

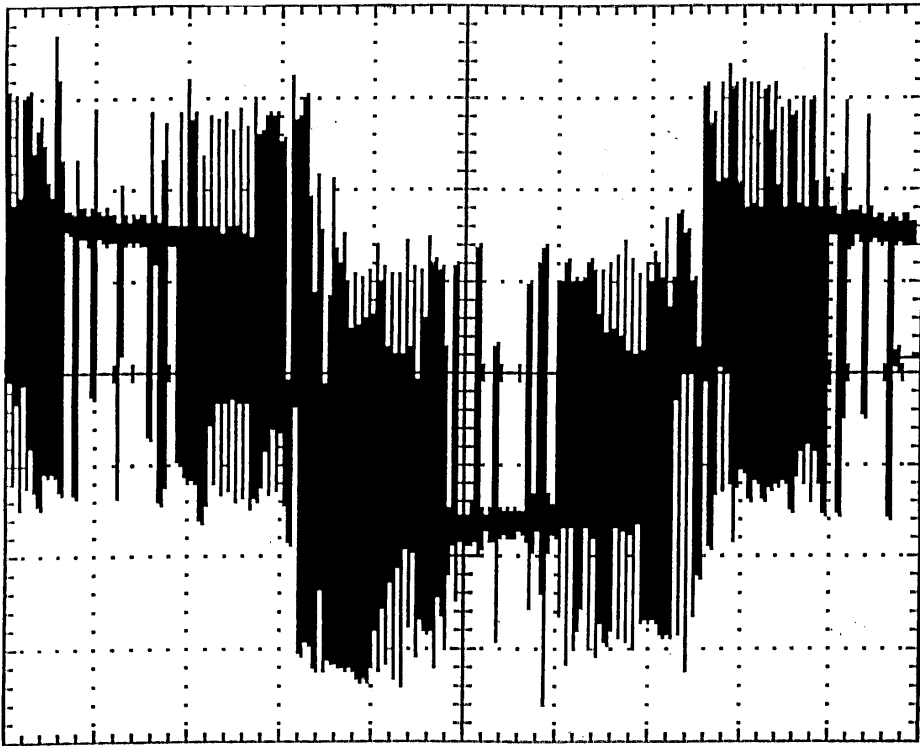
LOAD REACTORS

AC Load Reactors Increase Motor & Drive Reliability

- Prevent premature motor insulation failures:
 - Reduce peak voltage
 - Reduce turn to turn-over voltage
 - Minimize repetitive voltage stress
- Reduced motor temperature:
 - Increased motor insulation life (x2 to x4)
- Output short circuit protection:
 - Allows time for over-current shutdown circuits to act before power devices are destroyed

No Reactor

750 ft 240 V-60 Hz



**Output Device =
None**

**Circuit Length =
750 ft**

**Load = 3Ø 240V,
3-1/4 A**

$f_{SW} = 6\text{KHz}$

$f_{FUND} = 60\text{ Hz}$

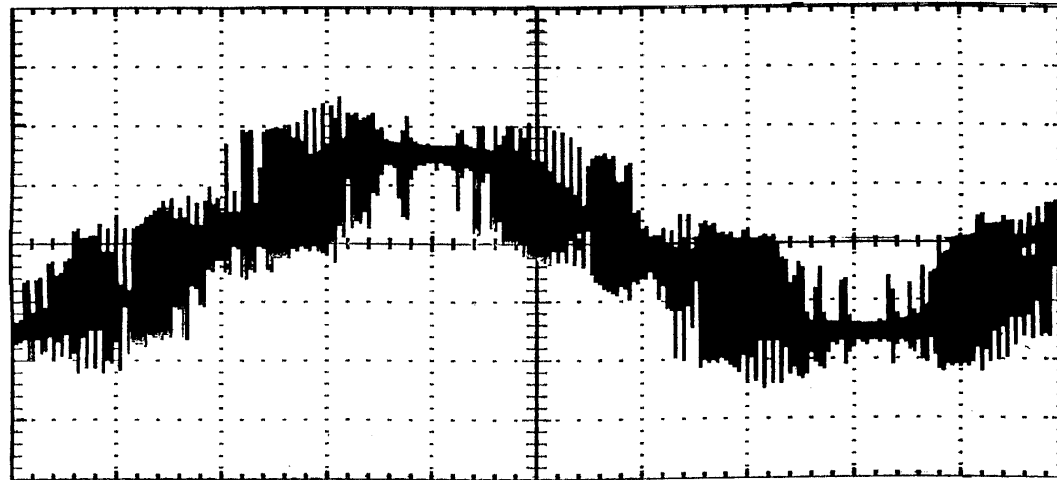
NEMA Design "B" Motor Specs

- 1000 volts peak (maximum)
- $\geq 2 \mu\text{sec}$ voltage rise time
- $\leq 500 \text{ V per } \mu\text{sec}$

NEMA Inverter Duty Motor Specs

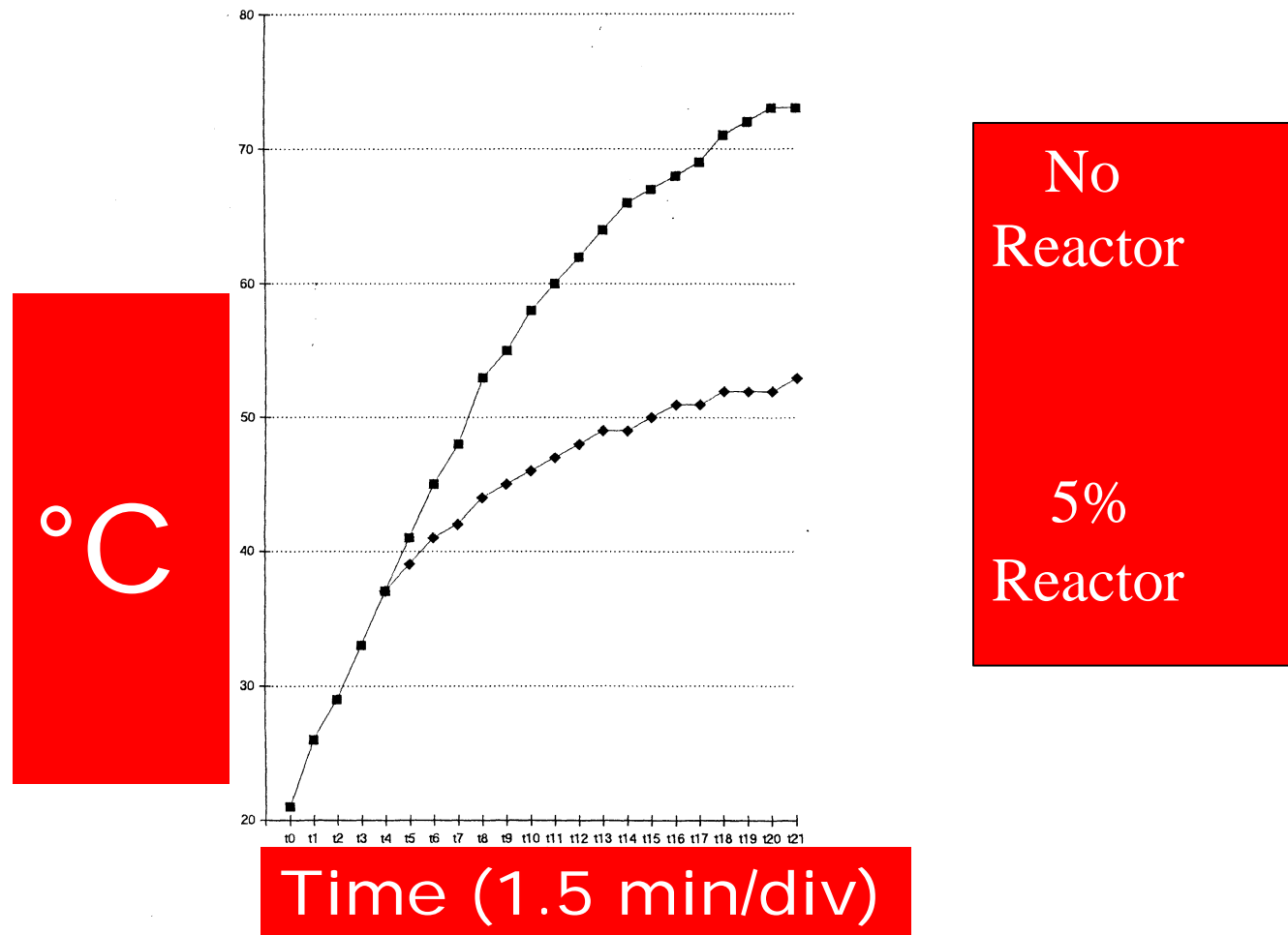
- 1600 volts peak (maximum)
- $\geq 0.1 \mu\text{sec}$ voltage rise time
- $\leq 16,000 \text{ V per } \mu\text{sec}$

5% Reactor, 1000 ft, PWM

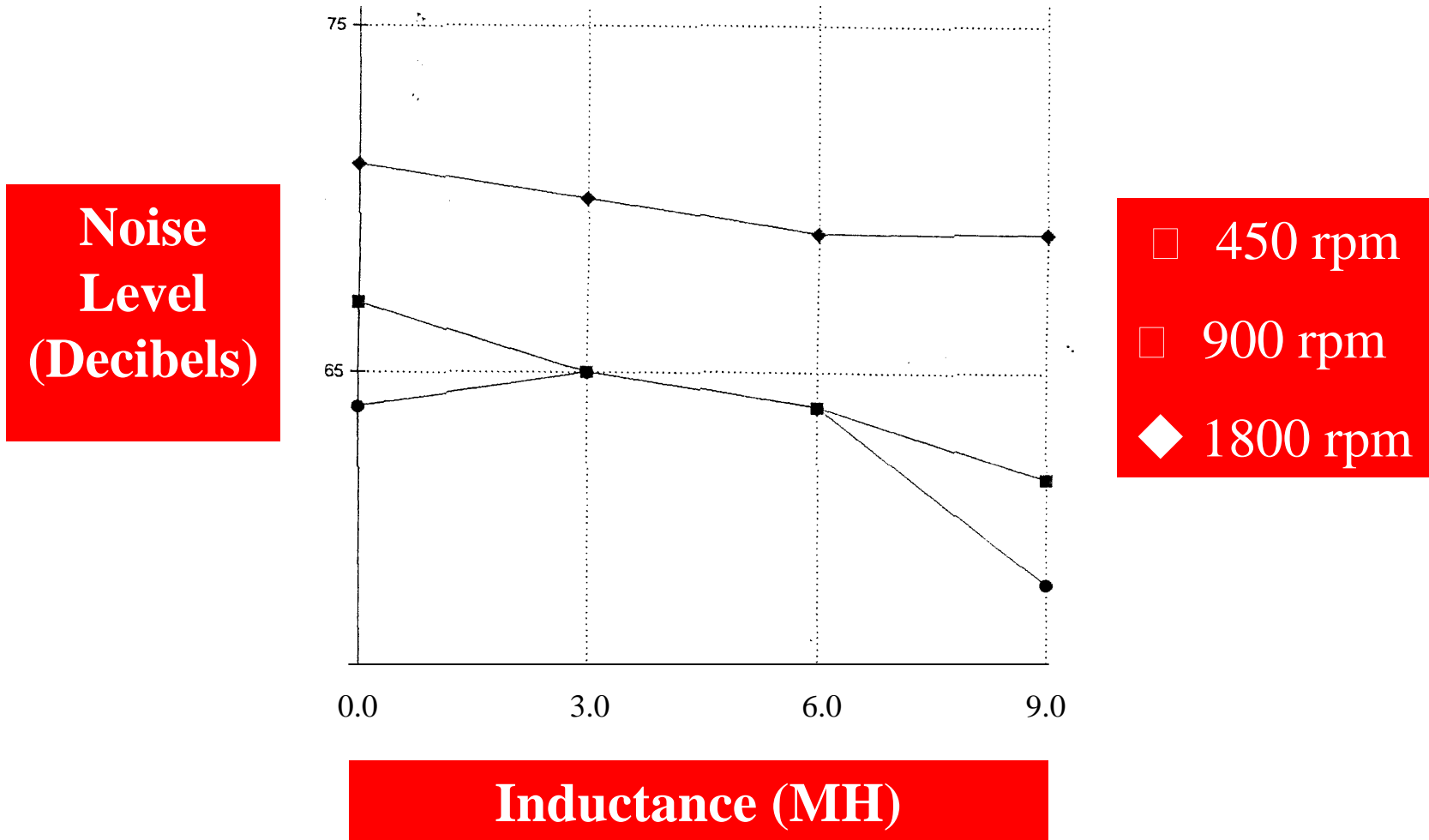


Rise Time $\geq 4\mu\text{sec}$

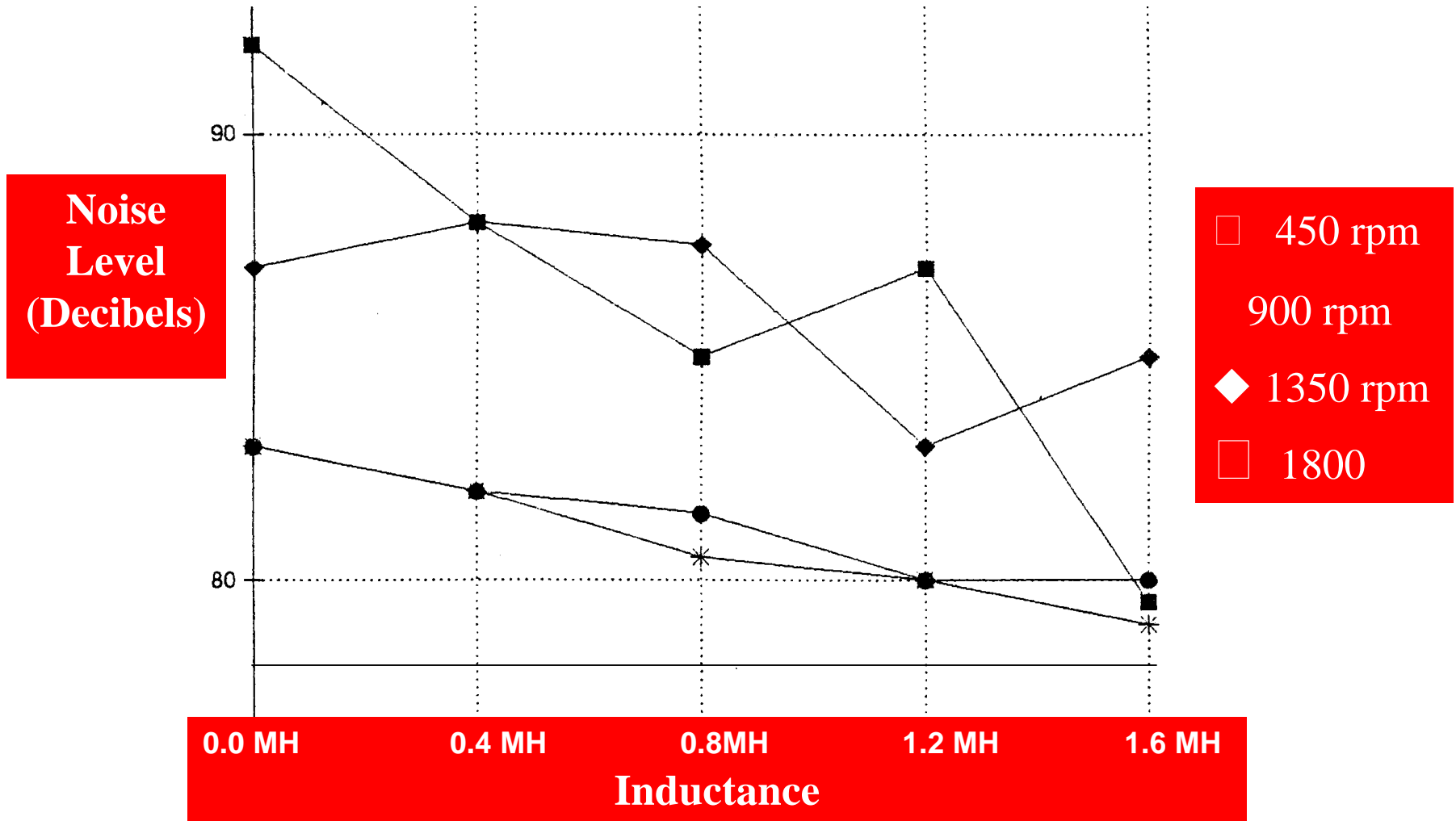
Reduction in Motor Temperature



AC Load Reactors Decrease Audible Noise: 5HP, 460V PWM



AC Load Reactors Decrease Audible Noise: 50 HP, 460V, PWM



Load Reactor Summary

- Low cost motor protection filter
- Low cost long lead filter
- MTE reactors can be used in both line and load applications
- Load reactors extend motor life
- Load reactors decrease motor noise

MTE Load Reactors

- IGBT Protected
- 16,000 volt/usec dv/dt rating
- 5600 V peak dielectric strength

- Suitable for switching frequencies up to 20Khz

- Same reactor line or load side

Load Reactor Spec

Each variable frequency drive must be equipped with an output reactor offering no less than 4.5% effective impedance at rated motor amps (the fundamental current). Output reactors must be IGBT protected to withstand spikes of 16,000 volts per microsecond. They must be high frequency compensated and suitable for use with switching frequencies up to 20KHZ. They must be UL-506 and UL-508 approved. Nema 1 enclosed units must be UL Listed. The continuous current rating of the reactor must be equal to or greater than the rms output current rating of the drive. Reactors must be copper wound with a UL class H (180 C) insulation system. They should be suitable for an ambient temperature of 45 C and a have a maximum temperature rise of 115 C. Their watts loss must be less than 1% of the rated load. Box lug type terminals should be provided on all reactors rated up to 400 amps. Higher current reactors may be supplied with copper tab type terminals. Reactor should be MTE Corporation type "RL" series.

MTE **CORPORATION**

