



TABLE 34.3
Allowable Stress Values for Crankshafts and
Tail Shafts Due to a Single Harmonic
(Grade 2 Steel)

Engine Speed	0.5R or less	0.5R	0.95R-1.00R	1.05R
Diameter 300 mm (11.8 in.) or less	$\pm 400 \text{ kg/cm}^2$ (5,689 psi)	$\pm 250 \text{ kg/cm}^2$ (3,536 psi)	$\pm 150 \text{ kg/cm}^2$ (2,134 psi)	$\pm 250 \text{ kg/cm}^2$ (3,536 psi)
Diameter 600 mm (23.6 in.) or more	$\pm 320 \text{ kg/cm}^2$ (4,551 psi)	$\pm 200 \text{ kg/cm}^2$ (2,845 psi)	$\pm 120 \text{ kg/cm}^2$ (1,707 psi)	$\pm 200 \text{ kg/cm}^2$ (2,845 psi)

Notes

- 1 Stress limits for speeds intermediate between those shown in Table 34.3, and for shafts between 300 and 600 mm (11.8 in. and 23.6 in.) in diameter, may be obtained by interpolation. In the Table, *R* is rpm at rated speed, which is the speed at maximum continuous rating for regular operation in service. Stresses are nominal values based on diameter of crankpins, or on the minimum propeller-shaft diameter between the big end of the taper and the forward stern gland, disregarding stress-concentration factors.
- 2 Where the service is such that the vessel will operate for a significant portion of its service life at speeds below 90% of rated speed, the stress limits in the interval 0.95R-1.00R of Table 34.3 are to be used in such speed ranges.
- 3 If torsional critical-speed arrangements are similar to previous installations proven by service experience, consideration will be given to higher stresses upon submittal of full details.
- 4 Stress limits for crankshafts made of Grade 3 or 4 or approved alloy-steel forgings may be increased by two-thirds of the percentage increase in ultimate tensile strength over 42 kg/mm² (60,000 psi).