

NO.	REVISION	DATE	BY	CHK'D
N	Reformat, remove ASTM A331 & A513, revised chemical composition per ASTM A322, revised tolerance table. ECR 7080	2/8/01	DJS/SMM2	RDE
P	Added special packaging note. ECR 8353	7/7/04	JLB	RDE
R	Added table with part no. M 1111-68-1 & -76-1, revised special packaging & part number example notes. ECR 9348	2/12/07	DHJ	RDE

Material Grade: SAE-AISI 8620

Color Code: Yellow-Green

Material Description: Hot-Wrought, Round Alloy Steel Bar.

Material Specification: ASTM A 322-91: Standard Specification for Steel Bars, Alloy, Standard Grades

Special Packaging, Stock Lengths: Part numbers without second suffix shall be cut into 10 ft sections. For part numbers with second suffix, see table for length and material condition.

Part Number Example: M 1111-64-25. First suffix indicated nominal O.D. in sixteenth of an inch. Second suffix, if present, identifies length.

Part Number	Nominal O.D.	Length +/- .031"	Material Condition
M 1111-68-1	4.250	2.500	1. Part shall be normalized and air quenched, per PR1002. 2. The saw-cut ends shall be perpendicular (square) with the O.D. within .031". 3. Parts shall be clean and free of chips.
M 1111-76-1	4.750	2.500	

Note: The following information is shown for engineering reference only and is subordinate to the above material specification.

Chemical Composition of Hot-Wrought Alloy Steel Bars, %: (ASTM A 322)

Carbon	0.18-0.23
Manganese	0.70-0.90
Phosphorus	0.035 max
Sulfur	0.04 max
Silicon	0.15-0.35
Nickel	0.40-0.70
Chromium	0.40-0.60
Molybdenum	0.15-0.25

Estimated Mechanical Properties and Machinability:

Tensile Strength MPa	Tensile Strength psi	Estimated Minimum Values Yield Strength MPa	Yield Strength psi	Estimated Minimum Values Elongation in 2 in, %	Reduction In Area %	Brinell Hardness	Average Machinability Rating 1212=100%
	95 000-105 000		80 000-90 000	15-25	50-60	179-235	65

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R	See page one.

Permissible Variations in Cross Section for Hot-Wrought Round Bars of Steel: (ASTM A29/A29M)

Specified Size, in.	Permissible Variation from Specified Size, in.	
	Over	Under
To 5/16, incl	0.005	0.005
Over 5/16 to 7/16, incl	0.006	0.006
Over 7/16 to 5/8, incl	0.007	0.007
Over 5/8 to 7/8, incl	0.008	0.008
Over 7/8 to 1, incl	0.009	0.009
Over 1 to 1 1/8, incl	0.010	0.010
Over 1 1/8 to 1 1/4, incl	0.011	0.011
Over 1 1/4 to 1 3/8, incl	0.012	0.012
Over 1 3/8 to 1 1/2, incl	0.014	0.014
Over 1 1/2 to 2, incl	1/64	1/64
Over 2 to 2 1/2, incl	1/32	0
Over 2 1/2 to 3 1/2, incl	3/64	0
Over 3 1/2 to 4 1/2, incl	1/16	0
Over 4 1/2 to 5 1/2, incl	5/64	0
Over 5 1/2 to 6 1/2, incl	1/8	0
Over 6 1/2 to 8 1/4, incl	5/32	0
Over 8 1/4 to 9 1/2, incl	3/16	0
Over 9 1/2 to 10, incl	1/4	0

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