Title of Addendum: *Corrections to Equations in ANSI/HI 14.3*
Standard ID and Name: *ANSI/HI 14.3-2019 American National Standard for Rotodynamic Pumps for Design and Application*
Date of Addendum: *March 16th, 2023*

The following addendum presents the corrections and revision of **ANSI/HI 14.3-2019 American National Standard for Rotodynamic Pumps for Design and Application**, approved on **February 1, 2019**. An addendum is issued to change or alter any technical information in a published standard, substantive in nature, from its original intended form.

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A ~~single strike through~~ of text indicates deletion, while a single underline indicates an addition. For formulas, figures and graphics, a dashed, gray line will be placed over the original reproduced object. The new or updated object will be presented in the same manner as it should appear in the standard.

Page Number	Change
131 (Document) 148 (PDF)	Paragraph 14.3.6.4.3.1 Method for calculating dry critical speed for pumps with overhung impellers (neglecting coupling weight)

Original Equation:

Shaft deflection at impeller location (X = 0) δ_x:

$$\delta_x = \frac{M_l g}{3E}\left\{\frac{Z^2 A}{I_A} + C_3 X\left(\frac{1}{I_C} - \frac{1}{I_B}\right) + \frac{Z^3}{I_B}\right\} \text{mm (in)}$$

Corrected Equation:

Shaft deflection at impeller location (X = 0) δ_x:

$$\delta_x = \frac{M_l g}{3E}\left\{\frac{Z^2 A}{I_A} + C^3\left(\frac{1}{I_C} - \frac{1}{I_B}\right) + \frac{Z^3}{I_B}\right\} \text{ mm (in)}$$

Note: The subscript 3 for dimension “C” changed to an exponent. The “X” was removed as multiplication symbols are not used in the equation.

Page Number	Change
132 (Document) 149 (PDF)	Paragraph 14.3.6.4.3.1 Method for calculating dry critical speed for pumps with overhung impellers (neglecting coupling weight)

g = 9.81 m/s^2 ~~(32.2 ft/s^2)~~, gravitational constant (When calculating in US customary units the constant g is not required in the calculation as mass is in lbm when using density in lbm/ft^3.)

139 (Document) 156 (PDF)	Paragraph 14.3.6.5.5 Method of calculating dry critical speed: open lineshaft vertical pumps

Original Equation:

Metric units:

$$F_n = 0.762 \times \frac{N}{L} \times 83.034 \times \sqrt{\frac{g}{w_L}} \times \left[1.4504 \times 10^{-4} \times E \times I \times \left(7.9797 \times 10^{-2} \times \frac{N}{L}\right)^2 + 0.2249 \times F\right]$$

Corrected Equation:

$$F_n = 30 \times \frac{N}{L} \times \sqrt{\frac{g}{W_L}} \times \left[1.0 \times 10^{-12} \times E \times I \times \left(3.1416 \times \frac{N}{L}\right)^2 + F\right]^{0.5}$$

Note: Corrected the equation for error and simplified the equation to a single conversion factor when moment of inertia is expressed in mm^4.