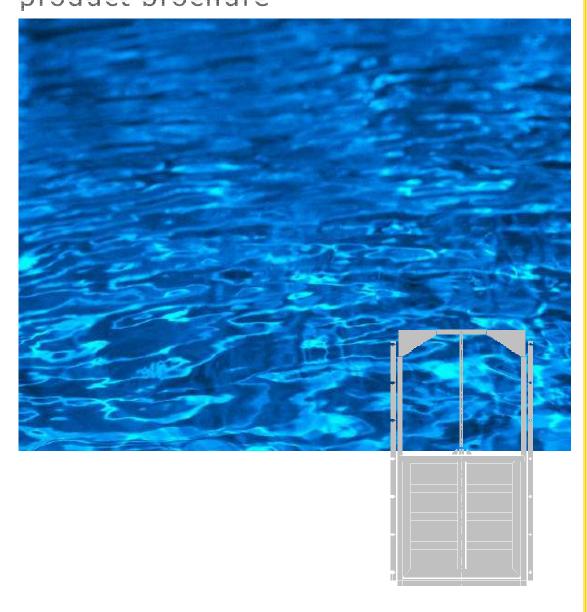
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Penstocks and Valves
Issue 07-748

# Welcome to.....

# industrial PENSTOCKS Itd

Just a small selection of Product photos for your information.



# **Company Profile.**

# industrial PENSTOCKS ltd

All industries today recognise industrial PENSTOCKS Ltd for its attitude toward customer requirements and its open approach to the design and manufacture of its Penstocks and Valves. The company can demonstrate a supply list both Internationally and here in the in the UK.

Since the company's conception industrial PENSTOCKS Ltd has chosen to concentrate on the manufacture and design of Penstocks and associated products in Stainless steel and Cast Iron. These early decisions have laid the foundations on which today's product range was built.

The industrial PENSTOCKS Ltd product range is continually growing and evolving to include larger and higher specification Penstocks. The company can demonstrate the ability to design Penstocks suitable for operating pressures of up to 10m on-off seating.

By combining traditional methods with state of art computer design software and never neglecting the basic principles which the industrial PENSTOCKS Ltd products derive, and coupled with a wealth of local experience, industrial PENSTOCKS Ltd ensure that high quality UK products are manufactured and delivered.

industrial PENSTOCKS Ltd can boast a wealth of collective product design, manufacturing and industry application knowledge. This experience together with products ranging from traditional cast iron construction to tailor made stainless steel means that industrial PENSTOCKS Ltd can supply products for inclusion in all fluid control applications.

All in all, industrial PENSTOCKS Ltd offers high quality SERVICE, PRODUCTS and DESIGN using the wealth of experience and knowledge, which gives customers the best possible solution to any future Penstock or Valve requirement.

Look forward to your enquiry by phone fax or e-mail contact us on

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# **Contents of Catalogue.**

# industrial PENSTOCKS Itd

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# **Penstock Selection.**

# industrial PENSTOCKS ltd

When designing a Penstock it is necessary for a number of factors to be taken into account so to obtain the optimum performance from the finished product. These considerations include:-

1) Pressure, 2) Types of Invert, 3) Mounting types, 4) Method of operation, 5) Stem types

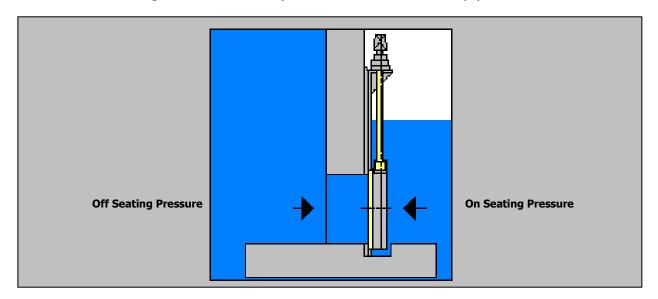
### 1) Pressure.

What pressures are the Penstock going to be subjected to? (refer to diagram for operating directions)

On Seating Pressure
Off Seating Pressure

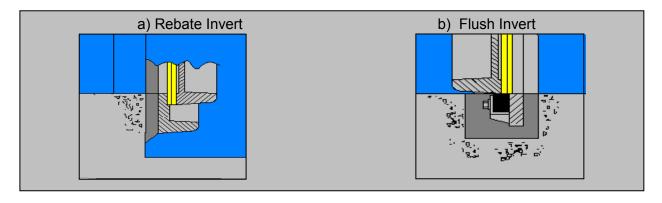
(Fluid forces the penstock onto wall) (Fluid forces penstock away from wall)

On/Off Seating Pressure (Fluid forces can be both ways)



# 2) Types of invert

These fall into two categories the rebate and flush. A rebate invert is used when it is specified as a requirement for invert fixing bolts to be incorporated. Flush inverts offer a smooth passage at the invert and remove any possible debris traps.



# Penstock Selection.

# industrial PENSTOCKS Itd

# 3) Mounting Types

The method of fixing the Penstock will depend upon the design requirements, the main options are as follows:-

Wall Mounting.

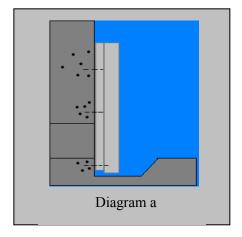
Diagram (a) shows a wall mounting penstock, the Penstock fixed to the wall by means of expanding or resin type anchor bolts.

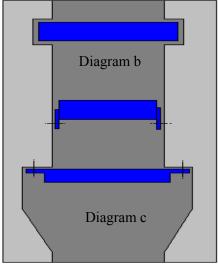
Channel Rebate Mounting.

Diagram (b) shows a channel rebate mounted penstock. The penstock is specifically designed to be mounted in to prepared rebates.

Wall Fixed within Channel.

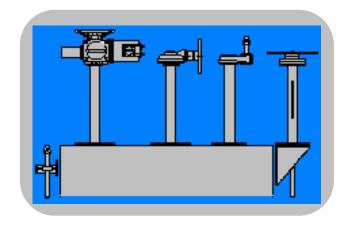
Diagram (c) shows a penstock when it is mounted to the inside of the channel. This method is utilised when a channel does not have rebates for conventional channel rebate mounting or it is pure replacement of exisiting.

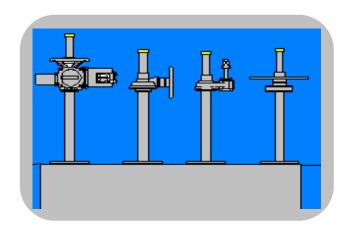




# 4) Operating Methods

Industrial PENSTOCKS is able to offer many modes of operating gear including manual and actuated options. Diagrams (a) and (b) below illustrate some of these options for both rising and non-rising stem applications. These include cap for T key, electric actuator, manual gearbox, and handwheel. Note weir type Penstocks are also available.





# **Penstock Selection.**

# industrial PENSTOCKS ltd

# 5) Stem Types Rising or Non-Rising

When considering the operation of a Penstock the nature of the stem must be specified. This falls into two categories- rising or non-rising. The recommended stem type under BS7775 is rising. If we look at rising stem applications it removes the need to drain locations so to undertake maintenance of the screwed stem. It will provide a usable tolerance by removing any potential dimensional problems against civil works regarding invert to floor levels. The rising stem offers lower torques thus reducing the operator torque and increases the working life of the Product. If however due to restricted headroom then non rising is to be specified.

### Non-Rising Stems.

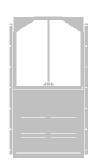
A threaded spindle nut is located in the penstock door. The screwed stem is rotated and works through the nut thus raising or lowering the spindle nut and the door. The screwed portion of the stem is within the penstock frame and is subject to submersion. The thrust for this type of operation is taken directly on the penstock frame.

## Rising Stems.

A threaded spindle nut is located in the operating equipment and is sometimes referred to as **RISING NON-ROTATING TYPE**. The nut is rotated and the screwed stem works through the nut thus raising or lowering the stem and the door. The screwed portion of the stem is generally not subject to submersion and is readily accessible for maintenance and lubrication. The thrust for this type of operation can be taken directly on the penstock frame or remotely to civil works.



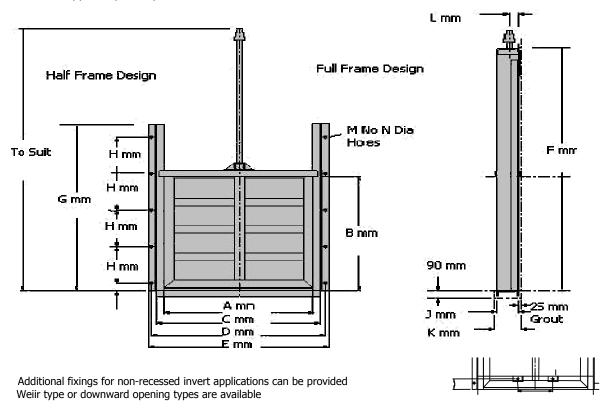




# SG 3100W Penstock.

# industrial PENSTOCKS Itd

**Dimensions:** 5 M ON 4 M OFF SEAT PRESSURE. Fig SG 3100W Wall Mounting Penstock. A heavier duty 10m unit can be supplied details supplied upon request.

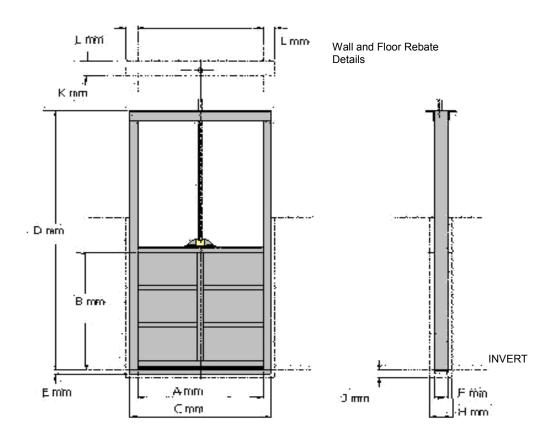


N	M	L	K	J	Н	G	F	E	D	С	В	Α
	6	59			450	750	1154	752	712	652	500	500
15	6	59			550	950	1354	852	812	752	600	600
15	6	59	200	152	650	1050	1554	952	912	852	700	700
	8	64			500	1250	1754	1052	1012	952	800	800
	8	64			565	1350	1954	1152	1112	1052	900	900
	10	74			475	1660	2161	1272	1222	1152	1000	1000
20	10	74			525	1760	2361	1372	1322	1252	1100	1100
20	10	76			575	1860	2562	1472	1422	1352	1200	1200
	12	76	230	178	500	2000	2762	1572	1522	1452	1300	1300
	14	86			450	2160	2362	1672	1622	1552	1400	1400
	14	86			485	3070	3193	1812	1752	1652	1500	1500
25	14	97			515	2500	3393	1912	1852	1752	1600	1600
	16	97	260	203	500	2660	3793	2112	2052	1952	1800	1800
	18	97			490	3080	4193	2312	2252	2152	2000	2000

# SG 3100C Penstock.

# industrial PENSTOCKS Itd

Dimensions: DOOR DEPTH PRESSURE. Fig SG 3100C Channel Mounting Penstock

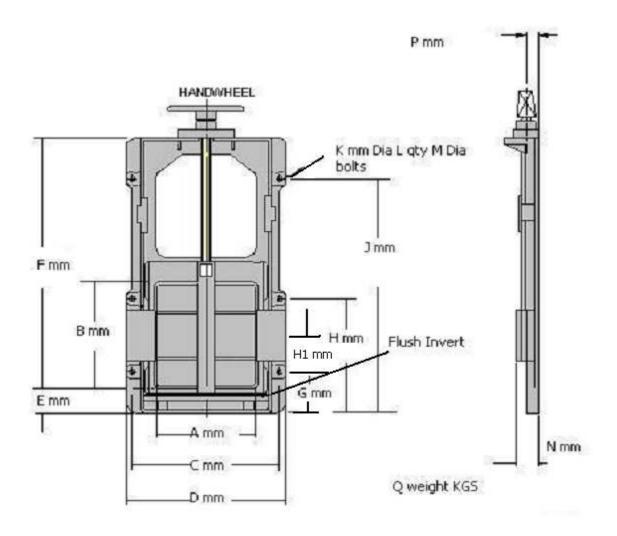


Α	В	С	D	Е	F	G	Н	J	K	L					
500	500	652	1148												
600	600	752	1348												
700	700	852	1548												
800	800	952	1748	76	152	212	200	90	260	100					
900	900	1052	1948												
1000	1000	1152	2148												
1100	1100	1252	2361												
1200	1200	1352	2561												
1300	1300	1452	2761												
1400	1400	1552	2961												
1500	1500	1652	3186												
1600	1600	1752	3386	76	178	238	230	90	290	100					
1800	1800	1952	3786												
2000	2000	2152	4186												

# Fig 108 Cast Iron Penstock.

# industrial PENSTOCKS Itd

Dimensions: 6M ON SEAT 3M OFF SEAT PRESSURE. Fig 108/30 Wall Mounting Penstock



А-В	С	D	Е	F	G	H1	Н	J	K	L	М	N	0	Q
150	300	345	55	399	55	-	215	365	15	6	12	115	67	22
200	350	395	55	520	55	-	235	435	15	6	12	115	67	38
225	375	420	55	549	55	-	255	495	15	6	12	115	67	42
250	400	445	55	629	55	-	420	649	15	6	12	54	65	43
300	450	495	55	729	55	-	440	694	15	6	12	54	65	54
400	565	619	75	953	75	-	485	995	15	6	12	130	97	78
450	615	670	75	1055	75	230	230	1085	15	8	12	130	97	110
500	665	720	75	1155	75	225	225	1130	15	8	12	135	97	128
600	765	820	75	1355	75	305	305	1390	15	8	12	140	102	149

# PENSTOCK Material Specifications

# industrial PENSTOCKS Itd

All our Penstocks can be manufactured in the following trim and with the coating systems

Penstock Component	Material	British Standard
Frames	Mild Steel	BS4360 Gr43A
	Stainless Steel	BS970 Gr304/Gr316
	Cast Iron	BS1452 Gr220
Doors & Wedges	HDPE Solid plastic	
	Stainless Steel	BS970 Gr304/316
	Cast Iron	BS1452 Gr220
Operating Stems	Stainless Steel	BS970 Gr316
Thrust Nuts & Drive Sleeves	Stainless Steel	BS970 Gr316
	Gunmetal	BS1400 GrLG2
	Aluminium Bronze	BS1400 AB1
	High Tensile Brass	BS1400 HTB1
Thrust Housings, Caps	Stainless Steel	BS970 Gr304/316
	Cast Iron	BS1452 Gr220
Handwheels	Cast Iron	BS1452 Gr220
	Cast Aluminium	BS1490
Assembly Fasteners	Stainless Steel	BS970 Gr A2, A4
Frame Gate Seal	Phosphor Bronze	BS2874 PB102
Flush Invert	EPDM	ASTM2000
Fixing Bolts	Stainless Steel	BS970 Gr A2, A4

### **Painting Guidelines.**

No consideration is required for the paint coating of the SG range of penstocks, one only consideration one has is to think of the floor pillar and coping brackets, as all doors and frames are stainless steel throughout and therefore require no further treatment to their natural finish. (Aesthetic finishes can be applied when required)

It is normal practice to either galvanise or flame zinc spray mild steel to achieve a good base protection prior to epoxy coating.

Where epoxy is specified it is preferable to blast clean, zinc spray, etch prime and then apply the epoxy coating to the desired DFT.

For potable water applications it is wise to seek advice from the DWI for approved coatings or follow, the customers specification which will normally state the requirements for DFT, number of coats etc.

Where no particular specifications are evident, the following guidelines can be applied:

Mild Steel:

Sewage - Blast clean, HD galvanise to BS729.

Blast clean, zinc spray, etch prime, coal tar epoxy to 150 microns DFT.

Potable - Blast clean, zinc spray, etch prime, bitumen to 150 microns DFT.

Blast cleaning should be to Swedish Standard SA2.5 Zinc spraying to Zn4 - 100 microns nominal, 75 microns minimum

# industrial PENSTOCKS Itd

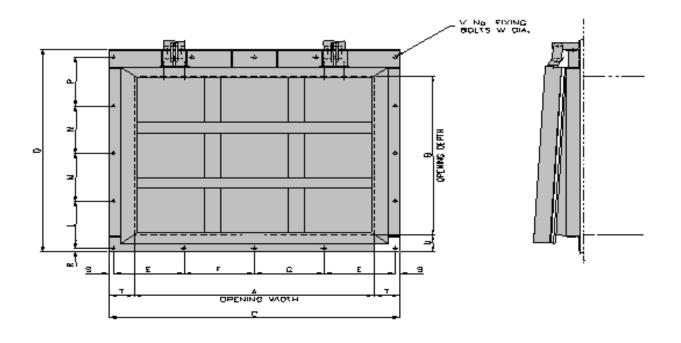
### **OVERVIEW**

Industrial PENSTOCKS Itd manufacture a comprehensive range of Flap Valves The valves are supplied with either square or rectangular aperture's, with single or as an option double door's. The Flap valve is designed for flow of surface water drainage preventing reverse flow conditions stopping flood damage.

### CONSTRUCTION

**Frame, Door, Hinge Brackets, and Hinge Links**. Stainless steel to BS970 gr 304/316, impact resistant and designed to suit customers pressure specifications. (Alternative tropical hard woods) **Seating Faces.** EPDM.

**Hinge Pins.** Stainless steel to BS970 gr 304. StSt 316 /phosphor bronze to BS2874 PB102.



A-B	С	D	E	F	G	L	M	N	Р	R	S	Т	U	V	W
500	716	822	328	-	-	358	-	-	358	30	30	108	108	8	15
600	816	922	378	-	-	408	-	-	408	30	30	108	108	8	15
700	916	1022	428	-	-	458	-	-	458	30	30	108	108	8	15
800	1016	1122	478	-	-	508	-	-	508	30	30	108	108	8	15
900	1116	1222	528	-	-	558	-	-	558	30	30	108	108	8	15
1000	1270	1352	600	-	-	620	-	-	620	35	35	135	135	8	20
1100	1370	1452	433	434	-	670	-	-	670	35	35	135	135	10	20
1200	1470	1552	467	466	-	480	-	480	480	35	35	135	135	12	20
1300	1570	1652	500	500	-	513	-	513	513	35	35	135	135	12	20
1400	1670	1752	533	534	-	547	-	547	547	35	35	135	135	12	20
1500	1770	1852	567	566	-	580	-	580	580	35	35	135	135	12	20
1600	1920	1977	617	616	-	622	-	622	622	35	35	160	160	12	25
1800	2120	2177	513	512	512	517	517	516	516	35	35	160	160	16	25
2000	2320	2377	563	562	562	567	567	566	566	35	35	160	160	16	25

# industrial PENSTOCKS Itd

# **DI 812 Flap Valve**

### **CONSTRUCTION**

Frame - Door - Hinge / Door Brackets Manufactured in Ductile Iron

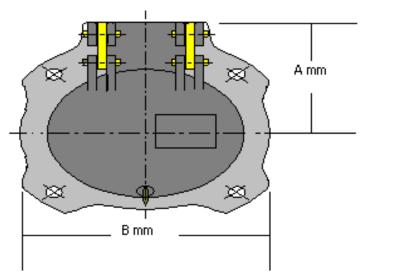
**Hinge Links** - Manufactured in Phosphor bronze

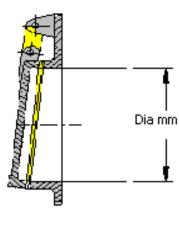
**Hinge Pins** - Stainless steel to BS 970 Gr 316

**Seating Faces** - Manufactured in phosphor bronze, machined to close tolerances.

Size Range - 80mm up to 1000mm Dia

**Coating** - Frame and door coated with high build epoxy as standard. Suited for the most aggressive duties





Dia mm	B mm	A mm	
80mm	200mm	135mm	
100mm	220mm	145mm	
150mm	285mm	175mm	
200mm	340mm	195mm	
225mm	370mm	210mm	
250mm	400mm	220mm	
300mm	455mm	240mm	
350mm	520mm	322mm	
375mm	550mm	335mm	
400mm	580mm	370mm	
450mm	640mm	440mm	
500mm	715mm	465mm	
525mm	740mm	478mm	
600mm	840mm	515mm	
700mm	910mm	600mm	
750mm	970mm	625mm	
800mm	1025mm	650mm	
900mm	1125mm	700mm	
1000mm	1255mm	750mm	

# Fig 938 Disc Flushing Valve.

# industrial PENSTOCKS Itd

### **OVERVIEW**

Industrial PENSTOCKS Itd manufacture a range of Disc Flushing Valves which will be designed to suit a variety of applications and industries from industrial to the municipal water and sewage

### **CONSTRUCTION**

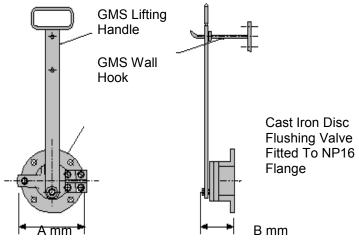
**Body, Wedge and Disc** - Cast iron to BS1452 Gr 220. Flange or wall mounting applications. – coated with a high build bitumen solution. The valve as standard comes ready for wall or flange mounting. The body has a reduced quantity of bolt holes conforming to the PCD and spacing of BS4504 NP16. **Seating Faces** - Gun-Metal to BS1400 LG2, securely fixed to body and door.

**Lifting Handle Wall Hook** - Manufactured in mild steel to BS970 Gr EN3A with locating holes for intermediate door positions. Alternative in stainless steel.

Range - Manufactured in sizes from 80mm through to 300mm. It is not recommended that sizes larger

are used due to H+S.

Dia	A mm	Bmm
80	200	76
100	220	76
150	285	86
225	380	86
300	455	86



# Fig 992 Sludge Valve

### CONSTRUCTION

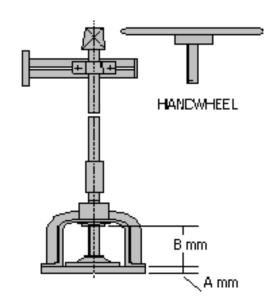
**Body Disc Bridge** - Manufactured in cast iron to BS1452 Gr 220. Designed for flange mounting applications. Machined recess for sealing face. Coated with a high build bitumen solution

**Seating Faces** - Gun-Metal to BS1400 LG2, securely fixed to body and door and having a bevelled seating face for accurate sealing.

**Operating Nut** - Manufatured in bronze. Securely fixed to bridge.

**Operating Stem** - Rising configuration as standard, manufactured in stainless steel to BS970 Gr 303.

Dia	A mm	B mm
100	20	95
150	20	95
200	20	95
300	25	95
500	30	95



# industrial PENSTOCKS Itd

### **OVERVIEW**

Industrial PENSTOCKS ltd manufacture a range of Floating and Decanting Arms with options on the Floating arms for single or twin float, scum boxes, constant discharge single or twin orifice plates.

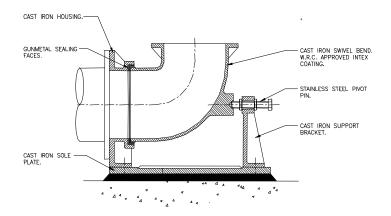
### **CONSTRUCTION**

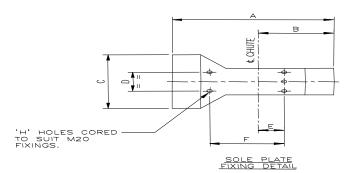
**Swivel Bend Body, Swivel Bend, Swivel Bend Bracket and Sole Plate -** Manufactured in cast iron to BS1452 Gr 220 with outlet flange drilled to BS4504 NP16.

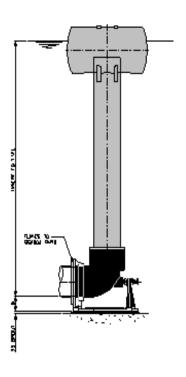
Swivel Bend Seals - Manufactured from Gun-Metal to BS1400 LG2.

**Float -** manufactured in mild steel and galvanised to BS729, complete with float plugs to facilitate accurate setting of float level.

Arm - Manufactured in st st 304/316







Dia	Α	В	С	D	E	F	Н
100	370	230	240	180	65	135	3
150	385	200	350	290	80	170	3
200	575	320	340	140	105	300	3
250	650	345	400	140	105	300	4
300	635	370	410	140	60	300	4

# Fig 674 Hydrostatic Valve.

# industrial PENSTOCKS Itd

Industrial PENSTOCKS ltd manufacture a range of Hydrostatic Valves offering direct lift bellmouth outlet for both manual and electric operation. The Fig 674 Hydrostatic valve is designed to control flow of piped media into and out of tanks, in particular regulating flows to filter beds and desludging of humus tanks and activated sludge.

# **Material Specification.**

**Base Cylinder -**Manufactured in ductile iron to EN545. Length calculated according to customers levels.

**Bellmouth outlet and Bridge-** Manufactured in cast iron to BS1452 Gr 220, secured to stem with stainless steel pin.

Sliding Tube-Manufactured from PVC to BS3505 attached to outlet to provide level adjustment.

**Gland Sealing Assembly-**Manufactured in cast iron to BS1452 Gr 220 with graphite impregnated greasy hemp gland packing to BS4371.

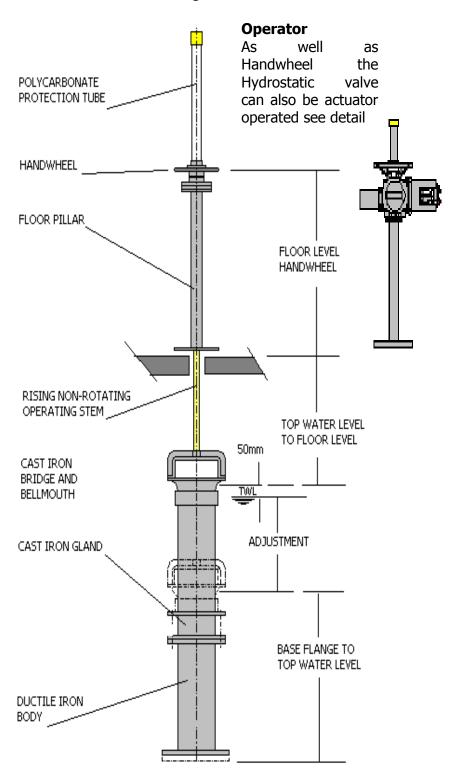
**Assembly Fasteners**-Stainless steel.

**Operating Stem-**Rising NON ROTATING stem in stainless steel.

**Pillar-** Galvanized mild steel St St 304-316 or Cast Iron

### **Size Range**

100mm, 150mm 200mm, 250mm 300mm, 400mm 450mm, 500mm

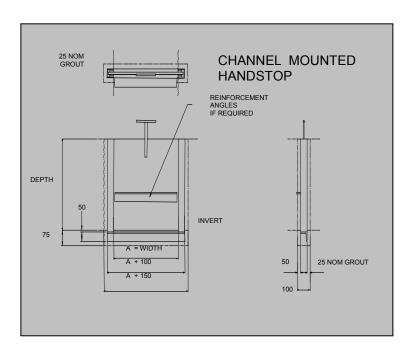


# Fig 710 Handstops.

# industrial PENSTOCKS Itd

### **OVERVIEW**

Industrial PENSTOCKS ltd manufacture a comprehensive range of SG Handstops, in square, rectangular and semi-circular aperture's, together with a wide range of trim levels and designs to suit a wide variety of applications and industries. The Handstop is available in sizes up to 900mm, over this size Penstocks or Stop logs are recommended.



### **CONSTRUCTION**

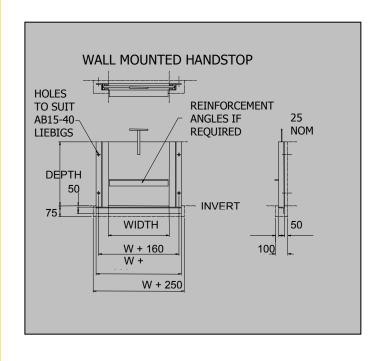
**Frame -** Welded Mild Steel construction to BS 4360 43A. Coating by means of galvanising to Swedish Standard SA2.5 or Zinc sprayd, etch primed and epoxy painted.

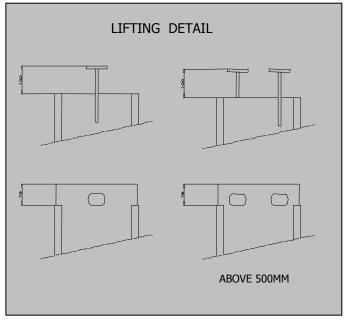
**Frame Seals** - Parallel resilient EPDM seals bonded to frame sides, with neoprene flush invert seal to invert section.

**Door** - Solid PVC construction complete with staienless steel reinforcement angles if required.

**Lifting Handles -** There is a choice between slotted lifting holes

within the UPVC door or lifting handles manufactured in Gr 304 stainless steel bolted through the door.

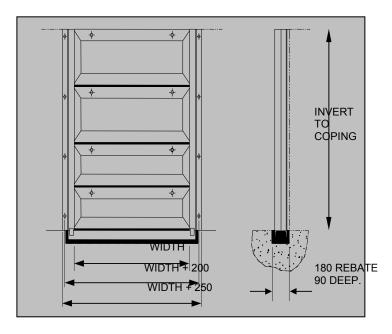




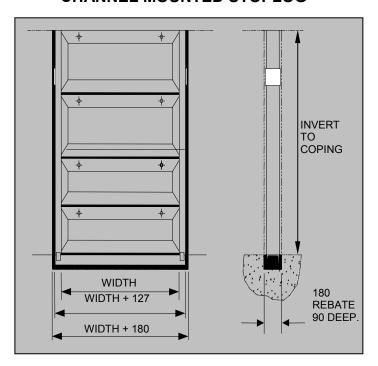
# Fig 6100 Stoplogs.

# industrial PENSTOCKS Itd

### WALL MOUNTED STOPLOG



### **CHANNEL MOUNTED STOPLOG**



### Lifting Arrangements.

A lifting pole system is usually adequate for raising and lowering smaller stoplogs, Due to SWL it is recommended that a lifting beam be used with a davit arm located near to the stoplog.

### **OVERVIEW**

Industrial **PENSTOCKS** ltd manufacture a range of SG square Stoplogs in and rectangular aperture's which are suitable for a wide variety of applications and industries. The product can be fitted in both new and old applications. The Fig 6100 and Channel Mounting Stoplogs are used mainly for weiring and isolation duties. Widely utilised in the isolation of screens other key areas maintenance within the works.

### **CONSTRUCTION**

**Stoplog Frame -** Manufactured in mild steel to BS970 Pt1 Gr43a with parallel resilient seals bonded to frame sides and neoprene invert seal.

**Coating -** choice of Galvanized or paint system Galvanizing to Swedish standard SA2.5

Paint System, Blast clean, zinc spray, etch primer and epoxy top coat.

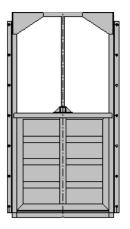
Stainless steel frames can be supplied on request, to BS970 Pt1 gr 304 /316.

**Stoplog** - Manufactured in stainless steel to BS970 Pt1 Gr 304/316 with stainless steel lifting pins and mechanically fixed EPDM interlog seals. Aluminium; HDPE solid plastic and tropical hard woods can be supplied on request.

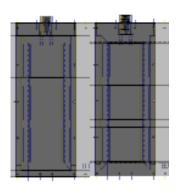
# **Product Range.**

# industrial PENSTOCKS ltd

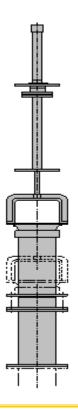
SG 3100



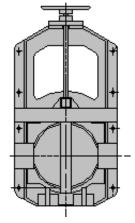
Flap Valve SG 5100



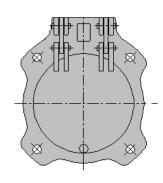
Hydrostatic Valve fig 674



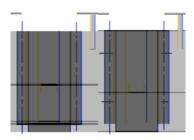
Penstock fig 108



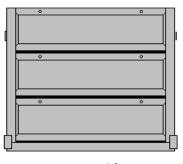
Flap Valve fig 812



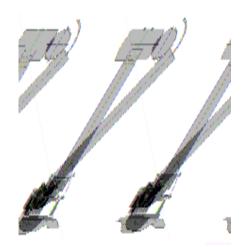
Handstops fig 710.



Stop logs fig SG 6100



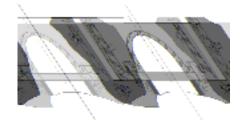
Floating Arms fig 934



Sludge Valves



Upward pressure relief valve



Self contained decanting valve

