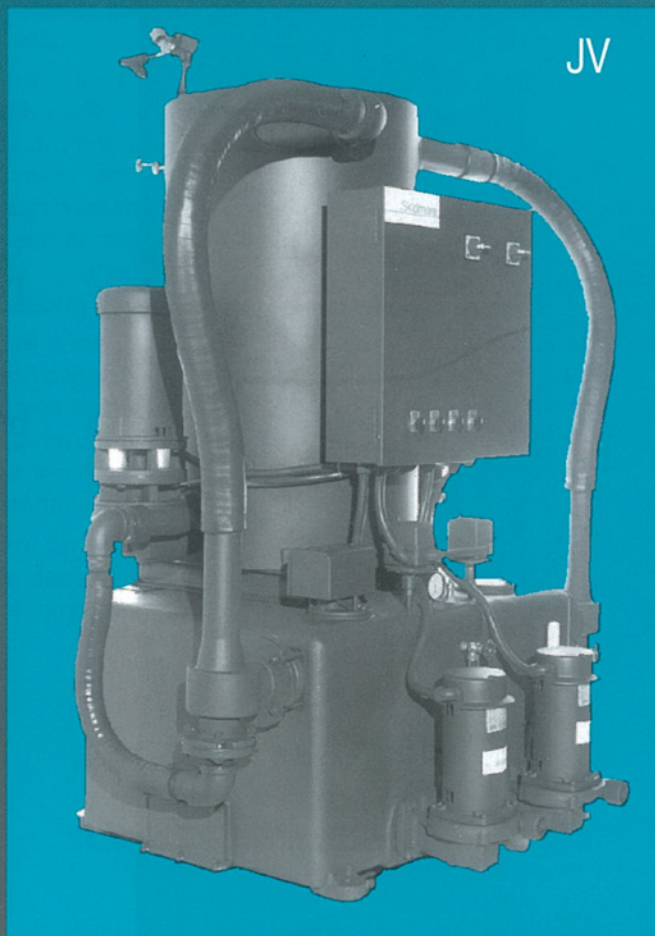


Skidmore®

Bulletin 8JIT
February, 2006

JV AND PD SERIES VACUUM CONDENSATE AND BOILER FEED PUMPS



Cast iron and steel receivers

Capacities from 2,500 to 150,000 sq. ft. EDR

Air capacities from 1 to 150 CFM

Standard receiver capacities from 29 to 1,000 gallons

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GENERAL INFORMATION

The Skidmore™ pumping systems described in this brochure are completely assembled, wired and tested before shipment. They are designed to provide maximum efficiency, reliability and easy maintenance in compact, space saving configurations.

Manufacturing is done in clean modern facilities by people who take pride in producing dependable products. Each unit is individually factory tested before shipment to assure that the product is ready for service when it is received. Testing includes verification of flow rate, pressure, amperage draw and cut-in and cut-out points of all components. You can specify Skidmore products with confidence knowing that you will receive the benefits that made the Skidmore name synonymous with quality and pride since 1921.

We invite you to compare the features and specifications of our condensate, boiler-feed and makeup pumps with other units. We're sure Skidmore will be your choice.

DO YOU NEED TECHNICAL ASSISTANCE?

Your Skidmore representative has the expertise to assist you in selecting the pumping system most suitable for your application. He is backed by a team of engineers and application specialists who can develop the most efficient, energy saving pumping system for your specific requirements.

SKIDMORE CUSTOM ENGINEERING

If your installation poses special problems, Skidmore's custom engineering and building capabilities are available without charge as part of our total service.

TECHNICAL MANUALS

Several technical manuals are available free-of-charge from your Skidmore representative, or they may be obtained by writing directly to the Skidmore sales headquarters in Benton Harbor, Michigan.

Bulletin 23T-1 contains piping and wiring diagrams, tables, formulae, and terminology.

Bulletin 23T-3 is a selection guide for boiler feed and condensate pumps. It contains the basic information required to understand, select and specify pump systems. Numerous diagrams show a variety of typical installations and piping arrangements.

Skidmore JV and PD Series Vacuum Pumps

Skidmore JV Jet Vacuum and PD Positive Displacement Vacuum Series pumping systems are available in simplex, semi-duplex or duplex configurations from 2,500 to 150,000 square feet EDR.

Simplex units – Consist of one (1) vacuum pump and one (1) return pump.

Semi-duplex units – Consist of one (1) vacuum pump and two (2) return pumps.

Duplex units – Consist of two (2) vacuum pumps and two (2) return pumps.

JVC and JVBF SERIES VACUUM UNITS

JVC Series units are jet vacuum condensate return type. JVBF Series units are for boiler feed and makeup water installations. They have capacities from 6 to 72 CFM @ 5½" hg, and are supplied with 3,500 rpm, open drip proof (ODP) motors ranging from ½ to 10 hp.

PDVC and PDBF SERIES VACUUM UNITS

PDVC Series units are positive displacement vacuum condensate return type; PDBF Series units are for boiler feed and makeup water installations. They have large capacities from 20 to 150 CFM @ 5½", 10", 20" hg. and are supplied with totally enclosed fan cooled (TEFC) motors ranging from 2 to 10 hp.

Skidmore recommends vacuum heating pumps have air capacities averaging 1 CFM per 1,000 sq. ft. EDR. This ratio of air capacity to connected load may be adjusted where desirable. The 1 CFM to 1,000 sq. ft. ratio is recommended in the following instances.

- For existing buildings with old piping, where it is impractical to make the piping as tight as one a new job.
- For industrial and institutional buildings, or groups of buildings, which cover large areas with long return piping. Large air capacity provides quick and positive removal of air and condensate from all distant areas, insuring quicker warm-up, better heat and lower fuel costs.
- For zoned systems where on and off control valves are used. The fast removal of air assures more rapid and thorough distribution of steam during the "on" cycles, and, by operating the pump at a sufficiently high vacuum level, serves to counteract the induced vacuum setup during the "off" cycles. The system will be continuously drained, thus eliminating spotty heating and water hammer.
- For zoned systems using modulating control. A large air capacity pump, operating at a suitable vacuum, gives better distribution of the reduced quantities of steam admitted to the system during the greater part of the heating season when the maximum quantity of steam is not required.
- For any building for which a very liberal factor of safety is desired – a new building of today is an old building of tomorrow.

CONDENSATE PUMPING SYSTEMS

Condensate Pumps

Condensate pumps are used in low pressure heating systems to collect and quickly return condensate to the boiler feed unit. Their pumping action is controlled by the water level in the receiver. Note: Condensate pumps do not supply boiler system makeup water.

Operation-Condensate Return Units

Condensate is returned to the vacuum receiver through the RETURN inlet.

When the receiver water level reaches a set point, the high level float switch starts the return pump(s), pumping the water from the receiver to the boiler feed system.

When vacuum in the lower receiver reaches a low preset level, the vacuum switch(es) actuates the required motor controls, to turn on the vacuum pump(s) which circulates water in the seal water tank.

If water in the upper water tank reaches a low preset level, a float switch operated makeup valve is activated to replenish the water supply. A temperature sensitive switch, wired in parallel to the makeup circuit, also permits the addition of cooling water into the water supply.

Advantages of the Vacuum Return/System

1. Fast, positive air removal, Air impairs the flow of steam and acts as an insulator, preventing efficient heat emission.
2. Faster return of condensate to the boiler, minimizing heat loss.
3. Vacuum provides for freer flow of steam through the system. In most cases piping can be reduced at least one size over that required for comparable gravity return systems.

4. Boilers can be operated at lower pressures, resulting in lower operating costs.
5. Better control of systems where zoned temperature is required.
6. Vacuum pumps are a must for systems with long runs and central power plants. (See figure 2).

FIGURE 1

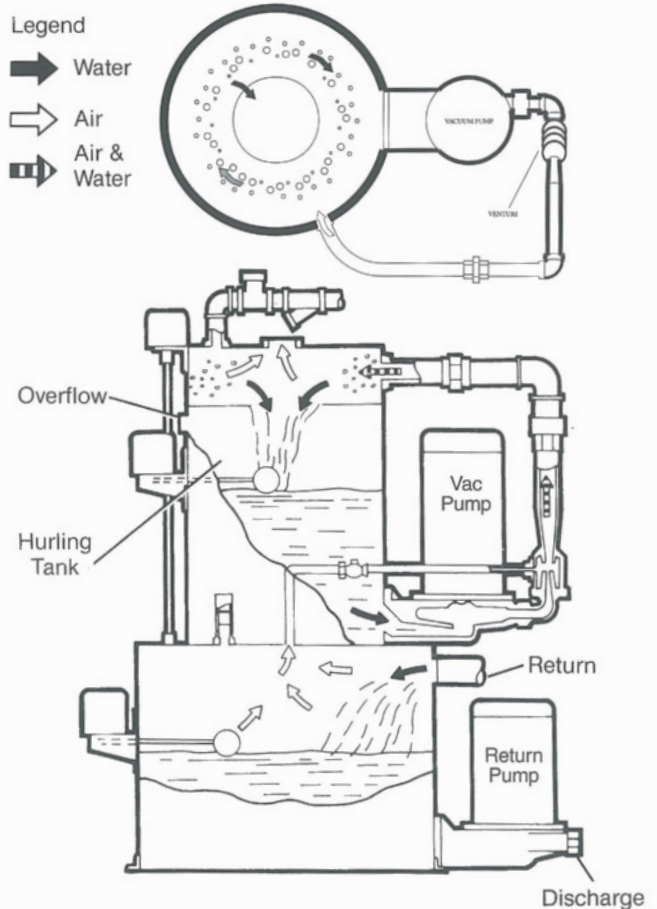
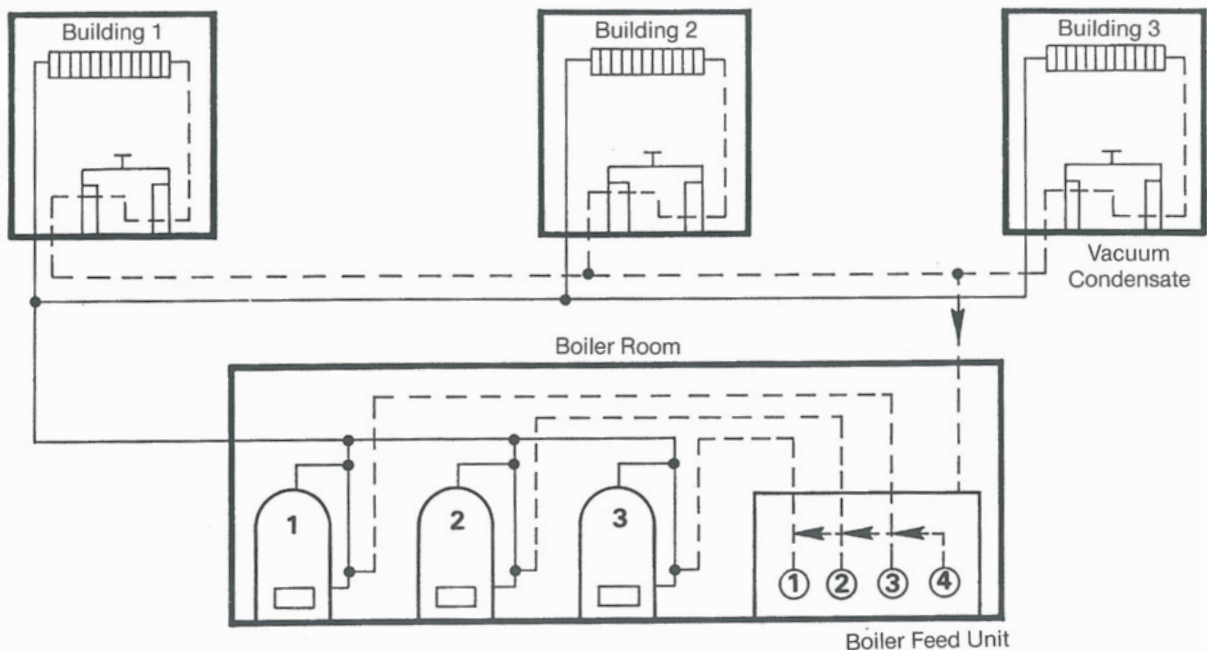


FIGURE 2



BOILER FEED PUMPING SYSTEMS

Boiler Feed or Makeup Pumps

Boiler feed pumps are used to pump and precisely control the condensate and makeup water required by the boiler(s) in low pressure steam applications. Pumping action is controlled by the fluid level in the boiler.

Operation – Boiler Feed or Makeup Pumps

Condensate is returned to the vacuum receiver through return inlet.

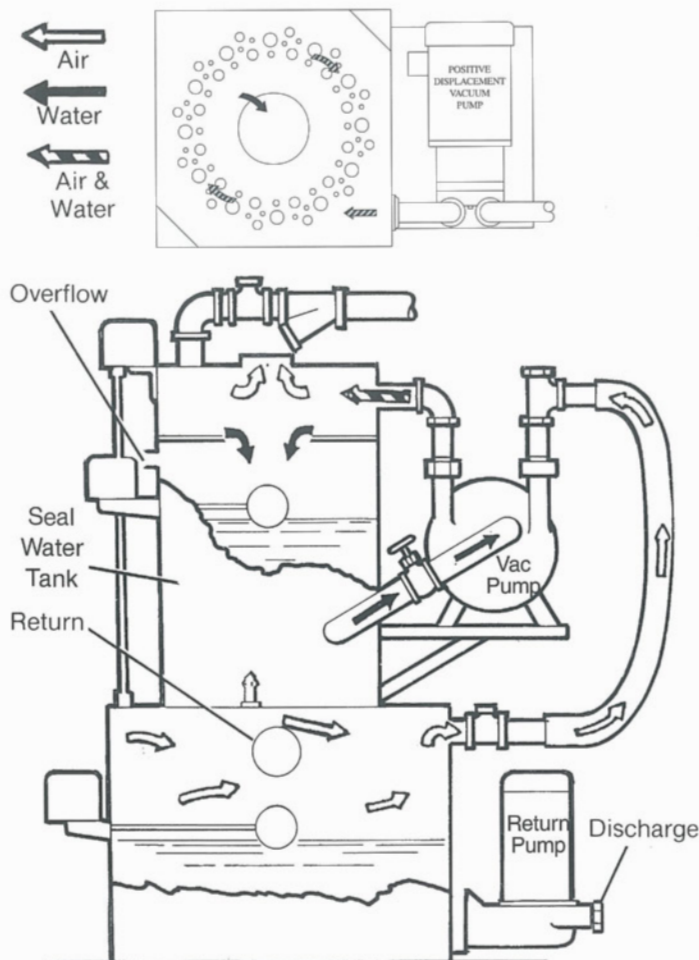
When the water level switch in boiler(s) reaches set low level, receiver return pump is turned on, pumping water from receiver to boiler(s).

On duplex or semi-duplex units, the water level switch may control an electric alternator in motor control circuit.

When water level in receiver reaches set low level, the reverse acting float switch in receiver turns on solenoid valve, allowing water to feed from hurling tank to boiler feed receiver.

When vacuum in the lower receiver reaches a low preset level, the vacuum switch(es) actuates the required motor controls, to turn on the vacuum pump(s) which circulates water in the upper water tank.

FIGURE 3



If water in the upper water tank reaches a low preset level, a float switch operated makeup valve is activated to replenish the water supply. A temperature sensitive switch, wired in parallel to the makeup circuit, also permits the addition of cooling water into the water supply.

Receivers and Hurling/Seal Water Tanks

Cast iron, receivers are available from 45 to 840 gallon standard capacities.

Welded, heavy duty, rust resistant, copper bearing steel receivers are available in two configurations: rectangular, or cylindrical. Capacities of standard rectangular steel receivers range from 29 to 1,000 gallons; cylindrical versions from 49 to 1,000 gallons.

Consult with your local representative for custom engineered receivers and rust resistant linings.

Upper water tanks are constructed of 3/16" thick steel – four (4) mounting brackets are drilled for 5/8" diameter bolts.



Skidmore Centrifugal Pumps

Skidmore vacuum and return pumps are centrifugal type, close-coupled bronze fitted with dripless mechanical shaft seals. They are flanged directly to the receiver to provide compact, efficient design. The motor and rotating pump parts can be removed from the system without disturbing suction or discharge piping.

Return pumps are offered in pressure ranges of 10-60 psi. Sizes are available to handle 3 to 120 gpm @ 3500 rpm.

BOILER FEED OR MAKEUP WATER PUMPING SYSTEMS

Close-coupled pump motors are equipped with heavy-duty ball bearings and special stainless steel shafts. Fractional horsepower single phase motors have built-in thermal protection. Single phase 115/230 volt 60 Hz, or three phase 200 or 230/460 volt, 60 Hz open drip proof motors are standard. TEFC and explosion proof motors are optional.

Vacuum pump motors are from 1/2 through 10 hp. Return pump motors are from 1/2 through 10 hp.

Condensate Pumps – Standard Equipment

- Simplex pumps are equipped with connections for addition of a second pump
- Vacuum relief valve – set for 9" hg
- Gauge – compound pressure/vacuum type – 2½" face
- Gauge glass – with shut-off valves
- Thermometer – 5½", 40° to 220°F
- Return pump controls –
Float switch (standard on simplex units)
Mechanical alternator (standard on semi-duplex and duplex units)
- Venturi – with flexible hose for connection to vacuum check valve (not included on PDVC and PDBF units).

Optional Equipment

- TEFC and explosion proof electric motors
- Unitized power control center
- Special receivers, sizes, and coatings

Boiler Feed and Makeup Water Pumps – Standard Equipment

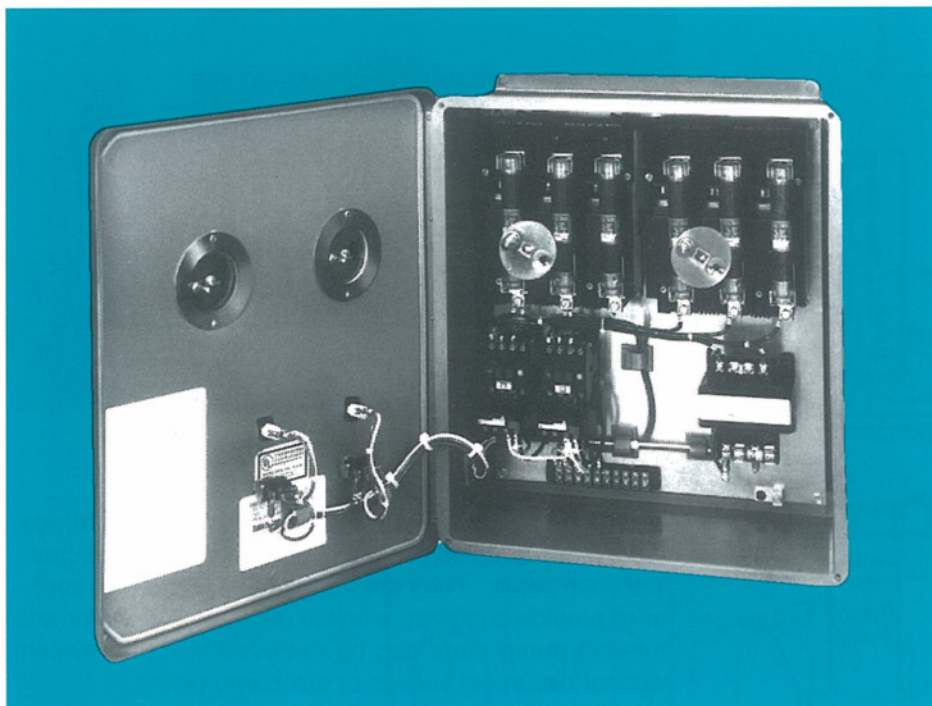
- Simplex pumps are equipped with connections for addition of a second pump
- Float switch – reverse acting type operates solenoid makeup valve when water reaches low level
- Makeup valve – solenoid type with inlet strainer
- Temperature limit switch – preset at 160°F. The switch is connected in parallel with the makeup valve which adds cooling water when the temperature of hurling water reaches high temperature limit.
- Venturi – with flexible hose for connection to vacuum check valve (not included on PDVC and PDBF units).
- Vacuum switch – three position lever operated "float only", "vacuum", and "continuous"

Motor switch "test-off-automatic" – one/motor, or "lead-off-lag" switch(es)

Pilot light – one/motor

Control circuit transformer – (required on 3 phase applications only)

Electric alternator

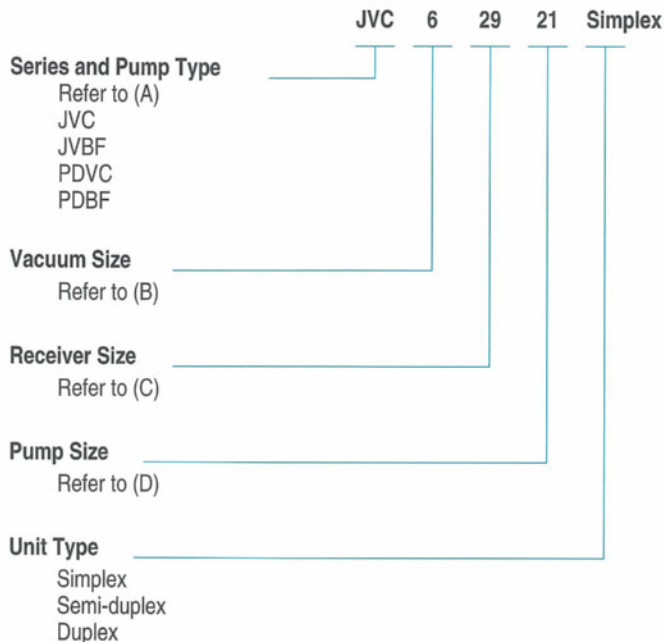


CONTROL PANELS

Skidmore will provide optional control panels tailored to your specific application requirements. Please refer to Bulletin ACC 700 for additional information, or consult with your local Skidmore representative who will be pleased to assist with your control panel selection. UL approved and labeled panels are available by request on 700 Series control panels.

ORDERING INFORMATION

TYPICAL CATALOG CODE DESIGNATION



VACUUM PRODUCER – JVC - JVBF (A)			
TOP (AIR) RECEIVER SIZE (GAL)	(B) SIZE NO.	CFM @ 5½" HG	HP 3500 RPM
30	6	6	1/2 ODP
30	7	7	3/4 ODP
30	9	9	1 ODP
30	12	12	1½ ODP
60	18	18	2 ODP
100	28	28	3 ODP
100	42	42	5 ODP
100	61	61	7½ ODP
100	72	72	10 ODP

VACUUM PRODUCER – PDVC - PDBF (A)					
TOP (AIR) RECEIVER SIZE (GAL)	(B) SIZE NO.	CFM @ 5½" HG	CFM @ 10" HG	CFM @ 15" HG	T.E.F.C. HP 3500 RPM
26	23	23	23	23	2 - 3450 rpm
26	36	36	36	36	3 - 3450 rpm
26	80	80	80	80	5 - 1750 rpm
26	100	100	100	100	7½ - 1750 rpm
26	150	150	150	150	10 - 1750 rpm

Receiver Selection Tables

(C) STANDARD CONDENSATE OR BOILER FEED		
RECTANGULAR STEEL (GAL)	CYLINDRICAL STEEL (GAL)	CAST IRON (GAL)
29		
45	49	45 (Ret)
65	71	65 (Ret)
110	117	110 (Ret)
200	209	210 (Cyl)
260	260	250 (Cyl)
360	370	370 (Cyl)
500	500	510 (Cyl)
630	650	660 (Cyl)
1000	1,000	840 (Cyl)

Larger units available, consult factory.

CONDENSATE RECEIVER SIZING MINIMUM		
VACUUM SIZE NO. JV	PD	MINIMUM RECEIVER SIZE (GAL)
6,7,9,12	—	29
18,28	23,36	45
42	80	65
61,72	100	110
	150	209

Boiler Feed Receiver Sizing

*Receiver capacity is determined by allowing one (1) gallon of gross capacity per boiler horsepower (hp)

Maximum working capacity recommended is 75% of gross capacity.

*General Services Administration Specifications

Pump Sizing

Condensate pumps are usually rated in terms of receiver storage capacities, pump pressure and flow rates converted to Equivalent Direct Radiation (EDR). To determine the EDR capacity of a pump, convert common industry ratings into EDR. The formulas are as follows:

$$\text{Boiler Horsepower} \times 140 = \text{EDR}$$

$$\text{British thermal units hour/divided by } 250 = \text{EDR}$$

$$\text{Pounds of steam hour} \times 4 = \text{EDR}$$

In steam heating applications, for each 1,000 square feet of EDR, .5 gpm of return condensate should be used as a guide.

After return rate(s) are established, pump selection(s) should be sized two (2) - three (3) times the condensing rate (Skidmore ratings).

WATER PUMPS (D)														
GPM	10 PSI		15 PSI		20 PSI		30 PSI		40 PSI		50 PSI		60 PSI	
	PUMP SIZE	HP	PUMP SIZE	HP	PUMP SIZE	HP	PUMP SIZE	HP	PUMP SIZE	HP	PUMP SIZE	HP	PUMP SIZE	HP
3	21	1/2	21½	1/2	22	1/2	23	3/4	24	1½	25	2	26	3
9	61	1/2	61½	1/2	62	1/2	63	3/4	64	1½	65	2	66	3
15	101	1/2	101½	1/2	102	3/4	103	1	104	1½	105	2	106	3
22½	151	1/2	151½	1/2	152	3/4	153	1	154	1½	155	3	156	3
30	201	1/2	201½	3/4	202	1	203	1½	204	1½	205	3	206	5
37½	251	3/4	251½	3/4	252	1	253	1½	254	3	255	3	256	5
45	301	1	301½	1	302	1½	303	2	304	3	305	3	306	7½
60	401	1½	401½	1½	402	1½	403	3	404	5	405	5	406	7½
75	501	1½	501½	1½	502	2	503	3	504	5	505	5	506	7½
97½	651	2	651½	2	652	3	653	5	654	5	655	7½	656	7½
120	801	3	801½	3	802	5	803	5	804	7½	805	7½	806	10

TYPICAL ENGINEERING SPECIFICATIONS

JVC Series Vacuum Condensate Pumps

Furnish and install according to plans and manufacturer's instructions, the quantity of jet vacuum units as shown on the drawing. The unit shall be of the type in which condensate and air are separated in the receiving tank under vacuum, condensate being pumped by the centrifugal element, air and vapor being removed by the vacuum element in which tempered water is used as the displacement media. A 3/16" steel hurling tank shall be arranged for use of vertical pump(s).

Makeup water is to be through a tank mounted 3/8" solenoid valve with inlet strainer, 110V coil, and reverse acting float switch. Temperature limit switch shall be provided and preset at 160°F. Gauge glass and shut-off cocks shall be provided. Overflow connection shall be piped to nearest available floor drain.

Air pump unit(s) shall be bronze fitted throughout vertical design with 250°F mechanical seals and must be capable of simultaneously delivering the full rated air capacity specified. Motors shall be 3500 rpm close-coupled, open drip proof, and be no greater than indicated on the drawings. The above pumps shall deliver the scheduled capacity of saturated air at 5.5" hg at 160°F. Each air pump shall require one tank mounted vacuum switch with a three-way selector to permit float and vacuum, float only, or continuous operation.

Condensate receiver will be fitted with basket type inlet strainer, gauge glass, thermometer, compound gauge, suction check valves, vacuum relief, and mechanical alternator on semi-duplex and duplex units single float switch on simplex units. Receiver size will be not less than indicated on drawings and be on 3/8" thick copper bearing steel.

Receiver pump(s) shall be bronze fitted throughout vertical design with 250°F mechanical seals and must be capable of simultaneously delivering the full rating in gpm and pressure as scheduled. Motors are to be open drip proof 3500 rpm close-coupled.

The above unit(s) shall be furnished with one Nema 2 UL listed enclosure containing one main disconnect with cover interlock. Across the line magnetic starters with three leg overload protection, and under voltage release for each pump assembly provided. Fuse block assembly and selector switch required for each pump assembly. Numbered terminal strip and corresponding wiring diagram. Control circuit transformer shall be provided on all 3-phase circuitry.

The pump manufacturer shall not only furnish above mentioned equipment, but mount and wire all above controls.

If requested, the installing contractor shall secure from the manufacturer, a factory test report which is to be submitted to the specifying engineer for approval. This factory test report shall show the actual condensate and air capacities for the pumping units and the power input to the units, all as determined by tests of the actual units furnished. The test report is to be certified by the manufacturer as to its correctness in all particulars.

CAPACITY SCHEDULE

(Required to complete suggested specification)

Qty _____ Air Pump(s) _____ CFM @ _____" hg _____°F

_____hp _____rpm Condensate Receiver _____ gallons

Qty _____ Water Pump(s) _____ gpm @ _____ psig

_____hp _____ rpm _____ Volts _____ Cycles _____ Phase

The unit described above as manufactured by Skidmore.

Type JVC Model Number _____-_____-_____

Simplex (1 air / 1 water), Duplex (2 air / 2 water), Semi Duplex (1 air / 2 water)

PDVC Series Positive Displacement Vacuum Condensate Pumps

Furnish and install according to plans and manufacturer's instructions, the quantity of positive displacement vacuum units as shown on the drawing. The unit shall be of the type in which condensate and air are separated in the receiving tank under vacuum, condensate being pumped by the centrifugal element, air and vapor being removed by the vacuum element in which tempered water is used as the displacement media. A 26 gallon 3/16" plate steel reservoir tank shall be arranged for use of horizontal pump(s).

All air removal pump units shall be bronze fitted positive displacement horizontal design with 250°F mechanical seals and must be capable of simultaneously delivering the full rated air capacity specified. Motors shall carry a minimum classification of open drip proof, and be no greater than indicated on the drawings. The above pumps shall deliver the scheduled capacity of saturated air at 5.5 hg at 160°F. Each air pump shall require one (1) tank mounted vacuum switch with a three-way selector to permit float and vacuum, float only, or continuous operation.

Condensate receiver will be fitted with basket type inlet strainer, gauge glass, thermometer, compound gauge, suction check valves, vacuum relief, and mechanical alternator on semi-duplex and duplex units single float switch on simplex units. Receiver size will be not less than indicated on drawings and be on 3/8" thick copper bearing steel.

Condensate receiver pump(s) shall be bronze fitted throughout vertical design with 250°F mechanical seals and must be capable of simultaneously delivering the full rating in gpm and pressure as scheduled. Motors shall be 3500 rpm, carry a minimum classification of open drip proof, and be no greater than indicated on the drawings.

The above unit(s) shall be furnished with one Nema 2 UL listed enclosure containing one main disconnect with cover interlock. Across the line magnetic starters with three leg overload protection, and under voltage release for each pump assembly provided. Fuse block assembly and selector switch required for each pump assembly. Numbered terminal strip and corresponding wiring diagram. Control circuit transformer shall be provided on all 3-phase circuitry.

The pump manufacturer shall not only furnish above mentioned equipment, but mount and wire all above controls.

If requested, the installing contractor shall secure from the manufacturer, a factory test report which is to be submitted to the specifying engineer for approval. This factory test report shall show the actual condensate and air capacities for the pumping units and the power input to the units, all as determined by tests of the actual units furnished. The test report is to be certified by the manufacturers as to its correctness in all particulars.

CAPACITY SCHEDULE (Required to complete suggested specification)

Qty _____ Air Pump(s) _____ CFM @ _____" hg _____°F

_____rpm Condensate Receiver _____ gallons

Qty _____ Water Pump(s) _____ gpm @ _____ psig

_____hp _____rpm _____ Volts _____ Cycles _____ Phase

The unit described above as manufactured by Skidmore.

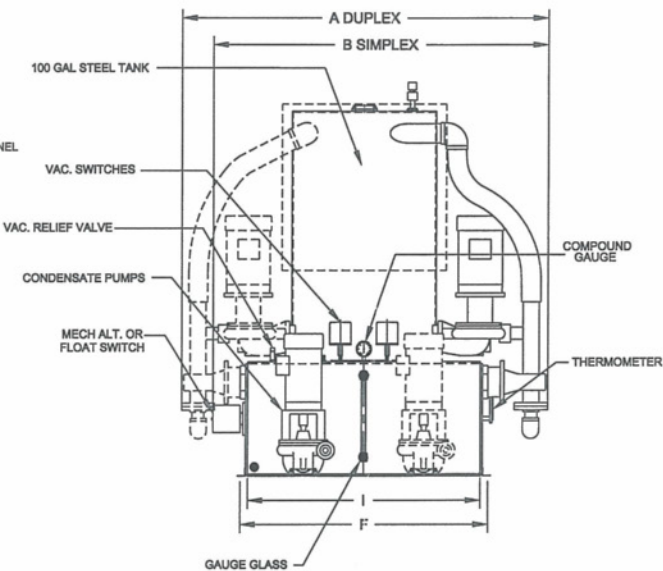
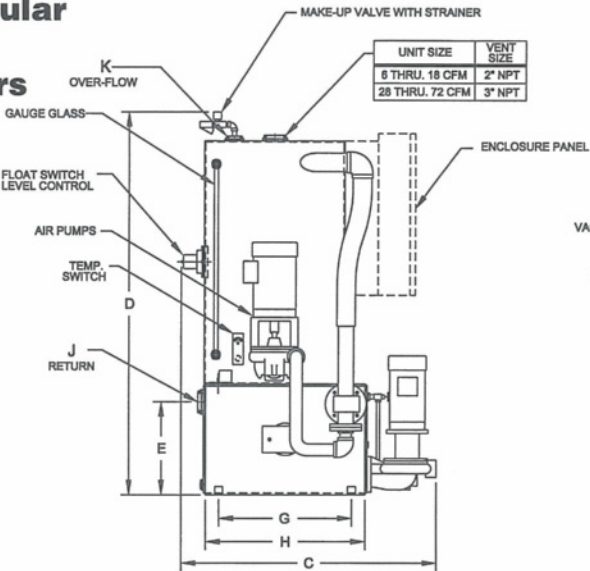
Type PDVC Model Number _____

Simplex (1 air / 1 water), Duplex (2 air / 2 water), Semi Duplex (1 air / 2 water)

DIMENSION DATA

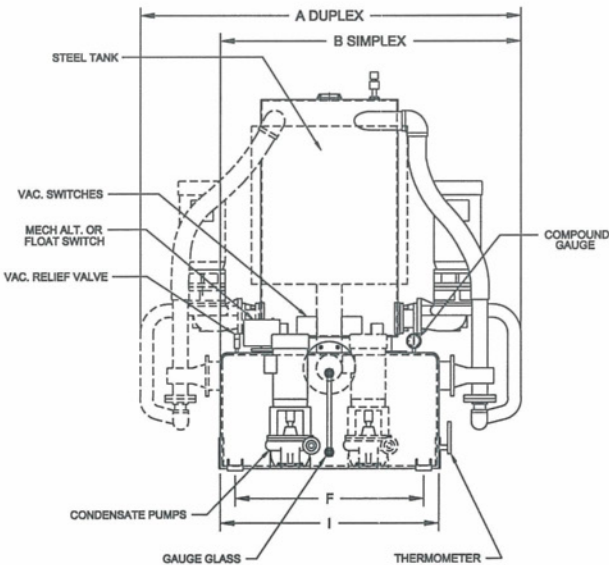
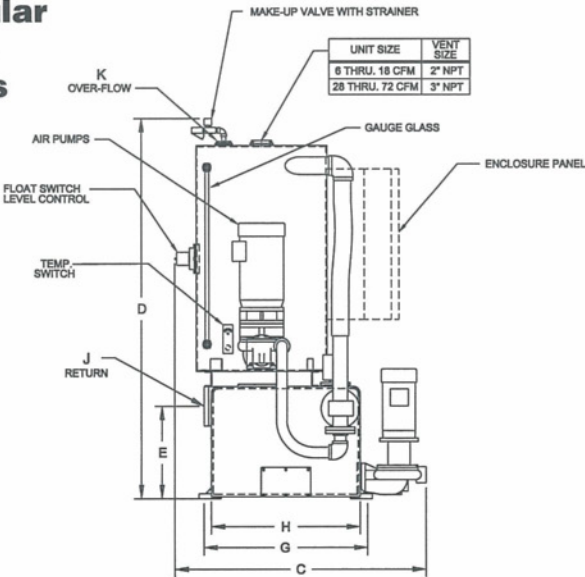
JV SERIES

Rectangular Steel Receivers



APPROXIMATE DIMENSIONS													
RECEIVER SIZE (GAL.)	A DUPLEX	B SIMPLEX	C	6 THRU 12 CFM	D 18 CFM	28 THRU 72 CFM	E	F	G	H	I	J NPT	K NPT
29	60	50	46½	49	65	N/A	10¾	26¾	22½	24	24¾	2	1½
45	62	52	46½	55	72	N/A	15⅞	26¾	22½	24	24¾	2	1½
65	62	52	46½	61	78	N/A	21⅞	26¾	22½	24	24¾	2	1½
110	70	65	55	57	74	78	17½	45¼	25	30	43¼	3	1½-2

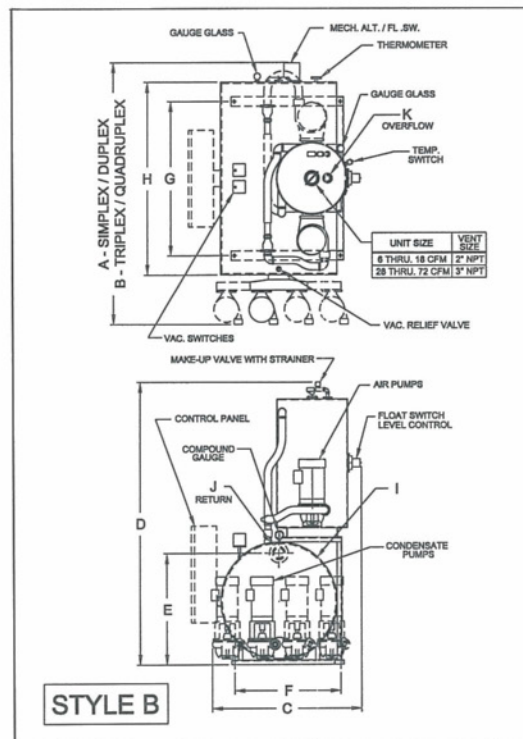
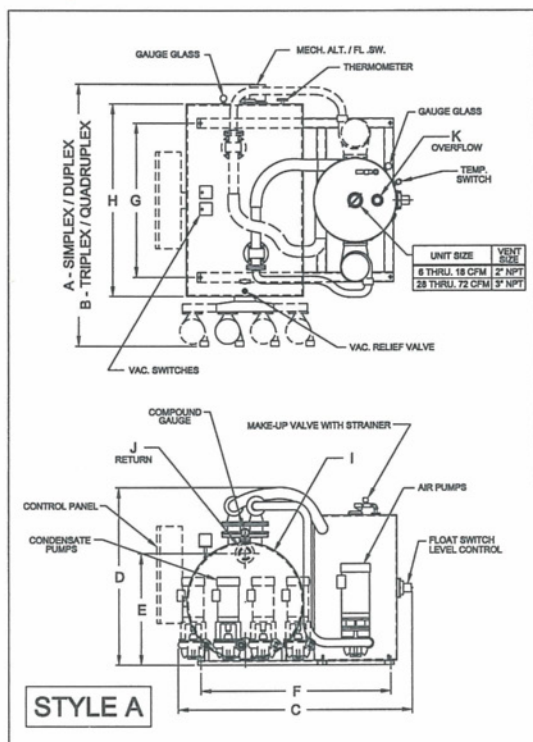
Rectangular Cast Iron Receivers



APPROXIMATE DIMENSIONS													
RECEIVER SIZE (GAL.)	A DUPLEX	B SIMPLEX	C	6 THRU 12 CFM	D 18 CFM	28 THRU 72 CFM	E	F	G	H	I	J NPT	K NPT
45	65	47	52	55	70	N/A	14½	28¾	25¾	20	28	2½	1½
65	65	47	55	60	75	N/A	19	30½	28¾	22¾	30½	3	1½
110	80	65	57	60	75	80	19½	42	32	30	42	4	1½-2

DIMENSION DATA

JV SERIES CYLINDRICAL STEEL RECEIVERS



6 CFM THROUGH 18 CFM MODELS

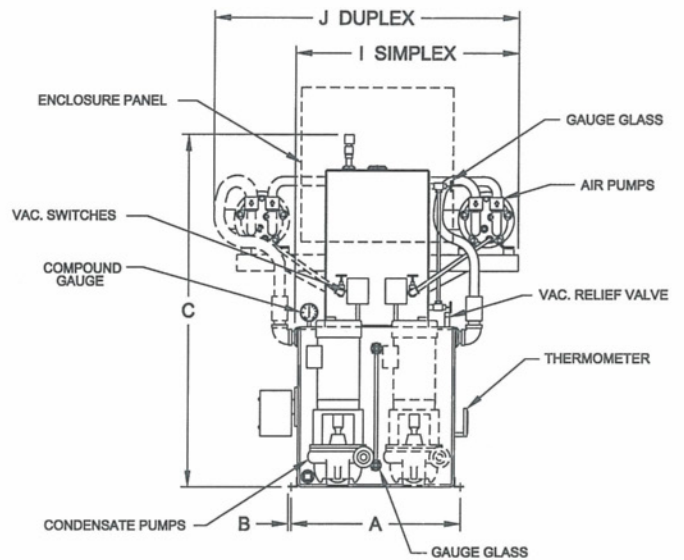
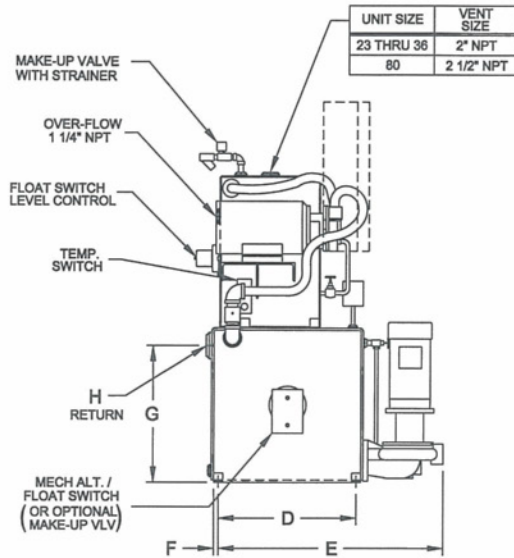
RECEIVER SIZE (GAL.)	STYLE	A MAX	B MAX	C	D		E	F	G	H	I	J NPT	K NPT
					6 THRU 12 CFM	18 CFM							
117	A	92	96	72	50	54½	22½	45⅜	30	60	Ø24	4	1½
209	A	92	96	72	50	54½	29¼	53	48	60	Ø32	5	1½
260	B	93	97	53	77	92½	33¼	33½	48	60	Ø36	5	1½
370	B	93	97	53	77	92½	33¼	33½	56	84	Ø36	5	1½
500	B	115	119	55	83	98½	39½	36½	56	84	Ø42	5	1½
650	B	139	143	55	83	98½	39½	36½	56	108	Ø42	5	1½
750	B	126	130	58	89	104	45½	44½	56	96	Ø48	5	1½
1000	B	162	166	58	89	104	45½	44½	96	132	Ø48	5	1½

28 CFM THROUGH 72 CFM MODELS

RECEIVER SIZE (GAL.)	STYLE	A MAX	B MAX	C	D		E	F	G	H	I	J NPT	K NPT
					28 THRU 72 CFM								
117	A	92	96	74	58		22½	49⅛	30	60	Ø24	4	2
209	A	92	96	74	58		29¼	57	48	60	Ø32	5	2
260	A	93	97	78	62		32¼	60	48	60	Ø36	5	2
370	A	93	97	78	62		32¼	60	56	84	Ø36	5	2
500	B	115	119	55	100		39½	36½	56	84	Ø42	5	2
650	B	139	143	55	100		39½	36½	56	108	Ø42	5	2
750	B	126	130	58	107		45½	44½	56	96	Ø48	5	2
1000	B	162	166	58	107		45½	44½	96	132	Ø48	5	2

DIMENSION DATA

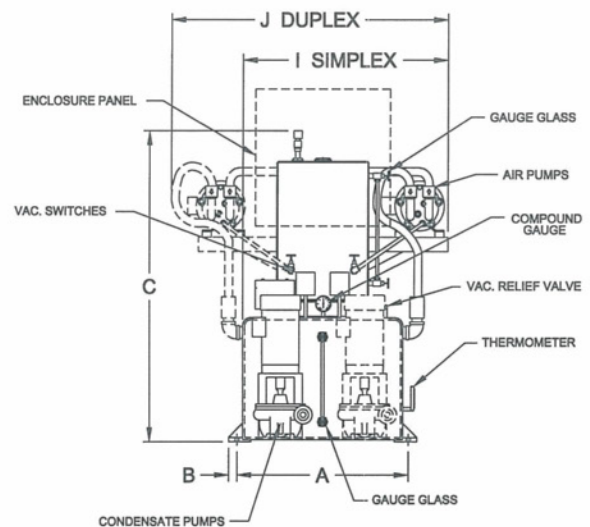
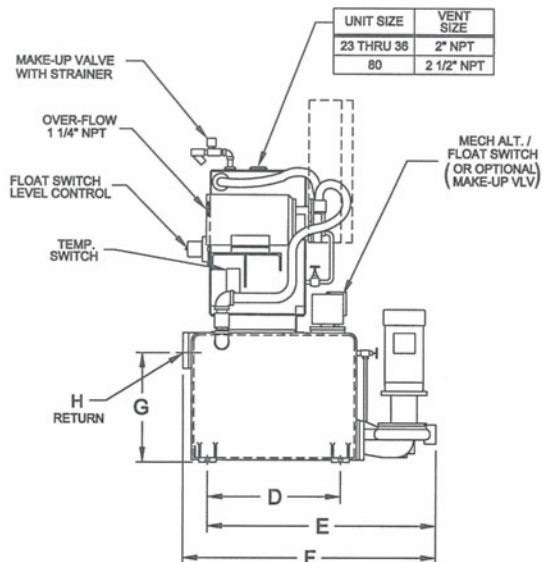
PD SERIES RECTANGULAR STEEL RECEIVERS



APPROXIMATE DIMENSIONS

RECEIVER SIZE (GAL.)	A	B	C	D	E	F	G	H	I	J	K
29	26 3/4	1/2	49	22 1/2	39	3/4	10 3/8	2	24	43	54
45	26 3/4	1/2	55	22 1/2	39	3/4	16 1/4	2 1/2	24	43	54
65	26 3/4	1/2	61	22 1/2	39	3/4	22	3	24	43	54
110	45 1/4	1/2	56	28 1/2	44	1 1/8	17 7/8	3	42 1/2	56	60

PD SERIES RECTANGULAR CAST IRON RECEIVERS

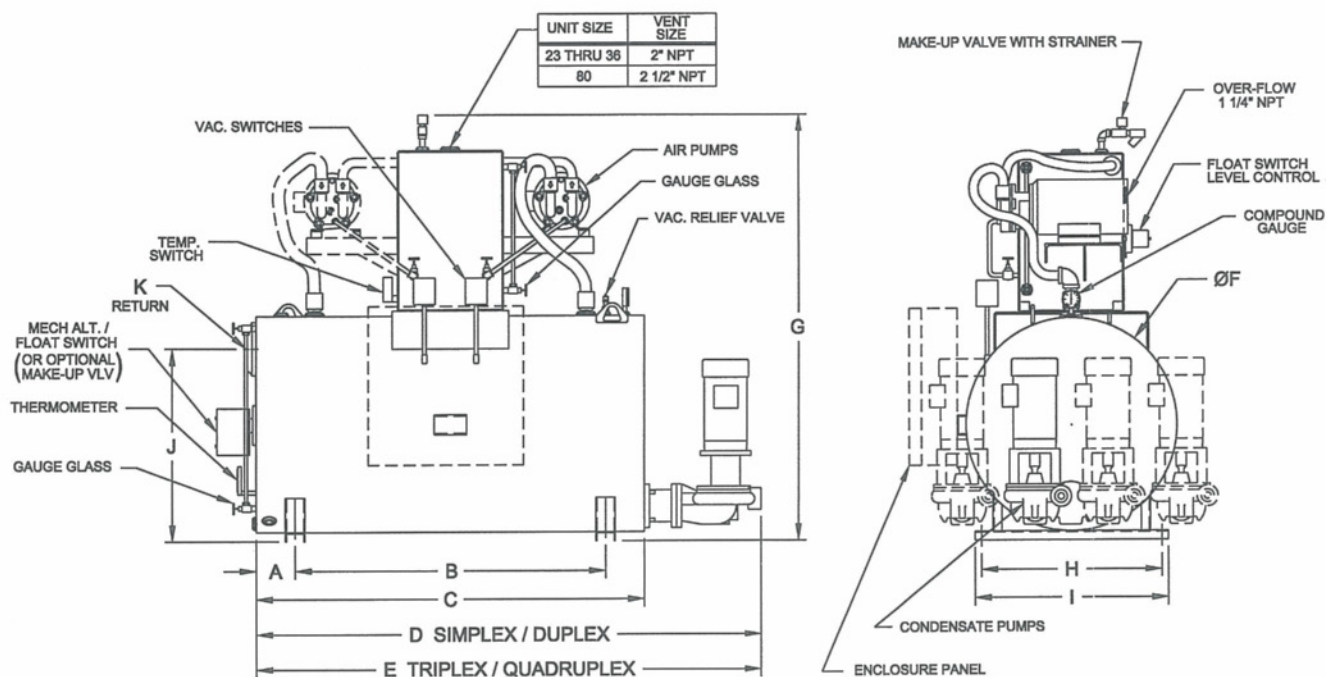


APPROXIMATE DIMENSIONS

RECEIVER SIZE (GAL.)	A	B	C	D	E	F	G	H	I	J
45	28 3/4	1 1/2	57	20	38	45	15	2 1/2	45	48
65	30 1/2	1 1/2	62	22 3/4	39 1/2	47 1/2	18 1/2	3	45	48
110	36 1/4	3 1/4	62	32	46	48	19 1/2	4	45	48

DIMENSION DATA

PDVC/PDBF CYLINDRICAL STEEL RECEIVERS



DIMENSIONS											
RECEIVER SIZE (GAL.)	A	B	C	D (MAX)	E (MAX)	F	G	H	I	J	K
110	15	30	60	79	83	24	66	16	18	22½	4
209	6	48	60	79	83	32	74	28	30	29½	5
260	6	48	60	79	83	36	78	28	30	33¼	5
370	14	56	84	103	107	36	78	28	30	33¼	5
500	14	56	84	103	107	42	84	28	30	39½	5
650	26	56	108	127	132	42	84	28	30	39½	5
750	20	56	96	115	119	48	90	38	40	45½	5
1000	33	66	132	151	151	48	90	38	40	45½	5

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T 269-925-8812 F 269-925-7888 W www.skidmorepump.com

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