

POLICY BULLETIN NO. 120

SUBJECT:

Electric Service Regulations

OBJECTIVES:

In view of the Lower Yellowstone Rural Electric Cooperative. (LYREC), responsibility as an electric utility operating within the States of Montana and North Dakota, it is essential that reasonably uniform voltage be maintained throughout the system to ensure proper operating power for all members.

POLICY:

Motor Starting Current Limitation

To provide for adequate and proper controls incident to voltage fluctuation, before installing a motor whose horsepower exceeds those stated in this policy, the member submit full information on the motor in the form of answers to a questionnaire which LYREC will furnish.

LYREC shall have the right to require the member to install, and pay for, reduced voltage starting equipment, or other acceptable means of starting, on any existing motor which in LYREC's sole discretion creates undue disturbance on the power lines.

The sizes of a single-phase and three-phase motors that will be permitted on the system, and the determination of locked rotor currents shall be in accordance with the following conditions:

PROCEDURE:

A. Single Phase Motors – Size Permitted

- a. Single phase, infrequently started motors may be operated at 120 volts provided their locked rotor current does not exceed 45 amperes.
- b. Single phase, frequently started motors may be operated at 120 volts provided their locked rotor current does not exceed 25 amperes.
- c. Single phase motors of 7.5 HP or less may be operated at 208 or 240 volts except that when the name place rating is higher than 5 HP, compensating starting equipment shall be installed to limit starting current. In locations where three-phase service is not available, single-phase motors larger than 7.5 HP may be operated only with the express written consent of LYREA
- d. All single phase motors exceeding the limitations of paragraphs (a.) and (b.) above must be operated at 208 or 240 volts and the locked rotor currents must not exceed the following ampere size:



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Your Touchstone Energy® Cooperative

Date Adopted: 05/15/07
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Maximum Permissible Locked Rotor Current (Amperes at Motor Terminals)

Table with 2 columns: HP, AMPS. Rows include 1 and smaller, 1.5, 2, 3, 5, 7.5.

B. Three Phase Motors – Size Permitted


- a. In general, three phase motors of 10 HP or less nameplate rating operating at 208 or 240 volts, may be equipped for across line starting; motors larger than 10 HP may use across line starting in some instances, depending on the frequency of starting, location, etc. Such cases shall be referred to the cooperative for written approval. Reduced voltage starting equipment, when required, will be furnished by the member.
b. Three phase motors rated at 208, 220 or 440 volts must have locked rotor currents which do not exceed the following amounts per terminal:

Maximum Permissible Locked Rotor Current (Amperes At Motor Terminals)

Table with 4 columns: Horsepower, Motor Voltage Rating (208, 220, 440). Rows include 5 and below, 7.5, 10, 15, 20, 25, 30, 35, 40, 50.



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- c. For motors above 50 HP the cooperative must be consulted for determination of permissible locked rotor current.
- d. Current values listed in these tables are those corresponding to the rated nameplate voltages of the motors. Tests or specified current values for other voltages shall be adjusted to the rated voltage of the motor.
- e. When a single piece of motor driven apparatus has more than one motor starting simultaneously, the sum of the maximum starting currents of those motors starting simultaneously, and also the sum of the horsepower rating shall be used in applying the above tables. For test purposes, the starting current of motorized equipment may be considered at 75% of the locked rotor current.

C. Determination Of Locked Rotor Currents:


- a. Locked rotor currents are obtainable from motor manufacturers or may be calculated from the nameplate data on the motor as follows:
 - 1. Obtain HP, voltage and Code Letter Rating from the motor nameplate.
 - 2. Obtain the kVa per horsepower with locked rotor for the motor by referring to the following tabulation taken from Paragraph 94304 of the *National Electric Code* and selecting the value that corresponds to the Code Letter Rating of the motor.
 - 3. Calculate locked rotor amperes by the following formulas:

Single Phase Motor - - $\text{Locked rotor amps} = \frac{1000 \times \text{locked rotor kVa per HP from Table} \times \text{HP rating of motor}}{\text{Voltage Rating of Motor}}$

Three-Phase Motor - - $\text{Locked rotor amps} = \frac{1000 \times \text{locked rotor kVa per HP from Table} \times \text{HP rating of motor}}{1.73 \times \text{Voltage Rating of Motor}}$



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<u>Code Letter</u>	<u>TABLE</u> <u>kVa per HP with locked rotor</u>
A	0 - - 3.14
B	3.15 - - 3.54
C	3.55 - - 3.99
D	4.0 - - 4.49
E	4.5 - - 4.99
F	5.0 - - 5.59
G	5.6 - - 6.29
H	6.3 - - 7.09
J	7.1 - - 7.99
K	8.0 - - 8.99
L	9.0 - - 9.99
M	10.0 - - 11.19
N	11.2 - - 12.49
P	12.5 - - 13.99
R	14.0 - - 15.99
S	16.0 - - 17.99
T	18.0 - - 19.99
U	20.0 - - 22.39
V	22.4 - - and up

- b. The locked rotor currents specified in the above tables are for average conditions only. In areas where frequent starting of motors will interfere with the electrical service to other customers supplied from the same secondary and primary lines, the cooperative reserves the right to limit locked rotor currents to values smaller than those determined herein.