

**Performance –**

Fill in and send to Kansas City Deaerator or request a detailed specification sheet. Add additional thermal cases as needed.

PROJECT	OPERATING CONDITIONS	SPECIAL REQUIREMENTS
DEAERATOR	Operating Pressure	HEI
Quantity	FEEDWATER INLET	Post Weld Heat Treatment
Capacity	% Makeup	Minimum Radiography
DESIGN	MU Temperature	WFMP Testing
ASME SEC. VIII, DIV.1	%Condensate	
Design Pressure	Cond. Temperature	BF PUMPS
Full Vacuum Design	STORAGE CAPACITY	Quantity
Design Temperature	Minutes at Overflow	Capacity
Corrosion Allowance	Gallon at Overflow	TDH

**Accessories –**

Select package or individual items

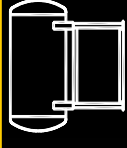
ITEM	DESCRIPTION	ACC PKG	PUMP PKG	SELECT
A	WATER INLET			√
A1	Inlet Valve			
	Mechanical	STD	STD	
	Pneumatic	OPT	OPT	
A2	Level Controller	STD	STD	
A3	Level Transmitter	OPT	OPT	
A4	Inlet Valve Bypass Valves	OPT	STD	
A5	Inlet Valve Bypass Piping	OPT	STD	
A5	Inlet Valve Bypass Strainer	OPT	STD	
B	STEAM CONTROL			
B1	Steam PRV		OPT	
	Self Contained		OPT	
	Pneumatic		OPT	
B2	Steam PRV Controller		OPT	
B3	Steam PRV Bypass Valves		OPT	
B4	Steam PRV Bypass Piping		OPT	
B5	Steam PRV Bypass Strainer		OPT	
C	RELIEF VALVE			
C1	Relief Valve			
	Sentinel	STD	STD	
	Full	OPT	OPT	
C2	Relief Valve Exhaust Piping		OPT	
D	THERMOMETER			
D1	(2) 5" Thermometer w/ss wells	STD	STD	
E	PRESSURE GAUGE			
E1	(1) 4 1/2" Pressure Gauge	STD	STD	
E2	Siphon & Cock	STD	STD	
E3	Pressure Transmitter	OPT	OPT	
F	VENT			
F1	Vent Valve	STD	STD	
F2	Vent Orifice w/Flange	OPT	OPT	
F3	Vent Bypass Valves	OPT	OPT	
F4	Vent Bypass Piping	OPT	OPT	
H	VACUUM BREAKER			
H1	Vacuum Breaker	STD	STD	

ITEM	DESCRIPTION	ACC PKG	PUMP PKG	SELECT
M	BFP RECIRC			√
M1	BFP Recirc Shutoff	NA	OPT	
M2	BFP Recirc Check	NA	OPT	
M3	BFP Recirc Orifice	NA	OPT	
M4	BFP Recirc ARC Valve	NA	OPT	
M5	BFP Recirc Piping	NA	OPT	
M5	BFP Recirc Pressure Gauge	NA	OPT	
N	BFP SUCTION			
N1	BF Pumps			
	(2) 100% Capacity	NA	STD	
	(3) 50% Capacity	NA	OPT	
	Motors			
	ODP	NA	STD	
	TEFC	NA	OPT	
N2	BFP Suction Isolation Valve	NA	STD	
N3	BFP Suction Strainer	NA	STD	
N4	BFP Suction Piping	NA	STD	
N5	BFP Suction Expansion Joint	NA	STD	
N6	BFP Discharge Pressure Gauge	NA	OPT	
N7	BFP Discharge Check Valve	NA	OPT	
N8	BFP Discharge Isolation Valve	NA	OPT	
O	CHEMICAL FEED			
O	Chemical Feed Quill	OPT	OPT	
Q	OVERFLOW			
Q1	Overflow Valve/Trap	STD	STD	
Q3	Overflow Piping	OPT	STD	
R	LEVEL SWITCH			
R1	Level Switches			
	High & Low (TWO)	STD	STD	
	High High (ADDITIONAL)	OPT	OPT	
R2	Level Switch Bridle Piping	OPT	STD	
S	GAUGE GLASS			
S1	Gauge Glass			
	Red Line Pyrex	STD	STD	
	Reflex	OPT	OPT	
	Magnetic	OPT	OPT	
S2	Gauge Glass Bridle	OPT	STD	

# KANSAS CITY DEAERATOR

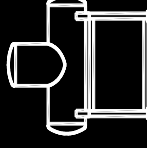


Standard Deaerating Units



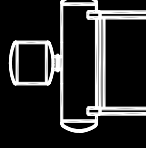
**HS Series**

Up to 350,000 #/hr  
Low Headroom



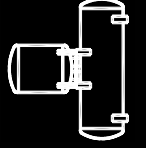
**TC Series**

Up to 250,000 #/hr  
Tray Unit Meets HEI



**BDS Series**

Up to 250,000 #/hr  
Tray Unit Meets HEI



**DS Series**

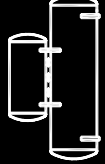
Up to 800,000 #/hr  
Tray Unit Meets HEI



**VS & VT Series**

Up to 800,000 #/hr  
Tray Unit

Minimal Plan Area Meets HEI



**HH Series**

Up to 16,000,000 #/hr  
Tray Unit-Meets HEI

## VT – Vertical Tray Deaerator

### Principles of Operation

Corrosion in boiler cycles is caused by the presence of non-condensable gases such as oxygen and carbon dioxide in the boiler feed water. In order to remove the non-condensable gases, the feedwater is heated and vigorously scrubbed by a counter current flow of steam.

The incoming undeaerated water enters the deaerator through spring-loaded, stainless steel, spray valves. These variable orifice valves produce a fine spray in a uniform pattern from 5% to 200% of design. The fine droplets of water maximize the surface area in contact with steam, raising the temperature to within a few degrees of saturation temperature and instantly releasing the majority of the corrosive, non-condensable gases.

The preheated and partially deaerated water flows through the tray stack where the hottest, purest steam vigorously scrubs the water to heat it to saturation temperature and strip the last traces of dissolved gases.

The entire deaeration process takes place in a stainless steel enclosure that eliminates any need for vessel lining or cladding and ensures a long life with little maintenance.

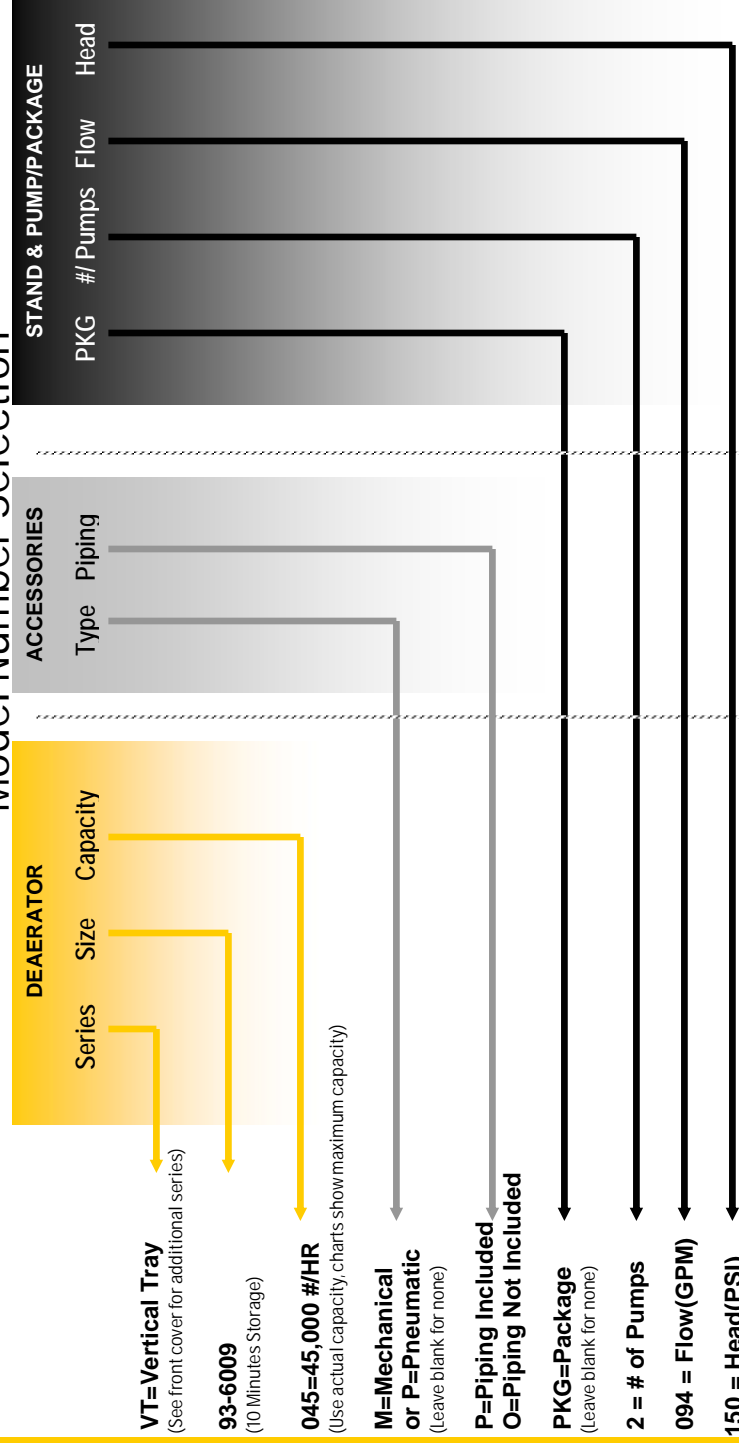
### FEATURES

- Vertical Tray Model (VT) Deaerator
- Guaranteed performance over wide load swings
- Rugged design with "Central Station" durability
- Quiet operation
- Capacities up to 200,000 #/hr with 100% makeup, 250,000 #/hr with condensate
  - Oxygen removal to 0.005 cc/liter (7ppb) Per HEI
  - Certified ASME construction
  - Options:
    - a. Accessory Package
    - b. Accessory Piping
    - c. BF Pump Package
    - d. Heat Exchange Institute (HEI) Design

Standard Vertical Tray Deaerator



Model Number Selection



**VT=Vertical Tray**  
 (See front cover for additional series)

**93-6009**  
 (10 Minutes Storage)

**045=45,000 #/HR**  
 (Use actual capacity, charts show maximum capacity)

**M=Mechanical or P=Pneumatic**  
 (Leave blank for none)

**P=Piping Included O=Piping Not Included**

**PKG=Package**  
 (Leave blank for none)

**2 = # of Pumps**

**094 = Flow(GPM) 150 = Head(Psi)**

**EXAMPLE: SERIES - SIZE CAPACITY**

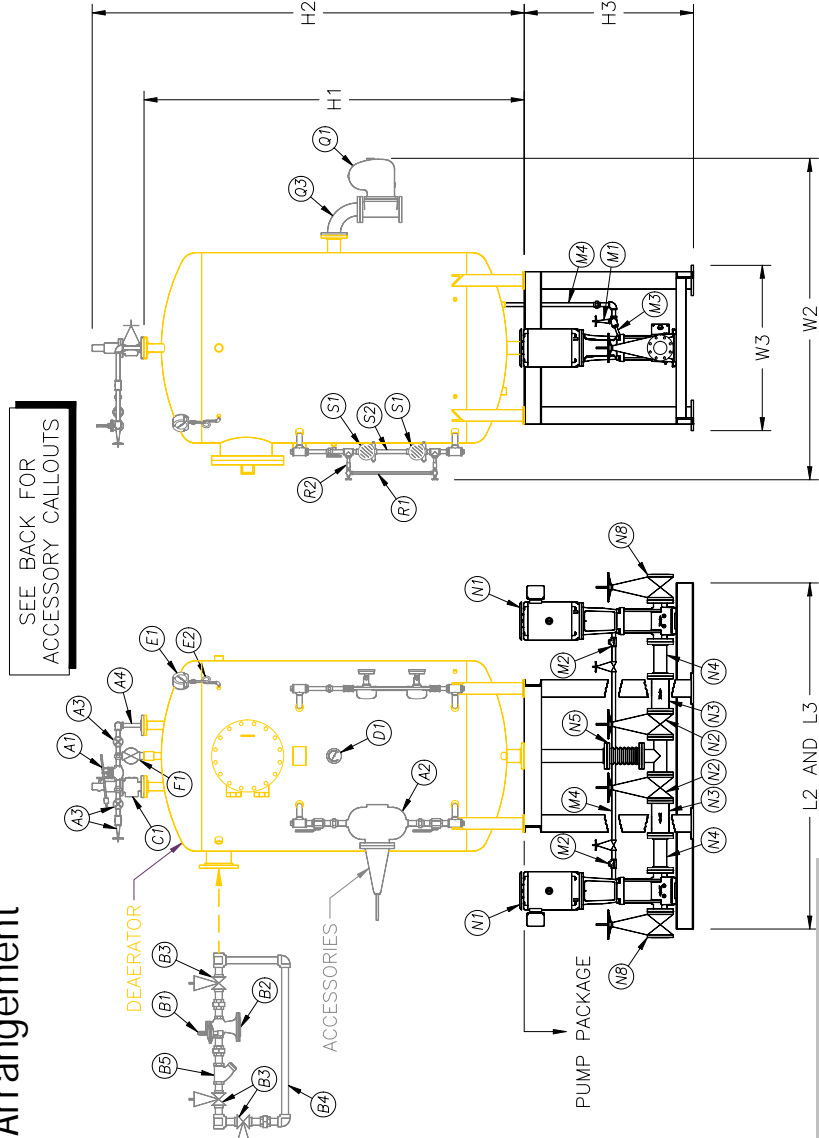
**VT 93 6009 -- 045 -- M O -- P PKG -- 2 -- 094 -- 150**

SELECTION CHART

10 Minutes Storage

DA MODEL	Boiler Capacity (HP)	Rated Capacity (#/HR)	Storage to Overflow (Gallons)	Storage Capacity (Minutes)	Vessel Dimension (L1 x W1 x H1)	Water Inlet "A" (in)	Steam Inlet "B" (in)	Empty Weight (lbs)	Operate Weight (lbs)	Flooded Weight (lbs)	Total Accessory (L2 x W2 x H2)	Pump Package (L3 x W3 x H3)
VT32-3006-10	290	4,000	93	10	3'0"x2'7" x 7'9"	1	3	1,300	3,000	4,000	6'6"x5'9" x 9'3"	6'9"x2'1" x 2'10"
VT32-3508-10	580	10,000	270	10	3'6"x2'11" x 9'11"	1.5	6	1,700	5,000	7,000	6'10"x7'7" x 11'11"	7'6"x3'3" x 2'10"
VT32-4008-10	725	15,000	353	10	4'0"x3'4" x 10'1"	2	6	2,100	7,000	9,000	7'1"x8'3" x 12'1"	8'0"x3'8" x 3'0"
VT32-4508-10	870	20,000	446	10	4'6"x3'8" x 10'4"	2	6	2,400	8,000	12,000	7'4"x8'6" x 12'3"	8'0"x4'0" x 3'0"
VT32-5008-10	1,159	25,000	539	10	5'0"x4'1" x 10'10"	2	6	2,700	10,000	14,000	7'7"x9'4" x 12'9"	8'4"x4'5" x 4'0"
VT50-5508-10	1,449	30,000	681	10	5'6"x4'5" x 11'0"	2.5	8	3,100	12,000	17,000	7'7"x10'2" x 12'6"	9'3"x4'9" x 3'6"
VT50-6008-10	1,739	40,000	811	10	6'0"x5'2" x 11'3"	2.5	8	3,300	14,000	20,000	7'10"x10'6" x 12'9"	10'6"x5'4" x 3'6"
VT93-6009-10	2,029	50,000	1,022	10	6'0"x5'2" x 12'3"	3	8	3,600	16,000	23,000	8'3"x11'2" x 13'9"	10'6"x5'4" x 3'6"
VT93-6010-10	2,319	60,000	1,234	10	6'0"x5'2" x 13'3"	3	10	4,000	18,000	25,000	8'3"x11'2" x 14'9"	10'6"x5'4" x 3'6"
VT93-6510-10	2,609	70,000	1,447	10	6'6"x5'7" x 13'5"	3	10	4,400	20,000	29,000	8'3"x11'5" x 14'11"	11'5"x5'9" x 3'6"
VT122-6512-10	3,188	90,000	1,943	10	6'6"x5'7" x 15'5"	4	10	5,100	24,000	34,000	8'3"x12'10" x 18'8"	12'0"x5'9" x 4'5"
VT122-7012-10	3,768	100,000	2,255	10	7'0"x5'11" x 15'7"	4	12	5,900	29,000	40,000	8'6"x13'1" x 18'10"	11'7"x6'1" x 4'11"

Typical Arrangement



5 Minutes Storage

DA MODEL	Boiler Capacity (HP)	Rated Capacity (#/HR)	Storage to Overflow (Gallons)	Storage Capacity (Minutes)	Vessel Dimension (L1 x W1 x H1)	Water Inlet "A" (in)	Steam Inlet "B" (in)	Empty Weight (lbs)	Operate Weight (lbs)	Flooded Weight (lbs)	Total Accessory (L2 x W2 x H2)	Pump Package (L3 x W3 x H3)
VT32-3006-05	580	8,000	93	5	3'0"x2'7" x 7'9"	1.5	6	1,400	3,000	4,000	6'6"x5'9" x 9'3"	7'0"x2'1" x 2'10"
VT32-3508-05	1,159	25,000	270	5	3'6"x2'11" x 9'11"	2	6	2,000	6,000	7,000	6'10"x8'7" x 11'11"	8'6"x3'3" x 3'10"
VT50-4008-05	1,449	30,000	353	5	4'0"x3'4" x 10'1"	2.5	8	2,400	7,000	10,000	6'10"x9'5" x 11'7"	8'6"x3'8" x 4'0"
VT50-4508-05	1,739	40,000	446	5	4'6"x3'8" x 10'4"	2.5	8	2,700	8,000	12,000	7'1"x9'9" x 11'10"	8'6"x4'0" x 4'0"
VT93-5008-05	2,319	50,000	539	5	5'0"x4'1" x 10'10"	3	10	3,200	11,000	15,000	7'9"x10'8" x 12'4"	9'0"x4'4" x 4'0"
VT93-5508-05	2,899	60,000	681	5	5'6"x4'5" x 11'0"	4	10	3,400	12,000	18,000	7'4"x12'4" x 12'10"	9'6"x4'9" x 5'6"
VT93-6008-05	3,478	75,000	811	5	6'0"x5'2" x 11'3"	4	12	3,900	15,000	21,000	7'7"x12'7" x 13'0"	9'6"x5'4" x 5'6"
VT122-6009-05	4,058	100,000	1,040	5	6'0"x5'2" x 12'3"	4	12	4,300	17,000	23,000	7'7"x12'7" x 13'0"	10'9"x5'4" x 5'6"
VT149-6010-05	4,638	120,000	1,234	5	6'0"x5'2" x 13'3"	4	12	4,700	19,000	26,000	7'7"x12'7" x 13'0"	11'1"x5'4" x 3'6"
VT184-6510-05	5,217	140,000	1,447	5	6'6"x5'7" x 13'5"	6	14	5,500	22,000	30,000	9'8"x12'6" x 16'8"	Consult Factory
VT209-6512-05	6,377	170,000	1,943	5	6'6"x5'7" x 15'5"	6	14	6,200	26,000	35,000	9'8"x13'5" x 18'8"	Consult Factory
VT246-7012-05	7,536	200,000	2,255	5	7'0"x5'11" x 15'7"	6	16	6,900	30,000	41,000	9'11"x13'8" x 18'10"	Consult Factory