Alfa Laval Vortex Shear-Mixer

An advanced mixing solution that reduces additive waste, mixing time and cost

The mixing of chemical additives into drilling mud is a critical process that can have a significant impact on the overall time and cost of drilling a well. However, mud mixing commonly receives less attention than other drilling processes because of its perceived simplicity. Most often, this leads to the selection of low-cost, low-tech, out-dated mud mixing equipment that does not promote additive waste reduction, and is not fully capable of keeping pace with other drilling processes on today's modern drilling rig.

The Alfa Laval Vortex Shear-Mixer is an advanced, yet simple mixer that vastly outperforms traditional mud mixing hoppers. The shear-mixer is nearly impossible to plug and has the highest additive loading rate of any venturi style mixer.

Features

- Simple robust design, no moving parts
- Low maintenance with easy to replace internals
- Highest product addition rate of any venturi mud hopper
- Easily handles difficult to mix mud additives
- Reduces product waste
- Highly customizable to fit specific rig applications
- High quality materials of construction

It also features a number of exclusive advantages that lead to abundant cost savings – related to both chemical additives and time, including:

- Dynamically shears chemical additives into the fluid
- Pre-wets difficult to mix additives such as bentonite or polymers
- Prevents the formation of fish eyes or microgels
- Equipped with easily replaceable inserts

Working Principle

Drilling mud is pumped at a high rate through the replaceable Lobestar Mixing Nozzle® insert – found inside the Lobestar Mixing Eductor® sub-component of the shear-mixer. The resulting pressure drop across the nozzle creates a high velocity fluid stream and generates an incredibly strong vacuum for maximum solid or liquid additive loading. The Lobestar Mixing Nozzle produces multiple jet streams, each of which consists of a core with oscillating vortex rings that expand into overlapping plumes. This flow pattern results in a highly energized fluid boundary layer, promoting turbulent, dynamic fluid shearing, rapid hydration of additives, and uniform dispersion. The specialized diffuser insert found downstream of the nozzle helps recover the maximum amount of available pressure lost across the nozzle. This allows the mixed fluid to be transported greater distances and up higher elevations through the piping, downstream of the mixer, and back to the mud pits.

The Radial Premixer sub-component of the system is used to “pre-wet” chemical additive particles, preventing clumps of additive particles from appearing in the mixed fluid as fish eyes or microgels. Fluid is passively diverted from the primary inlet of the shear-mixer to the Radial Premixer where a swirling flow pattern is created, generating a vortex of air and fluid. This vortex disperses additive particles evenly into a low pressure, swirling eye of fluid, effectively pre-wetting them before they are sheared into the drilling mud by the Lobestar Mixing Nozzle.

Basic equipment

The Alfa Laval Vortex Shear-Mixer consists of a single or dual suction port Lobestar Mixing Eductor with a Radial Premixer. The basic configuration includes a heavy duty, stainless steel, parabolic, table top hopper with support legs. The entire assembly is mounted on a skid base for easy transport and placement, and the standard inlet and discharge connections are grooved end piping with grooved style couplings. The typical shear-mixer size for drilling applications is 6” or 4” and is dependent on the rig mud system volumes or the desired mud processing rate.

Additional equipment

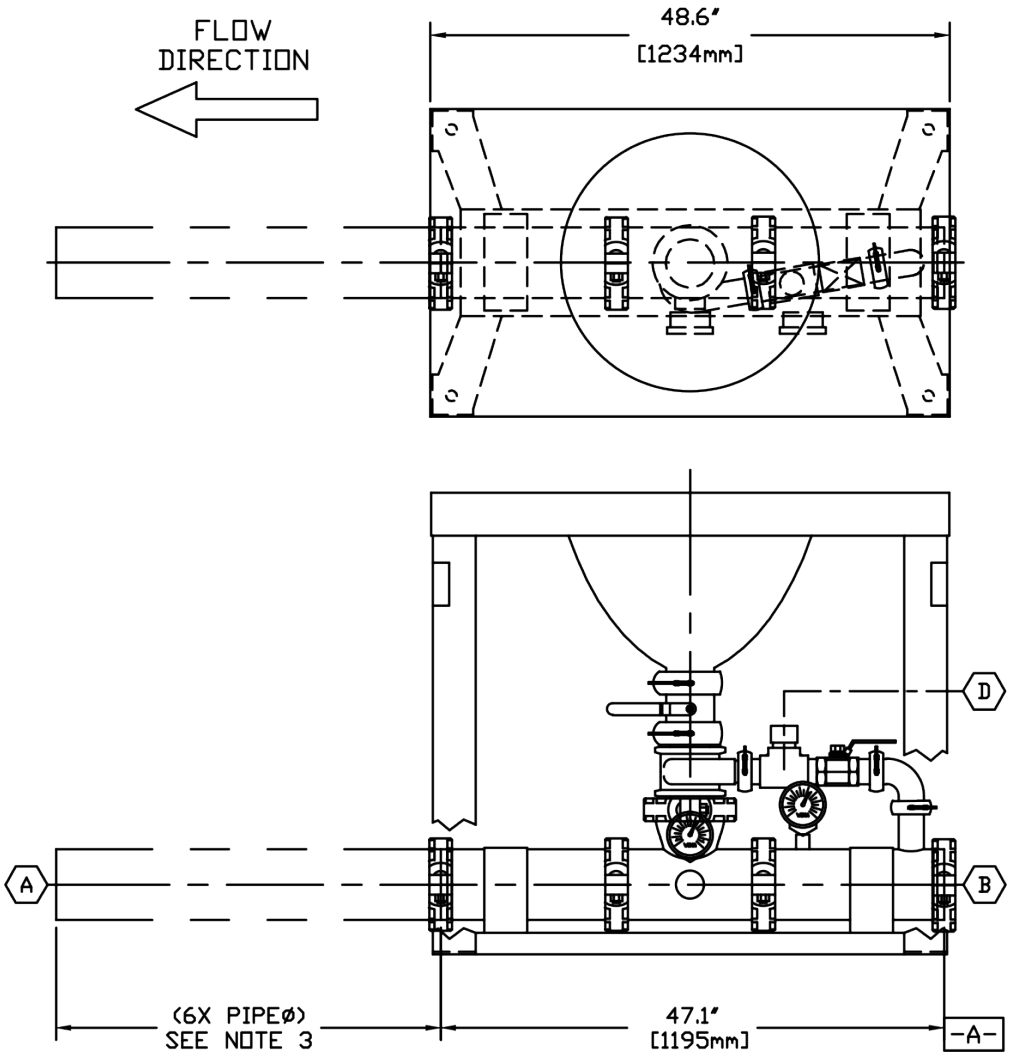
- Feed pump

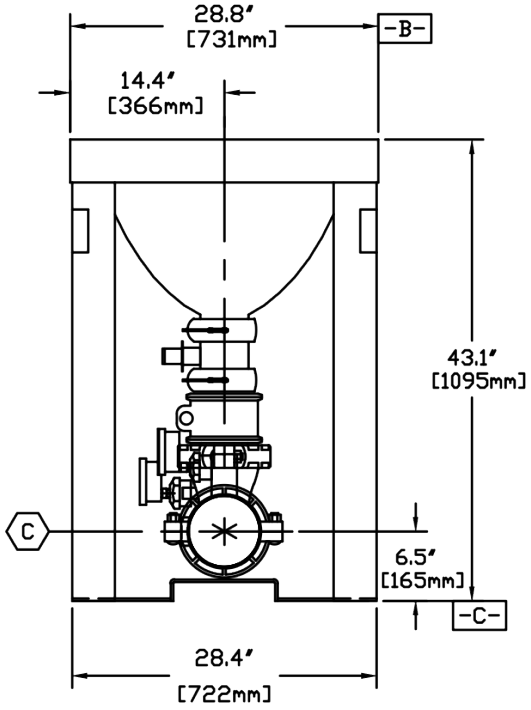
Technical data

Operating pressure range	92 – 231 feet of head
Operating temperature rating*	-40°F – +135°F (-40°C – +57°C)
Estimated weight*	450 lbs (204 kg)
Maximum hydraulic feed rate*	600 gpm (136 m3/hr)

* Based on most standard model configuration. Differently configured or sized units will have different values

Product dimensions





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