

Control Ball Valve Type GH₂



Control valve for hydrogen applications

Successful qualification of the ARTES 'H2ready' control ball valve for 100 vol.% hydrogen

Future-proof control technology for the energy transition

The transformation of the gas infrastructure towards hydrogen places high demands on valves and their sealing systems. To demonstrate the suitability of the ARTES control ball valve for future hydrogen applications, the Type 150 G size (DN150, PN100/Class 600) was tested in accordance with DBI-GTI 103 by the DVGW Energy Testing Laboratory at DBI Gastechnologisches Institut gGmbH in Freiberg.

The successful test resulted in the award of the DBI H2ready test mark certificate. For the tested sample, hydrogen tightness was demonstrated up to an operating pressure of 100 bar within the temperature range of -20 °C to +60 °C.

Scope of testing

- Leak test in as-supplied condition using nitrogen at 110 bar.
- Hydrogen leak tests at 0.5 bar and 110 bar.
- Tests with 100 vol.% hydrogen at room temperature, as well as at +60 °C and -20 °C.
- Verification of internal and external hydrogen tightness using a sniffer probe.
- 100 actuation cycles at nominal pressure and a further 50 cycles at differential pressure.
- Repeated hydrogen leak tests following prolonged loading.

Both the external tightness of the fitting and the tight seal within the passage met the stringent test requirements.

The measured leakage rates were below the specified limit of 1×10^{-4} mbar·l/s (equivalent to approx. 3 Liters/year). Based on the test results, hydrogen tightness was confirmed for

operating pressures up to 100 bar and temperatures from -20 °C to +60 °C.

Tried-and-tested design for demanding control tasks

The ARTES control ball valve combines control and shut-off functions in a single valve. Both functions are structurally separated from one another, thereby ensuring precise control whilst providing a secure shut-off.

The control function is achieved by the 90° rotational

movement of a trunnion-mounted ball. As the ball rotates, a defined section of the control contour integrated into a control disc is exposed, thereby precisely altering the flow cross-section.

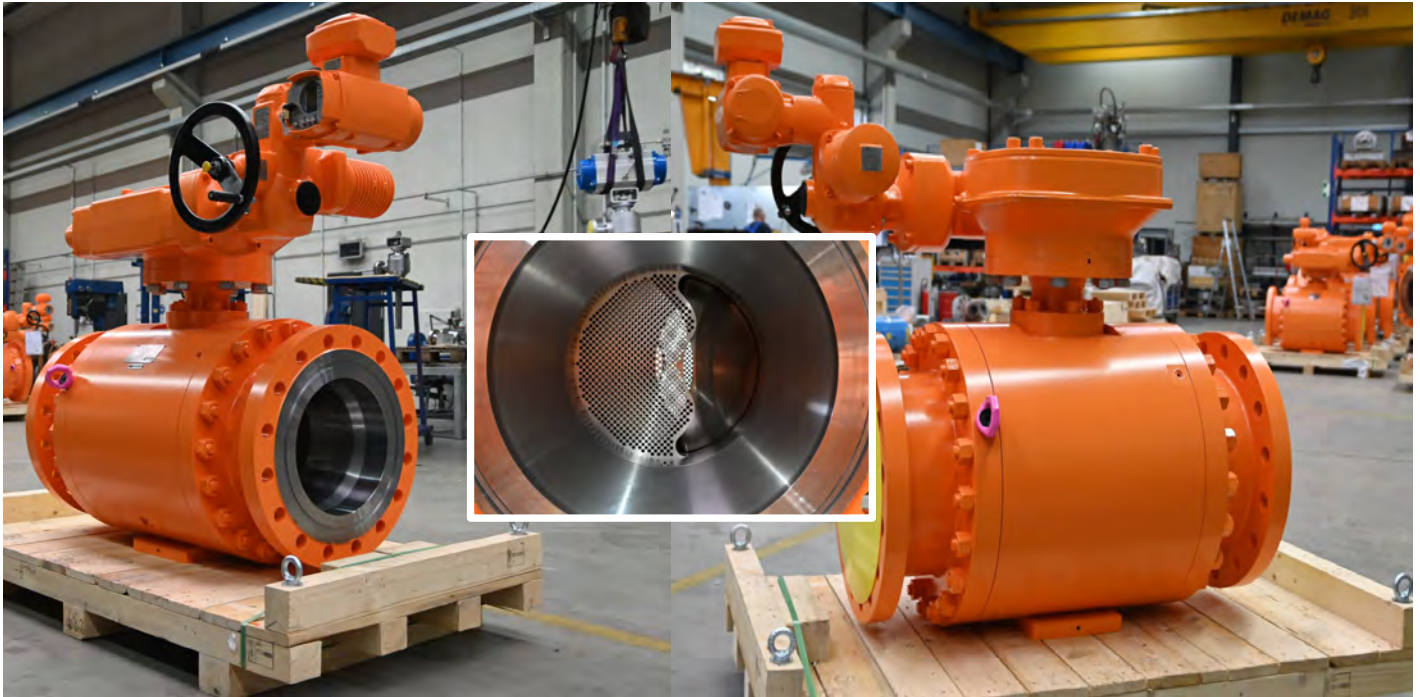
The control characteristic – typically linear or equal-percentage – is determined by the design of the control contour. Very high opening ratios of up to 100 are possible.



Successfully tested: ARTES Control ball valve Type GH₁

Unlike conventional control valves, the flow through the ARTES control ball valve is virtually straight. This enables applications requiring minimal pressure losses to be realised even at 0.2 bar.

the manufacturing process for the wear-resistant coating has been further developed. This has made it possible to further optimise the porosity of the coating.



ARTES Type 400 GG control ball valve with semi-perforated control contour in the control disc

The shut-off function is achieved by a metal-to-metal sealing ball-to-seat system, which ensures a reliable, gas-tight seal. The valve is bidirectional and can be used regardless of the direction of flow. The wear-resistant metal seal ensures a long service life even under demanding operating conditions.

Materials and hydrogen applications / H₂-compatible sealing technology

Materials are selected in accordance with the recommendations of DIN SPEC 3456, EIGA Doc 121/14 and various DVGW publications. All steel components are forged or rolled.

A purely metallic ball-seat sealing system is used to seal the passage. To meet the challenges posed by hydrogen as a working medium,

Special FKM sealing materials are used for the elastomer seals. These materials are ideally suited to high-pressure gas applications, demonstrate excellent resistance to explosive decompression and are qualified for use in hydrogen applications.

Conclusion

The ARTES control ball valve combines tried-and-tested technology with certification of its suitability for hydrogen use by an accredited independent institute, the DBI Gastechnologisches Institut gGmbH in Freiberg.

The successful completion of the tests for the 'H2ready' quality mark provides a solid foundation for use in today's natural gas networks and future hydrogen infrastructures.

TEST CONFIRMATION

on Hydrogen Suitability

100 Vol.-% in Natural Gas

The DVGW Test Laboratory Energy of DBI - Gastechnologisches Institut gGmbH
Freiberg confirms the successful testing of

Control ball valve;
Type "150 G", Class600
DN150 tested

according to the test basis

DBI-GTI 103:2020-11

Test for „H2ready“ for valves for natural gas transportation in pipelines"

The results of the test are documented in the following test report.

B 26/06/5043 | 24.06.2026

Based on this test mark confirmation, the applicant

Artes Valve & Service GmbH
(Parkallee 7 | 16727 Velten | Deutschland)

is authorized to apply the quality mark H2ready for the above mentioned products in accordance with the
statutes. The test confirmation is valid until 23.06.2029.




Dipl.-Ing. (BA) Rico Eßbach
Leiter Prüflaboratorium

Freiberg, den 24.06.2026

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This test confirmation is the English language version. In case of doubt the wording according to the German language version of the test confirmation is valid.

This test confirmation attests to the compliance of the products mentioned with the technical requirements in the test specifications mentioned above. It does not confirm standard conformity of the tested products. The H2ready warranty mark is only valid in conjunction with the above-mentioned test report(s). If conditions are specified in the test reports associated with the warranty mark, the right to use the warranty mark does not commence until they have been implemented.