

DXZ series multifunction limiter Operation manual

[WT-176V2.0]



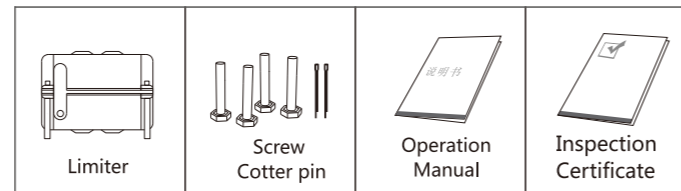
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① Unpacking list



please confirm if the series multifunction limiter appearance is in good condition and check all the components, if anything is missing, please contact with seller.

***sensors and cables is business contract matching parts.**

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② Product Description

DXZ series multifunction limiter (limiter) is a new security devices which imported from France Potain (POTAIN). It used for Bi-directional control, position\angle\stroke control and analog sensing control of three coordinate. It's widely used in tower cranes, port cranes, winches and other various types of construction machinery and similar mechanical control circuit.

③ Main technical parameters

1. Limiter environmental requirements
temperature : - 40°C~55°C
Relative humidity : ≤90%
Altitude : ≤2500M
2. Ration : 1:13~1:960
3. Repeat positioning accuracy : Memory cams angle ≤ 0.005rad (0.3°)
4. contact capacity: AC:380V
5. The main technical parameters of the sensor:
5-1. Sensor (potentiometer) W Standard resistance 5kΩ, independent linearity 0.1% Mechanical angle 360° (continuous).
5-2. sensor through the recommended operating voltage range DC5-15V.

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④ Model significance

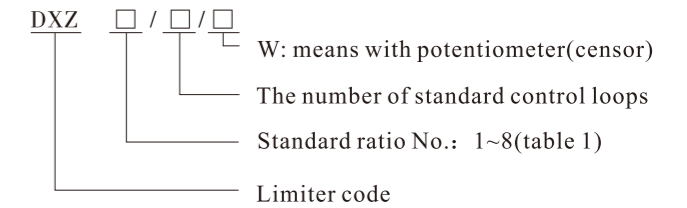


Table 1 Code corresponding to ratio

Ratio	1:13	1:17	1:46	1:60
Ratio	1:78	1:210	1:274	1:960

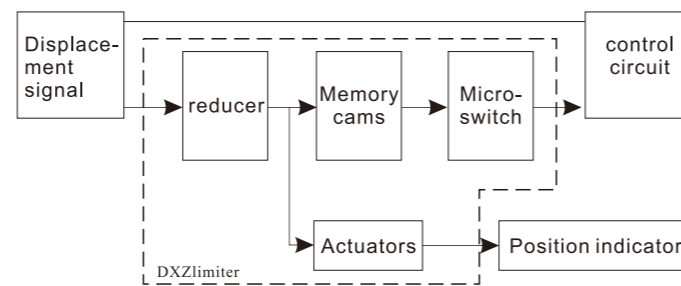
Attention: Non-standard control loop can be increased to 5~6;

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⑤ Working principle

4.2 Working principle

After the synchronous displacement signal of control elements shifting by external connections wheel, connect with the limiter's input shaft, then transform to angle displacement signal by reducer.(Table 4-1)



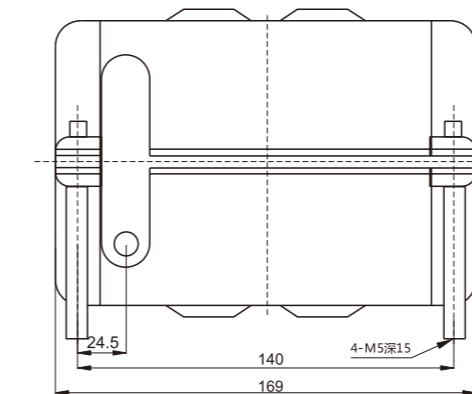
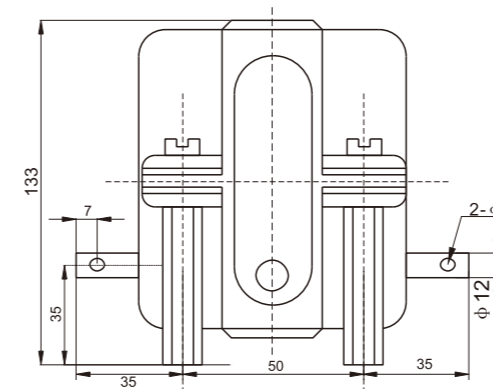
(pic1)

a Synchronization transmission and output mechanical memory control elements can artificially adjusting as cams switch the micro-switch chronologically, to achieve stroke limit and limit limit control.

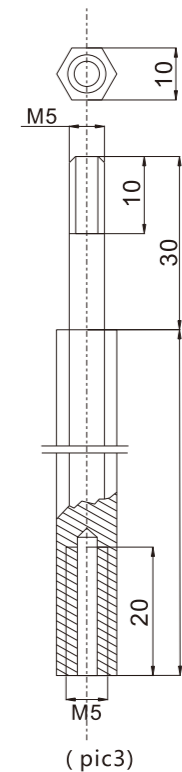
b Synchronization transmission and output sensor, output corresponding signal to indicator, to achieve display stroke instantaneous position.

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⑥ Mounting dimensions



(pic2)



(pic3)

Installation dimensions of the limiter (pic 2)
Install the fixed bolts (pic 3)
The user can be matched according to the external drive center.

-5-

-6-

7 adjustment

5.2 Limiter adjustment : (PIC4 ; PIC5)

Adjustment shaft corresponding memory cams and micro-switch are:

- 1Z-1T-1WK ; 2Z-2T-2WK ;
3Z-3T-3WK ; 4Z-4T-4WK ;

5.2.1 Adjustment program

a. Dismantle the upper cover, check and screw down 2-M3×55 screws.

b. Unscrew M5 nuts ;

c. Drive the mechanism under control to a designed position (without load) to meet the requirements. At this time, the micro-switch should make transient change-over corresponding to the action of this mechanism i.e. adjust the corresponding axle (z) to make the memory gear (T) press down the micro-switch (WK) contact.

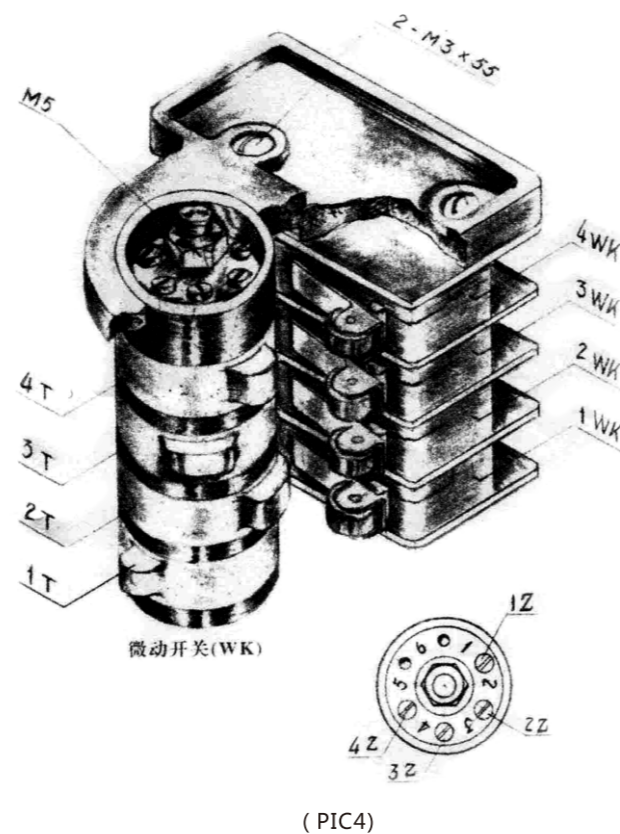
d. Screw down M5 nuts (be sure of screwing them down, otherwise foul-up memory will occur).

e. Make the mechanism operate under no-load condition again and again several times to check memorized positions for accuracy (repeat the above adjustments in case of deviations)

f. Make sure that the position is as specified. Screw down M5 nuts and re-cover the casing.

g. After the mechanism working normally, check at certain interval the memory control position for deviations. Correct the deviations if any.

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(PIC4)

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DXZ limiter is used of lifting extreme position limiting in order to preventing misuse; when hook pulley block close to boom or when lifting down before touch the ground(or make sure wire rope on winch greater than 3 turns),hook can be stop lifting up or down.

3.1 Working principle

Limiter input shaft direct drive by winch shaft, or by pinion bite with winch pinion. When winch working, the number of turns(length of output wire rope) is recorded, when hook pulley block or hook near to trolley or ground around 1M, stop working.

3.2 Adjustment (Adjustment same as 7 project)

A. Adjust at no-load conditions. Press down micro-switches (1WK, 2WK) by finger to check the rising micro-switch or lowering micro-switch for correct action.

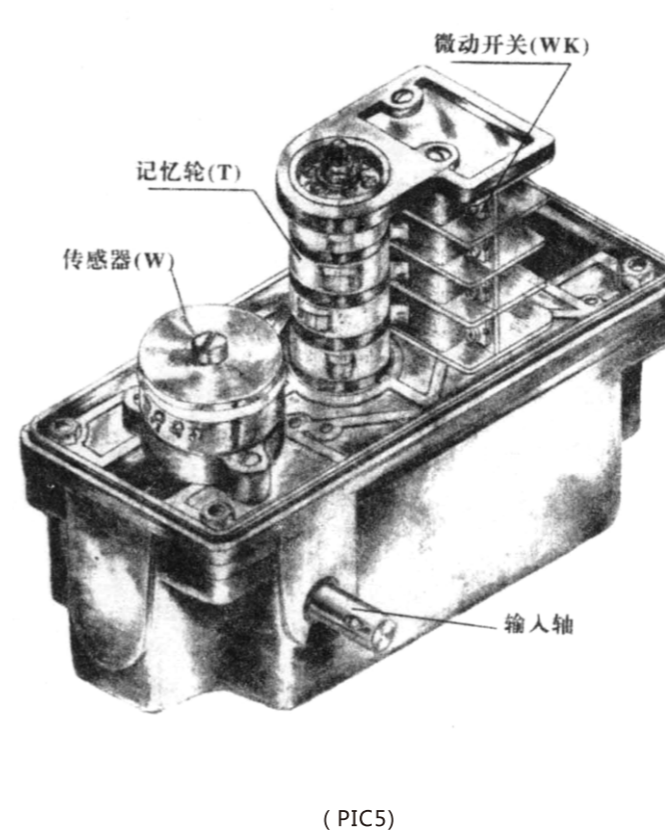
B. Adjust axle (4Z) to make cam (4T) act and press down micro-switch (4WK) for changing. Screw down M5 nuts. This is done when the minimum distance from trolley to hook is not smaller than 1m in hoisting to its extreme limit.

C. Adjust axle (1Z) to make cam (1T) act and press down micro-switch (1WK) for changing. Screw down M5 nuts. This is done when the minimum distance from hook to ground is not smaller than 0.5m in hoisting to its extreme limit.

D. Check and correct.

Tower crane slewing/travelling up or down limit need 3 DXZ limiters.

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(PIC5)

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8 Application

H3-36B ; F0-23B tower crane slewing, lifting, amplitude control as example

1. slewing limit limit

Using DXZ limiter to control tower's slewing angle, Prevent damage to the cable winding.

1.1 Working principle

The pinion which tooth with slewing ring gear, and its installed on the input shaft, when tower crane turning, the slewing angle will be recorded, when moving to the specified position of memory cams, micro-switch switch and stop slewing.

1.2 Adjustment

Turn the tower to the position where not wrapped cable(the position when crane be established).

a. Adjust under no-load condition. Press down the micro-switch (WK) by finger to check the switch for correct left and right control.

b. Slew to the right for 540°(1.5 rounds). Follow the Item 5.2.1 to adjust the axle (4Z) to make the cam (4T) move to achieve transient changing by the micro-switch (4WK). Screw down M5 nuts.

c. Rotate 1080°left (3 rounds). Follow item 5.2.1 to adjust the axle (1Z) to make the cam (1T) move to achieve transient changing by the micro-switch (1WK). Screw down M5 nuts.

d. Check if the left and right slewing is correct.

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2. Trolley extreme position limiting at the jib tip

DXZ limiter is used of travel limiting in order to preventing misuse, stop the trolley when it moving reaches the buffer of jib tip or jib root.

2.1 Working principle

The pinion which tooth with slewing ring gear, and its installed on the input shaft. When the winch working, the number of turns(cable length of output wire rope) are recorded, when moving to the specified position of memory cams, to achieve trolley travel slow down or extreme position limiting.

2.2 Adjustment (Adjustment same as 7 project)

A. Outward travel at lower speed and extreme position limiting at the jib tip: Drive the trolley at the position of 1.5m away from the jib tip buffer. Adjust the axle (2Z) to turn the memory cam (2T) to enable the micro-switch (2WK) for action. (Enable simultaneous overlap of the cam (3T) to the cam (2T) to avoid speed reduction interference before braking). Screw down M5 nuts. Drive the trolley to the position of 220mm away from the jib tip. Follow the procedures to adjust the axle (1Z) to rotate (1T) to make the micro-switch (1WK) act. Screw down M5 nuts.

B. Inward travel and extreme position limiting at the jib tip: The adjustment method is the same as item 3.1.4.1 Carry out speed reduction adjustment and position limiting at the jib root (3Z-3T-3WK, 4Z-4T-4WK) at 1.5m and 200mm.

C. Check and correct.

3. Lifting extreme position limiting

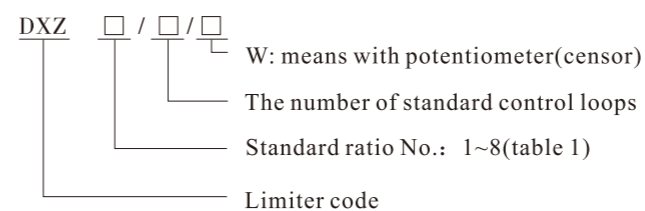
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9 Users Ordering Information

According to requirements, please offer product specification and quantity.

Eg1 : DXZ 1:60/6/W Limiter control loop: 6 , Ratio: 1 : 60, with potentiometer.

Eg2: DXZ 1:78/4 Limiter control loop: 4 , Ratio: 1 : 78, without potentiometer.



a Standard design memory cams(2T ; 3T) has a delay function, if don't need this function, can change to real-time switch cams, please declared in the contract.

b DXZ limiter valid slewing angle is 320°; (or number of turns of input shaft is delay change to real-time switch cams, please declared in the contract.)

DXZ 1:274/4 limiter valid slewing angle is $0.89 \times 274 = 244$ turns. Please take it into consideration.

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10 Maintenance

The product is a kind of precision electronic instrument, regularly maintenance is good to protect the equipment's function, Pls note as following:

- Use the equipment according to user manual;
- Carefully take and do not punch the product, in case damage it or recision reduction.
- Careful operation, non-professional personel or no professional guidance do not operation ;
- Do not disassemble or modify the limiter in private.
- 3 ~ 6 months for a precision calibration cycle, regular check and maintenance.

11 Product assurance

DXZ limiter guarantee period is 12 months which is from the installation acceptance delivery date on. But except follow damage reasons which are non-normal use, excessive supply voltage, and other external damage.

※This standard products (excluding customization) function finally explain belongs to the WTAU.

Pls indicate the specific symptoms, contact information, use site and other content when the product returned for repair.

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