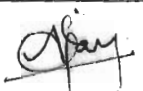
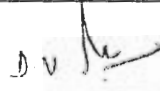
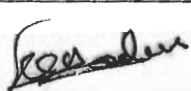


WAP/M/SPECN-1/080/2000			ALT
ALT	DATE	JOB NO.	SIGN.

GOVERNMENT OF INDIA
MINISTRY OF RAILWAYS

SPECIFICATION FOR
1" - 8 UNC 2B TAPS FOR
TAPPING OF RAILWAY AXLES

Issued by
MECHANICAL DRAWING OFFICE
WHEEL & AXLE PLANT
YELAHANKA, BANGALORE-560 064
I N D I A

		
DY. CME/A	WMAMS	SSE/DESIGN
APPROVED BY	CHECKED BY	PREPARED BY

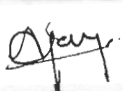
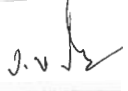
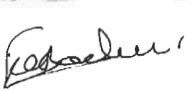
**SPECIFICATION FOR
1" - 8 UNC 2B TAPS FOR TAPPING OF RAILWAY AXLES**

- 1.0 **SCOPE:** The scope of supply covers, design, supply and establish satisfactory performance of short machine taps suitable for size 1" x 8 UNC2B class threads on holes of railway axle ends.
- 2.0 **DESCRIPTION OF THE WORK:** Railway axles are to be tapped on both end of axles 3 holes on each end. The tapping of holes shall be done simultaneously on a special purpose machine viz. End drilling, tapping machine in one pass to a depth of 53 mm. The tapped hole details are indicated in the Drawing No. WAP/SK/MA-125 (A4)
- 3.0 Composition and physical properties of the Railway axle is -

ELEMENT	PERCENTAGE
C	0.32-0.37
Mn	0.85-1.10
Si	0.15-0.35
P	0.03% max.
S	0.025% max.
Cr	0.3% max.
Ni	0.3 max.
Mo	0.05 max.
Cu	0.20 max.
V	0.05 max.
P+S	0.05 max.
Tensile strength:	550-700 N/MM ² min.
Yield strength :	50% of Tensile Strength.

- 4.0 The machine parameters are as under:

Speed of drive	-	98 RPM.
Feed	-	As per pitch.
Type of Chuck	-	Blitz make WFLP 460-60 TR 36 x 2
Type of Tapping Adapters	-	Blitz make WESN/B.
The movement of taps heads is controlled hydraulically.		

		
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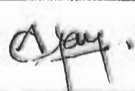
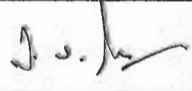
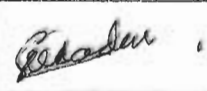
5.0 OPERATING CONDITIONS:

- (1) The axles are tapped on a Special Purpose Machine having tapping units with 3 spindle tapping head driven by a electric motor 10 HP 1500 RPM. The speed of tapping spindle is 90 RPM.
- (2) 3 taps are employed at a time on each axle end. Both the ends of axle holes are tapped simultaneously.
- (3) Manufacturers of taps shall design the taps suitable for the application and to satisfy the performance guarantee conditions.
- (4) The general dimension of the tap are indicated in the Drawing No. WAP/A/TL-051 latest.
- (5) The tapped holes shall not respond to NO GO (more than 2 threads) with 1" 8 UNC 2B thread plug gauge.

6.0 INSPECTION:

1. 12 Nos. of taps shall be supplied for checking the suitability before effecting bulk supplies.
2. On establishment of bulk supply 5% Inspection of each lot of taps supplied shall be done for -
 - (a) Hardness, chemical analysis as deemed necessary.
 - (b) The tapped hole size w.r.t. GO-NO GO gauge size 1"-8 UNC-2B.
 - (c) The size of geometry of thread formed.


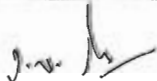
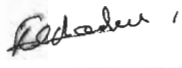
In case any tap found to be in variation to the above condition a, b, & c during the usage of taps after acceptance by Railways, the entire quantity available would be checked and rejection done accordingly.

		
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7.0 **PERFORMANCE:**

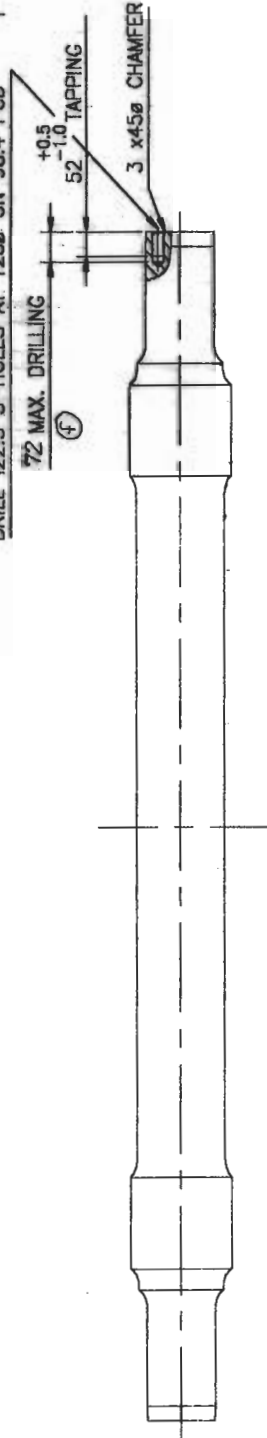
The performance of the taps shall be checked on the machine at WAP premises for -

1. The taps shall not respond to NO GO for more than two threads.
2. Tap shall last for minimum, 275 holes.
3. The threads formed shall be consistent for all the thread holes throughout the tap life guaranteed.

		
DY.CME/A	WM/AMS	SSE/DESIGN
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DRG. No. WAP/SK/MA-125

ALT	DESCRIPTION	JOB No.	INITIALS
Ⓒ	REVISED AND REDRAWN	2444	sd/-
Ⓕ	63 MAX. CHANGED TO 72 MAX, AS PER R.D.S.O Lr. NO. MW/WA/WAP-dt. 22.6.95	2670	sd/-
	DRILL 122.5 3-HOLES AT 120 ϕ ON 98.4 PCD		13.9.95



NOTE :-

1. ALL DIMENSIONS ARE IN 'mm' UNLESS OTHERWISE SPECIFIED.
2. ALLOWABLE DEVIATIONS FOR DIMENSIONS WITHOUT SPECIFIED TOLERANCES AS PER MEDIUM-IS:2102.
3. CHECK THE AXLE DIMENSIONS ATLEAST ONCE IN EVERY 5 AXLES.
4. KEEP YOUR MACHINE AND ITS PLATFORM CLEAN.
5. WEAR PERSONAL PROTECTIVE EQUIPMENT.

USE GAUGES:-

- 1 DRILL HOLE DEPTH -SS/TR-028-XY
- 2 TAP HOLE DEPTH -SS/TR/-026-XY
- 3 PCD VERIFICATION -SS/TR-045-XY
- 4 GO-NOGO THREAD PLUG GAUGE -SS/TR-024-XY-FIP

WHERE 'XY' INDICATES SL. No. IN THE GROUP.

OPERATING PARAMETERS FOR GUIDANCE ONLY

	REV/MIN	FEED mm/MIN	DEPTH OF CUT	COOLANT	INSERT
DRILLING	198	50	63	FLOOD COOLANT	122.5 TWIST DRILL
COUNTER SINKING	198	-	1.0	FLOOD COOLANT	128 TWIST DRILL
TAPPING	90	-	52 +0.5 -1.0	FLOOD COOLANT	1"-8 UNC M/C TAP

CLASS DEVIATION		PERMISSIBLE VARIATIONS ON LENGTH OF SHORTER SIDE OF ANGLE											
DEGREE		OVER 10 TO 50					OVER 50 TO 120						
100mm		DEGREE		mm PER 100mm			DEGREE		mm PER 100mm				
FINE	±1'	±1.8	±30'	±0.8	±20'	±0.6	±18'	±0.3	±15'	±0.4	±12'		
MEDIUM	±1'	±1.8	±30'	±0.8	±20'	±0.6	±18'	±0.3	±15'	±0.4	±12'		
EXTRA COARSE	±3'	±5.2	±2'	±3.5	±1'	±1.8	±30'	±0.9	±12'	±0.8	±10'		
SURFACE ROUGHNESS VALUE	Gr. NUMBER	N1	N2	N3	N4	N5	N6	N7	N8	N9	N10	N11	N12
	Rg. um	0.025	0.05	0.1	0.2	0.4	0.8	1.6	3.2	6.3	12.5	25	50

DEVIATION FOR LINEAR DIMENSIONS (mm)		RANGE	
3	6	30	120
6	30	120	315
30	120	315	1000
120	315	1000	2000
315	1000	2000	4000
1000	2000	4000	8000
2000	4000	8000	12000
4000	8000	12000	16000

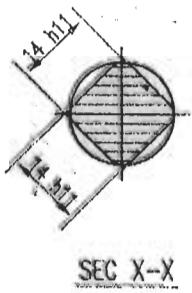
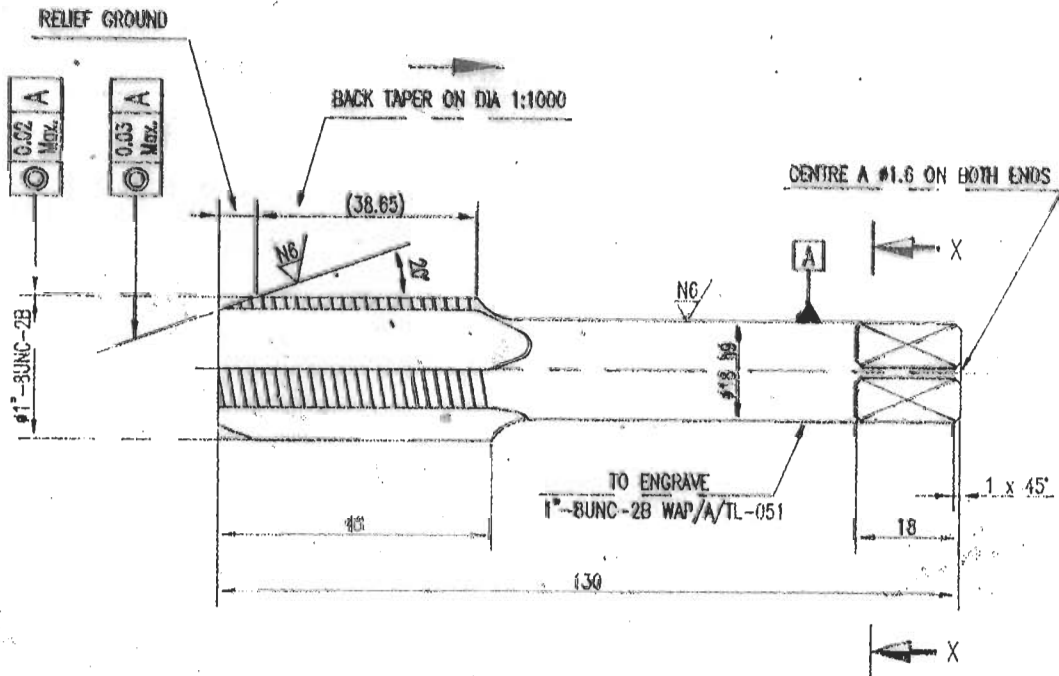
DEVIATION FOR ANGULAR DIMENSIONS (mm)		RANGE	
3	6	30	120
6	30	120	315
30	120	315	1000
120	315	1000	2000
315	1000	2000	4000
1000	2000	4000	8000
2000	4000	8000	12000
4000	8000	12000	16000

CLASS DEVIATION		PERMISSIBLE VARIATIONS ON LENGTH OF SHORTER SIDE OF ANGLE											
DEGREE		OVER 10 TO 50					OVER 50 TO 120						
100mm		DEGREE		mm PER 100mm			DEGREE		mm PER 100mm				
FINE	±1'	±1.8	±30'	±0.8	±20'	±0.6	±18'	±0.3	±15'	±0.4	±12'		
MEDIUM	±1'	±1.8	±30'	±0.8	±20'	±0.6	±18'	±0.3	±15'	±0.4	±12'		
EXTRA COARSE	±3'	±5.2	±2'	±3.5	±1'	±1.8	±30'	±0.9	±12'	±0.8	±10'		
SURFACE ROUGHNESS VALUE	Gr. NUMBER	N1	N2	N3	N4	N5	N6	N7	N8	N9	N10	N11	N12
	Rg. um	0.025	0.05	0.1	0.2	0.4	0.8	1.6	3.2	6.3	12.5	25	50

CLASS DEVIATION		PERMISSIBLE VARIATIONS ON LENGTH OF SHORTER SIDE OF ANGLE											
DEGREE		OVER 10 TO 50					OVER 50 TO 120						
100mm		DEGREE		mm PER 100mm			DEGREE		mm PER 100mm				
FINE	±1'	±1.8	±30'	±0.8	±20'	±0.6	±18'	±0.3	±15'	±0.4	±12'		
MEDIUM	±1'	±1.8	±30'	±0.8	±20'	±0.6	±18'	±0.3	±15'	±0.4	±12'		
EXTRA COARSE	±3'	±5.2	±2'	±3.5	±1'	±1.8	±30'	±0.9	±12'	±0.8	±10'		
SURFACE ROUGHNESS VALUE	Gr. NUMBER	N1	N2	N3	N4	N5	N6	N7	N8	N9	N10	N11	N12
	Rg. um	0.025	0.05	0.1	0.2	0.4	0.8	1.6	3.2	6.3	12.5	25	50

INDIAN RAILWAYS
STATION 5
RECENTERING, DRILLING & TAPPING
FOR
AXLE DRG. No. WD-89025-S/2
WHEEL AND AXLE PLANT
BANGALORE

SUPERSEDED BY
SUPERSEDES WAP/SK/MA-125 AT.C.
SCALE SD 16/3/00
CHD
TRD
DRN
DAS 28.10.94
ALT ②(f)
DRG. No. WAP/SK/MA-125
JOB No. 2444 SHEET 1 OF 1
5 OF 6
COMPUTER GENERATED DRG.



NOTE:

- 1) ALL DIMENSIONS ARE IN mm.
- 2) THE RELIEF ANGLE, CLEARANCE, TOOL GEOMETRY ARE TO BE DESIGNED TO SUIT THE END USE.
- 3) FLUTES FACE TO BE GROUND. (4 Nos. STRAIGHT FLUTES)
- 4) OTHER FLUTE DETAILS LEFT TO THE DISCRETION OF THE MANUFACTURER.
- 5) UNTOLERANCE DIMENSIONS SHALL BE AS PER IS: 2102 (COARSE)
- 6) CUMULATIVE PITCH ERROR MEASURED OVER 25mm THREAD LENGTH 0.012mm MAX.
- 7) HARDENED AND TEMPERED, THREADS GROUNDED.
- 8) SURFACE FINISH SHOULD CONFORM TO IS:3073.

MATL: HSS AISI-M2.

HARDNESS: 1) CUTTING PORTION: 760 HV TO 900 HV.
 2) DRIVING SQUARE: 320 HV MIN., MAX. HARDNESS SHALL NOT EXCEED THE CUTTING PORTION.

HARDEND AND GROUND	ANGULAR DIMENSIONS				TOLERANCE FOR MACHINED AND UNMACHINED SURFACES UNLESS SPECIFIED OTHERWISE								
	LENGTH OF SHORTER SIDE OF ANGLE		DEVIATION		OVER UPTO	> 6	6 30	30 120	120 315	315 1000	1000 2000	2000 4000	4000 >
	ABOVE	UPTO	mm	DEGREE OR MINUTES									
FINE FINISH	N1	N2	N3										
FINISH	N4	N5	N6	10	±0.1	±1'							
SMOOTH	N7	N8	N9	50	±0.2	±30'	0.05	0.1	0.2	0.3	0.5	0.8	1.2
ROUGH	N10	N11		120	±0.6	±20'							
MACHINING SYMBOLS				120	±0.8	±10'	0.2	0.5	0.8	1.2	2.0	3.0	4.0

INDIAN RAILWAYS

ASSEMBLY

SHORT MACHINE TAP - 1" - 8UNC - 2B

REF.

SUPERSEDED BY SUPERSEDES

SCALE	CD	10.3.2000
NTS	CHD	
	DRN	10.3.2000

WHEEL AND AXLE PLANT

ALT.

BANGALORE

DRG No. WAP/A/TL - 051

J.V. 10/3
APPROVED

JOB No.: 3559

6 OF 6