Feeding Distance of Feeder Heads in Steel Plates and Bars

Maximum feeding distance from a feeder head to the end of a steel plate or bar and between heads, with and without end chills (Bishop, Myskowski and Pellini).

Method: Beeley; Foundry Technology; ...

Input parameters

Unit system: SI

Parameter	Value	Unit
Section	Plate (width at least 3 × thickness)	
Section thickness	50.800	mm

Calculated results

Parameter	Value	Unit
Head to free end	228.60	mm
Between two heads, lower value	203.20	mm
Between two heads, upper value	203.20	mm
Head to a chilled end	279.40	mm
Between two heads with a chill midway	558.80	mm

Notes for this case

• From experiments on 0.25–0.30 % carbon steel in sand (the relations use inches). Alloys with a longer freezing range feed over shorter distances. A step from a section to one more than 1.4 times thinner extends the feeding of the thin part.

Formula and method

$$\text{Plate}: \; D_e = 4.5T, \; D_b = 4T, \; D_{e,c} = 4.5T + 2, \; D_{b,c} = 9T + 4; \quad \text{Bar}: \; D_e = 6\sqrt{T}, \; D_b = 1\text{–}4T, \; D_{e,c} = 6\sqrt{T} + T \;\; (\text{in})$$

Variables

section	Section	-
T	Section thickness	m
D_e	Head to free end	m
$D_{b,min}$	Between two heads, lower value	m
$D_{b,max}$	Between two heads, upper value	m
$D_{e,c}$	Head to a chilled end	m
$D_{b,c}$	Between two heads with a chill midway	m

Method and standards

Empirical feeding distances.

Assumptions and limits

- Sand moulds, 0.25–0.30 % C steel.

References

• Beeley
• Foundry Technology
• 2nd ed. (Butterworth-Heinemann, 2001)
• ch. 3
• figs. 3.25-3.27 (Bishop, Myskowski and Pellini)

Report details

Report reference	FCC-VRBV-CZCH (the same inputs always give the same reference)
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Release checks	4 reference cases of this calculator, computed independently, are checked on every release

Results are for engineering estimation. Verify critical designs against the referenced standards and your own data.

This calculator online

https://calc.firecad.com/materials/steelmaking-foundry/steel-casting-feeding-distance

Open this case on calc.firecad.com →

Reopens the calculator with the inputs of this report.