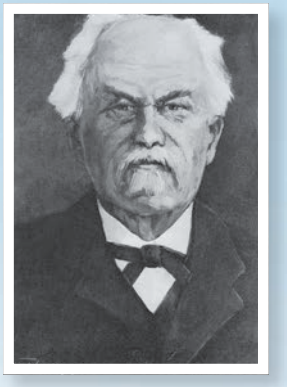
Dynamically into a new dimension – the new Butterfly valve ERHARD ROCO wave

A new chapter of the success story



Johannes Erhard, who founded our company more than 140 years ago, would certainly be proud of it: Since more than 60 years, butterfly valves from ERHARD have complied with the latest technical standards.

Globally, ERHARD EAK butterfly valves and ERHARD ROCO Premium butterfly valves are valued as solid and reliable constructions which comply with a multitude of tasks with outstanding safety and economy. Now it is time to completely redefine technology leadership.

Top in all dimensions

With our new **ERHARD ROCO wave Butterfly Valve** we are establishing a new standard. Innovative detailed solutions ensure peak values in terms of safety, economic efficiency and durability.

Dynamics
Flow-optimised butterfly discs ensure stability and maximum economic efficiency.

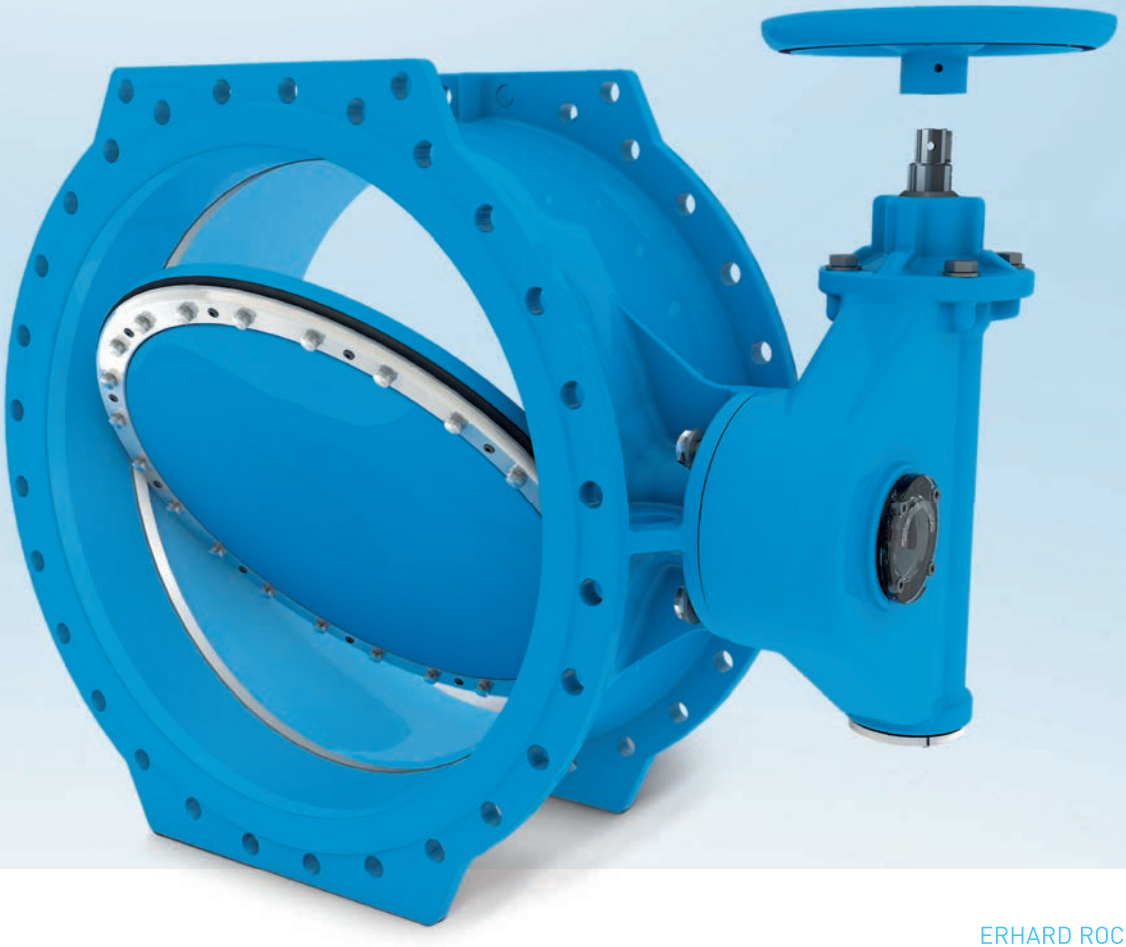
Precision
The gearbox with slider-crank mechanism ideally matches the torque curve of the butterfly valve and reduces pressure surges.

Power
The polygon plug connection reliably transmits the drive forces without any play or fluttering.

Size
Nominal widths from DN 150 to DN 1600 and numerous versions offer solutions for every task.

Protection
High-quality coatings ensure long-term protection for every application.

Safety
Reliable and maintenance-friendly sealing elements take care of operational safety for many decades.



Metres-high waves are full of power and dynamics. Butterfly valves, too, must be able to withstand all forces in a safe way, offering lowest resistance at the same time, however. The design of the ERHARD ROCO wave successfully combines both these requirements.

State-of-the-art CFD (computational fluid dynamics) processes were used for designing the tilting discs of the new ERHARD ROCO wave.

Form follows function

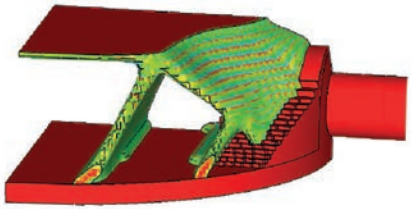
The newly developed, characteristic waveform gave the ERHARD ROCO wave Butterfly Valve its name. On the one hand, this design ensures highest stability, with its flow characteristics being optimised for highest economic efficiency on the other hand.

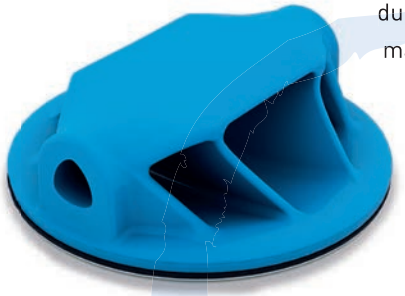
The new butterfly valve thus meets the requirements in an ideal way: Fore one, butterfly valves must be sufficiently stable in order to withstand the tremendous forces in a safe way during opening and closing. On the other hand, however, they shall have minimal impact on the flow rate when the valve is open. That is why ERHARD ROCO wave Butterfly Valves are designed in a flow-optimised way, thus realizing the least possible pressure loss compared with other butterfly valves available on the market. So the entire plant can be operated with the least possible pumping capacity, for example, ensuring permanently low operating costs.

Stability for every application

The challenge is even greater with large nominal widths or pressure ratings. Here the new butterfly disc "Skeleton" is used which is an optimised further development of the previously existing double-deck disc. The new shape is the result of a strength-oriented topology study. It ensures optimal rigidity, because the free cross section of the pipe is maximised due to the innovative arrangement of the material, whereby lowest zeta values are realized in turn.

At high pressure ratings and large nominal widths, the "Skeleton" design ensures optimal rigidity without narrowing the cross section.





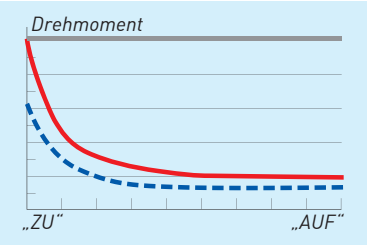
Dynamics

Precision

A gearbox that is adjusted optimally to the torque requirement is necessary for reliable opening and closing without pressure surges. With the SKG gearbox with slider-crank mechanism, ERHARD offers the optimal solution with highest precision.

Perfectly adjusted

For all ERHARD ROCO wave Butterfly Valves, the gearbox with slider-crank mechanism (SKG) developed by ERHARD is used as standard. Unlike a conventional worm gear with its constant torque (shown in grey in the graphic), the movement kinematics of the ERHARD gearbox with slider-crank mechanism (red curve) is optimally adjusted to the needs of the ERHARD ROCO wave Butterfly Valve (blue curve). The torque curve for operating the butterfly disc increases disproportionately near closing point in order to push the main sealing of the butterfly disc reliably into its seat.

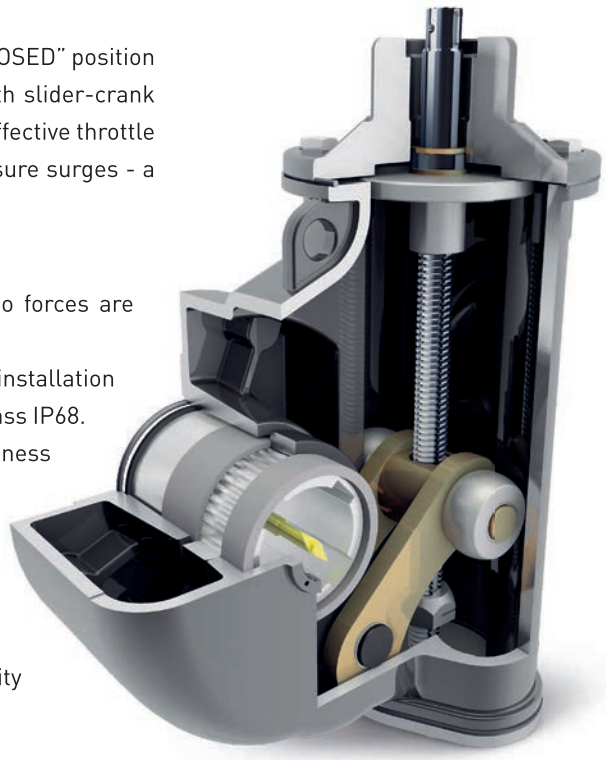


Preventing pressure surges

Furthermore, due to the slowed down closing speed near the "CLOSED" position thanks to the toggle lever effect, the ERHARD SKG gearbox with slider-crank mechanism ensures extremely soft closing in the hydraulically effective throttle range between 30 and 0 % which minimizes the danger of pressure surges - a plus for safety and durability of all plant components.

Further advantages

- Robust, adjustable end stop on the spindle to ensure that no forces are being exerted on the housing parts during operation.
- Extremely durable and particularly suitable for underground installation thanks to the robust, closed housing according to protection class IP68.
- Mechanical position indicator for checking the degree of openness at any time.
- Flexible drive options: Slip-on gear according to DIN ISO 5211; flange bearing for plant engineering or underground installation, hand wheel or flange according to DIN 5210 for rotary drive.
- Use of bronze and stainless steel for long durability and security of investment.



A strong connection is required in order to transmit drive forces to the butterfly disc in a safe way at any time. Only the patented polygon plug connection of the ERHARD ROCO wave Butterfly Valve ensures torque and zero backlash.

Perfect force-fitting and form-fitting - the polygon plug connection

Thanks to highest precision during manufacturing, the innovative polygon plug connection creates an absolutely clearance-free connection and thus 20 % higher torque reserves in comparison with the key joint connection due to the notch-free polygon profile with the same shaft diameter.

At the same time, the construction with completely closed butterfly eye and the use of O-ring cages allows complete encapsulation of the bearing from the medium. With it, sealing takes place consistently on the coated component areas.

However, the polygon plug connection also provides even more advantages:

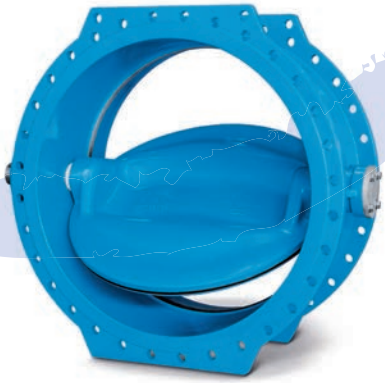
- Additional connection elements are not required; therefore there are also no separation joints.
- State-of-the-art precision manufacturing technologies make it possible that the connection is absolutely free of play and together with the flow-optimised shape of the butterfly disc prevents any fluttering.

The polygon plug connection is ideally adjusted to the reserves of the ERHARD SKG gearbox with slider-crank mechanism enabling precise and safe power transmission.

Power

Size

As one of the most often used valves, butterfly valves have to cover a wide spectrum of applications. The ERHARD ROCO wave is the right solution: from small to large ones, for use in plants and pipe networks, for water and gas applications.



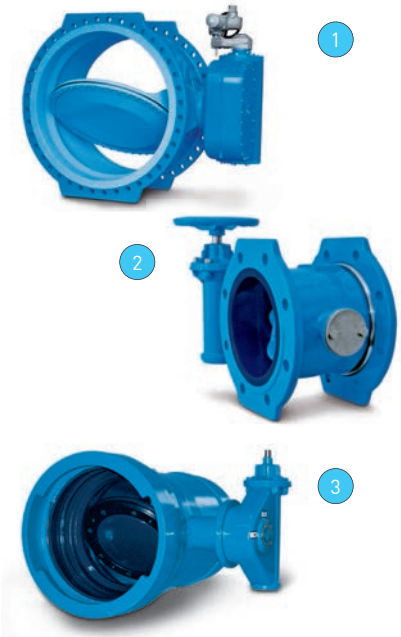
Nominal widths from DN 150 to DN 1600 and pressure ratings from PN 10 to PN 40 – with the new ERHARD ROCO wave Butterfly Valvea wide range of applications is now covered by just using one product line.

As the only butterfly valve in the market, the ERHARD ROCO wave Butterfly Valve has a DIN-DVGW type approval certificate* for versions up to a nominal width of DN 1600 (PN 10 and PN 16). It certifies externally and independently that these valves meet the high requirements of the drinking water area.

The range of products for all tasks

The new generation of butterfly valves is supplemented by a lot of proven models, by means of which special tasks can be solved:

- For nominal widths greater than DN 1600, the **ERHARD EAK Butterfly Valves[1]** will continue to be the first choice.
- An ideal butterfly valve for replacement in plants and pipe networks is the **ERHARD ROCO Premium Butterfly Valve - dismantling type[2]**. By means of using this butterfly valve, one can do without time-consuming and costly installations of fittings and extension pieces.
- The **ERHARD ROCO Premium Butterfly Valve with BLS-flange [3]** offers easy installation thanks to the longitudinal positive-locking BLS® socket connection (BLS = Buderus Lock System).
- **ERHARD ROCO Premium Butterfly Valves with butt-welding ends**are manufactured especially for use in gas supply networks for pressure ratings up to PN 16.
- ERHARD ROCO butterfly valves are also available in a **long version according to the basic series 15**, also with bypass for pressure-surge free filling and discharging of pipelines.



Whether in plants or mounted in the ground, whether for drinking water or for aggressive media – butterfly valves must reliably function in a wide variety of different mounting situations. ERHARD ROCO wave valves offer perfect surface protection.

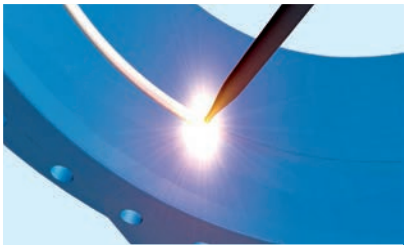
Long-term experiences and modern, own installations make sure that ERHARD ROCO wave Butterfly Valves are protected inside and outside;

- The proven **ERHARD EKB** epoxy plastic coating **[1]**according to GSK requirements is suitable for a lot of applications, e.g. in the plant area, for drinking water, waste water and gases. Layer thicknesses with more than 250 µm comply with all test conditions according to GSK.
- The perfect corrosion protection is provided by **ERHARD Pro Enamel [2]**. It is thus ideal for plants mounted into the ground for drinking water supply. As a high-tensile glassy material, enamel forms an inseparable bond with the metallic substrate. With ERHARD Pro-Enamel, short fibres in the material stop the enamel from cracking in case of any damage. Its extremely smooth surface area ensures best hygienic conditions and simultaneously and ideal mating face for elastomer seals. Combinations of EKB and Enamel are also available **[3]**.
- Individual solutions – also for special fields of application - are offered by our **special coatings**. Examples include EPC (Epoxy Polymer Ceramic), which is particularly suitable for abrasive media or sea water, the ERHARD hard or soft rubber coating on the inside in case of chemical, thermal and mechanical exposure, individual colour coatings **[4]** using PU lacquers for increased operational security, or conductive special coatings according to ATEX guidelines **[5]**.

Protection

Safety

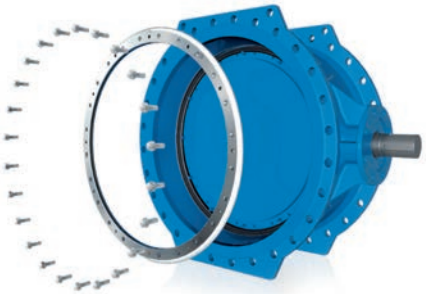
Decisive for operational safety over years are reliable bearing and sealing constructions which are easy to maintain in addition.
ERHAD ROCO wave Butterfly Valves set a new standard in this area, too.



In the sealing system of the **ERHARD ROCO wave Butterfly Valve**, a welded-on seat is used with all EKB variants. During the process, a special alloy is metallurgically bonded to the base material by means of the PTA welding process. The resultant layer **[1]** offers high wear protection and an exceptionally high resistance against pitting and crevice corrosion. With all enamel versions, however, coating takes place directly on the enamel featuring high hardness, having an extremely smooth surface area and thus representing an ideal mating face **[2]** .

An easy to fasten, rubberized steel ring **[3]** is used as a soft sealing main sealing with all nominal widths up to DN 600. For larger nominal widths, a rubber

ring is fixed by means of a stable steel ring on the valve disc **[4]**. Both variants are easily to replace and easily adjustable.



The shaft bearing **[5]**, too, complies with highest standards in terms of safety and ease of maintenance: Bushes coated with PTFE for safe guidance of the shaft at reduced friction, O-ring cage made of POM as bearing main seal with an EPDM or NBR seal, easy to replace retaining ring as blow-out protection, and a brass cage as additional sealing.

Your Choice in Waterflow Control

TALIS is the undisputed Number One for water transport and water flow control. TALIS has the best solutions available in the fields of water and energy management as well as for industrial and communal applications. We have numerous products for comprehensive solutions for the whole water cycle – from hydrants, butterfly valves and knife gate valves through to needle valves. Our experience, innovative technology, global expertise and individual consultation processes form the basis for developing long-term solutions for the efficient treatment of the vitally important resource "water".

ERHARD GmbH & Co. KG
Postfach 1280
D-89502 Heidenheim
Meeboldstraße 22
D-89522 Heidenheim
Phone: +49 7321 320-0
Fax: +49 7321 320-491
E-mail: info@erhard.de
Internet: www.erhard.de

ATPLAS BAYARD Belgicast ERHARD FRISCHHUT Raphael SCHMIEDING STRATE unijoint WAFREDA