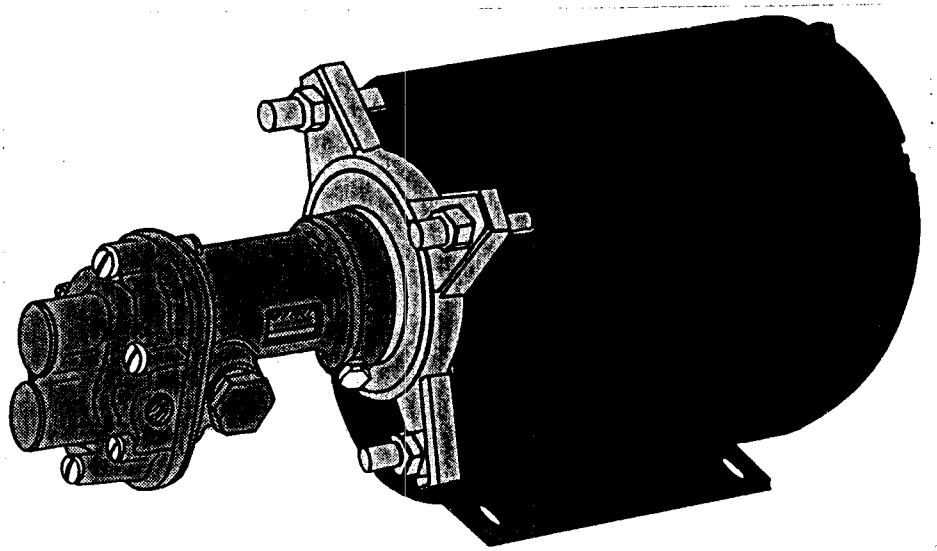
FPUGR100 Series

Gear Pumps



OMEGA®

An OMEGA Technologies Company

Operator's Manual
M1335/0192

FPUGR100 Series
Gear Pumps

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FPUGR100 Series Gear Pumps

SECTION 1

GENERAL INSTRUCTIONS

Available Models

Model Number	Flow Rate (GPM Water) 0 PSI	100 PSI	Relief Valve	Motor HP	Volts	Phase	Port Size NPT(F)	Ship. Wt. Lbs (kg)	Overall Dim. HxWxL In.
FPUGR101	0.9	0.61	No	1/4	115/230	1	1/4"	17(7.7)	6x6x14
FPUGR101-R	0.9	0.61	Yes	1/4	115/230	1	1/4"	17(7.7)	6x6x14
FPUGR102	2.1	1.5	No	1/3	115	1	1/4"	17(7.7)	6x6x14
FPUGR102-R	2.1	1.5	Yes	1/3	115	1	1/4"	18(8.2)	6x6x14
FPUGR103	2.1	1.5	No	1/2	115/230	1	1/4"	17(7.7)	6x6x14
FPUGR103-R	2.1	1.5	Yes	1/2	115/230	1	1/4"	18(8.2)	6x6x14
FPUGR104	2.1	1.5	No	1/3	230/460	3	1/4"	17(7.7)	6x6x14
FPUGR104-R	2.1	1.5	Yes	1/3	230/460	3	1/4"	18(8.2)	6x6x14
FPUGR105	4.0	3.0	No	1/3	115	1	3/8"	19(8.6)	6x6x14
FPUGR105-R	4.0	3.0	Yes	1/3	115	1	3/8"	19.5(8.7)	6x6x14
FPUGR106	4.0	3.0	No	1/3	230/460	3	3/8"	22(10)	6x6x14
FPUGR106-R	4.0	3.0	Yes	1/3	230/460	3	3/8"	22.5(10.2)	6x6x14
FPUGR107	4.0	3.0	No	1/2	115/230	1	3/8"	23(10.5)	6x6x14
FPUGR107-R	4.0	3.0	Yes	1/2	115/230	1	3/8"	23.5(10.7)	6x6x14
FPUGR108	10.5	9.4	No	2	230/460	3	1/2"	54(24.5)	7x9x18
FPUGR108-R	10.5	9.4	Yes	2	230/460	3	1/2"	55(25)	7x9x20
FPUGR109	23.0	---	No	3	230/460	3	1"	63(28.6)	9x10x22
FPUGR109-R	23.0	---	Yes	3	230/460	3	1"	64(29)	9x10x24

Specifications

Wetted Parts:
Bronze gears, 303SS shaft, Buna-N lip seal (Viton optional), carbon-graphite bearings.

Maximum Pressure:
100 PSIG; FPUGR109 limited to 50 PSIG for water and low viscosity liquids.

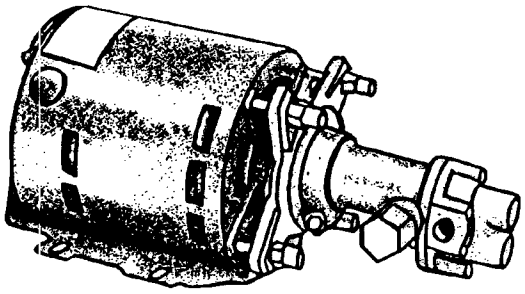
Temperature Range:
Buna N (nitrile): -65°F to +250°F
Viton (optional): -40°F to 300°F

Maximum Viscosity (SSU):
FPUGR101 through 108: 500
FPUGR109: 100

SECTION 1

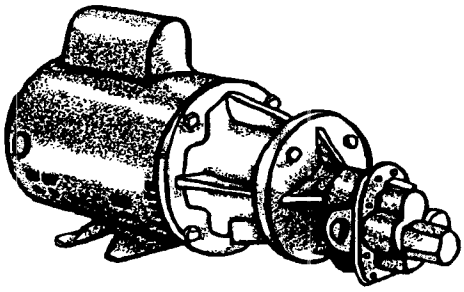
FPUGR100 Series Gear Pumps

GENERAL INSTRUCTIONS



1 to 4 GPM

Models
FPUGR101/101R
FPUGR102/102R
FPUGR103/103R
FPUGR104/104R
FPUGR105/105R
FPUGR106/106R
FPUGR107/107R



10 to 40 GPM

Models
FPUGR108/108R
FPUGR109/109R

General Description

Pump housing and gears are made of top quality bronze, shafts are from stainless steel 303.

Bearings are designed of high performance carbon-graphite material selected for wear resistance and long service life.

Gear pumps are **positive displacement pumps**.

Each shaft revolution displaces a definite amount of liquid relatively unaffected by the back pressure in the discharge line.

Shaft speed and flow are directly proportional. Recommended pressure limits are **100 psi** for water and non-lubricants, **150 psi** for oil and lubricants. The maximum shaft speed is **1750 rpm**.

Mounting and Drive Arrangement

Close coupled pumps are mounted directly to the electric motor by means of a suitable adapter casting. The pump drive shaft is connected to the motor shaft by a flexible coupling.

The smaller pumps (**1 to 4 G.P.M.**) use standard 48 and 56 frame motors, the larger pumps (**10 to 40 G.P.M.**) require NEMA C flange motors frame sizes 56 thru 213.

GENERAL INSTRUCTIONS

Shaft Seals

Close coupled gear pumps are normally supplied with Buna Lip Seals, Viton Lip Seals are available as on option. Mechanical Seals (Buna or Viton) can be supplied with Carbonator Motor mounted pumps.

Liquids and Temperature

These pumps are suitable for all liquids that are compatible with bronze. The most common liquids (in the PH-range of 4 to 11) are:

Water
Oil
Mild Chemicals

Viscous liquids require reduced shaft speeds of **1150 RPM** or lower.

Gear pumps are **definitely not recommended** to be used with liquids containing:

Solids
Abrasives
Powders
Paint Pigments

If abrasives are unavoidable, use very low shaft speed.

For best pump life recommended liquid temperature range is from **32°F to 140°F**. If more extreme temperature conditions exist, consult **OMEGA Flow Department.**
***WARNING*:** Freezing of water-filled pumps can cause damage and **must** be avoided. Oils at low temperatures are very viscous requiring low speed and extra power.

Suction Lift

As a general rule the suction lift should be kept at an absolute minimum by placing the pump as close to the liquid source as possible. A gear pump in new condition can lift **20 feet** of water in the suction line. A foot valve (preferably with built-in strainer) is recommended at the beginning of the suction line.

For a first start-up the pump should be primed to avoid running dry.

Minimum size of the suction pipe is the size of the pump inlet port. For longer suction lines (over 3 feet) or for viscous liquids the pipe size should be at least one size or two sizes larger than the pump inlet port. A reducing pipe coupling must be used at the pump entrance port.

SECTION 1

FPUGR100 Series Gear Pumps

GENERAL INSTRUCTIONS

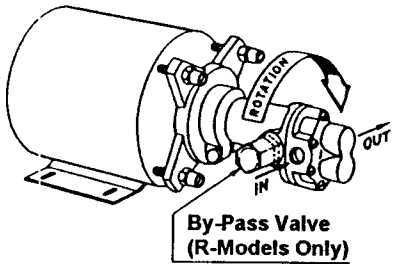
Relief Valve

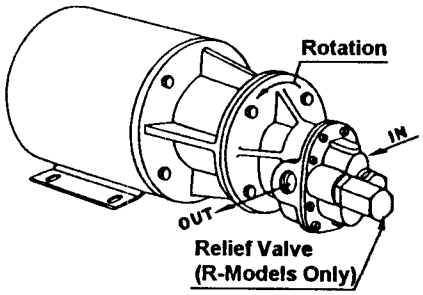
WARNING: If the discharge line contains any throttling devices such as a shut-off valve, a spray nozzle or other restrictive device, it is necessary to have a relief valve in the system which returns the liquid to the suction side or to the tank.

The relief valve is also available as part of the pump itself (R-model pumps). However, built-in relief valves are only good for intermittent service. If used continuously, pump will overheat.

A built-in relief valve is strictly a safety device against overpressure. It will not work successfully as a pressure or flow control device. For this purpose a separate relief valve in the pressure line must be used.

Rotation and Relief Valve



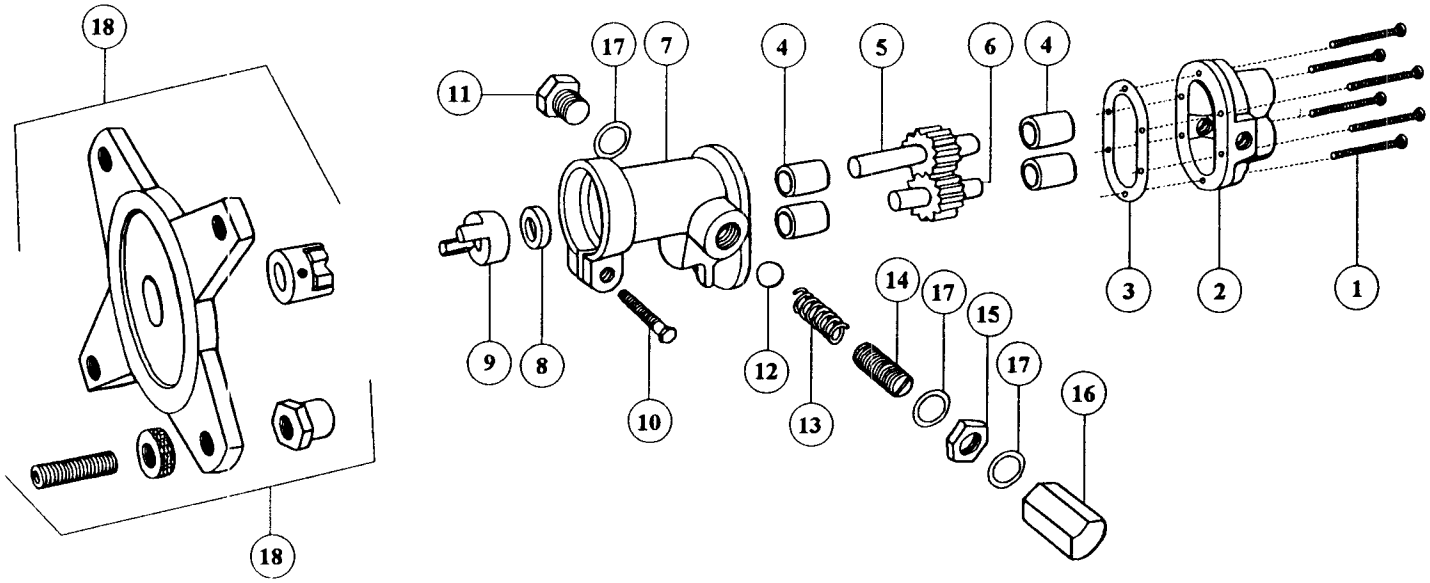


The drawings above show the relationship between **shaft rotation, direction of flow** and **location of relief valve** (R-models only).

Standard valve location is shown as installed at the factory. If opposite rotation is required, valve can be relocated in the field. Pressure setting is 50 P.S.I. To increase pressure setting, turn adjusting screw in clockwise direction.

FPUGR100 Series Gear Pumps

SECTION 2
PARTS LIST



Parts List			Pump Numbers (FPUGR)					
No.	Part Name	Req.	101	101-R	102, 103, 104	102-R, 103-R, 104-R	105, 106, 107	105-R, 106-R, 107-R
1	Screw	6	5506	5506	5013	5013	5013	5013
2	Body	1	5571	5571	5023	5023	5032	5032
3	Gasket	1	5226	5226	5226	5226	5642	5642
4	Bearing, Carbon	4	5024	5024	5024	5024	5024	5024
5	Drive Gear Assembly	1	32198	32198	32149	32149	32150	32150
6	Idle Gear Assembly	1	32199	32199	32110	32110	32111	32111
7	Cover	1	6318	5748	6318	5748	6756	6493
8	Seal, Lip	1	5007	5007	5007	5007	5007	5007
9	Coupling Half	1	5604	5604	5604	5604	5604	5604
10	Screw	1	5595	5595	5595	5595	5595	5595
11	Plug Nut	1	——	1838	——	1838	——	1838
12	Ball	1	——	5803	——	5803	——	5238
13	Spring	1	——	1840	——	1840	——	1840
14	Adjusting Screw	1	——	5237	——	5237	——	5237
15	Locknut	1	——	5240	——	5240	——	5240
16	Valve Nut	1	——	5239	——	5239	——	5239
17	Fiber Washer	3	——	6533	——	6533	——	6533
	Service Kit contains items 3,4,5,6,8	1	10640	10640	10640	10640	10640	10640

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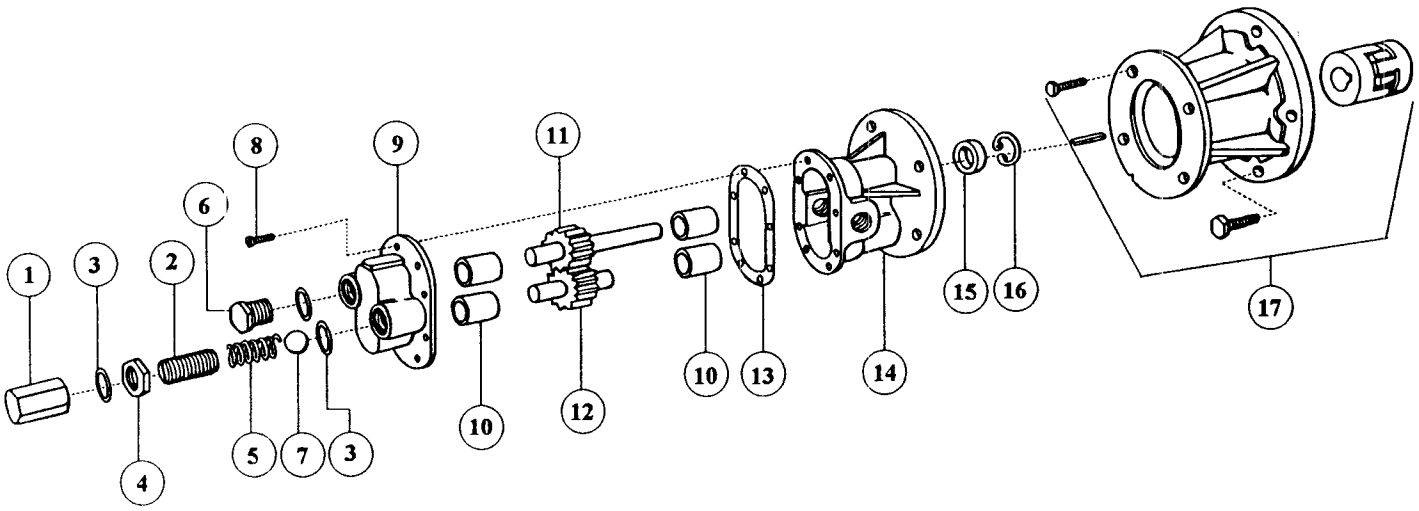
Gear Pumps

SECTION 2
PARTS LIST



Parts List			Pump Numbers (FPUGR)			
No.	Part Name	Req.	108	108-R	109	109-R
1	Valve Nut	1	-----	5204	-----	5276
2	Adjusting Screw	1	-----	5200	-----	5275
3	Fiber Washer	3	-----	6964	-----	6965
4	Locknut	1	-----	5209	-----	1642
5	Spring	1	-----	5207	-----	5277
6	Plug Nut	1	-----	5205	-----	5278
7	Ball	1	-----	5206	-----	6217
8	Screw No. 10	8	5385	5385	5385	5385
	Screw 1/4"	10	-----	-----	-----	-----
9	Cover	1	5900	5902	5901	5903
10	Bearing, Carbon	4	5091	5091	5091	5091
11	Drive Gear Assembly	1	32532	32532	32531	32531
12	Idle Gear Assembly	1	32113	32113	32115	32115
13	Gasket	1	5227	5227	5247	5247
14	Body	1	8401	8401	8400	8400
15	Seal, Lip	1	5463	5463	5463	5463
16	Retaining Ring	1	5476	5476	5476	5476
	*Service Kit Contains items 10, 11, 12, 13, 15, 16.	1	11333	11333	11334	11334

** Add -SK to pump P/N*

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