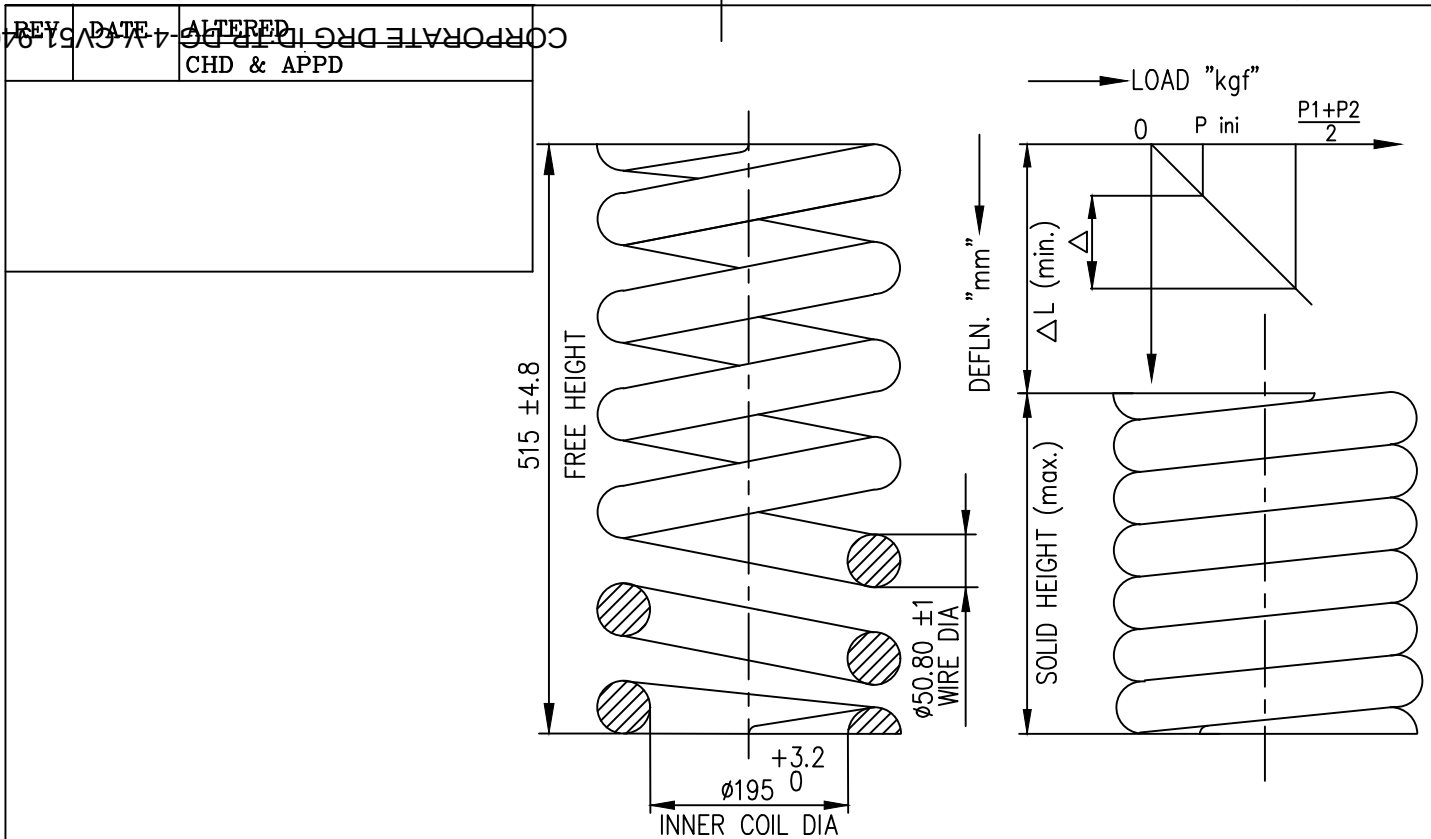


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FOR TOLERANCES OF UNTOLERANCED DIMENSIONS

DURING MANUFACTURE REFER RELEVANT QCP/QP

ALL DIMENSIONS ARE IN MILLIMETRES.



ROW	DESCRIPTION	UNITS	VALUE
01	MATL. CODE.	96 461 367 0000	
02	OUTSIDE DIA.MAX.LIMIT	(mm)	301
03	SPRING RATE ±4%	(Kg/mm)	80.00
04	SOLID DEFLECTION ΔL min.	(mm)	160
05	EFFECTIVE NO.OF COILS	NOS	5.30 $\begin{smallmatrix} 0 \\ -0.5 \end{smallmatrix}$

ROW	DESCRIPTION	UNITS	VALUE
06	SPRING WEIGHT	(Kg)	90.0
07	PITCH	(mm)	83.24 ± 2.0
08	PROCESS OF MANUFACTURE	HOT COILING	
09	IN-EFFECTIVE NO.OF COILS	SEE NOTE-7	

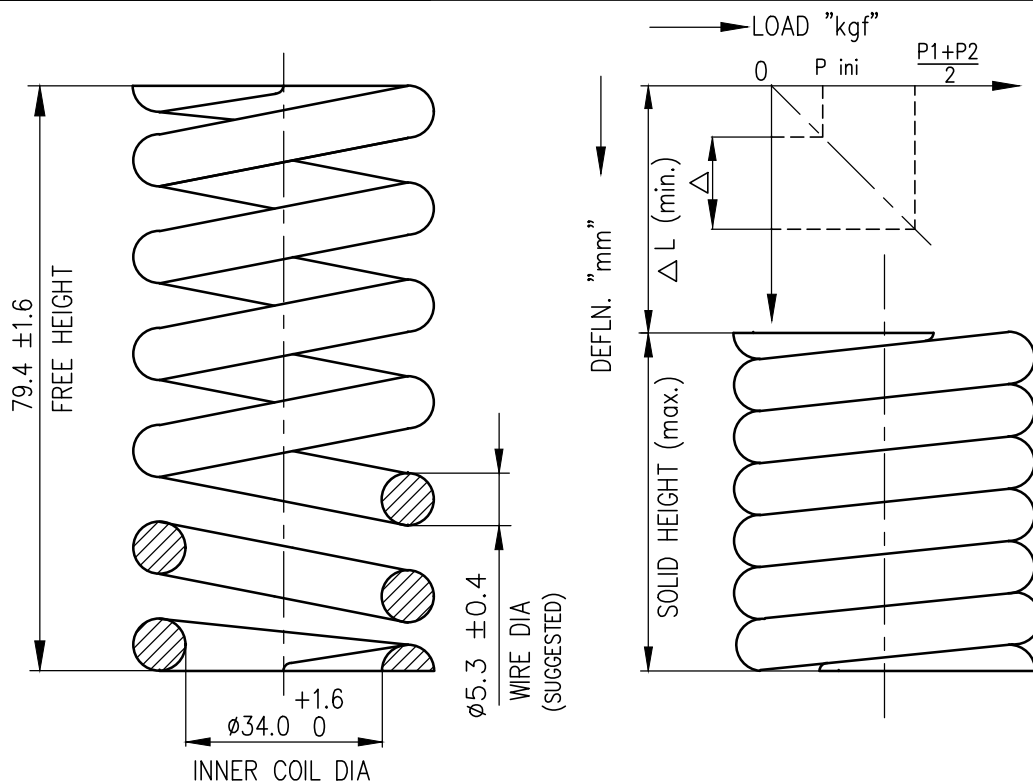
NOTES:

1. MANUFACTURE AND WORKMANSHIP SHALL IN ACCORDANCE WITH PROCEDURE APPLICABLE FOR NON-IBR SPRINGS.
2. ACCEPTABLE SPRING MATERIALS TO PRODUCT ATTEST: ASTM A564 – Gr.630 (or) 17-4 PH, HEAT TREATMENT CONDITION SHALL BE SUITABLY DECIDED BY THE VENDOR SUCH THAT STRESS AT SOLID CONDITION DOES NOT EXCEED ALLOWABLE STRESS OF THE MATERIAL.
3. FREE HEIGHT, SPRING RATE, SOLID DEFLECTION AND OUTSIDE DIAMETER ARE CRITICAL PARAMETERS AND SHOULD BE MAINTAINED.
4. THIS SPRING WILL BE CONTINUOUSLY IMMERSSED IN WATER AT 200°C±10°C TEMPERATURE-VENDOR SHALL CONFIRM THE APPLICABILITY.
5. REFER TO LATEST REVISION OF TDC:5:082 AND APPLICABLE MATERIAL STANDARD FOR FURTHER DETAILS.
6. VENDOR SHALL SUBMIT A SPRING DESIGN CALCULATION SHEET ALONG WITH OFFER MEETING THE VALUES MENTIONED ABOVE.
7. END COILS OF THE SPRING SHALL BE CLOSED AND GROUND TO FLAT. NO. OFF IN-EFFECTIVE COILS SHALL BE SUITABLY DECIDED BY VENDOR.

NO OFF	DESCRIPTION	MATL CODE	MATL SPECN	HEAT TREATMENT	SCRAP SORT	NET WT (kg)	GROSS WT (kg)	DRAWING No	ITEM No	
		BHARAT HEAVY ELECTRICALS LTD.,			DRN	NAME		SIGN	DATE	NO.OF VAR
365-122		UNIT: HIGH PRESSURE BOILER PLANT.			CHD	S.DAS		S.D	10.11.2018	
		TIRUCHIRAPALLI 620014.			APPD	M.C.K		M.C.K	10.11.2018	
						M.S.VINOD		M.S.V	10.11.2018	
DEPT VL			SCALE	WEIGHT (KG).	REFERENCE INFORMATION					NO. OF ITEMS
CODE 310			NTS	90	MATERIAL CODE:964613670000					
TITLE				CARD CODE	DRAWING NO.					REV
SPRING				U 01	4-V-CV51-94041					00

Size A4

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ROW	DESCRIPTION	UNITS	VALUE
01	SPRING NUMBER		0101060CR
02	OUTSIDE DIA MAX. LIMIT	(mm)	50.8
03	SPRING RATE ($\pm 4\%$)	(Kg/mm)	2.232
04	SOLID DEFLECTION ΔL min.	(mm)	40.9 $\begin{smallmatrix} +1.6 \\ -0 \end{smallmatrix}$
05	INITIAL LOADING P_{ini}	(Kgs)	13.7
06	TEST DEFLECTION Δ	(mm)	28.6
07	LOAD AT TEST DEFLECTION	P_1 MIN.	(Kgs) 74.4
		P_2 MAX.	(Kgs) 80.8
08	TILT DEFLECTION	(mm)	34.8

ROW	DESCRIPTION	UNITS	VALUE
09	EFFECTIVE NO. OF COILS	NOS	5.8 $\begin{smallmatrix} 0 \\ -0.5 \end{smallmatrix}$
10	SPRING WEIGHT	(Kgs)	0.2
11	PITCH	(mm)	13.0 ± 1.0
12	DEVELOPED LENGTH OF ROD	(mm)	905
13	SPRING CODE	974629240900/ 964162140900	
14	PROCESS OF MANUFACTURE	HOT/ COLD COILING	

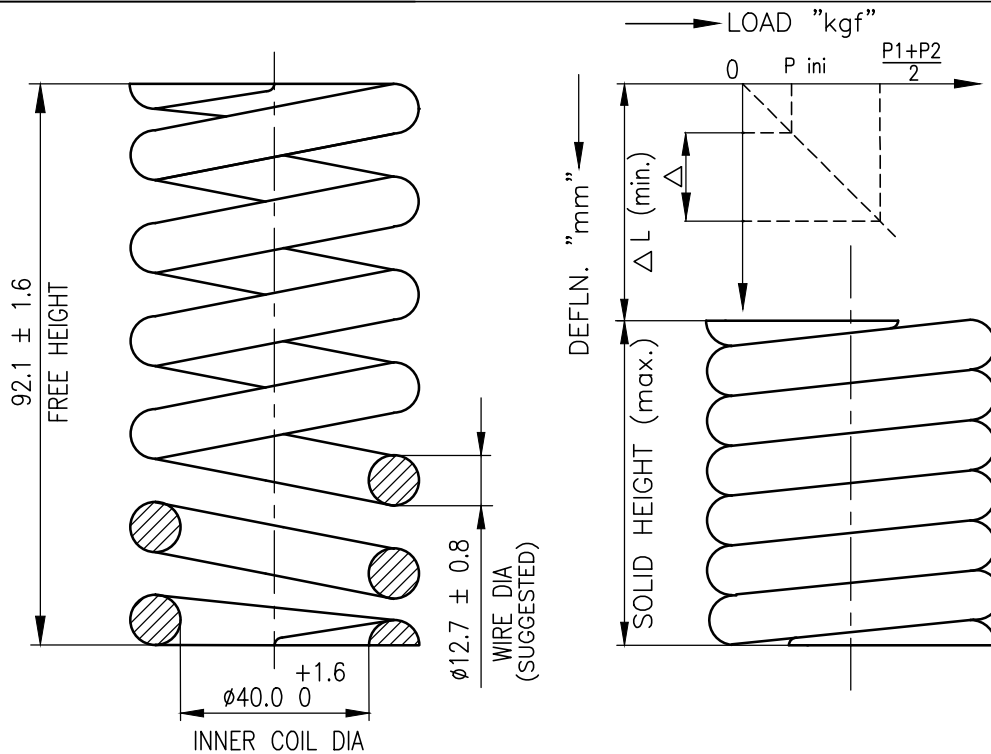
NOTES:

- MANUFACTURE & WORKMANSHIP SHALL BE IN ACCORDANCE WITH APPLICABLE PROCEDURE FOR NON IBR SPRINGS AND DESIGNED FOR SAFETY VALVE APPLICATION ONLY.
- FREE HEIGHT, SPRING RATE & SOLID DEFLECTION SHOULD BE MAINTAINED AND OTHER PARAMETERS TO BE DECIDED BY VENDOR, ACCORDING TO THE MATERIAL SELECTED IN THIS DRAWING.
- ACCEPTABLE SPRING MATERIALS TO ATTEST:
ASTM A322-6150/5160, A304-5160H/6150H/4161H, A401 BS970 Pt2-735A51/735H51, BS2803-735A50/685A55 51CrMoV4/50CrV4/51CrV4/52CrMoV4
- SPRING VENDOR IS RESPONSIBLE FOR STRESS RELIEVING, TEMPERING AND OTHER HEAT TREATMENTS AND CONTROLS TO INSURE MINIMUM STRESSED SPRINGS.

REV. 02	ALTD:	REV. 01	ALTD:
	CHKD:		CHKD:
	APPD:		APPD:

 365-081	DRAWN	P.VINITH/AP	SIGN	DATE
	CHECKED	R.RABIN		20.10.16
	APPROVED	E.ATHIANNAVI		20.10.16
TITLE				
SPRING				
DRG No. 4-V-J106-23826				REV. 00

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ROW	DESCRIPTION	UNITS	VALUE
01	SPRING NUMBER		0102210CR
02	OUTSIDE DIA MAX.LIMITS	(mm)	69.9
03	SPRING RATE	(Kg/mm)	41.423
04	AVERAGE DEFLECTION ΔL min.	(mm)	23.4
05	INITIAL LOADING P_{ini}	(Kgs)	145.2
06	TEST DEFLECTION Δ	(mm)	16.4
07	LOAD AT TEST	P_1 MIN.	(Kgs) 788.9
	DEFLECTION	P_2 MAX.	(Kgs) 856.6

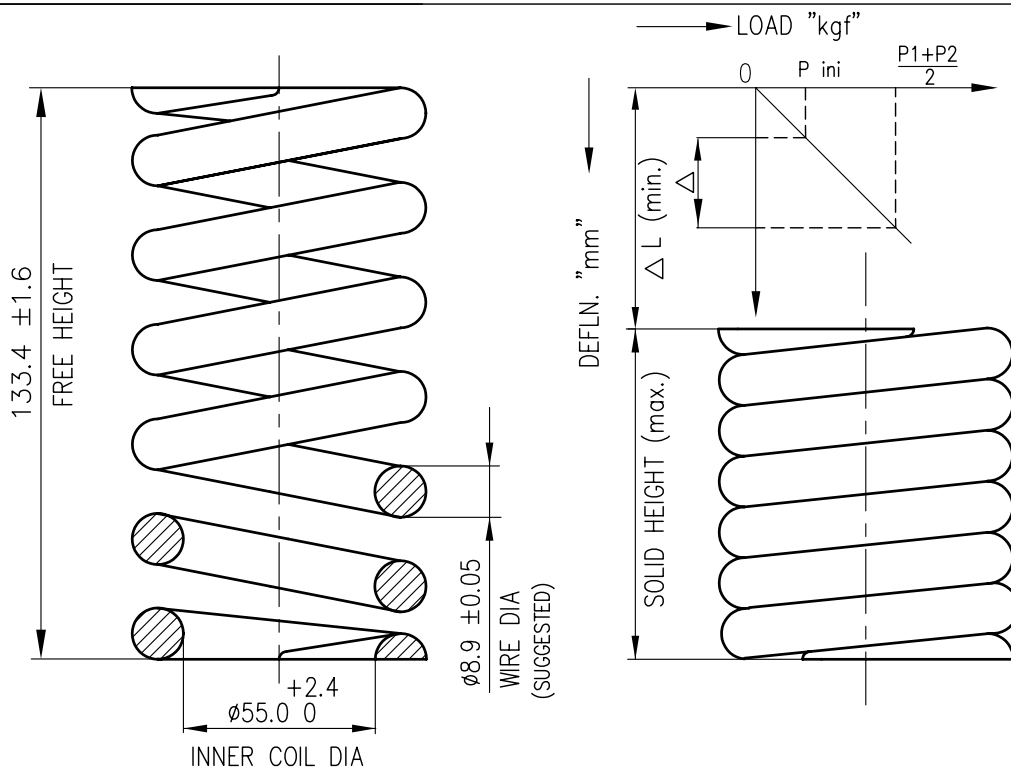
ROW	DESCRIPTION	UNITS	VALUE
08	TILT DEFLECTION	(mm)	19.9
09	EFFECTIVE NO.OF COILS	NOS	$4.4 - 0.5$
10	SPRING WEIGHT	(Kgs)	0.8
11	PITCH	(mm)	18.4 ± 0.8
12	DEVELOPED LENGTH OF ROD	(mm)	826.1
13	RAW MATERIAL DIA x LENGTH	(mm)	$\phi 18 \times 1310$
14	RAW MATERIAL WEIGHT	(Kgs)	2.6
15	PROCESS OF MANUFACTURE	HOT/COLD COILING (NOTE - 4)	

NOTES:

1. MANUFACTURE & WORKMANSHIP SHALL BE IN ACCORDANCE WITH APPLICABLE PROCEDURE FOR IBR SPRINGS.
2. DATA GIVEN IN ROWS 11 TO 14 ARE FOR REFERENCE ONLY. SPRING VENDOR TO DECIDE SUITABILITY.
3. ACCEPTABLE SPRING MATERIALS TO ATTEST:
ASTM A322-6150/5160, A304-5160H/6150H/4161H, A401, A231
BS970 Pt2-735A51/735H51, BS2803-735A50/685A55
51CrMoV4/50CrV4/51CrV4/52CrMoV4, EN10270-2/IS4454-2
4. SPRING VENDOR IS RESPONSIBLE FOR STRESS RELIEVING, TEMPERING AND OTHER HEAT TREATMENTS AND CONTROLS TO INSURE MINIMUM STRESSED SPRINGS.
5. TEST CERTIFICATE TO BE OBTAINED WITH THE INSPECTING AUTHORITY APPROVED UNDER IBR 1950.

REV. 02		ALTD: R.P.J	23.08.2013	REV. 01		ALTD: R.P.J	03.08.2011	भारत भारती  365-081	DRAWN	NAME	SIGN	DATE
		CHKD: S.M	23.08.2013			CHKD: S.M	03.08.2011		CHECKED	VPP		04.05.2002
		APPD: E.A	23.08.2013			APPD: E.A	03.08.2011		APPROVED	KN		04.05.2002
NOTES UPDATED DCP No.: 801440				NOTES UPDATED DCP NO.: 801130				TITLE SPRING				
								DRG No.		4-V-J221-23033		REV. 02

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ROW	DESCRIPTION	UNITS	VALUE
01	SPRING NUMBER		0102540CR
02	OUTSIDE DIA MAX. LIMIT	(mm)	85.7
03	SPRING RATE	(Kg/mm)	3.892
04	AVERAGE DEFLECTION ΔL min.	(mm)	68.8
05	INITIAL LOADING P_{ini}	(Kgs)	40.2
06	TEST DEFLECTION Δ	(mm)	48.2
07	LOAD AT TEST	P_1 MIN. (Kgs)	218.4
	DEFLECTION	P_2 MAX. (Kgs)	237.1
08	TILT DEFLECTION	(mm)	58.5

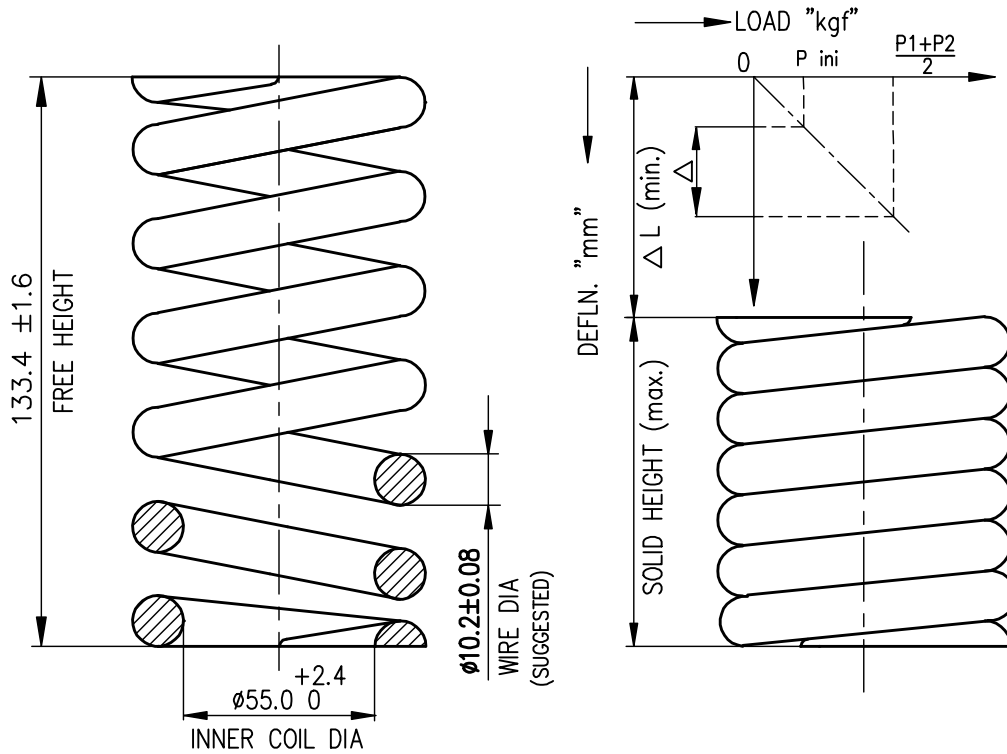
ROW	DESCRIPTION	UNITS	VALUE
09	EFFECTIVE NO. OF COILS	NOS	6.2 ± 0.5
10	SPRING WEIGHT	(Kgs)	0.7
11	PITCH	(mm)	21.0 ± 0.7
12	DEVELOPED LENGTH OF ROD	(mm)	1353
13	RAW MATERIAL DIA x LENGTH	(mm)	VENDOR TO DECIDE
14	RAW MATERIAL WEIGHT	(Kgs)	—
15	PROCESS OF MANUFACTURE	HOT/COLD COILING (NOTE-4)	

NOTES:

- MANUFACTURE & WORKMANSHIP SHALL BE IN ACCORDANCE WITH APPLICABLE PROCEDURE FOR IBR SPRINGS.
- DATA GIVEN IN ROWS 11 TO 14 ARE FOR REFERENCE ONLY. SPRING VENDOR TO DECIDE SUITABILITY.
- ACCEPTABLE SPRING MATERIALS TO ATTEST: ASTM A231 OR BS2803 GR.735A50/685A55.
- SPRING VENDOR IS RESPONSIBLE FOR STRESS RELIEVING, TEMPERING AND OTHER HEAT TREATMENTS AND CONTROLS TO INSURE MINIMUM STRESSED SPRINGS.
- TEST CERTIFICATE TO BE OBTAINED WITH THE INSPECTING AUTHORITY APPROVED UNDER IBR 1950.

REV. 03	ALTD: RPJ	24.11.10	REV. 02	ALTD: ASJ	09.01.10
	CHKD: VPP	24.11.10		CHKD: ASJ	09.01.10
	APPD: EA	24.11.10		APPD: EA	09.01.10
NOTES UPDATED DCP.No.801041			96 CODE ADDED. NOTES ALTERED. DCP No. 801015		

	DRAWN	LRS	SIGN	DATE
	CHECKED	VPP		27.07.01
	APPROVED	EA		27.07.01
TITLE				
SPRING				
DRG No. 4-V-J254-23097				REV. 03



ROW	DESCRIPTION	UNITS	VALUE
01	SPRING NUMBER		0102560CR
02	MAX. OUTSIDE DIA	(mm)	85.7
03	SPRING RATE	(Kg/mm)	6.821
04	AVERAGE DEFLECTION ΔL min.	(mm)	59.7
05	INITIAL LOADING P_{ini}	(Kgs)	61.1
06	TEST DEFLECTION Δ	(mm)	41.8
07	LOAD AT TEST P_1 MIN.	(Kgs)	331.8
	DEFLECTION P_2 MAX.	(Kgs)	360.3
08	TILT DEFLECTION	(mm)	50.7

ROW	DESCRIPTION	UNITS	VALUE
09	EFFECTIVE NO. OF COILS	NOS	5.8 $\begin{smallmatrix} 0 \\ -0.5 \end{smallmatrix}$
10	SPRING WEIGHT	(Kgs)	0.830
11	PITCH	(mm)	21.4 ± 0.7
12	DEVELOPED LENGTH OF ROD	(mm)	1294
13	RAW MATERIAL DIA x LENGTH	(mm)	--
14	RAW MATERIAL WEIGHT	(Kgs)	--
15	RAW MATERIAL CODE	--	
16	SPRING CODE		974627750900/ 964156190900
17	PROCESS OF MANUFACTURE		HOT/COLD COILING (NOTE-4)

NOTES:

- MANUFACTURE & WORKMANSHIP SHALL BE IN ACCORDANCE WITH APPLICABLE PROCEDURE FOR **IBR** SPRINGS.
- DATA GIVEN IN ROWS 11 TO 14 ARE FOR REFERENCE ONLY. SPRING VENDOR TO DECIDE SUITABILITY.
- ACCEPTABLE SPRING MATERIALS TO **ATTEST**:
ASTM A689/A322 GR.5160/6150, ASTM A401, ASTM A689/A304 GR.5160H/6150H/4161H, BS PT2-735A50/735A51/735H51, BS 2803-735A50/685A55, DIN 17221 GR.51CrMoV4.
- SPRING VENDOR IS RESPONSIBLE FOR STRESS RELIEVING, TEMPERING AND OTHER HEAT TREATMENTS AND CONTROLS TO INSURE MINIMUM STRESSED SPRINGS.
- TEST CERTIFICATE TO BE OBTAINED WITH LLOYD'S SIGNATURE IF IMPORTED, IF INDIGENOUSLY PROCURED, CERTIFICATE BY "STATE BOILER INSPECTORATE" IS REQUIRED.

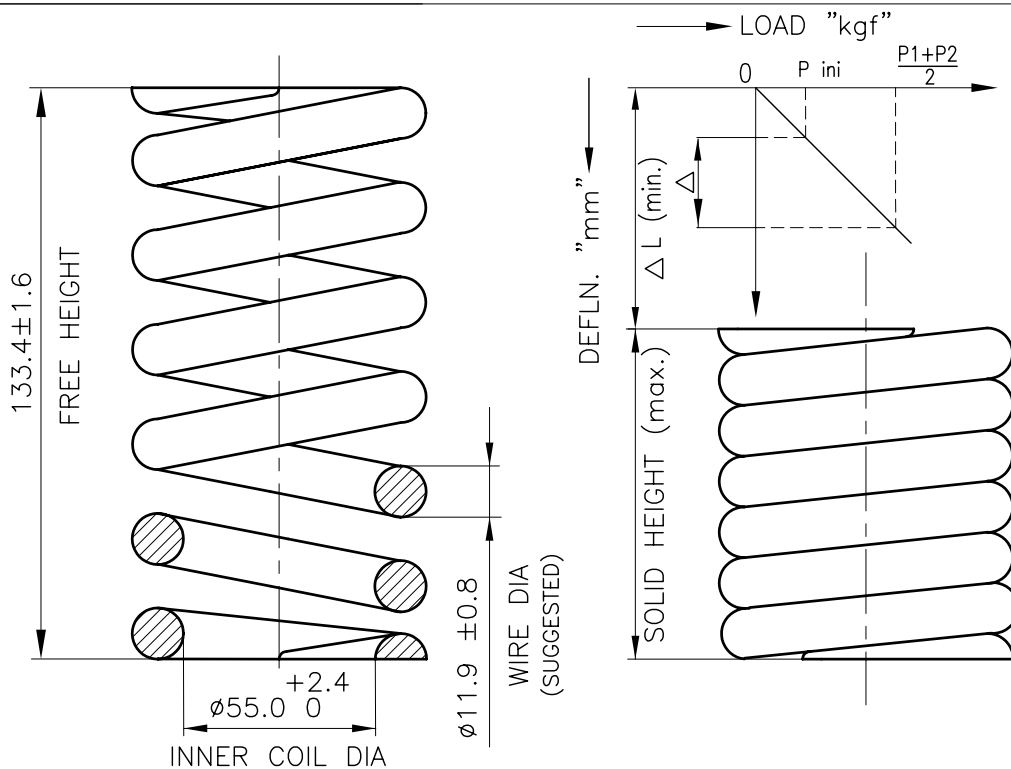
REV.	ALTD:	REV.	ALTD: G.V	26.11.08
02	CHKD:	01	CHKD: E.A	26.11.08
	APPD:		APPD: E.A	26.11.08

MATERIALS UPDATED
DCP. NO. 800878 DT.01.11.08

	NAME	SIGN	DATE
DRAWN	G.VENKATESWARALU		23.05.07
CHECKED	E.Athiannavi		23.05.07
APPROVED	E.Athiannavi		23.05.07

TITLE	SPRING
DRG No.	4-V-J256-23765
REV.	01

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ROW	DESCRIPTION	UNITS	VALUE
01	SPRING NUMBER		0102580CR
02	OUTSIDE DIA MAX. LIMIT	(mm)	85.7
03	SPRING RATE	(Kg/mm)	10.945
04	AVERAGE DEFLECTION ΔL min.	(mm)	48.3
05	INITIAL LOADING P_{ini}	(Kgs)	79.2
06	TEST DEFLECTION Δ	(mm)	33.8
07	LOAD AT TEST DEFLECTION	P_1 MIN.	(Kgs) 430.5
		P_2 MAX.	(Kgs) 467.5
08	TILT DEFLECTION	(mm)	41.0

ROW	DESCRIPTION	UNITS	VALUE
09	EFFECTIVE NO.OF COILS	NOS	$6.2 \pm \frac{0}{1/2}$
10	SPRING WEIGHT	(Kgs)	1.2
11	PITCH	(mm)	20.5 ± 0.7
12	DEVELOPED LENGTH OF ROD	(mm)	1403
13	RAW MATERIAL DIA x LENGTH	(mm)	$\phi 14 \times 1910$
14	RAW MATERIAL WEIGHT	(Kgs)	2.30
15	PROCESS OF MANUFACTURE	HOT/COLD COILING (NOTE-4)	

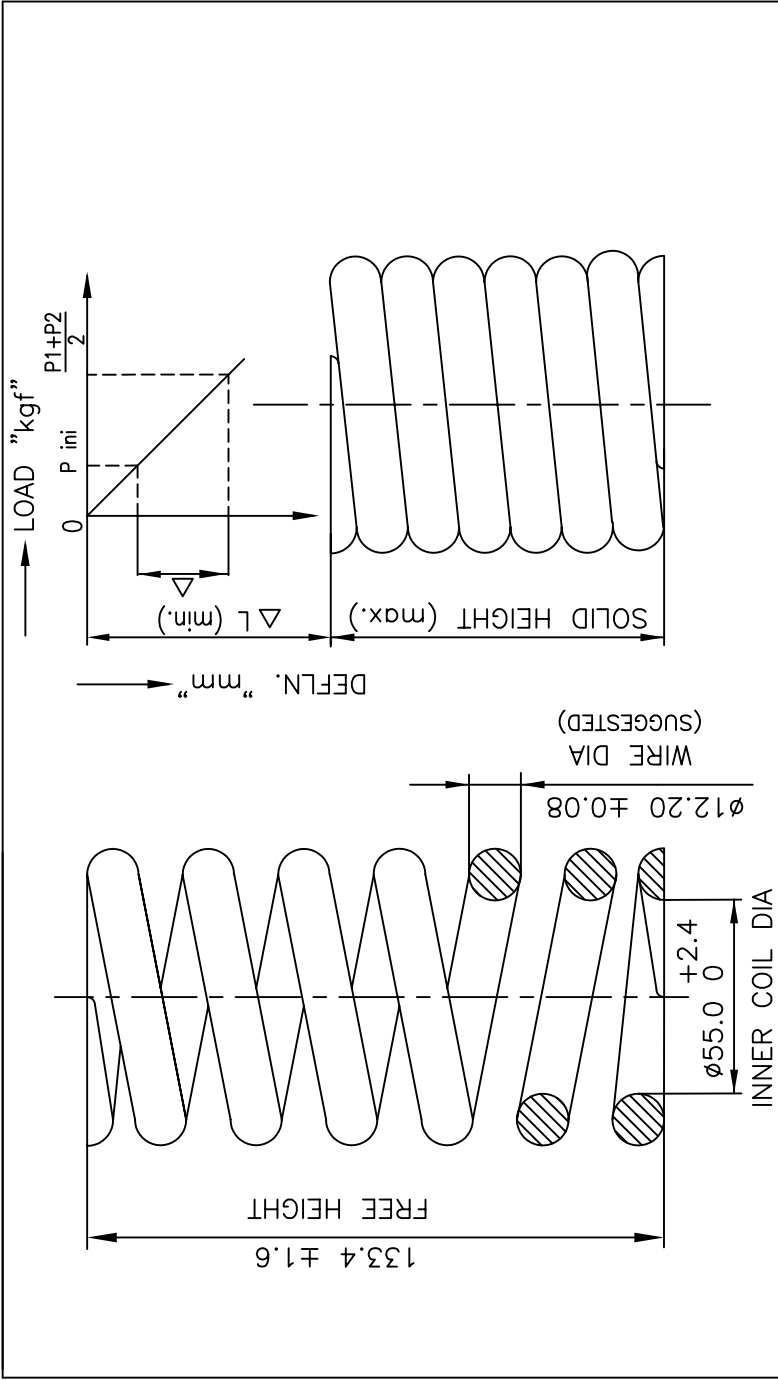
NOTES:

- MANUFACTURE & WORKMANSHIP SHALL BE IN ACCORDANCE WITH APPLICABLE PROCEDURE FOR IBR SPRINGS.
- DATA GIVEN IN ROWS 11 TO 14 ARE FOR REFERENCE ONLY. SPRING VENDOR TO DECIDE SUITABILITY.
- ACCEPTABLE SPRING MATERIALS TO ATTEST:
ASTM A231 OR BS2803 GR.735A50/685A55.
- SPRING VENDOR IS RESPONSIBLE FOR STRESS RELIEVING, TEMPERING AND OTHER HEAT TREATMENTS AND CONTROLS TO INSURE MINIMUM STRESSED SPRINGS.
- TEST CERTIFICATE TO BE OBTAINED WITH THE INSPECTING AUTHORITY APPROVED UNDER IBR 1950.

REV. 03	ALTD: G.V. 16.12.11	REV. 02	ALTD: A.S.J
	CHKD: S.M. 16.12.11		CHKD: V.P.P
	APPD: E.A. 16.12.11		APPD: E.A. 04.11.08
NOTES UPDATED DCN.No.801130 Dt.03.01.11		SPRING MATERIAL ALTERED. IN NOTE.3 NOTE.5 ALTERED. DCP No: 800877 Dt.29.10.08	

	DRAWN	LRS	SIGN	DATE
	CHECKED	EA		15.07.2003
	APPROVED	EA		15.07.2003
TITLE SPRING				
DRG No. 4-V-J258-23166				REV. 03

ALL DIMENSIONS ARE IN MM



ROW	DESCRIPTION	UNITS	VALUE
01	SPRING NUMBER	0102590CR	
02	MAX. OUTSIDE DIA	(mm)	85.7
03	SPRING RATE	(Kg/mm)	12.945
04	AVERAGE DEFLECTION ΔL min.	(mm)	50.8
05	INITIAL LOADING P ini	(Kgs)	98.6
06	TEST DEFLECTION Δ	(mm)	35.6
07	LOAD AT TEST	P ₁ MIN.	536.0
	DEFLECTION	P ₂ MAX.	582.0
08	TILT DEFLECTION	(mm)	43.2

ROW	DESCRIPTION	UNITS	VALUE
09	EFFECTIVE NO.OF COILS	NOS	5.7 -1 ⁰ / ₂
10	SPRING WEIGHT	(Kgs)	1.2
11	PITCH	(mm)	22.1±0.8
12	DEVELOPED LENGTH OF ROD	(mm)	1317
13	RAW MATERIAL DIA x LENGTH	(mm)	18X1820
14	RAW MATERIAL WEIGHT	(Kgs)	8.0
15	RAW MATERIAL CODE	153274050100	
16	SPRING CODE	931720880900	
17	PROCESS OF MANUFACTURE	HOT/ COLD COILING	

NOTES:

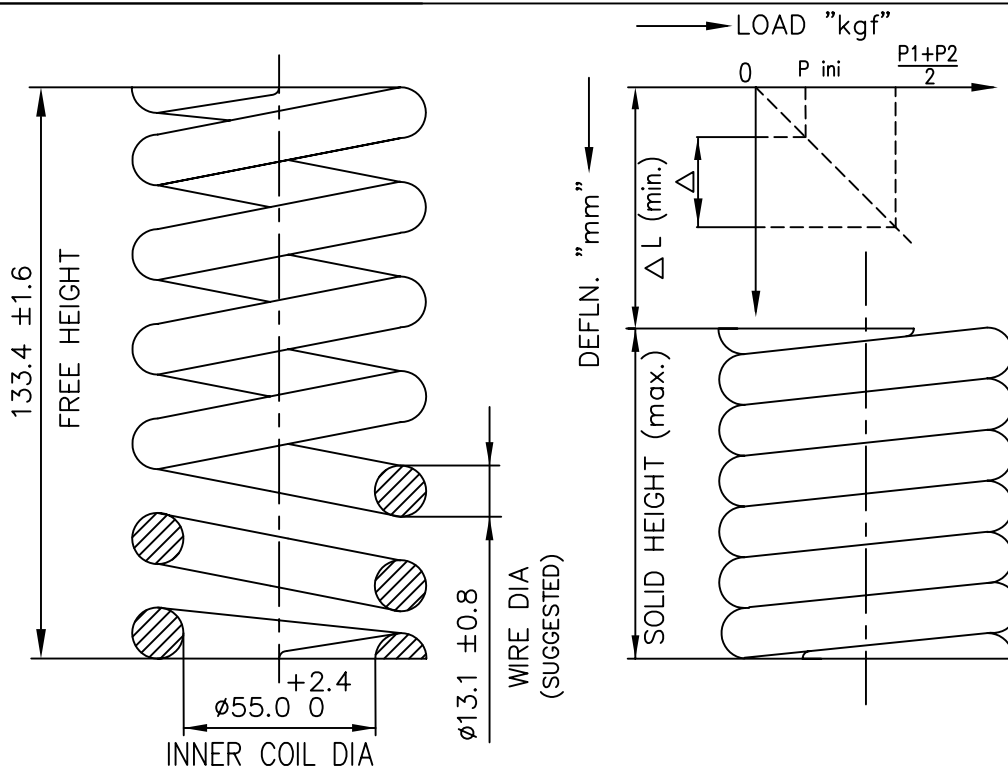
- MANUFACTURE & WORKMANSHIP SHALL BE IN ACCORDANCE WITH APPLICABLE PROCEDURE FOR IBR SPRINGS.
- DATA GIVEN IN ROWS 11 TO 14 ARE FOR REFERENCE ONLY. SPRING VENDOR TO DECIDE SUITABILITY.
- ACCEPTABLE SPRING MATERIALS TO ATTEST: ASTM A322 GR.6150/EN48A.

REV. 02	ALTD:	REV.01	ALTD:	LRS
	CHKD:		CHKD:	VPP
	APPD:	21.01.03	APPD:	KN
RAW MATERIAL CODE: 153274050100 WAS 15927211 DCP NO: 800159				

	DRAWN	NAME	SIGN	DATE
	CHECKED	LRS		04.04.2002
	APPROVED	VPP		04.04.2002
TITLE: SPRING				
DRG No. 4-V-J259-23088				REV. 01

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ROW	DESCRIPTION	UNITS	VALUE
01	SPRING NUMBER		0102610CR
02	OUTSIDE DIA MAX.LIMITS	(mm)	85.7
03	SPRING RATE	(Kg/mm)	17.391
04	AVERAGE DEFLECTION ΔL min.	(mm)	48.0
05	INITIAL LOADING P_{ini}	(Kgs)	125.2
06	TEST DEFLECTION Δ	(mm)	33.6
07	LOAD AT TEST DEFLECTION	P_1 MIN.	(Kgs) 680.4
		P_2 MAX.	(Kgs) 738.9

ROW	DESCRIPTION	UNITS	VALUE
08	TILT DEFLECTION	(mm)	40.8
09	EFFECTIVE NO.OF COILS	NOS	5.4 $\begin{smallmatrix} 0 \\ -0.5 \end{smallmatrix}$
10	SPRING WEIGHT	(Kgs)	1.4
11	PITCH	(mm)	23±0.7
12	DEVELOPED LENGTH OF ROD	(mm)	1280
13	RAW MATERIAL DIA x LENGTH	(mm)	18 x 1790
14	RAW MATERIAL WEIGHT	(Kgs)	3.6
15	PROCESS OF MANUFACTURE	HOT/ GOLD COILING	

NOTES:

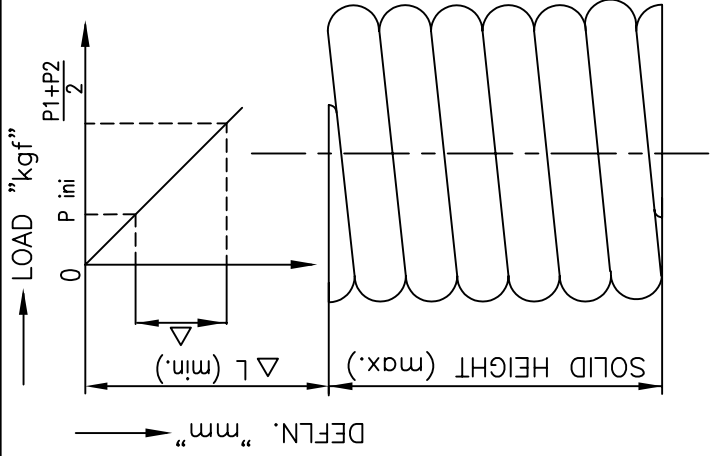
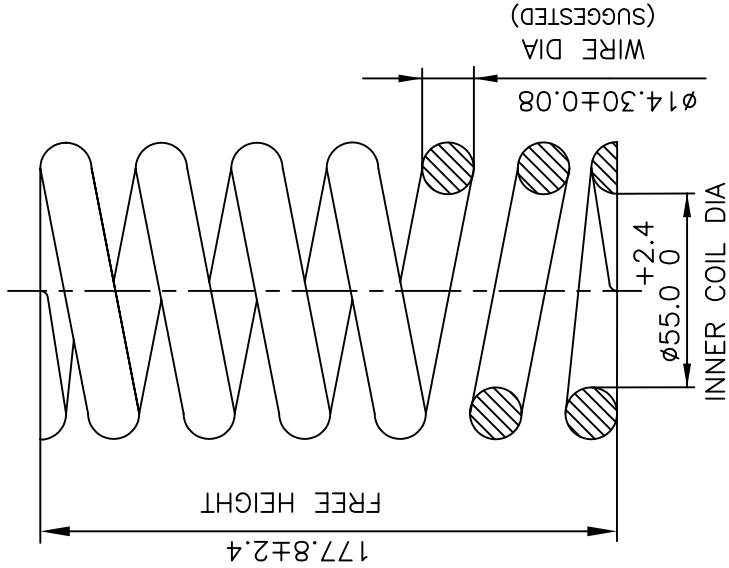
- MANUFACTURE & WORKMANSHIP SHALL BE IN ACCORDANCE WITH APPLICABLE PROCEDURE FOR IBR SPRINGS.
- DATA GIVEN IN ROWS 11 TO 14 ARE FOR REFERENCE ONLY. SPRING VENDOR TO DECIDE SUITABILITY.
- ACCEPTABLE SPRING MATERIALS TO ATTEST:
ASTM A322 GR.5160/6150 OR ASTM A304 GR.5160H/6150H.
- SPRING VENDOR IS RESPONSIBLE FOR STRESS RELIEVING, TEMPERING AND OTHER HEAT TREATMENTS AND CONTROLS TO INSURE MINIMUM STRESSED SPRINGS.
- TEST CERTIFICATE TO BE OBTAINED WITH THE INSPECTING AUTHORITY APPROVED UNDER IBR 1950.

REV. 02	ALTD: RPJ	10.02.2011	REV. 01	ALTD: GV	30.04.2009
	CHKD: VPP	10.02.2011		CHKD: SM	30.04.2009
	APPD: E.A	10.02.2011		APPD: E.A	30.04.2009
NOTES UPDATED			DRG. UPDATED & REDRAWN IN CAD		
DCP.No.801130			DCP.No.800903		

	DRAWN	NAME GV	SIGN	DATE 30.04.2009
	CHECKED	SM		30.04.2009
	APPROVED	EA		30.04.2009
TITLE SPRING				
DRG No. 4-V-J261-23421				REV. 02

ALL DIMENSIONS ARE IN MM

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ROW	DESCRIPTION	UNITS	VALUE
01	SPRING NUMBER	0103100CR	
02	MAX. OUTSIDE DIA	(mm)	92.1
03	SPRING RATE	(Kg/mm)	17.944
04	AVERAGE DEFLECTION Δ L min.	(mm)	62.5
05	INITIAL LOADING P ini	(Kgs)	168.2
06	TEST DEFLECTION Δ	(mm)	43.7
07	LOAD AT TEST	P ₁ MIN.	913.8
	DEFLECTION	P ₂ MAX.	992.3
08	TILT DEFLECTION	(mm)	53.1

ROW	DESCRIPTION	UNITS	VALUE
09	EFFECTIVE NO.OF COILS	NOS	7.1-1 ⁰ / ₂
10	SPRING WEIGHT	(Kgs)	2.1
11	PITCH	(mm)	24.2±0.9
12	DEVELOPED LENGTH OF ROD	(mm)	1634
13	RAW MATERIAL DIA x LENGTH	(mm)	18X2140
14	RAW MATERIAL WEIGHT	(Kgs)	4.3
15	RAW MATERIAL CODE		153274050100
16	SPRING CODE		931722060900
17	PROCESS OF MANUFACTURE	HOT/ COLD COILING	

NOTES:

- MANUFACTURE & WORKMANSHIP SHALL BE IN ACCORDANCE WITH APPLICABLE PROCEDURE FOR IBR SPRINGS.
- DATA GIVEN IN ROWS 11 TO 14 ARE FOR REFERENCE ONLY. SPRING VENDOR TO DECIDE SUITABILITY.
- ACCEPTABLE SPRING MATERIALS TO ATTEST:
ASTM A322 GR.6150

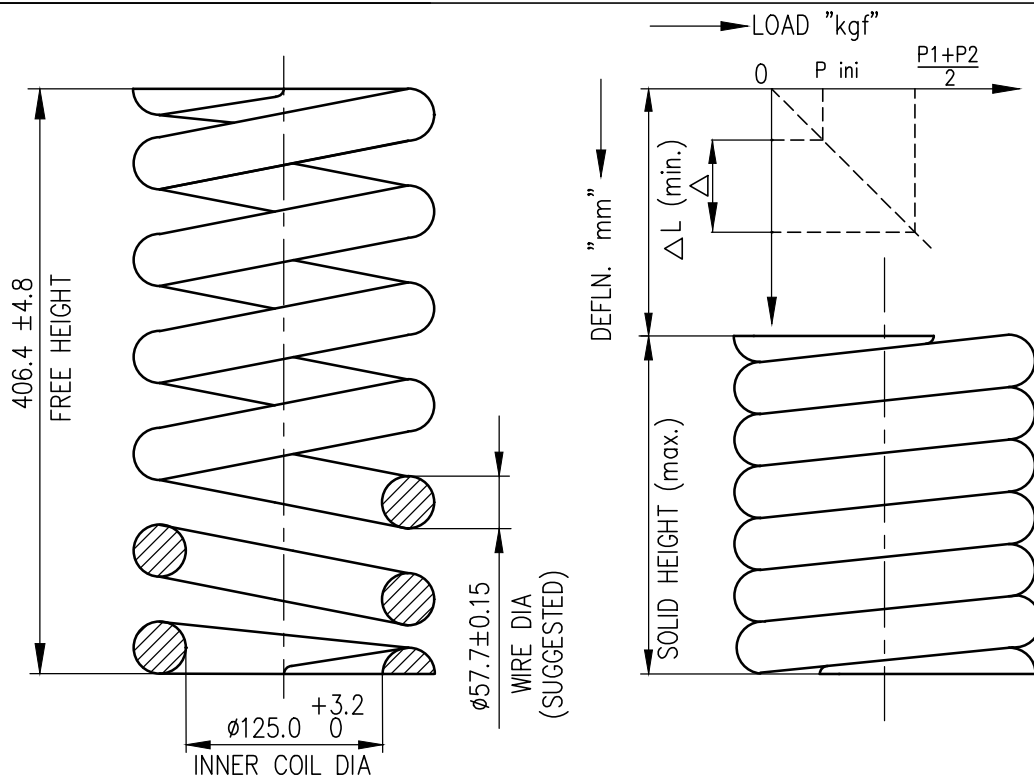
REV.	ALTD:	REV.	ALTD:
02	CHKD:	01	CHKD:
	APPD:		APPD:

	DRAWN	NAME	SIGN	DATE
	CHECKED	LRS		30.06.2004
	APPROVED	VPP		30.06.2004
		EA		30.06.2004

TITLE

SPRING

REV.	REV.
DRG No.	4-V-J310-2320600



ROW	DESCRIPTION	UNITS	VALUE
01	SPRING NUMBER		5107480E
02	OUTSIDE DIA. MAX. LIMIT	(mm)	254.0
03	SPRING RATE ($\pm 4\%$)	(Kg/mm)	394.66
04	SOLID DEFLECTION ΔL min.	(mm)	63.5
05	INITIAL LOADING P_{ini}	(Kgs)	3759.1
06	TEST DEFLECTION Δ	(mm)	44.5
07	LOAD AT TEST	P_1 MIN.	(Kgs) 20428.4
	DEFLECTION	P_2 MAX.	(Kgs) 22175.1

ROW	DESCRIPTION	UNITS	VALUE
08	TILT DEFLECTION	(mm)	54.0
09	EFFECTIVE NO.OF COILS	NOS	$4.7^{+0}_{-0.5}$
10	SPRING WEIGHT	(Kgs)	70.3
11	PITCH	(mm)	71.8 ± 2.2
12	DEVELOPED LENGTH OF ROD	(mm)	3443
13	RAW MATERIAL DIA x LENGTH	(mm)	$\phi 60 \times 4837$
14	RAW MATERIAL WEIGHT	(Kgs)	—
15	PROCESS OF MANUFACTURE		HOT COILING

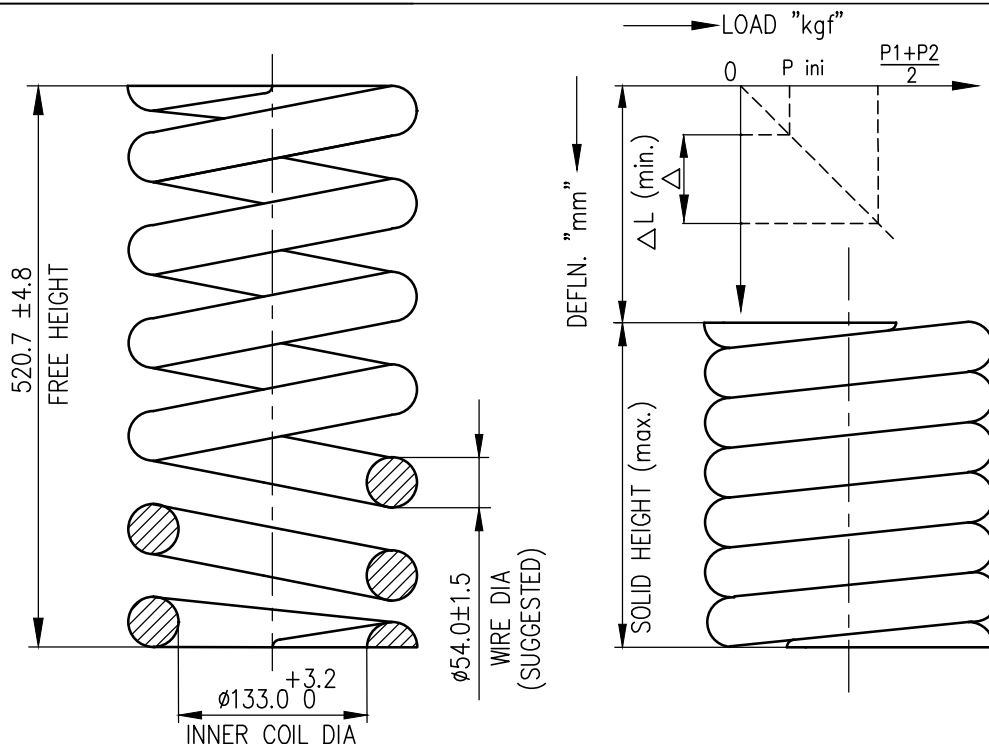
NOTES:

1. MANUFACTURE & WORKMANSHIP SHALL BE IN ACCORDANCE WITH APPLICABLE PROCEDURE FOR IBR SPRINGS AND DESIGNED FOR SAFETY VALVE APPLICATIONS ONLY.
2. FREE HEIGHT, SPRING RATE & SOLID DEFLECTION SHOULD BE MAINTAINED AND OTHER PARAMETERS TO BE DECIDED BY SPRING VENDOR, ACCORDING TO THE MATERIAL MENTIONED IN THIS DRAWING.
3. ACCEPTABLE SPRING MATERIALS TO ATTEST:
ASTM A681-H12/H21 OR BS 4659-BH12/BH21
4. SPRING VENDOR IS RESPONSIBLE FOR STRESS RELIEVING, TEMPERING AND OTHER HEAT TREATMENTS AND CONTROLS TO INSURE MINIMUM STRESSED SPRINGS.
5. TEST CERTIFICATE TO BE OBTAINED WITH THE INSPECTING AUTHORITY APPROVED UNDER IBR 1950.
6. SPRINGS SHALL BE ALUMINIZED, USING EITHER BAKED-ON PAINT OR MOLTEN ALUMINIUM.

REV. 02	ALTD:	REV. 01	ALTD:
	CHKD:		CHKD:
	APPD:		APPD:

	DRAWN	S.S	SIGN	DATE
	CHECKED	R.R		24.07.2018
	APPROVED	S.M		24.07.2018
TITLE SPRING				
DRG No. 4-V-J748-23864				REV. 00

CAUTION : The information of this document is the property of BHARAT HEAVY ELECTRICALS LIMITED
It must not be used directly or indirectly in any way detrimental to the interest of the company.



ROW	DESCRIPTION	UNITS	VALUE
01	SPRING NUMBER		5107910E
02	OUTSIDE DIA. MAX. LIMIT	(mm)	298.0
03	SPRING RATE ($\pm 4\%$)	(Kg/mm)	214.259
04	SOLID DEFLECTION ΔL min.	(mm)	124.0
05	INITIAL LOADING P_{ini}	(Kgs)	3985.2
06	TEST DEFLECTION Δ	(mm)	86.8
07	LOAD AT TEST DEFLECTION	P_1 MIN.	(Kgs) 21657.0
		P_2 MAX.	(Kgs) 23508.8

ROW	DESCRIPTION	UNITS	VALUE
08	TILT DEFLECTION	(mm)	105.4
09	EFFECTIVE NO.OF COILS	NOS	$6.1 - 0.5^0$
10	SPRING WEIGHT	(Kgs)	77.70
11	PITCH	(mm)	75.2 ± 2.0
12	DEVELOPED LENGTH OF ROD	(mm)	4352
13	RAW MATERIAL DIA x LENGTH	(mm)	60 x 5600
14	RAW MATERIAL WEIGHT	(Kgs)	124.294
15	PROCESS OF MANUFACTURE	HOT COILING	

NOTES:

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2. FREE HEIGHT, SPRING RATE & SOLID DEFLECTION SHOULD BE MAINTAINED AND OTHER PARAMETERS TO BE DECIDED BY SPRING VENDOR, ACCORDING TO THE MATERIAL MENTIONED IN THIS DRAWING.
3. ACCEPTABLE SPRING MATERIALS TO ATTEST:
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6. SPRINGS SHALL BE ALUMINIZED, USING EITHER BAKED-ON PAINT OR MOLTEN ALUMINIUM.

REV.	ALTD:	REV.	ALTD:	
02	CHKD:	01	CHKD:	R.P.J 21.05.13
	APPD:		APPD:	S.M 21.05.13
				E.A 21.03.13
		NOTES UPDATED DCP.No.801440		

	NAME	SIGN	DATE
DRAWN	RPJ		11.01.2012
CHECKED	RPJ		11.01.2012
APPROVED	EA		11.01.2012
TITLE			
SPRING			
DRG No.			REV.
4-V-J791-23808			01