

TECHNICAL BULLETIN

FACTORS AFFECTING FLOW RATE ON-Q* PAIN RELIEF SYSTEM

- ON-Q* Pump with Select-A-Flow*
- ON-Q* Pump with ONDEMAND*
- ON-Q* Pump with Select-A-Flow* and ONDEMAND*

HOW THE PUMP WORKS

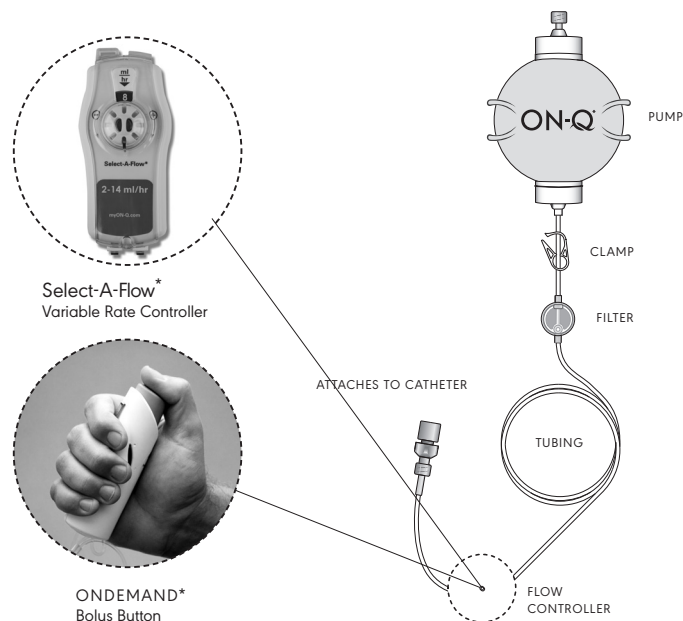
The ON-Q* pump consists of a dual layer elastomeric membrane with a soft outer protective cover. The pressure that pumps the fluid is generated by the strain energy of the elastomeric membranes that are forced to expand when the pump is filled.

Flow control is achieved with a flow restrictor tubing comprised of a fixed diameter and length in conjunction with the pressurized reservoir. The flow restrictor tubing is located inside the Select-A-Flow* and ONDEMAND* devices.

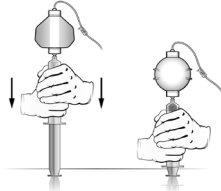




Elastomeric pumps are calibrated to specific operating conditions. When filled to the labeled volume, SELECT-A-FLOW* device delivery accuracy is $\pm 20\%$ while ONDEMAND* bolus dose is $+10\%/-20\%$ of the labeled rates when infusion is started 0-8 hours after fill and delivering normal saline as the diluent at 22°C/72°F.

FACTORS AFFECTING FLOW RATE

A variety of factors such as fill volume, temperature, pump position, and storage times affect the flow rate accuracy of elastomeric pumps. These factors may result in an increase or decrease in flow rate from the labeled flow rate and impact the delivery time. The information presented on the attached table outlines the factors affecting flow rate and presents information to help ensure accurate delivery times.



ON-Q* PAIN RELIEF SYSTEM: SELECT-A-FLOW* AND ONDEMAND* MODELS
FACTORS AFFECTING FLOW RATE AND DELIVERY TIME

	FLOW RATE FACTOR	GUIDELINES
Fill Volume	 <p>Flow rate accuracy specification is based on filling the pump to the labeled fill volume</p> <ul style="list-style-type: none"> Filling the pump <u>less</u> than the labeled fill volume ↑ <u>increases</u> flow rate Filling the pump <u>more</u> than the labeled fill volume ↓ <u>decreases</u> flow rate 	<ul style="list-style-type: none"> Do not underfill the pump Do not exceed the maximum fill volume
Temperature	 <p>The flow controller should be at room temperature. Temperature will affect fluid viscosity:</p> <ul style="list-style-type: none"> Flow rate will ↑ <u>increase</u> approximately 1.4% per 1° F/0.6° C increase in temperature Flow rate will ↓ <u>decrease</u> approximately 1.4% per 1° F/0.6° C decrease in temperature 	<ul style="list-style-type: none"> Do not place ice, cold therapy or heat in close proximity to the flow controller If ON-Q* is refrigerated, allow the pump to reach room temperature prior to use Instruct patient not to place pump underneath bed covers where it may become too warm Flow controller should be worn outside of clothing
Pump Position	 <p>The pump should be positioned at approximately the same level as the catheter site</p> <ul style="list-style-type: none"> Positioning the pump above this level may ↑ <u>increase</u> the flow rate Positioning the pump below this level may ↓ <u>decrease</u> flow rate 	<ul style="list-style-type: none"> Do not place the pump on the floor or hang from a bed post or IV pole Use E-clip to clip to the patient's dressing or clothing or place the pump in the carrying case
Storage Time	 <p>Flow rate accuracy specification is based on starting the infusion within 0-8 hours after filling</p> <ul style="list-style-type: none"> Pumps stored for more than 8 hours prior to starting infusion may ↓ <u>decrease</u> flow rate 	<ul style="list-style-type: none"> When a filled pump is stored beyond 8 hours before use, the pressure in the reservoir will decrease due to stretch of the elastomeric membranes, which may result in a reduction in flow rate below the labeled rate Technical Bulletin (Effect of Storage Times on Flow Rate of Pre-Filled ON-Q* Elastomeric Pumps) available at www.avanospainmanagement.com
External Pressure	 <ul style="list-style-type: none"> Squeezing or laying on the pump may ↑ <u>increase</u> flow rate 	<ul style="list-style-type: none"> Do not squeeze the pump. The pump has sufficient force to infuse the medication Instruct patient to place the pump on a bedside table or other location when sleeping, to help prevent laying on the pump for extended periods of time

Note: If the pump did not perform as expected, do not discard. Contact Avanos Medical for product return instructions.

There are inherent risks in all medical devices. Please refer to the product labeling for **Indications, Cautions, Warnings** and **Contraindications**. Failure to follow the product labeling could directly impact patient safety. Physician is responsible for prescribing and administering medications per instructions provided by the drug manufacturer. Refer to www.avanospainmanagement.com for additional product safety Technical Bulletins.

Please contact the Clinical Services Department at **800-444-2728** or **949-923-2400** if you have any questions regarding this information.

AVANOS

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COPY-01336_EN 07/2017