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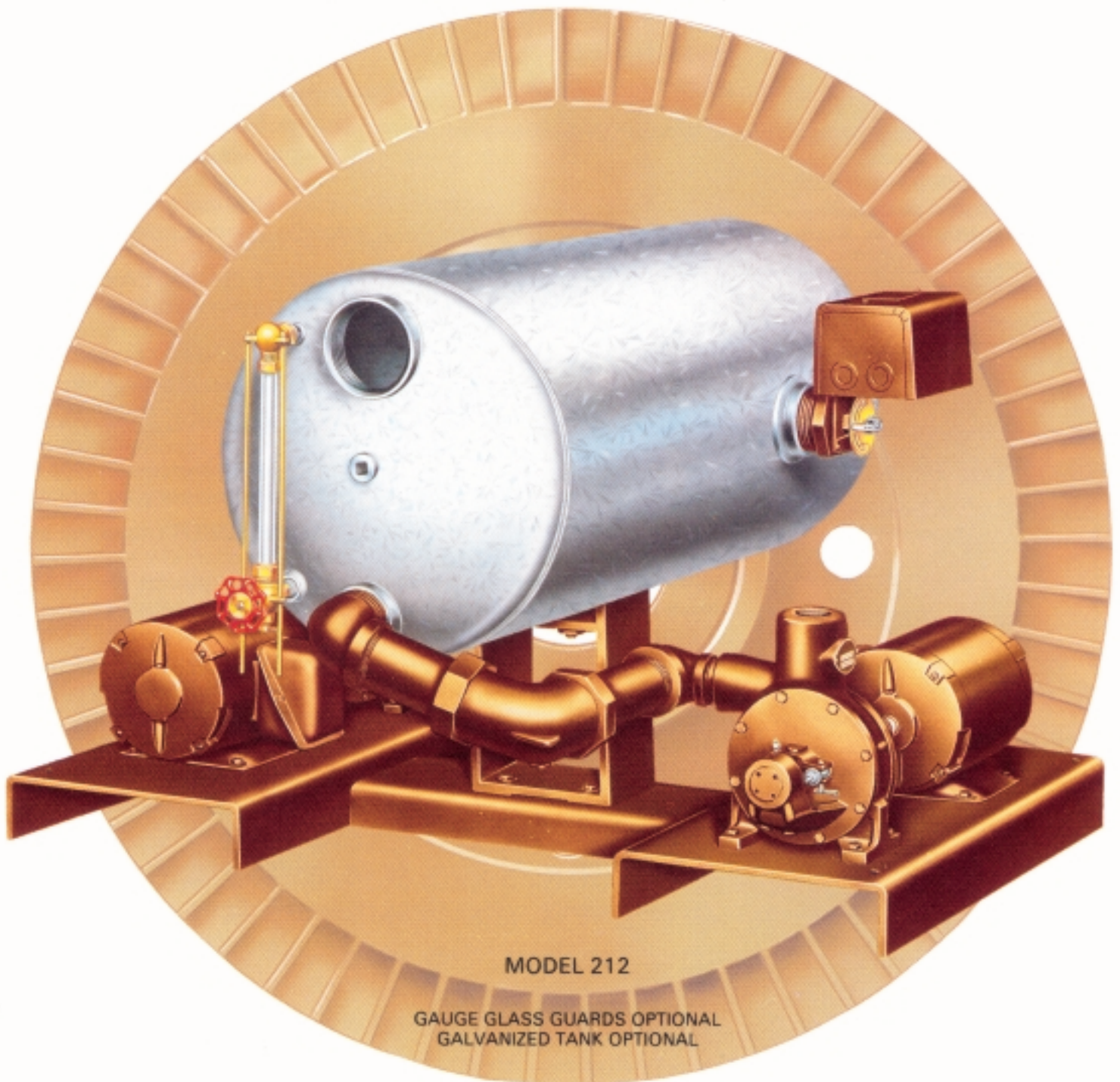
AURORA PUMP A member of PENTAIR PUMP GROUP

BULLETIN 210/REV. G

**210 SERIES
ONE & TWO STAGE
CONDENSATE
PUMPS**

CAPACITIES TO 150 G.P.M.
HEADS TO 270 FEET
TEMPERATURES TO 190°F.

AURORA PUMP



MODEL 212

GAUGE GLASS GUARDS OPTIONAL
GALVANIZED TANK OPTIONAL

INTRODUCTION AURORA CONDENSATE UNITS

Condensate units provide for an automatic return of hot water condensation from radiators, coils, pipe, etc., to high or low pressure boilers. They are also utilized in industrial complexes for returning liquids to overhead storage tanks of gravitational circulating systems as well as many other unique uses. Condensate return requirements call for a system that will provide uninterrupted service for single or multiple boiler installations. Aurora Packaged Systems deliver those values which you need and expect. Quality features include a steel receiver, float switch and pumps all completely assembled. In Aurora's

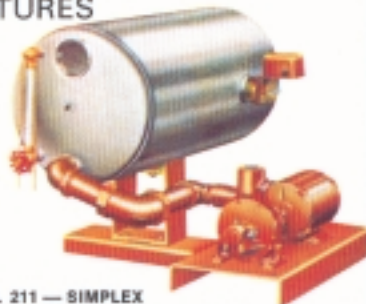
design, the pumps, support, and piping are mounted beneath the receiver on a common steel base. As your heating system grows, the receiver design will allow you to convert from simplex to duplex. Just add a pump and pipe it up! In a duplex system, single pump operation provides service when capacity and demand call for normal service. Duplex units require very little additional floor space than a simplex unit requires. The two APCO pumps used in the system operate alternately to extend the life of both pumps. Both pumps operate simultaneously when service demands exceed the capabilities of a single pump. This

Aurora product offers:

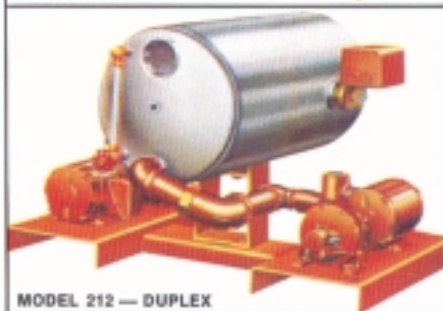
- Turbine design that handles vapor bubbles with no vapor lock.
- Design simplicity with a minimum of parts.
- Complete system package pre-piped on a one-piece common base.
- Versatile, rugged, compact construction.
- Simplex and Space Saving Duplex Systems.

The following pages explain the reasons why AURORA PUMP is able to offer you a modern, packaged, customer proven system.

FEATURES



MODEL 211 — SIMPLEX



MODEL 212 — DUPLEX

1 STEEL RECEIVER is 3/16" thick to insure long life. Receiver connections are threaded and include vent, inlet and drain.

2 STAINLESS STEEL FLOAT has adjustable travel to permit 1-1/2 times maximum return rate between stops. Combination float switch and alternator is standard on duplex units.

3 TEMPERATURES TO 190° F. water and selected for a minimum capacity of twice the rate of evaporation.

4 BRASS WATER LEVEL GAUGE glass assembly is furnished complete with shut-off valve.

5 INTERCHANGEABLE DESIGN provides future system expansion with receiver connections for up to 2 pumps. Just add a pump and pipe it up.

6 COMPLETELY ASSEMBLED PIPING from receiver to pump. Included are expansion type elbows to eliminate pipe strain.

7 ACCESSIBILITY to pump and other components for easier maintenance. All pumps and piping are mounted beneath the receiver. The unit bolts to a steel base.

8 PUMPS designed for condensate applications will handle entrained vapor and air with liquid to eliminate vapor lock.

QUICK REFERENCE 210 SERIES FEATURE SELECTOR

STANDARD

- Quality Aurora Pumps
- V.I.P. pump test
- 3/16" thick steel flat head receiver w/inlet, vent & drain connections
- Simplex pump with float switch
- Bronze fitted pump construction
- Removable channel rings
- Self-venting casings
- Piping from receiver to pumps
- Expansion type suction elbows
- Gauge glass assembly
- Factory assembled
- Coupling guards

OPTIONAL

- Duplex pumps with combination float switch and alternator
- Control panel prewired
- Electric alternator
- Thermometer
- Pressure gauges
- A.S.M.E. receivers
- Electrolytic corrosion inhibitors
- Make-up feeder valve
- Inlet "Y" strainer
- Special units
- 3/16" gauge galv. steel receiver w/inlet, vent & drain connections

TURBINE PUMP OPERATION AND OPTIONAL EQUIPMENT

STANDARD EQUIPMENT

SIMPLEX — Model 211

Receiver with float switch, sight gauge glass with gauge cock, support, expansion elbow, piping, pump, motor, base, coupling and coupling guard. **RECOMMENDED OPTIONS:** pressure gauge, thermometer, magnetic starter and one hand-off-auto switch mounted and wired complete.

DUPLEX — Model 212

Receiver with a combination float switch alternator assembly, sight gauge glass with gauge cock, support, expansion elbows and piping, two pumps (one operational and one

standby), motors, bases, coupling guards and couplings. **RECOMMENDED OPTIONS:** pressure gauges, thermometer, NEMA 1 control panel with two starters, two hand-off-automatic switches and two selector switches, mounted and wired complete. **OPTIONAL EQUIPMENT THERMOMETER** provided with direct reading scale from 40° to 260° F.

- A) Back angle
- B) 3" Dial

MAKE-UP FEEDER VALVE — 3/4" includes electric solenoid, reverse action float switch and necessary fittings.

125# ASME CODE RECEIVERS of equal capacity.

ADDITIONAL PIPE TAPS such as vents in receiver as required. **MAGNESIUM ANODE** provides electrolytic corrosion protection for the receiver.

ELECTRIC ALTERNATOR conveniently mounted and wired on duplex units.

MECHANICAL SEALS for single or two stage turbine pumps.

SPECIAL PUMPS such as centrifugals.

PRESSURE GAUGES on pump discharge.

DUPLEX UNITS completely assembled.

SPECIAL MOTORS — Voltages and enclosures.

PRINCIPLE OF OPERATION

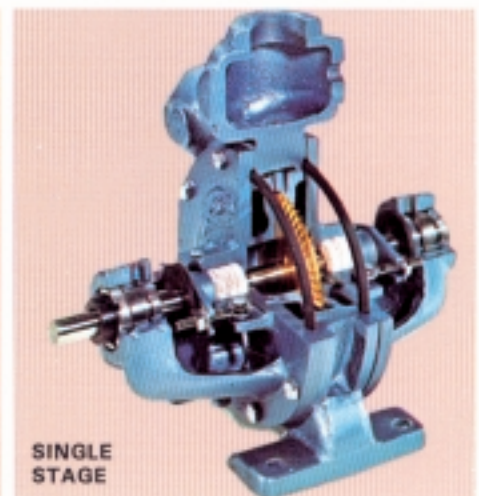
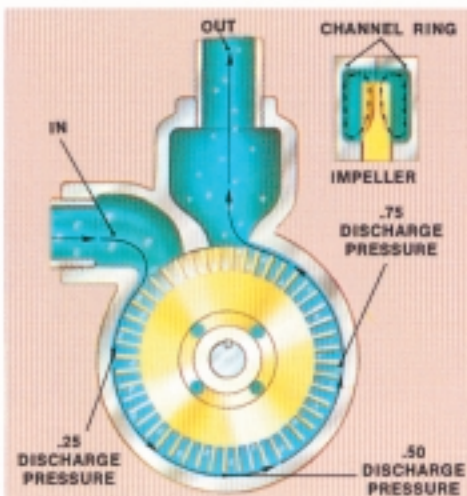
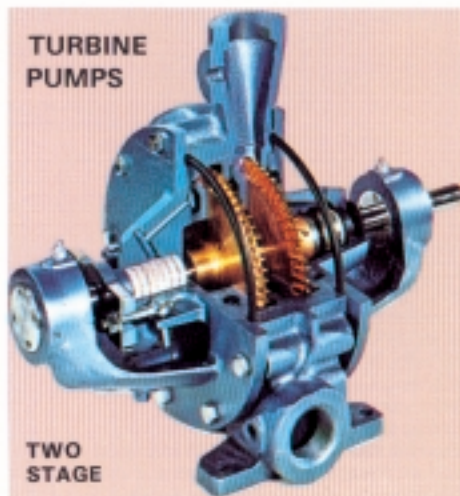
The turbine pump derives its name from the many buckets machined into the periphery of the rotating impeller which permits development of a relatively high pressure in an efficient and economic manner. More pressure is developed within the turbine pump than with a comparable size centrifugal pump. The pumped liquid is directed by the water passage so that it circulates in and out of the buckets many times on its way from the pump inlet to the pump outlet. Additional energy is added to the liquid each time it passes through the buckets so the numerous passes generate a high

discharge pressure. The pressure is developed without pulsations. While close clearances are used within the turbine pumps, there is no metal to metal contact. Volatile liquids are handled easily because a turbine pump readily handles vapor and air along with the liquid, thus eliminating the possibility of a vapor lock within the pump. Free-flowing and non-lubricating liquids are handled with a minimum of wear to pump parts because there is no metal to metal contact within the pump channel. The illustrations indicate the principle used in the handling of the liquid and developing of pressure

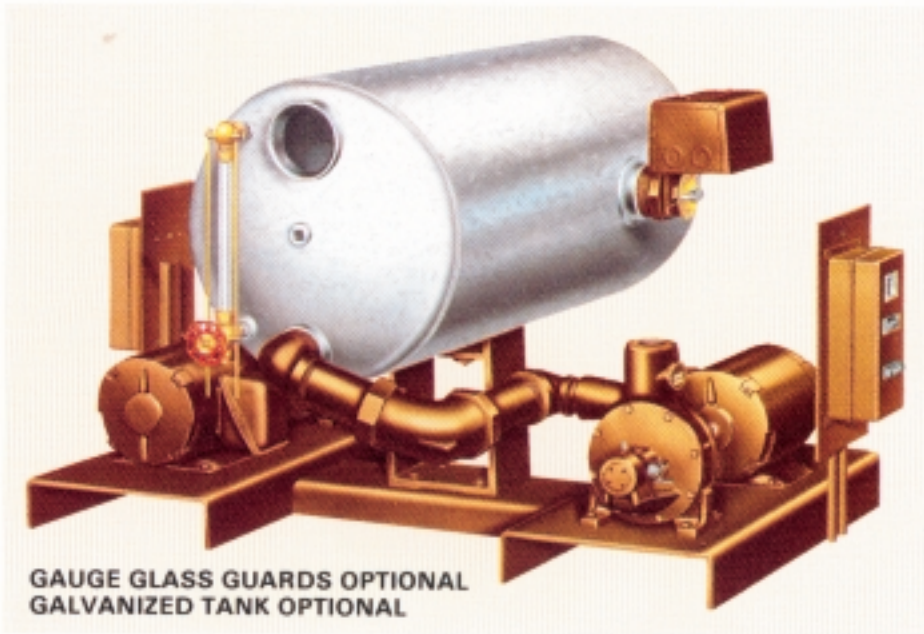
in a regenerative turbine pump.

AURORA APCO TURBINE PUMP FEATURES

- Double suction minimizes axial thrust.
- Replaceable channel rings and impellers.
- Opposed discharges to balance radial loads (two stage).
- Interchangeable packing or mechanical seals. Seals are optionally available on single as well as two stage pumps.
- Large shaft for minimum deflections.
- Slingers protect bearings.
- O-rings prevent leakage.



SELECTION TABLE — 1750 R.P.M.



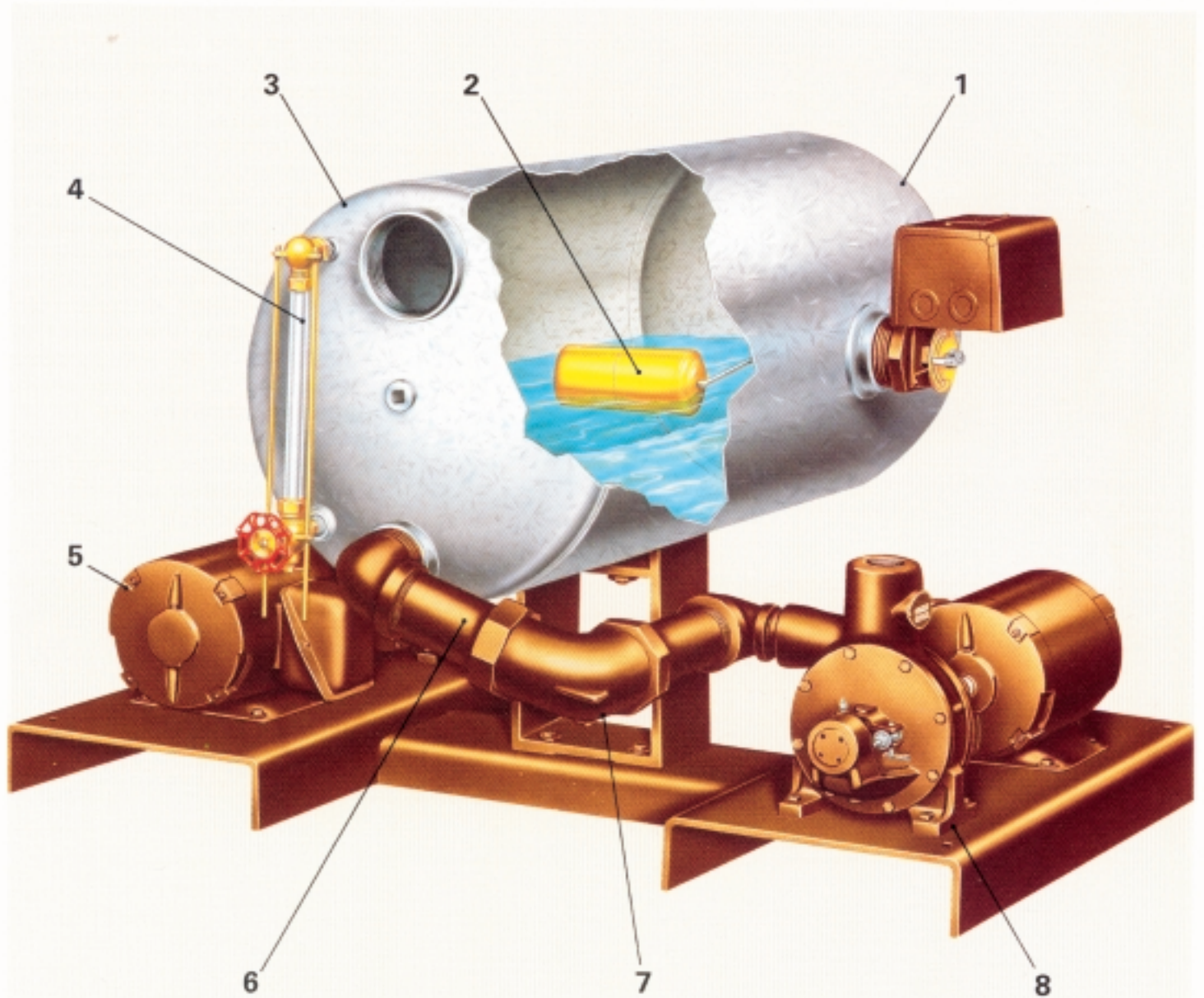
GAUGE GLASS GUARDS OPTIONAL
GALVANIZED TANK OPTIONAL

MAGNETIC STARTERS with overload and under-voltage protection are conveniently mounted on the unit. The starters are wired to the pump motors, and to the float switch or combination float switch and alternator. Rated for 3 phase, 1/3 H.P. and larger; and single phase 1 H.P. and larger. (Starters not required on single phase, 3/4 H.P. motors or less). On Simplex units, the starter is mounted in a general purpose enclosure. On Duplex units, magnetic starters are panel mounted in a NEMA 1 enclosure. Reset buttons are provided outside the starter enclosure for easy operation and service.

E.D.R.		2000	3000	4000	6000	8000	10,000	15,000	20,000	25,000	30,000	35,000	40,000	50,000	65,000	100,000	
PUMP CAPACITY G.P.M.		3	4-1/2	6	9	12	15	22-1/2	30	37-1/2	45	52-1/2	60	75	97-1/2	150	
RECEIVER	CAPACITY IN GALLONS	15	15	15	15	30	30	30	60	60	60	60	60	100	100	200	
	DIAMETER (IN.)	14	14	14	14	16	16	16	22	22	22	22	22	24	24	30	
	LENGTH (IN.)	30	30	30	30	38	38	38	38	38	38	38	38	50	50	66	
	INLET (IN.)	2	2	2	2	3	3	3	3	3	3	3	3	3	3	4	
PRESSURE — POUNDS PER SQUARE INCH	10	UNIT	15A35	15C4	15D4	15E4	30F4	30G4	30H4	60I4A	60M4	60M4	60P4	60R4	100M5	100N5	200J6
		H.P.	1/3	1/3	1/3	1/3	1/3	1/3	1/2	3/4	1	1	1-1/2	1-1/2	1-1/2	2	3
	15	UNIT	15A4	15C4	15D4	15E4	30F4	30G4	30H4	60I4A	60M4	60M4	60P4	60R4	100M5	100N5	200J6
		H.P.	1/3	1/3	1/3	1/3	1/3	1/3	1/2	1	1	1-1/2	1-1/2	1-1/2	2	3	3
	20	UNIT	15A4	15C4	15D4	15F4	30F4	30G4	30I4	60I4A	60M4	60P4	60P4	60L5	100N5	100P5	200J6
		H.P.	1/3	1/3	1/3	1/3	1/3	1/2	3/4	1	1-1/2	1-1/2	1-1/2	3	2	5	5
	30	UNIT	15C4	15C4	15E4	15F4	30G4	30H4	30I4A	60P4	60R4	60R4	60L5	60L5	100N5	100P5	200J6T
		H.P.	1/3	1/3	1/3	1/2	1/2	3/4	1-1/2	2	3	3	3	5	5	7-1/2	10
	40	UNIT	15D4	15D4	15E4	15F4	30G4	30I4	30I4A	60P4	60R4	60R4	60L5	60L5	100N5	100P5	200J6T
		H.P.	1/3	1/3	1/2	3/4	3/4	1	1-1/2	2	3	3	3	5	5	7-1/2	10
	50	UNIT	15D4	15E4	15F4	15G4	30I4	30I4	30P4	60R4	60K5	60K5	60L5	60N5	100P5	100P5	200K6T
		H.P.	1/3	1/2	3/4	1	1	1-1/2	2	3	3	3	5	5	7-1/2	7-1/2	15
	60	UNIT	15D4	15E4	15F4	15G4	30I4	30P4	30R4	60I5	60K5	60L5	60L5	60P5	100P5	100J6	200K6T
		H.P.	1/2	3/4	1	1	1-1/2	3	3	3	5	5	5	7-1/2	7-1/2	10	15
	75	UNIT	15E4	15F4	15G4	15R4	30R4	30R4	30I4TA	60K5	60K5	60L5	60P5	60P5	100J6	100K6	200K6T
		H.P.	3/4	1	1	1-1/2	2	2	3	3	5	5	7-1/2	10	10	10	15
	85	UNIT	15F4	15G4	15E4T	15G4T	30G4T	30I4T	30I4TA	60K5	60L5	60L5	60H6	60H6	100J6	100K6	
		H.P.	1	1	1	1-1/2	2	3	3	5	5	7-1/2	7-1/2	10	10	15	
	100	UNIT	15D4T	15E4T	15F4T	15G4T	30I4T	30I4TA	30I5	60K5	60L5	60G6	60J6	60K6	100G6T	100H6T	
		H.P.	1	1-1/2	1-1/2	2	3	3	3	5	7-1/2	10	10	10	10	15	
115	UNIT	15E4T	15F4T	15F4T	15G4T	30I4T	30H5	30I5	60L5	60L5	60F6T	60F6T	60G6T	100H6T	100J6T		
	H.P.	1-1/2	1-1/2	2	2	3	3	5	7-1/2	7-1/2	10	10	15	15	20		

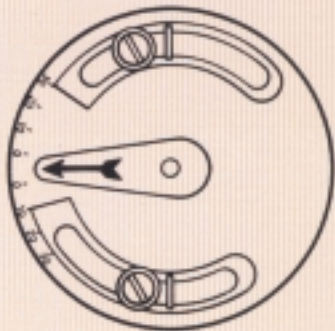
UNIT NUMBER EXAMPLE: 15D4 DESIGNATES 15 GALLON RECEIVER AND D4 SIZE PUMP. FOR SELECTIONS NOT SHOWN, PLEASE REFER TO FACTORY.
NOTE: TABLE SELECTIONS ARE FOR INTERMITTENT OPERATION — IF SYSTEM REQUIRES CONTINUOUS OPERATING PUMPS, CONSULT FACTORY FOR PUMP SELECTION.

UNIT FEATURES

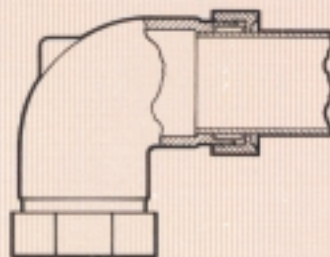


GAUGE GLASS GUARDS OPTIONAL
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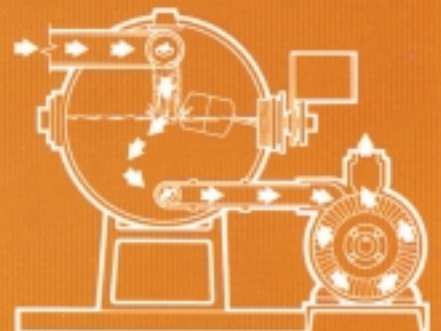
FLOAT ADJUSTMENT



EXPANSION ELBOW

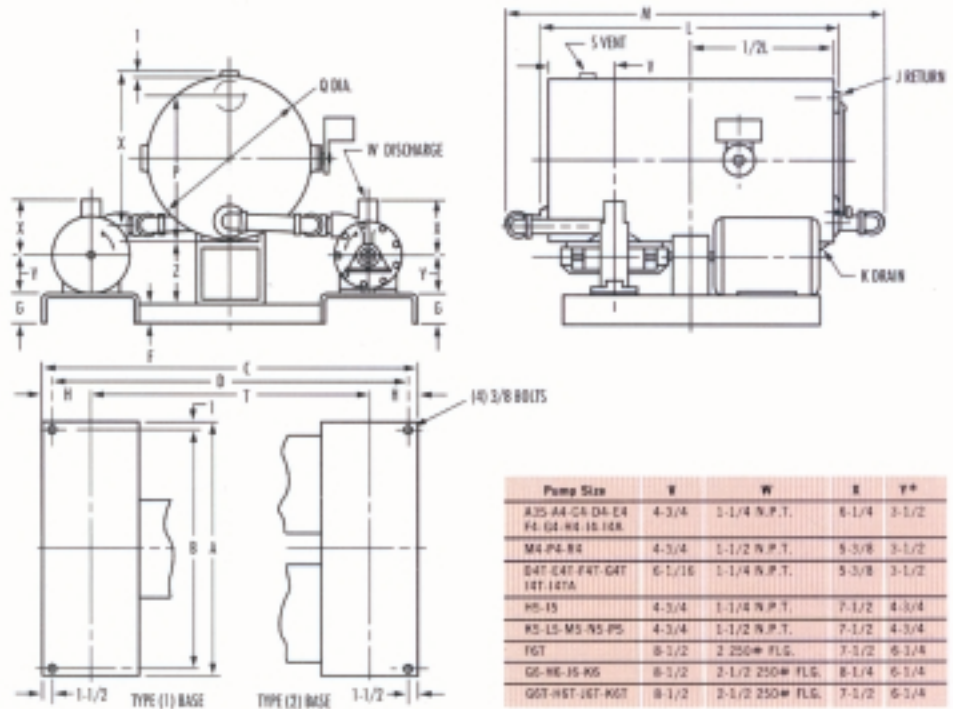


UNIT OPERATION



ENGINEERING SPECIFICATIONS AND DIMENSIONS

The contractor shall furnish (and install in location as shown on the plan) an Aurora 210 Series Model 211 (Simplex) □ — Model 212 (Duplex) □ Condensation Return Unit. Unit for handling condensate returns from square feet of direct radiation, when discharging against a pressure of P.S.I. at the pump. The unit is to include bronze fitted turbine type pumps and the impeller(s) shall be hydraulically balanced and shall be designed to pass vapor with the water. Removable channel ring design will permit replacement of the channels only. Covers shall incorporate the bearing arms and stuffing boxes for packing or mechanical seals. The pump(s) to be flexible coupled to NEMA motor(s) of H.P., phase, Hertz, voltage, R.P.M., (D.P.) (T.E.) (EX.PR.) enclosure. The pump-motor combination(s) to be base mounted to one flat head steel receiver of gallons capacity. All receivers shall include inlet, vent, drain and gauge glass connections. One optional back angle thermometer and std. brass water level gauge glass assembly complete with shut-off valve shall be mounted to the receiver. Simplex unit to be furnished with one enclosed float switch assembly. Duplex unit to be furnished with one combination float switch and alternator assembly. Optional magnetic starter(s) with overload and under voltage protection shall be mounted and wired to the pump motor(s) and float switch (Simplex units) or mechanical alternator (Duplex units). The Starter(s) shall be mounted in a NEMA 1 enclosure.



Type Base	Base Size	A	B	C	D	F	G	H	T
(1) 15, 30 & 60 Gallon Receiver	1	26	24	38	35	2	2 5/8	5	28
	2	27	25	42	39	2	3	6	30
	3	33	28	42	39	2	3	6	33
	4	34	32	50	47	2 5/8	4	6 1/2	37
	5	44	42	64	61	2	3 3/8	7 1/2	45
(2) 100 & 200 Gallon Receiver	6	48	46	70	67	3	4	9	52
	1	25	23	44	41	2	2 5/8	5	34
	2	27	25	48	45	2	3	6	36
	3	30	28	48	45	2	3	6	36
	4	34	32	54	51	2 5/8	4	6 1/2	43
5	38	36	56	53	2	2 7/8	6	44	
6	44	42	64	61	3	3 3/8	7 1/2	49	
7	48	46	70	67	3	4	9	52	

Gal. Cap.	Type	F	K	L	M	P	Q	R	S
35	(3)	2	3/4	30	48	12 1/2	14	14 1/2	2
30	(3)	3	3/4	38	50	13 5/8	16	16 1/2	2
60	(3)	3	3/4	38	58	19 5/8	22	22 1/2	2
100	(2)	3	1 1/4	54	66	25 5/8	24	26 1/2	3
200	(2)	4	1 1/4	68	82	26 7/8	30	33 1/2	3

Pump Size	F	W	E	Y*
A35 A4 CA DA E4 F4 G4 H4 J4 K4	4-3/4	1-1/4 N.P.T.	6-1/4	3-1/2
M4 P4 R4	4-3/4	1-1/2 N.P.T.	5-3/8	3-1/2
S4T S4T S4T S4T T4T T4T	6-1/16	1-1/4 N.P.T.	5-3/8	3-1/2
H5-15	4-3/4	1-1/4 N.P.T.	7-1/2	4-3/4
K5 L5 M5 N5 P5	4-3/4	1-1/2 N.P.T.	7-1/2	4-3/4
T6T	8-1/2	2 250W F.L.G.	7-3/2	6-3/4
G6 H6 J6 K6	8-1/2	2-1/2 250W F.L.G.	8-1/4	6-3/4
G6T H6T J6T K6T	8-1/2	2-1/2 250W F.L.G.	7-3/2	6-3/4

Patent	Z	Mfr. Frame	Y*	Mfr. Frame	S*
A	8	48	3	213T 215T	5 1/4
B	8 1/2	56-143T-145T	3 1/2	254T 254T	6 1/4
C	11	182T-184T	4 1/2	See Note #9	

BASE SELECTION				BASE SELECTION			
Unit Number	HP	Base Type Size	Unit Number	HP	Base Type Size		
25A15 TO 25F4	1/2 TO 3/4	1 1	60R4	3	1 3		
25F4 TO 25R4	3 TO 3 1/2	1 2	60L5 TO 60L5	3 TO 5	1 4		
25R4 TO 25T4	1/2 TO 3/4	1 1	60L5 TO 60F5	7-1/2 TO 18	1 5		
25T4 TO 25T4A	1 TO 1 1/2	1 2	60F5	15	1 6		
25T4 TO 25T4A	1 TO 1 1/2	1 2	100R5 TO 100R5	1 1/2 TO 2	2 3		
25T4 TO 25T4S	3 TO 5	1 4	100R5 TO 100S5	5 TO 5	2 4		
25T4T TO 25T4T	1 TO 1 1/2	1 2	100S5 TO 100S5	7-1/2 TO 10	2 5		
25T4T	3	1 3	100S5 TO 100S5	10 TO 20	2 6		
25T4TA	2	1 2	200R5 TO 200R5	3 TO 7-1/2	2 5		
25T4TA	2	1 3	200R5 TO 200R5	10 TO 15	2 6		
25T4T	1-1/2 TO 2	1 2	200R5 TO 200R5	10 TO 15	2 6		
25T4T	2/4	1 1	200R5 TO 200R5	ALL	2 7		
25T4T	1 TO 2	1 2	200R5 TO 200R5				

LIMITATIONS

MAX. RECEIVER INTERNAL PRESSURE 5 P.S.I.G.	MAXIMUM DISCHARGE PRESSURE 115 P.S.I.G.	MAX. TEMP. LIMIT ON PUMP SUCTION 190° F.
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MOTOR SPECIFICATIONS

Drip-proof NEMA rated open drip-proof steel shaft, 1750 R.P.M., dual voltage, single or three phase.
 THREE PHASE — 60/50 Hertz, 200-230/480 volt.
 SINGLE PHASE — 60 Hertz, 115/230 volt. All 1-1/2 H.P. and smaller equipped with thermal overload protection.
 Explosion-proof and totally enclosed motors also available.

MATERIAL OF CONSTRUCTION

PUMP PART	MATERIAL
Casing	Cast Iron ASTM A48
Covers	Cast Iron ASTM A48
Channel Rings	Cast Iron ASTM A48
Impeller	Bronze ASTM B62
Shaft	Stainless Steel AISI-416
Packing Glands	Cast Iron ASTM A48
Center Spacer	Cast Iron ASTM A48
Packing	Interwoven, graphite lubricated acrylic die molded, diagonally cut
Receiver	3/16" Steel flat head
Float	Stainless Steel
Gauge Glass Fitting	Brass ASTM B-36
Base and Supports	Steel Commercial

NOTES

- All dimensions in inches.
- Not for construction purposes unless certified.
- Duplex unit with mechanical alternator illustrated.
- All connections are threaded.
- Conduit box and/or capacitor not shown as location and dimensions vary with each motor manufacturer.
- Flanges in accordance with American Std.
- Write for Bulletin 110 for additional pump details.
- All simplex receivers have a blanked off suction opening available for possible future conversion to duplex construction.
- *Always use max. "Y" dimension given.

NOTE: Aurora Pump reserves the right to make revisions to its products and their specifications, and to this bulletin and related information without notice.

— Your Authorized Local Distributor —



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