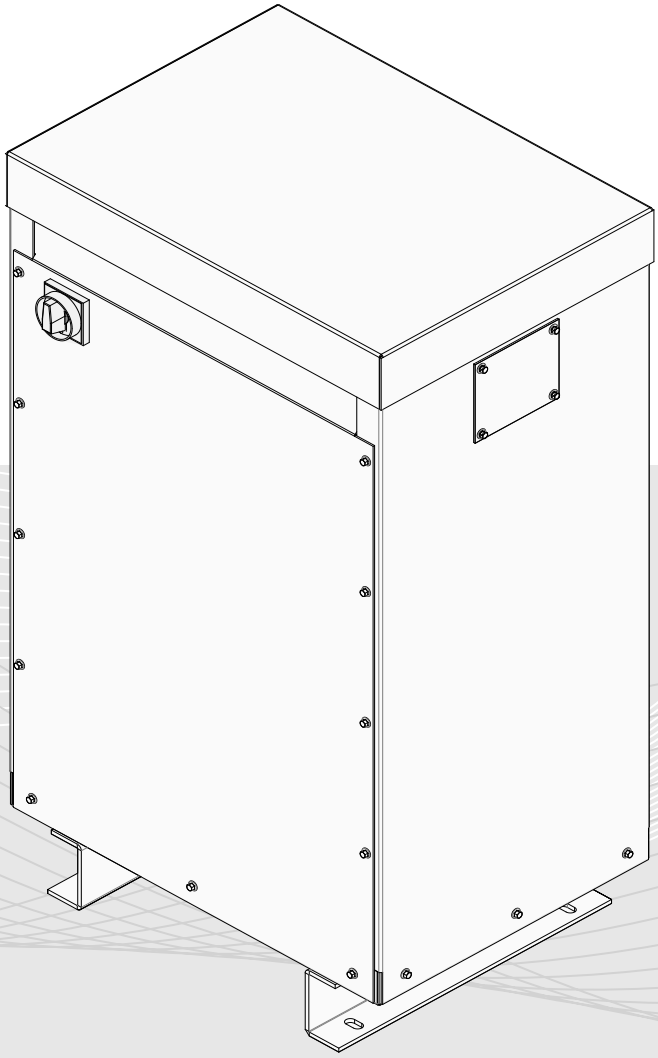
TRANSFORMERS

O&M MANUAL

Class I PSP/ASP Transformer 1ph Lightweight Aluminium Range



- 400/650VAC
- 230/650VAC
- 650/650VAC
- 400/230VAC
- 230/230VAC
- 650/230VAC

English

Doc Ref TECH149 Issue 4

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Version	Implemented By	Revision Date	Approved By	Approval Date	Reason
1	N.D.H.	24/04/17	B.M.	24/04/17	O&M Manual Creation
2	C.J.W.	06/05/20	N.D.H.	06/05/20	Changes to 10, 15 & 20KVA GA - Dimension 'D'.
3	C.J.W.	15/08/22	N.D.H.	15/08/22	Voltage Variants Added
4	C.J.W.	23/06/23	N.D.H.	23/06/23	Product Acceptance Numbers Addded

1. INTRODUCTION
1.1 SAFETY NOTES

SAFETY PRECAUTIONS	
GENERAL	The need for Personal Protection Equipment (PPE) must be assessed prior to undertaking installation or maintenance operations.
HEAVY EQUPMENT	All manual handling must be in accordance with the Manual Handling Operations Regulation 1992
LETHAL VOLTAGES	Electrical power within this system/equipment is at a level considered, by the low voltage directive 73/23/EEC, to be sufficient to kill. Always assume conductors are live until proved dead. Before attempting any maintenance task, ensure that equipment is isolated from electrical supply. When the electrical supply cannot be isolated, testing/maintenance tasks are to be undertaken only by personnel who are aware of the dangers involved and after all necessary precautions have been taken.
WORKING PRACTICES	Unauthorized interruption of the system may endanger the safe operation of the railway. Before attempting any maintenance on the equipment, obtain the necessary permission from the relevant authority. Ensure the consequence of any interruption has been fully considered and understood. If a component or equipment becomes overheated or burnt, a toxic fume hazard may exist. Isolate the power to the equipment, ventilate the area and allow the equipment time to cool before carrying out repairs. This equipment does not liberate any toxic or injurious gases during normal operation. When working on equipment, especially in the confines of a case, do not wear metal rings, bracelets, watches, etc. These articles can cause personal injury or damage to equipment by becoming entangled in components or causing a short circuit.

1.2 PURPOSE

This O&M Manual defines the operating & Installation guidelines for the ATL Transformers, 10 - 80KVA range of aluminium 400/650V, 230/650V, 650/650V, 400/230V, 230V/230V & 650/230V PSP/ASP transformer ranges for use within a standard Network Rail approved Principal Supply Point.

1.3 GUARANTEE

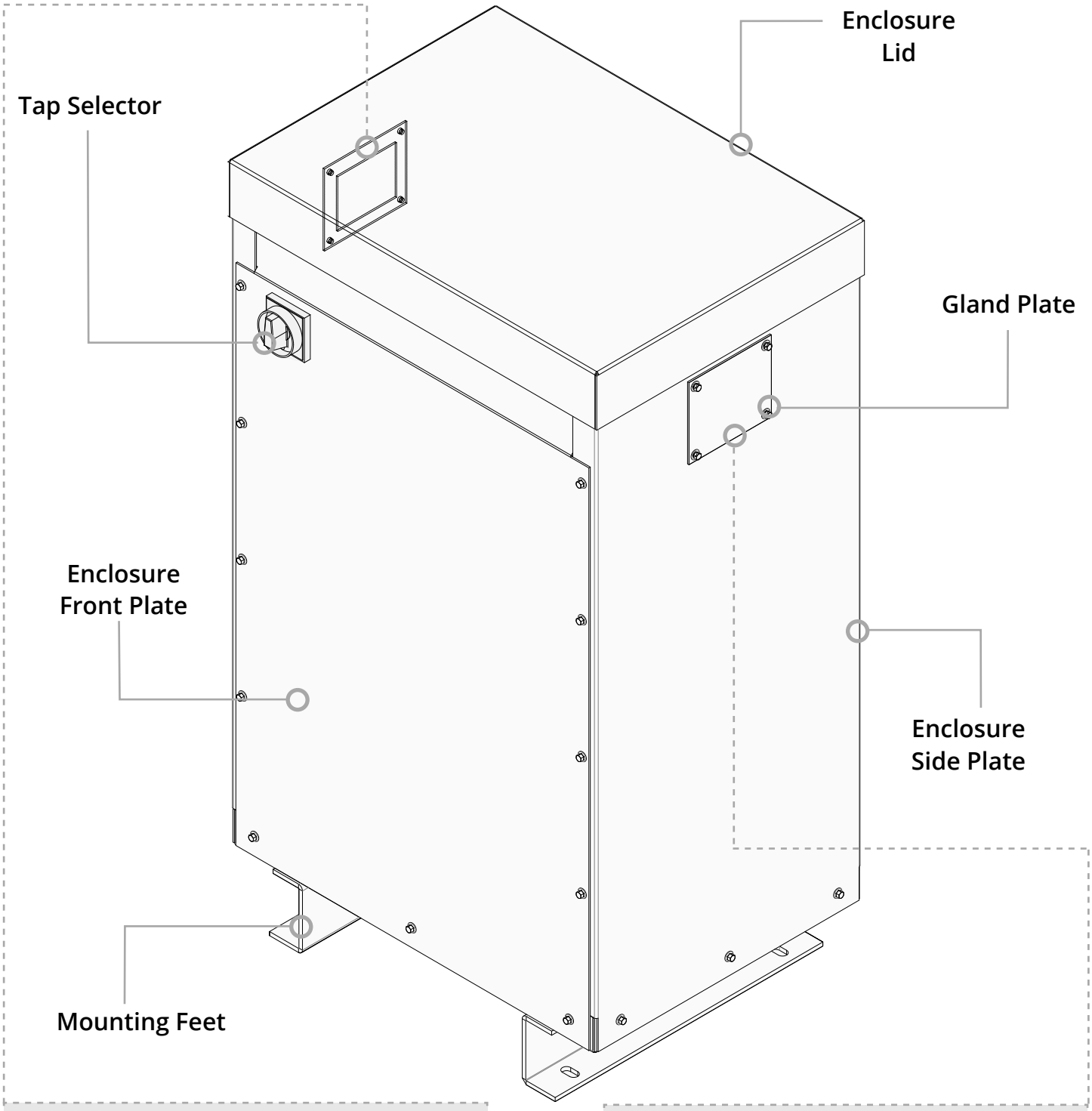
The function and safety of the equipment is only guaranteed if the warning and safety instructions included in this manual are adhered to.

ATL Transformers Ltd is not liable for any personal injury or damage to property that occurs as a result of the warning and manual being disregarded.

ATL Transformers Ltd does not accept any liability or warranty for damage due to the use of non-approved spare parts and accessories.

2. PRODUCT DESCRIPTION
2.1 KEY PSP/ASP eco-rail® FEATURES

The enclosed transformer has an ingress protection level of IP32 and is suitable for indoor Railway Installations. Primary & Secondary Class I terminals are segregated within separate terminals on the transformer. The Transformer features a tap changer which allows quick and simple tap selection.



Primary Class I Entry
Remove gland plate to for cable entry for Class I Primary Connections

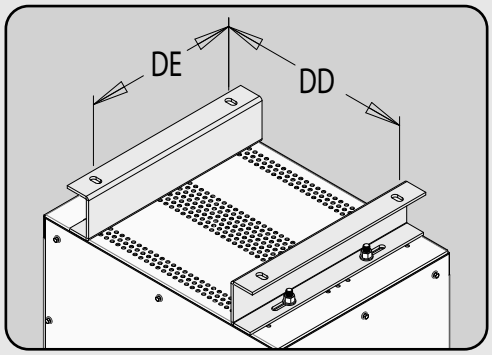
Secondary Class I Entry
Remove gland plate to for cable entry for Class I Secondary Connections

2.2 PRODUCT OPERATION

Supplied as standard for Class I distribution systems this range of transformers are designed to be fed from a nominal 50Hz supply voltage (+4% to -6%). Input and output cables are to be routed through the gland plates provided with suitable conduit and glands, terminated above the transformer Internally to the screw clamp terminals provided. Conduit should meet the requirements of NR/L2/SIGELP/27410 Issue 2 & NR/L2/SIGELP/27421 & 27422.

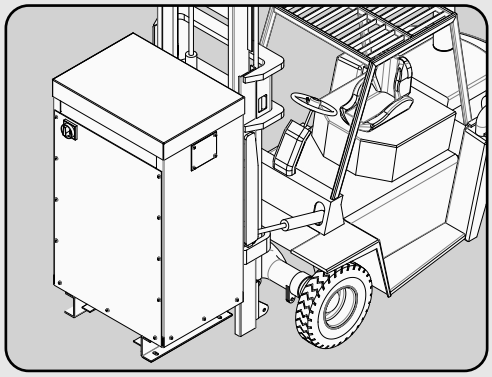
- On class I models an earth terminal is provided and shall always be connected to the protective earth network.
- Cable glands shall always be removed where hole profiles for conduit are being made. Never drill holes on transformer panels in situ as swarf can enter the enclosure and short circuit the magnetics when energized.
- All cabling should meet the requirements of NR standards: NR/L2/SIGELP/27410 Issue 2 and NR/L2/SIGELP/27421 & 27422

3. PRODUCT INSTALLATION
3.1 MOUNTING WITHIN APPARATUS HOUSING



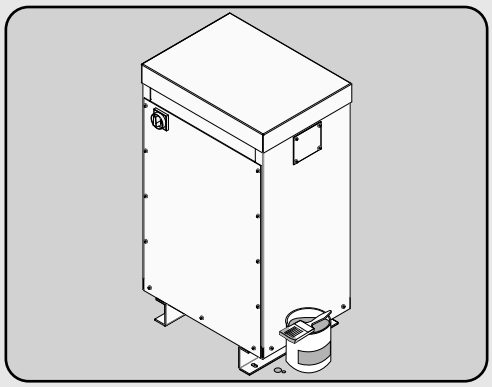
1. Dimensioning

The transformers shown in general arrangement drawings in Appendix A are designed to be securely fixed to a secure and level base. If Integrating within switch panel ensure that the plinth bar work is capable of bearing the weight of the transformer. Footprint and fixing points are summarised with the tables of Appendix A. Always ensure that there is 100mm clearance around the transformer taking care not to obstruct or impede on the transformers cooling louvres.



2. Lifting

Safe lifting practices should be observed when handling heavy transformers. These units can be lifted using a forklift or pallet truck, ensure that the transformer is secure before transporting. Please refer to weights in Appendix A and consult the manufactuer's forklift/pallet truck manual before lifting.



3. Repercussions

Due diligence and care should be taken not to damage any installed cable entry glands or couplings during the installation process as this could compromise the safety integrity of the unit. In the event that the paint finish is damaged during installation a touch up pen is available for aesthetics however paint is supplementary to the base material and not critical to the units operational integrity.

3.2 CABLE CONNECTION

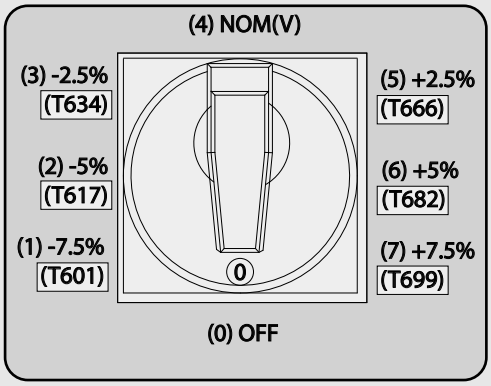
Primary & Secondary terminals are accessible within the enclosure by removal of the transformer lid. Cables glands are provided either side of the enclosure for cable access and are removeable for customization of gland and cable entry requirements.

- On class I models an earth terminal is provided and shall always be connected to the protective earth network.
- Cable glands shall always be removed where hole profiles for conduit are being made. Never drill holes on transformer panels in situ as swarf can enter the enclosure and short circuit the magnetics when energized.
- Cables should be installed correctly and not resting on top of the transformer core. Adequate bend radius's should be observed on the installed cables and all terminals checked for good compression prior to energization.
- All cabling should meet the requirements of NR standards: NR/L2/SIGELP/27410 Issue 2 and NR/L2/SIGELP/27421 & 27422

3.3 VOLTAGE SELECTION

INPUT: Monitor the supply voltage with a calibrated DVM to check your distribution is within tolerance +4%/-6%. Connect Supply cables to the provided Input Voltage terminals ensuring they are routed through suitable conduit and secure before energizing the transformer.
OUTPUT: The output tap selector facilitates feeder Voltage adjustment, this can be used to reset, reduce or boost output voltages according to your feeder requirements. Connect Output cables to the provided terminals ensuring they are routed through suitable conduit and secure. Select the required output voltage using the on-board tap selector and reinstate the transformer lid before energizing the transformer.

NOTE: - The on-load tap selector should not be used for isolation and that the transformer should be isolated from the supply before removing covers.



1. On-Load Tap Selector

The Voltage Selector can be found on the front of the enclosure at the top left, the tap selector automatically turns on a 45° and can be turned a full 360° clockwise or anti-clockwise with 8 different settings. The standard output for 3ph PSP/ASP range is 650V.

4. PRODUCT MAINTENANCE
4.1 ROUTINE MAINTENANCE

These units are non serviceable and require observational maintenance only to their Terminals, cables and enclosure panels which must be intact and installed as originally supplied.
Always ensure that there is 100mm clearance around the transformer taking care not to obstruct or impede on the transformers cooling louvres.
Do not place any foreign bodies on top of the enclosure lid or inside the transformer housing.

This does not supersede any maintenance tasks or scheduling procedures network rail deem necessary and set in accordance with. NR/SP/SIG/10661 Signalling Maintenance Task Intervals. Each unit is provided with a serial number and part code reference. This Information is located on the transformer rating plate and should be quoted at any Point where the unit is examined and suspected to be compromised.

4.2 TESTING IN SERVICE

1. Isolate incoming supply, when isolated remove transformer lid and disconnect Input supply and Secondary Output connections.

2. Using a calibrated 500V d.c insulation resistance tester check insulation resistance. Primary to body (Earth) Secondary to body (Earth) & Primary to Secondary.

3. Check incoming supply voltage at protection, If within tolerance Isolate supply at the protection and connect Incoming supply cables onto the respective transformer terminals.

4. Using a DVM and with the transformer energised, safely check at the output terminals secondary tap voltages are within 2% using the tap selector to cycle transformer taps accordingly. Check Secondary tap voltages which should be within 2% of the terminal voltage.

5. Isolate Supply and when safe re-connect Secondary Output cables.

6. Energise the transformer and using a calibrated ammeter check the load current.

Relevant safety checks & testing should be conducted in addition to these checks & in line with Network Rails controlled safety & inspection procedures prior to energizing the transformer.

4.3 MAINTENANCE AFTER FLOODING

Please note that the transformer should be sent back to ATL Transformers if the transformer has sustained flooding

Please see section 7 of this document for contact details.

4.4 SPARE PARTS

Item	Part Reference
TOUCH UP PAINT	RS-PAINT-RAL7032-125ml

5. TRAINING & COMPETENCE

The transformers are to be installed within a Network Rail approved Structure by trained & authorized Network Rail installers only.

All maintenance activities shall be undertaken by trained and authorized Network Rail crews and/or contractors.

6. PRODUCT MAINTENANCE

6.1 DATA SHEET REFERENCE

Refer to manufacturers Datasheets for required specification.

6.2 NR COMPONENT APPROVALS

CUSTOMER	DECLARATION OF CONFORMITY
	NETWORK RAIL
PRODUCT NAME	ATL 400/650V, 230/650V, 650/650, 400/230, 230/230 & 650/230 Signalling Power Transformers
ATL DATA SHEETS	AVAILABLE ON REQUEST: DOC REF TECH141
NETWORK RAIL CERTIFICATE(S)	PA05/07022

6.3 DECLARATION OF CONFORMITY

ATL Transformers claim conformity for this family of product(s) manufactured at our Manchester facility. In accordance with the specifications referenced below. This declaration is based upon our technical file which contains data supporting our claims.

COMPLIANCE SPECIFICATION(S)	
EC Directives	2006/95/EC Low Voltage Directive
Harmonized Standards	IEC 60076 - Power Transformers
Internal Standards	ISO 9001: 2015 BSI Audited Quality Assurance
Customer Standards/Specifications	BS EN 61558-1:2009 - Safety of power transformers, power supplies, reactors and similar products. NR/L2/SIGELP/30007 Issue3 - Product Specification for Power Transformers for Signalling Systems. IEC 60076 – Power Transformers BR 924A – Air Cooled Power Transformers for Railway Signalling
This declaration is made by: Mr. Neville D Haide (Company Director) ATL Transformers Ltd. Hanson Close, Middleton, Manchester, Lancashire, UK, M24 2HD	
Declaration by: N. Haide	Date 25/03/2015

7. MANUFACTURER CONTACTS

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Hanson Street
Middleton
Manchester
Lancashire
UK
M24 2HD

Tel: +44 (0) 161 653 0902 Monday – Thurs 08:00 – 17:15 Friday 8:00 – 13:00
Web: www.atltransformers.co.uk
Email: sales@atltransformers.co.uk

8. REGULATORY REQUIREMENTS
APPLICABLE STANDARDS

BS EN 50122-1 – Railway Applications – Fixed Applications – Part 1 Protective Provisions Relating to Electrical Safety & Earthing.
BS EN 50125-2 – Railway applications. Environmental conditions
for equipment. Fixed electrical installations.
BS EN 50125-3 – Railway applications. Environmental conditions for equipment. Equipment for signalling and telecommunications.
BS EN 60529 – Degrees of protection provided by enclosures.
BS EN 62262 – Degrees of protection provided by enclosures for electrical equipment against mechanical impacts (IK code).
BS EN 61558 – Safety of power transformers, power supplies, reactors and similar products.
BS EN 62262 – Degrees of protection provided by enclosures for electrical equipment against mechanical impacts (IK code).
NR/L1/ELP/27000 – Asset Management Policy for Electrical Power assets.
NR/L2/SIGELP/27408 – Product Specification for Signalling
Power Distribution Cables
NR/GN/ELP/27315 – Management of Power Supplies for Telecoms Equipment.
NR/L2/SIGELP/27410 Issue 2
NR/L2/SIGELP/27421 & 27422 - Flexible Conduits & Glands
NR/L2/SIGELP/27410 – Specification for Class II Based Signalling Power distribution systems.
NR/L2/SIG/11201 – Signalling Design Handbook.
NR/L2/SIG/30050 - Functional Signalling Power Circuits.
NR/L3/SIG/10663 – Signal Maintenance Specifications.
NR/SP/SIG/11221 – Signalling Works Testing.
NR/SP/SIG/11231 – Signalling Maintenance Testing Handbook.
NR/L2/ELP/21120 – E & P Records Management Process.

9. FREQUENTLY ASKED QUESTIONS

1) What tools are required to access the Transformer for termination?

WARNING

Ensure supply is Isolated before removing the Lid or Gland Plates. Ensure that the Gland Plates and Lid are bolted back on before exerting power supply.

- **To access Terminals:**
  To access Terminals the bolts securing the enclosure lid/gland plates door must be unscrewed using an M8-M10 spanner or Socket.

  The terminals are located on top of the transformer on the angled brackets and are labelled accordingly to the wiring schematic in Appendix C.

  If Ferrules are not being used cables should be stripped 10mm and secured into the terminals. The recommended torque setting is between.

NOTE: - All enclosure covers/plates must be replaced after terminating cables to maintain protection.

All electrical termination is by flat head terminal driver.

Cables are connected directly onto the terminals of the transformer, these are located on top of the transformer inside the enclosure and are clearly marked.

2) Where do I connect the cables?

- The cables are connected on the terminals of the Primary, these are located on top of the transformer inside the transformer, the same for the secondary terminals they're located on top of the transformer inside the enclosure. Please refer to Appendix C on how to wire the cables.

3) How do I gain access to the different sections of the assembly?

- This unit is designed to offer access to terminals only for installation purposes. The terminals are accessible via removing the lid or the gland plates on either side of the enclosure.

4) What is the procedure for installing & connecting cables?

- All cables shall be installed in accordance with NR Installation handbook.

5) Is there a start-up or switch on procedure?

- The assembly must be installed, commissioned & tested in accordance with NR Installation handbook by qualified person/s before power is applied to any part of the system.

6) The assembly is damaged or not functioning correctly, who shall I Contact for spare or replacement parts?

- Contact:
  ATL Transformers Ltd - details are given in section 7 of this document.

10. PRODUCT WARRANTY

These products are under ATL's standard warranty which is 12 months. Product warranty document is available upon request.

11. END OF LIFE DISPOSAL

All Electrical equipment must be disposed of in accordance with the Wee Directive 2002/96/EG.

End of life or completed equipment may be returned to ATL Transformers for Disposal or alternatively must be issued to a certified waste disposal vendor.

12. ECO-RAIL® PSP/ASP TRANSFORMER RANGE

- Table-12.1 400/650V 3ph Lightweight Transformer Product Range

Part No.	Description	Catalogue No.
T2987	CLASS I ASP/PSP LIGHTWEIGHT TRANSFORMER 5,000VA	0054/215008
T2909	CLASS I ASP/PSP LIGHTWEIGHT TRANSFORMER 10,000VA	0054/215009
T3077	CLASS I ASP/PSP LIGHTWEIGHT TRANSFORMER 15,000VA	0054/215010
T2910	CLASS I ASP/PSP LIGHTWEIGHT TRANSFORMER 20,000VA	0054/215011
T3078	CLASS I ASP/PSP LIGHTWEIGHT TRANSFORMER 25,000VA	0054/215012
T2911	CLASS I ASP/PSP LIGHTWEIGHT TRANSFORMER 30,000VA	0054/215013

- Table-12.1 400/650V Lightweight Transformer Product Range Continued.

Part No.	Description	Catalogue No.
T3079	CLASS I ASP/PSP LIGHTWEIGHT TRANSFORMER 35,000VA	0054/215014
T2912	CLASS I ASP/PSP LIGHTWEIGHT TRANSFORMER 40,000VA	0054/215015
T3103	CLASS I ASP/PSP LIGHTWEIGHT TRANSFORMER 50,000VA	0054/215016
T2913	CLASS I ASP/PSP LIGHTWEIGHT TRANSFORMER 60,000VA	0054/215017
T3320	CLASS I ASP/PSP LIGHTWEIGHT TRANSFORMER 80,000VA	0054/215018

- Table-12.2 230/650V Lightweight Transformer Product Range

Part No.	Description	Catalogue No.
T2987-1	CLASS I ASP/PSP LIGHTWEIGHT TRANSFORMER 5,000VA	0054/215019
T2909-1	CLASS I ASP/PSP LIGHTWEIGHT TRANSFORMER 10,000VA	0054/215020
T3077-1	CLASS I ASP/PSP LIGHTWEIGHT TRANSFORMER 15,000VA	0054/215021
T2910-1	CLASS I ASP/PSP LIGHTWEIGHT TRANSFORMER 20,000VA	0054/215022
T3078-1	CLASS I ASP/PSP LIGHTWEIGHT TRANSFORMER 25,000VA	0054/215023
T2911-1	CLASS I ASP/PSP LIGHTWEIGHT TRANSFORMER 30,000VA	0054/215024
T3079-1	CLASS I ASP/PSP LIGHTWEIGHT TRANSFORMER 35,000VA	0054/215025
T2912-1	CLASS I ASP/PSP LIGHTWEIGHT TRANSFORMER 40,000VA	0054/215026
T3103-1	CLASS I ASP/PSP LIGHTWEIGHT TRANSFORMER 50,000VA	0054/215027
T2913-1	CLASS I ASP/PSP LIGHTWEIGHT TRANSFORMER 60,000VA	0054/215028
T3320-1	CLASS I ASP/PSP LIGHTWEIGHT TRANSFORMER 80,000VA	0054/215029

- Table-12.3 650V/650V Lightweight Transformer Product Range

Part No.	Description	Catalogue No.
T2987-2	CLASS I ASP/PSP LIGHTWEIGHT TRANSFORMER 5,000VA	0054/215030
T2909-2	CLASS I ASP/PSP LIGHTWEIGHT TRANSFORMER 10,000VA	0054/215031
T3077-2	CLASS I ASP/PSP LIGHTWEIGHT TRANSFORMER 15,000VA	0054/215032
T2910-2	CLASS I ASP/PSP LIGHTWEIGHT TRANSFORMER 20,000VA	0054/215033

- Table-12.3 650V/650V Lightweight Transformer Product Range Continued.

Part No.	Description	Catalogue No.
T3078-2	CLASS I ASP/PSP LIGHTWEIGHT TRANSFORMER 25,000VA	0054/215034
T2911-2	CLASS I ASP/PSP LIGHTWEIGHT TRANSFORMER 30,000VA	0054/215035
T3079-2	CLASS I ASP/PSP LIGHTWEIGHT TRANSFORMER 35,000VA	0054/215036
T2912-2	CLASS I ASP/PSP LIGHTWEIGHT TRANSFORMER 40,000VA	0054/215037
T3103-2	CLASS I ASP/PSP LIGHTWEIGHT TRANSFORMER 50,000VA	0054/215038
T2913-2	CLASS I ASP/PSP LIGHTWEIGHT TRANSFORMER 60,000VA	0054/215039
T3320-2	CLASS I ASP/PSP LIGHTWEIGHT TRANSFORMER 80,000VA	0054/215040

- Table-12.4 400/230V Lightweight Transformer Product Range

Part No.	Description	Catalogue No.
T2987-3	CLASS I ASP/PSP LIGHTWEIGHT TRANSFORMER 5,000VA	0054/215041
T2909-3	CLASS I ASP/PSP LIGHTWEIGHT TRANSFORMER 10,000VA	0054/215042
T3077-3	CLASS I ASP/PSP LIGHTWEIGHT TRANSFORMER 15,000VA	0054/215043
T2910-3	CLASS I ASP/PSP LIGHTWEIGHT TRANSFORMER 20,000VA	0054/215044
T3078-3	CLASS I ASP/PSP LIGHTWEIGHT TRANSFORMER 25,000VA	0054/215045
T2911-3	CLASS I ASP/PSP LIGHTWEIGHT TRANSFORMER 30,000VA	0054/215046
T3079-3	CLASS I ASP/PSP LIGHTWEIGHT TRANSFORMER 35,000VA	0054/215047
T2912-3	CLASS I ASP/PSP LIGHTWEIGHT TRANSFORMER 40,000VA	0054/215048
T3103-3	CLASS I ASP/PSP LIGHTWEIGHT TRANSFORMER 50,000VA	0054/215049
T2913-3	CLASS I ASP/PSP LIGHTWEIGHT TRANSFORMER 60,000VA	0054/215050
T3320-3	CLASS I ASP/PSP LIGHTWEIGHT TRANSFORMER 80,000VA	0054/215051

- Table-12.5 230/230V Lightweight Transformer Product Range

Part No.	Description	Catalogue No.
T2987-4	CLASS I ASP/PSP LIGHTWEIGHT TRANSFORMER 5,000VA	0054/215052
T2909-4	CLASS I ASP/PSP LIGHTWEIGHT TRANSFORMER 10,000VA	0054/215053

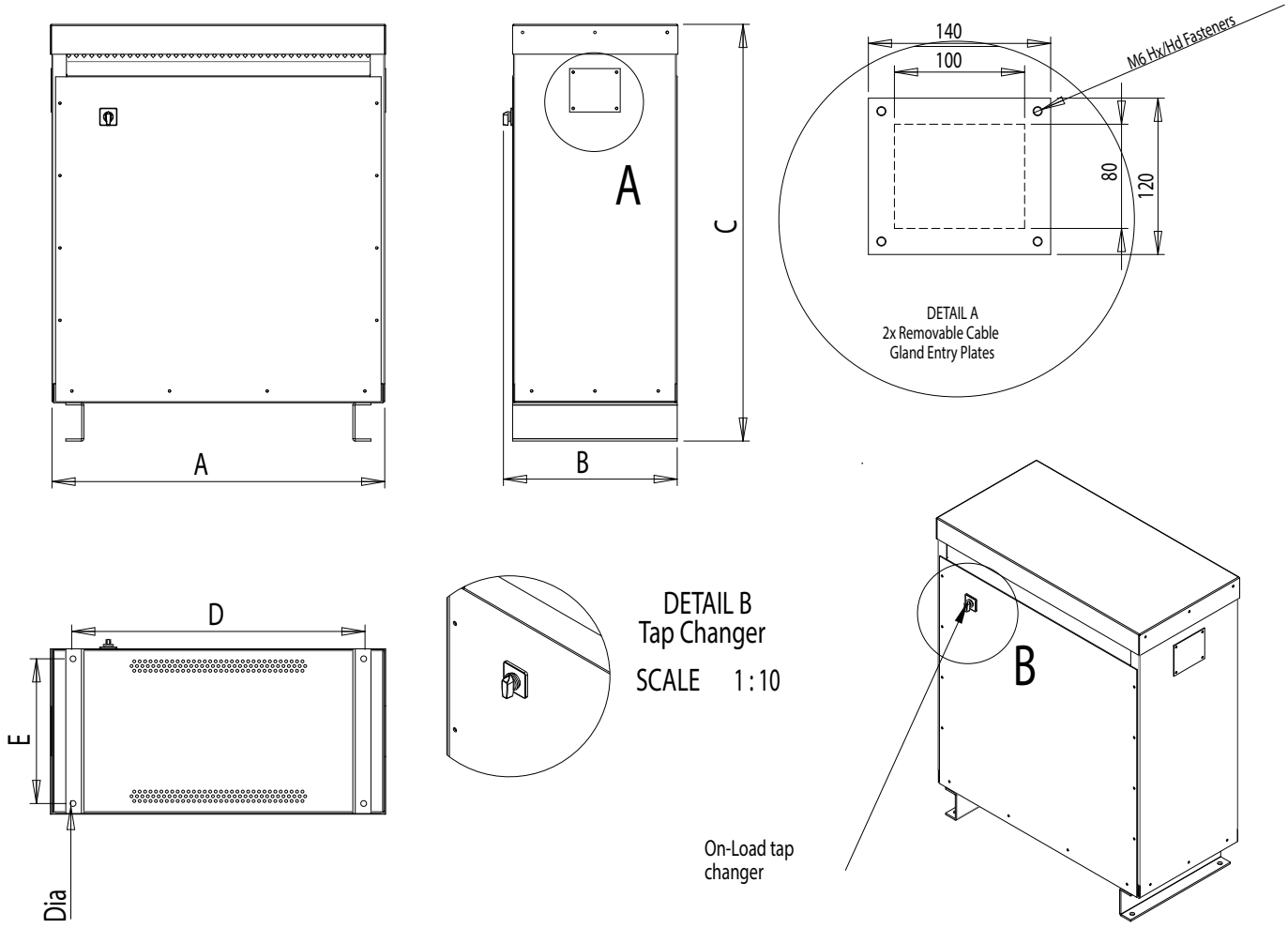
- Table-12.5 230/230V Lightweight Transformer Product Range Continued.

Part No.	Description	Catalogue No.
T3077-4	CLASS I ASP/PSP LIGHTWEIGHT TRANSFORMER 15,000VA	0054/215054
T2910-4	CLASS I ASP/PSP LIGHTWEIGHT TRANSFORMER 20,000VA	0054/215055
T3078-4	CLASS I ASP/PSP LIGHTWEIGHT TRANSFORMER 25,000VA	0054/215056
T2911-4	CLASS I ASP/PSP LIGHTWEIGHT TRANSFORMER 30,000VA	0054/215057
T3079-4	CLASS I ASP/PSP LIGHTWEIGHT TRANSFORMER 35,000VA	0054/215058
T2912-4	CLASS I ASP/PSP LIGHTWEIGHT TRANSFORMER 40,000VA	0054/215059
T3103-4	CLASS I ASP/PSP LIGHTWEIGHT TRANSFORMER 50,000VA	0054/215060
T2913-4	CLASS I ASP/PSP LIGHTWEIGHT TRANSFORMER 60,000VA	0054/215061
T3320-4	CLASS I ASP/PSP LIGHTWEIGHT TRANSFORMER 80,000VA	0054/215062

- Table-12.6 650/230V Lightweight Transformer Product Range

Part No.	Description	Catalogue No.
T2987-5	CLASS I ASP/PSP LIGHTWEIGHT TRANSFORMER 5,000VA	0054/215063
T2909-5	CLASS I ASP/PSP LIGHTWEIGHT TRANSFORMER 10,000VA	0054/215064
T3077-5	CLASS I ASP/PSP LIGHTWEIGHT TRANSFORMER 15,000VA	0054/215065
T2910-5	CLASS I ASP/PSP LIGHTWEIGHT TRANSFORMER 20,000VA	0054/215066
T3078-5	CLASS I ASP/PSP LIGHTWEIGHT TRANSFORMER 25,000VA	0054/215067
T2911-5	CLASS I ASP/PSP LIGHTWEIGHT TRANSFORMER 30,000VA	0054/215068
T3079-5	CLASS I ASP/PSP LIGHTWEIGHT TRANSFORMER 35,000VA	0054/215069
T2912-5	CLASS I ASP/PSP LIGHTWEIGHT TRANSFORMER 40,000VA	0054/215070
T3103-5	CLASS I ASP/PSP LIGHTWEIGHT TRANSFORMER 50,000VA	0054/215071
T2913-5	CLASS I ASP/PSP LIGHTWEIGHT TRANSFORMER 60,000VA	0054/215072
T3320-5	CLASS I ASP/PSP LIGHTWEIGHT TRANSFORMER 80,000VA	0054/215073

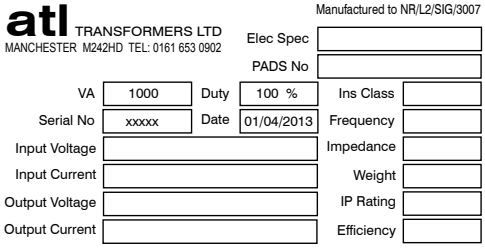
APPENDICES A
GENERAL ARRANGEMENTS



Aluminium Wound PSP/ASP 400/650 & 230/650V Transformers							
Model	Dimension (mm)						Weight (kg)
	A	B	C	D	E	Dia	All Voltages
5KVA	600	550	850	300	500	16	-
10KVA	600	550	850	300	500	16	150
15KVA	600	550	850	300	500	16	190
20KVA	620	500	1100	450	400	16	215
25KVA	620	500	1100	450	400	16	240
30KVA	620	500	1100	450	400	16	310
35KVA	620	500	1100	450	400	16	310
40KVA	620	500	1100	450	400	16	390
50KVA	760	500	1100	530	400	16	450
60KVA	760	500	1100	530	400	16	500
80KVA	800	600	1200	600	500	16	555

APPENDICES B
LABEL DETAILS

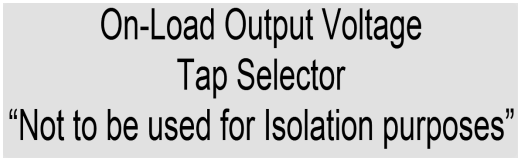
LABEL 1



LABEL 2

LABEL 3

LABEL 4

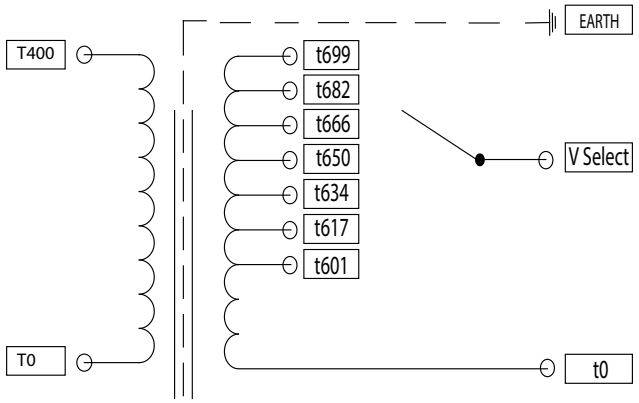
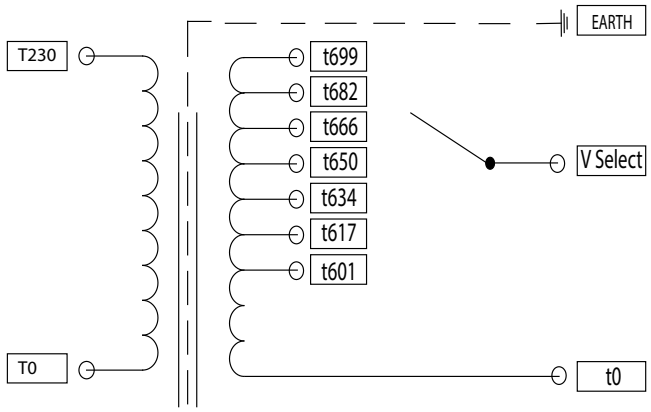
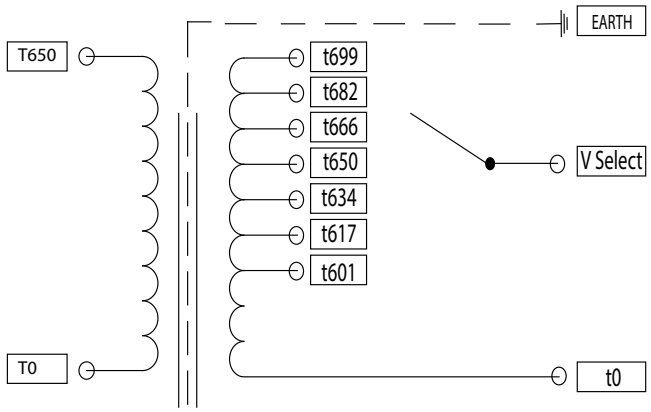
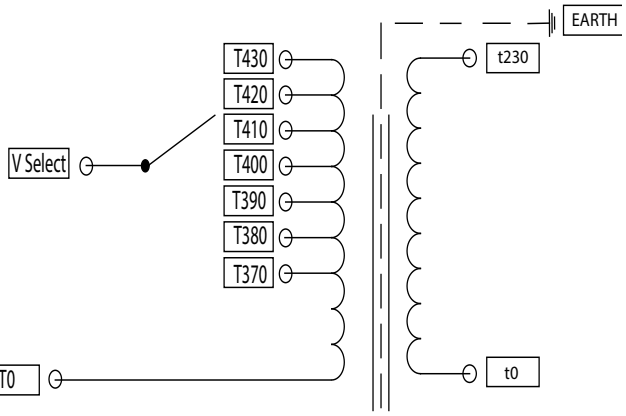


LABEL 5

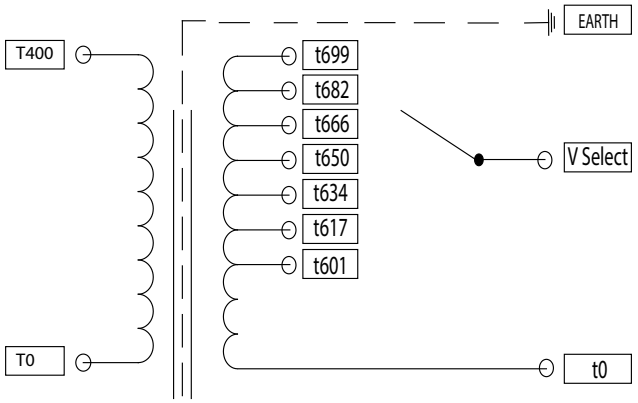
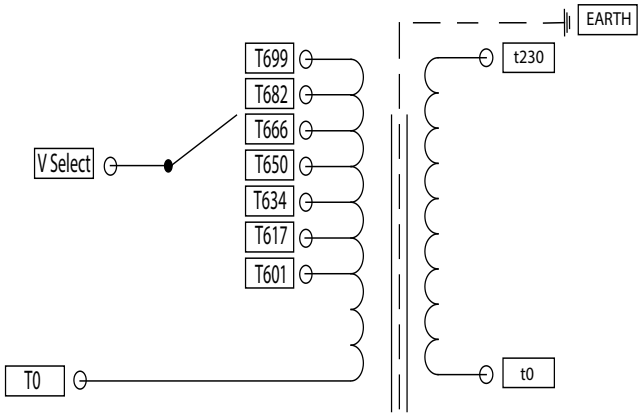
LABEL 6

Label	Description	Location
1	Electrical Specification Rating Plate	Enclosure Front Plate
2	Danger 650V - Isolate Supply	Enclosure Lid
3	Danger - Live Terminals Isolate Supply	Transformer
4	On Load Output Voltage Tap Selector	Enclosure Front Plate
5	CE Mark	Enclosure Lid
6	Tested Label - Date & Initials	Transformer

APPENDICES C
WIRING DIAGRAMS

Title	Descritpion	Diagram
400/650V Step-Up Aluminium	**1ph Step-Up Transformer** Generic Wiring Diagram	
230/650V Step-Up Aluminium	**1ph Step-Up Transformer** Generic Wiring Diagram	
650/650V Aluminium	**1ph Isolation Transformer** Generic Wiring Diagram	
400/230V Step-Down Aluminium	**1ph Step-Down Transformer** Generic Wiring Diagram	

APPENDICES C
WIRING DIAGRAMS

Title	Descritpion	Diagram
400/650V Step-Up Aluminium	**1ph Step-Up Transformer** Generic Wiring Diagram	
650V/230V Step-Down Aluminium	**1ph Step-Down Transformer** Generic Wiring Diagram	

NOTES

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