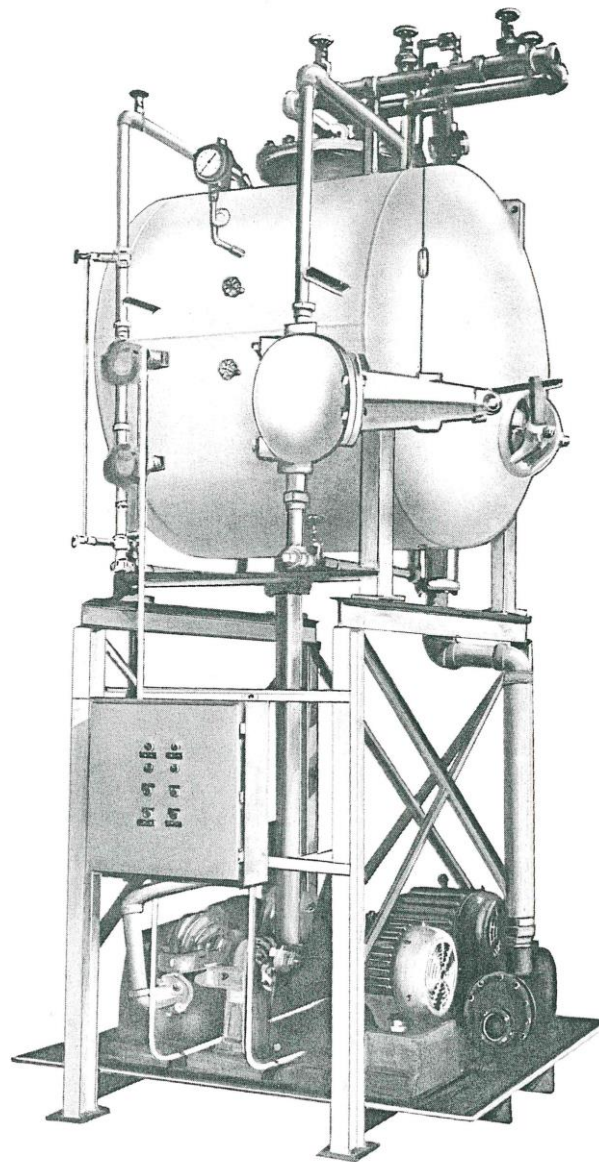


# **HYDREX**

## **Spray Type Deaerators**

---

**For removal of corrosive gases from boiler feedwater**

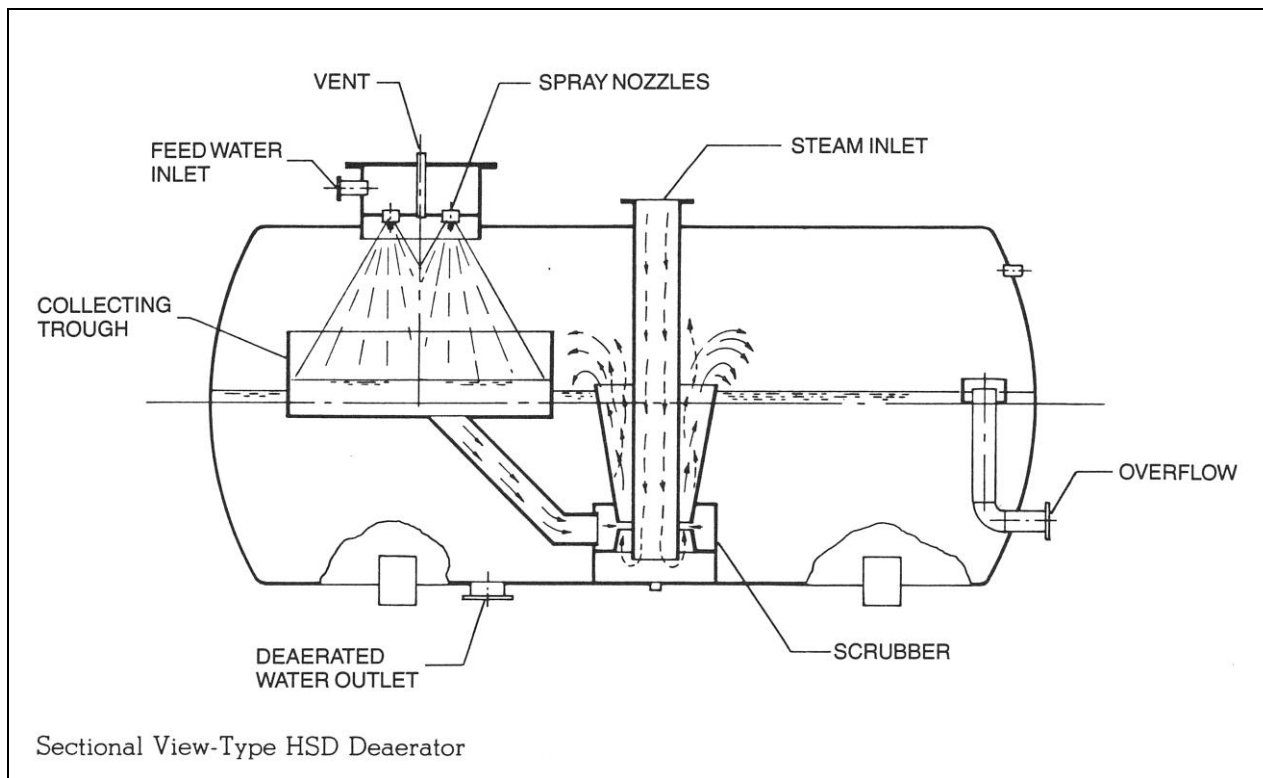


**Hydrex Package Deaerators are available in capacities from 5 to 70 tons per hour to suit all small and medium sized power plants.**  
**Low Cost. Compact. High Quality. Easy To Install. Low Maintenance.**  
**No Operating Cost. Guaranteed Performance**

## MODEL HSD DEAERATORS

*Hydrex Model HSD Deaerator is a spray type steam scrubber heater complete with a horizontal water storage tank. It is designed to completely remove all traces of carbon dioxide, reduce oxygen to less than 0.005 cc/lit saturated steam temperature.*

*It is idea for protection of boiler internals and piping in a small or medium size power plant. It also recovers heat from exhaust steam, provides condensate storage and returns condensate to the boiler without heat loss.*

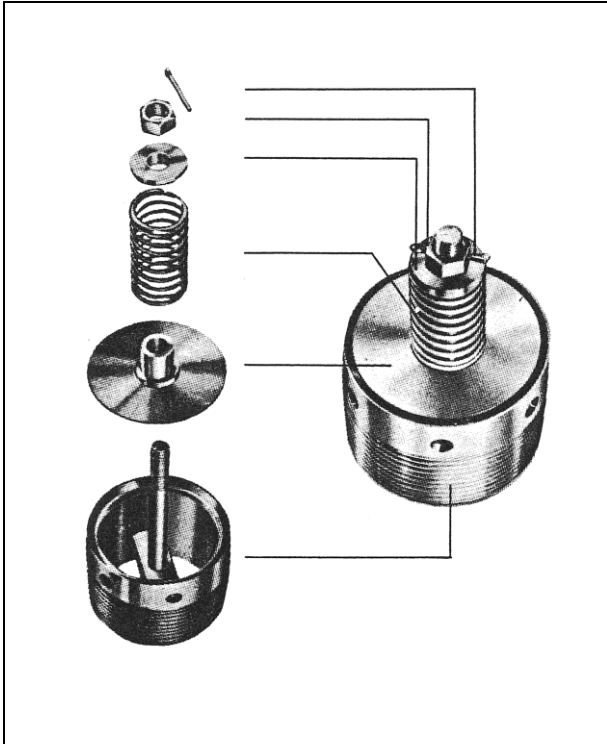


### Function of Deaerator:

Non-condensable gases, such as dissolved oxygen and carbon dioxide, when present in the boiler feedwater or in the condensate, attack iron and steel surface. At elevated boiler pressure and temperature the aggressive activity of the gases become serve resulting in substantial equipment damage from corrosion and boiler shut-down for

repair and replacement. The removal of non-condensable gases therefore becomes a vital necessity for all boiler plants, both large and small, to protect boiler internals, condensate lines, heat exchanger, piping and process equipment and prevent costly repair and process shut-down.

## PRINCIPLE OF OPERATION



Stainless steel spring loaded spray nozzle

### Water Flow

Feedwater enters the deaerator at a controlled rate through the spring loaded nozzles which spray the water in a finely divided state into a steam atmosphere. In this area, called the preheating and vent condensing section, intimate contact between water and steam results in heating the cold water makeup to nearly the boiling point. At this temperature the solubility of non-condensable gases is reduced to practically zero and almost all gases are released. The heated feedwater is collected in a reservoir and is directed to the scrubber section where it comes into direct contact with incoming steam. Vigorous agitation and boiling in the scrubber release the remaining non-condensable gases while the water rises and discharges into the storage compartment. The deaerated water remains at all times at the corresponding temperature and pressure of the steam by the constant steam pressure present in the deaerator

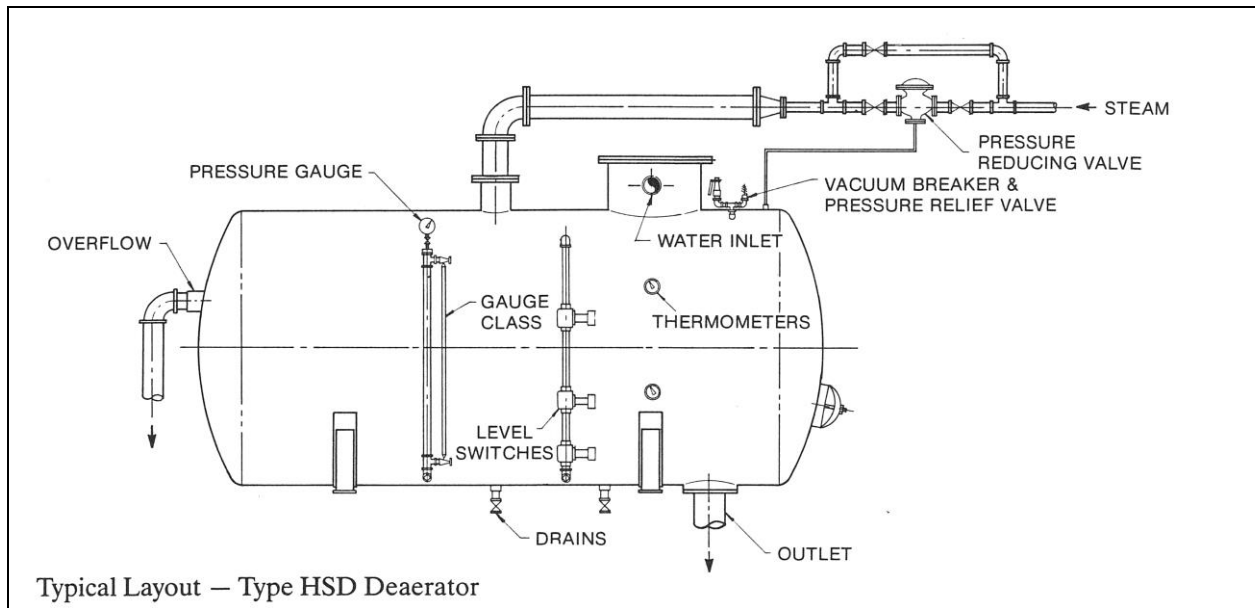
### Steam Flow

Steam enter the deaerator at a predetermined constant pressure through a reducing valve and is directed into the steam scrubber compartment. It passes upward through the scrubber with the incoming preheated water and is discharged into the atmosphere above the deaerated water. The intimate contact between the water and steam effectively removes all traces CO<sub>2</sub> and reduces oxygen content to less than 0.005 cc per liter. The steam consumed by consideration in heating the incoming makeup water is automatically replenished by additional steam flowing into the deaerator. The amount of steam thus entering the deaerator is directly in proportion to the rate and temperature of the feedwater.

The non-condensable gases released from the water are expelled from the top of the deaerator with a trace of steam through the vent valve.

### Features

- Finely divided water spray provides fullest heating and release of non-condensable gases.
- Entire spray compartment and vent condenser are fabricated from stainless steel to prevent corrosion by non-condensable gases.
- Stainless steel spray nozzles are non-clog type and maintain a higher pressure in the manifold than in the deaerator to prevent water hammer and backflow of steam into the condensate and makeup supply lines.
- Spray nozzles are easily accessible for inspection.
- All steam used for preheating must first pass through the scrubber compartment.
- Highest quality material are used to ensure long, efficient and trouble free service.
- All controls, valves, alarm switches gauges and accessories utilized on Hydrex deaerators are manufactured by leaders in their respective fields.



### Section Table

Model No.	Outlet Capacity		Tank Size		Storage Capacity	Tank Connections					Steam tons/hr.	Operating Weight tons
	m <sup>3</sup> /hr	lbs/hr	mm dia.	× Str. length		mm	Inlet	Outlet	Overflow	Drains		
HSD- 5	5	11,000	1,220	×1,600	0.85	1½	3	2	2	4	0.8	3.5
10	10	22,000	1,220	×2,350	1.7	2	3	2	2	4	1.5	5
15	15	33,000	1,220	×3,600	2.55	2½	3	2	2	6	2.3	7
20	20	44,000	1,520	×3,150	3.4	2½	4	2	2	6	3	8
25	25	55,000	1,520	×3,900	4.25	3	4	3	2	6	3.8	9.5
30	30	66,000	1,520	×4,650	5.1	3	4	3	2	8	4.5	11
35	35	77,000	1,830	×3,750	5.95	3	6	3	2	8	5.3	13
40	40	88,000	1,830	×4,200	6.8	4	6	4	2	8	6	15
45	45	99,000	1,830	×4,650	7.65	4	6	4	2	10	6.8	17
50	50	110,000	2,130	×3,150	8.5	4	6	4	2	10	7.5	19
60	60	132,000	2,130	×3,900	10.2	4	6	4	2	10	9	22
70	70	154,000	2,130	×4,650	11.9	4	6	4	2	12	10.5	25

#### FOR FURTHER INFORMATION

A full range of water and wastewater treatment systems and equipment are available from Hydrex. For further information, please contact us or our authorized agent.

#### Authorized Agent:

**HYDREX ASIA LTD.**

701, BEVERLEY COMMERCIAL CENTRE,  
87-105 CHATHAM ROAD, KLN, HONG KONG.  
PHONE: (852) 2527-9544  
E-mail: [info@hydrexasia.com](mailto:info@hydrexasia.com) [www.hydrexasia.com](http://www.hydrexasia.com)