Dimension verification sheet

Ball valve

Drawing RFS-DEMO-0126-02 · rev. A
Model measured Final 3D scene of the video, cutaway
Verification date 03-11-2026

The 48 dimensions on the valve drawing, measured again on the 3D model used to make the video.

> **43 within tolerance · 5 declared simplifications · 0 out of tolerance**

ID	DIMENSION	DRAWING (MM)	TOLERANCE	MODEL (MM)	RESULT
V01	Overall length	58	ISO 2768-m (±0.3)	58.00	Within tolerance
V02	Stem axis → body end	29	ISO 2768-m (±0.2)	29.00	Within tolerance
V03	Stem axis → tailpiece end	29	ISO 2768-m (±0.2)	29.00	Within tolerance
V04	Body outer Ø	Ø36	ISO 2768-m (±0.3)	36.00	Within tolerance
V05	Body hexagon, across flats	e/c 26	ISO 2768-m (±0.2)	26.00	Within tolerance
V06	Body hexagon length	11	ISO 2768-m (±0.2)	11.05	**Declared simplification**
V07	Tailpiece hexagon, across flats	e/c 32	ISO 2768-m (±0.3)	32.00	Within tolerance
V08	Tailpiece hexagon length	11	ISO 2768-m (±0.2)	11.00	Within tolerance
V09	Stem height (pipe axis → stem tip)	36	ISO 2768-m (±0.3)	36.00	Within tolerance
V10	Ball sphere	SØ25	h9	25.00	Within tolerance
V11	Ball bore	Ø15	H9	15.00	Within tolerance
V12	Ball length	20	ISO 2768-m (±0.2)	20.00	Within tolerance
V13	Ball drive slot	4.2	H11	4.20	Within tolerance
V14	Ø15 bore in the body	Ø15	ISO 2768-m (±0.2)	15.00	Within tolerance
V15	Ø15 bore in the tailpiece	Ø15	ISO 2768-m (±0.2)	15.00	Within tolerance
V16	Full free bore, valve open	Ø15	–	15.00	Within tolerance
V17	Seat housing (body × tailpiece)	Ø23	H8	23.00 × 23.00	Within tolerance
V18	Ball chamber	Ø27	ISO 2768-m (±0.3)	27.00	Within tolerance
V19	Neck	Ø16	ISO 2768-m (±0.2)	16.00	Within tolerance
V20	Stem bore	Ø8.2	H8	8.20	Within tolerance
V21	Collar housing	Ø14.5	H11	14.50	Within tolerance
V22	Collar housing depth	15.60	ISO 2768-m (±0.2)	15.60	Within tolerance
V23	Neck height	27	ISO 2768-m (±0.2)	27.00	Within tolerance
V24	Stop boss	Ø24	ISO 2768-m (±0.2)	24.00	Within tolerance
V25	Boss height	4	ISO 2768-m (±0.1)	4.00	Within tolerance
V26	Seat: outer Ø	Ø23	–	23.00	Within tolerance
V27	Seat: inner Ø	Ø16.5	–	16.50	Within tolerance

ID	DIMENSION	DRAWING (MM)	TOLERANCE	MODEL (MM)	RESULT
V28	Seat: ball contact Ø	Ø21.6	–	21.60	Within tolerance
V29	Seat: contact sphere	SR12.5	–	12.52	**Declared simplification**
V30	Seat: Ø23 length	5.80	–	5.80 × 5.80	Within tolerance
V31	Seat: Ø16.5 length	3.60	–	3.58 × 3.58	Within tolerance
V32	Stem: overall length	25.80	ISO 2768-m (±0.2)	25.80	Within tolerance
V33	Stem: collar	Ø14	ISO 2768-m (±0.2)	14.00	Within tolerance
V34	Stem: Ø	Ø8	f7	8.00	**Declared simplification**
V35	Stem: tang, length	9	ISO 2768-m (±0.2)	9.00	Within tolerance
V36	Stem: tang, thickness	4	h9	4.00	Within tolerance
V37	Stem: two flats, across flats	e/c 5	ISO 2768-m (±0.1)	5.00	Within tolerance
V38	Lever seat height	28	ISO 2768-m (±0.2)	28.00	Within tolerance
V39	Lever: plate thickness	3	ISO 2768-m (±0.1)	3.00	Within tolerance
V40	Lever length, grip included	101.50	ISO 2768-m (±0.3)	101.50	Within tolerance
V41	Grip: start	40	ISO 2768-m (±0.3)	40.00	Within tolerance
V42	Grip: width	17	ISO 2768-m (±0.2)	17.00	Within tolerance
V43	Lever: arm width	14	ISO 2768-m (±0.2)	14.00	Within tolerance
V44	Grip: thickness (top × side)	1.5	ISO 2768-m (±0.1)	1.50 × 1.50	Within tolerance
V45	Stop tab	3 × 3	ISO 2768-m (±0.1)	3.00 × 3.00	Within tolerance
V46	Closing turn (clockwise seen from above)	90°	–	90°	Within tolerance
V47	Rp 1/2 thread: diameter (body × tailpiece)	Rp 1/2	ISO 7-1	18.60 × 18.60	**Declared simplification**
V48	M30 × 1.5 thread, body to tailpiece	M30 × 1.5	–	30.00 × 30.00	**Declared simplification**

Notes

- V06: the body hexagon reaches 0.05 mm into the cone so that joining the two shapes does not fail; it is not visible.
- V29: the seat sits 0.02 mm from the ball so that the two surfaces do not clash when the image is drawn.
- V31: the drawing gives 3.6 with one decimal; the model measures 3.58 (0.02 mm less), because of the gap in V29.
- V34: the stem is modelled at its nominal size, 8.00; the f7 fit is a manufacturing tolerance and is not drawn.
- V47 and V48: threads are drawn plain, without flanks: Rp 1/2 at its rounded minor diameter (18.6) and M30 × 1.5 at nominal size.
- Measured on the final 3D scene used to make the video: all 48 with the part's checker, and 16 of them (the main ones and the turning direction) also with a second, independent program. Geometry error allowed: ±0.01 mm (V31: ±0.05, one-decimal dimension). Our own demonstration design.