

ADDITIONAL TERMS & CONDITIONS
FOR SF6 Gas Density Switch cum Pressure Switch (RVUNL SURATGARH) PROJECT
Enquiry No: Dated.....

1. For any technical clarification, kindly contact **Mr. Vyom, Dy. Manager (TBEM)**
 BHEL, Transmission Business Group
 10th Floor, Plot No.C-20/1A/1, Joy Towers, Sector-62, Noida, Uttar Pradesh, Pin No: 201301
 Phone: +91 (0) 0120- 6748597, E-mail: vyom@bhel.in

2. For any commercial clarification, kindly contact **Sandeep, Deputy Manager (TBMM);**
 BHEL, Transmission Business Group
 10th Floor, Plot No.C-20/1A/1, Joy Towers, Sector-62, Noida, Uttar Pradesh, Pin No: 201301
 Contact No. 0120 6748450; E-mail: kumar.sandeep@bhel.in.

3. **Proposed delivery plan: IMMEDIATE.** However, vendor to dispatch the material as per delivery plan mentioned in **ACTIVITY SCHEDULE** to meet the project requirement. In case, BHEL's delivery requirement is not met by vendor(s), then a chance may be given to all such vendors to review their quoted delivery schedule in line with BHEL's delivery requirement. However, if vendor fails to meet the requisite delivery plan, then BHEL reserves the right not to consider the offer of such vendor(s).

Break up of delivery period taken (Delay analysis for cases of delivery extension if required, shall be governed as per below schedule)

SL. NO.	ACTIVITY	ACTIVITY TIME IN WEEKS
1.	Submission of documents necessary for getting manufacturing clearance like Drawings, data sheet etc. (In scope of vendor)	NA
2.	Review and Approval of documents and issue of manufacturing clearance (In scope of BHEL)	NA
3.	Manufacturing Time (In scope of vendor)	10
4.	Inspection (In scope of BHEL)	02
5.	Issue of MICC (In scope of BHEL)	02
6.	Dispatch (In scope of vendor)	02
	Total	16 weeks

		Deviation	Remarks if any
1.	Schedule of Commercial Deviation, if any	NIL	
2.	Schedule of Technical Deviation, if any	NIL	

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	(Against Technical Specification)		
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4. **REVERSE AUCTION – Not APPLICABLE**
5. **MOP Circular: NOT APPLICABLE.**
6. **INTEGRITY PACT: Not Applicable.**
7. **PRICE BID FORMAT:** Bidder to submit un priced bid with their offer (Format Attached).
8. **Guarantee Clause (Defect Liability Period):** Guarantee shall be 18 months from the date of last delivery.
9. **Performance Bank Guarantee–** Not Applicable (Being Small value item)
10. **Payment Terms –** 100% of Payment within 60 days upon submission of billing documents.
11. **Liquidation Damage-** In case of delay in execution of Purchase Order beyond the contractual delivery time, an amount of 0.5% of delayed lot value (Ex Works and F&I charges) for supply per week of delay or part thereof subject to a maximum of 10% of delayed lot value (Ex Works and F&I charges) shall be deducted as Liquidated Damages (LD) along with applicable GST (if any) on LD.
12. Following confirmation to be provided by vendor:

Un-Priced Bid

Sl No.	Item Description	Quantity	Unit Price (Inclusive of F&I & GST)	GST Applicable %
01	SF6 Gas Density Switch cum Pressure Gauge	06 Nos.	Quoted	Quoted

“We confirm that we have quoted as per specified price format provided along with this tender”.

NAME & SEAL OF TENDERER

DRAWINGS/DOCUMENTS HAVE BEEN REVIEWED AND APPROVED BY BHEL, DATED 30.06.15

LIST OF DRAWINGS FOR GCB WITH & WITHOUT PIR WITHOUT CSD:

SR. NO.	LIST OF DRAWINGS/DOCUMENTS.	DRAWING NO.	TOTAL SHEET
1	LIST OF DRAWINGS	EH5-4342-40	1
2	GENERAL ARRANGEMENT	EH5-4342-41	5
3	SCHEMATIC DIAGRAM	EH5-4342-42	6
4	BILL OF MATERIAL	EH5-4342-43	1
5	RATING PLATE DETAILS (WITH & WITHOUT PIR)	EH5-4342-44	4
6	MECHANISM HOUSING ASSEMBLY R&Y	EH5-4342-45	1
7	MECHANISM HOUSING ASSEMBLY B	EH5-4342-46	1
8	AIR & GAS SYSTEM	EH5-4342-47	1
9	SECTIONAL VIEW OF POLE UNIT (WITH & WITHOUT PIR)	EH5-4342-48	2
10	MARSHALLING BOX DETAILS	EH5-4342-49	1
11	CABLE SCHEDULE	EH5-4342-50	1
12	SUPPORT STRUCTURE	EH5-4342-51	1
13	LADDER DETAILS	EH5-4342-52	1



REV.	DATE	REASONS FOR REVISION	DRN.	PREPARED BY	CHECKED BY	APPROVED BY
OWNER RAJASTHAN RAJYA VIDYUT UTPADAN NIGAM LIMITED						
PROJECT 2X660MW THERMAL POWER PLANT.SURAT GARH STAGE -V. UNIT 7 & 8 AT SURATGARH , RAJASTHAN						
OWNER'S ENGINEER TATA CONSULTING ENGINEERS LIMITED						
EPC CONTRACTOR BHARAT HEAVY ELECTRICALS LTD TRANSMISSION BUSINESS GROUP						
WORK ORDER NO: HS 4342		DEPT CODE		NAME	SIGN.	DATE
PRODUCT: FOR 400KV SP-PN		DRN	YBJ			05.03.15
TYPE: 400-SFM-40A		DESN	MSK			05.03.15
		CHKD	MSK			05.03.15
		APPD	HVS			05.03.15
TITLE LIST OF DRAWINGS						
PO NO:-- 144P231 DTD 03.03.2015						
CV	ME	EL	I&C	DEPT. SCALE	BHEL/SUB VENDOR DRG NO.	
-	-	MSK	-	SIGN	EH5-4342-40	
-	-	05.03.15	-	DATE	SHT. No 1/1 REV.0	

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NOTES:-

1. WEIGHT OF EACH MECH HOUSING = 1000Kg (APPROX)
2. TOTAL WEIGHT (3 POLE) = 6950 Kg (APPROX)
3. SF6 GAS WEIGHT (3 POLE) = 54 Kg (APPROX)
4. IMPACT LOADING FOR FOUNDATION DESIGN INCLUDING DEAD WEIGHT PLUS IMPACT VALUE IN OPENING AT MAXIMUM INTERRUPTING RATING EXPRESSED IN TERMS OF EQUIVALENT STATIC LOAD IN Kg. 15000/PHASE DOWNWARD 10000 Kg/ PHASE UPWARD.
5. ALL EXPOSED FERROUS HARDWARES ARE HOT DIP GLAV.
6. SUPPLY OF INTER PHASE CABLES UP TO MARSHALLING BOX IS IN CGL SCOPE. SAME SHALL BE PROVIDED ALONG WITH BREAKER.
7. UNITISED COMPRESSED AIR SYSTEM IS SUITABLE FOR 2-CO OPERATION.
8. CREEPAGE DISTANCE TO GROUND & ACROSS INTERRUPTER 13020mm
9. TYPE OF BREAKER : 400-SFM-40A
10. STD APPLICABLE : IEC-62271-100.
11. RATED VOLTAGE : 420 KV rms.
12. RATED CURRENT : 3150 Amps (AT 50°C.)
13. RATED OPERATING DUTY : 0-0.3 SEC-CO-3 MIN-CO
14. RATED AIR PRESSURE : 15.5Kg/cm²
15. RATED SF6 GAS PRESSURE : 7 Kg/cm² AT 20°C
16. FINISH COAT:- THE EXTERNAL SURFACE OF MECH. HOUSING & M BOX ARE PAINTED WITH SHADE 631 OF IS-5 AND THE INTERNAL SURFACES PAINTED IN GLOSSY WHITE
17. AIR RESERVOIR HOT DIP GALVANISED INSIDE AND OUTSIDE.
18. SUPPORT STRUCTURE HOT DIP GALVANISED
19. CABLE GLANDS & ANCHOR BOLTS ARE IN CGL SCOPE OF SUPPLY.
20. MAKE OF INSULATORS.:
BIRLA-NGK/MODERN/WS INSULATORS /IEC



1.	25.05.15	REVISED AS PER CONSULTANT COMMENT	SDS	SDS	HVS	HVS
REV.	DATE	REASONS FOR REVISION	DRN.	PREPARED BY	CHECKED BY	APPROVED BY
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			CHD	MSK		05.03.15
			APPD	HVS		05.03.15
TITLE GENERAL ARRANGEMENT FOR 400KV WO PIR						
PO NO:- 144P231 DTD 03.03.2015						
CV	ME	EL	I&C	DEPT.	SCALE	BHEL/SUB VENDOR DRG NO.
-	-	MSK	-	SIGN		EH5-4342-41
-	-	05.03.15	-	DATE		SHT. No 4/5
						REV.1

DRG NO:EH5-4342-41-5

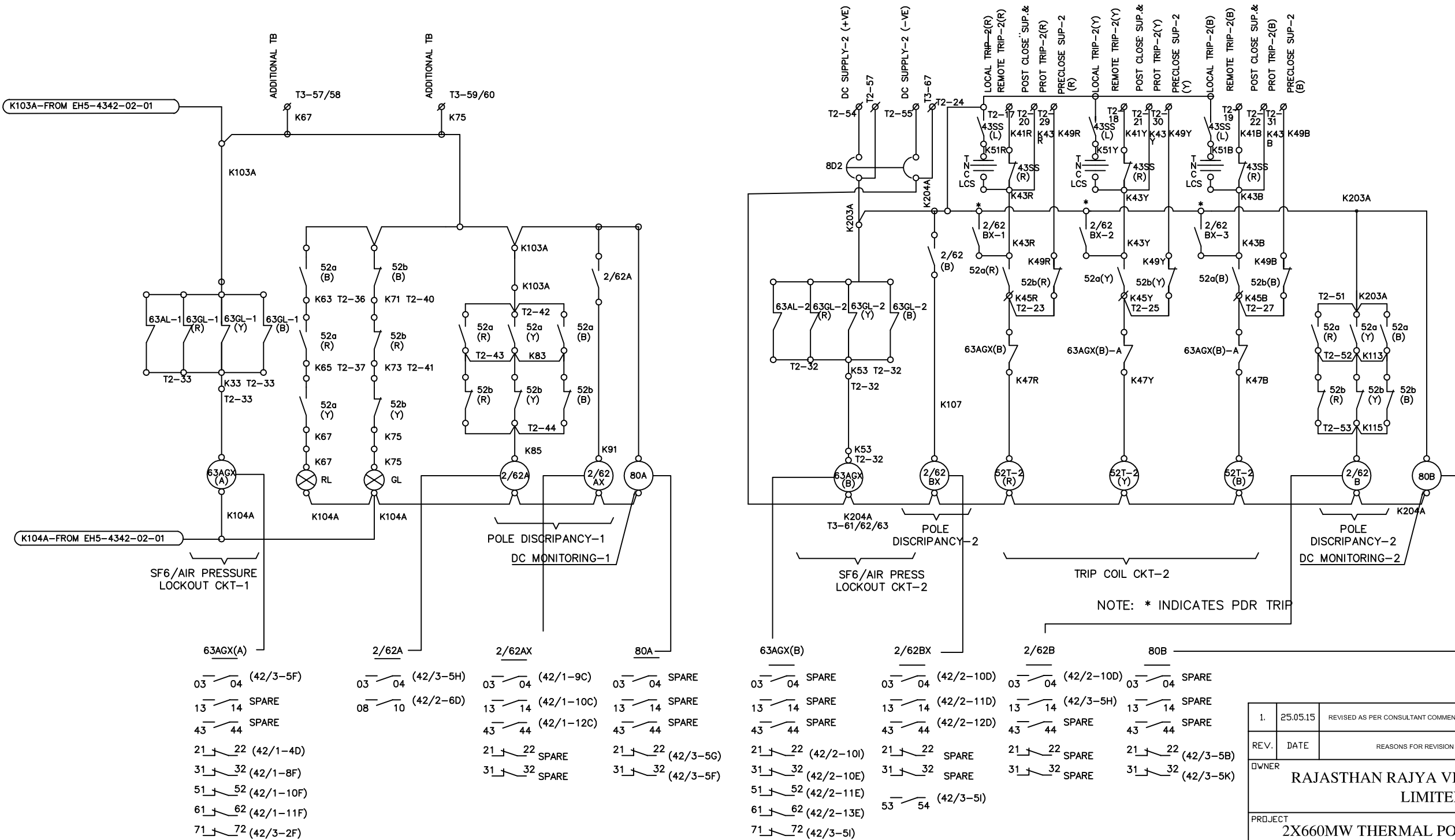
NOTES:-

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20. MAKE OF INSULATORS.:
BIRLA-NGK/MODERN/WS INSULATORS /IEC

SR.N.O	COMPONENT	QTY/ GCB
1	SUPPORTING PORCELAIN	9
2	INTERRUPTING UNIT WPIR	12
3	SUPPORT STRUCTURE	3
4	OPERATING MECHANISM HOUSING EQUIPPED WITH AIR COMPRESSOR ONLY PHASE R & Y	3
5	AIR RESERVOIR 160 LTRS	3
6	POSITION INDICATOR	3
7	SF6 GAS PRESS GAUGE ALL PHASE	3
8	OPERATION COUNTER	3
9	RATING PLATE (ENG) (ONLY Y PHASE)	1
10	AIR PRESS GAUGE (ONLY Y PHASE)	1
11	GROUNDING TERMINAL 75X8 FRONT SIDE	8
12	DRAIN VALVE	3
13	UNDRILLED GLAND PLATE(M.BOX)	1
14	MARSHALLING BOX	1
15	STOP VALVE FOR EMERGENCY EXTERNAL AIR SUPPLY	1
16	TERMINAL CONNECTOR SIDE	6
17	SHIELD RINGWPIR	6
18	M24 ANCHOR BOLT FOR M BOX & LADDER	10
19	M30 ANCHOR BOLT FOR HSG	12
20	LADDER	3
21	UNDRILLED GLAND PLATE (HSG)	3
22	RATING PLATE (HIN) (ONLY R PHASE)	1



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EPC CONTRACTOR BHARAT HEAVY ELECTRICALS LTD TRANSMISSION BUSINESS GROUP						
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			CHD	MSK		05.03.15
			APPD	HVS		05.03.15
TITLE GENERAL ARRANGEMENT FOR 400KV WITH PIR						
PO NO: - 144P231 DTD 03.03.2015						
CV	ME	EL	I&C	DEPT.	SCALE	BHEL/SUB VENDOR DRG NO.
-	-	MSK	-	SIGN		EH5-4342-41
-	-	05.03.15	-	DATE		SHT. No 5/5
						REV.0



SF6/AIR PRESSURE LOCKOUT CKT-1

POLE DISCRIPANCY-1
DC MONITORING-1

SF6/AIR PRESS LOCKOUT CKT-2

TRIP COIL CKT-2

POLE DISCRIPANCY-2
DC MONITORING-2

NOTE: * INDICATES PDR TRIP

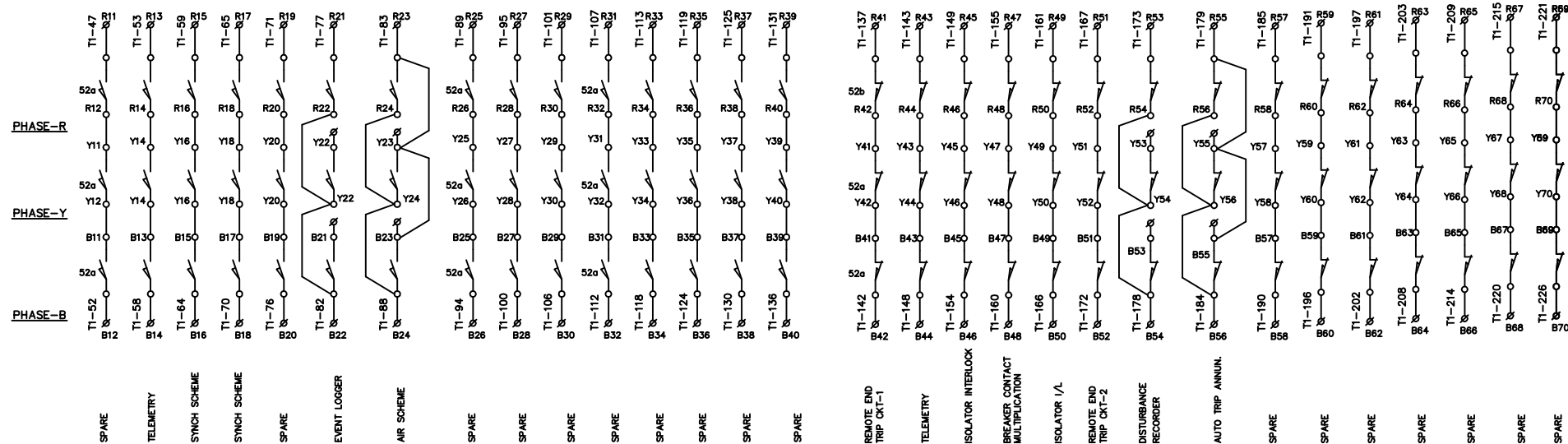
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- 13 14 SPARE
- 43 44 SPARE
- 21 22 (42/1-4D)
- 31 32 (42/1-8F)
- 51 52 (42/1-10F)
- 61 62 (42/1-11F)
- 71 72 (42/3-2F)
- 03 04 (42/3-5H)
- 08 10 (42/2-6D)
- 13 14 (42/1-10C)
- 43 44 (42/1-12C)
- 21 22 SPARE
- 31 32 SPARE
- 03 04 SPARE
- 13 14 SPARE
- 43 44 SPARE
- 21 22 (42/3-5G)
- 31 32 (42/3-5F)

- 03 04 SPARE
- 13 14 SPARE
- 43 44 SPARE
- 21 22 (42/2-10I)
- 31 32 (42/2-10E)
- 51 52 (42/2-11E)
- 61 62 (42/2-13E)
- 71 72 (42/3-5I)
- 03 04 (42/2-10D)
- 13 14 (42/2-11D)
- 43 44 (42/2-12D)
- 21 22 SPARE
- 31 32 SPARE
- 53 54 (42/3-5I)
- 03 04 (42/2-10D)
- 13 14 (42/3-5H)
- 43 44 SPARE
- 21 22 SPARE
- 31 32 SPARE
- 03 04 SPARE
- 13 14 SPARE
- 43 44 SPARE
- 21 22 (42/3-5B)
- 31 32 (42/3-5K)

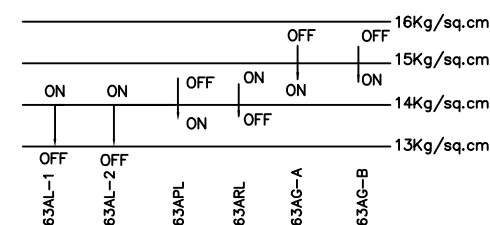


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			DESN	MSK		05.03.15
			CHD	MSK		05.03.15
			APPD	HVS		05.03.15
TITLE: - SCHEMATIC DIAGRAM FOR 420kV SP-PN SF6 GCB						
PO NO: - 144P231 DTD 03.03.2015						
CV	ME	EL	I&C	DEPT. SCALE	BHEL/SUB VENDOR DRG NO.	
-	-	MSK	-	SIGN	EH5-4342-42	
-	-	05.03.15	-	DATE	SHT. No 2/4	REV.1

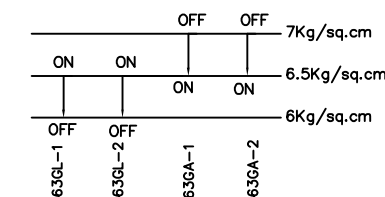
SPARE AUXILIARY SWITCHES OF PHASES R.Y.B. (15a-15b)



AIR PRESS. SWITCH SETTING



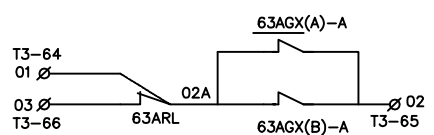
GAS PRESS SWITCH SETTING



NOTE :

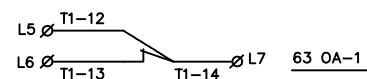
- AUXILIARY SWITCHES ARE SHOWN FOR OPEN BREAKER.
- AUXILIARY CONTACTOR'S CONTACT IN DEENERGIZED CONDITION.
- PRESSURE & OIL LEVEL SWITCHES ARE SHOWN WHEN NO SUPPLY & NO PRESSURE.
- REMOTE LOCAL OFF CHANGE OVER SWITCH IS SHOWN FOR REMOTE POSITION.
- RELAY C.B.
 - OPEN CONTACT
 - CLOSE CONTACT
 - OPEN CONTACT (TIME DELAYED CONTACT)
- SIZE OF CONTROL WIRE 2.5MM², 1100V GRADE STRANDED COPPER CONDUCTOR, PVC INSULATED, PVC INNER SHEATHE, UNARMoured.
- CONTROL WIRE INSIDE CABLE 2.5MM², 1100V GRADE STRANDED COPPER CONDUCTOR, FRLS INSULATED, PVC INNER SHEATHE, ARMoured.
- COLOR OF WIRE : FOR AC CIRCUIT RED YELLOW BLUE & BLACK, FOR DC CIRCUIT GREY & FOR EARTHING GREEN.
- STUD TYPE (NON DISCONNECTABLE TYPE) TERMINAL BLOCKS TO BE USED.
- 630A-1 & 630A-2 CONTACTS SHOWN FOR NO OIL CONDITION.
- TRIP CIRCUIT TO BE IDENTIFIED BY RED FERRULES.
- CONTINUOUS CURRENT CARRYING OF TRIP COIL IS 50 MILLIAMPS. TO CATER FOR TRIP CKT SUPERVISION.

AUTO RECLOSE LOCK CONTACT

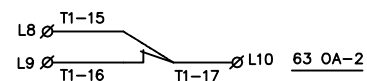


ALARM CONTACTS

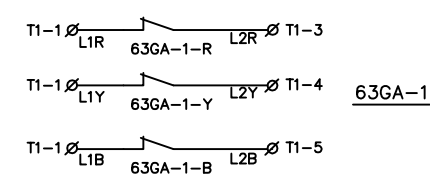
LOW OIL LEVEL IN COMPRESSOR-1



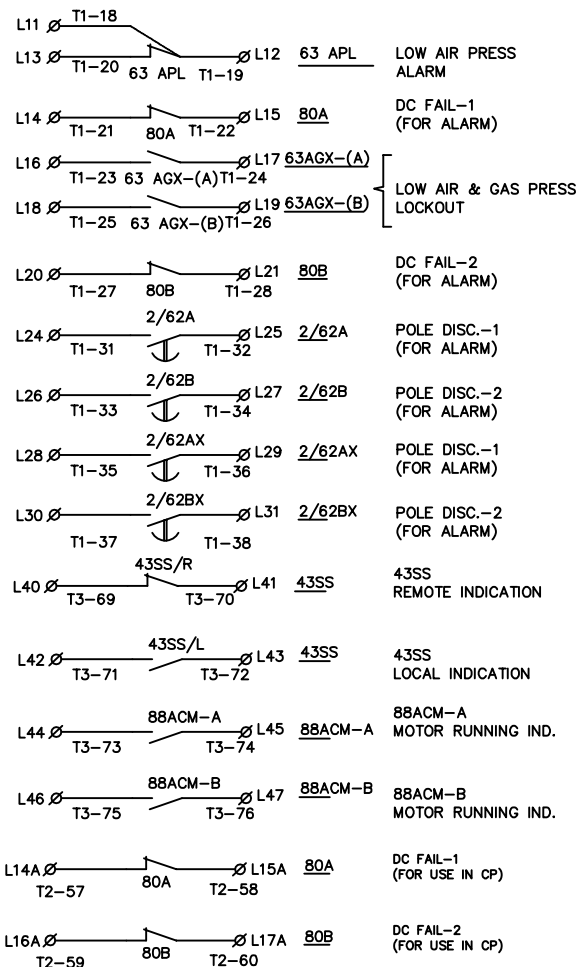
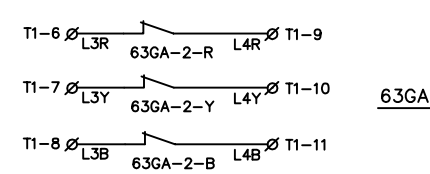
LOW OIL LEVEL IN COMPRESSOR-2



SF6 LOW GAS PRESSURE ALARM



SF6 LOW GAS PRESSURE ALARM

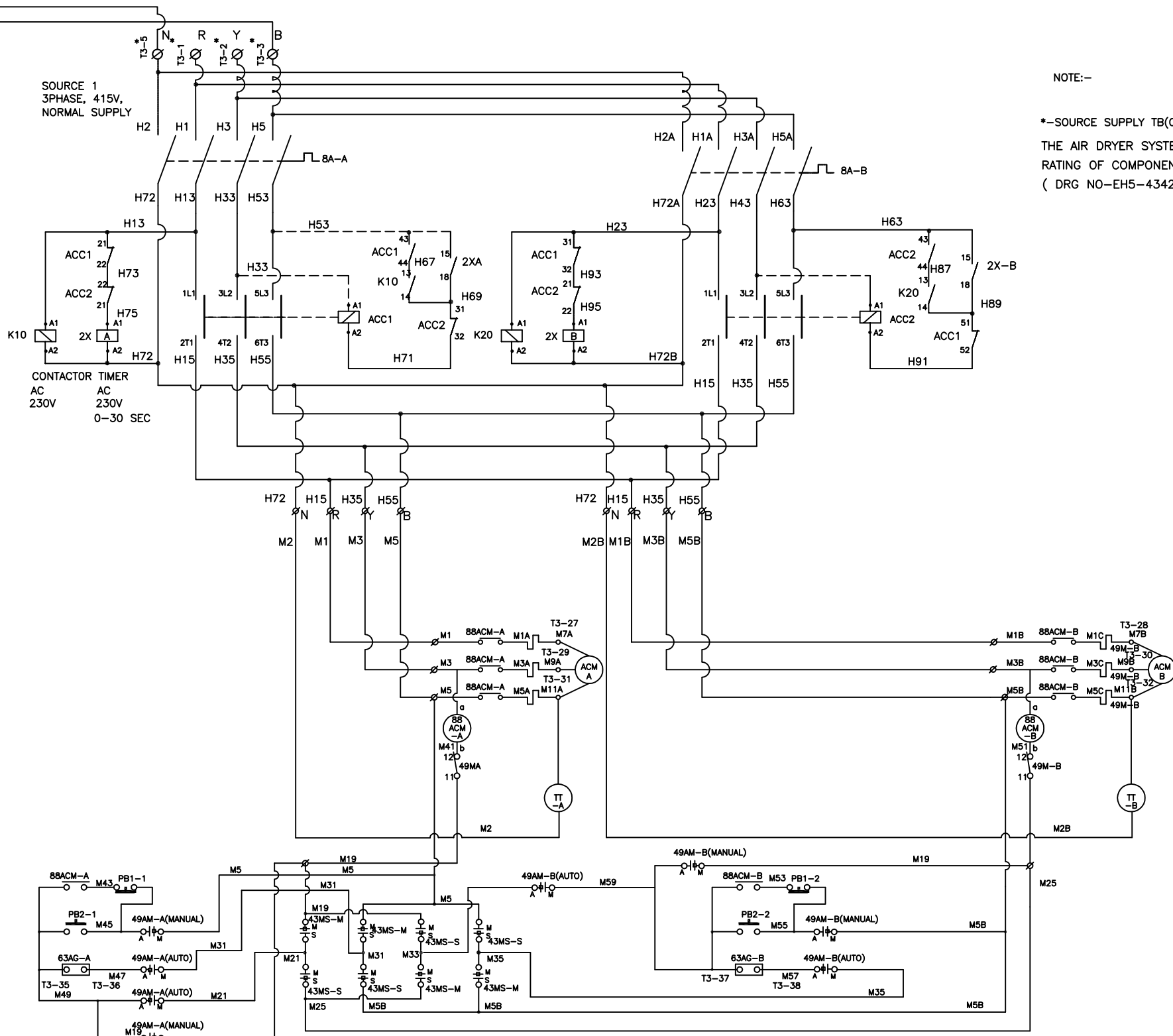


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PRODUCT: FOR 400KV SP-PN TYPE: 400-SFM-40A			DRN	YBJ		05.03.15
			DESN	MSK		05.03.15
			CHD	MSK		05.03.15
			APPD	HVS		05.03.15
TITLE: -- SCHEMATIC DIAGRAM FOR 420kv SP-PN SF6 GCB						
PO NO: -- 144P231 DTD 03.03.2015						
CV	ME	EL	I&C	DEPT. SCALE	BHEL/SUB VENDOR DRG NO.	
-	-	MSK	-	SIGN	EH5-4342-42	
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					REV.	1

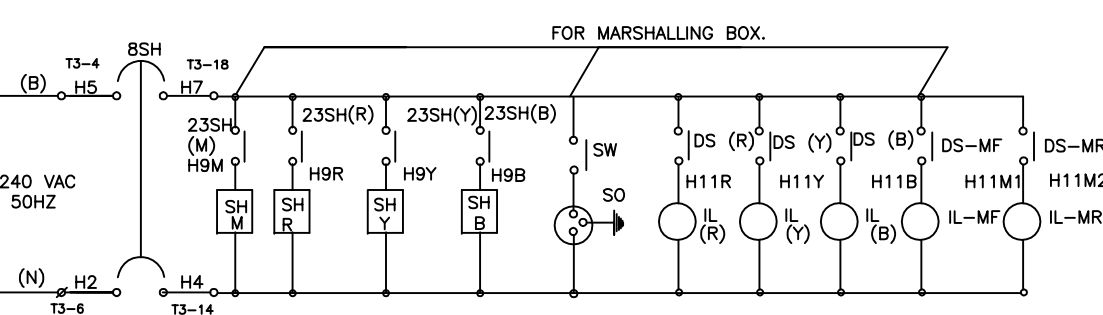
FIRST ANGLE PROJECTION

DRG NO:EH5-4342-42

LEGENDS	
MARK	DESCRIPTION
8A-A/8A-B	MCB FOR COMPR.CKT.
ACM-A/B	MOTOR FOR COMPRESSOR
88ACM-A/B	CONTACTOR FOR COMPR.MOTOR.
49M-A/B	OVERLOAD RELAY FOR MOTOR
63AG-A/B	COPMR.GOVERNOR SWITCH
49AM	AUTO HAND MANUAL SW.
43MS	MAIN STANDBY SWITCH
PB1/2	PUSH BUTTON FOR COMPR.
TT A/B	TIME TOTALISER(PHASE R & Y)
K10/K20	230V AC AUX.CONTACTOR
2X-A/2X-B	230V AC TIMER (0 TO 30 sec.)
ACC1/ACC2	CONT.FOR MOTOR.SUPPLY C/O..



NOTE:-
*-SOURCE SUPPLY TB(CSTSBS5) ARE SUITABLE FOR 4C X 16 CORE CABLE.
THE AIR DRYER SYSTEM TO BE PROVIDED AT COMPRESSOR OUTLET RATING OF COMPONENTS SHALL BE PROVIDED IN BILL OF MATERIAL (DRG NO-EH5-4342-43)



LEGENDS	
MARK	DESCRIPTION
8SH	MCB FOR HEATER CKT.
23SH	THERMOSTAT (R,Y,B & M.BOX.)
SH	SPACE HEAYER (R,Y,B & M.BOX.)
SO	SWITCH SOCKET UNIT
SW	PIANO SWITCH (R,Y,B & M.BOX)
IL	ILLUMINATION LAMP(R,Y,B & M.B)



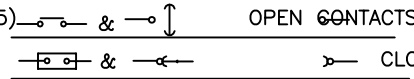
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						REV. 1

PRODUCED BY AN AUTODESK EDUCATIONAL PRODUCT

PRODUCED BY AN AUTODESK EDUCATIONAL PRODUCT

MARK	DESCRIPTION	QTY.	RATINGS	MAKE
52CC (RYB)	CLOSING COIL	3	220VDC 126 OHMS	CGL
52T1 (RYB)	TRIP COIL	3	220VDC 80 OHMS	CGL
52T2 (RYB)	TRIP COIL	3	220VDC 80 OHMS	CGL
63GA-1 63GA-2	LOW GAS PRESS ALARM SWITCH	3 EACH	ON 6.5 KG/CM ² , OFF 7.0 KG/CM ² AT 20°C.	REGENCY ELECTRIC/SAGINOMIYA/WIKA
63GL-1 63GL-2	LOW GAS PRESS LOCK OUT SWITCH	3 EACH	ON 6.5 KG/CM ² , OFF 6 KG/CM ² AT 20°C.	REGENCY ELECTRIC/SAGINOMIYA/WIKA
63AL-1 (R) 63AL-2 (Y)	LOW AIR PRESS LOCK OUT SWITCH	1 EACH	ON 13.0 KG/CM ² , OFF 14.0 KG/CM ²	DANFOSS/INDFOSS
63AG-A 63AG-B	COMPRESSOR GOVERNER SWITCH COMPRESSOR GOVERNER SWITCH	1 EACH	ON 14.5 KG/CM ² , OFF, 15.2 KG/CM ² ON 14.3 KG/CM ² , OFF, 15.2 KG/CM ²	DANFOSS/INDFOSS
63ARL	AIR PRESSURE SW FOR RECLOSING LOCK	1	ON 14.4 KG/CM ² , OFF, 13.9KG/CM ²	DANFOSS/INDFOSS
63APL	LOW AIR PRESSURE ALARM SWITCH	1	ON 13.5KG/CM ² , OFF, 14.5KG/CM ²	DANFOSS/INDFOSS
630A-1 630A-2	COMPRESSOR LOW OIL LEVEL SWITCH	1 EACH	240V AC, 5A.	INGERSOLL RAND/ ZEN AIRTECH/MICRO
63AGX-(A)	CONTACTOR FOR 63AL 1 & 63GL 1	1	220V DC,	SCHNEIDER/SIEMENS.
63AGX-(B)	CONTACTOR FOR 63AL 2 & 63GL 2	1	220V DC,	SCHNEIDER/SIEMENS.
2/62-A 2/62-B	POLE DISCREPANCY TIMER/RELAY	1 EACH	220V DC, (90V-270V) 0.1 sec-1200 hours	OMRON
2/62AX, 2/62BX	AUXILIARY CONTACTOR	1 EACH	220V DC	SCHNEIDER/SIEMENS.
RL/GL	RED/GREEN INDICATING LAMP	1 EACH	220V DC,	TEKNIC/D SQUARE/SIEMENS/CRAFTECH.
APR (RYB)	ANTIPUMPING CONTACTOR/RELAY	3	220V DC,	SCHNEIDER/SIEMENS/PLA.
LCS (11-52)	LOCAL CONTROL SWITCH(TNC)	1	250V DC, ROTORY SPRING RETURN TYPE	SWITRON/SHIRKE
43SS	LOCAL/REMOTE SELECTOR SWITCH	1	250V DC, STAY PUT TYPE	SWITRON/SHIRKE
80A, 80B	CONTACTOR (DC SUPPLY SUPERVISION)	1 EACH	220V DC,	SCHNEIDER/SIEMENS.
8SH	CIRCUIT BREAKER	1	2 POLE, 240V AC, 16A AC MCB STC RATING 10KA FOR 1sec	SCHNEIDER/SIEMENS.
23SH-M 23SH(RYB)	THERMOSTAT FOR MECH HOUSING/M BOX	1 EACH	240V AC, 15A (0°~60°C)/(30°~80°C)	APT/VELICO
SH(RYB) SH-M	SPACE HEATER FOR MECH HOUSING SPACE HEATER FOR M BOX	1 EACH 1	240V AC, 250W 240V AC, 100W	APT/VELICO
8A-A 8A-B	CIRCUIT BREAKER	1 EACH	4 POLE, 415V AC 16A AC MCB STC RATING 10KA FOR 1sec	SCHNEIDER/SIEMENS.
52a 52b	AUXILIARY SWITCHES	21 EACH	ROTORY TYPE	TURNING POINT/SHIRKE
IL-M(F&R) IL(RYB)	ILLUMINATION LAMP (FLUORESENT TUBE)	1 EACH	240V AC, 9W	CGL/PHILLIPS
SW-MB SW(RYB)	DOOR OPERATED SWITCH FOR IL	1 EACH	240V AC, 5A	KAYCEE/BRISK
SO SW1	INDUSTRIAL SOCKET ROTARY SWITCH FOR INDUSTRIAL SOCKET	1 1	240V AC, 20A, 240V AC, 25A STAY PUT TYPE	CGL SWITRON
8BACM-A 8BACM-B	CONTACTOR	1 EACH	415V AC 10A,	SCHNEIDER/SIEMENS.
49M-A 49M-B	OVERCURRENT RELAY FOR ACM	1 EACH	4A~6A SETTING	SIEMENS/SCHNEIDER.
ACM-A ACM-B	MOTOR FOR COMPRESSOR	1 EACH	3PH, 415V AC, 50HZ	CGL
TT-A TT-B	TIME TOTALISER	1 EACH	4 DIGIT UP TO 9999 MIN. 240V.AC.	KAYCEE
43MS	MAIN STAND BY SELECTOR SWITCH	1	4 POLE, 415V.AC. STAY PUT	SWITRON
8D1 & 8D2	CIRCUIT BREAKER	1 EACH	2 POLE, 16A DC MCB, 10KA FOR 1sec	SIEMENS/SCHNEIDER.
PB1 PB2	PUSH BUTTON RED PUSH BUTTON GREEN	2 EACH	2NC, 415V AC, 2NO, 415V AC,	TEKNIC TEKNIC
2X-A/B	TIMER FOR COMPR. CIRCUIT	2	240VAC, 0 TO 30 sec	SELEC
K10/K20	AUX. CONTACTOR FOR COMPR. CIRCUIT	2	240 VAC,	SCHNEIDER/SIEMENS
ACC1/2	COMPRESSOR SUPPLY C/O. CONTACTOR	2	415VAC, 10A, POWER CONTACTS	SCHNEIDER/SIEMENS
49AM	AUTO -OFF- HAND SWITCH	1	415V.AC, 3 POSITIONS 45° ANGLE, 16A STAY PUT TYPE.	SWITRON/SHIRKE

NOTES:-

- AUXILIARY SWITCHES ARE SHOWN FOR OPEN BREAKER.
- AUXILIARY CONTACTORS CONTACTS IN DE ENERGISED POSITION.
- PRESSURE SWITCHES ARE SHOWN WHEN NO SUPPLY & NO PRESSURE.
- LOCAL REMOTE CHANGEOVER SWITCH IS SHOWN IN REMOTE POSITION.
- 

OPEN CONTACTS
CLOSE CONTACTS.
- SIZE OF CONTROL WIRE = 2.5mm² 1100V GRADE STRANDED COPPER CONDUCTOR, PVC INSULATED, PVC INNER SHEATHED. CONTROL WIRE INSIDE CABLE 2.5MM² 1100V GRADE STRANDED COPPER CONDUCTOR, PVC INSULATED, PVC INNER SHEATHE, ARMOURED.
- COLOUR OF WIRE FOR AC CIRCUIT -RYB BLACK, FOR DC CIRCUIT -GRAY & FOR EARTHING -GREEN.
- STUD TYPE (NON DISCONNECTION TYPE) TERMINAL BLOCK ARE PROVIDED.
- 630A CONTACT IS SHOWN FOR NO OIL IN COMPRESSOR CONDITION.
- OVERLOAD RELAY IS SET IN MANUAL RESET POSITION.
- CONTACT RATING FOR GAS PRESSURE SWITCHES (AIR) ARE 0.05A AT 220V DC.
- CONTACT RATING FOR GAS PRESSURE SWITCHES ARE 0.05A AT 220VDC.
- CONTACT RATING FOR 630A 0.25A AT 220V DC NON INDUCTIVE.
- CONTINUOUS CURRENT CARRYING CAPACITY OF TRIP COIL IS 50mA TO CATER FOR TRIP COIL SUPERVISION.
- 52a CONTACT ARE OPEN WHEN BREAKER IS OPEN.
- 52b CONTACT ARE CLOSE WHEN BREAKER IS OPEN.
- Ø TERMINAL ARE WIRED UPTO TERMINAL BLOCKS FOR REMOTE CONTROL PANEL OF CIRCUIT BREAKER.
- REFER SEQUENCE DIAGRAM NO : EH5-4342-42-1/4 TO 4/4
- 20% SPARE TB PROVIDED AND SAME SHALL BE UNIFORM DISTRIBUTED ON EACH TB ROW.
- GUAGE & SWITCH ARE COMBINED IN CASE OF REGENCY ELECTRIC & WIKA MAKE DENSITY SWITCHES
- FOR SIEMENS MAKE CONTACTOR NO+NC COMBINATION MAY VARY

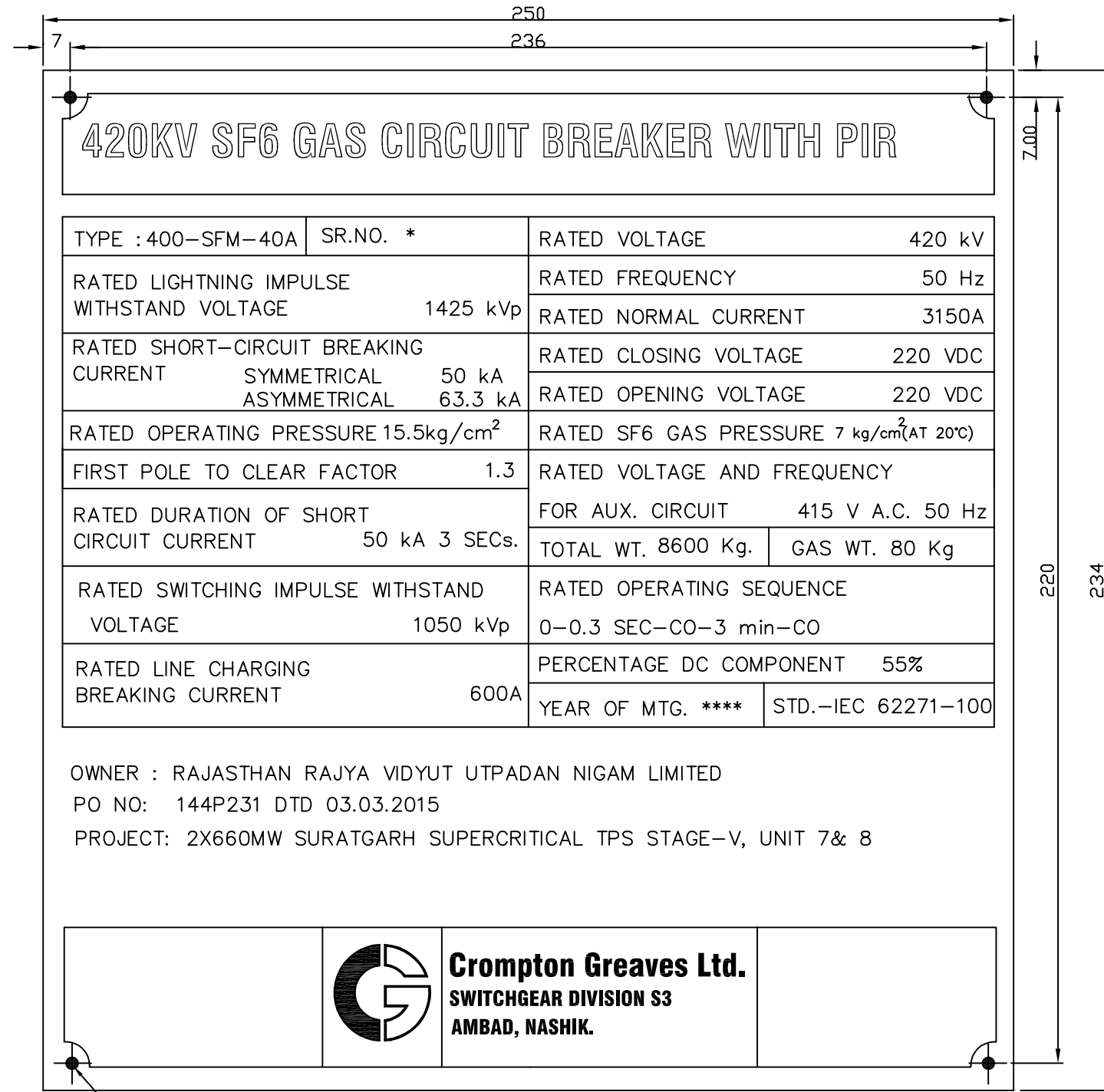


1	25.05.15	REVISED AS PER CONSULTANT COMMENT	SDS	SDS	HVS	HVS
REV.	DATE	REASONS FOR REVISION	DRN.	PREPARED BY	CHECKED BY	APPROVED BY
OWNER RAJASTHAN RAJYA VIDYUT UTPADAN NIGAM LIMITED						
PROJECT 2X660MW THERMAL POWER PLANT, SURAT GARH STAGE -V, UNIT 7 & 8 AT SURATGARH, RAJASTHAN						
OWNER'S ENGINEER TATA CONSULTING ENGINEERS LIMITED						
EPC CONTRACTOR BHARAT HEAVY ELECTRICALS LTD TRANSMISSION BUSINESS GROUP						
WORK ORDER NO: HS 4342			DEPT CODE	NAME	SIGN.	DATE
PRODUCT: FOR 400KV SP-PN			DRN	YBJ		05.03.15
TYPE: 400-SFM-40A			DESN	MSK		05.03.15
			CHD	MSK		05.03.15
			APPD	HVS		05.03.15
TITLE: - BILL OF MATERIAL FOR 420KV SP-PN SF6 GCB						
PO NO: - 144P231 DTD 03.03.2015						
CV	ME	EL	I&C	DEPT.	SCALE	
-	-	MSK	-		BHEL/SUB VENDOR DRG NO. EH5-4342-43	
-	-	05.03.15	-	SIGN	SHT. No 1/1	
-	-			DATE	REV. 1	

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FIRST ANGLE PROJECTION

DRG NO: EH5-4342-44



OWNER : RAJASTHAN RAJYA VIDYUT UTPADAN NIGAM LIMITED
 PO NO: 144P231 DTD 03.03.2015
 PROJECT: 2X660MW SURATGARH SUPERCRITICAL TPS STAGE-V, UNIT 7& 8



Ø3.5 DRILL, 4 HOLES

NOTE: -

MATERIAL : S.S. AISI : 304, 0.5 THK.

**** CURRENT MANUFACTURING YEAR

* SERIAL NOS	QTY
46097C TO 46102C	6 NOS
46451C (Spare ph)	1 NOS



1.	25.05.15	REVISED AS PER CONSULTANT COMMENT	SDS	SDS	HVS	HVS
REV.	DATE	REASONS FOR REVISION	DRN.	PREPARED BY	CHECKED BY	APPROVED BY

OWNER
RAJASTHAN RAJYA VIDYUT UTPADAN NIGAM LIMITED

PROJECT
2X660MW THERMAL POWER PLANT, SURAT GARH STAGE -V, UNIT 7 & 8 AT SURATGARH , RAJASTHAN

OWNER'S ENGINEER
TATA CONSULTING ENGINEERS LIMITED

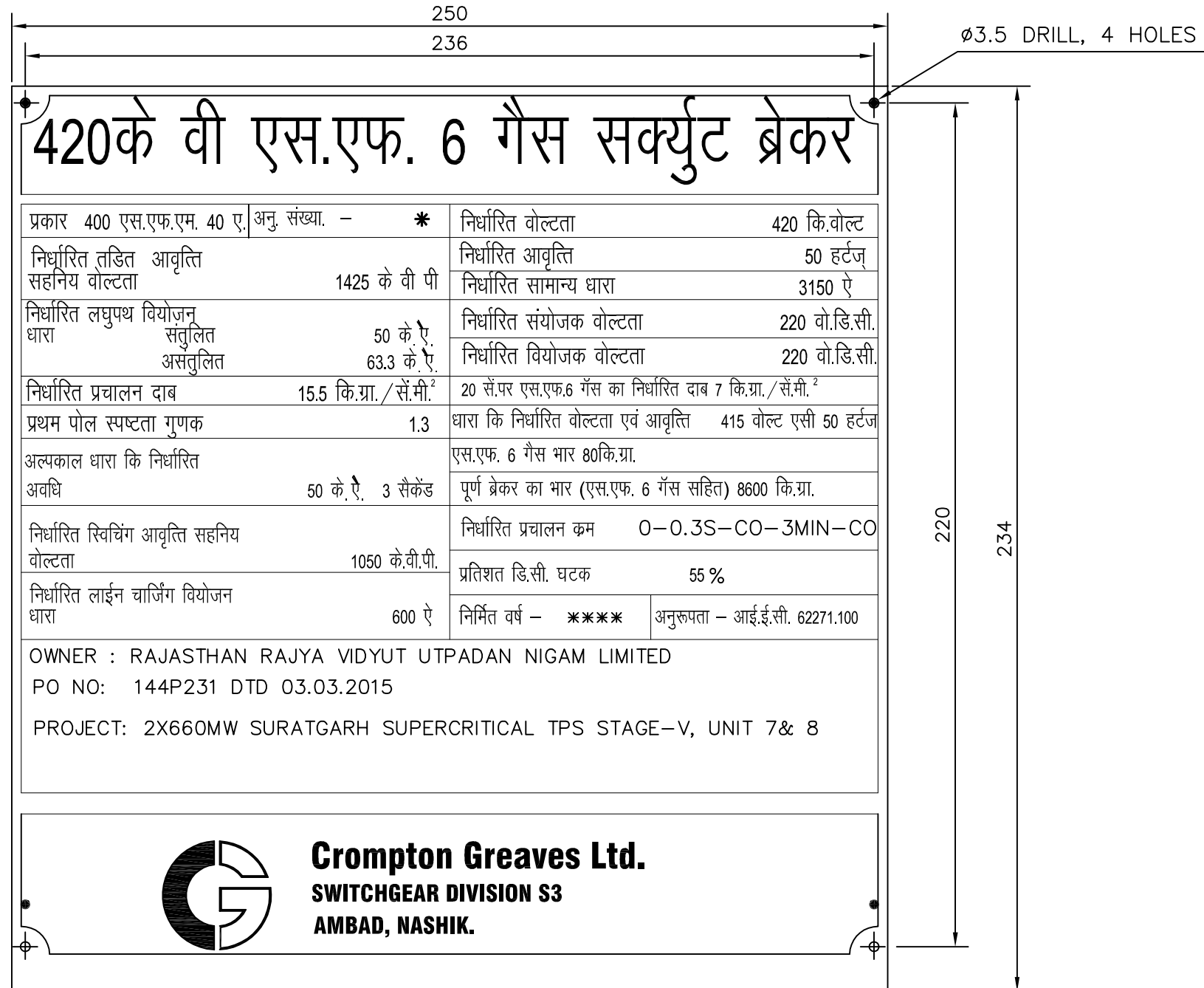
EPC CONTRACTOR
BHARAT HEAVY ELECTRICALS LTD TRANSMISSION BUSINESS GROUP

WORK ORDER NO: HS 4342	DEPT CODE	NAME	SIGN.	DATE
PRODUCT: FOR 400KV SP-PN TYPE: 400-SFM-40A	DRN	YBJ		05.03.15
	DESN	MSK		05.03.15
	CHD	MSK		05.03.15
	APPD	HVS		05.03.15

TITLE **RATING PLATE (WITH PIR WITHOUT CSD)**

PO NO: -	144P231 DTD 03.03.2015			DEPT. SCALE	BHEL/SUB VENDOR DRG NO.
CV	ME	EL	I&C	SIGN	EH5-4342-44
-	-	MSK	-	DATE	SHT. No 1/4
-	-	05.03.15	-		REV. 1

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NOTE: -

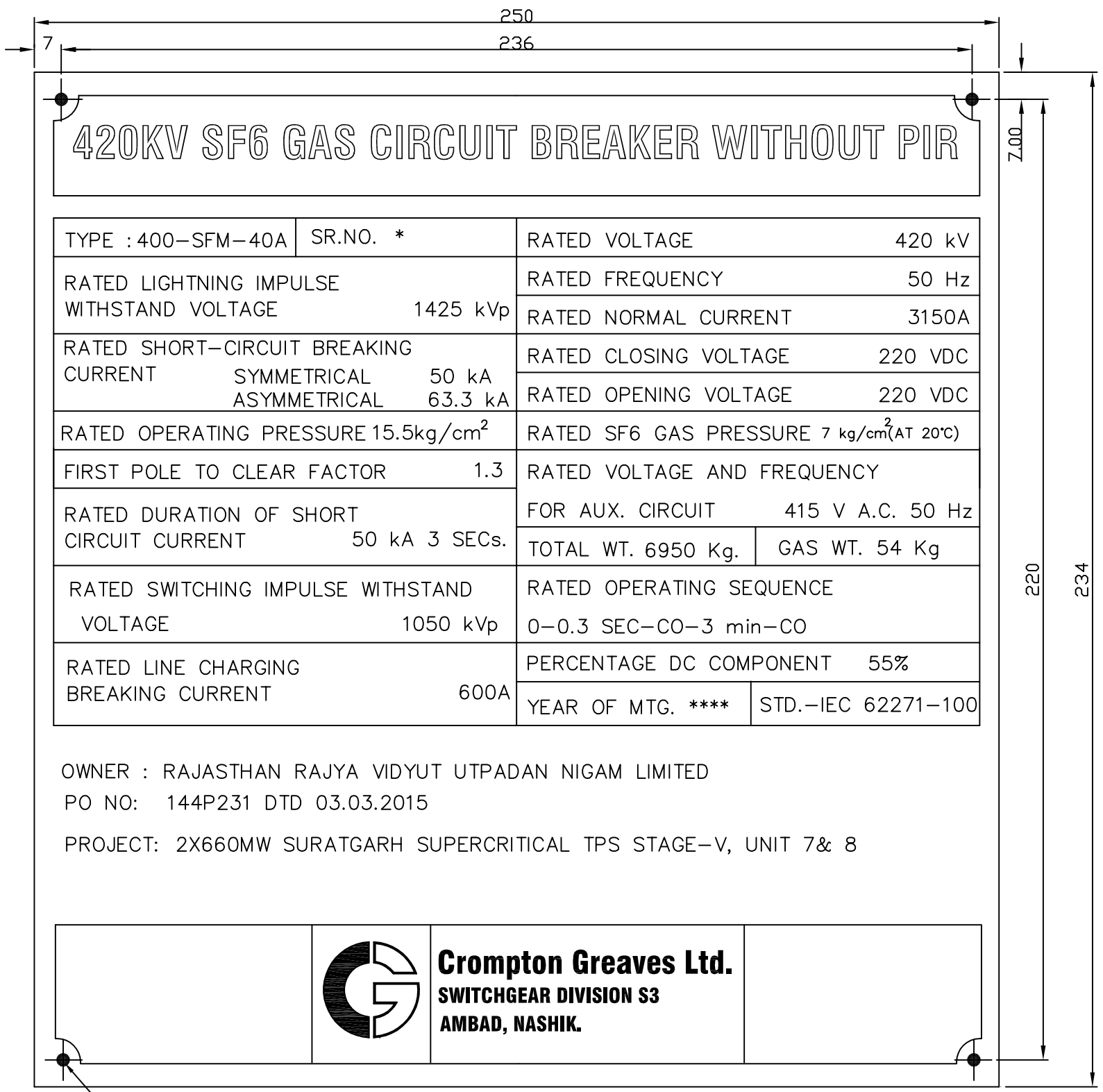
MATERIAL : S.S. AISI : 304, 0.5 THK.

**** CURRENT MANUFACTURING YEAR

* SERIAL NOS	QTY
46097C TO 46102C	6 NOS
46451C (Spare ph)	1 NOS



REV.	DATE	REASONS FOR REVISION	DRN.	PREPARED BY	CHECKED BY	APPROVED BY
OWNER RAJASTHAN RAJYA VIDYUT UTPADAN NIGAM LIMITED						
PROJECT 2X660MW THERMAL POWER PLANT, SURAT GARH STAGE -V, UNIT 7 & 8 AT SURATGARH, RAJASTHAN						
OWNER'S ENGINEER  TATA CONSULTING ENGINEERS LIMITED						
EPC CONTRACTOR  BHARAT HEAVY ELECTRICALS LTD TRANSMISSION BUSINESS GROUP						
WORK ORDER NO: HS 4342				DEPT CODE	NAME	SIGN. DATE
PRODUCT: FOR 400KV SP-PN				DRN	YBJ	05.03.15
TYPE: 400-SFM-40A				DESN	MSK	05.03.15
				CHD	MSK	05.03.15
				APPD	HVS	05.03.15
RATING PLATE (WITHOUT PIR WITHOUT CSD)						
PO NO: - 144P231 DTD 03.03.2015						
CV	ME	EL	I&C	DEPT. SCALE	BHEL/SUB VENDOR DRG NO.	
-	-	MSK	-	SIGN	EH5-4342-44	
-	-	05.03.15	-	DATE	SHT. No 2/4	REV.0



TYPE : 400-SFM-40A	SR.NO. *	RATED VOLTAGE	420 kV
RATED LIGHTNING IMPULSE WITHSTAND VOLTAGE	1425 kVp	RATED FREQUENCY	50 Hz
RATED SHORT-CIRCUIT BREAKING CURRENT	SYMMETRICAL 50 kA ASYMMETRICAL 63.3 kA	RATED NORMAL CURRENT	3150A
		RATED CLOSING VOLTAGE	220 VDC
		RATED OPENING VOLTAGE	220 VDC
RATED OPERATING PRESSURE	15.5kg/cm ²	RATED SF6 GAS PRESSURE	7 kg/cm ² (AT 20°C)
FIRST POLE TO CLEAR FACTOR	1.3	RATED VOLTAGE AND FREQUENCY	
RATED DURATION OF SHORT CIRCUIT CURRENT	50 kA 3 SECs.	FOR AUX. CIRCUIT	415 V A.C. 50 Hz
		TOTAL WT.	6950 Kg.
		GAS WT.	54 Kg
RATED SWITCHING IMPULSE WITHSTAND VOLTAGE	1050 kVp	RATED OPERATING SEQUENCE	0-0.3 SEC-CO-3 min-CO
RATED LINE CHARGING BREAKING CURRENT	600A	PERCENTAGE DC COMPONENT	55%
		YEAR OF MTG. ****	STD.-IEC 62271-100

OWNER : RAJASTHAN RAJYA VIDYUT UTPADAN NIGAM LIMITED
 PO NO: 144P231 DTD 03.03.2015
 PROJECT: 2X660MW SURATGARH SUPERCRITICAL TPS STAGE-V, UNIT 7& 8

Crompton Greaves Ltd.
 SWITCHGEAR DIVISION S3
 AMBAD, NASHIK.

Ø3.5 DRILL, 4 HOLES

NOTE: -

MATERIAL : S.S. AISI : 304, 0.5 THK.
 **** CURRENT MANUFACTURING YEAR

* SERIAL NOS	QTY
46089C TO 46096C	8 NOS
46110C (Spare ph)	1 NOS

Crompton Greaves Ltd.
 SWITCHGEAR DIVISION S3
 AMBAD, NASHIK.

REV.	DATE	REASONS FOR REVISION	DRN.	PREPARED BY	CHECKED BY	APPROVED BY
1.	25.05.15	REVISED AS PER CONSULTANT COMMENT	SDS	SDS	HVS	HVS

OWNER
RAJASTHAN RAJYA VIDYUT UTPADAN NIGAM LIMITED

PROJECT
 2X660MW THERMAL POWER PLANT, SURAT GARH STAGE -V, UNIT 7 & 8 AT SURATGARH , RAJASTHAN

OWNER'S ENGINEER
TATA CONSULTING ENGINEERS LIMITED

EPC CONTRACTOR
BHARAT HEAVY ELECTRICALS LTD
 TRANSMISSION BUSINESS GROUP

WORK ORDER NO: HS 4342	DEPT CODE	NAME	SIGN.	DATE
PRODUCT: FOR 400KV SP-PN	DRN	YBJ		05.03.15
TYPE: 400-SFM-40A	DES	MSK		05.03.15
	CHD	MSK		05.03.15
	APPD	HVS		05.03.15

TITLE RATING PLATE DETAILS (WITHOUT PIR WITHOUT CSD)

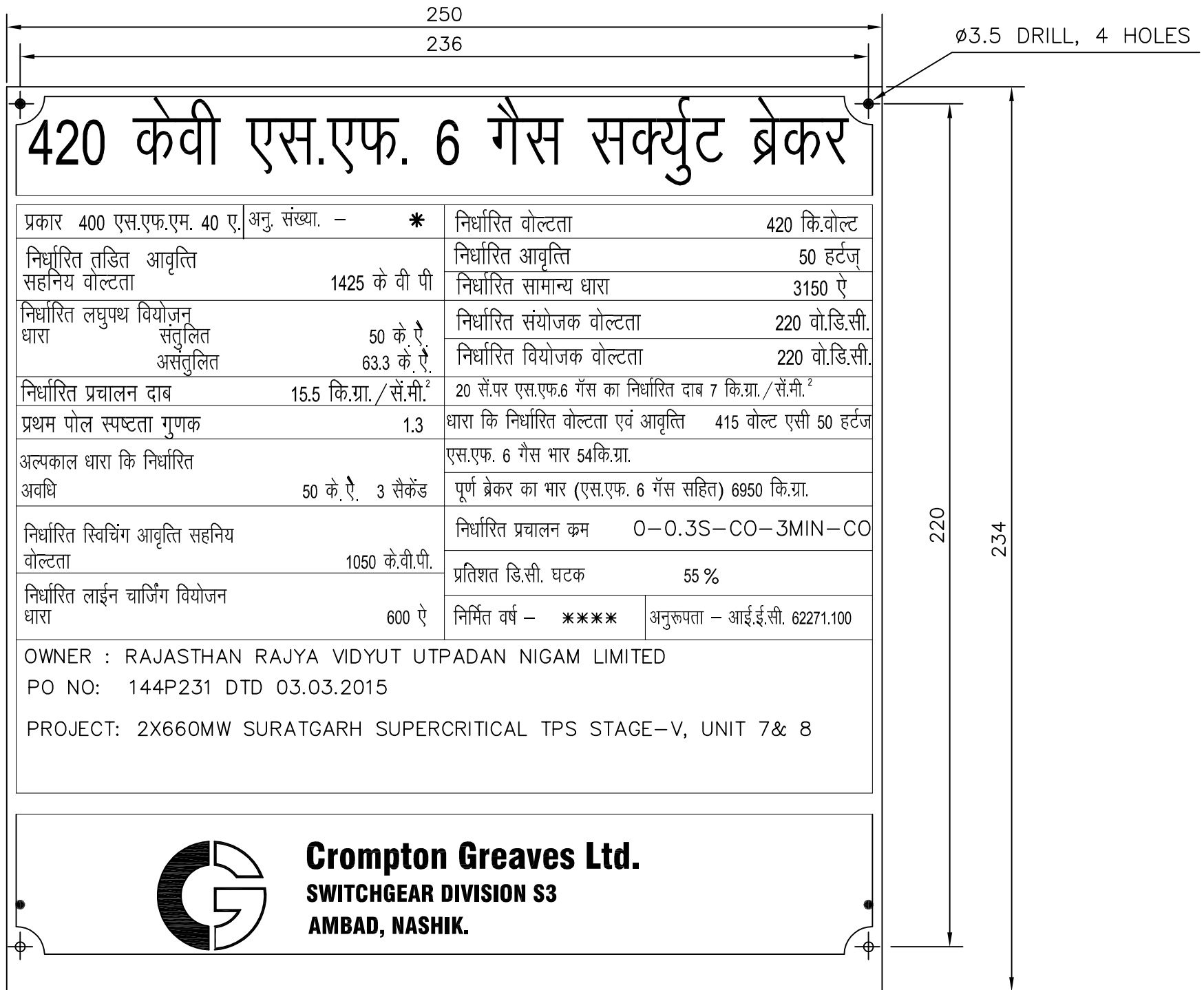
PO NO:- 144P231 DTD 03.03.2015

CV	ME	EL	I&C	DEPT.	SCALE	BHEL/SUB VENDOR DRG NO.
-	-	MSK	-	SIGN		EH5-4342-44
-	-	05.05.15	-	DATE		SHT. No 3/4
						REV. 1

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PRODUCED BY AN AUTODESK EDUCATIONAL PRODUCT


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420 केवी एस.एफ. 6 गैस सर्क्युट ब्रेकर

प्रकार 400 एस.एफ.एम. 40 ए. अनु. संख्या. - *	निर्धारित वोल्टता	420 कि.वोल्ट
निर्धारित तड़ित आवृत्ति सहनिय वोल्टता 1425 के वी पी	निर्धारित आवृत्ति	50 हर्टज
निर्धारित लघुपथ वियोजन धारा संतुलित 50 के.ऐ. असंतुलित 63.3 के.ऐ.	निर्धारित सामान्य धारा	3150 ऐ
निर्धारित प्रचालन दाब 15.5 कि.ग्रा./सें.मी. ²	निर्धारित संयोजक वोल्टता	220 वो.डि.सी.
प्रथम पोल स्पष्टता गुणक 1.3	निर्धारित वियोजक वोल्टता	220 वो.डि.सी.
अल्पकाल धारा कि निर्धारित अवधि 50 के.ऐ. 3 सैकंड	20 सें.पर एस.एफ.6 गैस का निर्धारित दाब 7 कि.ग्रा./सें.मी. ²	
निर्धारित स्विचिंग आवृत्ति सहनिय वोल्टता 1050 के.वी.पी.	धारा कि निर्धारित वोल्टता एवं आवृत्ति 415 वोल्ट एसी 50 हर्टज	
निर्धारित लाईन चार्जिंग वियोजन धारा 600 ऐ	एस.एफ. 6 गैस भार 54कि.ग्रा.	
	पूर्ण ब्रेकर का भार (एस.एफ. 6 गैस सहित) 6950 कि.ग्रा.	
	निर्धारित प्रचालन क्रम 0-0.3S-CO-3MIN-CO	
	प्रतिशत डि.सी. घटक 55 %	
	निर्मित वर्ष - ***	अनुरूपता - आई.ई.सी. 62271.100

OWNER : RAJASTHAN RAJYA VIDYUT UTPADAN NIGAM LIMITED
 PO NO: 144P231 DTD 03.03.2015
 PROJECT: 2X660MW SURATGARH SUPERCRITICAL TPS STAGE-V, UNIT 7& 8



Crompton Greaves Ltd.
 SWITCHGEAR DIVISION S3
 AMBAD, NASHIK.

Ø3.5 DRILL, 4 HOLES

220

234



NOTE: -

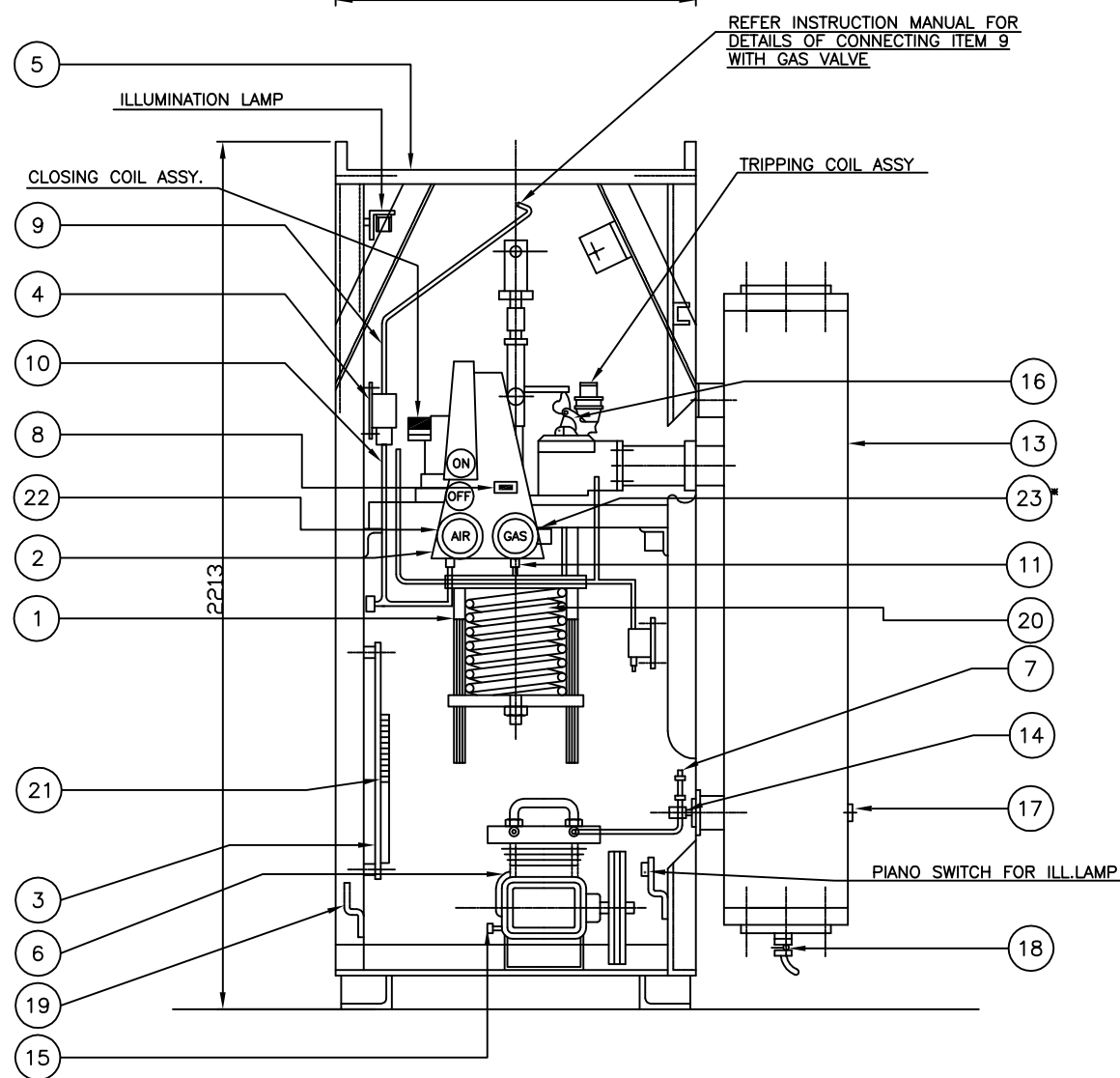
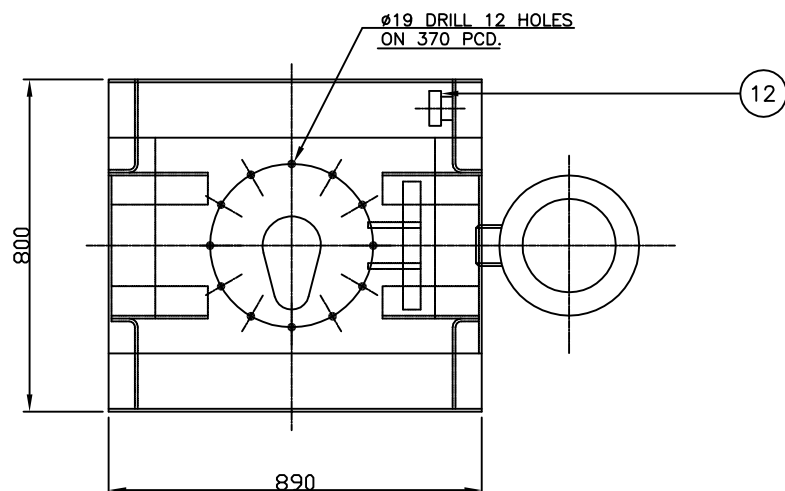
MATERIAL : S.S. AISI : 304, 0.5 THK.
 **** CURRENT MANUFACTURING YEAR

* SERIAL NOS	QTY
46089C TO 46096C	8 NOS
46110C (Spare ph)	1 NOS



Crompton Greaves Ltd.
 SWITCHGEAR DIVISION S3
 AMBAD, NASHIK.

REV.	DATE	REASONS FOR REVISION	DRN.	PREPARED BY	CHECKED BY	APPROVED BY
OWNER RAJASTHAN RAJYA VIDYUT UTPADAN NIGAM LIMITED						
PROJECT 2X660MW THERMAL POWER PLANT,SURAT GARH STAGE -V, UNIT 7 & 8 AT SURATGARH , RAJASTHAN						
OWNER'S ENGINEER  TATA CONSULTING ENGINEERS LIMITED						
EPC CONTRACTOR  BHARAT HEAVY ELECTRICALS LTD TRANSMISSION BUSINESS GROUP						
WORK ORDER NO: HS 4342			DEPT CODE	NAME	SIGN.	DATE
PRODUCT: FOR 400KV SP-PN			DRN	YBJ		05.03.15
TYPE: 400-SFM-40A			DESN	MSK		05.03.15
			CHD	MSK		05.03.15
			APPD	HVS		05.03.15
TITLE RATING PLATE DETAILS (WITHOUT PIR WITHOUT CSD)						
PO NO: - 144P231 DTD 03.03.2015						
CV	ME	EL	I&C	DEPT. SCALE	BHEL/SUB VENDOR DRG NO.	
-	-	MSK	-	SIGN	EH5-4342-44	
-	-	05.05.15	-	DATE	SHT. No 4/4	REV.0



REFER INSTRUCTION MANUAL FOR
DETAILS OF CONNECTING ITEM 9
WITH GAS VALVE

QTY.		ITEM NO.	DESCRIPTION	MAKE
PH	R PH Y			
1	1	1	TYPE AM PNUMATIC OP MECH	CGL MAKE
1	1	2	ROTARY TYPE AUX.SW.	AS PER ELECTRICAL BOM
1	1	3	CONTROL PANEL ASSY.	CGL MAKE
1	1	4	PRESSURE SW.ASSY	INDFOSS/DANFOSS
1	1	5	HOUSING ASSY.(M.S. SHEET)	CGL MAKE
1	1	6	COMPRESSOR WITH MOTOR	INGERSOLL/ZEN AIR TECH/CGL
-	1	7	SAFETY VALVE	TURNING POINT
1	1	8	OPERATION COUNTER	LINESAIKI
1	1	9	GAS PIPE ASSY. (UPPER)	CGL MAKE
1	1	10	GAS PIPE ASSY. (LOWER)	CGL MAKE
-	1	11	AIR PIPE ASSY.	CGL MAKE
1	1	12	SPACE HEATER	AS PER ELECTRICAL BOM
1	1	13	AIR RESERVOIR	CGL MAKE
1	1	14	CHECK VALVE	AMIT FORGING
1	1	15	LOW OIL LEVEL SW.	INGERSOLLRAND/ZEN-AIR TECH
1	1	16	CONTROL VALVE ASSY.	CGL MAKE
-	1	17	STOP VALVE FOR EMERGENCY AIR SUPPLY	AUDCO
1	1	18	DRAIN VALVE SIZE 1/4"	AMIT FORGING
1	1	19	GROUNDING TERMINAL	CGL MAKE
1	1	20	CLOSING SPRING	COVENTRY/EQ.
1	1	21	TERMINAL BLOCK ASSY.	CONNECTWELL/VINPAR/ELMEX
-	1	22	AIR PRESSURE GAUGE	MANOMETER / EQ
1	1	23	GAS PRESSURE GAUGE*	REGENCY ELECTRIC/WIKA

NOTE:

- *GAUGE & SWITCH ARE COMBINED IN CASE OF REGENCY ELECTRIC & WIKA MAKE DENSITY SWITCHES
- SHOWN LAYOUT OF COMPONENTS IS FOR INDICATION PUPROSE ONLY
- ALL DIMENTIONS ARE IN MM, TOLERANCE ON OVERALL DIMENSION +/-2%.

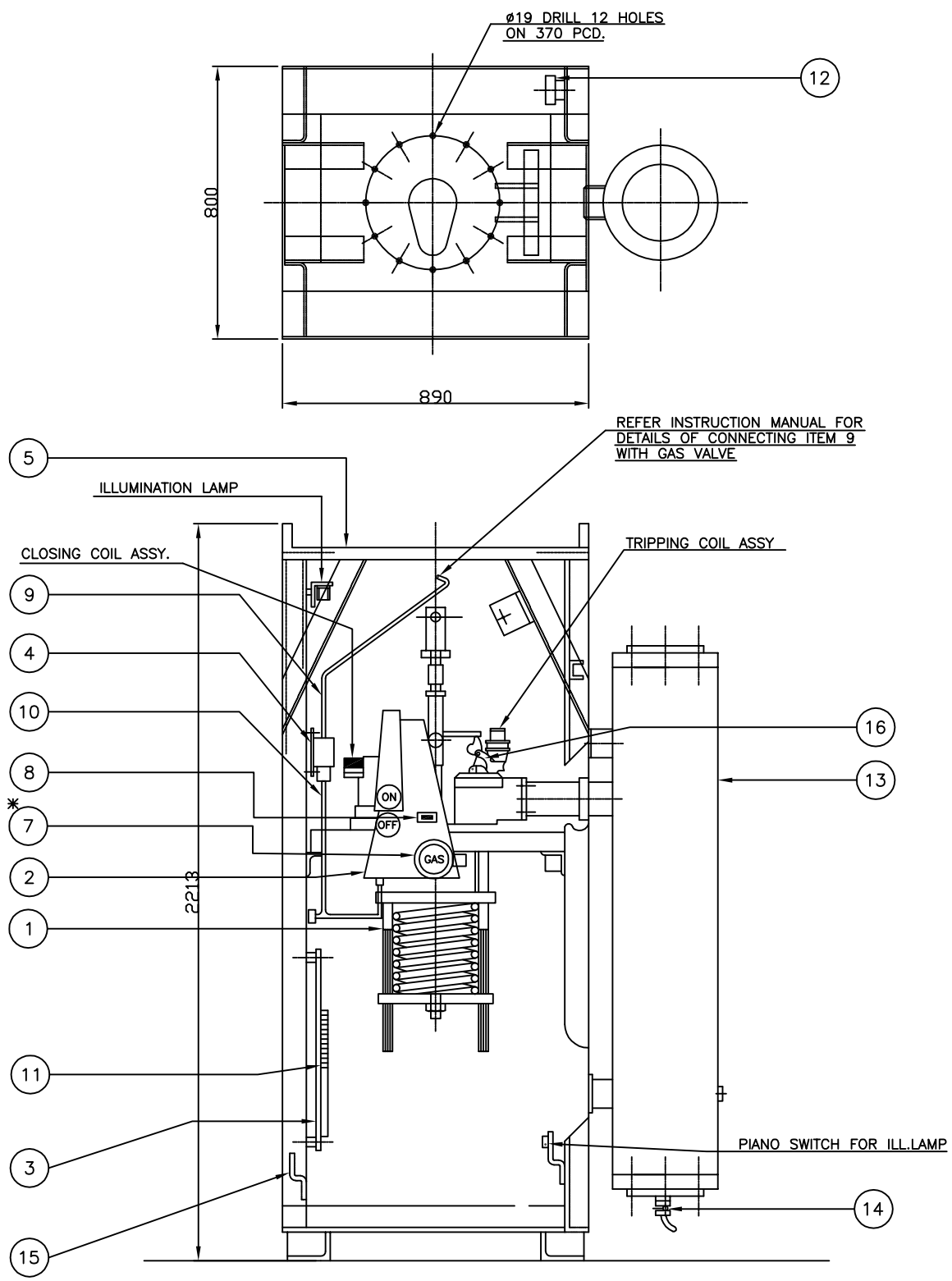


REV.	DATE	REASONS FOR REVISION	DRN.	PREPARED BY	CHECKED BY	APPROVED BY
OWNER RAJASTHAN RAJYA VIDYUT UTPADAN NIGAM LIMITED						
PROJECT 2X660MW THERMAL POWER PLANT, SURAT GARH STAGE -V, UNIT 7 & 8 AT SURATGARH, RAJASTHAN						
OWNER'S ENGINEER TATA CONSULTING ENGINEERS LIMITED						
EPC CONTRACTOR BHARAT HEAVY ELECTRICALS LTD TRANSMISSION BUSINESS GROUP						
WORK ORDER NO: HS 4342			DEPT CODE	NAME	SIGN.	DATE
PRODUCT: FOR 400KV SP-PN			DRN	YBJ		05.03.15
TYPE: 400-SFM-40A			DESN	MSK		05.03.15
			CHD	MSK		05.03.15
			APPD	HVS		05.03.15
TITLE MECHANISM HOUSING ASSY (PH. R&Y)						
PO NO: - 144P231 DTD 03.03.2015						
CV	ME	EL	I&C	DEPT.	SCALE	BHEL/SUB VENDOR DRG NO.
-	-	MSK	-		SIGN	EH5-4342-45
-	-	05.03.15	-		DATE	SHT. No 1/1
						REV.0

FIRST ANGLE PROJECTION

DRG NO:EH5-4342-46

PHASE-B QTY.	ITEM NO.	DESCRIPTION	MAKE
1	1	TYPE AM PNUMATIC MECH.ASSY.	CGL MAKE
1	2	ROTARY TYPE AUX.SW.	AS PER ELECTRICAL BOM
1	3	CONTROL PANEL ASSY.	CGL MAKE
1	4	PRESSURE SW.ASSY	INDFOSS/DANFOSS
1	5	HOUSING ASSY.	CGL MAKE
1	6	CLOSING SPRING	COVENTRY/EQ.
1	7	GAS PRESSURE GAUGE*	REGENCY ELECTRIC/WIKA
1	8	OPERATION COUNTER	LINESAIKI
1	9	GAS PIPE ASSY. (UPPER)	CGL MAKE
1	10	GAS PIPE ASSY. (LOWER)	CGL MAKE
1	11	TERMINAL BLOCK ASSY.	CONNECTWELL/VINPAR/ELMEX
1	12	SPACE HEATER	AS PER ELECTRICAL BOM
1	13	AIR RESERVOIR	CGL MAKE
1	14	DRAIN VALVE SIZE 1/4"	AMIT FORGING
1	15	GROUNDING TERMINAL	CGL MAKE
1	16	CONTROL VALVE ASSY.	CGL MAKE

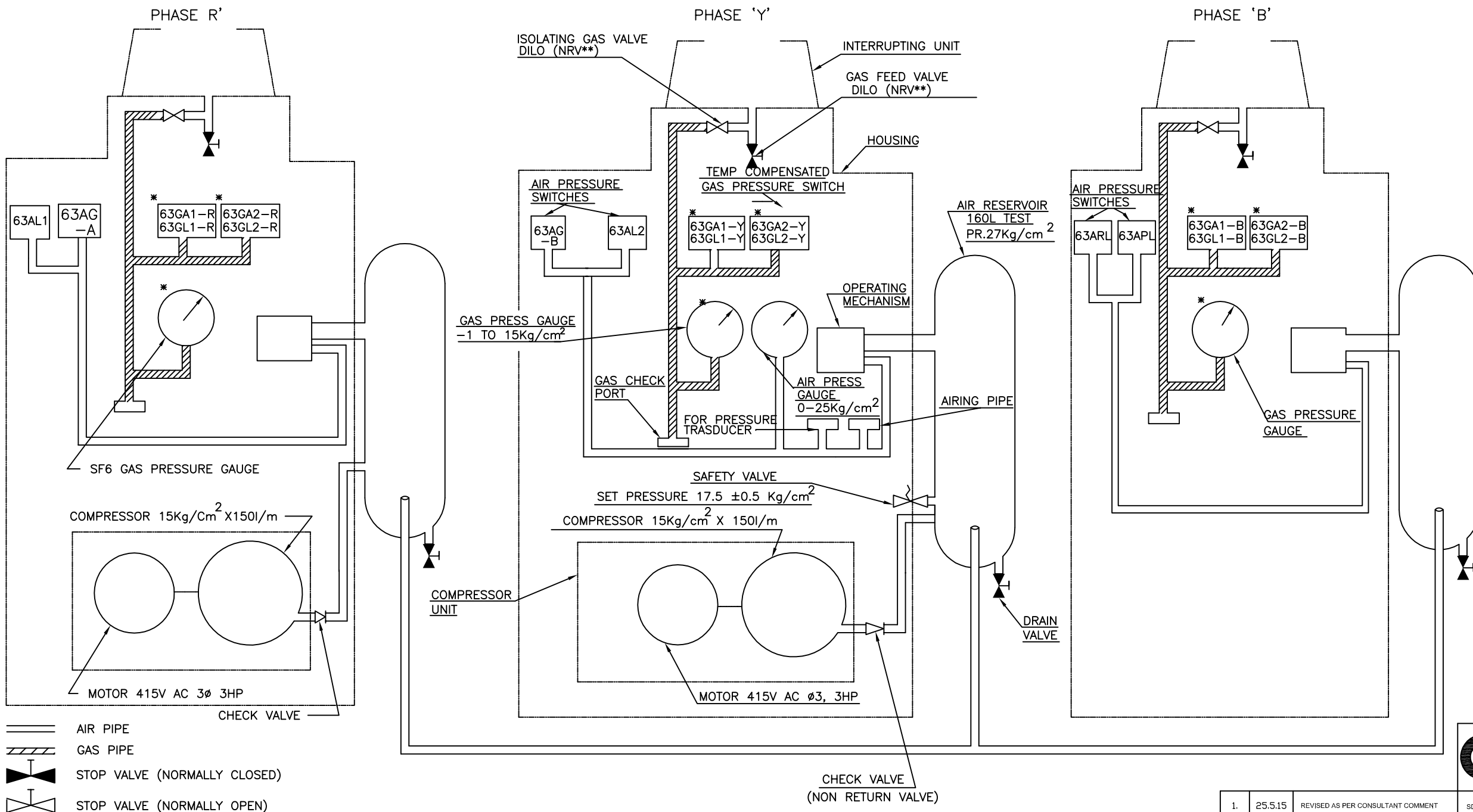


NOTE:

- *GAUGE & SWITCH ARE COMBINED IN CASE OF REGENCY ELECTRIC & WIKA MAKE DENSITY SWITCHES
- SHOWN LAYOUT OF COMPONENTS IS FOR INDICATION PUPPOSE ONLY
- ALL DIMENTIONS ARE IN MM, TOLERANCE ON OVERALL DIMENSION +/-2%.



REV.	DATE	REASONS FOR REVISION	DRN.	PREPARED BY	CHECKED BY	APPROVED BY
OWNER RAJASTHAN RAJYA VIDYUT UTPADAN NIGAM LIMITED						
PROJECT 2X660MW THERMAL POWER PLANT,SURAT GARH STAGE -V, UNIT 7 & 8 AT SURATGARH , RAJASTHAN						
OWNER'S ENGINEER TATA CONSULTING ENGINEERS LIMITED						
EPC CONTRACTOR BHARAT HEAVY ELECTRICALS LTD TRANSMISSION BUSINESS GROUP						
WORK ORDER NO: HS 4342			DEPT CODE	NAME	SIGN.	DATE
PRODUCT: FOR 400KV SP-PN			DRN	YBJ		05.03.15
TYPE: 400-SFM-40A			DESN	MSK		05.03.15
			CHD	MSK		05.03.15
			APPD	HVS		05.03.15
TITLE MECHANISM HOUSING ASSY (PH.B.)						
PO NO: - 144P231 DTD 03.03.2015						
CV	ME	EL	I&C	DEPT. SCALE	BHEL/SUB VENDOR DRG NO.	
-	-	MSK	-	SIGN	EH5-4342-46	
-	-	05.03.15	-	DATE	SHT. No 1/1	REV.0



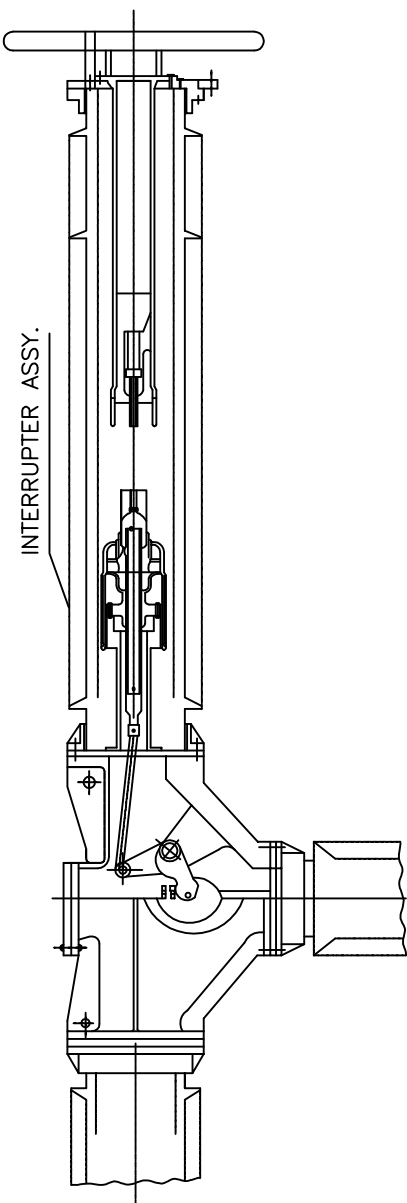
PRESS SWITCH	ON	OFF	PURPOSE	MAKE
63AG-A	14.5Kg/cm ²	15.2Kg/cm ²	COMPRESSOR ON OFF	DANFOSS SAGINOMIYA REGENCY
63AG-B	14.3Kg/cm ²	15.2Kg/cm ²		
63 APL	13.5Kg/cm ²	14.5Kg/cm ²	LOW AIR PRESS ALARM	
63 AL-1 63 AL-2	14.0Kg/cm ²	13.0Kg/cm ²	LOW AIR PRESS LOCK	
63 ARL	14.4Kg/cm ²	13.9Kg/cm ²	AUTO RECLOSE LOCK	
63 GA-1 63 GA-2	6.5Kg/cm ²	7.0Kg/cm ²	LOW SF6 PRESS ALARM	
63 GL-1 63 GL-2	6.5Kg/cm ²	6.0Kg/cm ²	LOW SF6 PRESS LOCK	

NOTES :

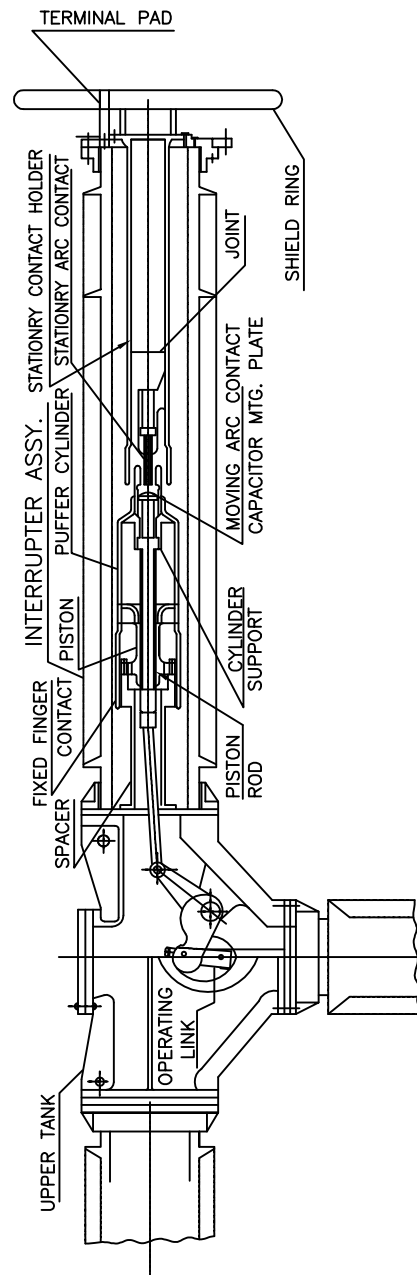
- CHECK PORT IS A NUT HAVING 'O' RING FOR GAS SEALING. GAS PRESSURE SWITCH IS CALIBRATED DURING ROUTINE TESTING USING FOR CALIBRATION AND SETTING THESE SWITCHES..
- AIRING PIPE IS PROVIDED FOR SCAVENGING OF AIR (INTENTIONAL AIR LEAKAGE) FOR COMPRESSOR MOTOR RUNNING THE COMPRESSOR MOTOR RUN 3/5 MINUTES AFTER EVERY 24 HOURS TO ENSURE HEALTHINESS OF SYSTEM
- COMPRESSOR MOTOR SET (UNITISED COMPRESSED AIR SYSTEM) IS RATED TO DELIVER FREE AIR AT 150 LTRS/MINUTE
- **THIS WILL OPERATIVE ONLY IN COUPLED POSITION WHEN IS NOT COUPLED IT WILL ACT AS NRV
- *GUAGE & SWITCH ARE COMBINED IN CASE OF REGENCY ELECTRIC & WIKA MAKE DENSITY SWITCHES
- LAYOUT OF DIFFERENT COMPONENT SHOWN ON DRAWING IS FOR INDICATION PURPOSE



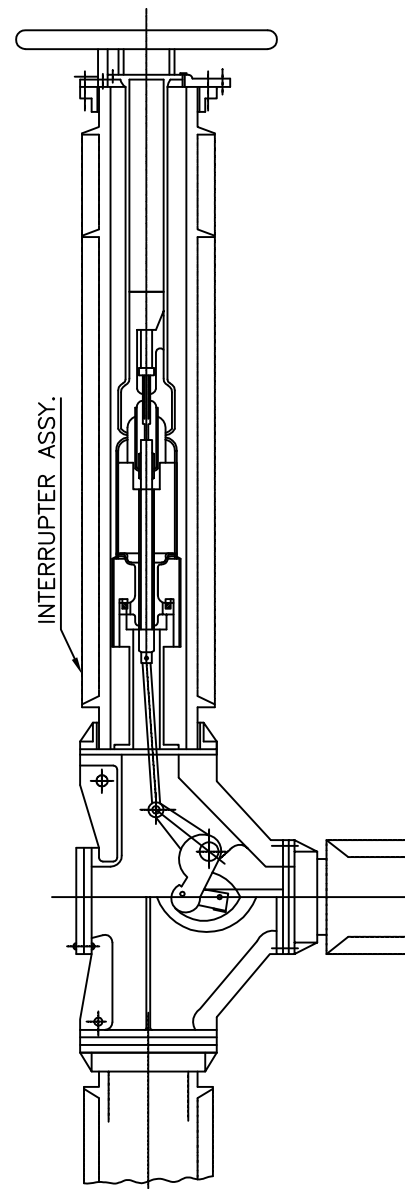
1.	25.5.15	REVISED AS PER CONSULTANT COMMENT	SDS	SDS	HVS	HVS
REV.	DATE	REASONS FOR REVISION	DRN.	PREPARED BY	CHECKED BY	APPROVED BY
OWNER RAJASTHAN RAJYA VIDYUT UTPADAN NIGAM LIMITED						
PROJECT 2X660MW THERMAL POWER PLANT,SURAT GARH STAGE -V, UNIT 7 & 8 AT SURATGARH , RAJASTHAN						
OWNER'S ENGINEER TATA CONSULTING ENGINEERS LIMITED						
EPC CONTRACTOR BHARAT HEAVY ELECTRICALS LTD TRANSMISSION BUSINESS GROUP						
WORK ORDER NO: HS 4342			DEPT CODE	NAME	SIGN.	DATE
PRODUCT: FOR 400KV SP-PN TYPE: 400-SFM-40A			DRN	YBJ		05.03.15
			DESN	MSK		05.03.15
			CHD	MSK		05.03.15
			APPD	HVS		05.03.15
TITLE AIR AND GAS SYSTEM						
PO NO: - 144P231 DTD 03.03.2015						
CV	ME	EL	I&C	DEPT.	SCALE	BHEL/SUB VENDOR DRG NO.
-	-	MSK	-		SIGN	EH5-4342-47
-	-	05.03.15	-		DATE	SHT. No 1/1
						REV. 1



OPEN POSITION



INSTANT OF PRE-INSERTION



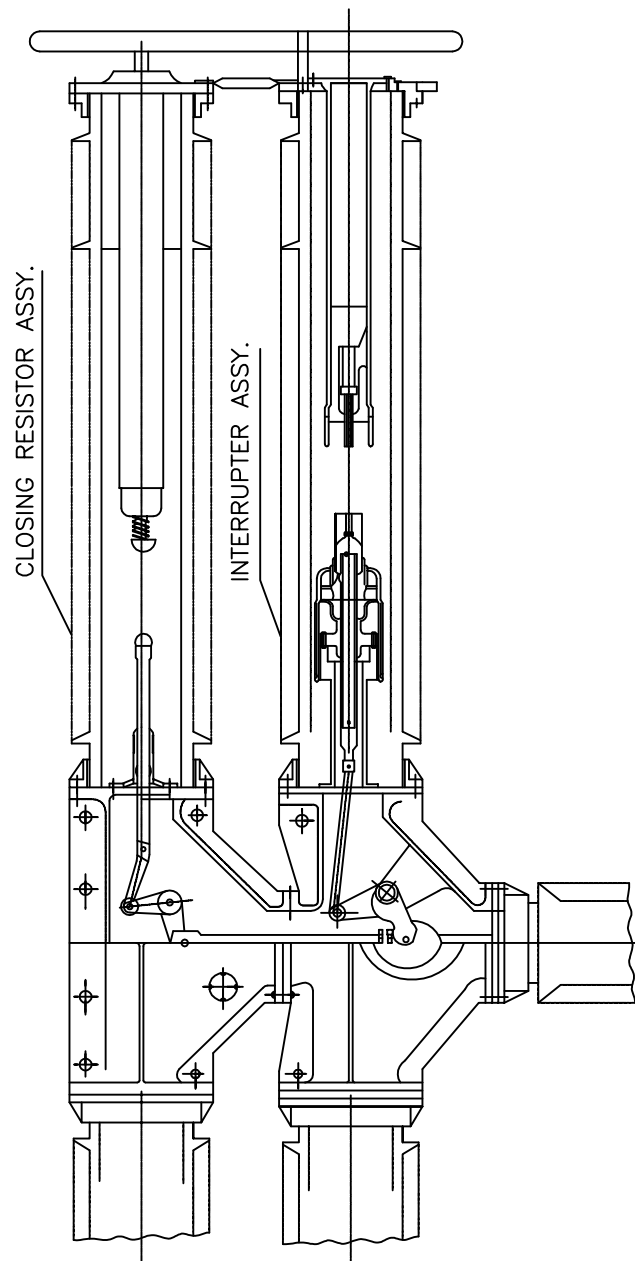
CLOSED POSITION



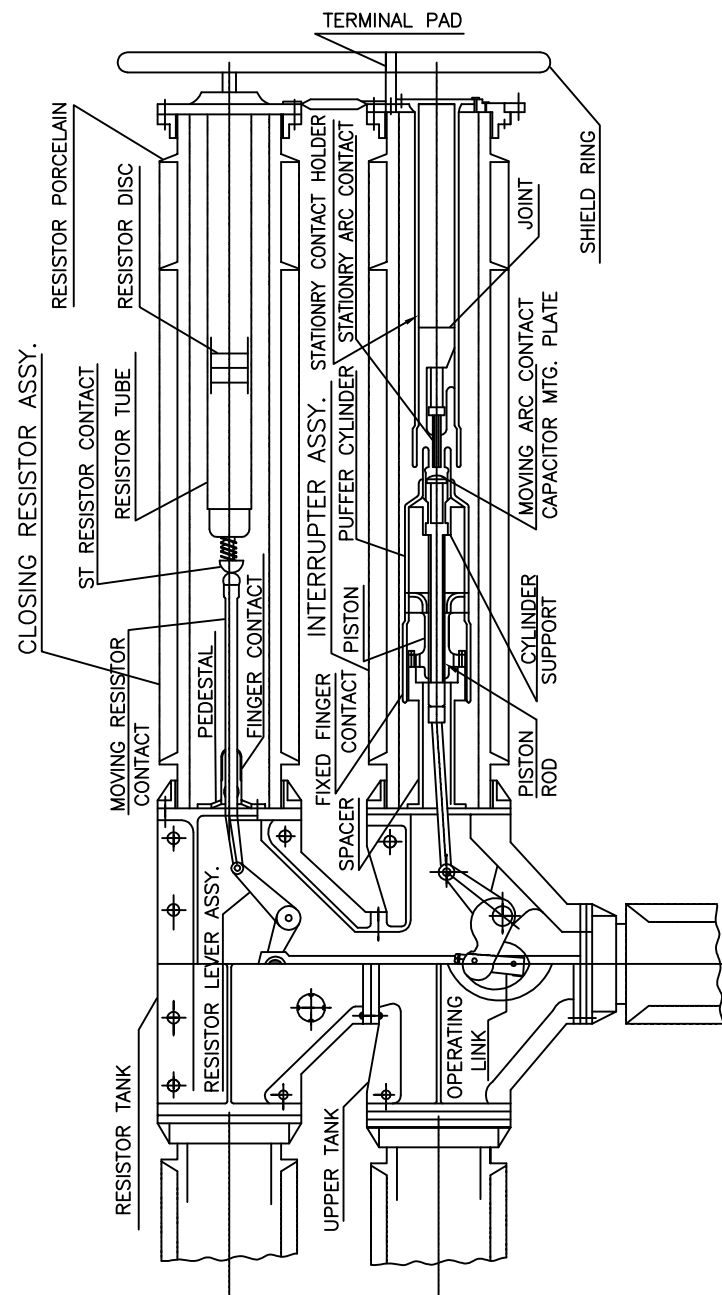
REV.	DATE	REASONS FOR REVISION	DRN.	PREPARED BY	CHECKED BY	APPROVED BY
OWNER RAJASTHAN RAJYA VIDYUT UTPADAN NIGAM LIMITED						
PROJECT 2X660MW THERMAL POWER PLANT, SURAT GARH STAGE -V, UNIT 7 & 8 AT SURATGARH, RAJASTHAN						
OWNER'S ENGINEER TATA CONSULTING ENGINEERS LIMITED						
EPC CONTRACTOR BHARAT HEAVY ELECTRICALS LTD TRANSMISSION BUSINESS GROUP						
WORK ORDER NO: HS 4342			DEPT CODE	NAME	SIGN.	DATE
PRODUCT: FOR 400KV SP-PN			DRN	YBJ		05.03.15
TYPE: 400-SFM-40A			DESN	MSK		05.03.15
			CHD	MSK		05.03.15
			APPD	HVS		05.03.15
TITLE SECT. VIEW OF POLE UNIT						
PO NO: - 144P231 DTD 03.03.2015						
CV	ME	EL	I&C	DEPT.	SCALE	BHEL/SUB VENDOR DRG NO.
-	-	MSK	-	SIGN		EH5-4342-48
-	-	05.03.15	-	DATE		SHT. No 1/2
						REV.0

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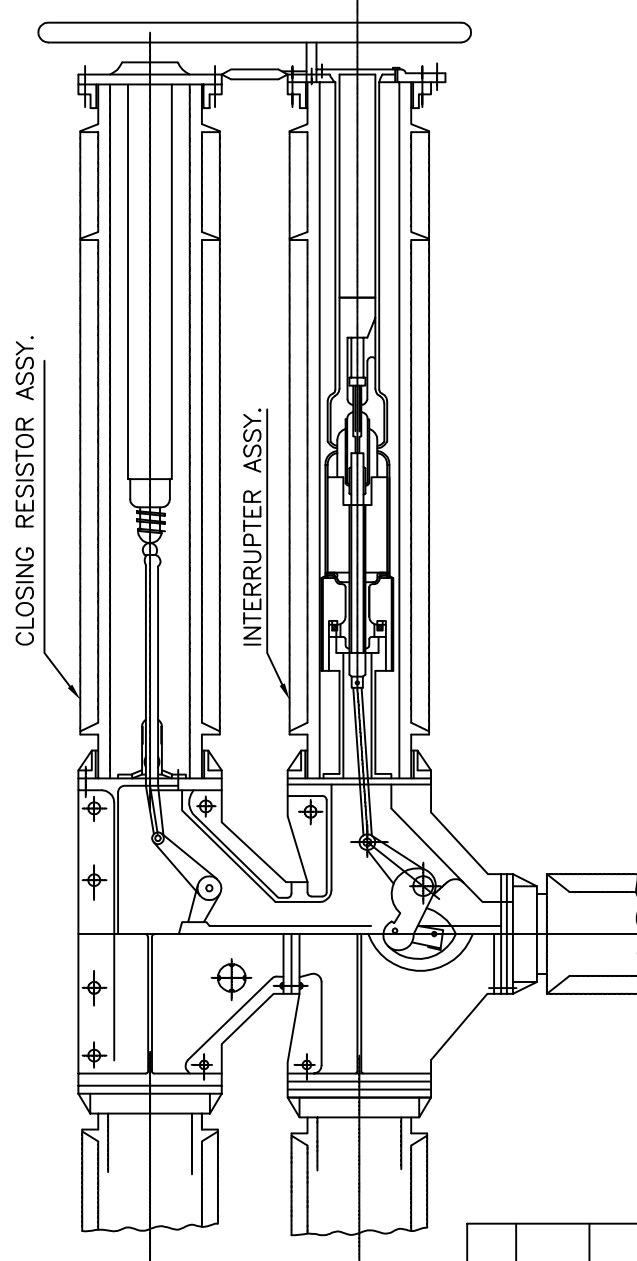
INVENTORY NO. _____
SIGN. AND DATE _____
REF. DRG. NO. _____
COMPUTER FILE NAME _____



OPEN POSITION



INSTANT OF PRE-INSFRTRION



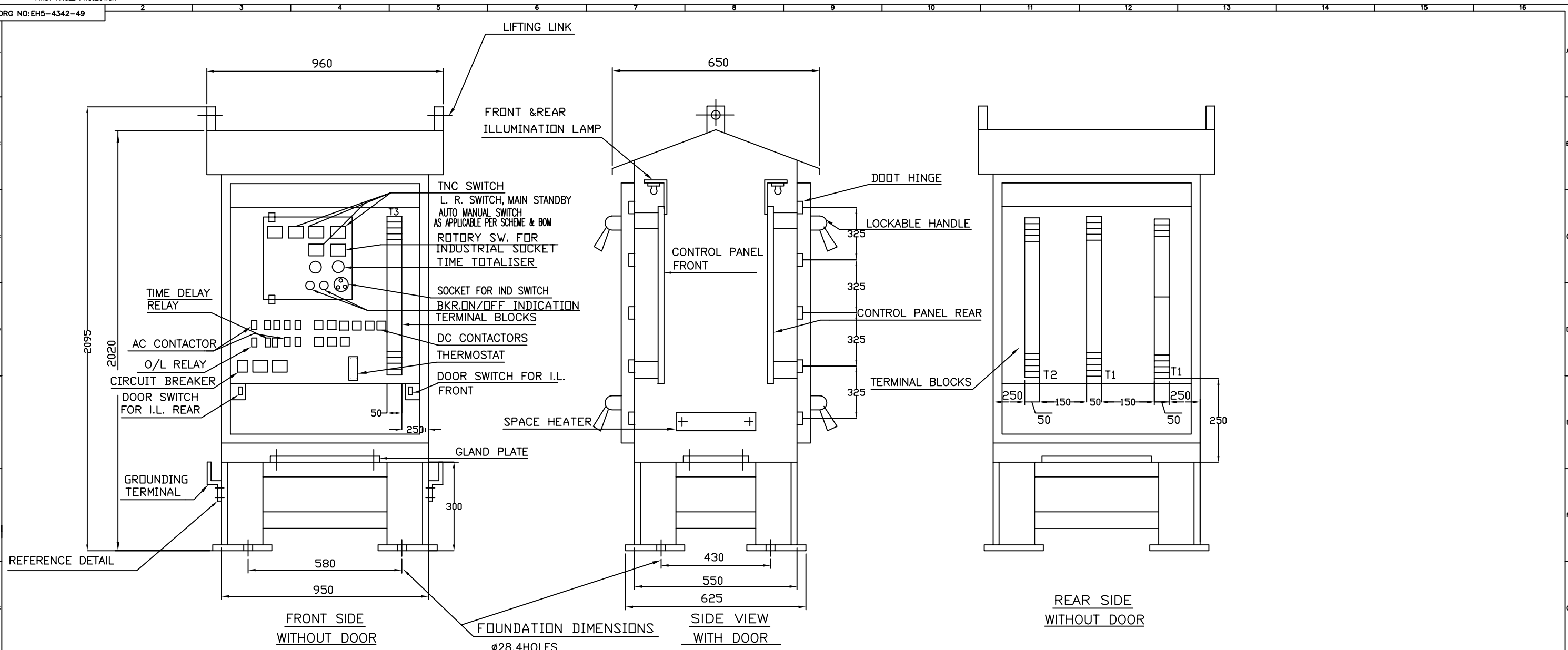
CLOSED POSITION



REV.	DATE	REASONS FOR REVISION	DRN.	PREPARED BY	CHECKED BY	APPROVED BY
OWNER RAJASTHAN RAJYA VIDYUT UTPADAN NIGAM LIMITED						
PROJECT 2X660MW THERMAL POWER PLANT, SURAT GARH STAGE -V, UNIT 7 & 8 AT SURATGARH, RAJASTHAN						
OWNER'S ENGINEER TATA CONSULTING ENGINEERS LIMITED						
EPC CONTRACTOR BHARAT HEAVY ELECTRICALS LTD TRANSMISSION BUSINESS GROUP						
WORK ORDER NO: HS 4342			DEPT CODE	NAME	SIGN.	DATE
PRODUCT: FOR 400KV SP-PN			DRN	YBJ		05.03.15
TYPE: 400-SFM-40A			DESN	MSK		05.03.15
			CHD	MSK		05.03.15
			APPD	HVS		05.03.15
TITLE SCET. VIEW OF POLE UNIT						
PO NO: - 144P231 DTD 03.03.2015						
CV	ME	EL	I&C	DEPT.	SCALE	BHEL/SUB VENDOR DRG NO.
-	-	MSK	-			EH5-4342-48
-	-	05.03.15	-			SHT. No 2/2
				DATE		REV.0

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indirectly in any way detrimental to the interest of the company.

SHEET NO. 2/2
REF. DRG. NO.
COMPUTER FILE NAME
INVENTORY NO.



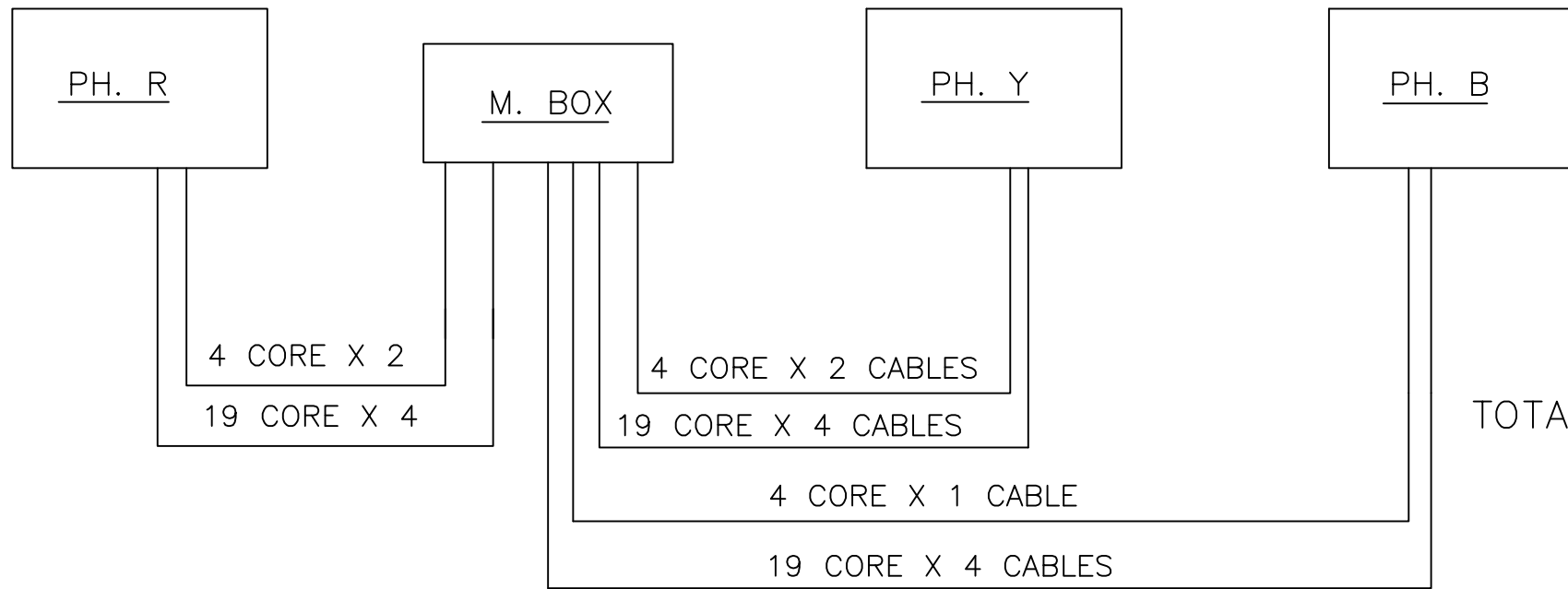
NOTES:

1. FRONT AND REAR VIEWS ARE SHOWN FOR OPEN DOORS.
2. SIDE VIEW IS SHOWN WITH DOORS.
3. MATERIAL : M.S./CRCA SHEET 3mm THICK, DOOR 2 THK
4. FINISH :- PAINTED AS PER SHADE 631 OF IS 5 (1994) EXTERNAL & INSIDE GLOSSY WHITE
5. WEIGHT : 125 Kg. (APPROX)
6. FOR DEATILED WIRING DIAGRAM REFER
A) WIRING DIAGRAM OF HOUSING
B) WIRING DIAGRAM OF M.B
7. COMPONAT LAYOUT SHOWN ON DRAWING IS FOR INDICATION PURPOSE.
8. IF ADDITIONAL TERMINAL BLOCK IS REQUIRED DEPENDING ON SCHEME SAME WILL BE ADDED SUITABLY INSIDE M. BOX
9. ALL DIMENTIONS ARE IN MM, TOLERANCE ON OVERALL DIMENSION +/-2%.



REV.	DATE	REASONS FOR REVISION	DRN.	PREPARED BY	CHECKED BY	APPROVED BY
OWNER RAJASTHAN RAJYA VIDYUT UTPADAN NIGAM LIMITED						
PROJECT 2X660MW THERMAL POWER PLANT,SURAT GARH STAGE -V, UNIT 7 & 8 AT SURATGARH , RAJASTHAN						
OWNER'S ENGINEER TATA CONSULTING ENGINEERS LIMITED						
EPC CONTRACTOR BHARAT HEAVY ELECTRICALS LTD TRANSMISSION BUSINESS GROUP						
WORK ORDER NO: HS 4342			DEPT CODE	NAME	SIGN.	DATE
PRODUCT: FOR 400KV SP-PN			DRN	YBJ		05.03.15
TYPE: 400-SFM-40A			DESN	MSK		05.03.15
			CHD	MSK		05.03.15
			APPD	HVS		05.05.15
TITLE MARSHLLING BOX						
PO NO: - 144P231 DTD 03.03.2015						
CV	ME	EL	I&C	DEPT.	SCALE	BHEL/SUB VENDOR DRG NO.
-	-	MSK	-	SIGN		EH5-4342-49
-	-	05.03.15	-	DATE		SHT. No 1/1
						REV.0

CABLES FOR R,Y,B PHASES TO M.BOX WIRING.



TOTAL=19 CORE 2.5 Sq.mm=230 MTRS
4 CORE 2.5 Sq.mm=105 MTRS

SR. NO.	PHASE TO M. BOX.	NO OF CORE	QTY/BKR. (MTRSXPCS)	TOTAL (MTRS)
1	PHASE -R TO M.BOX	4	17 X 2	34
2	PHASE -R TO M.BOX	19	17 X 4	68
3	PHASE -Y TO M.BOX	4	15 X 2	30
4	PHASE -Y TO M.BOX	19	15 X 4	60
5	PHASE -B TO M.BOX	4	25 X 1	25
6	PHASE -B TO M.BOX	19	25 X 4	100



REV.	DATE	REASONS FOR REVISION	DRN.	PREPARED BY	CHECKED BY	APPROVED BY
OWNER RAJASTHAN RAJYA VIDYUT UTPADAN NIGAM LIMITED						
PROJECT 2X660MW THERMAL POWER PLANT,SURAT GARH STAGE -V, UNIT 7 & 8 AT SURATGARH , RAJASTHAN						
OWNER'S ENGINEER TATA CONSULTING ENGINEERS LIMITED						
EPC CONTRACTOR BHARAT HEAVY ELECTRICALS LTD TRANSMISSION BUSINESS GROUP						
WORK ORDER NO: HS 4342			DEPT CODE	NAME	SIGN.	DATE
PRODUCT: FOR 400KV SP-PN			DRN	YBJ		05.03.15
TYPE: 400-SFM-40A			DESN	MSK		05.03.15
			CHD	MSK		05.03.15
			APPD	HVS		05.03.15
TITLE CABLE SCHEDULE PHASE TO M. BOX						
PO NO: - 144P231 DTD 03.03.2015						
CV	ME	EL	I&C	DEPT.	SCALE	BHEL/SUB VENDOR DRG NO.
-	-	MSK	-	SIGN		EH5-4342-50
-	-	05.03.15	-	DATE		SHT. No 1/1
						REV.0

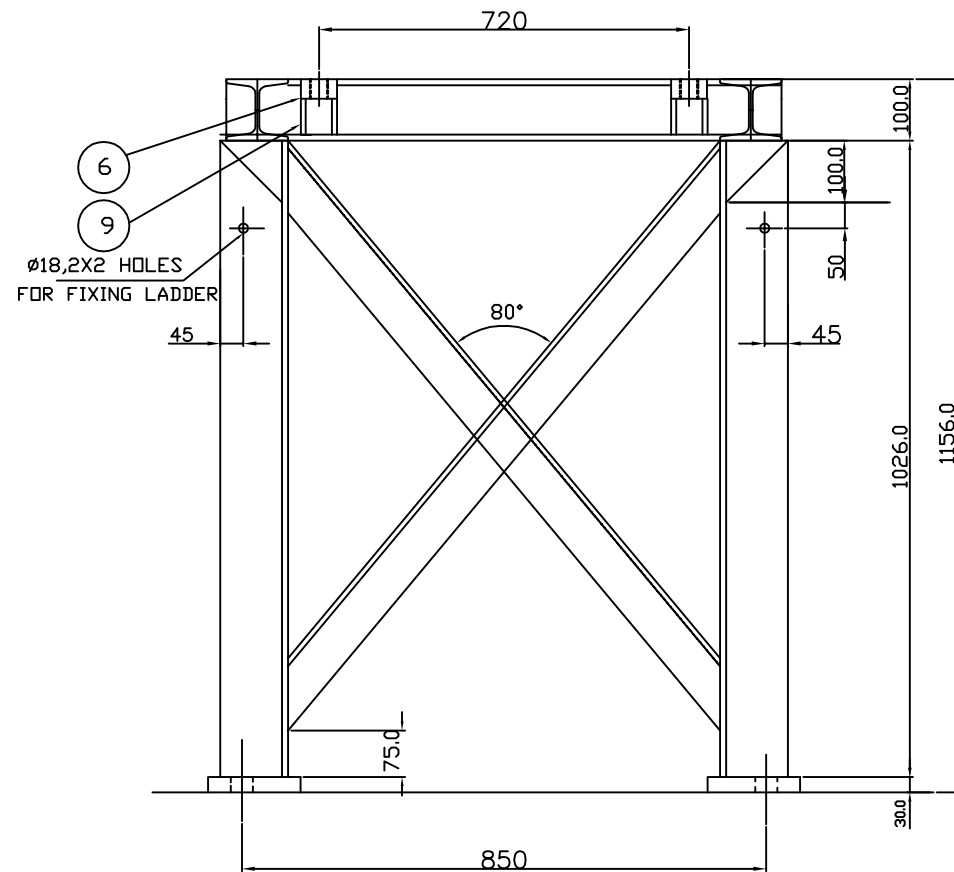
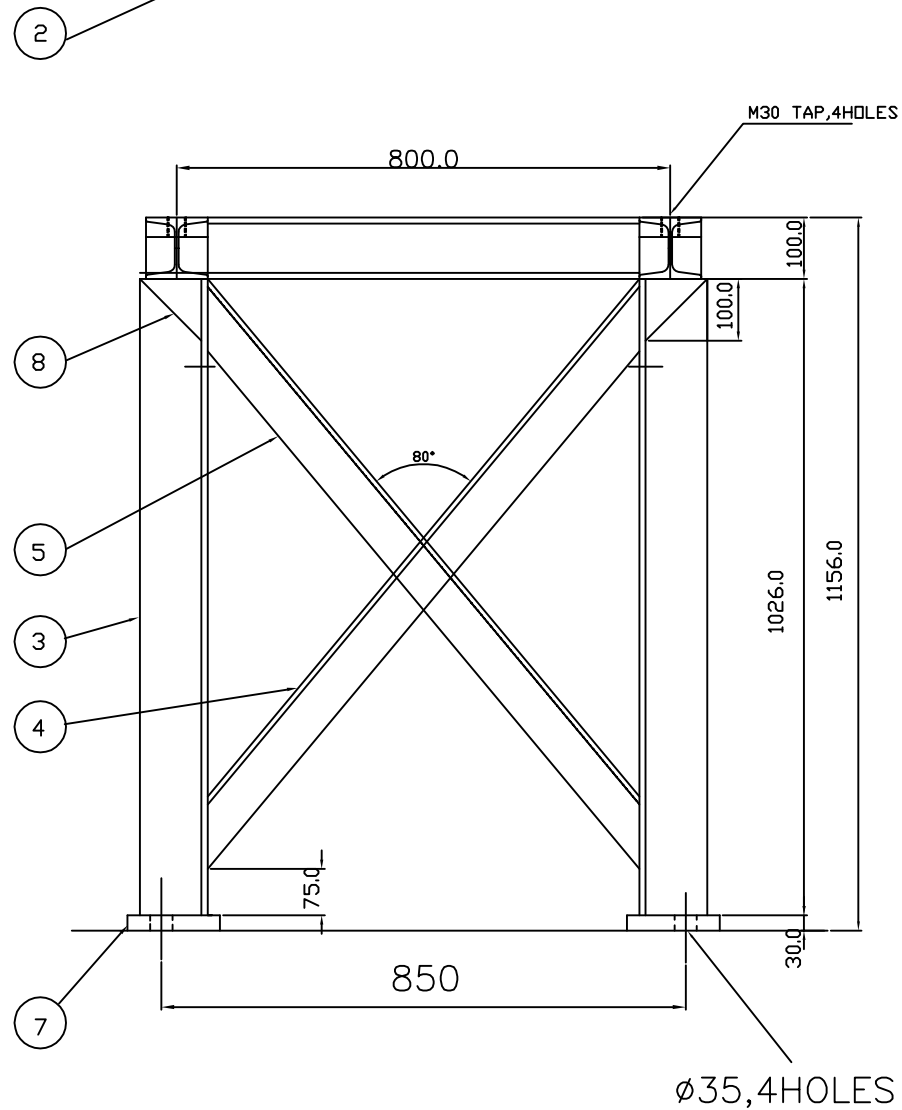
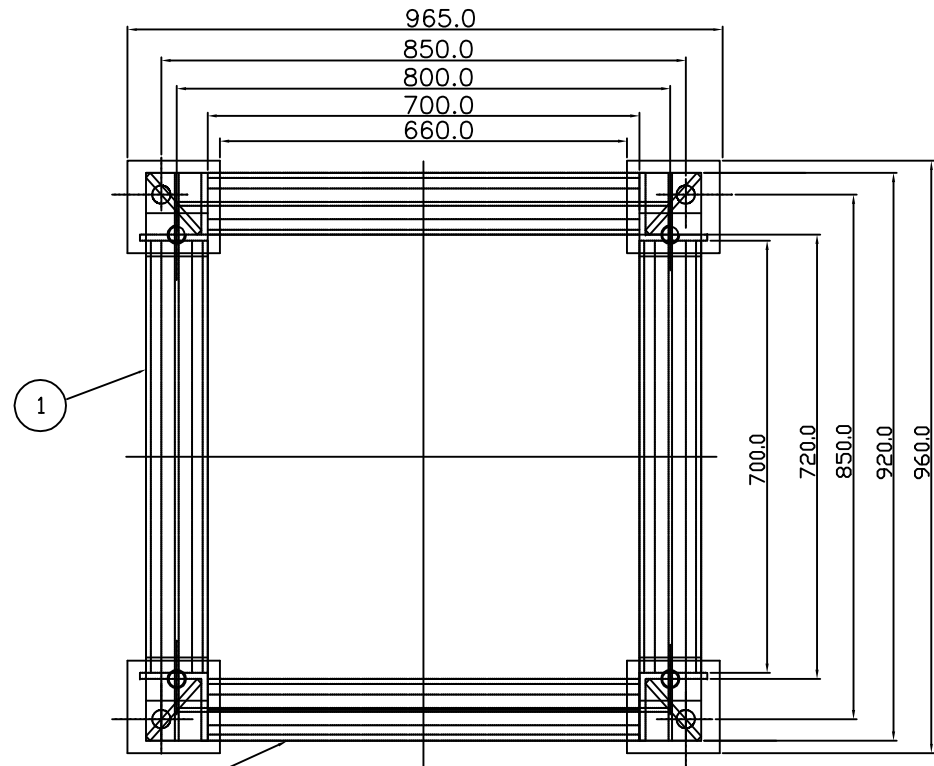
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DRAWING NO. REF. DRG. NO. COMPUTER FILE NAME

FIRST ANGLE PROJECTION

DRG NO:EH5-4342-51

GROUP NO.	ITEM NO.	DISCRIPTION	SIZE
	1	VERTICAL BEAM	ISMB 100 X 100 X 920
	2	HORIZONTAL BEAM	ISMB 100 X 100 X 788
	3	LEG	ISA 110 X 110 X 1031
	4	CROSS ANGLE	ISA 75 X 75 X 1182-8THK
	5	CROSS ANGLE	ISA 75 X 75 X 1182-8THK
	6	PLATE	MS PLATE 32 X 70 X 100
	7	PLATE (BOTTOM)	MS PLATE 150 X 150 X 30
	8	SUPPORT	MS PLATE 100 X 100 X 10
	9	SUPPORT	MS PLATE 46 X 66 X 10
	10	SUPPORT	MS PLATE 100 X 50 X 10



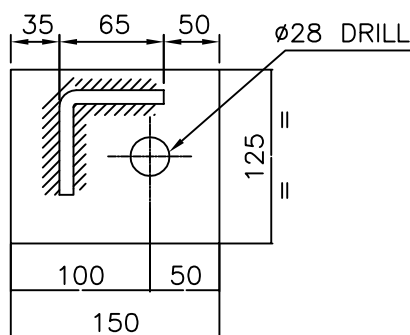
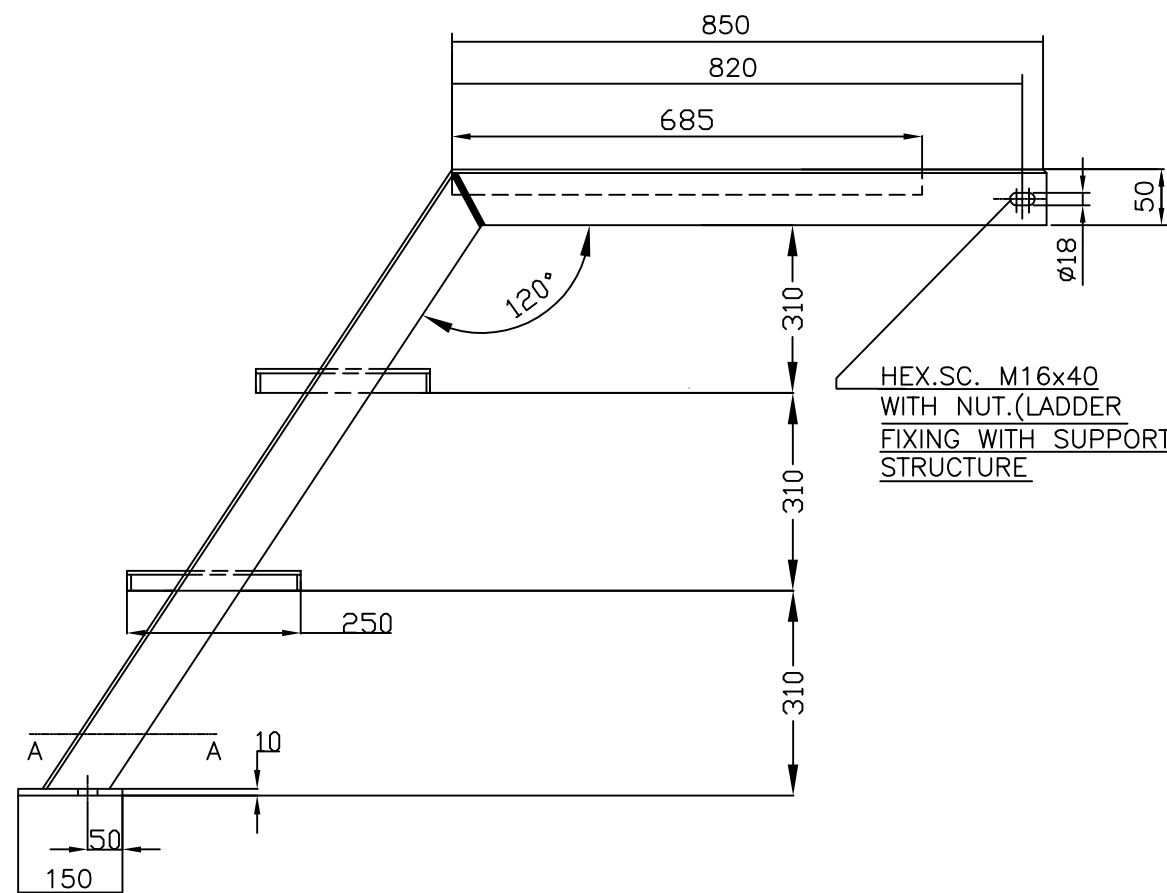
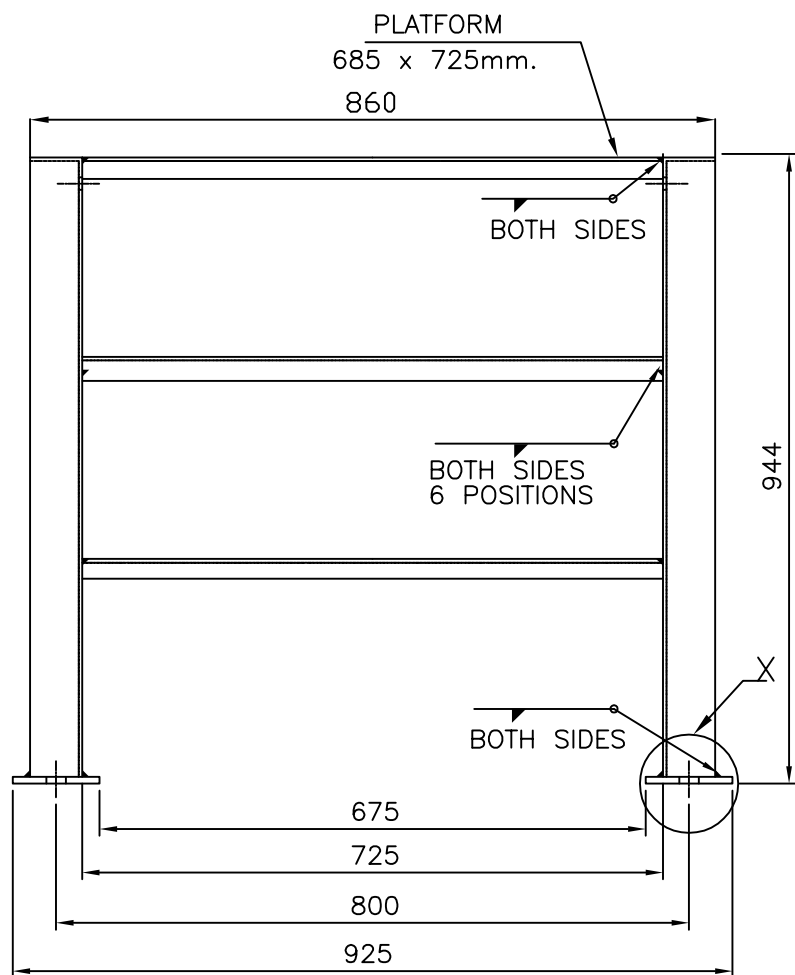
NOTE:

- 1) FINISH: HOT DIP GALVANISED 610 g/m²
- 2) WEIGHT : 250 Kg.
- 3) ALL DIMENTIONS ARE IN MM, TOLERANCE ON OVERALL DIMENSION +/-2%.

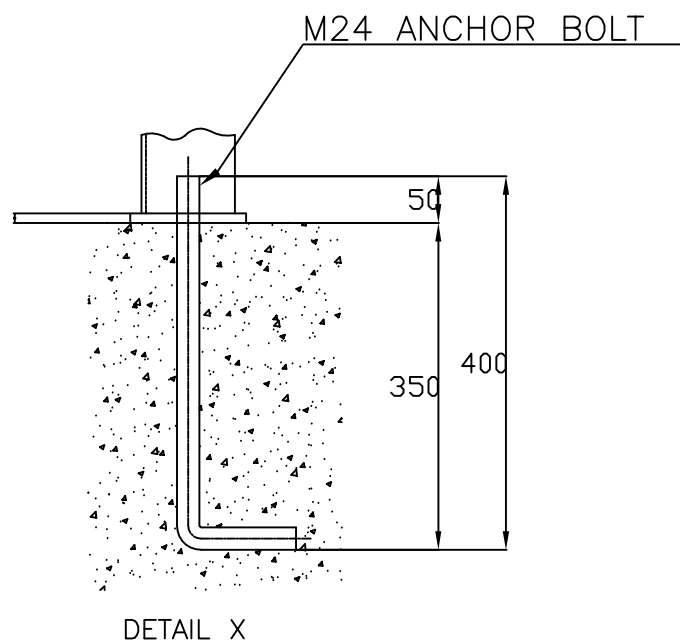


REASONS FOR REVISION	DRN.	PREPARED BY	CHECKED BY	APPROVED BY
OWNER RAJASTHAN RAJYA VIDYUT UTPADAN NIGAM LIMITED				
PROJECT 2X660MW THERMAL POWER PLANT,SURAT GARH STAGE -V, UNIT 7 & 8 AT SURATGARH , RAJASTHAN				
OWNER'S ENGINEER TATA CONSULTING ENGINEERS LIMITED				
EPC CONTRACTOR BHARAT HEAVY ELECTRICALS LTD TRANSMISSION BUSINESS GROUP				
WORK ORDER NO: HS 4342		DEPT CODE		
PRODUCT: FOR 400KV SP-PN TYPE: 400-SFM-40A				
TITLE SUPPORT STRUTURE				
PO NO: - 144P231 DTD 03.03.2015				
CV	ME	EL	I&C	DEPT. SCALE
-	-	MSK	-	SIGN
-	-	05.03.15	-	DATE
BHEL/SUB VENDOR DRG NO. EH5-4342-51				SHT. No 1/1
REV.0				

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DETAIL X



REASONS FOR REVISION	DRN.	PREPARED BY	CHECKED BY	APPROVED BY
OWNER RAJASTHAN RAJYA VIDYUT UTPADAN NIGAM LIMITED				
PROJECT 2X660MW THERMAL POWER PLANT,SURAT GARH STAGE -V, UNIT 7 & 8 AT SURATGARH , RAJASTHAN				
OWNER'S ENGINEER TATA CONSULTING ENGINEERS LIMITED				
EPC CONTRACTOR BHARAT HEAVY ELECTRICALS LTD TRANSMISSION BUSINESS GROUP				
WORK ORDER NO: HS 4342				DEPT CODE
PRODUCT: FOR 400KV SP-PN TYPE: 400-SFM-40A				
TITLE LADDER DETAILS				
PO NO: - 144P231 DTD 03.03.2015				
CV	ME	EL	I&C	DEPT. SCALE
-	-	MSK	-	SIGN
-	-	05.03.15	-	DATE
BHEL/SUB VENDOR DRG NO. EH5-4342-52			SHT. No 1/1	
REV.0				

1) ALL DIMENTIONS ARE IN MM, TOLERANCE ON OVERALL DIMENSION +/-2%.