

2nd Edition

... Rock Engineered Machinery Company, Inc. is a California Corporation based in Livermore, California USA. It was founded by machinery and minerals processing professionals in 1982, and is now a leader in reduction technology and know-how. **REMCO** manufactures the broadest line of fully autogenous and semi-autogenous VSI crushers for the reduction of hard, abrasive ores and rocks. Our machines serve the needs of mining and the industrial minerals industry. The products made by our machines are well graded, beneficiated and achieve the desired product grading.

REMCO

At **REMCD**, we understand that size reduction equipment generates revenue for its owner, our customer. Our crushers are designed using top quality materials, the latest design techniques and we provide the best possible technical support to achieve customer satisfaction and attain the lowest crushing cost per ton.

In this catalog, we provide you with the information you need to determine what model machine is best suited for your crushing task. When you have selected what you feel is best from the information contained herein, please contact **REMCO** for application guidance and to discuss what else you must consider to realize the best return from your crusher dollar investment.

The extraction of metals from all types of ore requires multiple stages of reduction crushing. Whether it is iron, copper, silver or gold, it must be crushed to a fine size. In many cases, grinding mills are used to produce the final size before beneficiation or final extraction. Traditionally, the crushing stage just before primary milling is limited to products that are minus 1/2" (12mm) as feed to the primary ballmills. A **REMCO OreMax** can be placed in the circuit to receive product from the 3rd stage cone crushers and further reduce it prior to milling; thereby, increasing the performance of the primary ballmills or allowing the mill's conversion to a finish mill.

This concept provides capital and operating cost savings when grinding capacity must be expanded. This is because a major increase in grinding capacity is achieved by simply reducing the feed size to the grinding mills. For example, from an F80 of 10 mm or coarser, to an F100 of 6, 5 or even 3 mm, resulting in a much finer mill feed grading.

REMCO OreMax VSI crushers reduce the feed mineral principally by high-velocity, energy transfer. This reduction results from particle failure at the plane of weakness within the ore. This more effectively separates the gangue mineral from the pay product. This process increases the yield in floatation and leaching lines over the traditional compression crushed feed to the mill.

REMCO OreMax VSI crushers are extra heavy-duty, heavier built machines of **REMCO's** standard VSI crushers, Series 1530 and larger. The **OreMax** is

available as a fully-autogenous or semi-autogenous type crusher. The semi-autogenous type units are designated as **OreMax-ST/AR** machines. These are intended for use in less aggressive ores and minerals. The **OreMax Premill** units are designed for extra-fine crushing and grinding.

We have grown accustomed to designing a crushing circuit based on the limits of specific brands and models of crushing and grinding machines. Where this goes awry is when a change in the operation is dictated after the system is in place. Since most mines have multi-year operating life spans and ore bodies can be counted on to be inconsistent, severe economic consequences can result when conventional machinery is pushed to or beyond its design limit to increase the production rate or produce a finer product. While the historical model size range of cone crushers has served the industry well, compression crushing machines usually encounter buyer resistance when the single machine price or number of units needed for the job is so expensive as to prevent a satisfactory return on the investment for the project. This is not surprising since the crushing capacity of present-day cone crushers is not much greater than 25-year old versions of the same machines. Certainly mechanical refinements and engineering improvements have occurred, but the performance curve has not risen at the same rate as the selling price.

In the real world, squeezing crusher settings on compression machines to achieve finer reduction has serious cost consequences. A final product size change from 19mm (3/4") to 12mm (1/2") to 6mm (1/4") can cut the installed crushing capacity by 30% to 50%. Along with this large production loss can come a doubling or even tripling of repair cost and wear parts usage of cones. The alternative to adding additional like units is quite often surprisingly expensive when the total installed cost is detailed. It should be remembered that the capital purchase price of the crusher or mill is but one portion of the ready-to-run cost for the addition. Often times, changing or replacing ancillary equipment, enlarging concentrator buildings, etc., can be costlier than the added crusher(s) and can make conventional approaches prohibitively expensive.

Since it is optimum cost-efficiency for a given product size that is the goal, each type of reduction machine has a preferred operating range to achieve the production and operating costs targets. Generally, the closer to the lower limit of its application range that a compression crusher operates in, the more expensive it will be on a cost-per-ton basis, i.e., fine crushing in conventional machines is expensive. Not so in a **REMCO OREMAX**.

Single Drive OreMax 4060 Series

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CREMCO OreMax.

Dual Drive OreMax 5080 Series shown with **REMco** Installation Kit

The REMco Autogenetic Crushing Process

ROCK-ON-ROCK reduction of all material feeds is achieved by high velocity energy transfer which commences as the rock feed enters the feed tube. At this point it is moving by gravity. When the incoming continuous ribbon of rock particles passes over the center distributor plate of the rotor, it is divided into multiple separate streams. These are forcefully impacted on the trailing edge of the autogenous waves at the center of the rotor. As the material begins its path through the rotor, it is being compressed by the rising centrifugal forces created by the rotor's rotation. This multi-layered stream of rock is abraded, compressed and pulverized against the rock waves which are formed and held in place by the radial rotor walls. The unique geometry of the **REMCO** multi-port rotors intensifies the inter-particle comminution with multiple collisions and a variety of forces act on the individual rock pieces as they proceed through the rotor.

SUPERIOR ROCK-ON-ROCK CRUSHING PERFORMANCE

REMCO impact crushers are designed for crushing the widest range of rocks, ores and minerals into fine cubical products. **REMCO** crushers with their unique high performance multi-port rotor designs, variable density chambers, and the widest operating speed range have expanded the application capabilities of VSI crushers. **REMCO** has advanced VSI crushing technology for rock-on-rock reduction by performing thousands of crushing tests in its testing facility. This has resulted in a unique application accuracy by adjusting the design variables to suit the user's specific requirements. This guarantees the right crusher for the job, eliminating guessing and user disappointment.

LOWEST CRUSHING COST

REMCO has continued to lower the wear parts cost per net finished ton of product. Fully autogenous (rock-onrock) designs provide the lowest product cost per ton. This is especially true when the desired product size is below 3/8" (10 mm). Even in the hardest, siliceous rocks and ores, REMco VSI crushers are the most affordable fine crushing units. **REMCO** machines will make products that cannot be made by cone crusher, Hammermills or other crushers at an affordable cost. **REMCO** rock-on-rock VSI crushers can routinely be operated in closed circuits to produce a product of minus 1 mm or less.





Typical

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THE IMPORTANCE OF SPEED

ALL IMPACT TYPE CRUSHING MACHINES USE **SPEED TO CRUSH!** While there are many factors that affect the crushing efficiency of impact crushers, the most important of these is material velocity. This determines the amount of crushing which is done and the overall grading of the crusher discharge. Generally, the faster the material is accelerated, the greater the amount of crushing that is achieved. For this reason, it is essential that the impact crusher used have a wide operating speed range to accommodate a broad spectrum of material types and feed gradings.

REMCO vertical shaft impact crushers have the broadest operating range of all VSI crushers. Please refer to the rotor velocity scale chart. For material reduction, the general velocity range is for particles traveling from 100 ft/sec. (30mps) to 325 ft/sec. (99 mps). This velocity scale is divided into three basic ranges. These are:

Scrubbing Speed – 100 to 175 ft/sec. (30 mps to 53 mps).

At this speed tumbling, rubbing and mild impacts shape the stone, Soft materials can often be reduced at these lower speeds which produce superior shape in all particles fed to the crusher. Very hard rocks may only be mildly cubed at these speeds. A sounder particle is produced by the elimination of soft, fragile portions.

General Crushing Speed – 175 to 250 ft/sec. (53 mps to 75 mps). This is the crushing range for reducing most rocks, ores and minerals. Severe impact, high attrition and compression of the rock stream cause particle failure. This results in a significant production of smaller particles when compared to those being fed to the crusher. Usually it is best to experi-

ment with speed within this range because the fracture characteristics of rocks vary widely. To get good crushing with a balance of recycle load and controlled production of microfines, it is only necessary to achieve the threshold speed of fracture. Additional speed consumes extra power raising energy cost and often generating undesirable size distribution in the crusher discharge.

Fine Grinding and Pulverizing – 250 to 325 ft/sec. (75 mps to 100 mps). Speeds above 250 ft/sec. are reserved for applications where pulverizing and grinding of the material is desired. At these higher speeds, it is possible to produce manufactured sand and many industrial mineral products requiring fine sizes, in many cases smaller than 1 millimeter. These applications require care, technical knowledge of processing and experience in good processing circuit design. This way the highest production of the needed fine product can be achieved without excess energy consumption and with acceptable overall operating cost.



Whether your crushing requirement is for dry scrubbing, general crushing or grinding and pulverizing, a **REMCO VSI** can be custom applied to produce your product. Contact **REMCO** for guidance.

How is Speed Applied in a REMco VSI?



REMCO VSI crushers use a rotating impeller that acts as a rock pump to accelerate and impart speed onto the rock particles which are fed to it. Depending on the model and particular application, the rotor configuration can be varied to suit. A common feature of all **REMCO** rotors is their unique internal construction, using the most efficient port configuration to accelerate the incoming feed stream and divide it into multiple flows. As the rocks are fed to the crusher, each particle experiences a rapid acceleration and deceleration in microseconds. This fills the crushing chamber with a violent rock cloud. Depending on the desired product, the crushing forces applied can be controlled by the operating speed of the machine. This speed control when combined with a variety of crushing chamber features results in optimum crushing efficiency for the power employed.

> In a limited number of cases, hard rocks may only be shaped at crushing speeds and soft rocks can often be crushed at shaping speeds. **REMCO VSI** crushers for ... any rock, any speed, anywhere.

1 Second

REMCO OreMax VSI crushers are versatile machines that can be applied conventionally in ways similar to a cone crusher. However, because of their greater ability to produce a finer product with a higher fines content, they can compliment existing circuits by reducing the load on the cone crusher and still produce a finer product with a minimum of crusher dollar investment.



This type of circuit is applicable to certain ores especially gold heap leach operations where a high tonnage of fine product is desired with the fewest crushing stages.



Where a large concentrator exists and additional crushing is needed in the tertiary stage, a *REMco OreMax* can be added to replace an existing cone crusher in the same location increasing crushing horsepower per unit and producing a finer product for the primary milling stage.

Premilling is an accepted concept to reduce the cost of expanding grinding mill buildings and the addition of grinding mills. Finer feed to primary ball mills can increase ball mill capacity from 20 to 30% over existing feed sizes.



This circuit illustrates how to insert a *REMco OreMax* into a conventional crushing/grinding circuit. Additional capacity is achieved by the installation of a wet classifier to remove the VSI fines directly prior to feeding the ball mill. This minimizes over-grinding and raises overall production.



To increase production from an existing SAG mill, it is possible to add a *REMCO OreMax* and screen to assist the cone crusher with the reduction of the critical oversize build up in the circuit. The OreMax can operate in closed circuit with the 5 mm sizing of the finish screen. This will reduce total screen deck load and improve screening efficiency if the screen is presently overloaded.

Note: It is recommended that all circuits using a **REMCO OreMax VSI** be arranged to include protection from uncrushables by using magnets or metal detectors. Ample size vibrating screens are necessary for optimum crusher performance. Using a surge preceding the crusher and a variable rate feeder will enhance performance, maximize production and provide the lowest wear cost per ton.

REMco OreMax / OreMax-ST/AR CRUSHERS

CAPACITY TABLE IN TONS PER HOUR AS MEASURED AT <mark>POINT A</mark> OPEN CIRCUIT, SINGLE PASS, TOTAL TONS THROUGH THE CRUSHER, 100% THROUGH ROTOR FEED

				MOD	EL SIZE R	ANGE			
	SERIES 1530	SEF 40	RIES 60		SEF 50	SERIES 9150			
DRIVE POWER	300 ST 1 Motor	400 ST 1 Motor	500 ST 1 Motor	500 XH 2 Motors	600 XH 2 Motors	700 XH 2 Motors	800 XH 2 Motors	1200 XH 2 Motors	1500 XH 2 Motors
300 HP	260-280	260-280							
350 HP		300-340	300-340						
400 HP		360-400	360-400	360-400					
500 HP			400-480	400-480	400-480	400-480			
600 HP					550-600	550-600	550-600		
700 HP						600-650	600-650		
800 HP							650-750	650-750	
1000 HP								700-850	700-850
1200 HP								850-1000	850-1000
1500 HP									1000-1500

Note 1: The capacities shown above are for feed which passes 100% through the rotor. **REMCO OreMax / OreMax-5T/AR VSI** crushers do not use any form of rotor by-pass system such as Cascade or Bi-Flow. These systems provide no crushing benefit and solely create a coarser product while increasing the circuit recycle load.

Note 2: The capacities shown in this table are for crushing sound, competent ore having a crushed bulk density of 100 lbs. per cubic foot . Larger, angular feeds will reduce capacity; finer, cubical feeds will increase capacity.

Note 3: ST designation is for Swing Top / Standard Top.

Note 4: 5T/AR designation is for Swing Top / Anvil Ring.

Note 5: XH designation is for Extra Heavy-Duty Construction.

Selecting REMco Impact Crusher Capacities

To select the correct crusher for your application, please refer to the Basic VSI Circuit diagram. **REMCO** impact crushers have two distinct capacities. These are measured at different points of the circuit. Understanding this circuit flow is key to proper crusher model and drive power selection.

Reduction Ratio

For **REMCO** crushers, the reduction ratio is calculated as the relationship of the maximum feed size to the desired product size. For example, with a feed of -2" and a product requirement of -1/4", the reduction is $2.0 \div .250 = 8$. Maximum recom-mended reduction ratios for **REMCO** crushers are, **OreMax** – 16:1 and **OreMax-ST/AR** – 6:1. Exceeding the recommended reduction ratio will interfere with circuit balance and may reduce production.



CAPACITY TABLE IN TONS PER HOUR – CLOSED CIRCUIT OPERATION. TONS OF NET SCREEN UNDERSIZE AS MEASURED AT POINT B.

	FEED TO	P SIZE FOR FIN	E, MEDIUM AND	COARSE FEEDS	ARE FOR ALL F	PARTICLES HAVI	NG A MAX. ONE-	WAY DIMENSIO	N AS SHOWN BE	LOW
	FEED SIZE	FINE	3/8" - 1" / 10-2	25 mm	MEDI	UM 1" - 2" / 25-	M 1" - 2" / 25-50 mm		COARSE 2" - 3" / 50-7	
	PRODUCT SIZE	3/8" (10mm)	1/4" (6mm)	3/16" (4.75 mm)	3/8" (10mm)	1/4" (6mm)	3/16" (4.75mm)	3/8" (10mm)	1/4" (6mm)	3/16" (4.75 mm)
R (DRIVE POWER									
	300 hp	145-155	120-130	100-110	125-135	105-115	95-105	115-125	95-105	80-90
	350 hp	170-180	145-155	125-135	155-165	130-140	110-120	135-145	125-135	100-110
	400 hp	205-215	170-180	148-158	185-195	155-165	130-140	160-170	140-150	115-125
12N	500 hp	235-245	200-210	170-180	210-220	180-190	155-165	190-200	160-170	135-145
HOH	2-300 = 600 hp	290-340	250-300	200-250	260-310	220-270	180-230	220-270	180-230	150-200
	2-350 = 700 hp	300-350	240-290	210-260	280-330	230-280	190-240	240-290	210-260	170-220
	2-400 = 800 hp	320-370	260-310	230-280	300-350	250-300	200-250	250-300	220-270	200-250
	2-500 = 1000 hp	400-500	290-390	250-350	320-420	260-360	220-320	260-360	230-330	210-310
	2-600 = 1200 hp	420-520	350-450	300-400	400-500	300-400	275-375	350-450	300-400	250-350
	2-750 = 1500 hp	500-600	450-550	350-450	450-550	360-460	300-400	400-500	350-450	270-370

FEED TOP SIZE FOR FINE, MEDIUM AND COARSE FEEDS ARE FOR ALL PARTICLES HAVING A MAX. ONE-WAY DIMENSION AS SHOWN BELOW												
FEED SIZE	FINE	3/8" - 1" / 10-2	5 mm	MEDI	UM 1" - 2" / 25⊣	50 mm	COARSE 2" - 3" / 50-75 mm					
PRODUCT SIZE	3/4" (20mm)	1/2" (13mm)	3/8" (10 mm)	1" (25mm)	3/4" (20mm)	1/2" (13mm)	1 1/2" (40mm)	1" (25mm)	3/4" (20mm)			
DRIVE POWER												
300 hp	240-250	200-210	170-180	235-245	205-215	180-190	205-215	180-190	155-165			
350 hp	270-290	230-250	190-210	270-290	220-240	210-220	220-240	210-220	170-190			
400 hp	335-355	270-290	220-240	335-355	230-250	240-260	230-250	240-260	220-240			
500 hp	360-380	310-330	260-280	360-380	330-350	280-300	330-350	280-300	240-260			
2-300 = 600 hp 2-350 = 700 hp 2-400 = 800 hp	470-520 510-560 580-630	380-430 420-470 475-525	325-375 350-400 400-450	470-620 510-560 580-630	410-460 450-500 510-560	350-400 380-430 440-490	410-460 450-500 510-560	350-400 380-430 440-490	290-340 325-375 370-420			
2-500 = 1000 hp 2-600 = 1200 hp 2-750 = 1500 hp	650-700 750-850 1000-1200	530-580 590-690 800-1000	450-500 500-600 600-800	650-700 750-850 1000-1200	570-620 640-740 800-1000	490-540 540-640 700-900	570-620 640-740 800-1000	490-540 540-640 700-900	410-460 450-550 650-850			

NOTE: The capacities shown in these tables are in short tons, 2000 lbs., and are neither maximum nor minimum. Tonnages shown are based on processing sound rock, stone or ore in a well designed processing circuit with proper feed controls and adequate screening. Many factors effect capacity, such as individual fracture characteristics, type of rotor, size of drive motor(s), feed moisture content, etc. Producing multiple sizes simultaneously will reduce total net tons of finished product. All capacities are based on 100% screening efficiency.





NDTE: The discharge grading of a **REMCO VSI** crusher is dependent on many factors. When all of these are considered, using the correct application process, a **REMCO VSI** can be configured to any third or fourth stage minerals reduction task.

The discharge of rock-on-rock machines will contain some particles which may range in size up to the original feed size. All particles fed will experience reduction. This makes the rock-on-rock type of chamber best for producing a consistent grading due to the lack of chamber wear. There is no discharge grading change due to the wearing of rotor parts.

For **REMCO** crushers fitted with anvil chambers, there will be a gradual coarsening of the crusher discharge as the anvils wear. In more abrasive materials, this will happen quickly and it will be noticeable by the increase in circulating load and reduced production of net product. In milder, less aggressive ores, this condition may take months or years to develop.

The above graphs illustrate the variation that can be expected in the discharge grading from two different **REMCO** crusher types when processing different size feeds.

REMCO cautions prospective crusher users to not depend on typical catalog gradings when seriously considering their crusher selection. A formal crushing test is strongly recommended prior to final model and type of

VSI selection.

OreMax-51/AR PRODUCTION RATING BY DRIVE HORSEPOWER (KW)

To determine your specific material crushing characteristics and crusher discharge grading by running a formal crushing test, contact REMCD.



REMCO OreMax VSI crushers are of extra-heavy duty design and construction. These rugged machines are built for longevity of operation while providing smooth production with a minimum of vibration. This is possible because **REMCO OreMax** crushers are the heaviest built machines. The **OreMax** and **OreMax 5T/AR** have interchangeable bases and bearing assemblies allowing the use or field conversion to any crushing chamber type or design. The crushing chamber of a **REMCO OreMax** can be custom-configured to provide the best crushing for any ore, rock or mineral. These machines are low cost to operate and offer ease of service that can be readily integrated into existing crushing plant procedures.







The 1530 Series **OreMax** is a compact, lowprofile design which allows installation of the **REMCO** into the dimensional envelope of existing cone crushers and other VSI machines.

REMCO crushers utilize advanced geometricallydesigned rotors of multiple ports and multiple heights. These rotors are available in short, standard and tall designs to suit specific application requirements. This provides the greatest versatility and broadest application range for **REMCO VSI** crushers. **REMCO VSI crushers use 3, 4, 5 or 6-port enclosed rotor designs.**



Figure 1 – The **REMCO** design uses drop-in type tungsten tips for ease of replacement and low cost operation. Multiple grades of tungsten are readily applied for maximum wear life depending on rock type. No bolts are used to hold the tungsten tips in place.

Figure 2 – By using relatively small, very hard chrome iron or steel wear castings, rotor weight is reduced, lowering power demand. This lowers energy cost and wear parts replacement cost. Rotor wear plates are bolted in place to maintain internal balance and prevent shifting during operation.



Figure 3 – **REMCD** rotors do not require extensive repair welding of the rotor body. The rotor is protected by one-piece hardened AR steel wear disks, top and bottom. These are smooth, reducing air drag and are easy to replace after providing long wear life.

Figure 4 – The complete assembly of *REMCO* rotors is designed for maximum tonnage throughput, lower power demand, grading control, ease of balance and wear parts replacement. This provides the user with maximum machine availability.



STANDARD FEATURES Some of the Many Plus Value Features on **REMCO** Crushers



REMCO offers six design series for its models with over 40 configurations to fit any crushing job.



Large hydraulic cylinder to raise receiving hopper for quick, safe access when servicing the crusher.



Dual acting heavy-duty ratchet jack for fast, clean and easy v-belt tensioning.



Bearing temperature, interlock switches and vibration safety system is supplied standard on all REMco VSI machines.



All REMco VSI crushers use a standard rugged support frame for ease of installation and isolation of vibration on any support structure, steel or concrete.



Four self-centering vibration isolator mounts for smooth operation and protection of drive motors and surrounding equipment.



Oil lubrication with tank and all safety sensors. Including heating and cooling of lube oil.



Patented cross-key design for locking rotor to mainshaft. Eliminates damage or failure of the shaft from incorrect assembly.



Heavy-duty, hammer-driven steel wedges, secure the crusher top during operation and provide easy, quick access for service.

OPTIONAL ACCESSORIES Some of the Many Plus Value Features on **REMCO** Crushers



REMCO offers installation kits that include support legs, skids, discharge hoppers and safety service platforms.



Electric or manual service hoists can be used on **REMCO's** optional service crane.



Electric motor solid state starters are available for all size drive motors in any voltage and current characteristics.



Variable volume autogenetic crushing chamber inserts with deep well pockets and adjustable gusset protectors.



REMCO offers a full range of drive motors with suitable electrical characteristics for heavy-duty crusher use.



For optimum product control, variable frequency drive (VFD) controllers are available for all motor sizes in single and dual drive models.



Basic or custom portable trailers are available for all **REMCO** model sizes..



REMCO also supplies complete portable plants for all models.



For continuous or multi-shift operations, **REMCO** Conqueror rotors provide the longest possible wear life and uptime.

REMCO SUPERMAX VSI CRUSHERS

REMCO custom builds special large machines when applications require very high capacities. These machines are designated as **SuperMax** models and are configured in any one of the basic designs.

These crushers are generally powered with two motors in dual drive configurations. The **SuperMax** models operate at 1,000 hp to a maximum of 1,500 hp. **REMco** has built a number of these units with excellent performance results. **SuperMax** models have been in service since 1998.



SuperMax models are complete with all normal accessories such as oil lubrication, spare rotors, installation kits, and the **REMCO SmartBox** systems. Additionally, the **SuperMax** can include any number of special or unique features as requested by the customer. The **SuperMax** is usually applied in third or fourth stage crushing applications where large quantities of products are required.

Typical Single Drive Arrangements for Stationary Installation

As an alternate to a complete wheel-mounted, mobile crushing plant, **REMCO** installation kits are a money-saving way of putting the crusher to work.



Proper installation of a new VSI into an existing or new crushing plant is **key** in achieving optimum performance and lowest cost operation. **REMCO** offers economical installation kits which provide all the necessary supporting components to complete the installation of **all REMCO VSI models and sizes**. These kits also allow for quick relocation of the crusher, if needed, as they mount on simple concrete pads or firm, level ground. Ready access for fast, safe inspection and maintenance of the crusher is also provided. **REMCO** kits minimize dust emissions and can be fully wired for lubrication, motors and motor starters. They can be delivered semi-assembled to the plant site from the factory, and be ready to operate in less than a day.



VSI CRUSHER MANAGEMENT SYSTEM

SmartBox ...

Systems Monitoring And Recording Technology ... The future is here. Improved operating control for maximum production at the highest quality.

The **REMCO VSI SmartBox** crusher HMI controller provides consistent real time information about the machine's operating performance. **SmartBox** monitors and records all critical elements including:

- Monitors and displays real time temperature of all bearings
- Records oil tank temperature
- Drive motor AMP/ KW draw
- Monitors all crusher vibration levels
- Records no loads / full load R.P.M
- Run Down time feature
- All safety switches functions
- Lube system operation
- All system Alarm notification signals
- Historical data logging, 365 days
- Custom designed historical printout
- Emergency stop function
- On screen alarm page trouble shooting guide
- Integrated System Operators Manual
- Factory recommended settings for the system
- Provides scheduled maintenance alerts
- Records all maintenance
- USB flash-drive accessibility
- Monitors rotor wear parts

Optional System Features:

- Temperature sensing of all motor phases
- Temperature sensing of all drive motor bearings
- Crushing chamber temperature sensing

Optional System Integration:

Can be integrated to an existing plant control system

Optional Monitoring Features:

- Real time alarm notification sent by text / email*
- Smartphone APP or iPad viewer*
- **REMCO** Diagnostic services*

Optional Multiple Crusher Monitoring:

- 15" HMI touch screen
- Multiple Crusher Monitor in central location

The operating data is gathered and processed through the HMI that is supplied with the system, providing real-time readouts of all operating limits.



SmartBox ... The ultimate crushing machine management system.

SmartBox programming is custom to each installation. This includes monitoring of all wear parts for protection against sudden wear parts failure.

SmartBox ... the latest technology in crushing machine management for the modern producer. Improving product quality and production rate by managing operation and maintenance of the crusher. **SmartBox** ... diagnoses mechanical problems while they are still small, preventing interruption of crusher operation and unscheduled down time. **SmartBox** ... alerts operating personnel and provides management with continuous feedback on crusher utilization and performance.

SmartBox ... a quick return on your investment in crusher control.

US patent No. 7,489,254 ~ Foreign patents pending

Typical HMI Screen Capture of **SmartBox** System in Operation. *Requires Internet connection



General Clearance and Installation Dimensions

REMco SINGLE DRIVE Model ST VSI												
CRUSHER	MODEL	Α	В	С	D	E	F	G	Н	I	J	К
200	INCHES	154	79	54	99	44	78	84	131	71	162	176
300	METRIC	3912	2007	1372	2515	1118	1981	2134	3327	1803	4115	4470
400	INCHES	172	99	70	102	56	90	84	138	82	176	191
600	METRIC	4369	2515	1778	2591	1422	2286	2134	3505	2083	4470	4851



REMco DUAL DRIVE Model ST VSI												
CRUSHER	MODEL	Α	В	С	D	Е	F	G	Н	I	J	Κ
800	INCHES	190	96	48	48	58	101	97	110	110	198	212
	METRIC	4826	2438	1230	1230	1480	2566	2459	2801	2801	5025	5380
1200	INCHES	270	117	75	58	58	88	96	192	142	214	228
	METRIC	6864	2965	1905	1480	1480	2095	2438	4883	3594	5441	5798
1500	INCHES	270	117	60	60	58	82	96	193	142	216	231
	METRIC	6864	2965	1524	1524	1480	2087	2438	4902	3594	5486	5867

The dimensions shown are approximate and subject to change. Do not use for construction. Request a certified installation drawing prior to designing the crusher support. **REMCO** reserves the right to change these dimensions without prior notice.

REMco Customer Services

When a new crushing circuit is being considered it is important to determine the crushing characteristics of the rock or mineral to be processed. Proper testing can establish the design parameters for new crushing plants to ensure that the desired product quantity and quality can be reliably produced by the equipment selected.

The only way to predict crushing costs with certainty is to establish the abrasion rate of the material to be quarried and crushed. From the softest limestone to roughest silica, wear rates and the resulting crushing costs can be ascertained, by a **REMCO** crushing test.

REMCO provides crushing test to prospective buyers of **REMCO** crushers. These crushing test services are generally performed on a no-charge bass for standard tests. **REMCO** uses a Series 320 VSI with 75 hp and VFD drive for these tests. This crusher can be arranged in a wide variety of configurations for test purposes. For accuracy in testing, it is essential that the right quantity of material be provided. For more information about these services, please visit **www.remcovsi.com**.



SPECIFICATIONS											
SERIES MODEL	1530	1530	4060	5080	9150	9150					
MODEL	250	300	400/500/600	700/800	1200	1500					
DRIVE ARRANGEMENT	Single	Single	Single	Dual	Dual	Dual					
HP RANGE	150-300	300-400	400-600	600-800	800-1,000	1000-1500					
ROTORS/No. of Ports	3/4/5	3/4/5	3/4/5	3/4/5	4/5	4/5					
ROTOR DIAMETERS	23"	30" to 35"	30" to 39"	30" to 42"	32" to 42"	32" to 42"					
ROTOR TYPE	Std/Tall	Std/Tall	Std/Tall	Std/Tall	Std/Tall	Std/Tall					
MAX. CRUSHING VELOCITY	305 FPS	315 FPS	315 FPS	315 FPS	300 FPS	300 FPS					
NUMBER OF ANVILS	17/18	17/18	18/20	19/21	19/21	19/21					
ROCK CHAMBER TYPE	Fine/Coarse	Fine/Coarse	Fine/Coarse	Fine/Coarse	Fine/Coarse	Fine/Coarse					
APPROX. SHIPPING WEIGHT	28,000 lbs.	32,000 lbs.	38,000 lbs.	45,000 lbs.	62,000 lbs.	67,000 lbs.					
MAX. ACCEPTABLE FEED SIZE	2" / 50mm	3" / 75mm	3" / 75mm	4" / 100mm	4" / 100mm	4" / 100mm					

		ACCE	SSORIES			
	O = OPTIONAL	S = STA	NDARD N/A = N	IOT AVAILABL	E	
MODEL	250	300/	400/500/600	700/800	1200	1500
CRUSHER TOOLS	S	S	S	S	S	S
BALANCING MACHINE	S	S	S	S	S	S
TEMP. SAFETY SYSTEM	S	S	S	S	S	S
INTERNAL AIR TRANSFER	S	0	0	0	S	S
SUPPORT LEGS	0	0	0	0	0	0
SKID FRAME	0	0	0	0	0	0
SAFETY SERVICE PLATFORM	0	0	0	0	0	0
VIBRATION PROTECTION	S	S	S	S	S	S
DISCHARGE HOPPER	0	0	0	0	0	0
DUST COLLECTOR	0	0	0	0	0	0
SMARTBOX	0	0	0	0	0	0
HYDRAULIC ACCESS	S	S	S	S	S	S
DELETE HYDRAULICS	0	0	N/A	N/A	N/A	N/A
ELECTRIC MOTOR STARTERS	0	0	0	0	0	0
AUTOMATION	0	0	0	0	0	0
VARI-SPEED CONTROL	0	0	0	0	0	0
OIL LUBRICATION	S	S	S	S	S	S
SERVICE CRANE/MANUAL	0	0	0	N/A	N/A	N/A
SERVICE HOIST ELECTRIC	0	0	0	0	0	0
SERVICE HOIST ELECTRIC	0	0	0	0	0	
CONQUEROR ROTORS	0	0	0	S	S	

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REMCO OreMax IMPORTANT APPLICATION INFORMATION AND GUIDELINES

- The capacities shown in this catalog are for fully autogenous rock-on-rock VSI crushers only and are neither maximum nor minimum. Tonnages shown are based on processing material in a well designed processing circuit with automated feed controls and adequate screening. Many factors effect capacity, such as ore hardness, type of rotor used, number of rotor ports, rotor speed, size of drive motor(s) feed moisture content, etc. For metric capacities, multiply by a factor of .9.
- **REMCO** recommends conducting a crushing test prior to applying **OreMax** crushers or designing a fine ore crushing circuit. Contact **REMCO** for details and/or to schedule such a test.
- Water in feed in excess of 3-5% will reduce crusher performance, cause chamber packing, raise power demand and increase parts wear raising the operating cost.
- Maximum recommended feed size will vary dependent on type, hardness and shape of rock or ore to be crushed. Larger, angular feeds will reduce capacity; finer, cubical feeds will increase capacity. All feed size designations shown are for a maximum one-way dimension of the rock pieces.
- OreMax crushers can be operated in open or closed circuit. Closed circuit operation will produce the best results when crushing for optimum particle shape. Closed circuit operation will also yield the greatest net product and the best final product grading.
- The information contained in this catalog is provided as an application aid to assist the user in maximizing the potential of **OreMax** crushers. No performance guarantees are expressed or implied. To determine the effect of individual conditions, contact **REMCO**.

The above applies to all **OreMax** models shown in this catalog. **REMCO** reserves the right to change the capacities and specifications contained herein without prior notice.



Any Material Any Tonnage, Anywhere

REMCO OreMax-ST/AR VSI

IMPORTANT APPLICATION INFORMATION AND GUIDELINES

- The capacities shown in this catalog are for crushers using a rock lined rotor and an anvil chamber and are neither maximum nor minimum. Tonnages shown are based on processing material in a well designed processing circuit with automated feed controls and adequate screening. Many factors effect capacity, such as rock hardness, type of rotor used, number of rotor ports, rotor speed, condition of anvils, size of drive motor(s), feed moisture content, etc. For metric capacities, multiply by a factor of .9.
- The capacities shown in this catalog are for crushing sound, competent ore. Larger, angular feeds will reduce capacity; finer, cubical feeds will increase capacity. When crushing to produce improved shape, slower speeds may be utilized. This will increase the crusher feed rate and lower reduction achieved.
- REMCO recommends conducting a crushing test prior to applying OreMax-ST/AR crushers or designing a crushing circuit. A chemical analysis test of the material to determine abrasive content is also recommended. Contact REMCO for details and/or to schedule such a test.
- Water in the feed in excess of 3-5% will reduce crusher performance, cause chamber packing, raise power demand and increase parts wear raising the operating cost.
- Maximum recommended feed size will vary dependent on type, hardness and shape of rock or ore to be crushed.
- OreMax-5T/AR crushers can be operated in open or closed circuit. Closed circuit operation will produce the best results. Closed circuit operation will also yield the greatest net product and the best final product grading.
- The information contained in this catalog is provided as an application aid to assist the user in maximizing the potential of **OreMax-ST/AR** crushers. No performance guarantees are expressed or implied. To determine the effect of individual conditions, contact **REMCO**.
- OreMax-5T/AR machines are recommended for use in low abrasion, less aggressive materials. When the total abrasives content of the rock (silica, alumina and iron) exceeds 20%, operation may result in unacceptable operating wear costs. In these instances, REMCO strongly recommends the use of a rock-on-rock chamber as in REMCO OreMax models.

The above applies to all **OreMax-5T/AR** models shown in this catalog. **REMCO** reserves the right to change the capacities and specifications contained herein without

