PG No. 39 $S_4(c)$ $\bar{4}$ [tetragonal]

* generator : $2_{001},\ -4^+_{001}$
* conjugacy class

$$
\begin{aligned}
[1]: &\quad 1\\
[2_{001}]: &\quad 2_{001}\\
[-4^+_{001}]: &\quad -4^+_{001}\\
[-4^-_{001}]: &\quad -4^-_{001}
\end{aligned}
$$

* symmetry operation

Table 1: Symmetry operations for 3d polar vector.

No.	tag	matrix (polar)	det
1	1	$\begin{bmatrix} 1 & 0 & 0 \\ 0 & 1 & 0 \\ 0 & 0 & 1 \end{bmatrix}$	1
2	2_{001}	$\begin{bmatrix} -1 & 0 & 0 \\ 0 & -1 & 0 \\ 0 & 0 & 1 \end{bmatrix}$	1
3	-4^+_{001}	$\begin{bmatrix} 0 & 1 & 0 \\ -1 & 0 & 0 \\ 0 & 0 & -1 \end{bmatrix}$	-1
4	-4^-_{001}	$\begin{bmatrix} 0 & -1 & 0 \\ 1 & 0 & 0 \\ 0 & 0 & -1 \end{bmatrix}$	-1