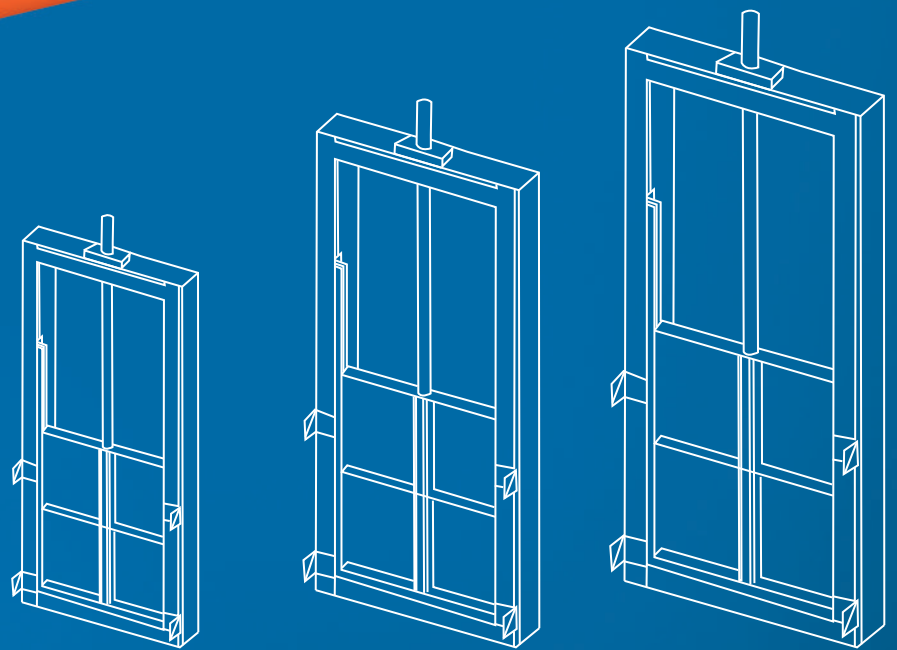


# کاتالوگ دریچه

# PARS ADVANCED TREATMENT



**Fabricated Penstock /  
Sluice Gate**

## Definition of Penstock / Sluice Gate

A piece of equipment used to control the flow or level of a liquid consisting a sliding door; controlled by a mechanically operated spindle, moving vertically over the aperture in a frame which is secured on to a structure.

A sluice gate is traditionally a wooden or metal plate which slides in grooves in the sides of channel. Sluice gate are commonly used to control water levels and flow rates in rivers and canals. They are also used in wastewater treatment plants and to recover minerals in mining operations, and in watermills.



Large



Medium



Small

## General Description

**PARS TREATMENT**'s SERIES 10 fabricated Penstock / Sluice Gate is a highly versatile flow control gate with various types of mountings.

Adaptable to different applications, the Series 10 can be designed to withstand seating and unseating heads of up to 18m. When required, the Series 10 can be designed for higher water heads. The seal design keeps the allowable leakage rate to 0.60 l/min per meter of seating perimeter for seating head conditions. The unseating head leakage is 1.25 l/min per meter of perimeter for 6m water head. Over 6m of unseating head, the leakage is corrected at a rate of 0.03 l/min per meter of perimeter for each additional meter over 6m. The leakage rate is 50% of the maximum allowable leakage recommended by AWWA/BS7775.

It is available in sizes from 150mm up to 3000mm. For larger sizes, please contact a Esareka representative. The design is suitable for square, rectangular or round applications.

Because of its stainless steel construction, the SERIES 10 has high corrosion and erosion resistance, and can be operated for many years with a minimum maintenance. Stainless steel provides virtually limitless design flexibility. The result is a lighter weight and easier-to-install gate.

# PARS TREATMENT Stainless Steel Penstock / Sluice Gate

## Product Specification

Penstock / Sluice Gate frames are constructed from stainless steel pressed channel and MIG welded to give the required rigidity for the design sealing duty. Yokes are removable for maintenance purposes, and wall or channel mounting brackets are incorporated; these can be omitted for rebate fixed valves.

Penstock / Sluice Gate doors are constructed from stainless steel plate, reinforced with a welded box section matrix to give the rigidity required. The gate may be plain, or reinforced with an angle or box section frame according duty.

Spindles are machined from stainless steel, with a single start full ACME thread (double start above 50mm diameter) this is the optimum thread form for ease of operation, long life, and prevention of ragging. Both rising and non-rising options are available.

Penstock / Sluice Gate seals are full face, and are manufactured from low friction material for long life and ease of operation, thus smaller actuators can frequently be specified for fabricated penstocks compared to cast iron valves of similar size. All fabricated penstocks use a flush invert type seal, and on channel and weir penstocks, the soffit seal is omitted as standard.

Small (less than 900sq), medium (900sq to 1400sq) and large (over 1400sq) penstock ranges are available, with square or rectangular openings. These accommodate heads up to 8m on or off seal as standard, conforming fully to BS7775 with respect to leakage rates. Penstocks can be designed for higher duties: please contact PARS TREATMENT SDN. BHD. for further details of these, and for sizes above 1,000 x 1,000mm.

## Product Performance

Penstock / Sluice Gates shall be substantially watertight under the design head conditions. Under the design seating head, the leakage shall not exceed 0.60 l/min per meter of seating perimeter. Under the design unseating head, the leakage for heads 6m or less shall not exceed 1.25 l/min per meter of perimeter. For unseating heads greater than 6m, the allowable leakage shall not exceed the rate per meter of perimeter specified by the following equations:

### Maximum Allowable Leakage

Liters per minute per meter of perimeter:

$$= 1.25 + (0.1025 \times (\text{unseating head in meters} - 6.1))$$

Example: If we have a gate with 10m head, the leakage for the unseating head will be:

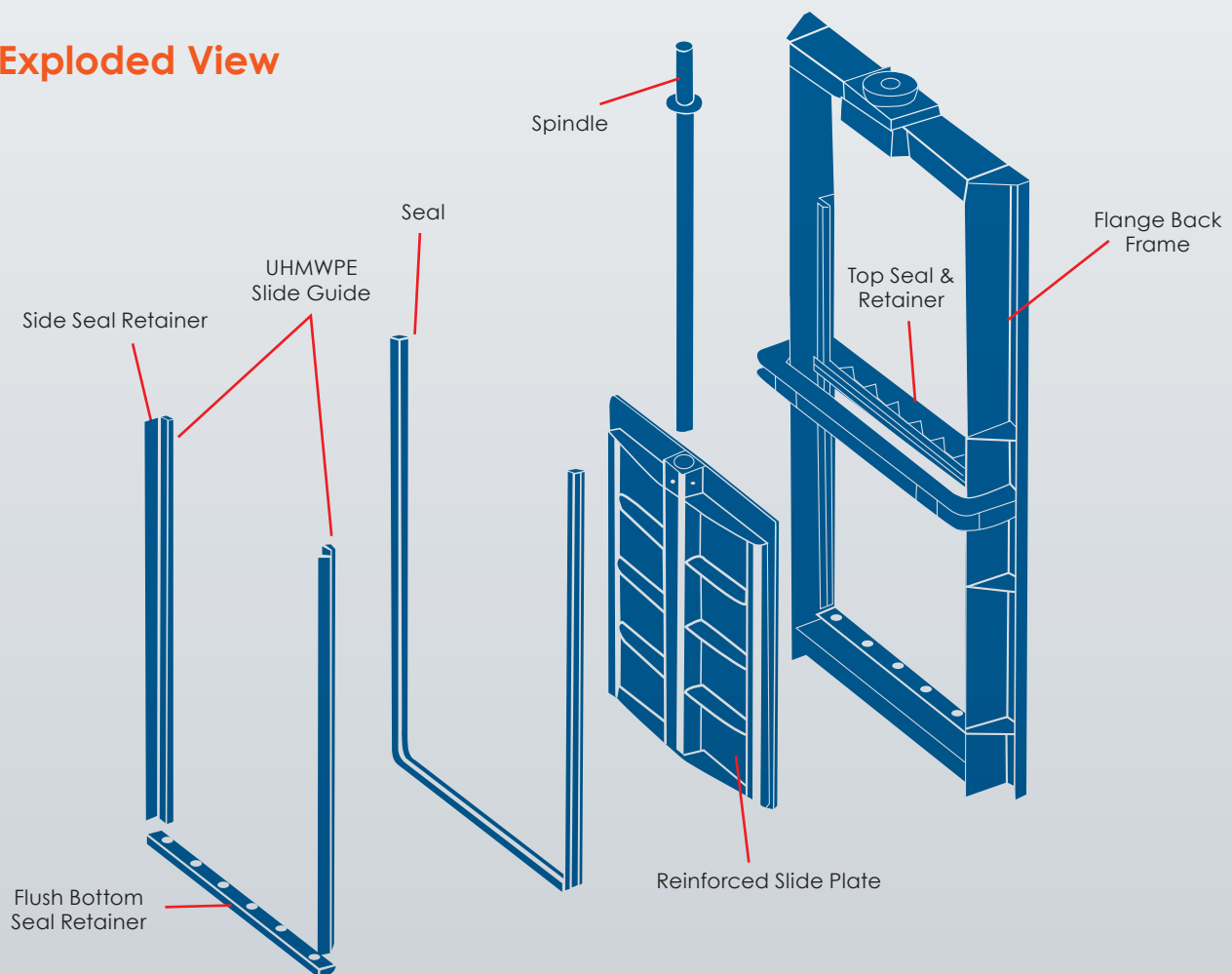
$$1.25 + (0.1025 \times (10 - 6.1)) = 1.65 \text{ lpm/m of perimeter}$$

## Material Specification

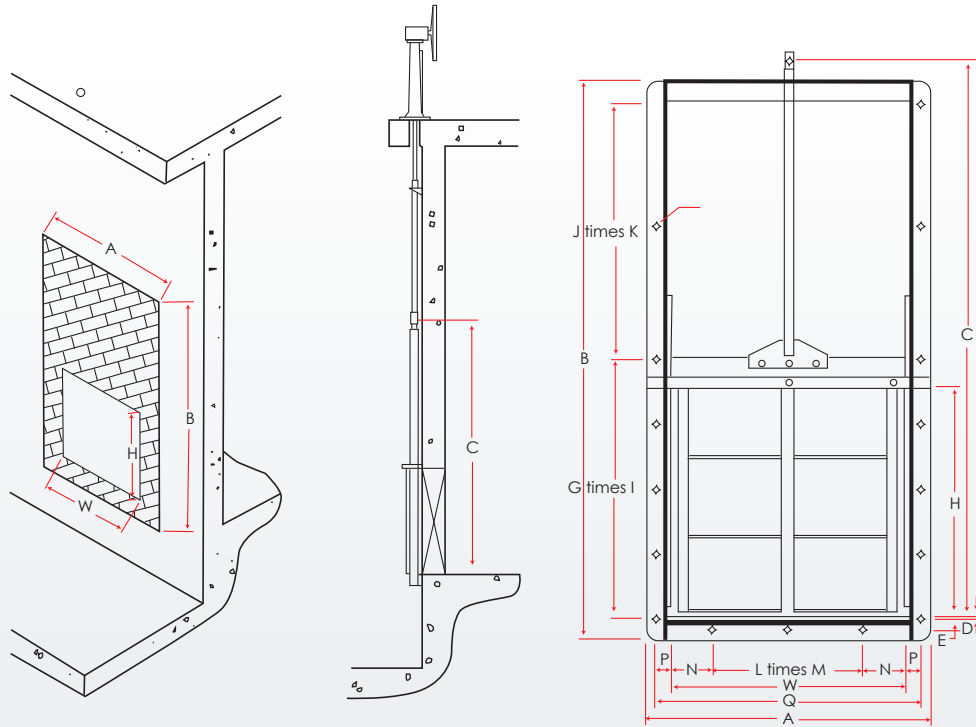
Component	Material
Frame, Side Frame and Slide Plate (Metal Door)	Stainless Steel (BS 970 Gr 304/304L or 316/316L)
Operating Nut	Gunmetal (BS1400 LG2)
Sealing and Pressure Adjusters Door Plate (Plastic Doors)	UHMWPE (UV Stabilized)
Flush Invert Seal	EPDM Rubber (ASTM 2000)
Fasteners and Adjusters	Stainless Steel (Gr A2 or A4)
Spindle	Stainless Steel (BS 970 Gr 304/304L or 316/316L)
Seal Retainer	Stainless Steel (BS 970 Gr 304/304L or 316/316L)
Slice Guide	UHMWPE (UV Stabilized)

Other materials and finishes are also available on request.

## Exploded View



# ESAREKA Stainless Steel Penstock / Sluice Gate: Fabricated Range



Comply with the surface evenness zone of  $\pm 2\text{mm}$  / linear meter, with a surface finish as accurate as possible.

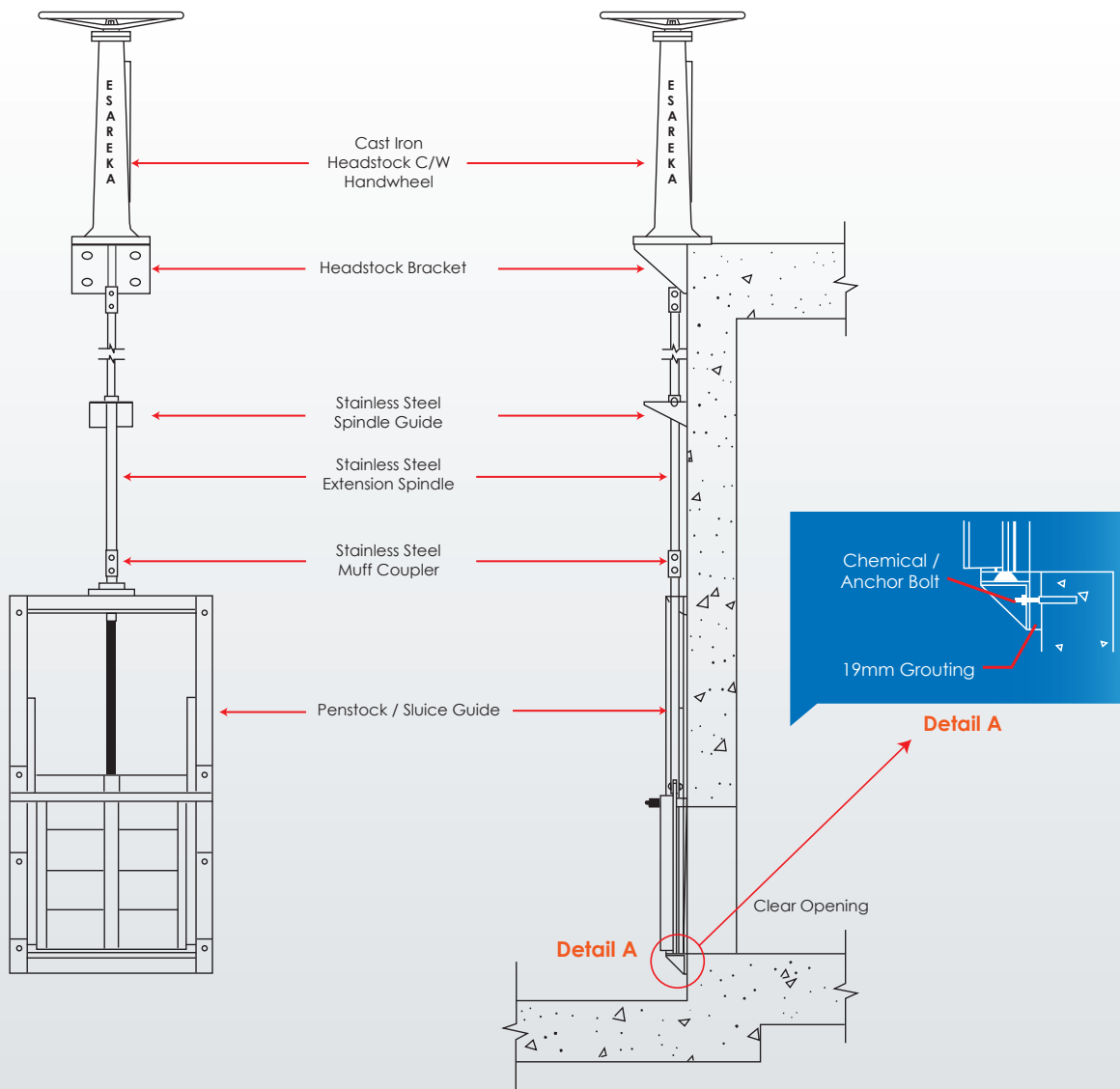
Dimensions in millimeters (mm)

Clear Opening		Overall Size			Bolt Hole Position													Dia. of Spindle	Mass (kg)
W	H	A	B	C	D	E	F	G	I	J	K	L	M	N	P	Q	NOS		
150	150	350	600	750	17	-	65	1	227	1	218	-	-	-	62.5	275	6	25	22
200	200	400	710	860	17	-	70	2	150	1	270	-	-	-	62.5	325	8	25	26
225	225	430	750	900	17	-	70	2	152	1	306	-	-	-	65	355	8	25	28
250	250	450	850	1000	17	-	70	2	175	1	360	-	-	-	62.5	375	8	25	30
300	300	500	880	1030	17	-	70	2	200	1	340	-	-	-	62.5	425	8	25	40
350	350	550	964	1114	17	-	70	2	220	1	374	-	-	-	62.5	475	8	28	50
400	400	600	1125	1275	17	-	70	2	263.5	1	458	-	-	-	62.5	525	8	28	60
450	450	650	1225	1375	17	-	70	2	287.5	1	510	-	-	-	62.5	575	8	28	70
500	500	700	1300	1450	17	-	70	2	315	1	530	-	-	-	62.5	625	8	32	90
600	600	800	1600	1750	17	-	70	3	235	1	675	-	-	-	62.5	725	10	35	100
700	700	900	1780	1930	17	32.5	70	4	211	2	383	1	250	225	62.5	825	16	35	110
750	750	960	1850	2000	17	42.5	80	4	211	2	413	1	270	240	67	884	16	35	120
800	800	1010	1930	2080	17	42.5	80	4	225	2	425	1	287	257	67	934	16	35	120
900	900	1110	2160	2310	17	42.5	80	4	250	2	460	1	320	290	67	1036	16	35	140
1000	1000	1240	2400	2550	17	55	102	5	230	2	485	2	265	235	75	1150	19	35	160

Please contact **PARS TREATMENT SDN BHD** for further details of these, and for sizes above 1,000 x 1,000mm.

- Fabricated Penstocks / Sluice Gate available in conventional design or weir type.
- Available for wall mounting or channel fixing, with flush invert as standard.
- Various material options are available for frame and door, including stainless steel.
- Square and rectangular openings accommodated within standard range.
- Actuation by handwheel, gearbox, pneumatics, hydraulics or electric systems.
- Number of door cross members to suit design head of water: minimizes cost.

# Wall Mounted Penstock/ Sluice Gate



## Flange Back Frame

The stainless steel frame on the SERIES 10 is a flange back type (Detail A) available in open or self-contained configurations, providing a solid one-piece gate. The rigidity provided by the flange back frame makes it easier to handle in transportation and installation with less risk of distortion. The seal bolting is completely separated from the flange anchoring, allowing the flange to be modified to better suit all particular applications. This feature also allows the gate to be completely factory assembled as well as tested for operation and leakage before being shipped. It also eliminates any on-site assembly and adjustments.

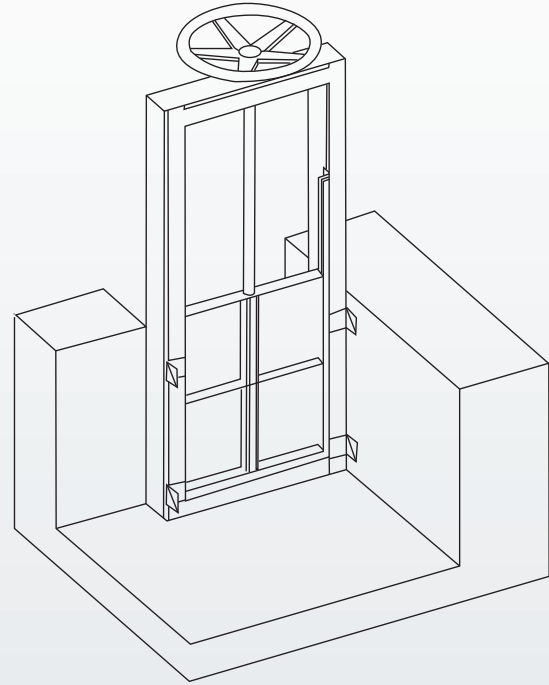
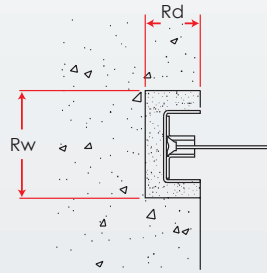
## Reinforce Slide

The slide is a stainless steel plate reinforced with members welded to the plate, making it a solid single piece.

# Channel Mounted Penstock / Sluice Gate

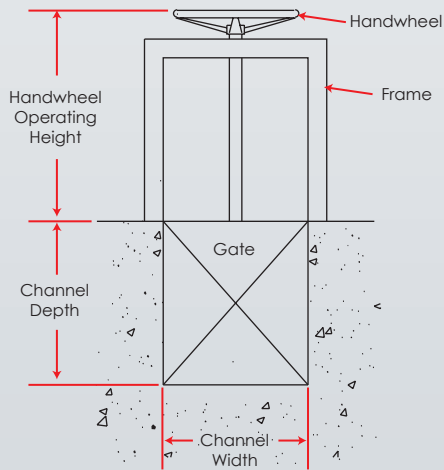
## CHANNEL MOUNTED REBATE DIMENSION

Item	Aperture Size	Rw	Rd
1	>1.0 M2	150mm	60mm
2	1.0 M2<>3.0 M2	170mm	65mm
3	3.0 M2 & Above	190mm	70mm



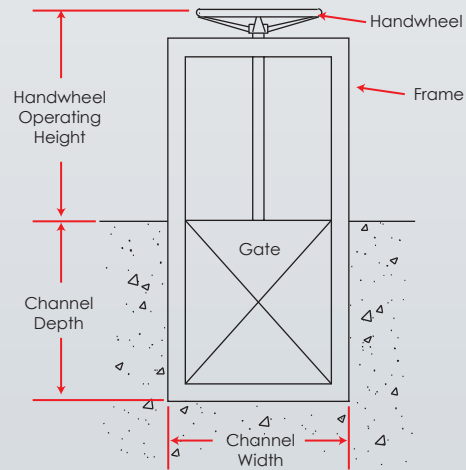
### OPTION "A"

Overall width of the slide gate frame equal or less than channel width



### OPTION "B"

Channel width equal to "gate" width



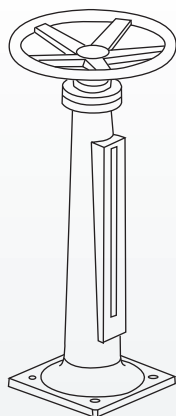
Stop log frame and door plate are constructed from stainless steel. The door plate may be plain, or reinforced with stiffeners to give the rigidity required.

Three(3) sides sealed with synthetic rubber and with flush level invert.

Door plate guided with low friction material, UHMWPE for long life and ease of operation.

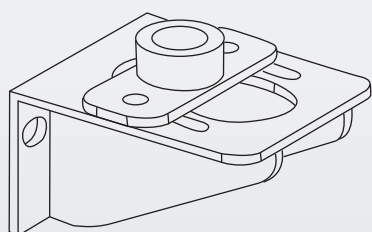


## Accessories



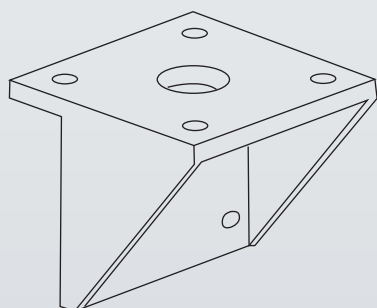
### Headstock

Headstock cone comes with variety of formats. Depending on the user's requirement, special custom-designed headstocks or gate opening mechanisms can also be manufactured that including electric actuated, pneumatic / hydraulic actuated, manual geared and direct manual with / without indicator.



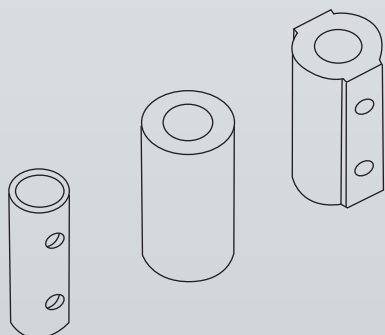
### Stem Guides

Stem guides are provided as required to support the stem from buckling. The stem guides are designed as per AWWA/BS7775 Standards. Stem guide brackets are fabricated from 304 stainless steel (316 optional). The stem guide collar is fabricated from 304 stainless steel (316 optional) with an ultra high molecular weight polyethylene (UHMWPE) (bronze optional) bushing.



### Headstock Wall Bracket

Headstock wall brackets are used to support headstock or extension spindle. When no concrete structure or suitable floor exists in the operating area. Manufactured in cast iron / mild steel / stainless steel, the brackets are designed to withstand all normal operating loads.



### Muff Coupler

Manufactured in SUS304 / SUS316 / cast iron for joining straight lengths of spindle in-line. For use with axial and torsion loads (rising and non-rising spindle application)

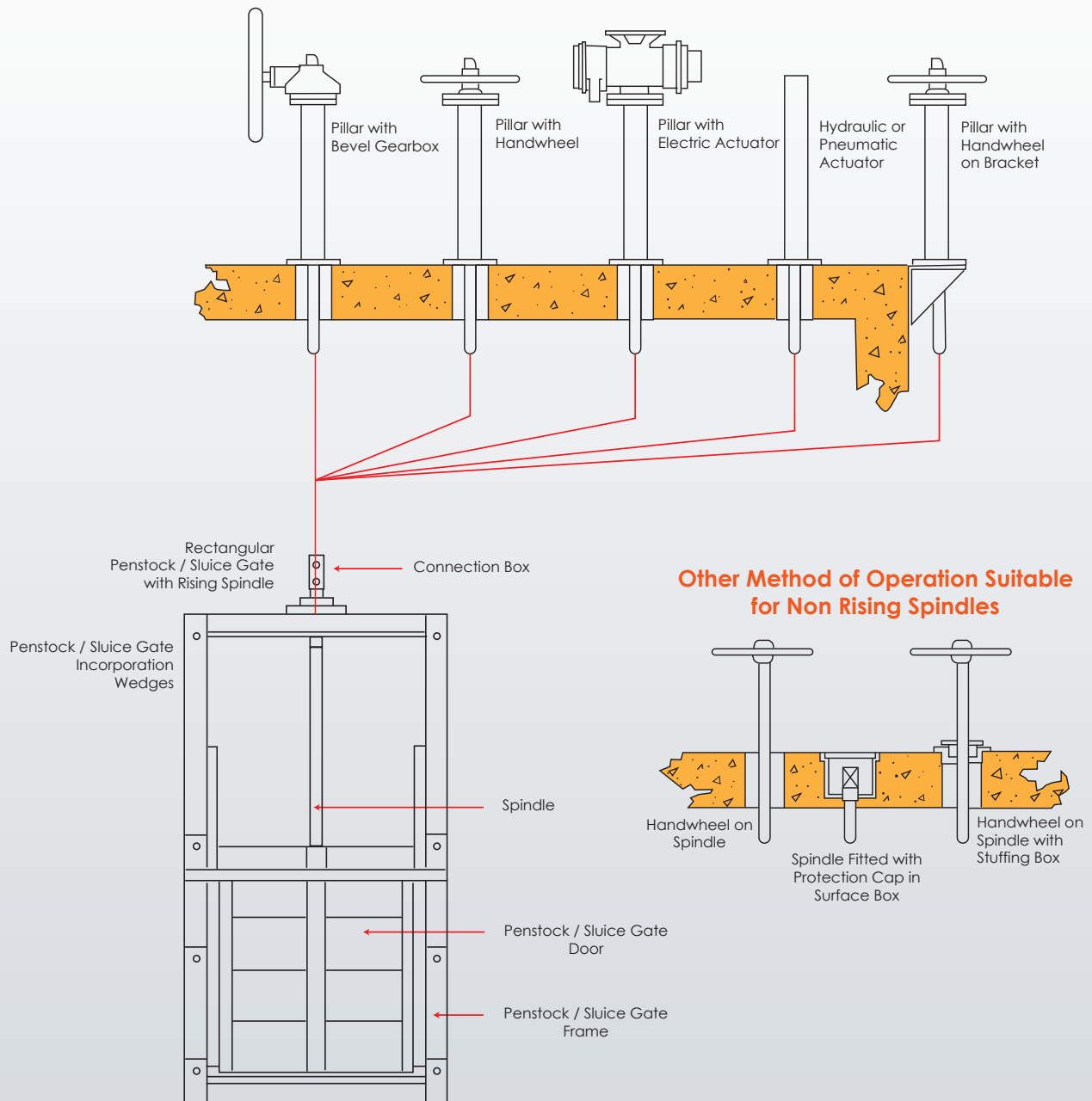
Two type of coupling are available :-

1. Plain muff coupling,
2. Screwed muff coupling.

The use of a particular type of coupling will depend upon the operating duty and/or the specification.

## Mode of Operation

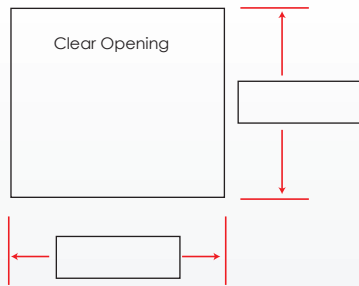
There are a number of different modes of operation available, although the standard requirement is either handwheel or protection cap (for Teekey operation).



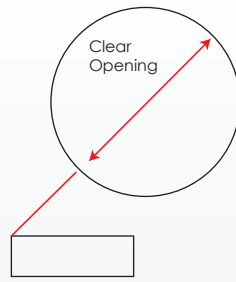
Non-rising spindle type penstocks / sluice gate are designed to accommodate the thrust reaction when operated, however, a rising spindle type penstock generates a remote thrust which must be taken into consideration when choosing a suitable means of operation.

# PARS TREATMENT Penstock / Sluice Gate Enquiry Form

## A) Penstock Aperture Size



Quantity :



Quantity :

### Material :

- Stainless Steel SS304
- Stainless Steel SS316
- Cast Iron
- Ductile Iron
- Carbon Steel

### Sealing :

- 4 Sides Sealed
- 3 Sides Sealed

### Closing :

- Downward Closing
- Upward Closing

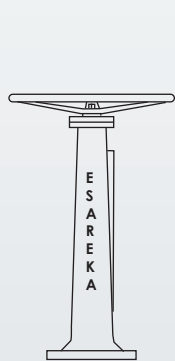
### Spindle :

- Rising Spindle
- Non-rising Spindle

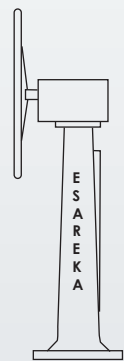
### Gate Mounted To :

- Concrete Wall
- Wall Timble
- Channel / Drain
- Other, Pls Specify

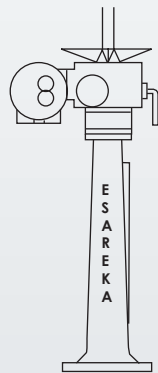
## B) Headstock Option



Manual with Handwheel



Manual with Gear Box

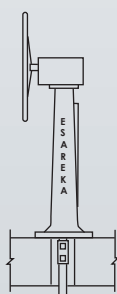


Electric Actuator

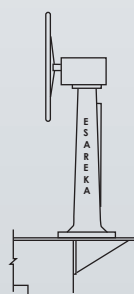


Pneumatic  
 Hydraulic

## C) Headstock Mounting

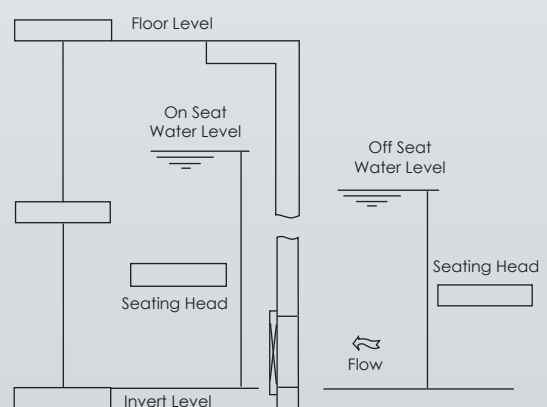


Headstock mounted on slab



Headstock mounted on bracket

## D) Penstock Design Requirement



E) Customer Details Company :

Contact Person :

Tel :

Fax :

E-mail :

Order Information

In line with our Company Policy of continuous product development, we reserve the right to modify any specification, dimension or design.

## PARS ADVANCED TREATMENT



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### Factory

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