

## 2. THE SPACE-GROUP TABLES

Table 2.1.2.2

Graphical symbols of symmetry planes normal to the plane of projection (three dimensions) and symmetry lines in the plane of the figure (two dimensions)

Description	Graphical symbol	Glide vector(s) of the defining operation(s) of the glide plane (in units of the shortest lattice translation vectors parallel and normal to the projection plane)	Symmetry element represented by the graphical symbol
Reflection plane, mirror plane Reflection line, mirror line (two dimensions) } }		None	<i>m</i>
'Axial' glide plane Glide line (two dimensions) } }		$\frac{1}{2}$ parallel to line in projection plane $\frac{1}{2}$ parallel to line in figure plane	<i>a</i> , <i>b</i> or <i>c</i> <i>g</i>
'Axial' glide plane		$\frac{1}{2}$ normal to projection plane	<i>a</i> , <i>b</i> or <i>c</i>
'Double' glide plane†		Two glide vectors: $\frac{1}{2}$ parallel to line in, and $\frac{1}{2}$ normal to projection plane	<i>e</i>
'Diagonal' glide plane		One glide vector with two components: $\frac{1}{2}$ parallel to line in, and $\frac{1}{2}$ normal to projection plane	<i>n</i>
'Diamond' glide plane‡ (pair of planes)		$\frac{1}{4}$ parallel to line in projection plane, combined with $\frac{1}{4}$ normal to projection plane (arrow indicates direction parallel to the projection plane for which the normal component is positive)	<i>d</i>

† The graphical symbols of the 'e'-glide planes are applied to the diagrams of seven orthorhombic *A*-, *C*- and *F*-centred space groups, five tetragonal *I*-centred space groups, and five cubic *F*- and *I*-centred space groups.‡ Glide planes *d* occur only in orthorhombic *F* space groups, in tetragonal *I* space groups, and in cubic *I* and *F* space groups. They always occur in pairs with alternating glide vectors, for instance  $\frac{1}{4}(\mathbf{a} + \mathbf{b})$  and  $\frac{1}{4}(\mathbf{a} - \mathbf{b})$ . The second power of a glide reflection *d* is a centring vector.

Table 2.1.2.3

Graphical symbols of symmetry planes parallel to the plane of projection

Description	Graphical symbol†	Glide vector(s) of the defining operation(s) of the glide plane (in units of the shortest lattice translation vectors parallel to the projection plane)	Symmetry element represented by the graphical symbol
Reflection plane, mirror plane		None	<i>m</i>
'Axial' glide plane		$\frac{1}{2}$ in the direction of the arrow	<i>a</i> , <i>b</i> or <i>c</i>
'Double' glide plane‡		Two glide vectors: $\frac{1}{2}$ in either of the directions of the two arrows	<i>e</i>
'Diagonal' glide plane		One glide vector with two components $\frac{1}{2}$ in the direction of the arrow	<i>n</i>
'Diamond' glide plane§ (pair of planes)		$\frac{1}{2}$ in the direction of the arrow; the glide vector is always half of a centring vector, i.e. one quarter of a diagonal of the conventional face-centred cell	<i>d</i>

† The symbols are given at the upper left corner of the space-group diagrams. A fraction *h* attached to a symbol indicates two symmetry planes with 'heights' *h* and  $h + \frac{1}{2}$  above the plane of projection; e.g.  $\frac{1}{8}$  stands for  $h = \frac{1}{8}$  and  $\frac{3}{8}$ . No fraction means  $h = 0$  and  $\frac{1}{2}$  (cf. Section 2.1.3.6).‡ The graphical symbols of the 'e'-glide planes are applied to the diagrams of seven orthorhombic *A*-, *C*- and *F*-centred space groups, five tetragonal *I*-centred space groups, and five cubic *F*- and *I*-centred space groups.§ Glide planes *d* occur only in orthorhombic *F* space groups, in tetragonal *I* space groups, and in cubic *I* and *F* space groups. They always occur in pairs with alternating glide vectors, for instance  $\frac{1}{4}(\mathbf{a} + \mathbf{b})$  and  $\frac{1}{4}(\mathbf{a} - \mathbf{b})$ . The second power of a glide reflection *d* is a centring vector.

dent of the projection direction and the labelling of the basis vectors. They are, therefore, applicable to any projection diagram of a space group. The alphanumeric symbols of glide planes (column 4), however, may change with a change of the basis vectors. For example, the dash-dotted *n* glide in the hexagonal description becomes an *a*, *b* or *c* glide in the rhombohedral description. In monoclinic space groups, the 'parallel' vector of a

glide plane may be along a lattice translation vector that is inclined to the projection plane.

The 'e'-glide graphical symbols are applied to the diagrams of seven orthorhombic *A*-, *C*- and *F*-centred space groups, five tetragonal *I*-centred space groups, and five cubic *F*- and *I*-centred space groups. The 'double-dotted-dash' symbol for *e* glides 'normal' and 'inclined' to the plane of projection was introduced