

57020 00 69p 3 / ON 'DRD

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INVENTORY NO.

SIGN. DATE

REF. DRG. NO.

THE PROPERTY OF BHARAT HEAVY ELECTRICALS LTD.
IT MUST NOT BE USED DIRECTLY OR INDIRECTLY IN ANY WAY DETRIMENTAL TO THE INTEREST OF THE COMPANY.

NOTES :-

1. WHEN REFERRING THIS DRAWING PLEASE QUOTE MVAR & W.O. NO.

2. 320 DIA. TWIN BI-DIRECTIONAL ROLLERS MOUNTED AT 1676 mm RAIL GAUGE IN BOTH DIRECTION ARE PROVIDED FOR MOVEMENT OF REACTOR AT SITE AND ROLLERS ARE TO BE REMOVED BEFORE ERECTION

3. OUT SIDE FINISHING PAINT TO SHADE RAL 5012.

4. WIRING FROM INSTRUMENT CTS. ETC. ARE NOT SHOWN FOR CLARITY.

5. FOUNDATION BOLTS ARE IN THE SCOPE OF BHEL SUPPLY.

6. FOR PART LIST OF OGA REFER DRAWING NO. 3 469 00 02046

7. DIMNS. SHOWN THUS ARE OVERALL SHIPPING DIMENSIONS EXCLUSIVE OF PACKING.

8. DIMENSIONS SHOWN ARE WITH REF. TO PLINTH LEVEL.

9. FOR TANK COVER BOLTING REFER DETAIL 'B' SHT. NO. 03 OF 04.

10. ALL GASKETS USED FOR TRANSFORMERS & ACCESSORIES (IN CONTACT WITH OIL) WILL BE O-RING NITRILE RUBBER.

11. GLAND PACKING/GASKET MATERIAL SHALL BE OF "O" RING OF NITRILE RUBBER FOR ALL THE VALVES FLANGES. ALL THE FLANGES SHALL BE MACHINED.

12. PAINTING & OIL SHALL BE AS PER NTPC TECHNICAL SPECIFICATION.

13. ALL BOLTS & NUTS SHALL BE HOT DIP GALVANIZED/SS.

14. ALL FITTINGS, ACCESSORIES, ARRANGEMENT (SHOWN OR NOT SHOWN) SHALL BE PROVIDED INLINE WITH TECHNICAL SPECIFICATION.

15. REACTOR CAN BE WITHDRAWN WITH BUSHINGS WITHOUT FOULING.

16. ALL CABLES ON TRANSFORMER SHALL BE PROVIDED IN TRAYS.

17. TOLERANCE IN DIMENSION ±2% WHERE TOLERANCE NOT SPECIFIED.

IMPORTANT NOTE:-

1. THE DESIGN FEATURES SHOWN ON THIS DRAWING (INLINE WITH IEC: 60076-6 APPLICABLE STANDARD & CUSTOMER SPECIFICATION) MEETS THE STATUTORY, REGULATORY & SAFETY REQUIREMENTS WITH RESPECT TO EARTHING ARRANGEMENT, DANGER & OTHER LABELS, CLEARANCES IN AIR, PROVISION FOR PRESSURE RELIEF DEVICE, GAS ACTUATED RELAY AND ANTI-EARTHQUAKE CLAMPING ARRANGEMENT.

TRANSPORT WEIGHT

DESCRIPTION

WT. IN TONNES

TRANSPORT WEIGHT (WITH OIL & BUSHINGS)

163

TRANSPORT WEIGHT (GAS FILLED WITHOUT BUSHINGS)

120

APPROXIMATE WEIGHT OF TRANSFORMER & OIL VOLUME

DESCRIPTION

WT. IN KG

OIL (L)

OIL IN CONSERVATOR

2250

OIL IN RADIATOR

3880

RADIATOR (WITHOUT OIL)

13044

CONSERVATOR PIPE WORK

130

APPROXIMATE WEIGHT & OIL QTY.

DESCRIPTION

WT. IN KG

OIL (L)

CORE AND WINDING

91700

TANK & FITTINGS

23705

47040

BUSHINGS

2590

RADIATOR BANK, CONSERVATOR & PIPE WORK

15835

6260

CONTRIL CABINET

500

TOTAL OIL

46370

53300

TOTAL WEIGHT

180700

MIN. AIR CLEARANCES (IN MM)

420 KV

145 KV

PHASE TO PHASE

4000

NA

PHASE TO EARTH

3500

1050

UN-TANKING

UN-TANKING OF H.V. BUSHING

LEVEL

CORE & WINDING LIFTING LUG

CORE & WINDING 91700 KG

10200

7400

100

REACTOR TANK

12350

6470

4267

100

REACTOR TANK

HV BUSHING 815 KG

PROJECT 3 X 800MW PVUNL PATRATU TPP PHASE-1 (EPC)

PATRATU VIDYUT UTPADAN NIGAM LIMITED

भारत हेवी इलेक्ट्रिकल्स लिमिटेड

भारत

भारत हेवी इलेक्ट्रिकल्स लिमिटेड

भारत

DEPT

CODE

WEIGHT(Kg)

SCALE

DRG. NO

3 469 00 02045

REV.

01

DRG. NO

3 469 00 02045

REV.

01

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15. REACTOR CAN BE WITHDRAWN WITH BUSHINGS WITHOUT FOULING.
16. ALL CABLES ON TRANSFORMER SHALL BE PROVIDED IN TRAYS.
17. TOLERANCE IN DIMENSION $\pm 2\%$ WHERE TOLERANCE NOT SPECIFIED.

IMPORTANT NOTE:-

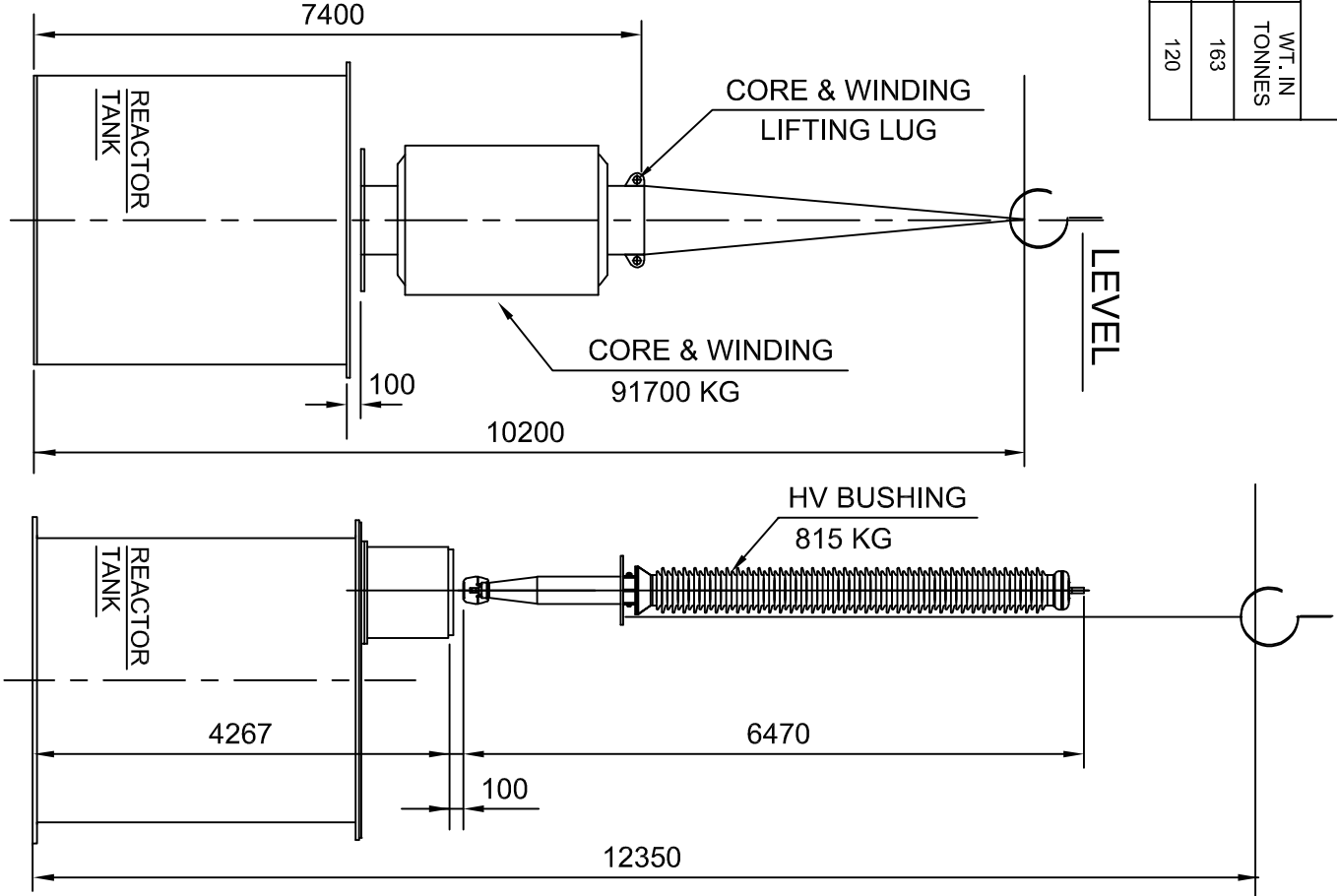
1. THE DESIGN FEATURES SHOWN ON THIS DRAWING (INLINE WITH IEC 60076-6 APPLICABLE STANDARD & CUSTOMER SPECIFICATION) MEETS THE STATUTORY, REGULATORY & SAFETY REQUIREMENTS WITH RESPECT TO EARTHING ARRANGEMENT, DANGER & OTHER LABELS, CLEARANCES IN AIR, PROVISION FOR PRESSURE RELIEF DEVICE, GAS ACTUATED RELAY AND ANTI-EARTHQUAKE CLAMPING ARRANGEMENT.

TRANSPORT WEIGHT	
DESCRIPTION	WT. IN TONNES
TRANSPORT WEIGHT (WITH OIL & BUSHINGS)	163
TRANSPORT WEIGHT (GAS FILLED WITHOUT BUSHINGS)	120







APPROXIMATE WEIGHT OF TRANSFORMER & OIL VOLUME		
DESCRIPTION	WT. IN KG	OIL (L)
OIL IN CONSERVATOR		2250
OIL IN RADIATOR		3880
RADIATOR (WITHOUT OIL)	13044	
CONSERVATOR PIPE WORK		130

APPROXIMATE WEIGHT & OIL QTY.		
DESCRIPTION	WT. IN KG	OIL (L)
CORE AND WINDING	91700	
TANK & FITTINGS	23705	47040
BUSHINGS	2590	
RADIATOR BANK, CONSERVATOR & PIPE WORK	15835	6260
CONTROL CABINET	500	
TOTAL OIL	46370	53300
TOTAL WEIGHT	180700	

MIN. AIR CLEARANCES (IN MM)		
	420 KV	145 KV
PHASE TO PHASE	4000	NA
PHASE TO EARTH	3500	1050



	PATRATU VIDYUT UTPADAN NIGAM LIMITED
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PROJECT		3 X 800MM PVUNL PATRATU TPP PHASE-1 (EPC)			
 भारती इलेक्ट्रिकल्स लिमिटेड भोपाल BHARAT HEAVY ELECTRICALS LTD. BHOPAL	DEPT	CODE	WEIGHT(KG)	SCALE	
	TRE	406	----	COMP.SCALE-1:1	
	TITLE				
	OUTLINE GENERAL ARRANGEMENT				
	NAME	SIGN	DATE	DRG. NO	
	RAKESH		01.02.19	3 469 00 02045	REV.
	CHD. KD		04.02.19		01
	APPD. KD/PP		04.02.19		
SHEET		01	OF	05	

54020 00 697 C ON GRD

202

203

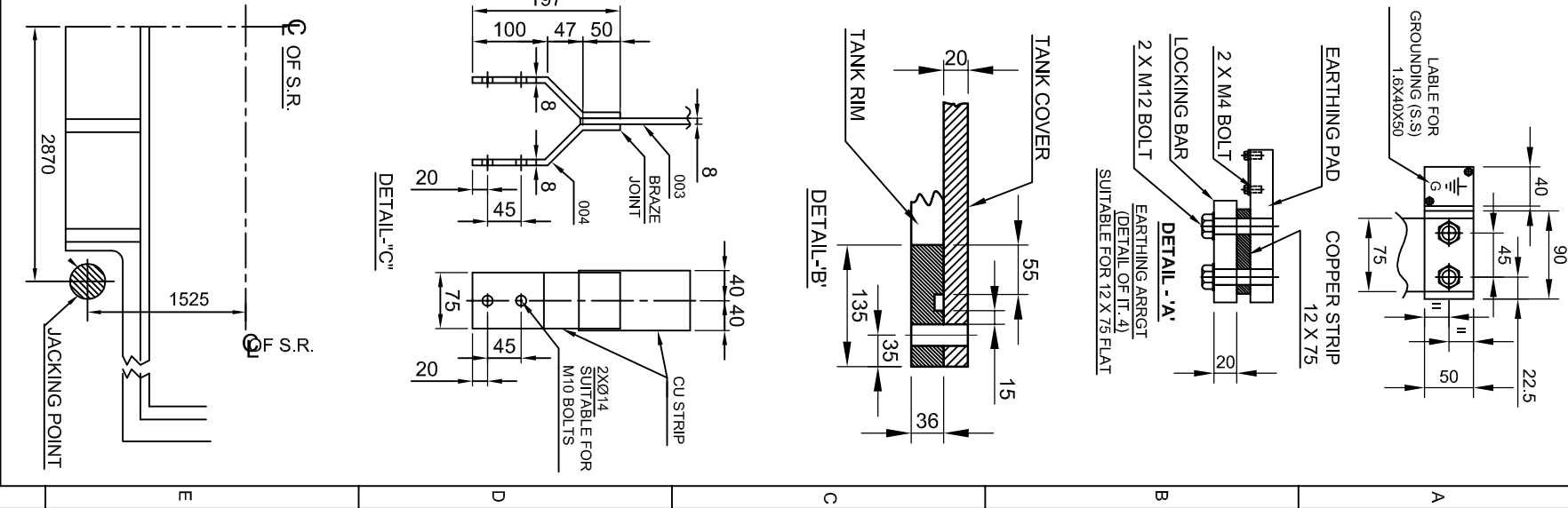
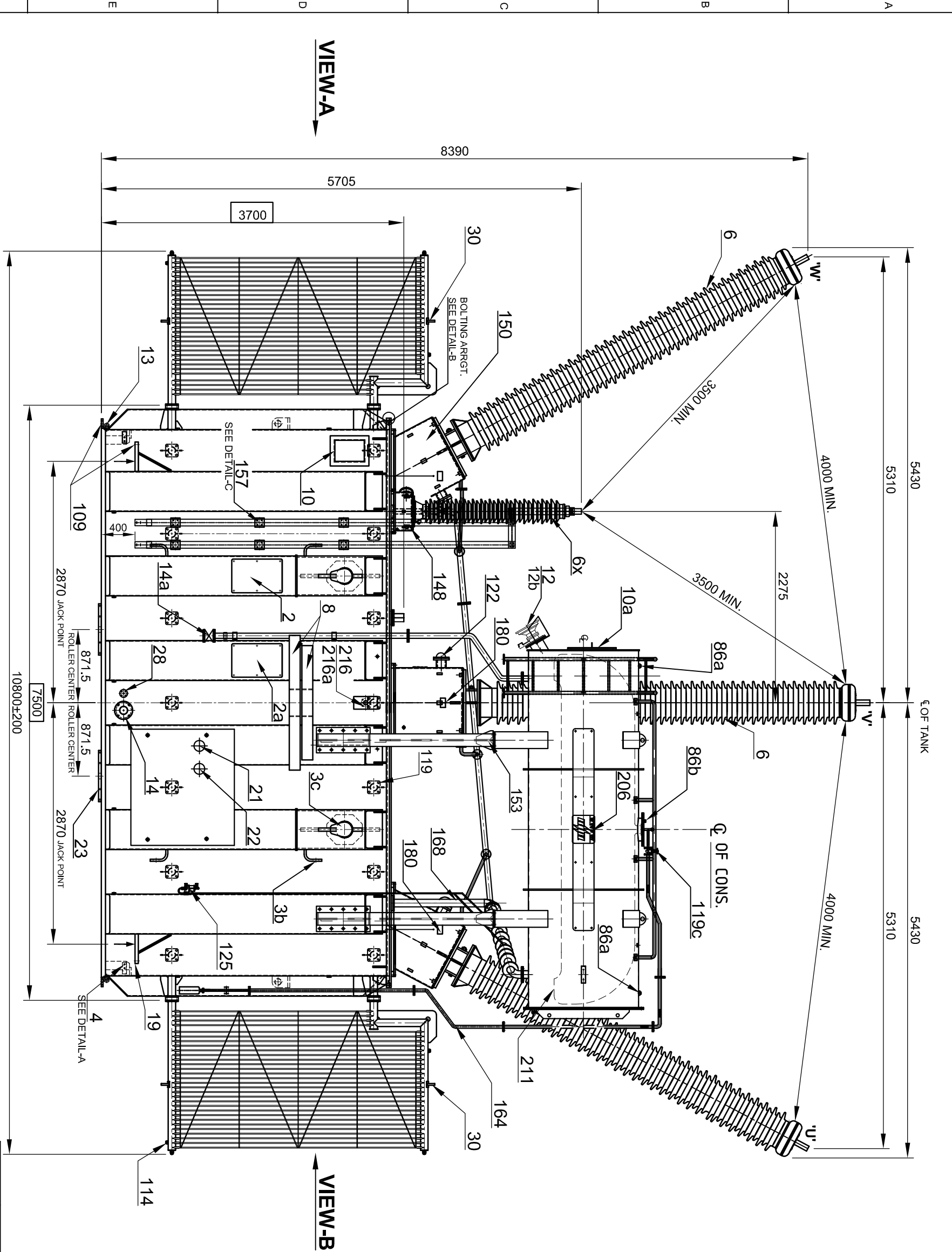
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INVENTORY NO.

SIGN.DATE

REF.DRG.NO.

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REV	DATE	ALT.	REV	DATE	ALT.	RAKESH
CKD.			CKD.			
APPD.			APPD.			

PVUNL DRG. NO.	9585-001-501-PVE-B-063
TYPE OF PRODUCT	125 MVAR, 420KV 3-PHASE SHUNT REACTOR
PO. NO.	01/PVUNL-CS-9585-001-2/NOA-SC DATED:08/03/18
NAME OF CUSTOMER	M/S PVUNL

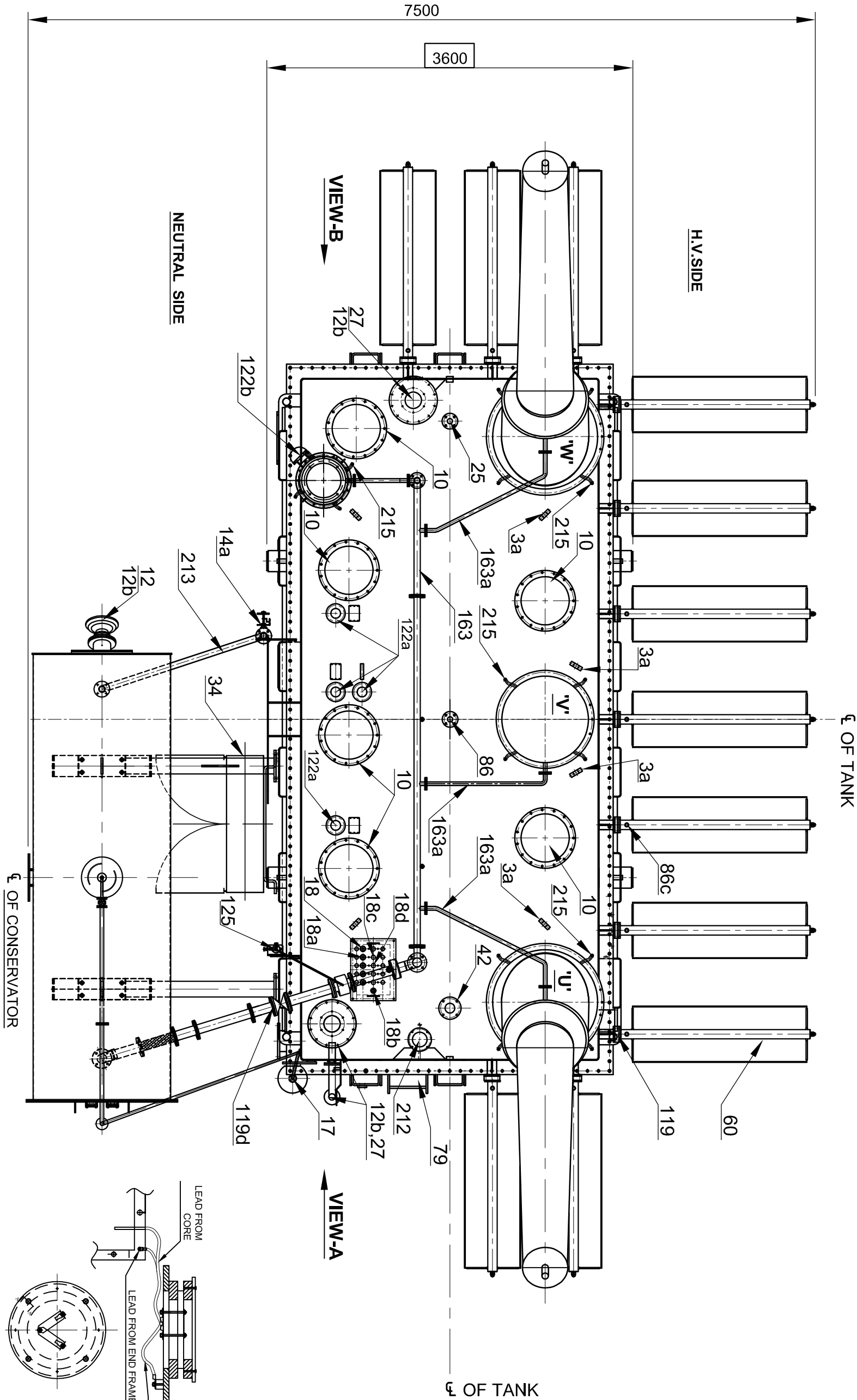
ADDITIONAL INFORMATION	W.O. - 67049 - A - 517 - 01
STATUS OF DRAWING	PPR
DISTRIBUTION OF PRINTS	TRE-1, TRM-3

PROJECT	3 X 800MM PVUNL PATRATU TPP PHASE-1 (EPC)
DEPT	BHARAT HEAVY ELECTRICALS LTD. BHOPAL
CODE	----
SCALE	COMP.SCALE:1:1
TRE	406
TITLE	OUTLINE GENERAL ARRANGEMENT (ELEVATION VIEW)
DRG. NO	3 469 00 02045
REV.	01

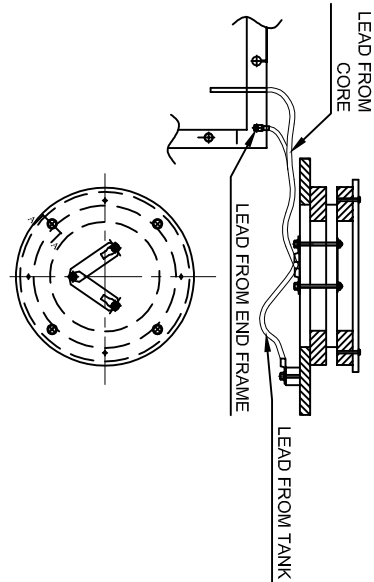
PROJECT	PATRATU VIDYUT UTPADAN NIGAM LIMITED
NAME	RAKESH
SIGN	
DATE	01.02.19
CHKD.	
APPD.	
KD/PP	
REV.	01

54020 00 699 3 ON GRD

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EARTHING DETAILS OF
CORE, END FRAME & TANK



INVENTORY NO.				SIGN.DATE				REF.DRG.NO.				THE INFORMATION ON THIS DOCUMENT IS THE PROPERTY OF BHARAT HEAVY ELECTRICALS LTD. IT MUST NOT BE USED DIRECTLY OR INDIRECTLY IN ANY WAY DETRIMENTAL TO THE INTEREST OF THE COMPANY.			
F				E				D				C			
REV				DATE				REV				DATE			
ALT.				ALT.				RAKESH				RAKESH			
CKD.				CKD.				KD				KD			
APPD.				APPD.				KD/PP				KD/PP			
ZONE				ZONE				NO CHANGE IN THIS SHEET.				NO CHANGE IN THIS SHEET.			
301				302				303				304			
PVUNL DRG. NO.				PVUNL DRG. NO.				9585-001-501-PVE-B-063				9585-001-501-PVE-B-063			
TYPE OF PRODUCT				TYPE OF PRODUCT				125 MVAR, 420KV 3-PHASE SHUNT REACTOR				125 MVAR, 420KV 3-PHASE SHUNT REACTOR			
PO. NO.				PO. NO.				01/PVUNL-CS-9585-001-2/NOA-SC DATED:08/03/18				01/PVUNL-CS-9585-001-2/NOA-SC DATED:08/03/18			
NAME OF CUSTOMER				NAME OF CUSTOMER				M/S PVUNL				M/S PVUNL			
305				306				307				308			
ADDITIONAL INFORMATION				ADDITIONAL INFORMATION				W.O. - 67049 - A - 517 - 01				W.O. - 67049 - A - 517 - 01			
STATUS OF DRAWING				STATUS OF DRAWING				TRE-1, TRM-3				TRE-1, TRM-3			
DISTRIBUTION OF PRINTS				DISTRIBUTION OF PRINTS				TITLE				TITLE			
OUTLINE GENERAL ARRANGEMENT				OUTLINE GENERAL ARRANGEMENT				(PLAN VIEW)				(PLAN VIEW)			
PROJECT				PROJECT				3 X 800MW PVUNL PATRATU TPP PHASE-1 (EPC)				3 X 800MW PVUNL PATRATU TPP PHASE-1 (EPC)			
PATRATU VIDYUT UTPADAN NIGAM LIMITED				PATRATU VIDYUT UTPADAN NIGAM LIMITED				BHARAT HEAVY ELECTRICALS LTD. BHOPAL				BHARAT HEAVY ELECTRICALS LTD. BHOPAL			
DRN				DRN				NAME				NAME			
SIGN				SIGN				DATE				DATE			
01.02.19				01.02.19				04.02.19				04.02.19			
04.02.19				04.02.19				04.02.19				04.02.19			
REV.				REV.				01				01			

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403

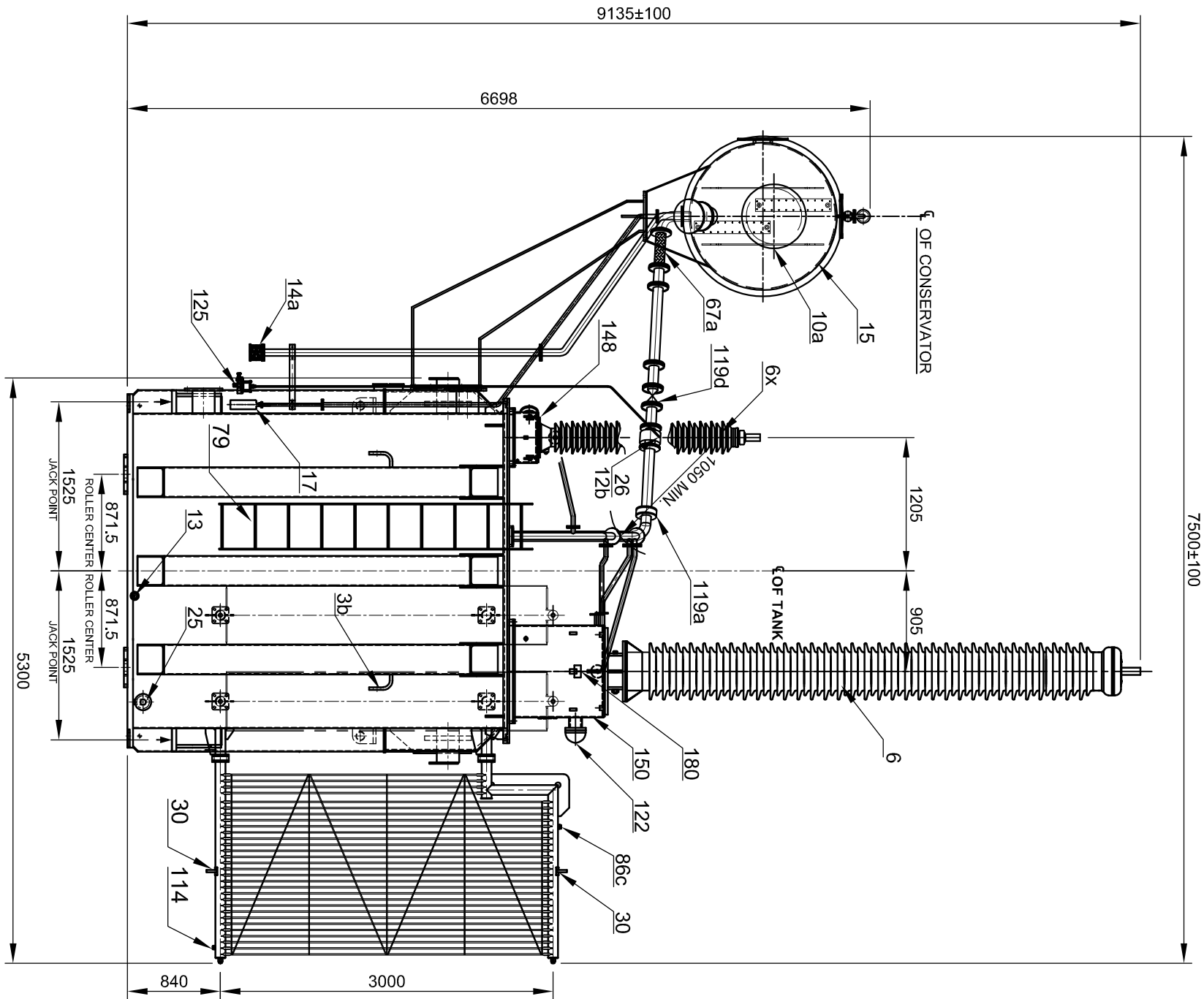
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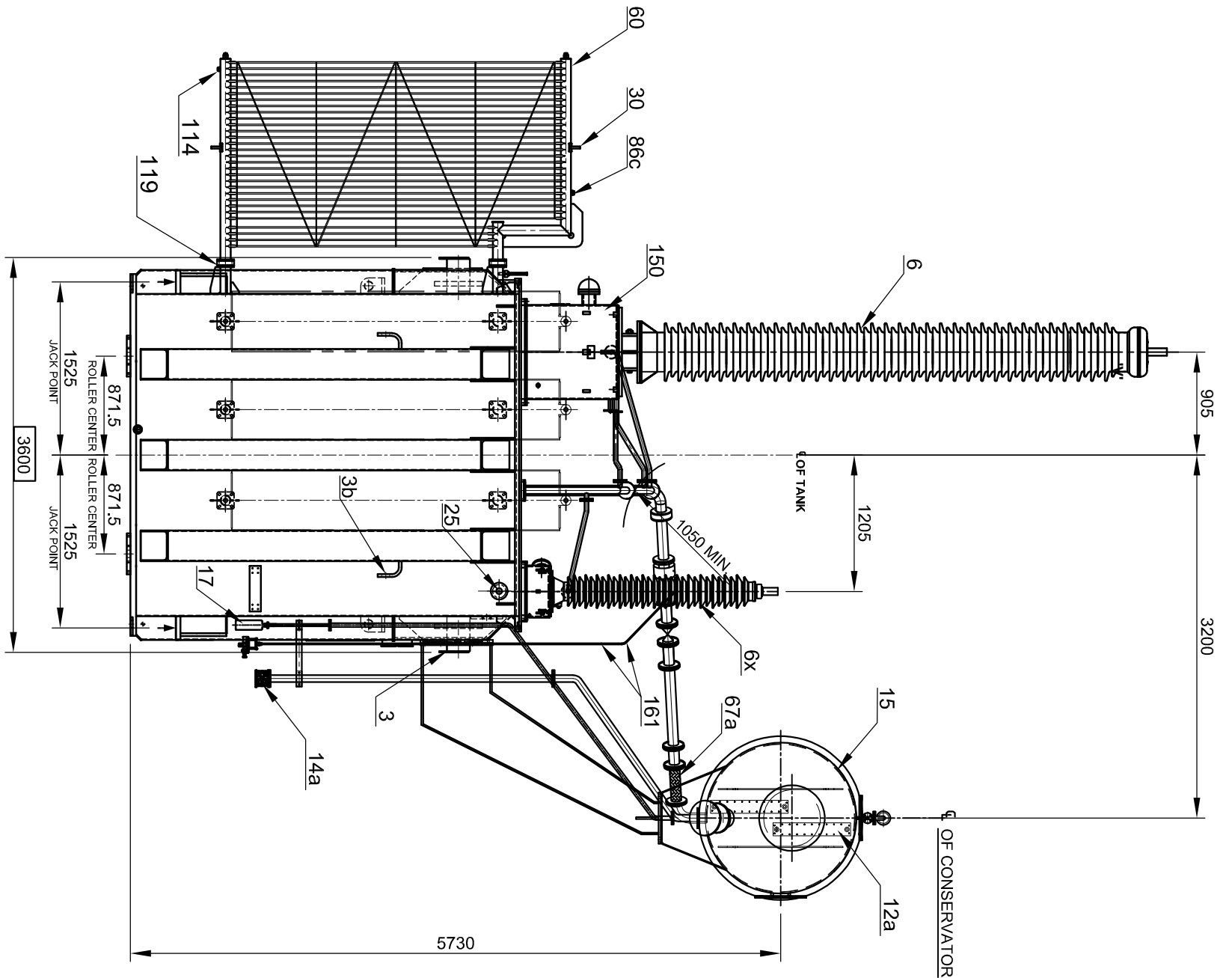
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VIEW-A



VIEW-B

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REF.DRG.NO.

SIGN.DATE

INVENTORY NO.

REV	DATE	ALT.	REV	DATE	ALT.	RAKESH	PVUNL DRG. NO.
CKD.			CKD.				9585-001-501-PVE-B-063
APPD.			APPD.				125 MVAR, 420KV 3-PHASE SHUNT REACTOR
ZONE							01/PVUNL-CS-9585-001-2/NOA-SC DATED:08/03/18
ZONE							NO CHANGE IN THIS SHEET.

REV	DATE	ALT.	REV	DATE	ALT.	RAKESH	PVUNL DRG. NO.
CKD.			CKD.				9585-001-501-PVE-B-063
APPD.			APPD.				125 MVAR, 420KV 3-PHASE SHUNT REACTOR
ZONE							01/PVUNL-CS-9585-001-2/NOA-SC DATED:08/03/18
ZONE							NO CHANGE IN THIS SHEET.

PATRATU VIDYUT UTPADAN NIGAM LIMITED

PROJECT 3 X 800MW PVUNL PATRATU TPP PHASE-1 (EPC)

W.O.	STATUS OF DRAWING	DEPT	CODE	WEIGHT(Kg)	SCALE	COMP.SCALE	TITLE
67049 - A - 517 - 01	TPR	BHARAT HEAVY ELECTRICALS LTD. BHOPAL	406	----	1:1	1:1	OUTLINE GENERAL ARRANGEMENT
DISTRIBUTION OF PRINTS							(END VIEW)
TRE-1, TRM-3							

DRN	NAME	SIGN	DATE
RAKESH			01.02.19
CKD.			04.02.19
APPD.			04.02.19
DRG. NO 3 469 00 02045			
SHEET 04 OF 05			
REV. 01			

INVENTORY NO.		SIGN.DATE		REF.DRG.NO.		IT MUST NOT BE USED DIRECTLY OR INDIRECTLY IN ANY WAY DETRIMENTAL TO THE INTEREST OF THE COMPANY.		59020 00 699 3		ON 3RD		502		503		504		505		506		507		508			
A		APPROXIMATE WEIGHT OF TRANSFORMER & OIL VOLUME		DESCRIPTION		WT. IN KG		OIL (L)		OIL IN CONSERVATOR		2250		OIL IN RADIATOR		3880		RADIATOR (WITHOUT OIL)		13044		OIL IN CONSERVATOR PIPE WORK		130			
B		APPROXIMATE WEIGHT & OIL QTY.		DESCRIPTION		WT. IN KG		OIL (L)		CORE AND WINDING		91700		TANK & FITTINGS		23705		BUSHINGS		2590		RADIATOR BANK & CONSERVATOR PIPE WORK		15835		6260	
				CONTROL CABINET		500				TOTAL OIL		46370		53300		TOTAL WEIGHT		180700									
C		TRANSPORT WEIGHT		DESCRIPTION		WT. IN TONNES		TRANSPORT WEIGHT (WITH OIL & BUSHINGS)		163		TRANSPORT WEIGHT (GAS FILLED WITHOUT BUSHINGS)		120													
D		NOTES :-		1. EACH VALVES SHALL BE PROVIDED WITH INDICATOR TO SHOW CLEAR POSITION OF THE VALVE.		2. WEIGHTS & OIL QUANTITIES ARE FINAL.		3. CABLE TRAY ON REACTOR TANK FOR CABLING OF INSTRUMENTS.		4. RADIATOR BANK IS PROVIDED WITH THERMOMETER POCKETS WITH CAPTIVE SCREW CAPS AT COOLER INLET AND OUTLETS.		5. LATCHING LUGS SHALL BE PROVIDED.		6. TERMINAL MARKING PLATE & RATING PLATE SHALL BE PROVIDED FOR BUSHINGS, VALVES, POCKETS, CT TBS ETC.		7. INSPECTION COVER SHALL BE PROVIDED FOR CORE/CLAMP/TANK EARTHING AND FOR ACCESSING CT CONDITION.		8. PRISMATIC LEVEL GAUGE SHALL BE PROVIDED BY BHEL.		9. ALL MAKE SHALL BE NTPC QA APPROVED.		10. MATERIALS, FITTINGS, ITEMS SHOWN OR NOT SHOWN TO AS PER CONTRACT.					
E		TABLE OF FITTINGS		ITEM NO		DESCRIPTION		QTY		ZONE		6		H V LINE BUSHINGS 420 KV 1250A		3		202-B		6X		H V NEUTRAL BUSHING 145 KV 1250A		1		203-C	
				122		CONNECTION BOX FOR C T TERMINAL (H V)		3		203-C		122a		CONNECTION BOX FOR C T TERMINAL(H V N) ON COVER		4		304-C		122b		CONNECTION BOX FOR C T TERMINAL (H V N)		1		303-D	
F		REV		DATE		ALT.		RAKESH		KD		CKD.		01		29.03.19		APPD.		KD/PP		APPD.		01		04.02.19	
G		ZONE		IT. 34 DESCRIPTION CORRECTED.		NAME OF CUSTOMER		M/S PVUNL		PVUNL DRG. NO.		9585-001-501-PVE-B-063		125 MVAR, 420KV 3-PHASE SHUNT REACTOR		PO. NO.		01/PVUNL-CS-9585-001-2/NOA-SC DATED:08/03/18									
H		TABLE OF FITTINGS		ITEM NO		DESCRIPTION		QTY		ZONE		6		H V LINE BUSHINGS 420 KV 1250A		3		202-B		6X		H V NEUTRAL BUSHING 145 KV 1250A		1		203-C	
				122		CONNECTION BOX FOR C T TERMINAL (H V)		3		203-C		122a		CONNECTION BOX FOR C T TERMINAL(H V N) ON COVER		4		304-C		122b		CONNECTION BOX FOR C T TERMINAL (H V N)		1		303-D	
I		TURRETS & BUSHINGS		ITEM NO		DESCRIPTION		QTY		ZONE		148		NEUTRAL TURRET		1		402-C		150		H V TURRETS		3		404-C	
				157		NEUTRAL GROUNDING ARRANGEMENT		1 SET		203-D		180		TERMINAL MARKING PLATE		4		404-C									
J		TABLE OF FITTINGS		ITEM NO		DESCRIPTION		QTY		ZONE		2		BILINGUAL RATING AND DIAGRAM PLATE (HINDI & ENGLISH)		1		204-D		2a		DOS & DONT'S INSTRUCTION PLATE		1		204-D	
				3		LIFTING BOLLARD (60000 KG. EACH)		4		407-D		3a		LIFTING LUGS FOR TANK COVER		6		304-C		3b		LASHING LUG		8		205-D	
K		TABLE OF FITTINGS		ITEM NO		DESCRIPTION		QTY		ZONE		4		EARTHING TERMINAL DIAGONALLY OPPOSITE (SIZE 20 TK X 50X 120 LG.) (STAINLESS STEEL)		2		206-E		8		NAME PLATES (ENGLISH & HINDI)		1+1		204-D	
				10		INSPECTION COVERS (25 KG EACH)		6+1		305-B		13		DRAIN PLUGS ON TANK 1" BSP		2		202-E		14		100 NB DRAIN GATE VALVE		1		204-E	
L		TABLE OF FITTINGS		ITEM NO		DESCRIPTION		QTY		ZONE		18		POCKET FOR OTI		1		305-D		18a		POCKET FOR WTI		1		306-D	
				18b		ORDINARY THERMOMETER WITH POCKET (1 NO ON TANK COVER)		1		306-C		18c		RTD WITH POCKET FOR OTI		1		305-C		18d		RTD WITH POCKET FOR WTI		1		305-C	
M		TABLE OF FITTINGS		ITEM NO		DESCRIPTION		QTY		ZONE		19		JACKING PADS 60000 KG EACH		4		206-E		21		OIL TEMPERATURE INDICATOR.					