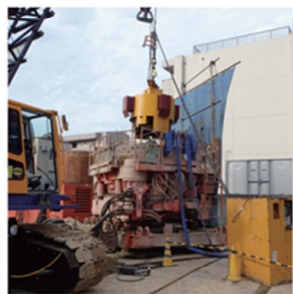




SHINMEIGIKOU CO., LTD METHOD INFORMATION



THE ALL CASING METHOD

This is a method of injecting a casing tube into the ground with a hydraulic jack while repeatedly rotating it with a vibrating device, and excavating earth and sand with a hammer grab.

LOW NOISE AND LOW VIBRATION ALL-PURPOSE METHOD

The all casing method is the method of bored piles method with high reliability.

Not only widely used with many types of geology and also environmentally friendly due to low noise and low vibration

★ REVOLVING METHOD

THE METHOD MAXIMIZES ITS POTENTIAL FOR HARD GROUND

All Casing Method The carbide bit installed onto the tip and the revolving excavation method enables the construction work free from ground collapse. And also, the high-precision verticality makes construction of large - bore or great depth with low vibration and noise available.

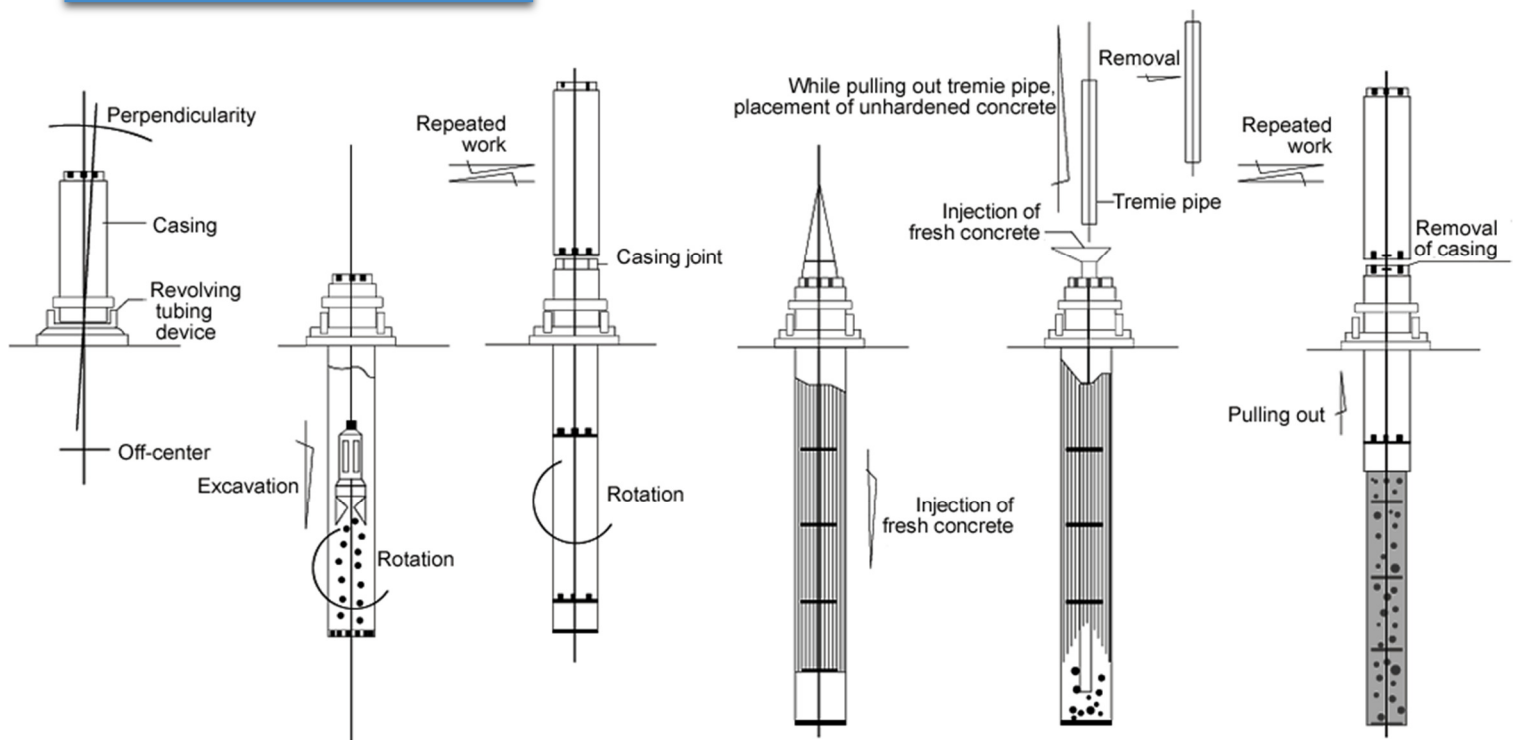


Revolving method

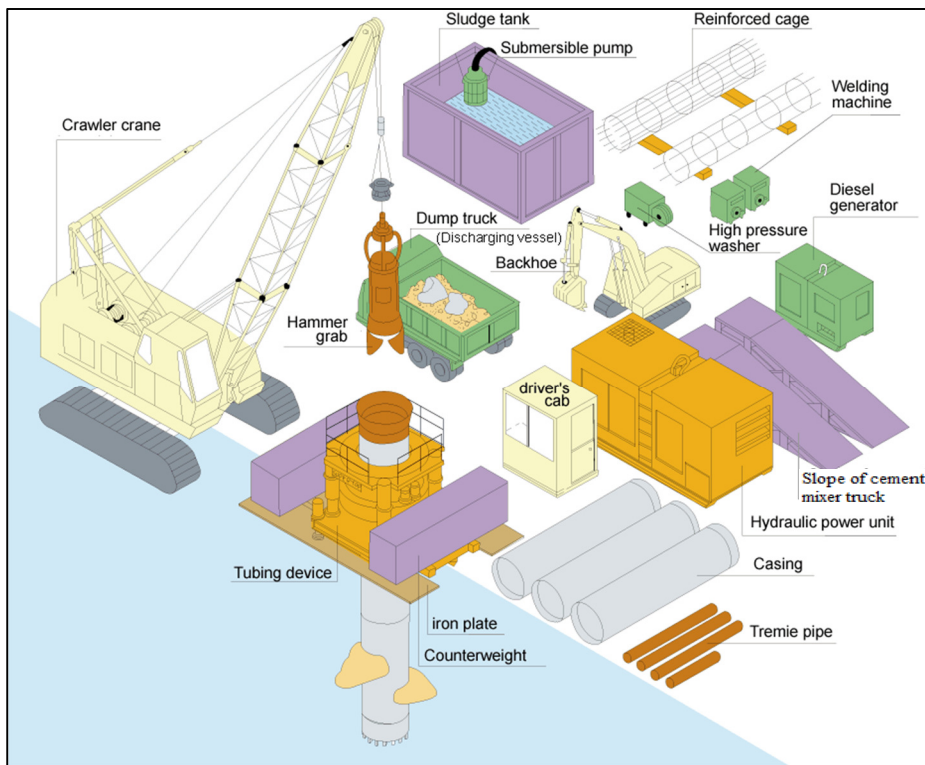
STRONG POINTS

Large - bore and great depth
Low noise and low vibration
Suitable to hard ground

CONSTRUCTION DIAGRAM



CONSTRUCTION SYSTEM DIAGRAM



CONSTRUCTION EQUIPMENT

Equipment	Function
● Crawler crane	Excavation, support work
● Hammer grab	Excavation
● Tubing device	Excavation
● Counterweight	To balanced counter force
● Casing tube	Excavation
● Tremie pipe	Injection of fresh concrete
● Slope of cement mixer truck	Injection of fresh concrete
● Diesel generator	Power supply
● High pressure washer	Washing
● Sludge tank	Sludge treatment

ENLARGED BOTTOM PILE CONSTRUCTION METHOD

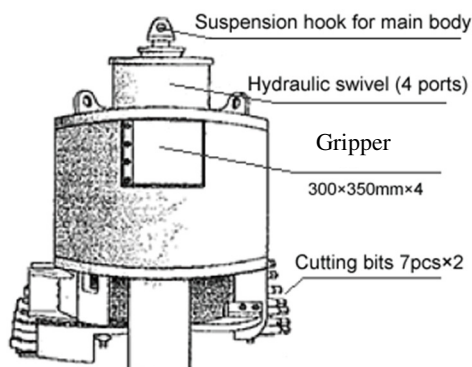
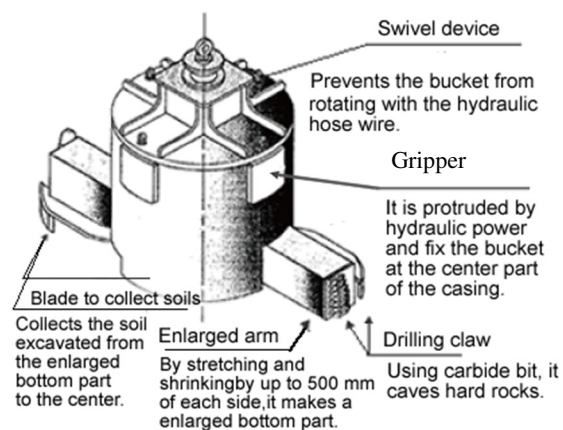
IT IS APPLICABLE TO ANY REVOLVING TUBING MACHINE

When a bottom-enlarged drilling machine is used in the full circle slewing enlarged bottom pile method, it is applicable to any revolving tubing machine, and the bottom diameter of the shaft portion diameter of +200 mm to +1000 mm is defined as the scope of enlarged bottom pile construction.

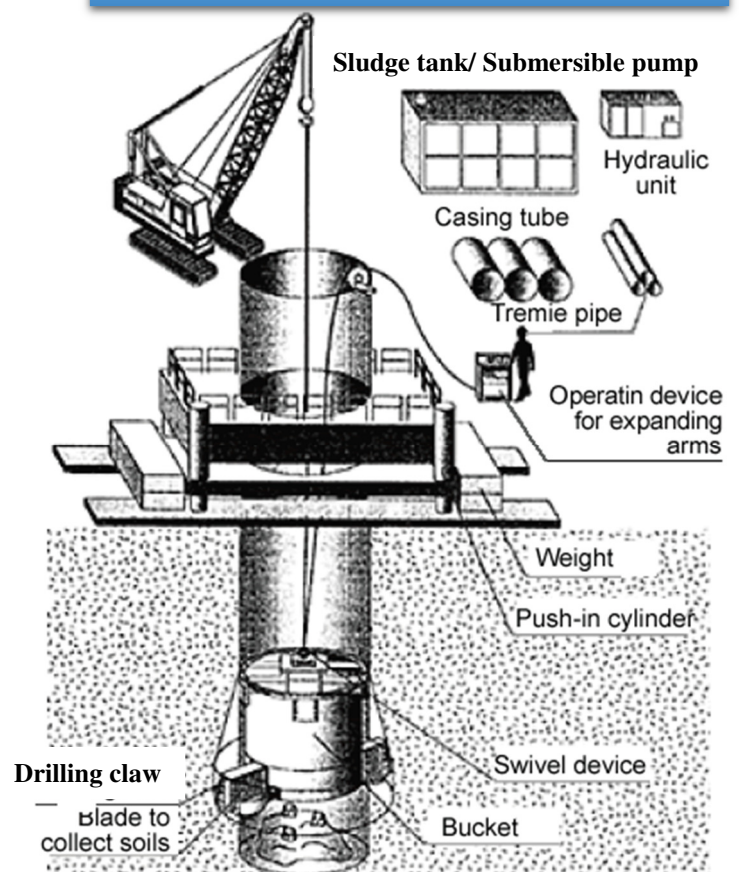


SG bottom-enlarged machine

SG BOTTOM-ENLARGED MACHINE



GENERAL CONSTRUCTION DIAGRAM





SKS METHOD

(LOW NOISE AND VIBRATION METHOD)

NO HYDRAULIC OIL SO DO NOT POLLUTE GROUNDWATER

As its main material, high-strength wear-proof special steel (1200kg/cm²) to be applicable to cast-in-place pile with large diameter ranging from 1000mm to 2000mm. And it is using the opening and closing method as hammerer grab.

Which can solve the both of two problems of "noise and vibration" especially at downtown and residential zones. Also you can use this instead of conventional hammer grab for main excavation and obstacle-removal tasks in the conventional All Casing(BENOTO) method.

LOW NOISE

By removing crown and crown head which were the noise source of conventional hammer grab, excavation work with low noise is achieved.

LOW VIBRATION

With conventional hammer grabs, we have needed to drop a hammer from a height of a certain degree to do excavation works.

When it is fallen by its own weight, vibration occurred. But, our newly developed hammer grab does not require height for falling to do excavation work.

The biggest advantage of clamshell grab is its low vibration and noise at the time of excavation work compared to those caused by conventional hammer grabs.

If you need to change the machine's weight for underwater drilling or as required, you can easily change the weight.



AC METHOD

THIS IS HAMMER GRAB SOIL REMOVING METHOD USING ALL CASING METHOD

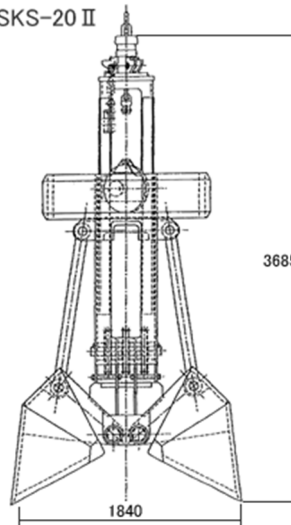
It is a hammer grab excavation discharge. Suitable for cast-in-place piling method (all casing construction)

NETIS Registration No.	QS-130012-A
Novelty and expected benefits	<p>① What kind of novelty does it have? (What was improved compared to conventional technology?)</p> <ol style="list-style-type: none"> By installing shell's opening and closing device at the external side of the main body, the volume of the excavated soil in its container was expanded. By increasing the weight of the main body, its excavating power was improved. Enabled the attachment of removable counterweight. <p>② What are its expected benefits? (What are the advantages of using its new technology?)</p> <ol style="list-style-type: none"> By expanding the volume of the excavated soil in its container and increasing the weight of the main body, the volume of the excavated and removed per cycle soil will increased. By increasing and decreasing the counterweight, effective handling will be enabled according to ground condition (soil property, retained water in the casing and so on) By improved construction efficiency, the reduction of construction expenses and time is achieved.
Applicable ranges	<p>① Applicable ranges</p> <ol style="list-style-type: none"> Soil property: viscosity soil/ clay soil, sand and sandy soil, rudaceous soil, round stones, soft rock (I) (Has been applied to N value 50 of Soft Rock Type I or the like) Applicable diameters: φ1000, φ1200, φ1500 and φ 2000mm Digging length: Max. 50 m (Our longest record is 54.6 m) <p>② Applicable ranges, which are especially effective</p> <ol style="list-style-type: none"> Soft ground Excavation of underwater Site which requires a reduction of construction time <p>③ Non applicable range</p> <ol style="list-style-type: none"> Soft rock (II), medium-hard rock, hard rock
Points of concern	<p>In construction</p> <ol style="list-style-type: none"> When the level of the water retained in the casing is high, or when there are any hard soil in the middle of the casing, to Adjust the counterweight. Since the weight is increased, operating radius of crawler crane and other points should be reviewed.

CHARACTERISTICS OF CLAMSHELL GRAB

Model	Weight (kg)	Full Length (mm)	Open width (mm)	Applicable casing (mm)	Diameter of casing (mm)	Grab capacity (m ³)
SKS-20 II	3910	3685	1840	1980	1890	0.89
SKS-18 II	3570	3576	1640	1780	1690	0.62
SKS-15 II	3270	3408	1340	1480	1390	0.32
SKS-13 II	1720	2580	1140	1280	1190	0.25
SKS-12 II	1620	2545	1040	1180	1090	0.20
SKS-10 II	1520	2434	840	980	890	0.11

SKS-20 II

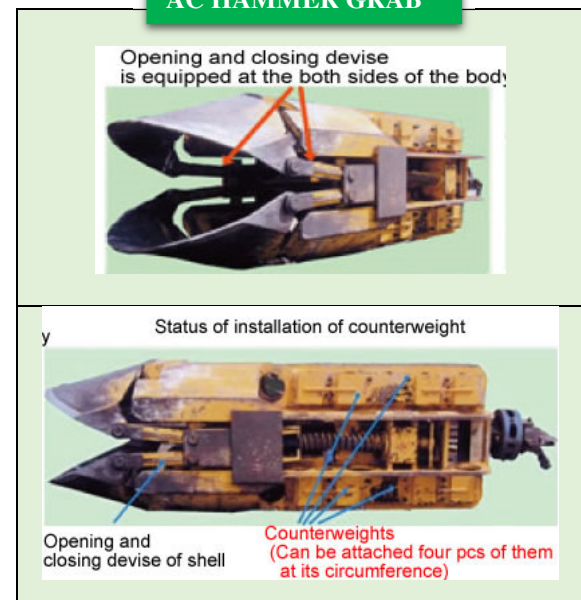


	Conventional hammer grabs	Newly developed hammer grabs	Hydraulic hammer grabs
Low noise	△	◎	○
Low vibration	○	◎	○
Excavation speed	◎	○	△
Underwater drilling	○	◎	△
Maintenance	○	◎	△
Machine's weight	Fix	Adjustable	Fix
Price	○	◎	○

CONVENTIONAL HAMMER GRAB



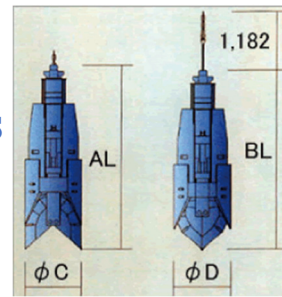
AC HAMMER GRAB



BKF METHOD

(LOW NOISE AND VIBRATION METHOD) ADAPT TO DRILLING IN VARIOUS ENVIRONMENTS

BKF method is a method of hammer grab method using hydraulic transmission system. It has low vibration and noise and it replaced a conventional excavation method using hammer grab which has big vibration and noise using all casing methods such as shaking type and full rotary type.



When shell is open



When shell is closed

STRONG POINTS

- Hydraulic pressure source and high pressure hose are not required.
- By its low noise and vibration, the influence on surrounding environment is lessened.
- Power generator or unit is not required.

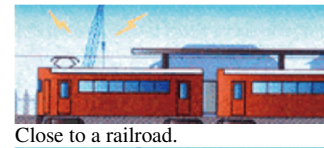
	AL	BL	ΦC	ΦD	Weight	Output
Φ1000	3580	3470	Φ830	Φ844	2.3t	8.9t
Φ1200	3700	3600	Φ1030	Φ1014	2.9t	11.2t
Φ1500	3920	3780	Φ1330	Φ1312	4.8t	10.4t
Φ1800	4180	4000	Φ1630	Φ1330	5.5t	13.0t
Φ2000	4200	4180	Φ1830	Φ1530	6.0t	13.8t

ADAPTABLE ENVIRONMENT

Since it has low noise and vibration, it can be adopted to the excavations under the following environments.



Adjacent to medical facilities.



Close to a railroad.



Adjacent to residential area.



Adjacent to schools or other educational institutions.



Adjacent to farms the likes.

AK METHOD

CASING INSIDE ROTARY-TYPE HYDRAULIC HAMMER GRAB (AK HYDRAULIC CATCHER)

AK method does not use conventional hammer grab method which excavates using the impact of free fall. Instead of it, after gently putting AK hydraulic catcher at the bottom of the casing, it excavates using the rotation and pushing force of all-round rotation excavator. So it has low level of noise and vibration.

All hydraulic cylinders which are used for pressure bonding for the main body and the casing and used for opening and closing the shell are driven by wire. Because of this, the method does not require any hydraulic hoses or units, it is a type of hydraulic hammer though.

NETIS Registration No.	KK-120056-A
Characteristics	<ol style="list-style-type: none"> Environment - friendly Rotates the catcher in the casing using the force of the all-round rotation excavator. Excavation with "low vibration and noise" is available. Consistent safety By its excavation which done by rotating its catcher at the lowest position of the casing, safe construction is achieved. Massive excavation By utilizing torque and pushing force of the all-round rotation excavator, "certain" and "massive" excavation is achieved. No problem with water level Not like free-fall style hammer, there is almost no problem on water resistance even when it was used with high water level. Applicable to any soil properties Since it has wide opening of its shell in the catcher, it is suited with any soil properties. Applicable by using wire Since it does not use hydraulic hose or unit, and its main body is operated only by "wire", there is no risk of oil leakage. Also it is economical because its cycle time is close to conventional hammer.



AK Hydraulic Catcher

Comparison of construction methods

Conventional methods Hammer grab (wire hammer)	AK Hydraulic Catcher
<ol style="list-style-type: none"> Free fall of hammer grab in the casing Shell is intrusively into the ground with its collision...High vibration and noise When the water level is high, the hammer is affected by resistance of the water, so its excavation power declines. Big noise at the time of soil removal (Noise due to Crown) 	<ol style="list-style-type: none"> Gently put a catcher in the casing ...Low vibration After the landing, tension the wire a little. Device will be fixed to the casing in this place. Rotate/ push-in the casing ...No noise from hammer. Stop the casing and loosen the 1st wire and detach the extension devise from the casing. Pull the second wire and close the shell with a cylinder and remove the soil. Pull the first and second wires at the same time to pull up the main body. Soil will be removed only by putting the machine on the ground ...No noise at the time of soil removal.

THE EXISTING PILE EXTRACTING METHOD

We use methods for pulling out existing piles, such as “Rotary Multiple Pulley System” that uses a hydraulic auger in combination with a rotary multiple pulleys for pulling out a pile, and “Avolon Casing Auger Construction Method” that drills and extracts the circumference of the pile.

THE EXISTING PILE HAS BECOME AN OBSTACLE IN THE GROUND TO EXTRACTED CONSTRUCTION

The existing pile extracted construction is the use of casing to drill down through the pile head 1m, combined using a auger outside the casing and pumping slurry into. then use a crane or specialized equipment to extracted the pile

There are many construction methods. At SHINMEIGIKOU company, we use methods, Rotary multiple pulleys method and Avolon casing auger method

Strong point

Because drilling to the top of the pile can easily to extracted its
After extracting the pile, you can quickly move to another pile for construction



✳ ROTARY MULTIPLE PULLEYS METHOD

Using 75T and 55T telescopic boom crawler cranes as its base machine, in this method, rotary multiple pulleys for pulling-out piles and hydraulic auger are simultaneously used to pull out piles.

Advantage

The multiple pulleys of pulling-out piles system work together on one crawler crane. So it is effectively used at narrow or confined spaces.

Disadvantage

Since its main target is construction works at narrow or confined spaces, it take a long construction period, including a large number of preparation work, compared to other methods.



✳ AVOLON CASING AUGER CONSTRUCTION METHOD

In this method, from the rough terrain crane or crawler base are installed the leader shaft, then from this leader shaft to install the auger and casing in set. This is most popular and common method, and frequently adopted at many general construction sites.

Also it is applicable for various construction site conditions such as wide, confined, narrow sites or for cases where the pile head is deeply buried.



EARTH DRILL METHOD

METHOD

3

In this method, when constructing a pile, a surface casing tube is used to protect the hole wall, a stabilizer mainly composed of bentonite is used to protect it, and a drilling bucket is used to drill and discharge soil.

ITS POTENTIAL FOR DRILLING FOR LARGE DIAMETER OR DEEP DEPTH HOLE WAS MAXIMIZED

The earth drill machine can make low noise and vibration. Because due to high mobility and high construction productivity can available for construction in narrow spaces onsite the city.

Moreover, the diameter of excavation can be changed easily, so it can be constructed with large diameter piles and large depths

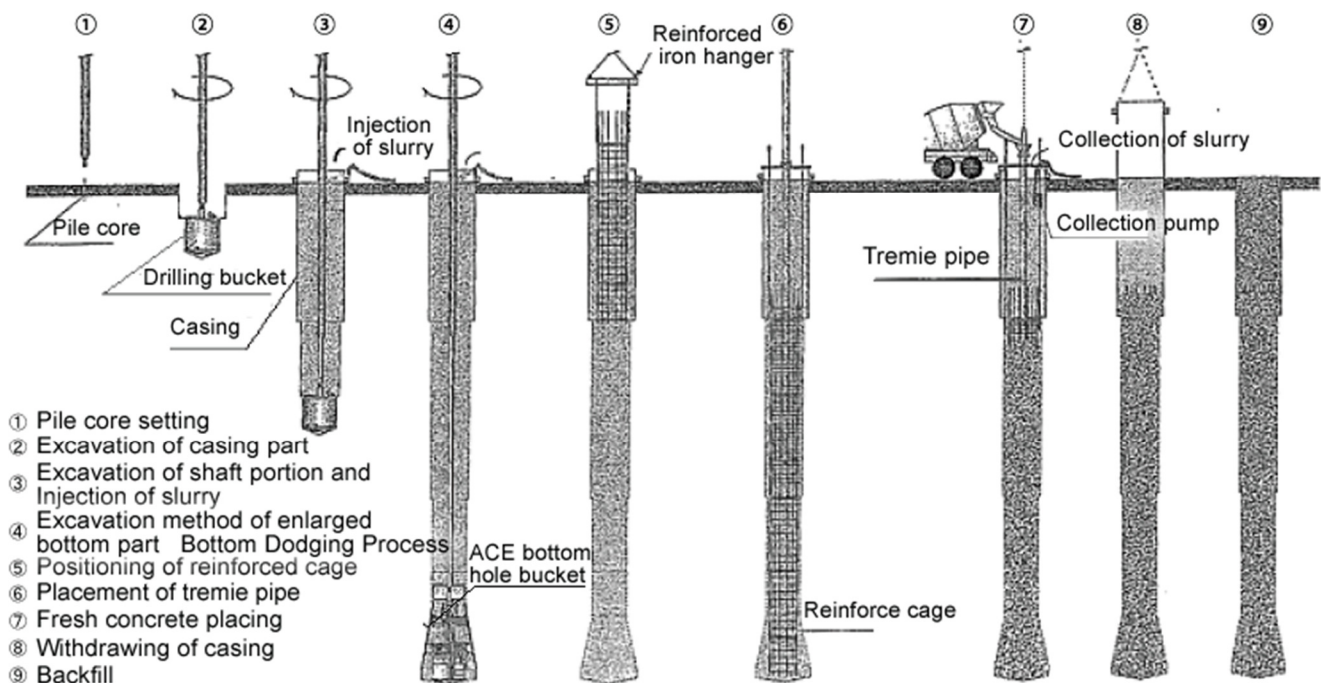
STRONG POINTS

It has a bucket which is selectable according to site characteristics and soil property. By its low noise and vibration, the influence on surrounding environment is lessened.

Since it offers a large amount of discharged earth and sand per bucket, per 1 time, a very high drilling speed is available. Available for construction in narrow spaces.



CONSTRUCTION DIAGRAM





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