

POLARITY TEST AND PARALLEL OPERATION TEST ON A 1- \emptyset TRANSFORMER

Exp no: 6

Date

Aim:(A) To check the polarity of given single phase transformer and to check the parallel operation of the two transformers.

Apparatus required:

S.no	Name of the Apparatus	Range	Type	Quantity
1	Two similar single phase transformer of same rating	1KVA		2
2	Ammeters	(0-10)A	MI	4
3	Volt meter	(0-300)V	MI	2
4	Auto-transformer	5A/10A,240V		1
5	Connecting wires	2.5sq.mm	Copper /Aluminum	Few

Name plate details:

Rated primary voltage=

Rated secondary voltage=

Rated primary current=

Rated secondary current=

KVA rating=

Precautions:1.The loads on the secondary of transformers should be fully switched off.

2.The single phase autotransformer should be kept in the minimum position.

Procedure:

POLARITY TEST:

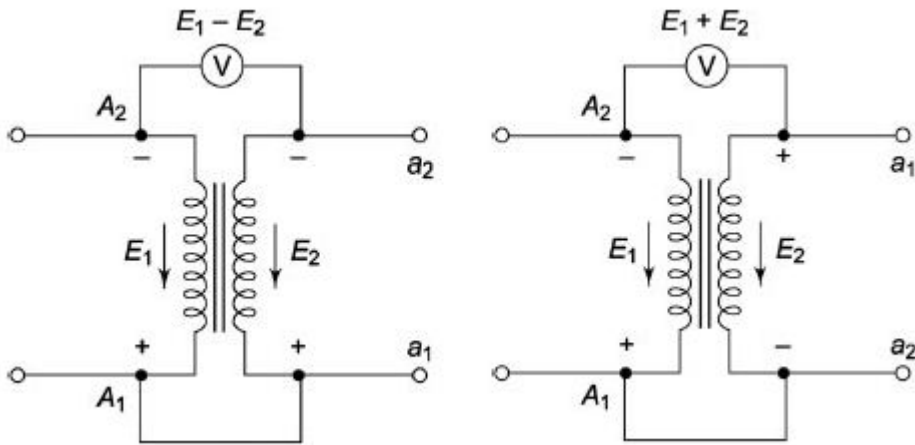
1. Connections are made as per the circuit diagram.
2. A voltage is supplied to primary.\
3. Note down the reading of E1,E2 and E3.
4. If E3 reads (E1-E2),then polarity is correct.
5. If E3 reads (E1+E2), then polarity is wrong.

PARALLEL OPERATION:

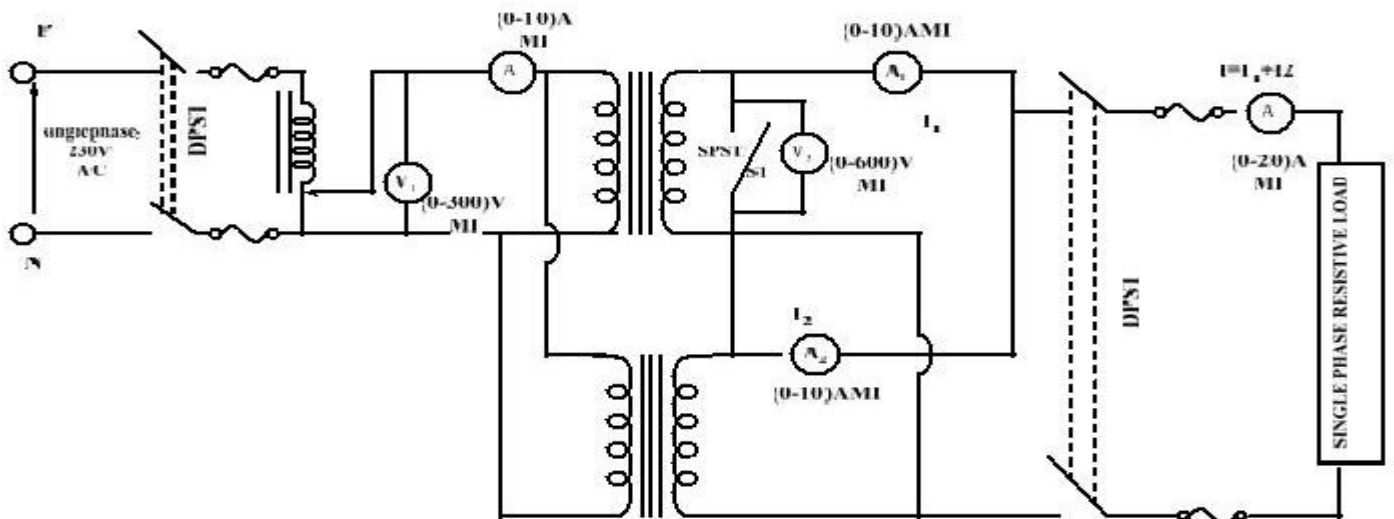
- 1.Check for the conditions mentioned for parallel operation of transformers.
- 2.Adjust the autotransformer to read the rated primary voltage on Voltmeter 1.
- 3.When the secondary windings are connected with correct polarity the voltmeter V3 reads zero.
4. Close the SPST switch S1 otherwise interchange the terminals of the secondary windings with supply switched off.
5. Close the DPST (Double Pole single Throw Switch) on the secondary and increase the electrical load in steps.
- 6.Note down the readings of the load current and currents shared by both the transformers.
- 7.Check the current sharing according to the current division rule.
8. Verify that current shared by transformer 1 $I_1=IZ_2/(Z_1+Z_2)$ and transformer 2, $I_2=IZ_1/(Z_1+Z_2)$

Circuit diagram:

Polarity test :



Parallel operation:



Observation Tables:

Polarity test(additive):

E1	E2	E3=E2+E1

Subtractive polarity:

E1	E2	E3=E2-E1

Parallel operation:

V1	V2	I1	I2	I=I1+I2

Result: