Ballasted Polar:

with the well known equation for lift:

$$mg = \tfrac{1}{2} \rho S V^2 C_a \qquad (1)$$

and

$$o = m_b/m \qquad (2)$$

o = ballast overload

m_b = ballasted mass

V = unballasted airspeed

S = wing area

ρ = air density constant

Ca = lift coefficient

m = unballasted mass as from reference polar

we can solve eq. (1) for V

$$V = \mathrm{sqrt}(\, m\, g / \tfrac{1}{2} \rho\, S\, Ca\,)$$

as we can consider everything except mass m as constant in the above expression we can conclude:

$$V_b / V = \mathrm{sqrt}(\, m_b / m) = \mathrm{sqrt}(o) \quad (2)$$

or

$$V = V_b / \mathrm{sqrt}(o) \qquad (3)$$

with the second order approximation for sink:

$$\mathrm{Sink}(V) = a0 + a1\, V + a2\, V^2 \quad (4)$$

and (3) in (4), we get for the ballasted sink:

$$\mathrm{Sink}_b(V_b/\mathrm{sqrt}(o)) = a0 + a1\, (V_b/\mathrm{sqrt}(o)) + a2\, (\, V_b/\mathrm{sqrt}(o)\,)^2$$

or

$$\mathrm{Sink}_b(V_b) = \mathrm{sqrt}(o)\, (\, a0 + (a1 / \mathrm{sqrt}(o)\,)\, V_b + (a2 / o)\, V_b^2\,)$$

or, further simplified:

$$\mathrm{Sink}_b(V_b) = a0\, \mathrm{sqrt}(o) + a1\, V_b + (a2 / \mathrm{sqrt}(o))\, V_b^2$$

So finally we get the polar translated for the ballasted case and thats what we do today in XCS and also XCV when user increases ballast.