1. **XM4 penstock**
2. Penstock made of stainless steel
3. Opening dimensions 200 x 200 mm to 1000 x 1000 mm: Pressure stage both sides: 10 mwc
4. Opening dimensions1100 x 1100 mm to 1200 x 1200 mm: Pressure stage both sides: 6 mwc
5. Opening dimensions 1300 x 1300 mm to 4000 x 4000 mm: Pressure stage both sides: 2/4/6 mwc

Optional ex-protection: On request, the penstock can be proven to comply with the ATEX Directive 2014/34/EU

A valid welding certificate of at least execution class EXC3 according to DIN EN 1090-2, from the manufacturer must be attached to the offer.

Penstock with rectangular opening, four-sided seal with the following design characteristics:

**Frame and plate**

* Supplied as pre-assembled penstock which does not require assembly, setting and adjusting works up to 1200 mm (multiple frame as of 1300 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
* Penstock plate with stiffening ribs according to structural requirements: The result of the FEM verification of the penstock plate must be submitted.
* 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.
* All welded parts with perfect corrosion protection from our own pickling plant
* No offset in rear to front invert level on the embedded penstock

**Material:** SS 304 / 316L / A 182 F51 / A 182 F53 / 904L (delete as applicable)

**Spindle**

* Spindle protection made of PE pipe
* Spindle with rolled trapezoidal thread made of stainless steel for opening dimensions

200 – 1700 mm

* Spindle with whirled trapezoidal thread made of stainless steel from opening dimensions

1800 – 4000 mm

* Single spindle design or twin spindle design
* Self-cleaning spindle nut made of seawater- and wastewater-resistant bronze with cleaning recess
* Optional: Spindle outside the medium rising or non-rising (easier to lubricate)

**Seal**

* Assembled inside of the frame, twin-lipped seal with welded BÜSCH UNO jointed connections made from wastewater- and UV-resistant EPDM or oil-resistant NBR
* Base seal is located on the penstock plate
* Waterproofing to wall as optional, to be ordered, sealing compound (Sikaflex)
* Seal line 50 mm larger than the masonry opening to prevent leaks on masonry spalling

**Leak tightness class**

* **Leak rate according to DIN EN 19569, Part 4, Table 1:**
  + Pressure on front side: 0.02 to 0.05 l/s/m (leak tightness class **4**)
  + Pressure on rear side: 0.05 to 0.1 l/s/m (leak tightness class **3**)
* **XM4 penstock leak rate:**
  + Pressure on front side: maximum 1 % from 0.02 l/s/m (leak tightness class **5**)
  + Pressure on rear side: maximum 5 % from: 0.02 to 0.05 l/s/m (leak tightness class **4**)

Prerequisites for wall properties:

The concrete quality must at least correspond to strength class C25 according to DIN 1045 / DIN 1084. The dimensional tolerances according to DIN EN 18202 (table 3, line 7) must be observed.

**Penstock must be demonstrably tested on leak test bench at factory (unless frame is set in concrete or screwed into channel)**

**Type of assembly for penstock**

Lateral fixing

* Concreted into recess
* Dowelling to the wall in front of the opening

Fastening in the base

* Concreted into recess
* Dowelling to the wall in front of the opening
* Dowelling onto the base

(Delete as applicable)

**Actuation of the penstock by:**

* Stainless steel handwheel on transverse yoke
* Lateral actuation with gearbox with BÜSCH stainless steel gearbox with stainless steel handwheel or stainless steel crank handle
* BÜSCH all-in-one control key via square cap
* BÜSCH MOBITORQ mobile electric drive unit via square cap
* BEAservo electric drive unit assembled on transverse yoke, optional with BÜSCH weather protection roof
* Pneumatic drive unit assembled on transverse yoke
* Hydraulic drive unit assembled on transverse yoke
* E-Actuator

(Delete as applicable)

**Penstock designed for:**

Opening dimensions: \_\_\_\_\_\_\_\_ x \_\_\_\_\_\_\_ mm

Maximum operating pressure on the front side: \_\_\_\_\_\_\_\_\_\_\_\_\_ mwc

Maximum operating pressure on the rear side: \_\_\_\_\_\_\_\_\_\_\_\_\_ mwc

Installation depth: \_\_\_\_\_\_\_\_\_\_\_\_\_ mm (measured from gutter base to the upper edge of the operating corridor)

Can be used with BÜSCH drive unit package \_\_\_\_\_\_\_\_\_ (2 to 25), refer to Position: \_\_\_\_\_ LV-No.: \_\_\_\_\_\_

**Scope of supply**

Penstock complete with all necessary fastening elements (dowels (stainless steel A4) and sealing material).

* Including works certificate according to DIN EN 10204, 2.1, with indication of leakage rate according to DIN 19569, part 4
* Including acceptance test certificate according to DIN EN 10204, 3.1, with factory leak test in the design for dowelling in front of the wall
* Including acceptance test certificate according to DIN EN 10204, 3.2, with factory leak test in the presence of the customer in the design for dowelling in front of the wall.

(Delete as applicable)

**BÜSCH XM4 penstock**

or equivalent

**Manufacturer:**

BÜSCH Armaturen Geyer GmbH

Industriestraße 1

09468 Geyer

Germany

[**www.buesch.com**](http://www.buesch.com/)

Quantity ........ EURO/Unit ............ EURO/Position .........