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

TRAVELING
BAND SCREENS

FACTS

- Capacities up to **60,000 m³/h**
- Band width: **3.0 m** considered standard for through flow screens and approx. **1.8 m** considered the standard for dual flow screen
- Specific dimension on request up to **5.0 m**
- Mesh sizes from **0.5 x 0.5 mm** to **10 x 10 mm**
- Mounting depth up to **20,000 mm**

TRAVELING BAND SCREENS FINE SCREENING FOR WATER INTAKES

Today the scarcity of fresh water resources leads to an ever increasing number of projects which focus on obtaining drinking water as well as water for other uses through the treatment of seawater. Parallel to this development there is an increase in the use of traveling band screens which represent the most suitable alternatives for the water intake structures required in such high flow projects.

Traveling band screens are typically installed in an intake screening system downstream from the trash rakes or coarse bar screens and upstream of the circulating water pumps. They protect the downstream components in the water intake system.

As Sismat Uluslararası, we have vast experience and expertise of many years in sea water treatment applications in terms of production techniques with duplex stainless steel, the use of plastic derivative (non-metallic) materials and cathodic protection practices.

FEATURES AND BENEFITS OF SISMAT ULUSLARARASI TRAVELING BAND SCREENS:

- Heavy duty, durable design
- Individually engineered to minimize the capital cost of the intake
- Framed design reducing civil work and installation costs
- Low maintenance costs
- High screening efficiency
- Efficient debris removal
- Protects downstream components
- No debris carry over

APPLICATIONS:

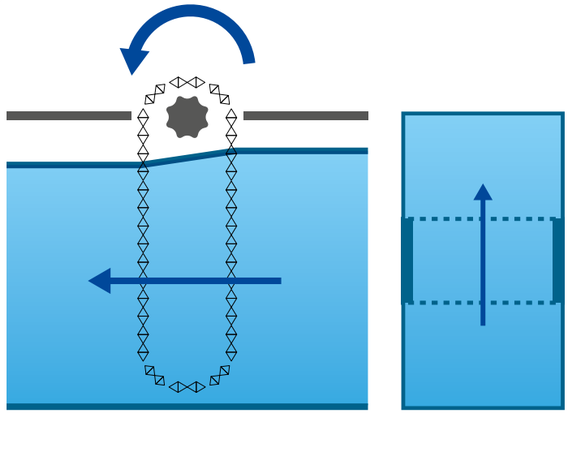
- Desalination plants
- Water intakes for nuclear, thermal and power plants
- Cooling water intakes
- Refineries
- Water treatment plants
- Wastewater treatment plants
- Iron and steel factories
- Sugar factories
- Other industries requiring screened process water

TYPES OF TRAVELLING BAND SCREENS

There are three types of travelling band screens based on flow patterns which are external to internal dual-flow, internal to external dual-flow (center-flow), or through flow.

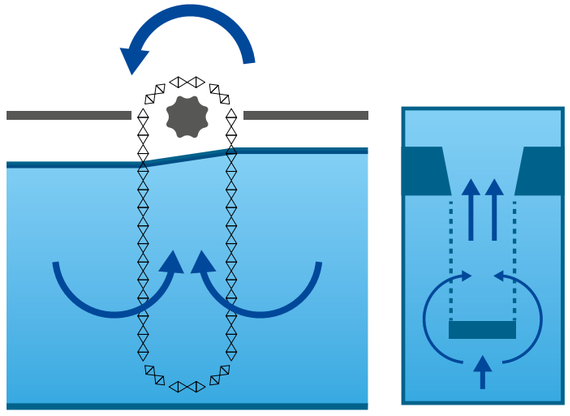
1. THROUGH FLOW TRAVELING BAND SCREENS

In through flow traveling band screens, mesh is placed perpendicular to the flow direction and the difference from other types is that screening is performed only on one side. The screening takes place on the front side of the mesh. It does not require a special civil construction. But since the screening is performed on one side only, the band width to meet the capacity is twice the width of other types. The debris which cannot be discharged into the discharge chute might be carried over to the screened water section. There might be sealing problems compared to the other flow pattern types of traveling band screens. For your existing through flow installations Sismat Uluslararası can offer a through flow to dual flow conversion allowing the benefits of a Dual Flow traveling band screen without modification to your existing civil structure.



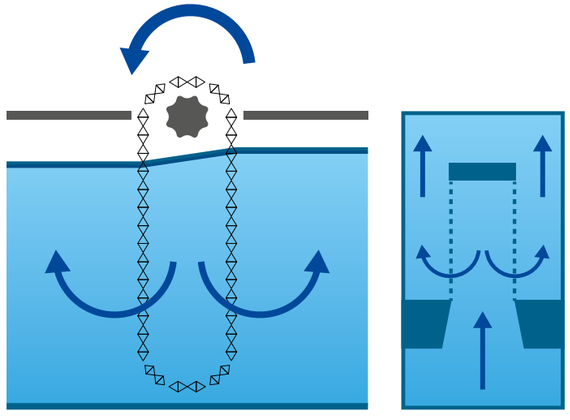
2. DUAL FLOW TRAVELING BAND SCREENS

These screens are installed parallel to the flow. Screening takes place as the raw water enters through the outer surface of the mesh. The screened water is collected in the inner part of the screen. The debris, on the other hand, is collected on the outer surface of the mesh. The debris is removed through back washing by the spray water system. The dual flow traveling band screens allow a flow twice of a through flow traveling band screen with the same specifications like velocity, mesh opening, etc. Sealing is more efficient than through flow traveling band screens. The debris always stays on the upstream surface of the screen both on ascending and descending panels. Special civil construction is required for installation.



3. CENTRAL FLOW TRAVELING BAND SCREENS

These screens are also installed parallel to the flow. Their difference from the dual flow travel band screens is that the raw water flows into the center of the screen frame and then out through the mesh panels to the clean side of the screen. As the debris is collected on the mesh, the screened water is collected outside. This flow pattern prevents debris carry over and is more commonly supplied as a “frameless” design.



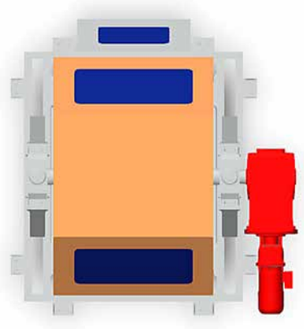
TRAVELING BAND SCREEN DESIGN AND SELECTION

Sismat Uluslararası Traveling Band Screens are designed to perform with minimum maintenance under different operating conditions. They can be used in rivers, reservoirs, lakes or sea and under different operational circumstances like high flow fluctuations, debris loading, water depths and salinity.

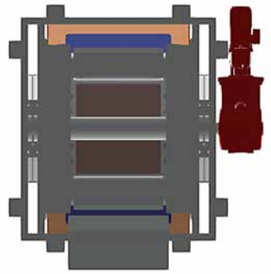
Size selection of traveling band screens is specified on the basis of several factors which are unique to each application. These factors are:

- Maximum and average flow rate (Q, m3/h)
- Maximum, minimum and average water levels (low water depth, LWD, mm)
- Number of screens (piece)
- Type of application
- Mesh opening size (OA,%) (refer to below table and select OA % acc. to design mesh opening)
- Velocity through mesh (m/sec, preferred 0.3-0.6 m/s)
- Effective band width (W, mm)
- Starting and operating head loss requirements
- Constant (k, 396 for through flow and 740 for dual flow screens)

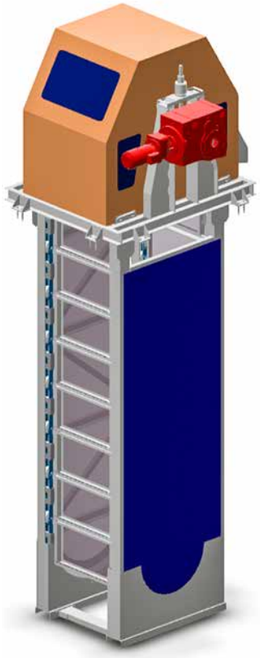
W = Q / (LWD . OA% . V . k)

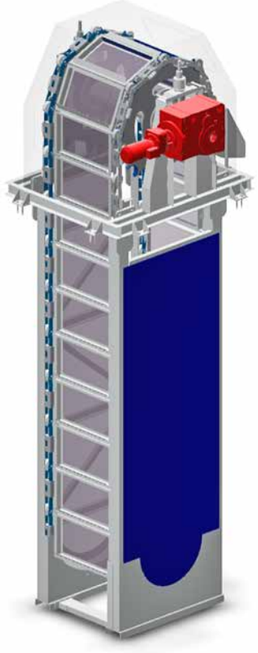


Top view



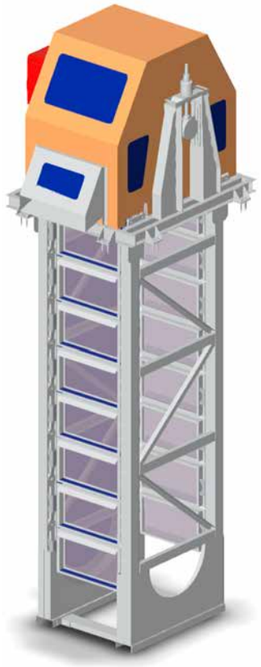
Bottom view





Front view

with cover without cover



Back view

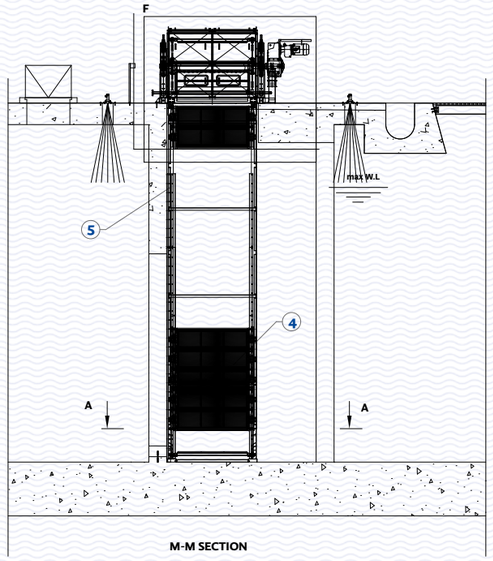
with cover without cover

Table for standard values of wire diameter and mesh opening for steel filter and wire mesh (DIN4189)

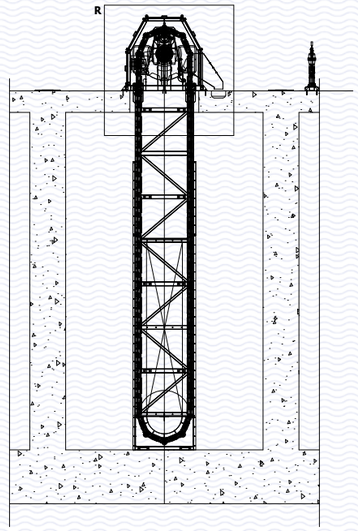
Mesh opening (mm)	Wire diameter (mm)	Open area (%)
0.50	0.20	51
0.50	0.25	44
0.50	0.32	37
0.63	0.22	56
0.63	0.28	48
0.63	0.40	37
0.71	0.45	37
0.80	0.25	58
0.80	0.32	51
0.80	0.50	38
1.00	0.28	61
1.00	0.36	54
1.00	0.56	41
1.25	0.32	63
1.25	0.40	57

Mesh opening (mm)	Wire diameter (mm)	Open area (%)
1.25	0.63	44
1.40	0.71	44
1.60	0.36	67
1.60	0.50	63
1.60	0.80	44
2.00	0.40	69
2.00	0.56	61
2.00	0.90	48
2.50	0.50	69
2.50	0.71	61
2.50	1.00	51
2.80	1.12	51
3.15	0.56	72
3.15	0.80	64
3.15	1.25	51

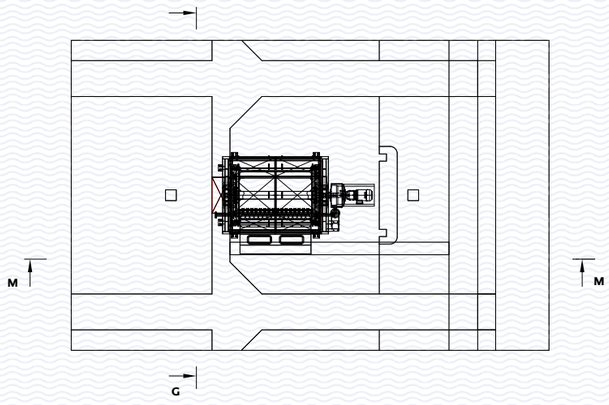
Typical Traveling Band Screen & Components

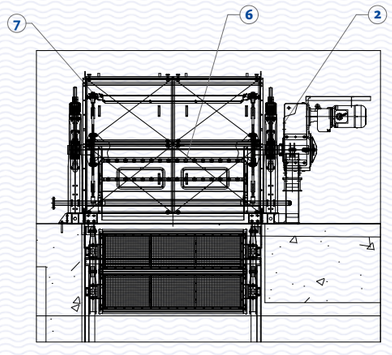


M-M SECTION

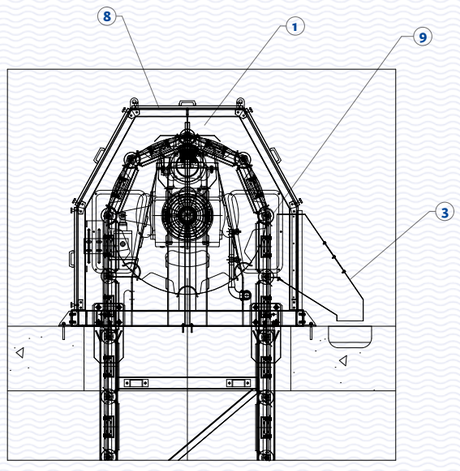


G-G SECTION





DETAIL F / S:1/350



DETAIL R - S:1/200

Typical drawings are for information only.

OUR TRAVELING BAND SCREEN COMPONENTS

	Traveling Band Screen Components	Materials Available
1	Frame	Carbon steel or stainless steel grade, AISI304, AISI304L, AISI316, AISI316L, AISI316Ti, DUPLEX or SUPER DUPLEX
2	Drive unit	-according to norm of manufacturer
3	Discharge chute	Carbon steel or stainless steel grade, AISI304, AISI304L, AISI316, AISI316L, AISI316Ti, DUPLEX or SUPER DUPLEX or GRP
4	Screen mesh	Carbon steel or stainless steel grade, AISI304, AISI304L, AISI316, AISI316L, AISI316Ti, DUPLEX or SUPER DUPLEX
5	Sealing	EPDM ; Silicone Rubber
6	Washing system	Carbon steel or stainless steel grade, AISI304, AISI304L, AISI316, AISI316L, AISI316Ti, DUPLEX or SUPER DUPLEX
7	Fastening materials	A2, A4 , DUPLEX or SUPER DUPLEX
8	Top covering	Carbon steel or stainless steel grade, AISI304, AISI304L, AISI316, AISI316L, AISI316Ti, DUPLEX or SUPER DUPLEX or GRP
9	Chain wheels	Delrin®

TRAVELING BAND SCREEN MAIN COMPONENTS

SCREEN PANELS
The panels are designed to maximize the effective screening area and provide sufficient structural strength to withstand the loads imposed by a differential head loss.

MESH
Our design offers the advantage of panels furnished with quickly changeable mesh inserts. This feature ensures ease of operation.

SCREEN CHAIN
The heavy roller chain carrying panel assembly is furnished by roller joints having heat treated pins, rollers and bushing.

ROLL AROUND FOOT TERMINAL
Roll out foot terminal is designed to eliminate most of the problems associated with permanently submerged moving parts.

HEAD SHAFT ASSEMBLY
The head shaft diameter is sized according to torsion and bending moments and allowable torsion deflection.

CHAIN TAKE UP ASSEMBLY
Chain take up assembly provides adjustment of chain tension raising or lowering the head shaft.

HEAD SECTION (UPPER FRAME)
Head section is the part of screen frame which is located above the operating floor level. It supports the head shaft assembly and spray system and is sometimes equipped by a platform to support the drive unit.

SPRAY WASH SYSTEM
It consists of a single or double row of venture type spray nozzles threaded to a spray pipe to provide complete and slightly overlapping spray coverage along the panel width.

SPLASH HOUSİNG
Splash housing enclosing the screen head section provides safety and assists the containment of was water overspray. Due to its special design, it is easily removed and it also has a suitable opening to provide easy access to the panels and chain for inspection and maintenance purposes.

DEBRIS THROUGH
Debris through collects the spray wash water and refuse removed from the screen and transports it away from the intake area. It is installed on the screen frame at the operating level.

DRIVE UNIT
Traveling band screen drive unit components include electrical motor, hallow shaft speed reducer mounted directly to the head shaft, drive sprocket and drive chain.

CONTROL SYSTEM
Purpose of the control system is to hold the differential head loss and velocity across the screen close to optimum values. Most installation requires automated control to ensure reliability and economy of operation. Sismat Uluslararası offers complete solutions with the supply of differential level control instruments (ultrasonic level sensors) and electrical control panels with PLC.

REFERENCES

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Learn More by visiting

www.sismat.com.tr

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