

Three-Way Valve



Purpose & Advantages

The ARTES three-way valve is a control valve with which material flows can be separated or mixed. The ARTES three-way valve has been designed for use with liquid and gaseous media, for example water and steam. Typical applications are in the power plant sector as bypass regulation in the water/steam cycle.

A typical application is the temperature regulation of a steam flow by bypassing a superheater. By nature of its design and the principle of rotary movement, the ARTES three-way valve offers many crucial advantages:

- ▶ The ARTES three-way valve takes on the function of 2 control valves, reducing installation costs and requiring only one drive
- ▶ Defined leakage in the passage through a defined gap between the rotary segment and housing, thus ensuring a minimum flow through the closed connection
- ▶ No vibration fractures, after positioning, the stem is free of forces and torques
- ▶ Straight flow-through permits a permanent pressure loss < 0.1 bar whilst guaranteeing constant control performance.
- ▶ Optimal piping due to arrangement of the pipe axes in one plane



Waste incineration plant enertec Hameln, Photo: E.ON Energy From Waste

Function

A difference in the function of the ARTES three-way valve is made between distributor and mixer. The direction of flow of the medium can be variably selected for the ARTES three-way valve.

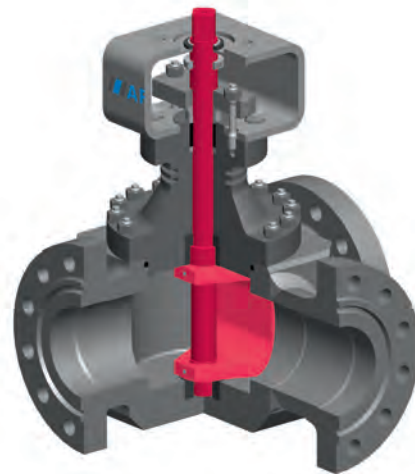
Distributor:

The rotary segment distributes the media flow that is fed into the valve through one connection out through two outputs. Thus, the closing of one outlet increases the flow rate of the second outlet.

Mixer:

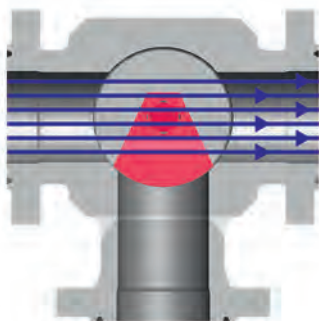
The rotary segment mixes the media flows fed into the valve through two connections and feeds them out of the valve through one outlet. Thus, the closing of one inlet increases the flow rate of the second inlet.

The distribution of the material flows is performed by the

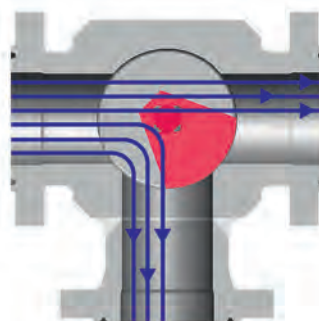


90° rotary movement of one of the rotary segments in the ARTES three-way valve. The setting function of the rotary segment provides a linear characteristic; the leak flow is determined by the defined gap between rotary segment and housing.

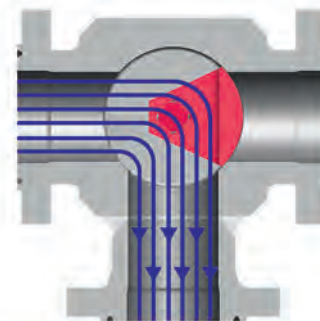
Example of three-way valve as distributor



Outlet 3 closed,



Outlet 2 and 3 opened 50% each



Outlet 2 closed

Design

The ARTES three-way valve is manufactured from forged steel. The material of the pressurized components complies with the requirements of the design data made by the customer. When delivered with welding ends, the forged material is used that matches the pipe material used by the customer.



with welding ends



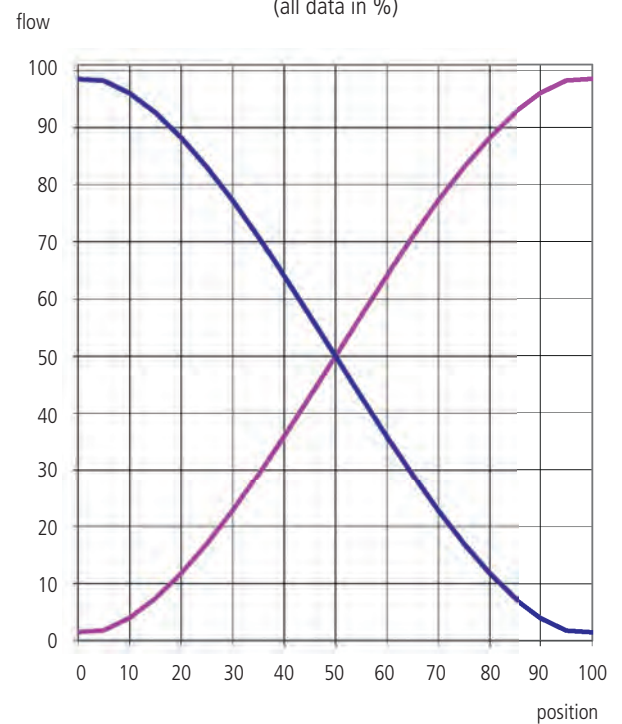
with flange ends

Adaptation to actuator
acc. to DIN/ISO 5211

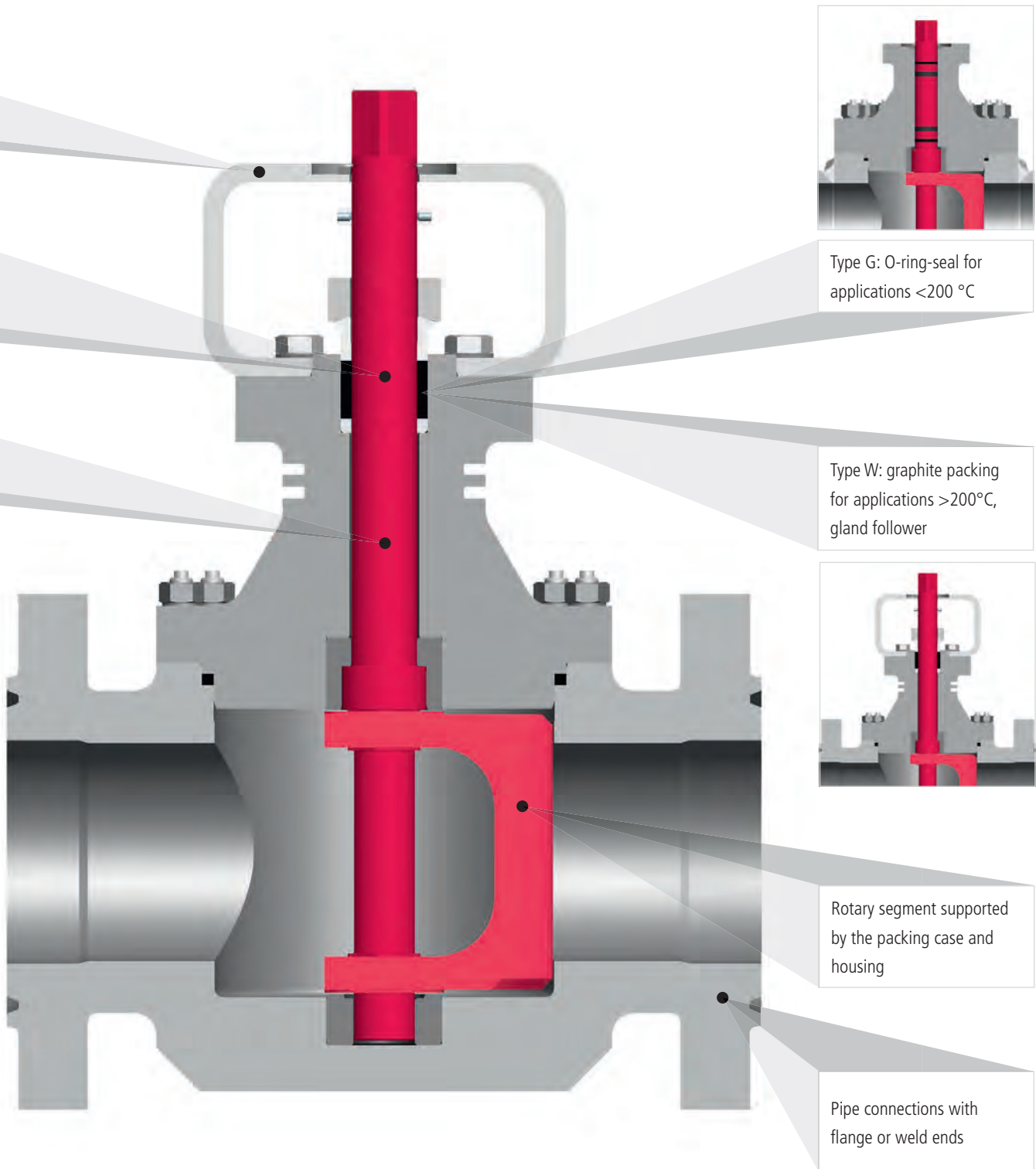
After positioning, the double-
mounted stem is free of forces
and torques

Blow-out proof stem

Linear control characteristics of ARTES three-way valve
(all data in %)



Design



Examples / Applications

The valves shown here are representative of the diverse range of applications for ARTES three-way valves

Type 150-W
Connections: 219,1 x 18,3 mm
Design: 525 °C, 74 bar
Medium: steam
Function: distributor



Type 65-G
Connections: 76,1 x 2,9 mm
Design: 120 °C, 13 bar
Medium: cooling water
Function: mixer



Type 150-W
Connections: 8" 600 lbs
Design: 485 °C, 48 bar
Medium: steam
Function: distributor

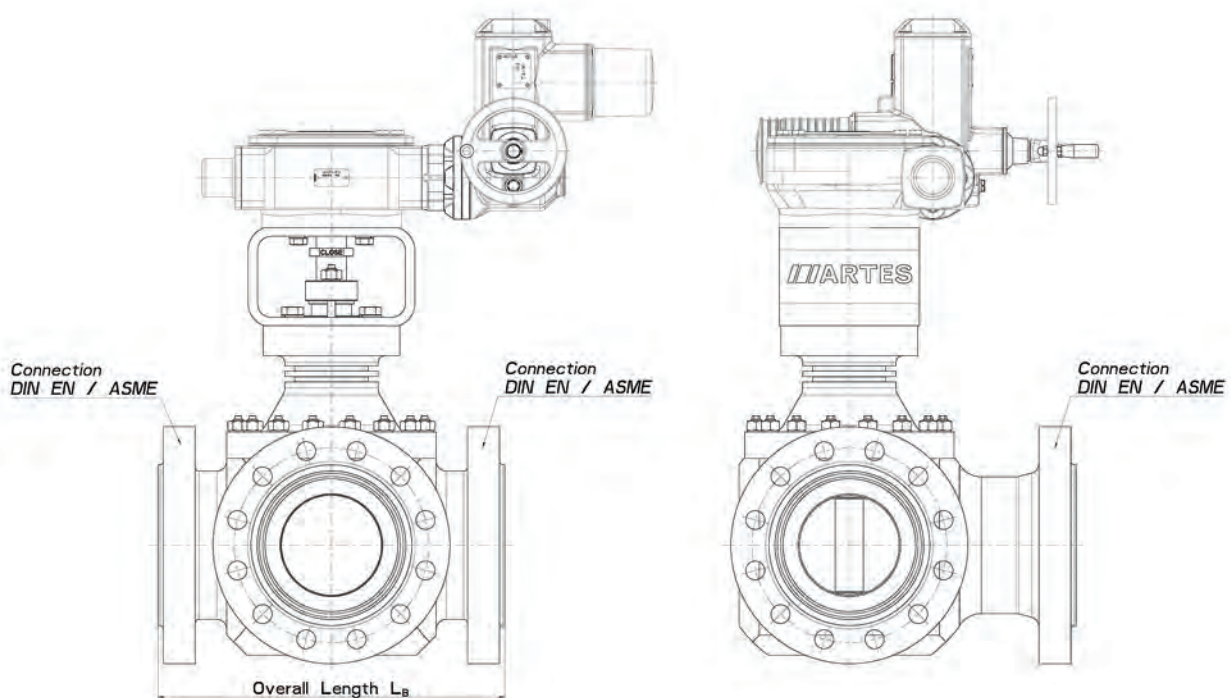


Type 450-G
Connections: 18" class 900
Design: 180 °C, 100 bar
Medium: natural gas
Function: distributor



Facts

Nominal pipe size:	DN50 ... DN600 or 2" ... 24"
Nominal pressure class:	PN16 ... PN400 or ANSI-class 300 ... 2500
Temperature:	up to 600 °C
Body material:	1.0460, 1.0566, 1.4541, 1.4571, 1.5415, 1.7335, 1.7380 or equivalent international materials
Material rotary segment:	1.4122, 1.4922 / 1.4923
Seal material:	Graphite, FKM, PTFE, EPDM, and others
Pipe connections:	Flanges (EN1092-1, ASME B16.5 and others), weld ends



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