VP7 Technology Platform
The VP7 spray pump was purpose-designed for the Pharmaceutical industry’s prescription drug products.

**Key Benefits**
- Highly efficient pre-compression nasal spray pump
- Consistent spray performance
- Large few droplets and therefore no dripping
- Wide range of dose volumes: 25 µl to 130 µl with different closures
- Suitable for liquid solutions, suspensions and viscous drug formulations
- Excellent ergonomics and soft actuation
- Wide range of actuators and accessories available off-the-shelf
- Actuator and cap with child-resistant features

**Key Differentiators**
- Several prescription drug product references on the European, Japanese and U.S markets.
- *In vitro* Bioequivalence testing
- All plastic materials made from pharmaceutical grade Polyolefin (PP/PE)
- GMP manufacturing using ISO7 clean rooms
- Global footprint
- Ultra-clean gaskets supplied the in-house Elastomer Center

**Droplet size distribution and stable phase (with water)**
The VP7 spray pump can be used as a platform for electronic add-on features such as dose counters, lock-out mechanisms and child-resistant systems.

Available Closure Types / Doses

<table>
<thead>
<tr>
<th>DIAMETER</th>
<th>DOSES (µL): 25, 50, 70, 90, 95, 100, 130</th>
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</thead>
<tbody>
<tr>
<td>VP7 CRIMP-ON</td>
<td>18/415 GCMI</td>
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<tr>
<td>VP7 SNAP-ON</td>
<td>20 mm</td>
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<tr>
<td>VP7 SCREW-ON</td>
<td>20 mm</td>
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Pump / Actuator / Cap Cross-Reference

<table>
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<tr>
<th></th>
<th>232 NA</th>
<th>232 NE*</th>
<th>234 NA**</th>
<th>CB18 NA</th>
<th>CB18 WNA**</th>
<th>161</th>
<th>SAFETY CLIP</th>
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* Only for pre-clinical tests / ** Available for Asian market only / *** Not available for 161

The VP7 spray pump can be used as a platform for electronic add-on features such as dose counters, lock-out mechanisms and child-resistant systems.
The VP7 spray pump platform is supported by the following associated Services to expedite your drug product development:

**Customized Drug Delivery Solutions**
- Specific designs for Rx and OTCs
- Designed and developed by multi-disciplinary project teams with a customer-centric approach
- Quality-by-Design

**Analytical Laboratories**
- Elastomer and plastic extractables, bioburden, silicone oil assay
- Full extractable and toxicology packages to support regulatory filing

**Physical Laboratories**
- Aerodynamic sizing and spray characterization
- Mechanical, stress and content uniformity testing, moisture content
- Non-destructive 3D tomography imaging
- IV BE Testing
- Fully validated Nasal Casts

**Regulatory Expertise**
- Dedicated regulatory affairs experts
- 30 DMFs and over 50 pass NDAs and ANDAs generated

**Elastomer Center Research & Development**
- Ultra clean, highly inert elastomer gaskets supported by validated testing and manufacturing processes
- Optimization of chemical purity
- Surface treatment for improved gasket inertness