Claims

1. A Z-shaped orthopedic cutting guide device, comprises rapid mounting flange (1), installation base (2), Z-shaped expansion handle (3), limiter (4), and saw blade characterized in that:

the rapid mounting flange (1) at one end is installed with mechanical arm at its one end to fix a position fast through location structure, the rapid mounting flange (1) in the other end carries on installation base (2), and the mounting base (2A) is fixedly connected with Z-shaped expansion handle (3), the Z-shaped expansion handle (3) at the end fixedly connected with limiter (4) , and limiter (4) at its center has guide groove slightly wider than the oscillating saw blade that allow the blade to pass through the guide groove;

wherein the rapid mounting flange (1) is in in a groove shape, the location structure comprises three pin holes (12) settled on the front surface of the rapid mounting flange (1), the pin hole correspond to the rapid positioning pin, the cylindrical pin (7) and the diamond pin (6), the connecting lines along the three pin holes (12) form an isosceles triangle with the vertex facing downwards, wherein the pin hole on the vertex of the isosceles triangle formed by connecting lines among the three pin holes are configured to be in interference fit with the rapid mounting flange (1) and the rapid positioning pin of the mechanical arm end interface, two pin holes on the bottom edge of the isosceles triangle formed by connecting lines among the three pin holes are respectively matched with the cylindrical pin (7) and the diamond-shaped pin (6).

2. Z-shaped orthopedic cutting guide device according to claim 1, characterized in that:

the Z-shaped expansion handle (3) is screwed with a shifting handle (5).

3. Z-shaped orthopedic cutting guide device according to any claim of 1~2, characterized in that:

the front surface of the rapid mounting flange (1) also has three countersunk through holes (11), the isosceles triangle formed by connecting lines among the three countersunk through holes (11) is opposite to the isosceles triangle formed by connecting lines of the three pin holes (12), the rapid mounting flange (1) and the end of mechanical arm (15) are locked as three countersunk bolts pass through the three countersunk through holes (11) respectively.

4. Z-shaped orthopedic cutting guide device according to any claim of 1~3, characterized in that:

the front surface of the rapid mounting flange (1) has two threaded holes A (13) for locking the mounting base (2) to the rapid mounting flange (1).

5. Z-shaped orthopedic cutting guide device according to any claim of 1~4, characterized in

that:

the rapid mounting flange (1) on the front surface has three pin holes (12), three countersunk through holes (11) and two threaded holes A (13) that has been positioned on the same circumference at an angle of 45 degree to each other.

6. Z-shaped orthopedic cutting guide device according to any claim of 1~4, characterized in that:

the mounting base (2) has a similar shape of the rapid mounting flange (1), two pin holes are formed in the groove surface of the mounting base (2) and are in interference fit with the cylindrical pins (7) and the diamond pins (6) respectively, two pin holes and the circle centre of the mounting base (2) is 90 degree.

7. Z-shaped orthopedic cutting guide device according to any claim of 1~6, characterized in that:

the groove surface of the mounting base (2) has two bolts connecting the inner hexagon countersunk head with the Z-shaped expansion handle (3) to the inner hexagonal countersunk head through hole I (9) of the mounting base (2).

8. Z-shaped orthopedic cutting guide device according to any claim of 1~7, characterized in that:

the mounting base (2) at the front has two inner hexagonal countersunk head through holes II (14), the mounting base (2) is fixedly connect to the end interface of mechanical arm (15) through the inner hexagon countersunk head blots of inner hexagonal countersunk head through holes II (14).

9. Z-shaped orthopedic cutting guide device according to any claim of 1~8, characterized in that:

the inner hexagon countersunk head has screw holes hole I (9) and hole II (14) wherein hole I (9) and hole II (14) are opposite in direction, the connecting line between the two inner hexagon countersunk head through holes I (9) and connecting line between two inner hexagon countersunk head through holes II (14) form an angle of 90 degree to each other.

10. Z-shaped orthopedic cutting guide device according to any claim of 1~9, characterized in that:

the mounting base (2) at the front surface has a rectangular groove (16), and at the bottom has rectangular groove (16) that allows the inner hexagon countersunk head through hole I (9) to penetrate.

11. Z-shaped orthopedic cutting guide device according to any claim of 1~10, characterized in that:

the rectangular groove (16) has four vertexes having 3/4 cylindrical groove.

12. Z-shaped orthopedic cutting guide device according to claim 7, characterized in that:

the Z-shaped expansion handle (3) is in a Z shape structure, the Z-shaped expansion handle (3) and mounting base (2) has matching surface having two threaded holes B (22) correspondingly, threaded hole B (22) correspond to the inner hexagon countersunk head through hole I (9) of the groove surface of the mounting base (2), and lock the mounting base (2) with the Z-shaped expansion handle (3) though a bolt.

13. Z-shaped orthopedic cutting guide device according to any claim of 1~12, characterized in that:

two corners of Z-shaped expansion handle (3) are obtuse angles.

14. Z-shaped orthopedic cutting guide device according to any claim of 1~13, characterized in that:

a rapid positing clamping groove matching the limiter (4) in the middle vertical section is in front of the Z-shaped end of Z-shaped expansion handle (3).

15. Z-shaped orthopedic cutting guide device according to any claim of 1~14, characterized in that:

the limiter (4) is in a Z shape, the limiter (4) has a bending angle in right angle.

16. Z-shaped orthopedic cutting guide device according to any claim of 1~14, characterized in that:

the Z-shaped expansion handle (3) at the outer surface has two staggered miniature semicircular grooves I (20), the limiter (4) at the outer surface has two staggered miniature semicircular grooves II (21), miniature semicircular groove I (20) and miniature semicircular groove II (21) are not positioned on the same horizontal plane of the groove I, miniature semicircular groove I (20) and miniature semicircular groove II (21) are used for positioning the Z-shaped cutting guide device.

17. Orthopedic surgery robot, comprising mechanical arm (15) and Z-shaped orthopedic cutting guide device according to any claim of 1~16, mechanical arm has an active mode and a passive mode, the Z-shaped cutting guide device of the orthopedic surgery robot is driven by utilizing the mutual switching of the two modes, to accurately position the cutting surface.