



TRIO SAND WASHERS

Efficient Sand Washing & Classifying



DIAMOND
diamondequip.com

TRIO offers World Class Design, Engineering and Manufacturing to provide high value solutions for your crushing, screening, washing and material handling requirements.

The core goal of TRIO Engineered Products, Inc. is to pursue product improvement, product quality, and provide our customers with the most cost-effective equipment solutions.

TRIO - Building Solutions Together



TRIO continues to expand as a world-class designer & manufacturer of crushers, screens, washers, and conveyors for the aggregate, mining, recycling, and industrial minerals industries.

TRIO strives to provide the most rugged, robust, and reliable equipment for the most demanding applications. TRIO provides customized high value solutions according to our customers' needs, from single machines to stationary or portable plants, including turnkey projects.

TRIO's design and manufacturing teams have many years of experience building building TRIO Sand Washers which are technically referred to as [FMW] Fine Material Washers or more commonly known as Sand Screws. These washing and classifying tools are the combination of quality, reliability, and performance. TRIO's TSW Series Washers can be widely applied in the aggregate and mining industries.

TRIO: CREATES VALUE FOR YOU

TRIO Fine Material Washers or Sand Screws are a relatively simple straight forward method to cost effectively; Clean, Classify and Dewater fine granular material (sand) that is nominally sized less than 4 mesh.

TRIO manufactures a broad array of both single and twin spiral FMW (sand screws) in sizes from 36" to 72" which are among the largest in the world. A mix of durability, lower maintenance and operating costs make these washers an exceptional value.



RUGGED RELIABLE DESIGNS

TRIO builds an ultra heavy duty speed reducer for all Trio Washers. These reducers are capable of up to a 85:1 reduction ratio to achieve low spiral speeds and high torque outputs. TRIO reducers incorporate a sealed oil bath lubrication arrangement for maintenance-free operation.

A head-end gearbox coupling insures proper shaft alignment in conjunction with a flexible spider coupling protecting the rotating shaft and gear reducer against variations.



TRIO: SAND WASHERS

PREPARATION & FEEDING

The feed material to a FMW or sand screw is usually prepared by a wet screening operation to control the top size feed and provide enough water to form a slurry mixture with the proper ratio of solids and water. The slurry mixture is collected in the belly pan of the screen and transported to the FMW or sand screw via gravity flow in a declined flume or pipe.

EFFICIENT WASHING

Cleaning and classifying refers to removing water soluble clay, silt, and micro sized fine sand particles typically less than 150 mesh in size. The cleaning and classifying functions of a FMW or sand screw are accomplished by employing hydraulic separation.

Hydraulic separation uses water as the medium to clean and classify sand particles by weight. Larger particles weigh more than smaller particles so the larger particles sink and are collected in the bottom of the trough.



The sand particles are transported to the inclined discharge end by a double pitched steel spiral shaft equipped with replaceable cast wear shoes. The smaller lighter unwanted particles are floated to the surface of the claim settling pool and are discharged over the weirs.

DEWATERING

Dewatering occurs as the spiral shaft transports the settled sand out of the settling pool and up the incline of the trough. A chase water line with an adjustable flow valve is installed just below the sand discharge point at the top of the trough incline. This flow of chase water is directed along the outside edge of the sand being discharged by the spiral shaft. The flow velocity of the chase water actually carries excess water being squeezed out of the sand by the spiral back down the trough to the flared turbulence water pool.

EASY OPERATION

There are two components in the operation of a Sand Screw that can be adjusted which will effect the gradation of the product being produced.

One is the speed [RPM] of the spirals from 100% to 25%. Decreasing the spiral speed reduces the sand screws capacity and required HP. The finer the gradation of the finished product desired; the slower the spiral speed will need to be.

Two is the total amount of water [GPM] reporting to the sand screw. As the amount of water is increased the finished product gradation becomes more coarse. Correspondingly a greater percentage of wasted fines are carried out of the sand screw with the waste water overflowing the weirs.

Percentage of Screw Speed Required for the Percent of Fines in the Finished Product			
% Screw Speed [RPM] Required	% Passing 50 Mesh	% Passing 100 Mesh	% Passing 200 Mesh
100%	15	2	0
75%	20	5	0
50%	30	10	3
25%	50	25	8

TRIO Sand Screw Capacity at Variuos Speeds and Water Required to Make Mesh Separations													
TRIO Sand Screw Size	% Screw Speed (RPM)	Capacity				Power Required Each-Spiral	Spiral Speed RPM	Water [GPM] Required to Overflow Weirs					
		Single Screw		Twin Screw				100 Mesh Split		150 Mesh Split		200 Mesh Split	
		STPH	MTPH	STPH	MTPH			Single	Twin	Single	Twin	Single	Twin
36" x 25'	100%	100	91	200	182	15 HP-11 kW	21	700 GPM	1200 GPM	325 GPM	600 GPM	175 GPM	300 GPM
	75%	75	68	150	136	10 HP-7.5 kW	15						
	50%	50	46	100	92	7.5 HP-5.5 kW	12	2700 LPM	4500 LPM	1200 LPM	2300 LPM	670 LPM	1500 LPM
	25%	25	23	50	46	5 HP-3.7 kW	6						
44" x 32'	100%	175	160	350	320	20 HP-15 kW	17	1500 GPM	2700 GPM	750 GPM	1300 GPM	400 GPM	750 GPM
	75%	130	118	260	238	15 HP-11 kW	13						
	50%	85	77	170	155	10 HP-7.5 kW	9	5700 LPM	10,200 LPM	2850 LPM	4900 LPM	1500 LPM	2850 LPM
	25%	45	41	90	82	7.5 HP-5.5 kW	5						
54" x 34'	100%	250	228	500	455	30 HP-22 kW	14	1800 GPM	3200 GPM	900 GPM	1600 GPM	525 GPM	900 GPM
	75%	185	168	370	336	25 HP-18.5 kW	11						
	50%	125	114	250	228	15 HP-11 kW	7	6800 LPM	12,100 LPM	3400 LPM	6050 LPM	2000 LPM	3400 LPM
	25%	60	55	120	110	10 HP-7.5 kW	4						
66" x 36'	100%	400	364	800	728	40 HP-30 kW	11	2400 GPM	4000 GPM	1100 GPM	2000 GPM	625 GPM	1000 GPM
	75%	300	273	600	546	30 HP-22 kW	8						
	50%	200	182	400	364	25 HP-18.5 kW	5	9100 LPM	1500 LPM	4200 LPM	7600 LPM	2400 LPM	3800 LPM
	25%	100	91	200	182	15 HP-11 kW	3						
72" x 38'	100%	475	432	950	864	60 HP-45 kW	11		4400 GPM		2200 GPM		1000 GPM
	75%	355	323	700	646	50 HP-37 kW	8						
	50%	230	209	475	418	30 HP-22 kW	5	N/A	16,700 LPM	N/A	8300 LPM	N/A	3800 LPM
	25%	120	110	240	220	20 HP-15 kW	3						

Results may vary depending on feed material gradation, density, silt & clay content, amount of water used, equipment settings and washing application. Please consult TRIO's application department for specific capacity for your application.

SAFE EASY MAINTENANCE



All TRIO Washers utilize a lower outboard grease lubricated, anti-friction, self-aligning spherical roller bearing assemblies with replaceable rubber “donut” seals and stainless steel wear sleeves. The mounting of the bearing outside the tub protects the bearing from external water and dirt commonly associated with plant operations and provides easy inspection and fast maintenance.

The Left: photo is the outboard bearing assembly used on the smaller TRIO washers and **The Right:** photo is the pillow block type of bearing used on the larger TRIO washers or optional on some models. **The Center:** Photo is the Lower end shaft coupling that insures precise alignment and an easy method for removing the shaft for maintenance.

Performance Specifications for TRIO “TSW Series” Single Spiral Fine Material Washers

Models	Spiral Size	Approximate Weight		Feed Size	Max Capacity		Est. Water Required		Power Re-quired		Speed
		MM	Lbs.		Kgs	STPH	MTPH	GPM	LPM	HP	
TSW3625	915x7620	14130	6420	10 x 0	25 - 100	23 - 91	720	2725	15	11	10 -21
TSW4432	1118x9700	22420	10190	10 x 0	40 - 175	36 - 159	1720	6518	25	18.5	8 - 17
TSW5434	1370x10010	31970	14530	10 x 0	70 - 275	64 - 249	2090	7921	40	30	7 - 14
TSW6636	1676x10670	40860	18570	10 x 0	100 - 400	91 - 363	2590	9816	60	45	5 - 11

Performance Specifications for TRIO "TTSW Series" Twin Spiral Fine Material Washers

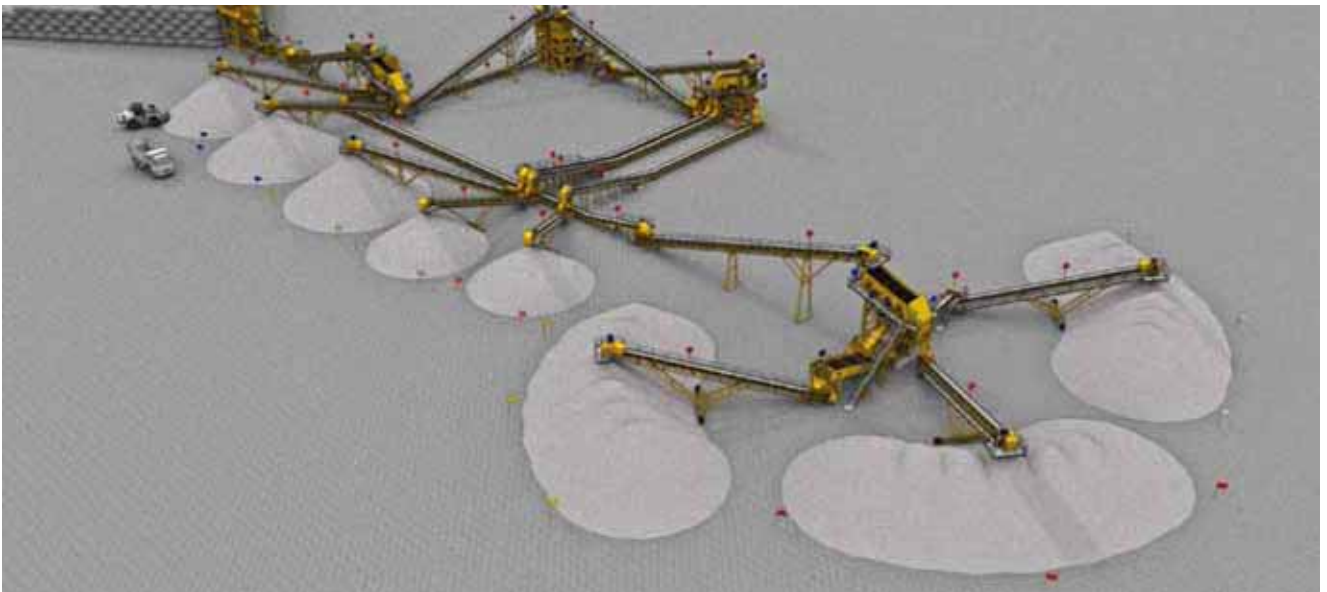
TTSW3625	915x7620	24860	11300	10 x 0	50 - 200	45 - 180	1250	4737	2 x 15	2 x 11	10 - 21
TTSW4432	1118x9700	41490	18860	10 x 0	80 - 350	72 - 318	2800	10612	2 x 25	2 x 18.5	8 - 17
TTSW5434	1370x10010	56340	25610	10 x 0	140 - 550	128 - 498	3700	14023	2 x 40	2 x 30	7 - 14
TTSW6636	1676x10670	92250	41930	10 x 0	200 - 800	182 - 726	4375	16581	2 x 60	2 x 45	5 - 11
TTSW7238	1830x11580	118430	53830	10 x 0	237- 950	215- 862	5040	19101	2 x 75	2 x 55	5 - 11

Results may vary depending on feed material gradation, density, silt & clay content, amount of water used, equipment settings and washing application. Please consult TRIO’s application department for specific capacity for your application.

COMPREHENSIVE SOLUTIONS

TRIO can provide not only key single machines, but also complete crushing, screening, washing, and material conveying solutions. We take your investment scale, working environment, capacity and product gradation requirements into consideration to provide a customized solution. Our optimized solutions include machine model selection, operating simulation, and on-site layout drawings.

TRIO's outstanding design, engineering and manufacturing capabilities; together with complete after-sales service will ensure the successful implementation of your project; creating value to help you achieve your profit objectives.



GLOBAL SERVICE & SUPPORT

From Europe to mid-Asia, Africa to America, China to Australia, in every corner of the world, no matter what you order (a complete system, single machine, or a spare part) TRIO will provide you with professional service and support.

Combined with, off-the-shelf availability, Global distribution for rapid delivery and Superior quality, TRIO replacement parts, and skilled service support personnel make TRIO a valued partner in the global mining and aggregate industries

All TRIO products are assembled and test run in our factory to ensure a fast and efficient installation, creating extra value for you. We also provide professional training for maintenance and operations personnel to insure smooth and efficient plant operations along with safe and easy maintenance.

TRIO TSW Series Sand Screws are rugged, reliable, high performance washers, and your best choice.





CRUSHERS

CT Series Jaw Crusher
TC Series Cone Crusher
APS& APP Series Impact
Crusher
TV Series VSI Crusher

Screens

TIH, THI&TIOSP Series
Inclined Screen
TTH Series Horizontal
Screen
TBSS& TBSD Series Banana
Screen

Portable Plants

Track mounted portable
plants
Wheel mounted portable
plants

Plant Solutions

'Turn-key' projects

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