SAVE POWER SAVE MONEY
INSTALL
'Reliance' TRANSFORMERS

RELIANCE
TRANSFORMERS
AN ISO 9001 : 2000 COMPANY

GENERAL DESCRIPTION

CORE

The interleaved CORE is built up from low loss CRGO (cold rolled grain oriented) silicon steel laminations. The core limbs are braced firmly with heavy duty webbing cotton tapes. The yoke clamping is secured by steel channels. Top and bottom clamping channels are secured to each other by steel the rods which serve dual purpose of securing the winding in place and transfering the load from the bottom to the top clamping channel when the core and windings are lifted which prevents tensile stresses being being set up in the core legs which could adversely affect the no load loss.

WINDINGS

The windings are made of high grade electrolytic conductors of Copper or Aluminium, paper covered or super enamelled as the case warrants. The windings are designed to fulfill the basic requirements such as Mechanical, Electrical and Thermal ability. The windings are cylindrical in shape and are assembled concentrically.

The low tension windings are helical type, single or multi-layer using flat copper/aluminium strips of appropriate size.

The high tension windings consist cross over coils using enamelled or papers covered round/flat strip conductors as the case requires. For higher voltages continuous disc win dings are used.

WINDING CONNECTIONS

H.T.

Tapping and phase leads are properly insulated with adequate size of insulating paper tubes. The phase leads are separated from tapping leads by adequate barriers. These tubes are rigidly braced to ensure that clearances between leads and thank walls are maintained.

L.T.

Low voltage leads being of larger cross section are sufficiently robust, so supports are provided wherever necessary.

TAPPINGS

Tappings are provided on the H. T. windings at $\pm$ 2.5% and $\pm$ 5% of H.V. for H.V. for H.V. variation. Other tapping ranges can be supplied on requests. Tap selection is effected by means of an off circuit tapping switch operated by an exteral handle. Tapping leads are brought away from the coils by means of paper insulated conductors. They are arranged in such a manner that the ampere-turn balance is maintained through out the tapping range.

INSULATION & IMPREGNATION

The main components of insulation are pre-fabricated from pressboard or fibre board sheet. All items subject to compression in service are preshrunk and the slight recovery in dimensions after preshrinkage is compensated for, by providing means of compressing the windings during final drying of the completed transformer. The oil used for impregnation comprises IS : 335, 1983 and every consignment received at work is tested before entry is permitted into the storeage tank.

SHORT CIRCUIT STRENGTH

In order to prevent deformation when subjected to short circuit forces, solid block end insulation backed by supporting frames is utilised. The axial and the trust under fault conditions is minimised by ensuring that designed dimensions are closely adhered to during manufacture. Transformers designed and constructed in this way are capable of withstanding the effects of short circuit testing.

TERMINALS

All bushings are of high quality porcelain and comply with ISS : 3347 and ISS : 2099. H. T. Bushings are supplied with arcing horns as standard accessories.

TANKS

The tanks are made from M.S. which is electrically welded. The tanks are so designed that the shape of tank and thickness of walls, top & bottom are related to the size and weight of the finished product. The core and windings are fitted to the tank cover and hold firmly in the tank to avoid chance of damages during transport. The tanks are tested to a pressure of 0.4 at to ensure zero leakage. The interior of the tank is painted with oil and heat resistant paint. Zinc cromate red oxide premier is applied to the exterior after treating the tank for a clean surface.

STANDING FITTINGS

The transformers are provided with the following standard fittings.

1. First filling of oil.
2. Drain valve with plug.
3. H. V. bushings / terminals
4. L. V. bushings / terminals
5. Earthing terminals.
6. Uni-directional flat rollers.
7. Radiators.
8. Rating & diagram plate.
9. Off load tap changer.
10. Thermometer pocket
11. Lifting lugs.
12. Conservator with fittings
13. Oil level indicator.
14. Oil filling hole with cap.
15. Silicagel breather.
16. Explosionvent.
17. Air release plug.
18. Filter valve with plug.

OPTIONAL FITTINGS

Following fittings can be supplied at customers request at extra cost.

1. Bucholz Relay.
2. Dial thermometer.
3. H.V/L.V. disconnecting chamber.
4. Extra neutral terminal.
5. Jacking pads.

QUALITY CONTROL / TESTING

Stringent quality control measure enforced for income-ing raw materials and accessories check-in process during manufacturing process thro stage inspection to ensure best quality products.

Before despatch the transformers are tested for routine tests laid down in ISS:2026-1977.

Our transformers have passed in TYPE TESTS at Government approved third party laboratories like:1. Lighting Impulse Test at ERDA, Baroda.

2. Short Circuit Withstand Test at CPRI, Banglore

TOLERANCES

No load losses, load losses, voltage ratio, and impedance voltage are guaranteed subject to the tolerance laid down in ISS:2026/1977.

OVERLOADS

The transformers can be operated at an output in excess of the nominal rating in accordance with IS:6600-1972.

DUAL RATIO TRANSFORMERS

The transformers can be supplied with DUAL ratios providing additional switch to change over from 11 KV to 22 KV and vice versa keeping the same % age variation on both ranges.

NON STANDARD / SPECIAL PURPOSE TRANSFORMERS

In additional to standard range of transformers, we can supply transformers for special purpose. While ordering such transformers the following information is required in your enquiry.

1. KVA rating. 2. No load voltage ratio. 3. Vector group reference. 4. Impedance voltage. 5. Frequency. 6. Temperature rise. 7. Tapping range 8. Climatic condition. 9. Altitude if above 1000 M. 10. Whether cable boxes are required on HV or LV 11. Standard to which the transformer is required to confirm. 12. Whether changeover switch is required for duel ratio transformers.

Low Loss Transformers with longer trouble free life. "We make it"

Steps for Selecting the Proper Transformer

1 Determine Electrical Load :

A. Voltage required by load.
B. Amperes or KVA required by load.
C. Frequency in Hz (Cycles per second).
D. Varify load is designed to operate on three phase.

All the above information is standard data normally obtained from equipment nameplates or instruction manuals.

2 Determine supply Voltage :

A. Voltage of supply. (source)
B. Frequency in Hz (Cycles per second).

The frequency of the line supply & electrical load must be the same. A three phase Transformer is selected which is designed to operate at this frequency having primary (input) equal to the supply voltage and secondary (Output) equal to the voltage required by the load.

3 Determine Capacity :

A. Select a transformer with a standard KVA capacity equal to or greater than that needed to operate the load.
B. Primary taps are available on most models to compensate for line voltage veriations.
C. When load ratings are given only in Amperes, the formula below may be used to determine proper KVA size for the required Transformer.

To determine three Phase KVA, when Voltage & Amperes are known :

$$\text{Three Phase KVA} = \frac{\text{Volts} \times \text{Amperes} \times 1.732}{1000}$$

A WIDE RANGE OF TRANSFORMERS DESIGNED TO WITHSTAND GREATER SHORT CIRCUIT STRESSES WITH LOW LOSSES

RELIANCE
TRANSFORMERS

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