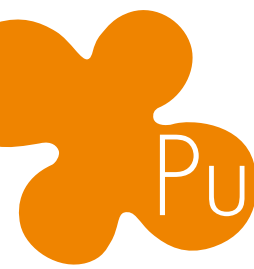




**pump up** your performance

**REXAM**



# Pump up your performance



Rexam proposes a vast range of pumps, valves, applicators, rigid bottles and squeezable sprays in different shapes and sizes. The validation process of systems in place goes beyond regulatory requirements in terms of mechanical performance and chemical compatibility.




## Quality first for patients!

- Traceability, automated controls and final tests ensure maximum industrial security.
- Rexam provides high-quality benefits such as clean room manufacturing in a dedicated site. Rexam is certified ISO 9001, ISO 13485 medical devices and ISO 15378.
- Rexam meets cGMP and European/US Pharmacopoeia standards.
- Rexam has Drug Master Files (DMF).

Improving spray accuracy and pump dosage, developing new shapes of bottles, all innovations in providing drug delivery systems via the nasal, buccal or auricular routes are based on patients' needs.

## How to choose from our solutions?

Total package solutions through matching your choice pump with a compatible container.

															
		Crimp-on					Screw-on						Snap-on		
		FEA 13 mm	FEA 15 mm	FEA 17 mm	FEA 18 mm	FEA 20 mm	DIN 18/10	DIN 18/13	GCM1 18/400	GCM1 18/415	GCM1 20/400	GCM1 20/410	GCM1 22/410	M17	FEA 20 mm
Pumps	Advancia (dose range 50 to 140 µl)					●									●
	SP270 (dose range 45 to 140 µl)	●	●	●	●	●	●	●	●	●	●	●	●	●	●
	SP3 (dose range 130 to 230 µl)		●	●	●	●	●	●	●	●	●	●	●	●	●
Bottles	5 ml													●	
	10 ml					●	●							●	●
	15 ml					●						●		●	●
	20 ml					●								●	●
	30 ml													●	

● standard    ● available





## Fitting systems



### Crimp-on

An updated classic solution for standard finishes, optimized by Rexam to ensure easier assembly on filling lines.



### Screw-on

Reliable and easy-to-assemble option. The easy separation of the pump from the bottle supports recycling.



### Snap-on

This attachment, known as an "outside neck" ensures that every container is tamper-proof and airtight.



State-of-the-art dispensing systems dedicated factory in Le Tréport (France)

## Pumps/valves by dosage table

	Standard pumps													Valves				
	Advancia*			SP270								SP3		CV20	6668	6685	2D	
Spray dose µl	50	100	140	45	50	55	80	90	100	130	140	130	180	230	none	none	none	100
<b>Crimp-On</b>																		
	FEA 13 mm				●	●	●	●	●	●	●							
	FEA 15 mm				●	●	●	●	●	●	●	●	●	●				
	FEA 17 mm				●	●	●	●	●	●	●	●	●	●				
	FEA 18 mm				●	●	●	●	●	●	●	●	●	●				
	FEA 20 mm	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
<b>Screw-On</b>																		
	DIN 18/10				●	●	●	●	●	●	●	●	●	●				
	DIN 18/13				●	●	●	●	●	●	●	●	●	●				
	GCM1 18/400				●	●	●	●	●	●	●	●	●	●				
	GCM1 18/415				●	●	●	●	●	●	●	●	●	●				
	GCM1 20/400				●	●	●	●	●	●	●	●	●	●				
	GCM1 20/410				●	●	●	●	●	●	●	●	●	●				
	GCM1 22/410				●	●	●	●	●	●	●	●	●	●				
<b>Snap-On</b>																		
	M17				●	●	●	●	●	●	●	●	●	●				
	FEA 20 mm	●	●	●	●	●	●	●	●	●	●	●	●	●				

● standard    ● available

\* in development

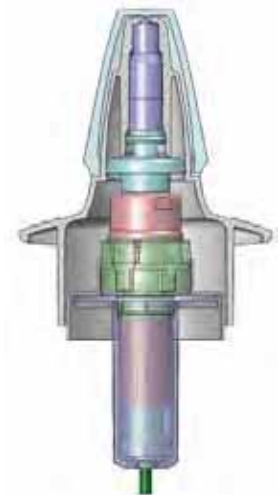
## Advancia™



in development

A new generation of pump: 1<sup>st</sup> pump with **user independent** performance and **preservative free** feature in one single system

### Key advantages

- user-independent with fine spray consistency
- closing tip prevents clogging, evaporation, microbiological ingress
- prime retention eliminates the need to reprime
- patented nozzle design for consistent, stabilised spray
- no metal part in contact with bulk
- airless pump available for preservative free formulations or atmospheric pump for preserved medications
- interchangeable actuators: nasal, auricular, buccal, topical
- innovative one-step snap-on process facilitating industrialisation



TECHNICAL DATA	
Doses available (µl)	50 - 100 - 140
Dose consistency	mean dose: ± 5%; indiv. dose: ± 10%
Fitting	 FEA 20 mm  FEA 20 mm
Actuator	Advancia snap or Advancia crimp



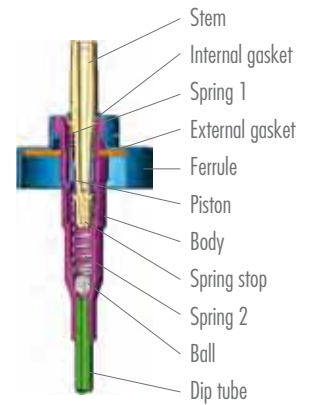
Advancia in snap-on and crimp-on versions combining preservative free and user independence features in one single device

# SP270

The SP270 is the pharma pump tuned for consistency and well proven on the market

## Key advantages

- excellent dose regularity
- robust and reliable
- developed for pharma applications with compliant materials
- high performance to match FDA and European Pharmacopoeia requirements
- DMF 13153
- sterilisable (gamma or beta irradiation)



- HD polyethylene
- Aluminium
- Stainless steel
- Elastomer
- Acetal or polypropylene
- LD polyethylene
- Polyethylene

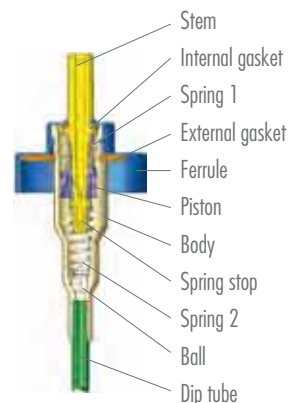


Screw-on, crimp-on & snap-on fittings

TECHNICAL DATA		
Doses available (µl)	stated dose	45 - 50 - 55 - 80 - 90 - 100 - 130 - 140
Fitting	M17 - FEA 20 mm	
	FEA 13 mm - FEA 20 mm	
	DIN 18/10 - DIN 18/13 - GCM1 20/400 - GCM1 20/410	
Actuator	any type of Rexam standard nasal, buccal or auricular	

# SP3

The oversized pump format produced to the same high standards as the SP270 pump, the SP3 gives comparable performance and safety levels



- Acetal copolymer
- Aluminium
- Stainless steel
- Polypropylene
- LD polyethylene
- Elastomer
- Polyethylene



TECHNICAL DATA		
Doses available (µl)	stated dose	130 - 180 - 230
Fitting	FEA 20 mm	
	FEA 20 mm	
Actuator	any type of Rexam standard nasal, buccal or auricular	

# Valves


The pressurized delivery solution with 2 different types of valves: continuous and metering.

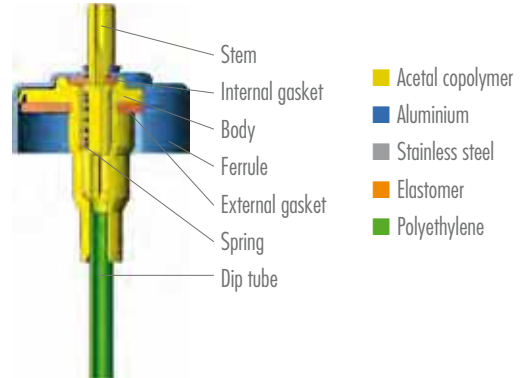


## CV20

Continuous valve works with compressed nitrogen or liquid gas

### Key advantages


- continuous valve with a neutral propellant agent (nitrogen) for liquid solutions
- dispenses every kind of product
- isolates the active ingredient from the aluminium ferrule.
- fitting  FEA 20 mm

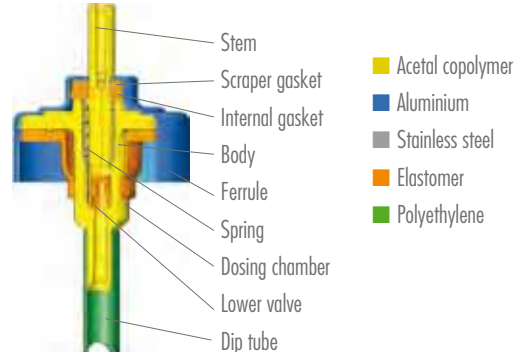


## 2D valves

Metered dose valve

### Key advantages


- metered dose valve with a neutral propellant agent (nitrogen) for liquid solutions
- ensures protection of active ingredients down to the last drop
- 100 µl dose availability
- fitting  FEA 20 mm

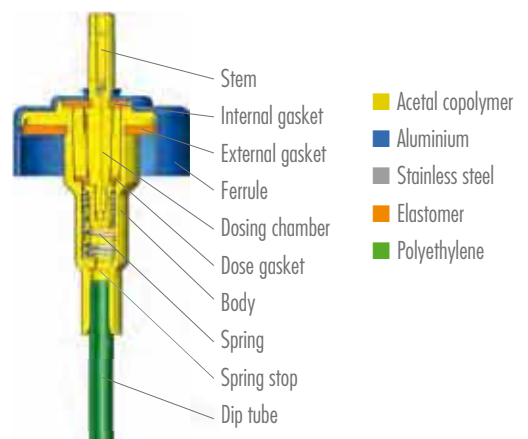


## MVT

The upright metering valve

### Key advantages

- consistent precision metering valve
- works with liquified propellant gas (HFA)
- MVT is used in the upright position
- available in a wide range of doses from 25 to 100 µl
- fitting  FEA 20 mm



## Round containers

Rexam provides a complete range of rigid bottles

Specially designed to be adapted to our pumps and applicators, our rigid bottles allow Rexam to supply complete packaging solutions.



	Neck finish	Size		Diameter		Height		Material	Reference
		(ml)	(oz)	(mm)	(inches)	(mm)	(inches)		
	DIN 18	10	0.34	25.5	1	50	1.97	HDPE	1759
	GCM 20/410	15	0.5	24.5	0.96	58.5	2.3	HDPE	4584
	FEA 20	10	0.34	25.5	1	49	1.93	HDPE	1760
	FEA 20	15	0.5	25.5	1	54.4	2.14	HDPE	4595
	FEA 20	20	0.68	29.7	1.17	57.2	2.25	HDPE	1769

## M17

### Key advantages

- an easy to assemble process: with only 2 components in a very tight block, with pump not separated from the bottle
- flexible availability: the M17 finish is available for both standard plastic bottles and for tubing glass containers from 5 ml up to 30 ml

	Neck finish	Size		Diameter		Height		Material	Reference
		(ml)	(oz)	(mm)	(inches)	(mm)	(inches)		
	M17	5	0.17	17.2	0.68	55	2.16	PP	1558
		10	0.34	23.1	0.91	51	2	PP	1833
		15	0.5	24.2	0.95	59.7	2.35	PP	2688
		30	1	32	1.26	59.9	2.36	PP	1838

## Oval containers

Suitable for nasal application



	Neck finish	Size		Weight (grams)	Overall height		Width		Over flow capacity		Reference
		(cc/ml)	(oz)		(mm)	(inches)	(mm)	(inches)	(cc)	(oz)	
	M18SP410	30	1	7.4	81.89	3.224	44.57	1.755	45	1.52	5191
	M20SP410, M20SP415	59	2	10.0	106.37	4.188	48.20	1.898	68	2.30	6065
	M20SP410	89	3	12.0	106.68	4.200	58.16	2.290	104	3.52	61694
	M18SP410 special	118	4	16.0	119.81	4.717	64.28	2.531	139	4.7	61084
	M20SP410	118	4	15.0	127.61	5.024	64.51	2.540	132	4.46	7124
	M20SP410	118	4	15.0	134.54	5.297	26.41	1.040	139	4.7	2611
	M20SP415	118	4	14.0	131.74	5.187	27.68	1.090	134	4.53	2611

Place of production: USA

# Applicators

Reliable and accurate for each and every usage.  
All our pump applicators are suitable for SP270 and SP3 pumps.

## Buccal

Fighting infection

 Pump    ref. 9180 Valve  ref. 918	 Pump  ref. 8940 Valve  ref. 894	 Pump  ref. 4234 Valve  ref. 4229	 Pump    ref. AA9994 Valve  ref. AA8400	
		 Pump  ref. 5860	 Valve  ref. 585	 Pump    ref. 4325

## Nasal

The right shape and size

 Pump  ref. 4345	 Pump  ref. 2370	 Pump  ref. AA5733	 Pump    ref. AB3960	 Pump    ref. AB3959
 Pump  ref. 4095	 Pump  ref. AA8238 Valve  ref. AA4238	 Pump  ref. 8841 Valve  ref. AA8541 pediatric applications	 Pump  ref. Advancia crimp*	 Pump  ref. Advancia snap*

\* compatible with Advancia pump only





# Auricular

The right combination of shape and size for ear treatment



Pump  

ref. 5860 + 662




Pump   

ref. 9180 + 662


Valve 


ref. 918 + 662




Valve 

ref. 585 + 662



Pump 

ref. AA8238 + 662

Valve 

ref. AA4238 + 662





Pump   

ref. AA9994 + 662


Valve 

ref. AA8400 + 662



Pump 

ref. 4234 + 662

Valve 

ref. 4229 + 662

# Others



Pump   


ref. 9590



Valve 

ref. 4115



Pump   

ref. 5200  
capillary and buccal  
applications

# Squeezable

Simple but effective for nasal applications.

- injection blow-molded, squeezable
- made from LDPE



Kervap 25 ml

## Kervap

Volume		TE*	Height		Bottle reference	Nozzle/cap reference
(ml)	(oz)		(mm)	(inches)		
25	0.85	Yes	65.5	2.58	1591	7711/7710
25	0.85	No	59	2.32	0544	7066/7120



Ovale 40 ml

## Ovale

Volume		TE*	Height		Bottle reference	Nozzle/cap reference
(ml)	(oz)		(mm)	(inches)		
20	0.85	No	60	2.36	249	7066/7120
40	1.35	No	69	2.72	1016	7385-7066/7120
40	1.35	Yes	75.3	2.96	1654	7711/7710
45	1.52	No	76	2.99	1072	7385/7120



Tablet 25 ml

## Tablet

Volume		TE*	Height		Bottle reference	Nozzle/cap reference
(ml)	(oz)		(mm)	(inches)		
25	0.85	Yes	69	2.72	1777	7711/7710
25	0.85	No	63.3	2.49	1094	7379-7385/7120



Tentation 40 ml

## Tentation

Volume		TE*	Height		Bottle reference	Nozzle/cap reference
(ml)	(oz)		(mm)	(inches)		
40	1.35	No	80.2	3.16	4183	7194/7167



Delphex 30 ml

## Delphex

Volume		TE*	Height		Bottle reference	Nozzle/cap reference
(ml)	(oz)		(mm)	(inches)		
30	1	No	70.7	2.78	4103	7066/7120

\*TE: Tamper Evident

# Rexam laboratory

A dedicated team with experience in pharmaceutical industry requirements.

## Our laboratory at the cutting-edge of technology

- Sympatec System
- Malvern Spraytec
- Imagetherm Optical Spray Analyzer
- Innova Systems



## Technology and anticipation

Rexam has extensive expertise in adjusting key factors for drug delivery. Spray performance is drug-device-sensitive and specifications are highly method dependant. Rexam has developed internal standards to test:

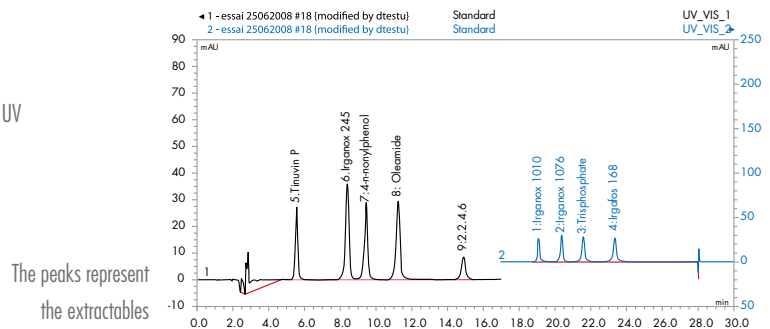
- particle size distribution
- spray angle
- spray pattern
- flow rate

## Extractable testing for batch release

Our laboratory also offers routine extractable testing.



Routine testing implementation = extraction + HPLC UV



## Spray quality: one of the most important elements in drug delivery

The efficacy of the drug and its therapeutic success depend on droplet size and spray pattern.

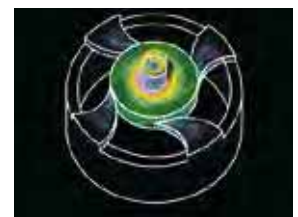
Rexam has over 30 years' experience in designing and evaluating spray systems.

Our teams include specialists in digital simulation and spray design.

With new geometrically designed channels and calculations of output and turbulence, Rexam spray nozzles offer perfect control of particle break-up and dispersion.



Magnified view of spray nozzle ref.3959



Simulation of fluid velocity inside the nozzle



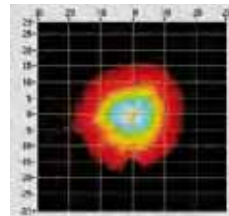
# Tune pump and nozzle characteristics to your needs

Rexam **internal laboratory** is broadening its expertise to customize your spray performance. Our **innovation teams** are dedicated to providing you with data which could facilitate qualification of your device.

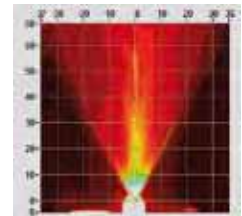
Our **regulatory experts** support you for optimizing time to market.

Rexam can propose you to adjust our standards pumps and nozzles to best match your specific target:

- **materials** to ensure full compatibility with your formulation  
Rexam involves material experts in the earliest phase of the design process.  
Rexam will recommend a combination of suitable raw materials to be used with the spray device.
- **spray performance**: 3 parameters can be adjusted from standard pumps to target optimum performance
  - **Droplet Size Distribution (DSD)**
  - **spray pattern** (size and shape analysis of the spray impact)
  - **plume geometry** (spray angle)
- **dose adjustment**: although predefined doses are available off the shelf, we know that the drug properties may vary with water. Rexam is therefore offering a **dose customization**.
- **look and feel**: Rexam is constantly looking for new solutions to simplify patient administration and insure compliance. New nozzles have been recently launched and Rexam innovation teams are also developing **full concepts for delivery systems around the pumps** to benefit patient administration (side-actuation devices, dose counters, etc) and ensure simpler handling for the pharmaceutical companies.



Spray pattern analysis:  
determination of the spray impact



Plume geometry analysis:  
determination of the spray angle



Innovative one-step snap-on process for Advancia pump