*BOUNDARY_SALE_MESH_FACE

Purpose: Define boundary conditions at S-ALE mesh faces. This keyword acts as a macro for other keywords to simplify specifying the boundary conditions. As a result, you can use a single keyword to apply boundary conditions.

During the keyword reader phase, this keyword translates to a combination of several different keywords. Those keywords include *SET_NODE_GENERAL (with SALEFAC option), *SET_SEGMENT_GENERAL (with SALEFAC option), *BOUNDARY_SPC_SET, and *BOUNDARY_NON_REFLECTING.

Include as many cards as needed with each card representing one boundary condition. This input ends at the next keyword ("*") card.

Card 1	1	2	3	4	5	6	7	8
Variable	BCTYPE	MSHID	NEGX	POSX	NEGY	POSY	NEGZ	POSZ
Type	A	I	I	I	I	I	I	I
Default	none	none	0	0	0	0	0	0

VARIABLE	DESCRIPTION

BCTYPE   Available boundary conditions:

        EQ.FIXED: All nodes at the face are fixed in all directions.

        EQ.NOFLOW: No flow allowed through the face.

        EQ.SYM: The face is a symmetric plane (same as NOFLOW).

        EQ.NONREFL: Non-reflective boundary condition

MSHID   S-ALE Mesh ID

NEG[X,Y,Z], POS[X,Y,Z]   Determine where the boundary condition is applied to the mesh. NEGX, POSX, NEGY, POSY, NEGZ, or POSZ means the mesh faces with an outward normal vector in the local $-x$, $+x$, $-y$, $+y$, $-z$, or $+z$-directions, respectively.

        EQ.0: The boundary condition is *not* applied to faces with this outward normal.

        EQ.1: The boundary condition is applied to faces with this outward normal.

Example:

The following input specifies no flow boundary conditions on faces with normal vectors in the -y and -z-directions and non-reflecting boundary conditions on the faces with normal vectors in the -x, +x, +y, and +z-directions.

```
*BOUNDARY_SALE_MESH_FACE
$   option     mshid      NEGX      POSX      NEGY      POSY      NEGZ      POSZ
    NOFLOW         1                             1                   1
    NONREFL        1         1         1                   1                   1
```

Internally, the above input is translated to the following keywords:

```
*BOUNDARY_SPC_SET
         1                   0         1         0
*BOUNDARY_SPC_SET
         2                   0         0         1
*SET_NODE_GENERAL
$      SID
         1
$   OPTION     MSHID       XMN       XMX       YMN       YMX       ZMN       ZMX
    SALEFAC        1                             1
*SET_NODE_GENERAL
$      SID
         2
$   OPTION     MSHID       XMN       XMX       YMN       YMX       ZMN       ZMX
    SALEFAC        1                                                 1
*BOUNDARY_NON_REFLECTING
$      SID
        11
*SET_SEGMENT_GENERAL
$      SID
        11
$   OPTION     MSHID       XMN       XMX       YMN       YMX       ZMN       ZMX
    SALEFAC        1         1         1                   1                   1
```

In comparison to the translated version, *BOUNDARY_SALE_MESH_FACE provides a more streamlined, intuitive approach to facilitate the boundary condition setup for S-ALE models. This method is particularly useful when the mesh is tilted since the local coordinate system is already assumed.