romtec Utilities. Romtec Utilities made a rigorous evaluation of its product offering to become more cost competitive. We also placed more emphasis on working with industrial clients with a broad range of applications.

In the following years, Romtec Utilities underwent dramatic changes that have ultimately made us a better company. We expanded our interests to include more stormwater, more wastewater, and more industrial water applications. We improved our vendor relationships to provide our customers with more products and capabilities at lower prices. We developed an efficient and precise documentation process to foster fast and clear communications, and we strengthened our field services and repair capabilities.

We have completed hundreds of projects across the United States and have supplied packages for international installations. Contact us for assistance. We love to talk about pumping systems of every type, shape, and size!



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