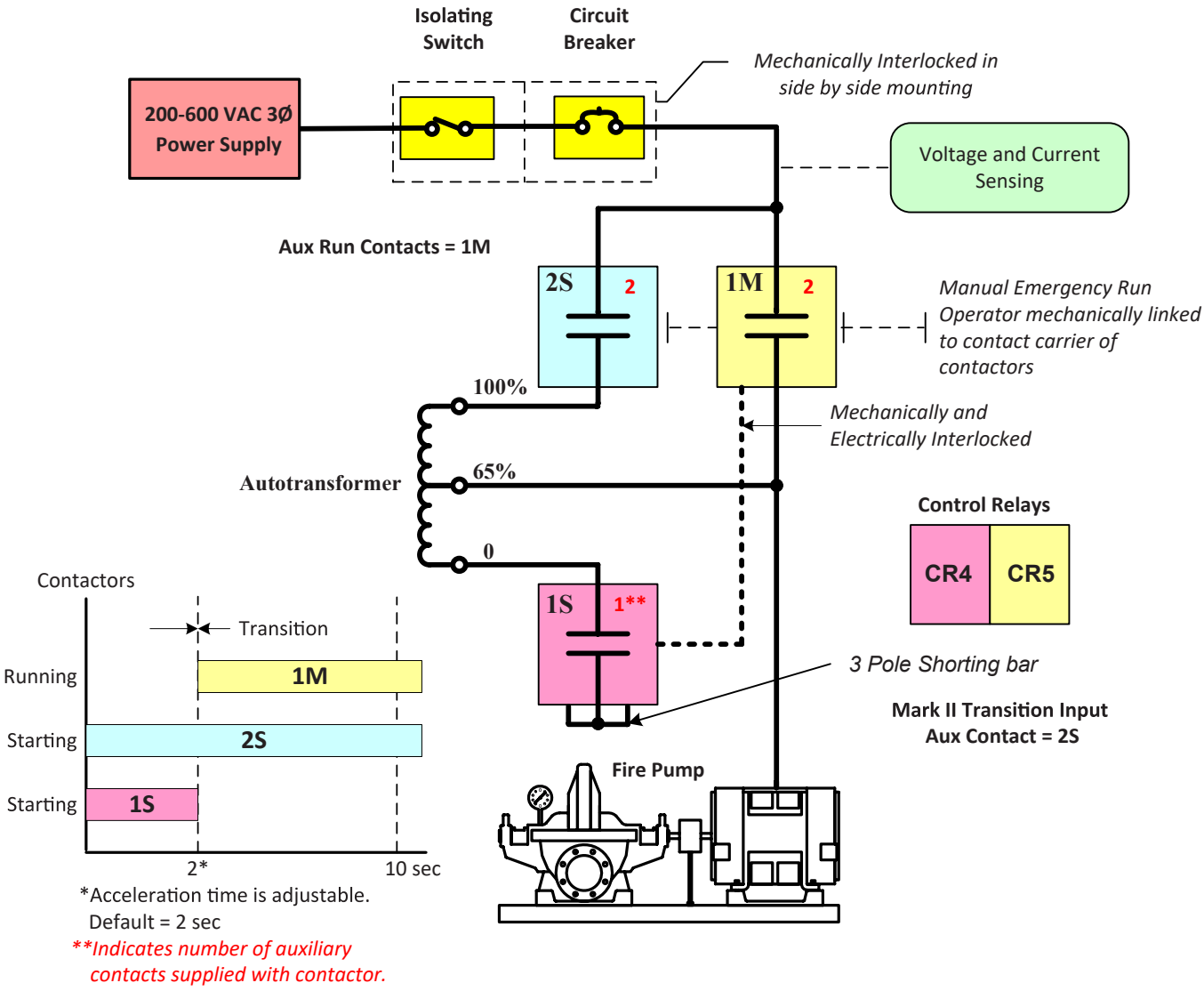
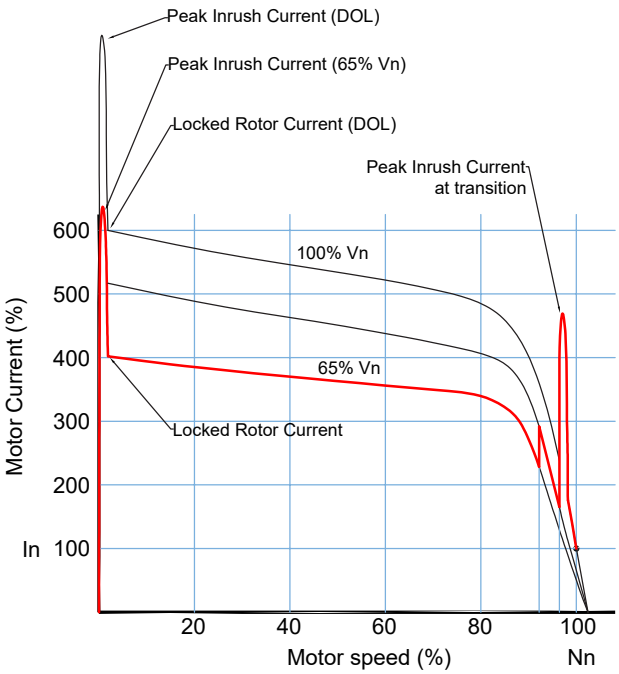
MARK^{III+} Electric Fire Pump Controllers - Autotransformer Starting

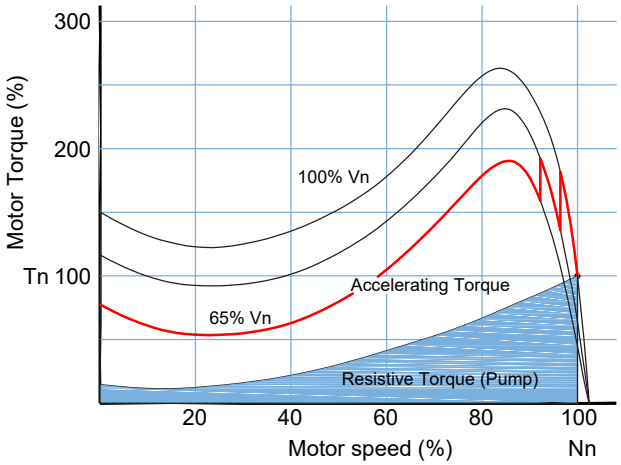


General Starting Configuration

Autotransformer starting



Legend:
FLA : Full Load Amperage / Full Load Current
FLT : Full-Load Torque / Rated Torque at FLA, Vn, and Full-Load Speed
Vn : Nominal Voltage / Rated Voltage
DOL : Direct On Line / Across-The-Line



Starting Method: Autotransformer
Starting voltage per winding: Reduced
Typical voltage applied at motor starting (%Vn): 65%
Peak inrush current at starting [(1)]**:** 4 - 11 x FLA
Peak inrush current at transition [(1)]**:** 4 - 11 x FLA
Starting current (% FLA) [(2)]**:** 210 - 420%
Transition current (% FLA) [(3)]**:** 210 - 420%
Starting Torque (% FLT) [(4)]**:** 40 - 85%
Motor type[(5)]**:** Standard
Number of wire connections: 3

1) A transient peak occurs when starting the motor while at rest or when disconnecting and reconnecting the motor during a transition. This transient lasts no more than 1/2 cycle.
2) The starting current (locked rotor current) is the Root Mean Square current value the motor takes from the power source at start and fades while the motor is accelerating to full speed. The larger the load on the motor, the slower the acceleration and the higher the current.
3) The transition current depends on the moment the transition occurs and the speed of the motor. A early transition will lead to increased current as the motor has not reached full speed for the load and voltage. A late transition suggests that the motor will be running at reduced voltage when the load is almost the same as full load. This causes the motor efficiency to drop and the temperature to rise in the motor stator windings. The motor can withstand this for a short period of time but it is not recommended to run the motor with reduced voltage for more than 5 seconds.
4) Generally, the torque developed by the induction motor at any speed is approximately proportional to the square of the voltage and inversely proportional to the square of the frequency. The locked rotor torque and breakdown torque are decreased when the voltage is unbalanced. If the voltage imbalance is severe, the torque may be inadequate for the application.
5) Induction motors are inherently capable of developing transient current and torque considerably in excess of rated current and torque when exposed to an out of phase bus transfer or momentary voltage interruption and re-closing on the same power supply. This transient torque can range from 2 to 20 times the rated torque and is related to many factors including: motor design, operating conditions, switching time, rotating system inertias and torsional spring constants, the number of motors on the bus and more.

This information is provided as a general information document. Consult an electrical engineer on your specific application.

Firetrol, Inc.
3412 Apex Peakway
Apex, North Carolina 27502
P +1 919 460 5200
F +1 919 460 5250
www.firetrol.com
While every precaution has been taken to ensure accuracy and completeness herein, Firetrol, Inc. assumes no responsibility, and disclaims all liability, for damages resulting from use of this information or for any errors or omissions. Specifications and drawings are subject to change without notice. ©2021 Firetrol, Inc., All Rights Reserved.
Publication GS1800-10 Rev. B