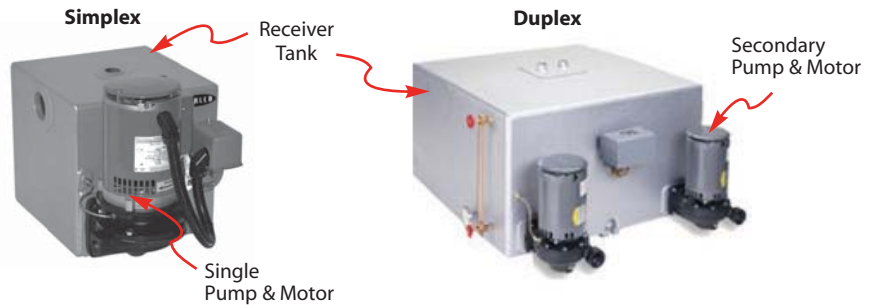


W4100, W4200 & W4300 Condensate Pumps

Watson McDaniel's **Condensate Return** and **Boiler Feed** Pumps are equipped with Cast Iron bodies and Bronze Impellers. The pump receiver tanks are available in either **Carbon Steel** (W4100), **Cast Iron** (W4200), or **Stainless Steel** (W4300) in Simplex or Duplex configurations.

Typical Condensate Pump Features

- Fabricated Steel Receivers (W4100), Cast Iron Receivers (W4200), Stainless Steel Receivers (W4300)
- Simplex and Duplex Packages
- Bronze Fitted Centrifugal Pumps
- Energy Efficient 3450 RPM motors
- Ceramic Pump Seal
- Heavy-duty Float Switch



Characteristics of Condensate Return Pumps Vs. Boiler Feed Pumps

Condensate Return Pumps

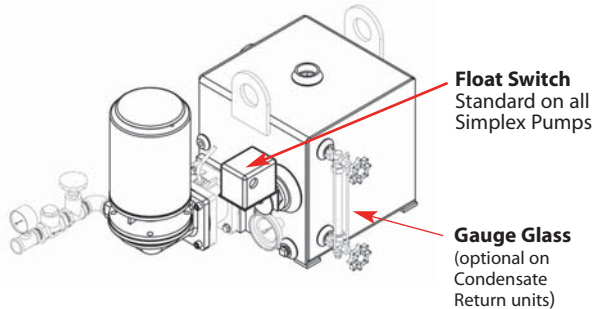
Used for returning condensate from the facility back to the boiler room. In Condensate Return applications, the operation of the pump is controlled by a **Float Switch** located on the receiver tank. The pump turns on when the receiver tank is full and shuts off when emptied. Duplex units contain a **Mechanical Alternator** float switch to alternate operation between the two pumps.

Boiler Feed Pumps

For Boiler Feed applications, the operation of the pump is controlled by the **water level control system** on the boiler. When the boiler requires water, the pump switches on pumping water from the receiver into the boiler. The receiver tank also contains an internal **make-up water valve** actuated by a stainless steel float. If the amount of condensate being returned to the receiver tank is inadequate, additional boiler feed water is automatically added to the receiver tank.

SIMPLEX

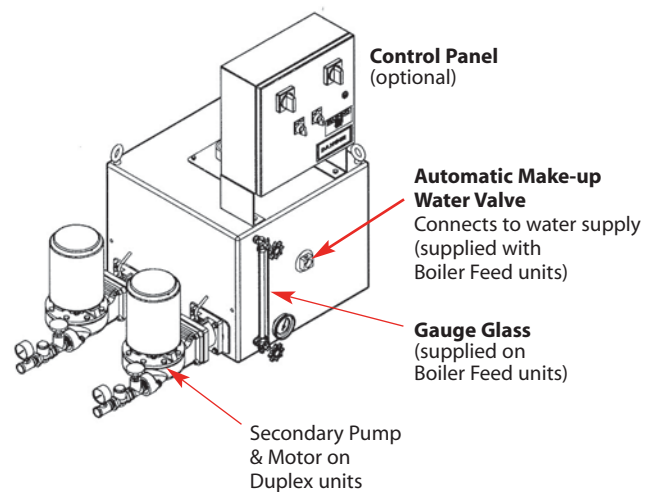
Float Switch is used to activate the pump.



SIMPLEX & DUPLEX

Water Level Control System on boiler is used to activate the pump.

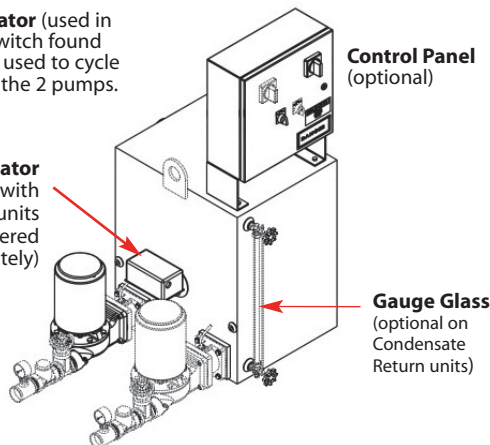
Automatic Make-up Water Valve is activated by a level float that adds additional boiler feed water to the receiver tank if required.



DUPLEX

Mechanical Alternator (used in place of the Float Switch found on Simplex units) is used to cycle operation between the 2 pumps.

Mechanical Alternator required with Duplex units (must be ordered separately)



Introduction

Simplex vs. Duplex Pump Operation:

A **Simplex System** contains a single pump and receiver tank. **Duplex Systems** contain two pumps on a common receiver tank allowing the second pump to serve as a back up in case of failure.

Mechanical Alternator/Float Switch

(must be ordered separately with Duplex units)



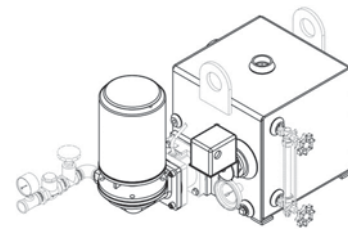
For **Duplex Condensate Return Pumps** the Float Switch is replaced with a Mechanical Alternator. The Mechanical Alternator is attached to a float and activates only one pump at a time in an alternating manner. The Mechanical Alternator switches power between the two motors so that the runtime of each pump is shared, allowing the system to continue operation in the event of a single pump failure.

ELECTRIC PUMPS

Motors & Controls

Single-Phase motors

Single-phase motors supplied with these pumps have overload protection and therefore do not require ancillary motor starters. Single-phase motors can be wired directly to the Float Switch (for Simplex units) or the Mechanical Alternator (on Duplex units) and no control panel is required for installation.



3-Phase motors

3-Phase motors do not have overload protection and therefore require a separate **Motor Starter** to operate. A Motor Starter contains a set of Electrical Contactors with overload protection (OL) to protect the motor. The standard Float Switch or Mechanical Alternator/Float Switch is wired to the Motor Starter and closes the Contactors to start the pump. The OL device incorporated into the Motor Starter protects the motor from damage. A separate circuit breaker or fuse box is still required to protect the circuitry.

Typical Motor Starter



NEMA-12 Control Panel

For **Simplex** units, the control panel would include a single motor starter with a single **HOA** (Hand-Off-Automatic) selector switch to turn the pump on manually to verify functionality; or, to set in automatic mode along with a single Motor Circuit Protector switch to shut power off to the pump in case of overload. The purpose of the Motor Circuit Protector is to protect the wiring to the pump eliminating the need for a separate circuit breaker or fuse box.

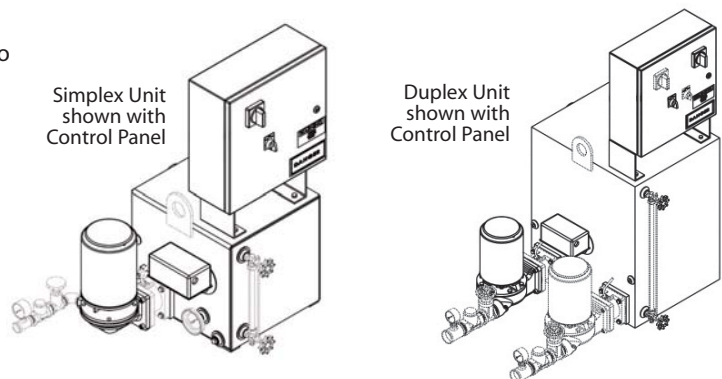
NEMA-12 Control Panel



For **Duplex** systems, the control panel would include two motor starters, two HOA Switches and two Motor Circuit Protector switches.

Simplex Unit shown with Control Panel

Duplex Unit shown with Control Panel



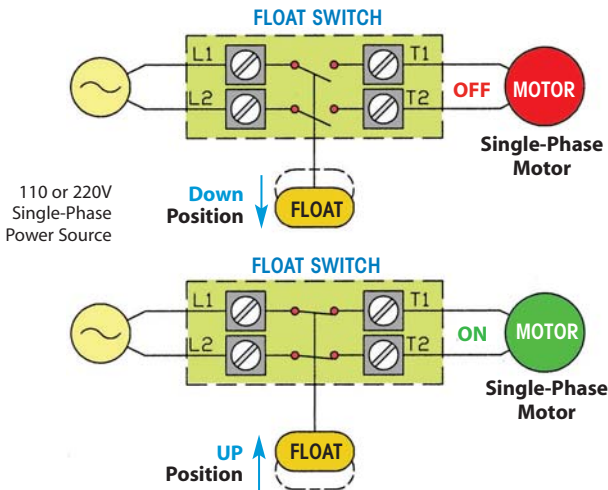
Float Switch for Simplex Condensate Return Units: Wiring Diagrams

The diagrams below show typical Single-phase & 3-phase wiring diagrams for the float switch used on Simplex Condensate Return Units. The Float Switch can be used to turn on a Single-phase motor directly or to activate a **Motor Starter**. A Motor Starter is required to operate 3-phase motors.

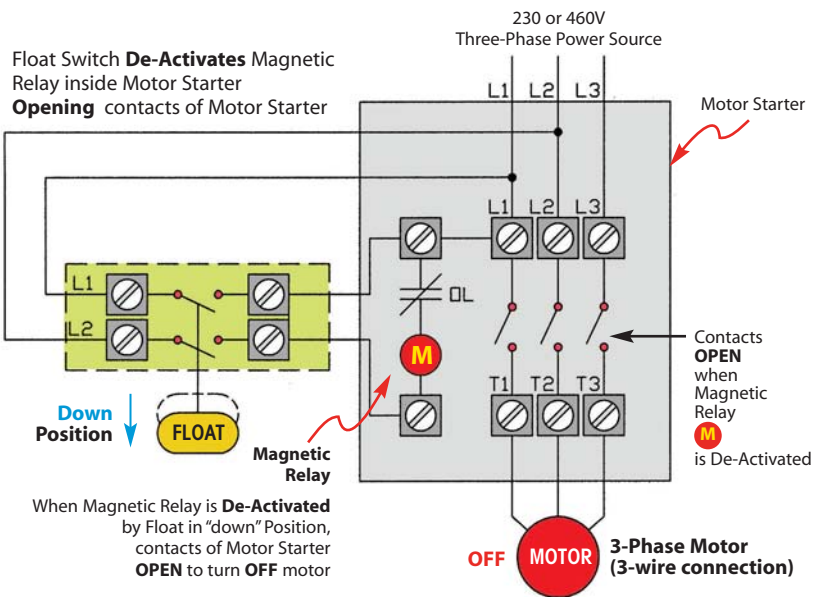
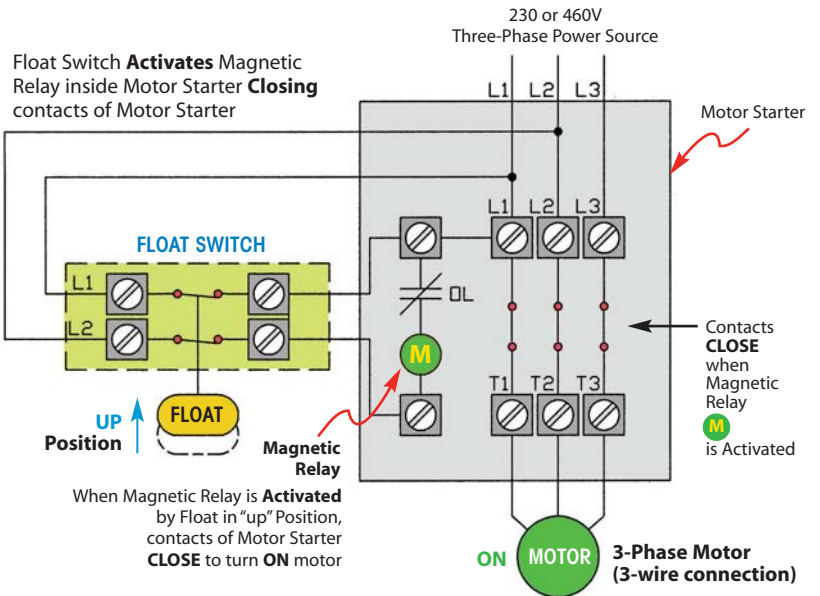


Float Switch for Simplex Pumps

Float Switch Wired Directly to a Single-Phase Motor



Float Switch Turning on a 3-Phase Motor Using a Motor Starter



NEMA 1 Control Panel
Motor Starter for
Simplex Pumps

Introduction

Mechanical Alternator for Duplex units: Wiring Diagrams

The diagrams below show a Mechanical Alternator operating two separate Single-Phase Motors required to operate a Duplex Pump System. The Mechanical Alternator can also be used to operate two separate Motor Starters which in turn would be used to operate two separate 3-phase motors.

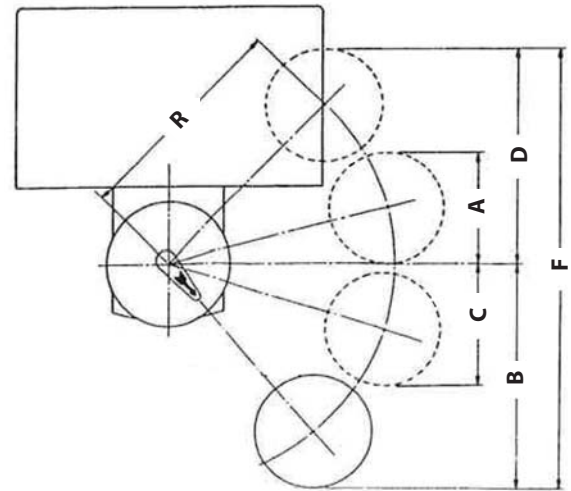
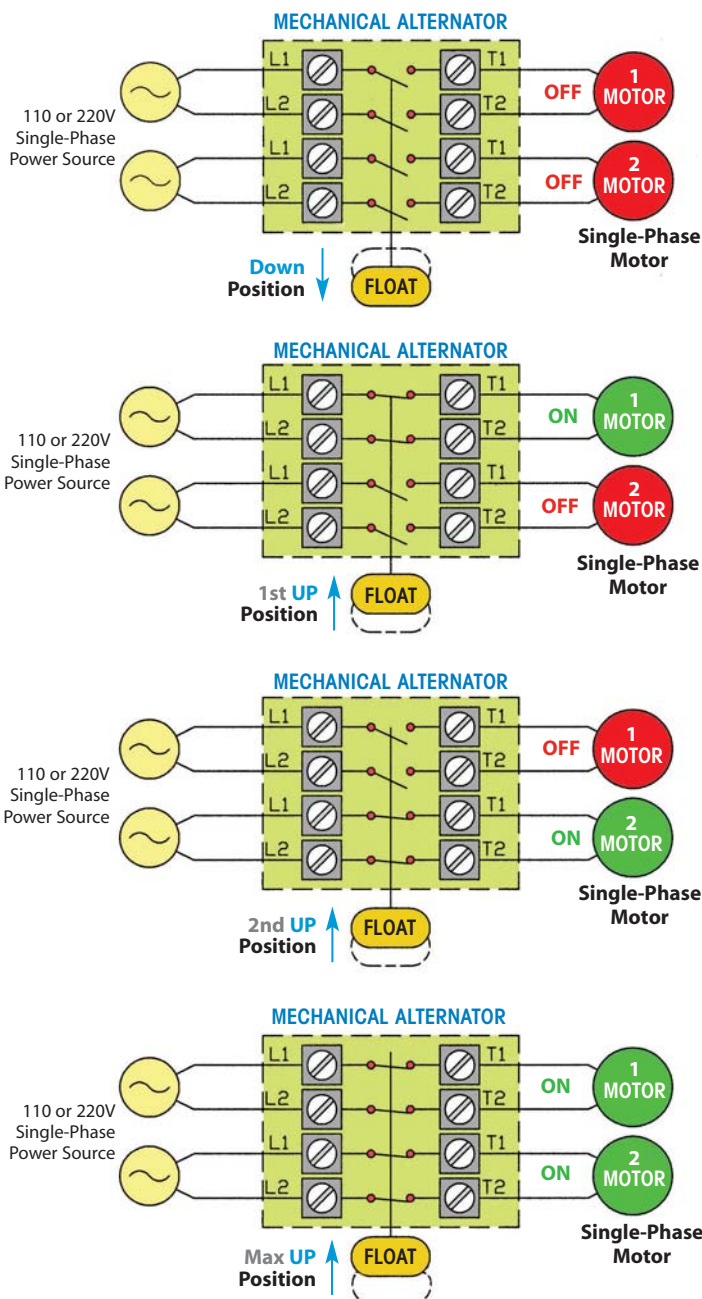


Explanation of Float Travel Position On Mechanical Alternator

Normal Operation: Switches will cut in and cut out at the high point of distance **A + B** given in the Figure below. Under normal conditions, as long as one pump alone is able to handle the incoming water, the pumps will alternate at this distance. With the water level continuing to rise, the second switch will cut in and start the second pump, when the float reaches the top of distance **D**. Both pumps will continue to run until the float returns to the lower point of distance **D + C**, where one pump will cut out. The other pump will continue until the float reaches the low point of distance **B**.

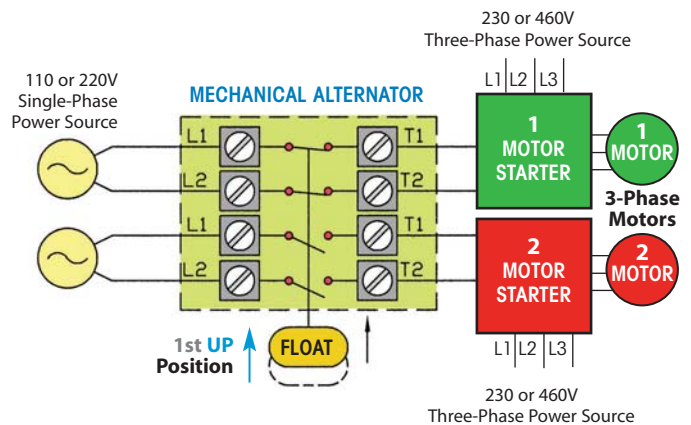
ELECTRIC PUMPS

Mechanical Alternator Operating Two Single-Phase Motors



Mechanical Alternator Operating Two 3-Phase Motors

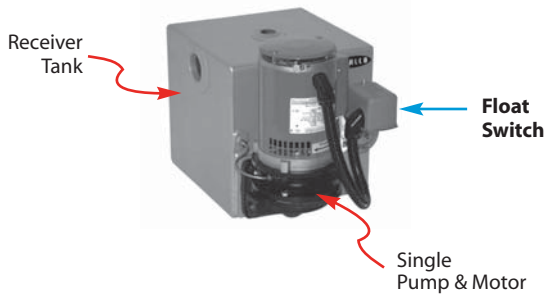
The Mechanical Alternator can also be used to operate two separate Motor Starters which in turn would be used to operate two separate 3-phase motors. Schematic shows **Motor Starter 1** activated which will turn on the 1st motor.



Operation of CONDENSATE RETURN Pumps

Condensate Return Pumps are designed to operate intermittently, discharging condensate only when the receiver tank is full. This is accomplished with a float switch that energizes the pump when the float rises above a set point. Once started, the pump will continue to operate until the water level drops below the bottom set position of the float switch. On Duplex condensate return pumps, a Mechanical Alternator float switch is mounted to the receiver so that both pumps are used in an alternating manner.

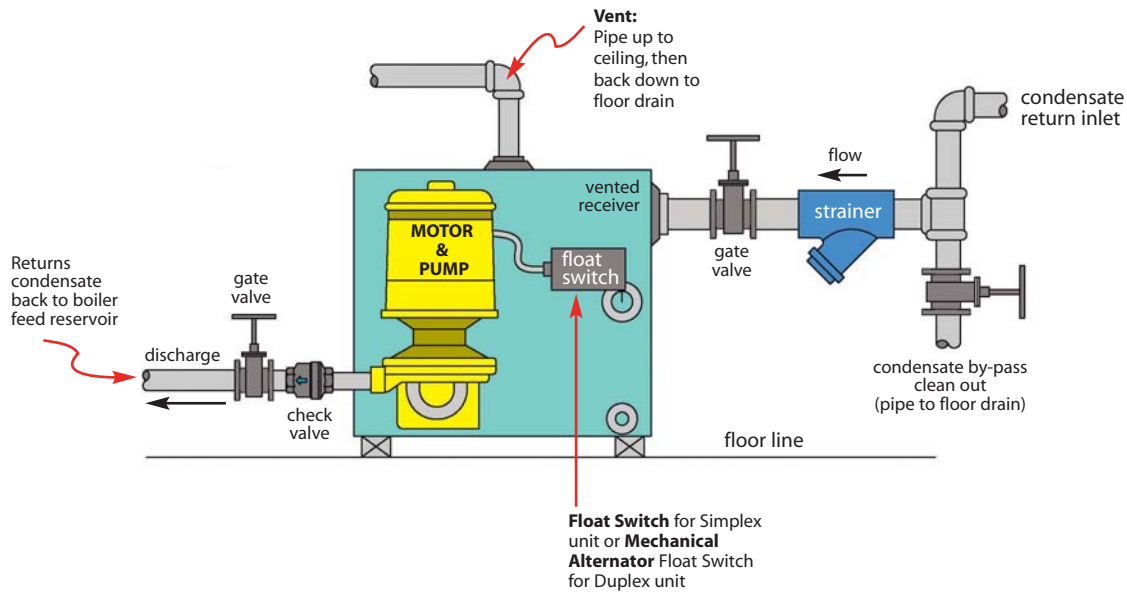
Simplex Unit



Duplex Unit



Condensate Return Pump Piping Diagram

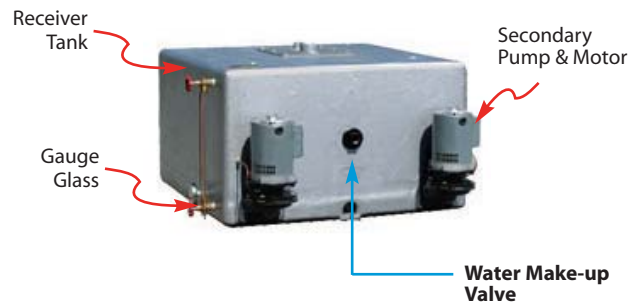


Operation of BOILER FEED Pumps

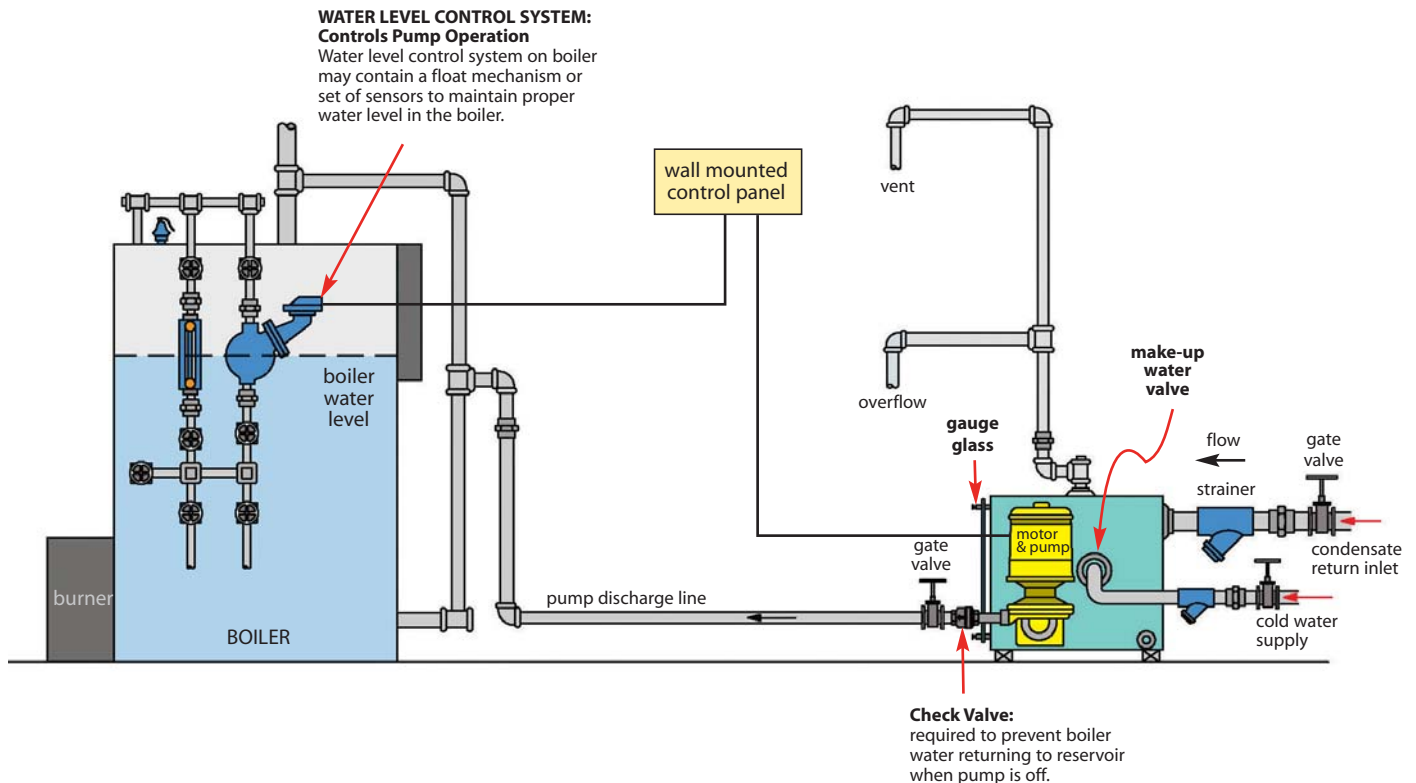
For Boiler Feed applications, the operation of the pump is controlled by the **water level control system** on the boiler. When the boiler requires water, the pump switches on pumping water from the receiver into the boiler. The receiver tank also contains an internal **make-up water valve** actuated by a stainless steel float. If the amount of condensate being returned to the receiver tank is inadequate to supply the boiler, additional make-up water is added to the receiver tank. This condition may occur when more steam is being produced than condensate being returned; common at system start-up.

An overflow pipe is used to dump excess condensate to drain during times when less boiler feed water is required than the amount of condensate being returned. Larger boiler feed tanks may be advantageous to keep systems in balance.

Duplex Boiler Feed Unit



Boiler Feed Pump Piping Diagram



What is required to choose and install an Electric Pump?

Selecting a Condensate Return Pump:	Selecting a Boiler Feed Pump:
<ul style="list-style-type: none"> • A Condensate Return Pump contains an automatic float switch in the receiver tank to activate the pump when the tank is filled and deactivate when empty. • On Duplex units, the standard float switch is replaced with a Mechanical Alternator float switch to alternate operation between the two pumps. Must be ordered separately. An Electric Alternator is also an option. • The capacity of the condensate return pump in Gallons Per Minute (GPM) is based on the amount of Effective Direct Radiation (EDR) in sq ft. of heating surface in the facility that the pump is expected to handle. <i>For Example: an EDR of 2000 sq. ft. can condense up to 500 lbs/hr of steam which translates to 1.0 GPM of condensate flow. Using a 3:1 safety factor would require a 3.0 GPM Condensate Return pump. The properly sized receiver tank that is adequate for that pump capacity is shown in the model selection chart for Condensate Return units. Larger receiver sizes are always desirable in order to cool condensate.</i> • Select a discharge pressure for the pump to overcome all system back pressures including frictional piping losses. Pump discharge pressures of 20-50 PSI are available. Selecting a pump with a significantly higher discharge pressure than required can cause pump to cavitate. 	<ul style="list-style-type: none"> • For a Boiler Feed Pump, the operation of the pump is controlled by the water level control system on the boiler. When the boiler requires water, the pump switches on pumping water from the receiver into the boiler. The receiver tank also contains an internal make-up water valve actuated by a stainless steel float. This is used if the amount of condensate being returned to the receiver tank is inadequate. • On Duplex boiler feed pumps, an Electric Alternator is required to cycle operation between the two pumps. • The capacity of the boiler feed pump in Gallons Per Minute (GPM) is based on the Boiler horsepower (hp). <i>For Example: A 15 horsepower boiler will produce up to 500 lbs/hr of steam when running at maximum load which translates to requiring 1.0 GPM of water make-up to the boiler. Using a 3:1 safety factor would require a 3.0 GPM Boiler Feed pump. The recommended receiver sizes based on boiler horsepower are shown in selection chart.</i> • Select a discharge pressure for the pump to overcome boiler pressure and all system back pressure including frictional piping losses. Pump discharge pressures of 20-50 PSI are available.

General Information:

Applies to both Condensate Return & Boiler Feed Pumps

- 1) **Select the model** with the appropriate sized receiver and pump discharge pressure. 4100-Series Carbon Steel tank, 4200-Series – Cast Iron tank or 4300-Series – Stainless Steel tank.

Safety factors and proper operating conditions: Pumps have a 3:1 safety factor. The 3:1 safety factor for Condensate Return pumps is based on the maximum condensate that can be produced by the EDR (Effective Direct Radiation) in square feet. For Boiler Feed pumps, the 3:1 safety factor is based on the maximum amount of water that would be required by the boiler (based on Boiler hp). Therefore, when the system is operating at maximum capacity, the pump will operate only one third of the time. Please note: these pumps as configured are not recommended for pumping condensate above 190° F.

- 2) **Motor hp** required for any given pump model is listed in the selection chart. For motor sizes below 1 hp, it is most common to choose single phase motors; (1Ph either 110 or 220 Volts). Single-phase motors (available up to 2 hp) have inherent overload protection (OL) and can therefore be wired directly to the float switch or Mechanical Alternator. This is the simplest method of control and does not require any additional electrical hardware. Since 3-Phase motors do not have inherent OL protection, they require a separate Motor Starter. Motor starters can be purchased separately from an electrical supply house or ordered separately with pump unit. Reference our NEMA 1 or NEMA 12 Control Panels with Motor Starter.
- 3) **Duplex pump units** require the addition of a mechanical or electrical **Alternator** which activates one pump at a time in alternating fashion. **Condensate Return** pumps most commonly use a Mechanical Alternator in place of the standard float switch and must be ordered separately. Refer to Model **MECH-ALT-N1**. For duplex **Boiler Feed** pumps, the **Electric Alternator** option on the NEMA-12 Control Panel (suffix code **E**) must be chosen. An Electric Alternator can also be used with Condensate Return pumps; however, an additional 2-level float switch is required (2-level float switch is Not required on boiler feed units).

Model	W4100	W4200	W4300
Connections	NPT	NPT	NPT
Tank Material	Carbon Steel	Cast Iron	Stainless Steel
Max Disch. Press.	50 PSIG	50 PSIG	50 PSIG
TMO/TMA	190°F	190°F	190°F
Options	Mechanical & electrical alternators; gauge glass; thermometer; discharge pressure gauges; isolation valves; magnetic starters; 1750 RPM motors; control panels; oversized or stainless steel receivers; high temperature components		



Typical Applications

Used for general condensate return or for boiler feed applications. Available in Simplex or Duplex configurations with several different receiver sizes available.

How It Works

For Condensate Return Applications:

The float, which is connected to the switch assembly, rises when condensate enters the receiver tank. When the float rises above its set point, it energizes the motor on the pump. Once started, the pump will continue to run until the water level drops below the bottom position of the float switch. There it will de-energize the motor to shut off the pump. This cycle repeats as condensate begins to fill the receiver tank. On duplex systems the float switch is replaced with a Mechanical Alternator-Switch connected to a float. The Mechanical Alternator cycles use between the two pumps, allowing only one pump to run at a time under normal conditions. If the condensate reaches a high water level, both pumps will be activated.

For Boiler Feed Applications:

For Boiler Feed units, the operation of the pump is controlled by the water level control device which is part of the boiler control package. When the boiler requires water, the pump switches on pumping water from the receiver into the boiler. On Duplex boiler feed units, an Electrical Alternator is used to activate one pump at a time in alternating fashion. The receiver tank also contains an internal make-up water valve actuated by a stainless steel float. This is used if the amount of condensate being returned to the receiver tank is inadequate.

Sample Specifications

Pump(s) shall be of the centrifugal type with 2-piece closed bronze impeller, cast iron housing and stainless steel motor shaft. A flat perforated brass strainer shall be provided in the inlet of the pump.

Installation

Place on an elevated, level and substantial foundation in a clean, dry and accessible area. Locate receiver tank inlet below lowest point of the condensate return lines.

Features

- Fabricated steel receivers (W4100), Cast Iron (W4200), Stainless Steel (W4300)
- Simplex and duplex packages
- Bronze-fitted centrifugal pumps
- Energy-efficient 3450 RPM motors
- Automatic venting of mechanical seal
- Ceramic pump seal with carbon face
- Heavy-duty float switch
- All steel and iron receivers over 24 gallons include a threaded NPT overflow port

Options

- Mechanical and Electrical Alternators
- Gauge Glass
- Thermometers
- Discharge Pressure Gauges
- Isolation valves
- Magnetic Starters with HOA Selector Switch
- 1750 RPM Motors
- Larger pumping capacities & higher discharge pressures
- Wide variety of control panels
- Oversized Receivers (45, 60 & 95 gallons)
- Stainless Steel Receivers
- High Temperature (250°F) Components

Electric Condensate Pumps

How to Order an Electric Condensate Return or Boiler Feed Pump

ELECTRIC PUMPS

Ordering Guidelines:

- 1) Decide on appropriate Receiver tank material for the application; W4100-Series with Steel Receiver tanks, W4200-Series with Cast Iron Receiver tanks or W4300 with Stainless Steel Receiver tanks.
- 2) Based on the particular application the **model selection charts** are separated on adjoining pages into either Boiler Feed or Condensate Return units. The proper pump model/size in GPM (gallons per minute) to suit the application and recommended receiver size for a Boiler Feed application is based on boiler size measured in Boiler Horsepower. The proper pump model size in GPM and recommended receiver size for a Condensate Return application is based on the Effective Direct Radiation (EDR) in square feet of the heating surfaces throughout the facility that the pump is expected to handle.
- 3) Select a pump discharge pressure that will exceed system back pressure, friction loss in piping and pressure in the boiler (in the case of a boiler feed pump). Selecting a pump with a significantly higher discharge pressure than required can cause pump to cavitate.
- 4) Decide if a Simplex (Single pump) unit is adequate or a Duplex (two pump) unit would be more appropriate in terms of system reliability and redundancy in the event of a pump failure.
- 5) Select Motor Phase and Voltage (reference chart). For smaller units under 1¹/₂ hp Single phase motors may be desirable because of ease of installation. For units in excess of 1¹/₂ hp, the more efficient and robust 3-phase motors are recommended.

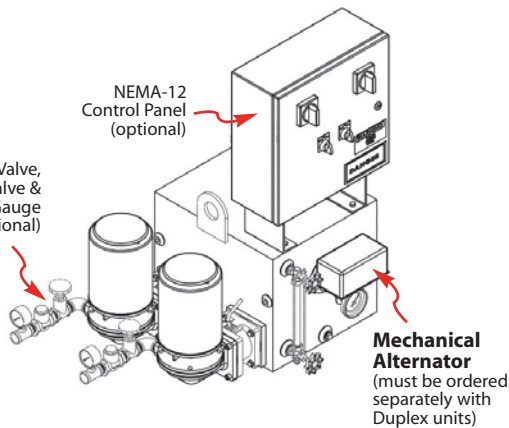
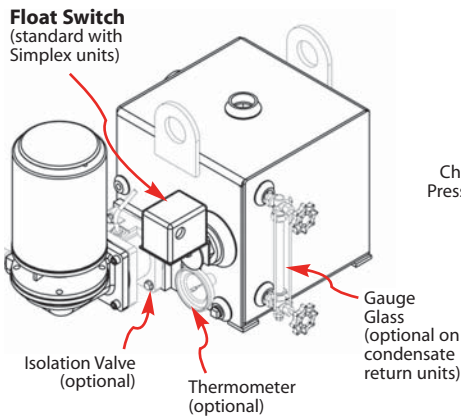
Example Model Code: **W4142JD-3P230**
(Pump Unit)

Duplex Condensate Return Pump, 3 GPM flow rate & 40 PSI discharge pressure & 15 gallon receiver, 1hp, 230 VAC, 60Hz, 3-Phase motor.

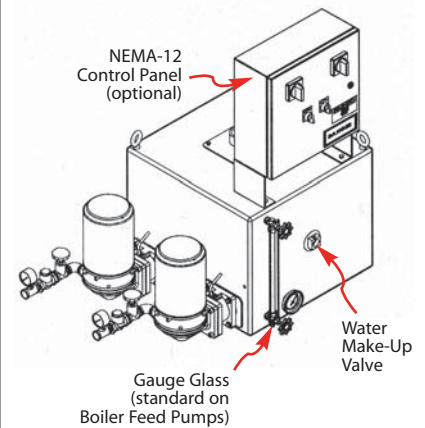
Example Model Code: **MECH-ALT-N1**
(Mechanical Alternator)

Note: Since a Duplex pump was chosen, a Mechanical Alternator must be purchased separately to replace the standard Float Switch.

Condensate Return



Boiler Feed



Phase & Voltage Codes for Standard 60/50 Hz Motors

Motor Phase & Voltage	60 Hz Motor Code	50 Hz Motor Code
Single Phase	115 VAC	1P115
	208 VAC	1P208
	230 VAC	1P230
Three Phase	208 VAC	3P208
	230 VAC	3P230
	460 VAC	3P460
	575 VAC	3P575

Codes for Specialty Motors (add as a Suffix)

Option	Suffix Code
Totally Enclosed Fan Cooled (1/2 to 3 hp)	TEFC
Explosion Proof – 1/2, 3/4, 1 hp	EP1
Explosion Proof – 1 ¹ / ₂ & 2 hp	EP2
Explosion Proof – 3 hp	EP3

How to Order an Electric Condensate Return or Boiler Feed Pump

Condensate Return			Boiler Feed
			
Simplex Cast Iron Tank	Duplex Cast Iron Tank	Duplex Stainless Steel Tank	Duplex Cast Iron Tank

ELECTRIC PUMPS

Mechanical Alternator For Duplex Condensate Return Pump Only

Replaces the standard float switch on Duplex Condensate Return Units. Must be ordered separately.



On Duplex units, the standard float switch is replaced with a Mechanical Alternator float switch to alternate operation between the two pumps. Must be ordered separately. An Electric Alternator is also an option.

For Duplex Pumps must choose either:

A Mechanical Alternator or 2-Level Float Switch with the Electric Alternator Option on NEMA-12 Control Panel

Mechanical Alternator & Float Switches	Model Code
Mechanical Alternator - NEMA 1 (replaces Float Switch on Duplex pumps)	MECH-ALT-N1
Mechanical Alternator - NEMA 4 (replaces Float Switch on Duplex)	MECH-ALT-N4
Mechanical Alternator - Explosion Proof (replaces Float Switch on Duplex)	MECH-ALT-EP
2-Level Float Switch – (required when using an Electrical Alternator - Reference NEMA-12 Control Panel)*	FLOAT-SWITCH-2L
(Option) High-Level Auxiliary Contacts for Mechanical Alternator	CONTACTS-HLA

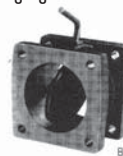
* 2-level float switch not required with Duplex Boiler Feed Units

Accessory Items

Condensate Return Pumps (ordered separately)	
For SIMPLEX and DUPLEX pumps	Model Code
Gauge Glass for Steel Tank	GAUGE-GLASS-ST
Gauge Glass for Cast Iron Tank	GAUGE-GLASS-CI
Isolation Valve	ISO-VALVE
Dial Thermometer	DIAL-THERM
Discharge Pressure Gauge	PRESS-GAUGE-D
Discharge Check Valve	CHECK VALVE-D
Float Switch - NEMA 4 (for Simplex Unit)	FLOAT-SWITCH-N4
Float Switch - Explosion Proof (for Simplex Unit)	FLOAT-SWITCH-EP

Boiler Feed Pumps (ordered separately)	
For SIMPLEX and DUPLEX pumps	Model Code
Isolation Valve	ISO-VALVE
Dial Thermometer	DIAL-THERM
Discharge Pressure Gauge	PRESS-GAUGE-D
Discharge Check Valve	CHECK VALVE-D

Gauge glass is standard on boiler feed pumps.



Isolation Valve

Allows pump and motor to be removed without draining condensate.

Electric Condensate Pumps

Motor Control Panel

ELECTRIC PUMPS

NEMA 12 - Control Panel (for Duplex & Simplex Pumps)

Purchasing the optional motor control panel is a convenient and simple method of hooking up your pump.



For **Simplex** units, the control panel would include a single motor starter with a single HOA (HAND-OFF-AUTOMATIC) selector switch to turn the pump on manually to verify functionality; or, to set in automatic mode along with a single Motor Circuit Protector switch to shut power off to the pump.

For **Duplex** systems, the control panel would include two motor starters with two HOA (HAND-OFF-AUTOMATIC) selector switches to turn either of the two pumps on manually to verify functionality, or to set in automatic mode along with two separate Motor Circuit Protector switches to shut power off to either of the two pumps.

An Electric Alternator option can be used to replace the standard Mechanical Alternator; this option uses electronic logic as opposed to a mechanical device to cycle operation between the two pumps. If an Electrical Alternator is chosen, the Mechanical Alternator is replaced with a 2-level float switch (suffix code **E**).

Other Options, such as Pilot Light indicating when the pump is running or High Level Alarm Horn & Light indicating a flood system condition, can be added.



Control Panel Model Codes

Standard CONTROL PANEL	Simplex Model Code	Duplex Model Code
1/3 thru 5 Horsepower	CPN12-P1-S	CPN12-P1-D
Over 5 Horsepower	CPN12-P2-S	CPN12-P2-D

Standard Control Panel Includes:

- Motor Circuit Protector(s)
- HOA Selector Switch(s)
- External Reset(s)

Control Panel Options

Options	Suffix Code
UL Certification	UL
Pilot Light (Power On) (1 required per pump)	P
Test Push Button (1 required per pump)	T
Electric Alternator (for Duplex)* (2-Level Float Switch is required with Electric Alternator)	E
High-Level Alarm Horn & Light with Silencing Switch	HA
All of the Above Options	AO

Note: Standard Voltages are: 1-phase/60 Hz/115, 208, 230 VAC and 3-phase/60Hz/208, 230, 460, 575 VAC.

For non-standard voltages; consult factory.

* 2-Level Float Switch is required with Electric Alternator for Condensate Pumps Only; Not required for Boiler Feed Units.

Pilot Light

Indicates when a pump is running;
Simplex - One light; Duplex - Two Lights.

Test Push Button

Used to test if pilot light is functional. Press to test.

Electric Alternator

Uses electronic logic to alternate operation between two pumps. This option is required for Duplex Boiler Feed systems.

For Condensate Return Systems: if an Electric Alternator is chosen instead of the Mechanical Alternator, a 2-Level Float Switch is required. (See Accessories - Electric Alternator Option. Model: **FLOAT-SWITCH-2L**)

High-Level Alarm

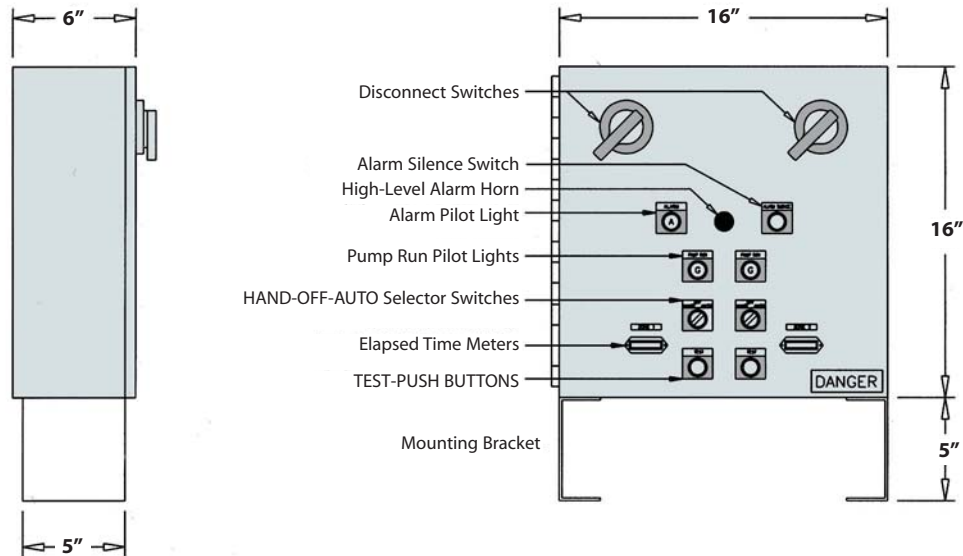
Alarm to indicate if maximum water level is exceeded.

- Example Model Codes:
- 1) CPN12-P1-S (Control Panel, NEMA 12, 1/3 thru 5 hp, Simplex, no options)
 - 2) CPN12-P1-S-UL (Control Panel, NEMA 12, 1/3 thru 5 hp, Simplex with UL Certification)
 - 3) CPN12-P2-D-E (Control Panel, NEMA 12, over 5 Hp, Duplex, with Electric Alternator)

Electric Condensate Pumps

Motor Control Panel

NEMA 12 - Control Panel (for Duplex & Simplex Pumps)



ELECTRIC PUMPS

NEMA 1 - Control Panel (for Simplex Pumps Only)

For Simplex units, the NEMA 1 Control Panel will include a single motor starter with a **HOA** (HAND-OFF-AUTOMATIC) selector switch to turn the pump on manually, or to set in automatic mode. A single Motor Circuit Protector switch shuts the power off to the pump when an overload (OL) condition is detected.



- Magnetic across-the-line motor starter *
- Thermal overload and Hand-Off-Automatic (HOA) selector switch
- Optional Pilot Light

* Allows for remote start-up with full line voltage across the motor terminals.

Phase	Power	Voltage	Model Code
Single Phase	Up to 1 HP	115 VAC	MSN1-1P-1-115
	Up to 2 HP	230 VAC	MSN1-1P-2-230
	Up to 2 HP	115 VAC	MSN1-1P-2-115
	Up to 3 HP	230 VAC	MSN1-1P-3-230
Three Phase	Up to 3 HP	230 VAC	MSN1-3P-3-230
	Up to 2 HP	460 VAC	MSN1-3P-2-460
	Up to 7.5 HP	230 VAC	MSN1-3P-7-230
	Up to 5 HP	460 VAC	MSN1-3P-5-460
Option	Pilot Light		(Suffix Code) P

Example Model Codes:

- 1) **MSN1-1P-1-115** (Motor Starter, NEMA 1, single-phase, 1 HP, 115 VAC)
- 2) **MSN1-3P-3-230-P** (Motor Starter, NEMA 1, three-phase, 3 HP, 230 VAC with Pilot light)

Boiler Feed Pumps • Model Selection

Boiler Feed Pumps **Steel** Receivers (**G & J** Series Pumps)

G (20 PSI Max Discharge Pressure) / **J** (up to 50 PSI Max Discharge Pressure)

ELECTRIC PUMPS

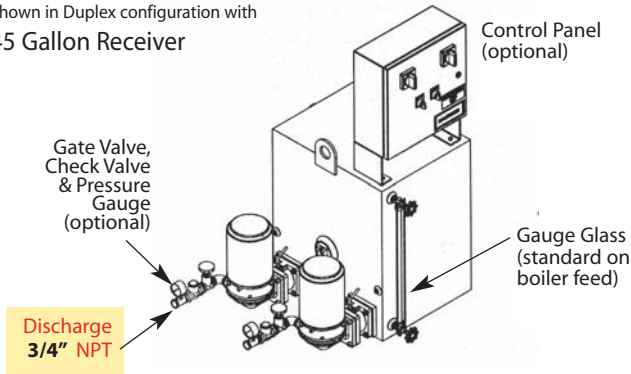
CAPACITIES									
Boiler Horsepower	Discharge Pressure (PSIG)	Flow Rate (GPM)	Motor Horsepower	Receiver Capacity (gallons)	Simplex Model #	Pump Series	Weight (lbs)	Duplex Model #	Weight (lbs)
15	20	3	1/3	30	W4122GF	G	200	W4122GDF	240
	30		1/2		W4132JF	J	260	W4132JDF	300
	40		1		W4142JF	J	265	W4142DF	310
	50		2		W4152JF	J	275	W4152JDF	330
30	20	6	1/3	30	W4124GF	G	200	W4124GDF	240
	30		1/2		W4134JF	J	260	W4134JDF	300
	40		1		W4144JF	J	265	W4144DF	310
	50		2		W4154JF	J	275	W4154JDF	330
45	20	9	1/3	45	W4126GF	G	240	W4126GDF	280
	30		1/2		W4136JF	J	300	W4136JDF	340
	40		1		W4146JF	J	305	W4146DF	350
	50		2		W4156JF	J	315	W4156JDF	370
60	20	12	1/3	60	W4128GF	G	275	W4128GDF	335
	30		1/2		W4138JF	J	335	W4138JDF	395
	40		1		W4148JF	J	340	W4148DF	405
	50		2		W4158JF	J	350	W4158JDF	425

Typical 4100-Series BOILER FEED Pumps (available in Simplex & Duplex with 30, 45 & 60 Gallon Receivers)

SIMPLEX & DUPLEX

G Series Pump

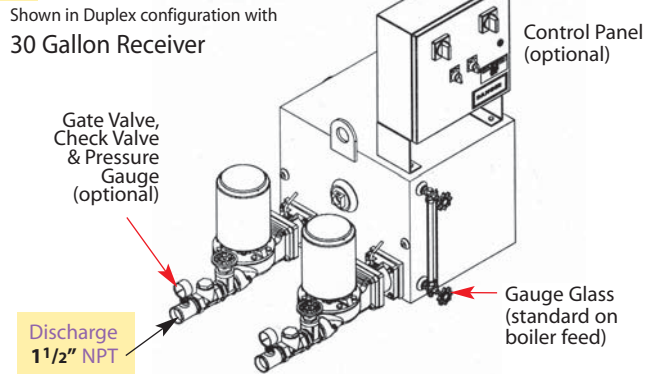
Shown in Duplex configuration with 45 Gallon Receiver



SIMPLEX & DUPLEX

J Series Pump

Shown in Duplex configuration with 30 Gallon Receiver

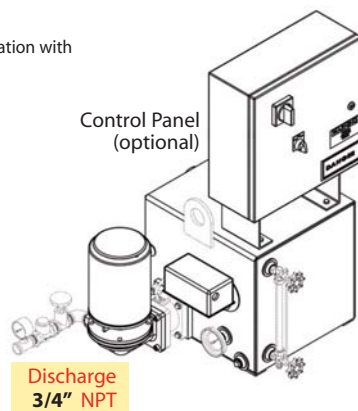


Typical 4100-Series CONDENSATE RETURN Pumps

SIMPLEX & DUPLEX

G Series Pump

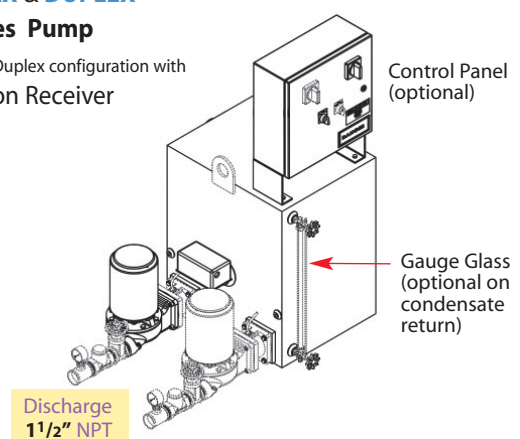
Shown in Simplex configuration with 15 Gallon Receiver



SIMPLEX & DUPLEX

J Series Pump

Shown in Duplex configuration with 45 Gallon Receiver



Model Selection • Condensate Return Pumps

Condensate Return Pumps **Steel** Receivers (**G & J** Series Pumps)

G (20 PSI Max Discharge Pressure) / **J** (up to 50 PSI Max Discharge Pressure)

CAPACITIES								
EDR	Discharge Pressure (PSIG)	Flow Rate (GPM)	Motor HP	Receiver Capacity (gallons)	Simplex Model #	Weight (lbs)	Duplex Model #	Weight (lbs)
2000	20	3	1/3	15	W4122G	125	W4122GD	185
4000	20	6	1/3	15	W4124G	125	W4124GD	185
6000	20	9	1/3	15	W4126G	125	W4126GD	185
8000	20	12	1/3	15	W4128G	125	W4128GD	185
10000	20	15	1/2	30	W41210G	190	W41210GD	240
15000	20	22.5	1/2	30	W41215G	190	W41215GD	240
20000	20	30	3/4	30	W41220G	200	W41220GD	250
25000	20	37.5	3/4	45	W41225J	285	W41225JD	350
30000	20	45	1	45	W41230J	285	W41230JD	350
40000	20	60	1 1/2	60	W41240J	335	W41240JD	405
50000	20	75	2	95	W41250J	385	W41250JD	460
2000	30	3	1/2	15	W4132J	180	W4132JD	250
4000	30	6	1/2	15	W4134J	180	W4134JD	250
6000	30	9	1/2	15	W4136J	180	W4136JD	250
8000	30	12	1/2	15	W4138J	180	W4138JD	250
10000	30	15	3/4	15	W41310J	185	W41310JD	250
15000	30	22.5	1	30	W41315J	230	W41315JD	300
20000	30	30	1	30	W41320J	230	W41320JD	300
25000	30	37.5	1	45	W41325J	285	W41325JD	350
30000	30	45	1 1/2	45	W41330J	290	W41330JD	355
40000	30	60	2	60	W41340J	340	W41340JD	410
50000	30	75	3	95	W41350J	395	W41350JD	470
2000	40	3	1	15	W4142J	190	W4142JD	270
4000	40	6	1	15	W4144J	190	W4144JD	270
6000	40	9	1	15	W4146J	190	W4146JD	270
8000	40	12	1	15	W4148J	190	W4148JD	270
10000	40	15	1	15	W41410J	190	W41410JD	270
15000	40	22.5	1 1/2	30	W41415J	240	W41415JD	310
20000	40	30	1 1/2	30	W41420J	240	W41420JD	310
25000	40	37.5	1 1/2	45	W41425J	290	W41425JD	355
30000	40	45	2	45	W41430J	295	W41430JD	360
40000	40	60	2	60	W41440J	240	W41440JD	410
50000	40	75	3	95	W41450J	395	W41450JD	470
2000	50	3	2	15	W4152J	195	W4152JD	275
4000	50	6	2	15	W4154J	195	W4154JD	275
6000	50	9	2	15	W4156J	195	W4156JD	275
8000	50	12	2	15	W4158J	195	W4158JD	275
10000	50	15	2	15	W41510J	195	W41510JD	275
15000	50	22.5	2	30	W41515J	245	W41515JD	320
20000	50	30	3	30	W41520J	255	W41520JD	330
25000	50	37.5	3	45	W41525J	305	W41525JD	385
30000	50	45	3	45	W41530J	305	W41530JD	385
40000	50	60	5	60	W41540J	370	W41540JD	500
50000	50	75	5	95	W41550J	430	W41550JD	500

- Notes: 1) EDR = Square Feet of Equivalent Direct Radiation
 2) Capacity of Steam (lbs/hr) = EDR x 0.25
 3) 2,000 EDR will produce 500 lbs/hr of condensate
 3) 500 lbs/hr = 1 GPM

ELECTRIC PUMPS

Boiler Feed Pumps • Model Selection

Boiler Feed Pumps **Cast Iron** Receivers (**G & J** Series Pumps)

G (20 PSI Max Discharge Pressure) / **J** (up to 50 PSI Max Discharge Pressure)

ELECTRIC PUMPS

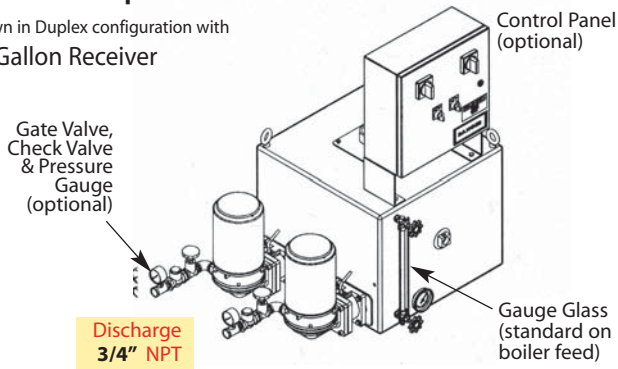
CAPACITIES								
Boiler Horsepower	Discharge Pressure (PSIG)	Flow Rate (GPM)	Motor Horsepower	Receiver Capacity (gallons)	Simplex Model #	Weight (lbs)	Duplex Model #	Weight (lbs)
15	20	3	1/3	36	W4222GF	465	W4222GDF	500
	30		1/2		W4232JF	505	W4232JDF	580
	40		1		W4242JF	510	W4242DF	590
	50		2		W4252JF	520	W4252JDF	600
30	20	6	1/3	36	W4224GF	465	W4224GDF	500
	30		1/2		W4234JF	505	W4234JDF	580
	40		1		W4244JF	510	W4244DF	590
	50		2		W4254JF	520	W4254JDF	600
45	20	9	1/3	50	W4226GF	575	W4226GDF	610
	30		1/2		W4236JF	615	W4236JDF	690
	40		1		W4246JF	620	W4246DF	700
	50		2		W4256JF	625	W4256JDF	710
60	20	12	1/3	50	W4228GF	575	W4228GDF	610
	30		1/2		W4238JF	615	W4238JDF	690
	40		1		W4248JF	620	W4248DF	700
	50		2		W4258JF	625	W4258JDF	710

Typical 4200-Series BOILER FEED Pumps

SIMPLEX & DUPLEX

G Series Pump

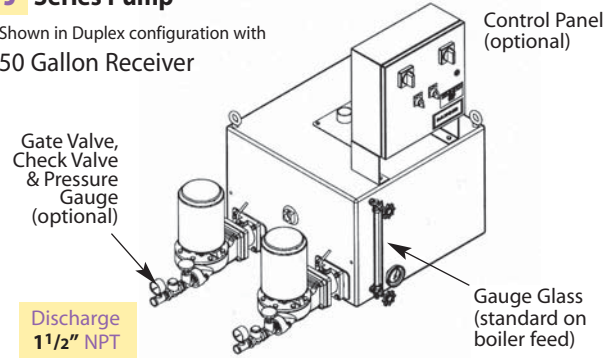
Shown in Duplex configuration with 36 Gallon Receiver



SIMPLEX & DUPLEX

J Series Pump

Shown in Duplex configuration with 50 Gallon Receiver

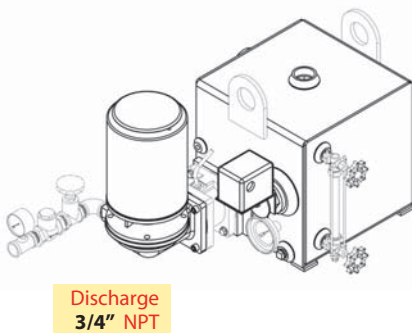


Typical 4200-Series CONDENSATE RETURN Pumps

SIMPLEX

G Series Pump

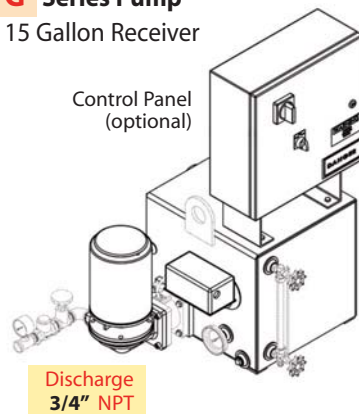
6 Gallon Receiver



SIMPLEX & DUPLEX

G Series Pump

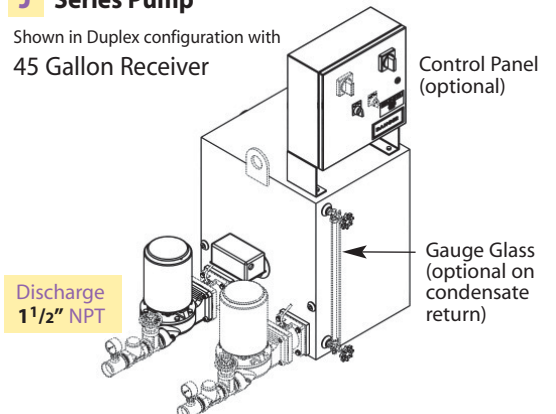
15 Gallon Receiver



SIMPLEX & DUPLEX

J Series Pump

Shown in Duplex configuration with 45 Gallon Receiver



Model Selection • Condensate Return Pumps

Condensate Return Pumps **Cast Iron** Receivers (**G & J** Series Pumps)

G (20 PSI Max Discharge Pressure) / **J** (up to 50 PSI Max Discharge Pressure)

CAPACITIES								
EDR	Discharge Pressure (PSIG)	Flow Rate (GPM)	Motor HP	Receiver Capacity (gallons)	Simplex Model #	Weight (lbs)	Duplex Model #	Weight (lbs)
2000	20	3	1/3	6	W4222G	150	N/A	N/A
4000	20	6	1/3	6	W4224G	150	N/A	N/A
6000	20	9	1/3	15	W4226G	260	W4226GD	295
8000	20	12	1/3	15	W4228G	260	W4228GD	295
10000	20	15	1/2	15	W42210G	260	W42210GD	295
15000	20	22.5	1/2	24	W42215G	300	W42215GD	335
20000	20	30	3/4	36	W42220G	410	W42220GD	445
25000	20	37.5	3/4	36	W42225J	350	W42225JD	420
30000	20	45	1	36	W42230J	355	W42230JD	430
40000	20	60	1 1/2	50	W42240J	420	W42240JD	500
50000	20	75	2	50	W42250J	425	W42250JD	510
2000	30	3	1/2	6	W4232J	165	N/A	N/A
4000	30	6	1/2	6	W4234J	165	N/A	N/A
6000	30	9	1/2	15	W4236J	295	W4236JD	360
8000	30	12	1/2	15	W4238J	295	W4238JD	360
10000	30	15	3/4	15	W42310J	300	W42310JD	365
15000	30	22.5	1	24	W42315J	305	W42315JD	380
20000	30	30	1	36	W42320J	355	W42320JD	430
25000	30	37.5	1	36	W42325J	355	W42325JD	430
30000	30	45	1 1/2	36	W42330J	360	W42330JD	440
40000	30	60	2	50	W42340J	425	W42340JD	510
50000	30	75	3	50	W42350J	435	W42350JD	525
2000	40	3	1	6	W4242J	170	N/A	N/A
4000	40	6	1	6	W4244J	170	N/A	N/A
6000	40	9	1	15	W4246J	295	W4246JD	360
8000	40	12	1	15	W4248J	295	W4248JD	360
10000	40	15	1	15	W42410J	295	W42410JD	360
15000	40	22.5	1 1/2	24	W42415J	310	W42415JD	390
20000	40	30	1 1/2	36	W42420J	360	W42420JD	440
25000	40	37.5	1 1/2	36	W42425J	360	W42425JD	440
30000	40	45	2	36	W42430J	365	W42430JD	450
40000	40	60	2	50	W42440J	425	W42440JD	510
50000	40	75	3	50	W42450J	435	W42450JD	525
2000	50	3	2	6	W4252J	175	N/A	N/A
4000	50	6	2	6	W4254J	175	N/A	N/A
6000	50	9	2	15	W4256J	315	W4256JD	395
8000	50	12	2	15	W4258J	315	W4258JD	395
10000	50	15	2	15	W42510J	315	W42510JD	395
15000	50	22.5	2	24	W42515J	330	W42515JD	415
20000	50	30	3	36	W42520J	370	W42520JD	460
25000	50	37.5	3	36	W42525J	370	W42525JD	460
30000	50	45	3	36	W42530J	370	W42530JD	460
40000	50	60	5	50	W42540J	445	W42540JD	535
50000	50	75	5	50	W42550J	445	W42550JD	535

- Notes: 1) EDR = Square Feet of Equivalent Direct Radiation
 2) Capacity of Steam (lbs/hr) = EDR x 0.25
 3) 2,000 EDR will produce 500 lbs/hr of condensate
 3) 500 lbs/hr = 1 GPM

ELECTRIC PUMPS

Boiler Feed Pumps Stainless Steel Receivers (G & J Series Pumps)

G (20 PSI Max Discharge Pressure) / **J** (up to 50 PSI Max Discharge Pressure)

ELECTRIC PUMPS

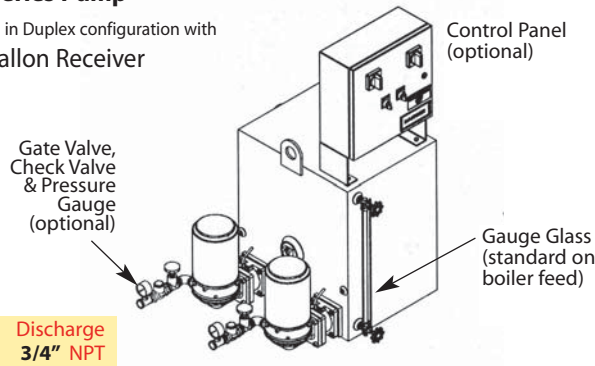
CAPACITIES								
Boiler Horsepower	Discharge Pressure (PSIG)	Flow Rate (GPM)	Motor Horsepower	Receiver Capacity (gallons)	Simplex Model #	Weight (lbs)	Duplex Model #	Weight (lbs)
15	20	3	1/3	30	W4322GF	200	W4322GDF	240
	30		1/2		W4332JF	260	W4332JDF	300
	40		1		W4342JF	265	W4342DF	310
	50		2		W4352JF	275	W4352JDF	330
30	20	6	1/3	30	W4324GF	200	W4324GDF	240
	30		1/2		W4334JF	260	W4334JDF	300
	40		1		W4344JF	265	W4344DF	310
	50		2		W4354JF	275	W4354JDF	330
45	20	9	1/3	45	W4326GF	240	W4326GDF	280
	30		1/2		W4336JF	300	W4336JDF	340
	40		1		W4346JF	305	W4346DF	350
	50		2		W4356JF	315	W4356JDF	370
60	20	12	1/3	60	W4328GF	275	W4328GDF	335
	30		1/2		W4338JF	335	W4338JDF	395
	40		1		W4348JF	340	W4348DF	405
	50		2		W4358JF	350	W4358JDF	425

Typical 4300-Series BOILER FEED Pumps

SIMPLEX & DUPLEX

G Series Pump

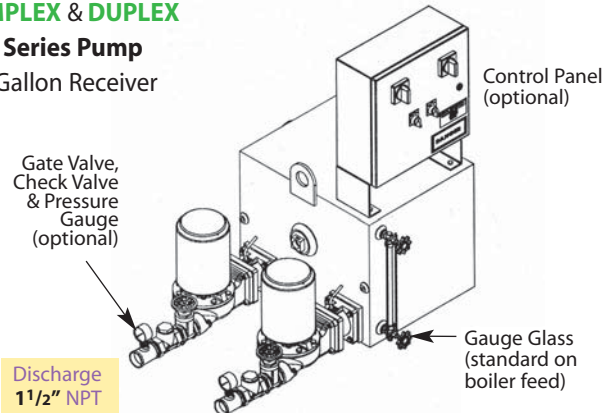
Shown in Duplex configuration with 45 Gallon Receiver



SIMPLEX & DUPLEX

J Series Pump

30 Gallon Receiver

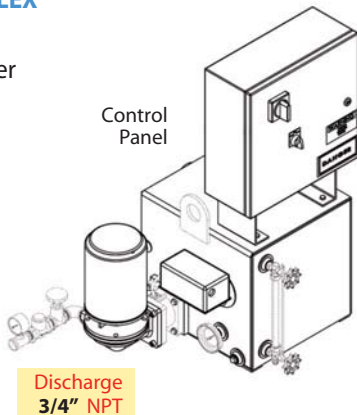


Typical 4300-Series CONDENSATE RETURN Pumps

SIMPLEX & DUPLEX

G Series Pump

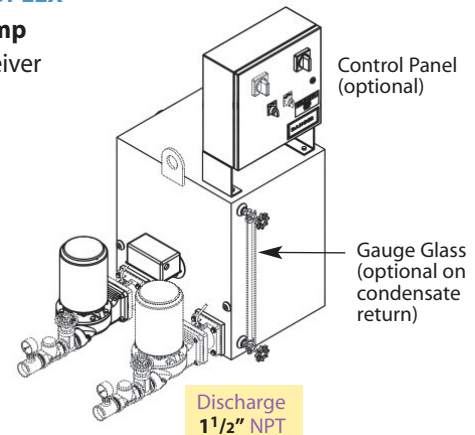
15 Gallon Receiver



SIMPLEX & DUPLEX

J Series Pump

45 Gallon Receiver



Model Selection • Condensate Return Pumps

Condensate Return Pumps **Stainless Steel** Receivers (**G & J** Series Pumps)

G (20 PSI Max Discharge Pressure) / **J** (up to 50 PSI Max Discharge Pressure)

CAPACITIES								
EDR	Discharge Pressure (PSIG)	Flow Rate (GPM)	Motor HP	Receiver Capacity (gallons)	Simplex Model #	Weight (lbs)	Duplex Model #	Weight (lbs)
2000	20	3	1/3	15	W4322G	125	W4322GD	185
4000	20	6	1/3	15	W4324G	125	W4324GD	185
6000	20	9	1/3	15	W4326G	125	W4326GD	185
8000	20	12	1/3	15	W4328G	125	W4328GD	185
10000	20	15	1/2	30	W43210G	190	W43210GD	240
15000	20	22.5	1/2	30	W43215G	190	W43215GD	240
20000	20	30	3/4	30	W43220G	200	W43220GD	250
25000	20	37.5	3/4	45	W43225J	285	W43225JD	350
30000	20	45	1	45	W43230J	285	W43230JD	350
40000	20	60	1 1/2	60	W43240J	335	W43240JD	405
50000	20	75	2	95	W43250J	385	W43250JD	460
2000	30	3	1/2	15	W4332J	180	W4332JD	250
4000	30	6	1/2	15	W4334J	180	W4334JD	250
6000	30	9	1/2	15	W4336J	180	W4336JD	250
8000	30	12	1/2	15	W4338J	180	W4338JD	250
10000	30	15	3/4	15	W43310J	185	W43310JD	250
15000	30	22.5	1	30	W43315J	230	W43315JD	300
20000	30	30	1	30	W43320J	230	W43320JD	300
25000	30	37.5	1	45	W43325J	285	W43325JD	350
30000	30	45	1 1/2	45	W43330J	290	W43330JD	355
40000	30	60	2	60	W43340J	340	W43340JD	410
50000	30	75	3	95	W43350J	395	W43350JD	470
2000	40	3	1	15	W4342J	190	W4342JD	270
4000	40	6	1	15	W4344J	190	W4344JD	270
6000	40	9	1	15	W4346J	190	W4346JD	270
8000	40	12	1	15	W4348J	190	W4348JD	270
10000	40	15	1	15	W43410J	190	W43410JD	270
15000	40	22.5	1 1/2	30	W43415J	240	W43415JD	310
20000	40	30	1 1/2	30	W43420J	240	W43420JD	310
25000	40	37.5	1 1/2	45	W43425J	290	W43425JD	355
30000	40	45	2	45	W43430J	295	W43430JD	360
40000	40	60	2	60	W43440J	240	W43440JD	410
50000	40	75	3	95	W43450J	395	W43450JD	470
2000	50	3	2	15	W4352J	195	W4352JD	275
4000	50	6	2	15	W4354J	195	W4354JD	275
6000	50	9	2	15	W4356J	195	W4356JD	275
8000	50	12	2	15	W4358J	195	W4358JD	275
10000	50	15	2	15	W43510J	195	W43510JD	275
15000	50	22.5	2	30	W43515J	245	W43515JD	320
20000	50	30	3	30	W43520J	255	W43520JD	330
25000	50	37.5	3	45	W43525J	305	W43525JD	385
30000	50	45	3	45	W43530J	305	W43530JD	385
40000	50	60	5	60	W43540J	370	W43540JD	500
50000	50	75	5	95	W43550J	430	W43550JD	500

- Notes: 1) EDR = Square Feet of Equivalent Direct Radiation
 2) Capacity of Steam (lbs/hr) = EDR x 0.25
 3) 2,000 EDR will produce 500 lbs/hr of condensate
 3) 500 lbs/hr = 1 GPM

ELECTRIC PUMPS

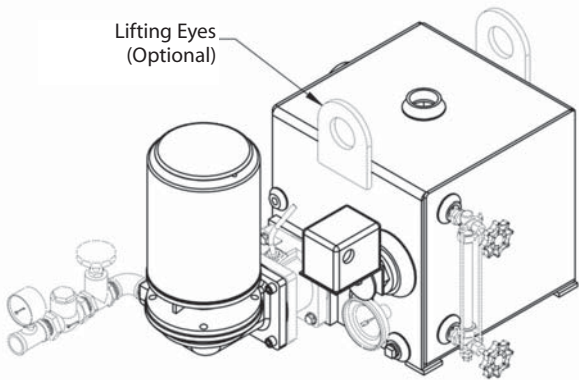
W4100 & W4300

Electric Pump

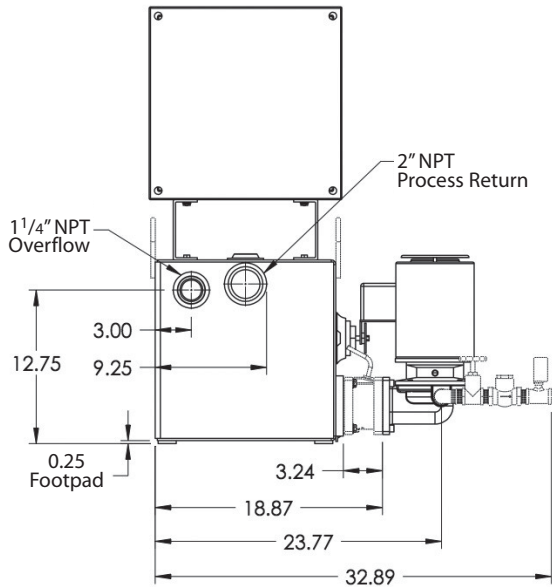
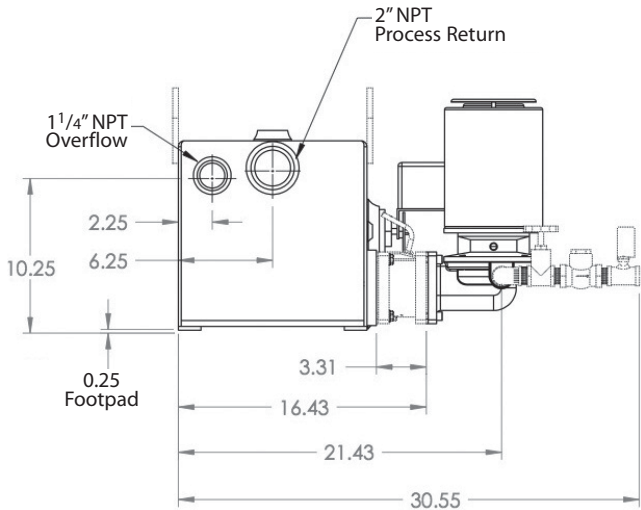
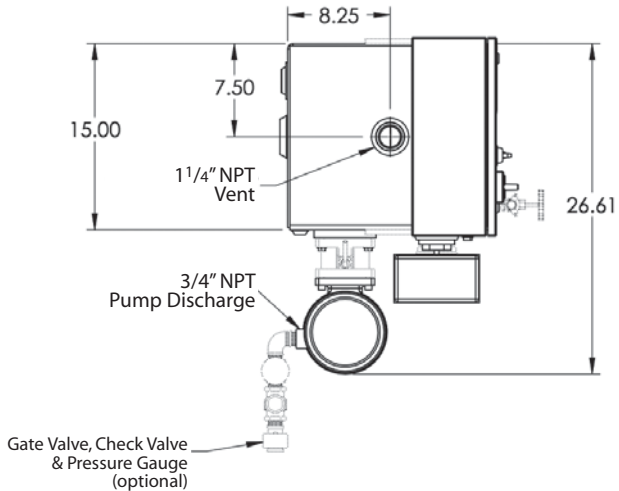
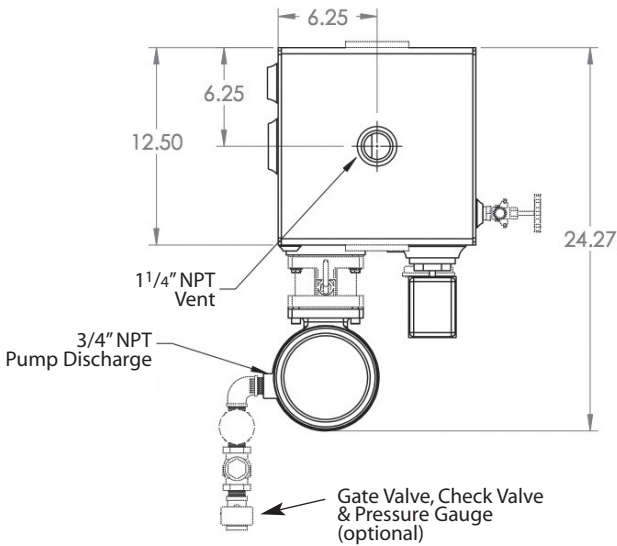
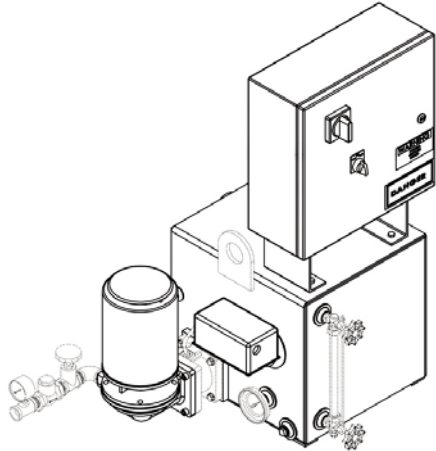
Condensate Return Pumps

ELECTRIC PUMPS

G SIMPLEX • 8 Gallon Receiver
4100 • Steel Receiver
4300 • Stainless Steel Receiver



G SIMPLEX • 15 Gallon Receiver
4100 • Steel Receiver
4300 • Stainless Steel Receiver

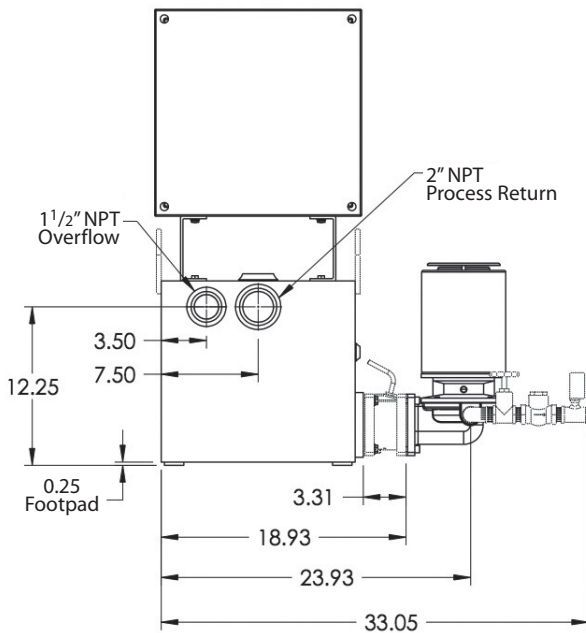
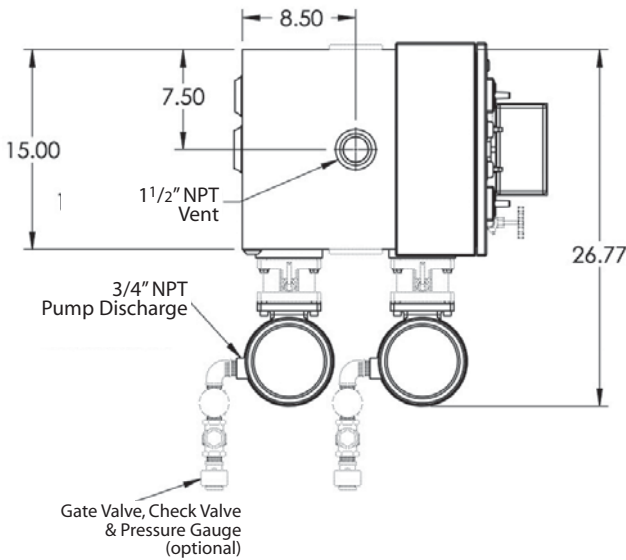
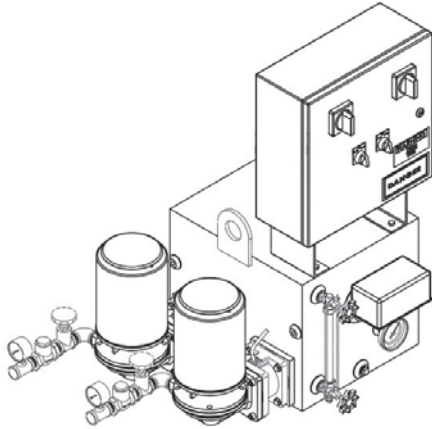


Condensate Return Pumps

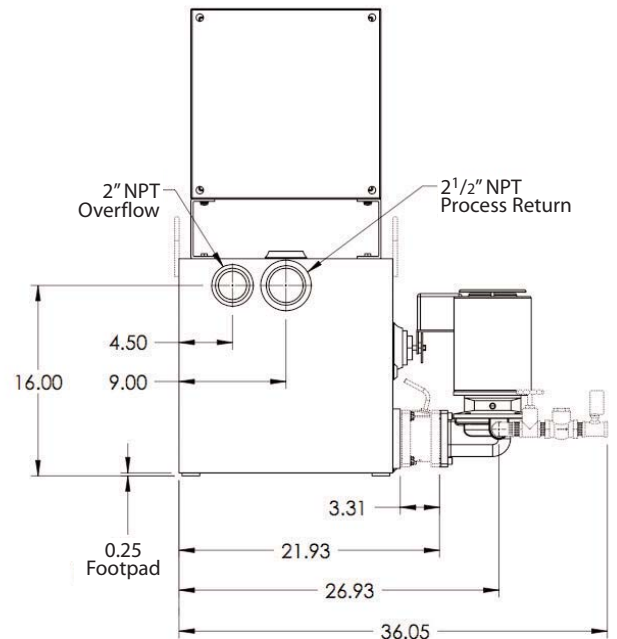
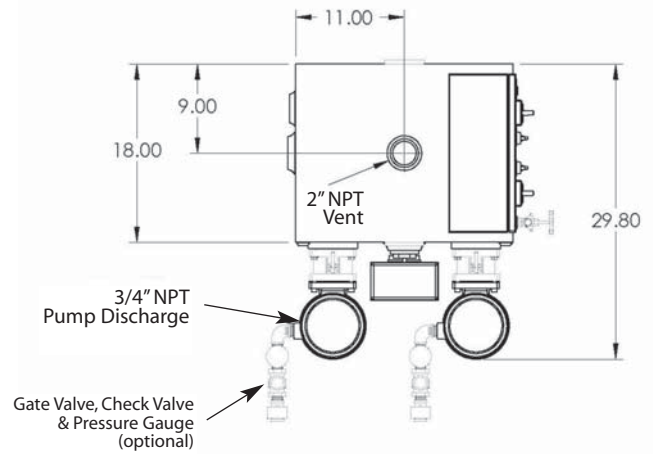
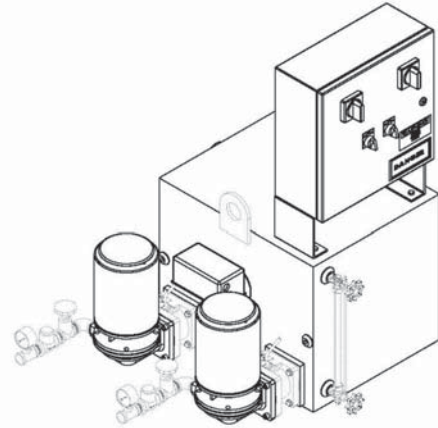
W4100 & W4300

Electric Pump

- G** DUPLEX • 15 Gallon Receiver
- 4100** • Steel Receiver
- 4300** • Stainless Steel Receiver



- G** DUPLEX • 30 Gallon Receiver
- 4100** • Steel Receiver
- 4300** • Stainless Steel Receiver



ELECTRIC PUMPS

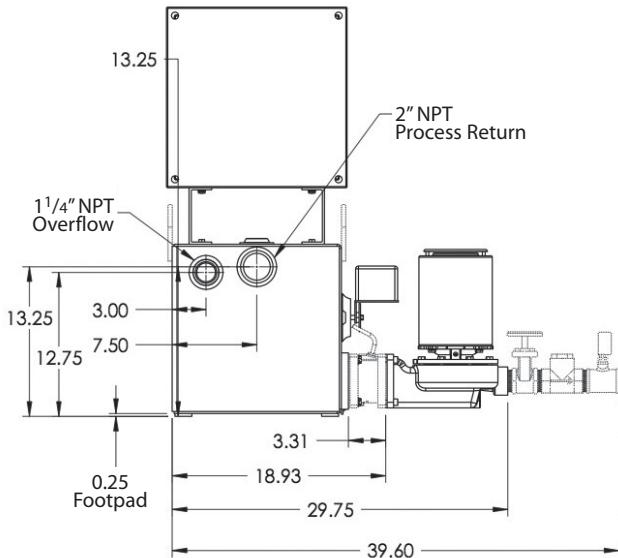
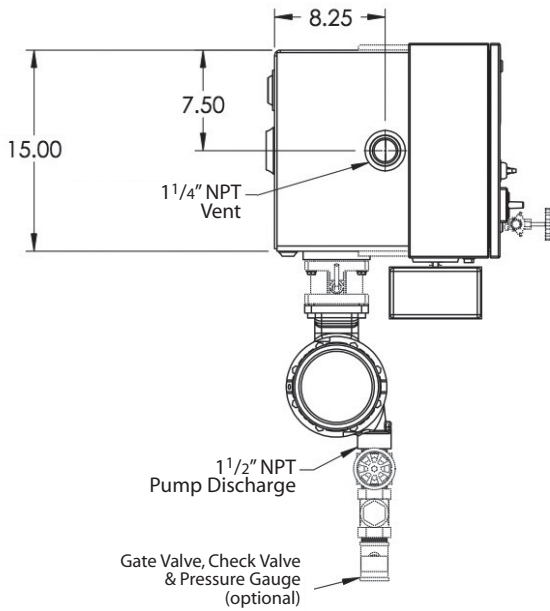
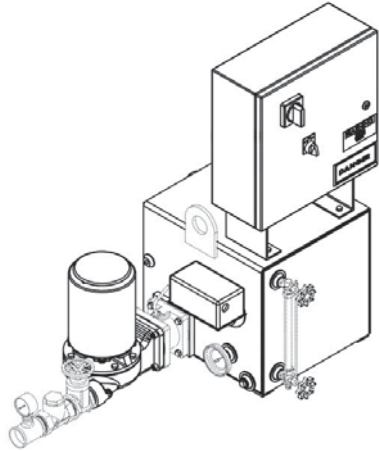
Condensate Return Pumps

W4100 & W4300

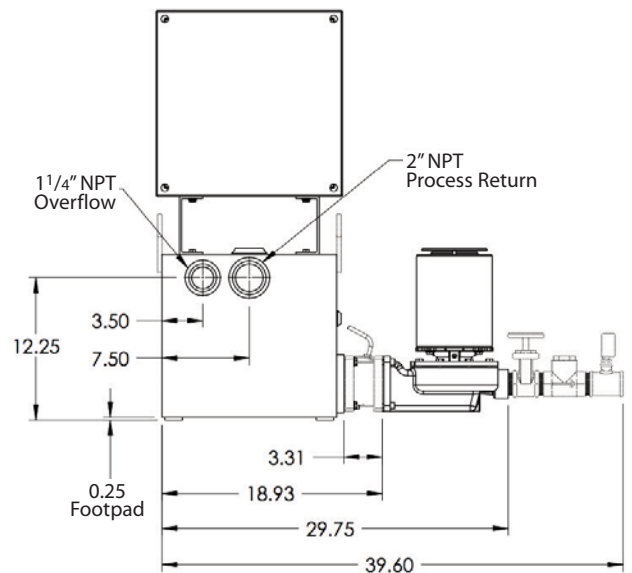
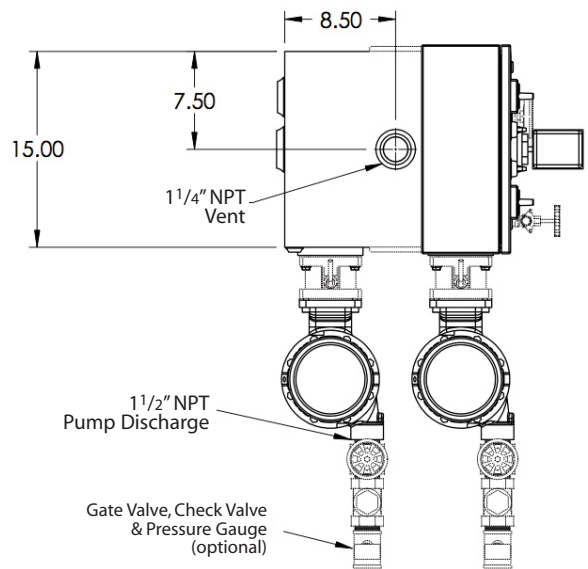
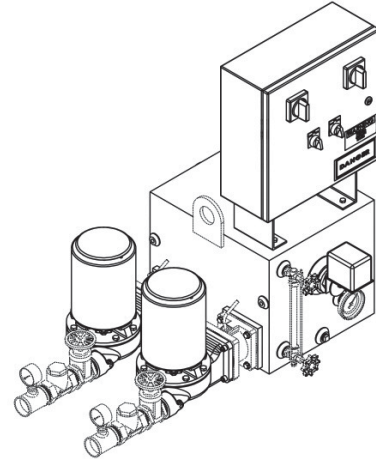
Electric Pump

ELECTRIC PUMPS

- J SIMPLEX** • 15 Gallon Receiver
- 4100** • Steel Receiver
- 4300** • Stainless Steel Receiver



- J DUPLEX** • 15 Gallon Receiver
- 4100** • Steel Receiver
- 4300** • Stainless Steel Receiver

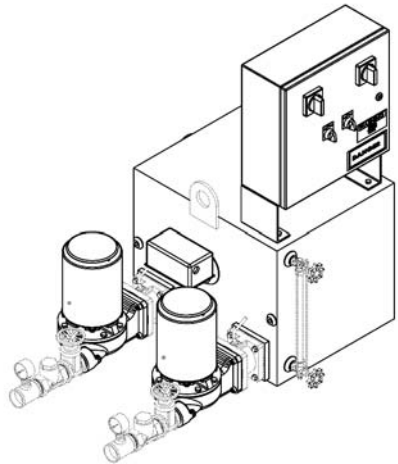


W4100 & W4300

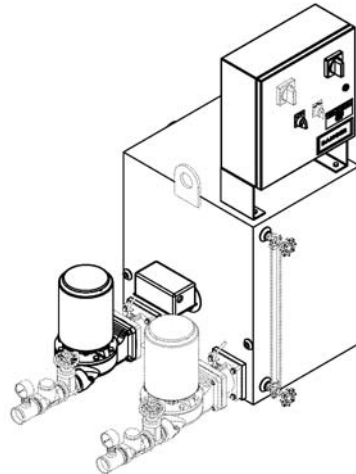
Electric Pump

Condensate Return Pumps

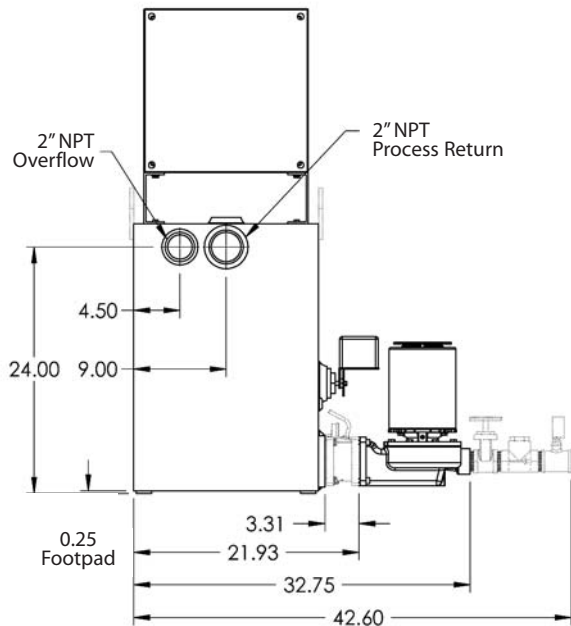
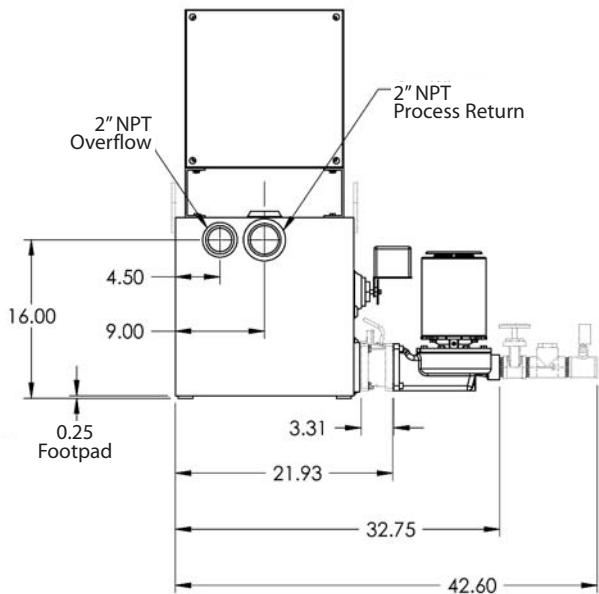
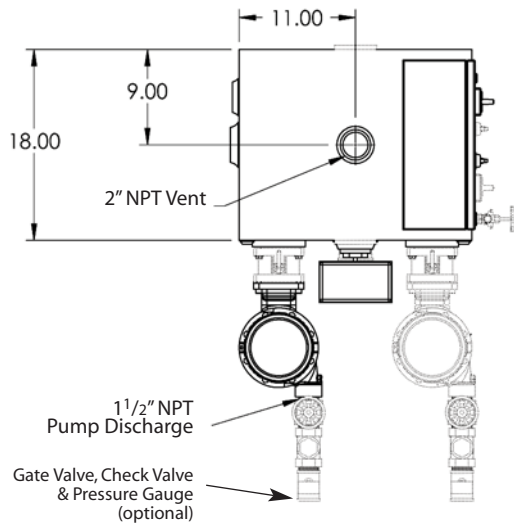
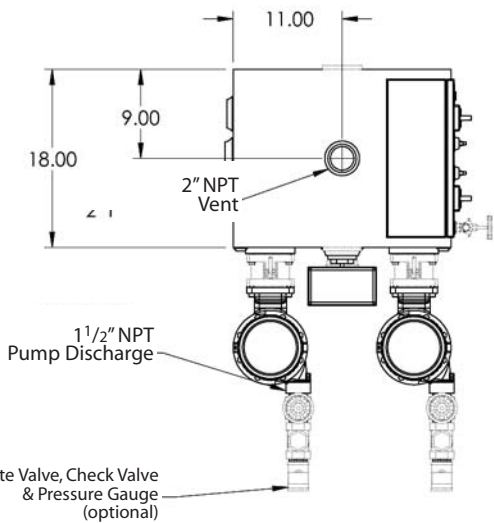
J **SIMPLEX & DUPLEX** • 30 Gallon Receiver
4100 • Steel Receiver
4300 • Stainless Steel Receiver



J **SIMPLEX & DUPLEX** • 45 Gallon Receiver
4100 • Steel Receiver
4300 • Stainless Steel Receiver

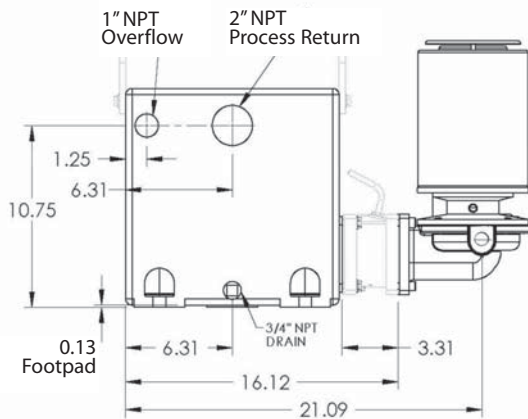
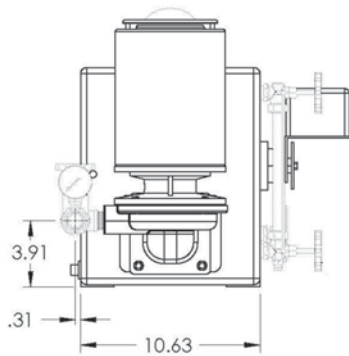
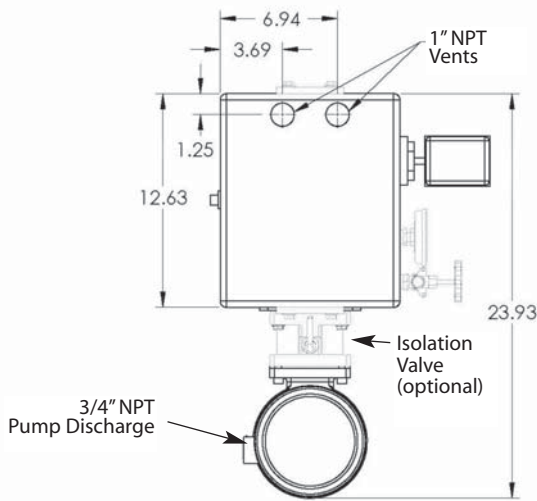
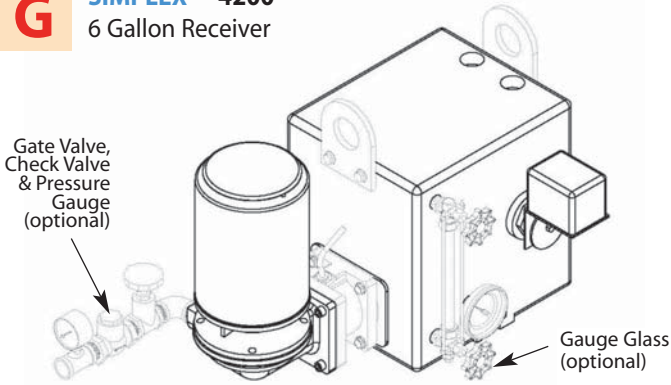


ELECTRIC PUMPS

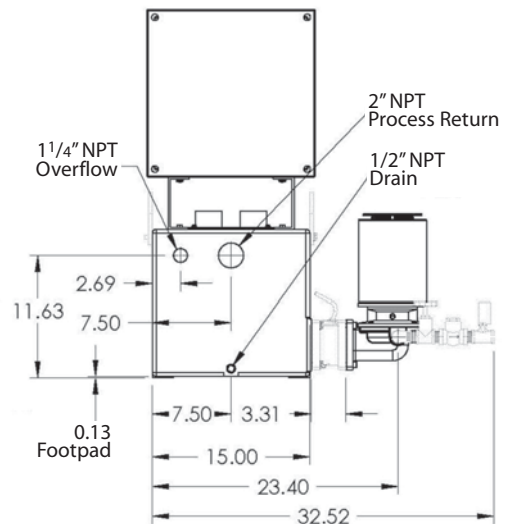
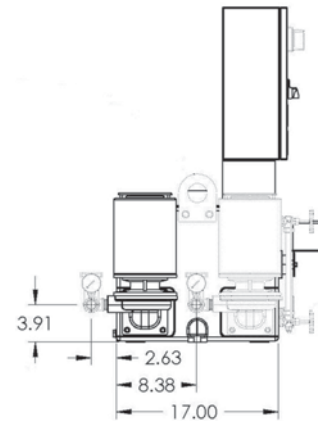
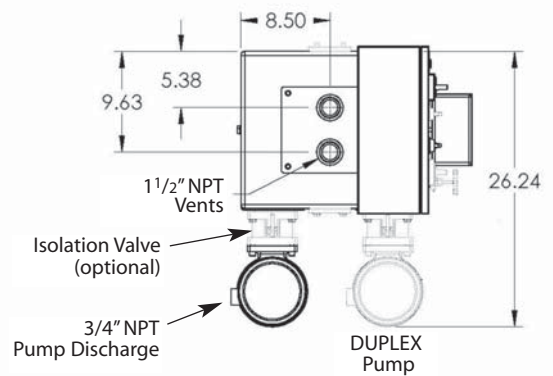
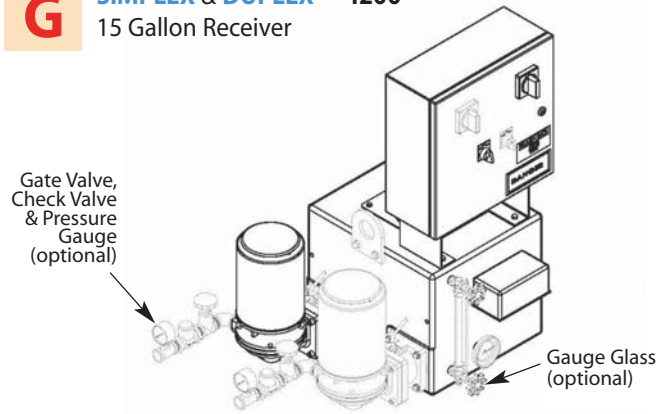


ELECTRIC PUMPS

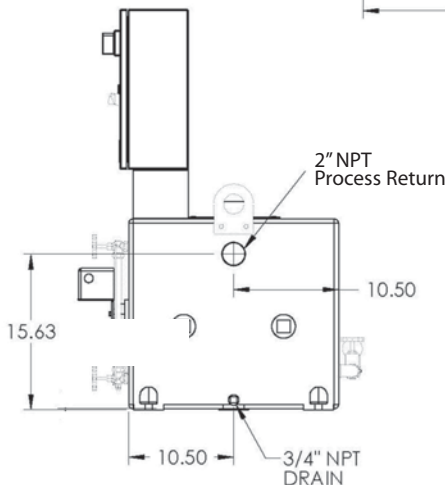
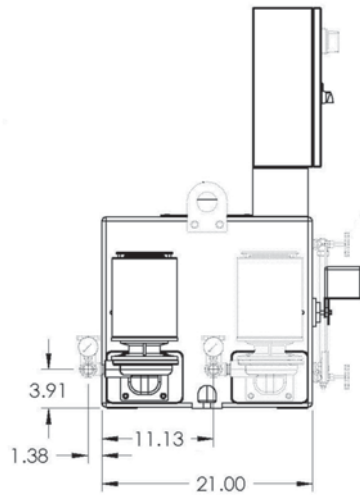
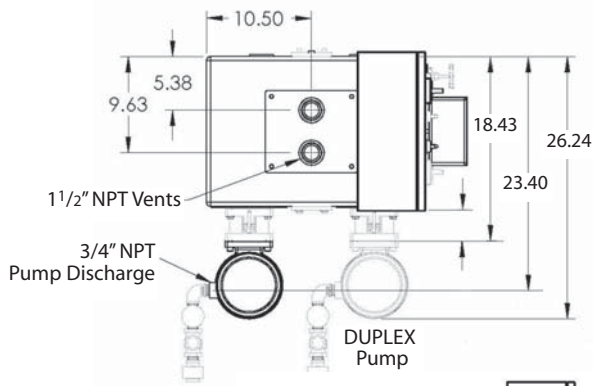
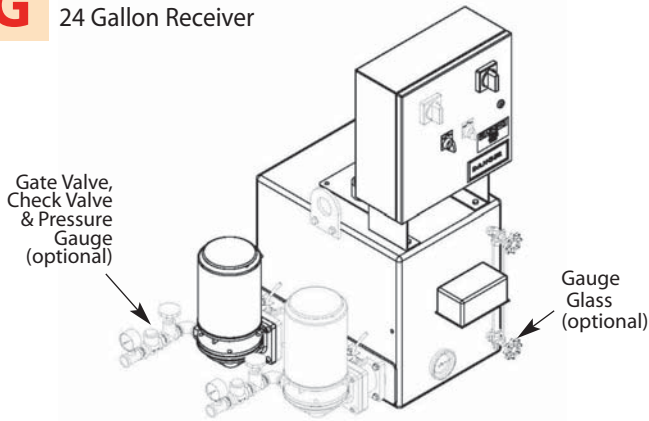
G **SIMPLEX • 4200**
6 Gallon Receiver



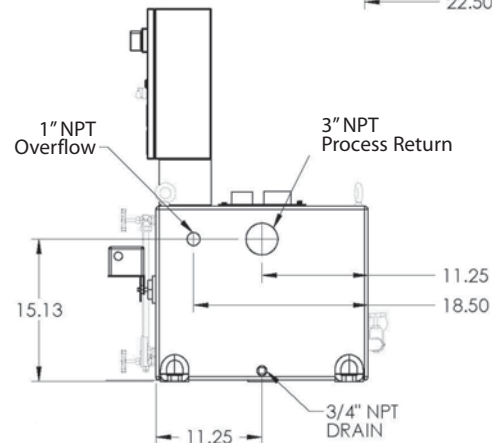
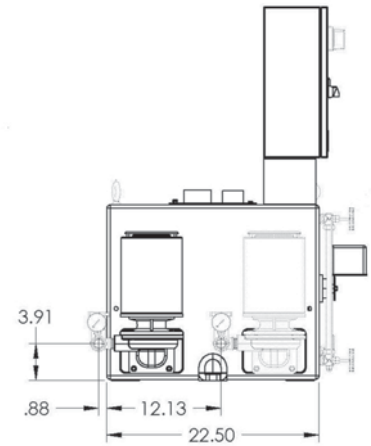
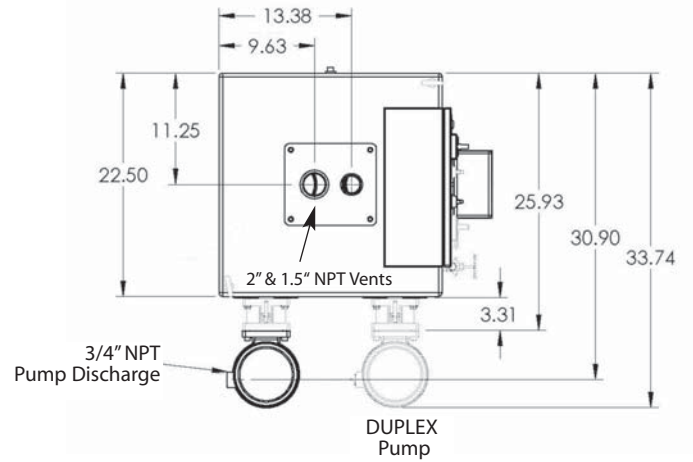
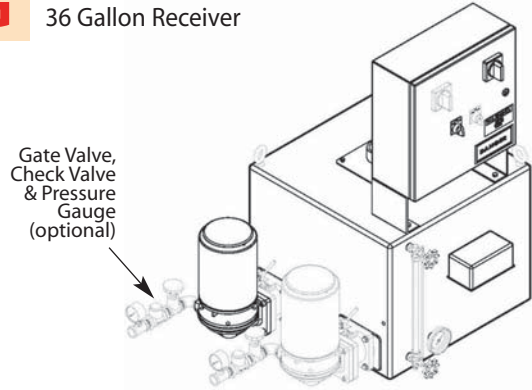
G **SIMPLEX & DUPLEX • 4200**
15 Gallon Receiver



G SIMPLEX & DUPLEX • 4200
24 Gallon Receiver



G SIMPLEX & DUPLEX • 4200
36 Gallon Receiver



Condensate Return Pumps

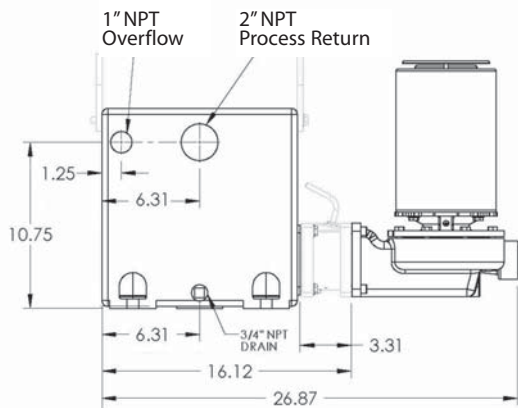
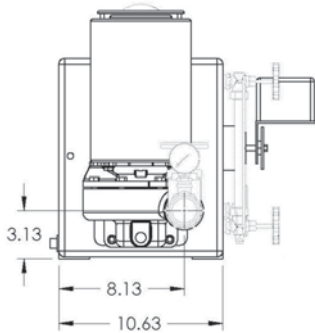
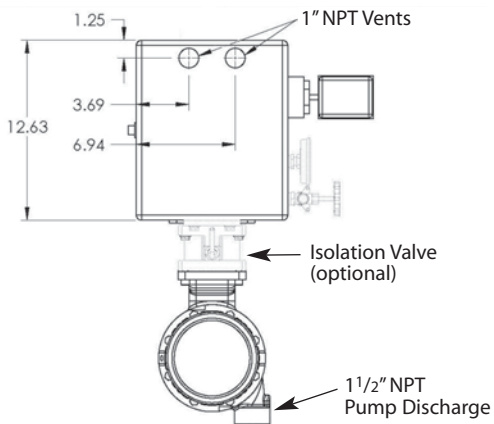
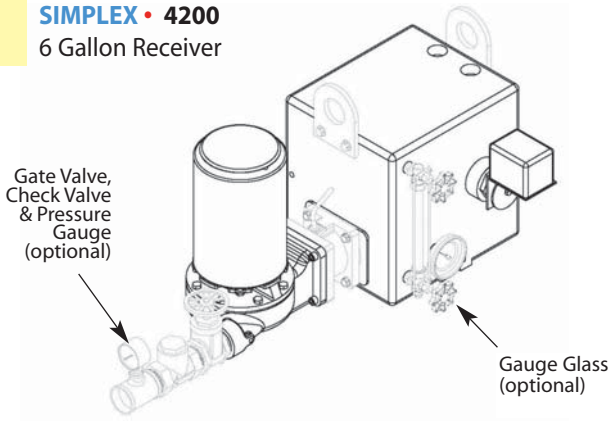
Cast Iron Receiver

W4200

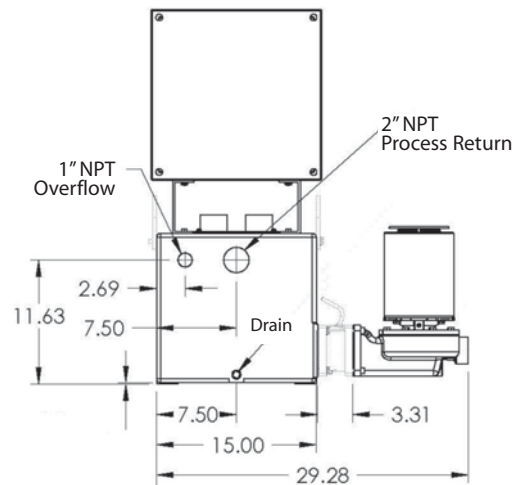
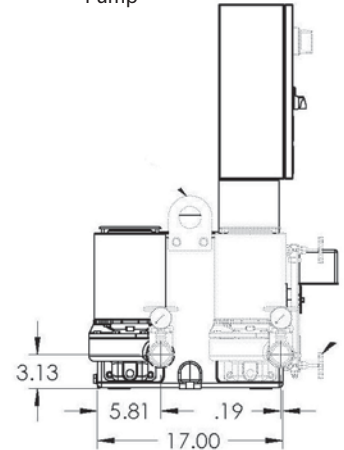
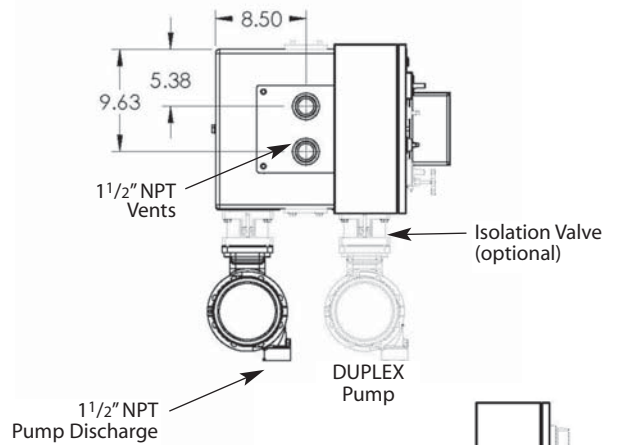
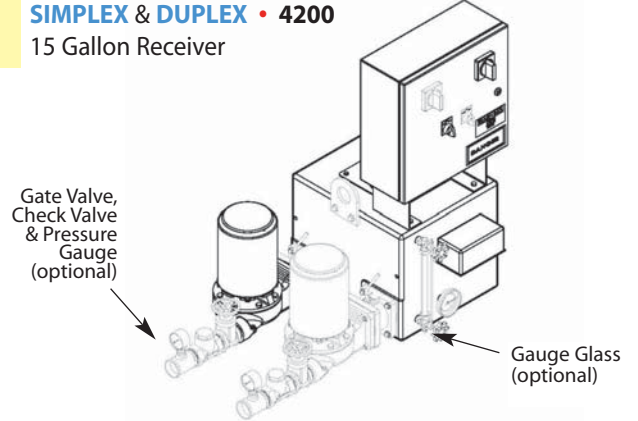
Electric Pump

ELECTRIC PUMPS

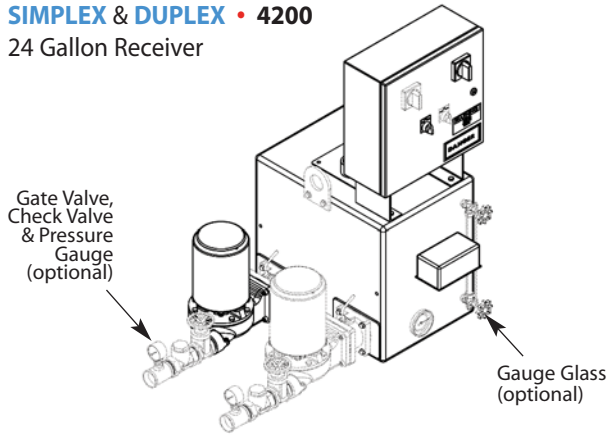
J SIMPLEX • 4200
6 Gallon Receiver



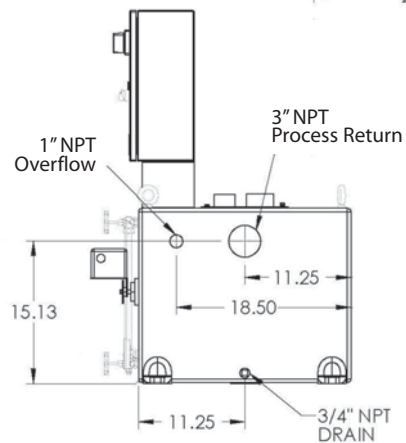
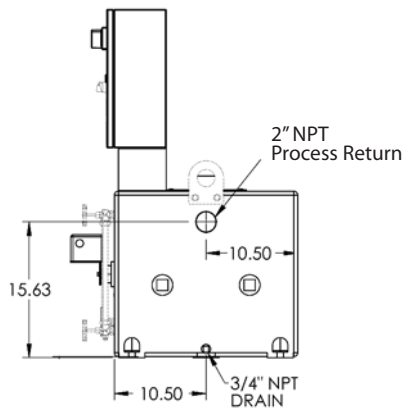
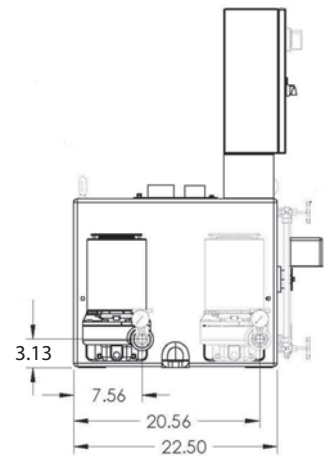
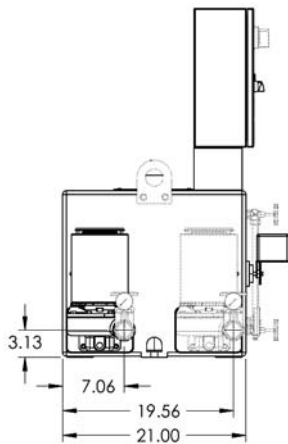
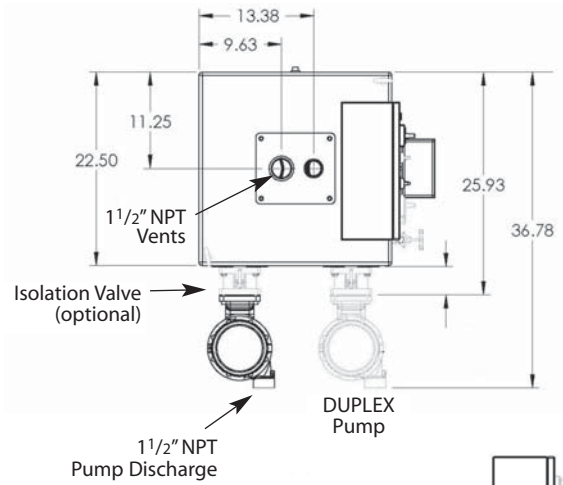
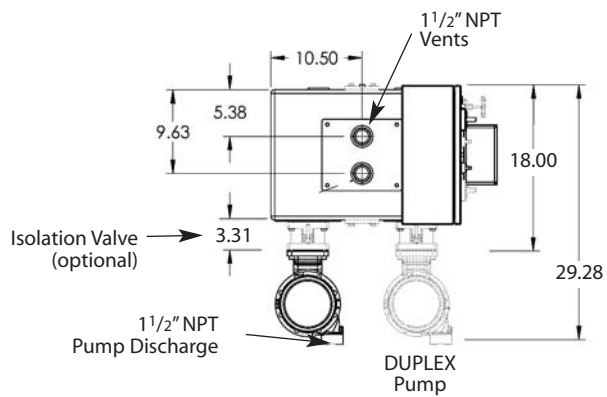
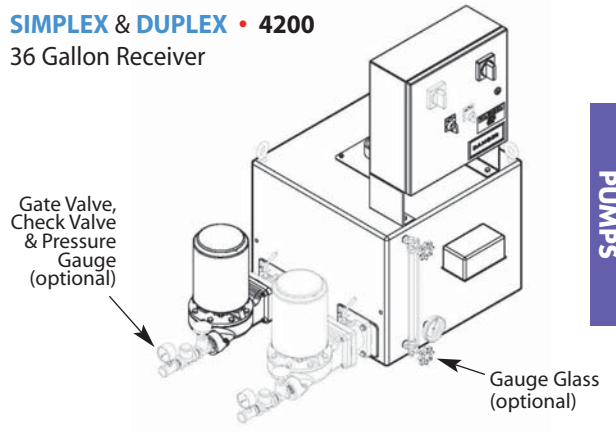
J SIMPLEX & DUPLEX • 4200
15 Gallon Receiver



J SIMPLEX & DUPLEX • 4200
24 Gallon Receiver



J SIMPLEX & DUPLEX • 4200
36 Gallon Receiver



Boiler Feed Pumps

4100 • Steel Receiver
4300 • Stainless Steel Receiver

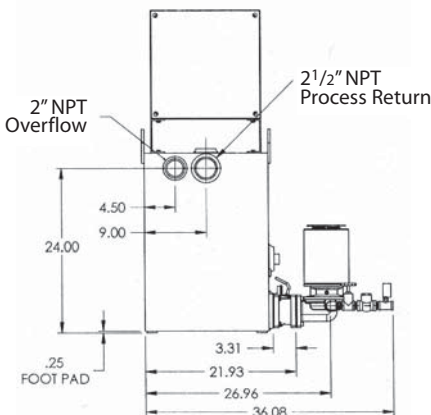
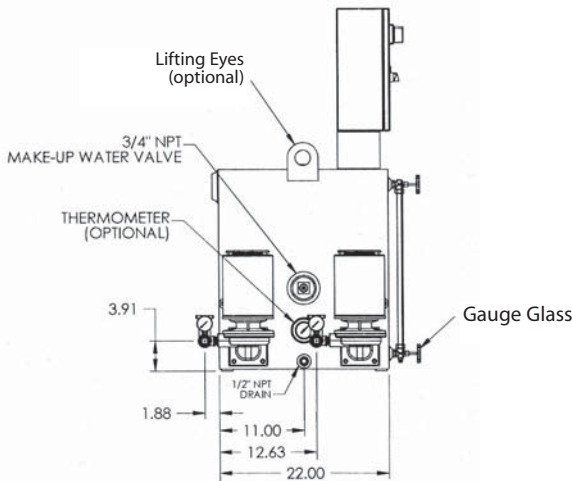
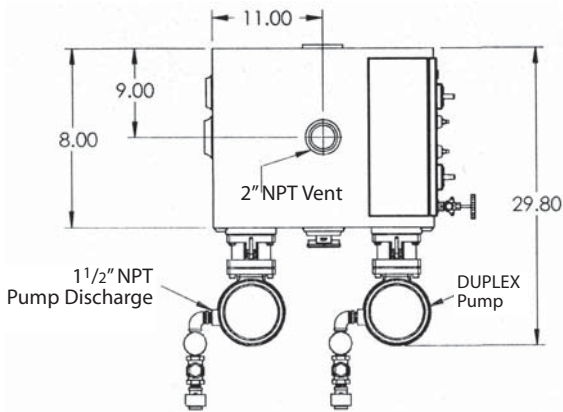
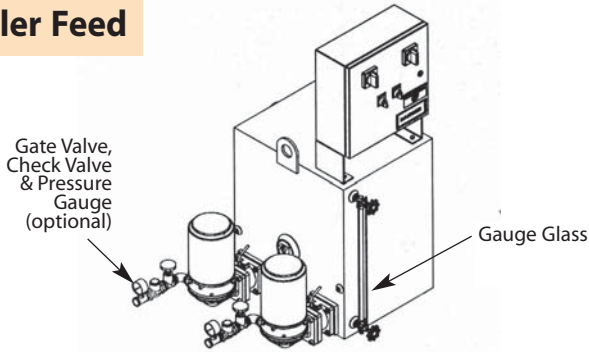
W4100/4300

Electric Pump

ELECTRIC PUMPS

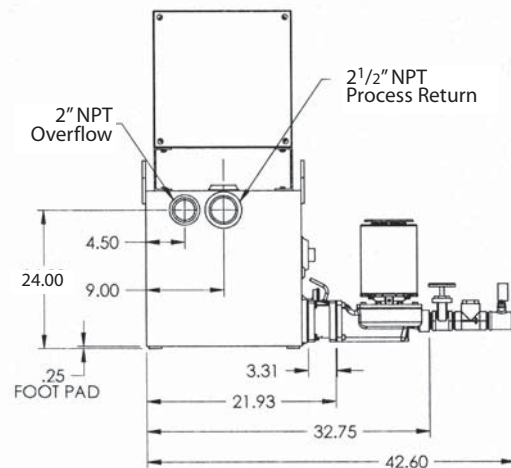
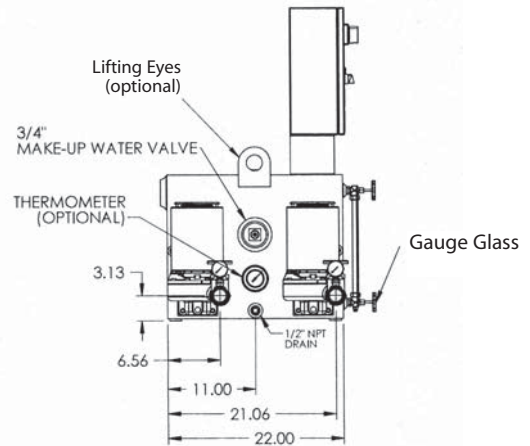
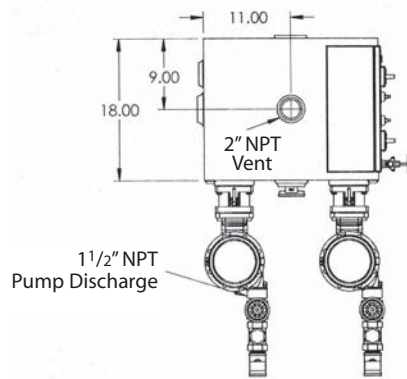
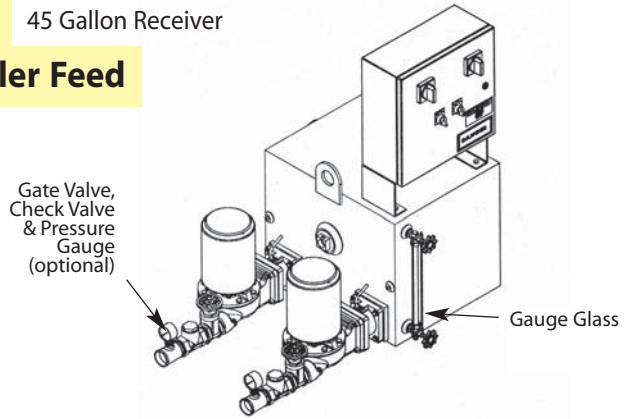
G SIMPLEX & DUPLEX • 4100/4300
45 Gallon Receiver

Boiler Feed



J SIMPLEX & DUPLEX • 4100/4300
45 Gallon Receiver

Boiler Feed



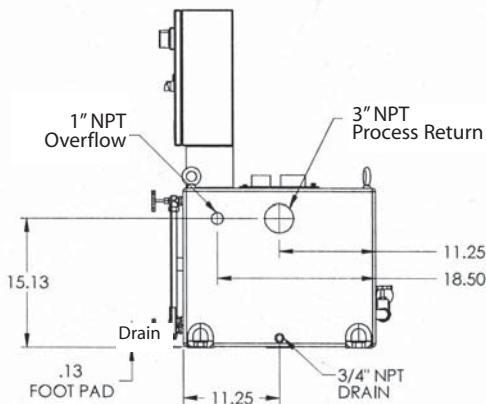
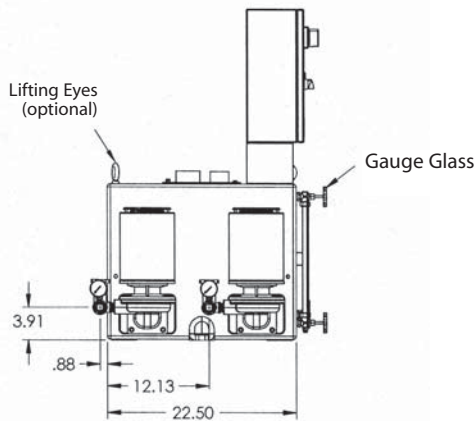
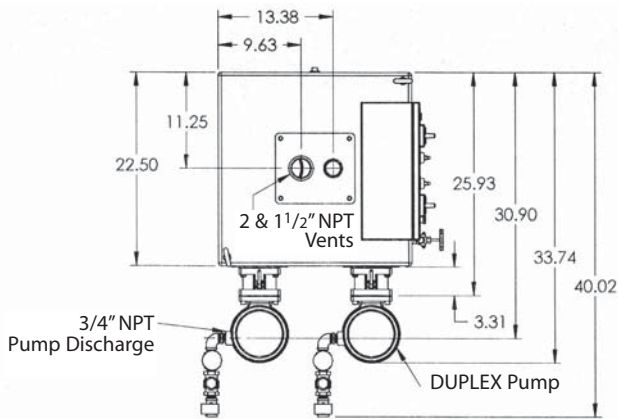
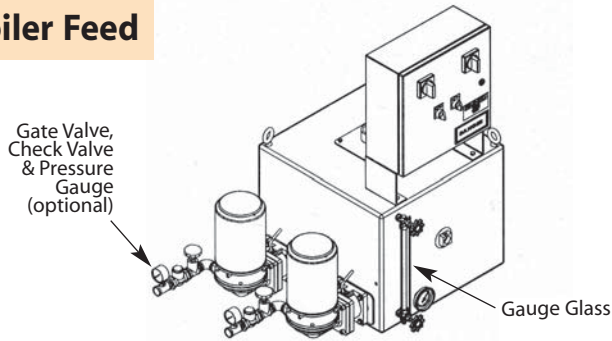
Boiler Feed Pumps

4100 • Steel Receiver
4300 • Stainless Steel Receiver

W4200
Electric Pump

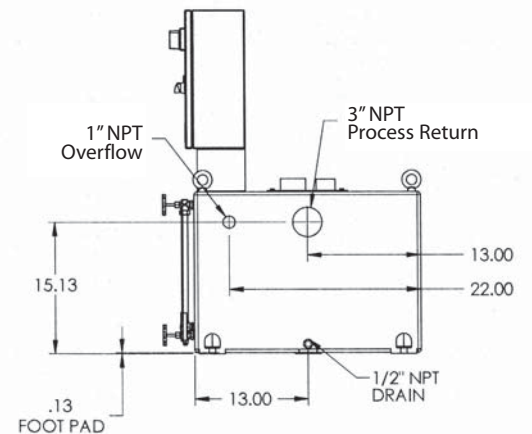
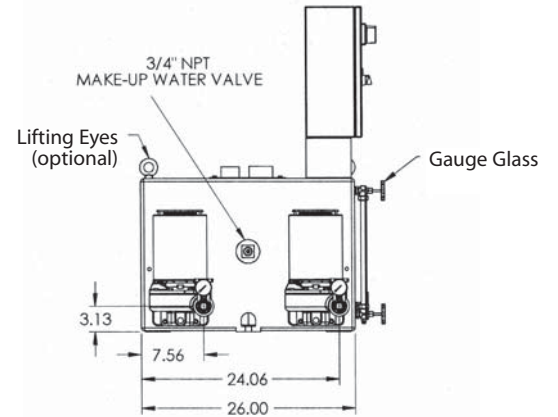
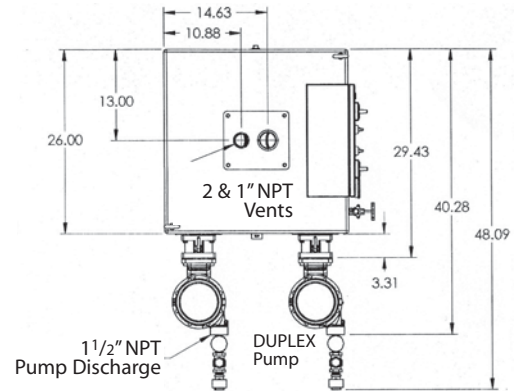
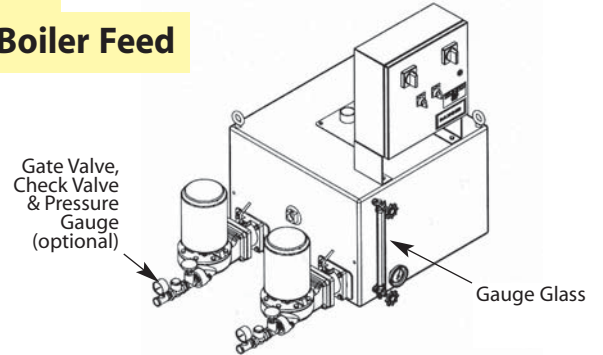
G SIMPLEX & DUPLEX • 4100/4300
36 Gallon Receiver

Boiler Feed



J SIMPLEX & DUPLEX • 4100/4300
50 Gallon Receiver

Boiler Feed



ELECTRIC
PUMPS