



## Comparison between Vibro-Top feed and Vibro-Bottom feed

### 1 Common point

1. The mechanism and effect of soil improvement are same.

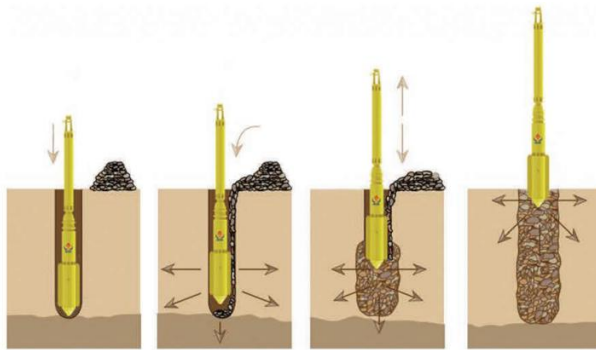
Soil improvement realized by means of pillar, subcrust and drainage effect of stone column

2. Design principle and method are same.
3. Inspection and test method are same.

### 2 Difference point

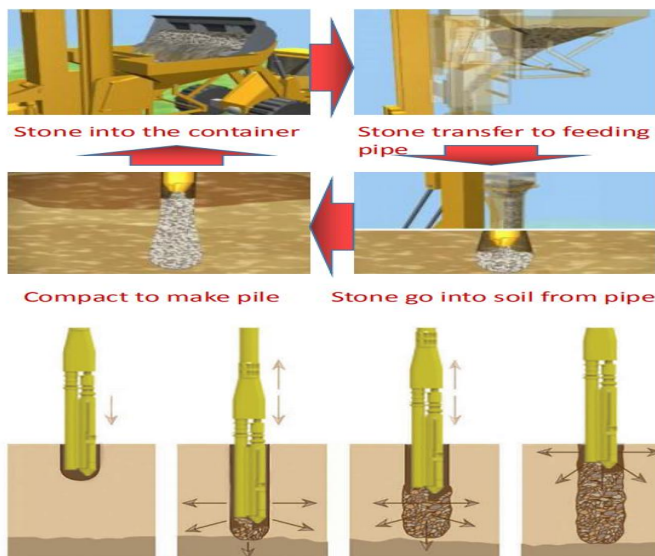
#### 2.1 Working method

##### 1 Vibro-Top feed



The stone material is filled into hole bottom from top of bore-hole.

##### 2 Vibro-Bottom feed



The stone material is filled into hole bottom through feeding tube of vibroflot.



## 2.2 Construction devices

### 1 Vibro-Top feed

Main equipment: hanging head, extension tube, vibration damper, vibrator and electrical control system of vibrator

### 2 Vibro-Bottom feed

Main equipment: material supply system, material container system, feeding tube system, vibrator system (extension tube, vibration damper, vibrator and electrical control system of vibrator)

## 2.3 Scope of application

### 1 Vibro-Top feed

It adopts to general vibro-construction.

### 2 Vibro-Bottom feed

It is an extension application of Vibro-Top feed, adopting to some special situation of vibro-construction:

- 1) Saturated cohesive soil with high water content and low shear strength (silt or muddy soil)
- 2) Water area construction
- 3) Areas where construction water is restricted and sewage discharge is prohibited.
- 4) The project with strict requirements for real-time pile diameter of stone column

## 3 Summary

### 1 Vibro-Top feed

- 1) Simple device, easy to organize and operation
- 2) Stronger penetrating capacity
- 3) Lower cost of device and construction

### 2 Vibro-Bottom feed

- 1) Can be applied for offshore job
- 2) Dry, water and linkage method can be offered
- 3) Controllable to real-time diameter
- 4) Lower penetrating capacity
- 5) More complex of operation and lower efficiency of construction