

# For Pharmaceutical, health and personal care applications

### APV PLATE HEAT EXCHANGERS ARE USED WIDELY IN PHARMACEUTICAL, HEALTH AND PERSONAL CARE APPLICATIONS.

SPX offers a broad portfolio of APV plate heat exchangers designed easily to be adapted to many pharmaceutical health and personal care processes.

As a result of growing global competition there is a constant need to improve process efficiency, raise quality and increase the cost-effectiveness of production facilities. At the same time, the investments needed to bring new products to the market continue to rise.

### FRAME DESIGN

APV Plate heat exchangers comply with pharmaceutical, health and personal care processing standards. Both stainless steel and painted frame options are available for sanitary process applications.

The APV standard construction is based on PED.

### A LARGE INSTALLED BASE ILLUSTRATES THE VALUE OF APV PLATE HEAT EXCHANGERS.

The market for pharmaceutical health and personal care products is requesting innovative solutions with built-in safety and reliability.

SPX draws on an extensive knowledge base to customize solutions for your unique application and delivers the latest innovations to help you achieve your process objectives.

Key attributes of APV plate heat exchangers are safety, reliability and robustness.



PHE MODEL	T4	H17		N35		Q055	
FRAME TYPE	AISI 304	AISI 304	PAINTED RAL5010	AISI 304	PAINTED RAL5010	AISI 304	PAINTED RAL5010
DESIGN TEMP (MAX)	150°C	150°C	150°C	150°C	150°C	150°C	150°C
DESIGN PRESSURE (MAX)	16 BAR	17 BAR	16 BAR	23 BAR	25 BAR	25 BAR	25 BAR
DESIGN CODE	PED	PED	PED	PED	PED	PED	PED

For other design temperatures and pressure please ask your local representative.

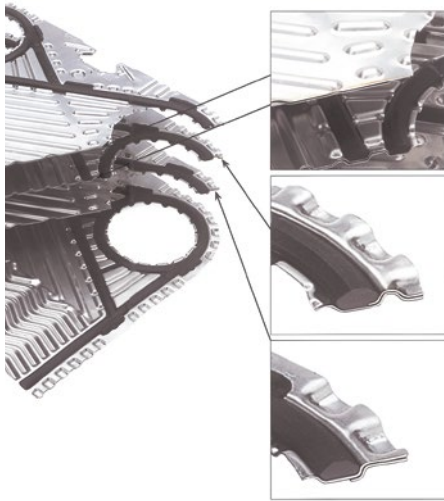
## APV DUOSAFETY OFFERS ADDITIONAL SAFETY AGAINST CROSS CONTAMINATION

The APV DuoSafety system is an early warning system that provides additional safety against liquid mixture and cross contamination risks in case of plate leaks, due to the fact that any liquid flow in the plate heat exchanger mounted with APV DuoSafety plate pack is surrounded by atmospheric air.

Should a leakage occur, risk of liquid mixing will be reduced significantly.

APV DuoSafety plate pair consists of two loose heat exchanger plates with an air gap in between. Each plate pair is fitted with a non glued Paraclip or EasyClip gasket, which both seals and holds the plate pair together.

With the APV DuoSafety system installed, together with a



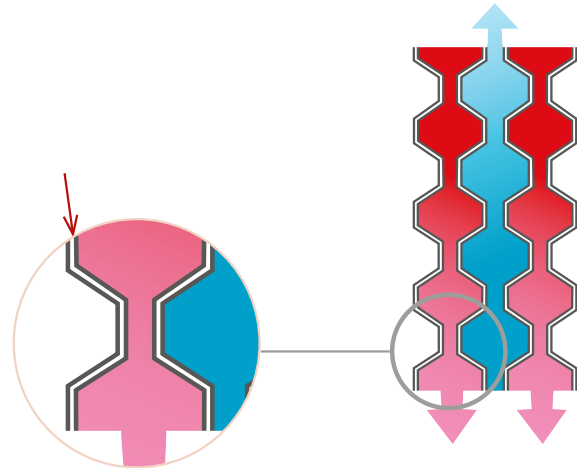
Details of the two loose plates that make up a DuoSafety plate.

Sealing detail of the DuoSafety plate.

## DUOSAFETY INSTALLATION

scheduled maintenance program the system provides additional safety against liquid mixture and cross contamination.

Additional safety provided by air gap.



## APV DUOSAFETY PLATE PAIR DESIGN AND CONSTRUCTION AVAILABLE

APV DuoSafety plate pair and gaskets can be supplied with different material and combinations. Standard plate materials available are e.g. AISI316L/AISI316L, AISI316L/Titanium, Titanium/Titanium.

Standard plate surface finish:  $<0,8\mu\text{m}$  in patterned areas.

Gasket combinations EPDM, NBR both complying to FDA, GMP and EC no. 1935/2004.

Other combinations please ask your local SPX representative.

## APV DUOSAFETY FEATURE AND BENEFITS

- Proven technology
- Additional safety against liquid mixture and cross contamination given by a positive air break between the products
- Simple to install, commission and service
- Easy to operate, control and monitor

## ELECTRO POLISHED PLATES

SPX is able to supply electro polished plates in Single-wall and Duo wall plate designs.

Surface treatment by electro polishing will generate a shining and completely smooth surface. In addition to this the surface will be cleaned for a number of microscopic parts and particles with undesired presence and behavior which is an advantage in order to prevent corrosion and following cross contamination etc.

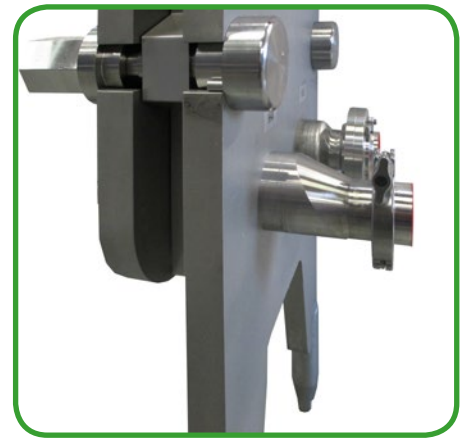


## CONNECTIONS

APV plate heat exchangers are recognized for their broad range of connection options.

Pharmaceutical health and personal care applications requires special care when selecting fitting options due to an increased focus on drainability, material surface, welding procedure, certification etc. Standard connections for pharmaceutical, health and personal care applications are typically mechanical polished down to <0,8µm. Standard construction material is AISI 316L however special material is available by request.

Additional options such as mechanical polish to <0,5µm, electropolished surface and special welding procedures to fulfill requirements of Fe<3% are available up on request.



The following table shows various tube norms and corresponding fittings available as standard.

TUBE NORM	CONNECTION TYPE	APV PLATE HEAT EXCHANGER TYPE									
		T4		H17			N35			Q055	
ISO 2037 Normal Inch Pipe	Clamp connection ISO 2852		1"	1½"	2"		2½"	3"	4"		
DIN 11866 / DIN 11850	Clamp connection DIN 32676										
	Clamp connection DIN 11864-3 Form A (Aseptic)	DN 15	DN 20	DN 25	DN 32	DN 40	DN 50	DN 65		DN 80	DN100
	Flange connection DIN 11864-2 Form A (Aseptic)										
	Screw connection DIN 11864-1 Form A (Aseptic)										
DIN EN / ISO 1127 Pipe	Clamp connection DIN 32676										
	Clamp connection DIN 11864-3 Form A (Aseptic)	NW 15	NW 20	NW 25	NW 32	NW 40		NW 50	NW 65	NW 80	NW100
	Flange connection DIN 11864-2 Form A (Aseptic)										
	Screw connection DIN 11864-1 Form A (Aseptic)										
ASME BPE 1997	Clamp connection DIN 32676										
	Clamp connection DIN 11864-3 Form A (Aseptic)	½"	¾"	1"	1½"	2"		2½"	3"	4"	
	Flange connection DIN 11864-2 Form A (Aseptic)										
	Screw connection DIN 11864-1 Form A (Aseptic)										

## CERTIFICATES AND DOCUMENTATION IN A SINGLE PACKAGE

The ability to supply requested certificates and documentation is critical when operating in the pharmaceutical health and personal care industry.

Material origin and traceability is also important as it contributes to overall product safety.

APV plate heat exchangers for pharmaceutical health and personal care applications are available with a complete documentation package upon request.\*

Additional documentation and configuration options are available based on application requirements, such as:

- Material certificates on gasket, fittings, plates and pressure retaining parts
- Welder's documentation
- ISO 9001 certificate
- Surface roughness documentation incl. measuring report
- Testing equipment calibration documentation
- Ferrite content documentation
- 3A compliance certificate
- Electro polish certification
- Leak detection certificate on plates and fittings
- Positive material identification analysis

*Additional certificates available upon request.*

*Please ask you local SPX representative for further details.*

\*Additional costs may apply

## THERMAL INSULATION JACKET

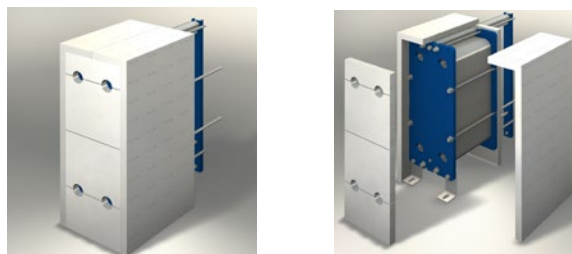
Mounting of an insulation jacket contributes to a number of advantages. The ROI is fast as the cost of energy is high and continuously increasing.

Insulation jackets for APV plate heat exchangers are tailor-made to suit a specific design and application. It fulfills international standards for surface as well as insulation material.

It is easy to mount and service an insulation jacket for APV plate heat exchangers as the design is constructed in several sections joined together with simple opening and closing mechanisms making it easy to mount and dismount.

### When purchasing insulation jackets you achieve:

- Reduced energy consumption
- Improved working environment
- Reduction in CO<sub>2</sub> emissions
- Protection of the heat exchanger



### Heat and cooling insulation jackets are available according to the following list of parameters:

APPLICATION	COOLING	HEATING	HEATING
CONSTRUCTION TYPE	C60	H60	H65
TYPE OF INSULATION	PU – 60MM	PU – 60MM	MINERAL WOOL – 65MM
TEMPERATURE RANGE	-50 - +80°C	0 - +100°C	20 - +200°C
COVER PLATE MATERIAL	STANDARD: ALUMINIUM - STUCCO OPTION: AISI304		

Based in Charlotte, North Carolina, SPX FLOW, Inc. (NYSE: FLOW) is a multi-industry manufacturing leader. For more information, please visit [www.spxflow.com](http://www.spxflow.com)

#### SPX FLOW

SPX Flow Technology Danmark A/S  
 Nordager 2  
 6000 Kolding  
 Denmark  
 P: +45 70 278 444  
 E: [ft.kolding.HEX.sales@spxflow.com](mailto:ft.kolding.HEX.sales@spxflow.com)

SPX FLOW, Inc. reserves the right to incorporate our latest design and material changes without notice or obligation.

Design features, materials of construction and dimensional data, as described in this bulletin, are provided for your information only and should not be relied upon unless confirmed in writing. Please contact your local sales representative for product availability in your region. For more information visit [www.spxflow.com](http://www.spxflow.com).

The green "s" and "x" are trademarks of SPX FLOW, Inc.

ISSUED 02/2019 APV-16029-GB

COPYRIGHT © 2019 SPX FLOW, Inc.