

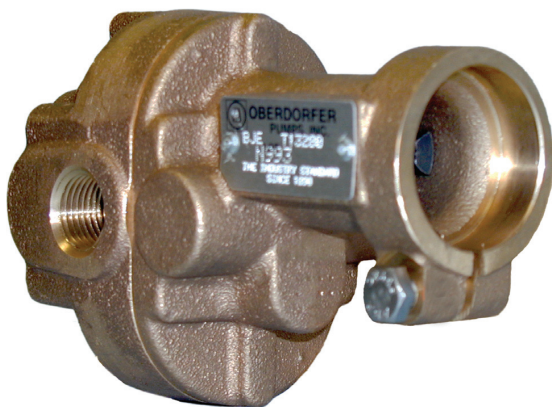


OBERDORFER PUMPS

by Gardner Denver

Bronze Close Coupled Rotary Gear Pumps N993 Series

1/2" NPT Ports Standard



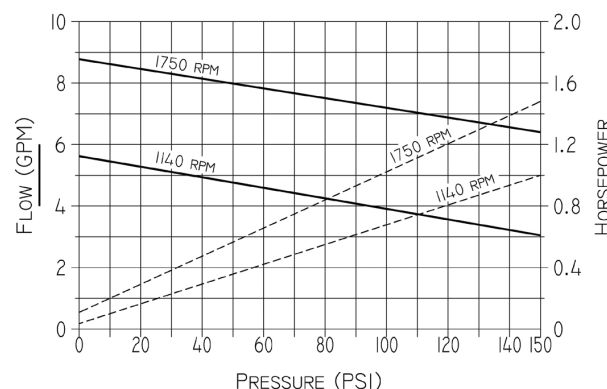
Pump	Description
N993	Standard Pump with 1/2" ports
N993R	Pump with 1/2" ports & relief valve
N993S5	Pump with FKM lipseal
N993RS5	Pump with FKM lipseal & relief valve
N993S16	Pump with NBR mechanical seal
N993RS16	Pump with NBR mech. seal & relief valve
N993S17	Pump with FKM mechanical seal
N993RS17	Pump with FKM mech. seal & relief valve
N993S18	Pump with PTFE mechanical seal
N993RS18	Pump with PTFE mech. seal & relief valve
N993S8	Pump with EPDM mechanical seal
N993RS8	Pump with EPDM mech. seal & relief valve

FEATURES:

- Rugged corrosion resistant bronze construction
- Compact close-coupled design
- Stainless steel shafts
- Durable bronze helical gears provide quiet operation
- Process lubricated carbon graphite bearings
- O-ring cover seal for maximum leak protection
- Shaft seal choices: Lip & Mechanical
- Easy field assembly to a variety of motor frames
 - For compact AC motor pump units - see Close Coupled Bronze Adapterless Rotary Gear Pumps
 - For Danfoss hydraulic motor driven pump units - see adapter 9960
- For bronze pedestal pumps - see model N3000
- For close-coupled ductile iron pumps - see model C993

PERFORMANCE:

Capacity Water at 70° F



GENERAL DESCRIPTION:

Pump housings and gears are made of top quality bronze, shafts are 303 stainless steel. Bearings are designed of high performance carbongraphite 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 other lubricants. The maximum shaft speed is 1750 RPM.

SHAFT SEALS:

Close coupled gear pumps are normally supplied with a NBR lip seal. A lip seal made of FKM is available as an option. For a FKM Seal, add S5 to the pump model number. For NBR mechanical add S16. For FKM mechanical add S17. For PTFE mechanical add S18. For EPDM mechanical add S8.

LIQUIDS AND TEMPERATURE:

These pumps are suitable for all liquids that are compatible with bronze. Most common liquids are water, oil, and mild chemicals in the pH range of 4 to 11. Viscous liquids require reduced shaft speeds of 1140 RPM or lower. (Consult factory.)

Liquids containing solids, abrasives, powders, or paint pigments are definitely not recommended for gear pumps. If abrasives are unavoidable, use a very low shaft speed. The recommended liquid temperature range is from 32° F to 140° F for best pump life. If more extreme



ELLSWORTH

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Bronze Close Coupled Rotary Gear Pumps

N993 Series

temperature conditions exist, factory should be consulted. Freezing of water-filled pumps can cause damage and must be avoided. Oils at low temperatures are very viscous requiring a lower speed or 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 dry running. 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 should be at least one size or two sizes larger than the pump inlet port.

ROTATION AND RELIEF VALVE:

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,

the 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. Unless otherwise specified, the pump motor unit is supplied by the factory for shaft rotation counterclockwise from pump shaft end. Reversing motor will reverse "in and "out" ports and also requires changing relief valve location. The relief valve is always on the inlet side of this pump series. The factory pressure setting is 50 PSIG. To increase pressure, turn the relief valve adjusting screw in a clockwise direction.

Adapter Kits		
Adapter Kit	Part Number	Description
M	10562	48 Frame
N	10816	56 Frame
P	11722	S56 Frame
Q	11331	56C Frame (to 3/4 HP)
C	11331H	56C Frame (above 3/4 HP)
F	11332	IEC71
N/A	N/A	Adapterless - Modified 48

Parts List

	1	2	3	4	5	6	7	8	9	10	11	12	
	Screw	Body	Bearing	Drive Gear Assy	Idle Gear Assy	Dowel Pin	O-Ring	Cover	Tag	Tag Screw	Screw	Lipseal	Mechanical Seal
Model	Qty. 6	Qty. 1	Qty. 4	Qty. 1	Qty. 1	Qty. 2	Qty. 1	Qty. 1	Qty. 1	Qty. 2	Qty. 1	Qty. 1	Qty. 1
N993	9837-20	9307ND5N	5024	32950	32937	8885	9797-038	9308NN2N	9344	9345	5595	5007	N/A
N993R	9837-20	9307ND5N	5024	32950	32937	8885	9797-038	9308NN3B	9344	9345	5595	5007	N/A
N993S5	9837-20	9307ND5N	5024	32950	32937	8885	9797-038	9308NN2N	9344	9345	5595	7580	N/A
N993RS5	9837-20	9307ND5N	5024	32950	32937	8885	9797-038	9308NN3B	9344	9345	5595	7580	N/A
N993S16	9837-20	9307ND5N	5024	33342	32937	8885	9797-038	9309PN4N	9344	9345	5595	N/A	32584
N993RS16	9837-20	9307ND5N	5024	33342	32937	8885	9797-038	9309PN4B	9344	9345	5595	N/A	32584
N993S17	9837-20	9307ND5N	5024	33342	32937	8885	9797-038	9309PN4N	9344	9345	5595	N/A	32585
N993RS17	9837-20	9307ND5N	5024	33342	32937	8885	9797-038	9309PN4B	9344	9345	5595	N/A	32585
N993S18	9837-20	9307ND5N	5024	33342	32937	8885	9797-038	9309PN6N	9344	9345	5595	N/A	32335
N993RS18	9837-20	9307ND5N	5024	33342	32937	8885	9797-038	9309PN6B	9344	9345	5595	N/A	32335
N993S8	9837-20	9307ND5N	5024	33342	32937	8885	9999-038	9309PN4N	9344	9345	5595	N/A	32754
N993RS8	9837-20	9307ND5N	5024	33342	32937	8885	9999-038	9309PN4B	9344	9345	5595	N/A	32754

Repair Kits contain items 3, 4, 5, 7 12, 14, 15, 24



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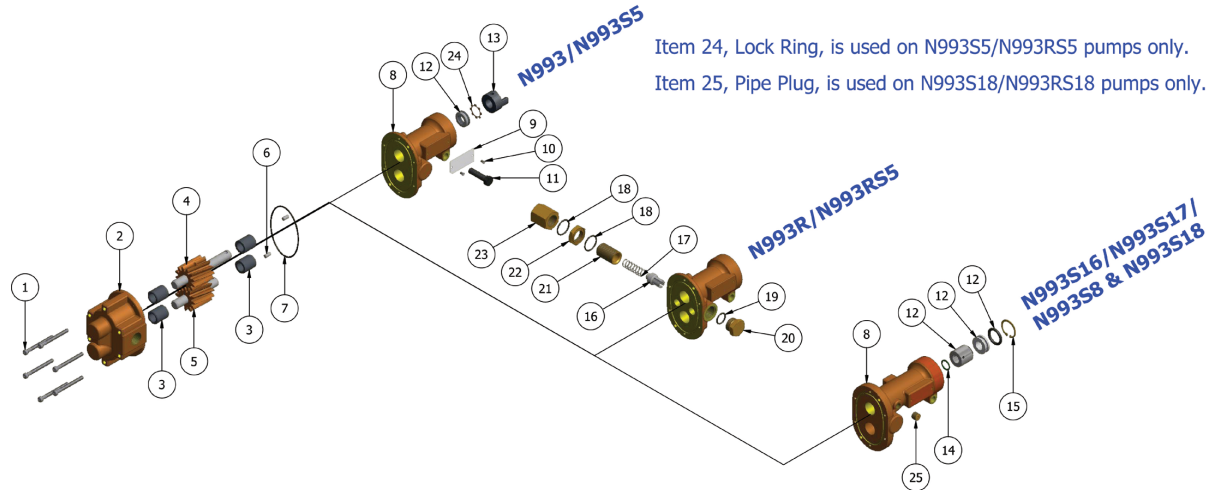
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Exploded View



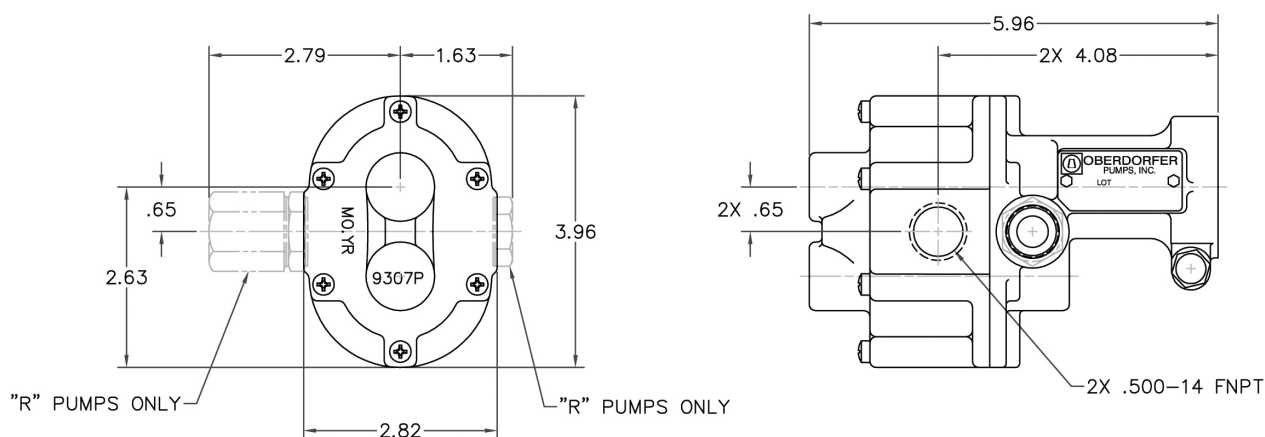
	13	14	15	16	17	18	19	20	21	22	23	24	25	
	Coupling Half	Retaining Ring	Retaining Ring	Poppet or Ball	Spring	O-Ring	O-Ring	Nut Plug	Adjust. Screw	Lock Nut	Nut Bypass	Lock Ring	Pipe Plug	Repair Kits
Model	Qty. 1	Qty. 1	Qty. 1	Qty. 1	Qty. 1	Qty. 2	Qty. 1	Qty. 1	Qty. 1	Qty. 1	Qty. 1	Qty. 1	Qty. 1	
N993	5604	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	12070
N993R	5604	N/A	N/A	5803	6301	9797-019	9797-019	1838	5237	5240D	5239	N/A	N/A	
N993S5	5604	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	7626	N/A	12101
N993RS5	5604	N/A	N/A	5803	6301	9797-019	9797-019	1838	5237	5240D	5239	7626	N/A	
N993S16	5604	5373	7639	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	12398
N993RS16	5604	5373	7639	5803	6302	9797-019	9797-019	1838	5237	5240D	5239	N/A	N/A	
N993S17	5604	5373	7639	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	12399
N993RS17	5604	5373	7639	5803	6302	9797-019	9797-019	1838	5237	5240D	5239	N/A	N/A	
N993S18	5604	5373	7639	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	6052	TBD
N993RS18	5604	5373	7639	5803	6302	9797-019	9797-019	1838	5237	5240D	5239	N/A	6052	
N993S8	5604	5373	7639	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	TBD
N993RS8	5604	5373	7639	5803	6302	9999-019	9999-019	1838	5237	5240D	5239	N/A	N/A	

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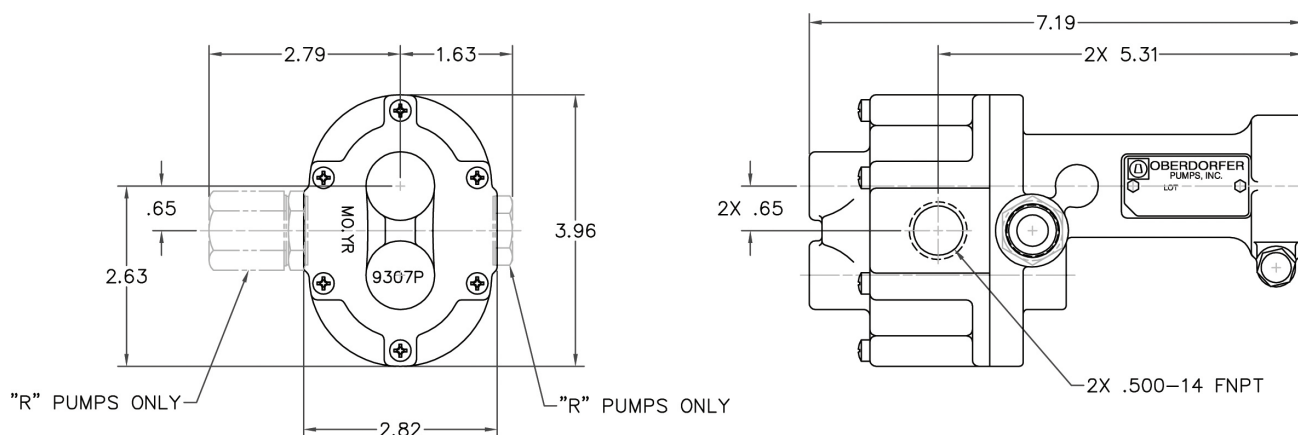
N993 Series

Dimensions

N993(R) & N993(R)S5



N993(R)S16, N993(R)S17, N993(R)S18 & N993(R)S8



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