

Woodward 20-Series Pump

Support Services and Spare Parts

Overview

The Woodward 20-series pumps were designed to supply oil from 175 to 200 PSI, typically to gate shaft governor systems. The system included a gear pump, unloader, check and relief valves, and an air-over-oil pressure tank. A unique feature was its ability to recharge its own air head. With proper maintenance and care, even the oldest models can continue to provide reliable service well into the future. These pumps were supplied in multiple sizes:

- Size 21
- Size 23 1/2 to 24 1/2
- Size 25 to 26 1/2
- Size 27 to 27 1/2

The size of the pump is important for proper support. The pump size and serial number are marked on the side of each pump tank.



Figure 1. Typical 20-series pump

Support Services

- Parts and gaskets required for routine maintenance
- Maintenance recommendations
- Pump air/oil balancing procedures
- Replacement exchange program – pumping elements
- Drive system replacement – chain to V-belt drive upgrades
- On-site service and support



Figure 2. Cutaway View of a 20-Series Pump

Replacements

Pumping Element Replacement-Exchange Program

After many years of service, the 20-series pump may begin to lose its ability to pump effectively. This becomes apparent when the pump is required to pump air into the accumulator during the pump balancing procedure. The loss of pumping ability does not mean that the system must be replaced. The degradation in pumping ability is usually the result of excessive end clearance and tolerance issues within the pumping element chamber.

The replacement/exchange process consists of four steps

- 1) Emerson supplies a reconditioned pumping element assembly
- 2) Customer removes old pumping element assembly
- 3) Customer installs new pumping element assembly
- 4) Old pumping element assembly is returned to Emerson

Chain Drive Replacement System

The original chain drive systems provided with some 20-series pump systems have proven to be problematic. A replacement system has been designed to change the chain system to a v-belt system. A kit can be provided based on the following information: pump size, pump serial number, motor shaft size, motor frame size.

Riveted Tanks

Some customers have expressed concerns over the riveted tanks used on early 20-series pumps. While the exact factors of safety and modern-day code compliance may be in question, it should be noted that the tanks are not just riveted together, they are also brazed as shown in the two photos below.

This information can come in handy as customers evaluate the status of their existing pumping systems.



Figure 3. Brazed Tank – Inside



Figure 4. Brazed Tank – Outside

Woodward 20-series rotary gear pump parts and reference numbers

Reference numbers are taken from Woodward manual 15001h (rotary gear pumps Woodward hydraulic governors manual 15001h)

Note: Because of different pump sizes, there can be multiple part numbers for each reference number.

Reference Number	Description	Part Number
Common Maintenance Items		
15001-24	Pressure Gauge (0-400 PSI)	197580
15001-24	Pressure Gauge (0-600 PSI)	197579
15001-33	Spring (Pilot Valve, 20-Series Pump, 200 psi)	191022
15001-37	Pilot Valve Bushing	150273
15001-39	Pilot Valve Plunger	150274
Major Overhaul Parts		
15001-41	Unloader Piston-Pump Size 21 to 23-1/2	150370
15001-41	Unloader Piston-Pump Size 24 to 25	150019
15001-41	Unloader Piston-Pump Size 26 to 27	150369
15001-42	Unloader Piston Ring-Pump Size 21 to 23-1/2	188541
15001-42	Unloader Piston Ring-Pump Size 24 to 25	188543
15001-42	Unloader Piston Ring-Pump Size 26 to 27	188544
15001-43	Unloader Spring-Pump Size 21 to 23-1/2	191069
15001-43	Unloader Spring-Pump Size 24 to 25	191062
15001-43	Unloader Spring-Pump Size 26 to 27	191089

Reference Number	Description	Part Number
15001-46	Safety Ball-Pump Size 21 to 23-1/2	189462
15001-46	Safety Ball-Pump Size 24 to 25	188456
15001-46	Safety Ball-Pump Size 26 to 27	188661
15001-47	Unloader Plunger-Pump Size 21 to 23-1/2	150192
15001-47	Unloader Plunger-Pump Size 24 to 25	150193
15001-47	Unloader Plunger-Pump Size 26 to 27	150048
15001-48	Safety Spring-Pump Size 21 to 23-1/2	191066
15001-48	Safety Spring-Pump Size 24 to 25	191068
15001-48	Safety Spring-Pump Size 26 to 27	191069
15001-61	Gauge Glass-6.5 Inches Long	150008
15001-61	Gauge Glass-7.5 Inches Long	150141
15001-61	Gauge Glass-14 Inches Long	150569
15001-66	Rotary Seal-Pump Size 21, Shaft Size 15/16	1388-116
15001-66	Rotary Seal-Pump Size 22 to 23, Shaft Size 1-3/16	1388-118
15001-66	Rotary Seal-Pump Size 24 to 25, Shaft Size 1-11/16	1388-120
15001-66	Rotary Seal-Pump Size 26 to 27-1/2, Shaft Size 2-3/16	1388-122

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