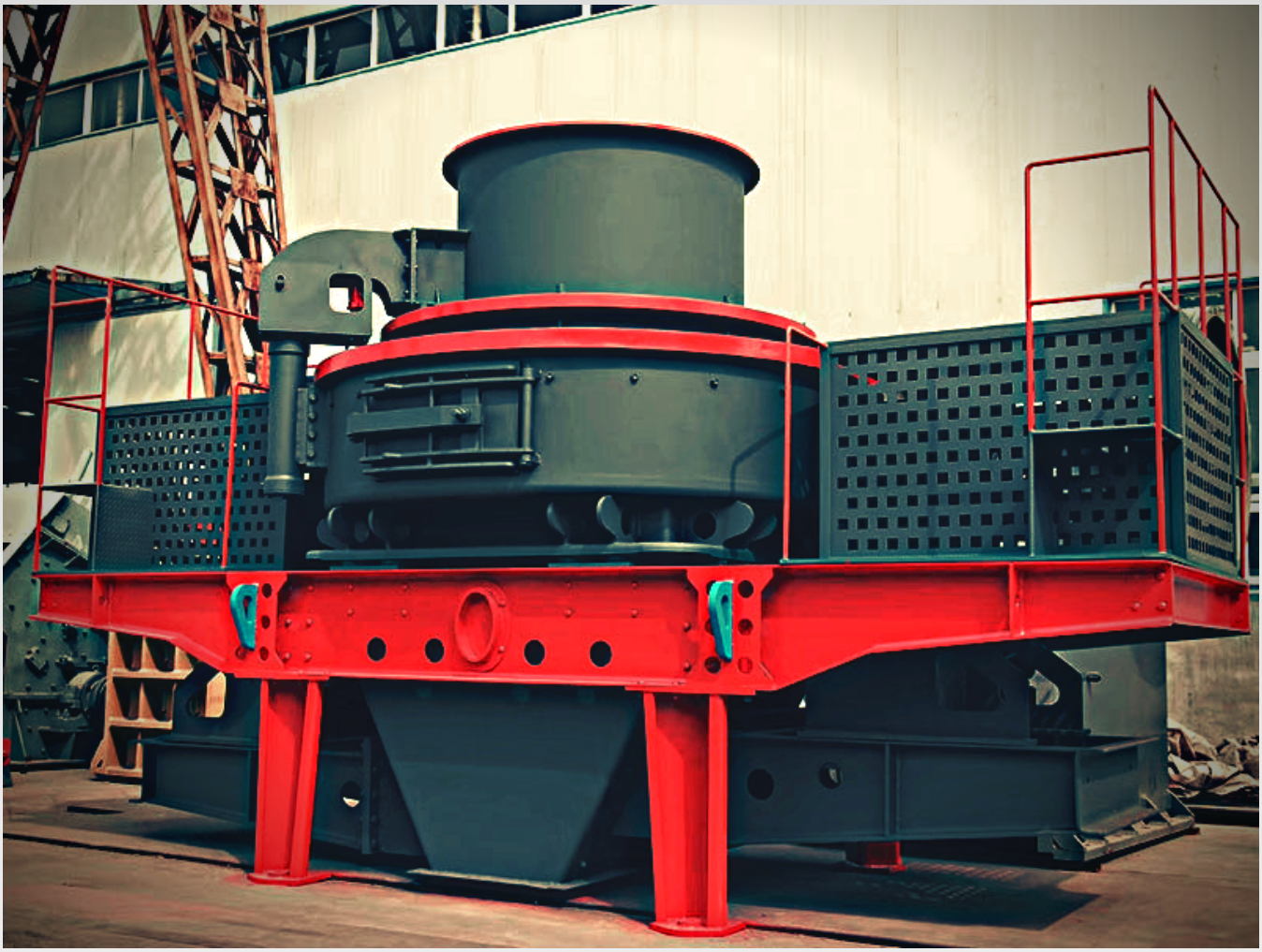

Vertical Shaft Impactor

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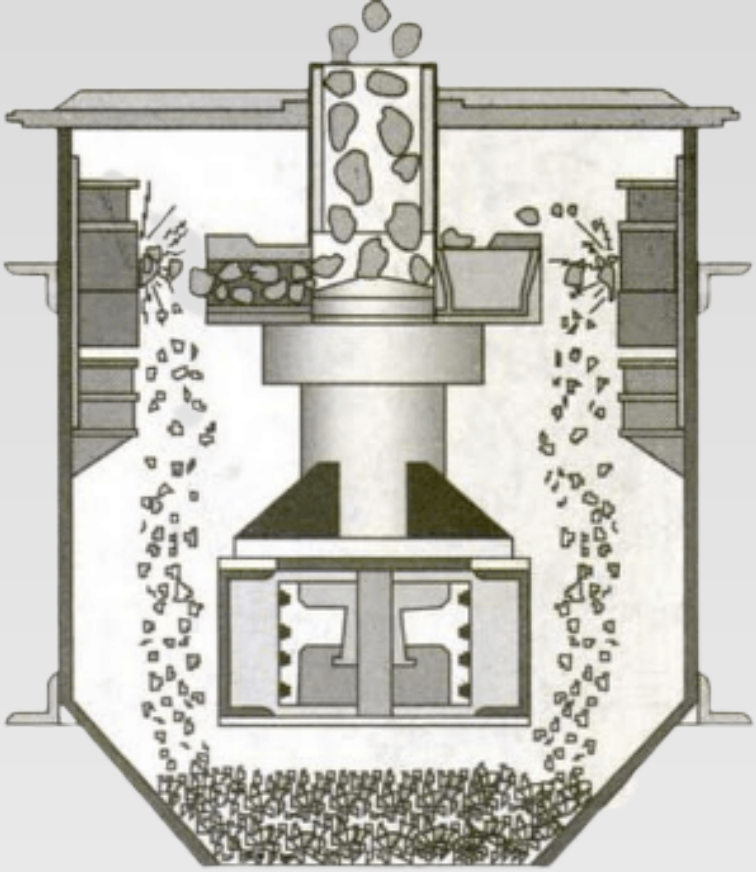
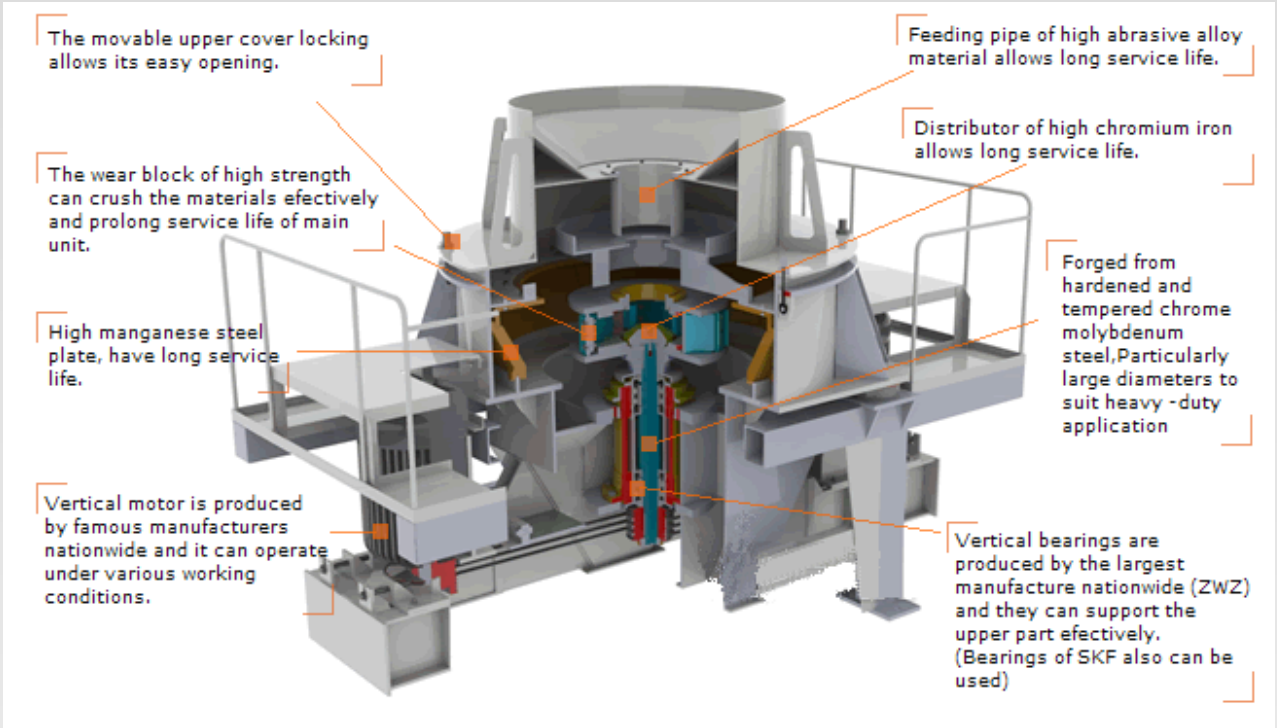


How VSI Works?

VSI is nothing but a centrifugal **"Stone Pump"**. Stones are fed into centre of the rotor & the material is thrown outwards towards the periphary by effect of centrifugal force.

Ther material fed through a vertical tube in the centre of a rotor which is rotating at a high speed around the vertical axis. Feed material due to effect of centrifugal force starts achieving speed and it starts getting distributed over the distribution cone and as the material travels over the vanes of rotor, towards the periphary reaches the same speed as speed of rotor's periphery. At the instant of alighting from the rotor material attains a velocity which is the resultant of peripharal velocity and radial velocity and direction of the resultant velocity is almost 45 degrees to radial direction.

Kinetic energy of these feed particles, is so high that after impact, against the breaking surfaces stresses developed within the partiles overshoot their ultimate strength and thereby particles divided into number of pieces giving rise to new surfaces.

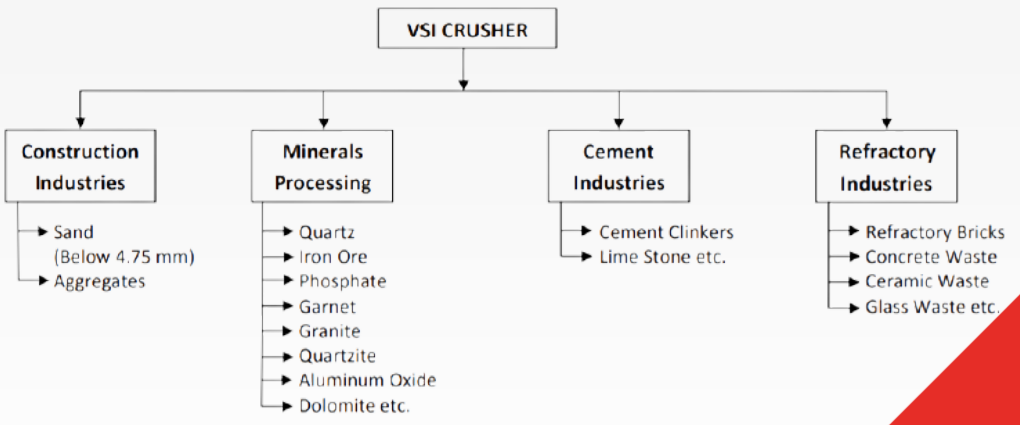


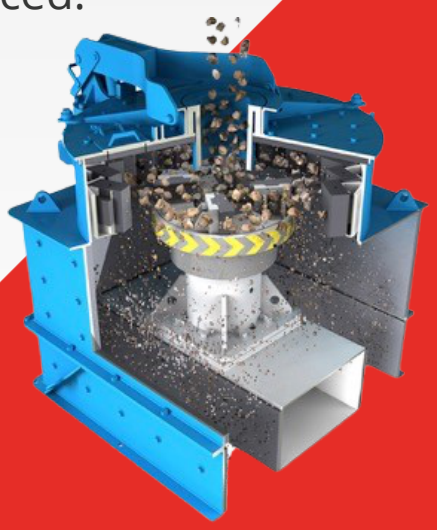
It is the Velocity & Velocity alone desides the amount of fragmentation. Therefore VSI is in true sense a pure impact crusher which crushes only by impact.

Not like other conventional impact crusher, where shear, compression, attrition, impact allocation, play the role in the crushing material.

In the VSI there is no gap setting assembly. Crushed material falls through the annular open ring area by effect of gravitational force only.

Rotor is so designed that stone layer gets formed on the when and breaking surface is also formed by material builtup. Thereby reducing the wear on the vanes and breaker walls but this cushioned surfaces reduces considerably the amount of crushing but the consumptions of spares is also getting reduced.





POINTS TO REMEMBER

1.One Should clearly understand, that V.S.I. is primarily a “Shaping Machine “& not a harsh heavy reduction crushing machine. Heavy size reduction has been intentionally avoided in V.S.I. by providing a “Soft Cushioned Impact”, so that, material is not reduced to desired product size in one pass, but it attains the desired product size, only after 3-4 passes or more, this has been done intentionally.

2.Therefore, quite a high recirculating load is essential. And that is how cubical shape achieved by V.S.I. is very much superior to cubical shape obtained by any other existing crushing equipments.

3.Therefore, throughput capacities are very high and should not be confused with the ultimate product output capacities. Invariably throughput capacity has to be 1.5 to 5 times of output capacities. For instance, sand manufacturing V.S.I of output capacity of 20 TPH, should have say 100 TPH throughput capacity. Therefore, capacities of feeding equipments are recirculating equipments should be based on throughput capacities and not on output capacities.

4.Ensuring of no oversized material is fed to V.S.I. is very vital. Even on occasionally, one or two pieces can be harmful, as these pieces may choke up in the feed tube or block the passages in the rotor. Rotor will get imbalanced & if continued to run further may damage the bearings. Therefore,prescreening prior to feeding into V.S.I is very essential. Even cardboard pieces, papers, clay lumps, cotton wastes etc., can block the passages. Upper limit of feed size, i.e. maximum feed size should be very strictly controlled.

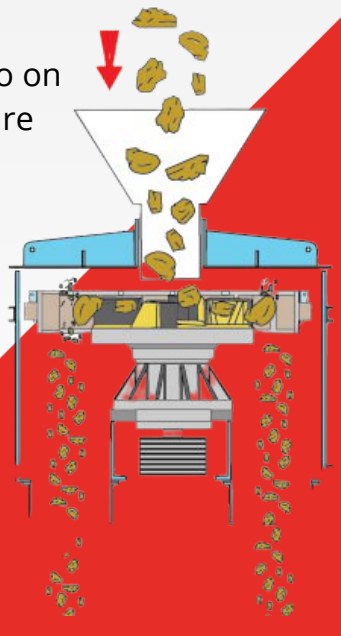
5.Feeding continuously, without interruption at rated throughput capacity gives best results. It increases outputs & shape of aggregates, gets further improves.

6.Surface velocity of Rotor decides the ratio of reduction. For finer end product, higher speeds are required. For standard Aggregates, 45m/sec is good speed but for finer products higher speed even up to 70m/sec to 80 m/sec. are used.

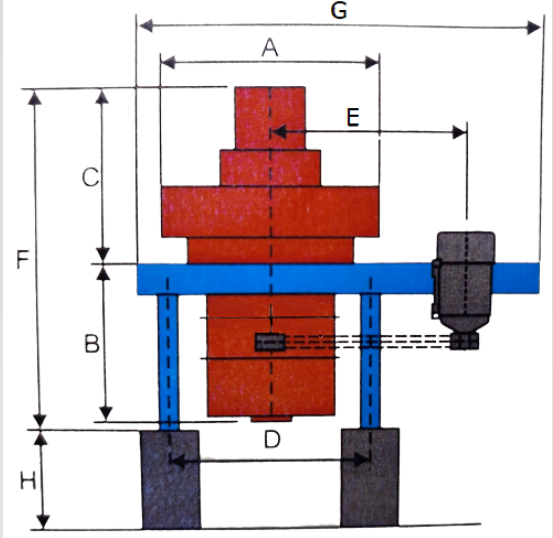
7.It is very much advantageous & advisable to make provisions in the crushing circuit, in such a way that all the separated sizes in desired proportion can be fed back to V.S.I to further improve desired grain analysis in product.

8.As the material is always flowing over the material bed and impacting also on material built up, wear & tear of components is minimized & therefore spare parts consumption per ton of aggregates produced is very low, especially when compared with conventional impactors.

9.In case of bigger V.S.I. twin motor drive should be selected. One motor will bring the V.S.I to full speed, then the other motor is brought into operation. Thereby starting heavy currents are reduced considerably. This arrangement is very useful especially when plant is running of D.G Set.

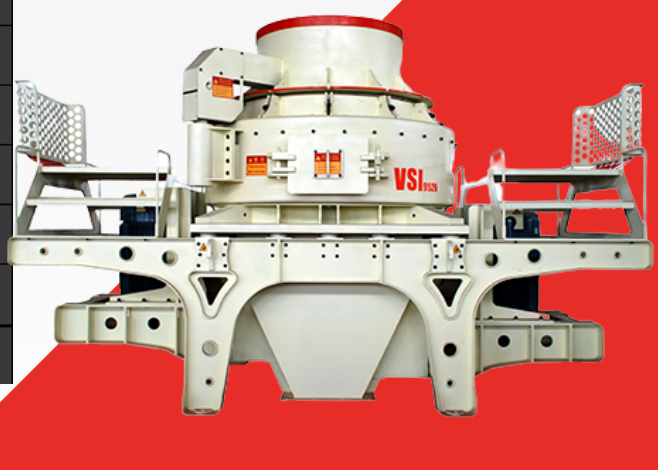


Dimensional & Application Details								
Type	A	B	C	D	E	F	G	H
35	1630	1150	1411	1390	1045	2500	2718	1000
55	1866	1398	1533	1760	1700	3031	3490	1000
80	1866	1398	1533	1760	1700	3031	3490	1000
110	2484	1460	1690	2010	1820	3150	4040	1100
160	2484	1460	1690	2010	1820	3150	4040	1100
220	3005	2129	1994	2750	2300	4221	4836	1100
330	3005	2129	1994	2750	2300	4221	4836	1100



Crusher data							
Type	35	55	80	110	160	220	330
Max . Feed size +	0-33	0-35	0-35	0-40	0-40	0-50	0-50
Throughput (TPH/BRASS)	40/10	70/17.5	90/22.5	130/32.5	160/40	220/55	280/70
Product Output 0-2 mm	8-12	12-16	16-24	25-30	30-40	50-70	70-90
Capacity TPH 0-4 mm	15-20	20-25	23-30	35-40	50-70	70-90	110-130
Diameter in mm	610	780	780S	1000	1000S	1200	1200S
Surface speed m/sec	40-62	45-65	45-65	45-65	45-65	35-60	35-60
RPM	1300-2000	1100-1600	1100-1600	860-1250	860-1250	560-1000	560-1000
Power in KW/HP	55/75	75/100	90/120	160/215	200/270	250/335	300/400
V-Belt	4 X SPB	5 X SPC	6 X SPC	6 X SPC	6 X SPC	8 X SPC	8 X SPC
WL in Kgs approx	2700	5000	5200	7000	7500	8000	8200
Motor Pulley (mm)	236	250	265	400	400	540	540
Note: 1 Brass = 4 ton (approx)							

Life of Tips with Different Applications.	
Product - 0-4 mm	
Mineral	Hrs Apprx
Mineral with 15% Quartz	1300-1500
Mineral with 60-90% Quartz	500-1500
Clinker	4000-8000
Granite/Basalt	1000-7000
Limestone	4000-12000
Corundum	250-500
Blast Furnace Slag	3000-4000
Bauxite	500-1000
Above non-binding values vary considerably.	



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