



## High efficiency with a small footprint

### Alfa Laval U-Turn AlfaNova 76 – plug'n'play module for flooded ammonia

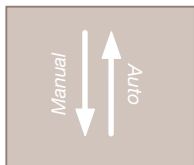
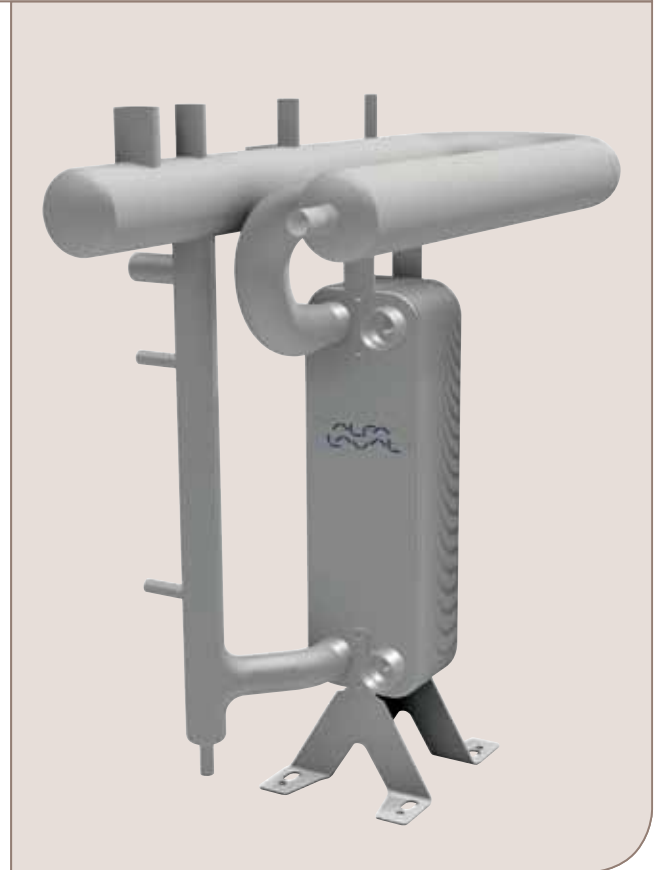
#### Turn to efficiency

U-Turn is a liquid separator especially designed for use with plate heat exchangers in ammonia applications. The module – including the separator and plate heat exchanger (PHE) ensures minimum pressure drop losses and maximum energy efficiency.

Plate heat exchangers from Alfa Laval can operate with the smallest LMTD (Logarithmic Mean Temperature Difference) as evaporators. To ensure this efficiency is not lost from a liquid column that is too small or large, or due to incorrect pressure drop, Alfa Laval has developed the U-Turn separator. The module provides an effective and compact installation with less vertical rise and smaller overall dimensions than any other solution. All ammonia connections are grouped on the same side which allows the module to be installed in close proximity to walls or on the perimeter of a main skid.

#### U-Turn in action

Alfa Laval U-Turn is designed to utilize the very best from Alfa Laval's plate heat exchanger technology. Installed above the plate heat exchanger, the self-contained U-Turn can be easily mounted onto the compatible AlfaNova 76 fusion bonded plate heat exchanger made of 100% stainless steel. It can cover ammonia capacities from 29 to 110 kW (depending on evaporating temperature from -40°C up to +10°C).



**Nozzles for preferred oil drain method**  
– various oil drainage options



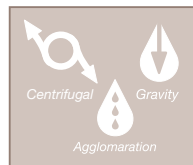
**Predefined liquid level and charge**  
– information to run U-Turn module at peak performance



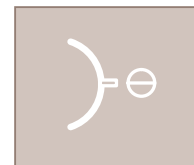
**Check valve for start-up flow control**  
– immediate safety operation



**Self-contained unit**  
– easy installation and full access, no skids or frame required



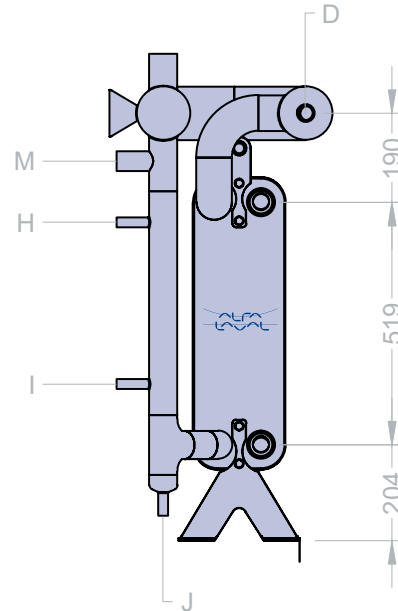
**Multiple separation methods** – enhanced separation efficiency and extremely low ammonia charge



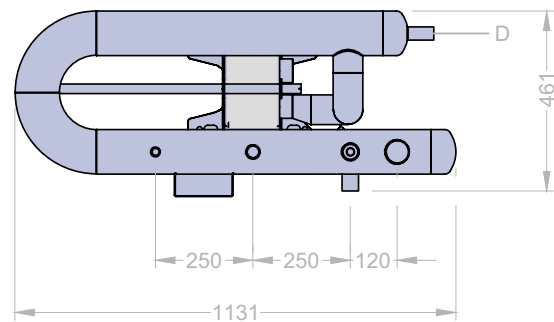
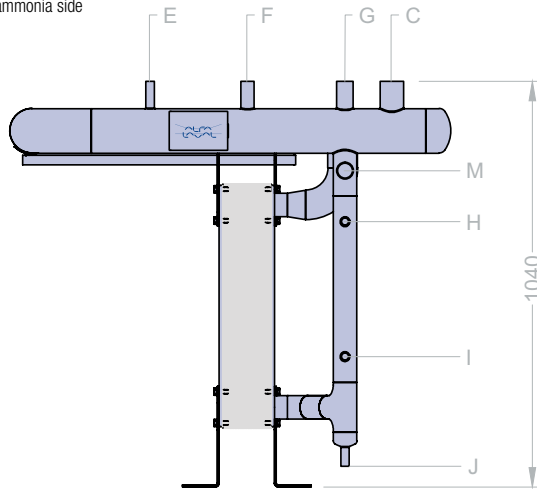
**Nozzles for regulation and control devices**  
– allow the option of preferred control system

Capacity selection table													
	°C	One-stage cycle								Part of two-stage cycle			
		+10		0		-10		-20		-30		-40	
Evaporating temperature	°C												
Condensing temperature	°C	+40	+30	+40	+30	+40	+30	+40	+30	+5	-10	+5	-10
Max. allowable capacity	kW	110	115	87	91	68	71	51	53	43	45	29	30
Reintrainment velocity, VR	m/s	7		8,5		10,5		13,1		15,5		21,2	
Max velocity = VR * 0,6	m/s	4,2		5,1		6,3		7,8		9,9		12,7	
Internal area U-Turn (normal on the gas flow)	m <sup>2</sup>									0,0079			
Internal area suction pipe	m <sup>2</sup>									0,0036			

Weights and volumes			
	Model		UR/UL-4-2C-AN76
Number of plates	Maximum		150
	Minimum		10
Weights	Per plate:	[kg]	
	Plate type A, E and H		0,49
	Plate type L		0,42
	With max number of plates:		
	Plate type A, E and H		81,50
	Plate type L		71,00
	Feet		3,84
	Lifting lug		3,00
	U-Turn separator		45,00
	Total module, max weight		133
Volumes on refrigerant side	Channel volume (S1/S2)*		
	Channel type A, H and L	0,25	
	Channel type E	0,18	
	Channel volume (S3/S4)**		
	Channel type A and E	0,18	
	Channel type H and L	0,25	
	Channel volume at max number of plates, S3/S4**	18,80	
	U-Turn separator volume	68	
Total module, max volume			
Oil volume	Oil pot volume	[dm <sup>3</sup> ]	0,25
Surfaces	Exposed surface plate heat exchanger, max size		0,9
	Exposed surface U-turn separator	[m <sup>2</sup> ]	1
	Total exposed surface		1,9



\* Normally the water / glycol side  
 \*\* Normally the ammonia side



Measurements in mm. Authorized drawing at order.

Nozzle dimensions									
Nozzle	C	D	E	F	G	H	I	J	M
Function	Suction gas	Liquid feed	Gauge	Safety relief valve	Liquid level control probe	Liquid level	Liquid level	Oil drain	Liquid level high level trip out
Dimension [mm]	Ø60,3	Ø33,7	Ø21,3	Ø33,7	Ø42,4	Ø21,3	Ø21,3	Ø21,3	Ø42,4
Type	BW	BW	BW	BW	BW	BW	BW	BW	BW



ERC00455EN

Alfa Laval reserves the right to change specifications without prior notification.

#### 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](http://www.alfalaval.com).