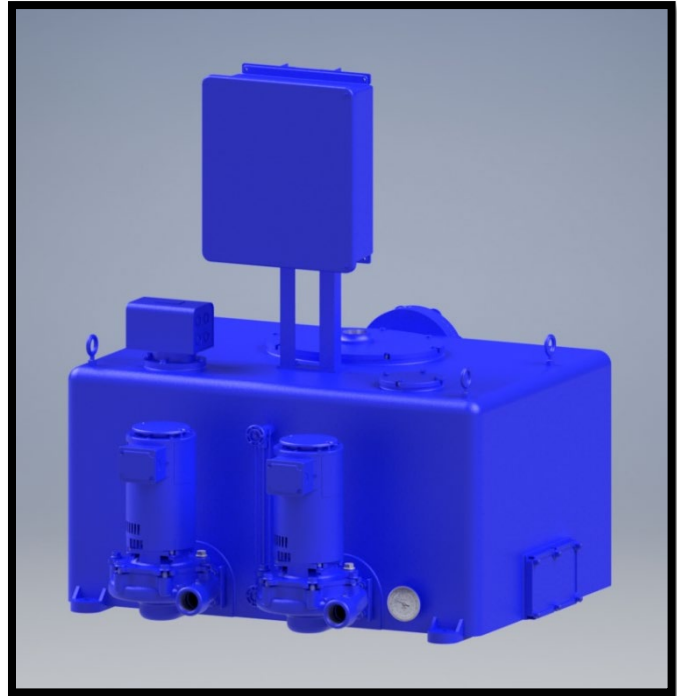
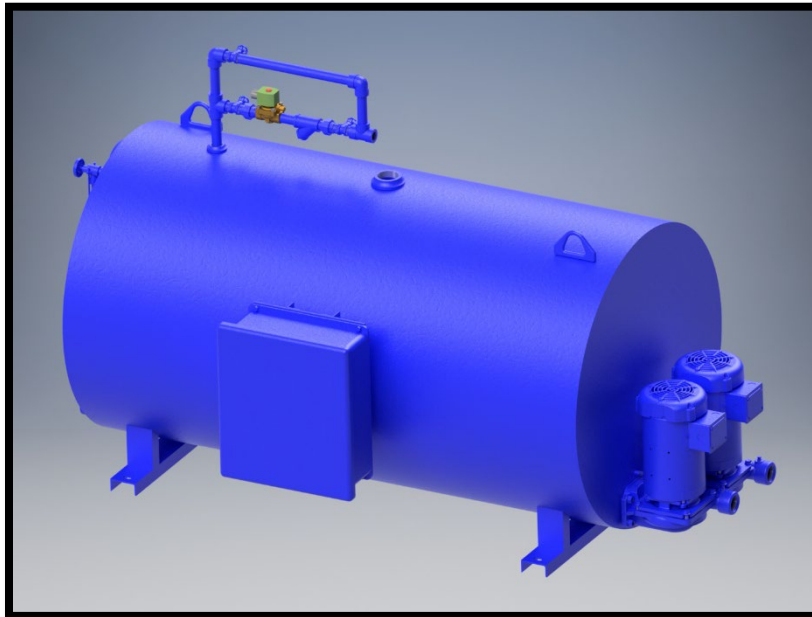


Guardian® Plus Bulletin



Guardian® Plus Boiler Feed

Guardian® Plus Condensate Return



TYPICAL APPLICATIONS

Condensate Pump Packages:

Guardian Plus systems are complete, compact assemblies for returning water to a boiler feed system from a gravity steam condensate return system. These pumps will quickly and automatically lift condensate from extremely low to high return lines.

Boiler Feed Pump Packages:

Boiler feed pump systems are used to pump and precisely control the condensate and make-up water required by the boiler(s) in low pressure steam applications. Pump action is controlled by the fluid level in the boiler.

Receivers:

Cast Iron rectangular receivers are available in 15 to 110 gallon capacities.

Heavy duty, welded carbon steel receivers are available in rectangular or cylindrical configurations with capacities from 10 to 110 gallons and 49 to 1000 gallons respectively. Consult your local representative for custom engineered receivers and rust resistant linings.

ACCESSORIES AND OPTIONAL EQUIPMENT

Condensate Pumps – Standard Equipment

- Simplex units have opening blanked-off for addition of a second pump at a later date.
- One float switch (simplex units)
- Mechanical alternator (duplex units – equalizes running time between the two pumps and provides emergency back-up)
- Gauge glass and thermometer tappings
- Name brand heavy-duty motors

Condensate Pumps – Optional Equipment

- Electrical control panel – factory mounted and wired
- Thermometer
- Two float switches (duplex units)
- Electric alternator – mounted on unit and factory wired
- Suction isolation valves
- Inlet strainers – “Y” or basket type
- Gauge glass
- Magnesium corrosion inhibitor
- Corrosion resistant receiver linings (steel receivers)
- Discharge pressure gauges
- Discharge check valves
- Discharge gate valves
- Special motors – T.E.F.C., explosion proof, washdown duty

Boiler Feed or Makeup Pumps – Standard Equipment

- Simplex units have opening blanked-off for addition of a second pump at a later date
- Float operated makeup valve
- Gauge glass and thermometer tappings
- Name brand heavy duty motors

Boiler Feed or Makeup Pumps – Optional Equipment

- Electrical control panel – factory mounted and wired
- Thermometer
- Makeup feeders – external type, or reverse acting float switch and solenoid valve type
- Magnesium corrosion inhibitor
- Corrosion resistant receiver linings (steel receivers)
- Suction isolation valves
- Inlet strainers – “Y” or basket type
- Gauge glass
- Three valve bypass and “Y” strainer assembly
- Feedwater pre-heaters
- Discharge pressure gauges
- Discharge check valves
- Discharge gate valves
- Special motors – T.E.F.C., explosion proof, wash down duty

PUMP SELECTION CHART

CAPACITY GPM	DISCHARGE PRESSURE PSIG	1750 RPM				3450 RPM			
		CATALOG NO.	PUMP DESC.	MOTOR HP	DISC. SIZE	CATALOG NO.	PUMP DESC.	MOTOR HP	DISC. SIZE
1-1/2	10	CRV110-1E	G6V	1/3	1-1/4"	CRV110-2E	G5V	1/3	1-1/4"
	15	CRV115-1E	G6V	1/2		CRV115-2E	G5V		
	20	CRV120-1E	G7V	1/2	1-1/2"	CRV120-2E	G5V		
	30					CRV130-2E	G5V		
	40					CRV140-2E	G6V		
	50					CRV150-2E	G6V		
	60					CRV160-2E	G6V	2	
3	10	CRV210-1E	G6V	1/3	1-1/4"	CRV210-2E	G5V	1/3	1-1/4"
	15	CRV215-1E	G6V	1/2		CRV215-2E	G5V		
	20	CRV220-1E	G7V	1/2	1-1/2"	CRV220-2E	G5V		
	30					CRV230-2E	G5V		
	40					CRV240-2E	G6V		
	50					CRV250-2E	G6V		
	60					CRV260-2E	G6V	2	
6	10	CRV410-1E	G6V	1/3	1-1/4"	CRV410-2E	G5V	1/3	1-1/4"
	15	CRV415-1E	G6V	1/2		CRV415-2E	G5V		
	20	CRV420-1E	G7V	1/2	1-1/2"	CRV420-2E	G5V		
	30					CRV430-2E	G5V		
	40					CRV440-2E	G6V		
	50					CRV450-2E	G6V		
	60					CRV460-2E	G6V	2	
9	10	CRV610-1E	G6V	1/3	1-1/4"	CRV610-2E	G5V	1/3	1-1/4"
	15	CRV615-1E	G6V	1/2		CRV615-2E	G5V		
	20	CRV620-1E	G7V	1/2	1-1/2"	CRV620-2E	G5V		
	30					CRV630-2E	G5V		
	40					CRV640-2E	G6V		
	50					CRV650-2E	G6V		
	60					CRV660-2E	G6V	2	
12	10	CRV810-1E	G6V	1/3	1-1/4"	CRV810-2E	G5V	1/3	1-1/4"
	15	CRV815-1E	G6V	1/2		CRV815-2E	G5V		
	20	CRV820-1E	G7V	3/4	1-1/2"	CRV820-2E	G5V		
	30					CRV830-2E	G5V		
	40					CRV840-2E	G6V		
	50					CRV850-2E	G6V		
	60					CRV860-2E	G6V	2	
15	10	CRV1010-1E	G6V	1/3	1-1/4"	CRV1010-2E	G5V	1/3	1-1/4"
	15	CRV1015-1E	G6V	1/2		CRV1015-2E	G5V		
	20	CRV1020-1E	G7V	3/4	1-1/2"	CRV1020-2E	G5V		
	30					CRV1030-2E	G5V		
	40					CRV1040-2E	G6V		
	50					CRV1050-2E	G6V		
	60					CRV1060-2E	G6V	2	
22-1/2	10	CRV1510-1E	G6V	1/3	1-1/4"	CRV1510-2E	G5V	1/3	1-1/4"
	15	CRV1515-1E	G6V			CRV1515-2E	G5V		
	20	CRV1520-1E	G7V	3/4	1-1/2"	CRV1520-2E	G5V		
	30					CRV1530-2E	G5V		
	40					CRV1540-2E	G6V		
	50					CRV1550-2E	G6V		
	60					CRV1560-2E*	G6V		
70					CRV1570-2E*	G7V	5	1-1/2"	

*Only 3-Phase motors available

NOTE: When using TEFC or Explosion Proof motors, we may need to increase HP. Consult factory for HP.

PUMP SELECTION CHART (continued)

CAPACITY GPM	DISCHARGE PRESSURE PSIG	1750 RPM				3450 RPM			
		CATALOG NO.	PUMP DESC.	MOTOR HP	DISC. SIZE	CATALOG NO.	PUMP DESC.	MOTOR HP	DISC. SIZE
30	10	CRV2010-1E	G6V	1/3	1-1/4"	CRV2010-2E	G5V	1/3	1-1/4"
	15	CRV2015-1E	G6V	1/2		CRV2015-2E	G5V	1/2	
	20	CRV2020-1E	G7V	1	1-1/2"	CRV2020-2E	G5V		
	30					CRV2030-2E	G5V	3/4	
	40					CRV2040-2E	G6V	1-1/2	
	50					CRV2050-2E	G6V	2	
	60					CRV2060-2E*	G6V	3	
	70					CRV2070-2E*	G7V	5	1-1/2"
37-1/2	10	CRV2510-1E	G6V	1/2	1-1/4"	CRV2510-2E	G5V	1/2	1-1/4"
	15	CRV2515-1E	G7V	3/4	1-1/2"	CRV2515-2E	G5V	3/4	
	20	CRV2520-1E	G7V	1		CRV2520-2E	G5V	1	
	30					CRV2530-2E	G5V		
	40					CRV2540-2E	G6V	2	
	50					CRV2550-2E*	G6V		
	60					CRV2560-2E*	G6V	3	
	70					CRV2570-2E*	G7V	5	1-1/2"
45	10	CRV3010-1E	G7V	3/4	1-1/2"	CRV3010-2E	G5V	1/2	1-1/4"
	15	CRV3015-1E	G7V	3/4		CRV3015-2E	G5V	3/4	
	20	CRV3020-1E	G7V	1		CRV3020-2E	G5V	3/4	
	30					CRV3030-2E	G5V	1-1/2	
	40					CRV3040-2E	G6V	2	
	50					CRV3050-2E*	G6V	3	
	60					CRV3060-2E*	G7V		
	70					CRV3070-2E*	G7V	5	1-1/2"
60	10	CRV4010-1E	G7V	1	1-1/2"	CRV4010-2E	G5V	3/4	1-1/4"
	15	CRV4015-1E	G7V	1		CRV4015-2E	G5V	1	
	20	CRV4020-1E	G7V	1-1/2		CRV4020-2E	G5V	1-1/2	
	30					CRV4030-2E	G5V		
	40					CRV4040-2E*	G6V		
	50					CRV4050-2E*	G6V	3	
	60					CRV4060-2E*	G7V		
	70					CRV4070-2E*	G7V	5	1-1/2"
75	10	CRV5010-1E	G7V	1	1-1/2"	CRV5010-2E	G5V		1-1/4"
	15	CRV5015-1E	G7V	1-1/2		CRV5015-2E	G5V	1-1/2	
	20	CRV5020-1E	G7V	1-1/2		CRV5020-2E	G5V	1-1/2	
	30					CRV5030-2E	G5V	2	
	40					CRV5040-2E*	G6V	3	
	50					CRV5050-2E*	G7V		
60						CRV5060-2E*	G7V	5	1-1/2"
97-1/2	10					CRV6510-2E*	G6V		1-1/4"
	15					CRV6515-2E*	G6V		
	20					CRV6520-2E*	G6V	3	
	30					CRV6530-2E*	G7V		
	40					CRV6540-2E*	G7V		
	50					CRV6550-2E*	G7V	5	
60						CRV6560-2E*	G7V	7-1/2	1-1/2"
120	20					CRV8020-2E*	G7V	3	1-1/2"
	30					CRV8030-2E*	G7V		
	40					CRV8040-2E*	G7V	5	
	50					CRV8050-2E*	G7V		
	60					CRV8060-2E*	G7V	7-1/2	
150	20					CRV10020-2E*	G7V		1-1/2"
	30					CRV10030-2E*	G7V	5	
	40					CRV10040-2E*	G7V		
	50					CRV10050-2E*	G7V	7-1/2	
	60					CRV10060-2E*	G7V	10	

*Only 3-Phase motors available

NOTE: When using TEFC or Explosion Proof motors, we may need to increase HP. Consult factory for HP.

PUMP SELECTION CHART (2' NPSHR)

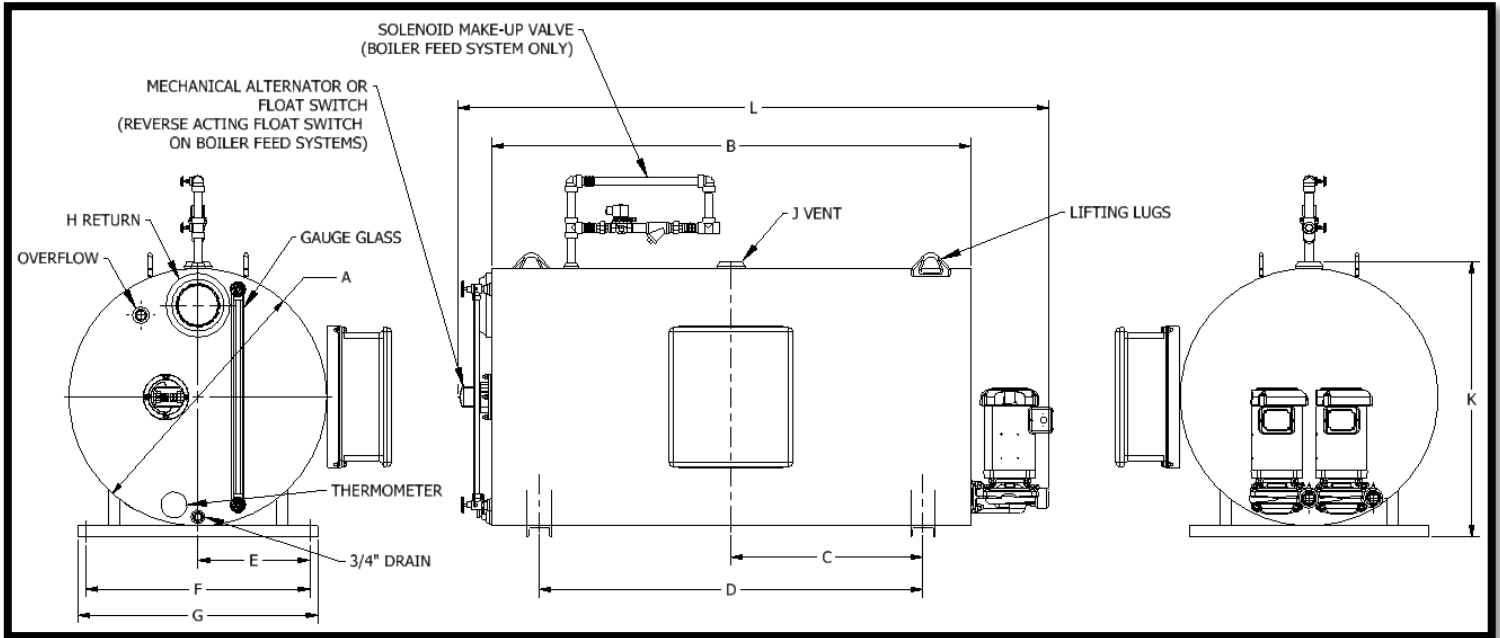
CAPACITY GPM	DISCHARGE PRESSURE PSIG	3450 RPM				
		CATALOG NO.	MODEL NUMBER	PUMP DESC.	MOTOR HP	DISC. SIZE
9	20	GNV-1000-1.12	62	GNV	1/2	1-1/4"
	30	GNV-1000-1.06	63	GNV	3/4	
	40	GNV-1000-1.00	64	GNV	1-1/2	
15	20	GNV-1000-1.12	102	GNV	1/2	1-1/4"
	30	GNV-1000-1.06	103	GNV	3/4	
	40	GNV-1000-1.00	104	GNV	1-1/2	
22-1/2	20	GNV-1000-1.11	152	GNV	1/2	1-1/4"
	30	GNV-1000-1.06	153	GNV	1	
	40	GNV-1000-1.00	154	GNV	1-1/2	
30	20	GNV-1000-1.11	202	GNV	3/4	1-1/4"
	30	GNV-1000-1.04	203	GNV	1	
	40	GNV-1000-1.00	204	GNV	2	
45	20	GNV-1000-1.10	302	GNV	1	1-1/4"
	30	GNV-1000-1.02	303	GNV	1-1/2	
	40	GNV-2000-1.09	304	GNV	3	2"
	50	GNV-2000-1.04	305	GNV	5	
	60	GNV-2000-1.01	306	GNV		
60	20	GNV-2000-1.17	402	GNV	1-1/2	2"
	30	GNV-2000-1.12	403	GNV	3	
	40	GNV-2000-1.09	404	GNV		
	50	GNV-2000-1.04	405	GNV	5	
	60	GNV-2000-1.00	406	GNV		
75	20	GNV-2000-1.16	502	GNV	2	2"
	30	GNV-2000-1.11	503	GNV	3	
	40	GNV-2000-1.08	504	GNV		
	50	GNV-2000-1.03	505	GNV	5	
	60	GNV-2000-1.00	506	GNV	7-1/2	
90	20	GNV-2000-1.16	602	GNV	2	2"
	30	GNV-2000-1.11	603	GNV	3	
	40	GNV-2000-1.08	604	GNV	5	
	50	GNV-2000-1.03	605	GNV	7-1/2	
120	40	GNV-2000-1.04	804	GNV	7-1/2	2"

NOTE: When using TEFC or Explosion Proof motors, we may need to increase HP. Consult factory for HP.

DIMENSION DATA

CRV(D) AND AWP(D) PUMPS WITH CYLINDRICAL STEEL RECEIVERS

Simplex or Duplex Condensate or Boiler Feed Units



Duplex Units Shown with G5V Pumps

NOTE: For dimension "L" add 2-3/8 for G6V/GNV or 3-5/8 for G7V

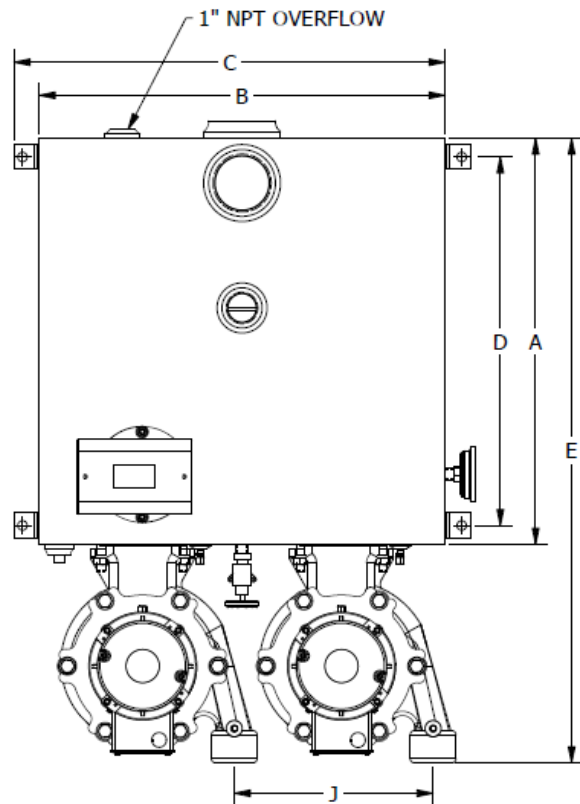
APPROXIMATE DIMENSIONS

RECEIVER SIZE (GAL)	A	B	C	D	E	F	G	H	J	K	L
49	22	30	10-1/2	21	7-1/2	15	17	2-1/2	1-1/4	23	45-5/8
71	24	36	10-1/2	21	7-1/2	15	17	3	1-1/2	25-1/4	51-5/8
117	24	60	15	30	7-1/2	15	17	4	2	25-1/4	75-5/8
209	32	60	24	48	14	28	30	5	2	34-1/2	75-5/8
260	36	60	24	48	14	28	30	5	2	38-1/2	75-5/8
370	36	84	28	56	14	28	30	5	2	38-1/2	99-5/8
500	42	84	28	56	14	28	30	5	2	44-3/4	99-5/8
650	42	108	28	56	14	28	30	5	2	44-3/4	123-5/8
750	48	96	28	56	19	38	40	5	2	50-3/4	111-5/8
1,000	48	132	48	96	19	38	40	5	2	50-3/4	147-5/8

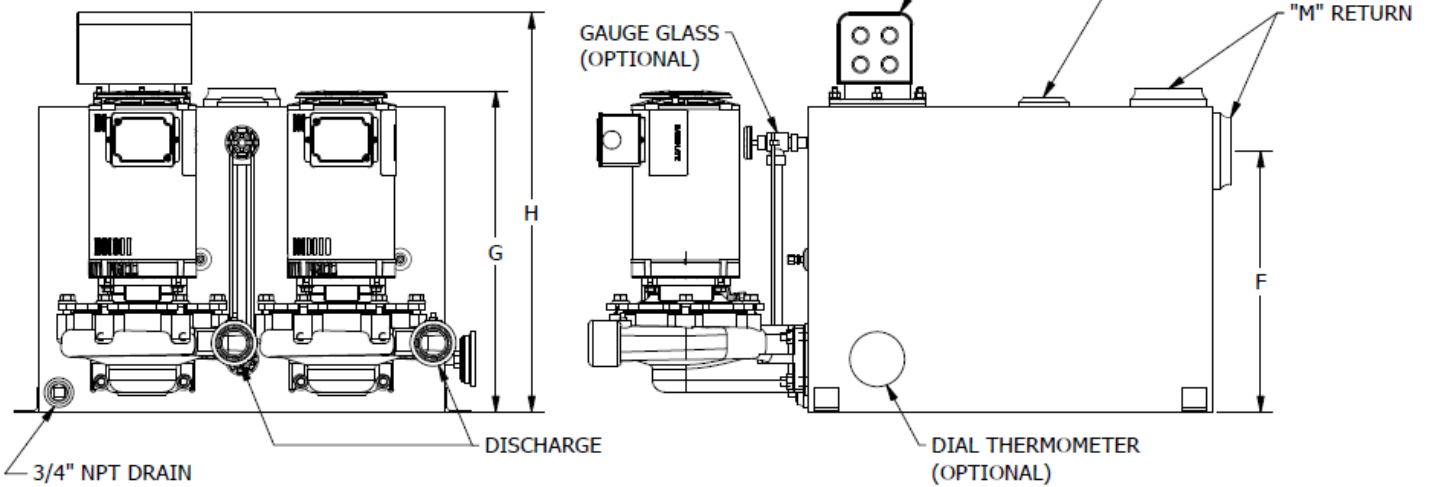
DIMENSION DATA

CRV(D) PUMPS WITH RECTANGULAR STEEL RECEIVERS

Simplex or Duplex Condensate or Boiler Feed Units



Duplex Unit Shown With G7V Pumps



APPROXIMATE DIMENSIONS

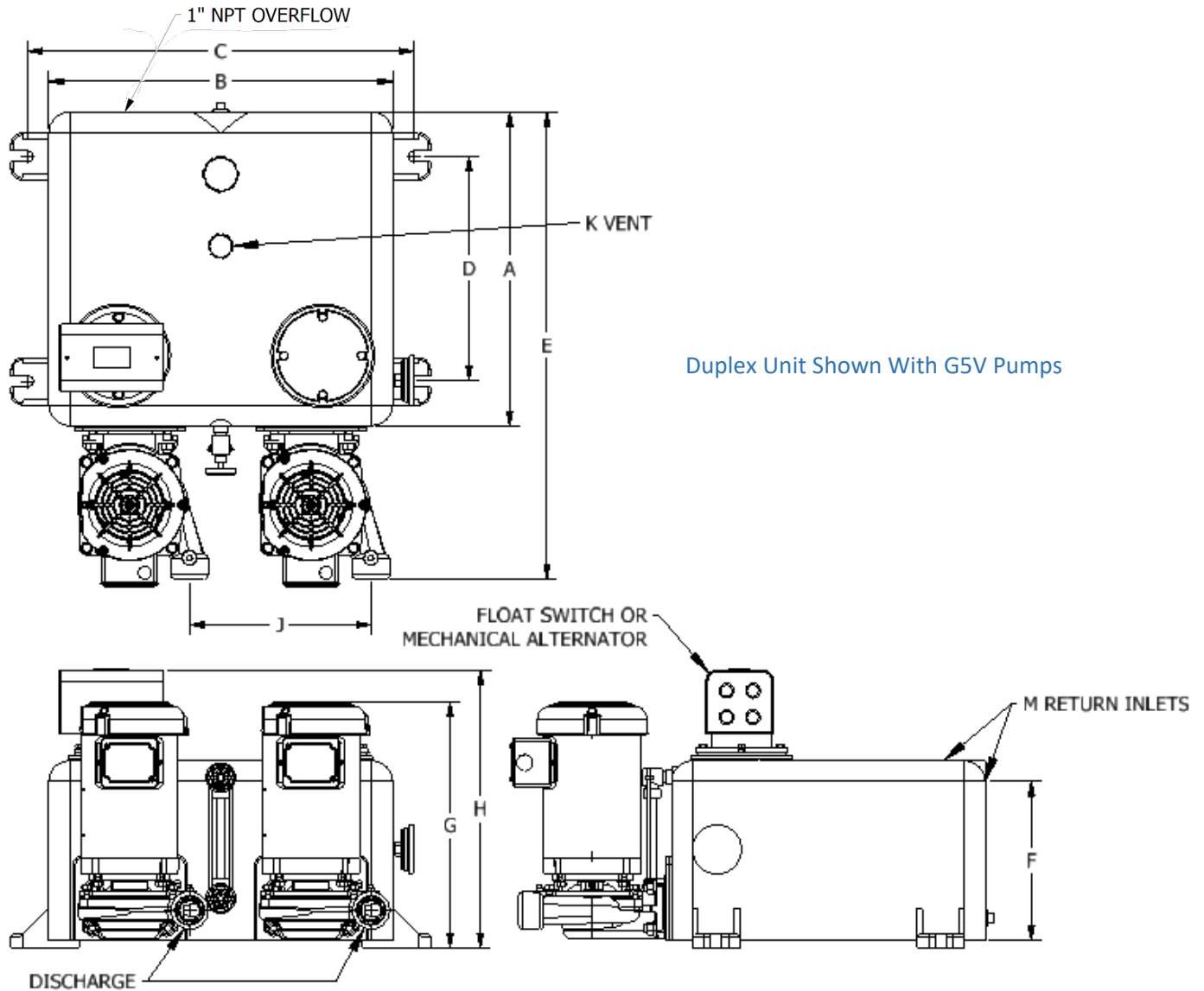
RECEIVER SIZE (GAL)	A	B	C	D	E MAX.	F	G	H MAX.	J	K	M
21	18-3/8	24-3/8	26-3/8	16-1/8	31-1/2	9-13/16	16-19	18-1/8	12	1-1/4	2-1/2
45	24-3/8	24-3/8	26-3/8	22-1/8	37-1/2	15-11/16	16-21	24-1/8	12	1-1/2	3
65	24-3/8	24-3/8	26-3/8	22-1/8	37-1/2	21-11/16	16-21	30-1/8	12	2	3
110	30-1/2	43	45	25	43-5/8	16-9/16	18-28	26-1/4	22	2	4

NOTE: For dimension "E" add 2-3/8 for G6V/GNV or 3-5/8 for G7V

DIMENSION DATA

CRV(D) PUMPS WITH RECTANGULAR CAST IRON RECEIVERS

Simplex or Duplex Condensate or Boiler Feed Units



APPROXIMATE DIMENSIONS

RECEIVER SIZE (GAL)	A	B	C	D	E	F	G	H	J	K	M
15	15-1/2	17-1/4	19-5/8	N/A	28-3/4	12-3/4	16-23	21-3/8	11-1/4	1	2
21	20-3/4	22-3/4	25-1/2	14-7/8	34	9-3/4	16-25	18	12	1-1/4	2
45	25-3/4	26-3/4	28-3/4	20	39	14-1/2	16-25	23-1/4	15	1-1/2	2-1/2
65	28-1/2	28-1/2	30-1/2	22-3/4	41-3/4	18-5/8	16-25	28-1/8	15	2	3
110	30	42	36-1/4	32	43-1/4	19-1/2	18-30	28-3/8	15	2	5

NOTE: For dimension "E" add 2-3/8 for G6V/GNV or 3-5/8 for G7V

TYPICAL ENGINEERING SPECIFICATIONS

1. Duplex Condensate Pump with Cast Iron or Steel Receiver

- 1.1 Furnish and install according to plans and manufacturer's instructions the quantity of condensate pump units as shown on the drawings. Each unit shall consist of one (1) condensate receiver, (2) condensate pumps, and (1) mechanical alternator.
- 1.2 The condensate pumps shall be centrifugal design; permanently aligned and driven by vertical close coupled drip proof motors with drip covers. The motor and rotating parts shall be removable without disturbing suction or discharge piping. Pumps shall be bronze fitted with enclosed bronze centrifugal impeller, stainless steel shaft, dripless mechanical seals suitable for 250°F, mechanical seal face flushing line with vent to receiver. Capacities and electrical characteristics shall be as scheduled on the drawings.
- 1.3 The receiver shall be manufactured of rust resisting steel or cast iron and shall have a capacity of not less than that shown on the drawings. Receiver shall be equipped with water level gauge glass, and one (1) mechanical alternator. Factory provided and wired Nema I UL electrical control panel with: (1) disconnect, (1) fuse block or circuit breaker per pump, (1) magnetic starter with overload per pump, (1) HOA selector switch per pump, (1) control circuit transformer on all 3-phase.

Model No.	Pump Capacity (GPM)	Pump Discharge Pressure (psig)	Motor Power (HP)	Motor Speed (RPM)	Motor Voltage (V)	Motor Phase	Motor Frequency (HZ)	Tank Capacity	Tank Material

2. Duplex Boiler Feed with Cast Iron or Steel Receiver

- 2.1 Furnish and install according to plans and manufacturer's instructions the quantity of boiler feed units as shown on the drawings. Each unit shall consist of one (1) steel boiler feed receiver, two (2) boiler feed pumps, one (1) water make-up assembly, electrical controls, and accessories.
- 2.2 The boiler feed pumps shall be centrifugal design, permanently aligned and driven by vertical close coupled drip proof motor with drip cover. The motor and rotating parts shall be removable without disturbing suction or discharge piping. Pump shall be bronze fitted with enclosed bronze centrifugal impeller, stainless steel shaft, dripless mechanical seals suitable for 250°F, mechanical seal face flushing line with vent to receiver. Capacities and electrical characteristics shall be as scheduled on the drawings.
- 2.3 The receiver shall be manufactured of rust resistant steel and shall have a capacity of not less than that shown on drawings. Receiver shall be equipped with water level gauge glass, two (2) isolation valves between pump and receiver, dial thermometer, and makeup water valve with capacity equal to one (1) boiler feed pump. Factory provided and wired Nema I UL electrical control panel with: (1) disconnect, (1) fuse block or circuit breaker per pump, (1) magnetic starter with overload per pump, (1) HOA selector switch per pump, (1) control circuit transformer on all 3-phase.

Model No.	Pump Capacity (GPM)	Pump Discharge Pressure (psig)	Motor Power (HP)	Motor Speed (RPM)	Motor Voltage (V)	Motor Phase	Motor Frequency (HZ)	Tank Capacity	Tank Material

Makeup Water Supply Pressure (psig)	Number of Boilers Serving	Number Standby

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