



Application Note to the Field

**Solids Handling Capability for
Liquiflo Centrifugal Pumps**

Application Note Number: 1601-5

Date: January 21, 2016

As with a gear pump, a strainer or screen is suggested for centrifugal pumps.

Internal clearances inside the pump are the main limiting factor for particle size. There are two main areas of concern: between the impeller and the volute and between the bearings and the shaft. The bearings have a much smaller operating clearance and therefore become the limiting factor for the standard mag-drive pumps. Since the sealed Centry pumps rely on the motor bearings, the sealed pumps are afforded a larger particle size.

Neither the Centry nor Endura MC Pumps are designed to handle solids, so the percent by volume should be kept to a minimum (< 2%) to avoid clogging and to reduce abrasive wear.

The Endura AB (Air Barrier) is a special mag-drive pump which is capable of handling solids up to 40% by volume. The AB pump uses a pressurized inert gas seal (typically nitrogen) which prevents the pumped fluid from entering the back end of the pump (i.e., the shaft, bearings and inner magnet area).

It is difficult to determine exactly how fast wear will occur when particles are present, as the wear rate is dependent on several factors. In addition to the nature and quantity of the particles (i.e., size, shape, hardness and concentration), physical wear rates also depend on the operating speed and pressure, fluid viscosity, duty cycle, starting and stopping frequency, and the materials used to construct the pump. The cleaner the fluid, the softer the particles and the lower the operating speed, the less wear will occur. Although some solids can be tolerated, pumping abrasive particles is not suggested with these pumps, especially at motor speeds above 1750 RPM.

The solids handling capability of the Liquiflo centrifugal pumps is summarized in the following table:

Maximum Allowable Particle Sizes and Concentrations for Liquiflo Centrifugal Pumps

Pump Model	Sealing Method	Maximum Particle Size		Max % by Volume
		(inches)	(microns)	
620	Sealed	.016	400	2
621	Sealed	.016	400	2
622	Sealed	.016	400	2
620	Mag-Drive	.006	150	2
621	Mag-Drive	.006	150	2
622	Mag-Drive	.006	150	2
Endura MC (all)	Mag-Drive	.002	50	2
Endura AB (all)	Mag-Drive	.016	400	40