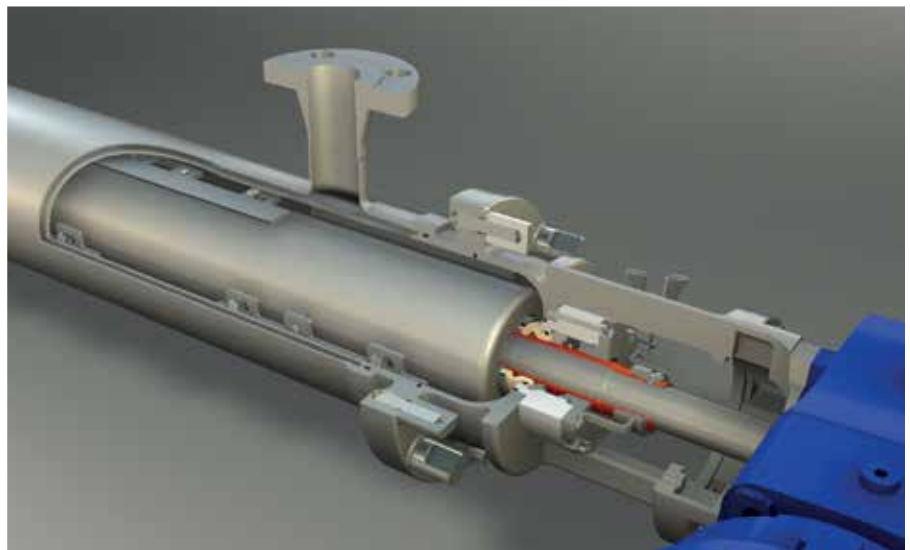
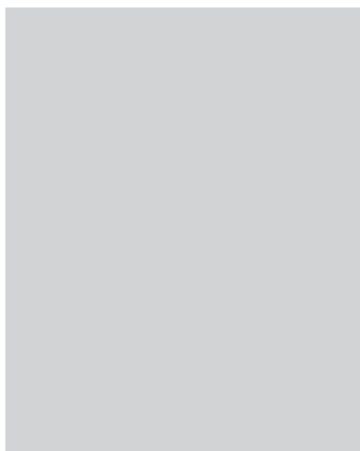


## Votator® LD Series

SCRAPED SURFACE HEAT EXCHANGER  
MULTI-FLEXIBLE CONFIGURATION FOR ROBUST AND EFFICIENT HEAT TRANSFER





# A Single Solution for Multiple Needs

The competitive challenges in the dairy, food, beverage and cosmetics industries are constantly increasing. Manufacturers require optimum performance, quality and flexibility at the lowest possible cost in order to respond to current and future production requirements.

Finding the right heat transfer solution requires experience and careful assessment of application and quality requirements such as energy efficiency, space constraints, availability (uptime), installation, product related requirements and flexibility.

Increasing competition and tight margins require low operating costs, quick payback and short return on investment (ROI).

As one of the largest producers of Scraped Surface Heat Exchangers (SSHE's) in the Food & Beverage segment, SPX FLOW understands the technical and commercial needs when it comes to heat transfer solutions for medium to high-viscosity products.

## LD SERIES – ALL IN ONE

Based on a multi-flexible platform, the Votator® LD series is designed to operate under harsh conditions where other heat exchanger technologies can fail or cannot sustain operational efficiency over a longer period.

Designed to heat or cool medium and high viscous products with or without particles under sanitary conditions, the Votator® LD series comes in two basic configurations:

### HORIZONTAL

- Rigid stainless steel frame
- Easily extended up to 6 cylinders

### VERTICAL

- Rotatable cylinder for easy maintenance
- Low space requirements

Made in the USA and the EU, the Votator® LD series offers robust reliability and performance along with easy access for maintenance, and fast and effective cleaning (CIP/SIP).

## INDUSTRIES

- Dairy
- Fats & Oils
- Processed Foods
- Fine-foods
- Fruit preparation
- General food applications
- Cosmetics
- Industrial applications

## APPLICATIONS

- Heating
- Cooling
- Crystallization
- Pasteurization
- Sterilization

## PRODUCTS

- Medium to high viscosity
- Products with particles
- Thixotropic products
- Heat sensitive products



# Robust Technology, Materials and Design

The Votator® LD series is designed specifically for hygienic processing of medium and high viscous products. Its modular design enables flexible adaptation to the process needs.

Floating scrapers in a staggered configuration, three optional rotor diameters, a choice of three scraper blade materials, and a duplex steel option enable process customization for a large variety of applications.

The Votator® LD series complies with EHEDG approved and 3-A design and fabrication standards.

## HEATING/COOLING MEDIA

Depending on the application and available utilities the Votator® LD series offers a choice of media including:

- Steam
- Hot water
- Glycol
- Brine
- Cold water

## GENERAL USE

The Votator® LD series is designed for use at 14 to 302°F (-10 to 150°C) with a design pressure of up to 209 psi (20 bar) in the standard version and comes optional in a 362 psi (25 bar) version.

Materials used enable utilization of acidic or corrosive media. The flow-design creates a low pressure drop and enables processing of products with particles and solids.

## TWELVE GOOD REASONS TO BUY THE VOTATOR® LD SERIES SCRAPED SURFACE HEAT EXCHANGER:

- 1 Customization, multiple options
- 2 Easily extendable
- 3 Vertical & horizontal configurations
- 4 Short CIP/SIP time
- 5 Easy maintenance
- 6 Aseptic production option
- 7 Small footprint
- 8 Low downtime
- 9 Fast delivery and installation
- 10 Use of widely available SPX FLOW standard parts
- 11 Support by skilled and experienced engineers
- 12 On site SPX FLOW representatives

# Typical Product Applications

## Dairy

- Cream Cheese
- Milk Concentrates
- Processed Cheese
- Quark
- Baby Food

## Bakery

- Chocolate Products
- Custards
- Light fat sugar cremes

## Fats & Oils

- Remelt of margarine
- Shortening

## Fruit & Vegetable Preparation

- Jam / Marmalade
- Fruit pulps
- Vegetable purré

## Fine Foods

- Starch Cooking
- Ketchup
- Dressings
- Mayonnaise

## Convenience Food

- Salsa
- Soups
- Sauces

## Cosmetics

- Facial cremes
- Hair wax
- Gels

## Industrial Applications

- Oil

# Customized to Your Specific Needs

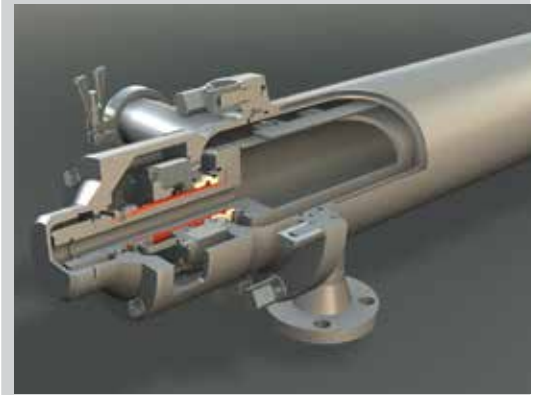
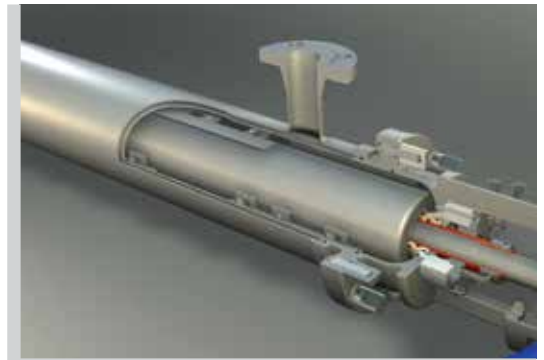
The Votator® LD series can be customized depending on the product, production volume, hygienic requirements, space constraints and the heating/cooling medium.

## STANDARD HIGH-FLEXIBILITY MEDIUM VISCOSITY UNIT

- 290 psi (20 bar) product pressure - high standard pressure rating for higher flexibility
- Product wetted parts in EN 1.4404 / AISI 316L
- Rotor diameter: 4" (99 mm)
- Scraper blades material: PEEK®/PTFE - with Teflon® to reduce friction and wear
- 50 Hz / 400V motor: 4 hp (3 kW) / 278 rpm / 76 ft\*lb (103 Nm)  
60 Hz / 460V motor: 3 hp (2.2 kW) / 213 rpm / 73 ft\*lb (99 Nm)
- Two single mechanical shaft seal
  - for high hygienic demands
  - increased run-time and shorter CIP-time - higher production output
  - in cartridge design for fast and easy maintenance
  - with widely available SIC/SIC sealing surfaces from the SPX FLOW shelf
  - EPDM gaskets

## CUSTOMIZATION OPTIONS

- Product wetted parts in duplex steel (EN 1.4462 / SAF 2205) for:
  - 362 psi (25 bar) option
  - acidic products
  - abrasive products
- Rotor diameter: 4.4" (112 mm) for:
  - better heat transfer
  - shorter contact time with heating surface - less heat exposure to product
  - shorter holding/heating time - less exposure to product
  - less holding volume - less waste product
- Rotor diameter: 2.84" (72 mm) for:
  - larger particles
  - less pressure drop - smaller pumps
- Scraper blade material: reinforced PEEK® for higher viscous products
- 50 Hz / 400V motor: 3 hp (2.2 kW) / 176 rpm / 88 ft-lb (119 Nm)  
5.4 hp (4 kW) / 142 rpm / 199 ft-lb (270 Nm)
- 60 Hz / 460V motor: 4 hp (3 kW) / 328 rpm / 64 ft-lb (87 Nm)  
5 hp (3.7 kW) / 181 rpm / 144 ft-lb (195 Nm)
- Heated rotor
  - to avoid product build-up when cooling crystallizing products
  - retro fit available
- Two flushable double mechanical seals
  - for aseptic design (use with i.e. aseptic fluids or steam)
  - for use with solidifying or abrasive product particles i.e. sugar (with water flush)
  - single mechanical seals can easily be upgraded
- Clip-on insulation
  - for easy mounting/dismounting
- Gasket material: FPM



# Certifications

- Made in accordance with the European Machine Directive (2006/42/EC)
- Pressure tank in accordance with
  - PED
  - ASME\*
- Sanitary approval according to
  - EHEDG approved
  - 3-A
- Other certificates on request



\* The equipment is engineered in accordance with the CE Pressure Equipment Directive, and is exempt from the requirements of ASME Section VIII, Unfired Pressure Vessels due to its diameter.

TECHNICAL DATA	VOTATOR® 5X20V / 5X20H			VOTATOR® 5X40V / 5X40H			VOTATOR® 5X80V / 5X80H		
Heat exchange surface / cyl. ft <sup>2</sup> (m <sup>2</sup> )	2.1" (0.2 mm)			4.3" (0.4 mm)			8.6" (0.8 mm)		
Inner cyl. diameter	5.26" (134 mm)			5.26" (134 mm)			5.26" (134 mm)		
Scraper system	Floating			Floating			Floating		
Scraper rows	4 staggered			4 staggered			4 staggered		
Shaft / dasher diam.	2.84" (72 mm)			2.84" (72 mm)			2.84" (72 mm)		
	4" (99 mm)			4" (99 mm)			4" (99 mm)		
	4.4" (112 mm)			4.4" (112 mm)			4.4" (112 mm)		
50 Hz / 400V motor - power	3.0 hp (2.2 kW)	4.0 hp (3.0 kW)	5.4 hp (4.0 kW)	3.0 hp (2.2 kW)	4.0 hp (3.0 kW)	5.4 hp (4.0 kW)	3.0 hp (2.2 kW)	4.0 hp (3.0 kW)	5.4 hp (4.0 kW)
Scraper rotor speed	176 rpm	278 rpm	142 rpm	176 rpm	278 rpm	142 rpm	176 rpm	278 rpm	142 rpm
Scraper rotor torque	88 ft-lb (119 Nm)	76 ft-lb (103 Nm)	199 ft-lb (270 Nm)	88 ft-lb (119 Nm)	76 ft-lb (103 Nm)	199 ft-lb (270 Nm)	88 ft-lb (119 Nm)	76 ft-lb (103 Nm)	199 ft-lb (270 Nm)
60 Hz / 460V motor - power	3.0 hp (2.2 kW)	4.0 hp (3.0 kW)	5.0 hp (3.7 kW)	3.0 hp (2.2 kW)	4.0 hp (3.0 kW)	5.0 hp (3.7 kW)	3.0 hp (2.2 kW)	4.0 hp (3.0 kW)	5.0 hp (3.7 kW)
Scraper rotor speed	213 rpm	328 rpm	181 rpm	213 rpm	328 rpm	181 rpm	213 rpm	328 rpm	181 rpm
Scraper rotor torque	73 ft-lb (99 Nm)	64 ft-lb (87 Nm)	144 ft-lb (195 Nm)	73 ft-lb (99 Nm)	64 ft-lb (87 Nm)	144 ft-lb (195 Nm)	73 ft-lb (99 Nm)	64 ft-lb (87 Nm)	144 ft-lb (195 Nm)
<b>PRODUCT:</b>									
Product volume - 2.84"/(72 mm) shaft	1.32 gal (5.0 ltr)			2.64 gal (10 ltr)			5.26 gal (19.9 ltr)		
4"/(99 mm) shaft	0.85 gal (3.2 ltr)			1.66 gal (6.3 ltr)			3.36 gal (12.7 ltr)		
4.5"/(112 mm) shaft	0.56 gal (2.1 ltr)			1.11 gal (4.2 ltr)			2.22 gal (8.4 ltr)		
Annular space - 2.84"/(72 mm) shaft	1.2" (31 mm)			1.2" (31 mm)			1.2" (31 mm)		
4"/(99 mm) shaft	0.7" (17.5 mm)			0.7" (17.5 mm)			0.7" (17.5 mm)		
4.5"/(112 mm) shaft	0.4" (11 mm)			0.4" (11 mm)			0.4" (11 mm)		
Max. working pressure standard	290 psi (20 bar)			290 psi (20 bar)			290 psi (20 bar)		
Max. working pressure option	362 psi (25 bar)			362 psi (25 bar)			362 psi (25 bar)		
Working Temperature	14 to 302°F (-10 to 150°C)			14 to 302°F (-10 to 150°C)			14 to 302°F (-10 to 150°C)		
Product connection in / out	2" S-Line (51 mm)			2" S-Line (51 mm)			2" S-Line (51 mm)		
<b>MEDIA:</b>									
Working pressure	-14 to 101 psi (-1 to 7 bar)			-14 to 101 psi (-1 to 7 bar)			-14 to 101 psi (-1 to 7 bar)		
Working Temperature	-4 to 338°F (-20 to 170°C)			-4 to 338°F (-20 to 170°C)			-4 to 338°F (-20 to 170°C)		
Media pipe In / out	1.5" 150# RF flange (48.6 mm)			1.5" 150# RF flange (48.6 mm)			1.5" 150# RF flange (48.6 mm)		
<b>HEIGHT X LENGTH X WIDTH</b>									
Horizontal version 1 cyl.	47" x 33.5" x 29" (1,189 mm x 851 mm x 735 mm)			66.5" x 33.5" x 29" (1,689 mm x 851 mm x 735 mm)			106" x 33.5" x 29" (2,689 mm x 851 mm x 735 mm)		
Vertical version	61.4" x 29.5" x 24.5" (1,560 mm x 750 mm x 620 mm)			81.1" x 29.5" x 24.5" (2,060 mm x 750 mm x 620 mm)			120.5" x 29.5" x 24.5" (3,060 mm x 750 mm x 620 mm)		

# Global Service and Support

SPX FLOW has a finely meshed network of locations and offices all over the world. Our experienced local specialists work to quickly address our customers' specific applications and business needs. This ensures optimum performance and reliability of your SPX FLOW equipment regarding cost control, productivity, reliability, waste and energy management, and regulatory compliance.

## APPLICATION TESTING

You can arrange for application testing on rented SPX FLOW equipment on your own premises. Alternatively you can leverage the entire range of SPX FLOW expertise and equipment at one of our Innovation Centers.

Experienced SPX FLOW R&D engineers and product specialists are ready to assist you to determine the right configuration for your equipment, whether the goal is to develop new products or improve an existing application.

## INSTALLATION AND COMMISSIONING

Skilled local SPX FLOW engineers ensure rapid installation and commissioning of your new SPX FLOW equipment.

## TRAINING

Local SPX FLOW specialists are available to train your workforce in operation and maintenance to ensure you derive maximum benefit from your SPX FLOW equipment.

## ORIGINAL SPARE PARTS

The wear parts used in the Votator® LD series are widely available SPX FLOW standard parts. These can be ordered to comply with your scheduled maintenance planning in order to minimize downtime.

## RAPID RESPONSE

SPX FLOW experts are ready to respond at short notice if a problem arises requiring immediate assistance.

## MAINTENANCE AGREEMENT

A maintenance agreement with SPX FLOW ensures scheduled maintenance by a local SPX FLOW specialist to minimize downtime and give you peace of mind.



## Votator® LD Series

SCRAPED SURFACE HEAT  
EXCHANGERS

# SPXFLOW

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**

611 Sugar Creek Road

Delavan, WI 53115

P: (262) 728-1900 or (800) 252-5200

F: (262) 728-4904 or (800) 252-5012

E: [wcb@spxflow.com](mailto:wcb@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 "y" and "x" are trademarks of SPX FLOW, Inc.

ISSUED 03/2016 1222-02-09-2014

COPYRIGHT © 2016 SPX FLOW, Inc.