

## VOLTAGE TRANSFORMER GROUPS

**GROUP 1.** Transformers for application with 100% of rated primary voltage connected to the primary terminals either line-to-line or line-to-ground. These transformers are capable of operating at 125% of rated volts in emergency conditions, but cannot have their thermal burden rating exceed 65% of rated volt-amperes and 105°C Ave. winding temperature. This will result in a reduced life expectancy. Consult the factory for details. Continuous operation at 110% of rated voltage is permissible, provided that the thermal burden rated volt-amperes is not exceeded.

| RATED PRIMARY VOLTAGE FOR RATED SYSTEM VOLTAGE LINE-TO-LINE | TURNS RATIO | BASIC IMPULSE INSULATION LEVEL(kV CREST) |
|---|-------------|--|
| 840 for 1455Y*  | 7:1         | 45*                                      |
| 1200 for 2078Y*   | 10:1        | 45*                                      |
| 2400 for 4160Y  | 20:1        | 60 or 45*                                |
| 4200 for 7280Y  | 35:1        | 75                                       |
| 4800 for 8320Y  | 40:1        | 75                                       |

| RATED PRIMARY VOLTAGE FOR RATED SYSTEM VOLTAGE LINE-TO-LINE | TURNS RATIO | BASIC IMPULSE INSULATION LEVEL(kV CREST) |
|---|-------------|--|
| 7200 for 12470Y   | 60:1        | 95 OR 110                                |
| 8400 for 14560Y   | 70:1        | 95 OR 110                                |
| 12000 for 20785Y  | 100:1       | 125 or 150                               |
| 14400 for 24940Y  | 120:1       | 125 or 150                               |

**GROUP 2.** Transformers are for line-to-line connection, but may be connected line-to-neutral at a voltage of the rated line volts divided by the square root of three. Continuous operation at 110% of rated voltage is permissible, provided that the thermal burden rated volt-amperes is not exceeded.

| RATED PRIMARY VOLTAGE FOR RATED SYSTEM VOLTAGE LINE-TO-LINE | TURNS RATIO | BASIC IMPULSE INSULATION LEVEL(kV CREST) |
|---|-------------|--|
| 2400 for 2400Y  | 20:1        | 45                                       |
| 3300 for 3300Y*   | 30:1        | 60 or 45*                                |
| 4200 for 4200Y*   | 35:1        | 60 or 45*                                |
| 4800 for 4800Y  | 40:1        | 60 or 45*                                |
| 7200 for 7200Y  | 60:1        | 75 or 110*                               |
| 8400 for 8400Y*   | 70:1        | 75 or 110*                               |
| 11000 for 11000Y  | 100:1       | 95 or 110                                |

| RATED PRIMARY VOLTAGE FOR RATED SYSTEM VOLTAGE LINE-TO-LINE | TURNS RATIO | BASIC IMPULSE INSULATION LEVEL(kV CREST) |
|---|-------------|--|
| 12000 for 12000Y  | 100:1       | 95 or 110                                |
| 13200 for 13200Y  | 110:1       | 95 or 110                                |
| 14400 for 14400Y  | 120:1       | 95 or 110                                |
| 18000 for 18000Y*   | 150:1       | 125*                                     |
| 21000 for 21000Y*   | 175:1       | 125*                                     |
| 24000 for 24000Y  | 200:1       | 125 or 150                               |
| 27600 for 27600Y*   | 240:1       | 150 or 200                               |
| 34500 for 34500Y  | 300:1       | 150 or 200                               |

**GROUP 4.** Transformers are for line-to-ground connection, indoors only. The neutral terminal is insulated to withstand a test voltage of 10kV. They may be continuously operated at 110% of rated voltage, provided that the thermal burden rated volt-amperes is not exceeded. Group 4A transformers may be operated at 125% of rated primary voltage, under emergency conditions, provided that the burden does not exceed 65% of the rated thermal burden, with a limit of 75°C. temperature rise. This will result in a reduced life expectancy. Consult the factory for details.

| Group 4A for Operation at 100% Rated Voltage                |             |  |
|---|-------------|--|
| RATED PRIMARY VOLTAGE FOR RATED SYSTEM VOLTAGE LINE-TO-LINE | TURNS RATIO | BASIC IMPULSE INSULATION LEVEL(kV CREST) |
| 2400 for 4160 GND Y   | 20:1        | 60 or 45*                                |
| 4200 for 7200 GND Y   | 35:1        | 75                                       |
| 4800 for 8320 GND Y   | 40:1        | 75                                       |
| 7200 for 12470 GND Y  | 60:1        | 110                                      |
| 8400 for 14560 GND Y  | 70:1        | 110                                      |

\*Not recognized in ANSI/IEEE C57.13.

| Group 4B for Operation at 58% Rated Voltage                 |             |  |
|---|-------------|--|
| RATED PRIMARY VOLTAGE FOR RATED SYSTEM VOLTAGE LINE-TO-LINE | TURNS RATIO | BASIC IMPULSE INSULATION LEVEL(kV CREST) |
| 4200 for 4160 GND Y   | 35:1        | 60 or 45                                 |
| 4800 for 4800 GND Y   | 40:1        | 60 or 45                                 |
| 7200 for 7200 GND Y   | 60:1        | 75                                       |
| 8400 for 8400 GND Y   | 70:1        | 75                                       |
| 11000 for 11000 GND Y                                       | 100:1       | 110                                      |
| 12000 for 12000 GND Y                                       | 100:1       | 110                                      |
| 13200 for 13200 GND Y                                       | 110:1       | 110                                      |
| 14400 for 14400 GND Y                                       | 120:1       | 110                                      |

NOTE: Voltage transformers connected line-to-ground on an ungrounded system cannot be considered to be grounding transformers and must not be operated with the secondaries in closed delta because excessive currents may flow in the delta. For further details see ANSI/IEEE C57.13