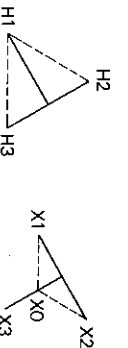


T-T Connection

Phasor Diagram:



Angular Displacement (Degrees): 30°

Source: Suitable for both ungrounded and effectively grounded sources.

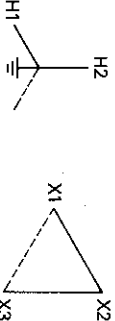
Service: Suitable for 3-wire service or for 4-wire service with X0 grounded. Can also supply a 4-wire delta service.

Notes:

1. Because of winding voltages required, this connection is generally only available as a three-phase transformer.
2. Neutral point of primary windings, if available, should not be grounded unless it is desired that the transformer serve as a grounding bank.

OPEN WYE-OPEN DELTA Connection

Phasor Diagram:



Angular Displacement (Degrees): 30°

Source: Suitable for a 4-wire effectively grounded source only.

Service: Suitable for 3-wire service or for 4-wire delta service with a mid-tap ground.

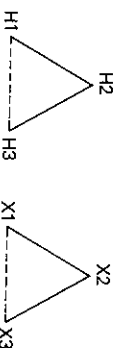
Notes:

1. When two units of the same KVA rating are used to supply only a balanced three-phase load, the combined rating of the two units must be 115 percent of the three-phase load if the load on each transformer is not to exceed nameplate rating.
2. Single-phase units with secondary breaker can be used, even with a mid-tap ground on one leg. However, with the secondary breaker open in only the grounded leg, high voltages due to capacitive coupling may appear from each terminal to ground of the transformer in the other leg. Sufficient phase-to-neutral connected load will limit these voltages.
3. Can be connected to either a three-phase or V phase primary line.
4. Frequently installed with one large and one small transformer to supply a combination of single-phase and three-phase load where single-phase load is much larger than the three-phase load.
5. With ungrounded secondary windings (3-wire service), voltage to ground from one or more secondary phases can be greater than secondary phase-to-phase voltage due to unbalances in the capacitance network. With sufficient length of secondary circuit or connected load, phase-to-ground voltage for each phase will approach in magnitude the phase-to-phase voltage divided by $\sqrt{3}$.

6. When primary terminals H1 and H2 are supplied from the same system phase, the open circuit phase to phase voltage from secondary terminal X1 to X3 is two (2) times normal phase to phase voltage.

OPEN DELTA-OPEN DELTA Connection

Phasor Diagram:



Angular Displacement (Degrees): 0°

Source: Suitable for both ungrounded and effectively grounded sources.

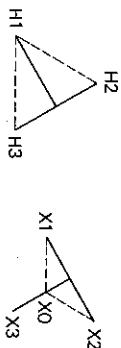
Service: Suitable for 3-wire service or for 4-wire delta service with a mid-tap ground.

Notes:

1. When two units of the same KVA rating are used to supply only a balanced three-phase load, the combined rating of the two units must be 115 percent of the three-phase load if the load on each transformer is not to exceed nameplate rating.
2. Single-phase units with a secondary breaker can be used, even with a mid-tap ground on one leg. However, with the secondary breaker open in only the grounded leg, high voltages due to capacitive coupling may appear from each terminal to ground of the transformer in the other leg. Sufficient phase-to-neutral connected load will limit these voltages.
3. Can be connected to only a three-phase primary line.
4. Frequently installed with one large and one small transformer to supply a combination of single-phase and three-phase load where single-phase load is much larger than the three-phase load.
5. With ungrounded secondary windings (3-wire service), voltage to ground from one or more secondary phases can be greater than secondary phase-to-phase voltage due to unbalances in the capacitance network. With sufficient length of secondary circuit or connected load, phase to ground voltage for each phase will approach in magnitude the phase-to-phase voltage divided by $\sqrt{3}$.

T-T Connection

Phasor Diagram:



Angular Displacement (Degrees): 30°

Source: Suitable for both ungrounded and effectively grounded sources.

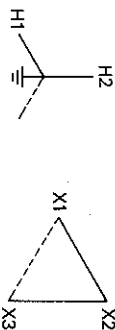
Service: Suitable for 3-wire service or for 4-wire service with XO grounded. Can also supply a 4-wire delta service.

Notes:

1. Because of winding voltages required, this connection is generally only available as a three-phase transformer.
2. Neutral point of primary windings, if available, should not be grounded unless it is desired that the transformer serve as a grounding bank.

OPEN WYE-OPEN DELTA Connection

Phasor Diagram:



Angular Displacement (Degrees): 30°

Source: Suitable for a 4-wire effectively grounded source only.

Service: Suitable for 3-wire service or for 4-wire delta service with a mid-tap ground.

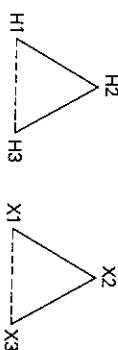
Notes:

1. When two units of the same KVA rating are used to supply only a balanced three-phase load, the combined rating of the two units must be 115 percent of the three-phase load if the load on each transformer is not to exceed nameplate rating.
2. Single-phase units with secondary breaker can be used, even with a mid-tap ground on one leg. However, with the secondary breaker open in only the grounded leg, high voltages due to capacitive coupling may appear from each terminal to ground of the transformer in the other leg. Sufficient phase-to-neutral connected load will limit these voltages.
3. Can be connected to either a three-phase or V phase primary line.
4. Frequently installed with one large and one small transformer to supply a combination of single-phase and three-phase load where single-phase load is much larger than the three-phase load.
5. With ungrounded secondary windings (3-wire service), voltage to ground from one or more secondary phases can be greater than secondary phase-to-phase voltage due to unbalances in the capacitance network. With sufficient length of secondary circuit or connected load, phase-to-ground voltage for each phase will approach in magnitude the phase-to-phase voltage divided by $\sqrt{3}$.

6. When primary terminals H1 and H2 are supplied from the same system phase, the open circuit phase to phase voltage from secondary terminal X1 to X3 is two (2) times normal phase to phase voltage.

OPEN DELTA-OPEN DELTA Connection

Phasor Diagram:



Angular Displacement (Degrees): 0°

Source: Suitable for both ungrounded and effectively grounded sources.

Service: Suitable for 3-wire service or for 4-wire delta service with a mid-tap ground.

Notes:

1. When two units of the same KVA rating are used to supply only a balanced three-phase load, the combined rating of the two units must be 115 percent of the three-phase load if the load on each transformer is not to exceed nameplate rating.
2. Single-phase units with a secondary breaker can be used, even with a mid-tap ground on one leg. However, with the secondary breaker open in only the grounded leg, high voltages due to capacitive coupling may appear from each terminal to ground of the transformer in the other leg. Sufficient phase-to-neutral connected load will limit these voltages.
3. Can be connected to only a three-phase primary line.
4. Frequently installed with one large and one small transformer to supply a combination of single-phase and three-phase load where single-phase load is much larger than the three-phase load.
5. With ungrounded secondary windings (3-wire service), voltage to ground from one or more secondary phases can be greater than secondary phase-to-phase voltage due to unbalances in the capacitance network. With sufficient length of secondary circuit or connected load, phase to ground voltage for each phase will approach in magnitude the phase-to-phase voltage divided by $\sqrt{3}$.