$$\mathrm{diag}(\boldsymbol{v})\boldsymbol{D}\boldsymbol{M}_f{\left(\boldsymbol{\sigma}^{-1}\right)}^{-1}\boldsymbol{D}^{\top}\ \mathrm{diag}(\boldsymbol{v})\boldsymbol{\varphi}=\boldsymbol{q}$$