

LOCKWOOD®

TYPE A BOILER FEED SYSTEMS



ILLUSTRATED WITH OPTIONAL EQUIPMENT

BF - A
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LOCKWOOD TYPE A - BOILER FEED OVERVIEW

STANDARD FEATURES

Lockwood Type A boiler feed systems are offered as standard for boilers up to 600 HP and 200 PSIG pump pressures in simplex, duplex, and triplex configurations. Custom systems are also available.

Receivers are constructed of heavy steel plate with necessary reinforced tank connections, including two vents (one internally unrestrictable for added safety). Receivers are furnished with flat flanged heads for added strength, and bolted to support legs for ease of removal. For general applications receiver capacity is sized to allow approximately 1 gallon of gross capacity per boiler horsepower (smaller receivers may be utilized for high make-up water conditions; larger receivers are recommended for high condensate return conditions). Each system includes a gauge glass with protection rods and shut-off cocks, individual pump suction piping, and a make-up water feeder (internal mechanical type for systems rated thru 200 boiler HP; electrical solenoid type on larger systems). Pumps are selected for intermittent service unless otherwise requested.

TYPE A PUMPS

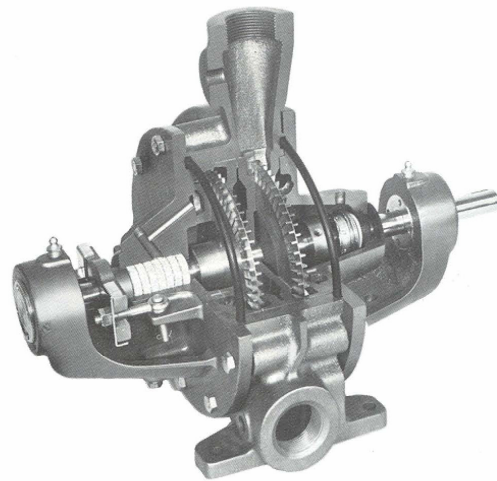
Type A regenerative turbine pumps offer many advantages in pumping applications requiring low flow and moderate to high pressure when compared to standard centrifugal pumps. Most centrifugal pumps are designed for high flow rates, relative to discharge pressure. Regenerative turbine pumps are designed for low flow rates, relative to discharge pressure, and consequently are more efficient and economical for boiler feed applications. Because the head capacity curve is steep in the turbine pump, a greater degree of flexibility is offered to the engineer. When turbine pumps are operated at lower than designed pressure, a turbine pump will require less HP, whereas a centrifugal pump would require more. Turbine pumps are less susceptible to cavitation caused by pressure fluctuations, and offer higher heads than are normally available with centrifugal pumps.

Turbine pumps derive their name from the many buckets machined into the periphery of the rotating impeller(s). The pumped liquid circulates in and out of the impeller buckets many times, each cycle imparting more energy until the liquid is discharged. The resulting flow is smooth and continuous. In two-stage pumps, the liquid is directed into a second stage impeller where the process is repeated, doubling the discharge head.

Standard Lockwood Type A turbine pumps are furnished with bronze fitted construction, long life bearings, and mechanical seals rated for 225°F (packed stuffing boxes are also available). Each pump is independently mounted on a heavy steel base, and direct connected by flexible coupling (with coupling guard) to an industrial grade motor with heavy duty bearings. Independent mounting allows ease of replacement of both motor and pump.

ACCESSORIES/OPTIONS

- TEFC/Explosion Proof Motors
- Magnetic Starters/Custom Panels
- H-0-A Switches
- Pilot Lights
- Control Circuit Transformers
- Electrical Alternators
- Level Alarm Switches
- Thermometers
- Pressure Gauges
- Internal Dispersion Tubes
- Steam Preheat Assemblies
- Pump Re-Circulation Orifices
- Corrosion Inhibitors (Magnesium Anode)
- Internal Tank Linings
- Galvanized Tanks
- ASME Code Tanks



TYPE A PUMP

LOCKWOOD TYPE A - BOILER FEED

SELECTION DATA

BOILER HP	PUMP GPM		PUMP DISCHARGE PRESSURE (PSIG)						TANK CAP. (GALLONS)	MAKE-UP VALVE
			25	75	100	125	150	200		
40	6	MODEL NO. PUMP NO. MOTOR HP	AC-1 6D 1/3	AC-2 7D 1-1/2	AC-3 6D2 1-1/2	AC-4 7D2 2	AC-5 7E 3	AC-6 7E2 5	35	1/2" MECH.
60	9	MODEL NO. PUMP NO. MOTOR HP	AE-1 6D 1/3	AE-2 6D2 1-1/2	AE-3 7E 2	AE-4 8E 3	AE-4 8E 3	AE-5 7E3 5	60	1/2" MECH.
80	11	MODEL NO. PUMP NO. MOTOR HP	AF-1 6D 1/3	AF-2 6D2 1-1/2	AF-3 7E 2	AF-4 8E 3	AF-4 8E 3	AF-5 8E2 5	100	1/2" MECH.
100	14	MODEL NO. PUMP NO. MOTOR HP	AF-9 9D 1/3	AF-10 9E 1-1/2	AF-8 9E 3	AF-8 9E 5	AF-11 9E2 5	AF-12 9E2 5	100	1/2" MECH.
125	18	MODEL NO. PUMP NO. MOTOR HP	AF-9 9D 3/4	AF-10 9E 3	AF-8 9E 5	AF-8 9E 5	AF-11 9E2 5	AF-12 9E2 7-1/2	100	1/2" MECH.
150	21	MODEL NO. PUMP NO. MOTOR HP	AG-1 9D 3/4	AG-2 9E 3	AG-3 9E 5	AG-4 1E 5	AG-5 9E2 5	AG-6 9E2 7-1/2	180	3/4" MECH.
200	28	MODEL NO. PUMP NO. MOTOR HP	AG-7 9D1 1	AG-8 10E 3	AG-9 1E 5	AG-10 12E 7-1/2	AG-11 4F2 5	AG-12 6F2 5	180	3/4" MECH.
250	35	MODEL NO. PUMP NO. MOTOR HP	AH-1 13D 1-1/2	AH-2 1E 5	AH-3 12E 7-1/2	AH-4 5F2 10	AH-4 5F2 10	AH-5 7F2 15	250	3/4" ELECT.
300	42	MODEL NO. PUMP NO. MOTOR HP	AJ-1 16D 1-1/2	AJ-2 12E 5	AJ-3 5F2 7-1/2	AJ-4 5F2 10	AJ-5 6F2 10	AJ-6 7F2 15	350	3/4" ELECT.
350	48	MODEL NO. PUMP NO. MOTOR HP	AJ-1 16D 1-1/2	AJ-7 7F 7-1/2	AJ-5 6F2 10	AJ-5 6F2 10	AJ-6 7F2 10		350	3/4" ELECT.
400	56	MODEL NO. PUMP NO. MOTOR HP	AK-1 12E 1-1/2	AK-2 7F 7-1/2	AK-3 6F2 10	AK-4 6F2 10	AK-5 7F2 10		500	1" ELECT.
500	70	MODEL NO. PUMP NO. MOTOR HP	AK-6 14E 3	AK-7 8F 7-1/2	AK-8 8F2 10	AK-5 8F2 15	AK-9 10F2 20		500	1" ELECT.
600	83	MODEL NO. PUMP NO. MOTOR HP	AK-6 14E 3	AK-10 10F 10	AK-8 8F2 10	AK-11 10F2 15	AK-9 10F2 20		500	1" ELECT.

BOILER FEED SYSTEMS

DESIGN SELECTION

- SIMPLEX:** one pump system to serve one boiler.
- DUPLEX:** two pump system to serve one boiler (with one stand-by pump); or two boilers (with one pump per boiler. If system is to serve two boilers; select pumps for individual boiler size, and select tank and make-up valve for total boiler load.
- TRIPLEX:** three system to serve two boilers (with one stand-by pump); or three boilers (with one standby pump); or pump per boiler). Select pumps for individual boiler size, and select tank and make-up valve for total boiler load.

HOW TO ORDER

QTY. -Model GC-5 LOCKWOOD DUPLEXSYSTEM: AG13 460/3/6 ODP WITH _____

MODEL NO. _____

SPECIFY simplex/duplex/triplex/etc. _____

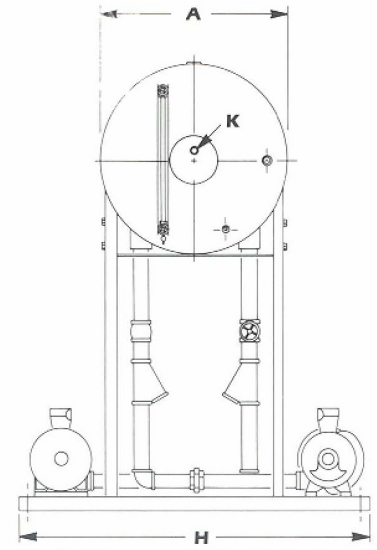
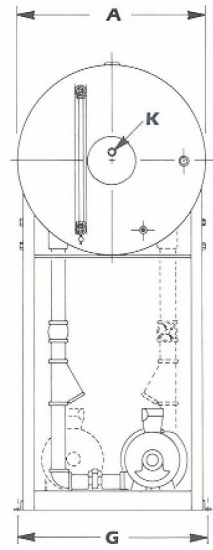
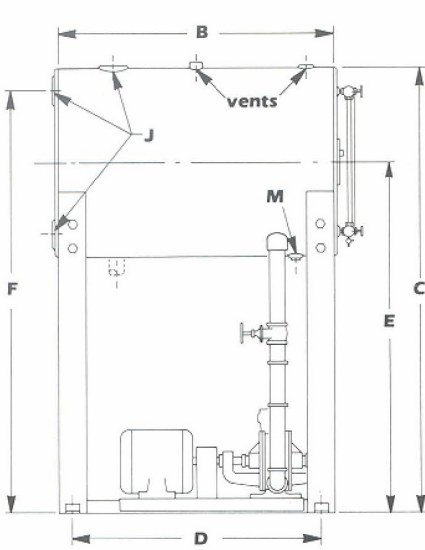
PUMP MODEL NO. _____

VOLTAGE AND PHASE _____

MOTOR ENCLOSURE _____

OPTIONS/ACCESSORIES _____

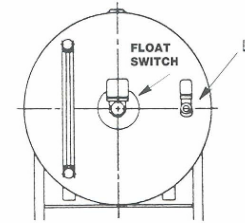
LOCKWOOD TYPE A - BOILER FEED RECEIVER DIMENSIONS



ALTERNATE CONFIGURATION
Used when standard configuration restricts location of pump(s)

APPROXIMATE DIMENSIONS IN INCHES

RECEIVER CAPACITY	A	B	C	D	E	F	G	H	J	K	L	M	VENT
35 GAL	18	32	41	30	32	38	19	38	2	1/2		1	1-1/4
60 GAL	22	36	59	32	48	56	23	42	2-1/2	1/2		1-1/4	1-1/4
100 GAL	26	42	73	38	60	70	28	50	3	1/2		1-1/4	1-1/2
180 GAL	30	60	75	56	60	71	29	58	4	3/4		1-1/2	2-1/2
250 GAL	36	60	78	56	60	74	35	64	4		3/4	1-1/2	2-1/2
350 GAL	42	60	81	56	60	77	41	68	4		3/4	1-1/2	3
500 GAL	42	84	81	80	60	77	41	68	4		1	1-1/2	3



**ELECTRIC SOLENOID
MAKE-UP VALVE ASSEMBLY**

SPECIFICATIONS

Furnish and install where shown on plans, one (1) model _____ (simplex) (duplex) (triplex) packaged boiler feed system as manufactured by Lockwood Products, Inc. (Atlanta, Georgia). The system shall be designed to deliver feedwater to _____ (number), _____ horsepower boiler(s) operating at _____ PSIG. Furnish gallon receiver of heavy steel plate with flat flanged heads (not flat heads), bolted leg configuration, and necessary threaded pipe connections (including two vents, one internally unrestrictable). Receiver shall be mounted with adequate height to prevent pump cavitation when handling 200°F. water.

Tank accessories to include: (mechanical) (electrical) make-up water assembly, gauge glass assembly with shut-off cocks and protection rods, and individual pump suction piping (each to include a shut-off valve and strainer).

Furnish _____ (number) Type A Lockwood boiler feed pump(s), each having a capacity of _____ GPM of 200°F water at _____ PSIG. Pump(s) shall be of the regenerative turbine design of bronze-fitted construction with peripheral vaned, bronze impellers. Each pump shall be equipped with (packed stuffing boxes) (mechanical seals). Pump(s) shall be of vertically split case design with removable bearing housings, and the channel rings shall be replaceable without replacing the bearing housings. The suction and discharge connections shall be cast integral with the casing. The discharge shall be in a vertical position and the pump shall be self-venting. The casing and bearing housings shall be cast of 30,000 pound tensile strength cast iron. The impeller shall be hydraulically self-centering and no external adjustment shall be necessary. Each pump shall be mounted on a heavy steel base and direct connected by flexible coupling to a _____ horsepower, 1750 RPM, _____ volt, _____ phase, 60 Hertz, (open drip-proof) (totally enclosed-fan cooled) motor. The motor shall be sized to prevent overloading at the highest head condition listed in the specifications. Coupling guards shall be provided.

All components of this system are to be provided by one manufacturer for single unit responsibility.

The specifications contained in this bulletin were effective at the time of publishing. Lockwood Products, Inc. reserves the right to discontinue products at any time or to change specifications or design without incurring any obligation.