12-phosphotungstic acid [$H_3PW_{12}O_{40}\cdot 5H_2O$] ($H4_{16}$) Structure: A5B40CD12_cP116_224_bd_e3k_a_k-001

This structure originally had the label `A5B40CD12_cP116_224_cd_e3k_a_k`. Calls to that address will be redirected here.

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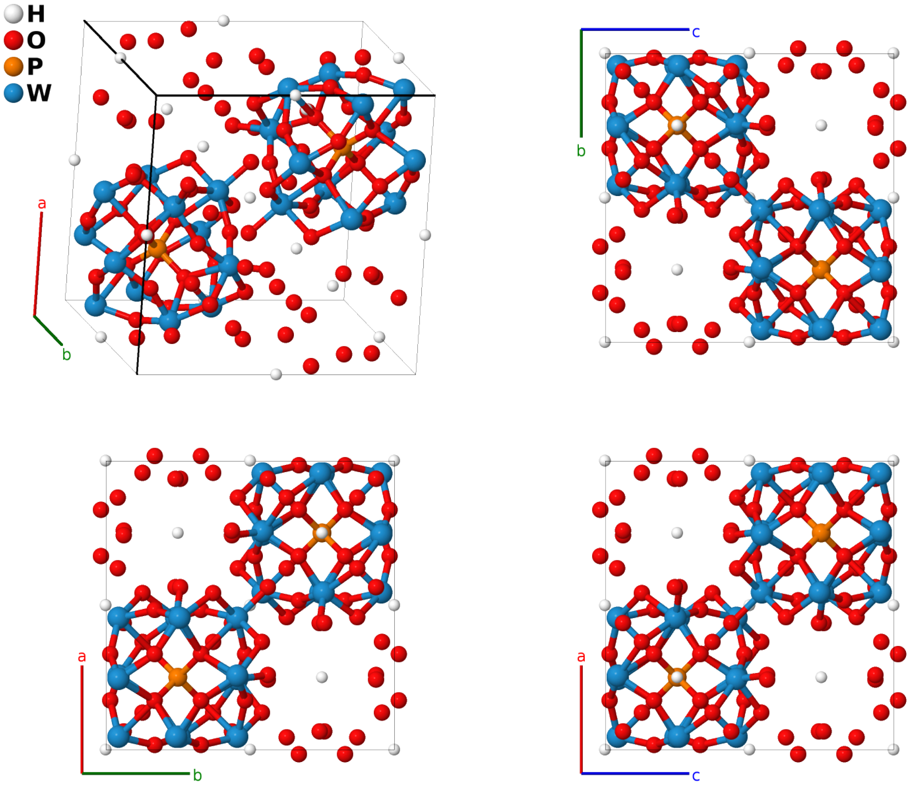
https://aflow.org/p/E8XB

https://aflow.org/p/A5B40CD12_cP116_224_bd_e3k_a_k-001



Prototype	$(H_2O)_5O_{40}PW_{12}$
AFLOW prototype label	A5B40CD12_cP116_224_bd_e3k_a_k-001
***Strukturbericht* designation**	$H4_{16}$
Mineral name	12-phosphotungstic acid
ICSD	31897
Pearson symbol	cP116
Space group number	224
Space group symbol	$Pn\bar{3}m$
AFLOW prototype command	`aflow --proto=A5B40CD12_cP116_224_bd_e3k_a_k-001` `--params=`$a, x_4, x_5, z_5, x_6, z_6, x_7, z_7, x_8, z_8$

- This structure is a bit problematic. (Brown, 1977) offers evidence that the true structure of the hydrated phosphotungstic acid is $H_3PW_{12}O_{40} \cdot 6H_2O$, rather than $5H_2O$ as deduced by (Keggin, 1934). The presence of the extra water molecule does change the structure somewhat, and Keggin does not give the positions of the hydrogen atoms not attached to water molecules. Ordinarily we would mark this structure obsolete, but it is possible to remove water molecules from this structure and still have a molecule that is recognizably related to the acid, as in $H_3PW_{12}O_{40} \cdot 3H_2O$. In addition, the lattice constant reported by Keggin is 12.141Å compared to Brown's 12.506Å, a change consistent with the loss of a water molecule. Given this, we will not depreciate this five Water molecule structure.

- (Gottfried, 1937) does not give the positions of the water molecules, and they reverse the x and z coordinates for O-IV and W.

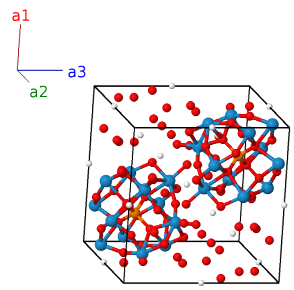
- This structure is a partially dehydrated form of $H_3PW_{12}O_{40} \cdot 29H_2O$ ($H4_{21}$). Further dehydration produces the $H_3PW_{12}O_{40} \cdot 3H_2O$ structure.

- The positions of the three hydrogen atoms are unknown. If we follow (Marosi, 2000), then the 'free' hydrogens are likely to be bound to some of the water molecules, giving the unusual stoichiometry in the prototype.

- The ICSD entry for (Keggin, 1934) does not list the positions of the water molecules.

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
$\mathbf{B_3}$	=	0	=	0	(4b)	H I
$\mathbf{B_4}$	=	$\frac{1}{2}\,\mathbf{a}_1 + \frac{1}{2}\,\mathbf{a}_2$	=	$\frac{1}{2}a\,\hat{\mathbf{x}} + \frac{1}{2}a\,\hat{\mathbf{y}}$	(4b)	H I
$\mathbf{B_5}$	=	$\frac{1}{2}\,\mathbf{a}_1 + \frac{1}{2}\,\mathbf{a}_3$	=	$\frac{1}{2}a\,\hat{\mathbf{x}} + \frac{1}{2}a\,\hat{\mathbf{z}}$	(4b)	H I
$\mathbf{B_6}$	=	$\frac{1}{2}\,\mathbf{a}_2 + \frac{1}{2}\,\mathbf{a}_3$	=	$\frac{1}{2}a\,\hat{\mathbf{y}} + \frac{1}{2}a\,\hat{\mathbf{z}}$	(4b)	H I
$\mathbf{B_7}$	=	$\frac{1}{4}\,\mathbf{a}_1 + \frac{3}{4}\,\mathbf{a}_2 + \frac{3}{4}\,\mathbf{a}_3$	=	$\frac{1}{4}a\,\hat{\mathbf{x}} + \frac{3}{4}a\,\hat{\mathbf{y}} + \frac{3}{4}a\,\hat{\mathbf{z}}$	(6d)	H II
$\mathbf{B_8}$	=	$\frac{3}{4}\,\mathbf{a}_1 + \frac{1}{4}\,\mathbf{a}_2 + \frac{3}{4}\,\mathbf{a}_3$	=	$\frac{3}{4}a\,\hat{\mathbf{x}} + \frac{1}{4}a\,\hat{\mathbf{y}} + \frac{3}{4}a\,\hat{\mathbf{z}}$	(6d)	H II
$\mathbf{B_9}$	=	$\frac{3}{4}\,\mathbf{a}_1 + \frac{3}{4}\,\mathbf{a}_2 + \frac{1}{4}\,\mathbf{a}_3$	=	$\frac{3}{4}a\,\hat{\mathbf{x}} + \frac{3}{4}a\,\hat{\mathbf{y}} + \frac{1}{4}a\,\hat{\mathbf{z}}$	(6d)	H II
$\mathbf{B_{10}}$	=	$\frac{1}{4}\,\mathbf{a}_1 + \frac{3}{4}\,\mathbf{a}_2 + \frac{1}{4}\,\mathbf{a}_3$	=	$\frac{1}{4}a\,\hat{\mathbf{x}} + \frac{3}{4}a\,\hat{\mathbf{y}} + \frac{1}{4}a\,\hat{\mathbf{z}}$	(6d)	H II
$\mathbf{B_{11}}$	=	$\frac{3}{4}\,\mathbf{a}_1 + \frac{1}{4}\,\mathbf{a}_2 + \frac{1}{4}\,\mathbf{a}_3$	=	$\frac{3}{4}a\,\hat{\mathbf{x}} + \frac{1}{4}a\,\hat{\mathbf{y}} + \frac{1}{4}a\,\hat{\mathbf{z}}$	(6d)	H II
$\mathbf{B_{12}}$	=	$\frac{1}{4}\,\mathbf{a}_1 + \frac{1}{4}\,\mathbf{a}_2 + \frac{3}{4}\,\mathbf{a}_3$	=	$\frac{1}{4}a\,\hat{\mathbf{x}} + \frac{1}{4}a\,\hat{\mathbf{y}} + \frac{3}{4}a\,\hat{\mathbf{z}}$	(6d)	H II
$\mathbf{B_{13}}$	=	$x_4\,\mathbf{a}_1 + x_4\,\mathbf{a}_2 + x_4\,\mathbf{a}_3$	=	$ax_4\,\hat{\mathbf{x}} + ax_4\,\hat{\mathbf{y}} + ax_4\,\hat{\mathbf{z}}$	(8e)	O I
$\mathbf{B_{14}}$	=	$-\left(x_4 - \frac{1}{2}\right)\,\mathbf{a}_1 - \left(x_4 - \frac{1}{2}\right)\,\mathbf{a}_2 + x_4\,\mathbf{a}_3$	=	$-a\left(x_4 - \frac{1}{2}\right)\,\hat{\mathbf{x}} - a\left(x_4 - \frac{1}{2}\right)\,\hat{\mathbf{y}} + ax_4\,\hat{\mathbf{z}}$	(8e)	O I
$\mathbf{B_{15}}$	=	$-\left(x_4 - \frac{1}{2}\right)\,\mathbf{a}_1 + x_4\,\mathbf{a}_2 - \left(x_4 - \frac{1}{2}\right)\,\mathbf{a}_3$	=	$-a\left(x_4 - \frac{1}{2}\right)\,\hat{\mathbf{x}} + ax_4\,\hat{\mathbf{y}} - a\left(x_4 - \frac{1}{2}\right)\,\hat{\mathbf{z}}$	(8e)	O I

$\mathbf{B_{16}}$	=	$x_4\,\mathbf{a}_1-\left(x_4-\frac{1}{2}\right)\,\mathbf{a}_2-\left(x_4-\frac{1}{2}\right)\,\mathbf{a}_3$	=	$ax_4\,\hat{\mathbf{x}}-a\left(x_4-\frac{1}{2}\right)\,\hat{\mathbf{y}}-a\left(x_4-\frac{1}{2}\right)\,\hat{\mathbf{z}}$	(8e)	O I
$\mathbf{B_{17}}$	=	$\left(x_4+\frac{1}{2}\right)\,\mathbf{a}_1+\left(x_4+\frac{1}{2}\right)\,\mathbf{a}_2-x_4\,\mathbf{a}_3$	=	$a\left(x_4+\frac{1}{2}\right)\,\hat{\mathbf{x}}+a\left(x_4+\frac{1}{2}\right)\,\hat{\mathbf{y}}-ax_4\,\hat{\mathbf{z}}$	(8e)	O I
$\mathbf{B_{18}}$	=	$-x_4\,\mathbf{a}_1-x_4\,\mathbf{a}_2-x_4\,\mathbf{a}_3$	=	$-ax_4\,\hat{\mathbf{x}}-ax_4\,\hat{\mathbf{y}}-ax_4\,\hat{\mathbf{z}}$	(8e)	O I
$\mathbf{B_{19}}$	=	$\left(x_4+\frac{1}{2}\right)\,\mathbf{a}_1-x_4\,\mathbf{a}_2+\left(x_4+\frac{1}{2}\right)\,\mathbf{a}_3$	=	$a\left(x_4+\frac{1}{2}\right)\,\hat{\mathbf{x}}-ax_4\,\hat{\mathbf{y}}+a\left(x_4+\frac{1}{2}\right)\,\hat{\mathbf{z}}$	(8e)	O I
$\mathbf{B_{20}}$	=	$-x_4\,\mathbf{a}_1+\left(x_4+\frac{1}{2}\right)\,\mathbf{a}_2+\left(x_4+\frac{1}{2}\right)\,\mathbf{a}_3$	=	$-ax_4\,\hat{\mathbf{x}}+a\left(x_4+\frac{1}{2}\right)\,\hat{\mathbf{y}}+a\left(x_4+\frac{1}{2}\right)\,\hat{\mathbf{z}}$	(8e)	O I
$\mathbf{B_{21}}$	=	$x_5\,\mathbf{a}_1+x_5\,\mathbf{a}_2+z_5\,\mathbf{a}_3$	=	$ax_5\,\hat{\mathbf{x}}+ax_5\,\hat{\mathbf{y}}+az_5\,\hat{\mathbf{z}}$	(24k)	O II
$\mathbf{B_{22}}$	=	$-\left(x_5-\frac{1}{2}\right)\,\mathbf{a}_1-\left(x_5-\frac{1}{2}\right)\,\mathbf{a}_2+z_5\,\mathbf{a}_3$	=	$-a\left(x_5-\frac{1}{2}\right)\,\hat{\mathbf{x}}-a\left(x_5-\frac{1}{2}\right)\,\hat{\mathbf{y}}+az_5\,\hat{\mathbf{z}}$	(24k)	O II
$\mathbf{B_{23}}$	=	$-\left(x_5-\frac{1}{2}\right)\,\mathbf{a}_1+x_5\,\mathbf{a}_2-\left(z_5-\frac{1}{2}\right)\,\mathbf{a}_3$	=	$-a\left(x_5-\frac{1}{2}\right)\,\hat{\mathbf{x}}+ax_5\,\hat{\mathbf{y}}-a\left(z_5-\frac{1}{2}\right)\,\hat{\mathbf{z}}$	(24k)	O II
$\mathbf{B_{24}}$	=	$x_5\,\mathbf{a}_1-\left(x_5-\frac{1}{2}\right)\,\mathbf{a}_2-\left(z_5-\frac{1}{2}\right)\,\mathbf{a}_3$	=	$ax_5\,\hat{\mathbf{x}}-a\left(x_5-\frac{1}{2}\right)\,\hat{\mathbf{y}}-a\left(z_5-\frac{1}{2}\right)\,\hat{\mathbf{z}}$	(24k)	O II
$\mathbf{B_{25}}$	=	$z_5\,\mathbf{a}_1+x_5\,\mathbf{a}_2+x_5\,\mathbf{a}_3$	=	$az_5\,\hat{\mathbf{x}}+ax_5\,\hat{\mathbf{y}}+ax_5\,\hat{\mathbf{z}}$	(24k)	O II
$\mathbf{B_{26}}$	=	$z_5\,\mathbf{a}_1-\left(x_5-\frac{1}{2}\right)\,\mathbf{a}_2-\left(x_5-\frac{1}{2}\right)\,\mathbf{a}_3$	=	$az_5\,\hat{\mathbf{x}}-a\left(x_5-\frac{1}{2}\right)\,\hat{\mathbf{y}}-a\left(x_5-\frac{1}{2}\right)\,\hat{\mathbf{z}}$	(24k)	O II
$\mathbf{B_{27}}$	=	$-\left(z_5-\frac{1}{2}\right)\,\mathbf{a}_1-\left(x_5-\frac{1}{2}\right)\,\mathbf{a}_2+x_5\,\mathbf{a}_3$	=	$-a\left(z_5-\frac{1}{2}\right)\,\hat{\mathbf{x}}-a\left(x_5-\frac{1}{2}\right)\,\hat{\mathbf{y}}+ax_5\,\hat{\mathbf{z}}$	(24k)	O II
$\mathbf{B_{28}}$	=	$-\left(z_5-\frac{1}{2}\right)\,\mathbf{a}_1+x_5\,\mathbf{a}_2-\left(x_5-\frac{1}{2}\right)\,\mathbf{a}_3$	=	$-a\left(z_5-\frac{1}{2}\right)\,\hat{\mathbf{x}}+ax_5\,\hat{\mathbf{y}}-a\left(x_5-\frac{1}{2}\right)\,\hat{\mathbf{z}}$	(24k)	O II
$\mathbf{B_{29}}$	=	$x_5\,\mathbf{a}_1+z_5\,\mathbf{a}_2+x_5\,\mathbf{a}_3$	=	$ax_5\,\hat{\mathbf{x}}+az_5\,\hat{\mathbf{y}}+ax_5\,\hat{\mathbf{z}}$	(24k)	O II
$\mathbf{B_{30}}$	=	$-\left(x_5-\frac{1}{2}\right)\,\mathbf{a}_1+z_5\,\mathbf{a}_2-\left(x_5-\frac{1}{2}\right)\,\mathbf{a}_3$	=	$-a\left(x_5-\frac{1}{2}\right)\,\hat{\mathbf{x}}+az_5\,\hat{\mathbf{y}}-a\left(x_5-\frac{1}{2}\right)\,\hat{\mathbf{z}}$	(24k)	O II
$\mathbf{B_{31}}$	=	$x_5\,\mathbf{a}_1-\left(z_5-\frac{1}{2}\right)\,\mathbf{a}_2-\left(x_5-\frac{1}{2}\right)\,\mathbf{a}_3$	=	$ax_5\,\hat{\mathbf{x}}-a\left(z_5-\frac{1}{2}\right)\,\hat{\mathbf{y}}-a\left(x_5-\frac{1}{2}\right)\,\hat{\mathbf{z}}$	(24k)	O II
$\mathbf{B_{32}}$	=	$-\left(x_5-\frac{1}{2}\right)\,\mathbf{a}_1-\left(z_5-\frac{1}{2}\right)\,\mathbf{a}_2+x_5\,\mathbf{a}_3$	=	$-a\left(x_5-\frac{1}{2}\right)\,\hat{\mathbf{x}}-a\left(z_5-\frac{1}{2}\right)\,\hat{\mathbf{y}}+ax_5\,\hat{\mathbf{z}}$	(24k)	O II
$\mathbf{B_{33}}$	=	$\left(x_5+\frac{1}{2}\right)\,\mathbf{a}_1+\left(x_5+\frac{1}{2}\right)\,\mathbf{a}_2-z_5\,\mathbf{a}_3$	=	$a\left(x_5+\frac{1}{2}\right)\,\hat{\mathbf{x}}+a\left(x_5+\frac{1}{2}\right)\,\hat{\mathbf{y}}-az_5\,\hat{\mathbf{z}}$	(24k)	O II
$\mathbf{B_{34}}$	=	$-x_5\,\mathbf{a}_1-x_5\,\mathbf{a}_2-z_5\,\mathbf{a}_3$	=	$-ax_5\,\hat{\mathbf{x}}-ax_5\,\hat{\mathbf{y}}-az_5\,\hat{\mathbf{z}}$	(24k)	O II
$\mathbf{B_{35}}$	=	$\left(x_5+\frac{1}{2}\right)\,\mathbf{a}_1-x_5\,\mathbf{a}_2+\left(z_5+\frac{1}{2}\right)\,\mathbf{a}_3$	=	$a\left(x_5+\frac{1}{2}\right)\,\hat{\mathbf{x}}-ax_5\,\hat{\mathbf{y}}+a\left(z_5+\frac{1}{2}\right)\,\hat{\mathbf{z}}$	(24k)	O II
$\mathbf{B_{36}}$	=	$-x_5\,\mathbf{a}_1+\left(x_5+\frac{1}{2}\right)\,\mathbf{a}_2+\left(z_5+\frac{1}{2}\right)\,\mathbf{a}_3$	=	$-ax_5\,\hat{\mathbf{x}}+a\left(x_5+\frac{1}{2}\right)\,\hat{\mathbf{y}}+a\left(z_5+\frac{1}{2}\right)\,\hat{\mathbf{z}}$	(24k)	O II
$\mathbf{B_{37}}$	=	$\left(x_5+\frac{1}{2}\right)\,\mathbf{a}_1+\left(z_5+\frac{1}{2}\right)\,\mathbf{a}_2-x_5\,\mathbf{a}_3$	=	$a\left(x_5+\frac{1}{2}\right)\,\hat{\mathbf{x}}+a\left(z_5+\frac{1}{2}\right)\,\hat{\mathbf{y}}-ax_5\,\hat{\mathbf{z}}$	(24k)	O II
$\mathbf{B_{38}}$	=	$-x_5\,\mathbf{a}_1+\left(z_5+\frac{1}{2}\right)\,\mathbf{a}_2+\left(x_5+\frac{1}{2}\right)\,\mathbf{a}_3$	=	$-ax_5\,\hat{\mathbf{x}}+a\left(z_5+\frac{1}{2}\right)\,\hat{\mathbf{y}}+a\left(x_5+\frac{1}{2}\right)\,\hat{\mathbf{z}}$	(24k)	O II
$\mathbf{B_{39}}$	=	$-x_5\,\mathbf{a}_1-z_5\,\mathbf{a}_2-x_5\,\mathbf{a}_3$	=	$-ax_5\,\hat{\mathbf{x}}-az_5\,\hat{\mathbf{y}}-ax_5\,\hat{\mathbf{z}}$	(24k)	O II
$\mathbf{B_{40}}$	=	$\left(x_5+\frac{1}{2}\right)\,\mathbf{a}_1-z_5\,\mathbf{a}_2+\left(x_5+\frac{1}{2}\right)\,\mathbf{a}_3$	=	$a\left(x_5+\frac{1}{2}\right)\,\hat{\mathbf{x}}-az_5\,\hat{\mathbf{y}}+a\left(x_5+\frac{1}{2}\right)\,\hat{\mathbf{z}}$	(24k)	O II
$\mathbf{B_{41}}$	=	$\left(z_5+\frac{1}{2}\right)\,\mathbf{a}_1+\left(x_5+\frac{1}{2}\right)\,\mathbf{a}_2-x_5\,\mathbf{a}_3$	=	$a\left(z_5+\frac{1}{2}\right)\,\hat{\mathbf{x}}+a\left(x_5+\frac{1}{2}\right)\,\hat{\mathbf{y}}-ax_5\,\hat{\mathbf{z}}$	(24k)	O II
$\mathbf{B_{42}}$	=	$\left(z_5+\frac{1}{2}\right)\,\mathbf{a}_1-x_5\,\mathbf{a}_2+\left(x_5+\frac{1}{2}\right)\,\mathbf{a}_3$	=	$a\left(z_5+\frac{1}{2}\right)\,\hat{\mathbf{x}}-ax_5\,\hat{\mathbf{y}}+a\left(x_5+\frac{1}{2}\right)\,\hat{\mathbf{z}}$	(24k)	O II
$\mathbf{B_{43}}$	=	$-z_5\,\mathbf{a}_1+\left(x_5+\frac{1}{2}\right)\,\mathbf{a}_2+\left(x_5+\frac{1}{2}\right)\,\mathbf{a}_3$	=	$-az_5\,\hat{\mathbf{x}}+a\left(x_5+\frac{1}{2}\right)\,\hat{\mathbf{y}}+a\left(x_5+\frac{1}{2}\right)\,\hat{\mathbf{z}}$	(24k)	O II
$\mathbf{B_{44}}$	=	$-z_5\,\mathbf{a}_1-x_5\,\mathbf{a}_2-x_5\,\mathbf{a}_3$	=	$-az_5\,\hat{\mathbf{x}}-ax_5\,\hat{\mathbf{y}}-ax_5\,\hat{\mathbf{z}}$	(24k)	O II
$\mathbf{B_{45}}$	=	$x_6\,\mathbf{a}_1+x_6\,\mathbf{a}_2+z_6\,\mathbf{a}_3$	=	$ax_6\,\hat{\mathbf{x}}+ax_6\,\hat{\mathbf{y}}+az_6\,\hat{\mathbf{z}}$	(24k)	O III
$\mathbf{B_{46}}$	=	$-\left(x_6-\frac{1}{2}\right)\,\mathbf{a}_1-\left(x_6-\frac{1}{2}\right)\,\mathbf{a}_2+z_6\,\mathbf{a}_3$	=	$-a\left(x_6-\frac{1}{2}\right)\,\hat{\mathbf{x}}-a\left(x_6-\frac{1}{2}\right)\,\hat{\mathbf{y}}+az_6\,\hat{\mathbf{z}}$	(24k)	O III
$\mathbf{B_{47}}$	=	$-\left(x_6-\frac{1}{2}\right)\,\mathbf{a}_1+x_6\,\mathbf{a}_2-\left(z_6-\frac{1}{2}\right)\,\mathbf{a}_3$	=	$-a\left(x_6-\frac{1}{2}\right)\,\hat{\mathbf{x}}+ax_6\,\hat{\mathbf{y}}-a\left(z_6-\frac{1}{2}\right)\,\hat{\mathbf{z}}$	(24k)	O III

$\mathbf{B_{48}}$	=	$x_6\,\mathbf{a}_1-\left(x_6-\frac{1}{2}\right)\,\mathbf{a}_2-\left(z_6-\frac{1}{2}\right)\,\mathbf{a}_3$	=	$ax_6\,\hat{\mathbf{x}}-a\left(x_6-\frac{1}{2}\right)\,\hat{\mathbf{y}}-a\left(z_6-\frac{1}{2}\right)\,\hat{\mathbf{z}}$	(24k)	O III
$\mathbf{B_{49}}$	=	$z_6\,\mathbf{a}_1+x_6\,\mathbf{a}_2+x_6\,\mathbf{a}_3$	=	$az_6\,\hat{\mathbf{x}}+ax_6\,\hat{\mathbf{y}}+ax_6\,\hat{\mathbf{z}}$	(24k)	O III
$\mathbf{B_{50}}$	=	$z_6\,\mathbf{a}_1-\left(x_6-\frac{1}{2}\right)\,\mathbf{a}_2-\left(x_6-\frac{1}{2}\right)\,\mathbf{a}_3$	=	$az_6\,\hat{\mathbf{x}}-a\left(x_6-\frac{1}{2}\right)\,\hat{\mathbf{y}}-a\left(x_6-\frac{1}{2}\right)\,\hat{\mathbf{z}}$	(24k)	O III
$\mathbf{B_{51}}$	=	$-\left(z_6-\frac{1}{2}\right)\,\mathbf{a}_1-\left(x_6-\frac{1}{2}\right)\,\mathbf{a}_2+x_6\,\mathbf{a}_3$	=	$-a\left(z_6-\frac{1}{2}\right)\,\hat{\mathbf{x}}-a\left(x_6-\frac{1}{2}\right)\,\hat{\mathbf{y}}+ax_6\,\hat{\mathbf{z}}$	(24k)	O III
$\mathbf{B_{52}}$	=	$-\left(z_6-\frac{1}{2}\right)\,\mathbf{a}_1+x_6\,\mathbf{a}_2-\left(x_6-\frac{1}{2}\right)\,\mathbf{a}_3$	=	$-a\left(z_6-\frac{1}{2}\right)\,\hat{\mathbf{x}}+ax_6\,\hat{\mathbf{y}}-a\left(x_6-\frac{1}{2}\right)\,\hat{\mathbf{z}}$	(24k)	O III
$\mathbf{B_{53}}$	=	$x_6\,\mathbf{a}_1+z_6\,\mathbf{a}_2+x_6\,\mathbf{a}_3$	=	$ax_6\,\hat{\mathbf{x}}+az_6\,\hat{\mathbf{y}}+ax_6\,\hat{\mathbf{z}}$	(24k)	O III
$\mathbf{B_{54}}$	=	$-\left(x_6-\frac{1}{2}\right)\,\mathbf{a}_1+z_6\,\mathbf{a}_2-\left(x_6-\frac{1}{2}\right)\,\mathbf{a}_3$	=	$-a\left(x_6-\frac{1}{2}\right)\,\hat{\mathbf{x}}+az_6\,\hat{\mathbf{y}}-a\left(x_6-\frac{1}{2}\right)\,\hat{\mathbf{z}}$	(24k)	O III
$\mathbf{B_{55}}$	=	$x_6\,\mathbf{a}_1-\left(z_6-\frac{1}{2}\right)\,\mathbf{a}_2-\left(x_6-\frac{1}{2}\right)\,\mathbf{a}_3$	=	$ax_6\,\hat{\mathbf{x}}-a\left(z_6-\frac{1}{2}\right)\,\hat{\mathbf{y}}-a\left(x_6-\frac{1}{2}\right)\,\hat{\mathbf{z}}$	(24k)	O III
$\mathbf{B_{56}}$	=	$-\left(x_6-\frac{1}{2}\right)\,\mathbf{a}_1-\left(z_6-\frac{1}{2}\right)\,\mathbf{a}_2+x_6\,\mathbf{a}_3$	=	$-a\left(x_6-\frac{1}{2}\right)\,\hat{\mathbf{x}}-a\left(z_6-\frac{1}{2}\right)\,\hat{\mathbf{y}}+ax_6\,\hat{\mathbf{z}}$	(24k)	O III
$\mathbf{B_{57}}$	=	$\left(x_6+\frac{1}{2}\right)\,\mathbf{a}_1+\left(x_6+\frac{1}{2}\right)\,\mathbf{a}_2-z_6\,\mathbf{a}_3$	=	$a\left(x_6+\frac{1}{2}\right)\,\hat{\mathbf{x}}+a\left(x_6+\frac{1}{2}\right)\,\hat{\mathbf{y}}-az_6\,\hat{\mathbf{z}}$	(24k)	O III
$\mathbf{B_{58}}$	=	$-x_6\,\mathbf{a}_1-x_6\,\mathbf{a}_2-z_6\,\mathbf{a}_3$	=	$-ax_6\,\hat{\mathbf{x}}-ax_6\,\hat{\mathbf{y}}-az_6\,\hat{\mathbf{z}}$	(24k)	O III
$\mathbf{B_{59}}$	=	$\left(x_6+\frac{1}{2}\right)\,\mathbf{a}_1-x_6\,\mathbf{a}_2+\left(z_6+\frac{1}{2}\right)\,\mathbf{a}_3$	=	$a\left(x_6+\frac{1}{2}\right)\,\hat{\mathbf{x}}-ax_6\,\hat{\mathbf{y}}+a\left(z_6+\frac{1}{2}\right)\,\hat{\mathbf{z}}$	(24k)	O III
$\mathbf{B_{60}}$	=	$-x_6\,\mathbf{a}_1+\left(x_6+\frac{1}{2}\right)\,\mathbf{a}_2+\left(z_6+\frac{1}{2}\right)\,\mathbf{a}_3$	=	$-ax_6\,\hat{\mathbf{x}}+a\left(x_6+\frac{1}{2}\right)\,\hat{\mathbf{y}}+a\left(z_6+\frac{1}{2}\right)\,\hat{\mathbf{z}}$	(24k)	O III
$\mathbf{B_{61}}$	=	$\left(x_6+\frac{1}{2}\right)\,\mathbf{a}_1+\left(z_6+\frac{1}{2}\right)\,\mathbf{a}_2-x_6\,\mathbf{a}_3$	=	$a\left(x_6+\frac{1}{2}\right)\,\hat{\mathbf{x}}+a\left(z_6+\frac{1}{2}\right)\,\hat{\mathbf{y}}-ax_6\,\hat{\mathbf{z}}$	(24k)	O III
$\mathbf{B_{62}}$	=	$-x_6\,\mathbf{a}_1+\left(z_6+\frac{1}{2}\right)\,\mathbf{a}_2+\left(x_6+\frac{1}{2}\right)\,\mathbf{a}_3$	=	$-ax_6\,\hat{\mathbf{x}}+a\left(z_6+\frac{1}{2}\right)\,\hat{\mathbf{y}}+a\left(x_6+\frac{1}{2}\right)\,\hat{\mathbf{z}}$	(24k)	O III
$\mathbf{B_{63}}$	=	$-x_6\,\mathbf{a}_1-z_6\,\mathbf{a}_2-x_6\,\mathbf{a}_3$	=	$-ax_6\,\hat{\mathbf{x}}-az_6\,\hat{\mathbf{y}}-ax_6\,\hat{\mathbf{z}}$	(24k)	O III
$\mathbf{B_{64}}$	=	$\left(x_6+\frac{1}{2}\right)\,\mathbf{a}_1-z_6\,\mathbf{a}_2+\left(x_6+\frac{1}{2}\right)\,\mathbf{a}_3$	=	$a\left(x_6+\frac{1}{2}\right)\,\hat{\mathbf{x}}-az_6\,\hat{\mathbf{y}}+a\left(x_6+\frac{1}{2}\right)\,\hat{\mathbf{z}}$	(24k)	O III
$\mathbf{B_{65}}$	=	$\left(z_6+\frac{1}{2}\right)\,\mathbf{a}_1+\left(x_6+\frac{1}{2}\right)\,\mathbf{a}_2-x_6\,\mathbf{a}_3$	=	$a\left(z_6+\frac{1}{2}\right)\,\hat{\mathbf{x}}+a\left(x_6+\frac{1}{2}\right)\,\hat{\mathbf{y}}-ax_6\,\hat{\mathbf{z}}$	(24k)	O III
$\mathbf{B_{66}}$	=	$\left(z_6+\frac{1}{2}\right)\,\mathbf{a}_1-x_6\,\mathbf{a}_2+\left(x_6+\frac{1}{2}\right)\,\mathbf{a}_3$	=	$a\left(z_6+\frac{1}{2}\right)\,\hat{\mathbf{x}}-ax_6\,\hat{\mathbf{y}}+a\left(x_6+\frac{1}{2}\right)\,\hat{\mathbf{z}}$	(24k)	O III
$\mathbf{B_{67}}$	=	$-z_6\,\mathbf{a}_1+\left(x_6+\frac{1}{2}\right)\,\mathbf{a}_2+\left(x_6+\frac{1}{2}\right)\,\mathbf{a}_3$	=	$-az_6\,\hat{\mathbf{x}}+a\left(x_6+\frac{1}{2}\right)\,\hat{\mathbf{y}}+a\left(x_6+\frac{1}{2}\right)\,\hat{\mathbf{z}}$	(24k)	O III
$\mathbf{B_{68}}$	=	$-z_6\,\mathbf{a}_1-x_6\,\mathbf{a}_2-x_6\,\mathbf{a}_3$	=	$-az_6\,\hat{\mathbf{x}}-ax_6\,\hat{\mathbf{y}}-ax_6\,\hat{\mathbf{z}}$	(24k)	O III
$\mathbf{B_{69}}$	=	$x_7\,\mathbf{a}_1+x_7\,\mathbf{a}_2+z_7\,\mathbf{a}_3$	=	$ax_7\,\hat{\mathbf{x}}+ax_7\,\hat{\mathbf{y}}+az_7\,\hat{\mathbf{z}}$	(24k)	O IV
$\mathbf{B_{70}}$	=	$-\left(x_7-\frac{1}{2}\right)\,\mathbf{a}_1-\left(x_7-\frac{1}{2}\right)\,\mathbf{a}_2+z_7\,\mathbf{a}_3$	=	$-a\left(x_7-\frac{1}{2}\right)\,\hat{\mathbf{x}}-a\left(x_7-\frac{1}{2}\right)\,\hat{\mathbf{y}}+az_7\,\hat{\mathbf{z}}$	(24k)	O IV
$\mathbf{B_{71}}$	=	$-\left(x_7-\frac{1}{2}\right)\,\mathbf{a}_1+x_7\,\mathbf{a}_2-\left(z_7-\frac{1}{2}\right)\,\mathbf{a}_3$	=	$-a\left(x_7-\frac{1}{2}\right)\,\hat{\mathbf{x}}+ax_7\,\hat{\mathbf{y}}-a\left(z_7-\frac{1}{2}\right)\,\hat{\mathbf{z}}$	(24k)	O IV
$\mathbf{B_{72}}$	=	$x_7\,\mathbf{a}_1-\left(x_7-\frac{1}{2}\right)\,\mathbf{a}_2-\left(z_7-\frac{1}{2}\right)\,\mathbf{a}_3$	=	$ax_7\,\hat{\mathbf{x}}-a\left(x_7-\frac{1}{2}\right)\,\hat{\mathbf{y}}-a\left(z_7-\frac{1}{2}\right)\,\hat{\mathbf{z}}$	(24k)	O IV
$\mathbf{B_{73}}$	=	$z_7\,\mathbf{a}_1+x_7\,\mathbf{a}_2+x_7\,\mathbf{a}_3$	=	$az_7\,\hat{\mathbf{x}}+ax_7\,\hat{\mathbf{y}}+ax_7\,\hat{\mathbf{z}}$	(24k)	O IV
$\mathbf{B_{74}}$	=	$z_7\,\mathbf{a}_1-\left(x_7-\frac{1}{2}\right)\,\mathbf{a}_2-\left(x_7-\frac{1}{2}\right)\,\mathbf{a}_3$	=	$az_7\,\hat{\mathbf{x}}-a\left(x_7-\frac{1}{2}\right)\,\hat{\mathbf{y}}-a\left(x_7-\frac{1}{2}\right)\,\hat{\mathbf{z}}$	(24k)	O IV
$\mathbf{B_{75}}$	=	$-\left(z_7-\frac{1}{2}\right)\,\mathbf{a}_1-\left(x_7-\frac{1}{2}\right)\,\mathbf{a}_2+x_7\,\mathbf{a}_3$	=	$-a\left(z_7-\frac{1}{2}\right)\,\hat{\mathbf{x}}-a\left(x_7-\frac{1}{2}\right)\,\hat{\mathbf{y}}+ax_7\,\hat{\mathbf{z}}$	(24k)	O IV
$\mathbf{B_{76}}$	=	$-\left(z_7-\frac{1}{2}\right)\,\mathbf{a}_1+x_7\,\mathbf{a}_2-\left(x_7-\frac{1}{2}\right)\,\mathbf{a}_3$	=	$-a\left(z_7-\frac{1}{2}\right)\,\hat{\mathbf{x}}+ax_7\,\hat{\mathbf{y}}-a\left(x_7-\frac{1}{2}\right)\,\hat{\mathbf{z}}$	(24k)	O IV
$\mathbf{B_{77}}$	=	$x_7\,\mathbf{a}_1+z_7\,\mathbf{a}_2+x_7\,\mathbf{a}_3$	=	$ax_7\,\hat{\mathbf{x}}+az_7\,\hat{\mathbf{y}}+ax_7\,\hat{\mathbf{z}}$	(24k)	O IV
$\mathbf{B_{78}}$	=	$-\left(x_7-\frac{1}{2}\right)\,\mathbf{a}_1+z_7\,\mathbf{a}_2-\left(x_7-\frac{1}{2}\right)\,\mathbf{a}_3$	=	$-a\left(x_7-\frac{1}{2}\right)\,\hat{\mathbf{x}}+az_7\,\hat{\mathbf{y}}-a\left(x_7-\frac{1}{2}\right)\,\hat{\mathbf{z}}$	(24k)	O IV
$\mathbf{B_{79}}$	=	$x_7\,\mathbf{a}_1-\left(z_7-\frac{1}{2}\right)\,\mathbf{a}_2-\left(x_7-\frac{1}{2}\right)\,\mathbf{a}_3$	=	$ax_7\,\hat{\mathbf{x}}-a\left(z_7-\frac{1}{2}\right)\,\hat{\mathbf{y}}-a\left(x_7-\frac{1}{2}\right)\,\hat{\mathbf{z}}$	(24k)	O IV

$\mathbf{B_{80}}$	=	$-\left(x_7-\frac{1}{2}\right)\,\mathbf{a}_1-\left(z_7-\frac{1}{2}\right)\,\mathbf{a}_2+x_7\,\mathbf{a}_3$	=	$-a\left(x_7-\frac{1}{2}\right)\,\hat{\mathbf{x}}-a\left(z_7-\frac{1}{2}\right)\,\hat{\mathbf{y}}+ax_7\,\hat{\mathbf{z}}$	(24k)	O IV
$\mathbf{B_{81}}$	=	$\left(x_7+\frac{1}{2}\right)\,\mathbf{a}_1+\left(x_7+\frac{1}{2}\right)\,\mathbf{a}_2-z_7\,\mathbf{a}_3$	=	$a\left(x_7+\frac{1}{2}\right)\,\hat{\mathbf{x}}+a\left(x_7+\frac{1}{2}\right)\,\hat{\mathbf{y}}-az_7\,\hat{\mathbf{z}}$	(24k)	O IV
$\mathbf{B_{82}}$	=	$-x_7\,\mathbf{a}_1-x_7\,\mathbf{a}_2-z_7\,\mathbf{a}_3$	=	$-ax_7\,\hat{\mathbf{x}}-ax_7\,\hat{\mathbf{y}}-az_7\,\hat{\mathbf{z}}$	(24k)	O IV
$\mathbf{B_{83}}$	=	$\left(x_7+\frac{1}{2}\right)\,\mathbf{a}_1-x_7\,\mathbf{a}_2+\left(z_7+\frac{1}{2}\right)\,\mathbf{a}_3$	=	$a\left(x_7+\frac{1}{2}\right)\,\hat{\mathbf{x}}-ax_7\,\hat{\mathbf{y}}+a\left(z_7+\frac{1}{2}\right)\,\hat{\mathbf{z}}$	(24k)	O IV
$\mathbf{B_{84}}$	=	$-x_7\,\mathbf{a}_1+\left(x_7+\frac{1}{2}\right)\,\mathbf{a}_2+\left(z_7+\frac{1}{2}\right)\,\mathbf{a}_3$	=	$-ax_7\,\hat{\mathbf{x}}+a\left(x_7+\frac{1}{2}\right)\,\hat{\mathbf{y}}+a\left(z_7+\frac{1}{2}\right)\,\hat{\mathbf{z}}$	(24k)	O IV
$\mathbf{B_{85}}$	=	$\left(x_7+\frac{1}{2}\right)\,\mathbf{a}_1+\left(z_7+\frac{1}{2}\right)\,\mathbf{a}_2-x_7\,\mathbf{a}_3$	=	$a\left(x_7+\frac{1}{2}\right)\,\hat{\mathbf{x}}+a\left(z_7+\frac{1}{2}\right)\,\hat{\mathbf{y}}-ax_7\,\hat{\mathbf{z}}$	(24k)	O IV
$\mathbf{B_{86}}$	=	$-x_7\,\mathbf{a}_1+\left(z_7+\frac{1}{2}\right)\,\mathbf{a}_2+\left(x_7+\frac{1}{2}\right)\,\mathbf{a}_3$	=	$-ax_7\,\hat{\mathbf{x}}+a\left(z_7+\frac{1}{2}\right)\,\hat{\mathbf{y}}+a\left(x_7+\frac{1}{2}\right)\,\hat{\mathbf{z}}$	(24k)	O IV
$\mathbf{B_{87}}$	=	$-x_7\,\mathbf{a}_1-z_7\,\mathbf{a}_2-x_7\,\mathbf{a}_3$	=	$-ax_7\,\hat{\mathbf{x}}-az_7\,\hat{\mathbf{y}}-ax_7\,\hat{\mathbf{z}}$	(24k)	O IV
$\mathbf{B_{88}}$	=	$\left(x_7+\frac{1}{2}\right)\,\mathbf{a}_1-z_7\,\mathbf{a}_2+\left(x_7+\frac{1}{2}\right)\,\mathbf{a}_3$	=	$a\left(x_7+\frac{1}{2}\right)\,\hat{\mathbf{x}}-az_7\,\hat{\mathbf{y}}+a\left(x_7+\frac{1}{2}\right)\,\hat{\mathbf{z}}$	(24k)	O IV
$\mathbf{B_{89}}$	=	$\left(z_7+\frac{1}{2}\right)\,\mathbf{a}_1+\left(x_7+\frac{1}{2}\right)\,\mathbf{a}_2-x_7\,\mathbf{a}_3$	=	$a\left(z_7+\frac{1}{2}\right)\,\hat{\mathbf{x}}+a\left(x_7+\frac{1}{2}\right)\,\hat{\mathbf{y}}-ax_7\,\hat{\mathbf{z}}$	(24k)	O IV
$\mathbf{B_{90}}$	=	$\left(z_7+\frac{1}{2}\right)\,\mathbf{a}_1-x_7\,\mathbf{a}_2+\left(x_7+\frac{1}{2}\right)\,\mathbf{a}_3$	=	$a\left(z_7+\frac{1}{2}\right)\,\hat{\mathbf{x}}-ax_7\,\hat{\mathbf{y}}+a\left(x_7+\frac{1}{2}\right)\,\hat{\mathbf{z}}$	(24k)	O IV
$\mathbf{B_{91}}$	=	$-z_7\,\mathbf{a}_1+\left(x_7+\frac{1}{2}\right)\,\mathbf{a}_2+\left(x_7+\frac{1}{2}\right)\,\mathbf{a}_3$	=	$-az_7\,\hat{\mathbf{x}}+a\left(x_7+\frac{1}{2}\right)\,\hat{\mathbf{y}}+a\left(x_7+\frac{1}{2}\right)\,\hat{\mathbf{z}}$	(24k)	O IV
$\mathbf{B_{92}}$	=	$-z_7\,\mathbf{a}_1-x_7\,\mathbf{a}_2-x_7\,\mathbf{a}_3$	=	$-az_7\,\hat{\mathbf{x}}-ax_7\,\hat{\mathbf{y}}-ax_7\,\hat{\mathbf{z}}$	(24k)	O IV
$\mathbf{B_{93}}$	=	$x_8\,\mathbf{a}_1+x_8\,\mathbf{a}_2+z_8\,\mathbf{a}_3$	=	$ax_8\,\hat{\mathbf{x}}+ax_8\,\hat{\mathbf{y}}+az_8\,\hat{\mathbf{z}}$	(24k)	W I
$\mathbf{B_{94}}$	=	$-\left(x_8-\frac{1}{2}\right)\,\mathbf{a}_1-\left(x_8-\frac{1}{2}\right)\,\mathbf{a}_2+z_8\,\mathbf{a}_3$	=	$-a\left(x_8-\frac{1}{2}\right)\,\hat{\mathbf{x}}-a\left(x_8-\frac{1}{2}\right)\,\hat{\mathbf{y}}+az_8\,\hat{\mathbf{z}}$	(24k)	W I
$\mathbf{B_{95}}$	=	$-\left(x_8-\frac{1}{2}\right)\,\mathbf{a}_1+x_8\,\mathbf{a}_2-\left(z_8-\frac{1}{2}\right)\,\mathbf{a}_3$	=	$-a\left(x_8-\frac{1}{2}\right)\,\hat{\mathbf{x}}+ax_8\,\hat{\mathbf{y}}-a\left(z_8-\frac{1}{2}\right)\,\hat{\mathbf{z}}$	(24k)	W I
$\mathbf{B_{96}}$	=	$x_8\,\mathbf{a}_1-\left(x_8-\frac{1}{2}\right)\,\mathbf{a}_2-\left(z_8-\frac{1}{2}\right)\,\mathbf{a}_3$	=	$ax_8\,\hat{\mathbf{x}}-a\left(x_8-\frac{1}{2}\right)\,\hat{\mathbf{y}}-a\left(z_8-\frac{1}{2}\right)\,\hat{\mathbf{z}}$	(24k)	W I
$\mathbf{B_{97}}$	=	$z_8\,\mathbf{a}_1+x_8\,\mathbf{a}_2+x_8\,\mathbf{a}_3$	=	$az_8\,\hat{\mathbf{x}}+ax_8\,\hat{\mathbf{y}}+ax_8\,\hat{\mathbf{z}}$	(24k)	W I
$\mathbf{B_{98}}$	=	$z_8\,\mathbf{a}_1-\left(x_8-\frac{1}{2}\right)\,\mathbf{a}_2-\left(x_8-\frac{1}{2}\right)\,\mathbf{a}_3$	=	$az_8\,\hat{\mathbf{x}}-a\left(x_8-\frac{1}{2}\right)\,\hat{\mathbf{y}}-a\left(x_8-\frac{1}{2}\right)\,\hat{\mathbf{z}}$	(24k)	W I
$\mathbf{B_{99}}$	=	$-\left(z_8-\frac{1}{2}\right)\,\mathbf{a}_1-\left(x_8-\frac{1}{2}\right)\,\mathbf{a}_2+x_8\,\mathbf{a}_3$	=	$-a\left(z_8-\frac{1}{2}\right)\,\hat{\mathbf{x}}-a\left(x_8-\frac{1}{2}\right)\,\hat{\mathbf{y}}+ax_8\,\hat{\mathbf{z}}$	(24k)	W I
$\mathbf{B_{100}}$	=	$-\left(z_8-\frac{1}{2}\right)\,\mathbf{a}_1+x_8\,\mathbf{a}_2-\left(x_8-\frac{1}{2}\right)\,\mathbf{a}_3$	=	$-a\left(z_8-\frac{1}{2}\right)\,\hat{\mathbf{x}}+ax_8\,\hat{\mathbf{y}}-a\left(x_8-\frac{1}{2}\right)\,\hat{\mathbf{z}}$	(24k)	W I
$\mathbf{B_{101}}$	=	$x_8\,\mathbf{a}_1+z_8\,\mathbf{a}_2+x_8\,\mathbf{a}_3$	=	$ax_8\,\hat{\mathbf{x}}+az_8\,\hat{\mathbf{y}}+ax_8\,\hat{\mathbf{z}}$	(24k)	W I
$\mathbf{B_{102}}$	=	$-\left(x_8-\frac{1}{2}\right)\,\mathbf{a}_1+z_8\,\mathbf{a}_2-\left(x_8-\frac{1}{2}\right)\,\mathbf{a}_3$	=	$-a\left(x_8-\frac{1}{2}\right)\,\hat{\mathbf{x}}+az_8\,\hat{\mathbf{y}}-a\left(x_8-\frac{1}{2}\right)\,\hat{\mathbf{z}}$	(24k)	W I
$\mathbf{B_{103}}$	=	$x_8\,\mathbf{a}_1-\left(z_8-\frac{1}{2}\right)\,\mathbf{a}_2-\left(x_8-\frac{1}{2}\right)\,\mathbf{a}_3$	=	$ax_8\,\hat{\mathbf{x}}-a\left(z_8-\frac{1}{2}\right)\,\hat{\mathbf{y}}-a\left(x_8-\frac{1}{2}\right)\,\hat{\mathbf{z}}$	(24k)	W I
$\mathbf{B_{104}}$	=	$-\left(x_8-\frac{1}{2}\right)\,\mathbf{a}_1-\left(z_8-\frac{1}{2}\right)\,\mathbf{a}_2+x_8\,\mathbf{a}_3$	=	$-a\left(x_8-\frac{1}{2}\right)\,\hat{\mathbf{x}}-a\left(z_8-\frac{1}{2}\right)\,\hat{\mathbf{y}}+ax_8\,\hat{\mathbf{z}}$	(24k)	W I
$\mathbf{B_{105}}$	=	$\left(x_8+\frac{1}{2}\right)\,\mathbf{a}_1+\left(x_8+\frac{1}{2}\right)\,\mathbf{a}_2-z_8\,\mathbf{a}_3$	=	$a\left(x_8+\frac{1}{2}\right)\,\hat{\mathbf{x}}+a\left(x_8+\frac{1}{2}\right)\,\hat{\mathbf{y}}-az_8\,\hat{\mathbf{z}}$	(24k)	W I
$\mathbf{B_{106}}$	=	$-x_8\,\mathbf{a}_1-x_8\,\mathbf{a}_2-z_8\,\mathbf{a}_3$	=	$-ax_8\,\hat{\mathbf{x}}-ax_8\,\hat{\mathbf{y}}-az_8\,\hat{\mathbf{z}}$	(24k)	W I
$\mathbf{B_{107}}$	=	$\left(x_8+\frac{1}{2}\right)\,\mathbf{a}_1-x_8\,\mathbf{a}_2+\left(z_8+\frac{1}{2}\right)\,\mathbf{a}_3$	=	$a\left(x_8+\frac{1}{2}\right)\,\hat{\mathbf{x}}-ax_8\,\hat{\mathbf{y}}+a\left(z_8+\frac{1}{2}\right)\,\hat{\mathbf{z}}$	(24k)	W I
$\mathbf{B_{108}}$	=	$-x_8\,\mathbf{a}_1+\left(x_8+\frac{1}{2}\right)\,\mathbf{a}_2+\left(z_8+\frac{1}{2}\right)\,\mathbf{a}_3$	=	$-ax_8\,\hat{\mathbf{x}}+a\left(x_8+\frac{1}{2}\right)\,\hat{\mathbf{y}}+a\left(z_8+\frac{1}{2}\right)\,\hat{\mathbf{z}}$	(24k)	W I
$\mathbf{B_{109}}$	=	$\left(x_8+\frac{1}{2}\right)\,\mathbf{a}_1+\left(z_8+\frac{1}{2}\right)\,\mathbf{a}_2-x_8\,\mathbf{a}_3$	=	$a\left(x_8+\frac{1}{2}\right)\,\hat{\mathbf{x}}+a\left(z_8+\frac{1}{2}\right)\,\hat{\mathbf{y}}-ax_8\,\hat{\mathbf{z}}$	(24k)	W I
$\mathbf{B_{110}}$	=	$-x_8\,\mathbf{a}_1+\left(z_8+\frac{1}{2}\right)\,\mathbf{a}_2+\left(x_8+\frac{1}{2}\right)\,\mathbf{a}_3$	=	$-ax_8\,\hat{\mathbf{x}}+a\left(z_8+\frac{1}{2}\right)\,\hat{\mathbf{y}}+a\left(x_8+\frac{1}{2}\right)\,\hat{\mathbf{z}}$	(24k)	W I
$\mathbf{B_{111}}$	=	$-x_8\,\mathbf{a}_1-z_8\,\mathbf{a}_2-x_8\,\mathbf{a}_3$	=	$-ax_8\,\hat{\mathbf{x}}-az_8\,\hat{\mathbf{y}}-ax_8\,\hat{\mathbf{z}}$	(24k)	W I

$\mathbf{B_{112}}$	=	$\left(x_8+\frac{1}{2}\right)\,\mathbf{a}_1 - z_8\,\mathbf{a}_2 + \left(x_8+\frac{1}{2}\right)\,\mathbf{a}_3$	=	$a\left(x_8+\frac{1}{2}\right)\,\hat{\mathbf{x}} - a z_8\,\hat{\mathbf{y}} + a\left(x_8+\frac{1}{2}\right)\,\hat{\mathbf{z}}$	(24k)	W I
$\mathbf{B_{113}}$	=	$\left(z_8+\frac{1}{2}\right)\,\mathbf{a}_1 + \left(x_8+\frac{1}{2}\right)\,\mathbf{a}_2 - x_8\,\mathbf{a}_3$	=	$a\left(z_8+\frac{1}{2}\right)\,\hat{\mathbf{x}} + a\left(x_8+\frac{1}{2}\right)\,\hat{\mathbf{y}} - a x_8\,\hat{\mathbf{z}}$	(24k)	W I
$\mathbf{B_{114}}$	=	$\left(z_8+\frac{1}{2}\right)\,\mathbf{a}_1 - x_8\,\mathbf{a}_2 + \left(x_8+\frac{1}{2}\right)\,\mathbf{a}_3$	=	$a\left(z_8+\frac{1}{2}\right)\,\hat{\mathbf{x}} - a x_8\,\hat{\mathbf{y}} + a\left(x_8+\frac{1}{2}\right)\,\hat{\mathbf{z}}$	(24k)	W I
$\mathbf{B_{115}}$	=	$-z_8\,\mathbf{a}_1 + \left(x_8+\frac{1}{2}\right)\,\mathbf{a}_2 + \left(x_8+\frac{1}{2}\right)\,\mathbf{a}_3$	=	$-a z_8\,\hat{\mathbf{x}} + a\left(x_8+\frac{1}{2}\right)\,\hat{\mathbf{y}} + a\left(x_8+\frac{1}{2}\right)\,\hat{\mathbf{z}}$	(24k)	W I
$\mathbf{B_{116}}$	=	$-z_8\,\mathbf{a}_1 - x_8\,\mathbf{a}_2 - x_8\,\mathbf{a}_3$	=	$-a z_8\,\hat{\mathbf{x}} - a x_8\,\hat{\mathbf{y}} - a x_8\,\hat{\mathbf{z}}$	(24k)	W I

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