WELDING ROBOTICS

Touch-sense Function of TURIN Robot

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Abstract: When the robot match with a welding machine with the touch-sense signal can realize ARC Search detection, which can correct the deviation of welding trajectory caused by the work piece welding seam.Can set Nine parameters(01-09) and give notes.In the Arc Search mode, the system provides low-voltage electricity to the nozzle or welding wire, and the work piece is grounded. In the process of robot moving along the locating track, once the nozzle or welding wire contacts with the work piece, the contact signal will be generated and the robot will stop moving.Correct the path by using the deviation value between the current position and the program setting position, so as to get the real target position. There must be no rust, oxide layer, paint or other insulating coating on the surface of the work piece. Cleaning torch and wire cutting must be carried out before locating. When using water-cooled welding torch, it is recommended to use distilled water or other non-conductive coolant. Impure water, such as saline mineral water, can reduce the sensitivity or voltage of locating.

Operation instruction: Arc search is in the Crafts → Welding → Arc search, the reference label is set as the reference position, the welding seam in the same position only needs to set one reference, the second use needs to close the reference label. Search model including seven types, ranging from one to three dimensions. There are three rotation directions around the X, Y and Z axes. When the X-axis and Y-axis direction are used to search, the z-axis rotation is used by using the user coordinates. The user coordinates are selected to correspond to the user location required. Please refer to the instruction for the specific user coordinates usage method (image 6). The maximum searching distance is greater than the linear distance from the position where the searching point is opened to the position where the searching point is needed, and the searching speed is the linear searching speed. When the automatic return is enabled, the welding torch or welding wire will automatically return to the starting point after touching the work piece. The return maximum distance is usually the same as or less than the seek maximum distance.

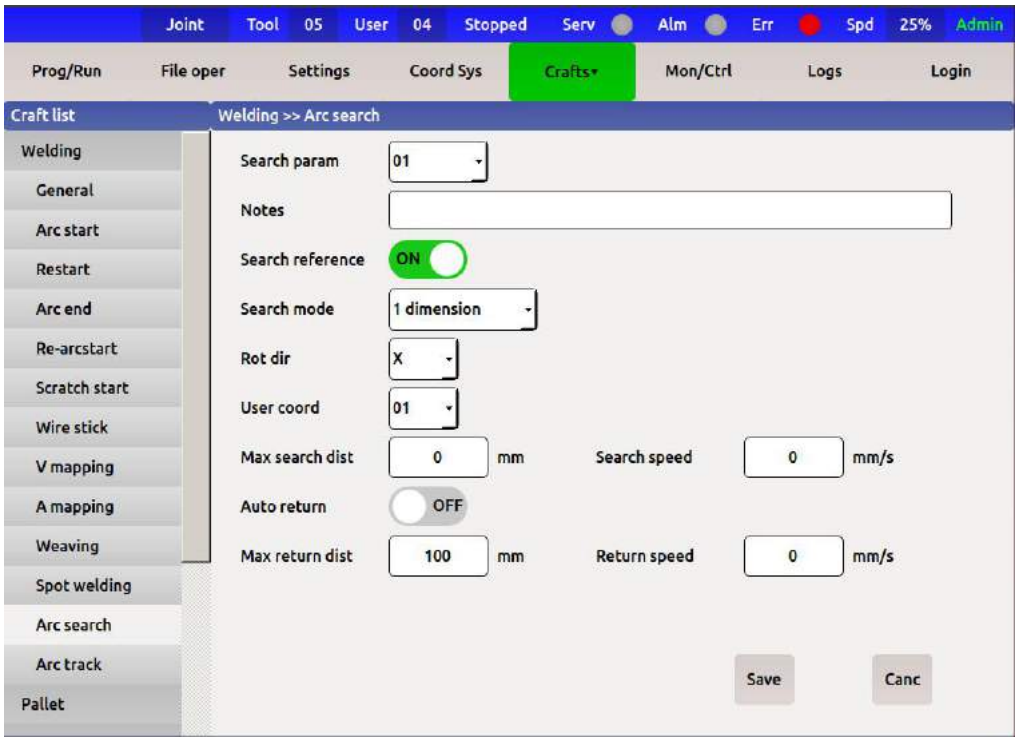

Image 1. Arc search

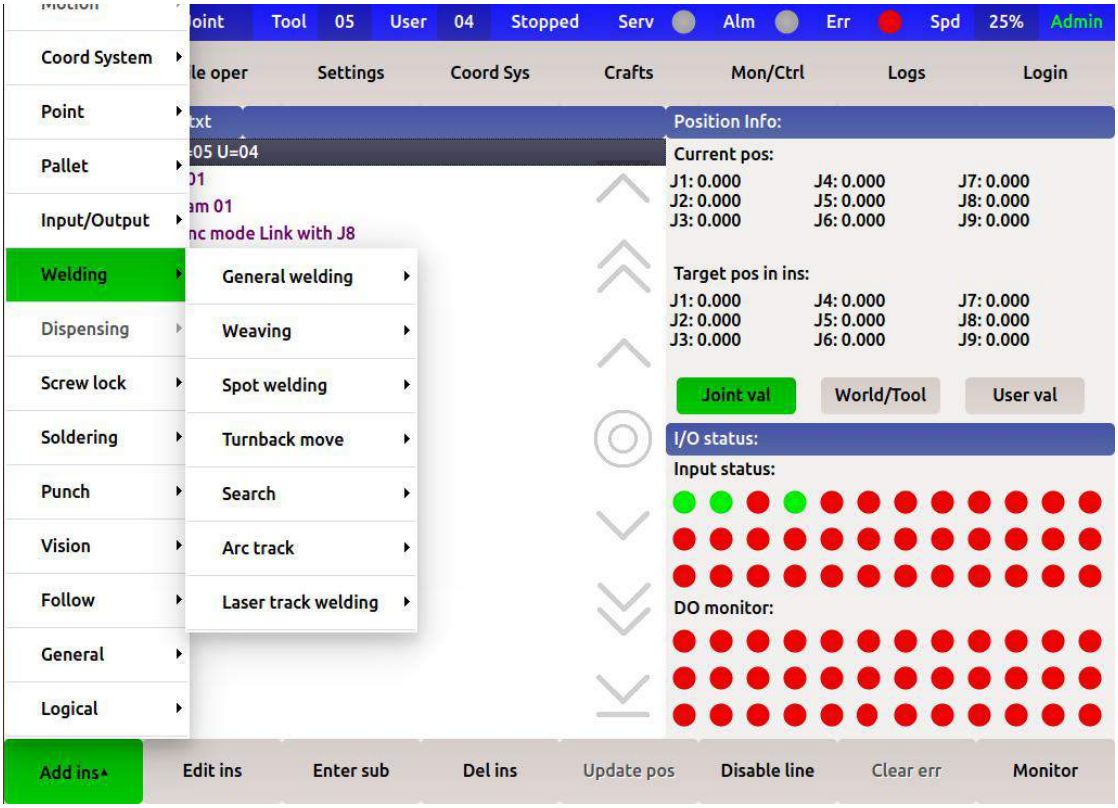

Image 2. Add instruction

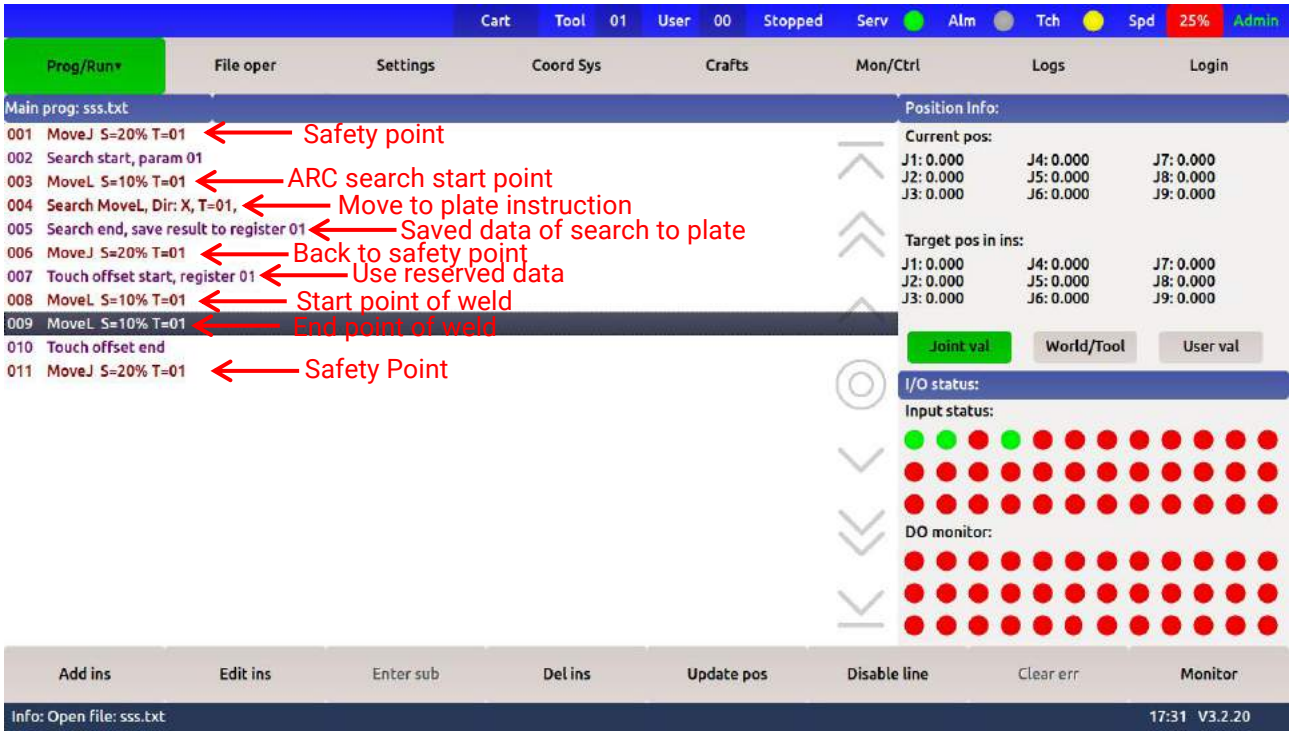

Image 3. A simple track edited by using search function

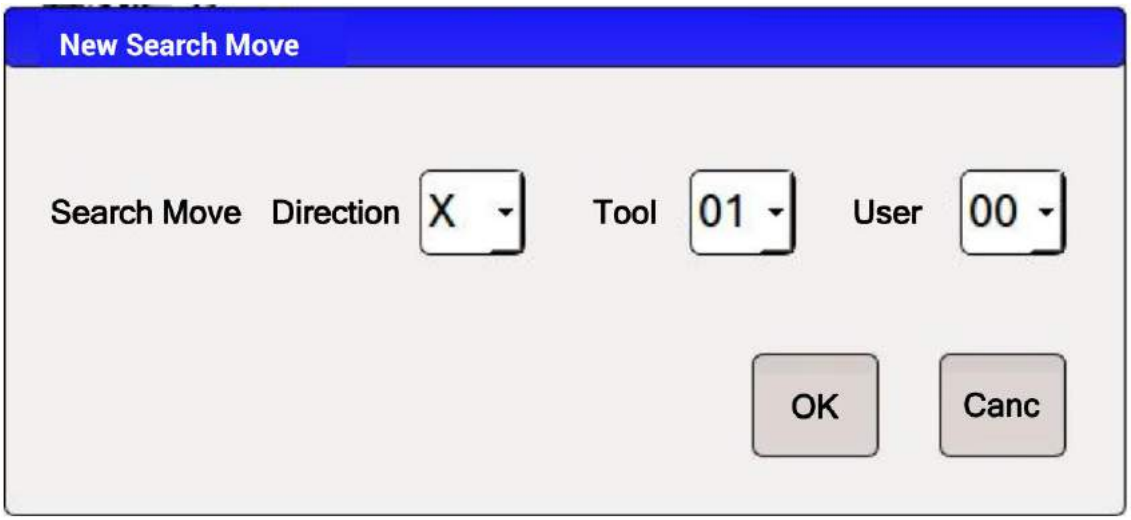

Image 4.Search move

One dimension search: the work piece weld offset direction only has one dimension, for example, only X axis positive direction and negative direction deviation, do not need to use user coordinates, do not use rotation direction.

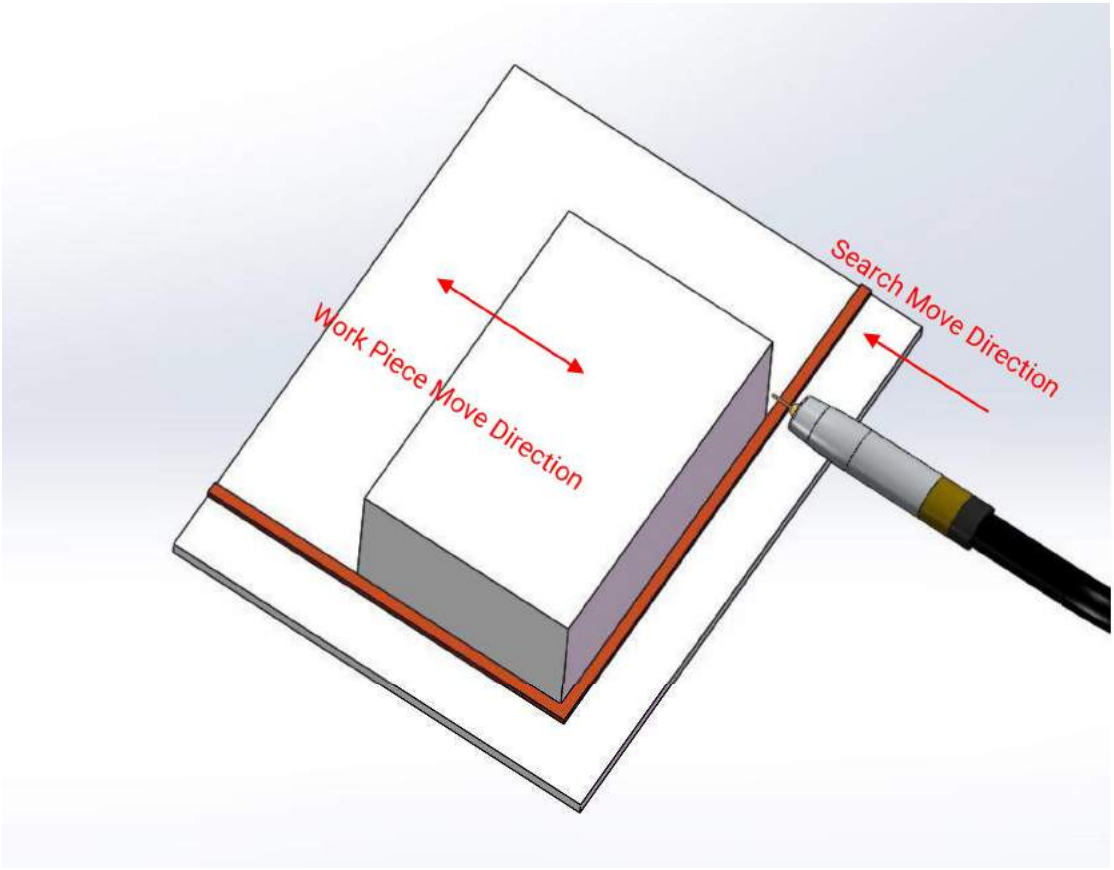

Image 5.Search move diagram

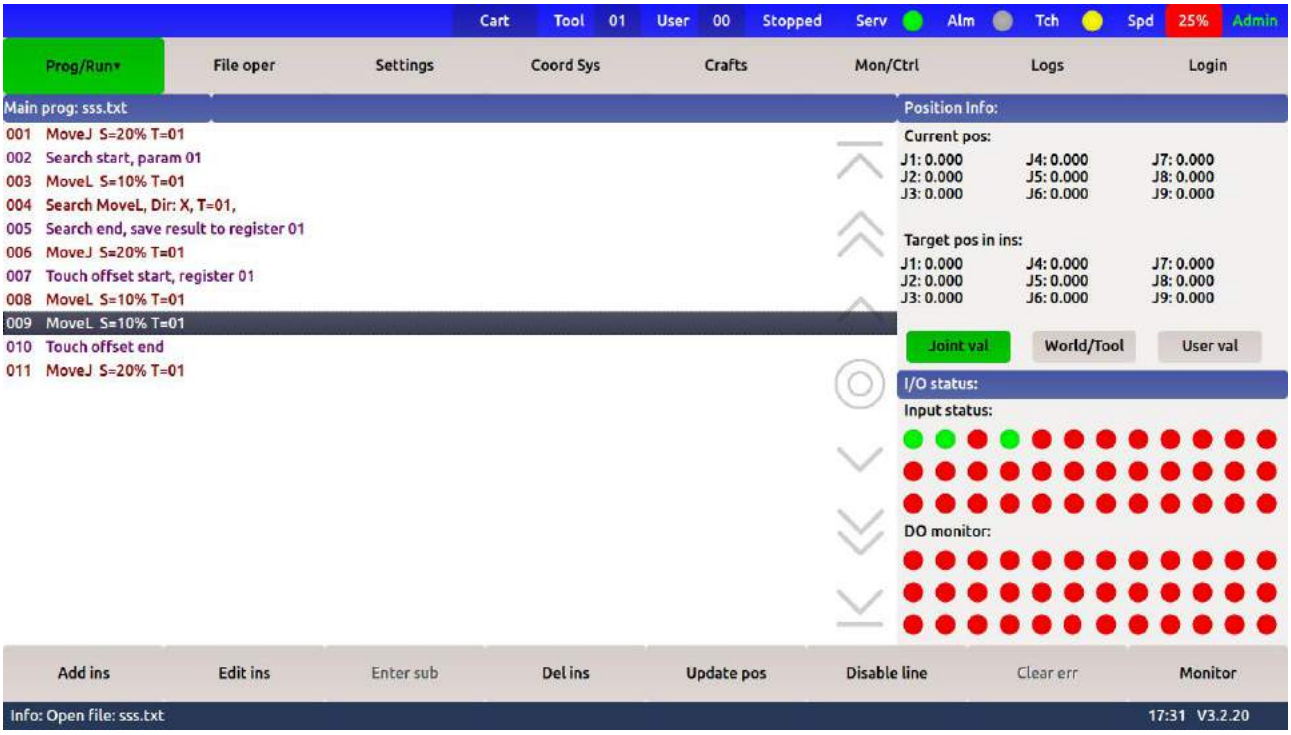

Image 6.Search move instruction

One dimension with rotation search: the work piece rotates and offsets around the origin of the user's coordinates. The position needs to be searched twice. The user's coordinates need to be used and use the rotation direction.

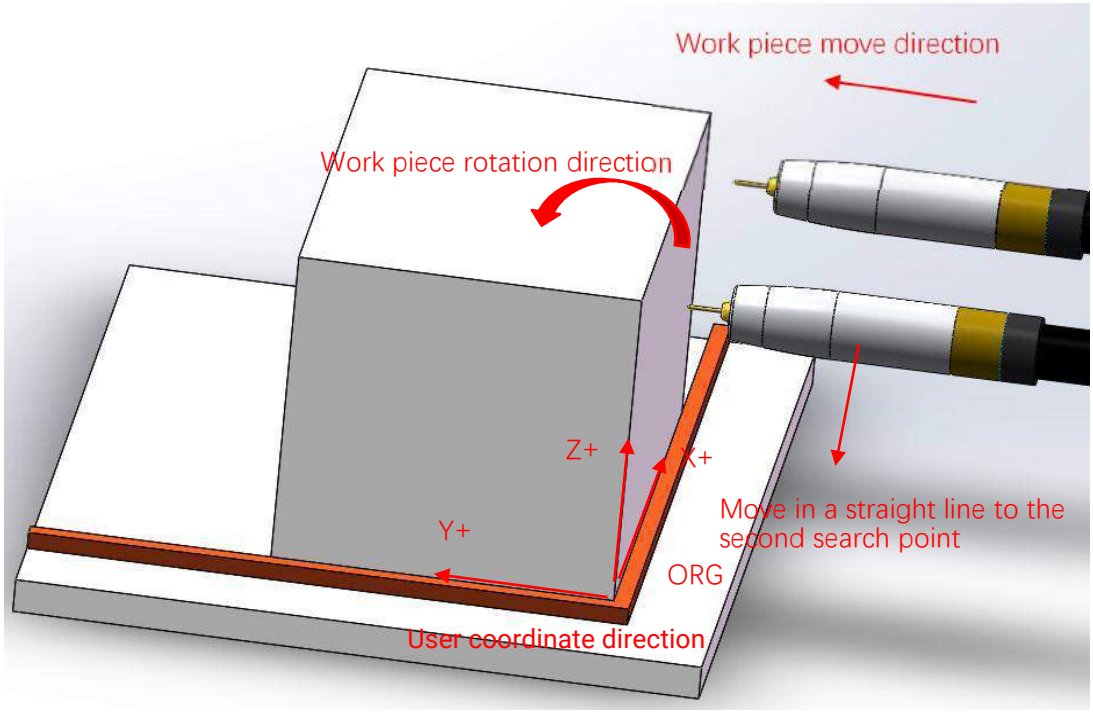

Image 7.Search move diagram

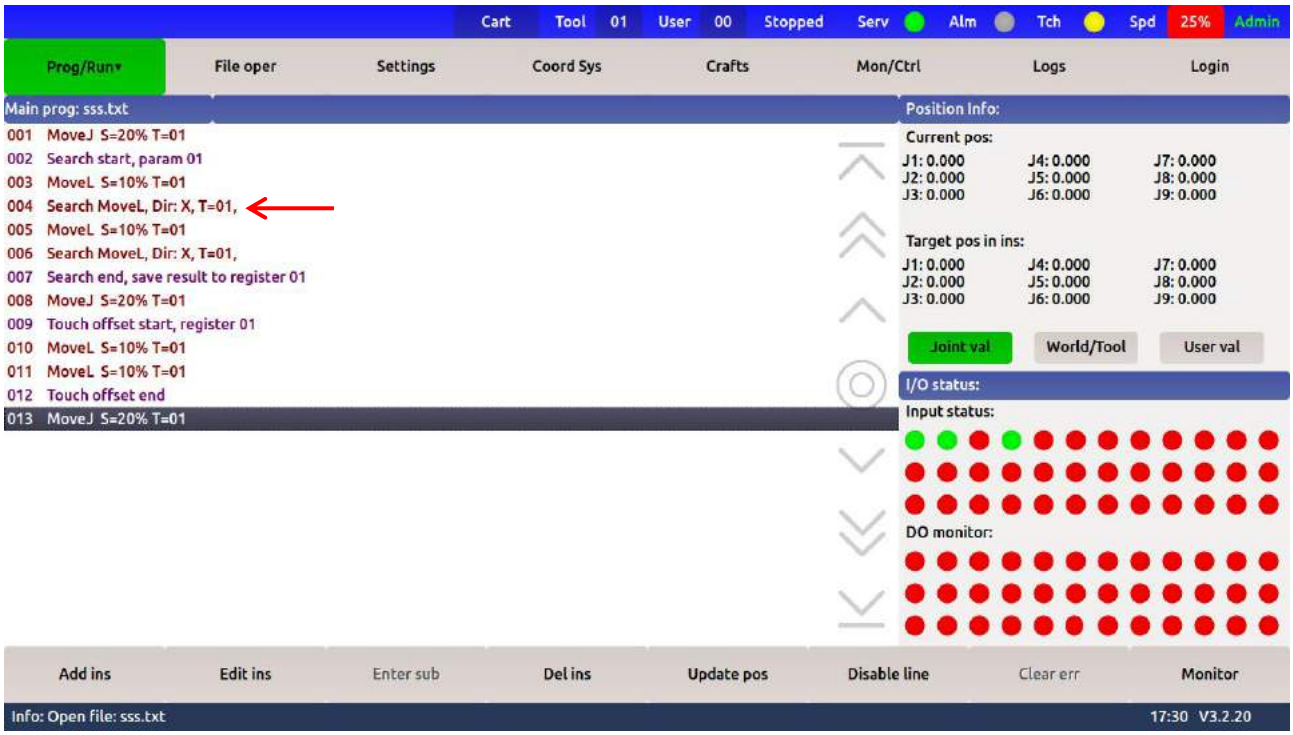

Image 8.One dimension with rotation instruction diagram

Two-dimensional search: the work piece weld offset direction only has one dimension, for example, both X axis positive direction or negative direction deviation, while Y axis positive direction or negative direction deviation, do not need to use user coordinates, do not use rotation direction.

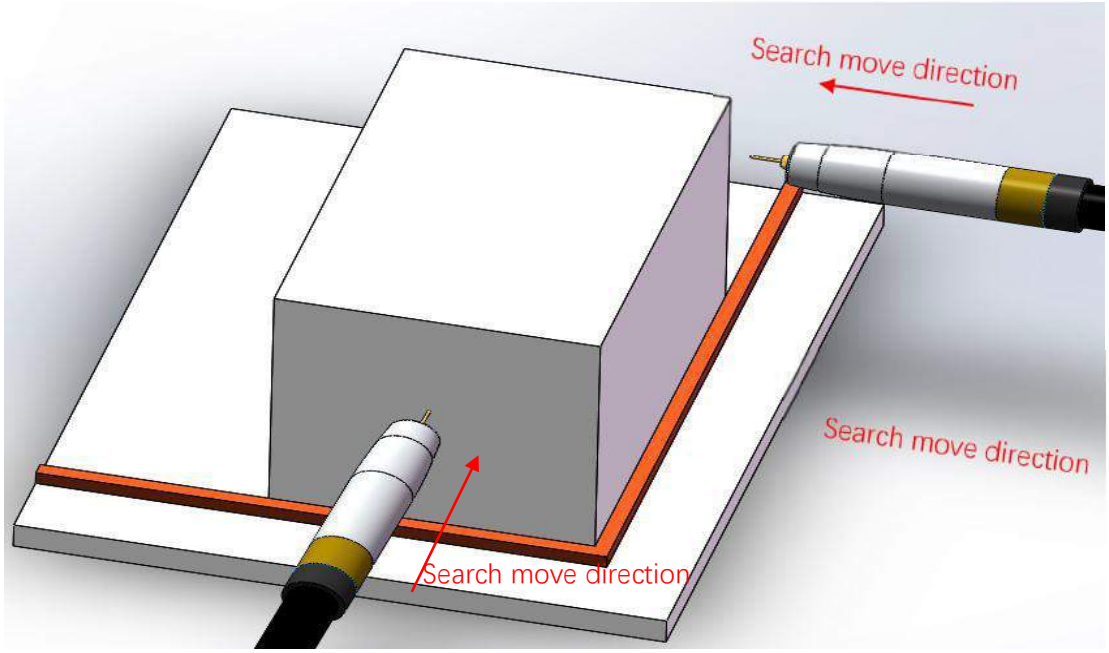

Image 9.0 Search move diagram

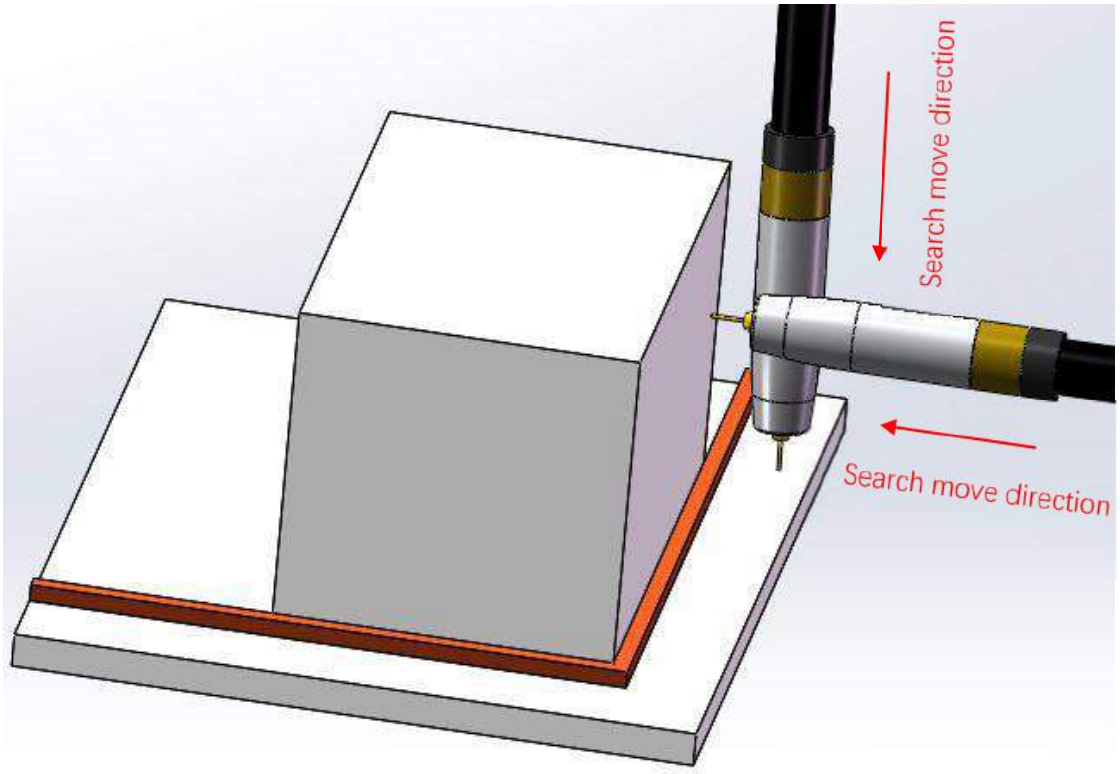

Image 9.1 Search move diagram

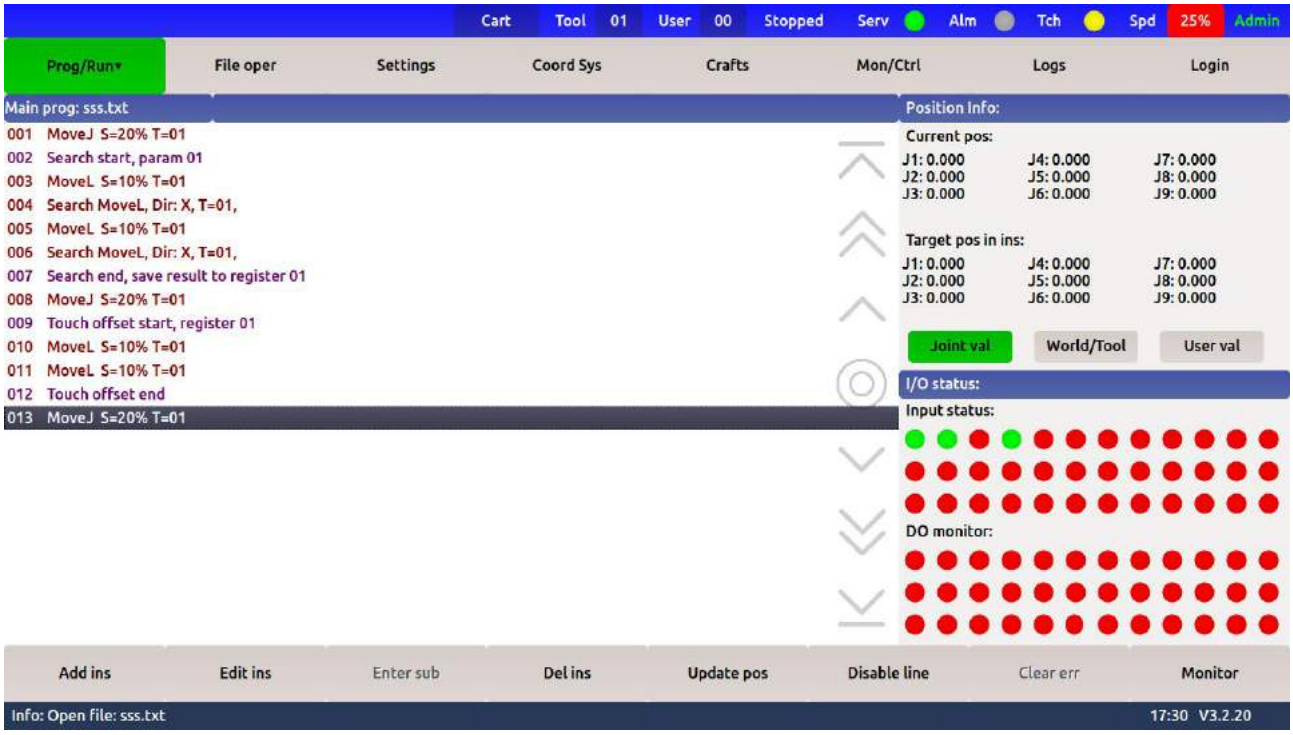

Image 10. Two dimension with rotation instruction diagram

Two dimension with rotation search: the work piece rotates and offsets around the user's coordinate axis, and the position should be searched twice in each direction. The user's coordinates should be used and the rotation direction should be used.

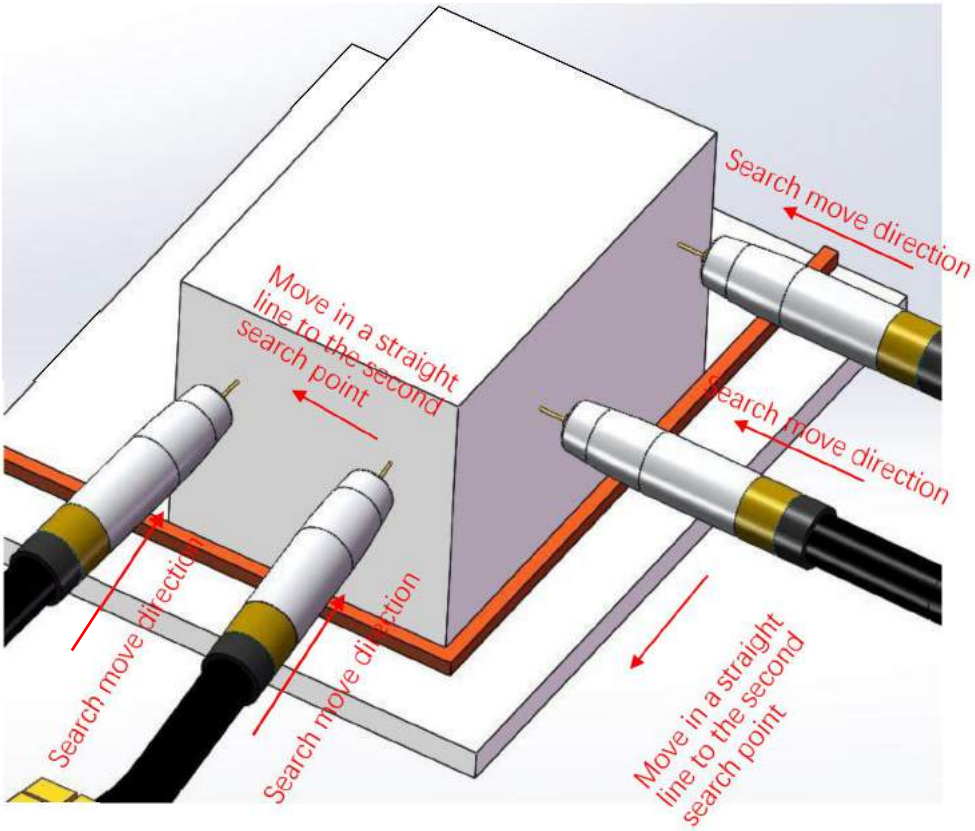

Image 11. Search move diagram

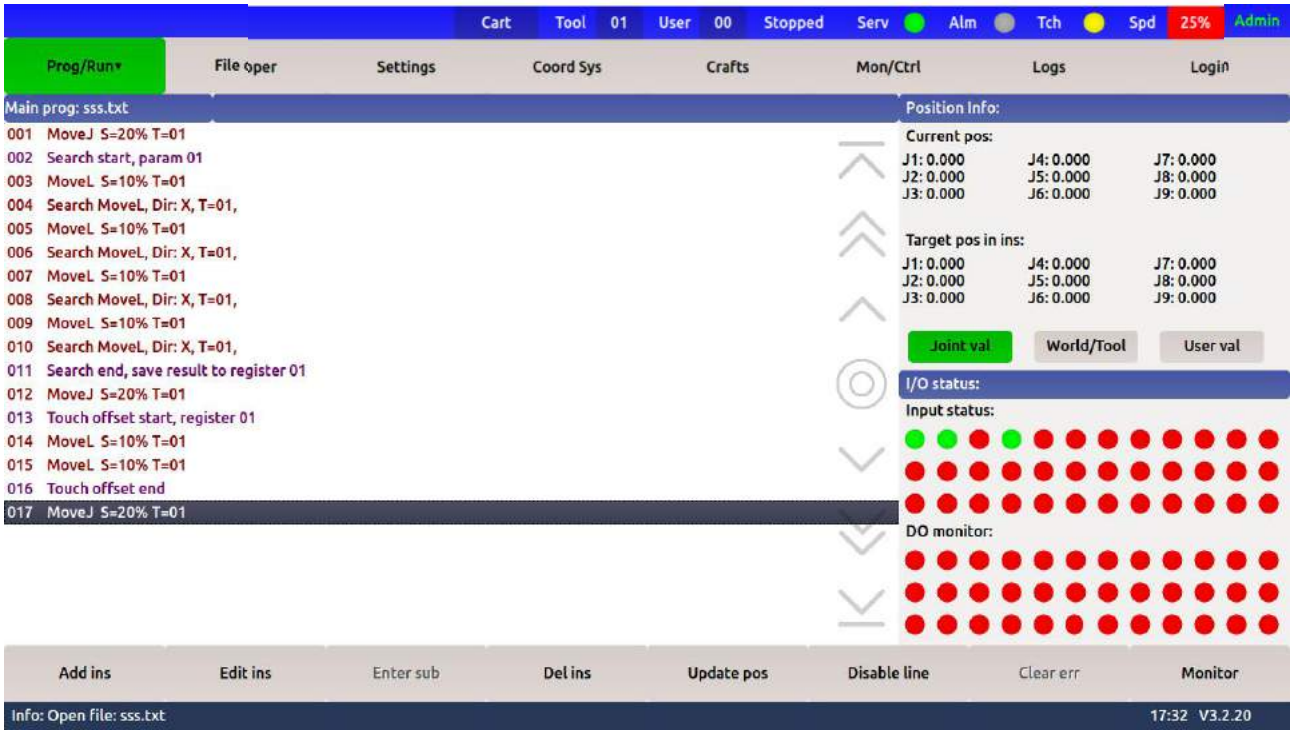

Image 12. Two dimension with rotation search diagram

Three dimension search: the work piece is offset in the direction of X, Y and Z of the user's coordinate axis. Positioning is required once in each direction, without user coordinates and rotation direction. Can refer to two search, just add the third coordinate direction search once.

Three dimension with rotation search: the work piece is offset in the direction of X, Y and Z of the user's coordinate axis, in addition to any direction, the user's coordinates should be used, not the rotation direction. Two of them go to two points on the line, and the other one takes three points to form a triangle.

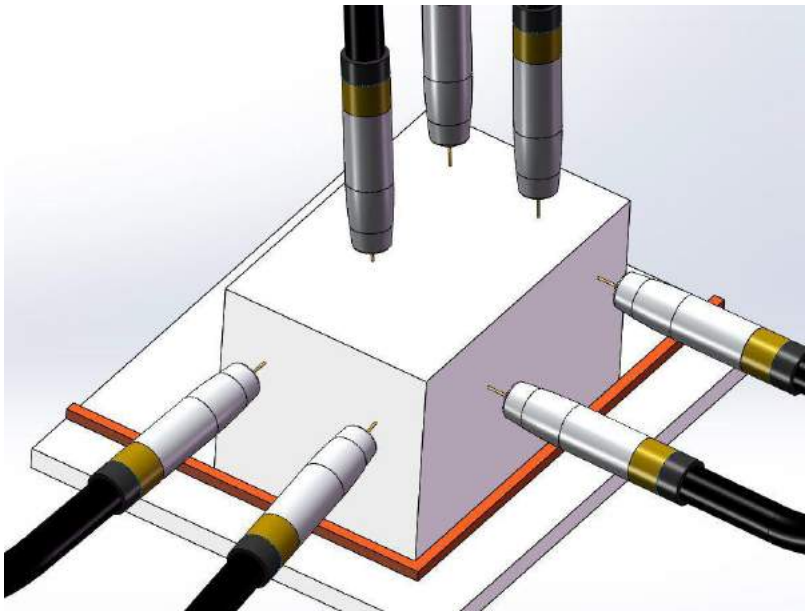

Image 13. Three dimension with rotation search diagram