

**WEH**

**Minerals**

**Trio® Crushing Products**





**Trio®** products you can rely on

Trio® products operate in some of the most challenging environments in the industry. Our Trio® solutions are designed and proven to be able to withstand even the harshest of operating conditions.

Designed to perform, our Trio® products assure ease of operation. We understand that the continued production of quality end-products is of critical importance - that's why our Trio® products are manufactured to be quickly installed and commissioned, and are fully supported by our Weir Minerals global service network.

**By using the very best design standards and methodologies, our extensive range of equipment is built to last.**

#### **Every step of the way**

At Weir Minerals, our reputation for quality engineering and exceptional service is second-to-none.

Combining decades of experience with innovative design and the highest quality materials, our equipment is designed with reliability, productivity, ease of operation, and maintenance in mind.

Designed to maximise performance and built for extra-long service life, our entire range of crushing and grinding equipment is backed by the Weir Minerals service network, operating in over 70 countries across the globe.

#### **Rock solid**

Our crushing and grinding products work together with our heavy duty vibrating screens and washing equipment to deliver reliable solutions across the toughest mining, aggregate and recycling applications.

Our Trio® jaw crushers and horizontal shaft impact crushers are among the highest capacity primary crushers available on the market.

Our Trio® APS series horizontal impact crushers, Trio® TC and Trio® TP series cone crushers are high performance secondary and tertiary crushers. Our Trio® vertical impact crushers are ideal for tertiary and extra-fine quaternary crushing.

## **Our numbers...**

With a global footprint covering over **70** countries, we operate more than **140+** facilities providing manufacturing and service support.

**+**

**1200+** crushers

**1000+** screens

**100+** Enduron<sup>®</sup> HPGR

***and counting...***

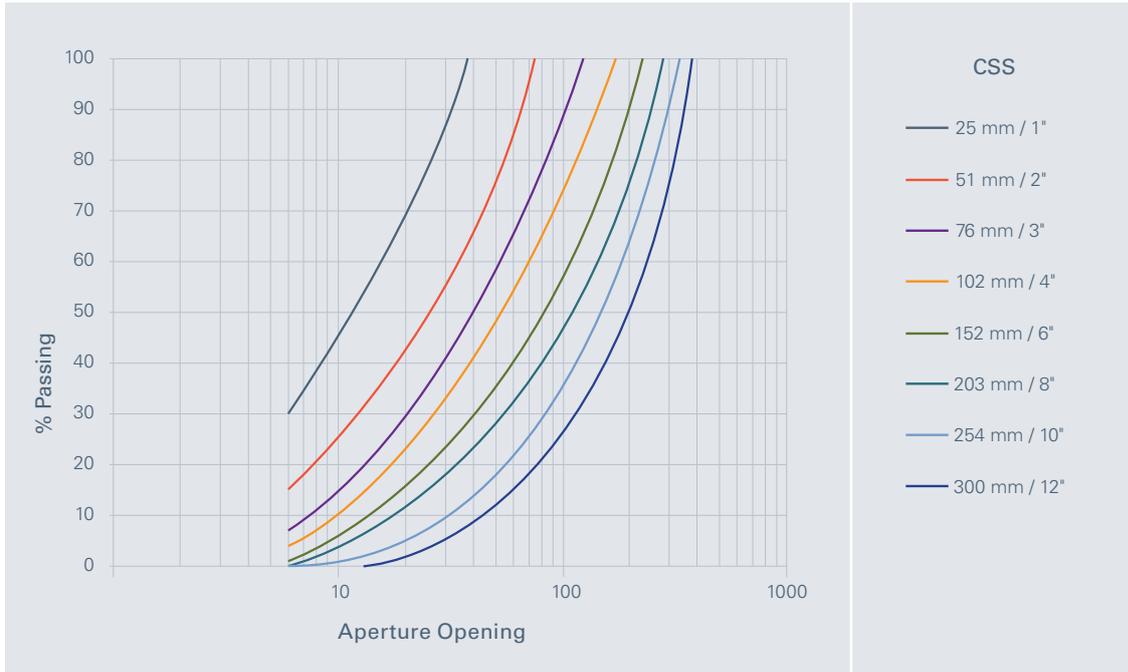


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**Our range of heavy duty Trio® CT series jaw crushers are expertly engineered to perform in the toughest applications.**

**Trio® CT Jaw Crusher Gradation Curves**

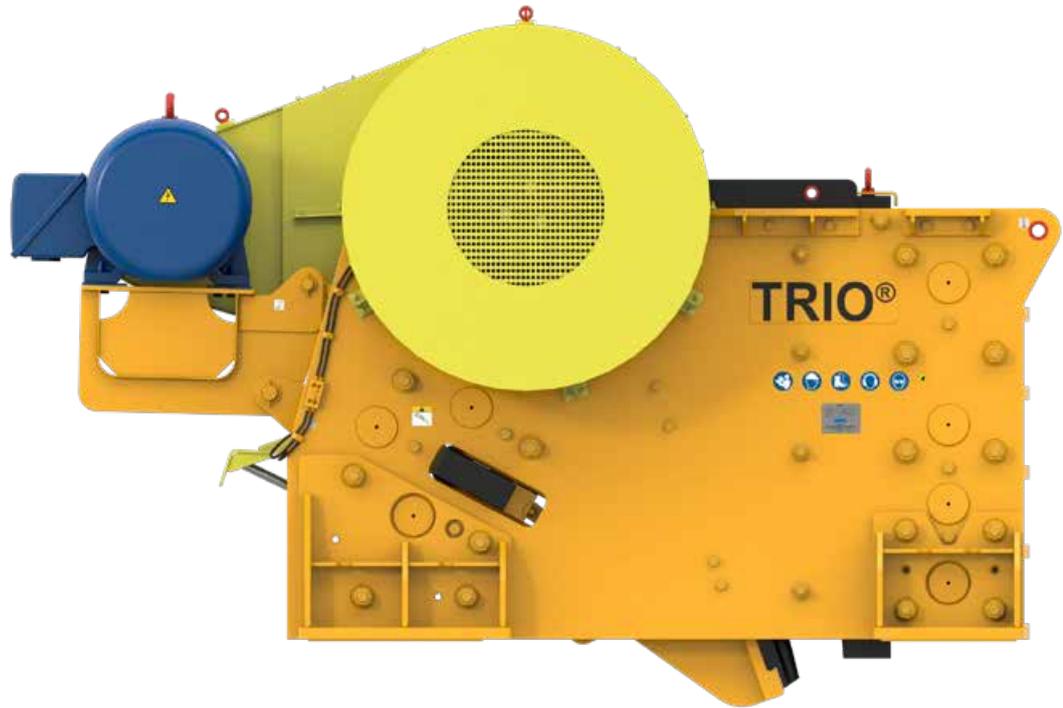


NOTE: the above graph relates to an application for medium hard rock, where the fines were removed and the feed contained no clay or moisture.

### Typical Physical Properties

MODEL	MAX. FEED SIZE	WEIGHT	POWER	OPERATING SPEED	PRODUCTION RANGE	CLOSED SIDE SETTING (CSS) RANGE	CRUSHER FEED OPENING
	mm			RPM	MTPH	mm	mm
CT1030	210	6,300	30	300	21 - 54	25-90	250 x 760
CT2036	405	11,700	55	250	82 - 209	50-127	500 x 900
CT2436	510	15,400	75	250	136 - 363	63-178	610 x 914
CT3042	635	24,900	110	250	181 - 417	75-178	762 x 1,067
CT3254	660	30,300	160	250	308 - 517	75-178	810 x 1,370
CT3648	750	47,700	185	225	299 - 635	100-229	915 x 1,220
CT4254	915	58,200	200	225	454 - 816	127-254	1,067 x 1,372
CT4763	1,020	81,600	250	200	560 - 1,070	152-305	1,200 x 1,600

NOTE: some technical data may vary if the hydraulic toggle relief option is selected. In addition, a bulk density of 1.6t/m<sup>3</sup> and W<sub>i</sub> of 16 formed the basis of the gradation curve and capacities above. For more information, please contact your local Weir Minerals representative.



## TRIO® CT SERIES PRIMARY JAW CRUSHERS

Our Trio® CT series jaw crushers are available in an extensive range of sizes suitable for mobile or stationary jaw crushing applications. They are manufactured with a higher mass, leading to improvements in their mechanical capabilities and reliability in tough applications.

### Applications

- Primary crushing of mined ore
- Primary crushing of aggregate material
- Recycle crushing of asphalt products
- Recycle crushing of concrete products

### Design features

Our Trio® CT series jaw crushers combine a robust design with a steep nip angle and optimised toggle to create a crusher that offers an aggressive bite and reliable operation. **This crusher can be fitted with a hydraulic toggle relief system as required.**

Our Trio® CT series jaw crushers incorporate a steeply designed toggle seat which enables efficient crushing at high production rates. They also feature a fixed jaw die configuration with a wrap-around design to protect the crusher frame. In addition, hydraulically adjusted wedges are incorporated to facilitate quick and easy adjustments to the closed side settings.

Engineered to perform in the toughest of environments, our Trio® CT series jaw crushers feature large, spherical, self-aligning roller bearings in the pitman to help protect the machine from issues related to unforeseen stresses. They also feature extra-large, drop-forged and heat treated overhead eccentric shafts.

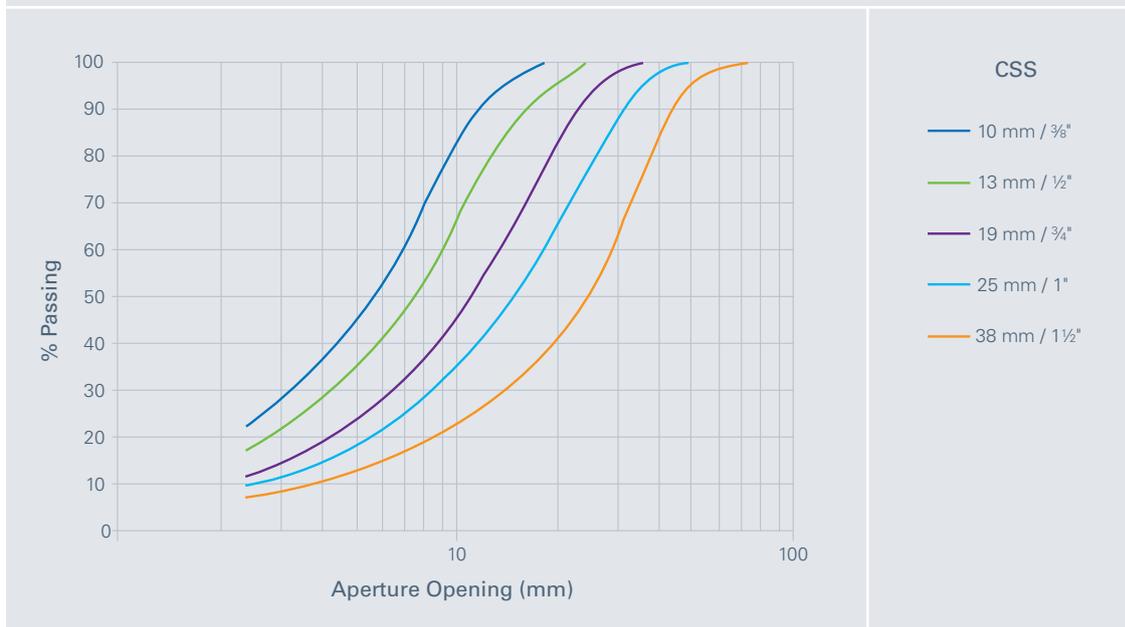
These rugged features, combined with both front and rear frames cast from high strength, low carbon alloy steel, mean our machines are built to last.

### Liner options

- standard corrugated coarse
- corrugated coarse with curved belly
- slab breaker
- extra heavy-duty flat jaw dies
- standard manganese steel wear liners
- standard ESCO® manganese liners
- optimised ESCO® manganese liners, designed and formulated to extend crusher uptime based on wear analysis of special customer applications

**Our Trio® TP cone crusher range is designed to deliver high performance and maximum reliability, without compromising on safety.**

**Trio® TP Cone Crusher Gradation Curves**



NOTE: the above graph relates to an application for medium hard rock, where the fines were removed and the feed contained no clay or moisture.

**Typical Physical Properties**

MODEL	MAX. FEED SIZE*	WEIGHT	POWER	OPERATING SPEED	PRODUCTION RANGE	CLOSED SIDE SETTING (CSS) RANGE	HEAD DIAMETER
	mm	kg	kW	RPM	MTPH	mm	mm
TP260	244	12,000	185	910 - 1,088	72 - 259	6 - 38	935
TP350	245	18,500	250	870 - 1,024	113 - 490	6 - 45	1,133
TP450	305	25,000	315	768 - 1,024	146 - 673	8 - 51	1,250
TP600	296	35,000	450	768 - 1,105	194 - 832	8 - 51	1,475
TP900	320	76,000	630	938 - 1,072 or 1,137 - 1,299**	279 - 1166	8 - 57	1,829

\* Standard coarse chamber

\*\* Using different gear ratios

NOTE: A bulk density of 1.6t/m<sup>3</sup> and Wi of 16 formed the basis of the gradation curve and capacities above. For more information, please contact your local Weir Minerals representative.



## TRIO® TP SERIES CONE CRUSHERS

Our Trio® TP cone crushers are designed for customers producing aggregates with fractured faces or who need maximum size reduction at a high production rate. Cast in high strength, alloy steel with an optimised design, our Trio® TP cone crushers deliver maximum strength and durability in demanding applications.

### Applications

- Secondary stage crushing circuits
- Tertiary stage crushing circuits
- Quaternary stage crushing circuits
- Specification size and/or shape for aggregate crushing
- Crushing ore for maximum reduction, leaching or milling operations

### Design features

All of our Trio® TP cone crushers feature a stepped crushing chamber angle, a large crushing stroke, a high pivot point, and optimised speed to deliver a finer product through increased inter-particle comminution.

Our Trio® TP cone crushers are Synertrex® enabled which means you can monitor the operation and health of your crusher, whether on-site or remotely. This technology also provides component replacement recommendations and machine optimisation advice. (Please see page 22 for more details about our Synertrex® technology).

The closed side setting (CSS) of our Trio® TP cone crushers can be easily adjusted using the threaded bowl and hydraulic gear drive. Operating controls consist of a fully integrated hydraulic console with push button controls for clamping, clearing and adjustment. These crushers can be operated remotely and can be fully integrated into the plant's control system if required.

Our Trio® TP series cone crushers also feature a self-contained, climate-controlled oil lubrication skid with integrated programmable logic controller (PLC) monitoring condition sensors. These crushers also utilise bronze bushings designed for extended life under maximum load.

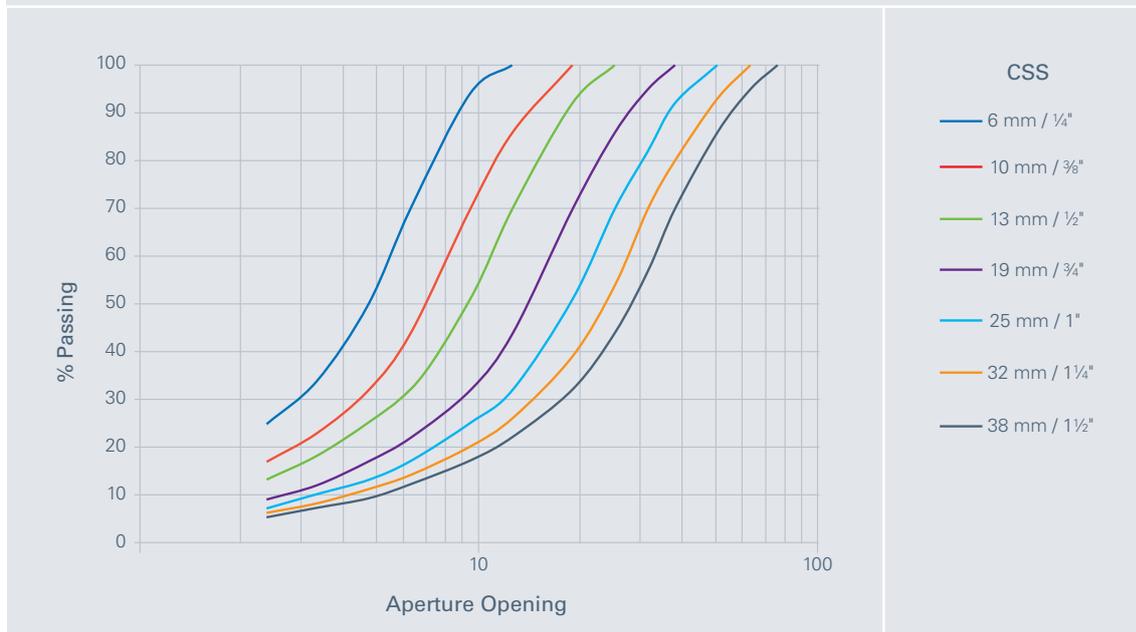
In addition, all key components feature high alloy steel castings and forgings for long and reliable performance under severe crushing conditions. The pedestal main shaft and spiral bevel gears are also machined from high alloy steel forgings.

### Liner options

- standard 13% manganese steel wear liners and mantles for standard and short head applications
- optional 18% manganese steel wear liners and mantles offered for standard short head applications
- standard ESCO® manganese liners
- optimised ESCO® manganese liners, designed and formulated to extend crusher uptime based on wear analysis of special customer applications

**Our Trio<sup>®</sup> TC series cone crusher is typically heavier than similarly sized machines, greatly increasing its reliability in tough applications.**

**Trio<sup>®</sup> TC Cone Crusher Gradation Curves**



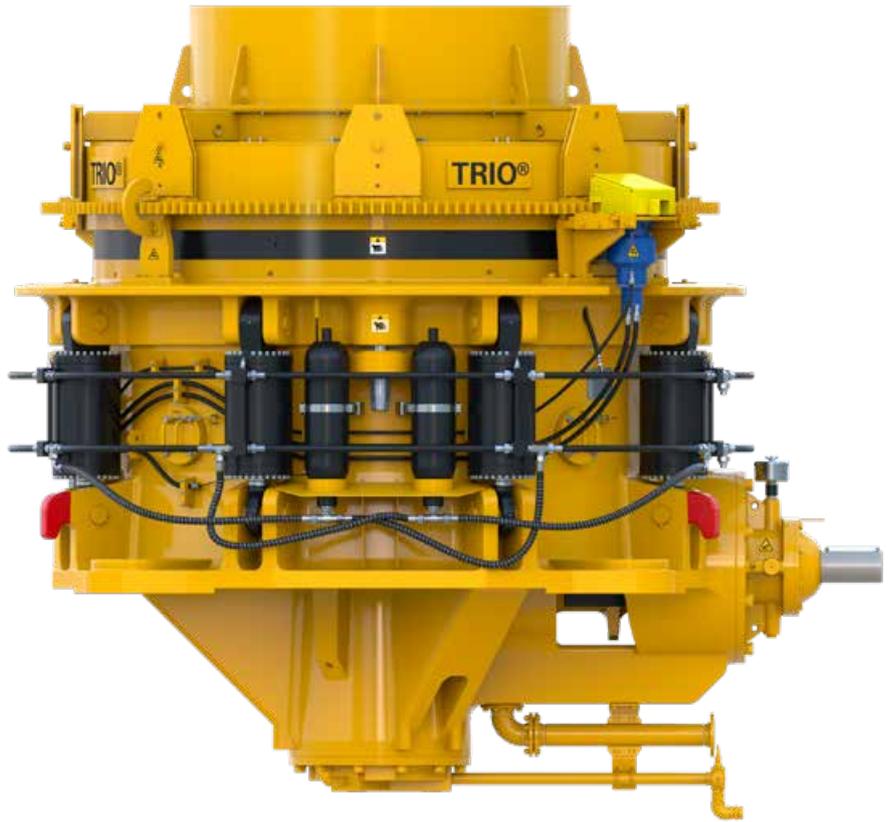
NOTE: the above graph relates to an application for medium hard rock, where the fines were removed and the feed contained no clay or moisture.

**Typical Physical Properties**

MODEL	MAX. FEED SIZE*	WEIGHT	POWER	OPERATING SPEED	PRODUCTION RANGE	CLOSED SIDE SETTING (CSS) RANGE	HEAD DIAMETER
	mm	kg	kW	RPM	MTPH	mm	mm
TC36	184	12,000	90	600	63 - 186	6 - 38	914
TC51	271	22,500	200	635	90 - 426	6 - 51	1,295
TC66	282	43,500	250	560	154 - 562	6 - 51	1,676
TC84XR	383	78,000	450	485	318 - 1590	6 - 64	2,134

\* Standard coarse chamber

NOTE: A bulk density of 1.6t/m<sup>3</sup> and Wi of 16 formed the basis of the gradation curve and capacities above. For more information, please contact your local Weir Minerals representative.



## TRIO® TC SERIES CONE CRUSHERS

Our Trio® TC series cone crushers are designed to be reliable, simple to operate and maintain, while incurring low operational costs. The design of our live-shaft TC series has been proven to perform in heavy-duty secondary and tertiary crushing applications.

### Applications

- Secondary stage crushing circuits
- Tertiary stage crushing circuits
- Quaternary stage crushing circuits
- Down-sizing of various types of ore products, prior to grinding operation
- Pebble crushing

### Design features

Designed to deliver high crushing force, increased horsepower and moderate increases in crushing speed, our Trio® TC cone crushers include modern hydraulic features that allow you to safely and easily adjust the crusher settings.

Tramp material is dealt with safely through a fully automated tramp-release and setting recovery system. The tramp release hydraulics can also be used to safely clear the crushing chamber should a sudden disruption in plant power cause a shut-down of the cone crusher.

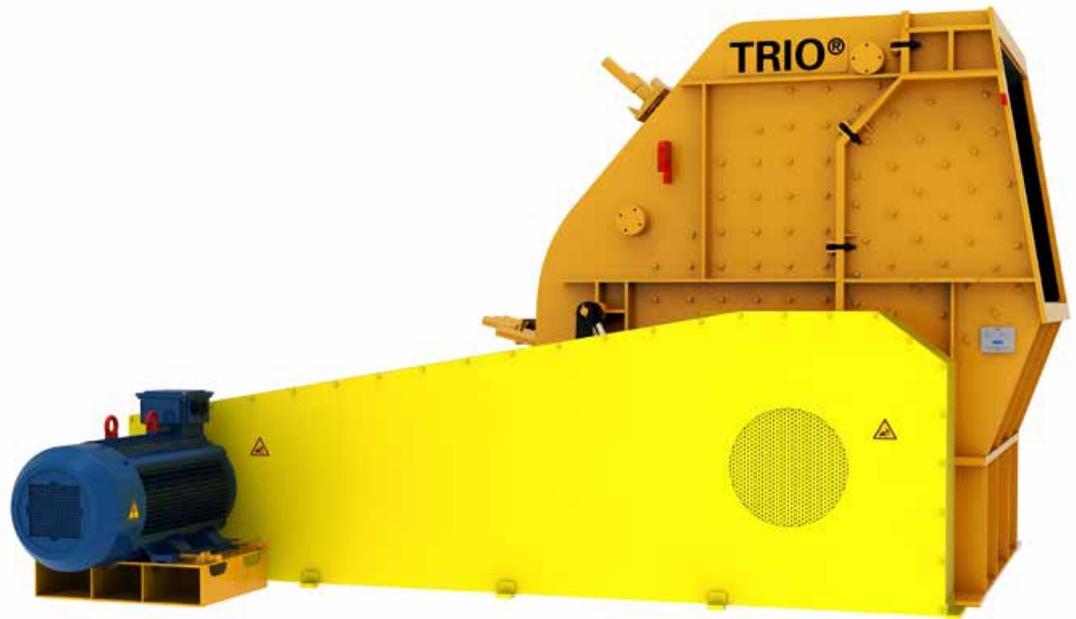
In addition, our Trio® TC series cone crushers can be operated remotely and can be fully integrated into the plant's control system if required.

Our Trio® TC cone crusher range is manufactured using a combination of heat-treated, stress-relieved cast and fabricated high strength alloy steels. This combination delivers long service life while allowing weld repairs and rebuilds of major components, even after operating for several years within severe duty crushing applications.

### Liner options

- standard 13% manganese steel wear liners and mantles for standard and short head applications
- optional 18% manganese steel wear liners and mantles offered for standard short head applications
- standard ESCO® manganese liners
- optimised ESCO® manganese liners, designed and formulated to extend crusher uptime based on wear analysis of special customer applications





## TRIO® APP SERIES HORIZONTAL IMPACT CRUSHERS

Our Trio® APP series horizontal impact crushers are designed for high volume and high reduction ratio impact crushing. Particularly useful when processing limestone, these crushers are also suitable in applications where typical compression crushers, such as jaw crushers and cone crushers, would have difficulty meeting strict particle shape requirements. In some applications, our Trio® APP horizontal impact crushers are capable of generating a product that does not require secondary crushing. These crushers are valued for their versatility under a wide range of operating conditions.

### Applications

- Crushing of low abrasive and soft aggregates
- Mobile plants and systems
- Beneficiation

### Design features

Our Trio® APP series horizontal impact crushers feature robust steel coil springs which provide additional tension on the secondary curtain. This maintains a consistent gap setting, helping to create a uniform end-product.

Shims and hydraulically assisted jacks allow you to easily adjust the apron gap settings, while access doors on the top, rear and sides make inspection and routine maintenance safe and simple.

Adjustment and replacement of the stripper bar can be performed from outside of the machine via bolted access covers.

Our Trio® APP series horizontal impact crushers also boast a hydraulically-powered crusher opening, with safety locks and proximity switch, allowing operators to safely inspect and maintain the crusher.

By utilising the highest quality materials, these hard working machines are designed to deliver precision and reliability. Featuring a welded and stress-relieved carbon steel main frame, our Trio® APP series crushers also feature solid, one-piece, cast alloy steel rotors with abrasion resistant wear plates, forged steel rotor shafts, abrasion resistant steel interior liner plates, and monolithic manganese steel primary curtains.

**One of the outstanding benefits of using our range of horizontal impact crushers is the high ratio of reduction that can be achieved in a single stage of crushing.**

#### Typical Physical Properties - APP Series

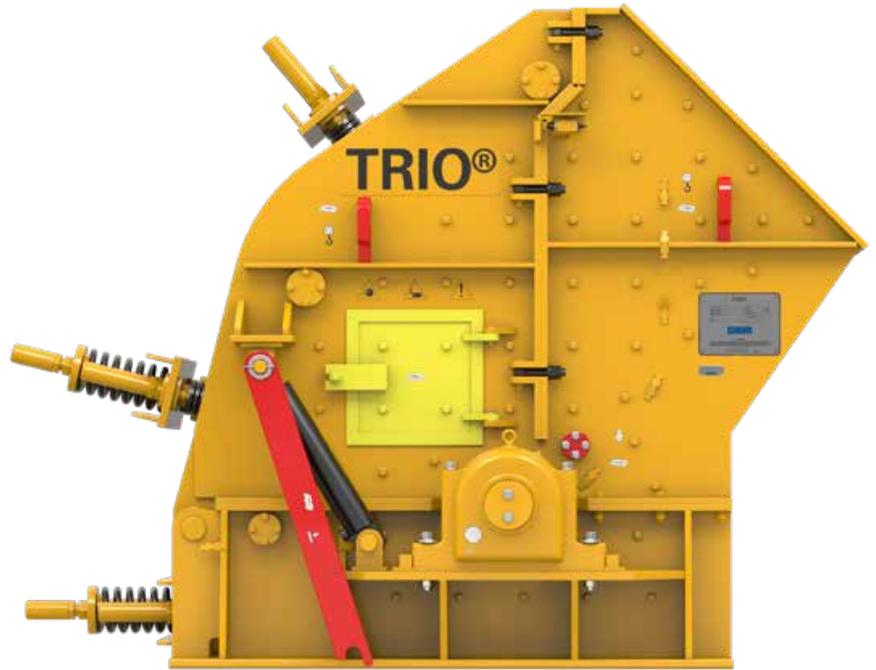
MODEL	MAX. FEED SIZE	WEIGHT	POWER	OPERATING SPEED	PRODUCTION RANGE	FEED OPENING	ROTOR SIZE	MIN SETTING (PRIMARY/SECONDARY)
	mm	kg	kW	RPM	MTPH	mm	mm	mm
APP4354	600	17,500	200	400 - 800	180 - 320	1,000 x 1,400	1,092 x 1,372	150/100

NOTE: A bulk density of 1.6t/m<sup>3</sup> and Wi of 14 formed the basis of the capacities above. For more information, please contact your local Weir Minerals representative.

#### Typical Physical Properties - APS Series

MODEL	MAX. FEED SIZE	WEIGHT	POWER	OPERATING SPEED	PRODUCTION RANGE	FEED OPENING	ROTOR SIZE	MIN SETTING (PRIMARY/SECONDARY)
	mm	kg	kW	RPM	MTPH	mm	mm	mm
APS3030	200	4,600	55	600 - 1250	18 - 54	680 x 800	762 x 762	25/13
APS4034	400	9,400	110	400 - 950	68 - 180	800 x 900	1,016 x 864	38/19
APS4054	400	12,400	160	400 - 950	110 - 270	800 x 1,400	1,016 x 1,372	38/19
APS5160	600	21,000	315	400 - 700	180 - 360	900 x 1,570	1,295 x 1,524	51/25

NOTE: A bulk density of 1.6t/m<sup>3</sup> and Wi of 14 formed the basis of the capacities above. For more information, please contact your local Weir Minerals representative.



## TRIO® APS SERIES HORIZONTAL IMPACT CRUSHERS

Our Trio® APS series horizontal impact crushers offer large reduction ratios and a high production capacity, without compromising the quality of the cubical product. Our Trio® APS series crushers feature a large unobstructed opening for slabby feed. These versatile crushers can be used in a range of applications including the recycling of asphalt, concrete, slag and glass.

### Applications

Secondary crusher in:

- asphalt recycling
- concrete recycling
- slag applications
- glass recycling

### Design features

Our Trio® APS series horizontal impact crushers are designed to consistently deliver a high quality end-product while proving intuitive and easy to operate.

Shims and hydraulically assisted jacks allow users to easily adjust the apron gap settings, while access doors on the top, rear and sides make inspection and routine maintenance safe and simple.

Adjustment and replacement of the stripper bar can be performed from outside of the machine via a bolted access cover.

Our Trio® APS series crushers also boast a hydraulically-powered crusher opening with safety locks and a proximity switch to further aid inspection and maintenance.

Featuring a welded and stress-relieved low carbon steel main frame, our Trio® APS series crushers also include welded open frame or solid cast alloy steel rotors with abrasion resistant wear plates, forged steel rotor shafts, and abrasion resistant steel interior liner plates.

**Our range of vertical shaft impact crushers are designed to meet the ever-changing requirements in the construction aggregate environments.**

#### Typical Physical Properties

MODEL	MAX. FEED SIZE	WEIGHT	POWER	OPERATING SPEED	PRODUCTION RANGE	ROTOR SIZE	ROTOR PORT CONFIGURATIONS
	mm			kW			
TV65-ROR-SD	40	9,500	160	1800-2700	60 - 100	635	4
TV85-ROR-SD	50	13,000	250	800-1800	150 - 250	813 or 889	5 or 6
TV85-ROR-DD	50	14,500	2x132	800-1800	150 - 250	813 or 889	5 or 6
TV85-ROS-SD	40	15,000	315	800-1650	100 - 300	889	6
TV85-ROS-DD	40	16,500	2x160	800-1650	100 - 300	889	6
TV85-SOS-SD	90	15,500	315	800-1400	100 - 300	889	4
TV85-SOS-DD	90	17,000	2x200	800-1400	100 - 400	889	4
TV95-ROR-SD	50	13,500	315	800-1800	220 - 300	889 or 1016	4,5,or 6
TV95-ROR-DD	50	16,500	2x315	800-1800	220 - 500	889 or 1016	4,5,or 6
TV95-ROS-SD	50	16,000	315	800-1650	180 - 350	889	6
TV95-ROS-DD	50	19,000	2x315	800-1650	180 - 550	889	6
TV95-SOS-SD	125	19,500	315	800-1400	100 - 550	1067	4 or 6
TV95-SOS-DD	125	22,500	2x315	800-1400	100 - 550	1067	4 or 6

NOTE: A bulk density of 1.6t/m<sup>3</sup> and Wi of 14 formed the basis of the capacities above. For more information, please contact your local Weir Minerals representative.



## TRIO® TV SERIES VERTICAL IMPACT CRUSHERS

Our Trio®TV series vertical impact crushers are high performance comminution machines. Unlike compression crushers, Trio®TV series crushers accelerate rock to high speeds, breaking it along its natural fracture lines with high energy impacts. This reduces wear on the crusher while still producing high quality shaped aggregates and manufactured sand.

### Applications

- Secondary crushing
- Tertiary crushing
- Beneficiation
- Particle shaping
- Sand manufacture

### Design features

This high performance, specialised, vertical impact crusher is designed to deliver flexibility through its modular crusher housing and replaceable centre bearing cartridge.

Lubrication of the bearing cartridge via a dedicated lubrication unit facilitates a rotor speed that is higher than traditionally offered by grease lubricated bearings.

Offering versatility, our Trio®TV series crushers can be designed for a variety of crushing, shaping, beneficiation, and sand production tasks. In addition,

modifications can be made post-sale in the event customers are required to react to a change in requirements.

A hydraulically-powered lid lifting mechanism, external feed pipe adjustment, and a lid inspection cover combine to create a crusher which is simple and safe to service.

Featuring a welded and stress-relieved carbon steel main frame, and chrome iron feed plate, impeller shoes and feed pipe, these crushers are robust and reliable. Our Trio®TV series vertical impact crushers also feature tungsten carbide tipped inner and outer rotor bars, replaceable chrome iron wear rings and plates, and cast iron anvil rings.



# SYNERTREX<sup>®</sup>

## Advanced. Understanding.

Our revolutionary Synertrex<sup>®</sup> technology gives you the ability to know all about your equipment, with accuracy and attention to detail, delivered in real time.

Utilising sensors that are applied to your Weir Minerals equipment, the Synertrex<sup>®</sup> Intelligence Platform captures data that is continually analysed through edge computing.

Synertrex<sup>®</sup> technology monitors the health of your machinery, or those indicators that make your equipment reliable. It allows you to remotely monitor wear and tear, and manage maintenance. And with the early detection of trouble spots such as drive systems, structural or lubrication issues, our Synertrex<sup>®</sup> technology is designed to alert you before issues turn into costly downtime.

Synertrex<sup>®</sup> also assesses your machinery's performance and provides guidance on potential improvements, such as optimising your equipment's energy efficiency or throughput.

By using our Synertrex<sup>®</sup> technology, keeping your equipment at its most profitable is now a reality.

## **Our crushing philosophy**

### **Work safe**

Keeping your people and our people safe every day.

### **Built to last**

Combining the latest technological advancements and engineering expertise with the toughest materials to deliver robust, rugged, long-lasting equipment.

### **Complete solutions**

Partnering with you to deliver unique, site-specific solutions to allow you to fully optimise your operations and decrease your operating costs.

### **Global support**

Ensuring you have the support you need, whenever and wherever you need it.





## Minerals

[www.global.weir](http://www.global.weir)  
[trio@mail.weir](mailto:trio@mail.weir)

