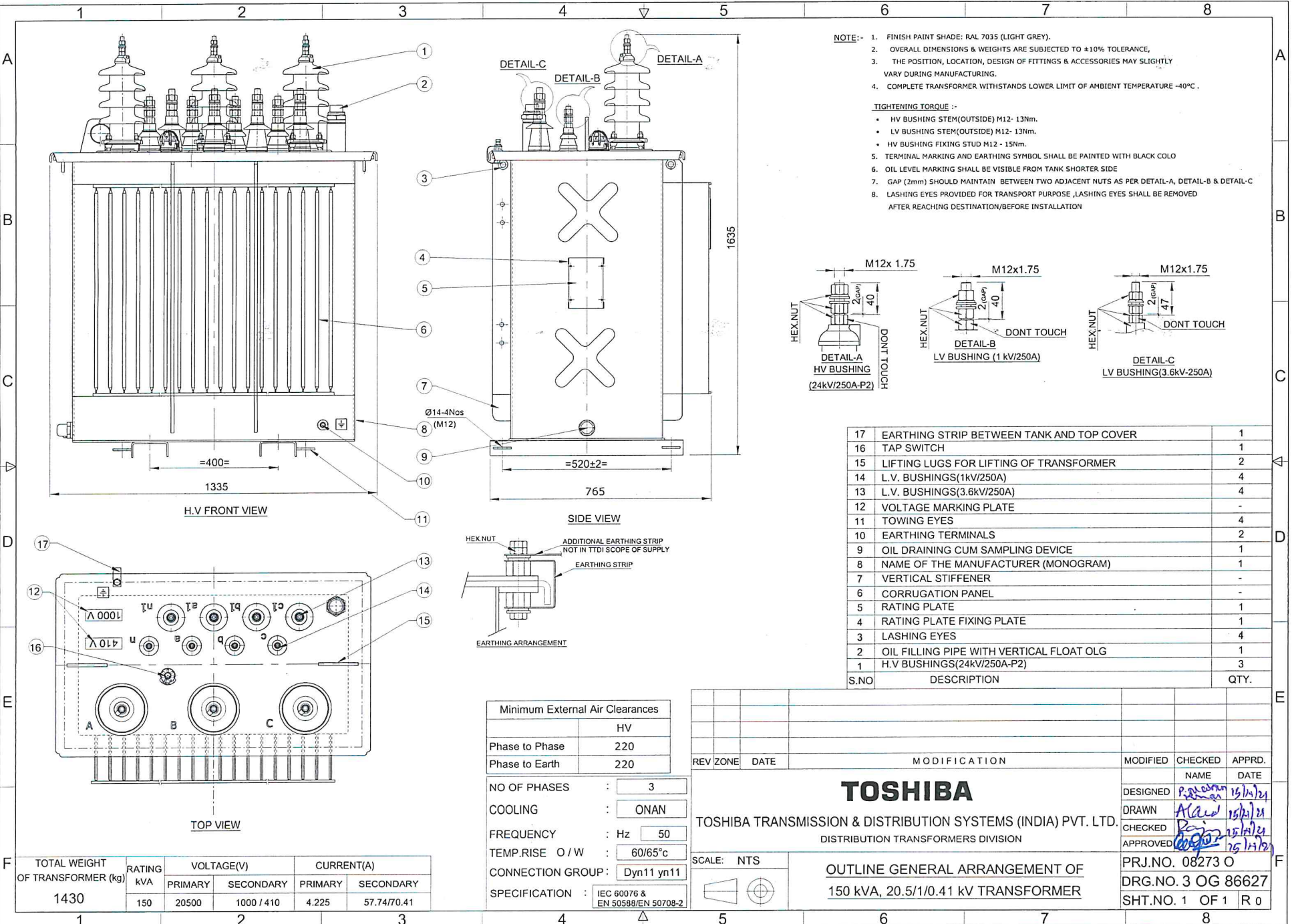
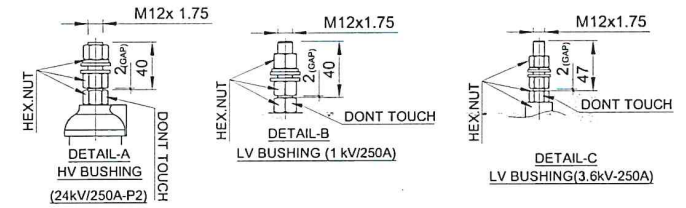


Product design meets OHSAS requirements (Ref: Work instructions DOC No. WIU10ENGG001). ALL DIMENSIONS ARE IN mm & WEIGHTS ARE IN kg UNLESS OTHERWISE SPECIFIED. FORMAT No.: Mech003/R0

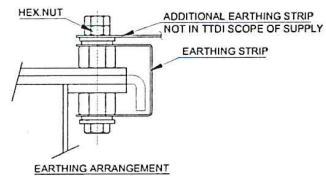
ALL INFORMATION CONTAINED IN THIS DOCUMENT IS CONFIDENTIAL AND THE PROPERTY OF TOSHIBA TRANSMISSION & DISTRIBUTION SYSTEMS (INDIA) PVT. LTD. REPRODUCTION OF THIS IN ANY FORM IS TO BE DONE WITH THE SPECIFIC PERMISSION OF THE ORGANISATION.



- NOTE:-**
1. FINISH PAINT SHADE: RAL 7035 (LIGHT GREY).
 2. OVERALL DIMENSIONS & WEIGHTS ARE SUBJECT TO ±10% TOLERANCE,
 3. THE POSITION, LOCATION, DESIGN OF FITTINGS & ACCESSORIES MAY SLIGHTLY VARY DURING MANUFACTURING.
 4. COMPLETE TRANSFORMER WITHSTANDS LOWER LIMIT OF AMBIENT TEMPERATURE -40°C.
- TIGHTENING TORQUE :-**
- HV BUSHING STEM(OUTSIDE) M12- 13Nm.
 - LV BUSHING STEM(OUTSIDE) M12- 13Nm.
 - HV BUSHING FIXING STUD M12 - 15Nm.
5. TERMINAL MARKING AND EARTHING SYMBOL SHALL BE PAINTED WITH BLACK COLOR
 6. OIL LEVEL MARKING SHALL BE VISIBLE FROM TANK SHORTER SIDE
 7. GAP (2mm) SHOULD MAINTAIN BETWEEN TWO ADJACENT NUTS AS PER DETAIL-A, DETAIL-B & DETAIL-C
 8. LASHING EYES PROVIDED FOR TRANSPORT PURPOSE , LASHING EYES SHALL BE REMOVED AFTER REACHING DESTINATION/BEFORE INSTALLATION



S.NO	DESCRIPTION	QTY.
17	EARTHING STRIP BETWEEN TANK AND TOP COVER	1
16	TAP SWITCH	1
15	LIFTING LUGS FOR LIFTING OF TRANSFORMER	2
14	L.V. BUSHINGS(1kv/250A)	4
13	L.V. BUSHINGS(3.6kv/250A)	4
12	VOLTAGE MARKING PLATE	-
11	TOWING EYES	4
10	EARTHING TERMINALS	2
9	OIL DRAINING CUM SAMPLING DEVICE	1
8	NAME OF THE MANUFACTURER (MONOGRAM)	1
7	VERTICAL STIFFENER	-
6	CORRUGATION PANEL	-
5	RATING PLATE	1
4	RATING PLATE FIXING PLATE	1
3	LASHING EYES	4
2	OIL FILLING PIPE WITH VERTICAL FLOAT OLG	1
1	H.V BUSHINGS(24kv/250A-P2)	3



Minimum External Air Clearances	
	HV
Phase to Phase	220
Phase to Earth	220

NO OF PHASES	: 3
COOLING	: ONAN
FREQUENCY	: Hz 50
TEMP. RISE O / W	: 60/65°C
CONNECTION GROUP	: Dyn11 yn11
SPECIFICATION	: IEC 60076 & EN 50588/EN 50708-2

REV	ZONE	DATE	MODIFICATION	MODIFIED	CHECKED	APPRD.
				NAME		DATE
TOSHIBA						
TOSHIBA TRANSMISSION & DISTRIBUTION SYSTEMS (INDIA) PVT. LTD. DISTRIBUTION TRANSFORMERS DIVISION						
SCALE: NTS			OUTLINE GENERAL ARRANGEMENT OF 150 kVA, 20.5/1/0.41 kV TRANSFORMER			
				DESIGNED	<i>P. Anand</i>	15/12/24
				DRAWN	<i>A. Reddy</i>	15/12/24
				CHECKED	<i>P. Anand</i>	15/12/24
				APPROVED	<i>P. Anand</i>	15/12/24
PRJ.NO. 08273 O						
DRG.NO. 3 OG 86627						
SHT.NO. 1 OF 1 R 0						

TOTAL WEIGHT OF TRANSFORMER (kg)	RATING KVA	VOLTAGE(V)		CURRENT(A)	
		PRIMARY	SECONDARY	PRIMARY	SECONDARY
1430	150	20500	1000 / 410	4.225	57.74/70.41

TOSHIBA	Toshiba Transmission & Distribution Systems (India) Pvt.Ltd. Distribution Transformers Division	Engineering
		Unit-10

**GUARANTEED TECHNICAL PARTICULARS
THREE PHASE DISTRIBUTION TRANSFORMER**

Enquiry No : 10889	Customer : KKM POWER Oy, Finland				
kVA : 150	kV :20.5/1/0.41	Phase : 3	Freq. : 50Hz	Cooling : ONAN	Doc No:

Sl. No.	Description	UNIT	150 kVA
1)	Make		Toshiba Transmission & Distribution Systems (India) Pvt. Ltd
2)	Type		Hermetically Sealed
3)	Phases	No.	Three
4)	Rating	kVA	150kVA (100kVA at 1kV + 50kVA at 0.41kV)
5)a)	Rated Voltage:		
	HV	V	20500
	LV	V	1000 / 410
b)	Highest voltage for equipment		
	HV	kV	24
	LV	kV	3.6 / 1
c)	HV Tapping Range		+5% to -5% insteps of 2.5%
6)	Frequency	Hz	50
7)	Vector Group		Dyn11yn11
8)	Insulation Level		
	HV	kV peak	125
	LV	kV peak	Not Applicable
9)	Power Frequency Level		
	HV	kV rms	50
	LV	kV rms	10 / 3
10)	Winding material		HV& LV – Aluminium
11)	Core Material		CRGO
12)	Temperature Rise:		
	Oil	° C	60
	Winding	° C	65
13)	Losses		
	No Load Losses at rated Voltage and Frequency	Watt	179 (MAX)
	Load Losses at 75 ° C	Watt	1666 (MAX)
14)	Impedance Voltage	%	3.2 (between 20.5 & 1kV at 100kVA) 4 (between 20.5 & 0.41kV at 100kVA) (+/- IEC Tolerance Applicable)
15)	Percentage Resistance	%	1.11
16)	Efficiency at 0.8 PF:		
	Full Load	%	98.49

TOSHIBA		Toshiba Transmission & Distribution Systems (India) Pvt.Ltd. Distribution Transformers Division		Engineering
				Unit-10
	¾ Full Load	%		98.78
	½ Full Load	%		99.02
17)	Terminal Arrangement:			
	HV			Bare Bushings – Porcelain-24kV/250A-P2
	LV – 410V			Bare Bushings – Porcelain-1kV/250A
	LV – 1000V			Bare Bushings – Porcelain-3.6kV/250A
18)	Overall Dimensions:			
	Length	mm		1340
	Width	mm		800
	Height	mm		1780
19)	Overall Weight			
	Total Weight	Kg.		1510
Applicability of Optional Fittings				
20)	Provision for Rollers			No
21)	Pole Mounting consoles			No
22)	HV bushing flags/connector/lug			No
23)	LV bushing flags/ connector/lug			No
24)	HV Tapping/Tap Switch			Yes
25)	Over pressure valve			No
26)	Thermometer pocket			No
27)	Surge arrester holders			No

Note:

1. Actual overall dimensions and weights are subjected to +/-10% Tolerance,
2. All the efficiencies are calculated at the nominal values of NLL, LL AT 75 Deg C and % Z at 75 Deg C.
3. * With Rollers transformer height will increase by 100mm.
4. If HV flags required transformer overall height will increase.
5. Paint: Class C4 corrosion protection paint will be provided instead of hot dip galvanizing.
6. No load current is max 2% of full load current at rated voltage.