SECTION 16460

DRY TYPE TRANSFORMERS

PART 1  GENERAL

1.01  SUMMARY

A. Section Includes:

1. Dry type transformers.

1.02  REFERENCES

A. Where appropriate refer to current ANSI and NEMA Standards for requirements and material ratings.


C. ANSI/NEMA ST 20

1.03  SUBMITTALS

A. Require submittals under the provisions of Section 16010 - Basic Electrical Requirements and Section 01300 - Submittals.

B. Include outline and support point dimensions of enclosures and accessories, unit weight, voltage, kVA, and impedance ratings and characteristics, loss data, efficiency at 25, 50, 75, and 100 percent rated load, sound level, tap configurations, insulation system type, and rated temperature rise.

PART 2  PRODUCTS

2.01  MANUFACTURERS

A. Dry Type Two-Winding Transformers:

1. General Electric

2. Westinghouse/Cutler Hammer

3. Hevi-Duty

4. ITE

5. Sorgel/Square D
2.02 DRY TYPE TWO-WINDING TRANSFORMERS

A. Dry Type Transformers: (ANSI/NEMA ST 20)
   1. Factory assembled air cooled dry type.

B. Insulation and Temperature Rise:
   1. Rating 1 - 15 kVA, Class 185 insulation and $80^\circ$ C temperature rise.
   2. Rating 16 - 500 kVA, Class 220 insulation and $80^\circ$ C temperature rise.

C. Winding Taps:
   1. Transformers Less Than 15 kVA:
      a. Two 5% below rated voltage, full capacity taps on primary winding.
   2. Transformers 15 kVA and Larger:
      a. Two 2-1/2% above rated voltage, four 2-1/2% below normal, full capacity taps on primary winding.

D. Sound Levels:
   1. Require maximum sound levels as follows:

<table>
<thead>
<tr>
<th>kVA RATING</th>
<th>SOUND LEVEL</th>
</tr>
</thead>
<tbody>
<tr>
<td>0-9</td>
<td>40 dB</td>
</tr>
<tr>
<td>10-50</td>
<td>45 dB</td>
</tr>
<tr>
<td>51-150</td>
<td>50 dB</td>
</tr>
<tr>
<td>151-300</td>
<td>55 dB</td>
</tr>
<tr>
<td>301-500</td>
<td>60 dB</td>
</tr>
</tbody>
</table>

E. Mounting:
   1. Transformers 75 kVA and less may be suspended or wall mounted and should be suitable for that possibility.
   2. Transformers over 75 kVA shall be floor mounted.

F. Vibration Isolations:
   1. Transformer winding assemblies shall be isolated from housing by vibration isolation mounts.

G. Coil Conductors:
1. Continuous aluminum windings with terminations brazed or welded, regardless of size.

H. Transformer Terminations:

1. Terminations shall be suitable for landing copper conductors without any special preparation.

2.03 K-RATED TRANSFORMERS

A. In areas with heavy computer loads, K rated (non-linear) transformers shall be provided. Only computer loads shall be connected to the transformer.

PART 3 EXECUTION

3.01 INSTALLATION

A. Vibration Isolation:

1. Specify minimum of 2’ and maximum 3’ flexible conduit for transformer connections.

2. Require standard manufacturer vibration isolation mounts for all connections between structure and housing of transformer.

B. Transformer Cooling:

1. Coordinate with Mechanical Engineer to assure adequate air quantities for proper ambient conditions in electrical room.

2. Locate transformers to assure adequate air movement around transformer enclosure.

3. Design of transformer capacities should allow a minimum 25% growth capabilities of electrical loads served by transformer.

4. Transformer cooling fans, when required, shall be of the sealed bearing type.

END OF SECTION