$$ {}^{\zeta}E^{\mu}_{w_1^z - w_2^z} = {}^{\zeta^z g}_{-}E^{\mu}_{\widehat{w_1 g}^{w_1 g} - \widehat{w_2 g}^{w_2 g}} $$

$$ \widehat{0 \cdot \overset{*}{g}}^{w} + w^w = \widehat{wg}^{wg} \, {}^{w}_{-}\overset{*}{g} \underset{\text{pol}}{\Longrightarrow} \widehat{0 \cdot \overset{*}{g}}^{z} + w^z = \widehat{wg}^{zg} \, {}^{z}_{-}\overset{*}{g} \Longrightarrow w_1^z - w_2^z = \underbrace{\widehat{w_1 g}^{w_1 g} - \widehat{w_2 g}^{w_2 g}}_{} \, {}^{z}_{-}\overset{*}{g} $$

$$ \text{LHS} = {}^{\zeta}E^{\mu}_{\underbrace{\widehat{w_1 g}^{w_1 g} - \widehat{w_2 g}^{w_2 g}}_{} \, {}^{z}_{-}\overset{*}{g}} = \text{RHS} $$

$$ {}^{\zeta}\widehat{\mathfrak{t}_{z^w} \mathfrak{1}} = {}^{\zeta + z^w}\mathfrak{1} $$

$$ \begin{array}{ccccc} Z_{\widehat{\triangle}^{n^-}\mathbb{C}^{\times}T^{-n-\nu}} & \xrightarrow[{}^{z}\Delta_w^{-n-\nu}]{{}^{z}_{U}G^{n^-}_{w}} & Z_{\widehat{\triangle}^{n^-}\mathbb{C}^{\times}T^{-n-\nu}} & \xleftarrow{\mathfrak{t}_{z^w}} & Z_{\widehat{\triangle}^{z}\mathbb{C}^{\times}T^{-\nu}} \\ \uparrow {}^{z}_{U}g^{n^-} \; \uparrow {}^{z}_{T}g^{-n-\nu} & & \downarrow {}^{w}_{U}\overset{*}{g}^{n^-} \; \downarrow {}^{w}_{T}\overset{*}{g}^{-\nu} & & \downarrow {}^{w}_{K}\overset{*}{g}^{\varkappa} \; \downarrow {}^{w}_{T}\overset{*}{g}^{-\nu} \\ Z_{\widehat{\triangle}^{n^-}\mathbb{C}^{\times}T^{-n-\nu}} & \xrightarrow[{}^{zg}_{T}G^{-n-\nu}_{wg}]{{}^{zg}_{U}G^{n^-}_{wg}} & Z_{\widehat{\triangle}^{n^-}\mathbb{C}^{\times}T^{-n-\nu}} & \xleftarrow[\mathfrak{t}_{\widehat{zg}^{wg}}]{} & Z_{\widehat{\triangle}^{z}\mathbb{C}^{\times}T^{-\nu}} \end{array} $$

$$ {}^{w}_{U}\overset{*}{g}^{n^-} \, \mathfrak{t}_{z^w} \mathfrak{1} = {}^{w}_{T}\overset{*}{g}^{-n} \, \mathfrak{t}_{zg^{wg}} \widehat{{}^{w}_{K}\overset{*}{g}^{\varkappa} \mathfrak{1}} $$

$$ \underbrace{zg^{wg}}_{} \, {}^{w}_{K}\overset{*}{g} = zg \, \mathfrak{t}^*_{-wg} \, {}^{w}_{K}\overset{*}{g} = z \underbrace{\mathfrak{t}^*_{-w} \mathfrak{t}_{0^{-w}_{\overset{*}{g}}} \, {}^{w}_{K}\overset{*}{g}^{-1} \mathfrak{t}^*_{wg}}_{} \, \mathfrak{t}^*_{-wg} \, {}^{w}_{K}\overset{*}{g} = z \, \mathfrak{t}^*_{-w} \, \mathfrak{t}_{0^{-w}_{\overset{*}{g}}} = z^w + 0^{-w}_{\overset{*}{g}} $$

$$ \Longrightarrow {}^{\zeta}\text{LHS} = {}^{w}_{T}\overset{*}{g}^{-n} \, {}^{z^w + 0^{-w}_{\overset{*}{g}} + \zeta}_{K} {}^{w}g^{*} \mathfrak{1} = {}^{w}_{T}\overset{*}{g}^{-n} \, {}^{zg^{wg}}_{K} {}^{w}g^{*} + \zeta {}^{w}_{K}g^{*} \mathfrak{1} = {}^{w}_{T}\overset{*}{g}^{-n} \, {}^{(zg^{wg} + \zeta)}_{K} {}^{w}\overset{*}{g} \mathfrak{1} = {}^{\zeta}\text{RHS} $$

$$\overbrace{{}^{z}_{U}G_{w} \ltimes {}^{z^w+}\mathbb{1}}^{\zeta} = {}^{\zeta+z}\Delta^{n}_{-w\ (\zeta+z)^w - z^w}\mathbb{1} = {}^{\zeta}\Delta^{n}_{-w^z}\ {}^{z}\Delta^{n}_{w}\ {}^{\zeta^{w^z z}B_w^{-1}}\mathbb{1}$$

$$\overbrace{{}^{z}_{U}G_{w} \ltimes {}^{z^w+}\Delta^{n}_{-\omega}}^{\zeta} = {}^{\zeta+z}\Delta^{n}_{-w\ (\zeta+z)^w - z^w}\Delta^{n}_{-\omega} = {}^{z}\Delta^{n}_{w}\ {}^{\zeta}\Delta^{n}_{-w^z}\ {}^{\zeta^{w^z z}B_w^{-1}}B^{n}_{-\omega} = {}^{z}\Delta^{n}_{w}\ {}^{-\zeta^{z}_{U}G_w^{-1}}B^{n}_{\omega+w-z\,Q_w}$$

$$ {}^{z}_{U}G_{z} = {}^{o}_{U}\mathfrak{g}^{-1}_{z}\ {}^{o}_{U}\mathfrak{g}^{-*}_{z} = \overbrace{{}^{z}B_z^{1/2}\mathfrak{t}^{*}_{z^z}}^{-1}\ \overbrace{{}^{z}B_z^{1/2}\mathfrak{t}^{*}_{z^z}}^{-*} = \mathfrak{t}^{*}_{-z^z}\ {}^{z}B_z^{-1/2}\ {}^{z}B_z^{-1/2}\,\mathfrak{t}_{-z^z} = \mathfrak{t}^{*}_{-z^z}\ {}^{z}B_z^{-1}\,\mathfrak{t}_{-z^z}$$

$$\implies {}^{z}_{U}G_{w} = \mathfrak{t}^{*}_{-w^z}\ {}^{z}B_w^{-1}\,\mathfrak{t}_{-z^w} \implies \begin{cases} \zeta^{z}_{U}G_w + z^w & = \zeta^{w^z z}B_w^{-1} = (\zeta+z)^w - z^w \\ \underline{{}^{\zeta}_{U}G_w} & = \underline{{}^{\zeta}\mathfrak{t}^{*}_{-w^z}}\ {}^{z}B_w^{-1} = {}^{\zeta}B_{w^z}^{-1z}B_w^{-1} = {}^{\zeta+z}B_w^{-1} \end{cases}$$

$$\implies \text{LHS} = \underline{{}^{\zeta_z}B_w}^{-n/p\ z^w + \zeta^z B_w}\mathbb{1} = \text{RHS}$$

$${}^{\zeta^{w^z z}B_w^{-1}}B_{\omega}\ {}^{\zeta}B_{w^z} = {}^{\zeta^{w^z}}B_{\omega^w B_z^{-1}}\ {}^{\zeta}B_{w^z} \underset{\text{JP33}}{=} {}^{\zeta}B_{\omega^w B_z^{-1}+w^z} = {}^{\zeta}B_{\underline{\omega+w-z\,Q_w}^{\,w}B_z^{-1}} = {}^{\zeta\ z}B_w^{-1}B_{\omega+w-z\,Q_w}$$

$$\implies {}^{\zeta^{w^z z}B_w^{-1}}\Delta^{n}_{\omega}\ {}^{\zeta}B^{n}_{-w^z} = {}^{\zeta^z B_w^{-1}}\Delta^{n}_{\omega+w-z\,Q_w}$$

$$\begin{array}{ccc} D_{\underset{\omega}{\triangle}}^{2}\, Z_{\underset{\frown}{\triangle}}^{n^-}\mathbb{C}\rtimes T^{-n-\nu} & \xleftarrow[\Delta_w^{-\nu-n}]{{}_U G_w^{-n^-}\mathfrak{t}_{\frown w}} & Z_{\underset{\frown}{\triangle}}^{\varkappa}\mathbb{C}\rtimes T^{-\nu} \\ \uparrow{\scriptstyle g_{\nu+n}^{n^-}\ltimes} & & \downarrow{\scriptstyle {}_K^{w*}g^{\varkappa}\ {}_T^{w*}g^{-\nu}} \\ D_{\underset{\omega}{\triangle}}^{2}\, Z_{\underset{\frown}{\triangle}}^{n^-}\mathbb{C}\rtimes T^{-n-\nu} & \xleftarrow[\Delta_{wg}^{-\nu-n}]{{}_U G_{wg}^{-n^-}\mathfrak{t}_{\frown wg}} & Z_{\underset{\frown}{\triangle}}^{\varkappa}\mathbb{C}\rtimes T^{-\nu} \end{array}$$

$$\overbrace{g^{-1}\ltimes \underbrace{{}^{\zeta+z}B_{-w}^{n\ \ (\zeta+z)^w-z^w}\mathbb{1}}}^{\zeta|z} = {}_T^{w*}g^{-n}\ {}^{\zeta+z}\Delta_{wg}^{n\ \ (\zeta+z)^{wg}-z^{wg}}\overbrace{{}_K^{w}g^*\ltimes\mathbb{1}}$$

$$\overbrace{g\ltimes {}^{\zeta+z}\Delta_{wg}^{n\ \ (\zeta+z)^{wg}-z^{wg}}\overbrace{{}_K^{w}g^*\ltimes\mathbb{1}}}^{\zeta|z} = {}_T^{\zeta+z}g^{-n\ (\zeta+z)\,g}\Delta_{wg}^{n\ \ \overbrace{(\zeta+z)\,g}^{wg}-\overbrace{zg}^{wg}}\overbrace{{}_K^{w}g^*\ltimes\mathbb{1}}$$

$$= {}_T^{\zeta+z}g^{-n\ (\zeta+z)\,g}\Delta_{wg}^{n\ \ \overbrace{(\zeta+z)\,g}^{wg}\ {}_K^{w}g^*-\overbrace{zg}^{wg}\ {}_K^{w}g^*}\mathbb{1} = {}_T^{\zeta+z}g^{-n\ (\zeta+z)\,g}\Delta_{wg}^{n\ \ (\zeta+z)^w+0_{\overset{*}{g}}^{-w}-z^w-0_{\overset{*}{g}}^{-w}}\mathbb{1}$$

$$= {}^{\zeta+z}B_{-w}^{n}\ {}_T^{w*}g^{n\ (\zeta+z)^w-z^w}\mathbb{1}$$

$$D_{\underset{\omega}{\triangle}}^{2}\, Z_{\underset{\frown}{\triangle}}^{n^-}\mathbb{C}\rtimes T^{-n-\nu} \xleftarrow{\mathcal{I}} D_{\underset{\omega}{\triangle}}^{2}K^{\varkappa}\rtimes T^{-\nu}$$

$$\mathcal{I}\,\underbrace{\Delta_w^{-\nu}B_w^{-\varkappa}\mathbb{1}} = \Delta_w^{-\nu-n}\ {}_U G_w^{-n^-}\ \mathfrak{t}_{\frown w}\mathbb{1}$$

$$\overbrace{\mathcal{I}\,\underbrace{\Delta_w^{-\nu}\overbrace{B_w^{-\varkappa}\mathbb{1}}}} = {}^{z}\Delta_w^{-\nu-n\ z+\zeta}B_{-w}^{n\ \ (\zeta+z)^w-z^w}\mathbb{1} = {}^{z}\Delta_w^{-\nu}\ {}^{\zeta}B_{-w^z}^{n\ \ \zeta^{w^z z}B_w^{-1}}\mathbb{1}$$

$${}_{\nu}^{-1}g^{\varkappa}\ltimes\underbrace{\Delta_w^{-\nu}B_w^{-\varkappa}\mathbb{1}} = {}_T^{w*}g^{-\nu}\ \Delta_{wg}^{-\nu}\ B_{wg}^{-\varkappa}\ {}_K^{w*}g^{\varkappa}\mathbb{1}$$

$$\mathcal{I}\,\overbrace{{}_{\nu}^{-1}g^{\varkappa}\ltimes\underbrace{\Delta_w^{-\nu}B_w^{-\varkappa}\mathbb{1}}} = \mathcal{I}\,\overbrace{{}_T^{w*}g^{-\nu}\Delta_{wg}^{-\nu}B_{wg}^{-\varkappa}\ {}_K^{w*}g^{\varkappa}\mathbb{1}} = {}_T^{w*}g^{-\nu}\,\mathcal{I}\,\overbrace{\Delta_{wg}^{-\nu}B_{wg}^{-\varkappa}\ {}_K^{w*}g^{\varkappa}\mathbb{1}}$$

$$= {}_T^{w*}g^{-\nu}\ \Delta_{wg}^{-\nu}\ {}_U G_{wg}^{-n^-}\ \mathfrak{t}_{\frown wg}\ {}_K^{w*}g^{\varkappa}\mathbb{1} = {}_{\nu}^{-1}g^{\chi}\ltimes\underbrace{\Delta_w^{-\nu}\ {}_U G_w^{-n^-}\mathfrak{t}_{\frown w}\mathbb{1}} = {}_{\nu}^{-1}g^{\chi}\ltimes\overbrace{\mathcal{I}\underbrace{\Delta_w^{-\nu}B_w^{-\varkappa}\mathbb{1}}}$$

$$(-n)_{\varkappa}\, {}^{\zeta}\underset{-\leftrightarrow w^z}{\mathfrak{b}}^{n}\; {}^{\zeta^{w^z z} B_w^{-1}}{}_K K_b^{\varkappa} = \underbrace{{}^{w^z+}\underset{-\leftrightarrow\zeta}{\mathfrak{b}}^{n}} \barwedge \underbrace{{}^z B_w^{-1} \ltimes {}_K K_b^{\varkappa}} \text{ poly } \zeta$$

$$\bar{\text{RHS}} = \underbrace{{}^z B_w^{-1} \ltimes {}_K K_b^{\varkappa}} \barwedge {}^{w^z+}\underset{-\leftrightarrow\zeta}{\mathfrak{b}}^{n} = {}_K K^{\varkappa}_{b^w B_z^{-1}} \barwedge {}^{w^z+}\underset{-\leftrightarrow\zeta}{\mathfrak{b}}^{n} = {}^{b^w B_z^{-1}}{}_K K_\partial^{\varkappa} \Big|^{0}\, {}^{w^z+}\underset{-\leftrightarrow\zeta}{\mathfrak{b}}^{n} = {}^{b^w B_z^{-1}}{}_K K_\partial^{\varkappa} \Big|^{w^z}\, \underset{-\leftrightarrow\zeta}{\mathfrak{b}}^{n}$$

$$= (-n)_{\varkappa}\, {}^{w^z}\underset{-\leftrightarrow\zeta}{\mathfrak{b}}^{n}\; {}^{b^w \mathfrak{g}_z^{-1}}{}_K K^{\varkappa}_{\zeta^{w^z}} = (-n)_{\varkappa}\, {}^{w^z}\underset{-\leftrightarrow\zeta}{\mathfrak{b}}^{n}\; {}^{b}{}_K K^{\varkappa}_{\zeta^{w^z z} B_w^{-1}} = \bar{\text{LHS}}$$

$$\overbrace{\mathcal{I}\,\underbrace{\Delta_w^{-\lambda}\,\overbrace{B_w^{-1}\lhd}}}^{\zeta|z} = {}^z\Delta_w^{-\lambda-n}\; \overbrace{{}^z B_w \ltimes {}^{z^w+}\lhd}^{\zeta} = {}^z\Delta_w^{-\lambda}\, {}^{\zeta}B^n_{w^z}\; {}^{\zeta^{w^z z} B_w^{-1}}\lhd = {}^z\Delta_w^{-\lambda-n}\, {}^{z+\zeta}B_w^n\; {}^{(\zeta+z)^w - z^w}\lhd$$

$$\mathcal{I}\,\underbrace{\overset{-1}{g} \ltimes \overbrace{{}^z\Delta_w^{-\lambda}\,\underbrace{{}^z B_w^{-1}\lhd}}} = \mathcal{I}\,\underbrace{\overbrace{\overset{-1}{g} \ltimes {}^z\Delta_w^{-\lambda}}\,\overbrace{\overset{-1}{g} \ltimes \underbrace{{}^z B_w^{-1}\lhd}}} = \mathcal{I}\,\overbrace{\underbrace{{}^z_T G_{wg}^{-\lambda}\; {}^{w*}_{T}\breve{g}^{\lambda}}\,\underbrace{{}^z B_{wg}^{-1}\, {}^{w*}_{K}\breve{g}\lhd}}$$

$$= {}^{w*}_{T}\breve{g}^{\lambda}\;\; \mathcal{I}\,\overbrace{{}^z_T G_{wg}^{-\lambda}\,\underbrace{{}^z B_{wg}^{-1}\, {}^{w*}_{K}\breve{g}\lhd}} = {}^{w*}_{T}\breve{g}^{\lambda}\;\; {}^z_T G_{wg}^{-\lambda-n}\; \underbrace{{}^z B_{wg}\;\; {}^{\widetilde{zg}^{wg}+}\overbrace{{}^{w*}_{K}\breve{g}\lhd}}$$

$$= {}^{w*}_{T}\breve{g}^{\lambda}\;\; {}^z_T G_{wg}^{-\lambda-n}\; \underbrace{{}^z B_{wg}\;\; {}^{w*}_{T}\breve{g}^{n}\;\; {}^{w*}_{U}\breve{g}^{z^w+}\lhd} = {}^z_T G_{wg}^{-\lambda-n}\;\; {}^{w*}_{T}\breve{g}^{\lambda+n}\; \underbrace{{}^z B_{wg}\, {}^{w*}_{U}\breve{g}^{z^w+}\lhd}$$

$$= \overbrace{\overset{-1}{g} \ltimes {}^z\Delta_w^{-\lambda-n}}\,\overbrace{\overset{-1}{g} \ltimes \underbrace{{}^z B_w\;\; {}^{z^w+}\lhd}} = \overset{-1}{g} \ltimes \overbrace{{}^z\Delta_w^{-\lambda-n}\,\underbrace{{}^z B_w\;\; {}^{z^w+}\lhd}} = \overset{-1}{g} \ltimes \underbrace{\mathcal{I}\,\overbrace{{}^z\Delta_w^{-\lambda}\,\underbrace{{}^z B_w^{-1}\lhd}}}$$

$$\overbrace{{}^z B_w \ltimes {}^{z^w+}{}_K K_\omega^{-\nu}}^{\zeta} = {}^{\zeta+z}\underset{-\leftrightarrow w}{\mathfrak{b}}^{n}\; {}^{(\zeta+z)^w - z^w}{}_K K_\omega^{-\nu} = {}^{z}\underset{-\leftrightarrow w}{\mathfrak{b}}^{n}\; {}^{\zeta}\underset{-\leftrightarrow w^z}{\mathfrak{b}}^{n}\; {}^{\zeta^{w^z z} B_w^{-1}}{}_K K_\omega^{-\nu} = {}^{z}\underset{-\leftrightarrow w}{\mathfrak{b}}^{n}\, \frac{1}{(-n)_\nu}\, \underbrace{{}^{w^z+}\underset{-\leftrightarrow\zeta}{\mathfrak{b}}^{n}} \barwedge \underbrace{{}^z B_w^{-1} \ltimes {}_K K_\omega^{-\nu}}$$

$$\rhd \in {}^{D}\underset{\omega}{\overset{2}{\triangle}}\; \underbrace{{}^{Z}\underset{\frown}{\triangle}\, \overset{n-}{\mathbb{C}} \bowtie {}^{\lambda+n}\mathbb{C}} \leftarrow {}^{D}\underset{\omega}{\overset{2}{\triangle}}\; \underbrace{{}^{Z}\underset{\frown}{\triangle}\, \overset{\mu}{\mathbb{C}} \bowtie \overset{\lambda}{\mathbb{C}}} \ni \rhd$$

$$\overbrace{\mathcal{I}\Delta_w^{-\lambda}\,\underbrace{B_w^{-1} \ltimes E_\omega^{-\nu}}}^{\zeta|z} = {}^z\Delta_w^{-\lambda-n}\; \overbrace{{}^z B_w \ltimes {}^{z^w+}E_\omega^{-\nu}}^{\zeta} = {}^z\Delta_w^{-\lambda-n}\, {}^{\zeta+z}B_w^n\; {}^{(\zeta+z)^w - z^w}E_\omega^{-\nu}$$

$$= {}^z\Delta_w^{-\lambda}\, {}^{\zeta}B^n_{w^z}\; {}^{\zeta^{w^z z} B_w^{-1}}E_\omega^{-\nu} = {}^z\Delta_w^{-\lambda}\, \frac{1}{(-n)_\nu}\, \underbrace{{}^{w^z+}B_\zeta^n} \barwedge \underbrace{{}^z B_w^{-1} \ltimes E_\omega^{-\nu}}$$

$$\Rightarrow {}^z B_w^{\lambda}\;\; \overbrace{\mathcal{I}\Delta_w^{-\lambda}\,\underbrace{B_w^{-1} \ltimes E_\omega^{-\nu}}}^{\zeta|z} = \frac{1}{(-n)_\nu}\, \underbrace{{}^{w^z+}B_\zeta^n} \barwedge \underbrace{{}^z B_w^{-1} \ltimes E_\omega^{-\nu}}$$

$$\underbrace{{}^{wz+}B^n_\zeta}\blacktriangleright\eth = \overbrace{\partial_{{}^{wz+}B^n_\zeta}\eth}^{0} = \overbrace{1-\zeta\left(\overset{*}{w}{}^z+\partial\right)}^{n}\eth = {}^{\zeta}B^n_{w^z}\,{}^{\zeta^{wz}}B^n_\partial\eth$$

$$\overbrace{g\ltimes\mathfrak{f}}^{\zeta|z} = {}^{z}_{T}g^{-\nu}\blacktriangleright{}^{\zeta}_{K}{}^{z}_{zg|zg}S$$

$${}^{zg}_{\nu}\underline{\mathcal{K}}_{wg} = {}^{z}_{K}g^{-\nu}\,{}^{z}_{\nu}\underline{\mathcal{K}}_{w}\,{}^{w}_{T}\overset{*}{g}{}^{-\nu}$$

$$\overbrace{\widetilde{\mathcal{K}}_w}^{\zeta|z} = {}^{\zeta+z}_{\nu}\underline{\mathcal{K}}_w \Longrightarrow g\ltimes\widetilde{\mathcal{K}}_w = \widetilde{\mathcal{K}}_{w\,{}^{-1}_{g}}\,{}^{w\,{}^{-1}_{g}}_{T}\overset{*}{g}{}^{-\nu}$$

$$\overbrace{g\ltimes\widetilde{\mathcal{K}}_w}^{\zeta|z} = \overbrace{{}^{z}_{U}g^{-\nu}\ltimes{}^{zg}\widetilde{\mathcal{K}}_w}^{\zeta} = {}^{\zeta}_{\underline{U}}{}^{z}g^{-\nu/p}\,{}^{zg|zg}_{\zeta\;U}\widetilde{\mathcal{K}}_w = {}^{\zeta+z}_{T}g^{-\nu}\,{}^{zg+zg}_{\zeta\;U}\widetilde{\mathcal{K}}_w$$

$$= {}^{\zeta+z}_{T}g^{-\nu}\,{}^{\underline{\zeta+zg}}_{\nu}\underline{\mathcal{K}}_w = {}^{\zeta+z}_{\nu}\underline{\mathcal{K}}_{w\,{}^{-1}_{g}}\,{}^{w\,{}^{-1}_{g}}_{T}\overset{*}{g}{}^{-\nu} = {}^{\zeta|z}\widetilde{\mathcal{K}}_{w\,{}^{-1}_{g}}\,{}^{w\,{}^{-1}_{g}}_{T}\overset{*}{g}{}^{-\nu}$$

$${}^{z}_{\nu}\underline{\mathcal{K}}_w = \overbrace{1-z\overset{*}{w}}^{\nu} = {}^{z}_{T}G^{-\nu}_{w}$$

$${}^{zg}B_{wg} = {}^{w}_{K}\overset{*}{g}\,{}^{z}B_w\,{}^{z}_{K}g \Longrightarrow {}^{zg}_{T}G^{-\nu}_{wg} = {}^{w}_{T}\overset{*}{g}{}^{-\nu}\,{}^{z}_{T}G^{-\nu}_{w}\,{}^{z}_{T}g^{-\nu}$$

$${}^{\zeta|z}\mathcal{K}_w = {}^{\zeta+z}_{\nu}\underline{\mathcal{K}}_w$$

$$g\ltimes\mathcal{K}_w = \mathcal{K}_{w\,{}^{-1}_{g}}\,{}^{w}_{T}\overset{*}{g}{}^{-\nu}$$

$$\overbrace{g\ltimes\mathcal{K}_w}^{\zeta|z} = {}^{\zeta+z}_{T}g^{-\nu}\,{}^{\underline{\zeta+zg}}\mathcal{K}_w = {}^{\zeta+z}_{T}g^{-\nu}\,{}^{\underline{\zeta+zg}}\mathcal{K}_{\underbrace{w\,{}^{-1}_{g}}g} = {}^{\zeta+z}\mathcal{K}_{w\,{}^{-1}_{g}}\,{}^{w}_{T}\overset{*}{g}{}^{-\nu} = {}^{\zeta|z}\mathcal{K}_{w\,{}^{-1}_{g}}\,{}^{w}_{T}\overset{*}{g}{}^{-\nu}$$

$${}^{\zeta|z}\mathcal{K}_w\,{}^{z}k^{\nu+\lambda}_{w}$$

$$g\ltimes\underbrace{\mathcal{K}_w k^{\nu+\lambda}_w} = \underbrace{g\ltimes\mathcal{K}_w}\,\underbrace{g\ltimes k^{\nu+\lambda}_w} = \mathcal{K}_{w\,{}^{-1}_{g}}\,{}^{w}_{T}\overset{*}{g}{}^{-\nu}\,k_{w\,{}^{-1}_{g}}\,{}^{w}_{T}\overset{*}{g}{}^{\nu+\lambda} = \mathcal{K}_{w\,{}^{-1}_{g}}\,k_{w\,{}^{-1}_{g}}\,{}^{w}_{T}\overset{*}{g}{}^{\lambda}$$