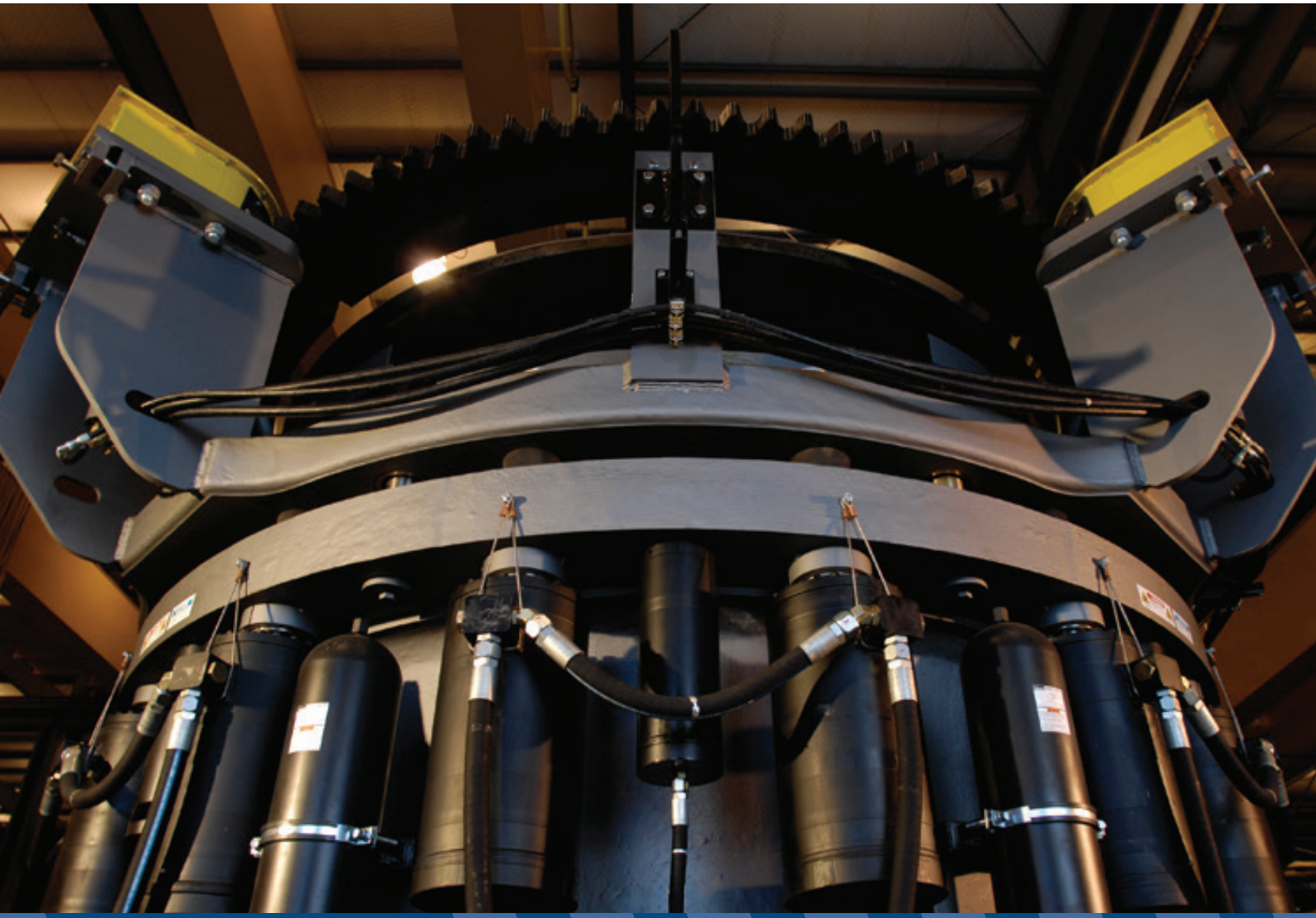
FLSmidth

Raptor high-performance cone crushers



One Source

Raptor® high-performance cone crushers

Key value statements

- Largest cone crusher in the world (Raptor 2000)
- Most diverse product line on the market
- Continual focus on improving technology to meet the demands of the industry needs

High reliability

Raptor cone crushers have been designed with input from plant operations and maintenance personnel around the globe. This input has led to many designs and features that reduce maintenance time and increase production.

Structural integrity

Raptor cone crushers' critical load bearing components meet specifications that typically exceed what is commonly offered in a conventional cone crusher. Our major components are cast of high grade steel, and our eccentric material selection provides greater certainty of a reliable surface finish, even after many years of service.

Accessibility

New Raptor cone crushers have been designed to give better access to the inside of the crusher through features like main frame inspection ports, cartridge countershaft boxes and the new socket-less design.

Mobility

Raptor cone crushers offer mobile closed circuit plants. Productive and versatile, the Raptor cone crusher is readily mounted and easily transportable on a portable cone/ screen chassis.

Versatility

The Raptor cone crusher offers more flexibility in the production of high quality aggregates such as ballast, road base and asphalt chips. The Raptor cone has also earned a leading reputation in the mining industry, operating in some of the most demanding mineral processing applications worldwide.

Security

Raptor cone crushers employ "Fail Safe" hydraulics to ensure protection from mechanical overload should an accumulator bladder fail. Should the accumulator fail, an internal relief valve within the dual acting tramp release cylinders provides immediate, alternate protection from severe and costly structural damage to the crusher. Another standard safety feature is the counterclockwise rotating crushing action. This prevents the machine from self-tightening the setting when adjustment ring movement is excessive, or if the ring gear brake or thread clamping fails.

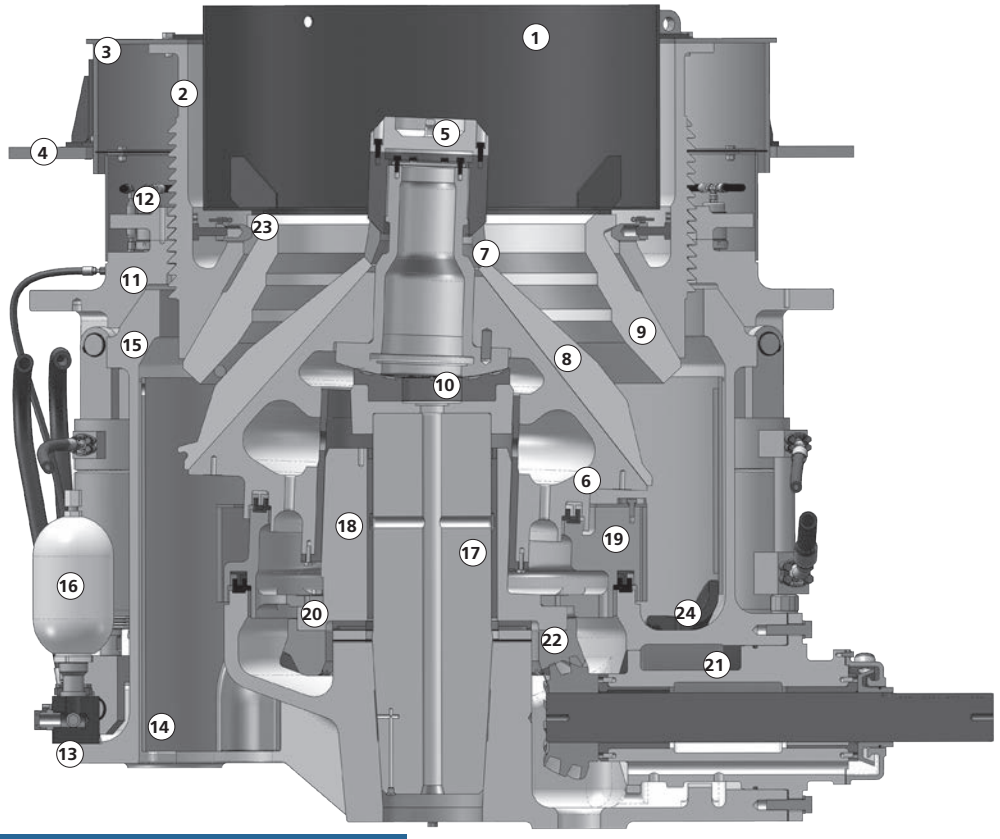
Superior bronze bearing technology

Raptor cone crushers utilize bronze sleeve bearings for all internal moving components that are load bearing or involved in load transmission. FLSmidth's bronze technology is custom engineered to meet specific application demands.

Automation

Raptor cone crushers employ advanced overload sensing technology to detect crushing force overload. If desired, our advanced automation system can take the necessary corrective action. The same advanced automation system can be used to optimize crusher performance with feed control, setting adjustment and monitoring of critical lubrication and hydraulic parameters.

Raptor 200



1. Hopper Assembly
2. Bowl
3. Adjustment Cap
4. Drive Ring
5. Feed Plate Assembly
6. Head Assembly
7. Torch Ring
8. Mantle
9. Bowl Liner
10. Socket Liner
11. Adjustment Ring
12. Clamping Cylinder
13. Main Frame
14. Main Frame Liner
15. Main Frame Seat Liner
16. Tramp Release Cylinder
17. Main Shaft
18. Eccentric
19. Counterweight
20. Gear
21. Countershaft
22. Pinion
23. Wedge
24. Arm Guard

Raptor 200 features

- Durable, low-profile design
- Can be mounted onto a portable chassis
- Inverted tramp release cylinders keep hydraulics cleaner than conventional designs
- One accumulator means less maintenance

Similar to the 300/400 crusher, the 200 crusher has slower speed ratios which allow for greater flexibility in production, along with a durable, low-profile design and the ability to be fitted onto a portable chassis. The inverted tramp release cylinders keep hydraulics cleaner than conventional designs. Unique to the 200 is the integrated CSB as well as a single head bushing combined for easier maintenance. The 200 also features an anti-spin option and a single inspection port.

Raptor 300

1. Hopper Assembly
2. Bowl
3. Adjustment Cap
4. Drive Ring
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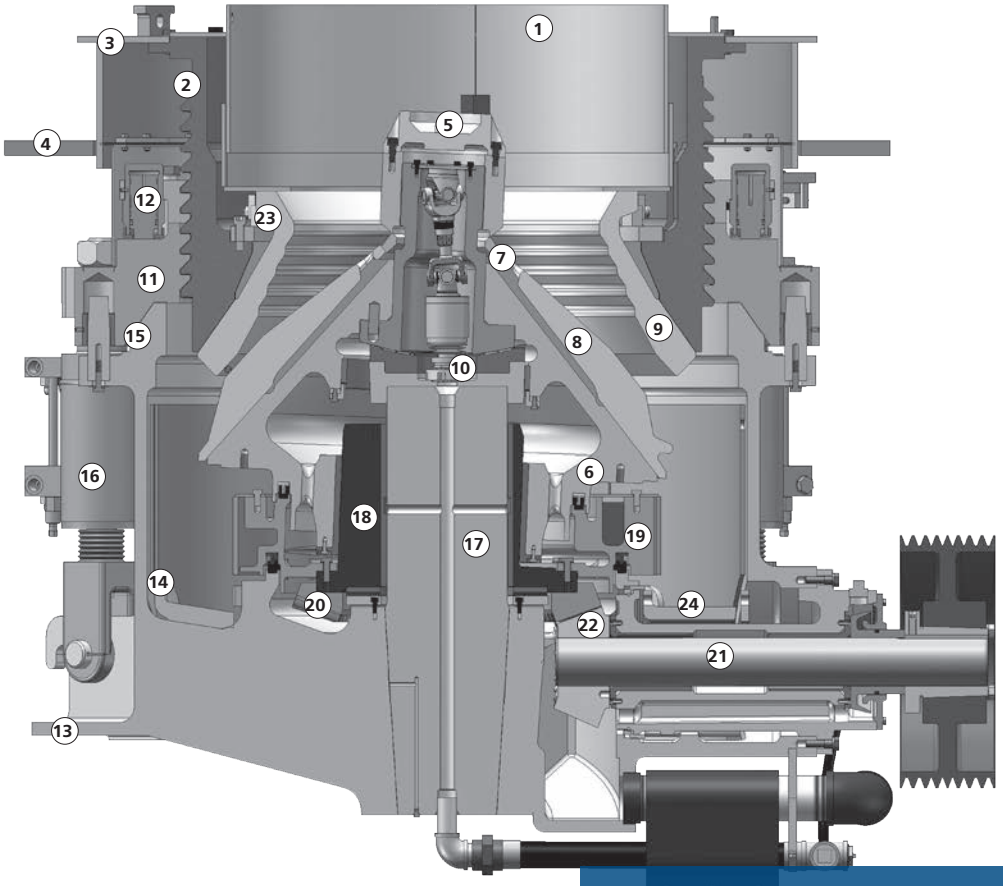


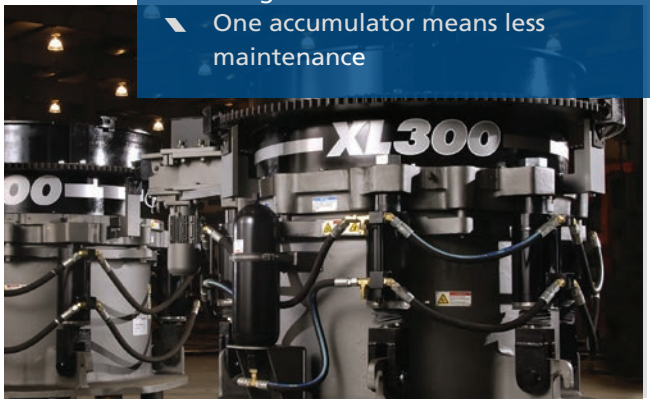
Raptor 300 features

- Slower speed ratios allow flexibility in production
- Durable, low-profile design
- Can be fitted onto a portable chassis
- Inverted tramp release cylinders keep hydraulics cleaner than conventional designs
- One accumulator means less maintenance

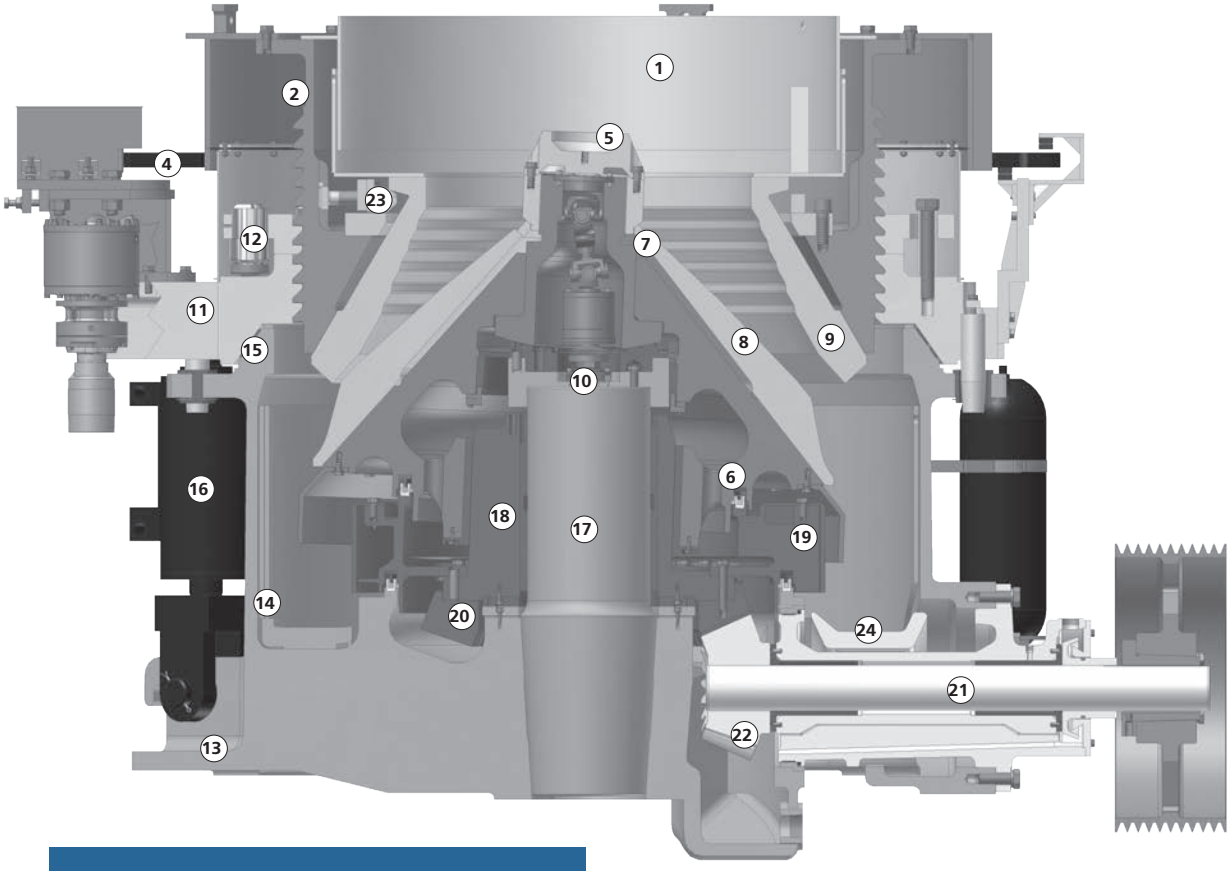
Our Raptor® 300 cone crushers deliver significantly higher production at lower costs to succeed against today's toughest economic challenges. The Raptor 300 offers the versatility of slower speed ratios which allow for more flexibility in production. This machine generates chips quickly and easily in high-stress applications with high force due to integrity of position.

This model features advanced hydraulics which ensure protection from mechanical overload through bypass release. This also protects the hydraulic cylinders if the bladder in the accumulator fails. Dual acting tramp release cylinders provide protection as they provide both clamping pressure and clearing action in a tramp event.

The Raptor 300 offers a mobile closed circuit plant. Productive and versatile, the 300 Cone Crusher is readily mounted and easily transportable on a portable cone/ screen chassis.



Raptor 400



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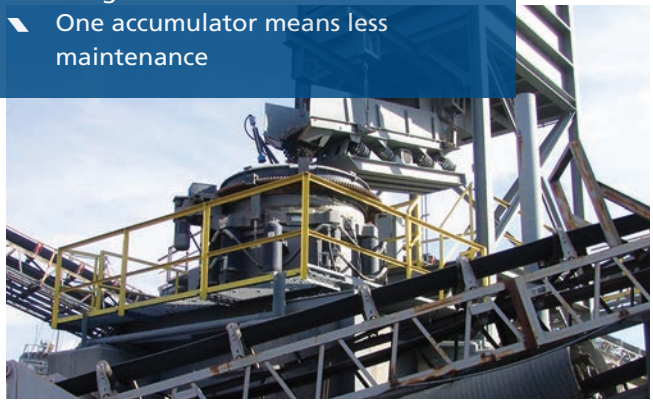
24. Arm Guard

Raptor 400 features

- Slower speed ratios allow flexibility in production
- Durable, low-profile design
- Can be fitted onto a portable chassis
- Inverted tramp release cylinders keep hydraulics cleaner than conventional designs
- One accumulator means less maintenance



The Raptor 400 cone crusher is an ideal solution as a secondary crusher following a Jaw. This machine produces more usable and saleable aggregate per ton processed than competitive models in its class. Versatile and highly portable, the Raptor 400 can accept primary-crushed ore with greater flexibility (up to 25 percent larger material) due to its 52-inch (1.3m) head diameter, large feed opening, high-pivot-point crushing action and wide crushing stroke. Outstanding gradation control and cubical product also make the Raptor 400 an excellent tertiary crusher for aggregate, asphalt or concrete products.

Raptor 500

1. Hopper Assembly
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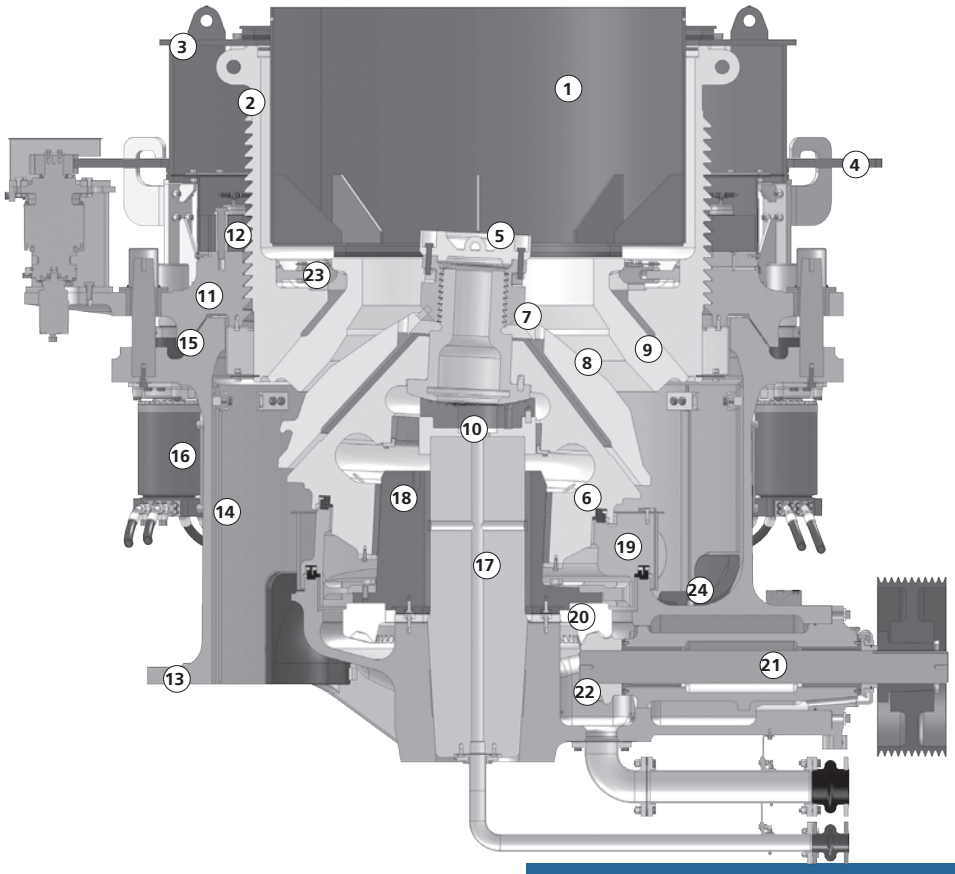
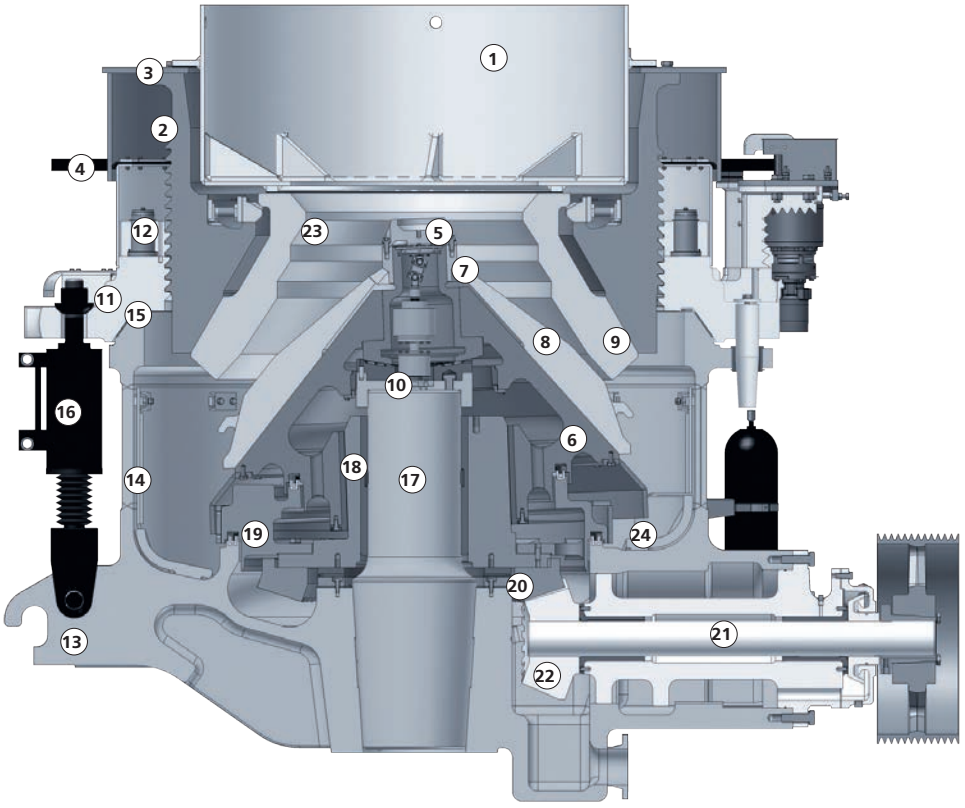


Raptor 500 features

- Heavy-duty alloy steel major components
- Significant eccentric throw and high pivot point crushing action
- Integral countershaft assembly reduces maintenance time, improves the reliability of the gear and pinion
- Double acting tramp release & clearing cylinders

Because of its large head diameter of 59.06 inches (1.5 m) and ideal eccentric motion, the Raptor 500 cone crusher can accept feed that is up to 25 percent larger than can be accepted by competitive cones with less throw or similar head diameter, while producing more material of desired cubicity and gradation. With a maximum diameter of 148 inches (3.75 m) and weight of 110,833 lbs. (50,274 kg), the crusher's size allows flexibility for multi-site crushing opportunities. The Raptor 500 cone is built with a rigid three-arm frame and integral countershaft box mounted inside one of its three arms which reduces maintenance time, improves the reliability of the gear and pinion and simplifies the backlash adjustment.

Raptor 600



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Raptor 600 features

- Wide operating speed range
- Upgradable
- Long liner life
- Less maintenance
- Interchangeable components
- Easy retrofit
- Raptor 900 frame components
- Longer sleeve bushings
- 65" head diameter

The Raptor 600 cone crusher is designed to use a four arm lower frame with a countershaft contained by one of the four arms. The crusher's active feed opening creates better end product shape for high production of saleable material. The 600 is designed to operate and be mechanically sound at lower eccentric speeds. The eccentric speed can be selected to maximize throughput, size reduction, product shape or product yield. The 600 can be easily installed to replace a cone crusher with a 1.5 meter [59"] head diameter or larger without major modifications to the foundation or feed arrangement.

Raptor 900

1. Hopper Assembly
2. Bowl
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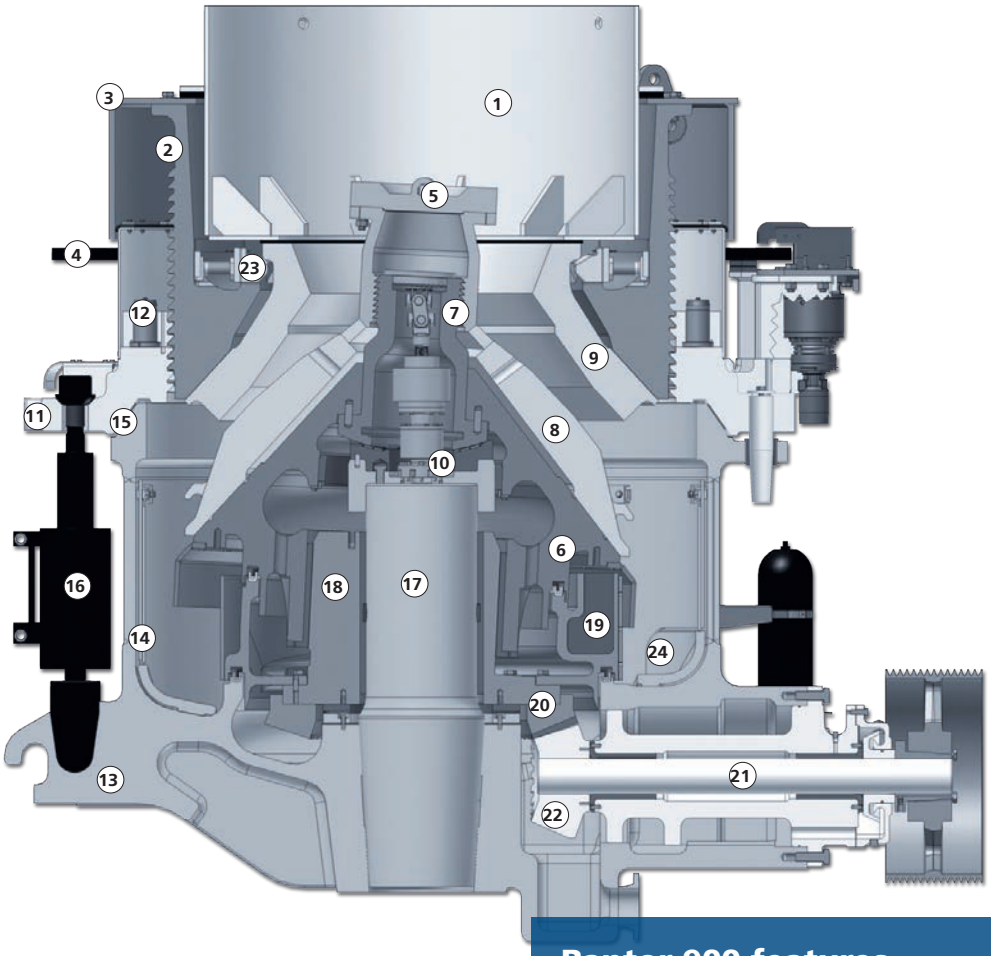
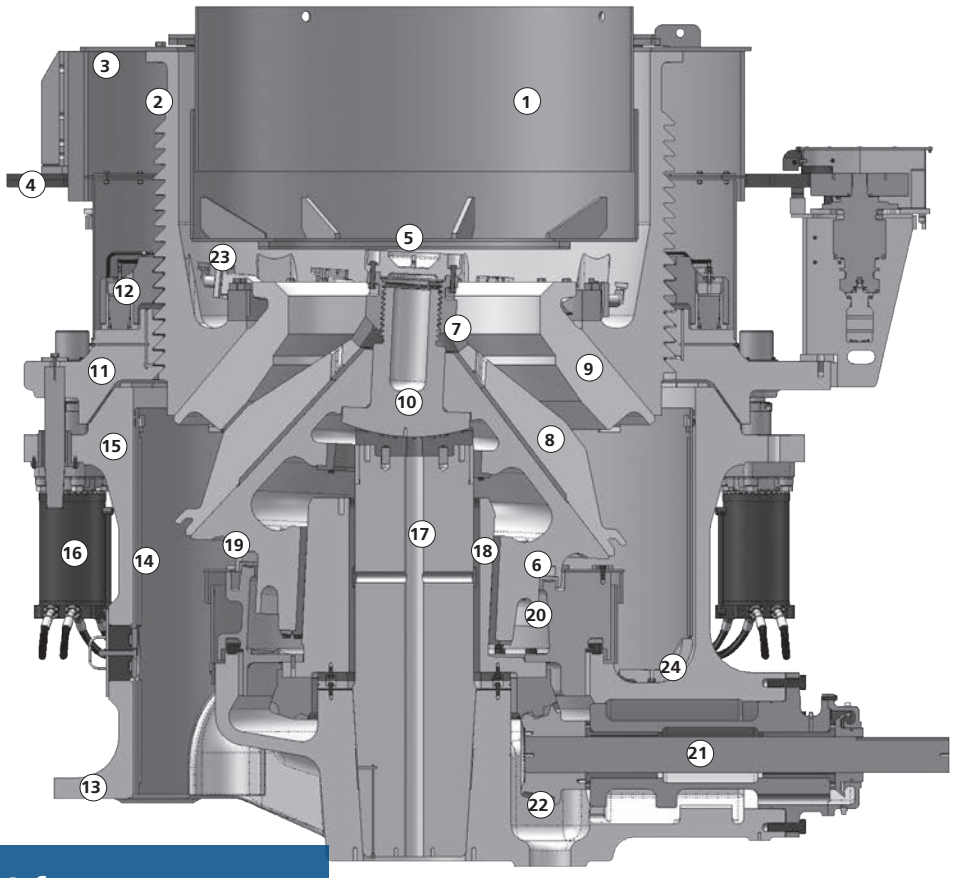


Raptor 900 features

- Flexibility in speed
- Upgradable
- Less maintenance
- Interchangeable components
- Easy retrofit
- High pivot point
- Increased throw
- 70” head diameter
- 50% more force than Raptor 600

The Raptor 900’s 70-inch (1.8 m) head diameter and integral countershaft built into the four-arm mainframe means the 900 is not only large, but it’s one of the most robust crushers in its size range. Like all Raptor models, the high pivot point and large crushing stroke offer better crushing action throughout the crushing chamber. The 900 leaps forward, improving throughput and acceptance of larger feed size. The crusher’s higher pivot point and larger crushing stroke provide the most productive 70-inch (1.8 m) head diameter cone ever manufactured. The dynamics of the 900 allow more crushing to take place from the first nip at the feed opening and continuously throughout the chamber, until the material exits the parallel zone.

Raptor 1000



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Raptor 1000 features

- Interchangeable bowl, hopper and adjustment cap
- Multiple liner options
- Hanging double-acting cylinders
- Socketless design
- Inspection portholes (optional)
- Design improvements around the arms to keep material build-up from causing problems

The Raptor 1000 model consists of a number of features which have been designed for maximum efficiency. The integral countershaft assembly reduces maintenance time along with improving the reliability of the gear and pinion. The double acting tramp release and clearing cylinders reduce stress in the main frame lower flange with a multi-functional design. Greater flexibility of use comes from the inclusion of an interchangeable bowl, hopper and adjustable cap. This model includes many liner options, including ones of increased thickness. Additional features are hanging double-acting cylinders, socketless design and inspection ports. The increased throw and high pivot point crushing action ensures maximum throughput and application of connected horsepower. Coupled with increased bowl travel, production is increased while operating costs are lowered. Design improvements around the arms help to keep material build-up from causing problems with operations

Raptor 1100

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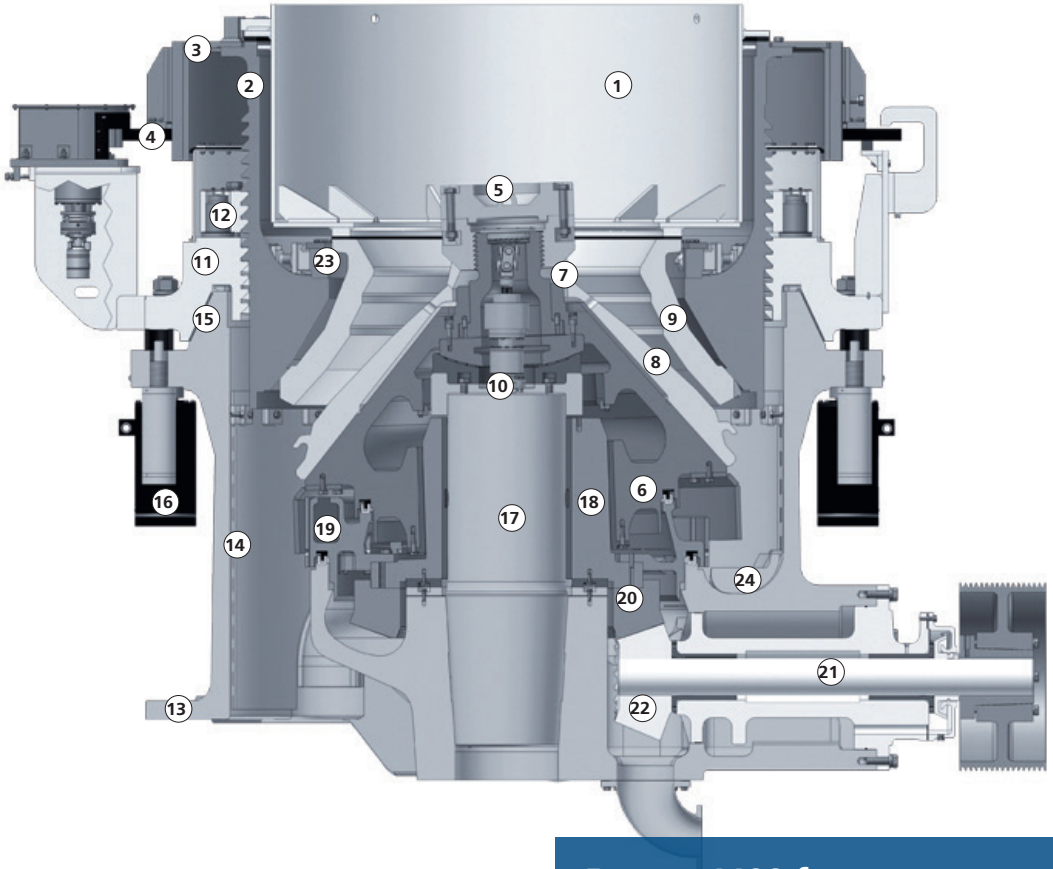
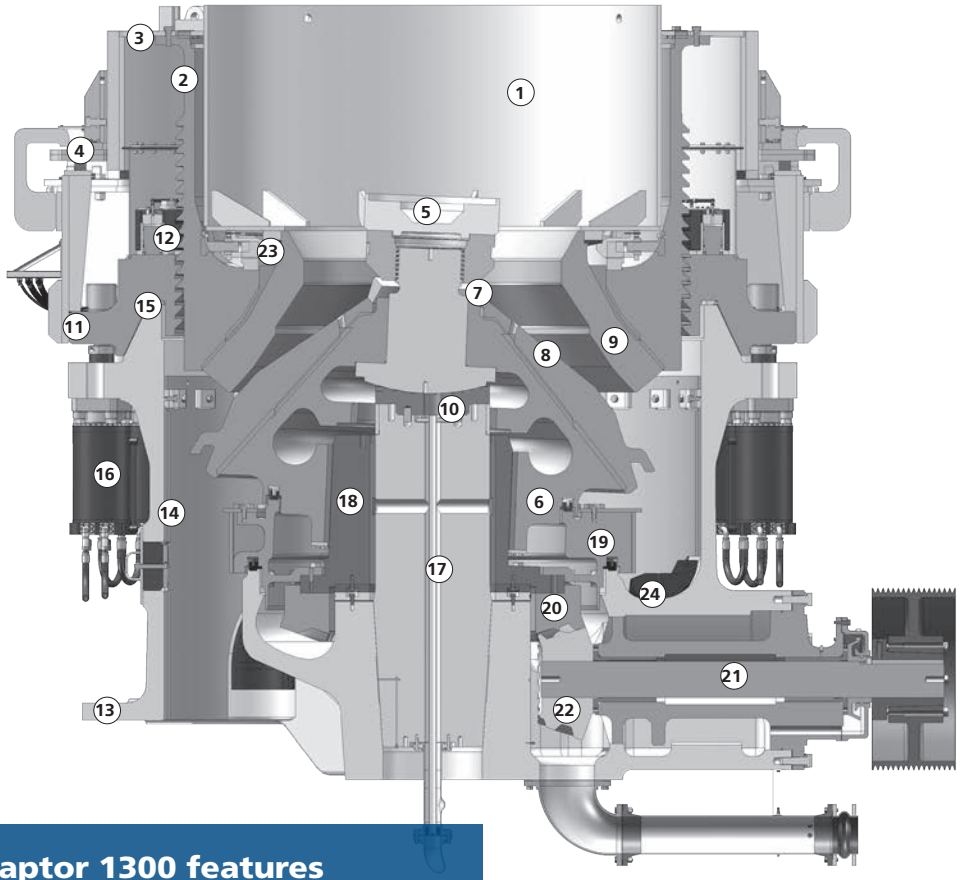


Raptor 1100 features

- Open discharge
- Integrated countershaft box
- Heavy-duty three-arm main frame
- Advanced hydraulics
- Spiral bevel gearing
- Cartridge-style countershaft box
- Fewer accumulators

Previously our largest cone crusher on the market, the Raptor 1100 breaks productivity barriers and features an integrated countershaft in a three-arm mainframe for unmatched durability. Whether accepting coarse feeds, intermittent feeds, high yields or simply high throughputs, the Raptor 1100 uniquely combines proven and modern technology in an excellent machine to meet those needs. The Raptor 1100 eccentric is a nodular iron casting, providing a high strength material with excellent machinability and surface finish critical to bearing longevity under high performance crushing conditions.

Raptor 1300



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Raptor 1300 features

- Improved head action for higher capacity and power consumption
- Integral Counter Shaft Assembly suitable for direct drive and low maintenance
- Hanging double acting multi-purpose tramp and release cylinders.
- Fail Safe Hydraulic Relief for Maximum Reliability of Cone Crusher.
- Increased Bowl Travel for Lower Operating Costs
- Easy access to Load Carrying Bearings.

The Raptor 1300 cone crusher includes many exciting new features. One such is the integral countershaft assembly, which reduces maintenance time along with improving the reliability of the gear and pinion. The crusher's spiral bevel gearing is the best combination of durability and reliability while minimizing gear noise, and is engineered to maximize resistance to pitting and breakage. Our new double acting tramp release and clearing cylinders reduces stress in the main frame lower flange with a multi-functional design. The increased throw and high pivot point crushing action ensures maximum throughput and application of connected horsepower and coupled with increase bowl travel production is increased while operating costs are lowered. A combination of technologies such as these make the Raptor 1300 cone crusher one of the best on the market today!

Raptor 2000

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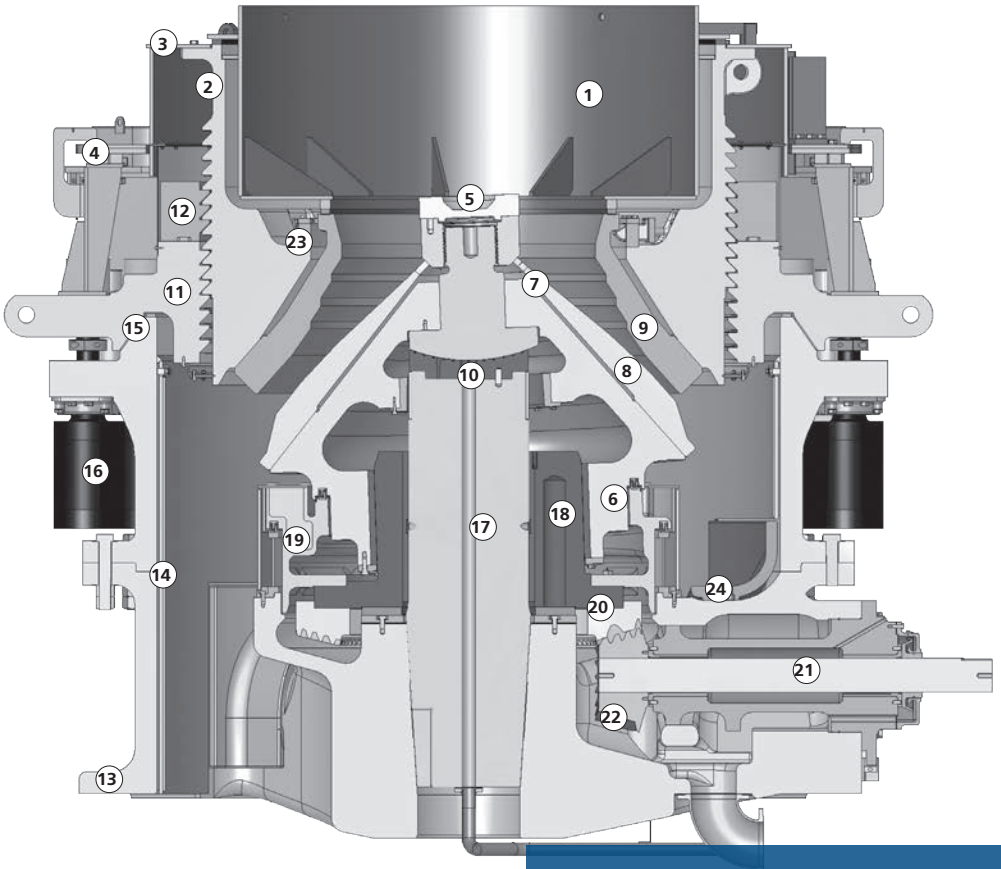

Raptor 2000 features

- Improved head action for higher capacity and power consumption
- Integral counter shaft assembly suitable for direct drive and low maintenance
- Hanging double acting multi-purpose tramp and release cylinders.
- Fail Safe hydraulic relief for maximum reliability of cone crusher.
- Increased bowl travel for lower operating costs
- Easy access to load carrying bearings.
- Proven 2500 horsepower performance with direct drive and variable speed capability.

The Raptor 2000 cone crusher is a maximum capacity cone crusher for the most demanding high tonnage applications. The machine has been successfully applied in the most demanding crushing applications with full power consumption. With many industry-leading features such as fail safe hydraulics, integral countershaft assembly, enclosed counterweight assembly with replaceable non-contacting T/U seal arrangement and ductile iron eccentric, the Raptor 2000 is designed to meet the demanding needs of high capacity and high demand mineral processing circuits. Specific features include: spiral bevel gearing, new double acting tramp release and clearing cylinder, along with new easy access to critical load carrying bearings offers a cone crusher design that will exceed previous expectations for cone crusher performance. Add to all this the features of significant eccentric throw and high pivot point crushing action and direct drive at 2500 hp with a variable speed option, and you won't find a crusher that matches the Raptor 2000 cone crusher.

Specifications

Raptor 200-600 US Standard Capacities

	Raptor 200			Raptor 300			Raptor 400			Raptor 500			Raptor 600		
	Setting (Inches)	stph Min	stph Max	Setting (Inches)	stph Min	stph Max	Setting (Inches)	stph Min	stph Max	Setting (Inches)	stph Min	stph Max	Setting (Inches)	stph Min	stph Max
Short Head Fine	5/16	90	120	5/16	NA	NA	5/16	NA	NA	5/16	NA	NA	5/16	NA	NA
Short Head Fine	3/8	110	140	3/8	140	190	3/8	180	235	3/8	215	285	3/8	245	330
Short Head Medium	1/2	150	180	1/2	155	230	1/2	230	300	1/2	280	350	1/2	320	380
Short Head Medium	5/8	165	215	5/8	200	290	5/8	285	375	5/8	340	420	5/8	395	460
Short Head Coarse	3/4	190	225	3/4	240	350	3/4	325	425	3/4	390	480	3/4	460	530
Standard Fine	7/8	200	245	7/8	255	380	7/8	340	445	7/8	415	500	7/8	495	560
Standard Fine	1	215	255	1	285	410	1	375	490	1	450	545	1	530	595
Standard Fine	1-1/4	235	286	1-1/4	300	440	1-1/4	430	560	1-1/4	500	610	1-1/4	565	660
Standard Medium	1-1/2	260	315	1-1/2	330	485	1-1/2	490	640	1-1/2	560	705	1-1/2	625	770
Standard Coarse	1-3/4	280	335	1-3/4	400	550	1-3/4	560	730	1-3/4	640	805	1-3/4	715	880

Raptor 200-600 Metric Capacities

	Raptor 200			Raptor 300			Raptor 400			Raptor 500			Raptor 600		
	Setting (mm)	mtph Min	mtph Max	Setting (mm)	mtph Min	mtph Max	Setting (mm)	mtph Min	mtph Max	Setting (mm)	mtph Min	mtph Max	Setting (mm)	mtph Min	mtph Max
Short Head Fine	8	80	110	8	NA	NA	8	NA	NA	8	NA	NA	8	NA	NA
Short Head Fine	10	100	130	10	130	175	10	165	215	10	195	259	10	220	300
Short Head Medium	13	135	165	13	140	210	13	210	275	13	250	315	13	295	360
Short Head Medium	16	150	195	16	180	265	16	260	340	16	310	380	16	360	415
Short Head Coarse	19	170	205	19	220	315	19	295	385	19	355	385	19	415	480
Standard Fine	22	180	220	22	230	345	22	310	405	22	375	450	22	440	505
Standard Fine	25	195	230	25	260	375	25	340	445	25	405	490	25	480	540
Standard Fine	32	215	260	32	275	400	32	390	510	32	450	550	32	510	595
Standard Medium	38	235	285	38	300	440	38	445	580	38	500	640	38	565	690
Standard Coarse	45	255	305	45	360	500	45	510	665	45	580	730	45	640	795

Raptor 900-2000 US Standard Capacities

	Raptor 900			Raptor 1000			Raptor 1100			Raptor 1300			Raptor 2000		
	Setting (Inches)	stph Min	stph Max	Setting (Inches)	stph Min	stph Max	Setting (Inches)	stph Min	stph Max	Setting (Inches)	stph Min	stph Max	Setting (Inches)	stph Min	stph Max
Short Head Fine	3/8	300	385												
Short Head Medium	1/2	330	470	1/2	580	690	1/2	605	880	1/2	670	975	1/2	1135	1930
Short Head Coarse	5/8	440	600	5/8	640	760	5/8	680	960	5/8	760	1055	5/8	1285	2095
Hybrid Chamber	3/4	485	660	3/4	695	850	3/4	770	1045	3/4	860	1195	3/4	1450	2300
Standard Fine	7/8	550	745	7/8	800	1035	7/8	870	1320	7/8	975	1510	7/8	1630	2895
Standard Fine	1	575	850	1	900	1210	1	985	1425	1	1100	1600	1	1850	3125
Standard Medium	1-1/4	660	990	1-1/4	1095	1380	1-1/4	1265	1570	1-1/4	1400	1710	1-1/4	2380	3380
Standard Medium	1-1/2	715	1150	1-1/2	1265	1485	1-1/2	1400	1870	1-1/2	1705	2145	1-1/2	2425	3495
Standard Coarse	1-3/4	860	1370	1-3/4	1385	1695	1-3/4	1733	2173	1-3/4	1980	2155	1-3/4	2690	3860

Raptor 900-2000 Metric Capacities

	Raptor 900			Raptor 1000			Raptor 1100			Raptor 1300			Raptor 2000		
	Setting (mm)	mtph Min	mtph Max	Setting (mm)	mtph Min	mtph Max	Setting (mm)	mtph Min	mtph Max	Setting (mm)	mtph Min	mtph Max	Setting (mm)	mtph Min	mtph Max
Short Head Fine	10	270	350												
Short Head Medium	13	325	450	13	525	625	13	550	800	13	610	885	13	770	1200
Short Head Coarse	16	400	550	16	580	690	16	620	870	16	690	960	16	870	1250
Hybrid Chamber	19	435	600	19	630	770	19	700	950	19	780	1085	19	980	1350
Standard Fine	22	495	675	22	725	940	22	790	1200	22	885	1370	22	1110	1700
Standard Fine	25	525	770	25	815	1100	25	895	1295	25	1000	1455	25	1260	1900
Standard Medium	32	600	900	32	995	1255	32	1150	1425	32	1275	1555	32	1650	2000
Standard Medium	38	650	1050	38	1150	1350	38	1350	1700	38	1550	1950	38	1700	2100
Standard Coarse	45	780	1250	45	1260	1540	45	1575	1975	45	1800	2100	45	1900	2500

CAPACITY FILE - Consult Factory for Specific Application. The information above is not warranted or guaranteed as either a minimum or a maximum by the manufacturer. Capacities indicated are for 100 lbs per cubic foot and impact work index of 13. The indicated capacities and allowable settings will vary significantly from application to application. Factors affecting capacity include any or all of the following: feed size relative to chamber selected, material fragmentation characteristics, fines in the feed, cavity level, eccentric speed, clays, moisture and feed arrangement.

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Rev. 4/14/2013 al-us