



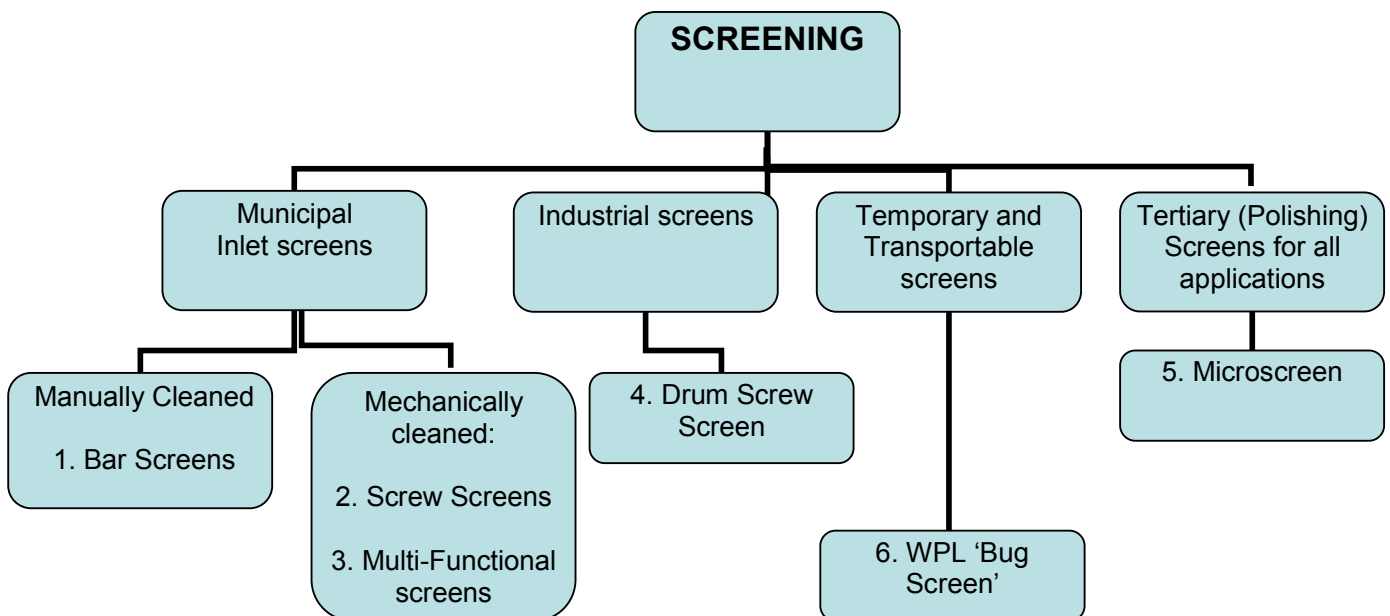
INLET SCREEN GUIDE

Objectives of a screen:

- Prevent damage to downstream processes
- Improve efficiency of downstream processes
- Reduce contamination to watercourses
- Elimination of material that inhibit recycling

Considerations for selection of a Screen:

- Flow – average and variation
- Type of effluent – Storm, Industrial, Municipal
- Sewer type – long sewers result in heavy flushes of rags
- Degree of screenings removal required – screen aperture
- Type of cleaning required – Manual, Automatic
- Availability of power and washwater
- Health and Safety – screenings contain pathogens and attract insects
- Odour potential
- Handling and transport requirements
- Disposal options



Types of screens:

Screen type	Typical spacing mm	Process performance Lit/sec	Approx Dimensions mm	Process Application	Screen medium	Industry application	Key Features
1. Bar screens	10 – 60 mm	150 – 1200	Various Made for specific applications	Coarse screening only	304 Stainless Steel Bars	All applications where fine/medium screens need to be protected	No mechanical /moving parts Manual or mechanical cleaning No electricity supply needed Available in a pre-fabricated box
2. Screw Screen Also available for deeper inverts	3 mm 6 mm 12 mm	7.0 – 45.0 l/s	CS OR CSP Series Channel Depth 600 - 1500 Channel Width: 200 - 800	Preliminary Screening	304 Stainless Steel Perforated plate and screw	Smaller Municipal WwTW	Below ground channel OR Above ground skid mounted SMALL FOOTPRINT Shallow canal and deeper invert models available Dewatering/Compactor optional Automatic cleaning with 2 yr brush life Low maintenance
3. Multi-Functional Screens	30 mm (coarse) Choice of: 3mm 6mm (Fine screen)	5 – 35 l/s Special 'High Volume' models available up to 160 l/s	MZ Series Length 3500 - 6000 mm Height 2150 - 3250 mm Width 740 - 3450 mm	INTEGRAL coarse and fine screening	304 Stainless Steel	Municipal Industrial	Below ground channel OR Above ground skid mounted Incorporates coarse and fine screen Incorporates integrated by-pass Gravity or pumped inlet Can deal with high levels of grease Dewatering/Compactor optional
4. Drum screw screen	0.10 mm 0.25 mm 0.50 mm 0.75 mm 1.00 mm 2.00 mm 3.00 mm	20 – 360 l/s	FBS series Drum Dia 800 - 2000 Width 1000 - 2500	Primary or Tertiary	304 Stainless Steel Mesh	Agricultural Fish Processing Paper and pulp Food and drink	Below ground Channel OR Above ground skid mounted Potentially High flow Robust SS mesh Integral Backwash screenings tank High quality effluent
5. Microscreens	0.1 mm 0.2 mm 0.3 mm 0.4 mm 0.6 mm 0.8 mm 1.0 mm	90 – 7200 l/s	BMF series Depth 800 - 1600 Height 1200 - 400 Width: 550 - 2000	Tertiary	Polymide mesh cloth	Tertiary treatment: Municipal Plants Paper and pulp Fish farms Zoos Textile industry	Below ground Channel OR Above ground skid mounted Temporary or permanent installations Pumped or Gravity flows Easy maintenance No water supply needed Low electricity usage
6. Bug Screen	3 mm 6 mm	10 - 56 l/s	Length 1300 – 1420 Width 680 – 2160 Height Approx 1700	Preliminary screening above ground	304 stainless and plastic	Municipal plants Industrial applications Temporary and Transportable applications	Automatic cleaning Large construction tolerances Low cost installation Low operational costs Designed for above ground installation Transportable unit designed for temporary installations Reliable and durable Storm overflow by-pass incorporated
Additional Equipment	Screen Press/dewatering equipment. Transportation conveyors. Sluice gates. Thermal insulation.						



Bar Screens

A Simple screen inclined at an angle to the flow to remove larger objects that may cause damage to downstream processes.

Used to protect pumps, valves and pipelines from risk of clogging with larger items.

Screens can be configured for manual or automatic cleaning.

These screens can be installed in preformed concrete channels, or come packaged in a standard stainless steel pre-fabricated box.

Typically used at the head works of small to medium sized municipal works for sewage and storm flows. Can be used as standby screening in bypass channels during high flow periods.



Advantages:

- Inexpensive basic screen
- Easy to install
- Small footprint
- Made to suit most channel dimensions

Technical Details:

10 – 60 mm bar spacing in one dimension
150 – 1200 l/s flow, depending on bar spacing and width



Screw Screens

Screw screens are a good general purpose fine screen, designed for small wastewater treatment plants.

The screen comes complete with a stainless steel tank which contains all the mechanical equipment.

The screen can be supplied for below ground installation in a concrete channel, or above ground on a skid mounted platform. This latter configuration is ideal for use as transportable emergency equipment.



Maintenance is simplified by a unique pivoting system that allows the unit to be raised out of the housing or channel for cleaning. The outlet pipe can be rotated through 300 degrees to suit the site configuration with regards to screen storage. The unit can be fitted with optional dewatering and compaction equipment.

Advantages:

- Concrete Channel or Stainless steel tank
- Optional skid mounting for transportation between sites
- Adjustable screen rod dimensions
- Screens can be supplied for deep inverts
- Low washwater and power requirements

Technical Details:

Screen reference	Channel width (mm)	Channel depth (mm)	Max flow (l/s) 3mm mesh	Max flow (l/s) 6mm mesh	Max flow (l/s) 12mm mesh
400 CS 600	400	600	20	30	40
500 CS 700	500	700	30	40	50
600 CS 800	600	800	40	50	60
800 CS 1000	800	1000	60	70	80
CSP range	From 200mm	1500mm max	Dependant on Channel area – guide as above		



Multi-Purpose Coarse and Fine Inlet Screens

The compact 'Multifunctional' screen provides the ideal solution for sites that require coarse and fine screens, and provides one integral unit for both these applications.

The unit incorporates an integral by-pass, screen compactor and optional screenings washing.

Wastewater flows either by gravity or pump feed into a sedimentation unit via a coarse screen, where screenings are removed by screw conveyor, washed and pressed and delivered to a storage bin supplied by others. Wastewater in the screen is passed onto the fine screen and material trapped here are again conveyed by a screw screen, washed and pressed and into a storage bin as before. Screened effluent flows by gravity to the outlet.

The screw conveyor comes complete with nozzles for washing and a press for dewatering. The screens are cleaned by means of a fresh water supply delivered directly to the unit and stored in a container which comes complete with a pump set.



Advantages:

- Small footprint
- Self cleaning integral coarse and fine screen saves costs on providing two units
- Integral screenings dewatering, compaction and washing unit
- Suitable for wastes with high grease content – automated removal of grease from incoming flow
- Gravity or pumped flow
- Above ground modules saving money on Civils installation – units are mounted on a concrete slab

Technical Details:

Screen Type	Indicative dimensions (mm) H x l x W	Typical flow (l/s)	Consumed power (kw)	Supply water consumption (l/s)
MZ1 Fine screen only	2200 x 3460 x 740	10 – 30	2.1 - 3.5	0.08 – 0.12
MZ3 Fine and Coarse screen	3232 x 6018 x 3423	15	4.6	0.15

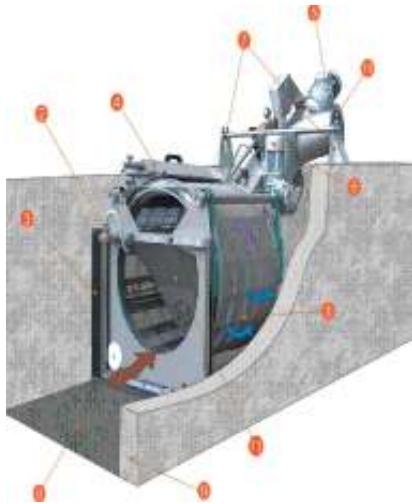


Drum Screw Screens

The rotary drum screen is designed for separation, dewatering and compaction of screenings from industrial and municipal wastewater effluent, and particularly for water containing viscose and fibrous elements. This screen can also be used to reduce BOD and TSS to replace/enhance primary settlement.

Flow enters the drum which is mounted horizontally, and screenings are retained on the inside. Screened water flows through the mesh, whilst screenings are retained on the inside of the drum. Horizontal movement of the drum concentrates the screenings to a channel, which via a screw feed, transports the screenings to compactor. The screen is periodically cleaned with screened water, held in an integral holding tank and utilising a backwash pump.

Typical flow rates 30 - 800 l/s. Stainless steel and polyester screen cloths. 0.25 – 5 mm mesh sizes.



Advantages:

- Stainless steel construction, including sieve
- Self cleaning with backwash pump
- Variety of applications
- Suitable for viscose and fibrous screening
- Screening, dewatering and compaction in the same unit
- Can be skid mounted for portable applications

Technical Details:

Screen Reference	Drum diameter [mm]	Canal width [mm]	Max Flow l/s (3 mm mesh)
8_FBS	800	1000	65
12_FBS	1200	1500	120
16_FBS	1600	2000	240
20_FBS	2000	2500	360



Microscreens

The WPL Microscreen is the perfect solution for tertiary treatment of effluent containing excess suspended solids.

Microscreens are designed to receive pumped or gravity flows and the unique design of the drum filter maximises the surface area of the filtration cloth to achieve high removal efficiency with low operating costs.

Used on Municipal Wastewater treatment plants as permanent or temporary additions to existing process units, or used as part of the design to remove solids associated with chemical dosing.

WPL currently has a fleet of skidded mounted hire units that can be deployed at short notice to plants that are in danger of breaching effluent consent standards. There is no 'seeding' time required, and these units can be hired for short or long term periods, with an option to purchase at the end of the hire period.

The complete range of WPL Microscreens can handle flows from 3 – 200 l/s and have been permanently installed in more than 40 Water PLC applications throughout the UK.



Advantages:

- 50-80% solids removal with very low power consumption
- Temporary or permanent solutions
- Portable with skid mounted units
- No water supply needed
- The simple construction of the filters allows for quick visual inspection and easy maintenance
- The filters are made of 300 series stainless steel to resist corrosion even in harsh environments
- Very low headloss, typically 250 - 400mm with gravity fed units
- Gravity flow or pumped flows can be accommodated
- Exceptionally small footprint

Technical Details:

Indicative flows assuming 40 mg/l Solids concentration			
Model Reference	60 Micron Cloth	40 Micron Cloth	20 Micron Cloth
5 BMF 5	7	4	2
5 BMF 10	20	13	5
10 BMF 10	50	38	17
10 BMF 20	100	77	35
15 BMF 30	Speak with technical staff for further information		



‘Bug Screens’

The WPL above ground circular bar screen has been developed as a mobile/temporary unit for pre-treatment of municipal and other kinds of wastewater. It removes fine solid impurities larger than 3 or 6 mm, depending on the chosen screen aperture – see below for flow rates. It also removes grit up to 5 cm, sand larger than 3 or 6 mm, municipal waste, grease, fibres, textiles etc. Taking account of the economic and legislative drivers, we are able to provide the unit in either a basic configuration, or with optional additional functions and modifications for different flows.

The unit is equipped with an integrated fine screen bypass, which mitigates the risk associated with power failure or other damage on the fine screen. The unit is further equipped with an easy to open laminated cover, fitted with a ‘deadman switch’ cut-out arrangement for safety.



Advantages:

- 304 Stainless steel and plastic components in tank
- Low installation costs – above ground construction
- Durable – and suitable for transportation. Can be skid mounted
- Fine mesh bypass - Storm overflow. Prevents overloading
- Compact to suit most site applications
- Can be controlled by PLC

Technical Details:

3 or 6 mm bar spacing in one dimension

10 – 56 l/s flow, depending on bar spacing and width and unit size

slot width of sieve (mm)		length L mm	width b mm	inlet pipe Ø mm	outlet pipe Ø mm	weight without water kg	weight with water kg
3	6						
capacity Q (l/s)							
10	14	1 300	680	125	200	170	203
20	28	1 340	1 200	150	250	293	332
30	42	1 380	1 680	200	300	440	498
40	56	1 420	2 160	250	350	608	682



Transport and Disposal

Mechanically cleaned Step/Drum/Screw screens come with a compactor which discharges via a (rotating) discharge arm into a skip by others. This reduces water content by 50% and volume by 75%.

Disposal by haulage to landfill, burial on site, incineration or maceration for return to head of works.

The WPL screens are designed for the complete management of influent screenings, ragging and other solid detritus arising from municipal wastewater. The units consist of a perforated steel screen lattice located in the base of a prefabricated steel channel, which is designed to retain solid and suspended matter. Screenings are spread out over the surface of the screen whilst screened flows pass through the channel for further treatment by other process units. Screened substances are washed with clean backwash water (sourced by user) and washed screenings are then compacted and dewatered further up the unit and screened substances are further squeezed up the screen chute and out of the exit pipe.

The screens can be connected to mains water for press backwash water where legislation permits, otherwise it is possible to substitute this mechanism with final effluent from the wastewater treatment works through a booster pump system. The minimum pressure required is 0.3 MPa.