

BOTTOM OUTLET VALVE WITH NO DEAD SPACE

P154e1

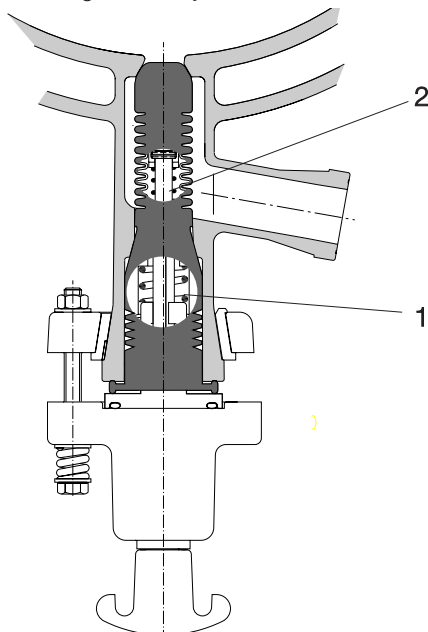
Borosilicate glass 3.3 is a preferred material in the chemical and pharmaceutical industry due to its smooth and inert surface. These properties also make it ideally suitable for cGMP applications. To keep within these stringent guidelines, all peripherals should utilize the same engineering designs to fit these specified requirements, e.g. safety flat buttress ends with GMP seals, or dead space free bottom outlet valves, etc. This type of bottom outlet valve is available for the following vessel types:

- Graduated receiving flasks
- Double-wall jacketed reaction vessel
- Triple-wall jacketed vessels
- Glass vessels with OptiMix® baffles

The vessels are equipped with a pre-fabricated nozzle, fused into the (add space) vessel walls. The discharge port can then be precisely drilled and honed. This design maximizes sealing capability and eliminates dead space.

DESIGN OF THE VALVE

The new bottom outlet valve implements two sealing design capabilities that incorporate high-grade connections equipped with spring elements to account for PTFE's weakened state at high temperatures. The first sealing design capability located at position 1 (illustration 1) between the glass body and valve bellows and acts in a



Illustr. 1: Design structure of the bottom outlet valves



Illustr. 2: Bottom outlet valves with thermometer employed in a jacketed vessel

self-adjusting fashion. The spring at position 2 (illustration 2) is pre-loaded due to the closing movement of the valve, thus enabling resilience against PTFE flow upon warming and creating a seal at the same time.

The smooth, rounded shape of the bellows that come in contact with product can be fully drained during open operational status, promoting cleanability.

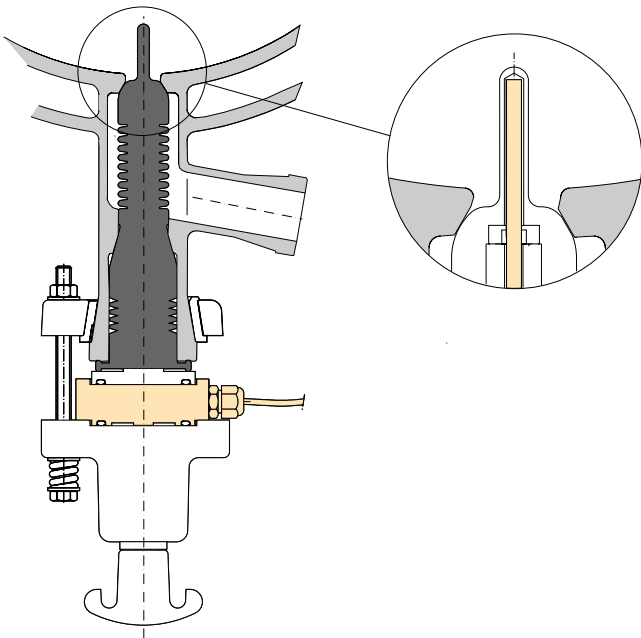
Three different valve lengths are available for different vessel types.

- ☞ Sealing capability in dead spaces near the floor
- ☞ Self-adjusting capability for high temperatures
- ☞ Integrated PT100

BOTTOM OUTLET VALVE WITH PT100 (RTD)

In many cases, temperature measurement is favorable by employing the bottom outlet valves, e.g.:

- Small residual amounts of fluid
- OptiMix® without a baffle installed in the cover



Illustr. 3: Bottom outlet valves employing PT100

The QVF bottom outlet valves that feature a PT100 fully sustain the advantages of the standard dead space free design. The PT100 is assembled at the machined top, without the need of an additional seal. The thermometer is positioned in the vessel, allowing for fast, accurate temperature measurement as well as isolating it from the jacket temperature. A temperature deviation of about +/- 3°C results from the PTFE jacket, and may be taken into account during calibration of the thermometer.

TECHNICAL DATA

Active sensor tip:	30 mm protruding into the product
Sensor type:	4 cable-design PT100
ATEX license:	PTB 00 ATEX 2075 U
Ex protection grade:	II 2G EEx ell
Installation mode:	Using heat inductive paste
Response time:	About 3 minutes
Temperature deviation:	About 3°C
Connecting cable:	About 2.7 meters

ORDER NUMBERS

BA	S	D	TH	T
Bottom outlet valves				
L - triple-wall vessels				
M - jacketed vessels				
S - graduated receiving flasks				
Length contingent to vessel deployed,				
Dead space free design				
With PT100				
Torque limitation				

Caution:

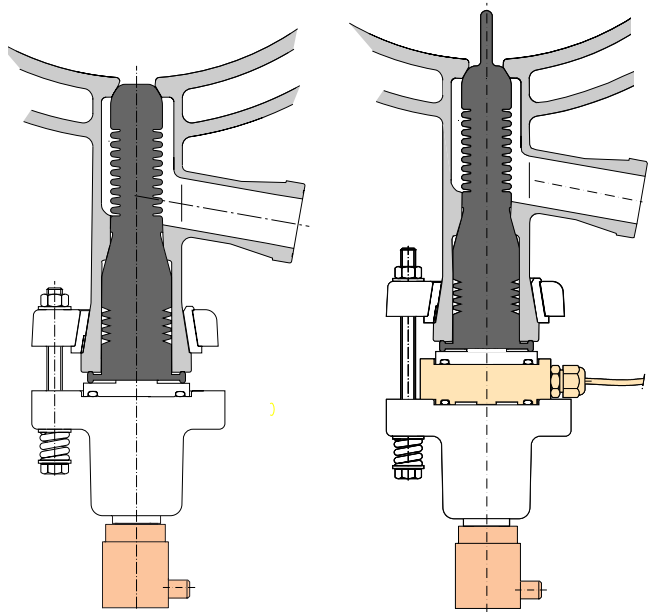
The glass vessel must be equipped with a the integral valve body.



Illustr. 4: Bottom outlet valves employed in triple-wall vessel

TORQUE LIMITATION

Upon demand, the valve may be equipped with a torque limitation to avoid the possibility of over-tightening. This is a standard feature for triple-wall vessels.



Illustr. 5: Bottom outlet valves employing security device against over-winding

QVF ENGINEERING GMBH

P.B. 33 69
D-55023 Mainz
Hattenbergstraße 36
D-55122 Mainz

Tel.: (+49) 0 61 31/ 97 04-0
Fax: (+49) 0 61 31/ 97 04-500
mail@qvf.de
www.qvf.com

