Dodecatungstophosphoric Acid Hexahydrate ($H_3PW_{12}O_{40}\cdot 6H_2O$) Structure: A27B52CD12_cP184_224_dl_eh3k_a_k-001

This structure originally had the label `A27B52CD12_cP184_224_dl_eh3k_a_k`. Calls to that address will be redirected here.

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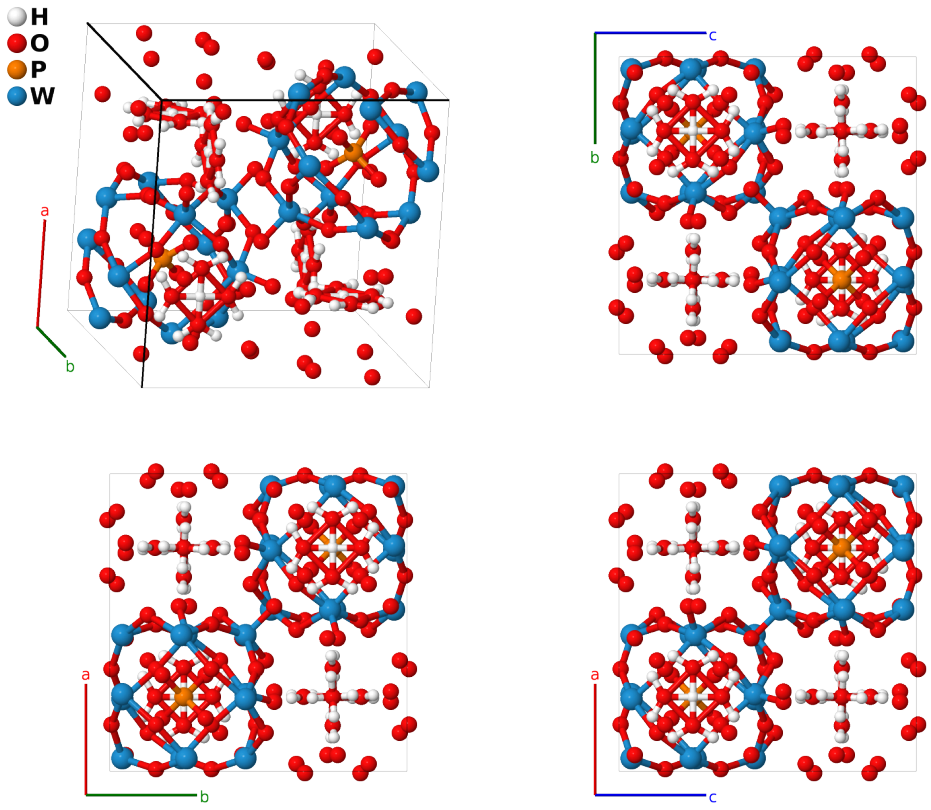
https://aflow.org/p/XBJQ

https://aflow.org/p/A27B52CD12_cP184_224_dl_eh3k_a_k-001

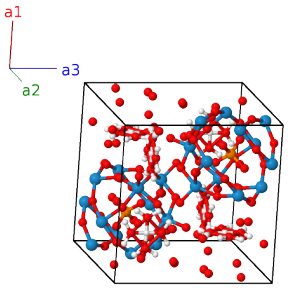


Prototype	$H_{15}O_{46}PW_{12}$
AFLOW prototype label	A27B52CD12_cP184_224_dl_eh3k_a_k-001
Mineral name	dodecatungstophosphoric acid hexahydrate
ICSD	904
Pearson symbol	cP184
Space group number	224
Space group symbol	$Pn\bar{3}m$
AFLOW prototype command	`aflow --proto=A27B52CD12_cP184_224_dl_eh3k_a_k-001 --params=`$a, x_3, x_4, x_5, z_5, x_6, z_6, x_7, z_7, x_8, z_8, x_9, y_9, z_9$

- (Brown, 1977) presents this as an improvement on the $H4_{16}$ structure, $H_3PW_{12}O_{40} \cdot 5H_2O$. The primary difference is the addition of a sixth water molecule and the location of the hydrogen molecules not directly attached to a water molecule.
- The water molecules are formed by the H-II and O-II atoms, and the (24h) (O-II) and (48k) (H-II) Wyckoff sites are only occupied half of the time. Presumably this means that the nearly flat H-O molecular ions in this structure actually consist of one water molecule, the central hydrogen atom (H-I), and a water molecule on the other side of the central hydrogen, with the other water positions empty. Exactly which water molecules are occupied on around each H-I atom is completely up to chance. (Brown, 1977) state that the molecule has a positive charge, and write it as $H_5O_2^+$.
- We use the neutron data from (Brown, 1977) to locate the non-hydrogen atoms.
- This structure is a partially dehydrated form of $H_3PW_{12}O_{40} \cdot 29H_2O$ ($H4_{21}$). Further dehydration produces the $H_3PW_{12}O_{40} \cdot 3H_2O$ structure.

Simple Cubic primitive vectors

$$\mathbf{a_1} = a\,\hat{\mathbf{x}}$$
$$\mathbf{a_2} = a\,\hat{\mathbf{y}}$$
$$\mathbf{a_3} = a\,\hat{\mathbf{z}}$$



Basis vectors

		Lattice coordinates		Cartesian coordinates	Wyckoff position	Atom type
$\mathbf{B_1}$	=	$\frac{1}{4}\,\mathbf{a}_1 + \frac{1}{4}\,\mathbf{a}_2 + \frac{1}{4}\,\mathbf{a}_3$	=	$\frac{1}{4}a\,\hat{\mathbf{x}} + \frac{1}{4}a\,\hat{\mathbf{y}} + \frac{1}{4}a\,\hat{\mathbf{z}}$	(2a)	P I
$\mathbf{B_2}$	=	$\frac{3}{4}\,\mathbf{a}_1 + \frac{3}{4}\,\mathbf{a}_2 + \frac{3}{4}\,\mathbf{a}_3$	=	$\frac{3}{4}a\,\hat{\mathbf{x}} + \frac{3}{4}a\,\hat{\mathbf{y}} + \frac{3}{4}a\,\hat{\mathbf{z}}$	(2a)	P I
$\mathbf{B_3}$	=	$\frac{1}{4}\,\mathbf{a}_1 + \frac{3}{4}\,\mathbf{a}_2 + \frac{3}{4}\,\mathbf{a}_3$	=	$\frac{1}{4}a\,\hat{\mathbf{x}} + \frac{3}{4}a\,\hat{\mathbf{y}} + \frac{3}{4}a\,\hat{\mathbf{z}}$	(6d)	H I
$\mathbf{B_4}$	=	$\frac{3}{4}\,\mathbf{a}_1 + \frac{1}{4}\,\mathbf{a}_2 + \frac{3}{4}\,\mathbf{a}_3$	=	$\frac{3}{4}a\,\hat{\mathbf{x}} + \frac{1}{4}a\,\hat{\mathbf{y}} + \frac{3}{4}a\,\hat{\mathbf{z}}$	(6d)	H I
$\mathbf{B_5}$	=	$\frac{3}{4}\,\mathbf{a}_1 + \frac{3}{4}\,\mathbf{a}_2 + \frac{1}{4}\,\mathbf{a}_3$	=	$\frac{3}{4}a\,\hat{\mathbf{x}} + \frac{3}{4}a\,\hat{\mathbf{y}} + \frac{1}{4}a\,\hat{\mathbf{z}}$	(6d)	H I
$\mathbf{B_6}$	=	$\frac{1}{4}\,\mathbf{a}_1 + \frac{3}{4}\,\mathbf{a}_2 + \frac{1}{4}\,\mathbf{a}_3$	=	$\frac{1}{4}a\,\hat{\mathbf{x}} + \frac{3}{4}a\,\hat{\mathbf{y}} + \frac{1}{4}a\,\hat{\mathbf{z}}$	(6d)	H I
$\mathbf{B_7}$	=	$\frac{3}{4}\,\mathbf{a}_1 + \frac{1}{4}\,\mathbf{a}_2 + \frac{1}{4}\,\mathbf{a}_3$	=	$\frac{3}{4}a\,\hat{\mathbf{x}} + \frac{1}{4}a\,\hat{\mathbf{y}} + \frac{1}{4}a\,\hat{\mathbf{z}}$	(6d)	H I
$\mathbf{B_8}$	=	$\frac{1}{4}\,\mathbf{a}_1 + \frac{1}{4}\,\mathbf{a}_2 + \frac{3}{4}\,\mathbf{a}_3$	=	$\frac{1}{4}a\,\hat{\mathbf{x}} + \frac{1}{4}a\,\hat{\mathbf{y}} + \frac{3}{4}a\,\hat{\mathbf{z}}$	(6d)	H I
$\mathbf{B_9}$	=	$x_3\,\mathbf{a}_1 + x_3\,\mathbf{a}_2 + x_3\,\mathbf{a}_3$	=	$ax_3\,\hat{\mathbf{x}} + ax_3\,\hat{\mathbf{y}} + ax_3\,\hat{\mathbf{z}}$	(8e)	O I
$\mathbf{B_{10}}$	=	$-\left(x_3 - \frac{1}{2}\right)\,\mathbf{a}_1 - \left(x_3 - \frac{1}{2}\right)\,\mathbf{a}_2 + x_3\,\mathbf{a}_3$	=	$-a\left(x_3 - \frac{1}{2}\right)\,\hat{\mathbf{x}} - a\left(x_3 - \frac{1}{2}\right)\,\hat{\mathbf{y}} + ax_3\,\hat{\mathbf{z}}$	(8e)	O I
$\mathbf{B_{11}}$	=	$-\left(x_3 - \frac{1}{2}\right)\,\mathbf{a}_1 + x_3\,\mathbf{a}_2 - \left(x_3 - \frac{1}{2}\right)\,\mathbf{a}_3$	=	$-a\left(x_3 - \frac{1}{2}\right)\,\hat{\mathbf{x}} + ax_3\,\hat{\mathbf{y}} - a\left(x_3 - \frac{1}{2}\right)\,\hat{\mathbf{z}}$	(8e)	O I
$\mathbf{B_{12}}$	=	$x_3\,\mathbf{a}_1 - \left(x_3 - \frac{1}{2}\right)\,\mathbf{a}_2 - \left(x_3 - \frac{1}{2}\right)\,\mathbf{a}_3$	=	$ax_3\,\hat{\mathbf{x}} - a\left(x_3 - \frac{1}{2}\right)\,\hat{\mathbf{y}} - a\left(x_3 - \frac{1}{2}\right)\,\hat{\mathbf{z}}$	(8e)	O I
$\mathbf{B_{13}}$	=	$\left(x_3 + \frac{1}{2}\right)\,\mathbf{a}_1 + \left(x_3 + \frac{1}{2}\right)\,\mathbf{a}_2 - x_3\,\mathbf{a}_3$	=	$a\left(x_3 + \frac{1}{2}\right)\,\hat{\mathbf{x}} + a\left(x_3 + \frac{1}{2}\right)\,\hat{\mathbf{y}} - ax_3\,\hat{\mathbf{z}}$	(8e)	O I
$\mathbf{B_{14}}$	=	$-x_3\,\mathbf{a}_1 - x_3\,\mathbf{a}_2 - x_3\,\mathbf{a}_3$	=	$-ax_3\,\hat{\mathbf{x}} - ax_3\,\hat{\mathbf{y}} - ax_3\,\hat{\mathbf{z}}$	(8e)	O I
$\mathbf{B_{15}}$	=	$\left(x_3 + \frac{1}{2}\right)\,\mathbf{a}_1 - x_3\,\mathbf{a}_2 + \left(x_3 + \frac{1}{2}\right)\,\mathbf{a}_3$	=	$a\left(x_3 + \frac{1}{2}\right)\,\hat{\mathbf{x}} - ax_3\,\hat{\mathbf{y}} + a\left(x_3 + \frac{1}{2}\right)\,\hat{\mathbf{z}}$	(8e)	O I
$\mathbf{B_{16}}$	=	$-x_3\,\mathbf{a}_1 + \left(x_3 + \frac{1}{2}\right)\,\mathbf{a}_2 + \left(x_3 + \frac{1}{2}\right)\,\mathbf{a}_3$	=	$-ax_3\,\hat{\mathbf{x}} + a\left(x_3 + \frac{1}{2}\right)\,\hat{\mathbf{y}} + a\left(x_3 + \frac{1}{2}\right)\,\hat{\mathbf{z}}$	(8e)	O I

$\mathbf{B_{17}}$	=	$x_4\,\mathbf{a}_1+\frac{1}{4}\,\mathbf{a}_2+\frac{3}{4}\,\mathbf{a}_3$	=	$ax_4\,\hat{\mathbf{x}}+\frac{1}{4}a\,\hat{\mathbf{y}}+\frac{3}{4}a\,\hat{\mathbf{z}}$	(24h)	O II
$\mathbf{B_{18}}$	=	$-\left(x_4-\frac{1}{2}\right)\,\mathbf{a}_1+\frac{1}{4}\,\mathbf{a}_2+\frac{3}{4}\,\mathbf{a}_3$	=	$-a\left(x_4-\frac{1}{2}\right)\,\hat{\mathbf{x}}+\frac{1}{4}a\,\hat{\mathbf{y}}+\frac{3}{4}a\,\hat{\mathbf{z}}$	(24h)	O II
$\mathbf{B_{19}}$	=	$\frac{3}{4}\,\mathbf{a}_1+x_4\,\mathbf{a}_2+\frac{1}{4}\,\mathbf{a}_3$	=	$\frac{3}{4}a\,\hat{\mathbf{x}}+ax_4\,\hat{\mathbf{y}}+\frac{1}{4}a\,\hat{\mathbf{z}}$	(24h)	O II
$\mathbf{B_{20}}$	=	$\frac{3}{4}\,\mathbf{a}_1-\left(x_4-\frac{1}{2}\right)\,\mathbf{a}_2+\frac{1}{4}\,\mathbf{a}_3$	=	$\frac{3}{4}a\,\hat{\mathbf{x}}-a\left(x_4-\frac{1}{2}\right)\,\hat{\mathbf{y}}+\frac{1}{4}a\,\hat{\mathbf{z}}$	(24h)	O II
$\mathbf{B_{21}}$	=	$\frac{1}{4}\,\mathbf{a}_1+\frac{3}{4}\,\mathbf{a}_2+x_4\,\mathbf{a}_3$	=	$\frac{1}{4}a\,\hat{\mathbf{x}}+\frac{3}{4}a\,\hat{\mathbf{y}}+ax_4\,\hat{\mathbf{z}}$	(24h)	O II
$\mathbf{B_{22}}$	=	$\frac{1}{4}\,\mathbf{a}_1+\frac{3}{4}\,\mathbf{a}_2-\left(x_4-\frac{1}{2}\right)\,\mathbf{a}_3$	=	$\frac{1}{4}a\,\hat{\mathbf{x}}+\frac{3}{4}a\,\hat{\mathbf{y}}-a\left(x_4-\frac{1}{2}\right)\,\hat{\mathbf{z}}$	(24h)	O II
$\mathbf{B_{23}}$	=	$\frac{3}{4}\,\mathbf{a}_1+\left(x_4+\frac{1}{2}\right)\,\mathbf{a}_2+\frac{1}{4}\,\mathbf{a}_3$	=	$\frac{3}{4}a\,\hat{\mathbf{x}}+a\left(x_4+\frac{1}{2}\right)\,\hat{\mathbf{y}}+\frac{1}{4}a\,\hat{\mathbf{z}}$	(24h)	O II
$\mathbf{B_{24}}$	=	$\frac{3}{4}\,\mathbf{a}_1-x_4\,\mathbf{a}_2+\frac{1}{4}\,\mathbf{a}_3$	=	$\frac{3}{4}a\,\hat{\mathbf{x}}-ax_4\,\hat{\mathbf{y}}+\frac{1}{4}a\,\hat{\mathbf{z}}$	(24h)	O II
$\mathbf{B_{25}}$	=	$\left(x_4+\frac{1}{2}\right)\,\mathbf{a}_1+\frac{1}{4}\,\mathbf{a}_2+\frac{3}{4}\,\mathbf{a}_3$	=	$a\left(x_4+\frac{1}{2}\right)\,\hat{\mathbf{x}}+\frac{1}{4}a\,\hat{\mathbf{y}}+\frac{3}{4}a\,\hat{\mathbf{z}}$	(24h)	O II
$\mathbf{B_{26}}$	=	$-x_4\,\mathbf{a}_1+\frac{1}{4}\,\mathbf{a}_2+\frac{3}{4}\,\mathbf{a}_3$	=	$-ax_4\,\hat{\mathbf{x}}+\frac{1}{4}a\,\hat{\mathbf{y}}+\frac{3}{4}a\,\hat{\mathbf{z}}$	(24h)	O II
$\mathbf{B_{27}}$	=	$\frac{1}{4}\,\mathbf{a}_1+\frac{3}{4}\,\mathbf{a}_2-x_4\,\mathbf{a}_3$	=	$\frac{1}{4}a\,\hat{\mathbf{x}}+\frac{3}{4}a\,\hat{\mathbf{y}}-ax_4\,\hat{\mathbf{z}}$	(24h)	O II
$\mathbf{B_{28}}$	=	$\frac{1}{4}\,\mathbf{a}_1+\frac{3}{4}\,\mathbf{a}_2+\left(x_4+\frac{1}{2}\right)\,\mathbf{a}_3$	=	$\frac{1}{4}a\,\hat{\mathbf{x}}+\frac{3}{4}a\,\hat{\mathbf{y}}+a\left(x_4+\frac{1}{2}\right)\,\hat{\mathbf{z}}$	(24h)	O II
$\mathbf{B_{29}}$	=	$-x_4\,\mathbf{a}_1+\frac{3}{4}\,\mathbf{a}_2+\frac{1}{4}\,\mathbf{a}_3$	=	$-ax_4\,\hat{\mathbf{x}}+\frac{3}{4}a\,\hat{\mathbf{y}}+\frac{1}{4}a\,\hat{\mathbf{z}}$	(24h)	O II
$\mathbf{B_{30}}$	=	$\left(x_4+\frac{1}{2}\right)\,\mathbf{a}_1+\frac{3}{4}\,\mathbf{a}_2+\frac{1}{4}\,\mathbf{a}_3$	=	$a\left(x_4+\frac{1}{2}\right)\,\hat{\mathbf{x}}+\frac{3}{4}a\,\hat{\mathbf{y}}+\frac{1}{4}a\,\hat{\mathbf{z}}$	(24h)	O II
$\mathbf{B_{31}}$	=	$\frac{1}{4}\,\mathbf{a}_1-x_4\,\mathbf{a}_2+\frac{3}{4}\,\mathbf{a}_3$	=	$\frac{1}{4}a\,\hat{\mathbf{x}}-ax_4\,\hat{\mathbf{y}}+\frac{3}{4}a\,\hat{\mathbf{z}}$	(24h)	O II
$\mathbf{B_{32}}$	=	$\frac{1}{4}\,\mathbf{a}_1+\left(x_4+\frac{1}{2}\right)\,\mathbf{a}_2+\frac{3}{4}\,\mathbf{a}_3$	=	$\frac{1}{4}a\,\hat{\mathbf{x}}+a\left(x_4+\frac{1}{2}\right)\,\hat{\mathbf{y}}+\frac{3}{4}a\,\hat{\mathbf{z}}$	(24h)	O II
$\mathbf{B_{33}}$	=	$\frac{3}{4}\,\mathbf{a}_1+\frac{1}{4}\,\mathbf{a}_2-x_4\,\mathbf{a}_3$	=	$\frac{3}{4}a\,\hat{\mathbf{x}}+\frac{1}{4}a\,\hat{\mathbf{y}}-ax_4\,\hat{\mathbf{z}}$	(24h)	O II
$\mathbf{B_{34}}$	=	$\frac{3}{4}\,\mathbf{a}_1+\frac{1}{4}\,\mathbf{a}_2+\left(x_4+\frac{1}{2}\right)\,\mathbf{a}_3$	=	$\frac{3}{4}a\,\hat{\mathbf{x}}+\frac{1}{4}a\,\hat{\mathbf{y}}+a\left(x_4+\frac{1}{2}\right)\,\hat{\mathbf{z}}$	(24h)	O II
$\mathbf{B_{35}}$	=	$\frac{1}{4}\,\mathbf{a}_1-\left(x_4-\frac{1}{2}\right)\,\mathbf{a}_2+\frac{3}{4}\,\mathbf{a}_3$	=	$\frac{1}{4}a\,\hat{\mathbf{x}}-a\left(x_4-\frac{1}{2}\right)\,\hat{\mathbf{y}}+\frac{3}{4}a\,\hat{\mathbf{z}}$	(24h)	O II
$\mathbf{B_{36}}$	=	$\frac{1}{4}\,\mathbf{a}_1+x_4\,\mathbf{a}_2+\frac{3}{4}\,\mathbf{a}_3$	=	$\frac{1}{4}a\,\hat{\mathbf{x}}+ax_4\,\hat{\mathbf{y}}+\frac{3}{4}a\,\hat{\mathbf{z}}$	(24h)	O II
$\mathbf{B_{37}}$	=	$-\left(x_4-\frac{1}{2}\right)\,\mathbf{a}_1+\frac{3}{4}\,\mathbf{a}_2+\frac{1}{4}\,\mathbf{a}_3$	=	$-a\left(x_4-\frac{1}{2}\right)\,\hat{\mathbf{x}}+\frac{3}{4}a\,\hat{\mathbf{y}}+\frac{1}{4}a\,\hat{\mathbf{z}}$	(24h)	O II
$\mathbf{B_{38}}$	=	$x_4\,\mathbf{a}_1+\frac{3}{4}\,\mathbf{a}_2+\frac{1}{4}\,\mathbf{a}_3$	=	$ax_4\,\hat{\mathbf{x}}+\frac{3}{4}a\,\hat{\mathbf{y}}+\frac{1}{4}a\,\hat{\mathbf{z}}$	(24h)	O II
$\mathbf{B_{39}}$	=	$\frac{3}{4}\,\mathbf{a}_1+\frac{1}{4}\,\mathbf{a}_2+x_4\,\mathbf{a}_3$	=	$\frac{3}{4}a\,\hat{\mathbf{x}}+\frac{1}{4}a\,\hat{\mathbf{y}}+ax_4\,\hat{\mathbf{z}}$	(24h)	O II
$\mathbf{B_{40}}$	=	$\frac{3}{4}\,\mathbf{a}_1+\frac{1}{4}\,\mathbf{a}_2-\left(x_4-\frac{1}{2}\right)\,\mathbf{a}_3$	=	$\frac{3}{4}a\,\hat{\mathbf{x}}+\frac{1}{4}a\,\hat{\mathbf{y}}-a\left(x_4-\frac{1}{2}\right)\,\hat{\mathbf{z}}$	(24h)	O II
$\mathbf{B_{41}}$	=	$x_5\,\mathbf{a}_1+x_5\,\mathbf{a}_2+z_5\,\mathbf{a}_3$	=	$ax_5\,\hat{\mathbf{x}}+ax_5\,\hat{\mathbf{y}}+az_5\,\hat{\mathbf{z}}$	(24k)	O III
$\mathbf{B_{42}}$	=	$-\left(x_5-\frac{1}{2}\right)\,\mathbf{a}_1-\left(x_5-\frac{1}{2}\right)\,\mathbf{a}_2+z_5\,\mathbf{a}_3$	=	$-a\left(x_5-\frac{1}{2}\right)\,\hat{\mathbf{x}}-a\left(x_5-\frac{1}{2}\right)\,\hat{\mathbf{y}}+az_5\,\hat{\mathbf{z}}$	(24k)	O III
$\mathbf{B_{43}}$	=	$-\left(x_5-\frac{1}{2}\right)\,\mathbf{a}_1+x_5\,\mathbf{a}_2-\left(z_5-\frac{1}{2}\right)\,\mathbf{a}_3$	=	$-a\left(x_5-\frac{1}{2}\right)\,\hat{\mathbf{x}}+ax_5\,\hat{\mathbf{y}}-a\left(z_5-\frac{1}{2}\right)\,\hat{\mathbf{z}}$	(24k)	O III
$\mathbf{B_{44}}$	=	$x_5\,\mathbf{a}_1-\left(x_5-\frac{1}{2}\right)\,\mathbf{a}_2-\left(z_5-\frac{1}{2}\right)\,\mathbf{a}_3$	=	$ax_5\,\hat{\mathbf{x}}-a\left(x_5-\frac{1}{2}\right)\,\hat{\mathbf{y}}-a\left(z_5-\frac{1}{2}\right)\,\hat{\mathbf{z}}$	(24k)	O III
$\mathbf{B_{45}}$	=	$z_5\,\mathbf{a}_1+x_5\,\mathbf{a}_2+x_5\,\mathbf{a}_3$	=	$az_5\,\hat{\mathbf{x}}+ax_5\,\hat{\mathbf{y}}+ax_5\,\hat{\mathbf{z}}$	(24k)	O III
$\mathbf{B_{46}}$	=	$z_5\,\mathbf{a}_1-\left(x_5-\frac{1}{2}\right)\,\mathbf{a}_2-\left(x_5-\frac{1}{2}\right)\,\mathbf{a}_3$	=	$az_5\,\hat{\mathbf{x}}-a\left(x_5-\frac{1}{2}\right)\,\hat{\mathbf{y}}-a\left(x_5-\frac{1}{2}\right)\,\hat{\mathbf{z}}$	(24k)	O III
$\mathbf{B_{47}}$	=	$-\left(z_5-\frac{1}{2}\right)\,\mathbf{a}_1-\left(x_5-\frac{1}{2}\right)\,\mathbf{a}_2+x_5\,\mathbf{a}_3$	=	$-a\left(z_5-\frac{1}{2}\right)\,\hat{\mathbf{x}}-a\left(x_5-\frac{1}{2}\right)\,\hat{\mathbf{y}}+ax_5\,\hat{\mathbf{z}}$	(24k)	O III
$\mathbf{B_{48}}$	=	$-\left(z_5-\frac{1}{2}\right)\,\mathbf{a}_1+x_5\,\mathbf{a}_2-\left(x_5-\frac{1}{2}\right)\,\mathbf{a}_3$	=	$-a\left(z_5-\frac{1}{2}\right)\,\hat{\mathbf{x}}+ax_5\,\hat{\mathbf{y}}-a\left(x_5-\frac{1}{2}\right)\,\hat{\mathbf{z}}$	(24k)	O III
$\mathbf{B_{49}}$	=	$x_5\,\mathbf{a}_1+z_5\,\mathbf{a}_2+x_5\,\mathbf{a}_3$	=	$ax_5\,\hat{\mathbf{x}}+az_5\,\hat{\mathbf{y}}+ax_5\,\hat{\mathbf{z}}$	(24k)	O III
$\mathbf{B_{50}}$	=	$-\left(x_5-\frac{1}{2}\right)\,\mathbf{a}_1+z_5\,\mathbf{a}_2-\left(x_5-\frac{1}{2}\right)\,\mathbf{a}_3$	=	$-a\left(x_5-\frac{1}{2}\right)\,\hat{\mathbf{x}}+az_5\,\hat{\mathbf{y}}-a\left(x_5-\frac{1}{2}\right)\,\hat{\mathbf{z}}$	(24k)	O III
$\mathbf{B_{51}}$	=	$x_5\,\mathbf{a}_1-\left(z_5-\frac{1}{2}\right)\,\mathbf{a}_2-\left(x_5-\frac{1}{2}\right)\,\mathbf{a}_3$	=	$ax_5\,\hat{\mathbf{x}}-a\left(z_5-\frac{1}{2}\right)\,\hat{\mathbf{y}}-a\left(x_5-\frac{1}{2}\right)\,\hat{\mathbf{z}}$	(24k)	O III
$\mathbf{B_{52}}$	=	$-\left(x_5-\frac{1}{2}\right)\,\mathbf{a}_1-\left(z_5-\frac{1}{2}\right)\,\mathbf{a}_2+x_5\,\mathbf{a}_3$	=	$-a\left(x_5-\frac{1}{2}\right)\,\hat{\mathbf{x}}-a\left(z_5-\frac{1}{2}\right)\,\hat{\mathbf{y}}+ax_5\,\hat{\mathbf{z}}$	(24k)	O III
$\mathbf{B_{53}}$	=	$\left(x_5+\frac{1}{2}\right)\,\mathbf{a}_1+\left(x_5+\frac{1}{2}\right)\,\mathbf{a}_2-z_5\,\mathbf{a}_3$	=	$a\left(x_5+\frac{1}{2}\right)\,\hat{\mathbf{x}}+a\left(x_5+\frac{1}{2}\right)\,\hat{\mathbf{y}}-az_5\,\hat{\mathbf{z}}$	(24k)	O III

$\mathbf{B_{54}} = -x_5\,\mathbf{a}_1 - x_5\,\mathbf{a}_2 - z_5\,\mathbf{a}_3 = -ax_5\,\hat{\mathbf{x}} - ax_5\,\hat{\mathbf{y}} - az_5\,\hat{\mathbf{z}}$ (24k) O III

$\mathbf{B_{55}} = \left(x_5+\frac{1}{2}\right)\mathbf{a}_1 - x_5\,\mathbf{a}_2 + \left(z_5+\frac{1}{2}\right)\mathbf{a}_3 = a\left(x_5+\frac{1}{2}\right)\hat{\mathbf{x}} - ax_5\,\hat{\mathbf{y}} + a\left(z_5+\frac{1}{2}\right)\hat{\mathbf{z}}$ (24k) O III

$\mathbf{B_{56}} = -x_5\,\mathbf{a}_1 + \left(x_5+\frac{1}{2}\right)\mathbf{a}_2 + \left(z_5+\frac{1}{2}\right)\mathbf{a}_3 = -ax_5\,\hat{\mathbf{x}} + a\left(x_5+\frac{1}{2}\right)\hat{\mathbf{y}} + a\left(z_5+\frac{1}{2}\right)\hat{\mathbf{z}}$ (24k) O III

$\mathbf{B_{57}} = \left(x_5+\frac{1}{2}\right)\mathbf{a}_1 + \left(z_5+\frac{1}{2}\right)\mathbf{a}_2 - x_5\,\mathbf{a}_3 = a\left(x_5+\frac{1}{2}\right)\hat{\mathbf{x}} + a\left(z_5+\frac{1}{2}\right)\hat{\mathbf{y}} - ax_5\,\hat{\mathbf{z}}$ (24k) O III

$\mathbf{B_{58}} = -x_5\,\mathbf{a}_1 + \left(z_5+\frac{1}{2}\right)\mathbf{a}_2 + \left(x_5+\frac{1}{2}\right)\mathbf{a}_3 = -ax_5\,\hat{\mathbf{x}} + a\left(z_5+\frac{1}{2}\right)\hat{\mathbf{y}} + a\left(x_5+\frac{1}{2}\right)\hat{\mathbf{z}}$ (24k) O III

$\mathbf{B_{59}} = -x_5\,\mathbf{a}_1 - z_5\,\mathbf{a}_2 - x_5\,\mathbf{a}_3 = -ax_5\,\hat{\mathbf{x}} - az_5\,\hat{\mathbf{y}} - ax_5\,\hat{\mathbf{z}}$ (24k) O III

$\mathbf{B_{60}} = \left(x_5+\frac{1}{2}\right)\mathbf{a}_1 - z_5\,\mathbf{a}_2 + \left(x_5+\frac{1}{2}\right)\mathbf{a}_3 = a\left(x_5+\frac{1}{2}\right)\hat{\mathbf{x}} - az_5\,\hat{\mathbf{y}} + a\left(x_5+\frac{1}{2}\right)\hat{\mathbf{z}}$ (24k) O III

$\mathbf{B_{61}} = \left(z_5+\frac{1}{2}\right)\mathbf{a}_1 + \left(x_5+\frac{1}{2}\right)\mathbf{a}_2 - x_5\,\mathbf{a}_3 = a\left(z_5+\frac{1}{2}\right)\hat{\mathbf{x}} + a\left(x_5+\frac{1}{2}\right)\hat{\mathbf{y}} - ax_5\,\hat{\mathbf{z}}$ (24k) O III

$\mathbf{B_{62}} = \left(z_5+\frac{1}{2}\right)\mathbf{a}_1 - x_5\,\mathbf{a}_2 + \left(x_5+\frac{1}{2}\right)\mathbf{a}_3 = a\left(z_5+\frac{1}{2}\right)\hat{\mathbf{x}} - ax_5\,\hat{\mathbf{y}} + a\left(x_5+\frac{1}{2}\right)\hat{\mathbf{z}}$ (24k) O III

$\mathbf{B_{63}} = -z_5\,\mathbf{a}_1 + \left(x_5+\frac{1}{2}\right)\mathbf{a}_2 + \left(x_5+\frac{1}{2}\right)\mathbf{a}_3 = -az_5\,\hat{\mathbf{x}} + a\left(x_5+\frac{1}{2}\right)\hat{\mathbf{y}} + a\left(x_5+\frac{1}{2}\right)\hat{\mathbf{z}}$ (24k) O III

$\mathbf{B_{64}} = -z_5\,\mathbf{a}_1 - x_5\,\mathbf{a}_2 - x_5\,\mathbf{a}_3 = -az_5\,\hat{\mathbf{x}} - ax_5\,\hat{\mathbf{y}} - ax_5\,\hat{\mathbf{z}}$ (24k) O III

$\mathbf{B_{65}} = x_6\,\mathbf{a}_1 + x_6\,\mathbf{a}_2 + z_6\,\mathbf{a}_3 = ax_6\,\hat{\mathbf{x}} + ax_6\,\hat{\mathbf{y}} + az_6\,\hat{\mathbf{z}}$ (24k) O IV

$\mathbf{B_{66}} = -\left(x_6-\frac{1}{2}\right)\mathbf{a}_1 - \left(x_6-\frac{1}{2}\right)\mathbf{a}_2 + z_6\,\mathbf{a}_3 = -a\left(x_6-\frac{1}{2}\right)\hat{\mathbf{x}} - a\left(x_6-\frac{1}{2}\right)\hat{\mathbf{y}} + az_6\,\hat{\mathbf{z}}$ (24k) O IV

$\mathbf{B_{67}} = -\left(x_6-\frac{1}{2}\right)\mathbf{a}_1 + x_6\,\mathbf{a}_2 - \left(z_6-\frac{1}{2}\right)\mathbf{a}_3 = -a\left(x_6-\frac{1}{2}\right)\hat{\mathbf{x}} + ax_6\,\hat{\mathbf{y}} - a\left(z_6-\frac{1}{2}\right)\hat{\mathbf{z}}$ (24k) O IV

$\mathbf{B_{68}} = x_6\,\mathbf{a}_1 - \left(x_6-\frac{1}{2}\right)\mathbf{a}_2 - \left(z_6-\frac{1}{2}\right)\mathbf{a}_3 = ax_6\,\hat{\mathbf{x}} - a\left(x_6-\frac{1}{2}\right)\hat{\mathbf{y}} - a\left(z_6-\frac{1}{2}\right)\hat{\mathbf{z}}$ (24k) O IV

$\mathbf{B_{69}} = z_6\,\mathbf{a}_1 + x_6\,\mathbf{a}_2 + x_6\,\mathbf{a}_3 = az_6\,\hat{\mathbf{x}} + ax_6\,\hat{\mathbf{y}} + ax_6\,\hat{\mathbf{z}}$ (24k) O IV

$\mathbf{B_{70}} = z_6\,\mathbf{a}_1 - \left(x_6-\frac{1}{2}\right)\mathbf{a}_2 - \left(x_6-\frac{1}{2}\right)\mathbf{a}_3 = az_6\,\hat{\mathbf{x}} - a\left(x_6-\frac{1}{2}\right)\hat{\mathbf{y}} - a\left(x_6-\frac{1}{2}\right)\hat{\mathbf{z}}$ (24k) O IV

$\mathbf{B_{71}} = -\left(z_6-\frac{1}{2}\right)\mathbf{a}_1 - \left(x_6-\frac{1}{2}\right)\mathbf{a}_2 + x_6\,\mathbf{a}_3 = -a\left(z_6-\frac{1}{2}\right)\hat{\mathbf{x}} - a\left(x_6-\frac{1}{2}\right)\hat{\mathbf{y}} + ax_6\,\hat{\mathbf{z}}$ (24k) O IV

$\mathbf{B_{72}} = -\left(z_6-\frac{1}{2}\right)\mathbf{a}_1 + x_6\,\mathbf{a}_2 - \left(x_6-\frac{1}{2}\right)\mathbf{a}_3 = -a\left(z_6-\frac{1}{2}\right)\hat{\mathbf{x}} + ax_6\,\hat{\mathbf{y}} - a\left(x_6-\frac{1}{2}\right)\hat{\mathbf{z}}$ (24k) O IV

$\mathbf{B_{73}} = x_6\,\mathbf{a}_1 + z_6\,\mathbf{a}_2 + x_6\,\mathbf{a}_3 = ax_6\,\hat{\mathbf{x}} + az_6\,\hat{\mathbf{y}} + ax_6\,\hat{\mathbf{z}}$ (24k) O IV

$\mathbf{B_{74}} = -\left(x_6-\frac{1}{2}\right)\mathbf{a}_1 + z_6\,\mathbf{a}_2 - \left(x_6-\frac{1}{2}\right)\mathbf{a}_3 = -a\left(x_6-\frac{1}{2}\right)\hat{\mathbf{x}} + az_6\,\hat{\mathbf{y}} - a\left(x_6-\frac{1}{2}\right)\hat{\mathbf{z}}$ (24k) O IV

$\mathbf{B_{75}} = x_6\,\mathbf{a}_1 - \left(z_6-\frac{1}{2}\right)\mathbf{a}_2 - \left(x_6-\frac{1}{2}\right)\mathbf{a}_3 = ax_6\,\hat{\mathbf{x}} - a\left(z_6-\frac{1}{2}\right)\hat{\mathbf{y}} - a\left(x_6-\frac{1}{2}\right)\hat{\mathbf{z}}$ (24k) O IV

$\mathbf{B_{76}} = -\left(x_6-\frac{1}{2}\right)\mathbf{a}_1 - \left(z_6-\frac{1}{2}\right)\mathbf{a}_2 + x_6\,\mathbf{a}_3 = -a\left(x_6-\frac{1}{2}\right)\hat{\mathbf{x}} - a\left(z_6-\frac{1}{2}\right)\hat{\mathbf{y}} + ax_6\,\hat{\mathbf{z}}$ (24k) O IV

$\mathbf{B_{77}} = \left(x_6+\frac{1}{2}\right)\mathbf{a}_1 + \left(x_6+\frac{1}{2}\right)\mathbf{a}_2 - z_6\,\mathbf{a}_3 = a\left(x_6+\frac{1}{2}\right)\hat{\mathbf{x}} + a\left(x_6+\frac{1}{2}\right)\hat{\mathbf{y}} - az_6\,\hat{\mathbf{z}}$ (24k) O IV

$\mathbf{B_{78}} = -x_6\,\mathbf{a}_1 - x_6\,\mathbf{a}_2 - z_6\,\mathbf{a}_3 = -ax_6\,\hat{\mathbf{x}} - ax_6\,\hat{\mathbf{y}} - az_6\,\hat{\mathbf{z}}$ (24k) O IV

$\mathbf{B_{79}} = \left(x_6+\frac{1}{2}\right)\mathbf{a}_1 - x_6\,\mathbf{a}_2 + \left(z_6+\frac{1}{2}\right)\mathbf{a}_3 = a\left(x_6+\frac{1}{2}\right)\hat{\mathbf{x}} - ax_6\,\hat{\mathbf{y}} + a\left(z_6+\frac{1}{2}\right)\hat{\mathbf{z}}$ (24k) O IV

$\mathbf{B_{80}} = -x_6\,\mathbf{a}_1 + \left(x_6+\frac{1}{2}\right)\mathbf{a}_2 + \left(z_6+\frac{1}{2}\right)\mathbf{a}_3 = -ax_6\,\hat{\mathbf{x}} + a\left(x_6+\frac{1}{2}\right)\hat{\mathbf{y}} + a\left(z_6+\frac{1}{2}\right)\hat{\mathbf{z}}$ (24k) O IV

$\mathbf{B_{81}} = \left(x_6+\frac{1}{2}\right)\mathbf{a}_1 + \left(z_6+\frac{1}{2}\right)\mathbf{a}_2 - x_6\,\mathbf{a}_3 = a\left(x_6+\frac{1}{2}\right)\hat{\mathbf{x}} + a\left(z_6+\frac{1}{2}\right)\hat{\mathbf{y}} - ax_6\,\hat{\mathbf{z}}$ (24k) O IV

$\mathbf{B_{82}} = -x_6\,\mathbf{a}_1 + \left(z_6+\frac{1}{2}\right)\mathbf{a}_2 + \left(x_6+\frac{1}{2}\right)\mathbf{a}_3 = -ax_6\,\hat{\mathbf{x}} + a\left(z_6+\frac{1}{2}\right)\hat{\mathbf{y}} + a\left(x_6+\frac{1}{2}\right)\hat{\mathbf{z}}$ (24k) O IV

$\mathbf{B_{83}} = -x_6\,\mathbf{a}_1 - z_6\,\mathbf{a}_2 - x_6\,\mathbf{a}_3 = -ax_6\,\hat{\mathbf{x}} - az_6\,\hat{\mathbf{y}} - ax_6\,\hat{\mathbf{z}}$ (24k) O IV

$\mathbf{B_{84}} = \left(x_6+\frac{1}{2}\right)\mathbf{a}_1 - z_6\,\mathbf{a}_2 + \left(x_6+\frac{1}{2}\right)\mathbf{a}_3 = a\left(x_6+\frac{1}{2}\right)\hat{\mathbf{x}} - az_6\,\hat{\mathbf{y}} + a\left(x_6+\frac{1}{2}\right)\hat{\mathbf{z}}$ (24k) O IV

$\mathbf{B_{85}} = \left(z_6+\frac{1}{2}\right)\mathbf{a}_1 + \left(x_6+\frac{1}{2}\right)\mathbf{a}_2 - x_6\,\mathbf{a}_3 = a\left(z_6+\frac{1}{2}\right)\hat{\mathbf{x}} + a\left(x_6+\frac{1}{2}\right)\hat{\mathbf{y}} - ax_6\,\hat{\mathbf{z}}$ (24k) O IV

$\mathbf{B_{86}} = \left(z_6+\frac{1}{2}\right)\mathbf{a}_1 - x_6\,\mathbf{a}_2 + \left(x_6+\frac{1}{2}\right)\mathbf{a}_3 = a\left(z_6+\frac{1}{2}\right)\hat{\mathbf{x}} - ax_6\,\hat{\mathbf{y}} + a\left(x_6+\frac{1}{2}\right)\hat{\mathbf{z}}$ (24k) O IV

$$
\begin{array}{lcccccc}
\mathbf{B_{87}} & = & -z_6\,\mathbf{a}_1+\left(x_6+\frac{1}{2}\right)\,\mathbf{a}_2+\left(x_6+\frac{1}{2}\right)\,\mathbf{a}_3 & = & -az_6\,\hat{\mathbf{x}}+a\left(x_6+\frac{1}{2}\right)\,\hat{\mathbf{y}}+a\left(x_6+\frac{1}{2}\right)\,\hat{\mathbf{z}} & (24k) & \text{O IV}\\
\mathbf{B_{88}} & = & -z_6\,\mathbf{a}_1-x_6\,\mathbf{a}_2-x_6\,\mathbf{a}_3 & = & -az_6\,\hat{\mathbf{x}}-ax_6\,\hat{\mathbf{y}}-ax_6\,\hat{\mathbf{z}} & (24k) & \text{O IV}\\
\mathbf{B_{89}} & = & x_7\,\mathbf{a}_1+x_7\,\mathbf{a}_2+z_7\,\mathbf{a}_3 & = & ax_7\,\hat{\mathbf{x}}+ax_7\,\hat{\mathbf{y}}+az_7\,\hat{\mathbf{z}} & (24k) & \text{O V}\\
\mathbf{B_{90}} & = & -\left(x_7-\frac{1}{2}\right)\,\mathbf{a}_1-\left(x_7-\frac{1}{2}\right)\,\mathbf{a}_2+z_7\,\mathbf{a}_3 & = & -a\left(x_7-\frac{1}{2}\right)\,\hat{\mathbf{x}}-a\left(x_7-\frac{1}{2}\right)\,\hat{\mathbf{y}}+az_7\,\hat{\mathbf{z}} & (24k) & \text{O V}\\
\mathbf{B_{91}} & = & -\left(x_7-\frac{1}{2}\right)\,\mathbf{a}_1+x_7\,\mathbf{a}_2-\left(z_7-\frac{1}{2}\right)\,\mathbf{a}_3 & = & -a\left(x_7-\frac{1}{2}\right)\,\hat{\mathbf{x}}+ax_7\,\hat{\mathbf{y}}-a\left(z_7-\frac{1}{2}\right)\,\hat{\mathbf{z}} & (24k) & \text{O V}\\
\mathbf{B_{92}} & = & x_7\,\mathbf{a}_1-\left(x_7-\frac{1}{2}\right)\,\mathbf{a}_2-\left(z_7-\frac{1}{2}\right)\,\mathbf{a}_3 & = & ax_7\,\hat{\mathbf{x}}-a\left(x_7-\frac{1}{2}\right)\,\hat{\mathbf{y}}-a\left(z_7-\frac{1}{2}\right)\,\hat{\mathbf{z}} & (24k) & \text{O V}\\
\mathbf{B_{93}} & = & z_7\,\mathbf{a}_1+x_7\,\mathbf{a}_2+x_7\,\mathbf{a}_3 & = & az_7\,\hat{\mathbf{x}}+ax_7\,\hat{\mathbf{y}}+ax_7\,\hat{\mathbf{z}} & (24k) & \text{O V}\\
\mathbf{B_{94}} & = & z_7\,\mathbf{a}_1-\left(x_7-\frac{1}{2}\right)\,\mathbf{a}_2-\left(x_7-\frac{1}{2}\right)\,\mathbf{a}_3 & = & az_7\,\hat{\mathbf{x}}-a\left(x_7-\frac{1}{2}\right)\,\hat{\mathbf{y}}-a\left(x_7-\frac{1}{2}\right)\,\hat{\mathbf{z}} & (24k) & \text{O V}\\
\mathbf{B_{95}} & = & -\left(z_7-\frac{1}{2}\right)\,\mathbf{a}_1-\left(x_7-\frac{1}{2}\right)\,\mathbf{a}_2+x_7\,\mathbf{a}_3 & = & -a\left(z_7-\frac{1}{2}\right)\,\hat{\mathbf{x}}-a\left(x_7-\frac{1}{2}\right)\,\hat{\mathbf{y}}+ax_7\,\hat{\mathbf{z}} & (24k) & \text{O V}\\
\mathbf{B_{96}} & = & -\left(z_7-\frac{1}{2}\right)\,\mathbf{a}_1+x_7\,\mathbf{a}_2-\left(x_7-\frac{1}{2}\right)\,\mathbf{a}_3 & = & -a\left(z_7-\frac{1}{2}\right)\,\hat{\mathbf{x}}+ax_7\,\hat{\mathbf{y}}-a\left(x_7-\frac{1}{2}\right)\,\hat{\mathbf{z}} & (24k) & \text{O V}\\
\mathbf{B_{97}} & = & x_7\,\mathbf{a}_1+z_7\,\mathbf{a}_2+x_7\,\mathbf{a}_3 & = & ax_7\,\hat{\mathbf{x}}+az_7\,\hat{\mathbf{y}}+ax_7\,\hat{\mathbf{z}} & (24k) & \text{O V}\\
\mathbf{B_{98}} & = & -\left(x_7-\frac{1}{2}\right)\,\mathbf{a}_1+z_7\,\mathbf{a}_2-\left(x_7-\frac{1}{2}\right)\,\mathbf{a}_3 & = & -a\left(x_7-\frac{1}{2}\right)\,\hat{\mathbf{x}}+az_7\,\hat{\mathbf{y}}-a\left(x_7-\frac{1}{2}\right)\,\hat{\mathbf{z}} & (24k) & \text{O V}\\
\mathbf{B_{99}} & = & x_7\,\mathbf{a}_1-\left(z_7-\frac{1}{2}\right)\,\mathbf{a}_2-\left(x_7-\frac{1}{2}\right)\,\mathbf{a}_3 & = & ax_7\,\hat{\mathbf{x}}-a\left(z_7-\frac{1}{2}\right)\,\hat{\mathbf{y}}-a\left(x_7-\frac{1}{2}\right)\,\hat{\mathbf{z}} & (24k) & \text{O V}\\
\mathbf{B_{100}} & = & -\left(x_7-\frac{1}{2}\right)\,\mathbf{a}_1-\left(z_7-\frac{1}{2}\right)\,\mathbf{a}_2+x_7\,\mathbf{a}_3 & = & -a\left(x_7-\frac{1}{2}\right)\,\hat{\mathbf{x}}-a\left(z_7-\frac{1}{2}\right)\,\hat{\mathbf{y}}+ax_7\,\hat{\mathbf{z}} & (24k) & \text{O V}\\
\mathbf{B_{101}} & = & \left(x_7+\frac{1}{2}\right)\,\mathbf{a}_1+\left(x_7+\frac{1}{2}\right)\,\mathbf{a}_2-z_7\,\mathbf{a}_3 & = & a\left(x_7+\frac{1}{2}\right)\,\hat{\mathbf{x}}+a\left(x_7+\frac{1}{2}\right)\,\hat{\mathbf{y}}-az_7\,\hat{\mathbf{z}} & (24k) & \text{O V}\\
\mathbf{B_{102}} & = & -x_7\,\mathbf{a}_1-x_7\,\mathbf{a}_2-z_7\,\mathbf{a}_3 & = & -ax_7\,\hat{\mathbf{x}}-ax_7\,\hat{\mathbf{y}}-az_7\,\hat{\mathbf{z}} & (24k) & \text{O V}\\
\mathbf{B_{103}} & = & \left(x_7+\frac{1}{2}\right)\,\mathbf{a}_1-x_7\,\mathbf{a}_2+\left(z_7+\frac{1}{2}\right)\,\mathbf{a}_3 & = & a\left(x_7+\frac{1}{2}\right)\,\hat{\mathbf{x}}-ax_7\,\hat{\mathbf{y}}+a\left(z_7+\frac{1}{2}\right)\,\hat{\mathbf{z}} & (24k) & \text{O V}\\
\mathbf{B_{104}} & = & -x_7\,\mathbf{a}_1+\left(x_7+\frac{1}{2}\right)\,\mathbf{a}_2+\left(z_7+\frac{1}{2}\right)\,\mathbf{a}_3 & = & -ax_7\,\hat{\mathbf{x}}+a\left(x_7+\frac{1}{2}\right)\,\hat{\mathbf{y}}+a\left(z_7+\frac{1}{2}\right)\,\hat{\mathbf{z}} & (24k) & \text{O V}\\
\mathbf{B_{105}} & = & \left(x_7+\frac{1}{2}\right)\,\mathbf{a}_1+\left(z_7+\frac{1}{2}\right)\,\mathbf{a}_2-x_7\,\mathbf{a}_3 & = & a\left(x_7+\frac{1}{2}\right)\,\hat{\mathbf{x}}+a\left(z_7+\frac{1}{2}\right)\,\hat{\mathbf{y}}-ax_7\,\hat{\mathbf{z}} & (24k) & \text{O V}\\
\mathbf{B_{106}} & = & -x_7\,\mathbf{a}_1+\left(z_7+\frac{1}{2}\right)\,\mathbf{a}_2+\left(x_7+\frac{1}{2}\right)\,\mathbf{a}_3 & = & -ax_7\,\hat{\mathbf{x}}+a\left(z_7+\frac{1}{2}\right)\,\hat{\mathbf{y}}+a\left(x_7+\frac{1}{2}\right)\,\hat{\mathbf{z}} & (24k) & \text{O V}\\
\mathbf{B_{107}} & = & -x_7\,\mathbf{a}_1-z_7\,\mathbf{a}_2-x_7\,\mathbf{a}_3 & = & -ax_7\,\hat{\mathbf{x}}-az_7\,\hat{\mathbf{y}}-ax_7\,\hat{\mathbf{z}} & (24k) & \text{O V}\\
\mathbf{B_{108}} & = & \left(x_7+\frac{1}{2}\right)\,\mathbf{a}_1-z_7\,\mathbf{a}_2+\left(x_7+\frac{1}{2}\right)\,\mathbf{a}_3 & = & a\left(x_7+\frac{1}{2}\right)\,\hat{\mathbf{x}}-az_7\,\hat{\mathbf{y}}+a\left(x_7+\frac{1}{2}\right)\,\hat{\mathbf{z}} & (24k) & \text{O V}\\
\mathbf{B_{109}} & = & \left(z_7+\frac{1}{2}\right)\,\mathbf{a}_1+\left(x_7+\frac{1}{2}\right)\,\mathbf{a}_2-x_7\,\mathbf{a}_3 & = & a\left(z_7+\frac{1}{2}\right)\,\hat{\mathbf{x}}+a\left(x_7+\frac{1}{2}\right)\,\hat{\mathbf{y}}-ax_7\,\hat{\mathbf{z}} & (24k) & \text{O V}\\
\mathbf{B_{110}} & = & \left(z_7+\frac{1}{2}\right)\,\mathbf{a}_1-x_7\,\mathbf{a}_2+\left(x_7+\frac{1}{2}\right)\,\mathbf{a}_3 & = & a\left(z_7+\frac{1}{2}\right)\,\hat{\mathbf{x}}-ax_7\,\hat{\mathbf{y}}+a\left(x_7+\frac{1}{2}\right)\,\hat{\mathbf{z}} & (24k) & \text{O V}\\
\mathbf{B_{111}} & = & -z_7\,\mathbf{a}_1+\left(x_7+\frac{1}{2}\right)\,\mathbf{a}_2+\left(x_7+\frac{1}{2}\right)\,\mathbf{a}_3 & = & -az_7\,\hat{\mathbf{x}}+a\left(x_7+\frac{1}{2}\right)\,\hat{\mathbf{y}}+a\left(x_7+\frac{1}{2}\right)\,\hat{\mathbf{z}} & (24k) & \text{O V}\\
\mathbf{B_{112}} & = & -z_7\,\mathbf{a}_1-x_7\,\mathbf{a}_2-x_7\,\mathbf{a}_3 & = & -az_7\,\hat{\mathbf{x}}-ax_7\,\hat{\mathbf{y}}-ax_7\,\hat{\mathbf{z}} & (24k) & \text{O V}\\
\mathbf{B_{113}} & = & x_8\,\mathbf{a}_1+x_8\,\mathbf{a}_2+z_8\,\mathbf{a}_3 & = & ax_8\,\hat{\mathbf{x}}+ax_8\,\hat{\mathbf{y}}+az_8\,\hat{\mathbf{z}} & (24k) & \text{W I}\\
\mathbf{B_{114}} & = & -\left(x_8-\frac{1}{2}\right)\,\mathbf{a}_1-\left(x_8-\frac{1}{2}\right)\,\mathbf{a}_2+z_8\,\mathbf{a}_3 & = & -a\left(x_8-\frac{1}{2}\right)\,\hat{\mathbf{x}}-a\left(x_8-\frac{1}{2}\right)\,\hat{\mathbf{y}}+az_8\,\hat{\mathbf{z}} & (24k) & \text{W I}\\
\mathbf{B_{115}} & = & -\left(x_8-\frac{1}{2}\right)\,\mathbf{a}_1+x_8\,\mathbf{a}_2-\left(z_8-\frac{1}{2}\right)\,\mathbf{a}_3 & = & -a\left(x_8-\frac{1}{2}\right)\,\hat{\mathbf{x}}+ax_8\,\hat{\mathbf{y}}-a\left(z_8-\frac{1}{2}\right)\,\hat{\mathbf{z}} & (24k) & \text{W I}\\
\mathbf{B_{116}} & = & x_8\,\mathbf{a}_1-\left(x_8-\frac{1}{2}\right)\,\mathbf{a}_2-\left(z_8-\frac{1}{2}\right)\,\mathbf{a}_3 & = & ax_8\,\hat{\mathbf{x}}-a\left(x_8-\frac{1}{2}\right)\,\hat{\mathbf{y}}-a\left(z_8-\frac{1}{2}\right)\,\hat{\mathbf{z}} & (24k) & \text{W I}\\
\mathbf{B_{117}} & = & z_8\,\mathbf{a}_1+x_8\,\mathbf{a}_2+x_8\,\mathbf{a}_3 & = & az_8\,\hat{\mathbf{x}}+ax_8\,\hat{\mathbf{y}}+ax_8\,\hat{\mathbf{z}} & (24k) & \text{W I}\\
\mathbf{B_{118}} & = & z_8\,\mathbf{a}_1-\left(x_8-\frac{1}{2}\right)\,\mathbf{a}_2-\left(x_8-\frac{1}{2}\right)\,\mathbf{a}_3 & = & az_8\,\hat{\mathbf{x}}-a\left(x_8-\frac{1}{2}\right)\,\hat{\mathbf{y}}-a\left(x_8-\frac{1}{2}\right)\,\hat{\mathbf{z}} & (24k) & \text{W I}
\end{array}
$$

$$\mathbf{B_{119}} = -\left(z_8-\tfrac{1}{2}\right)\mathbf{a}_1-\left(x_8-\tfrac{1}{2}\right)\mathbf{a}_2+x_8\,\mathbf{a}_3 = -a\left(z_8-\tfrac{1}{2}\right)\hat{\mathbf{x}}-a\left(x_8-\tfrac{1}{2}\right)\hat{\mathbf{y}}+ax_8\,\hat{\mathbf{z}} \quad (24k) \quad \text{W I}$$

$$\mathbf{B_{120}} = -\left(z_8-\tfrac{1}{2}\right)\mathbf{a}_1+x_8\,\mathbf{a}_2-\left(x_8-\tfrac{1}{2}\right)\mathbf{a}_3 = -a\left(z_8-\tfrac{1}{2}\right)\hat{\mathbf{x}}+ax_8\,\hat{\mathbf{y}}-a\left(x_8-\tfrac{1}{2}\right)\hat{\mathbf{z}} \quad (24k) \quad \text{W I}$$

$$\mathbf{B_{121}} = x_8\,\mathbf{a}_1+z_8\,\mathbf{a}_2+x_8\,\mathbf{a}_3 = ax_8\,\hat{\mathbf{x}}+az_8\,\hat{\mathbf{y}}+ax_8\,\hat{\mathbf{z}} \quad (24k) \quad \text{W I}$$

$$\mathbf{B_{122}} = -\left(x_8-\tfrac{1}{2}\right)\mathbf{a}_1+z_8\,\mathbf{a}_2-\left(x_8-\tfrac{1}{2}\right)\mathbf{a}_3 = -a\left(x_8-\tfrac{1}{2}\right)\hat{\mathbf{x}}+az_8\,\hat{\mathbf{y}}-a\left(x_8-\tfrac{1}{2}\right)\hat{\mathbf{z}} \quad (24k) \quad \text{W I}$$

$$\mathbf{B_{123}} = x_8\,\mathbf{a}_1-\left(z_8-\tfrac{1}{2}\right)\mathbf{a}_2-\left(x_8-\tfrac{1}{2}\right)\mathbf{a}_3 = ax_8\,\hat{\mathbf{x}}-a\left(z_8-\tfrac{1}{2}\right)\hat{\mathbf{y}}-a\left(x_8-\tfrac{1}{2}\right)\hat{\mathbf{z}} \quad (24k) \quad \text{W I}$$

$$\mathbf{B_{124}} = -\left(x_8-\tfrac{1}{2}\right)\mathbf{a}_1-\left(z_8-\tfrac{1}{2}\right)\mathbf{a}_2+x_8\,\mathbf{a}_3 = -a\left(x_8-\tfrac{1}{2}\right)\hat{\mathbf{x}}-a\left(z_8-\tfrac{1}{2}\right)\hat{\mathbf{y}}+ax_8\,\hat{\mathbf{z}} \quad (24k) \quad \text{W I}$$

$$\mathbf{B_{125}} = \left(x_8+\tfrac{1}{2}\right)\mathbf{a}_1+\left(x_8+\tfrac{1}{2}\right)\mathbf{a}_2-z_8\,\mathbf{a}_3 = a\left(x_8+\tfrac{1}{2}\right)\hat{\mathbf{x}}+a\left(x_8+\tfrac{1}{2}\right)\hat{\mathbf{y}}-az_8\,\hat{\mathbf{z}} \quad (24k) \quad \text{W I}$$

$$\mathbf{B_{126}} = -x_8\,\mathbf{a}_1-x_8\,\mathbf{a}_2-z_8\,\mathbf{a}_3 = -ax_8\,\hat{\mathbf{x}}-ax_8\,\hat{\mathbf{y}}-az_8\,\hat{\mathbf{z}} \quad (24k) \quad \text{W I}$$

$$\mathbf{B_{127}} = \left(x_8+\tfrac{1}{2}\right)\mathbf{a}_1-x_8\,\mathbf{a}_2+\left(z_8+\tfrac{1}{2}\right)\mathbf{a}_3 = a\left(x_8+\tfrac{1}{2}\right)\hat{\mathbf{x}}-ax_8\,\hat{\mathbf{y}}+a\left(z_8+\tfrac{1}{2}\right)\hat{\mathbf{z}} \quad (24k) \quad \text{W I}$$

$$\mathbf{B_{128}} = -x_8\,\mathbf{a}_1+\left(x_8+\tfrac{1}{2}\right)\mathbf{a}_2+\left(z_8+\tfrac{1}{2}\right)\mathbf{a}_3 = -ax_8\,\hat{\mathbf{x}}+a\left(x_8+\tfrac{1}{2}\right)\hat{\mathbf{y}}+a\left(z_8+\tfrac{1}{2}\right)\hat{\mathbf{z}} \quad (24k) \quad \text{W I}$$

$$\mathbf{B_{129}} = \left(x_8+\tfrac{1}{2}\right)\mathbf{a}_1+\left(z_8+\tfrac{1}{2}\right)\mathbf{a}_2-x_8\,\mathbf{a}_3 = a\left(x_8+\tfrac{1}{2}\right)\hat{\mathbf{x}}+a\left(z_8+\tfrac{1}{2}\right)\hat{\mathbf{y}}-ax_8\,\hat{\mathbf{z}} \quad (24k) \quad \text{W I}$$

$$\mathbf{B_{130}} = -x_8\,\mathbf{a}_1+\left(z_8+\tfrac{1}{2}\right)\mathbf{a}_2+\left(x_8+\tfrac{1}{2}\right)\mathbf{a}_3 = -ax_8\,\hat{\mathbf{x}}+a\left(z_8+\tfrac{1}{2}\right)\hat{\mathbf{y}}+a\left(x_8+\tfrac{1}{2}\right)\hat{\mathbf{z}} \quad (24k) \quad \text{W I}$$

$$\mathbf{B_{131}} = -x_8\,\mathbf{a}_1-z_8\,\mathbf{a}_2-x_8\,\mathbf{a}_3 = -ax_8\,\hat{\mathbf{x}}-az_8\,\hat{\mathbf{y}}-ax_8\,\hat{\mathbf{z}} \quad (24k) \quad \text{W I}$$

$$\mathbf{B_{132}} = \left(x_8+\tfrac{1}{2}\right)\mathbf{a}_1-z_8\,\mathbf{a}_2+\left(x_8+\tfrac{1}{2}\right)\mathbf{a}_3 = a\left(x_8+\tfrac{1}{2}\right)\hat{\mathbf{x}}-az_8\,\hat{\mathbf{y}}+a\left(x_8+\tfrac{1}{2}\right)\hat{\mathbf{z}} \quad (24k) \quad \text{W I}$$

$$\mathbf{B_{133}} = \left(z_8+\tfrac{1}{2}\right)\mathbf{a}_1+\left(x_8+\tfrac{1}{2}\right)\mathbf{a}_2-x_8\,\mathbf{a}_3 = a\left(z_8+\tfrac{1}{2}\right)\hat{\mathbf{x}}+a\left(x_8+\tfrac{1}{2}\right)\hat{\mathbf{y}}-ax_8\,\hat{\mathbf{z}} \quad (24k) \quad \text{W I}$$

$$\mathbf{B_{134}} = \left(z_8+\tfrac{1}{2}\right)\mathbf{a}_1-x_8\,\mathbf{a}_2+\left(x_8+\tfrac{1}{2}\right)\mathbf{a}_3 = a\left(z_8+\tfrac{1}{2}\right)\hat{\mathbf{x}}-ax_8\,\hat{\mathbf{y}}+a\left(x_8+\tfrac{1}{2}\right)\hat{\mathbf{z}} \quad (24k) \quad \text{W I}$$

$$\mathbf{B_{135}} = -z_8\,\mathbf{a}_1+\left(x_8+\tfrac{1}{2}\right)\mathbf{a}_2+\left(x_8+\tfrac{1}{2}\right)\mathbf{a}_3 = -az_8\,\hat{\mathbf{x}}+a\left(x_8+\tfrac{1}{2}\right)\hat{\mathbf{y}}+a\left(x_8+\tfrac{1}{2}\right)\hat{\mathbf{z}} \quad (24k) \quad \text{W I}$$

$$\mathbf{B_{136}} = -z_8\,\mathbf{a}_1-x_8\,\mathbf{a}_2-x_8\,\mathbf{a}_3 = -az_8\,\hat{\mathbf{x}}-ax_8\,\hat{\mathbf{y}}-ax_8\,\hat{\mathbf{z}} \quad (24k) \quad \text{W I}$$

$$\mathbf{B_{137}} = x_9\,\mathbf{a}_1+y_9\,\mathbf{a}_2+z_9\,\mathbf{a}_3 = ax_9\,\hat{\mathbf{x}}+ay_9\,\hat{\mathbf{y}}+az_9\,\hat{\mathbf{z}} \quad (48l) \quad \text{H II}$$

$$\mathbf{B_{138}} = -\left(x_9-\tfrac{1}{2}\right)\mathbf{a}_1-\left(y_9-\tfrac{1}{2}\right)\mathbf{a}_2+z_9\,\mathbf{a}_3 = -a\left(x_9-\tfrac{1}{2}\right)\hat{\mathbf{x}}-a\left(y_9-\tfrac{1}{2}\right)\hat{\mathbf{y}}+az_9\,\hat{\mathbf{z}} \quad (48l) \quad \text{H II}$$

$$\mathbf{B_{139}} = -\left(x_9-\tfrac{1}{2}\right)\mathbf{a}_1+y_9\,\mathbf{a}_2-\left(z_9-\tfrac{1}{2}\right)\mathbf{a}_3 = -a\left(x_9-\tfrac{1}{2}\right)\hat{\mathbf{x}}+ay_9\,\hat{\mathbf{y}}-a\left(z_9-\tfrac{1}{2}\right)\hat{\mathbf{z}} \quad (48l) \quad \text{H II}$$

$$\mathbf{B_{140}} = x_9\,\mathbf{a}_1-\left(y_9-\tfrac{1}{2}\right)\mathbf{a}_2-\left(z_9-\tfrac{1}{2}\right)\mathbf{a}_3 = ax_9\,\hat{\mathbf{x}}-a\left(y_9-\tfrac{1}{2}\right)\hat{\mathbf{y}}-a\left(z_9-\tfrac{1}{2}\right)\hat{\mathbf{z}} \quad (48l) \quad \text{H II}$$

$$\mathbf{B_{141}} = z_9\,\mathbf{a}_1+x_9\,\mathbf{a}_2+y_9\,\mathbf{a}_3 = az_9\,\hat{\mathbf{x}}+ax_9\,\hat{\mathbf{y}}+ay_9\,\hat{\mathbf{z}} \quad (48l) \quad \text{H II}$$

$$\mathbf{B_{142}} = z_9\,\mathbf{a}_1-\left(x_9-\tfrac{1}{2}\right)\mathbf{a}_2-\left(y_9-\tfrac{1}{2}\right)\mathbf{a}_3 = az_9\,\hat{\mathbf{x}}-a\left(x_9-\tfrac{1}{2}\right)\hat{\mathbf{y}}-a\left(y_9-\tfrac{1}{2}\right)\hat{\mathbf{z}} \quad (48l) \quad \text{H II}$$

$$\mathbf{B_{143}} = -\left(z_9-\tfrac{1}{2}\right)\mathbf{a}_1-\left(x_9-\tfrac{1}{2}\right)\mathbf{a}_2+y_9\,\mathbf{a}_3 = -a\left(z_9-\tfrac{1}{2}\right)\hat{\mathbf{x}}-a\left(x_9-\tfrac{1}{2}\right)\hat{\mathbf{y}}+ay_9\,\hat{\mathbf{z}} \quad (48l) \quad \text{H II}$$

$$\mathbf{B_{144}} = -\left(z_9-\tfrac{1}{2}\right)\mathbf{a}_1+x_9\,\mathbf{a}_2-\left(y_9-\tfrac{1}{2}\right)\mathbf{a}_3 = -a\left(z_9-\tfrac{1}{2}\right)\hat{\mathbf{x}}+ax_9\,\hat{\mathbf{y}}-a\left(y_9-\tfrac{1}{2}\right)\hat{\mathbf{z}} \quad (48l) \quad \text{H II}$$

$$\mathbf{B_{145}} = y_9\,\mathbf{a}_1+z_9\,\mathbf{a}_2+x_9\,\mathbf{a}_3 = ay_9\,\hat{\mathbf{x}}+az_9\,\hat{\mathbf{y}}+ax_9\,\hat{\mathbf{z}} \quad (48l) \quad \text{H II}$$

$$\mathbf{B_{146}} = -\left(y_9-\tfrac{1}{2}\right)\mathbf{a}_1+z_9\,\mathbf{a}_2-\left(x_9-\tfrac{1}{2}\right)\mathbf{a}_3 = -a\left(y_9-\tfrac{1}{2}\right)\hat{\mathbf{x}}+az_9\,\hat{\mathbf{y}}-a\left(x_9-\tfrac{1}{2}\right)\hat{\mathbf{z}} \quad (48l) \quad \text{H II}$$

$$\mathbf{B_{147}} = y_9\,\mathbf{a}_1-\left(z_9-\tfrac{1}{2}\right)\mathbf{a}_2-\left(x_9-\tfrac{1}{2}\right)\mathbf{a}_3 = ay_9\,\hat{\mathbf{x}}-a\left(z_9-\tfrac{1}{2}\right)\hat{\mathbf{y}}-a\left(x_9-\tfrac{1}{2}\right)\hat{\mathbf{z}} \quad (48l) \quad \text{H II}$$

$$\mathbf{B_{148}} = -\left(y_9-\tfrac{1}{2}\right)\mathbf{a}_1-\left(z_9-\tfrac{1}{2}\right)\mathbf{a}_2+x_9\,\mathbf{a}_3 = -a\left(y_9-\tfrac{1}{2}\right)\hat{\mathbf{x}}-a\left(z_9-\tfrac{1}{2}\right)\hat{\mathbf{y}}+ax_9\,\hat{\mathbf{z}} \quad (48l) \quad \text{H II}$$

$$\mathbf{B_{149}} = \left(y_9+\tfrac{1}{2}\right)\mathbf{a}_1+\left(x_9+\tfrac{1}{2}\right)\mathbf{a}_2-z_9\,\mathbf{a}_3 = a\left(y_9+\tfrac{1}{2}\right)\hat{\mathbf{x}}+a\left(x_9+\tfrac{1}{2}\right)\hat{\mathbf{y}}-az_9\,\hat{\mathbf{z}} \quad (48l) \quad \text{H II}$$

$$\mathbf{B_{150}} = -y_9\,\mathbf{a}_1 - x_9\,\mathbf{a}_2 - z_9\,\mathbf{a}_3 = -ay_9\,\hat{\mathbf{x}} - ax_9\,\hat{\mathbf{y}} - az_9\,\hat{\mathbf{z}} \quad (48l) \quad \text{H II}$$

$$\mathbf{B_{151}} = \left(y_9+\tfrac{1}{2}\right)\mathbf{a}_1 - x_9\,\mathbf{a}_2 + \left(z_9+\tfrac{1}{2}\right)\mathbf{a}_3 = a\left(y_9+\tfrac{1}{2}\right)\hat{\mathbf{x}} - ax_9\,\hat{\mathbf{y}} + a\left(z_9+\tfrac{1}{2}\right)\hat{\mathbf{z}} \quad (48l) \quad \text{H II}$$

$$\mathbf{B_{152}} = -y_9\,\mathbf{a}_1 + \left(x_9+\tfrac{1}{2}\right)\mathbf{a}_2 + \left(z_9+\tfrac{1}{2}\right)\mathbf{a}_3 = -ay_9\,\hat{\mathbf{x}} + a\left(x_9+\tfrac{1}{2}\right)\hat{\mathbf{y}} + a\left(z_9+\tfrac{1}{2}\right)\hat{\mathbf{z}} \quad (48l) \quad \text{H II}$$

$$\mathbf{B_{153}} = \left(x_9+\tfrac{1}{2}\right)\mathbf{a}_1 + \left(z_9+\tfrac{1}{2}\right)\mathbf{a}_2 - y_9\,\mathbf{a}_3 = a\left(x_9+\tfrac{1}{2}\right)\hat{\mathbf{x}} + a\left(z_9+\tfrac{1}{2}\right)\hat{\mathbf{y}} - ay_9\,\hat{\mathbf{z}} \quad (48l) \quad \text{H II}$$

$$\mathbf{B_{154}} = -x_9\,\mathbf{a}_1 + \left(z_9+\tfrac{1}{2}\right)\mathbf{a}_2 + \left(y_9+\tfrac{1}{2}\right)\mathbf{a}_3 = -ax_9\,\hat{\mathbf{x}} + a\left(z_9+\tfrac{1}{2}\right)\hat{\mathbf{y}} + a\left(y_9+\tfrac{1}{2}\right)\hat{\mathbf{z}} \quad (48l) \quad \text{H II}$$

$$\mathbf{B_{155}} = -x_9\,\mathbf{a}_1 - z_9\,\mathbf{a}_2 - y_9\,\mathbf{a}_3 = -ax_9\,\hat{\mathbf{x}} - az_9\,\hat{\mathbf{y}} - ay_9\,\hat{\mathbf{z}} \quad (48l) \quad \text{H II}$$

$$\mathbf{B_{156}} = \left(x_9+\tfrac{1}{2}\right)\mathbf{a}_1 - z_9\,\mathbf{a}_2 + \left(y_9+\tfrac{1}{2}\right)\mathbf{a}_3 = a\left(x_9+\tfrac{1}{2}\right)\hat{\mathbf{x}} - az_9\,\hat{\mathbf{y}} + a\left(y_9+\tfrac{1}{2}\right)\hat{\mathbf{z}} \quad (48l) \quad \text{H II}$$

$$\mathbf{B_{157}} = \left(z_9+\tfrac{1}{2}\right)\mathbf{a}_1 + \left(y_9+\tfrac{1}{2}\right)\mathbf{a}_2 - x_9\,\mathbf{a}_3 = a\left(z_9+\tfrac{1}{2}\right)\hat{\mathbf{x}} + a\left(y_9+\tfrac{1}{2}\right)\hat{\mathbf{y}} - ax_9\,\hat{\mathbf{z}} \quad (48l) \quad \text{H II}$$

$$\mathbf{B_{158}} = \left(z_9+\tfrac{1}{2}\right)\mathbf{a}_1 - y_9\,\mathbf{a}_2 + \left(x_9+\tfrac{1}{2}\right)\mathbf{a}_3 = a\left(z_9+\tfrac{1}{2}\right)\hat{\mathbf{x}} - ay_9\,\hat{\mathbf{y}} + a\left(x_9+\tfrac{1}{2}\right)\hat{\mathbf{z}} \quad (48l) \quad \text{H II}$$

$$\mathbf{B_{159}} = -z_9\,\mathbf{a}_1 + \left(y_9+\tfrac{1}{2}\right)\mathbf{a}_2 + \left(x_9+\tfrac{1}{2}\right)\mathbf{a}_3 = -az_9\,\hat{\mathbf{x}} + a\left(y_9+\tfrac{1}{2}\right)\hat{\mathbf{y}} + a\left(x_9+\tfrac{1}{2}\right)\hat{\mathbf{z}} \quad (48l) \quad \text{H II}$$

$$\mathbf{B_{160}} = -z_9\,\mathbf{a}_1 - y_9\,\mathbf{a}_2 - x_9\,\mathbf{a}_3 = -az_9\,\hat{\mathbf{x}} - ay_9\,\hat{\mathbf{y}} - ax_9\,\hat{\mathbf{z}} \quad (48l) \quad \text{H II}$$

$$\mathbf{B_{161}} = -x_9\,\mathbf{a}_1 - y_9\,\mathbf{a}_2 - z_9\,\mathbf{a}_3 = -ax_9\,\hat{\mathbf{x}} - ay_9\,\hat{\mathbf{y}} - az_9\,\hat{\mathbf{z}} \quad (48l) \quad \text{H II}$$

$$\mathbf{B_{162}} = \left(x_9+\tfrac{1}{2}\right)\mathbf{a}_1 + \left(y_9+\tfrac{1}{2}\right)\mathbf{a}_2 - z_9\,\mathbf{a}_3 = a\left(x_9+\tfrac{1}{2}\right)\hat{\mathbf{x}} + a\left(y_9+\tfrac{1}{2}\right)\hat{\mathbf{y}} - az_9\,\hat{\mathbf{z}} \quad (48l) \quad \text{H II}$$

$$\mathbf{B_{163}} = \left(x_9+\tfrac{1}{2}\right)\mathbf{a}_1 - y_9\,\mathbf{a}_2 + \left(z_9+\tfrac{1}{2}\right)\mathbf{a}_3 = a\left(x_9+\tfrac{1}{2}\right)\hat{\mathbf{x}} - ay_9\,\hat{\mathbf{y}} + a\left(z_9+\tfrac{1}{2}\right)\hat{\mathbf{z}} \quad (48l) \quad \text{H II}$$

$$\mathbf{B_{164}} = -x_9\,\mathbf{a}_1 + \left(y_9+\tfrac{1}{2}\right)\mathbf{a}_2 + \left(z_9+\tfrac{1}{2}\right)\mathbf{a}_3 = -ax_9\,\hat{\mathbf{x}} + a\left(y_9+\tfrac{1}{2}\right)\hat{\mathbf{y}} + a\left(z_9+\tfrac{1}{2}\right)\hat{\mathbf{z}} \quad (48l) \quad \text{H II}$$

$$\mathbf{B_{165}} = -z_9\,\mathbf{a}_1 - x_9\,\mathbf{a}_2 - y_9\,\mathbf{a}_3 = -az_9\,\hat{\mathbf{x}} - ax_9\,\hat{\mathbf{y}} - ay_9\,\hat{\mathbf{z}} \quad (48l) \quad \text{H II}$$

$$\mathbf{B_{166}} = -z_9\,\mathbf{a}_1 + \left(x_9+\tfrac{1}{2}\right)\mathbf{a}_2 + \left(y_9+\tfrac{1}{2}\right)\mathbf{a}_3 = -az_9\,\hat{\mathbf{x}} + a\left(x_9+\tfrac{1}{2}\right)\hat{\mathbf{y}} + a\left(y_9+\tfrac{1}{2}\right)\hat{\mathbf{z}} \quad (48l) \quad \text{H II}$$

$$\mathbf{B_{167}} = \left(z_9+\tfrac{1}{2}\right)\mathbf{a}_1 + \left(x_9+\tfrac{1}{2}\right)\mathbf{a}_2 - y_9\,\mathbf{a}_3 = a\left(z_9+\tfrac{1}{2}\right)\hat{\mathbf{x}} + a\left(x_9+\tfrac{1}{2}\right)\hat{\mathbf{y}} - ay_9\,\hat{\mathbf{z}} \quad (48l) \quad \text{H II}$$

$$\mathbf{B_{168}} = \left(z_9+\tfrac{1}{2}\right)\mathbf{a}_1 - x_9\,\mathbf{a}_2 + \left(y_9+\tfrac{1}{2}\right)\mathbf{a}_3 = a\left(z_9+\tfrac{1}{2}\right)\hat{\mathbf{x}} - ax_9\,\hat{\mathbf{y}} + a\left(y_9+\tfrac{1}{2}\right)\hat{\mathbf{z}} \quad (48l) \quad \text{H II}$$

$$\mathbf{B_{169}} = -y_9\,\mathbf{a}_1 - z_9\,\mathbf{a}_2 - x_9\,\mathbf{a}_3 = -ay_9\,\hat{\mathbf{x}} - az_9\,\hat{\mathbf{y}} - ax_9\,\hat{\mathbf{z}} \quad (48l) \quad \text{H II}$$

$$\mathbf{B_{170}} = \left(y_9+\tfrac{1}{2}\right)\mathbf{a}_1 - z_9\,\mathbf{a}_2 + \left(x_9+\tfrac{1}{2}\right)\mathbf{a}_3 = a\left(y_9+\tfrac{1}{2}\right)\hat{\mathbf{x}} - az_9\,\hat{\mathbf{y}} + a\left(x_9+\tfrac{1}{2}\right)\hat{\mathbf{z}} \quad (48l) \quad \text{H II}$$

$$\mathbf{B_{171}} = -y_9\,\mathbf{a}_1 + \left(z_9+\tfrac{1}{2}\right)\mathbf{a}_2 + \left(x_9+\tfrac{1}{2}\right)\mathbf{a}_3 = -ay_9\,\hat{\mathbf{x}} + a\left(z_9+\tfrac{1}{2}\right)\hat{\mathbf{y}} + a\left(x_9+\tfrac{1}{2}\right)\hat{\mathbf{z}} \quad (48l) \quad \text{H II}$$

$$\mathbf{B_{172}} = \left(y_9+\tfrac{1}{2}\right)\mathbf{a}_1 + \left(z_9+\tfrac{1}{2}\right)\mathbf{a}_2 - x_9\,\mathbf{a}_3 = a\left(y_9+\tfrac{1}{2}\right)\hat{\mathbf{x}} + a\left(z_9+\tfrac{1}{2}\right)\hat{\mathbf{y}} - ax_9\,\hat{\mathbf{z}} \quad (48l) \quad \text{H II}$$

$$\mathbf{B_{173}} = -\left(y_9-\tfrac{1}{2}\right)\mathbf{a}_1 - \left(x_9-\tfrac{1}{2}\right)\mathbf{a}_2 + z_9\,\mathbf{a}_3 = -a\left(y_9-\tfrac{1}{2}\right)\hat{\mathbf{x}} - a\left(x_9-\tfrac{1}{2}\right)\hat{\mathbf{y}} + az_9\,\hat{\mathbf{z}} \quad (48l) \quad \text{H II}$$

$$\mathbf{B_{174}} = y_9\,\mathbf{a}_1 + x_9\,\mathbf{a}_2 + z_9\,\mathbf{a}_3 = ay_9\,\hat{\mathbf{x}} + ax_9\,\hat{\mathbf{y}} + az_9\,\hat{\mathbf{z}} \quad (48l) \quad \text{H II}$$

$$\mathbf{B_{175}} = -\left(y_9-\tfrac{1}{2}\right)\mathbf{a}_1 + x_9\,\mathbf{a}_2 - \left(z_9-\tfrac{1}{2}\right)\mathbf{a}_3 = -a\left(y_9-\tfrac{1}{2}\right)\hat{\mathbf{x}} + ax_9\,\hat{\mathbf{y}} - a\left(z_9-\tfrac{1}{2}\right)\hat{\mathbf{z}} \quad (48l) \quad \text{H II}$$

$$\mathbf{B_{176}} = y_9\,\mathbf{a}_1 - \left(x_9-\tfrac{1}{2}\right)\mathbf{a}_2 - \left(z_9-\tfrac{1}{2}\right)\mathbf{a}_3 = ay_9\,\hat{\mathbf{x}} - a\left(x_9-\tfrac{1}{2}\right)\hat{\mathbf{y}} - a\left(z_9-\tfrac{1}{2}\right)\hat{\mathbf{z}} \quad (48l) \quad \text{H II}$$

$$\mathbf{B_{177}} = -\left(x_9-\tfrac{1}{2}\right)\mathbf{a}_1 - \left(z_9-\tfrac{1}{2}\right)\mathbf{a}_2 + y_9\,\mathbf{a}_3 = -a\left(x_9-\tfrac{1}{2}\right)\hat{\mathbf{x}} - a\left(z_9-\tfrac{1}{2}\right)\hat{\mathbf{y}} + ay_9\,\hat{\mathbf{z}} \quad (48l) \quad \text{H II}$$

$$\mathbf{B_{178}} = x_9\,\mathbf{a}_1 - \left(z_9-\tfrac{1}{2}\right)\mathbf{a}_2 - \left(y_9-\tfrac{1}{2}\right)\mathbf{a}_3 = ax_9\,\hat{\mathbf{x}} - a\left(z_9-\tfrac{1}{2}\right)\hat{\mathbf{y}} - a\left(y_9-\tfrac{1}{2}\right)\hat{\mathbf{z}} \quad (48l) \quad \text{H II}$$

$$\mathbf{B_{179}} = x_9\,\mathbf{a}_1 + z_9\,\mathbf{a}_2 + y_9\,\mathbf{a}_3 = ax_9\,\hat{\mathbf{x}} + az_9\,\hat{\mathbf{y}} + ay_9\,\hat{\mathbf{z}} \quad (48l) \quad \text{H II}$$

$$\mathbf{B_{180}} = -\left(x_9-\tfrac{1}{2}\right)\mathbf{a}_1 + z_9\,\mathbf{a}_2 - \left(y_9-\tfrac{1}{2}\right)\mathbf{a}_3 = -a\left(x_9-\tfrac{1}{2}\right)\hat{\mathbf{x}} + az_9\,\hat{\mathbf{y}} - a\left(y_9-\tfrac{1}{2}\right)\hat{\mathbf{z}} \quad (48l) \quad \text{H II}$$

$$\mathbf{B_{181}} = -\left(z_9-\tfrac{1}{2}\right)\mathbf{a}_1 - \left(y_9-\tfrac{1}{2}\right)\mathbf{a}_2 + x_9\,\mathbf{a}_3 = -a\left(z_9-\tfrac{1}{2}\right)\hat{\mathbf{x}} - a\left(y_9-\tfrac{1}{2}\right)\hat{\mathbf{y}} + ax_9\,\hat{\mathbf{z}} \quad (48l) \quad \text{H II}$$

$\mathbf{B_{182}} =$	$-\left(z_9 - \frac{1}{2}\right)\,\mathbf{a}_1 + y_9\,\mathbf{a}_2 - \left(x_9 - \frac{1}{2}\right)\,\mathbf{a}_3$	$=$	$-a\left(z_9 - \frac{1}{2}\right)\,\hat{\mathbf{x}} + a y_9\,\hat{\mathbf{y}} - a\left(x_9 - \frac{1}{2}\right)\,\hat{\mathbf{z}}$	(48l)	H II
$\mathbf{B_{183}} =$	$z_9\,\mathbf{a}_1 - \left(y_9 - \frac{1}{2}\right)\,\mathbf{a}_2 - \left(x_9 - \frac{1}{2}\right)\,\mathbf{a}_3$	$=$	$a z_9\,\hat{\mathbf{x}} - a\left(y_9 - \frac{1}{2}\right)\,\hat{\mathbf{y}} - a\left(x_9 - \frac{1}{2}\right)\,\hat{\mathbf{z}}$	(48l)	H II
$\mathbf{B_{184}} =$	$z_9\,\mathbf{a}_1 + y_9\,\mathbf{a}_2 + x_9\,\mathbf{a}_3$	$=$	$a z_9\,\hat{\mathbf{x}} + a y_9\,\hat{\mathbf{y}} + a x_9\,\hat{\mathbf{z}}$	(48l)	H II

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