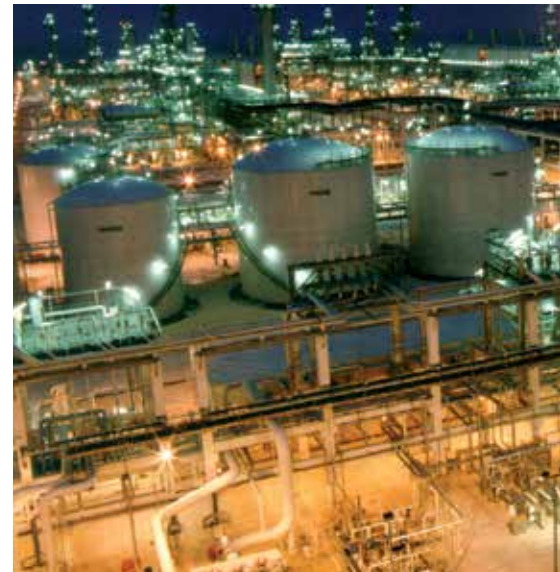


Mapag butterfly valves
Product offering



Meeting even your
most demanding
requirements





Metso's Mapag product line offers engineered valve solutions

A wide spectrum of international references proves the reliability and low life cycle cost of the complete range of Mapag's products.

- superior sealing element long lasting speciality selected materials and body mounting provide protection from erosion
- bubble tight testing according to API 598
- emission prevention-qualified and live loaded packing design to fulfill exceed requirements of US Clean Air Amendment and Germany's TA-Luft
- industry's best disc valve flow coefficient

Product Range – Butterfly Valves

The current range of butterfly valves covers operating temperatures from $-270\text{ }^{\circ}\text{C}$ ($-454\text{ }^{\circ}\text{F}$) up to $+1450\text{ }^{\circ}\text{C}$ ($+2642\text{ }^{\circ}\text{F}$) and pressures from a vacuum up to 400 bar (CL 2500). The butterfly valve diameters range from 50 mm (2 inch) up to 2500 mm (100 inch) and are made of different materials.

The pneumatic actuators have a proven record of success in control and safety driven applications, operating with torques up to 60,000 Nm (531 000 lb/inch).



Applications

Mapag products are used across a wide spectrum of industries, e.g. chemical and petrochemical, natural gas, offshore and LNG, as well as nuclear and conventional power stations. The products include a special range for safety critical applications, e.g. fire and earthquake shut-down systems, patented as well as special rapid closing emergency shut-down valves.

Research, development and design

In addition to the standard product range, Mapag is able to offer turn-key solutions for difficult applications.

New products are designed using 3-d

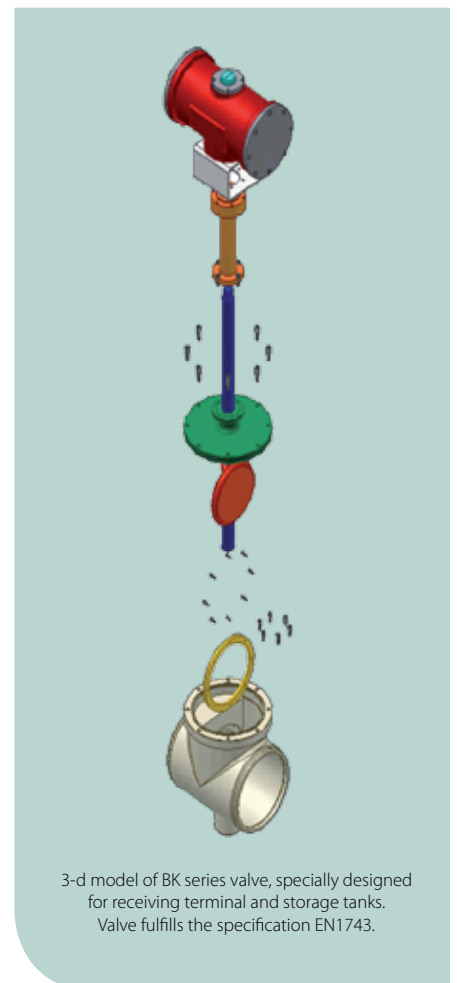
design software. Valves are fully tested and the design is optimized by computer simulation thus ensuring their reliability.

Quality

Mapag operates its own quality management systems according to ISO 9001 (EN 29001), certified by the certification body. MAPAG is certified according to directive 97/23/EC module H and module H1.


Service

Maintenance can be carried out at the customer's plant or on site by fully qualified Metso Mapag service personnel or, if necessary, at Mapag works.



3-d model of BK series valve, specially designed for receiving terminal and storage tanks. Valve fulfills the specification EN1743.

High performance switch and control butterfly valves for hydrogen applications

Type: BA	Size and pressure range	Materials	Temperature range	Application
	NPS 2 - NPS 36 CL 300, 600	Carbon Steel Stainless steel	-10 °C to 200 °C, 14 °F to 392 °F	Pressure swing adsorption plants; processing of refinery off-gases; recovery of high pressure hydrogen; up to 2 million cycles


Flow control valves

Type: BD	Size and pressure range	Materials	Temperature range	Application
	NPS 2 - NPS 100 CL 150, 300, 600, 900, 1500, 2500	Carbon Steel Stainless Steel Duplex SS Al-Ni-Bronze Special Materials	-40 °C to 1450 °C, -40 °F to 2642 °F	For flow control, sulphur recovery, chemical plants, power plants, ethylene plants, desalination plants

Cryogenic flow control valves

Type: BE	Size and pressure range	Materials	Temperature range	Application
	NPS 2 NPS 100 CL 150, 300, 600, 900, 1500, 2500	Stainless Steel Aluminium	-270 °C to 200 °C, -454 °F to 392 °F	For flow control in cryogenic media, LNG plants, air separation, liquid oxygen, nitrogen, helium and hydrogen, space exploration

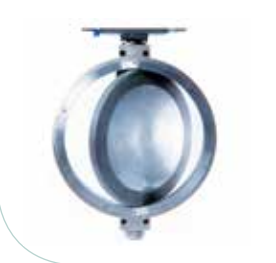
MAPAG lever valves

Type: BH	Size and pressure range	Materials	Temperature range	Application
	NPS 8 - NPS 100 CL 150	Carbon Steel Stainless Steel	-40 °C to 600 °C -40 °F to 1 112 °F	Valve opens at precise pressure differential without use of separate monitoring. Air separation, chemical plants, cement and steel, industry, safety valve


Cryogenic butterfly valves

Type: BK	Size and pressure range	Materials	Temperature range	Application
	NPS 2 - NPS 100 CL 150, 300, 600, 900,	Stainless Steel Aluminium	-270 °C to 200 °C, -454 °F to 392 °F	Cryogenic and LNG applications, air separation, nitrogen, helium and hydrogen, space exploration
	Weld End, Top Entry LNG applications NPS 4 - NPS 48 CL 150, 300			


High performance butterfly valves for oxygen recovery

Type: BO	Size and pressure range	Materials	Temperature range	Application
	NPS 2 - NPS 40 CL 150	Carbon Steel	-10 °C to 200 °C, 14 °F to 392 °F	Pressure swing adsorption plants for low pressure oxygen and nitrogen in up to 2 million cycles with opening and closing time <1 s

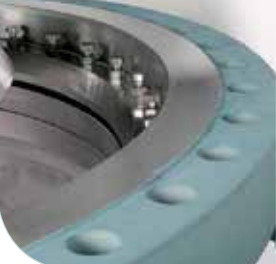
Soft seated butterfly valves

Type: Type BN	Size and pressure range	Materials	Temperature range	Application
	NPS 2 - NPS 100 CL 150	Carbon Steel Stainless Steel Duplex SS	-16 °C to 200 °C, -10 °F to 400 °F	Standard butterfly valves with: EPDM, VITON, PTFE and metal seating for general application

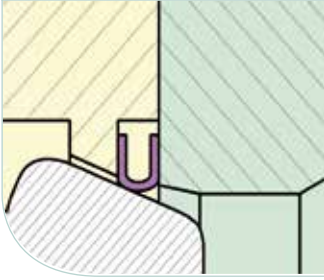
Metal seated butterfly valves for high pressure applications

Type: BW	Size and pressure range	Materials	Temperature range	Application
	NPS 2 - NPS 100 CL 150, 300, 600, 900, 1500, 2500	Carbon Steel Stainless Steel Duplex SS Special Materials	-40 °C to 1450 °C, -40 °F to 2642 °F	High pressure applications in power plants, ethylene plants, refineries, aero engines, chemical plants, slurries, polymerizing fluids, styrene, acrylic acid, natural gas

Double block and bleed with steam purging

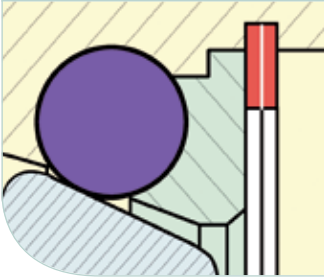
Type: MAPABLOC	Size and pressure range	Materials	Temperature range	Application
	NPS 12 - NPS 100 CL 150, 300	Carbon steel	-40 °C to 600 °C, -40 °F to 1 112 °F	Ethylene plants, transfer line valve and decoking valve

High temperature to cryogenic



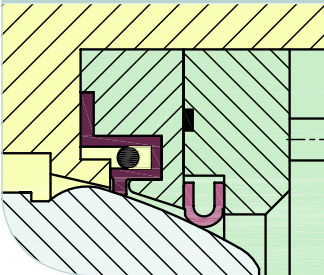
- Metal sealing
- - 200 °C to +1 000 °C
- Pressure to ANSI 600 (100 bar)
- Tested bubble tight (API 598)
- Design tightness to ANSI/FCI 70-2 Class V
- Variable material combinations
- Fire safe design

High pressure polymeric 'O' ring PTFE/Viton/EPDM/PEEK



- -40 °C to +250 °C
- Pressure to ANSI 600 (100 bar)
- Bubble tight sealing as standard (API 598)
- Design tightness to ANSI/FCI Class VI
- Low torques small actuators
- Nearly all known sealing material can be used

Flexible sealing system for cryogenic applications



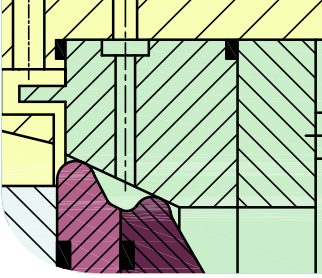
- Double Sealing
- -254 °C to +100 °C
- Pressure to ANSI (100 bar)
- Design tightness to ANSI/FCI 70-2 Class VI
- The flexible sealing system ensures that the sealing remains consistent and tight even when there is a rapid temperature change and a temperature differential within the butterfly valve

From high temperature to cryogenic, high pressures, slurries, polymerizing fluids, solid metal seat with hard faced option



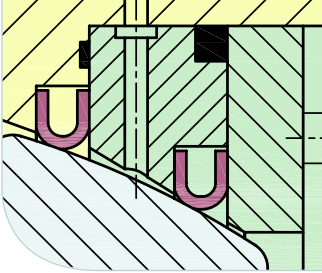
- Metal Sealing
- -200 °C to +1000 °C
- Pressure to ANSI 600 (100 bar)
- Tested bubble tight (API 598)
- Design tightness to ANSI/FCI 70-2 Class VI
- Variable material combinations
- Fire safe design

Block and bleed sealing systems



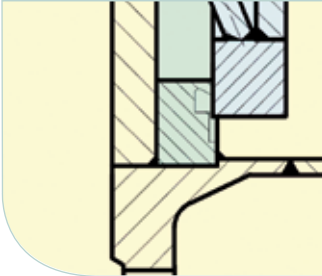
- Double sealing with block and purge. Special design for ethylene plants
- -40 °C to +600 °C
- Pressure to ANSI 300 (50 bar)
- Design tightness to API598
- Variable material combinations
- Extremely tight sealing for safety applications
- Fire safe design

Double block and bleed



- -40 °C to +1000 °C
- Pressure to ANSI 2500 (400 bar)
- Design tightness to ANSI/FCI 70-2 Class V & VI
- Variable material combinations
- Extremely tight sealing for safety applications
- Fire safe

Soft seated design, PTFE/VITON/EPDM



- -40 °C to +250 °C
- Pressure to ANSI 600 (100 bar)
- Bubble tight design as standard
- Design tightness to ANSI/FCI Class VI

Metal design



- -40 °C to +600 °C
- Pressure to ANSI 600 (100 bar)
- Tested bubble tight (API 598)
- Fire safe design

Mapag is able to offer turn-key solutions for very challenging applications.

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