Abstract—We have studied the contact characteristics of two resin-impregnated Y-Ba-Cu-O (a composite of YBa$_2$Cu$_3$O$_{y}$ and Y$_2$BaCuO$_5$+10wt%Ag$_2$O) bulk superconductors in mechanical contact. In the previous work, fundamental characteristics of mechanical contact between two YBCO bulks were studied. A switching phenomenon between high and low resistance range could be observed at a threshold current or a transfer current value in the $V-I$ curves. In this paper we found that the transfer current exceeded 30A and the contact resistance decreased to 40 µΩ at 77K for the mechanical contact when the sample surfaces were carefully polished. Moreover we succeeded in decreasing the contact resistance to 6µΩ with depositing the metal on the contact surface. The present results suggest that a pair of YBCO blocks might be applicable to the mechanical persistent current switch for superconducting magnetic energy storage and other superconducting systems that are run in a persistent current mode.

Index terms— Persistent current switch, Contact resistance, Transfer current, High - Temperature superconductor, YBCO