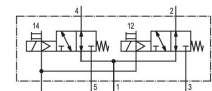


## AVENTICS Series 503 Directional Control Valves

The AVENTICS Series 503 is a line of pneumatic directional control valves with ultra-high flow ratings per valve size. This enables design and specifying engineers to use smaller, lower-cost valves and components that do more work with less air, energy, and cost. Designers can choose to generate greater speed of motion for their components using the same size valve. The 503 Series valves are designed to complement the benefits of AVENTICS G3 fieldbus electronics. When assembled together, original equipment manufacturers can leverage assemblies that combine ultra-high flow rates with ease of use, plus fieldbus technology that provides configurability, flexibility, and cost-effective I/O and distribution architecture. The compact 503 Series valves are ideal for automation and piloting applications across a wide range of automotive and tire, food and beverage, pharmaceutical, packaging equipment, and general machinery applications.

- Available in either spool-and-sleeve or rubber seal models
- Proprietary and ISO versions enable the valve to meet a variety of applications
- Increased energy efficiency via pressure regulators
- Low power consumption (1.7 W for DC applications)
- Modular design and plug-in circuit boards for easy configuration and elimination of wiring
- Machine cycle rate can be optimized via speed controls
- Pressure isolation of individual valves for easy maintenance



## Technical data

Industry

Activation

Valve type

Switching principle

Valve function

Actuating control

Sealing principle

Connection type

Industrial

Electrically

Spool valve, positive overlapping

2x 3/2 NO/NO, with spring return

NO/NO

Single Solenoid

Soft seal

Plate connection

# 2x3/2-directional valve, Series 503

R503A2BA0MA00F1

Series 503

2025-10-23

|                                    |                                                           |
|------------------------------------|-----------------------------------------------------------|
| Manual override                    | without detent                                            |
| Pilot control exhaust              | with directional pilot air exhaust                        |
| Nominal flow Qn                    | 950 l/min                                                 |
| Min. working pressure              | 2 bar                                                     |
| Max. working pressure              | 8 bar                                                     |
| Min. control pressure              | 2 bar                                                     |
| Max. control pressure              | 8 bar                                                     |
| Protection class with connection   | IP65                                                      |
| Protective circuit                 | TVS diode                                                 |
| Reverse polarity protection        | Protected against polarity reversal                       |
| Operational voltage                | 24 V DC                                                   |
| Voltage tolerance DC               | -15 % / +10 %                                             |
| Pilot                              | External                                                  |
| LED status display                 | Yellow                                                    |
| Power consumption DC               | 1.4 W                                                     |
| Duty cycle                         | 100 %                                                     |
| Typ. switch-on time                | 15 ms                                                     |
| Typ. switch-off time               | 20 ms                                                     |
| Blocking principle                 | Single base plate principle, can be assembled into blocks |
| Can be assembled into blocks       | Can be assembled into blocks                              |
| Min. ambient temperature           | -10 °C                                                    |
| Max. ambient temperature           | 50 °C                                                     |
| Min. medium temperature            | -10 °C                                                    |
| Max. medium temperature            | 50 °C                                                     |
| Medium                             | Compressed air                                            |
| Min. oil content of compressed air | 0 mg/m <sup>3</sup>                                       |
| Max. oil content of compressed air | 5 mg/m <sup>3</sup>                                       |
| Max. particle size                 | 50 µm                                                     |
| Mounting screws                    | with hexagon socket                                       |
| Mounting screw tightening torque   | 2.9 Nm                                                    |
| Weight                             | 0.236 kg                                                  |

## Material

|                      |                                          |
|----------------------|------------------------------------------|
| Housing material     | Die cast zinc                            |
| Seal material        | Nitrile butadiene rubber<br>Polyurethane |
| Material front plate | Polyamide                                |
| Material end plate   | Polyamide                                |

|          |                 |
|----------|-----------------|
| Part No. | R503A2BA0MA00F1 |
|----------|-----------------|

## Technical information

The min. control pressure must be adhered to, since otherwise faulty switching and valve failure may result!

The pressure dew point must be at least 15 °C less than ambient and medium temperature and may not exceed 3 °C.

The oil content of compressed air must remain constant during the life cycle.

Use only the approved oils from AVENTICS. Further information can be found in the "Technical information" document (available in <https://www.emerson.com/en-us/support>).

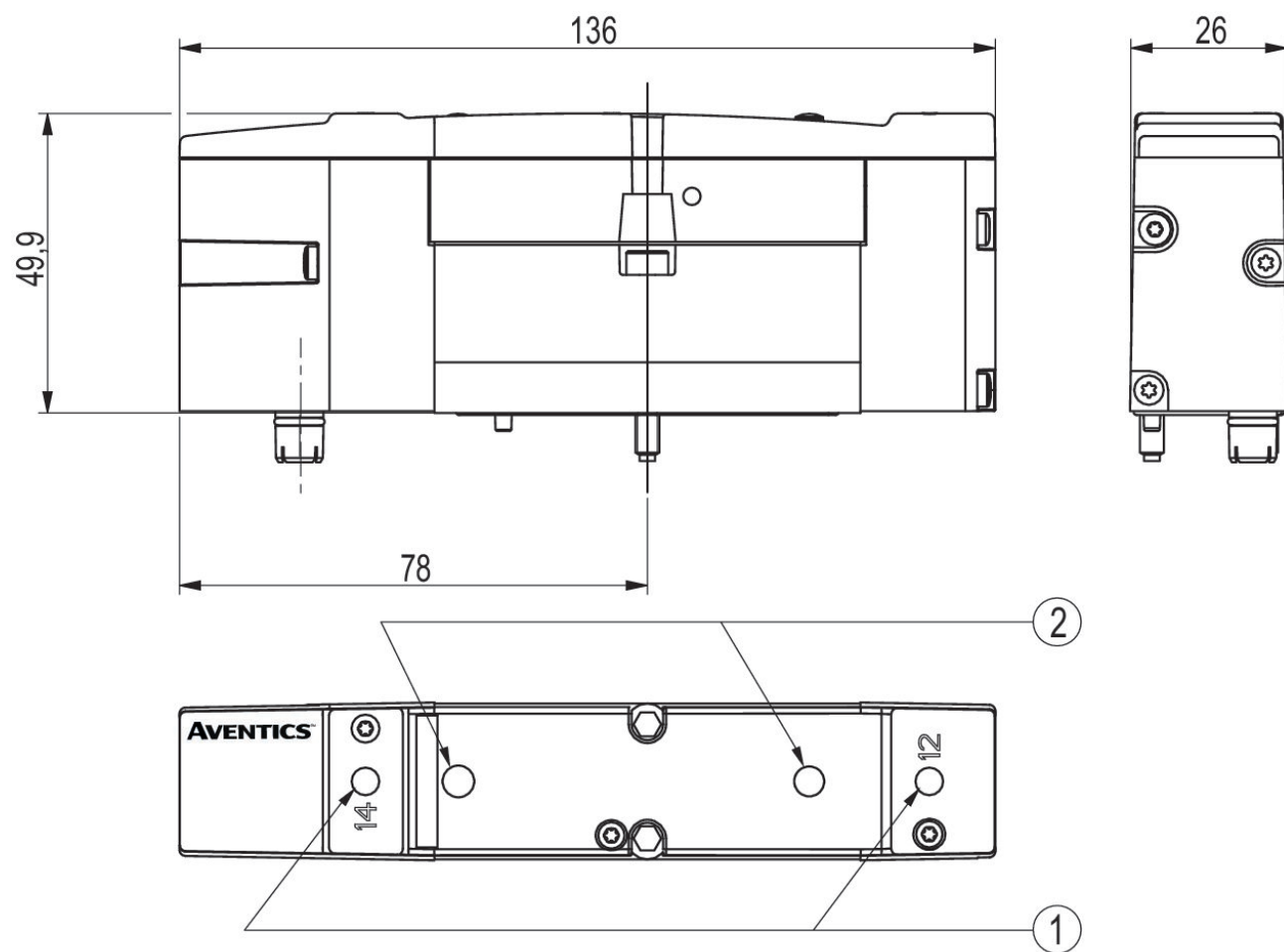
# 2x3/2-directional valve, Series 503

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## Dimensions



1) Manual override

2) LED

# 2x3/2-directional valve, Series 503

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## Accessories overview

