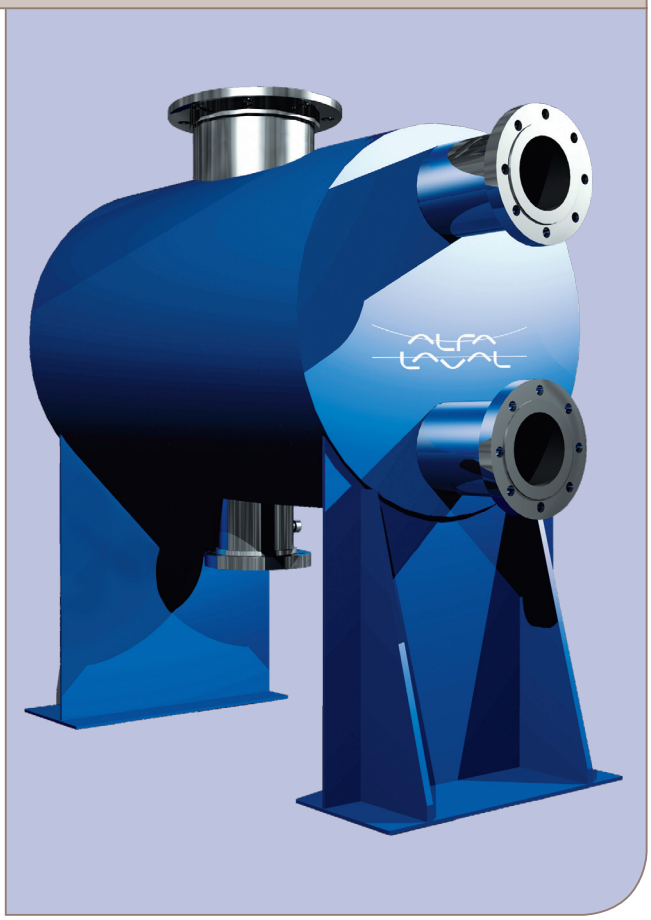
AlfaDisc

An all-welded Plate Heat Exchanger for Refrigeration



AlfaDisc is a compact, welded heat exchanger for refrigeration applications including two-phase and single-phase liquid/gas cooling. It is manufactured for a wide range of duties making it applicable for low and high temperatures (over 200°C/400°F) as well as high pressures (100b/ASME 680 psi). These characteristics make the AlfaDisc a perfect fit with natural refrigerants like ammonia and carbon dioxide.

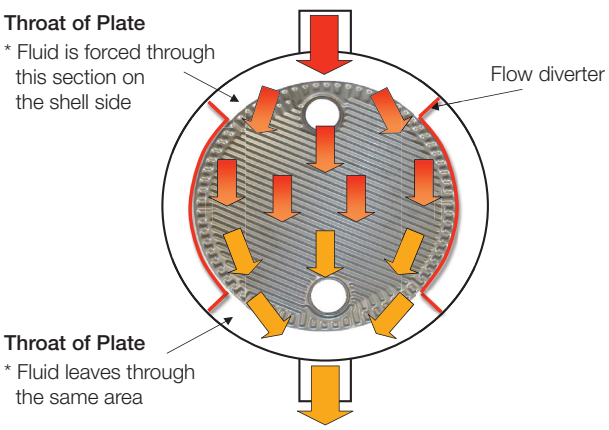
AlfaDisc provides the thermal efficiency and the compactness of a plate-and-frame heat exchanger while handling temperatures and pressures otherwise requiring shell-and-tube units. It has a high tolerance for thermal expansion compared to other welded technologies.

The plate and the shell modules can be constructed of different materials selected to withstand corrosive fluids and to satisfy demands for process fluids in high and low temperature applications.

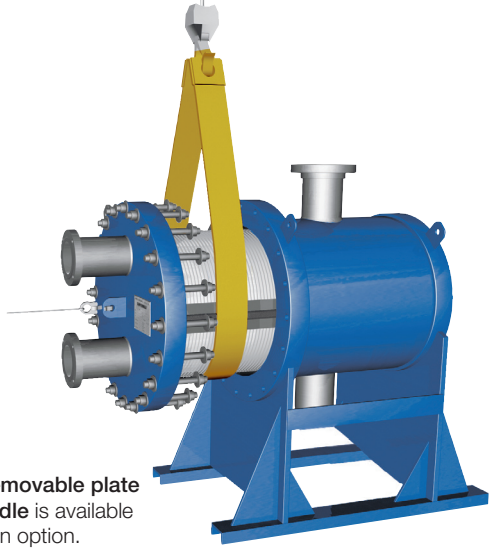
How it works

AlfaDisc is constructed of a shell and a plate pack with alternating channels for pure co-current or counter-current flows.

The refrigerant typically condenses or evaporates on the shell side where the two-phase flow is assisted by flow diverters. On the plate side, water or brine are normally pumped through the welded channels. In some applications, for example cascade systems, phase change can occur on both the plate side and the shell side.



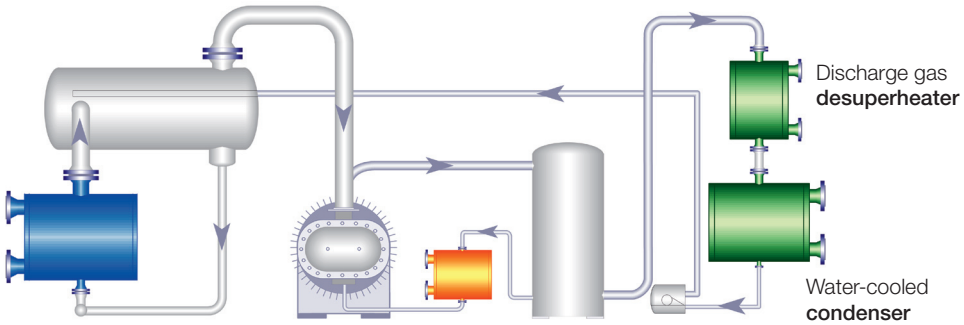
The plate pack is resistant to thermal expansion and damage from freezing due to the “accordion” core construction.

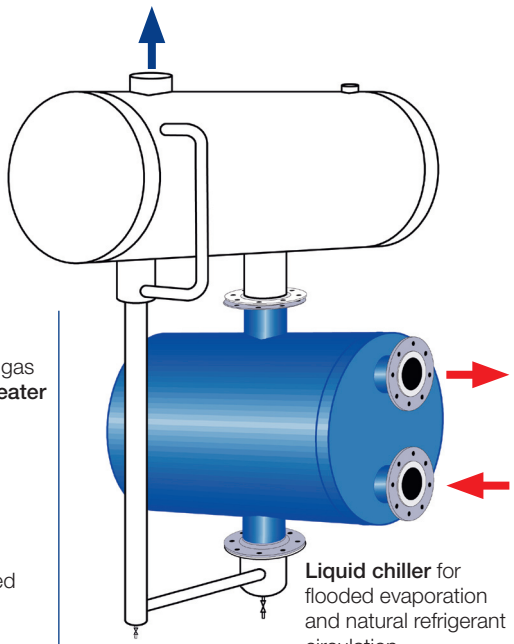


A removable plate bundle is available as an option.

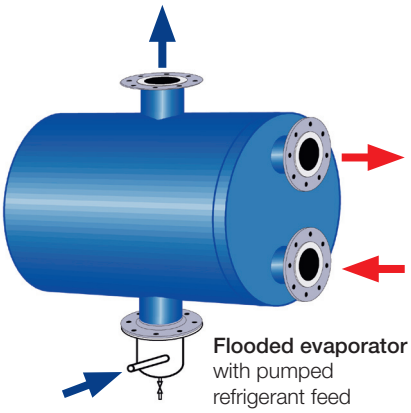
System Applications

AlfaDisc is designed for natural refrigerants or HFCs for industrial and commercial refrigeration system applications.

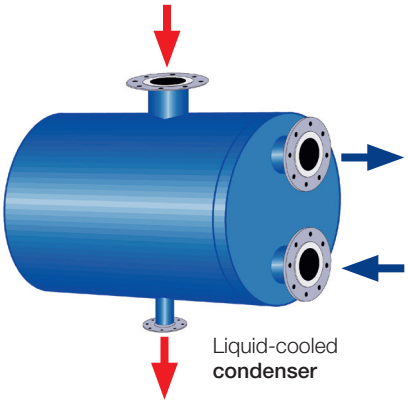




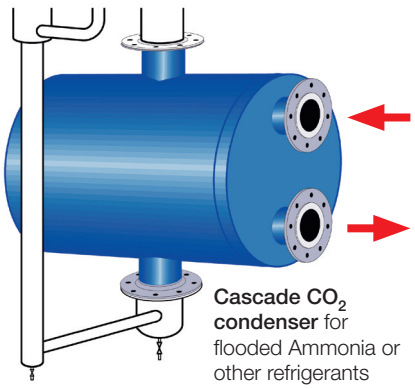
Liquid chiller for flooded evaporation and natural refrigerant circulation



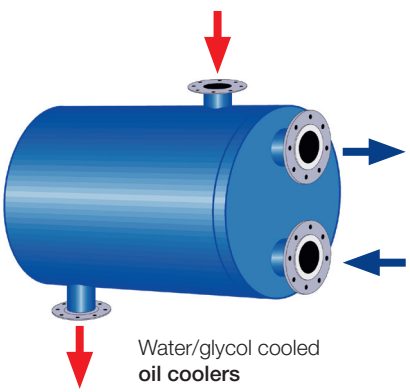
Flooded evaporator with pumped refrigerant feed



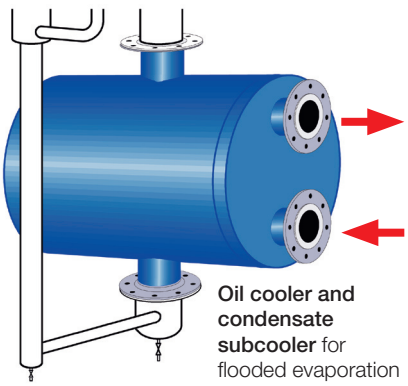
Liquid-cooled **condenser**



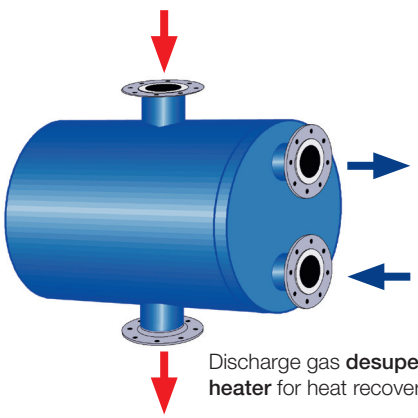
Cascade CO_2 condenser for flooded Ammonia or other refrigerants



Water/glycol cooled **oil coolers**



Oil cooler and condensate subcooler for flooded evaporation

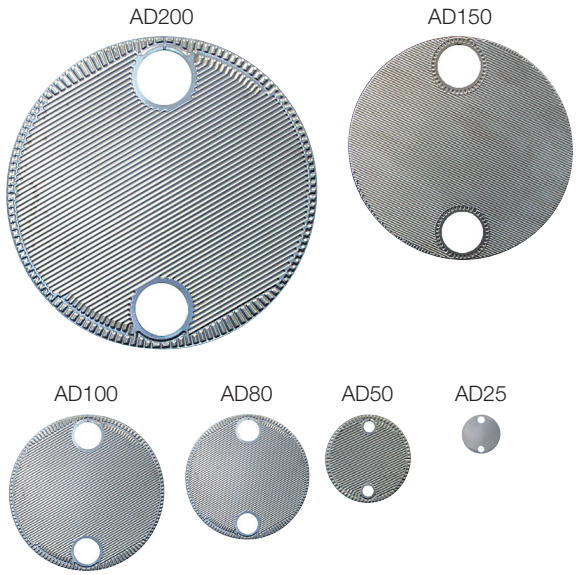


Discharge gas **desuper-heater** for heat recovery

Advantages of AlfaDisc compared to shell-and-tube heat exchangers

+ Less than half the size for comparable duties as a result of higher heat transfer coefficient.
+ Turbulent flow even at low velocities enables stable capacity regulation and minimizes fouling.
+ Easy adaptation to each cooling duty by grouping plates in pure co-current or counter-current flow and by using multiple passes when required.
+ Thermal and hydraulic performances can be optimised trought different plate pattern
+ Can handle small approach temperatures for highly efficient overall plant performance.
+ Resistant to freezing due to fluid turbulence on corrugated plate pattern.
+ Tested against pressure and temperature fatigue.
+ Low refrigerant charge.

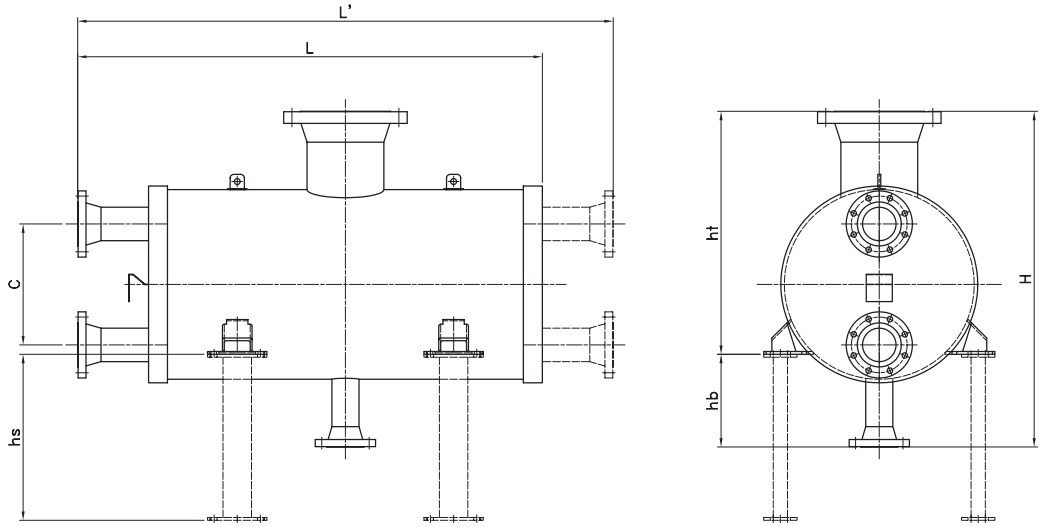
Model range	Maximum area m^2	Maximum area ft^2
AD25	4,5	48,5
AD50	35	377
AD80	62	667
AD100	125	1345,5
AD150	220	2368
AD200	380	4090



	Design Pressure range				Design Temperature range	
CE/PED	0-100	bar	0-1450	psi	-160 to 538°C	-260 to 1000°F
ASME VIII	0-100	bar	0-1450	psi	-160 to 538°C	-260 to 1000°F
Standard	10, 25, 40	bar	150, 350, 600	psi	-29 to 300°C	-20 to 575°F

Standard materials	Plates (including connections)	Shell (including connections)
CE/PED	AISI 316L	Carbon steel, AISI 316L
ASME VIII	AISI 316L	Carbon steel, AISI 316L
Coating	–	AL standard
On request	Ti, Alloy 254	–

Quality Assurance and Pressure Vessel Certifications
ISO 9001
ISO 14001
ASME VIII Div 1
PED CE, Europe
CRN, Canada
GOST, Russia
KGS, Korea
SQL, China
Ukranian Certificate
Other pressure vessel codes including marine classifications on request



Dimensions (mm)

Model	H[2] min	H[2] max	L min	L max	L' min	L' max	C	hs[1] min	hs[1] max	hb[2] min	hb[2] max	ht[2] min	ht[2] max	Nozzles Plate side	Nozzles Shell side
AD25	370	850	275	1945	410	2230	132	260	740	265	500	110	340	25	10-100
AD50	630	1050	290	2010	450	2300	216	450	790	445	650	185	380	50	20-150
AD80	790	1270	310	2070	480	2390	290	540	1040	575	830	210	440	80	25-250
AD100	930	1450	340	2125	510	2475	420	640	1220	690	960	235	475	100	25-350
AD150	1130	1700	380	2205	565	2590	550	760	1530	875	1170	280	530	150	25-500
AD200	1450	2400	430	2325	640	2740	723	1000	1980	1120	1550	320	630	200	25-700

Dimensions (in)

Model	H[2] min	H[2] max	L min	L max	L' min	L' max	C	hs[1] min	hs[1] max	hb[2] min	hb[2] max	ht[2] min	ht[2] max	Nozzles Plate side	Nozzles Shell side
AD25	15	33	11	77	16	88	5	10	29	10	20	4	13	1	0,5-4
AD50	25	41	11	79	18	91	9	18	31	18	26	7	15	2	1-6
AD80	31	50	12	81	19	94	11	21	41	23	33	8	17	3	1-10
AD100	37	57	13	84	20	97	17	25	48	27	38	9	19	4	1-14
AD150	44	67	15	87	22	102	22	30	60	34	46	11	21	6	1-20
AD200	57	94	17	92	25	108	28	39	78	44	61	13	25	8	1-28

[1] Dimensions vary with support type
[2] Dimensions vary with connection sizes and supports

Available connection standards	PED	ASME ANSI 16.5
Plain End Pipe	PN 16, 25, 40, 63 and 100	150, 300, 600 and Class 900
Welding neck/raised face	PN 16, 25, 40, 63 and 100	150, 300, 600 and Class 900
Welding neck/tongue-and-groove	PN 16, 25, 40, 63 and 100	–
Other connection executions available on request		

How to contact Alfa Laval
Up-to-date Alfa Laval contact details for all countries are always available on our website at www.alfalaval.com.