


HAPPY FORGINGS LIMITED,LUDHIANA				METTALURGICAL TEST REPORT					
				RAW MATERIAL BILLET/FORGINGS					
				(FROM SUB CONTRACTOR)					
				(DOC. NO. FM:HT-LB-11)					
CUSTOMER	M/s	VE Commercial Vehicles Ltd. (DEWAS)							
STEEL MILL	M/S	VARDHMAN			REPORT NO.	596			
CHALLAN NO.					DATE	02.01.2018			
HEAT NO.		U-62658			SECTION SIZE	100 RCS			
GRADE		1E1120			NO. OF BARS/BILLET				
QTY.	E				LENGTH RANGE	4.5 TO 5.5 MTRS			
PART NO.		3164/3166			COLOUR CODE	WHITE BASE+RED DOT			
CHEMICAL PROPERTIES									
SPEC.		C%	Mn%	Si%	S%	P%	Cr%	Ni%	Mo%
MIN.		0.19	0.80		0.015	-	0.45		0.08
MAX		0.23	1.10	0.18	0.025	0.050	0.70		0.25
HFL OBSERVED		0.220	1.06	0.143	0.020	0.013	0.65	0.0670	0.105
PHYSICAL PROPERTIES									
INTERNAL SOUNDNESS		C2 R1 S1							
GRAIN FLOW									
SURFACE HARDNESS(BHN)									
UPSETTING TESTING		OK							
METALLOGRAPHY									
GRAIN SIZE-ASTM E-112		ASTM-7							
INCLUSION RATING WORST FIELD AS PER ASTM E-45		A		B		C		D	
		TK	TN	TK	TN	TK	TN	TK	TN
		0	1	0	0.5	0	0	0	1
JOMINY TRASVELET									
DISTT.		J1.5MM	J5MM	J13MM					
SPEC.		43-48	34 MIN	29 MAX					
HFL OBSERVED HRC		44	39	22.5					
REMARKS									
MILL T. C. ENCLOSED									
 AUTHORISED SIGNATORY									