



®
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An Ingersoll Rand Business

N993E Series Bronze Close Coupled Rotary Gear Pumps

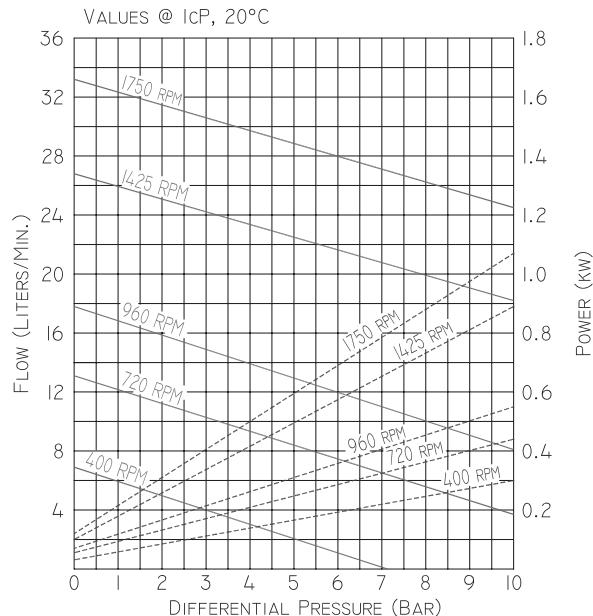


Features

- 1/2" BSPT Ports
- Temp. Range: 0°C - 60°C
- 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
- Lip seal or Mechanical Seal
- Easy field assembly to a variety of motor frames
- For compact AC motor pump units - see Bronze Adapterless Rotary Gear Pumps
- For bronze pedestal pumps - see model OBN3000E

PUMP	DESCRIPTION
OB993E	Standard Pump with 1/2" ports
OB993RE	Pump with 1/2" ports & relief valve
OB993ESS	Pump with FKM lipseal
OB993RESS	Pump with FKM lipseal & relief valve
OB993ES16	Pump with NBR mechanical seal
OB993RES16	Pump with NBR mechanical seal & relief valve
OB993ES17	Pump with FKM mechanical seal
OB993RES17	Pump with FKM mechanical seal & relief valve
OB993ES18	Pump with PTFE mechanical seal
OB993RES18	Pump with PTFE mech. seal & relief valve
OB993ES8	Pump with EPDM mechanical seal
OB993RES8	Pump with EPDM mech. seal & relief valve

Performance



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 7 bar for water and non-lubricants, 10.3 bar 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. For a FKM Seal, add S5 to the pump model number. For a NBR Mechanical seal add S16 and for a FKM Mechanical Seal add S17. For a PTFE mechanical seal add S18. For a EPDM mechanical seal 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 0°C to 60°C for best pump life. If more extreme 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 6 meters 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 1 meter) or for viscous liquids, the pipe should be at least one size or two sizes larger than the pump inlet port.

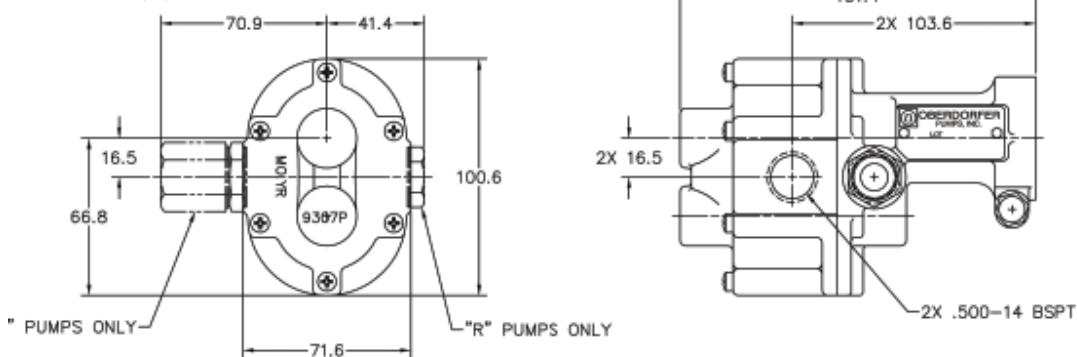
Rotation and Relief Valve

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.

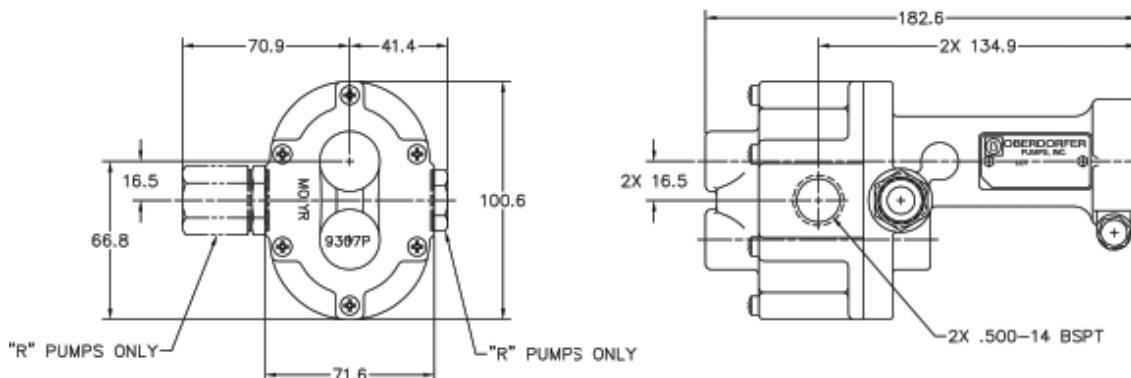
For this purpose a separate relief valve in the pressure line must be used. Unless otherwise specified, the pump motor unit is supplied by the factory for shaft rotation counterclockwise from pump shaft end. Reversing motor will reverse "in and "out" ports and also requires changing relief valve location. The relief valve is always on the inlet side of this pump series. The factory pressure setting is 3.5 bar. To increase pressure, turn the relief valve adjusting screw in a clockwise direction.

Dimensions

OBN993(R)E & OBN993(R)ES5

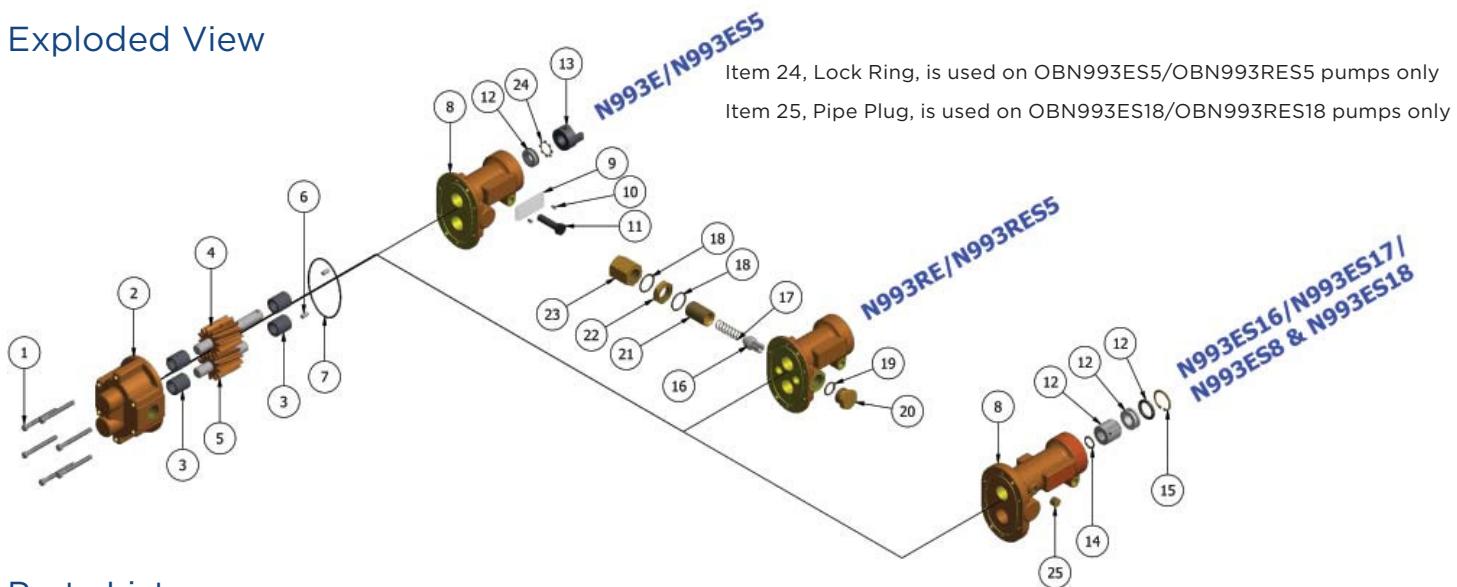


OBN993(R)ES16, OBN993(R)ES17, OBN993(R)ES18 & OBN993(R)ES8





Exploded View



Parts List

	1	2	3	4	5	6	7	8	9	10	11	12	13	14		
Model	Screw	Body	Bearing	Drive Gear Assy	Idle Gear Assy	Dowel Pin	O-Ring	Cover	Tag	Tag Screw	Screw	Lipseal	Mech. Seal	Coupling Half	Retaining Ring	
OBN993E	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	Qty. 1	Qty. 1	
OBN993RE	OB9837-20	OB9307ND5N	OB5024	OB32950	OB32937	OB8885	OB9797-038	OB9308NN2N	OB9344	OB9345	OB5595	OB5007	N/A	OB5604	N/A	
OBN993ES5	OB9837-20	OB9307ND5N	OB5024	OB32950	OB32937	OB8885	OB9797-038	OB9308NN2N	OB9344	OB9345	OB5595	OB5007	N/A	OB5604	N/A	
OBN993RESS5	OB9837-20	OB9307ND5N	OB5024	OB32950	OB32937	OB8885	OB9797-038	OB9308NN3B	OB9344	OB9345	OB5595	OB7580	N/A	OB5604	N/A	
OBN993ES16	OB9837-20	OB9307ND5N	OB5024	OB33342	OB32937	OB8885	OB9797-038	OB9309PN4N	OB9344	OB9345	OB5595	OB7580	N/A	OB32584	OB5604	OB5373
OBN993RES16	OB9837-20	OB9307ND5N	OB5024	OB33342	OB32937	OB8885	OB9797-038	OB9309PN4B	OB9344	OB9345	OB5595	OB7580	N/A	OB32584	OB5604	OB5373
OBN993ES17	OB9837-20	OB9307ND5N	OB5024	OB33342	OB32937	OB8885	OB9797-038	OB9309PN4N	OB9344	OB9345	OB5595	N/A	OB32585	OB5604	OB5373	
OBN993RES17	OB9837-20	OB9307ND5N	OB5024	OB33342	OB32937	OB8885	OB9797-038	OB9309PN4B	OB9344	OB9345	OB5595	N/A	OB32585	OB5604	OB5373	
OBN993ES18	OB9837-20	OB9307ND5N	OB5024	OB33342	OB32937	OB8885	OB9797-038	OB9309PN6N	OB9344	OB9345	OB5595	N/A	OB32335	OB5604	OB5373	
OBN993RES18	OB9837-20	OB9307ND5N	OB5024	OB33342	OB32937	OB8885	OB9797-038	OB9309PN6B	OB9344	OB9345	OB5595	N/A	OB32335	OB5604	OB5373	
OBN993ES8	OB9837-20	OB9307ND5N	OB5024	OB33342	OB32937	OB8885	OB9999-038	OB9309PN4N	OB9344	OB9345	OB5595	N/A	OB32754	OB5604	OB5373	
OBN993RES8	OB9837-20	OB9307ND5N	OB5024	OB33342	OB32937	OB8885	OB9999-038	OB9309PN4B	OB9344	OB9345	OB5595	N/A	OB32754	OB5604	OB5373	

	15	16	17	18	19	20	21	22	23	24	25	Repair Kits
Model	Retaining Ring	Poppet or Ball	Spring	O-Ring	O-Ring	Nut Plug	Adjust. Screw	Lock Nut	Nut Bypass	Lock Ring	Pipe Plug	
OBN993E	Qty. 1	Qty. 1	Qty. 1	Qty. 2	Qty. 1	Qty. 1	Qty. 1	Qty. 1	Qty. 1	Qty. 1	Qty. 1	OB12070
OBN993RE	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	OB12070
OBN993ES5	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	OB12101
OBN993RESS5	N/A	OB6535	OB6301	OB9797-019	OB9797-015	OB1838	OB5237	OB5240D	OB5239	N/A	N/A	OB12101
OBN993ES16	OB7639	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	OB12398
OBN993RES16	OB7639	OB5803	OB6302	OB9797-019	OB9797-015	OB1838	OB5237	OB5240D	OB5239	N/A	N/A	OB12398
OBN993ES17	OB7639	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	OB12399
OBN993RES17	OB7639	OB5803	OB6302	OB9797-019	OB9797-015	OB1838	OB5237	OB5240D	OB5239	N/A	N/A	OB12399
OBN993ES18	OB7639	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	TBD
OBN993RES18	OB7639	OB5803	OB6302	OB9797-019	OB9797-015	OB1838	OB5237	OB5240D	OB5239	N/A	OB6052	TBD
OBN993ES8	OB7639	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	TBD
OBN993RES8	OB7639	OB5803	OB6302	OB9999-019	OB9999-015	OB1838	OB5237	OB5240D	OB5239	N/A	N/A	TBD

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

Adapter Kits

Adapter Kits		
Adapter Kit	Part Number	Description
M	OB10562	48 Frame
N	OB10816	56 Frame
P	OB11722	S56 Frame
Q	OB11331	56C Frame (to 3/4 HP)
C	OB11331H	56C Frame (above 3/4 HP)
F	OB11332	IEC71
N/A	N/A	Adapterless - Modified 48



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