

## Large Sump or Drainage Pumps

The proper selection of guide bearing assembly, column closure and shaft material is essential for the successful operation of Vertical Sump and Process Pumps, due to the variety of liquids that may be encountered at the point of installation.

DEMING offers a wide choice of bearing construction and shaft materials to meet requirements of most installations. Listed below are recommendations for the proper selection of these important items.

### BEARING SELECTION Maximum Recommended Operating Temperature 400°F

Type of Service	Typical Application	Bearing Material	Max. Liquid Temp °F	BHN	Recommended Lubrication			Abrasion Resistance of Bearing when used in Bearing Assembly Indicated		
					Clean Liquid (1)	Grease (2)	Dry (3)	Fair	Good	Best
General	Furnished on Standard Fitted and Bronze Fitted Pumps	Bronze	180°	57/64	NR	R	NR	6 & 8	11	NR
Clean Liquids	Cold or Hot Water, Sea Water, Cleaning Fluids, Gasoline, Kerosene, Jet Fuels	Babbit-Graphite*	300°	19	R	NR	R	NR	NR	NR
Acids (clean)	Most Acids - Max., 60% Sulfuric	Carbolube*	400°	237	R	NR	R	6 & 8	11	NR
	Most Acids - Max., 100% Sulfuric	Nickel Graphite*	400°	--	R	NR	R	NR	NR	NR
Alkaline Caustic	Sodium Hydroxide, etc. Standard on All Iron Pumps	Class 30 Cast Iron	180°	160	NR	R	NR	6 & 8	11	NR
Chemical	General Service with most clean Acids and Solvents	Teflon *	350°	--	R	R	NR	10	NR	NR
Mild Abrasive	General Service with Compatible Liquids	Cast Iron	180°	180	NR	R	NR	NR	6 & 8	11
General Abrasives	Used in Compatible Liquids except Concentrated Acids and Solvents	Rubber * (Buna)	150°	--	R	NR	NR	NR	NR	12
Molten Sulphur	Used as bottom bearing with Carbolube Intermediate Bearing	Babbit-Graphite*	360°	220	NR	NR	R	NR	NR	6
Nuclear	Demineralized Water	Nickel Graphite *	400°	--	R	NR	R	6 & 8	11	NR

(\* ) Requires Type 416, Carp. 20 or 316 Stainless Steel Shaft.      R - Recommended      NR - Not Recommended

**Important! - Pump Should be Minimum 1 HP.**

- Note:** (1) Clean liquid flush to bearing requires approx. ½ gpm per bearing at pressure equal to or greater than ½ of the pump discharge pressure. Solenoid valve is required.  
 (2) Standard grease lubricated pump includes grease fitting on lube line to each bearing assembly. Spring loaded grease cup optional when specified.  
 (3) Bearings indicated for dry lubrication are lubricated by the liquid being pumped.  
 (4) Add ½ hp per Intermediate Bearing.

### RECOMMENDED SHAFT MATERIALS Listed below is general recommendation of shaft materials for various types of chemical service

Shaft Material	Brinell Hardness	Application
4140 SAE Steel	163	General Service - Furnished in standard fitted pumps
416 Stainless Steel	207 - 241	General Service in mild acids and chloride solutions
316 Stainless Steel	135 - 185	Industrial chemicals, solvents, chlorides, brines and most acids
Carp. 20 Stainless Steel	160	Most active acids except those requiring Hastelloy or other metals

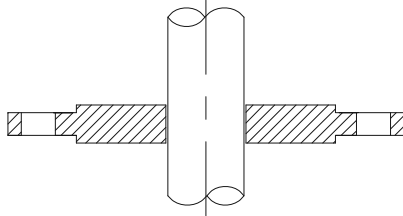
For specific applications, contact Factory with full information.

### Large Sump or Drainage Pumps

#### STANDARD SHAFT GUIDE BEARING ASSEMBLIES

For standard drainage service - non-corrosive liquids without abrasives or vapors.

DESIGN 1 - TOP

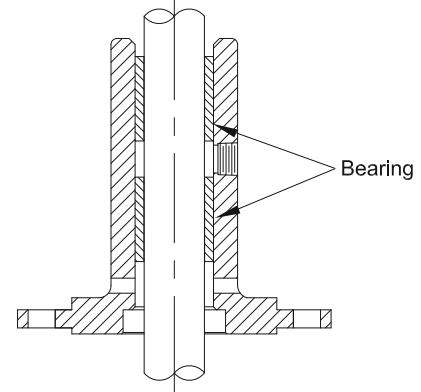


**Design 1** is the standard cast iron column top closure. On Standard Fitted and All Iron pumps, it is of Fianite material. On alloy pumps, it will be of the same material as the liquid end parts

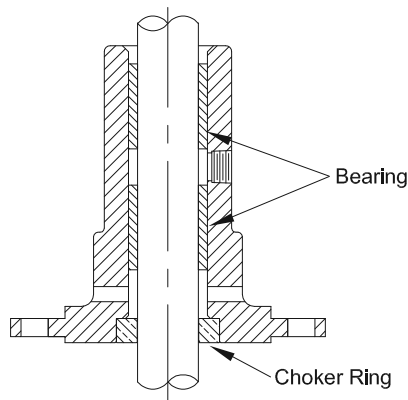
Normally furnished with pressurized grease lubrication with bearings of Bronze or Cast Iron.

For pressurized liquid lubrication, specify Babbit-Graphite, Nickel Graphite or Carbolube bearing material. If liquid being pumped is compatible, it may be used to lubricate the bearing.

DESIGN 8 - INTERMEDIATE



DESIGN 6 - BOTTOM



**Design 6** is the standard bottom shaft guide bearing assembly with choker ring and two guide bearings of the material selected.

**Design 8** is the standard intermediate shaft guide bearing assembly including two guide bearings of the material as selected. Used where pit depth is greater than 6 ft. For pressurized grease lubrication, specify bearings of Bronze or Cast Iron.

For pressurized liquid lubrication, specify Babbit-Graphite, Nickel Graphite or Carbolube bearing material. If liquid being pumped is compatible, it may be used to lubricate the bearing.

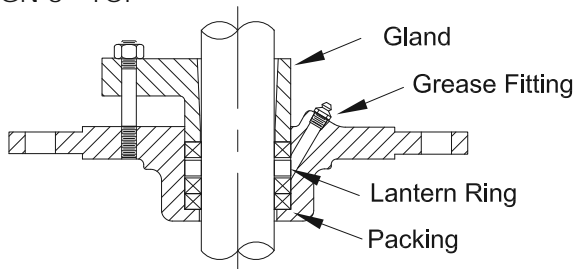
#### FOR SPECIAL APPLICATIONS

When pumping abrasive, corrosive or hot liquids, the standard construction as shown above must be modified to meet the

requirements of the particular installation. Shown below are recommendations for specific applications.

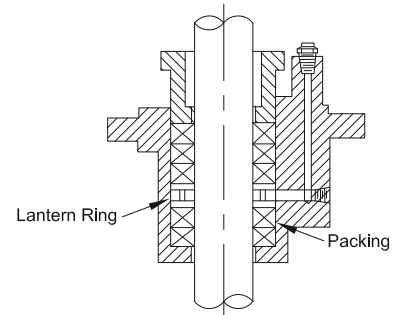
#### ALTERNATE TOP COLUMN CLOSURE

DESIGN 3 - TOP



**Design 3** top closure is used instead of Design #1 and is recommended to seal the shaft when gas or obnoxious vapors are present in the liquid. Includes three rings of packing and lantern ring. May be grease lubricated or liquid flushed. Has 1/8" inlet and outlet connections.

DESIGN 5



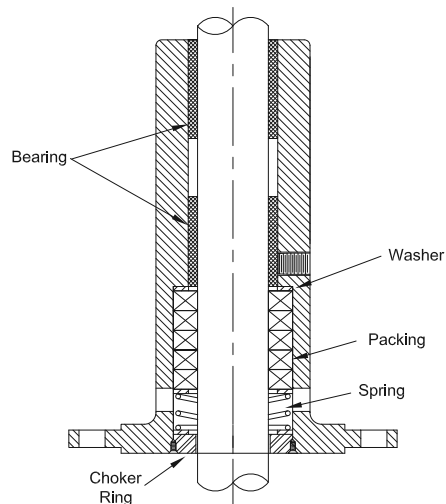
Top closure is also used in place of Design #1 and is recommended for containment of hot or corrosive vapors, high pumping pressures, abrasives and with pressurized column assembly. Includes five rings of packing and lantern ring. May be grease lubricated or liquid flushed. Has 1/8" connections.

**Large Sump or Drainage Pumps**

**ALTERNATE GUIDE BEARING ASSEMBLIES**

**BOTTOM OR INTERMEDIATE**

FOR SLIGHTLY ABRASIVE LIQUIDS

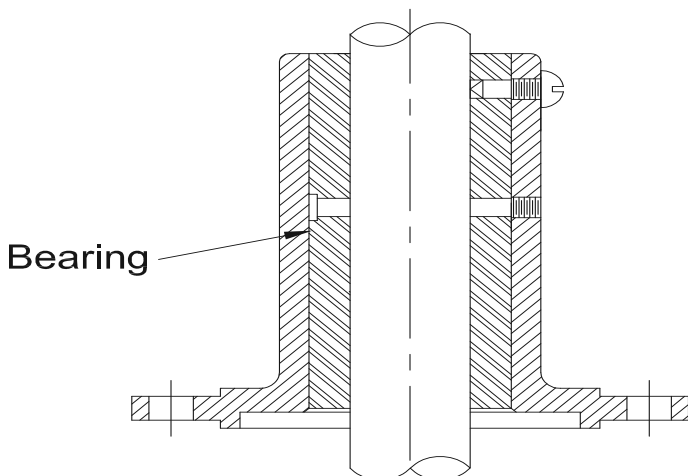


**DESIGN 11** includes bearings of the material selected, five rings of packing under spring tension plus choker ring in bottom of the housing to form a seal to exclude abrasives from the bearings.

For pressurized grease lubrication, specify bearing of Bronze or Cast Iron.

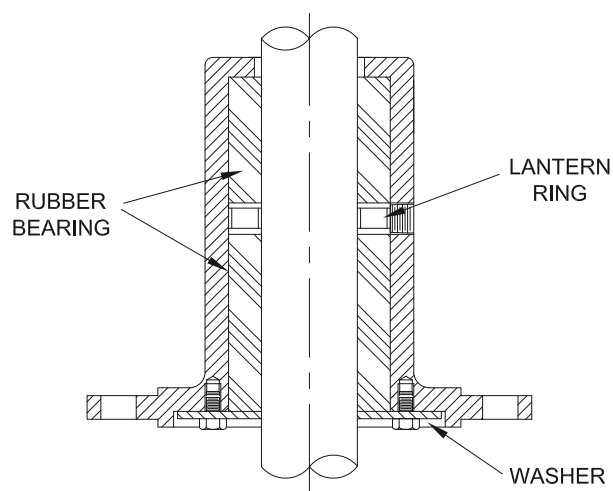
For pressurized liquid lubrication, specify bearings of Babbit Graphite, Nickel Graphite or Carbolube.

FOR CHEMICAL SERVICE



**DESIGN 10** includes Teflon bearing with lock screw and is lubricated by the liquid being pumped, or may be pressured with compatible liquid.

FOR ABRASIVE LIQUIDS



**DESIGN 12** is recommended for abrasive liquids and includes two rubber bearings separated by lantern ring for flush connection. Requires pressurized liquid lubrication.

For installation requiring maximum protection against abrasives, refer full information to Factory.