TORO
WASTEWATER EQUIPMENT INDUSTRIES®

SCREEN

defender®

ROTARY SCREENS
STATIC SCREENS

Process Description

Rotary screens are pretreatment equipment used to separate solid waste from clean water through a filter drum. This drum can be either screen or perforated depending on the type of solids to be treated.

We have developed an intelligent programme for our screens. They detect the amount of solids accumulation and only rotate when necessary. In addition, this programme allows you to control the sieve records through an app on your mobile phone. (Optional)

These are independent units with self-cleaning systems and automatic operation.

TR SMART ® NEW SMART PROGRAMME

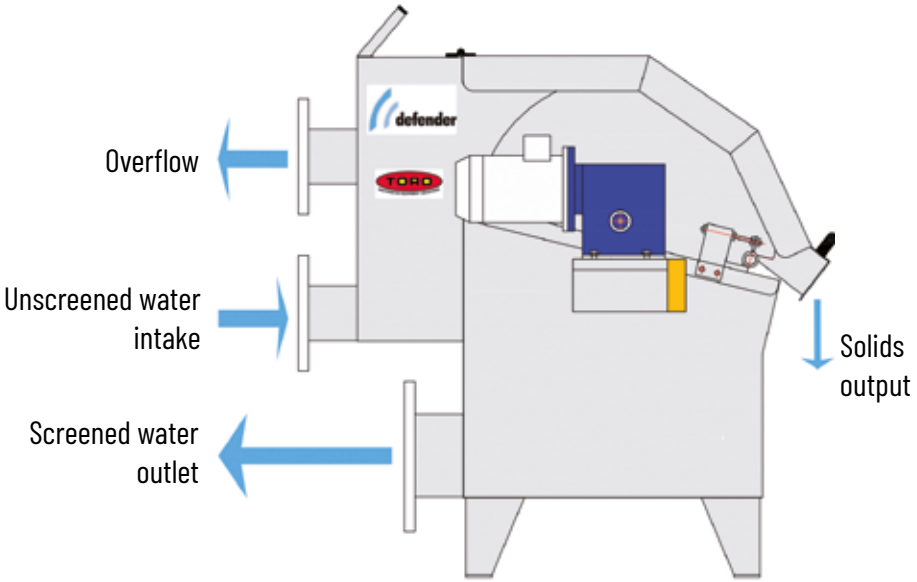
We have developed an optional intelligent programme for our rotary sieves. It is equipped with a frequency inverter designed specifically for the motor, which guarantees low energy consumption. It operates as a stand-alone machine that does not require any configuration or parameterisation, just plug and play. The TR-Smart® integrates a data logger based on historical values, which calculates the optimal start-up speed in any application, avoiding overflow and the frequency inverter adjusts the screen speed automatically.

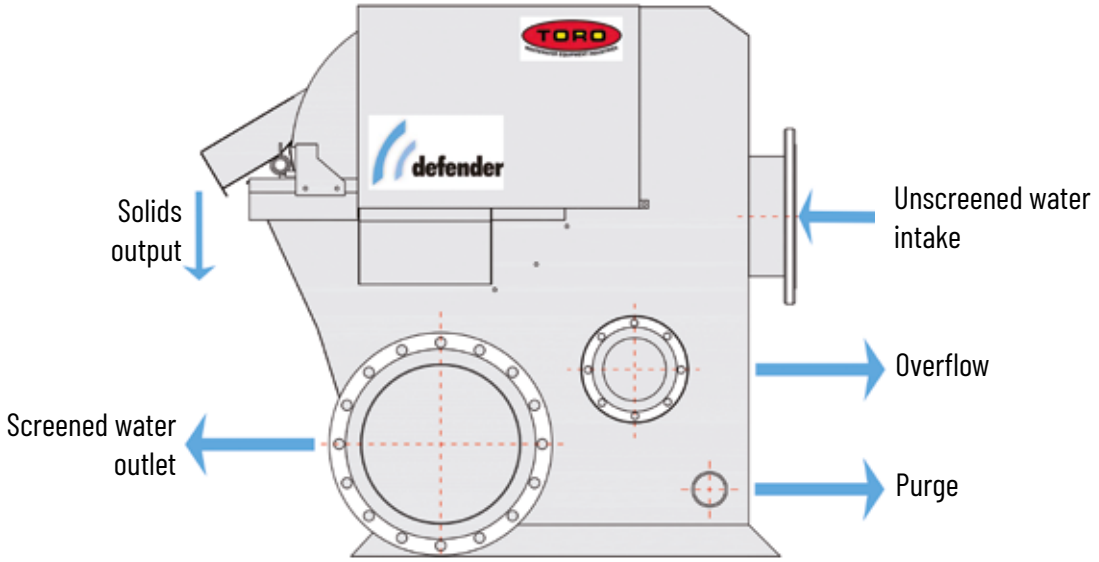
In addition, it measures the amount of dirt accumulated in the equipment, and decides when to start the cleaning cycle.

WATCH VIDEO

SIMPLE OPERATION

- The effluent to be treated enters through the flange on the outside of the screen body and is evenly distributed through the spillway and overflow through the filtering drum.
- The solids are retained on the surface of the drum while it is rotating, the spillage penetrates through the mesh aperture and performs a self-cleaning function by passing through the lower part of the drum again.
- As it passes through the outer scraper, the solids are released from the screen and gravity causes the solids to fall off the scraper.





Rotatory Screen | Models

ROTARY SCREENS

CAPACITY

- From 30 m3/h to 228 m3/h in clean water.
- Small flow rates.
- High performance with high solids load.
- Smaller filter surface.

DESCRIPTION

- Produces polished effect, high output water quality.
- Protected from outlet overloads.
- Solid, non-collapsing, high-strength infused GRP lamella construction. Easy to clean

HIGH PRESSURIZATION SYSTEM SCREENS

CAPACITY

- From 133m^3/h up to 5.874m^3/h.
- High volumes in less space.
- Increased screening capacity for fine particles.

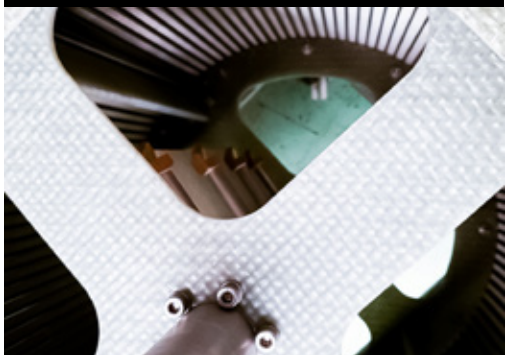
DESCRIPTION

- Capable of handling four times the volume of a conventional screen.
- Many advantages in projects where space is a constraint.
- A good option for urban wastewater.

MANUFACTURING

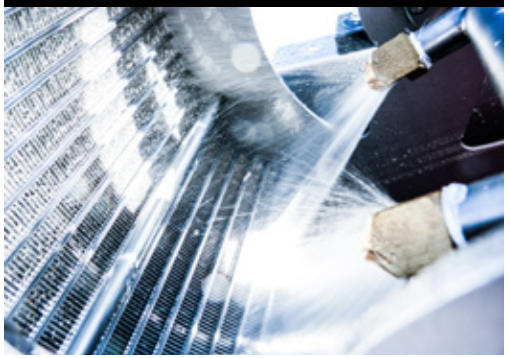
- Safe designs with high quality materials
- Manufactured in 316 L stainless steel.
- GRP components and protections.
- Incorporates effective safety system.
- GRP flanges with DIN/ANSI connection.
- Pressurised water cleaning system for the filtering drum.
- Shot blasted finish.
- Solids scraper adjustment

FILTER DRUM



SENSOR

CLEANING SYSTEM



DRIVE UNIT

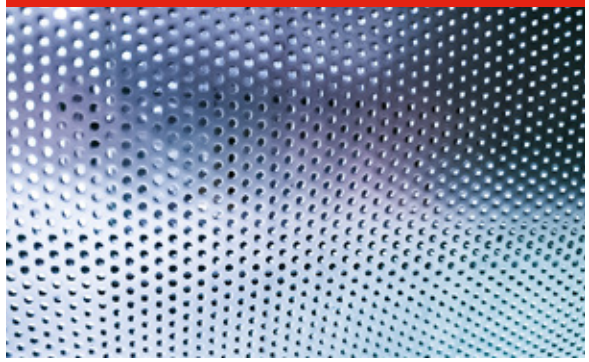
COVER

CLEANING SCRAPER

Tipos de mallas | Fabricación

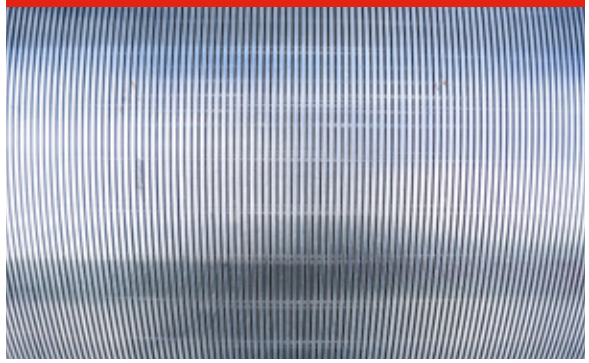
In our factory in Villavaquerín we manufacture different models of floats which, together with the different sizes of flocculators and pressurisation skid, allow us to adapt to the needs of the client depending on the flow and load of solids to be treated.

PERFORMED



Mesh size from 2 to 3 mm Ø

GRID



Mesh size 0.15 to 2 mm

MESH GRID	PERFORATED MESH	SOLIDS
🔴	🟢	Scales - Gelatinous bodies
🔴	🟢	Film, plastics...
🟠	🟢	Long fibres - e.g. hair, bristles...
🟢	🟠	Fats*
🟢	🟢	MSS
🟠	🟢	Sands
🔴	🟢	Weed Wash

* With pigs cleaning of meshes at water temperature < 50º.

🟢 Recommended 🟠 Low recomended 🔴 Not recomended

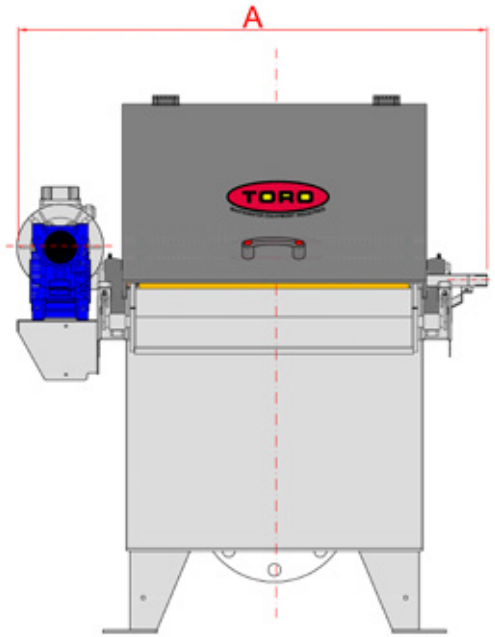
ROTARY SCREEN RANGE 40

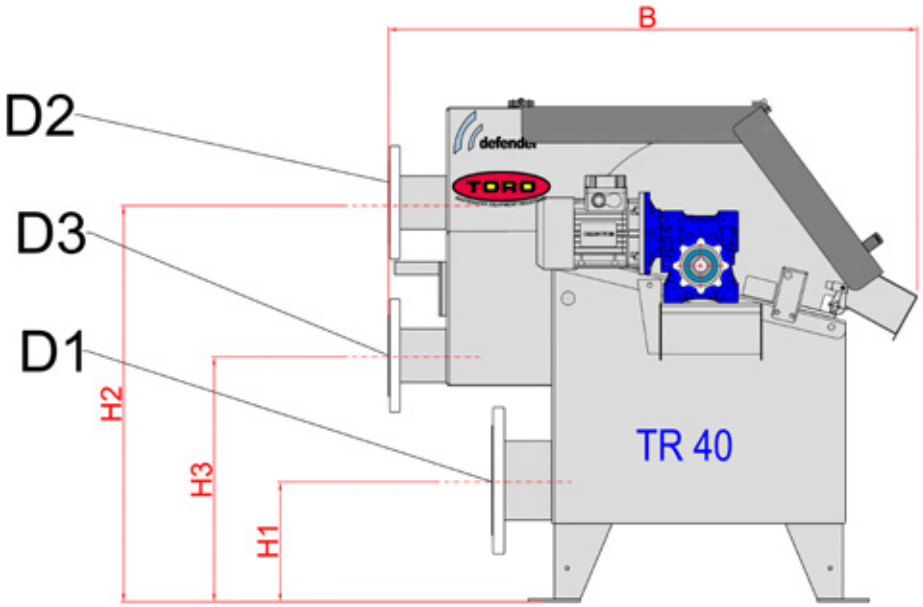
RANGE 40- TECHNICAL SPECIFICATIONS, m^3/h (Us gpm)

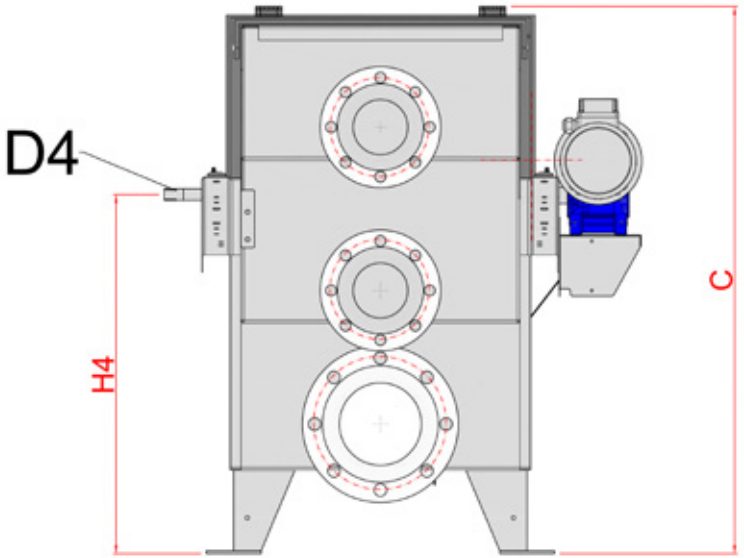
MODEL	Drum Diameter	Length Drum	Power Kw / HP	A	B	C	Output		Overflow		Input		Cleaning	
							D1	H1	D2	H2	D3	H3	D4	H4
TR 40/25	400 (15 3/4)	250 (9 7/8)	0.25 (0.33)	651 (23 5/8)	1,250 (40 3/8)	980 (42 3/4)	DN 100 ANSI 4"	209 (8 1/8)	DN 100 ANSI 4"	770 (31 1/2)	DN 100 ANSI 4"	477 (20)	1/2"	649 (26 3/4)
TR 40/50	400 (15 3/4)	500 (19 5/8)	0.25 (0.33)	903 (33 1/2)	1,250 (40 3/8)	980 (42 3/4)	DN 150 ANSI 6"	234 (9 1/8)	DN 100 ANSI 4"	770 (31 1/2)	DN 100 ANSI 4"	477 (20)	1/2"	649 (26 3/4)
TR 40/75	400 (15 3/4)	750 (29 1/2)	0.25 (0.33)	1,159 (43 1/4)	1,250 (40 3/8)	980 (42 3/4)	DN 200 ANSI 8"	Inferior	DN 100 ANSI 4"	770 (31 1/2)	DN 100 ANSI 4"	502 (21)	1/2"	649 (26 3/4)

RANGE 40- MAXIMUM CLEAN WATER FLOW RATES, m^3/h (Us gpm)

MODEL	Grid Mesh ▼▼, (in)						Perforated mesh		
	0,15 (0.006)	0,25 (0.01)	0,50 (0.02)	0,75 (0.03)	1.00 (0.04)	2.00 (0.08)	1.00 (0.04)	2.00 (0.08)	3.00 (0.12)
TR 40/25	7 (30)	11 (47)	19 (83)	25 (110)	30 (132)	30 (132)	9 (38)	17 (74)	22 (74)
TR 40/50	14 (61)	21 (94)	36 (165)	50 (220)	60 (264)	60 (264)	18 (78)	35 (153)	47 (153)
TR 40/75	21 (91)	32 (141)	56 (248)	75 (331)	90 (397)	90 (397)	27 (118)	52 (231)	71 (231)







Rotatory Screen | Technical Specifications

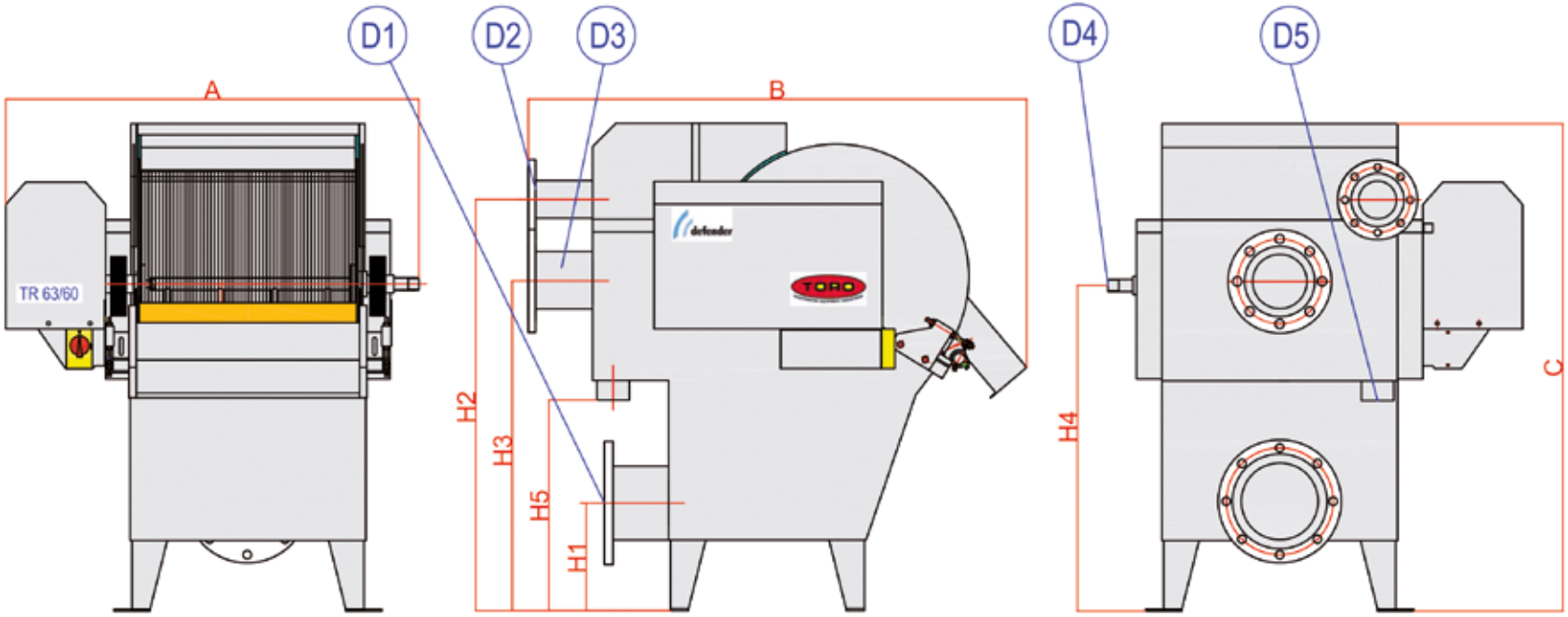
ROTARY SCREEN RANGE 63

RANGE 63- TECHNICAL SPECIFICATIONS, m^3/h (Us gpm)

MODEL	Drum Diameter	Length Drum	Power Kw / HP	A	B	C	Output		Overflow		Input		Cleaning		Purge	
							D1	H1	D2	H2	D3	H3	D4	H4	D5	H5
TR 63/60	630 (24 3/4)	600 (23 5/8)	0.55 (0.75)	1,140 (44 7/8)	1,375 (54 1/8)	1,345 (53)	DN 250 ANSI 10"	322 (12 5/8)	DN 100 ANSI 4"	1,135 (44 5/8)	DN 200 ANSI 8"	910 (35 7/8)	1"	903 (35 1/2)	3"	580 (22 7/8)
TR 63/90	630 (24 3/4)	500 (19 5/8)	0.55 (0.75)	1,440 (56 3/4)	1,375 (54 1/8)	1,345 (53)	DN 250 ANSI 10"	322 (12 5/8)	DN 100 ANSI 4"	1,135 (44 5/8)	DN 200 ANSI 8"	910 (35 7/8)	1"	903 (35 1/2)	3"	580 (22 7/8)
TR 63/120	630 (24 3/4)	1.200 (47 2/8)	0.75 (1.00)	1,740 (68 1/2)	1,375 (54 1/8)	1,345 (53)	DN 300 ANSI 12"	322 (12 5/8)	DN 100 ANSI 4"	1,135 (44 5/8)	DN 250 ANSI 10"	910 (35 7/8)	1"	903 (35 1/2)	3"	580 (22 7/8)
TR 63/150	630 (24 3/4)	1.500 (59)	0.75 (1.00)	2,040 (80 3/8)	1,375 (54 1/8)	1,345 (53)	DN 350 ANSI 14"	322 (12 5/8)	DN 100 ANSI 4"	1,135 (44 5/8)	DN 300 ANSI 12"	910 (35 7/8)	1"	903 (35 1/2)	3"	580 (22 7/8)

RANGE 63- MAXIMUM CLEAN WATER FLOW RATES, m^3/h (Us gpm)

MODELO	Grid Mesh ▼▼, (in)						Perforated mesh	
	0,15 (0.006)	0,25 (0.01)	0,50 (0.02)	0,75 (0.03)	1.00 (0.04)	2.00 (0.08)	2.00 (0.08)	3.00 (0.12)
TR 63/60	23 (101)	36 (159)	63 (278)	84 (370)	101 (444)	144 (635)	57 (252)	77 (252)
TR 63/90	35 (152)	54 (239)	95 (419)	127 (558)	152 (670)	217 (957)	86 (380)	117 (380)
TR 63/120	46 (203)	72 (319)	127 (558)	169 (744)	203 (892)	290 (1,276)	115 (507)	156 (507)
TR 63/150	58 (254)	91 (400)	159 (699)	212 (932)	254 (1,118)	363 (1,598)	144 (635)	196 (635)



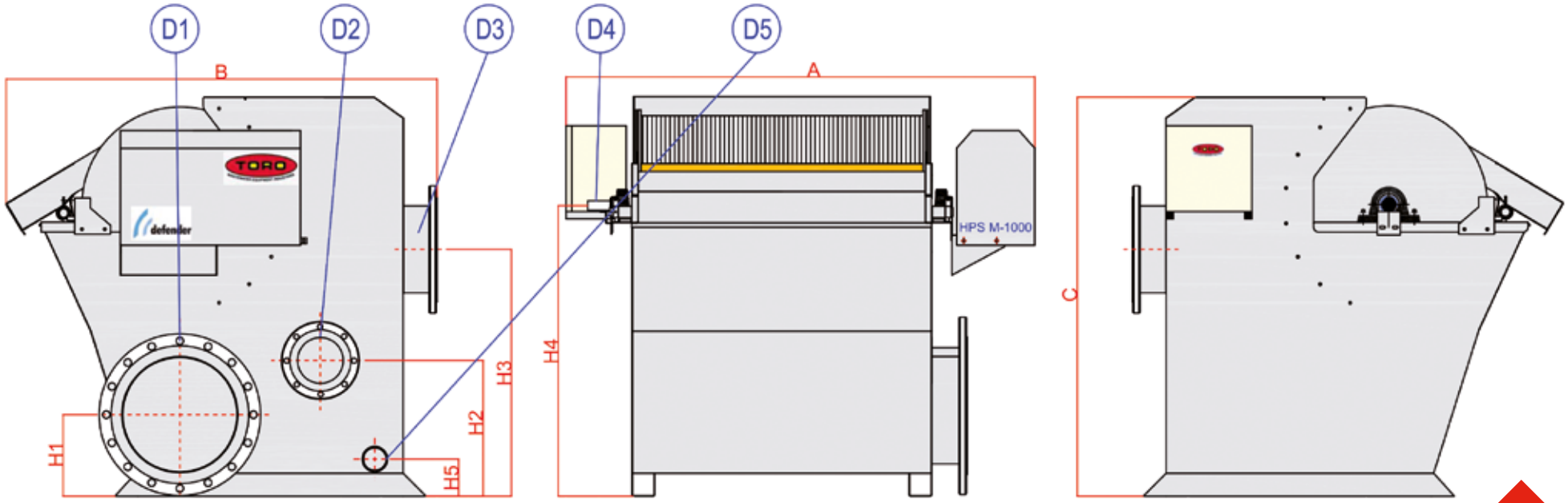
HPS SIEVE RANGES M/L

TP HPS- TECHNICAL SPECIFICATIONS, m^3/h (Us gpm)

MODEL	Drum Diameter	Length Drum	Power Kw / HP	A	B	C	Output		Overflow		Input		Cleaning		Purge	
							D1	H1	D2	H2	D3	H3	D4	H4	D5	H5
M-500	630 (24 3/4)	500 (19 5/8)	0.55 (0.75)	1,140 (44 7/8)	1,540 (60 5/8)	1,395 (54 7/8)	DN 350 ANSI 14"	259 (10 1/4)	DN 150 ANSI 6"	474 (18 5/8)	DN 250 ANSI 10"	838 (32)	1"	1,015 (40)	3"	129 (5 1/8)
M-1000	630 (24 3/4)	1,000 (39 3/8)	0.55 (0.75)	1,640 (64 5/8)	1,540 (60 5/8)	1,395 (54 7/8)	DN 400 ANSI 16"	285 (11 1/4)	DN 150 ANSI 6"	474 (18 5/8)	DN 300 ANSI 12"	862 (33 7/8)	1"	1,015 (40)	3"	129 (5 1/8)
M-1500	630 (24 3/4)	1,500 (59)	0.75 (1.00)	2,140 (84 1/4)	1,540 (60 5/8)	1,395 (54 7/8)	2x DN 400 2x ANSI 16"	285 (11 1/4)	DN 150 ANSI 6"	474 (18 5/8)	2x DN 300 2x ANSI 12"	862 (33 7/8)	1"	1,015 (40)	3"	129 (5 1/8)
L-1500	914 (36)	1,500 (59)	0.75 (1.00)	2,150 (84 5/8)	2,420 (95 1/4)	1,996 (78 5/8)	2x DN 400 2x ANSI 16"	305 (12)	DN 200 ANSI 8"	680 (26 3/4)	2x DN 400 2x ANSI 16"	1,179 (46 3/8)	1"	1,452 (57 1/8)	3"	154 (6 1/4)
L-2000	914 (36)	2,000 (78 3/4)	0.75 (1.00)	2,650 (104 3/8)	2,420 (95 1/4)	1,996 (78 5/8)	2x DN 500 2x ANSI 20"	355 (14)	DN 300 ANSI 12"	680 (26 3/4)	2x DN 500 2x ANSI 20"	1,229 (48 1/4)	1"	1,452 (57 1/8)	3"	154 (6 1/4)

TR HPS- MAXIMUM CLEAN WATER FLOW RATES, m^3/h (Us gpm)

MODEL	Grid Mesh ▼▼, (in)						Perforated mesh	
	0,15 (0.006)	0,25 (0.01)	0,50 (0.02)	0,75 (0.03)	1.00 (0.04)	2.00 (0.08)	2.00 (0.08)	3.00 (0.12)
M-500	133 (584)	208 (918)	365 (1,606)	486 (2,141)	584 (2,569)	834 (3,670)	332 (1,462)	467 (1,462)
M-1000	269 (1,185)	423 (1,861)	740 (3,258)	987 (4,343)	1,184 (5,212)	1,691 (7,446)	671 (2,955)	944 (2,955)
M-1500	405 (1,785)	637 (2,805)	1,115 (4,910)	1,487 (6,546)	1,784 (7,855)	2,549 (11,222)	1,011 (4,453)	1,423 (4,453)
L-1500	699 (3,079)	1,099 (4,838)	1,923 (8,466)	2,564 (11,288)	3,077 (13,546)	4,395 (19,351)	1,744 (7,679)	2,454 (7,679)
L-2000	934 (4,114)	1,468 (6,466)	2,570 (11,315)	3,426 (15,086)	4,112 (18,104)	5,874 (25,862)	2,331 (10,263)	3,280 (10,263)



Rotatory Screen | Optionals

EQUIPAMIENTO

● Standard equipment ● Optional equipment

BODY	TR		TR HPS	
	40	63	M	L
Material AISI 304	–	–	–	●
Threaded connections	●	●	●	–
Protective cover	●	●	●	–
Double/triple inlet flange	–	●	●	●
3" inlet chamber drain	●	●	●	●
Protective motor casing	●	●	●	●
Flow inlet baffle	●	●	●	●

DOCUMENTATION	
Operating manuals in specific languages	●
ISO standard documentation	●

NOTES:

- Optional equipment may have an extra cost on the product. Please consult our technical department.
- Standard and optional equipment may vary slightly due to normal product development by Toro Equipment, S.L. technical team.
- When placing your order, please ask for specifications about your equipment.
- More specific values can be found on our website, **www.toroequipment.com.**

● Standard equipment ● Optional equipment

CERTIFICATES	TR		TR HPS	
	40	63	M	L
EC Certificate			●	
Certificate of origin			●	
Factory test certificate			●	
Certificate of quality			●	
Certificate of materials			●	
Welding certificate			●	
Specific hydraulic certificate			●	

- In order to achieve a high quality in our products and services, at Toro Equipment, we have developed and implemented a Quality Management System in accordance with the UNE-EN-ISO 9001 standard, adjusted to the needs of the company and adopting the methodology of continuous improvement to achieve business excellence.
- The system is based on a continuous monitoring of all the activities carried out in the company:
  - -Design
  - -Manufacturing
  - -After-sales service

EQUIPMENT

● Standard equipment ● Optional equipment

ELECTRICAL PANEL	TR		TR HPS	
	40	63	M	L
Integration of electrical panel		●		
Start/stop		●		
Automatic programming of the cleaning system		●		
Safety limit switch protection cover		●		
Protective cover support bracket		●		
Emergency stop		●		

- The electrical panel includes as standard, Start/Stop, limit switch to stop the drum when the safety cover is lifted, safety cover support, emergency stop and automatic programming of the cleaning system.
- Start/Stop, start/stop of the machine in the presence or absence of flow. Level detection device that activates the machine when it receives water for treatment.

● Standard equipment ● Optional equipment

DRIVE SYSTEMS	
Multi-voltage motor	●
ATEX motor	●
NEMA, CSA, etc. standard motor.	●

OTHERS	
Automatic starting system (Start/Stop)	●
Emergency stop	●
Fumigated crate packaging	●
Shrink wrapping	●
Containerisation	●
Lifting structure	●
GRP solids collection hopper	●
Solids collection hopper AISI 316 L	●

Static Screens | Description

The Defender® Static Sieves are pre-treatment equipment for refining the process of solid-liquid waste elimination through a mesh screen of different calibre depending on the type and quantity of solids to be treated, which filters the water from the solids.

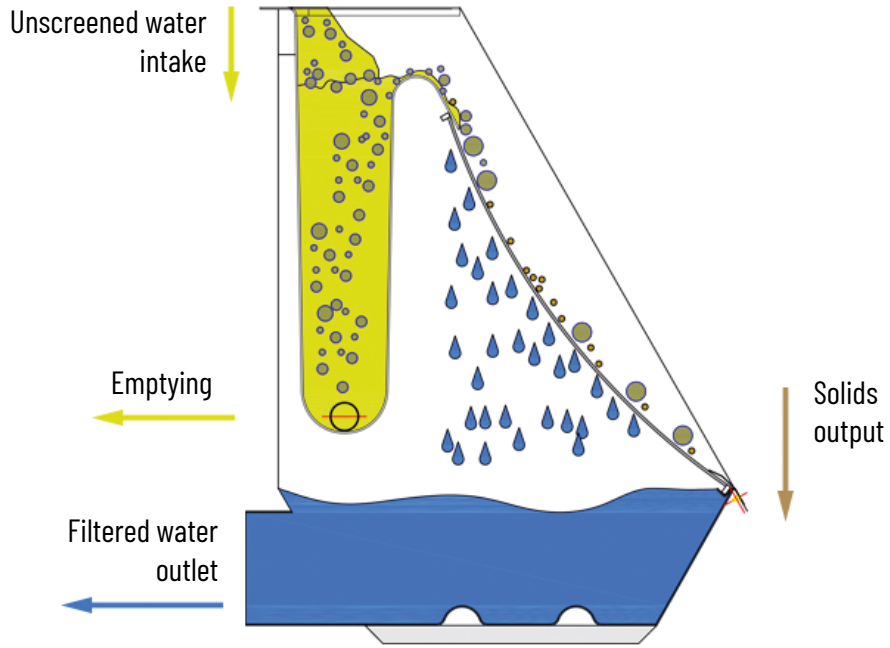
Its mission is to eliminate the solids carried by the water, in order to avoid clogging and mechanical problems in the installations.

They are equipment with little maintenance service and their operation is continuous, without the need for electrical current.

In urban waters, they can replace primary decanters in many cases, providing the elimination of coarse sands and up to 30% percentages of grease and effluent leftovers. Spans of 0.50 to 0.15 millimetres are used.

SIMPLE OPERATION

- The effluent to be treated is pumped or pressurised to the screen head.
- After a certain retention time, determined by the filling of the sieve feed box, a laminar overflow occurs, in which the liquid slides smoothly through the filter mesh.
- In this sliding process, the liquid passes through the mesh (most of it in its first section), with the solids retained on the surface of the mesh and falling towards the bottom, draining out of the screen. The filtered liquid falls into the lower tank and is evacuated by gravity through pipes.
- By means of a lifting structure, the equipment can be installed at the head of the plant, so that the next stage of treatment can be carried out without the need for pumping.



- **POWER SUPPLY BOX,** in the upper rear part, where the liquid to be treated is pumped. There is a small retention that provides a laminar overflow outlet.
- **FILTER CHANNEL,** at the front, the bottom of which is the screen, where the solid-liquid separation takes place.
- **MESH,** formed by AISI 306l trapezoidal section wires, separated according to the span determined by the process, being the fundamental element of the equipment.
- **FINAL DEPOSIT,** in the lower part, under the screen, which receives the filtered effluent that is evacuated by piping

Static Screens | Technical Specifications

APPLICATIONS

TE static screens have countless applications in the pretreatment of wastewater for practically all types of industries. The performance is optimal in those applications in which there are no greases, obtaining with this system greater dryness than even with rototamices.En industria alimentaria en general.

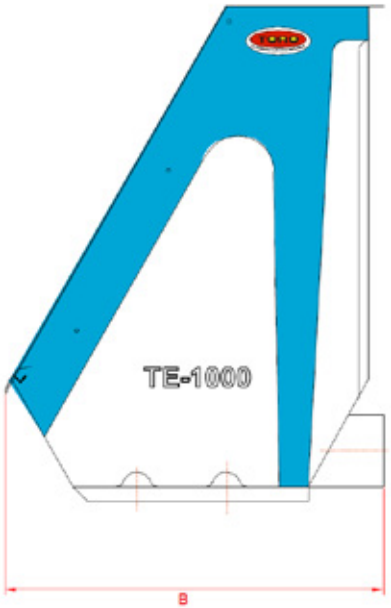
- Tank washers
- Screening of water from the plastics, paper and wood industries...
- Coarse screening after roughing screen in urban water treatment.
- Recirculation of water in cleaning circuits.

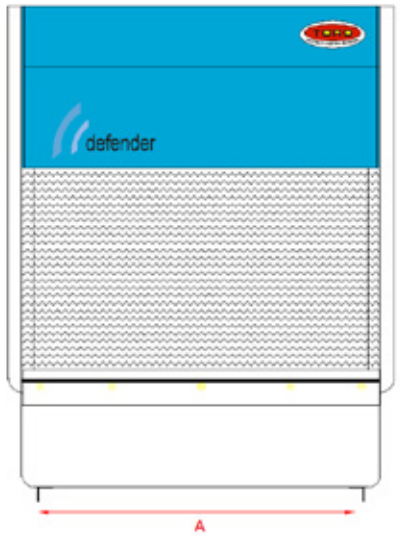
TE- TECHNICAL SPECIFICATIONS, mm

MODEL	Width (A), mm	Depth (B), mm	Height (C), mm	Outlet diameter, mm
TE -500	590	1.050	1.350	200
TE-1000	1.070	1.050	1.350	250
TE-1500	1.660	1.093	1.394	250
TE-2000	2.080	1.125	1.496	250

TE- MAXIMUM CLEAN WATER FLOW RATES, m^3/h

MODEL	Grid Mesh ▼▼, mm (in)			
	1.00 (0.04)	1.50 (0.06)	2.00 (0.08)	3.00 (0.12)
TE-500	30 (132)	42 (184)	58 (255)	70 (308)
TE-1000	60 (264)	84 (369)	114 (501)	140 (616)
TE-1500	90 (396)	126 (554)	171 (752)	210 (924)
TE-2000	120 (528)	168 (739)	232 (1,021)	280 (1,232)





EQUIPMENT

● Standard equipment ● Optional equipment

BODY	TE			
	500	1000	1500	2000
Material GRP		●		
ISO/ANSI connecting flanges		●		
Anchor fastening		●		
125-250 µm shot-blasted finish B60 microspheres		●		

FILTER MESH	
AISI 316l wire mesh screen	●

DOCUMENTATION	
Language-specific operating manuals	●

CERTIFICATES	
EC Certificate	●
Certificate of origin	●
Factory test certificate	●
Certificate of quality	●
Certificate of materials	●
Welding certificate	●
Specific hydraulic certificate	●

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  - -Design
  - -Manufacturing
  - -After-sales service

● Standard equipment ● Optional equipment

OTHERS	
Fumigated crate packaging	●
Shrink wrapping	●
Containerisation	●
Lifting structure	●
Containerisation	●
Solids collection hopper AISI-304	●
Solids collection hopper AISI-316	●
Solids collection hopper AISI-PRFV	●

- The electrical panel includes as standard, Start/Stop, limit switch to stop the drum when the safety cover is lifted, emergency stop,stop to stop the drum when the safety cover is lifted, safety cover support, emergency stop and automatic programming of the cleaning system.
- Start/Stop, start/stop of the machine in the presence or absence of flow. presence or absence of flow. Level detection device that activates the machine when it receives water for treatment.

Fábrica Villavaquerín - Valladolid

WORLD REFERENCES

- Algeria
- Argentina
- Australia
- Austria
- Belgium
- Brazil
- Bulgaria
- Canada
- Chile
- China
- Colombia
- Costa Rica
- Croatia
- Dominican Republic
- Ecuador
- Egypt
- Estonia
- Finland
- France
- Germany
- Greece
- Guatemala
- Holland
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- Indonesia
- Iran
- Ireland
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- Montenegro
- Morocco
- Netherlands
- Nicaragua
- Pakistan
- Panama
- Peru
- Philippines
- Poland
- Portugal
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- Vietnam

FOUNDED
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