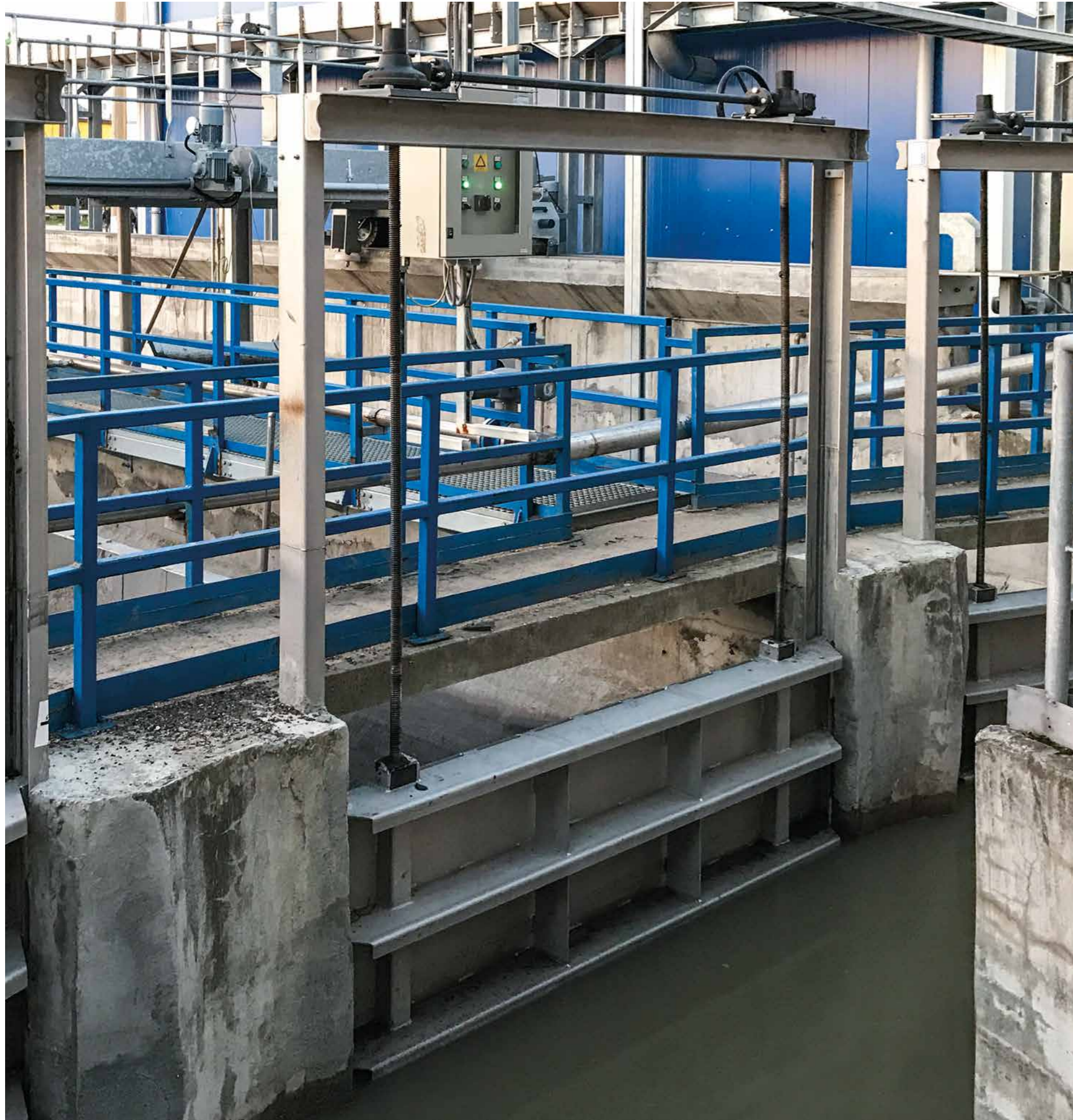




Sismat Uluslararası
Arıtma Makinaları
İnşaat Mühendislik
Sanayi ve Tic. A.Ş.



PENSTOCKS
Sluice Gates



PENSTOCKS ENGINEERED FOR WATER

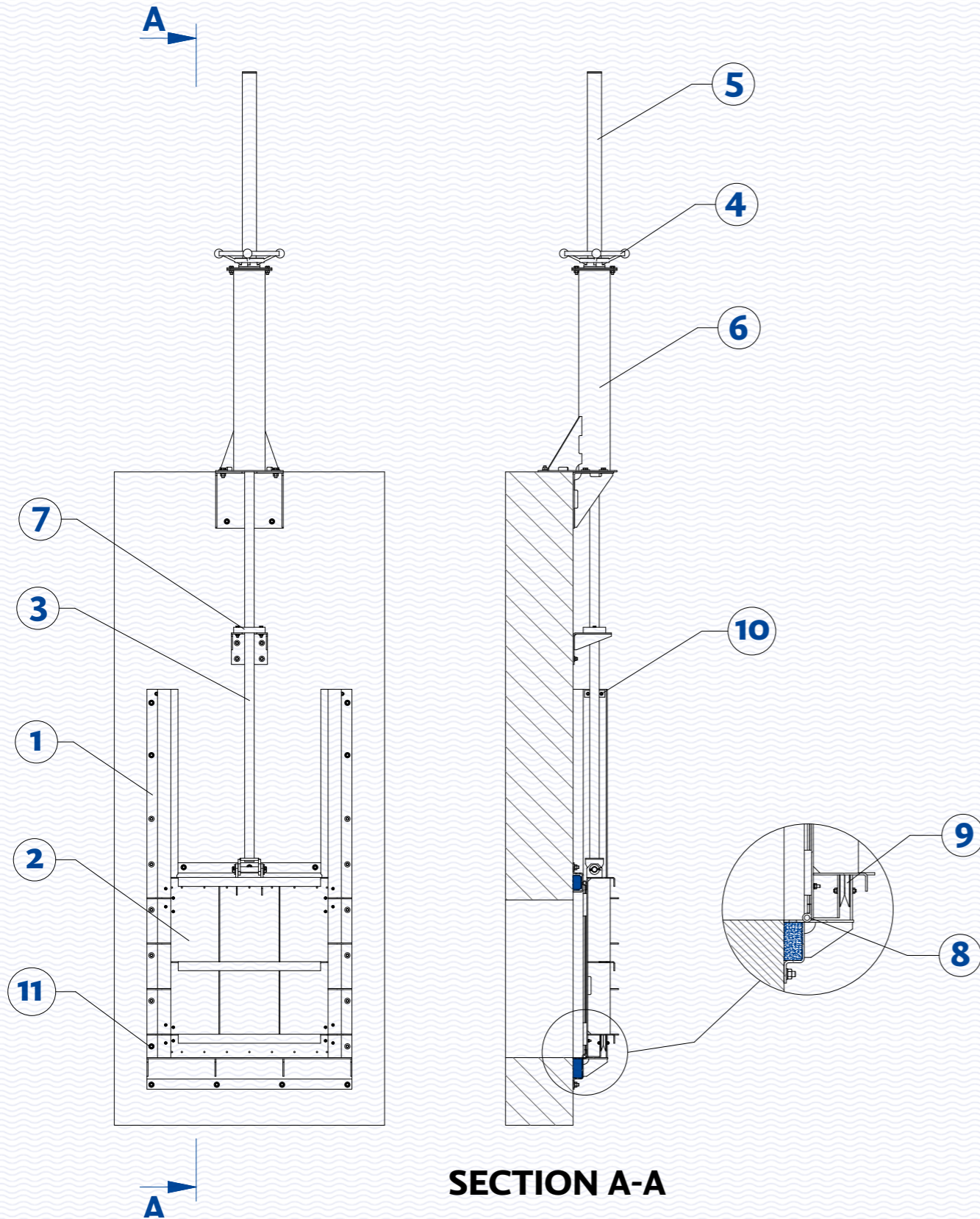
SİSMAT ULUSLARARASI is a well-known penstock supplier, manufacturing high quality, high performance water control gates for all industries as standard designs or tailor made to meet specific site requirements. Our penstocks accommodate client requirements, site specifications, environmental conditions and operational preferences.

Penstocks are water control gates or structures that control flow. Penstocks also known as Sluice gates, Slide gates or Stop gates are designed for flow regulation, diversion, level control or isolation and are a flow control and isolation valve for fluids associated with water, waste water, sewage treatment plants, power generation, irrigation schemes and process plants.

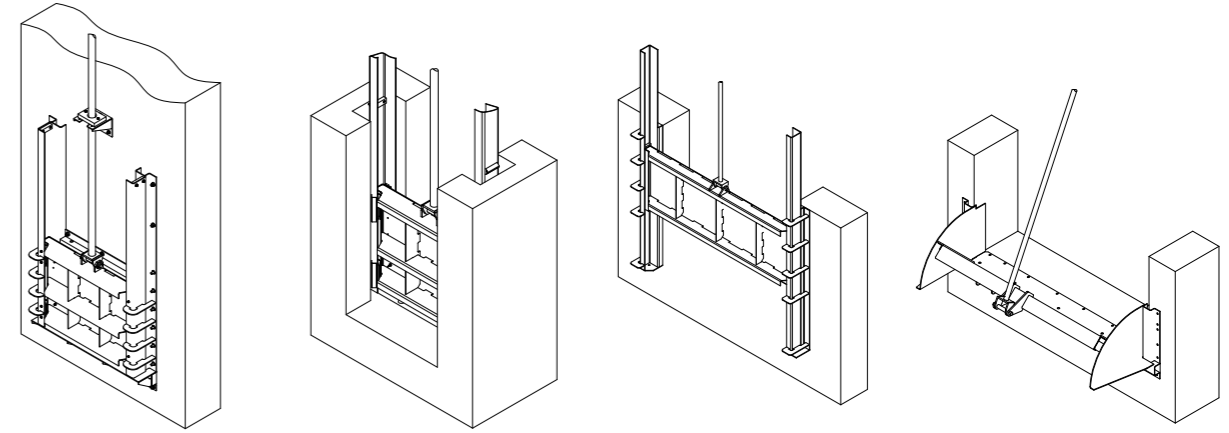
FEATURES AND BENEFITS OF SİSMAT ULUSLARARASI PENSTOCKS:

- Wide range of material applications and sizes
- Multiple operations, including hand wheel or gearbox
- Optional pressure seating (on seat / off seat or both)
- Special sizes factory fabricated
- Wide range of manual operating systems available
- Remote electrical actuator options
- Robust construction with minimum maintenance

TYPICAL PENSTOCK & COMPONENTS



OUR PENSTOCK TYPES

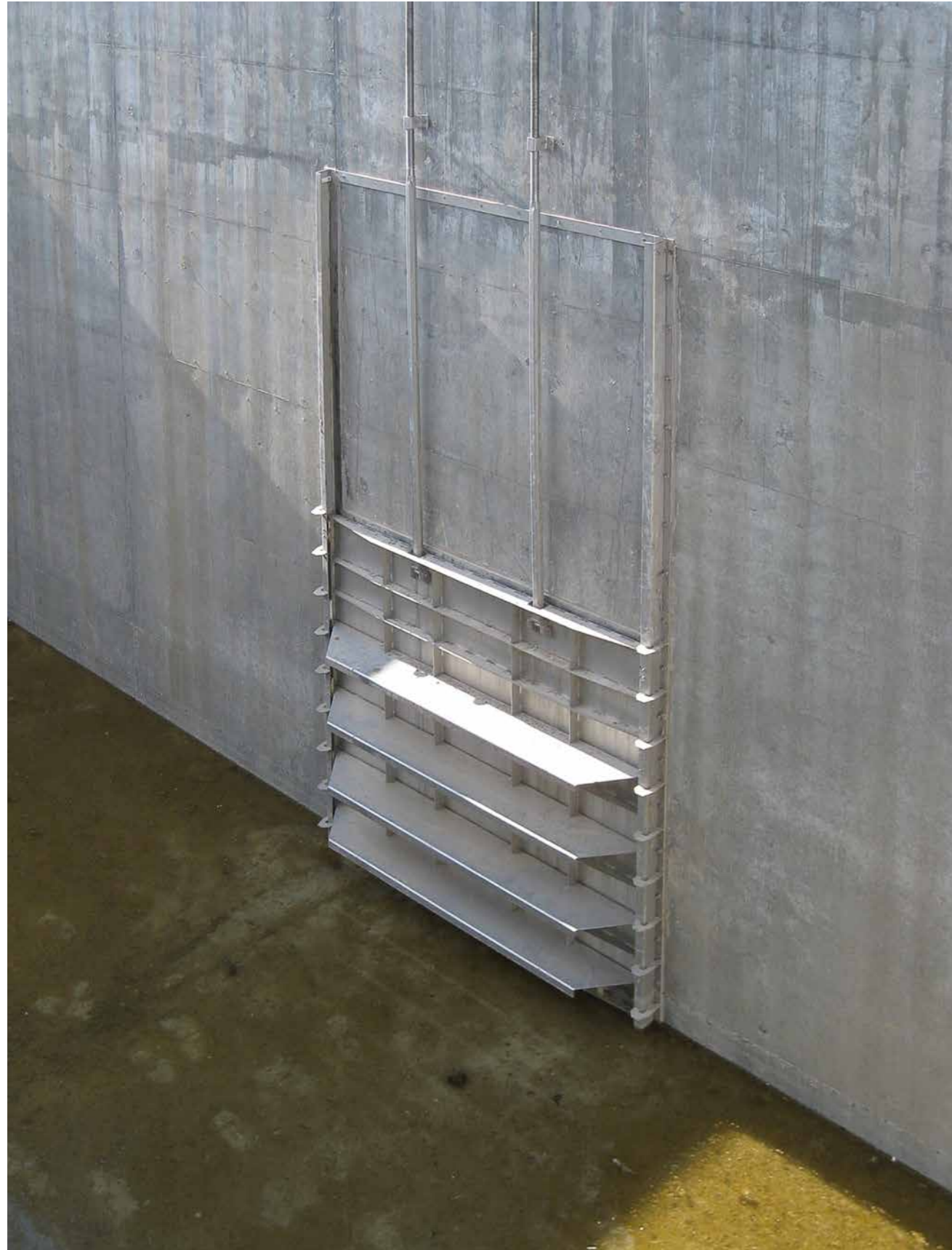


Type	Wall Penstock	Channel Penstock	Weir Penstock	Tilting Penstock
Product features	Welded frame self-supporting flange back type for installation on a concrete wall at the end of the channel. Seal assembled on door for easy replace	Welded frame U-shape type for installation on concrete channel fixed into performed rebates in the sides and inverts by grout. Seal assembled on door for easy replace	Welded frame self-supporting flange back type fixed to the wall. Installation on channel outlet to control or adjust the level.	Welded frame with lateral sealing. Installation on discharge channel to control or adjust the level
Seal	4 facings	3 facings	4 facings	3 facings
Aperture	Square / rectangular	Square / rectangular	Square / rectangular	Square / rectangular
Type of operation	Manual operation Electric actuator Power piston drive	Manual operation Electric actuator Power piston drive	Manual operation Electric actuator Power piston drive	Manual operation Electric actuator Power piston drive
Range of application	Mounting to pipe outlet or channel outlet fixed on the wall use for on-off control of the flow	Installation in open channel fixed on side inverts by grout use for on-off control of the flow	Installation on channel outlet fixed on the wall use for level control	Installation on structure recess of discharge widths fixed on the wall use for level control

OUR PENSTOCK COMPONENTS

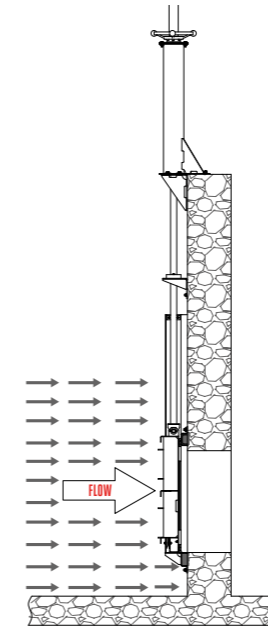
	Penstock Component	Materials available
1	Frame	Carbon steel or stainless steel grade, AISI304, AISI304L, AISI316, AISI316L, AISI316Ti, DUPLEX or SUPER DUBLEX
2	Door / Slide	Carbon steel or stainless steel grade AISI304, AISI304L, AISI316, AISI316L, AISI316Ti, DUPLEX or SUPER DUBLEX
3	Operating Stem / Spindle	AISI304, AISI304L, AISI316, AISI316L, AISI316Ti, DUPLEX or SUPER DUBLEX
4	Drive mechanism	Manual, Reducer, Actuator, Pneumatic cylinder, Hydraulic
5	Spindle protection tube (for rising spindle)	Polycarbonate, Hot dip galvanize, AISI304, AISI316L
6	Console / Headstock	Aluminum, Carbon steel or stainless steel grade AISI304, AISI304L, AISI316, AISI316L, AISI316Ti, DUPLEX or SUPER DUBLEX
7	Stem guide	Delrin
8	Seal	Neoprene / EPDM
9	Wedge	POM
10	Assembly Fasteners	A2, A4, DUPLEX or SUPER DUBLEX
11	Fixing Bolts	A2, A4, DUPLEX or SUPER DUBLEX

SELECTING YOUR PENSTOCK TYPE

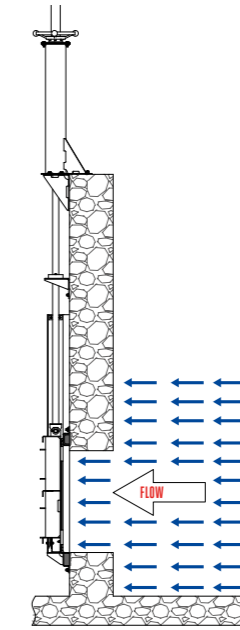


1. Operating Pressure:

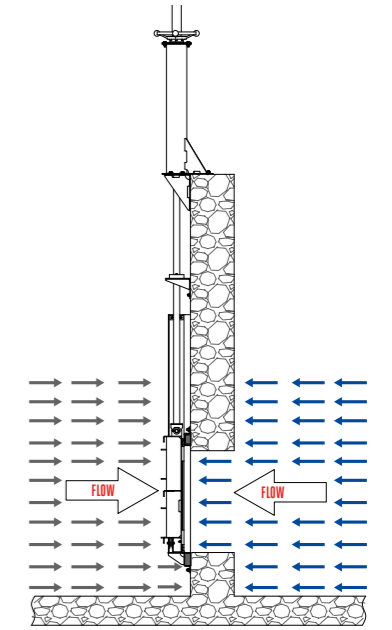
- on seating pressure (fluid forces the penstock onto wall)
- off seating pressure (fluid forces penstock away from wall)
- on/off seating pressure (fluid forces can be both ways).



On-seating pressure



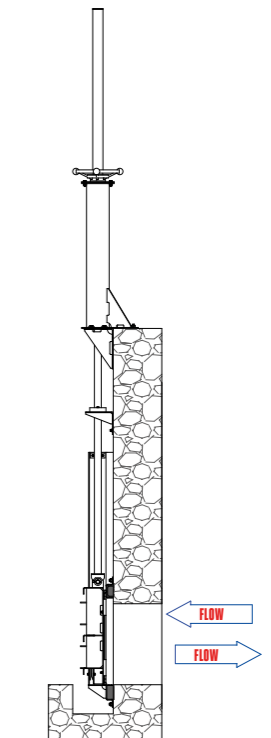
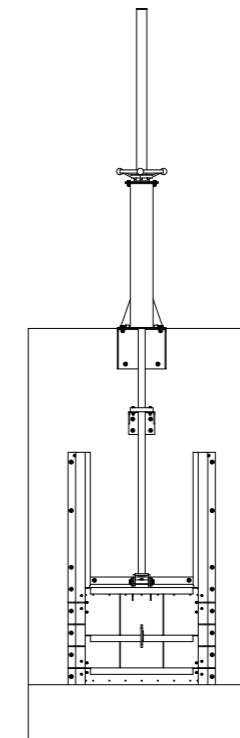
Off-seating pressure



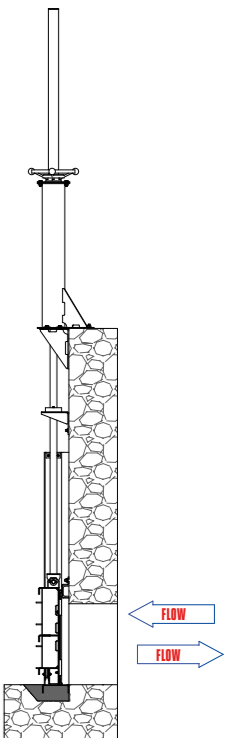
On/Off-seating pressure

2. Types of Invert:

- Rebate Invert
(when it is a requirement for invert fixing bolts to be incorporated)
- Flush Invert
(a smooth passage at the invert and remove any possible debris traps)



Rebate invert



Flush invert

3. Mounting Types

The method of fixing the penstock depends on the design requirements.

- a. Wall Mounting
- b. Channel Mounting

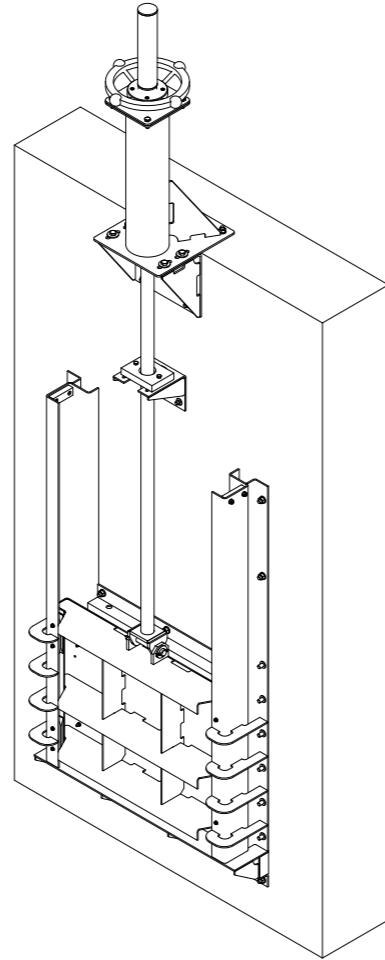
a. Wall Mounting

The penstock is fixed to the wall by means of expanding or resin type anchor bolts. They are used to close off an opening in a wall, or the end of a pipe and seal around the complete periphery of the opening. They can be either of the slide or roller type and can be arranged to seal against on or off seating pressure. By fitting double seals, a gate can be arranged to seal in both directions if necessary.

b. Channel Mounting

The penstock is specifically designed to be mounted into prepared rebates. Channel gates are used to control flow in open channels or canals and therefore do not have a top horizontal seal. They are usually mounted in slots in side walls and floor, but they can be adapted to bolt against a wall face if necessary. They are normally screw operated with hand wheel or gearbox mounted on a bridge which forms part of the headframe.

Wide gated may require twin lifting spindles.



4. Stem Types

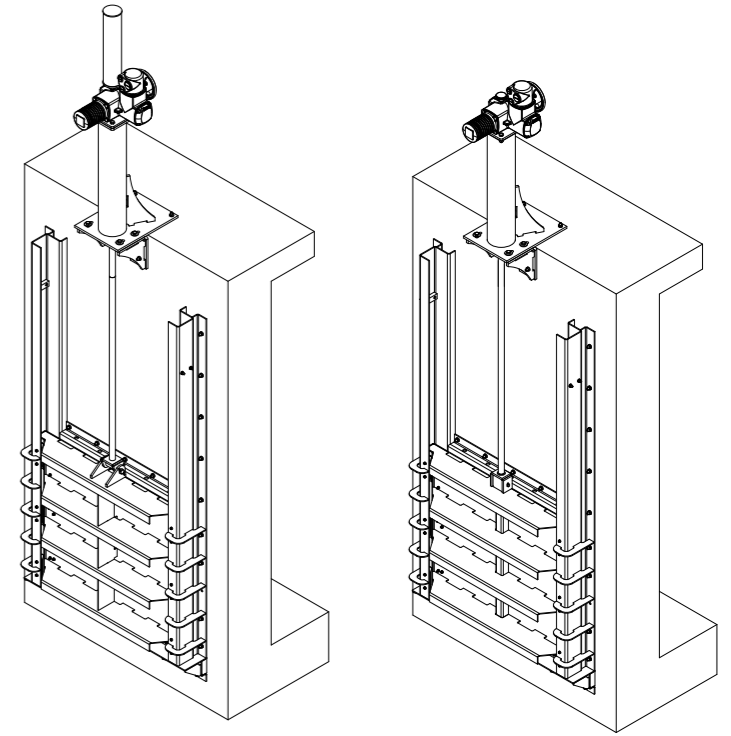
- a. Rising Stems
- b. Non-rising Stems

a. Rising Stems

A screwed stem nut is located in the operating equipment. The nut is rotated by the operator and as the screwed stem works through the nut, it rises or lowers together with the door. The screwed portion of the stem is not subject to immersion and is fully accessible for maintenance and operation. The trust for this type of operation can be taken directly on the penstock frame or remotely at floor level.

b. Non-rising Stems

A threaded stem nut is fitted in the door of the penstock. Then the screwed stem is rotated by the operator working through the nut. Due to this action it raises and lowers the door. The screwed stem does not raise and is within the penstock frame, it will be subject to immersion.



5. Modes of Operation

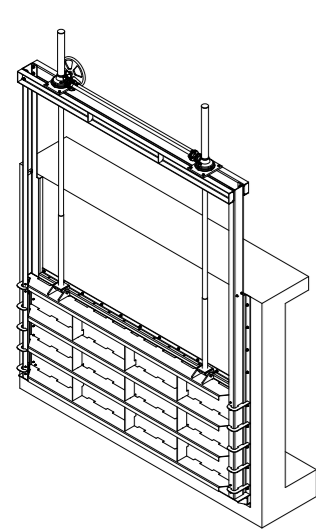
- a. Manual Operation
- b. Mechanized Operation

A. Manual Operation:

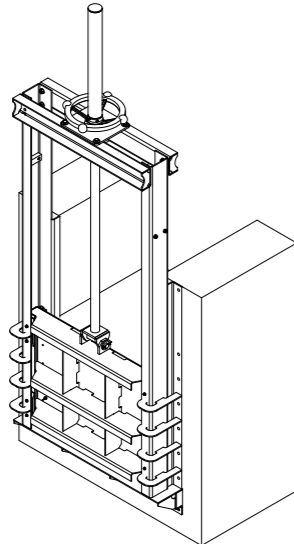
Manual operation of penstocks is recommended where frequency of operation, time required fully opening and closing the gate and the torque required to operate the gate is low. Manual operation can be effected by means of either ungeared or geared type lift mechanism. Selection of the type of lift mechanism depends on the hoisting capacity required for each gate.

B. Mechanized Operation:

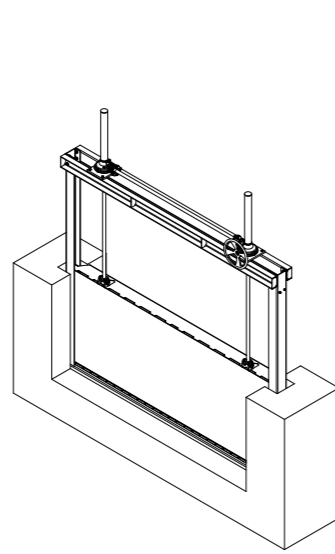
Mechanized operation of penstock is recommended where torques required to open the gate or the frequency of operation of the gate is high and where faster gate operation is required.



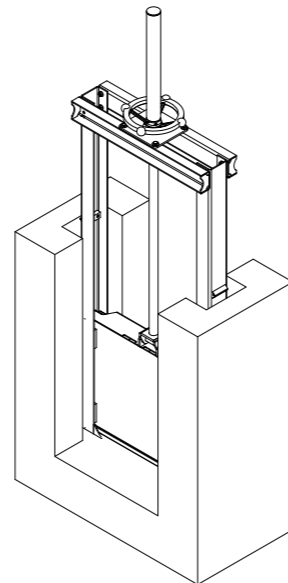
Twin-lift wall gate



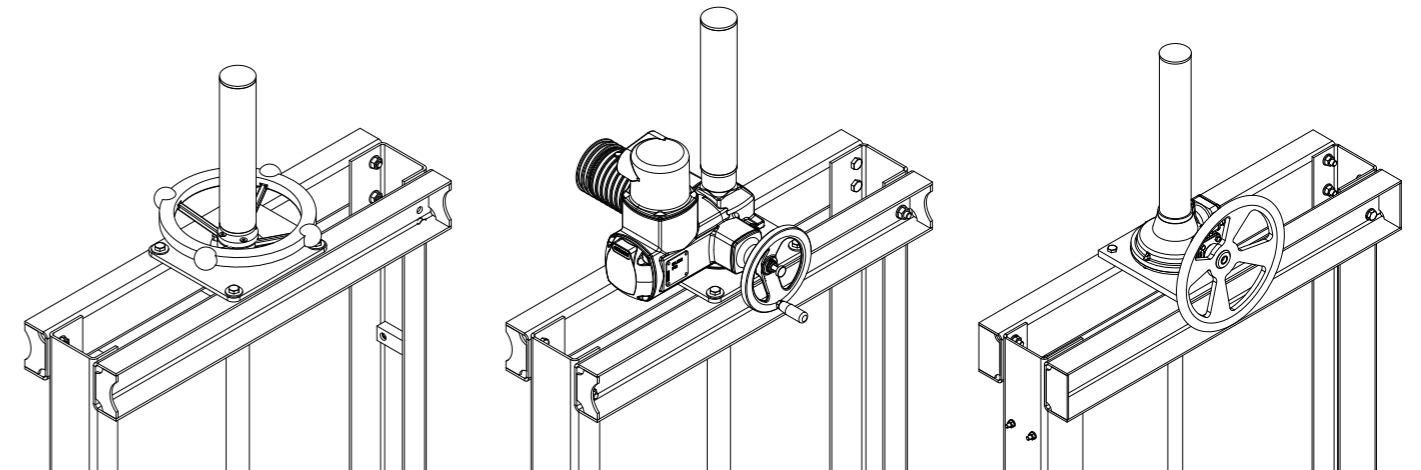
Aperture or end of channel mounting



Twin-lift channel gate



In-channel mounting



REFERENCES





Learn More by visiting

www.sisnat.com.tr

Sisnat Uluslararası Arıtma Makinaları
İnşaat Mühendislik San. ve Tic. A. Ş.
Address: Gebze Güzeller Organize Sanayi Bölgesi (GGOSB)
Fatih Sultan Mehmet Cd. 5/1 Gebze/Kocaeli/Türkiye
Telephone : +90 262 751 12 54
Fax: +90 262 751 12 56