Starting Method	Description	% Motor Full Load Starting Current	% Starting Torque	Firetrol Base Catalog Number	Advantages	Disadvantages	Cost Index
Full Voltage	Preferred starting method when the power supply is adequate. Full voltage is applied to the motor as soon as the controller is actuated and the motor supplies its rated torque. When using this method, the power source must have sufficient KVA capacity to provide locked rotor current and prevent the line voltage from dropping below acceptable limits.	600	100	FTA1000	Low Cost, High starting torque, uses standard motors	High starting current	100
Part winding	Lowest cost method of reduced voltage starting. Used with part winding type starting motors which have two parallel stator windings. The motor starts on one winding, then, after a time delay, the second winding is connected to the line in parallel and the motor runs normally and develops full torque.	390	42	FTA1250	Low cost	Special motors, 200 & 400 V	120
Wye-Delta open transition	Most often used with transfer switch/emergency generator applications. Used with delta wound motors. When the controller is actuated, the motor starts on the wye connection. After a time delay, the motor is automatically reconnected in delta, applying full voltage to the motor windings. Since the motor circuit is open during the wye to delta transition, line transients could affect other equipment sharing the same power source.	200	33	FTA1300	Low starting Current, medium starting torque	Power line transients special motors, 200 V	130
Wye-delta closed transition	Often used with transfer switch/emergency generator applications; less line disturbance than wye-delta open transition type. Starts as above however, during the transition from wye to delta, a resistor is connected to each phase to absorb current	200	33	FTA1350	Low starting current, Medium starting torque, no line transients	More expensive	185

	surges and limit line disturbances						
Primary resistance	Does not produce line disturbances or excessive voltage drop. When the controller is actuated, resistance is connected to each phase, after a time delay, the resistors are bypassed and the motor runs at full voltage.	300	25	FTA1500	Standard motors, low starting torque	High starting current, resistive heating	150
Autotrans-former with 50% Tap; with 65% Tap; with 80% Tap	Optimum method of reduced voltage starting, especially if a smaller emergency generator can be used in transfer switch applications. When the controller is actuated, the motor is connected to the autotransformer. After a time delay, a portion of the transformer winding is connected in series with the motor (as an inductor) and then, a second contactor closes and connects the motor to full line voltage.	150 252 384	25 42 64	FTA1800	Highest starting torque, low starting current, uses standard motors	Most expensive	200
Solid state	Upon a call to start, the motor ramps to full speed utilizing a solid state SCR starter. At full speed, a bypass contactor closes, connecting the motor across the line. When all starting causes have been satisfied, the bypass contactor opens and the motor ramps to a preset level using the solid state starter. This “sincerity check” allows time for other starting causes to reactivate the controller while the motor continues to run. If no other starting cause is present, the motor will ramp to a stop. This stopping method provides additional safety for fire personnel as well as reduced water hammer in the piping system.	240	15	FTA1900	Soft start & soft stop, reduced water hammer, redundant power circuit, uses standard motors	More expensive	180