Quasigroups isotopic to IP-loops

Let $Q = \{1, 2, \ldots, n\}$ and $Q(\cdot)$ quasigroup on it.

**Definition 1.** We will call permutation $\varphi_i$ track of element $i \in Q$ when

$$x \cdot \varphi_i(x) = i$$

The notions of IP-loop was introduced by Bruck R.H. [1].

**Definition 2.** We will call $Q(\cdot)$ IP-loop when

$$(y \cdot x) \cdot x^{-1} = y = x^{-1} \cdot (x \cdot y)$$

**Theorem.** If loop $Q(\cdot)$ is isotopic to any IP-loop, then for all $i$ we can find an element $j$ that

$$\varphi_i \varphi_j^{-1} \varphi_i = \varphi_j$$

where $1 \cdot x = x \cdot 1 = x, x \in Q$.