

WAP / M / SPECN-1 / 063 / 1995			ALT.
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GOVERNMENT OF INDIA
MINISTRY OF RAILWAYS

SPECIFICATION FOR
38x22x12mm CUTTING INSERTS FOR
ROUGH MACHINING OF AXLES

Issued by
MECHANICAL DRAWING OFFICE
WHEEL & AXLE PLANT
YELAHANKA, BANGALORE-560 084
J N D T A

<i>DTIS</i> <i>16.10.95</i>	<i>J.V. 16/10</i>	<i>R. Anshu</i> <i>16.10.95</i>
Dy. C.M.E./AXLE	WM/AMS	SUPDT./DESIGN
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SPECIFICATION FOR 38x22x12mm CUTTING INSERTS FOR ROUGH MACHINING OF AXLES

- 1.0 **SCOPE:** The specification covers the supply of cutting inserts for machining railway axles by fixing to tool holder to Drg. No. WAP/A/TL-046 and WAP/A/TL-047 at Wheel and Axle Plant, Yelahanka, Bangalore, Karnataka State, India as per specified specifications.
- 2.0 **DESCRIPTION OF WORK:** Steel axles are machined from forged drawing No. WAP/Forge-10 to the rough machined size Drg. No. WAP/SK/MA/122, in one Pass.
- The maximum depth of the cut for the material to be removed by machining is 28 mm on radius in one pass.
- 3.0 **Composition and physical properties of the material to be removed by machining:**

C	:	0.4 to 0.5%
Mn	:	0.5 to 0.9%
Si	:	0.15 to 0.35%
P	:	0.045% max.
S	:	0.05% max.
Cr	:	0.20% max.
CR+Ni+Cu	:	0.35% max.
Tensile strength	:	54 Kg/Cm ² to 70 Kg/Cm ² .
Yield strength	:	50% of Tensile Strength.
Hardness	:	Approx. 190 to 220 BHN.

4.0 **MACHINE DATA:**

<u>Sl.No.</u>	<u>Description</u>	<u>Specification</u>
1.	Spindle speed	: Variable 100 to 400 RPM.
2.	Feed range	: 1" to 80"/min.
3.	Type of chuck	: Hydraulic.
4.	Product diameter range	: 5" to 10".
5.	No. of tools per carriage	: (1) Max. 3 on right hand front and left hand rear. (2) Max. 2 on left hand front and right hand rear.
6.	Carriage	: 2 front, 2 rear.
7.	Traverse rate	: 80"/min.

5.0 **OPERATING CONDITIONS:**

- (1) The axles are machined on heavy duty Farrel Roughing Centre Lathe.
- (2) Four tools are employed at a time for machining the axle.

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- (3) For heavy duty copying of the railway axles the inserts should have four cutting edges of 38mm length and 12 mm thickness and it should be in a position to operate at higher parameters.
- (4) It should have higher resistance to wear at high temperature, high speed operation.
- (5) It is a copying operation which results in very high cutting forces to be carried out with heavy duty turning holders.
- (6) The inserts should have built-in wide and narrow chip breaking facility for easy chip breaking and positive rake machining.
- (7) No facility exists for coolant application during cutting operation.
- (8) The surface finish of M12 is to be obtained.

6.0 GENERAL CONDITIONS:

- (1) Each cutting insert is required to machine minimum twelve axles.
- (2) The tenderer should be an ISO-9001 certified firm.

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