Number of vertices $n = 12$.
Adjacencies of Graph

1. vertex 1 adjacent to 2 3 4

2. vertex 2 adjacent to 1 3 7

3. vertex 3 adjacent to 1 2 10

4. vertex 4 adjacent to 1 5 6

5. vertex 5 adjacent to 4 6 12

6. vertex 6 adjacent to 4 5 8

7. vertex 7 adjacent to 2 8 9

8. vertex 8 adjacent to 6 7 9

9. vertex 9 adjacent to 7 8 11

10. vertex 10 adjacent to 3 11 12

11. vertex 11 adjacent to 9 10 12

12. vertex 12 adjacent to 5 10 11

Size of automorphism group of the graph=24
    Full group: $|Aut(polytope)| = 49152$
    Restricted group: $|Aut(G) \times switch| = 49152$
    Number of orbits for the full group : 4
    List of orbits of facets for the full group: Total number of orbits $= 4$ Total
number of facets $= 540$

1. Inequality 1 with incidence 1536 and stabilizer of size 3072. Orbit size
   is 16 nature: 3-cycle inequality, C=[5, 6, 4] F=[5, 6]

(1,2) : 0	(1,3) : 0	(1,4) : 0	(2,3) : 0	(2,7) : 0	(3,10) : 0
(4,5) : 1	(4,6) : 1	(5,6) : -1	(5,12) : 0	(6,8) : 0	(7,8) : 0
(7,9) : 0	(8,9) : 0	(9,11) : 0	(10,11) : 0	(10,12) : 0	(11,12) : 0

2. Inequality 2 with incidence 1024 and stabilizer of size 4096. Orbit size is 12 nature: edge inequality e=[5, 12]

(1,2) : 0	(1,3) : 0	(1,4) : 0	(2,3) : 0	(2,7) : 0	(3,10) : 0
(4,5) : 0	(4,6) : 0	(5,6) : 0	(5,12) : 1	(6,8) : 0	(7,8) : 0
(7,9) : 0	(8,9) : 0	(9,11) : 0	(10,11) : 0	(10,12) : 0	(11,12) : 0

3. Inequality 3 with incidence 384 and stabilizer of size 384. Orbit size is 128 nature: 6-cycle inequality, C=[3, 10, 12, 5, 4, 1] F=[3, 10]

(1,2) : 0	(1,3) : 1	(1,4) : 1	(2,3) : 0	(2,7) : 0	(3,10) : -1
(4,5) : 1	(4,6) : 0	(5,6) : 0	(5,12) : 1	(6,8) : 0	(7,8) : 0
(7,9) : 0	(8,9) : 0	(9,11) : 0	(10,11) : 0	(10,12) : 1	(11,12) : 0

4. Inequality 4 with incidence 128 and stabilizer of size 128. Orbit size is 384 nature: 8-cycle inequality, C=[2, 3, 10, 12, 5, 6, 8, 7] F=[2, 3]

(1,2) : 0	(1,3) : 0	(1,4) : 0	(2,3) : -1	(2,7) : 1	(3,10) : 1
(4,5) : 0	(4,6) : 0	(5,6) : 1	(5,12) : 1	(6,8) : 1	(7,8) : 1
(7,9) : 0	(8,9) : 0	(9,11) : 0	(10,11) : 0	(10,12) : 1	(11,12) : 0