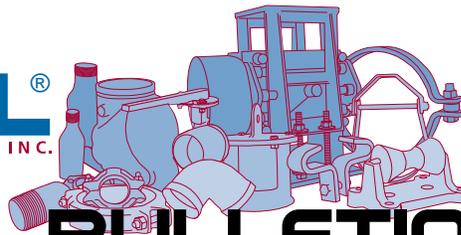




**ANVIL**<sup>®</sup>  
INTERNATIONAL, INC.



# TECHNICAL BULLETIN

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**New products and developments from Anvil International, Inc.**

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## Gruvlok<sup>®</sup> Piping Method: Noise and Vibration Attenuation

Gruvlok<sup>®</sup> flexible design couplings, properly installed, provide for pipe system expansion, contraction, displacement of the pipe from center-line, and rotational movement to the limits of coupling design capability. This design-in capability also provides the further benefit of attenuating vibration that can be transmitted by the pipe system.

If we think of the pipe joint (and pipe system) in terms of an electric circuit, we get a better understanding of how the Gruvlok coupling attenuates vibration and noise transmission. Let us consider the pipe to be a wire, the Gruvlok coupling to be an electrical connection, and the vibration to be a current flowing through the wire. The Gruvlok coupling is not a very good electrical connector; it has a relatively large gap between the pipe ends (i.e., wire ends). In an electrical circuit, this would be called a resistor.

If the voltage is low, the flow of current may be stopped at the first connection. If the current voltage is high, the current may arc across the space between the pipe ends. By this arcing, however, a significant amount of the power (energy) driving the current flow is dissipated. Other joints will further reduce the power (energy) driving the current flow until it is completely dissipated.

The above is a rudimentary analogous explanation in electrical terms of the function of the Gruvlok coupling in the attenuation of vibration input to a pipe system. Many factors affect the performance of the Gruvlok flexible coupling. The

gap between the pipe ends is just one factor. Other factors which also contribute to the coupling's performance in attenuating vibration are explained below.

1. The gap at each joint permits each pipe to move independently of adjacent piping, thus each pipe length acts as an independent system, isolated from the pipe to which it is connected.
2. The area of transmission of vibration between the pipe and coupling is small (i.e., engagement of coupling key with pipe groove) and, in a deflected condition, the direct contact area becomes even smaller. This small contact provides a "high resistance" to vibration transmission, adding to the attenuation of vibration.

The capability of attenuating vibration, along with the ability to accommodate misalignment, thus reducing pipe system stress, makes the Gruvlok coupling ideal for pump and equipment connections. Wherever a pump is installed, three (3) Gruvlok flexible design couplings, in close proximity to the source of the vibration, are recommended.

Three Gruvlok Figure 7001 or 7000 couplings provide vibration attenuation characteristics which are equal to or exceed that of elastomeric "boot" type and flexible metal-reinforced hose connections. The use of additional Gruvlok couplings, either flexible or rigid, provide additional reduction of vibration and noise transmission.