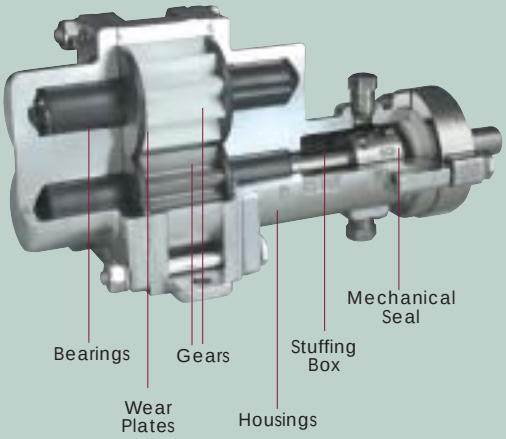
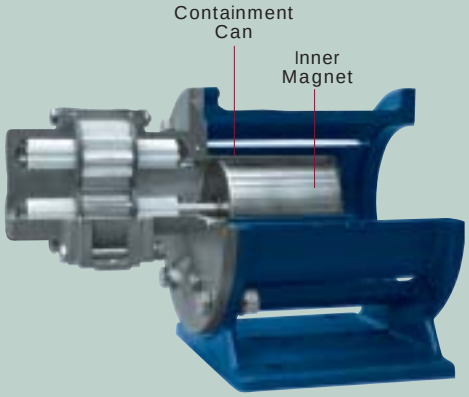
3-SERIES & H-SERIES GEAR PUMPS

Liquiflo



All pump components shown are available in a wide selection of materials to handle difficult chemical pumping applications.

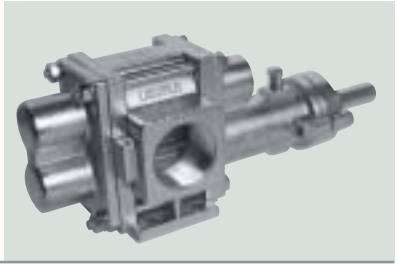
Bearings	Optional Silicon Carbide Bearings and hardened Shafts provide extended service life.
Wear Plates	Allow pump to be rebuilt to like-new condition.
Gears	Material selection includes metal/non-metal self-lubricating combinations for thin fluids.
Housings	Available in several materials for a wide range of corrosion resistance.
Stuffing Box	**Universal Stuffing Box** will accept packing, single-mechanical seal, double-mechanical seal and external mechanical seal arrangements.
Mechanical Seal	Type 9 Seal: available in a wide selection of materials for pumping virtually any chemicals.



Containment Can	Available in 316 SS, Alloy-C or Tefzel-lined Alloy-C. Eliminates leakage associated with mechanical seals.
Inner Magnets	Liquiflo's standard Inner Magnets are made from Samarium Cobalt which can be used at elevated temperatures.

Liquiflo's Rotogear 3-series and H-series gear pumps handle flows from 0.1 to 58 GPM and up to 225 PSI* of pressure. They were specifically designed to meet the needs of the chemical processing industry and will handle a wide range of difficult pumping applications.

* For higher pressure applications, please contact factory.



WHY USE GEAR PUMPS?

Gear Pumps are positive displacement pumps that are frequently used for metering and transferring viscous as well as thin fluids at higher differential pressures.

Gear pumps are an economical alternative to Diaphragm pumps for metering applications and do not pulse or require an air source to operate. They generally last longer in continuous duty applications than Diaphragm, Progressive Cavity or Peristaltic pumps that require frequent part replacements. However, the real value of a gear pump derives from the flexibility and availability of materials of construction and the sealing arrangements which facilitate optimizing the pump for the given service.

Liquiflo has extended the useful range of gear pumps into low-viscosity fluids by using a wide variety of non-metallic self-lubricating components.

Advantages and attributes over other types of pumps are:

- Low flow and high discharge pressure
- Virtually no pulsations
- Self-priming
- Lower NPSHR
- Fewer wearing parts
- Less auxiliary equipment required (pulsation dampeners, compressors, dryers, etc.)
- Flow accuracies as low as 0.5% are achievable
- Easy to repair

WHY USE MAG-DRIVE GEAR PUMPS?

Magnetically Coupled Pumps offer a simple and cost effective solution to sealing toxic, noxious, crystallizing or most other fluids that present problems for single seals and would therefore require use of a double mechanical seal. Magnetically-coupled pumps eliminate the need for cooling loops that are required by double mechanical seals. Two problems commonly associated with cooling loops are selecting a compatible barrier fluid and disposing of the barrier fluid in the event of an inboard seal failure.

Liquiflo has been producing magnetically coupled pumps for more than twenty years with tens of thousands of successful applications. Magnetically-coupled versions are available for all of Liquiflo's product lines including **2**, **3**, **4**, & **H-Series Gear Pumps**, and the **Centry® Series Centrifugal Pumps**.

Advantages of Mag-Drive Pumps:

- Less expensive than double-sealed arrangements
- Eliminates cooling loops required on double seal arrangements
- Eliminates the need to dispose of barrier fluids

MATERIALS AVAILABLE

Liquiflo's **Rotogear® 3-Series and H-Series Gear Pumps** come in a wide range of materials to meet all of your chemical processing applications.

HOUSINGS	GEARS	WEAR PLATES	BEARINGS	SHAFTS
316 SS	316 SS	Carbon	Carbon	316 SS
Alloy-C	Alloy-C	Ceramic	Teflon	Alloy-C
Titanium	Glass-filled PTFE	Teflon	Ryton	Titanium
	Delrin	Ryton	Silicon Carbide	Ceramic Coated
	Ryton	PEEK	PEEK	Tungsten Carbide Coated
	Carbon			

Liquiflo Gear Pumps handle a wide range of applications including the pumping of low-viscosity and high-viscosity fluids, as well as complex metering applications.

High-Viscosity Fluids

Water treatment polymers and food materials up to 80,000 cps are typical of the high-viscosity service of the Rotogear® Series of gear pumps. On high-viscosity applications, it is preferable and more efficient to use larger pumps running at slower speeds.

Low-Viscosity Fluids

Frequently, gear pumps are the preferred solution in low-viscosity pumping applications because of their hydraulics (low flow, high pressure and pulseless flow), compactness, efficiency and low cost. Liquiflo's wide selection of materials allow for pump customization to reduce premature shaft, gear, and bearing wear on low-viscosity fluids. Liquiflo has successfully pumped liquids with viscosities as low as 0.3 CPS.

Metering

Liquiflo gear pumps are used in variable flow systems where the motor RPM is controlled to regulate pump output. Flow rate, pH levels or RPM can trigger the control of feedback signals. (Refer to the Engineering section for more details on gear pumps in metering applications). The Rotogear® Series is available in a wide variety of flow ranges (11 sizes offered), simplifying selection for metering applications.

REPAIR KITS

Repair Kits simplify inventory and speed repair. All parts can also be purchased separately.

Repair kits contain all components to completely rebuild your Liquiflo Gear Pump to like-new condition (all items except the housings are included).

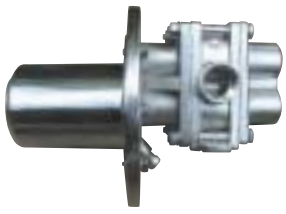
Repair Kits Include:

- **Gears**
- **Shafts**
- **Keys**
- **Bearings**
- **Wear Plates**
- **Pins**
- **O-Rings**
- **Retaining Rings**
- **Seals (if applicable)**

RELIEF VALVES

Positive displacement pumps should be installed with a relief valve in the discharge line. This will protect the pump and piping against any type of line blockage including the inadvertent closing of an isolation valve. Liquiflo manufactures two sizes of relief valves in both 316 SS and Alloy-C.

CARTRIDGE



A cartridge is a complete mag-drive pump less the outer magnet and pedestal. A cartridge replacement is a convenient way to quickly replace a pump that requires maintenance.

OPTIONS

Liquiflo has several options available for its complete line of Positive Displacement Gear Pumps, as well as offering a complete line of standard pumps. Liquiflo will custom engineer its pumps and options to fit your specific requirements.

SANITARY FITTINGS

Sanitary Fittings are available for food & drug applications

RAISED-FACE FLANGES

ANSI, DIN, JIS Flanges are available

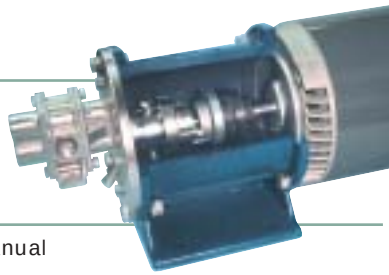
CLAMP-ON TEMPERATURE CONTROL JACKET

Temperature Control Jackets can maintain the pump at either elevated or reduced temperatures. Commonly used when pumping liquids that solidify or become difficult to pump when the temperature decreases.

S-ADAPTER

The S-Adapter is available for long-coupling mag-drive pumps; it isolates the pump from the motor.

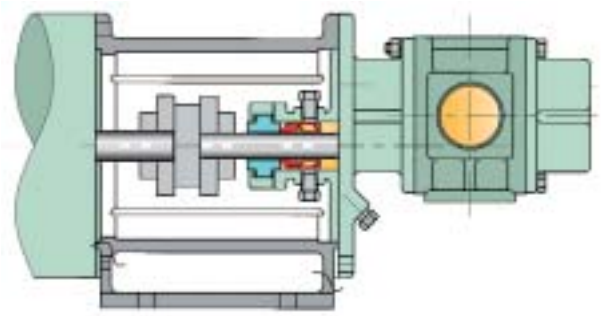
TYPICAL MOUNTING CONFIGURATIONS



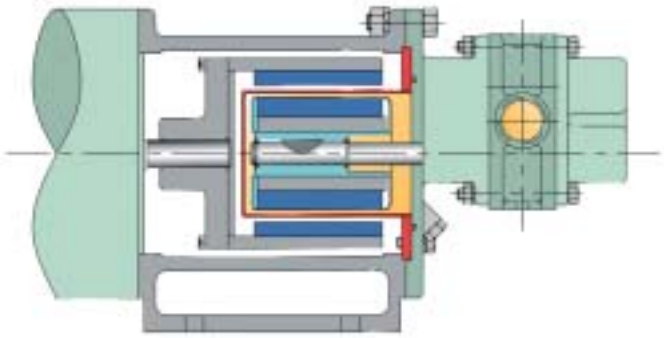
Close-Coupled Option eliminates manual alignment of pump and motor.

Features of Close-Coupled Design:

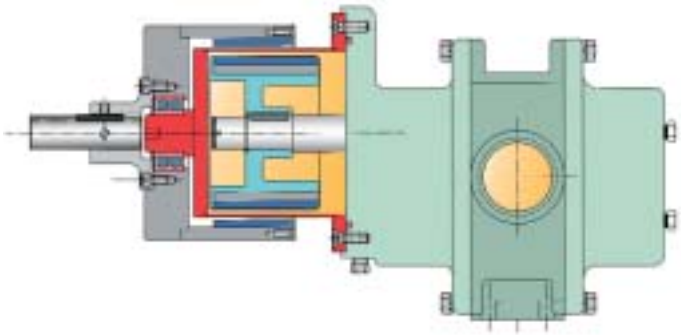
- Eliminates difficulties and inconvenience of manually aligning pump and motor
- Cast-iron bracket that rigidly supports pump & motor
- Dimensionally interchangeable with our Mag-Drive pumps
- Available for 56C, 143/145TC, IEC 71, 80, 90 frame motors
- Excellent for OEM applications
- Quickly and easily installed



CLOSE-COUPLED SEALED



CLOSE-COUPLED MAG-DRIVE



LONG-COUPLED MAG-DRIVE (312, 314 & H12 only)

SEAL CONFIGURATIONS

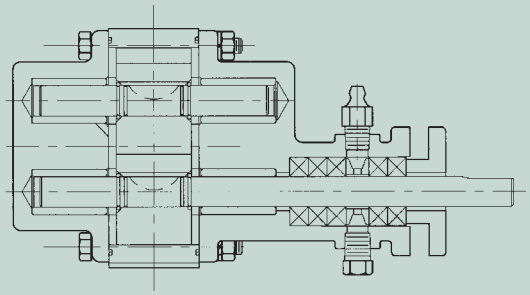


FIG.1 LANTERN RING/PACKING SEAL

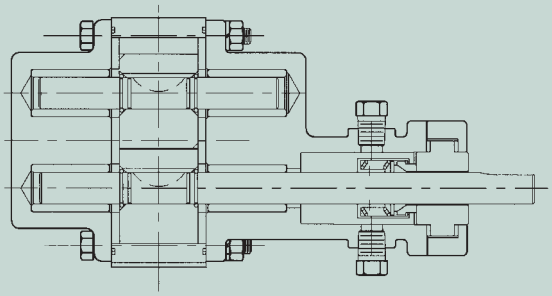


FIG.2 SINGLE MECHANICAL SEAL

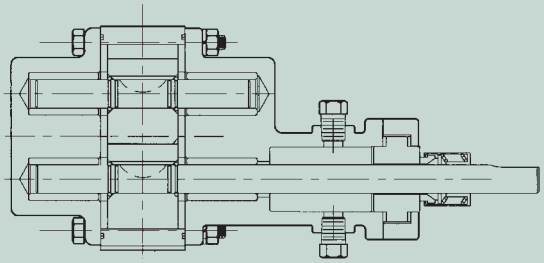


FIG.3 EXTERNAL MECHANICAL SEAL

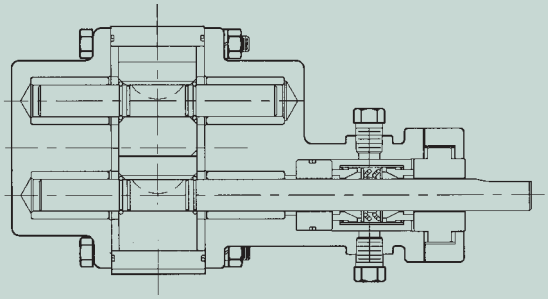


FIG.4 DOUBLE MECHANICAL SEAL

RANGE OF SEALS AVAILABLE

Liquiflo's Universal Front Housings will accommodate packing, as well as single and double mechanical seal configurations.

Fig. 1 **Packing** is suitable and the most economical for safe, non-hazardous liquids.

Fig. 2 **Single Mechanical Seals** are used when leakage needs to be minimized. Single seals have a viscosity limit of 5,000 cps and a temperature limit of 500˚F.

Fig. 3 **External Mechanical Seals** are used to isolate the seal body from the liquid being pumped or when pumping liquid under vacuum conditions.

Fig. 4 **Double Mechanical Seals** require a flushing system and are typically used when pumping liquids that are abrasive, crystallize on contact with air, or are very dangerous.

SEAL MATERIALS AVAILABLE

PACKING	SEAL WEDGES	SEAL FACES	SEAL SEATS
Braided Teflon Grafoil	Teflon Grafoil	Carbon Teflon Silicon Carbide	Ceramic Silicon Carbide Tungsten Carbide

FIG.5 EXPLODED VIEW OF SINGLE INTERNAL MECHANICAL SEAL