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FIRST ANGLE PROJECTION

(ALL DIMENSIONS ARE IN mm)

1751981/2023/HEP-SWM20961

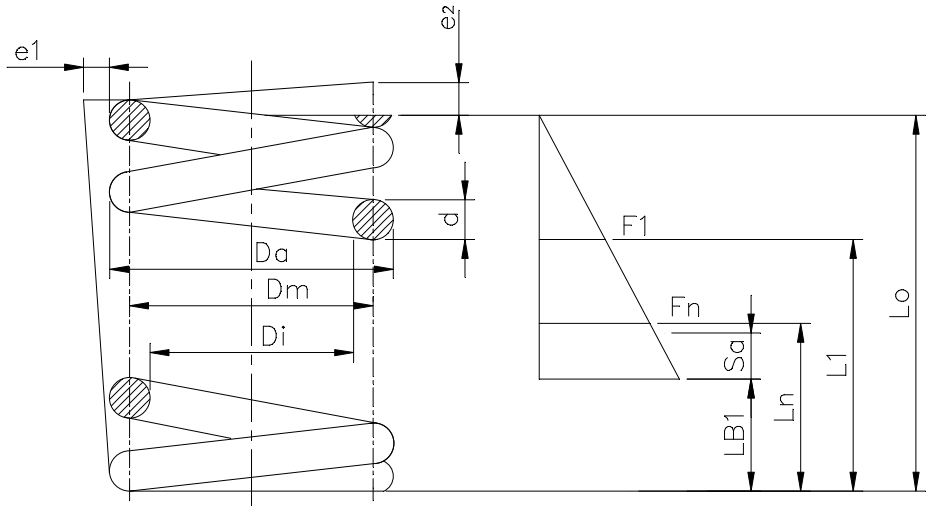
DRG. NO. 3 521 10 01561

SPRING PARAMETERS:

1	WIRE DIAMETER	d= 8 mm. ±0.06mm.
2	WIRE MATERIAL CONFIRMS TO STANDARD	IS4454:1981 (PART I) GRADE 3 PATENTED COLD DRAWN SPRING STEEL WIRE MADE OF UNALLOYED STEEL.
3	MEAN WINDING DIA. OUTSIDE WINDING DIA.	Dm= 37 mm.* Da= 45 mm. ±0.5 mm.
4	DIRECTION OF WINDING	RIGHTHAND.
5	MODULUS OF RIGIDITY	G=8400 Kg/mm ²
6	FREE LENGTH	Lo= 95mm.
7	LENGTH SPRING LOAD AT L1	L1= 83mm. F1=156.8Kg. ±15 Kg. **
8	LENGTH SPRING LOAD AT Ln	Ln= 73mm. Fn=287.4Kg. ±16 Kg. **
9	SOLID LENGTH	LB1= 64mm.
10	NO.OF ACTIVE TURNS TOTAL NO.OF TURNS	if= 6.5* ig= 8
11	SPRING ENDS	CLOSED AND GROUND
12	DEBURRING OF THE SPRING ENDS	OUT SIDE
13	SPRING TEMPERING	REQUIRED
14	SHEAR STRESS AT LOAD Fn (TZUL=PERMISSIBLE SHEAR STRESS)	Tkn= 70.4 Kg./mm. ² ≤ Tzul

15	SPRING SCALE	C=13.063 Kg./mm. *
16	PERMISSIBLE DEVIATIONS	e1= mm. e2= mm.
17	BALANCE OF MANUFACTURING BY	if, Lo AND d EFFORTS
18	SURFACE FINISH–	PHOSPHATING TO AA0673616
19	ADDITIONAL INFORMATION : –	MARKING–LIGHT BLUE COLOUR PAINT
**	F1 & Fn AS PER QUALITY	GRADE1

* ONLY CALCULATED VALUES.



ENDS CLOSED AND GROUNDED

- NOTE: –
- WIRE DIA ACCURACY SHALL CONFIRM TO CLASS 'C' AS PER DIN2076.
 - MATERIAL TO GRDE 'C' DIN.17223 MAY BE USED AS AN ALTERNATIVE.
 - PERMISSIBLE DEVIATIONS AS PER QUALITY GRADE 2 OF DIN–2095.
 - ALTERNATIVELY SPG. TO BE MANUFACTURED FROM CHROMIUM VANADIUM SPG.S.WIRE TO BP10571
 - REFER PRODUCT STD.SG.12712 FOR MANUFACTURING TESTING AND ACCEPTANCE INSTRUCTIONS.

FINISH: – SEE INSTRUCTION 18 OF TABLE

	ST 943213		001	8 DIA.x940 LG PATENTED COLD DRAWN SPG. STEEL WIRE			BP1034098071					
							BP10398					
VAR □□	REMARKS	VAR NO.	ITEM NO	DESCRIPTION	STD.	DRAWING NO.	IT.N□	MATL. CODE	A/C	UNIT	UNIT WT.	Q. ZONE
							VAR	MATL. SPECN.			QTY.	

ADDITIONAL INFORMATION

mRikn dk i–dkj ;k
xk–gd@ifj;kstuk dk uke
TYPE OF PRODUCT OR
NAME OF CUSTOMER/PROJECT

VCB

STATUS OF DRAWING

DISTRIBUTION OF PRINTS

O.C – 1 TCX – 1
SWM – 3



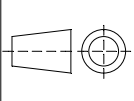
HAKjr gsob bysfDV&dYl fyfeVsm
HAKsiky
BHARAT HEAVY ELECTRICALS LTD.
BHOPAL

uke@NAME	gLrk@SIGN	fnaukd@ATE	osfj_ dh la[; k NO. OF VAR
C.H.U.	Sd/–	–	
MZG	Sd/–	8.12.82	
BPN	Sd/–	15.12.82	–

REV.	DATE	ALTERED	Sd/–
03	16.11.04	CHECKED	Sd/–
		APPROVED	RM

foHAKj
DEPT SWE
dksM
CODE 409

vu_ Vky_ uki dh Js.kh
UNTOL.DIMS. GR.
M
AA0230208



vugikr
SCALE
1:1

HAKj fd_xk–
WEIGHT (K.G.)

vis_ M&kbZax dk lanHAZ
REF. TO ASSY. DRG.
35211001560

en d–
ITEM NO.
027
en_ la[;k
NO. OF
ITEM
001

IN SL.NO.78 FINISH WAS PR.S.7609
NOTE 5 ADDED. IN SL.NO.2 IS: 4454:
1981 WAS IS: 4454:1975,IN BOM BP
10398 WAS PS10308 BP10571 WAS
PS10571.
(DCA NO.07728)

'kh"AZ@OLE

COMPRESSION SPRING

vkjs[A d–DRAWING NO.

3 521 10 01561

iqu_@EV

03

i="B d–@. No. 01

i="Bksa dh la[;k. NO. OF SHT. 01

A3

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5213040\35211001516-R04-S01

REF. DRG. NO.

SIGN. & DATE

INVENTORY NO.

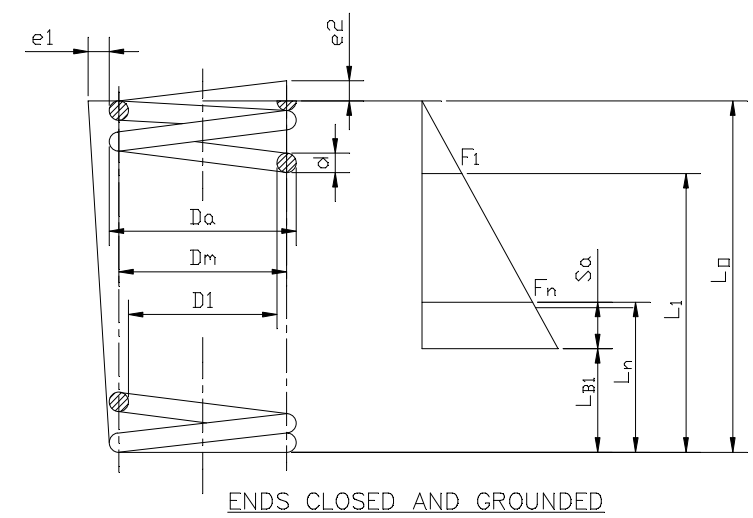
1751981/2023/HEP-SWM20961

SPRING PARAMETERS :

1	WIRE DIAMETER	$d = 6 \pm 0.06 \text{ mm.}$
2	WIRE MATERIAL CONFIRMS TO STANDARD	IS 4454 : 1981 (PART-I) GRADE 3 PATENTED COLD DRAWN SPRING STEEL WIRE MADE OF UNALLOYED STEEL
3	MEAN WINDING DIA. OUTSIDE WINDING DIA.	$D_m = 40 \text{ mm.} *$ $D_o = 46.0 \pm 0.5 \text{ mm.}$
4	DIRECTION OF WINDING	RIGHT HAND
5	MODULUS OF RIGIDITY	$G = 8300 \text{ KG./mm}^2$
6	FREE LENGTH	$L_0 = 205 \text{ mm.}$
7	LENGTH SPRING LOAD AT L_1	$L_1 = 150 \text{ mm.}$ $F_1 = 80.0 \pm 3.8 \text{ Kg.}$
8	LENGTH SPRING LOAD AT L_n (FOR ACCEPTANCE,REFER NOTE 6)	$L_n = 100 \text{ mm.}$ $F_n = 152.0 \pm 7.0 \text{ Kg.}$ (FOR REFERENCE ONLY)
9	SOLID LENGTH	$L_{BL} = 96 \text{ mm.} *$
10	NO. OF ACTIVE TURNS TOTAL NO. OF TURNS	$i_f = 14.5 \quad *$ $i_g = 16$
11	SPRING ENDS	CLOSED AND GROUND
12	DEBURRING OF THE SPRING ENDS	INSIDE & OUTSIDE
13	SPRING TEMPERING	REQUIRED
14	SHEAR STRESS AT LOAD F_n ($\tau_{zul} =$ PERMISSIBLE SHEAR STRESS)	$\tau_{Kn} = 83.6 \text{ Kg./mm}^2$ $\leq \tau_{zul}$

15	SPRING SCALE	C = 1.44 Kg./mm. *
16	PERMISSIBLE DEVIATIONS	e1 = mm. e2 = mm.
16	BALANCE OF MANUFACTURING EFFORTS	BY if, L ₀ AND d
18	SURFACE FINISH	PHOSPHATING TO AA 0673616
19	ADDITIONAL INFORMATION:-	



* ONLY CALCULATED VALUES



NOTE :- 1) WIRE DIA ACCURACY SHALL CONFIRM TO CLASS 'C' AS PER DIN 2076.
2) MATERIAL TO GRADE 'C' DIN 17223 MAY BE USED AS AN ALTERNATIVE.
3) PERMISSIBLE DEVIATIONS AS PER QUALITY GRADE 2 OF DIN 2095.
4) ALTERNATIVELY SPRING TO BE MANUFACTURED FROM CHROM. VANADIUM SPG. S. WIRE TO BP10571.
5) REFER PROD. STD. SG12712 FOR MANUFACTURING, TESTING AND ACCEPTANCE INSTRUCTIONS.
6) AT LENGTH $L_c = 105 \text{ mm}$, $F_c = 145 \pm 7.0 \text{ Kg}$.
(AS LENGTH L_n AT SL. NO.8 OF TABLE IS CLOSE TO SOLID LENGTH L_{bl})

FINISH :- SEE INSTRUCTION 18 OF TABLE

[illegible]

INVENTORY NO.	REV.			DATE			SIGN. & DATE			REF.
	REV.	DATE	ALTERED	REV.	DATE	ALTERED	ADDITIONAL INFORMATION			
04	02.03.03	CHECKED APPROVED	03	02.02.02	CHECKED APPROVED	02	29.04.96	CHECKED APPROVED	STATUS OF DRAWING DISTRIBUTION OF PRINTS □C - 1. SWM - 3. TCX - 1.	
LOAD F ₁ WAS 76.8 Kg. LOAD F ₂ WAS 146.7 Kg. SPRING SCALE 'C' WAS 1.4 Kg/mm NOTE 6 ADDED (DCA 12167)			DRG. REDRAWN. (DCA11195)			IS 4454 : 1981 WAS IS 4454 : 1975. BP 10571 WAS PS 10571 IN NOTE 4 & 5 ADDED. BP 10398 WAS PS 10308 IN BOM FINISH WAS P.R.S. 7609. IN SL. NO. 18 (DCA. NO. 07715)			mRikn dk i-dkj ; k xk-gd@fj;kstuk dk uke TYPE OF PRODUCT OR NAME OF CUSTOMER/PROJECT <div style="text-align: center;">  HAkjr gsoh bysfDV&dYl fyfeVsm HAKSiky BHARAT HEAVY ELECTRICALS LTD. BHOPAL </div>	
foHAKk DEPT SWE			VW... Vky... uki dh js.kh UNTIL DIMS. GR.			 NTS			HAKjr fd_xk-... WEIGHT (K.G.) 35211001556	
dkSM CODE 409			'kh'AZADOLE			vkjkr SCALE HAKjr fd_xk-... WEIGHT (K.G.) 35211001556			vls... M&ktZax dk lanHAZ REF. TO ASSY. DRG. 050	
COMPRESSION SPRING			vkjs[A d - DRAWING NO.			3 521 10 01516			04	
i="B d - 86, No. 01			i="BkSa dh la; NO. of SHD1							

COMPRESSION SPRING