

PRETREATMENT EQUIPMENT

 defender®



FOR TRANSPORT,
DOSING AND CAKING
OF WASTE.



Process

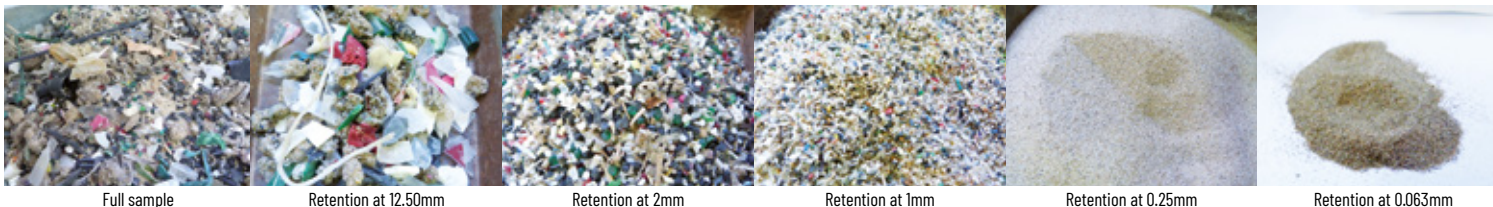
It consists of an endless screw that rotates on its own axis thus displacing the materials towards the discharge.

- Manufactured in carbon steel and stainless steel AISI 304 or AISI 316.
- Adaptable to the installation needs.
- The installation does not require civil works or large spaces.
- High durability, resistant to oxidation and corrosion.
- No clogging or obstructions.
- High transport capacity.



ADVANTAGES

- Wide range of models designed and tested by Toro Equipment, manufactured in 304 and 316 stainless steel.
- Guaranteed against material or manufacturing defects, under normal use and maintenance conditions.
- Defender® equipment can be combined with each other, according to the needs for an optimal treatment.
- Easy and fast installation, implementation in reduced spaces.
- Easy and quick maintenance.
- The equipment is always packed in shrink-wrapped material and optionally in treated wood packaging.
- Toro Equipment offers start-up and after-sales service, please contact us.
- **Applications:** paper mills, tanneries and textiles, food, urban, wineries, fish, meat, high oil content, canneries, laundries, dairies, biodiesel...

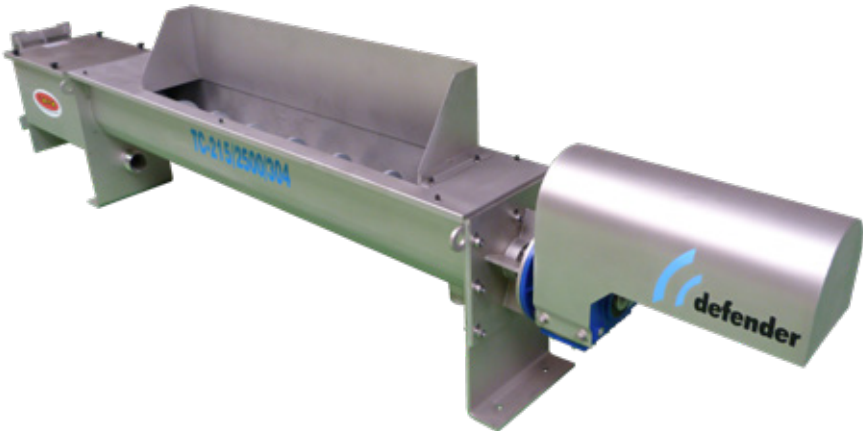


Particle-size test of a sample from a DA Defender® installed in a plastics factory.



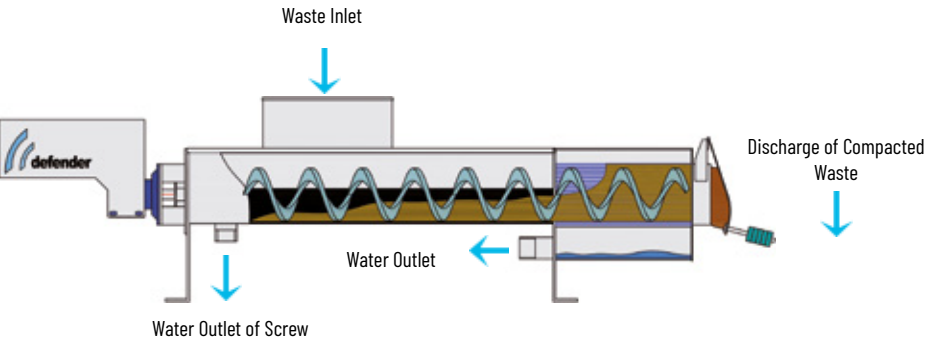
WATCH VIDEO

TC COMPACTOR SCREW



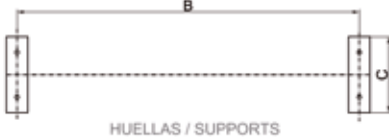
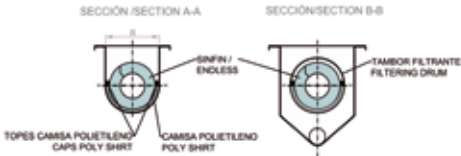
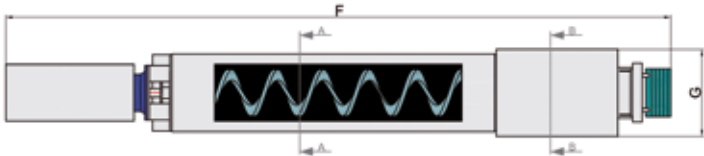
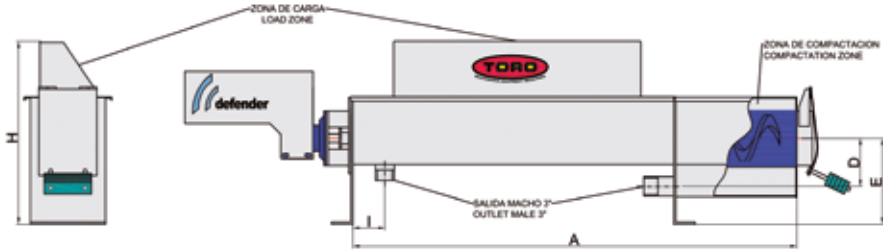
Compact equipment that performs several functions in the process of removing solids from urban and industrial wastewater treatment plants, minimizing their moisture content and volume.

Special application in the treatment of solids from screening and roughing processes, helping to achieve greater dryness in the output waste.



TECHNICAL SPECIFICATIONS, mm (in)

MODEL	Screw Diameter	Power kw (HP)	Slope 0° m ² /h (US gpm)	Drainage	A	B	C	D	E	F	G	H	I
TC 160	160 (6 2/8)	1.1 (1.5)	1.16 (5.11)	2"	2,075 (81 6/8)	1,510 (59 4/8)	300 (11 6/8)	200 (7 7/8)	377 (14 7/8)	3,050 (120 1/8)	360 (14 1/8)	767 (30 2/8)	150 (5 7/8)
TC 215	215 (8 4/8)	1.5 (2)	2.81 (12.37)	3"	3,075 (121 1/8)	2,510 (98 7/8)	350 (13 6/8)	235 (9 2/8)	406 (16)	4,110 (161 6/8)	410 (16 1/8)	844 (33 2/8)	150 (5 7/8)
TC 315	315 (12 3/8)	2.2 (3)	8.84 (38.92)	3"	4,075 (160 3/8)	3,510 (138 2/8)	475 (18 6/8)	305 (12)	466 (18 3/8)	5,220 (205 4/8)	535 (21 1/8)	979 (38 4/8)	150 (5 7/8)

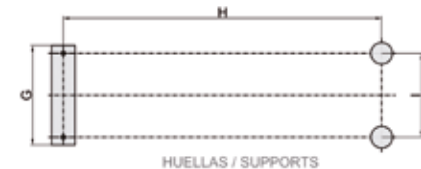
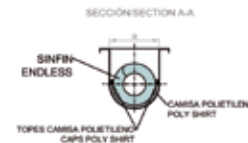
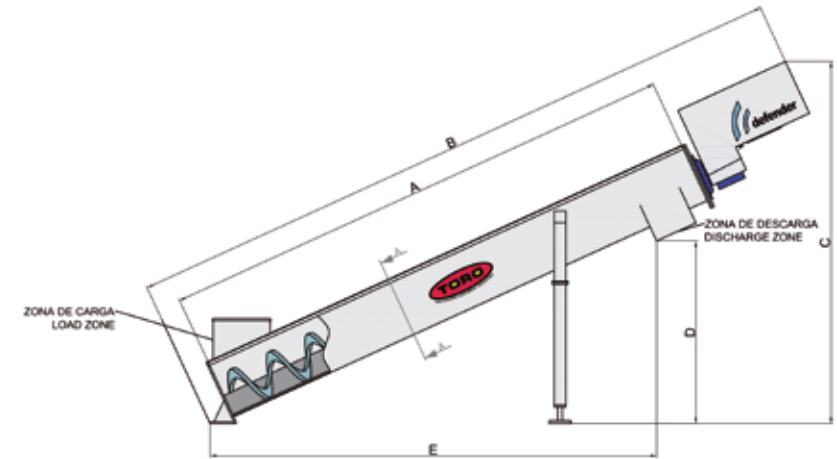
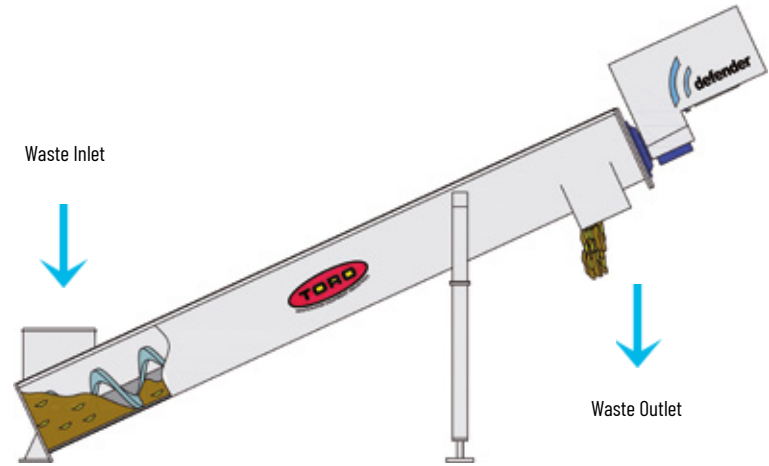


Models | Conveyor Screw

TT CONVEYOR SCREW



For the displacement of waste. It can be horizontal or with slopes up to 25°.



TECHNICAL SPECIFICATIONS, mm (in)

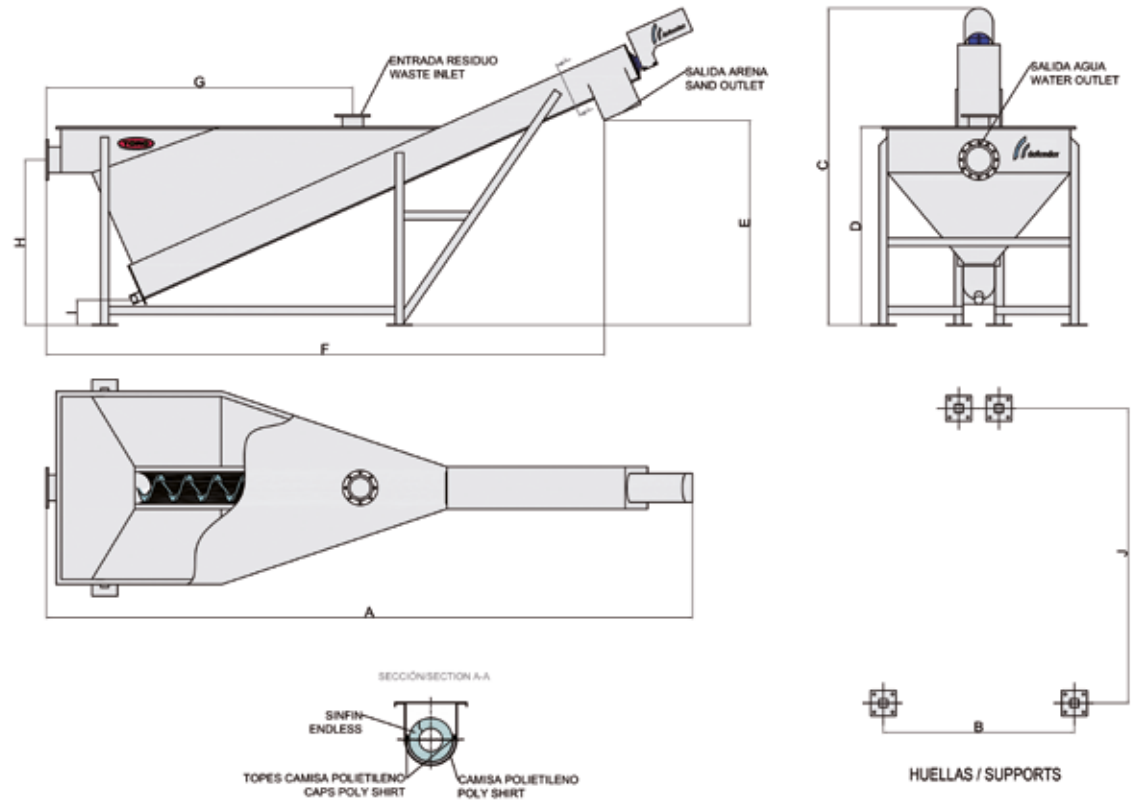
MODEL	Screw Diameter	Power kw (HP)	Slope 0° m³/h (US gpm)	Slope 25° m³/h (US gpm)	A	B	C	D	E	F	G	H	I
TT 160	160 (6 2/8)	1.1 (1.5)	1.16 (5.11)	0.58 (2.55)	2,000 (78 6/8)	2,775 (109 2/8)	1,650 (65)	575 (22 5/8)	1,720 (67 6/8)	310 (12 2/8)	460 (18 1/8)	1,230 (48 3/8)	380 (15)
TT 215	215 (8 4/8)	1.5 (2)	2.81 (12.37)	1.4 (6.16)	3,000 (118 1/8)	3,775 (148 5/8)	2,070 (81 4/8)	994 (39 1/8)	2,629 (103 4/8)	360 (14 1/8)	510 (20 1/8)	2,139 (84 2/8)	430 (16 7/8)
TT 315	315 (12 3/8)	2.2 (3)	8.84 (38.92)	4.42 (19.46)	4,000 (157 4/8)	3,520 (138 5/8)	2,505 (98 5/8)	1,412 (55 5/8)	3,537 (139 2/8)	485 (19 1/8)	635 (25)	3,047 (120)	555 (21 7/8)

DA SAND REMOVER



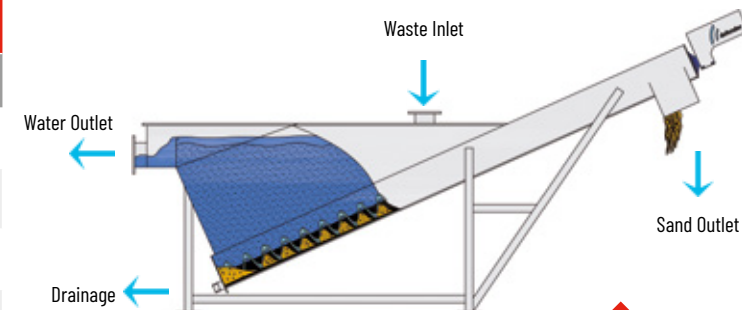
It consists of a sand trap made of GRP or stainless steel and a hollow shaft screw that collects and transports the solids, achieving a 97% grit removal rate.

High efficiency in WWTP of discharges with high grit content, for example, in potato and beet processing.



TECHNICAL SPECIFICATIONS, mm (in)

MODEL	Screw Diameter	Power kw (HP)	Flow Q ^o m ³ /h (US gpm)	Inlet	Outlet	Drainage	A	B	C	D	E	F	G	H	I	J
DA - 0,6/100	100 (3 7/8)	0.25 (0.33)	15 (66.045)	DN 100 4"	DN 100 4"	2"	2,621 (103 2/8)	750 (29 4/8)	1,384 (54 4/8)	950 (37 3/8)	988 (38 7/8)	2,215 (87 2/8)	1,300 (51 1/8)	802 (31 5/8)	250 (9 7/8)	1,165 (45 7/8)
DA - 2/215	215 (8 4/8)	0.75 (1)	50 (220.15)	DN 100 4"	DN 150 6"	3"	4,963 (195 3/8)	1,480 (58 2/8)	2,436 (95 7/8)	1,650 (65)	4,190 (165)	4,110 (161 6/8)	2,550 (100 3/8)	1,327 (52 2/8)	250 (9 7/8)	2,330 (91 6/8)
DA - 4/280	280 (11)	1.1 (1.5)	100 (440.30)	DN 200 8"	DN 250 10"	3"	6,058 (238 4/8)	1,880 (74)	2,920 (115)	1,950 (76 6/8)	2,095 (82 4/8)	5,490 (216 1/8)	3,015 (118 6/8)	1,627 (64)	250 (9 7/8)	2,900 (114 1/8)
DA - 6/280	280 (11)	1.5 (2)	150 (660.45)	DN 200 8"	DN 250 10"	3"	6,742 (265 3/8)	2,280 (89 6/8)	3,140 (123 5/8)	2,250 (88 5/8)	3,175 (125)	5,950 (234 2/8)	3,750 (147 5/8)	1,902 (74 7/8)	250 (9 7/8)	2,660 (104 6/8)

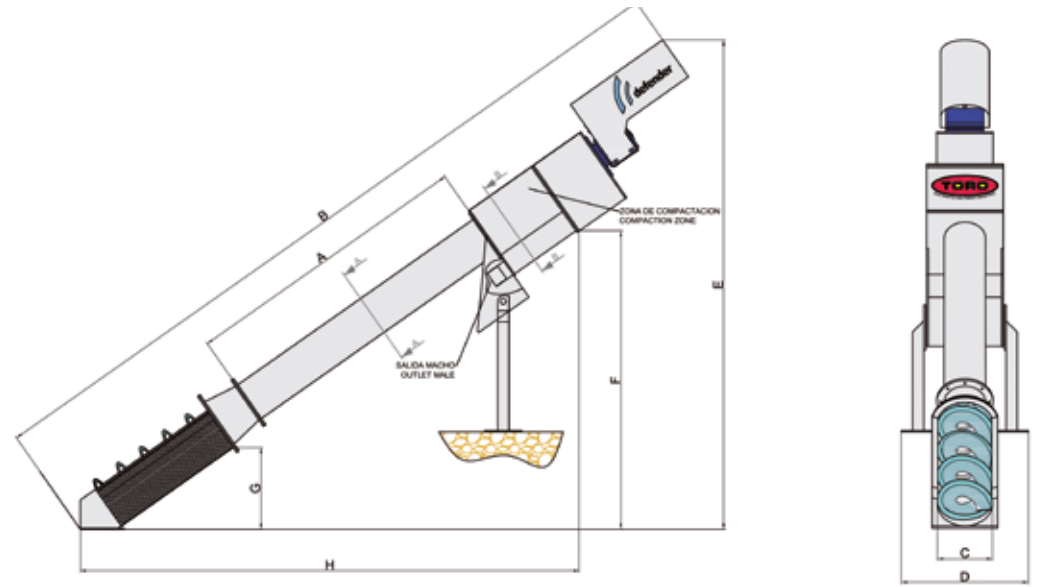
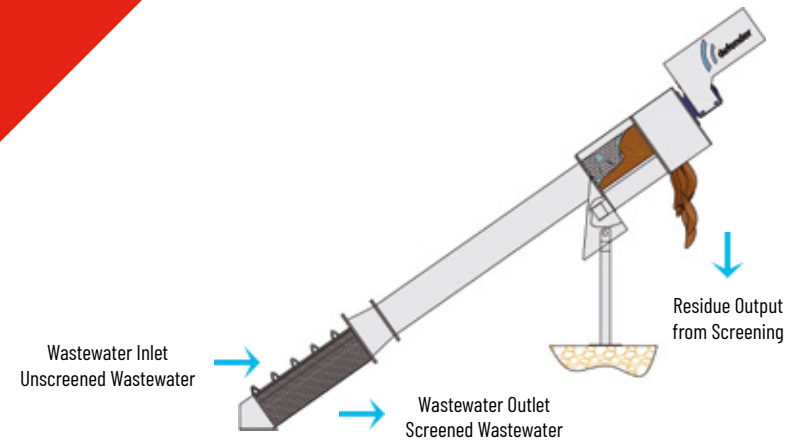


Models | Channel Screw Conveyor

TTC CHANNEL SCREW CONVEYOR



Screening, conveying and compacting of heterogeneous solids in a single unit. Equipped with a perforated mesh as a sieve at the water inlet for better filtration. Variable inclination up to 35°. Suitable for urban wastewater, agricultural and agri-food industries.



TECHNICAL SPECIFICATIONS, mm (in)

MODEL	Screw Diameter	Power kw (HP)	A	B	C	D	E	F	G	H	I
TTC 200	190 (7 1/2)	1.1 (1.5)	1,500 (59)	3,750 (147 5/8)	200 (7 7/8)	680 (26 6/8)	2,465 (97)	1,450 (57 1/8)	435 (17 1/8)	2,465 (97)	2,060 (81 1/8)
TTC 300	262 - 190 (10 3/8 - 7 4/8)	1.1 (1.5)	1,500 (59)	3,995 (157 2/8)	300 (11 6/8)	680 (26 6/8)	2,605 (102 4/8)	1,590 (62 5/8)	435 (17 1/8)	2,667 (105)	2,262 (89)
TTC 400	344 - 190 (13 4/8 - 7 4/8)	1.1 (1.5)	1,500 (59)	4,260 (167 6/8)	400 (15 6/8)	680 (26 6/8)	2,757 (108 4/8)	1,742 (68 5/8)	506 (19 7/8)	2,884 (113 4/8)	2,479 (97 5/8)
TTC 500	442 - 190 (17 3/8 - 7 4/8)	1.1 (1.5)	1,500 (59)	4,510 (177 4/8)	500 (19 5/8)	680 (26 6/8)	2,900 (114 1/8)	1,885 (74 2/8)	570 (22 4/8)	3,088 (121 5/8)	2,683 (105 5/8)

CLEAN WATER MAXIMUM FLOW RATES, M3/H (US GPM)

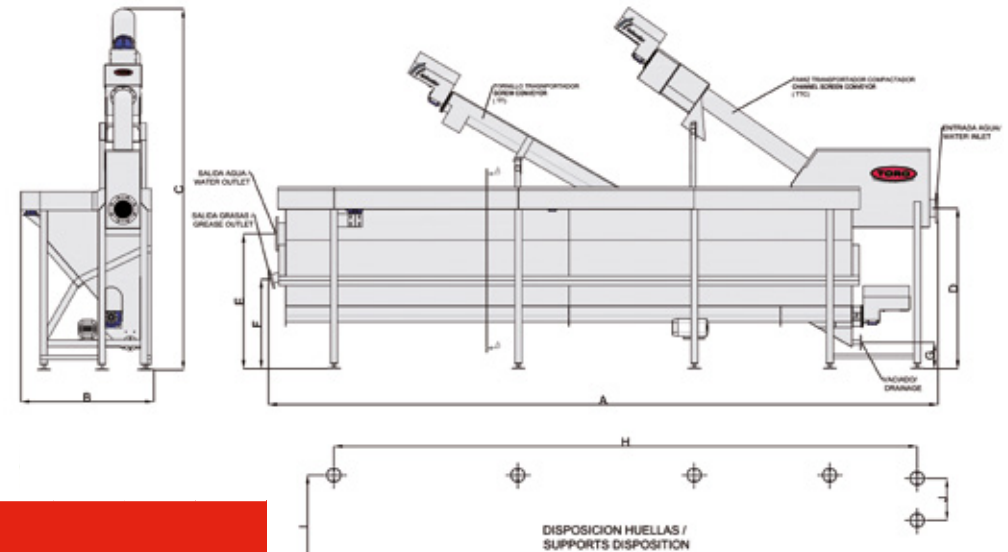
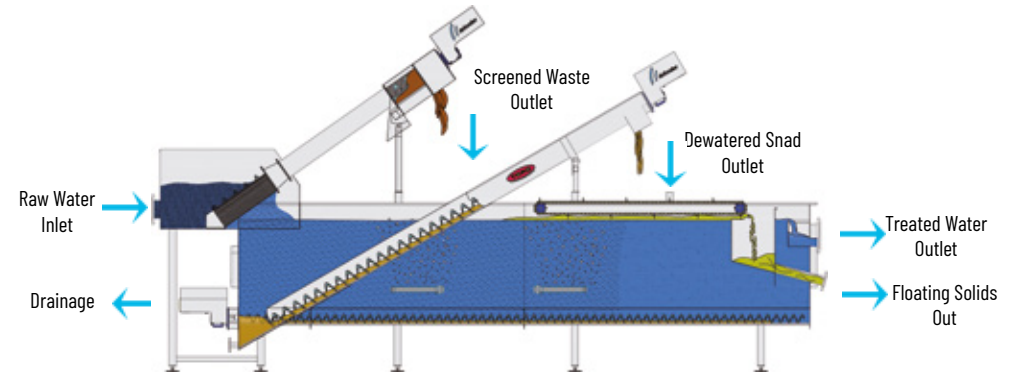
MODEL	Grill Mesh ▼▼, mm (in)			Perforated Mesh				
	1.00 (0.04)	2.00 (0.08)	3.00 (0.12)	2.00 (0.08)	3.00 (0.12)	4.00 (0.16)	5.00 (0.20)	6.00 (0.24)
TTC 200	82 (361)	127 (559)	156 (687)	55 (242)	65 (286)	74 (326)	84 (370)	93 (409)
TTC 300	159 (700)	246 (1,083)	302 (1,330)	108 (476)	126 (555)	144 (634)	162 (713)	180 (793)
TTC 400	249 (1,096)	386 (1,700)	475 (2,091)	155 (682)	198 (872)	245 (1,079)	281 (1,237)	324 (1,427)
TTC 500	354 (1,559)	548 (2,413)	674 (2,968)	216 (951)	281 (1,237)	353 (1,554)	425 (1,871)	497 (2,188)

Compact Pretreatment Plant | Models

PPC COMPACT PRETREATMENT PLANT



Compact wastewater pretreatment unit that integrates in a single unit a TTC and a DA, thus performing several processes: roughing, desanding and degreasing. Highly efficient equipment for wastewater pretreatment.



TECHNICAL SPECIFICATIONS, mm (in)

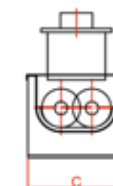
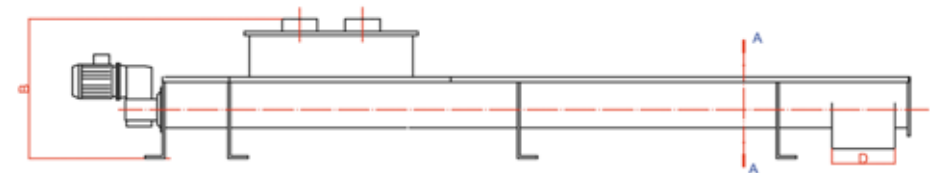
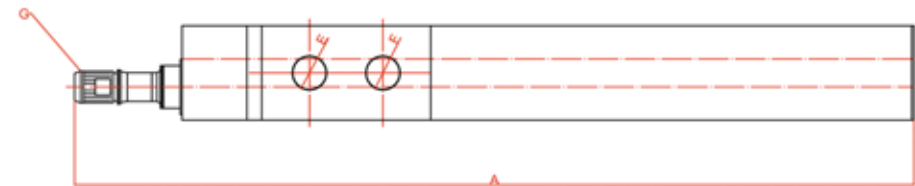
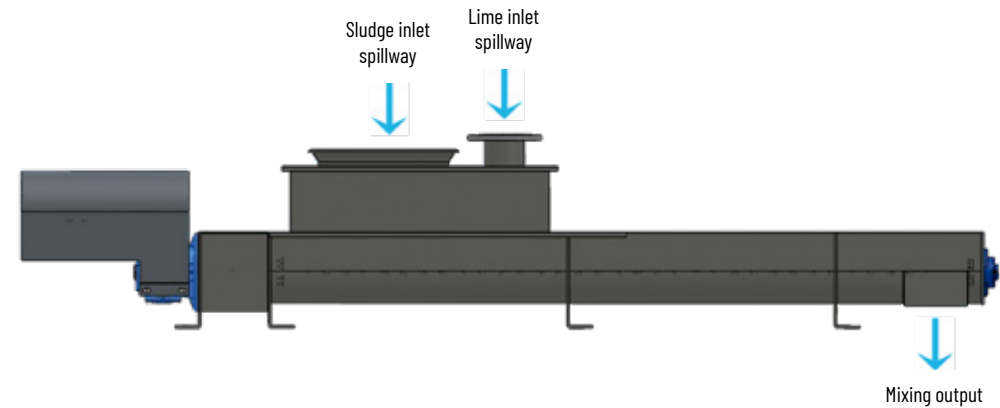
MODEL	Power kw (HP)	Slope m ³ /h (US gpm)	Inlet	Outlet	Grease outlet	Drainage	A	B	C	D	E	F	G	H	I	J
PPC-30	4.02 (5.46)	108 (475.52)	DN 200 ANSI 8"	DN 250 ANSI 10"	DN 100 ANSI 4"	DN 50 ANSI 2"	7,807 (307 3/8)	1,550 (61)	4,214 (165 7/8)	1,875 (73 7/8)	1,575 (62)	1,045 (41 1/8)	310 (12 2/8)	6,802 (267 6/8)	1,205 (47 4/8)	490 (19 2/8)
PPC-60	4.57 (6.21)	216 (951.05)	DN 250 ANSI 10"	DN 300 ANSI 12"	DN 150 ANSI 6"	DN 50 ANSI 2"	8,807 (346 6/8)	1,790 (70 4/8)	4,414 (173 6/8)	2,070 (81 4/8)	1,740 (68 4/8)	1,490 (58 5/8)	350 (13 6/8)	7,802 (307 1/8)	1,497 (58 7/8)	640 (25 2/8)
PPC-100	5.40 (7.34)	360 (1,585.08)	DN 350 ANSI 14"	DN 400 ANSI 16"	DN 200 ANSI 8"	DN 100 ANSI 4"	12,200 (480 3/8)	2,110 (83 1/8)	4,720 (185 7/8)	2,315 (91 1/8)	1,990 (78 3/8)	1,490 (58 5/8)	375 (14 6/8)	11,195 (440 6/8)	1,810 (71 2/8)	740 (29 1/8)

Models | Mixing Screw Conveyor

TTM MIXING SCREW CONVEYOR



It has a high mixing capacity since it comes with a double internal mixing system.



TECHNICAL SPECIFICATIONS, mm (in)

MODEL	Screw Diameter	Slope m ² /h (US gpm)	Power kw (HP)	A	B	C	D	E	F	G	H	I
TTM 150	190 (7 1/2)	0,3-2	1.1 (1.5)	3,500	552	379	200	2,465 (97)	1,450 (57 1/8)	435 (17 1/8)	2,465 (97)	2,060 (81 1/8)
TTM 200	262 - 190 (10 3/8 - 7 4/8)	2-5,5	1.5 (1.5)	3,500	675	474	250	2,605 (102 4/8)	1,590 (62 5/8)	435 (17 1/8)	2,667 (105)	2,262 (89)
TTM 240	344 - 190 (13 4/8 - 7 4/8)	4-7,5	2.2 (1.5)	4,000	725	556	300	2,757 (108 4/8)	1,742 (68 5/8)	506 (19 7/8)	2,884 (113 4/8)	2,479 (97 5/8)
TTM 280	442 - 190 (17 3/8 - 7 4/8)	5,5-10	2.2(1.5)	4,000	810	630	300	2,900 (114 1/8)	1,885 (74 2/8)	570 (22 4/8)	3,088 (121 5/8)	2,683 (105 5/8)

EQUIPMENT

● Standard equipment ● Optional equipamient

BODY	TC	TT	DA	TTC	PPC	TTM
Material AISI-304	●	●	●	●	●	●
Material AISI-316	●	●	●	●	●	●
Connection Flanges ISO/ANSI	●	●	●	●	●	●
Screw couplings	● / ●	● / ●	● / ●	● / ●	● / ●	● / ●
Protection cover	●	●	●	●	●	●
Motor housing	●	●	●	●	●	●
Lifting eyebolt	●	●	●	●	●	●
Anchoring legs	●	●	●	●	●	●
Blast finishing 125-250 µm Microspheres B60	●	●	●	●	●	●

CLEANING SYSTEM	TC	TT	DA	TTC	PPC	TTM
Self-cleaning brush	—	—	—	●	●	●

SCREENING MESH	TC	TT	DA	TTC	PPC	TTM
Material AISI-316	●	—	●	●	●	●
Grill/ perforated mesh	● / ●	—	● / ●	● / ●	● / ●	● / ●

DOCUMENTATION	TC	TT	DA	TTC	PPC	TTM
User manual in specific language	●	●	●	●	●	●
ISO standard documentation	●	●	●	●	●	●

• To achieve a high quality in our products and services, in Toro Equipment, we have developed and implemented a Quality Management System according to the UNE-EN-ISO 9001 standard, adapted to the needs of the company and is continuously improving the procedure.

• The system is based on a continuous monitoring of all the activities developed in the company:

- Design
- Manufacturing
- After-sales service

• The electrical panel includes as standard, Start/Stop, limit switch to stop the drum when the safety cover is lifted, support to hold it, emergency stop and automatic programming of the cleaning system.



● Standard equipment ● Optional equipment

CERTIFICATES	TC	TT	DA	TTC	PPC	TTM
CE Certificate	●	●	●	●	●	●
Certificate of origin	●	●	●	●	●	●
Factory test Certificate	●	●	●	●	●	●
Quality Certificate	●	●	●	●	●	●
Material Certificate	●	●	●	●	●	●
Welding Certificate	●	●	●	●	●	●

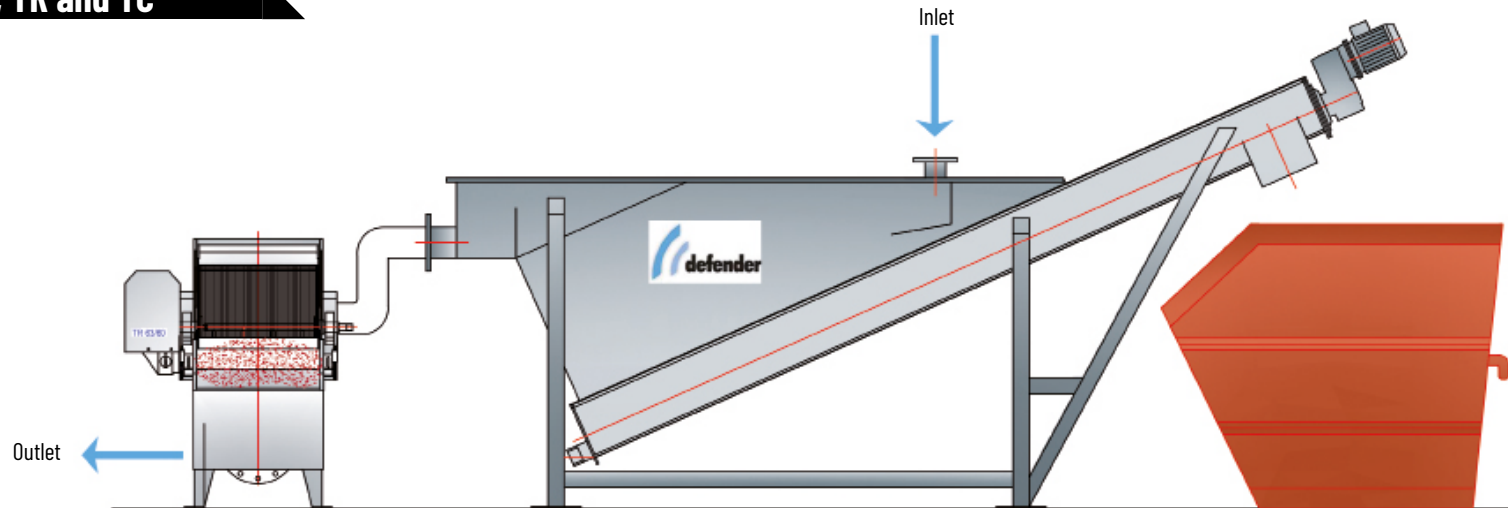
ELECTRIC PANEL	TC	TT	DA	TTC	PPC	TTM
Incorporation of electrical panel	●	●	●	●	●	●
Start/Stop	●	●	●	●	●	●
Automatic cleaning program	—	—	—	—	—	—
Emergency stop	●	●	●	●	●	●

CONDITIONING	TC	TT	DA	TTC	PPC	TTM
Multi-voltage motor	●	●	●	●	●	●
ATEX motor	●	●	●	●	●	●
Motor fulfilling NEMA, CSA, etc...	●	●	●	●	●	●

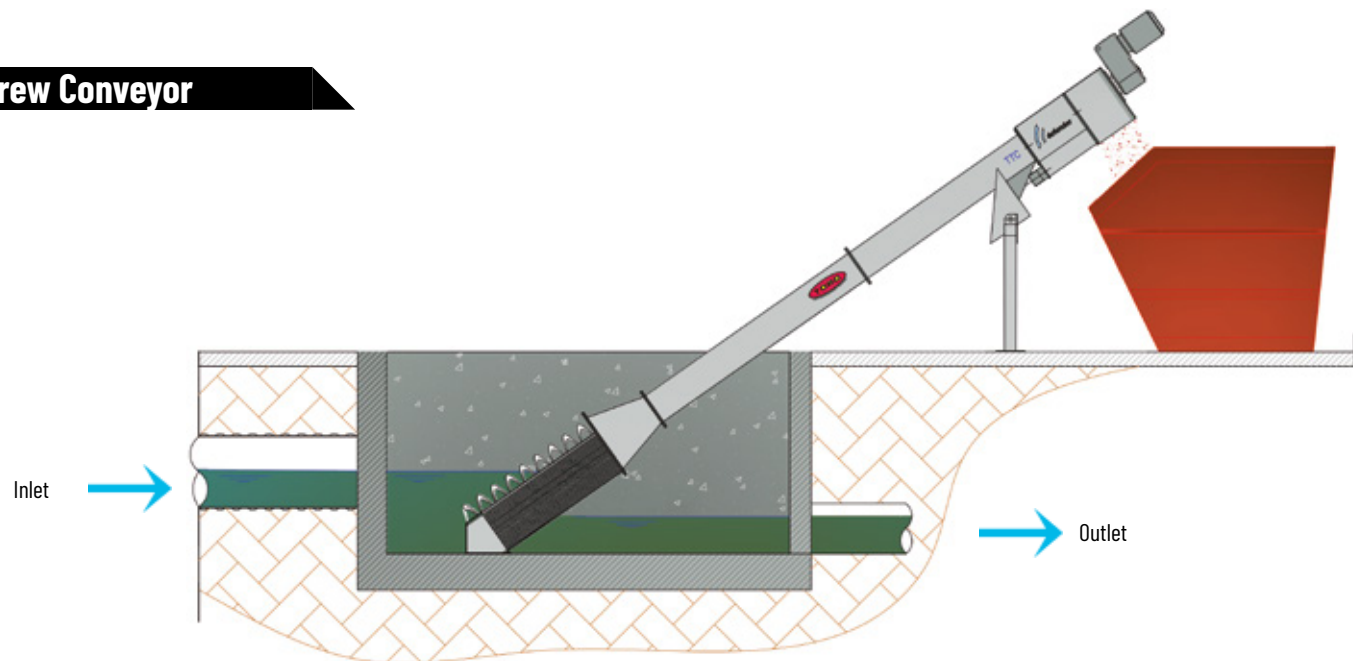
OTHERS	TC	TT	DA	TTC	PPC	TTM
Packed in fumigated crate	●	●	●	●	●	●
Retractable packaging	●	●	●	●	●	●
Containerization	●	●	●	●	●	●
Lifting ttructure	●	●	●	●	●	●
Rotating base	—	●	—	—	—	—
Wheels in legs	—	●	—	—	—	—
Solids connection hopper AISI-304	●	●	●	●	●	●
Solids connection hopper AISI-316	●	●	●	●	●	●
Solids connection hopper AISI-GRP	●	●	●	●	●	●
Mixer Transporter Screw Draco®	●	●	●	●	●	●
Rotary Screen 40&63 Defender®	●	●	●	●	●	●
Rotary Screen HPS M&L Defender®	●	●	●	●	●	●
Static Screen Defender®	●	●	●	●	●	●

Implementations

Group DA, TR and TC



Channel Screw Conveyor



Select your Pretreatment Equipment

EQUIPMENT ADAPTED TO YOUR NEEDS

WHAT WE NEED TO KNOW

- Flow rate.
- Application.
- Size of solids.
- Working hours.
- Screw length.
- Water conductivity.
- Installation of optionals. E.g.: lifting structure, screw inclination.





Factory 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
- Hungary
- Indonesia
- Iran
- Ireland
- Israel
- Italy
- Japan
- Jordan
- Latvia
- Lebanon
- Lithuania
- Luxembourg
- Malaysia
- Mexico
- Montenegro
- Morocco
- Netherlands
- Nicaragua
- Pakistan
- Panama
- Peru
- Philippines
- Poland
- Portugal
- Qatar
- Romania
- Russia
- Saudi Arabia
- Serbia
- Seychelles
- Singapore
- Slovenia
- South Africa
- Spain
- Switzerland
- Thailand
- Trinidad and Tobago
- Tunisia
- Turkey
- UK
- Ukraine
- United Arab Emirates
- United States of America
- Uruguay
- Vietnam

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Equipos de Pretratamiento

