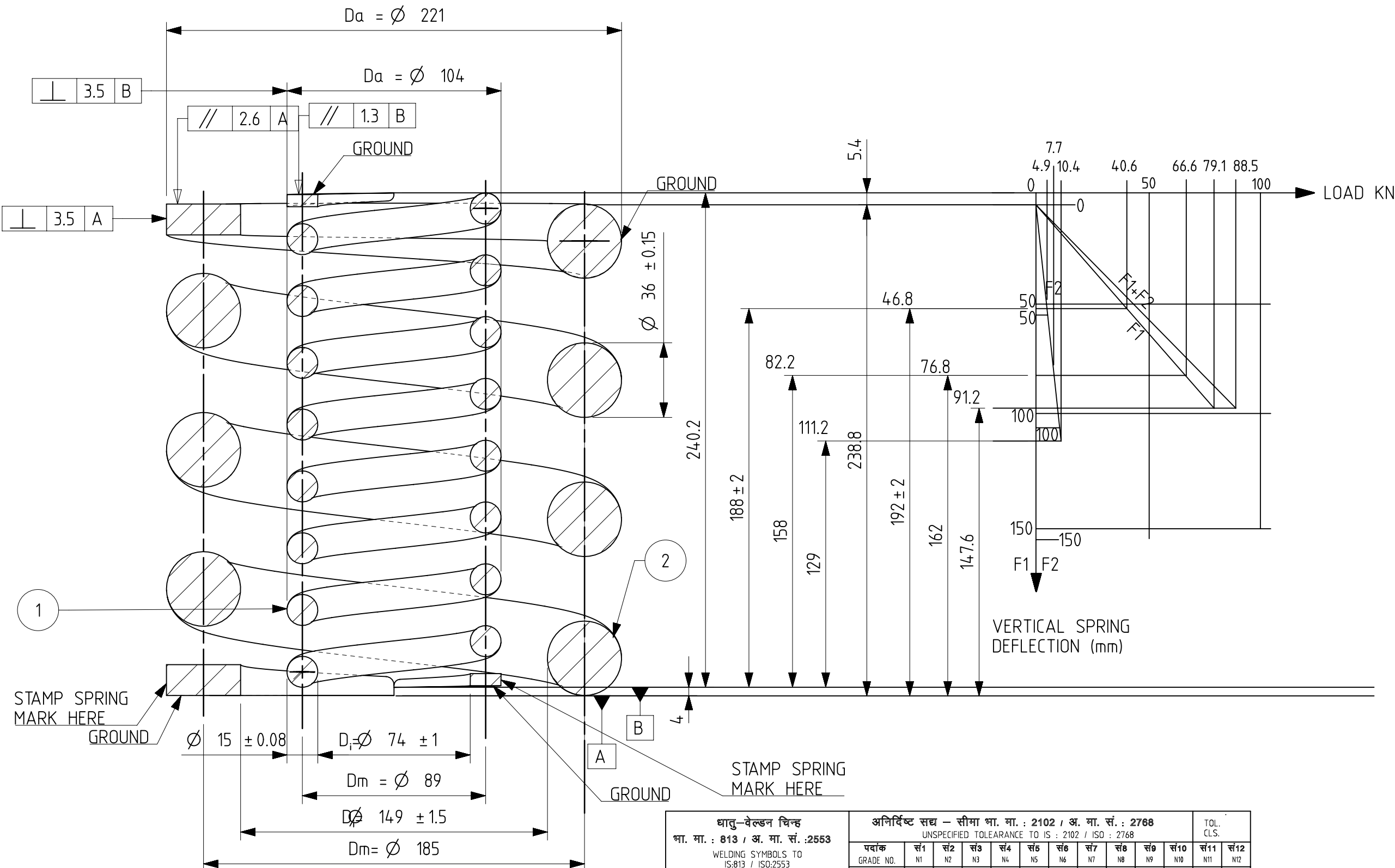


SPRING - OUTER F1							
SPRING DATA	DIMENSION	ITEM 1	VERTICAL LOAD	LOAD (kN)	HEIGHT (mm)	DEFLECTION (mm)	STRESS $\tau_i(N/mm^2)$ $\tau_k(N/mm^2)$
FREE HEIGHT	L_0 (mm)	238.8	UNLOADED (L_0)		238.8		
BAR DIAMETER	d (mm)	36.0	STATIC LOAD (L)	40.6	192.0	46.8	410 526
MEAN SPRING DIAMETER	D_m (mm)	185.0	LOAD AT STOP (L_A)	66.6	162.0	76.8	673 864
NUMBER OF ACTIVE COILS	i_f (-)	3	LOAD AT SOLID LENGTH (L_{Bk})	79.1	147.6	91.2	799 1025
TOTAL NOS. OF COILS.	i_g (-)	4.5					
DIRECTION OF COILING	(-)	RIGHT HAND	LATERAL DEFLECTION		DEFLECTION (mm)	TRANSVERSE FORCE (kN)	STRESS $\tau_{kr}(N/mm^2)$
RATIO OF WINDINGS	W (-)	5.14	AT STATIC LOAD		17	22.5	821
SHEAR MODULUS	G (N/mm ²)	78500					
SPRING DEFLECTION	$f_{1000}(mm)$	1.0	AT LOAD AT STOP		17	24.2	1157
SHEAR STRESS	τ_{1000} (N/mm ²)	10.1					
CORRECTED SHEAR STRESS	τ_k (N/mm ²)	13.0					

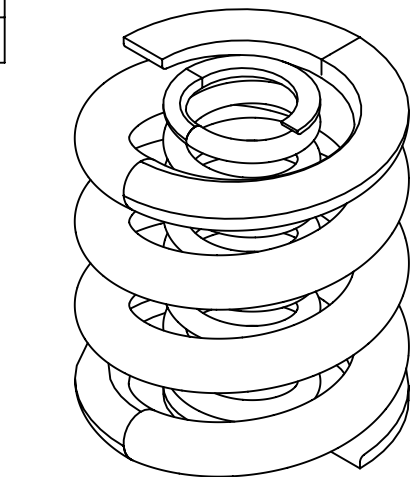
SPRING - INNER F2							
SPRING DATA	DIMENSION	ITEM 3	VERTICAL LOAD	LOAD (kN)	HEIGHT (mm)	DEFLECTION (mm)	STRESS $\tau_i(N/mm^2)$ $\tau_k(N/mm^2)$
FREE HEIGHT	L_0 (mm)	240.2	UNLOADED (L_0)		240.2		
BAR DIAMETER	d (mm)	15.0	STATIC LOAD (L)	4.9	188.0	52.2	329 409
MEAN SPRING DIAMETER	D_m (mm)	89.0	LOAD AT STOP (L_A)	7.7	158.0	82.2	519 643
NUMBER OF ACTIVE COILS	i_f (-)	7.5	LOAD AT SOLID LENGTH (L_{Bk})	10.4	129.0	111.2	702 870
TOTAL NOS. OF COILS.	i_g (-)	9					
DIRECTION OF COILING	(-)	LEFT HAND	LATERAL DEFLECTION		DEFLECTION (mm)	TRANSVERSE FORCE (kN)	STRESS $\tau_{kr}(N/mm^2)$
RATIO OF WINDINGS	W (-)	5.93	AT STATIC LOAD		17	0.6	577
SHEAR MODULUS	G (N/mm ²)	78500					
SPRING DEFLECTION	$f_{1000}(mm)$	1.0	AT LOAD AT STOP		17	0.5	827
SHEAR STRESS	τ_{1000} (N/mm ²)	67.2					
CORRECTED SHEAR STRESS	τ_k (N/mm ²)	83.4					



धातु-वेल्डन चिह्न भा. मा. : 813 / अ. मा. सं. :2553 WELDING SYMBOLS TO IS:813 / ISO:2553											
अनिर्दिष्ट सद्य - सीमा भा. मा. : 2102 / अ. मा. सं. : 2768 UNSPECIFIED TOLERANCE TO IS : 2102 / ISO : 2768											
पदांक GRADE NO.	सं1 N1	सं2 N2	सं3 N3	सं4 N4	सं5 N5	सं6 N6	सं7 N7	सं8 N8	सं9 N9	सं10 N10	सं11 N11
Rz	0.16-0.3	0.5-0.7	0.9-1.1	1.5-2.0	2.5-3.8	5.0-6.3	9.0-12	16-25	30-40	50-63	75-100
Ra μm	0.075	0.05	0.1	0.2	0.4	0.8	1.6	3.2	6.3	12.5	25
चिह्न SYMBOL											

परिवर्तन संख्या ALT. NO.	0	प्राधिकार AUTHY	वर्णन DESCRIPTION	दिनांकित आधार DATED INITIAL	19-08-09
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अनिकल्पित DGN		चितरंजन रेलइंजन कारखाना CHITTARANJAN LOCOMOTIVE WORKS, INDIA	
जीवा व.अ.अ. CHD SSE		पदार्थ MAIL	SPRING STEEL
समीक्षित स.वि.अ. / व.वि.अ. REVIEWED AEE / SEE		प्रति भार कि. गा. WT. EACH IN KG	21.87
अनुमोदित चक्रवि.अ. APPROVED DYCEE		विशिष्ट SPECN	SEE NOTE
दिनांक DATE	28-10-2024	वर्णन DESCRIPTION	PRIMARY SPRING
दिनांकित आधार DATED INITIAL	19-08-09	आरेखण संख्या DRAWING NO.	1209-01.215-027
परिवर्तन संख्या ALTERATION NO.	0	पर्ण SHEET	1 OF 1
परिवर्तन संख्या ALTERATION NO.	0	परि SHEET	1 OF 1



1. THE SPRINGS ARE TO BE DIVIDED IN TO TWO TOLERANCE GROUPS: *SEE TABLE
2. SURFACE OF FINISHED SPRING: BEFORE TREATMENTS SPRINGS ARE FILED, CENTERLESS GRIND AND ELECTROMAGNETICALLY CHECKED FOR SURFACE DEFECTS. AFTER THEY HAVE HARDENED, THEY ARE CHECKED FOR SCORING, THEN SHOT-BLASTED WITH STEEL BALLS AND SUBSEQUENTLY BONDERSIZED. CRACKING AND PRESSURE MARKS ARE IN ADMISSIBLE. THE SPRING FINISH IS SPECIFICALLY SPECIFIED IN THE ORDER. IN ORDER TO AVOID PERMANENT DEFORMATION IN THE OPERATING STATE, THE SPRINGS ARE TO BE PRESSED TO SOLID LENGTH DURING DELIVERY.
3. FORMATION OF THE SPRING ENDS: THE SPRING ENDS ARE TO BE FORMED IN SUCH A WAY THAT THEY FIT CLOSELY TO THE NEXT WINDING IN A SUFFICIENT WAY DURING STATIC LOAD. BY THIS, POINT CONTACT WHICH MIGHT DAMAGE THE SURFACE IS TO BE AVOIDED. THE SURFACE IS TO BE $D/3$, HOWEVER, ATLEAST 20 mm.
4. DELIVERY ACCORDING TO WN 19205 EXCEPT PARA 7.1.

5. SPRING IS HOT PRESSED WITH AT LEAST 200°C, TENSILE STRENGTH 1550-1720 N/mm²

6. MAT. SPECIFICATION: a) OUTER SPRING -735H51 TO BS970 GERMAN EQU 50 CrV4 b) INNER SPRING -251A58 TO BS970 GERMAN EQU 50 CrV4
7. MATL. SPECIFICATION NO. CLW /MS/3/SPEC/ ELDO-BOGIE/004 ALT. 2

ITEM NO.	DESCRIPTION	C&D NO.	QTY./LOCO	WEIGHT (kg)
1	Primary Spring (Inner)	T222/045	24	3.30
2	Primary Spring (Outer)	T222/044	24	18.57

9. NEXT LEVEL ASSEMBLY DRG. NO. 1209-01.115-032 ALT 0 REF NO-4
10. USED FOR LOCO-WAG-9H,WAG-9HC
11. DO NOT SCALE DIMENSIONS FROM DRAWINGS IF IN DOUBT ASK.
12. REMOVE ALL BURRS AND SHARP EDGES.