

GENERAL ELECTRIC COMPANY

SCHENECTADY, N. Y.

Sales Offices in Principal Cities

Motor and Control

For Heating, Ventilating and Air Conditioning Systems

Quiet Operating Motors

The Need for Quiet Operating Motors

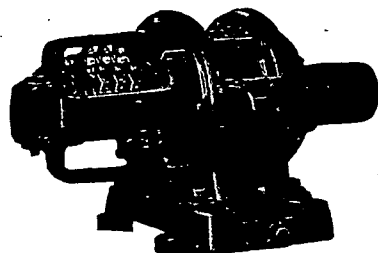
This company has, for some time, been aware of the fact that induction motors of the general purpose line are not quiet enough for use in office buildings, schools, etc., where quiet operation is of great importance, although these motors are not objectionable for other classes of service. This fact was pointed out at various times so as to guard against the application of standard motors in such locations, but this warning has been generally disregarded, and although a great number of standard motors have been applied successfully in such buildings, there have also been a number of complaints on noise from customers who have used standard motors.

Acoustics of the Structure, Location and Mounting

The problem of reducing noise in buildings should not be left entirely to the motor manufacturer, and although it has been found that many architects fully appreciate the noise problem and their specifications cover very fully the precautions which must be taken in mounting the equipment, there are architects who are apparently overlooking this problem entirely and make no provision for covering this point at all.

Concrete, which is usually used in conjunction with steel in modern building construction, is a nearly homogeneous substance of high density, liberal elasticity and is an excellent conductor of sound waves, while concrete arches are potential sound amplifiers. The importance of correctly designing foundations is best illustrated by a case which has come to our attention where, in the motor-room, there was no objectionable noise, yet on certain lower floors, the noise was very objectionable, the noise being transmitted by the steel work and amplified by the sounding-board effect of the walls, and sometimes further intensified by localized resonance.

This Company will gladly assist in the solution of any electrical problem in relation to heating and ventilation



MTB Wound Rotor Quiet Operating Induction Motor

One of the best methods for preventing the transmission of sound is to use a laminated structure across the direction of the sound wave, the lamination varying in density so as to cause multiple reflection.

Materials which can be used in constructing proper foundations are cork pads (2 to 3 in. thick), felt pads, sheet lead, wood and sand used in combination with reinforced concrete or steel.

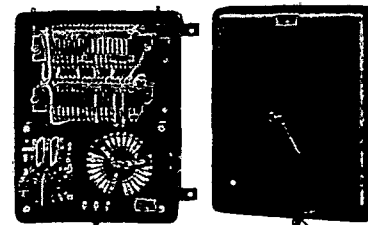
It has been found that when cork is used, the foundation should be designed so that the pressure on the cork will be 30 lb. per sq. in.; either more or less does not seem to produce as satisfactory results. A block of cork 2 in. thick should not compress more than 0.272 in. under a pressure of 10,000 lb. per sq. ft. of surface area. The installation should be made so as to eliminate any metal-to-metal contact between motor and building.

The use of short center belt, tetrope drive or worm gear drive should be recommended wherever possible as this enables higher speed motors to be used—900 and 1200 r. p. m. motors are recommended rather than the lower speed motors such as 450 r. p. m., giving better efficiency and far better power factor. In addition, the connecting of motors in this way allows proper insulating foundations to be used under the motor without affecting the line-up of the drive. Where the motor is direct connected to the drive, especially low-speed fans, the most satisfactory

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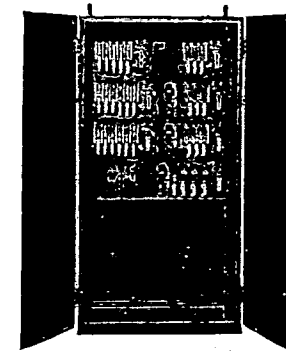
Alternating Current Control



CR7765, 1-6 Hp. Controller

method of mounting is to have both motor and fan on a common base, the whole base being mounted on proper insulating supports. Where the fan and motor are not on the same base, it is difficult to use any sound absorbing insulation under the motor without causing difficulty in keeping the equipment properly lined up.

The location of the motor in the building with reference to the acoustics of the surrounding structure is a very important point, and while in one location a perfectly standard motor may be acceptable, the same motor may be entirely unsuitable in another location.



CR7761-F1, 20-50 Hp. Controller

Switches

Method of Operation	Type	Horsepower Range	Overload Protection	Remarks
Manual	CR1924	1/4-50	Fuse.....	Safety Type.
Manual	CR1038	1/4-5	Thermal Cut-outs.....	Tumbler Switch.
Push Button	CR7006	1-50	Temperature Relay.....	Contactors.
Push Button	CR7006F1	1-5	Fuse and Temperature Relay	Combined Magnetic Switch and Disconnection.

Starters

Manual	CR1034	5-50	Temperature Relay.....	Compensator Type.
Manual	CR1042	5-15	Temperature Relay.....	Resistance Type.
Push Button	CR7056	2-50	Temperature Relay.....	Resistance Type.
Push Button	CR7051	5-50	Temperature Relay.....	Compensator Type.
Push Button	CR7773	1-5	Time Limit.....	Combined Magnetic Starter and Circuit Breaker.

Speed Regulators

Manual	CR1264	1-15	Temperature Relay.....	Requires Separate Switch.
Manual	CR7764C1	7 1/2-50	Temperature Relay.....	Combined Regulator and Switch.
Manual	CR7764Y1	5-50	Time Limit.....	Combined Regulator and Circuit Breaker.
Push Button	CR7765	1-5	Temperature Relay.....	Preset Speed Type.
Push Button	CR7761	5-50	Temperature Relay.....	Remote Speed Indicating.

The General Electric Co. manufactures a complete line of control devices for starting and controlling motors driving ventilating fans. The table above gives briefly the line of controllers for use with alternating current motors. All controllers are of the enclosed type externally operated. Speed regulators are designed

to give 50 per cent speed reduction on fan load and arranged to maintain equalized current in all phases of the rotor which is necessary to maintain quiet operating motors.

Details may be obtained at the nearest sales office.

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