

ZJ-1D

SOIL SINGLE DIRECT SHEAR



Contents

1. Product introduction	2
2. Standare.....	2
3. Technical Parameter.....	2
4. Instruction	2
5. Maintenance and precautions.....	4

1. Product introduction

To determine the shearing strength of the soil using the direct shear apparatus. In many engineering problems such as design of foundation, retaining walls, slab bridges, pipes, sheet piling, the value of the angle of internal friction and cohesion of the soil involved are required for the design. Direct shear test is used to predict these parameters quickly. The laboratory report cover the laboratory procedures for determining these values for cohesionless soils. Strain controlled direct shear machine consists of shear box, soil container, loading unit, proving ring, dial gauge to measure shear deformation and volume changes. A two piece square shear box is one type of soil container used. A proving ring is used to indicate the shear load taken by the soil initiated in the shearing plane.

2. STANDARD

ASTM D3080

3. Technical Parameter

Model Data	ZJ-1D	Remard
MAX Vertical load (KPa)	400	
Pressure level (KPa)	50,100,200,300,400	
weight of counterpoise (KPa)	1.275,2.55,5.1,7.65,10.2	hanging plate is the first level
Leverage ratio	1:12	
Soil specimens	30cm ² high 2cm	
Max horizontal shear force (KN)	1.2	
Running type	Electric	
Moto Speed (r/min)	0.1,4,12	The motor has a displacement of 0.2mm per revolution of the propeller
Shear speed (mm/min)	0.02,0.8,2.4	

4. Instruction

(1) Adjust the frame to make it level and install a stable instrument based on the instrument table.

(2) Adjust the position of the balance hammer so that the lever is in equilibrium. When adjusting, adjust the lever by hand, visually measure the basic level of the lever, and tighten the cap (usually adjusted before the factory to be used by the user).

(3) Equipped with the soil sample in the container, align the upper and lower frames, insert the screw pin (note that the guide rail should correspond to the left end), screw in the lower frame, cut the soil sample with a cutting ring cutter, and trim the ends. The circular knife flat mouth is overlapped on the upper frame mouth, and the soil sample is pushed into the shearing box with the soil sample cover (corrected, no soil sample can be placed, and the spacer block is placed). Place the permeable stone and the pressure plate on the soil sample.

(4) Align the beam head on the pressure frame with the pressure plate, adjust the position of the pressure head, and lift the lever slightly. When the frame is backward, the container part can be freely taken.

(5) turn the head, push the force ring forward, so that the pressure frame is in a vertical state (the lever should be in the horizontal position), screw the screw head on the fixed seat forward, so that each joint is in contact, then Tightening the nut (can not be adjusted later).

(6) Pull out the latch, turn the pusher bar into contact with the container, and insert the latch.

(7) When the soil sample meets the consolidation requirements, unscrew the screw pin and prepare for cutting.

(8) The selection of shear rate is determined according to the test requirements. The instrument has a third speed, 2.4, 0.8, 0.02 mm/min.

(9) Plug the instrument into the power socket. The power supply should be 220V, 50Hz. After the power switch is turned on (the indicator light is on), the instrument display panel is set to cut, and the shear test starts.

(10) Measurement method of shear displacement: When the dial indicator that pushes the screw to advance into the force ring starts to change, the timing starts immediately. When the soil sample is damaged, the shear displacement is calculated

as $i=mt(\text{mm})$. m is the shear rate and t is the recorded time (shear time).

(11) When the soil sample is damaged, the shear force is measured and the relationship between shear stress and shear displacement is plotted to obtain the shear strength. Then the internal friction angle and cohesion force can be obtained from the relationship between the shear strength and the vertical pressure. .

(12) After the cutting is finished, the display panel will be set (you can also manually return quickly)

(13) When manual shearing is used, the coupling should be pulled back. Each time the handwheel makes one turn, the pusher bar advances by 0.2 mm, and the shear rate is controlled by the hand wheel rotation speed.

5. Maintenance and precautions

1. After the test is finished, the weight and the hanging plate should be removed to protect the knife edge.

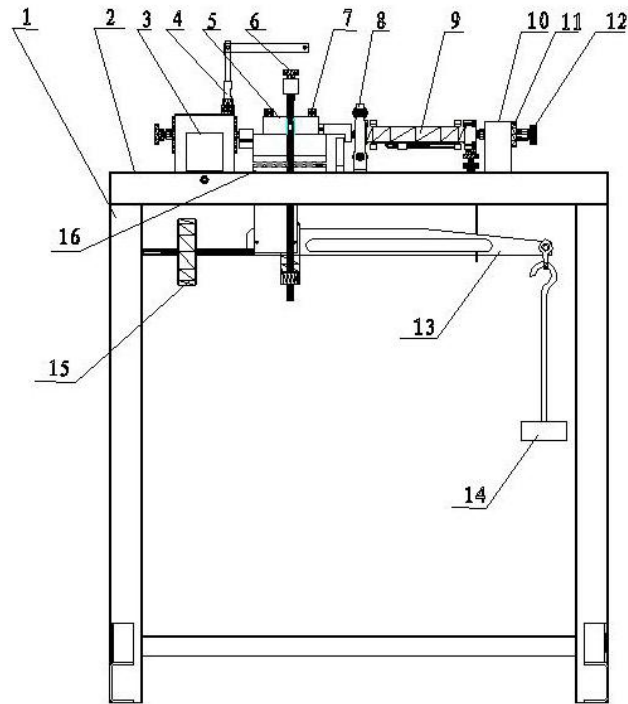
2, after each use, the instrument should be wiped clean, the surface of the metal parts coated with thin grease to prevent rust, open the panel regularly, add appropriate amount of butter on the tooth surface, turn, etc.

3. When the measuring force ring is shipped from the factory, a calibration table is attached. It can be checked regularly (about one year) or according to the usage.

4, electric, etc. should be straight shear

(1) After use, the power plug must be unplugged.

(2) The power ground wire must be connected.



Drawings (structure diagram)

1, bracket 2, bottom plate 3, motor 4, pole parts 5, container parts 6, pressure screw 7, positioning pin 8, Force ring bearing 9, Force ring main component 10, Force ring tailstock 11, lock nut 12, tailstock ejector 13, lever 14, hanging plate 15, balance hammer 16, carriage

Brief operation instructions

- (1) Press the “Select” button to select different cutting rates for cutting
- (2) Press “Settings” to select the cutting speed and set the corresponding direction key to set the required cutting rate.
- (3) Press “Setting” point limit, set as above, you can set it according to the experiment.
- (4) After the shear rate is selected, the experiment can be started.

Accessory & packig list

Product Name: ZJ-1D three-speed electric direct shear apparatus

No.	Name	Unit	QTY
1	Weight (1.275kg)	pc	1
2	Weight (2.55kg)	pc	3

3	Ring knife ($\Phi 61.8 \times 20$)	pc	1
4	Steel ball ($\Phi 10$)	Pc	14
5	Hanging plate parts (1.275kg)	set	1
6	Force ring component	set	1
7	Force ring verification table	set	1
8	Container part	set	1
9	power set	set	1
10	Plastic rail	pc	2
11	61.8 permeable stone	pc	2
12	Manual	pc	1
13	Certificate	pc	1