



XL4 penstock (Seal on the plate)

made of stainless steel or steel

WITH RECTANGULAR OPENING, 4-SIDED SEALING

Opening dimensions and pressure level

Opening dimensions 150 x 150 mm to 4000 x 4000 mm

Selectable pressure level on both sides: 2-15 mwc

Standard pressure level for sizes 150 x 150 mm to 1200 x 1200 mm on both sides: 6 mwc

Higher pressure levels 7-15 mwc: available on request

Frame and plate

- Supplied as pre-assembled penstock which does not require assembly, setting and adjusting works up to 1200 mm
- Design as self-supporting frame construction made of stainless steel with integrated spindle bearing
- Welded frame and penstock plate made of stainless steel, optimised for maximum safety and durability by means of FEM certification
- Bridge screwed on, thereby all wear parts (spindle, spindle nut, spindle bearing and seal) can be exchanged in the installed condition without dismantling the penstock from the structure
- Penstock for embedding in concrete: Equipped with adjustment sleeves for aligning the penstock in the channel recess
- No offset in rear to front invert level on the embedded penstock
- Welding certificate in accordance with DIN EN 1090-2 EXC2

Material

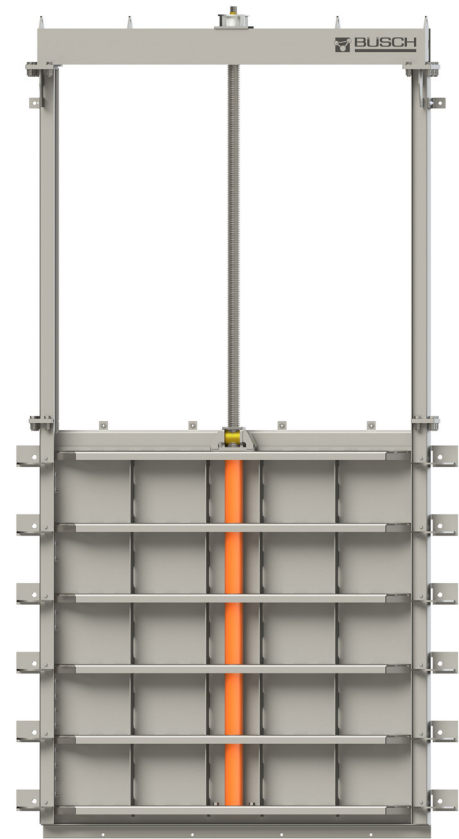
- Stainless steel 1.4301 (304) / 1.4404 (316L) / 1.4410 (A182 F53) / 1.4462 (A182 F51) / Steel 1.0038 (S235JR/A36) hot-dip galvanised or epoxy coated

Spindle

- Polyethylene spindle protection
- Spindle with rolled trapezoidal thread made of stainless steel from opening dimensions 150-1600 mm
- Spindle with whirled trapezoidal thread made of stainless steel from opening dimensions 1700-4000 mm
- Single spindle design or twin spindle design
- Spindle nut made of seawater-resistant bronze
Optional: Spindle outside the medium rising or non-rising (easier to lubricate)

Seal

- Easy seal replacement possible during operation, as the penstock plate can be pulled out upwards
- Factory pre-assembled seal against the wall made of solid, wastewater-resistant cellular rubber on the seal support with maximum pressure stage 6 mwc on both sides, from 6 mwc (at higher water pressures) a 1-component sealant (SIKAFLEX®) is required with appropriate pre-treatment of the penstock and the structure using a primer
- Seal line 50 mm larger than the masonry opening to prevent leaks on masonry openings



XL4 penstock 2000 x 2000 mm



YOUR ADVANTAGES

- **READY FOR IMMEDIATE USE**
Penstock is delivered ready for assembly*
- **SEAL ON PENSTOCK PLATE**
Can be replaced during operation by pulling out the entire penstock plate
- **VARIANT SEAL IN FRAME**
Due to the maintenance position, the seal in the frame can be replaced during operation using a raised frame
- **FOREVER DURABLE SEAL**
Through vulcanised UNO angle joints
- **PERFECT CORROSION PROTECTION**
All welded stainless steel parts from our own pickling plant
- **OPTIONAL EX-PROTECTION**
On request, the penstock can be proven to comply with the ATEX Directive 2014/34/EU

*(multiple frame as of 1300 mm)

XL4 penstock

Wedge sealing system (Seal on the plate)

- Mounted on the penstock plate, note profile seal with hot vulcanised (minimum temperature: 180°C) UNO angle joints made of wastewater and UV-resistant EPDM or oil-resistant NBR

up to Opening dimension 1200 x 1200 mm

- Integrated closing wedges in the frame made of stainless steel, on the penstock plate made of polyethylene (PE-UHMW)

Leak tightness class

- Leak rate better than DIN EN 19569, Part 4, Table 1:
 - Pressure on front side max: 1 % of 0.02 l·s⁻¹·m⁻¹ (leak tightness class 5)
 - Pressure on back side max: 2 % of 0.02 to 0.05 l·s⁻¹·m⁻¹ (leak tightness class 4)

Opening dimensions over 1200 x 1200 mm

- Integrated closing wedges in the frame made of sea and waste water resistant bronze, on the penstock plate made of stainless steel

Leak tightness class

- Leak rate better than DIN EN 19569, Part 4, Table 1:
 - Pressure on front side max: 1 % of 0.02 l·s⁻¹·m⁻¹ (leak tightness class 5)
 - Pressure on back side max: 5 % of 0.02 to 0.05 l·s⁻¹·m⁻¹ (leak tightness class 4)

Detailed view

Wedge-actuated side sealing system



XL4 penstock VARIANT* OF XL4

Slide sealing system (Seal on the plate)

Opening dimension 150 x 150 mm to 3500 x 3500 mm

- Integrated sliding guides on the penstock plate made of polyethylene (PE-UHMW)
- Mounted on the penstock plate, note profile seal with hot vulcanised (minimum temperature: 180°C) UNO angle joints made of wastewater and UV-resistant EPDM or oil-resistant NBR

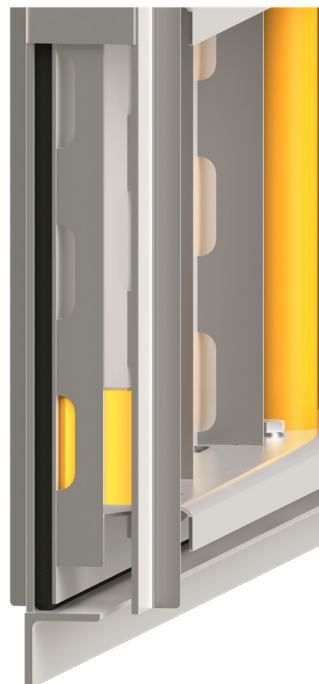
Leak tightness class

- Leak rate better than DIN EN 19569, Part 4, Table 1:
 - Pressure on front side max: 1 % of 0.02 to 0.05 l·s⁻¹·m⁻¹ (leak tightness class 4)
 - Pressure on back side: 0.05 to 0.1 l·s⁻¹·m⁻¹ (leak tightness class 3)

* STANDARD DATA: please refer XL4 penstock

Detailed view

Adjustable and readjustable sliding sealing system with replaceable sliding guides



XL4 penstock VARIANT* OF XL4

Wedge sealing system (Seal in frame)

- Note profile seal mounted in the frame, with hot-vulcanised UNO angle joints (minimum temperature: 180°C), made of wastewater- and UV-resistant EPDM or oil-resistant NBR
- Bottom seal mounted on the penstock plate

up to Opening dimension 1200 x 1200 mm

- Integrated closing wedges in the frame made of stainless steel, on the penstock plate made of polyethylene (PE-UHMW)

Opening dimensions over 1200 x 1200 mm

- Integrated closing wedges in the frame made of sea and waste water resistant bronze, on the penstock plate made of stainless steel

XL4 penstock VARIANT* OF XL4

Slide sealing system (Seal in frame)

- Note profile seal mounted in the frame, with hot-vulcanised UNO angle joints (minimum temperature: 180°C), made of wastewater- and UV-resistant EPDM or oil-resistant NBR

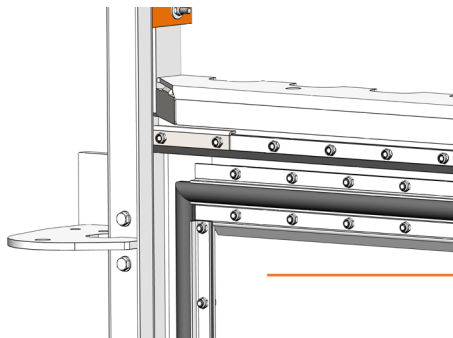
Opening dimension 150 x 150 mm to 3500 x 3500 mm

- Integrated sliding guides on the penstock plate made of polyethylene (PE-UHMW)

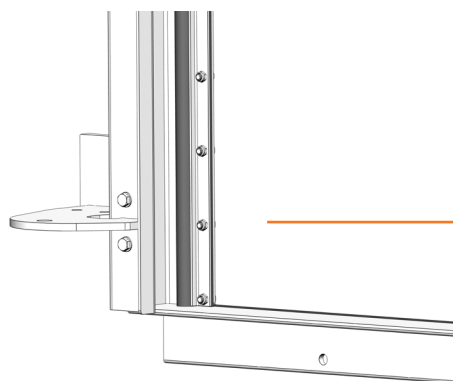
Leak tightness class

- Leak rate better than DIN EN 19569, Part 4, Table 1:
 - Pressure on front side max: 1 % from 0.02 to 0.05 l·s⁻¹·m⁻¹ (leak tightness class 4)
 - Pressure on back side: 0.05 to 0.1 l·s⁻¹·m⁻¹ (leak tightness class 3)

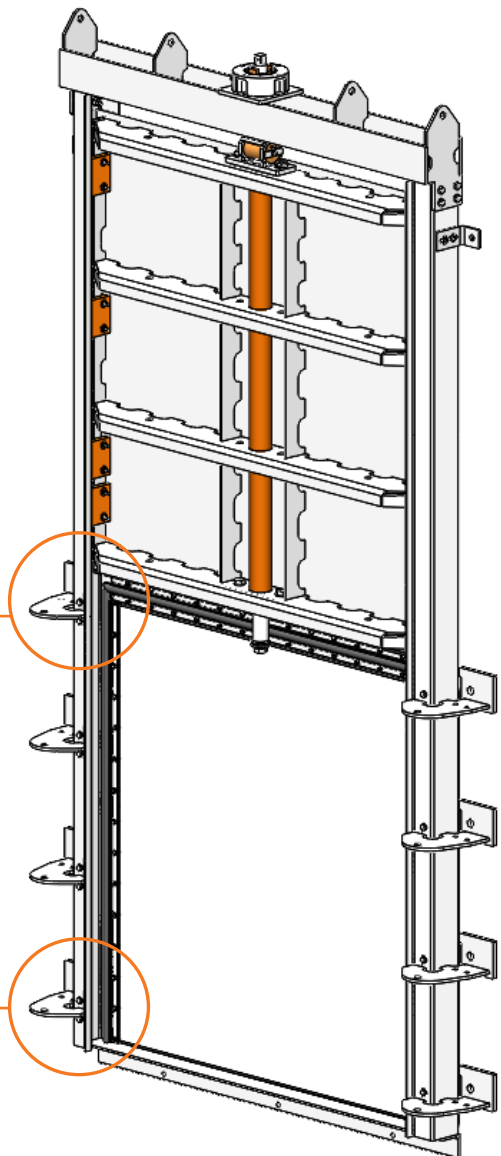
Sealing principle



Seal opened in frame with bottom seal



Seal in frame



XL4 penstock in maintenance position

SPECIAL FEATURES

• SEAL IN FRAME

Seal replacement during operation without penstock plate removal - a raised frame allows the penstock plate to be moved into maintenance position

* STANDARD DATA: please refer XL4 penstock

Mounting

- Lateral fixing
 - Grouting into recess
 - Anchoring to the wall in front of the opening
 - Anchoring laterally on the wall
- Fastening in the base
 - Grouting into recess
 - Anchoring to the wall in front of the opening
 - Anchoring onto the base

Actuation options

- Stainless steel handwheel with direct mounting or with Modular Actuation System MAS
- Lateral actuation with stainless steel gearbox with stainless steel handwheel or stainless steel crank handle
- Stainless steel operating key All-in-one via square cap
- MOBITORQ mobile actuators (electric or battery-powered) via square cap with Modular Actuation System MAS
- BEAmax stainless steel electric rotary actuator for open-close & modulating duty with direct mounting or with Modular Actuation System MAS, optional with stainless steel weather protection roof
- Electric actuator with direct mounting or with Modular Actuation System MAS
- Pneumatic actuator/Hydraulic actuator with direct mounting or with Modular Actuation System MAS

Dimensions in mm

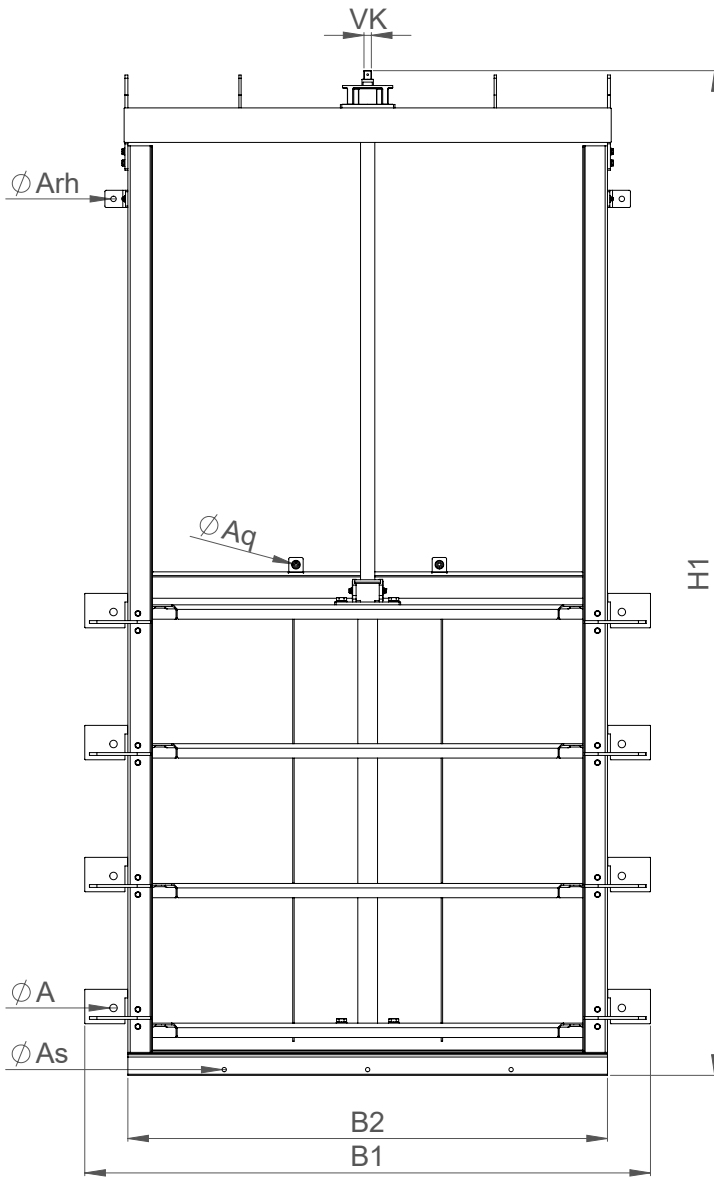
W x H	150 x 150	200 x 200	250 x 250	300 x 300	400 x 400	500 x 500	600 x 600	700 x 700	800 x 800	900 x 900	1000 x 1000	1200 x 1200
B1	350	400	450	500	600	740	840	1058	1158	1258	1358	1558
B2	210	260	310	360	460	600	700	820	920	1020	1120	1320
H1	488	588	693	788	988	1234	1434	1745	1945	2145	2345	2745
H2	448	548	648	748	948	1194	1394	1685	1885	2085	2285	2685
H3	ca. 90	ca. 90	ca. 90	ca. 90	ca. 90	ca. 130	ca. 130	ca. 192	ca. 192	ca. 192	ca. 192	ca. 192
ET min.	508	608	708	808	1008	1254	1454	1745	1945	2145	2345	2745
WA	50	50	50	50	50	50	50	67	67	67	67	67
Rev./stroke	31	41	51	61	81	101	121	141	161	181	201	241
VK	□16	□16	□16	□16	□16	□16	□16	□26	□26	□26	□26	□26
A	2x Ø13 M10x130				4x Ø13 M10x130			4x Ø19 M16x190	6x Ø19 M16x190			
As	-	-	-	-	-	-	-	-	-	1x Ø13 M10x130		
Aq	-	-	-	-	-	-	-	-	-	2x Ø14,5 M8x90		
Arh	-	-	-	-	-	-	-	2x Ø13 M10x130				

W x H	1400 x 1400	1600 x 1600	1800 x 1800	2000 x 2000	2200 x 2200	2400 x 2400	2600 x 2600	2800 x 2800	3000 x 3000
B1	1872	2072	2272	2472	2672	2872	3072	3272	3472
B2	1572	1772	1972	2172	2372	2572	2772	2972	3172
H1	3302	3702	4198	4502	4957	5350	5914	6102	6502
H2	3222	3622	4118	4541	4877	5270	5834	6022	6422
H3	ca. 255	ca. 255	ca. 255	ca. 300	ca. 300	ca. 300	ca. 300	ca. 300	ca. 300
ET min.	3282	3682	4178	4601	4937	5330	5894	6082	6482
WA	95	95	95	95	130	130	130	130	130
Rev./stroke	176	201	201	223	221	241	261	281	281
VK	□26	□26	Ø30	Ø30	Ø30	Ø35	Ø35	Ø60	Ø60
A	8x Ø26 M20x260			10x Ø26 M20x260					
As	3x Ø15 M12x160				4x Ø15 M12x160				
Aq	2x Ø14,5 M8x90							on request	
Arh	2x Ø13 M10x130	2x Ø26 M20x260	2x Ø26 M20x260	2x Ø26 M20x260	2x Ø26 M20x260	2x Ø26 M20x260			

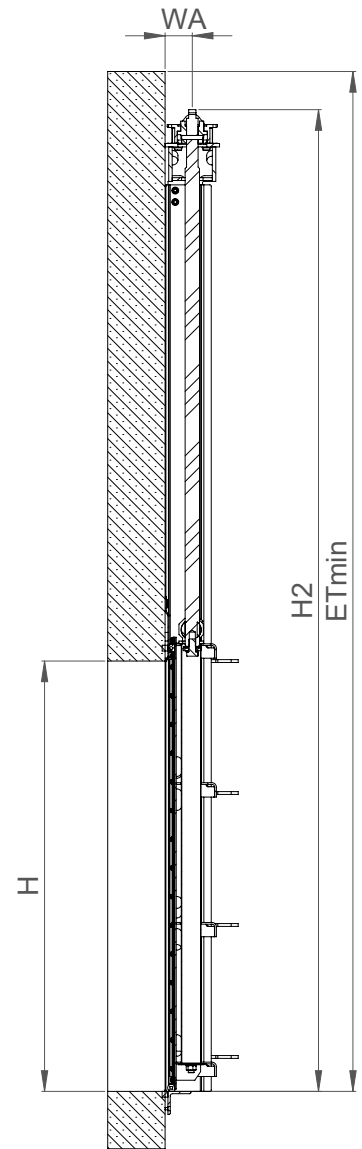
Dimensions for other nominal sizes on request.

Dimensional drawing

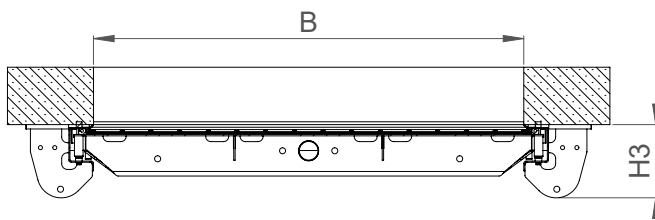
XL4 penstock with wedge sealing system (Seal on the plate)



XL4 penstock 1500 x 1500 mm front view



XL4 penstock 1500 x 1500 mm side view



XL4 penstock 1500 x 1500 mm top view

XL4 with GRP-Bar screen VARIANT* OF XL4

WITH RECTANGULAR OPENING, 4-SIDED SEALING

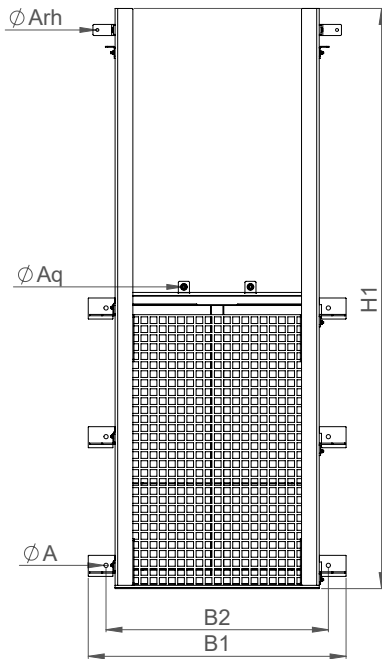
SPECIAL FEATURES

- XL4 penstock with integrated GRP bar screen in single or double bar screen version (GRP = glass fiber reinforced plastic bar screen)

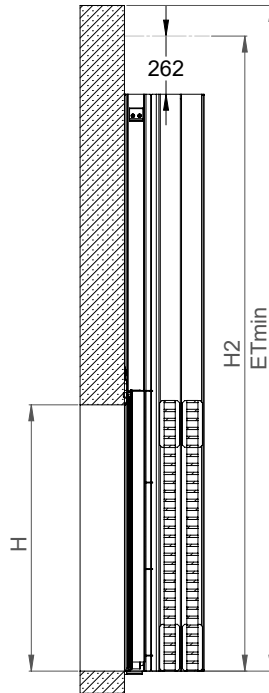
*STANDARD DATA: please refer XL4 penstock

Dimensional drawing

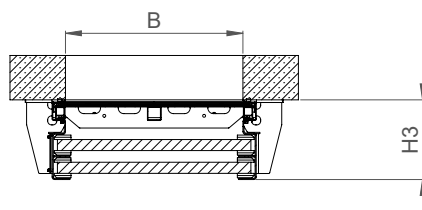
Anchored directly to the base slab



XL4 with GRP-Double bar screen
800 x 1200 mm front view

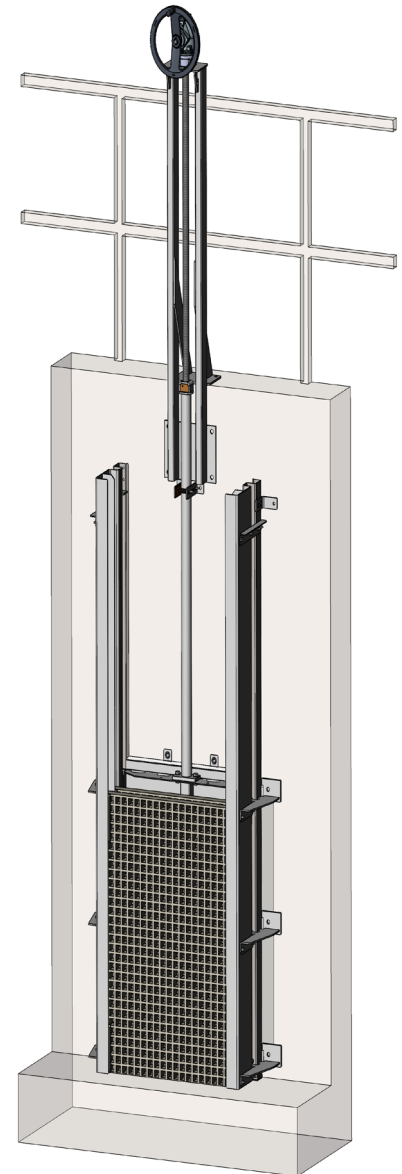


XL4 with GRP-Double bar screen
800 x 1200 mm side view



XL4 with GRP-Double bar screen
800 x 1200 mm top view

Dimension "H3" depends on the size of the bar screen



View XL4 with integrated
GRP-Double bar screen 800 x 1200 mm

Dimensions

For dimensions see table XL4 standard. All dimensions in mm. Shown with the „DR“ sole assembly type.

Mounting types

All mounting types of the XL4 standard are possible with the version with GRP (glass fiber reinforced plastic) bar screen.