

APV Homogenizers

Rannie and Gaulin



A Tradition of Value

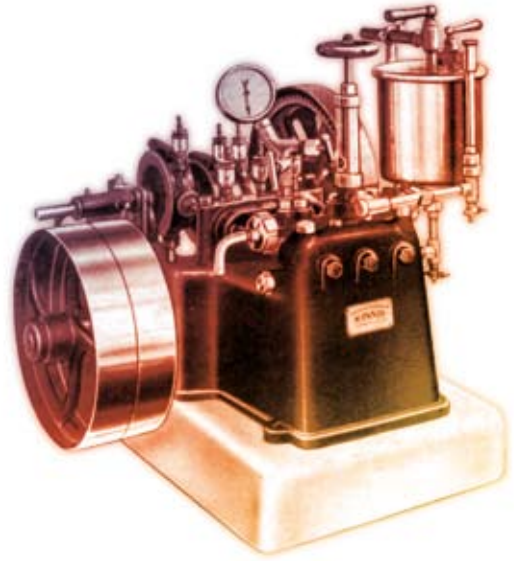
Gaulin. Rannie. Famous names in the history of homogenization. Today, the benefits of this heritage in homogenization and high-pressure pumps come to you as a great opportunity to choose between world leading brands.

Gaulin and Rannie bring an impeccable reputation of excellence and technological breakthroughs. From Auguste Gaulin's invention for "treating milk" at the 1900 Paris World's Fair – to the latest emulsifying, dispersing, and cell disruption advances – Rannie and Gaulin deliver specific industry expertise unmatched by any other manufacturer.

In food, dairy, cosmetic, chemical, biotech, and pharmaceutical fields, Rannie and Gaulin stand for real-world innovation and expertise. When you call on us, you get the greatest range of equipment and service from a single source. Exceptional design, precision engineering, and quality manufacturing that improves your process profitability.

No matter what industry you're in, we've met the challenge and can manufacture a high-efficiency homogenizer tailored to your needs.

With over a century of real-world experience, Rannie and Gaulin have the products and experts to ensure an ideal configuration and installation for you. Laboratory, pilot plant, production or biotech, we've been there and bring extensive knowledge and dedication to satisfy every customer.



1892

Rannie is established in Albertslund, featuring production of lactoscopes and pumps for use in the dairy industry.

1899

Auguste Gaulin is granted a patent in Paris for a homogenizer for milk (U.S. patent granted in 1904).

1900

Milk homogenized on Gaulin's machine is shown at the World's Fair in Paris.

1909

Manton-Gaulin company is formed to manufacture the Gaulin homogenizer.

1918

Rannie develops its first homogenizer.

1925

Manton-Gaulin patents the first two-stage homogenizing valve for ice cream mix.

1930's

Homogenized milk is certified.

1945

Rannie introduces the first machine able to handle capacities up to 4000 LPH.

At APV, we work hard to improve the performance of your process and reduce your operating costs, so we pay attention to every aspect of delivering the right homogenizer for you. For example, we know the ideal type of valve, valve housing, and valve seating to optimize performance for your specific application. It's advanced technology, personalized for your specific needs.

Tap into the vast technical resources and support of the acknowledged industry leader. We're ready to help you develop new products and enhance existing ones with improved taste, longer life, better consistency and added consumer appeal – just like we've done for over 100 years. It's the value of tradition translated into a tradition of value.

1950's

The first homogenizer is used for cell disruption of yeast.

1955

Liquid Whirling (LW) homogenizing valve patented by Rannie, delivering built-in back pressure for improved efficiency.

1960's

The use of the homogenizer extends well beyond the dairy industry including chemical, food, textile, paper, plastics and pharmaceutical industries.

1971

Procter & Gamble patents a process for peanut butter using the Gaulin homogenizer.

1972

APV acquires Gaulin.

1976

Rannie introduces a completely enclosed homogenizer that limits sound levels to 80 dB or less.



1982 and 1983

Gaulin is granted patents for the super efficient Micro-Gap homogenizing valve.

1987

APV acquires Rannie.

1989

Gaulin is granted patents on the citrus juice concentrate process.

1990's

The use of homogenizers extends throughout a wide range of industries. Maximum operating pressures to 1500 bar.

1995

Gaulin and Rannie form the APV Homogenizer Group.

1998

APV patents the new Super Micro-Gap homogenizing valve.

2001

APV standardizes the Gaulin and Rannie product lines, creating the largest selection of homogenizers in the world.

Excellence Through Innovation

APV has revolutionized countless processes, facilitating the development of new products and enhancing many more.

We feature the widest selection of laboratory, pilot plant and production homogenizers, with hundreds of innovative solutions to meet your highly specialized emulsions and dispersion applications. Whatever you are processing, we will deliver a homogenizer customized to your specific needs.



No matter how viscous or abrasive your product, whether you require sterile conditions, emission containment, or coolant collection, you'll get a high-performance homogenizer designed for highly efficient performance.



Capacities up to 15,855 gallons/hour (60,000 liters/hour) and operating pressures

as high as 21,750 psi (1,500

bar). Low-pressure homogenizers for improved dairy products. Whatever the demands for pressure and flow, APV creates the most technologically advanced homogenizers on the market today.

Along with product improvement, operating efficiency, and the most advanced valve technology today, Rannie and Gaulin homogenizers reduce maintenance and downtime with operator friendly, easy access features. Noise and vibration are reduced dramatically. Oil and water consumption are slashed. And cleaning and sterilization are simplified, thanks to an in-line design that virtually eliminates crevices and dead ends.



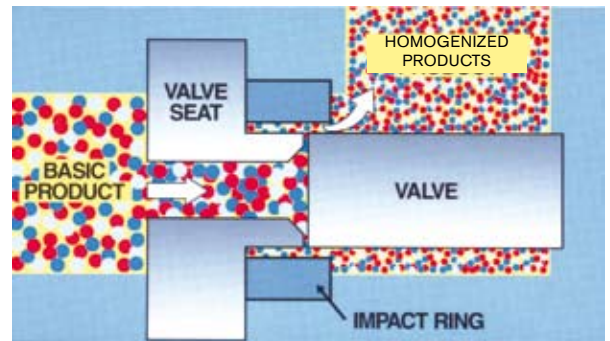
Performance: Buy or Rent

APV's rental program offers the flexibility to scale your equipment up or down as process requirements change. Additionally, the rental program provides a solution for equipment upgrades and process improvement when capital budgets are limited. Whether you buy or rent, APV delivers the equipment you need to optimize your production performance.

Homogenization Overview

The Theory of Homogenization

The unhomogenized product enters the valve area at high pressure and low velocity. As the product enters the adjustable, close clearance area between the valve and seat, there is a rapid increase in velocity with a corresponding decrease in pressure. The intense energy release causes turbulence and localized pressure differences, which will tear apart the particles. The homogenized product impinges on the impact ring and exits at a pressure sufficient for movement to the next processing stage.

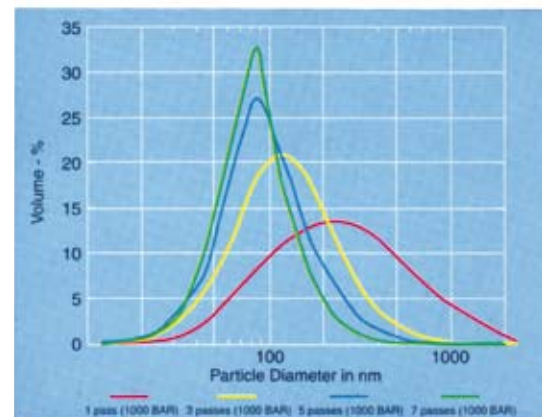
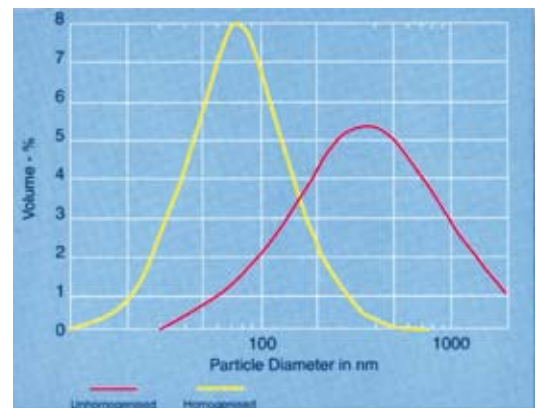


Homogenizing Techniques

For processing of emulsions a single-stage valve assembly may be used. However, the use of a two-stage assembly, where 15 – 25% of the total pressure is applied to the second stage, will improve the stability of most emulsions. For processing dispersions a single-stage valve assembly is usually preferred.

Multi-Pass Homogenization

If a narrow particle size distribution is required, it may be necessary to homogenize the product more than once. This can be done by two or more homogenizers in a series, which ensures discrete passes, or by re-circulating the product through a single unit.



Right: the effect of four discrete passes at 14,500 psi (1000 bar) on an oil-in water intravenous emulsion. Each pass results in a shift in the particle-size distribution towards smaller droplet sizes and a more narrow distribution.

Covering a Full Spectrum of Applications

While others talk versatility, only APV's extensive experience – with an unsurpassed variety of applications – means you'll receive the right unit and configuration for outstanding performance. Simply put, we understand your business. The bottom-line and process-performance benefits of this knowledge and expertise will simply delight you.

Dairy Products

Extended shelf stability, improved smoothness and body.

- Milk
- Ice cream
- Cream
- Yogurt
- Desserts
- Sour cream
- Cheeses
- Condensed milk



Foods and Beverages

Improved viscosity control and shelf stability, reduced ingredient cost.

- Fat substitutes
- Dressings
- Liquors
- Peanut butter
- Flavors and fragrances
- Fruit juices
- Sauces
- Beverage emulsions
- Baby foods
- Vegetable juices
- Tomato products
- Reduced fat products
- Infant formulas
- Juice concentrates
- Egg products
- Nutritional supplements



Healthcare and Cosmetics

Smoother textures, better dispersion of thickeners, enhanced color, increased gloss, better application.

- Hair products
- Conditioners
- Skin creams
- Lipsticks
- Lotions
- Nail polishes
- Shampoos
- Liposome emulsions



Chemicals

Particle size and viscosity control, enhanced color, uniformity of application, and improved stability.

- Disinfectants
- Silicone emulsions
- Latex
- Emulsifiers
- Wax emulsions
- Viscosity index improvements
- Insecticides
- Lubricants
- Pigment dispersions
- Specialty paints and coatings
- Resins/rosins
- Inks



Biotechnology

Cell disruption for harvesting high yields of intracellular products.

- Bacteria (E-Coli)
- Proteins
- Yeast (Cerevisiae)
- Algae
- Enzymes



Pharmaceuticals

Stability, uniformity, narrow particle size distribution, enhanced texture.

- Antibiotics
- Ointments
- Veterinarian preparations
- Intravenous emulsions
- Nutritional supplements
- Creams
- Liposomes
- Antacids
- Tablet coatings



Innovative Technology

From the power end to the liquid end, Rannie and Gaulin homogenizers are designed and built to exceed your expectations for excellence in quality and technological innovation.

The most critical component of the homogenizing system is the valve technology. APV has established itself as the leader in developing a wide range of technologically advanced valves for a wide range of applications. Our engineers are committed to working with you every step of the way to ensure the homogenizing valve configuration and material selection are customized for your specific application.

The two-stage valve assembly is recommended for most emulsions, a single-stage assembly is preferred for most dispersions. No matter what your application is, APV has the solution that will optimize performance for your specific processing conditions.

The Liquid End

APV is the world leader in design, construction, and materials, taking valve technology further with the largest range of product offerings. Our experts will help you select the right homogenizing valve and cylinder design for your application. The choice between the Rannie and Gaulin fluid ensures that you get the right machine for your specific application. APV's liquid ends are dependable and low maintenance, offering precise operation while meeting all international sanitary specifications. Whether you choose the Rannie (Three-Piece Valve Housing) or the Gaulin (Mono-Block), we offer the widest range of materials and configurations in the industry.

The Gaulin Mono-Block Design

The Gaulin cylinder block for sanitary applications provides an in-line flow pattern and minimizes the number of sealed areas. Top and front caps improve accessibility and simplify maintenance.

Poppet valves for low-viscosity, moderately abrasive products, like ice cream mixes and dairy products, vegetable oils, and silicone emulsions.



Gaulin Mono-Block
with Hydraulic Actuation



Ball valves, designed for high-viscosity, abrasive products including peanut butter, evaporated milk, wax emulsion lubricants and pigments.

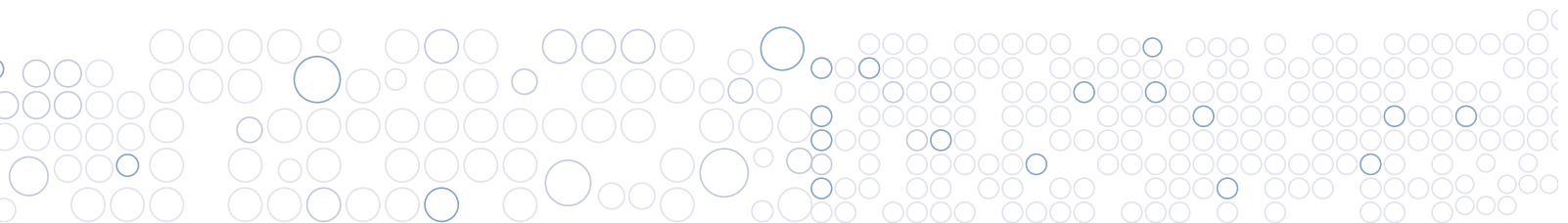
Aseptic Double-Packed Cylinders, are engineered for aseptic processing and can also provide containment of fugitive emissions (compounds that are pathogenic, toxic, and radioactive flammable).

The Rannie Three-Piece Valve Housing

The Rannie cylinder block exemplifies engineering superiority and is well suited for both sanitary and industrial applications. The design allows for pressure segregation from the suction and discharge manifolds, reducing the possibility of breaking or cracking when adverse operating conditions are present or operating pressures exceed 8,700 psi (600 bar). The Rannie homogenizer is well suited for ultra-high pressure or severe duty applications. It is also available in an aseptic design. The Rannie homogenizer incorporates both ball and poppet valves with no difference in capacity.



Rannie Three-Piece Cylinder Block
with Hydraulic Actuation



APV Delivers the Right Valve for Your Application

SEO Homogenizing Valve: A flat, conical homogenizing valve made of several ceramic materials is used for abrasive products. Also available in Stellite and tungsten carbide. The SEO achieves the same homogenizing effect as the LW, at slightly higher pressures.

XFD Homogenizing Valve: Typically used as a single-stage valve for capacities up to 9,510 gallons/hour (36,000 liters/hour) or as the first-stage valve in a two-stage configuration. The XFD is available in Stellite and tungsten carbide.

LW Universal Homogenizing Valve: The LW's (liquid whirl) whirling chambers deliver highly efficient homogenizing effect with low power consumption. The LW is a universal valve that can be used for emulsions, dispersion and suspensions. In some cases, the efficiency of the LW valve will eliminate the need for a second stage.

Actuation: Standard, high-performance actuation systems are available for all models and can be operated by manual or automatic control. Hydraulic actuation is standard on high capacity units.



SEO
Homogenizing
Valve



XFD
Homogenizing
Valve



LW Universal
Homogenizing
Valve



The Power End

Engineered to provide multiple environmental and ergonomic benefits, the power end incorporates a durable slow-speed drive with adjustable stainless steel feet and vibration dampeners.

A stainless steel enclosure, elimination of external oil piping, pilot lamp, and push-button start/stop feature facilitate easy operation. Every power end is engineered for minimal noise and vibration, to keep process effectiveness at its highest. Maintenance-reduction features include an extended 2,000 hour/six-month oil change interval, and easy access through hinged doors. The power end is common across both Rannie and Gaulin machines. The elimination of separate power ends ensures the timely availability of replacement parts worldwide.



Automation

Integrate your homogenizer into your process control system with leading-edge automation packages. Remote-activation, self-adjusting electronic homogenizer control systems provide consistent homogenizer pressure with no operator involvement. Automation packages are available for a variety of hydraulic control systems.



Quality for a New Century

The most comprehensive customer service and support in the industry. Our regional offices and distributor network mean you are always close to APV expertise.

Superior Customer Service

Your relationship with APV doesn't end with the sale. We have the people with the skills to keep your equipment running at optimal levels. We stock vital parts for the machines in operation and can usually ship orders within 24 hours, which will minimize downtime and reduce service expenses.

On-Call Technical Expertise

When you do business with APV, you have access to the vast technical resources of the world leader in homogenization equipment and solutions. We offer you high-quality training and responsiveness, and can arrange seminars with your team – at your facility – to keep you, your people and equipment “state of the art”. Our field service engineers are available to travel to your location for on-site support.

APV: The Answer for Productive, Efficient Homogenization

We want to help you improve your product, increase process efficiency and reduce operating costs with the most technologically advanced homogenizers available. With the legacy of Rannie and Gaulin, APV builds on past performance and innovates today to perfect the future of homogenization. Profit from our vision, and discover all the advantages APV can deliver for you. Contact us to discuss your specific objectives and applications, and the many benefits that only APV's technology can provide for you and your business.

Lab Testing Services

Many physical and chemical properties of a product can be enhanced by homogenization. As the recognized pioneer in homogenization technology, we maintain well-equipped, professionally staffed customer service facilities -- resources not available from any other source.

The Customer Service Laboratories

Our laboratories have helped improve the products and solve the processing problems of many customers. Product stability, color, viscosity, taste, appearance and consistency can be monitored throughout the homogenization process.

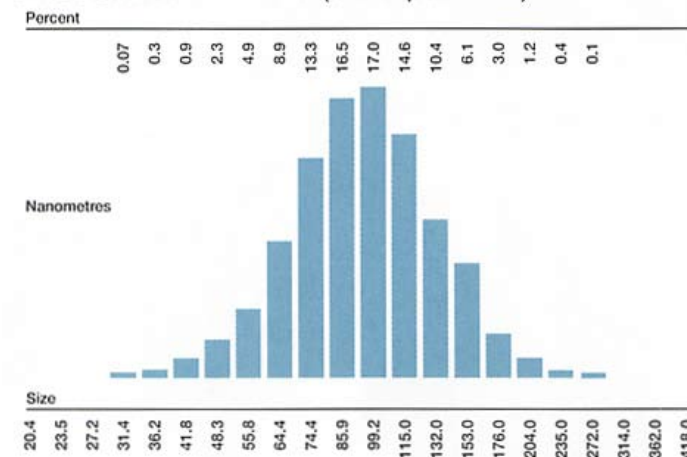


Sample testing parameters can include particle size analysis, photomicrographs, viscosity measurement and stability.

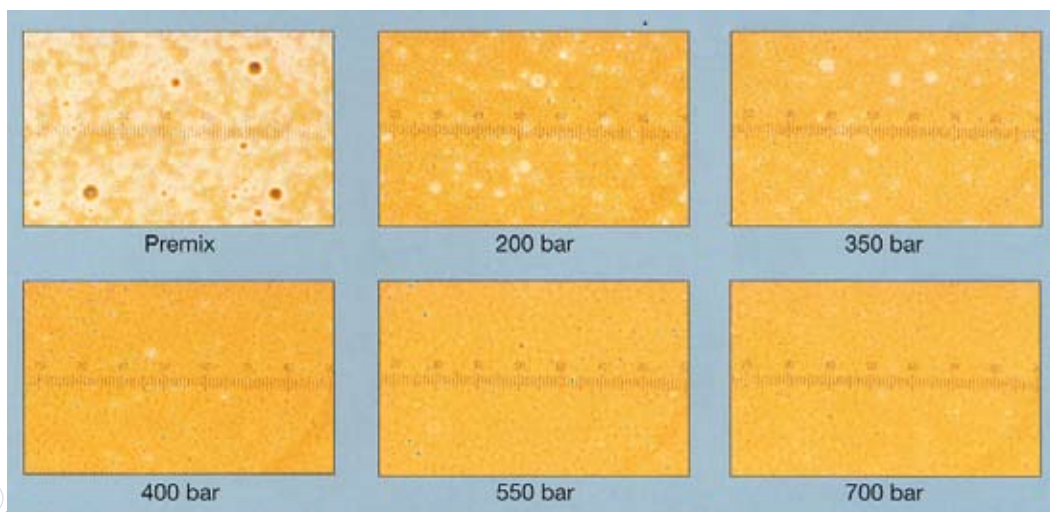
Expert Analyses

People with the experience and expertise to evaluate and interpret test data are critical to your success. APV is proud to offer you the most experienced technical support in the field of homogenization.

GAUSSIAN ANALYSIS (Solid particles)



SAMPLE OF AN EMULSION PROCESSED AT VARIOUS HOMOGENIZING PRESSURES



APV Homogenizers - gph - psi

Rannie homogenizers - max. capacity g/h - ball and poppet type valves													
Model	2175 psi	2465 psi	2900 psi	3000 psi	3625 psi	4350 psi	5800 psi	8700 psi	9425 psi	11600 psi	14500 psi	17400 psi	21750 psi
Rannie 5	260		260		185	150	120	65	35	35	20		
Rannie 15	870		600		500	435	295	175	105	105	80	40	25
Rannie 24	1370		980		750	660	490	250	170	170	130		
Rannie 37	2170		1530		1240	1085	740	530	345	345	265		
Rannie 55	3300		2375		1980	1660	1160	770	555	555	370	210	160
Rannie 110	5540	4750		3670	3165	2640	1980	1320					
Rannie 132T	5810		5810		4490	3910	2905	1980	1650	1650	1060		
Rannie 132Q	7920		5280		4490	3830	2640	1850					
Rannie 185Q	11800		9200		6600	4750	4700	2600	2600				
Rannie 315	9245		9245		9245	5550	5550	3750	2775	2775	2115		

Gaulin homogenizers - max. capacity gph - ball type valves												
Model	1450 psi	2030 psi	2175 psi	2465 psi	2900 psi	3000 psi	3045 psi	3625 psi	4350 psi	5800 psi	8700 psi	
Gaulin 5	190	190	190	190	190		190	130	130	105	50	
Gaulin 15	550	550	550	550	420		420	340	300	210	120	
Gaulin 24	820	820	820	820	725		725	500	500	370	185	
Gaulin 37	1375	1375	1375	1375	1190		1190	820	820	580	420	
Gaulin 55	3620	2380	2380	2380	2035		2035	1400	1400	990	685	
Gaulin 110			5545	4750		3700		3170	2640	1980	1320	
Gaulin 132T	5020	5020	5020	5020	5020		5020	3300	3300	2775	1950	
Gaulin 132Q	8720	4225	4225	4225	4225		4225					
Gaulin 185Q	10000	10000	8000	8000	7100		5300	5300				

Max. Capacity gph - Poppet Type Valves												
Model	1015 psi	1450 psi	2030 psi	2175 psi	2465 psi	2900 psi	3000 psi	3045 psi	3625 psi	4350 psi	5800 psi	8700 psi
Gaulin 5	225	225	225	225	225	225		225				
Gaulin 15	790	790	790	790	790	610		610	500	450	290	
Gaulin 24	2690	1110	1110	1110	1110	950		950	660	660	490	
Gaulin 37	2960	2960	1750	1750	1750	1505		1505	740	740	740	
Gaulin 55	4230	4230	2775	2775	2775	2380		2380	1640	1640	1160	
Gaulin 110				5545	4750		3700		3170	2640	1980	1320
Gaulin 132T	5150	5150	5150	5150	5150	5150		5150	3435	34535	2905	
Gaulin 132Q	9000	9000	6600	6600	5020	4490		4490				
Gaulin 185Q	13200	13200	10600	8500	8500	7400		5545	5545			

APV Homogenizers - l/h - bar

Rannie homogenizers - max. capacity l/h - ball and poppet type valves													
Model	150 bar	170 bar	200 bar	210 bar	250 bar	300 bar	400 bar	600 bar	650 bar	800 bar	1000 bar	1200 bar	1500 bar
Rannie 5	900		900		700	570	450	250	130	130	80		
Rannie 15	3300		2300		1900	1650	1120	670	400	400	300	160	100
Rannie 24	5200		3700		2850	2500	1850	950	650	650	500		
Rannie 37	8200		5800		4700	4100	2800	2000	1300	1300	1000		
Rannie 55	12500		9000		7500	6300	4400	2900	2100	2100	1400	800	600
Rannie 110	21000	18000		14000	12000	10000	75000	5000		35000	25000		
Rannie 132T	22000		22000		17000	15000	11000	7500	5100	5100	4000		
Rannie 132Q	30000		20000		17000	14500	10000	7000					
Rannie 185Q	45000		35000		25000	18000	18000	10000	10000				
Rannie 315	35000		35000		35000	21000	21000	14200	10500	10500	8000		

Gaulin homogenizer - max. capacity l/h - Ball Type Valves												
Model	70 bar	100 bar	140 bar	150 bar	170 bar	200 bar	210 bar	250 bar	300 bar	400 bar	600 bar	
Gaulin 5		720	720	720	720	720	720	500	500	400	180	
Gaulin 15		2100	2100	2100	2100	1600	1600	1300	1150	800	450	
Gaulin 24		3100	3100	3100	3100	2750	2750	1900	1900	1400	700	
Gaulin 37		5200	5200	5200	5200	4500	4500	3100	3100	2200	1600	
Gaulin 55		13700	9000	9000	9000	7700	7700	5300	5300	3750	2600	
Gaulin 110				21000	18000		14000	12000	10000	75000	5000	
Gaulin 132T		19000	19000	19000	19000	19000	19000	12500	12500	10500	7400	
Gaulin 132Q		33000	16000	16000	16000	16000	16000					
Gaulin 185Q		38000	38000	30000	30000	27000	20000	20000				

Gaulin homogenizer - max. capacity l/h - poppet type valves											
Model	70 bar	100 bar	140 bar	150 bar	170 bar	200 bar	210 bar	250 bar	300 bar	400 bar	600 bar
Gaulin 5	850	850	850	850	850	850	850				
Gaulin 15	3000	3000	3000	3000	3000	2300	2300	1900	1700	1100	
Gaulin 24	10200	4200	4200	4200	4200	3600	3600	2500	2500	1850	
Gaulin 37	11200	11200	6640	6640	6640	5700	5700	2800	2800	2800	
Gaulin 55	16000	16000	10500	10500	10500	9000	9000	6200	6200	4400	
Gaulin 110				21000	18000		14000	12000	10000	7500	5000
Gaulin 132T	19500	19500	19500	19500	19500	19500	19500	15000	15000	11000	
Gaulin 132Q	34000	34000	25000	25000	19000	17000	17000				
Gaulin 185Q	50000	50000	40000	32000	32000	28000	21000	21000			



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For more information about our worldwide locations, approvals, certifications, and local representatives, please visit www.apv.com.

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