

# WAGU®

Penstock sewage technology



quality as tradition.

# WAGU® - Sewage engineering for a clean environment



- WAGU® penstocks without housing are used as isolating and regulation devices in the fields of sewage and waste engineering. They are field-proven for isolating and regulating open channels, inlets and outlets of canals, sewers, pits, basins and pipelines.
- WAGU® penstocks are used for flow control, for maintaining the sewage level, for flow limitation, distribution of channel flow and ensure recirculation.

Depending on the type of design, WAGU® penstocks are either mounted to smooth concrete walls or in the channel.

## Wall bolting type

Bolting is the most common installation method. Therefore, the frames are provided with factory-made boreholes. For fastening we recommend to use chemical anchors (resin bolts consisting of mortar cartridges and threaded rod with hexagon nut and A4 washer). Prior to wall attachment, seal the outer frame edge with flexible, single-faced adhesive sealing tape. The corresponding mounting parts including sealing tape are supplied with the valve.

## Grouting type

The WAGU® penstocks are inserted in the provided recess and fixed. Then the recess is boarded and grouted with concrete of appropriate quality.

## Installation

On request, the WAGU® penstocks can be installed on site by ERHARD fitters. However, the penstocks can also be installed by an assembly company in accordance with the ERHARD installation instructions. For large-scale projects, we recommend to have ERHARD specialists conduct the installation work or in case of self-assembly to request the assistance of an ERHARD chief field service technician.

- The specialised variety of design versions and different materials provide the customer with a wide range of WAGU® penstocks to choose from for nearly all requirements in the field of sewage engineering.
- WAGU® penstocks are available from 150 mm to 3000 mm and in different materials such as hot-dip zinc-coated steel, stainless steel as well as aluminium alloys.

## Channel recess mounting

Insert the WAGU® penstocks in the channel recess. The exact height is adjusted by means of the screw at the frame sill, with the frame being aligned to the recess by means of the lateral set screws. Then the recess is boarded and grouted with the proper type of concrete.



## WAGU valves in use worldwide.

Whether at Munich Airport or La Florida waterworks in South America – WAGU valves from ERHARD are installed all over the world.

# WAGU valves for every type of water flow

WAGU gate valves and sluices are penstocks used for isolating and regulating open channels, inlets and outlets of canals, sewers, pits, basins and pipelines.

Thanks to the wide variety of versions and specific material, WAGU valves are ideally suited for use in sewage engineering, the water industry and flood protection.

- Modular component assembly for universal accommodation of all operating gear options and for individual designs and sizes
- Customised material selection: stainless steel, aluminium alloys and hot-dip zinc-coated steel as well as special materials on request
- Tried and tested sealing principle with clamped lip and invert seal
- 3- or 4-facing seals in both directions of flow
- Plate guided by lateral slider strips or sliding curves in the frame, nonabrasive guides, low actuating forces
- Maintenance-friendly due to clamped or bolted sealing profile
- Easy installation due to wall sealing without grouting and variable fastening claws or fixing brackets
- Reduced recess dimensions, therefore low structural costs

## The WAGU range includes numerous variations, such as:

### ▪ ERHARD WAGU CL

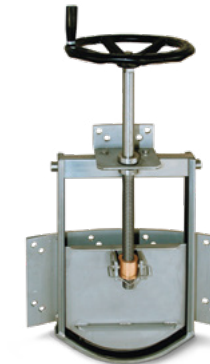
DN 150-1200, working pressure up to 0.4 bar, for wall bolting, also available as special version for Round sewers from diameter DN 1000

### ▪ ERHARD WAGU PRO

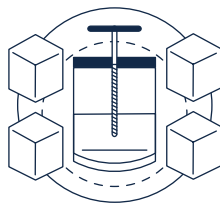
DN 150-1200, working pressure up to 0.6 bar, for wall bolting or grouting or as a flange type, adapters available for round sewers

### ▪ ERHARD WAGU GK

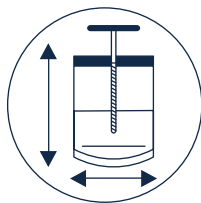
DN 150-3000, special sizes possible, up to 2 bar working pressure, for wall bolting, grouting or as flange type, adapters available for round sewers, also suitable for drinking water







**Welded design based on modular concept**



**Low cost**

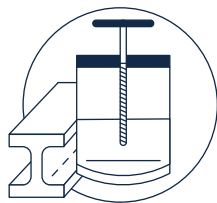
Any dimension available.



**Standardised sealing profiles ensure permanent sealing properties,**  
low wear and easy replacement.  
Low operation forces required.

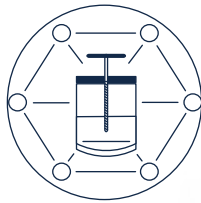


**Alternatively 4-facing isolating devices available also in reinforced design**

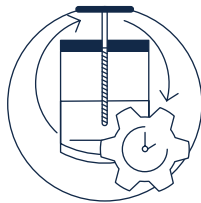


**Ideal material combinations suited for every type of application:**

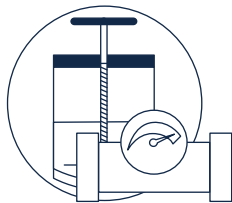
- Hot-dip zinc-coated steel
- Stainless steel
- Aluminium alloy



**Many design variants and attachment options**



- Long life
- Reliability
- Little maintenance



**Application for increased working pressures up to 2 bar**

Higher gauge working pressures on request.

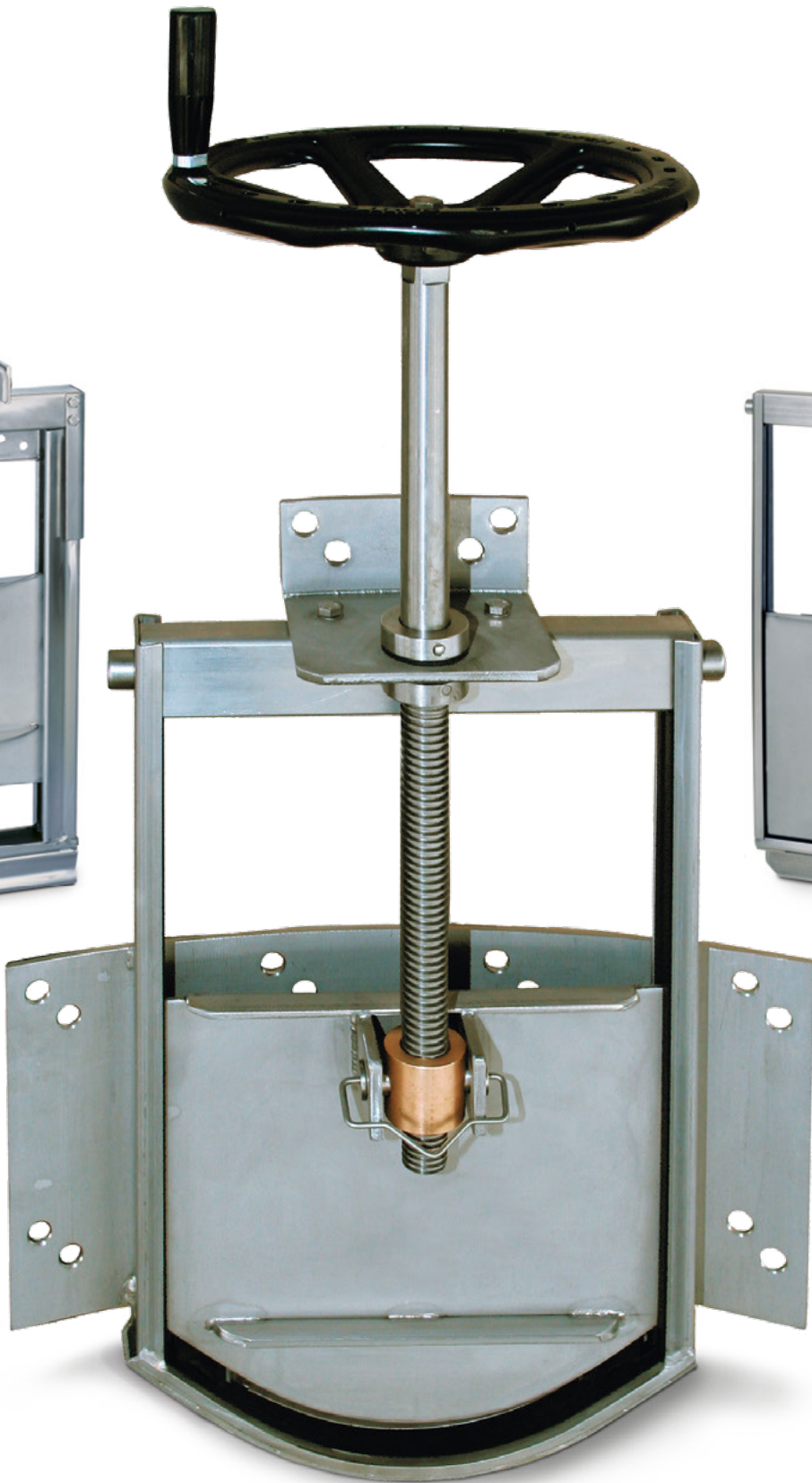


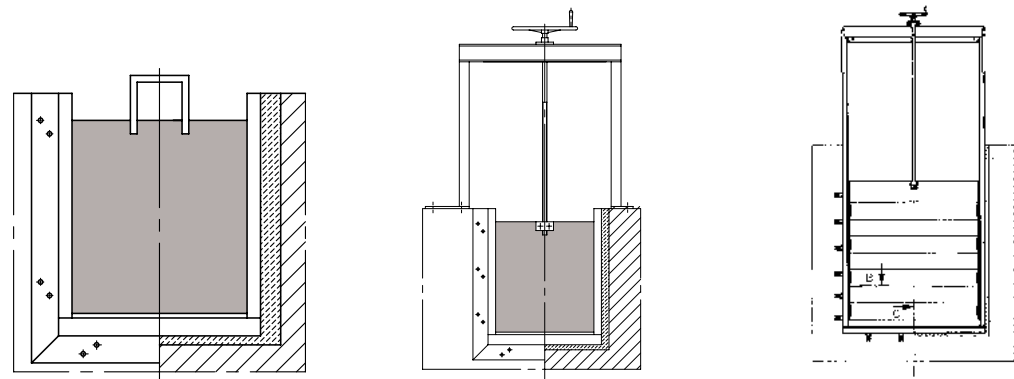
**Applicable for any flow medium**



**Existing plants can be upgraded to WAGU® standard**

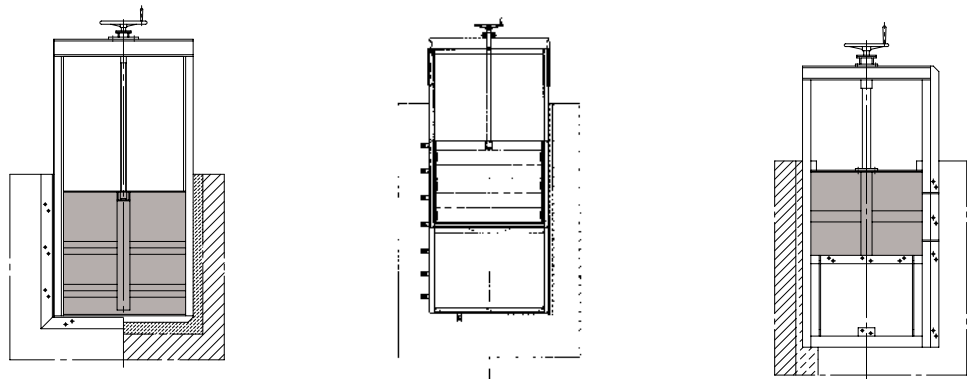
at any time without modification of the buildings





Type of valve	Handstop	Channel Penstock L	WAGU-PRO-Channel Penstock
Product characteristics	Welded U-shaped frame of C-profile with inserted profile seal and flush invert sealing. Smooth penstock door with lifting handle, from size width = 800 mm with reinforcing ribs.	Welded U-shaped frame of C-profile with inserted profile seal and flush invert sealing. Smooth penstock door, from width = 800 mm, with reinforcing ribs. Operating device consisting of welded bearing bracket with fixed stem and stem nut attached to door.	Welded frame made of torsionproof rolled steel sections. Frame with positive-fit guide bar. Clamped lip profile. Wall sealing with self-adhesive sealing tape. Bolted to the wall by means of variable fastening claws. Operating gear is mounted directly on the thrust bridge.
Materials Frame/Door/ Seal	1.4301/AlMg3/Neoprene 1.4301/1.4301/Neoprene 1.4571/1.4571/Neoprene *)	1.4301/AlMg3/Neoprene 1.4301/1.4301/Neoprene 1.4571/1.4571/Neoprene *)	1.4301/1.4301/Neoprene 1.4571/1.4571/Neoprene *)
Sealing	3-facing	3-facing	3-facing
Apertures	Square Rectangular	Square Rectangular	Square Rectangular
Still shapes	Straight Round Trapezoidal	Straight Round Trapezoidal	Straight Round
Fixing types	Grouting Bolting to channel outlet Channel bolting	Grouting Bolting to channel outlet Channel bolting	Grouting Bolting to channel outlet Channel bolting
Dimensions W x H or DN	200 x 200 up to 1000 x 1000	200 x 200 up to 1200 x 1200	1000 x 1000 up to 2000 x 2000
Type of operation	Via lifting handle	Manual operation **) Electric actuator **) Hydraulic or pneumatic actuator See product line overview for operating gears	Manual operation **) Electric actuator **) Hydraulic or pneumatic actuator See product line overview for operating gears
Installation	In open channel or bolting to channel outlet width up to 1000 mm and door height up to 1000 mm. This door size should not be exceeded due to the required pulling force.	In open channel or mounting to channel outlet with widths up to 1200 mm and door heights up to 1200 mm, suitable for isolation or throttling of the flow medium.	In open channel or mounting to channel outlet up to size 2000 x 2000. Suitable for isolating or controlling or restricting the flow medium.

\*) Other materials and different material combinations possible
 \*\*) Rising stem upon request



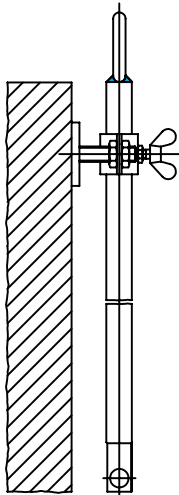
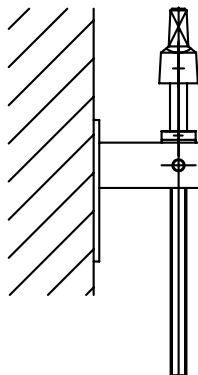
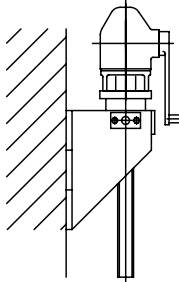
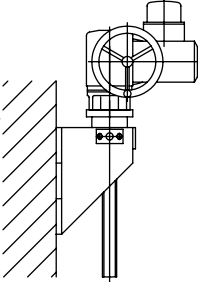
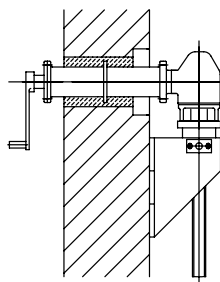

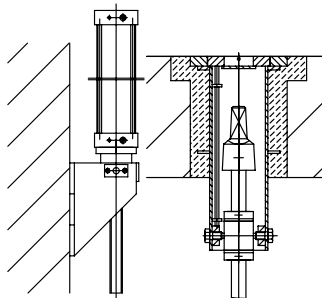
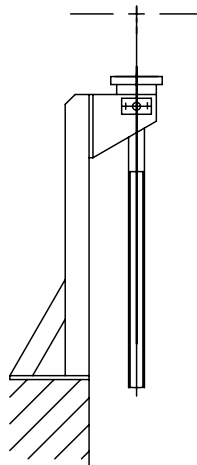
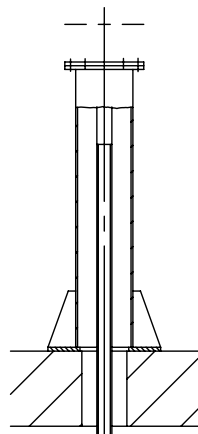
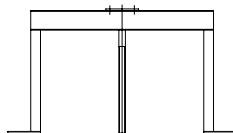
Channel Penstock S	WAGU-PRO-Weir Type Channel Penstock	Weir Type Channel Penstock
Welded frame made of U-profile with thrust bridge and bolted-on profile seal as well as enclosed flush invert seal. Penstock door with reinforcing ribs and plastic rails. Operating gear is mounted directly on the thrust bridge, stem nut inserted in the door.	Welded frame made of torsion-proof rolled steel sections. Frame with positive-fit guide bar. Clamped lip profile. Wall sealing with self-adhesive sealing tape. Install variable fastening claws on the wall with dowels. Operating gear is mounted directly on the thrust bridge.	Welded frame with thrust bridge and bolted-on profile seal as well as enclosed flush invert seal, Penstock door with reinforcing ribs and plastic rails. Operating gear directly mounted on the thrust bridge. Stem nut inserted in the door.
Hot-dip zinc-coated steel/hot-dip zinc-coated steel/Perbunan 1.4301/1.4301/Perbunan 1.4571/1.4571/Perbunan *)	1.4301/1.4301/Neoprene 1.4571/1.4571/Neoprene *)	Hot-dip zinc-coated steel/hot-dip zinc-coated steel/Perbunan 1.4301/1.4301/Perbunan 1.4571/1.4571/Perbunan *)
3-facing	3-facing	3-facing
Square Rectangular	Square Rectangular	Square Rectangular
Straight Round Trapezoidal	Straight	Straight
Grouting Bolting to channel outlet Channel bolting	Bolting Grouting into lateral recess	Bolting Grouting into lateral recess
400 x 400 up to the largest dimensions	150 x 150 up to 2000 x 2000	400 x 400 up to the largest dimensions
Manual operation **) Electric actuator **) Hydraulic or pneumatic actuator See product line overview for operating gears	Manual operation **) Electric actuator **) Hydraulic or pneumatic actuator See product line overview for operating gears	Manual operation **) Electric actuator **) Hydraulic or pneumatic actuator See product line overview for operating gears
Installation in open channel or mounting to channel outlet up to the largest dimensions. Suitable for isolating, regulating or restricting the flow medium.	Installation in open channel or mounting to channel outlet up to size 2000 x 2000. Suitable for discharge control or level adjustment.	Installation to the channel outlet up to the largest dimensions. Suitable for discharge control or level adjustment.

WAGU® product range overview
Shut-off devices

Type of valve	WAGU-CL Penstock and Control Gate	WAGU-PRO-Gate Valve	Gate valve with slider rails/ slider skids
Product characteristics	or similar made of stainless steel, self-supporting welded construction made of torsionproof rolled-steel sections, stem non-rising, integrated and smooth-running lip seal system “CL” between door and frame, seal easy to replace, permissible working pressures on front and rear up to 4 m wc, 4-facing seal, leakage rate in accordance with Class 4 acc. to DIN 19569-4, in intermediate positions sealing must be ensured between the frame and door in unreleased part of cross-section, wedge closure not allowed, enclosed flat seal on the sill is flush with invert, brand: ERHARD	Welded frame made of torsion-proof rolled steel sections. Frame with positive-fit guide bar in the frame. Clamped lip profile. Wall sealing with selfadhesive sealing tape. Bolted to the wall by means of variable fastening claws.	Welded frame with bolted-on profile seal and enclosed flush invert seal. Gate with reinforcing ribs, sliding skids and suspension device for stem nut and push rod.
Materials	1.4301/1.4301/Neoprene	1.4301/1.4301/Neoprene	1.4301/1.4301/EPDM
Frame/Door/ Seal	1.4571/1.4571/Neoprene *)	1.4571/1.4571/Neoprene *)	1.4571/1.4571/EPDM *)
Sealing	4-facing	4-facing	4-facing
Apertures	Square Rectangular	Square Rectangular	Square Rectangular
Still shapes	Straight Round	Straight Round	Straight Round
Fixing types	Bolting Grouting	Bolting Grouting	Bolting Grouting
Dimensions W x H or DN	150 x 150 up to 1200 x 1200	150 x 150 up to 1600 x 1600	150 x 150 up to the largest dimensions
Type of operation	Square cap hand Hand wheel Electric actuator Power piston	Manual operation **) Electric actuator **) Hydraulic/pneumatic actuator See product line overview for operating gears	Manual operation **) Electric actuator **) Hydraulic/pneumatic actuator See product line overview for operating gears
Installation		Mounting to pipe outlet or channel outlet up to 1200 x 1200 + 6m wc, suitable for isolation, regulation or reduction of the flow medium. 1300/1300 x 1600 x 1600 4mWS	Mounting to pipe outlet or channel outlet up to the largest dimensions, suitable for isolating or controlling/throttling the flow medium.

\*) Other materials and different material combinations possible
\*\*) Rising stem upon request

WAGU-PRO-Penstock Gate	Penstock Gate	Tilting-flap Spillway	Backwash Preventing Valve
Welded frame made of torsionproof rolled steel sections. Frame with positive-fit guide bar. Clamped lip profile. Wall sealing with self-adhesive sealing tape. Bolted to the wall by means of variable fastening claws.	Welded frame with bolted-on profile seal and enclosed crown seal, gate with reinforcing ribs, plastic sliding strips and suspension device for stem nut and push rod.	Welded frame with lateral sealing plates, with spillway body in a torsion-proof hollow design. Longitudinal rubber tape seal bolted to frame and spillway body, serving as bearing and articulation at the same time, lateral faces: profile rubber attached to spillway body. Actuation via headstock with fixed stem.	Welded frame with cover hinge and transversal flap seating, facing inserted in frame or cover. The covers are available in three types: a: Plain cover b: Hollow-float cover c: Cover with lever and weight
1.4301/1.4301/Neoprene 1.4571/1.4571/Neoprene *)	1.4301/1.4301/EPDM 1.4571/1.4571/EPDM *)	1.4301/1.4301/Neoprene 1.4571/1.4571/Neoprene *)	1.4301/1.4301/Neoprene 1.4571/1.4571/Neoprene *)
4-facing	4-facing	3-facing	circumferential or 4-facing
Square Rectangular	Square Rectangular	Square Rectangular	Square Rectangular Round
Straight	Straight	Straight	–
Bolting Grouting into lateral Recesses	Bolting Grouting into lateral Recesses	Bolting	Bolting Grouted with wall ring Fixing with flange
150 x 150 up to 1600 x 1600	150 x 150 up to the largest dimensions	500 x 200 up to 8000 x 1000 up to the largest dimensions	150 bzw. 200 x 200 up to the largest dimensions
Manual operation **) Electric actuator **) Hydraulic/pneumatic actuator See product line overview for operating gears	Manual operation **) Electric actuator **) Hydraulic/pneumatic actuator See product line overview for operating gears	Manual operation **) Electric actuator **) Hydraulic/pneumatic actuator	Self-closing
Attachment to tube or channel outlet up to size 1200 x 1200 and 6mWS, for isolation and regulation of the discharge flow or for adjustment of the medium level.	Mounting to channel outlet up to the largest dimensions, suitable for isolation as well as discharge or level control.	Installation in structural recesses for large discharge widths with low heights of travel, suitable for level control, floating sludge discharge, etc.	Installation in retaining reservoirs etc., suitable for use as a non-return device in a gravity sewer to prevent flooding.

																
Actuator type	Manual lifting rod	Masonry bracket with cap	Wall bracket with cap	Wall bracket with gearbox	Wall bracket with Electric actuator	Wall bracket with Wall penetration		Wall bracket with Pneumatic or hydraulic actuator	Ceiling-mounted actuator	Projecting headstock		Projecting headstock	Drive pedestal			
suitable for DN or W x H	150-400	150-1200	150-1200	150-2000	150-2000	150-2000		150-400	150-2000	150-2000		150-2000	up to the largest dimensions			
Operating devices	Manual lifting rod	Operating key	Operating key	Operating manual wheel or manual crank	Electric	Manual wheel für crank or e-actuator		Pneumatic or hydraulic actuator with compressed air or hydraulic oil	Operating key or operating key via gearbox	Manual wheel or manual wheel or crank via gearbox	E-actuator	Pneumatic or hydraulic actuator with compressed air or hydraulic oil	Manual wheel or manual wheel or crank via gearbox	E-actuator	manual wheel or manual wheel or crank via gearbox	E-actuator
Bearing types	–	Plain bearing, roller bearing	Plain bearing, roller bearing	Roller bearing	Roller bearing	Roller bearing		Rolling bearing	Plain bearing Roller bearing	Plain bearing Roller bearing	Roller bearing	Plain bearing	Plain bearing Roller bearing	Roller bearing	Roller bearing	Roller bearing
Stem types	–	Fixed stem or extension stem *)	Fixed stem or extension stem*)	Fixed stem or extension stem *)	Fixed stem or extension stem *)	Fixed stem or extension stem *)		Piston rod	Fixed stem or Extension stem *)	Fixed stem or Extension stem *)	Fixed stem or Extension stem *)	Piston rod	Fixed stem or Extension stem *)	Fixed stem or Extension stem *)	Fixed stem or Extension stem *)	Fixed stem or Extension stem *)
Ceiling penetration	–	X	X	X	X	–		X	X	X	X	X	X	X	X	X
Stem bearing	–	X	–	–	X	X		–	–	–	–	–	–	–	–	–
Gearbox	–	–	–	–	X	X		–	–	–	–	–	–	–	–	–
E-actuator	–	–	–	–	–	–		–	–	–	–	–	–	–	–	–

\*) For installation depths less than 3 x DN or 3 x DN + 500, an extension stem is used. Rising stem on request X = available type



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