LRQA CERTIFIED ISO 9001

ADCA ADCATherm

ADCATHERM BOILER FEED TANKS
BFT

DESCRIPTION

The BFT boiler feed tank is one of the most important devices in a boiler room. Its main function is to store the make-up water and condensate, assuring a reserve of treated water to supply to the steam boilers.
The make-up water has to be softened to prevent scale formation on the boiler and the oxygen also has to be removed, so that corrosion in the boiler and steam system is avoided (this situation is normally handled by specialists).
The consumption of chemicals used to eliminate the oxygen can be drastically reduced if you use one of the several ADCATherm thermal degasification processes (ADG, TDG, FCD) for the removal of oxygen and other non-condensable gases (mainly carbon dioxide).
Even if you choose not to use one of the mentioned systems, the ADCATherm boiler feed tanks will always be optimized according to the existing needs, therefore being able to include water pre-heating, as well as other features obvious to a true steam expert, but not to a simple tank manufacturer.

MAIN FEATURES

Sandblasted and metalized internally and externally (externally painted).
Prevents energy wasting.
Can be installed on new or existing systems.

OPTIONS:	Vertical and special designs for different applications. Complete stainless steel construction. Complete system including all the necessary equipment. Vent condenser for energy recovery.
USE:	Steam boiler feed water.
AVAILABLE MODELS:	BFT – standard horizontal design. BFT/ADG or TDG – vessel and correspondent deaerator dome. BFTV – special vertical design.
CONNECTIONS:	Flanged EN 1092-1 or ASME. ISO or NPT threaded sockets. Different connections on request.
CONSTRUCTION:	Carbon steel with internal stainless steel components.
INSTALLATION:	See ADG/TDG catalogues for typical installations. Standard horizontal install. Vertical on request. Final dimensions and connections according to the drawing supplied after order confirmation. Insulation (not included) recommended after installation.

LIMITING CONDITIONS	
PS – Maximum allowable pressure	0,5 bar
TS – Maximum allowable temperature	120 ºC

Minimum operating temperature: -10 ºC;
Design code: AD-Merkblatt.
Remark: other conditions and CE marking on request.

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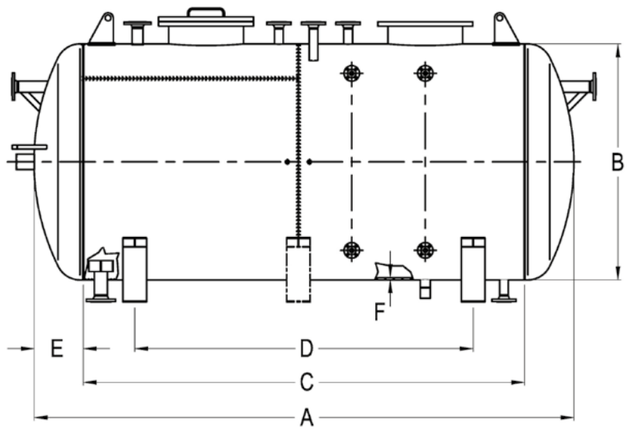


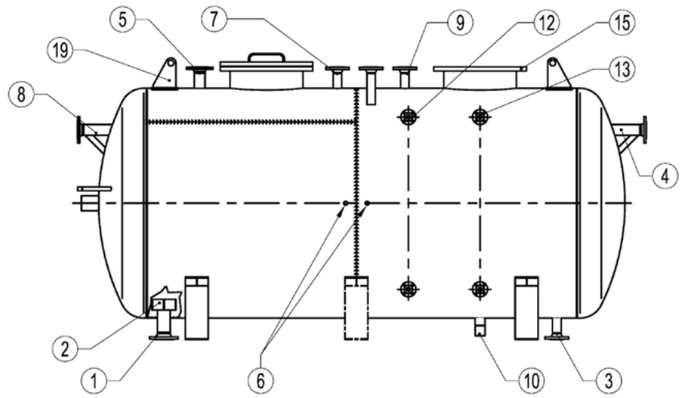
DIMENSIONS (mm)								
MODEL	**CAPACITY (L)**	**A**	**B**	**C**	**D**	**E**	**F**	**WEIGHT (kg)**
BFT-500	537	1800	640	1500	900	150	4	180
BFT-750	856	1860	800	1500	900	180	5	290
BFT-1000	1107	2360	800	2000	1200	180	5	350
BFT-1250	1336	1920	960	1500	900	210	5	360
BFT-1500	1698	2420	960	2000	1200	210	5	410
BFT-2000	2248	2480	1080	2000	1200	240	6	570
BFT-2500	2706	2980	1080	2500	1500	240	6	665
BFT-3000	3068	2560	1280	2000	1200	280	7	795
BFT-3500	3711	3060	1280	2500	1500	280	7	920
BFT-4000	4176	2660	1500	2000	1200	330	8	1160
BFT-5000	5060	3160	1500	2500	1500	330	8	1335
BFT-6000	5943	3660	1500	3000	1800	330	8	1510

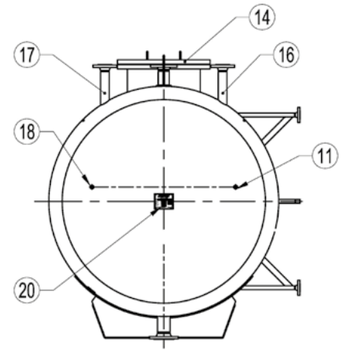
Remarks: approximate dimensions. Consult manufacturer for certified dimensions.
Pipe connections and location approved after order confirmation.

MATERIALS	
DESIGNATION	**MATERIAL**
Cylindrical shell	EN 10025 / S235JR / 1.0038
Domed ends	EN 10025 / S235JR / 1.0038
Inlet/outlet pipes	EN 10216-2 / P235GH / 1.0345
EN flanges	EN 10222-2 / P250GH / 1.0460
ASME flanges	ASTM A105 / 1.0432
Sockets	ASTM A105 / 1.0432
Internals	EN 10028-7 / AISI 316 / 1.4401
Supports	EN10025 / S235JR / 1.0038
Bolts	Steel 8.8

EN 10204 3.1 certificate available on request.

THERMAL DEAERATOR DATA INQUIRY		
Make-up water pressure		bar
Make-up water temperature		ºC
Make-up water flow rate		kg/h
Condensate return pressure		bar
Condensate temperature		ºC
Condensate flow rate		kg/h
Saturated heating steam pressure		bar
Feed water tank required capacity		m3
Max. dearated water flow required		kg/h





CONNECTIONS *		
POS. Nº	**DESIGNATION**	**REMARKS**
1	Boiler feed pump supply	Larger diameter to optimize pressure loss (preventing cavitation)
2	Anti vortex	–
3	Drain	To be connected to a BEX (always at a lower level than the feed tank)
4	Overflow	Float trap or “U” bend (only for atmospheric)
5	Heating steam	Can be located at the domed ends
6	Chemical dosing	Can be located at the domed ends
7	Condensate return	Only if not connected to a dearetor dome
8	Soft water inlet	Only if not connected to a dearetor dome
9	Vent outlet	Only if not connected to a dearetor dome
10	Recirculating pump	Recommended for atmospheric design only
11	Temperature indicator	Can be located at the domed ends
12	Level indicator	Can be located at the domed ends
13	Level controller	Can be located at the domed ends
14	Headhole	DN 300 PN 6 up to 1000 L
14	Manhole	DN 500 PN 6 for 1250 L and above
15	Dome flange	For ADG or TDG
16	Vacuum valve	For pressurized systems only
17	Safety valve	For presurized systems only
18	Temperature control	Suitable for electrical or self operated valve control
19	Lifting eyes	–
20	Name plate	–

* Sizes to be defined according to the real flow conditions.

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IS BFT.20 E 09.12

ATMOSPHERIC SEMI – DEAERATORS
ADG

DESCRIPTION

The ADCATherm atmospheric semi-deaerators are designed to heat boiler feed water and to reduce oxygen and carbon dioxide (oxygen values in the feed water of less than 1,6 mg/L can be achieved). Remaining oxygen can be completely removed using oxygen scavenging chemicals.
Basically, the complete system consists of a storage vessel, a deaeration head section and a vent.

OPERATION

Hot return condensate is injected in the bottom of the storage vessel using an adequate sparger pipe and softened make-up water is introduced in the deaerator head to be heated by a contact cascade flash steam heating system (counter-current flow) coming from the vessel. A part of the dissolved gases is liberated from the water at this point, and then to the atmosphere, trough the flash steam vent line.
The semi-deaerated water then falls to the storage vessel below, where a steam injection system will provide an additional deaeration.
The complete unit is supplied, including all the necessary instrumentation for temperature and level control, to be described in our offer, depending on the operation conditions (see Table 1).

MAIN FEATURES

Prevents energy wasting.
Easy to install.
Can be installed on new or existing systems.
Reduces the flow of flash steam from the vessel venting pipe.
Long life expectancy.

OPTIONS: Complete stainless steel construction.
Complete system including all the necessary equipments.
Vent condenser for energy recovery.

USE: Steam boiler feed water.

AVAILABLE MODELS: ADG – Deaerator head.

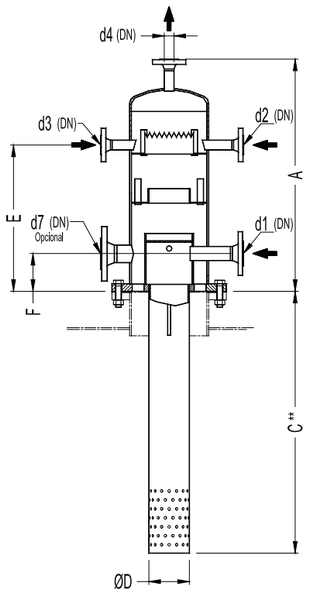
CONNECTIONS: Flanged EN 1092-1 or ASME.
ISO or NPT threaded sockets.
Different connections on request.

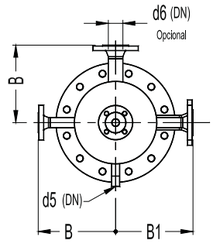
CONSTRUCTION: Carbon steel with internal stainless steel components.

INSTALLATION: Deaerator head – vertical installation.
Storage vessel – cylindrical horizontal design.
Final dimensions and connections according to the drawing supplied after order confirmation.

LIMITING CONDITIONS	
PS – Maximum allowable pressure	0,5 bar
TS – Maximum allowable temperature	120 ºC

Minimum operating temperature: -10 ºC;
Design code: AD-Merkblatt.
Remark: other conditions and CE marking on request.





DIMENSIONS (mm)														
MODEL	A (mm)	B (mm)	C (mm)	D (mm)	E (mm)	F (mm)	d1 (DN)	d2 (DN)	d3 (DN)	d4 (DN)	d5 (DN)	d6 * (DN)	d7 * (DN)	WGT. (kg)
ADG150	610	184	**	80	400	125	50	25	25	40	1/2”	50	50	***
ADG200	670	210	**	120	425	160	80	32	25	50	1/2”	65	65	***
ADG250	860	237	**	140	580	190	100	50	25	65	1/2”	80	80	***
ADG300	900	265	**	170	610	190	100/150	65	40	80	1/2”	100	100	***
ADG400	780	510	**	220	490	180	150	80	40	100	1/2”	125	125	***

d1 – hot condensate inlet; d2 – cold make-up water; d3 – recirculating pump connection; d4 – vent; d5 – pressure gauge connection; d6 – cold condensate return; d7 – flash steam;
* Optional; ** Dimensions on request; *** Weight to be confirmed.

SELECTION TABLE					
MAX. STEAM GENERATION (kg/h)	5000	10000	20000	30000	50000
MODEL	ADG150	ADG200	ADG250	ADG300	ADG400

THERMAL DEAERATOR DATA INQUIRY		
Make-up water pressure		bar
Make-up water temperature		ºC
Make-up water flow rate		kg/h
Condensate return pressure		bar
Condensate temperature		ºC
Condensate flow rate		kg/h
Saturated heating steam pressure		bar
Feed water tank required capacity		m3
Max. dearated water flow required		kg/h

Table 1

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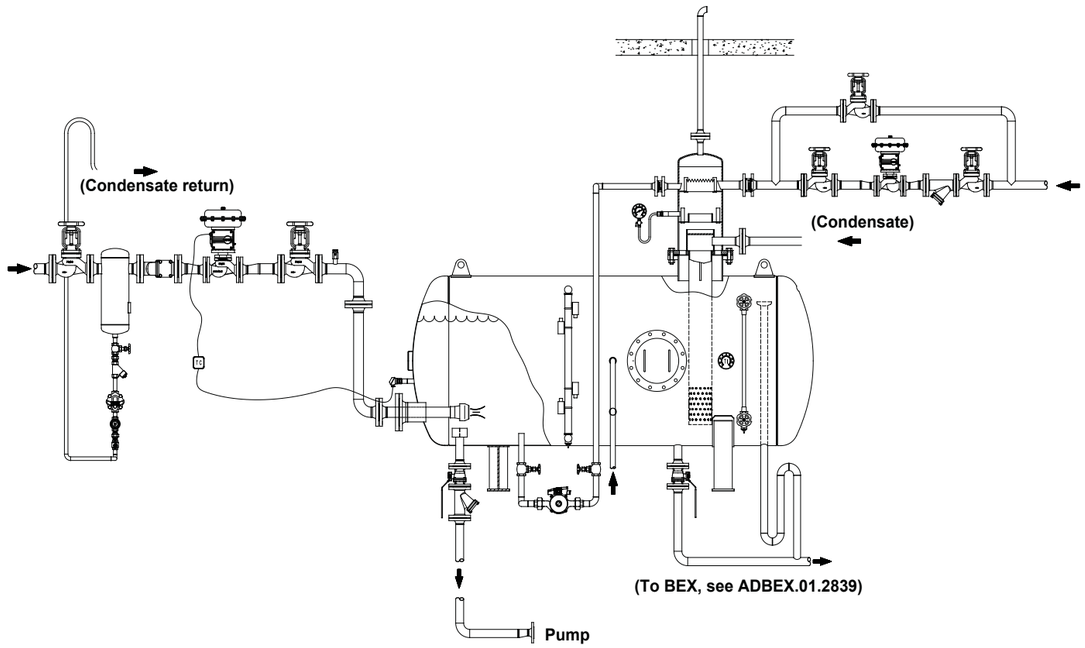
TYPICAL INSTALLATION

Semi - deaerator system with cold make-up water



Atmospheric deaerator provides an economic system to preheat boiler feed water and remove dissolved gases.

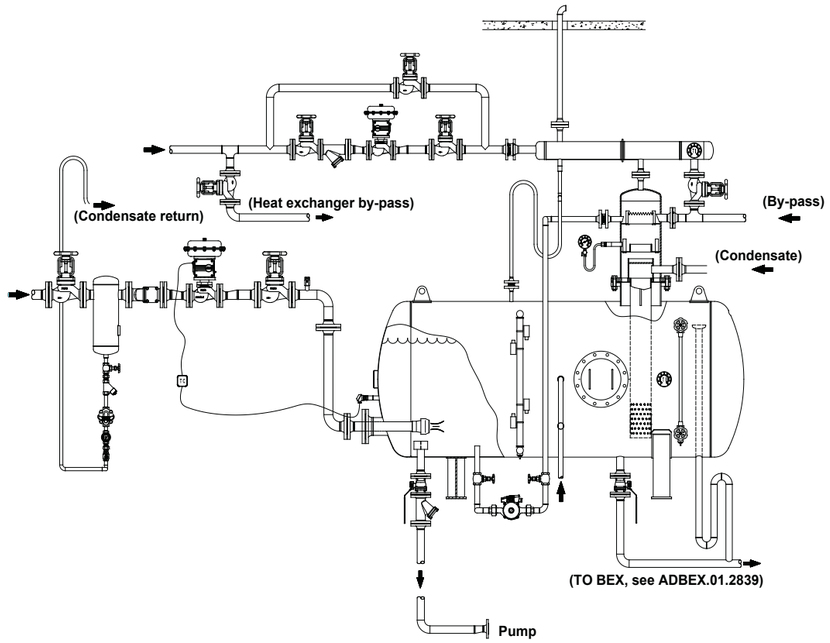
The steam injector can be supplied with flanges and pipe, ready to adapt to existing vessels.

The feed water is re-circulated using a low power re-circulating pump which will improve thermal efficiency by reducing the temperature stratification.

For more detailed information please see assembly drawing ADADGV.01.2844.

TYPICAL INSTALLATION

Semi - deaerator system with vent condenser



Atmospheric deaerator including ADCATherm STS series complete stainless steel heat exchanger. Make-up water crossing the heat exchanger will condense the flash steam, preventing energy waste and providing better performance for the whole system.

The steam injector can be supplied with flanges and pipe, ready to adapt to existing vessels.

The feed water is re-circulated using a low power re-circulating pump which will improve thermal efficiency by reducing the temperature stratification.

For more detailed information please see assembly drawing ADADGV.02.2845.

ADCATHERM TRAY TYPE DEAERATORS
TDG

DESCRIPTION

The TDG series tray type thermal deaerators are designed to heat boiler feed water and reduce oxygen and carbon dioxide levels (oxygen levels in the feed water of less than 0,02 mg/l - 0,02 ppm can be achieved). Remaining oxygen can be completely removed using oxygen scavenging chemicals.
Basically, the complete system consists of a storage vessel, a deaeration section and a vent.

OPERATION

Returning condensate and softened make-up water are introduced in the deaerator dome to be heated by a contact cascade steam heating system (counter-current flow). Most of the dissolved gases are liberated from the water at this point, and they are released to the atmosphere trough the flash steam vent line.
The deaerated water then falls to the storage vessel below, where a steam blanket ensures that no gases are reabsorbed.
A sparger pipe is installed inside the tank, at the bottom level, providing the necessary heating energy. A second low pressure steam supply may also be necessary.
The complete unit is supplied including all the necessary instrumentation for temperature, pressure and level control, to be described in our offer depending on the operation conditions (see Table 1).

MAIN FEATURES

Turndown (max./min. flow) – 100:1.
Long life expectancy.

OPTIONS: Complete stainless steel construction.
Complete system including all the necessary equipment.
Two stage deaerators.
Vent condenser for energy recover

USE: Steam boiler feed water.

AVAILABLE MODELS: TDG – deaerator dome.

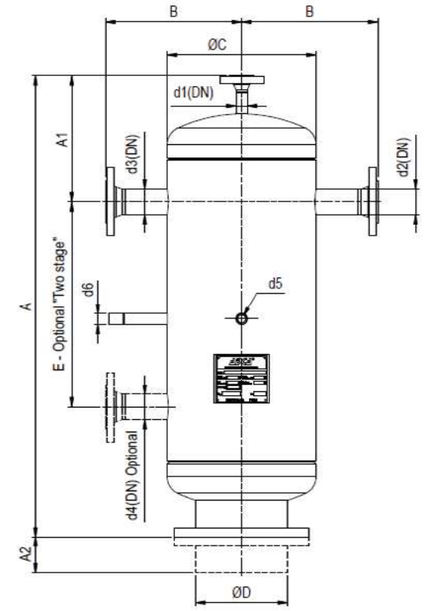
CONNECTIONS: Flanged EN 1092-1 or ASME.
ISO or NPT threaded sockets.
Different connections on request.

CONSTRUCTION: Carbon steel with internal stainless steel components.

INSTALLATION: Deaerator dome – vertical installation.
Storage vessel – cylindrical horizontal design.
Final dimensions and connections according to the drawing supplied after order confirmation.

LIMITING CONDITIONS	
PS – Maximum allowable pressure	0,5 bar
TS – Maximum allowable temperature	120 ºC

Minimum operating temperature: -10 ºC;
Design code: AD-Merkblatt.
Remark: other conditions and CE marking on request.



DIMENSIONS (mm)														
MODEL	FLOW *	A	A1	A2	B	C	D	d1	d2	d3	d4	d5	d6	WGT. (kg)
TDG-10	1	950	265	250	260	220	220	DN 15	DN 25	DN 25	DN 50	G 1/2"	G 1/2"	47,2
TDG-20	2	950	265	250	290	273	220	DN 20	DN 25	DN 25	DN 50	G 1/2"	G 1/2"	56,1
TDG-40	4	1100	300	300	325	355	220	DN 20	DN 50	DN 50	DN 50	G 1/2"	G 1/2"	96,1
TDG-60	6	1250	320	300	380	457	273	DN 32	DN 50	DN 50	DN 80	G 1/2"	G 1/2"	163,4
TDG-100	10	1400	355	300	425	508	324	DN 32	DN 80	DN 80	DN 100	G 1/2"	G 1/2"	225,7
TDG-140	14	1550	380	300	475	610	407	DN 32	DN 80	DN 80	DN 100	G 1/2"	G 1/2"	330,4
TDG-200	20	1950	410	300	550	813	508	DN 32	DN 100	DN 100	DN 100	G 1/2"	G 1/2"	528,4

* Maximum flow rate in m³/h (heating from 10 ºC to 105 ºC).
Remarks: d1 to d6 and certified dimensions supplied after complete data evaluation.

THERMAL DEAERATOR DATA INQUIRY		
Make-up water pressure		bar
Make-up water temperature		ºC
Make-up water flow rate		kg/h
Condensate return pressure		bar
Condensate temperature		ºC
Condensate flow rate		kg/h
Saturated heating steam pressure		bar
Feed water tank required capacity		m3
Max. dearated water flow required		kg/h

Table 1

VALSTEAM ADCA
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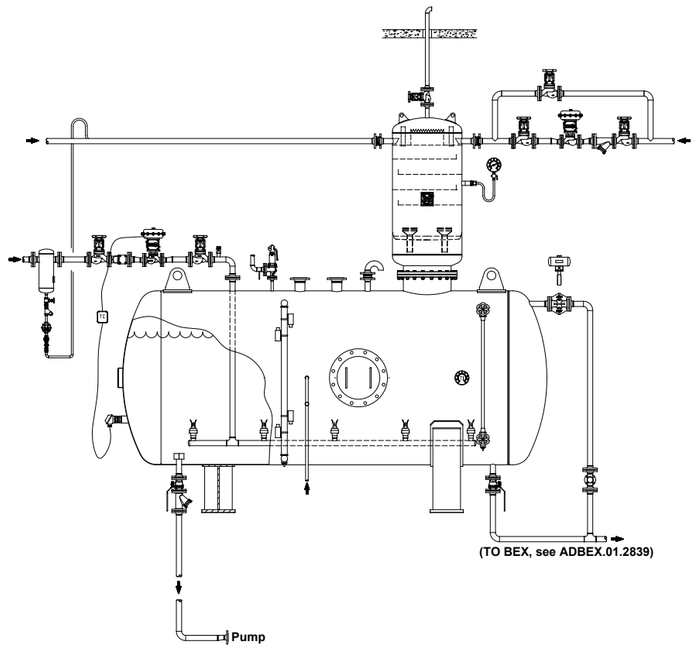
IS TDG.20 E 15.07

TYPICAL INSTALLATION

Thermal deaerator system with cold make-up water (without dome steam injection)



If a high percentage of hot condensate is recovered, the direct steam injection in the deaerator tower is usually unnecessary, as the heating steam supplied trough the steam injection system is, in most cases, enough.

For more detailed information please consult assembly drawing ADTDGV.04.2843.

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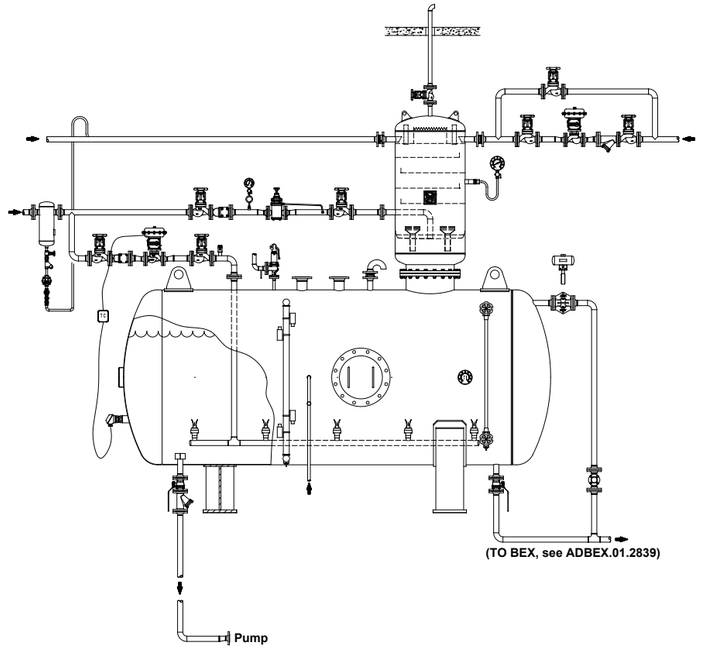
TYPICAL INSTALLATION

Thermal deaerator system with cold make-up water (with dome steam injection)



In systems where condensate return is negligible and/or high flow rates are involved, an additional dome steam injection should be provided.

For more detailed information please consult assembly drawing ADTDGV.01.2597.

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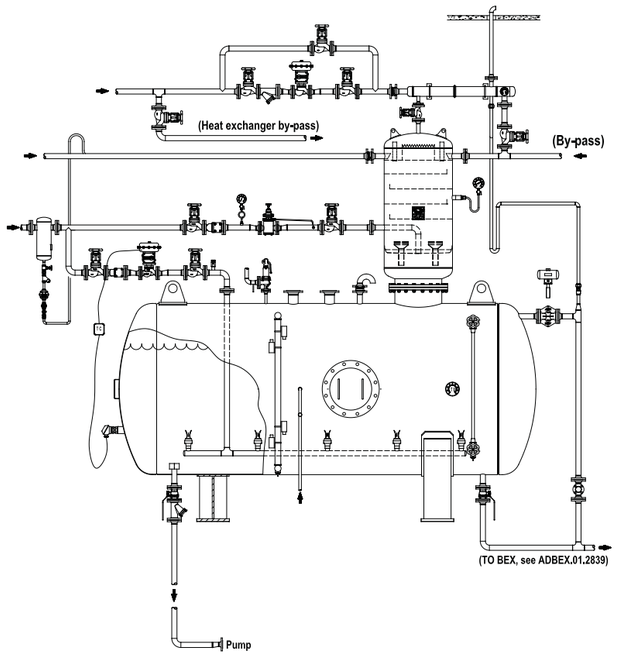
IS TDG.20 E 15.07

TYPICAL INSTALLATION

Thermal deaerator system with vent condenser

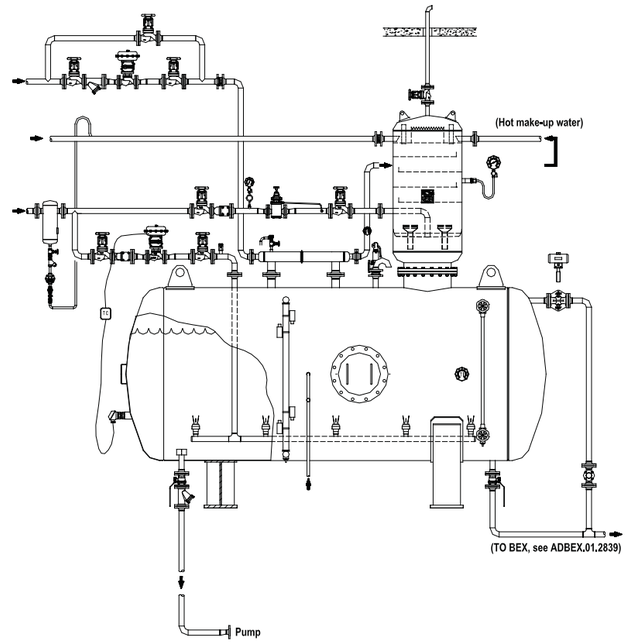


Thermal deaerators, including ADCATherm STS series complete stainless steel heat exchanger. Make-up water crossing the heat exchanger will condense the flash steam, preventing energy waste and increasing performance of the whole system.

For more detailed information please see assembly drawing ADTDGV.02.2841.

TYPICAL INSTALLATION

Thermal deaerator system with pre-heating make-up water heat exchanger



Thermal deaerator with low pressure steam to water ADCATherm STS complete stainless steel heat exchanger, providing make-up water heating.

For more detailed information please see assembly drawing ADTDGV.03.2842.