Barnes' integral representation of the hypergeometric function

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When a, b, c, d are complex numbers and z is a complex number such that $-\pi < \arg(-z) < +\pi$ and C is a contour in the complex s-plane which goes from $-i\infty$ to $+i\infty$ chosen such that the poles of $\Gamma(a+s)\Gamma(b+s)$ lie to the left of C and the poles of $\Gamma(-s)$ lie to the right of C, then

$$\int_C \frac{\Gamma(a+s)\Gamma(b+s)}{\Gamma(c+s)}\Gamma(-s)(-z)^s \, ds = 2\pi i \frac{\Gamma(a)\Gamma(b)}{\Gamma(c)} F(a, b; c; z)$$