

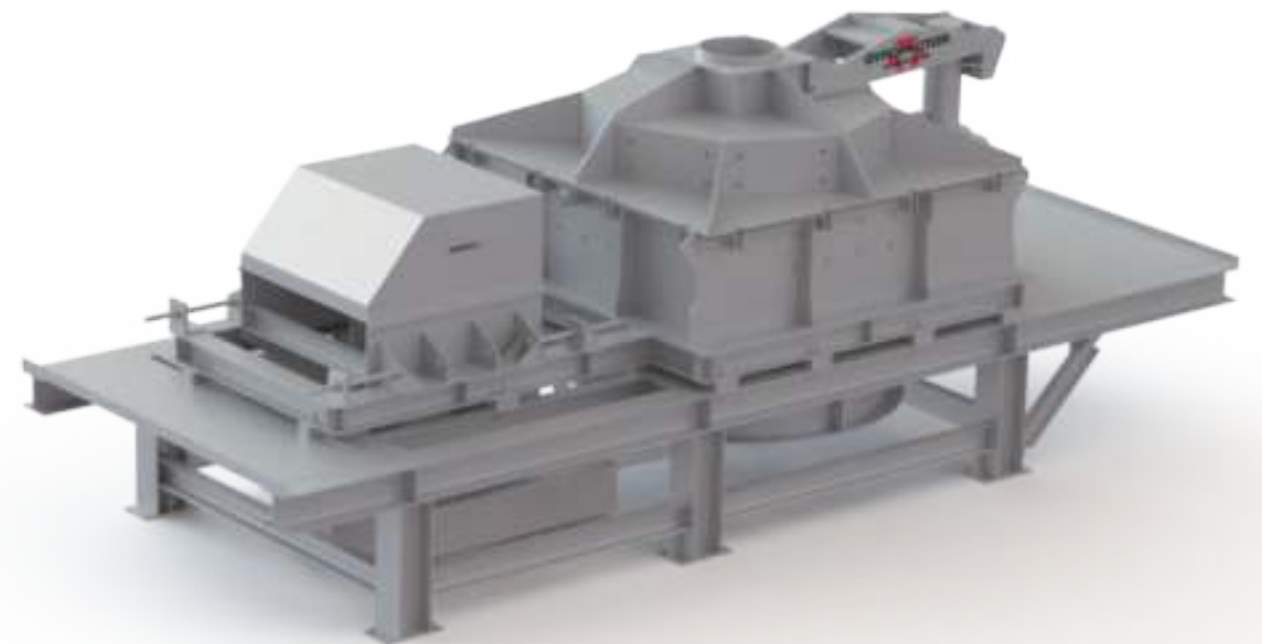
# GYROPACTOR

## NAKAYAMA VSI



Best solution for shaping aggregates and M-sand.

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**Safety Precautions:** In order to use this product correctly and safely, please read the technical Manual carefully before use.  
(Notes) Do not use reprint of drawings and information in this catalogue without prior consent of Nakayama.



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# NAKAYAMA VSI developed with tenacious efforts and experience for 30 years

NAKAYAMA has made 3 benefits on VSI after development efforts.  
Nakayama SR series VSI is highly advanced crusher, which can be widely used in quarries, sand production plants, and recycling plants.



## BENEFITS

- 1 Low running cost  
p.03 - 04
- 2 High performance  
p.05 - 06
- 3 Easy maintenance  
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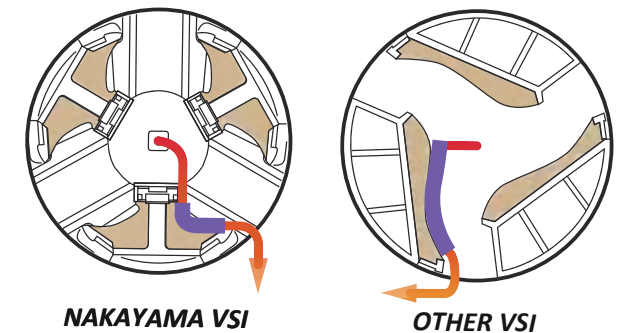
# 1 Design concept

## Low running cost

The rotor rotation is reversible, giving equal wear on both sides of the part, thus cuts down the parts replacement downtime interval to a half. The rotor is not one-piece construction, but it is made up of assembled parts. Therefore, there is no need to repair or replace the rotor itself. And the total maintenance cost on VSI will be minimised.

### Shorter passage in the rotor

The passage in the rotor is shorter than other VSI to reduce power consumption and to avoid vibration caused by the unbalanced rock distribution in the long passage.



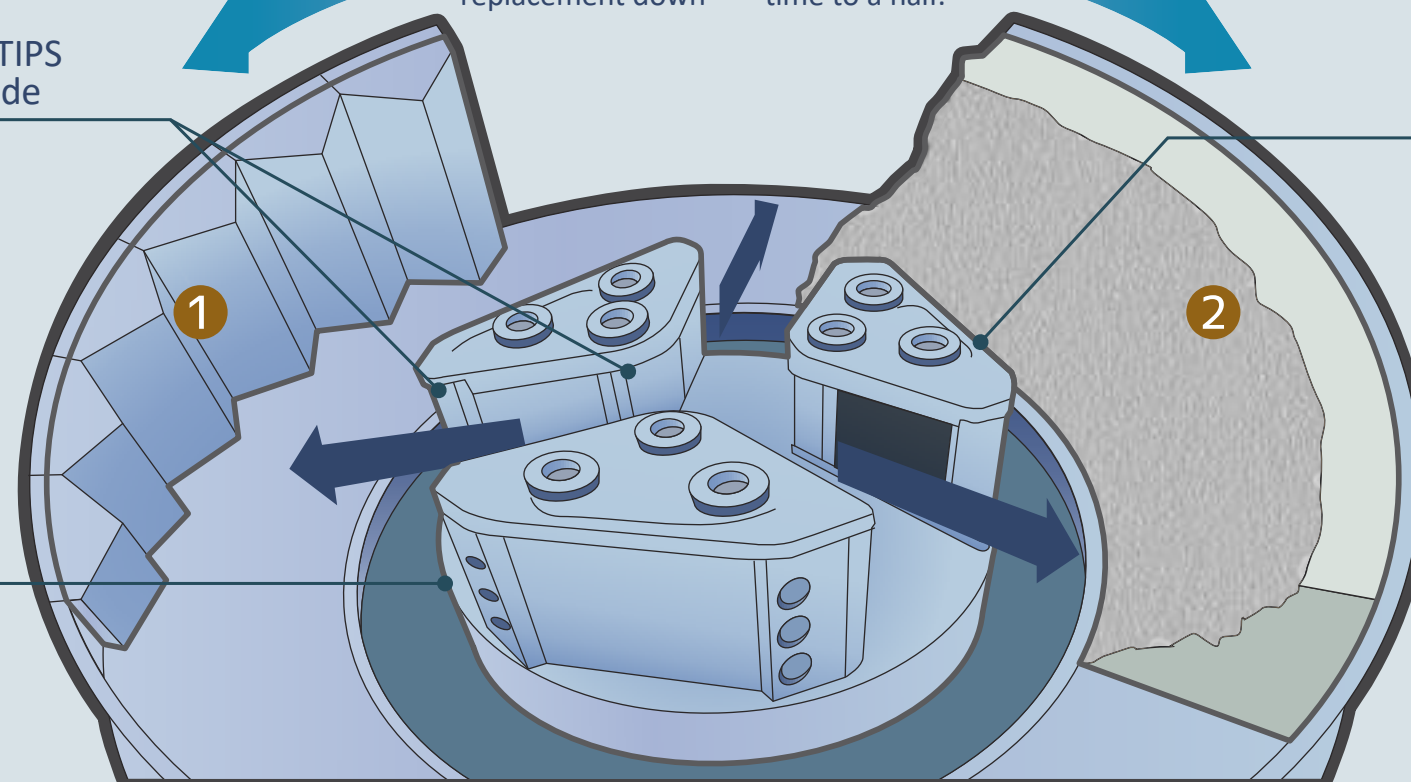
### REVERSIBLE, OPEN TYPE ROTOR

ABRASION-RESISTANT TIPS  
made of Tungsten Carbide

**REVERSIBLE ROTATION**  
Cuts down the  
replacement down  
parts  
time to a half.

No blocking of material in the rotor  
with the ample rotor passage

The rotor speed is relatively slower than that of the VSI of other manufacturers. The optimum slower rotor speed enables lower power consumption, and what is more, the production of unnecessary fines smaller than 0.075mm can be minimised.



Sectionalised rotor for easy  
parts replacement

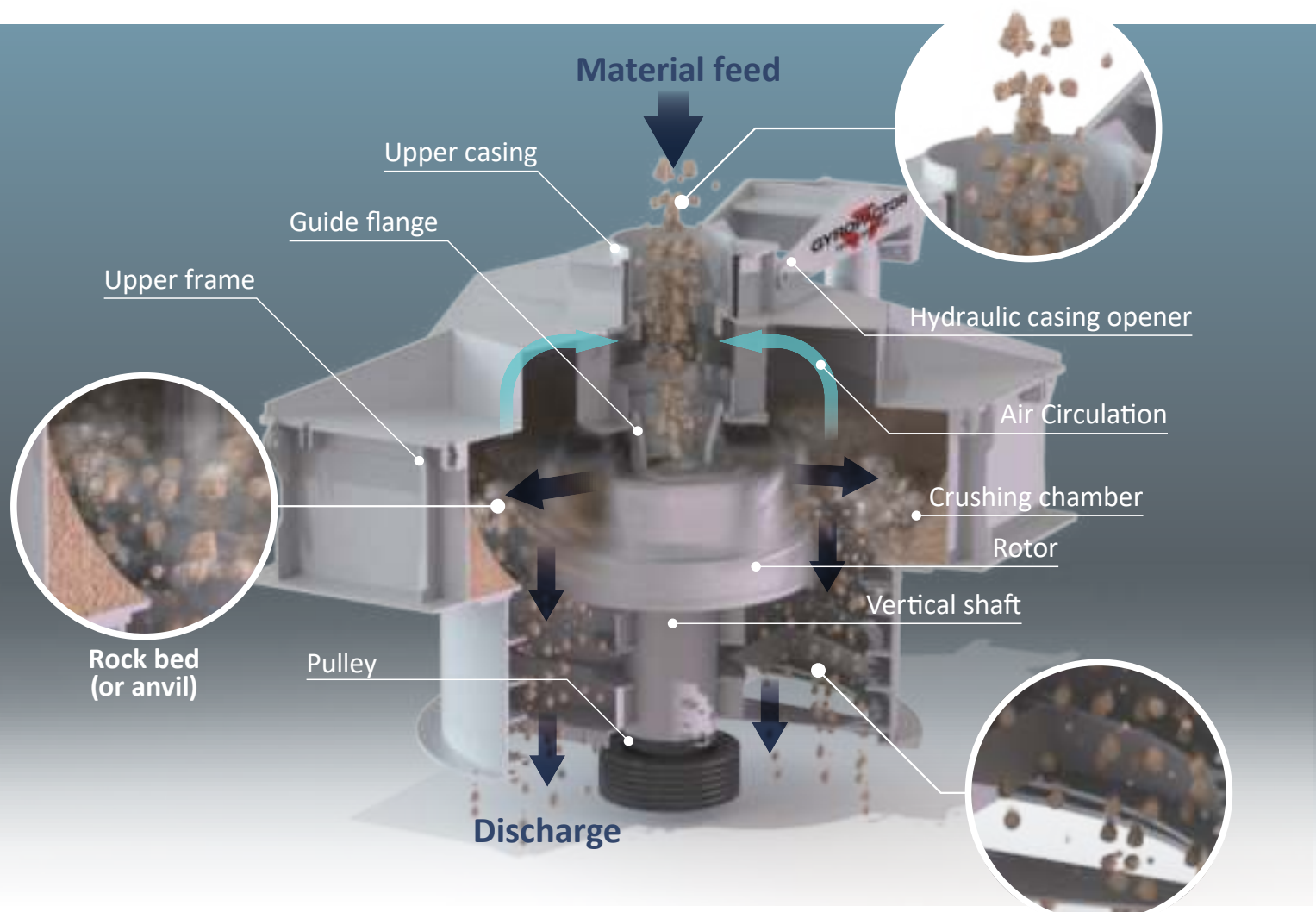
Adjustable parts fitting position  
maximises the rate of parts utilization  
and minimises the wear costs.

- 1 ROCK-ON-METAL crushing chamber (Type A)  
ANVIL GEOMETRY for maximum crushing effect
- 2 ROCK-ON-ROCK crushing chamber (Type D)  
ROCK BED with optimum slope angle for shaping

## 2 High performance

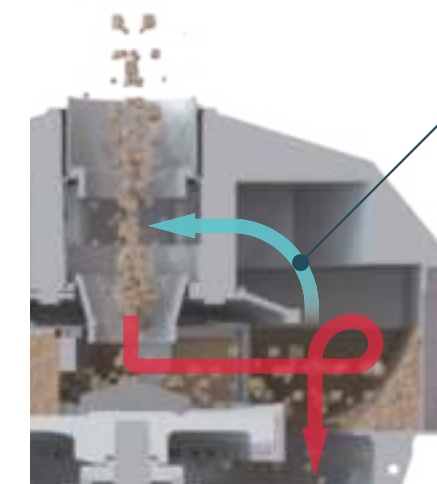
Design concept

The inter-particle crushing around the sloped rock bed gives effective crushing by and among the particles of aggregates. There is no need to speed up the rotor to hurl the rock strongly against the vertical rock bed or anvils using a high power motor. Slower rotor speed helps to prolong the service life of the parts.



### CHANGE DEAD STOCK TO PRODUCTS

Unsellable products (eg. 40-0mm, 20-0mm, 5-2.5mm, etc) stocked in quarries cause a headache for quarry managers. Nakayama VSI can change these non-marketable stock to sellable products.



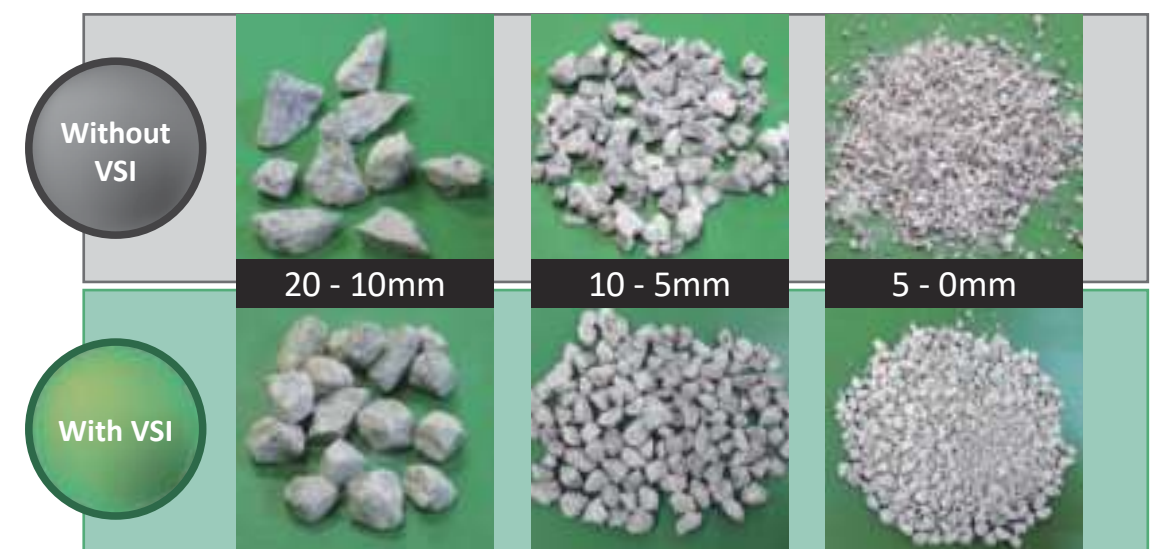
### Lower dust emission

The flow of air inside the VSI is designed to circulate within the machine to minimise the dust emission.

### Slower rotor speed

The Nakayama VSI was designed to assure optimal rock bed formation around the rotor. Not like other VSI, the wall behind the rock-bed is higher and the rock bed angle is not steep. Therefore, the rock hurled from the rotor is subjected to particle-to-particle impact crushing. This is the reason why Nakayama VSI gives better VSI effects in aggregate shape and gradation at a relatively slow rotor speed (40-50m/sec).

### Comparison





## MALAYSIAN QUARRY "Y" MANAGER'S COMMENTS:

### Before installation of VSI:

The production of M-Sand, before using Nakayama VSI, was about 25% of the total plant production of 160TPH ; namely 40TPH

The production level of this Quarry "Y" was 3-0mm. 5-3mm size was rejected by the screen as the waste material because this 5-3mm size shows flaky and elongated size in the M-Sand.

This rejected 5-3mm size was no use and made mountains of stockpile.

### After installation of VSI:

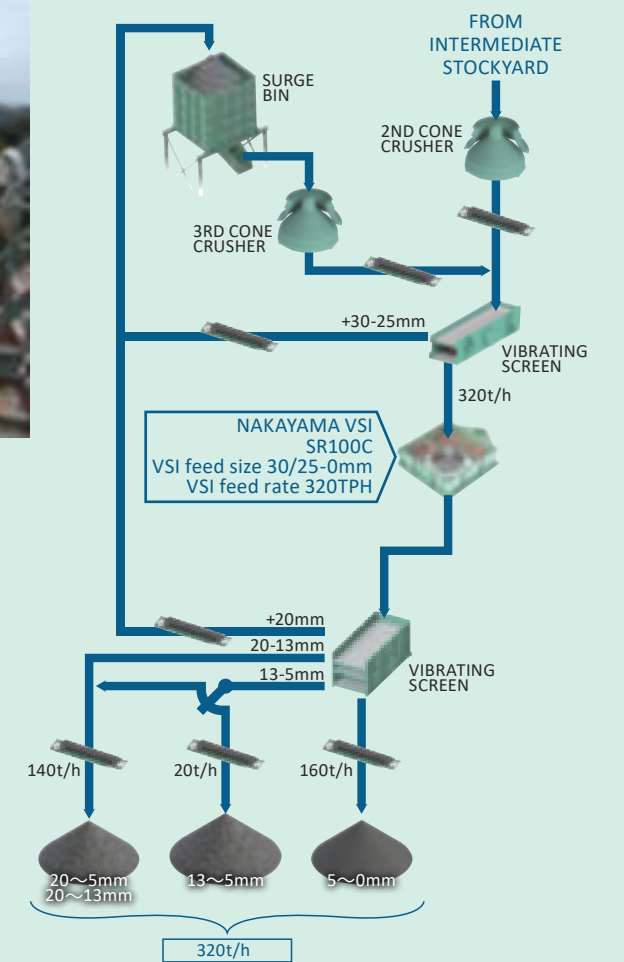
After installation of Nakayama VSI (SR100), the production drastically increased.

The total plant production of 160TPH doubled. M-Sand production increased by 4 times; from 40TPH to as much as 160TPH, and that, much better sand shape. It was not necessary to separate with 3mm mesh. The crushed sand by Nakayama VSI of 5-0mm was high-quality M-Sand.

Thanks to Nakayama VSI, the production increased drastically with the optimum settings, giving cubical product shape and gradation ideal for the M-sand, the customer said.



## QUARRY "Y" FLOW SHEET



## VSI EFFECT ON AGGREGATES

### Before installation of VSI



### After installation of VSI



Application - Outstanding effect with Nakayama VSI



### 3

Design concept

## Easy maintenance

The wear parts are simple in design, enabling easy and safe fitting. Maintenance can be minimised allowing long-time operation without servicing. Furthermore, the rotor is open type and there will be virtually no blockage of foreign material in the rotor, allowing continuous operation for maximum production.



### Wide-open top cover

Wide-open top cover (lid) is hydraulically raised and lowered providing easy and instant access to the open rotor for servicing and parts replacement.



### Parts management

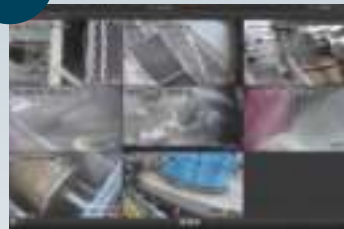
NAKAYAMA keeps a large amount of parts in stock to enable us to supply the necessary parts immediately to the customers (Parts stock total 7,500 in item and 20,000 in quantity)

## N-Link Infinite possibility when the plant equipment is connected to internet.

The plant operating scene can be monitored by the camera. The operating condition of the plant equipment and production output are also easily accessible. An emergency alarm and daily production records are automatically transmitted to office computers and smart phones.



The operating condition can be monitored by cameras.



The production output can be monitored on real-time basis.



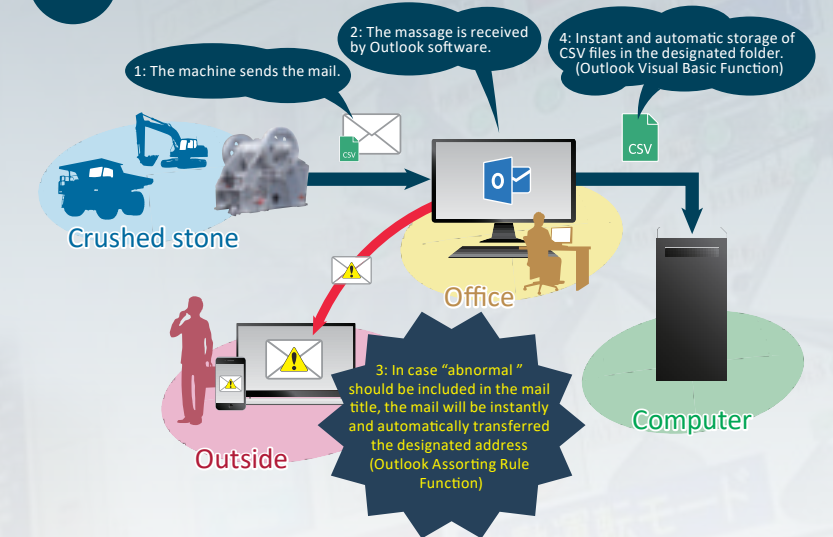
The operating conditions can be monitored.



The plant operating Programme, such as plant aggregates flow, can be changed from a remote place.



E-mail can be automatically transmitted.



### Green box (Data recording device)

Automatic data recording and storage of the equipment state is possible when a technical problem occurs. It is also possible to record the date replacement time of each spare part, to improve servicing and schedule downtime maintenance.

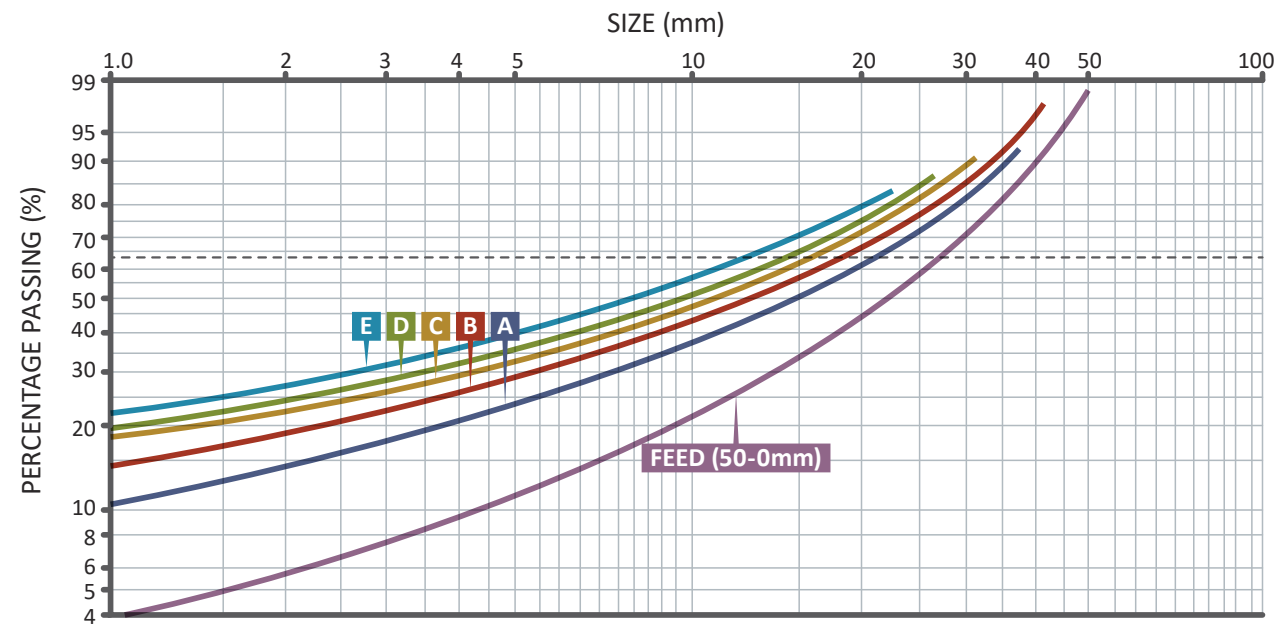


## GUIDANCE CURVES

### 50-0mm VSI feed

GUIDANCE CURVE vs SPEED & ROCK HARDNESS

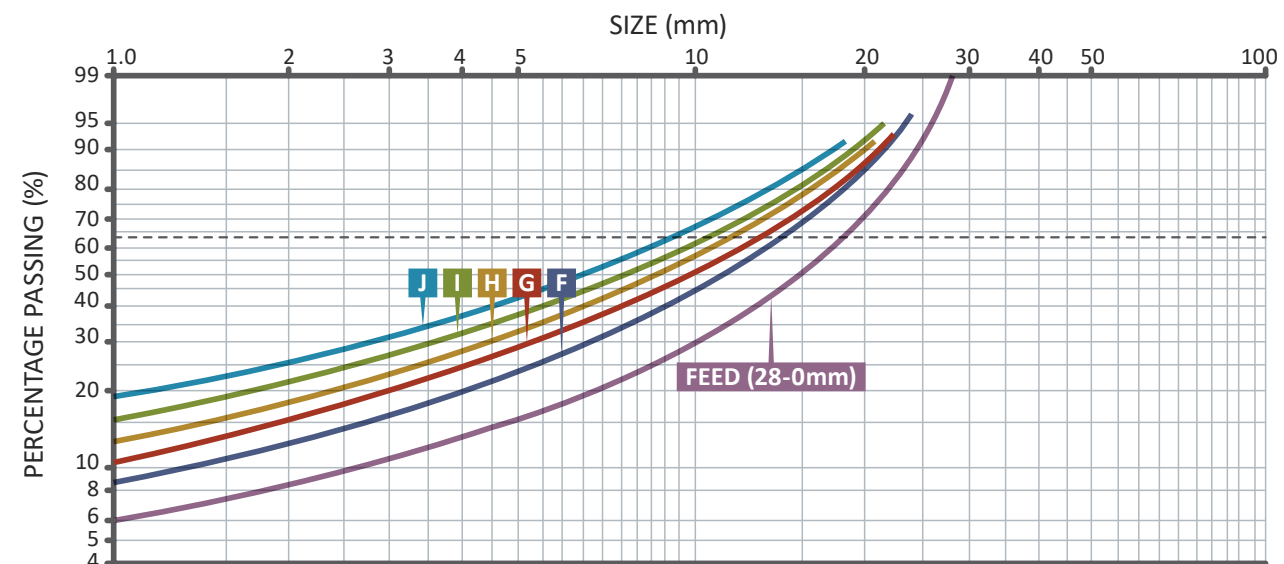
FEED SIZE		50-0mm		
ROTOR SPEED (m/sec)		40	45	50
ROCK HARDNESS	HARD (160MPa or more)	A	B	C
	MEDIUM (100~160MPa)	B	C	D
	FRIABLE (100MPa or less)	C	D	E



### 28-0mm VSI feed

GUIDANCE CURVE vs SPEED & ROCK HARDNESS

FEED SIZE		28-0mm		
ROTOR SPEED (m/sec)		40	45	50
ROCK HARDNESS	HARD (160MPa or more)	F	G	H
	MEDIUM (100~160MPa)	G	H	I
	FRIABLE (100MPa or less)	H	I	J



## CAPACITY / MOTOR REQUIREMENT (Based on Type D, Rock-on-rock crushing)

MODEL	ROTOR SPEED	MOTOR POWER ( KW )					
		110	132	150	190	220	250
SR 100C	40 m/s	180	215	245	310	-	-
	45 m/s	145	175	200	250	290	330
	50 m/s	-	135	150	190	220	250

Note: 1) Optional rotor top plate is available for faster speed range between 50-60m/sec.

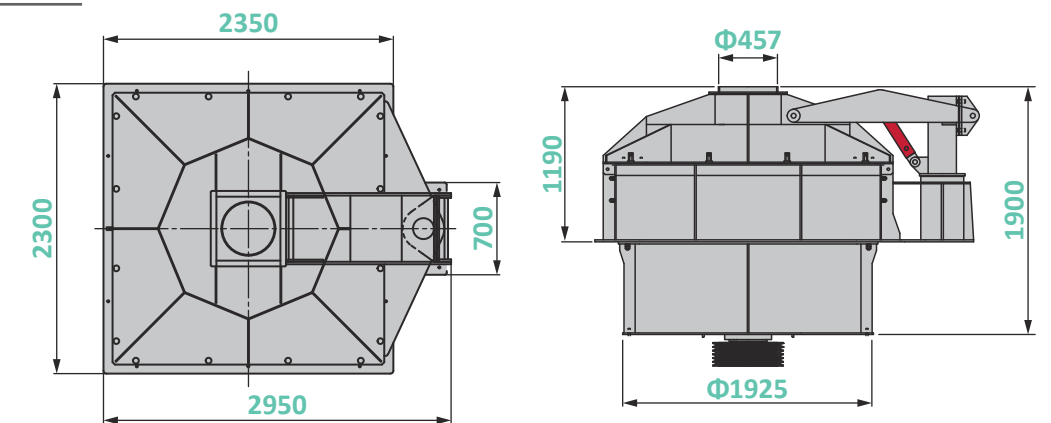
2) Motor shall be VERTICAL type.

3) Capacity is based on the continuous feed of andesite having a specific gravity of 2.6.

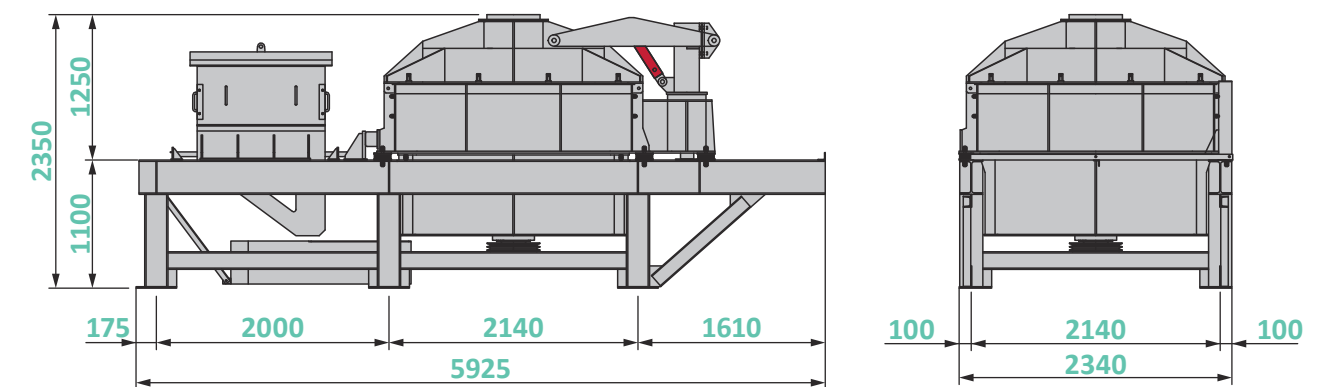
4) The capacity varies depending on the material - size, hardness, toughness and moisture content and the feeding method.

UNIT : TPH (ton per hour)

## DIMENSIONS



VSI UNIT can be loaded into a 40FT container.



■ In order to keep our policy of continuous development, specifications are subject to change without notice.

## SPECIFICATIONS

MODEL	CRUSHING TYPE	FEED OPENING (mm)	MAX. FEED SIZE (mm)	MOTOR POWER (kW)	ROTOR SPEED (m / s)	CRUSHING CAPACITY (TPH)	WEIGHT (TON)
SR100C	ROCK BED	Φ440	75	110~250	35~60	135~330	10.0
SR100C	ANVIL	Φ440	45	110~250	35~60	135~330	12.0

■ Processing capacity depends on the quality of raw materials, grain size and input mass.

■ This machine specifications and dimensions are subject to change without prior notice.





NAKAYAMA VSI – GYROFACTOR in operation

## FEATURES

- Reversible rotation cuts down parts replacement downtime.
- Assembled (sectionalised) rotor made up of compnents for easy parts replacement.
- Hydraulic top cover opener for easy servicing.
- Vibration sensor to detect excessive vibration for countermeasure at an early stage.
- VSI UNIT can be loaded into a 40FT container.

