Application Note

Installing accelerometers using a conical mount

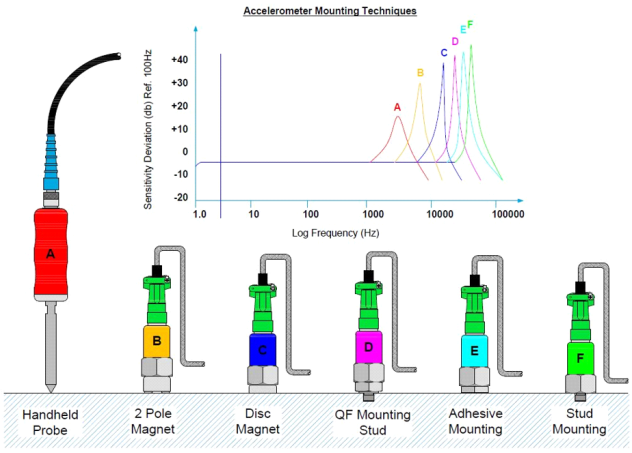

Fig.1 The frequency response of an accelerometer is determined not just by the accelerometer but also the method of mounting. The stiffer the connection the better the frequency response. Care therefore needs to be taken to ensure an accelerometer is mounted in the best way, and stiffest way, possible.

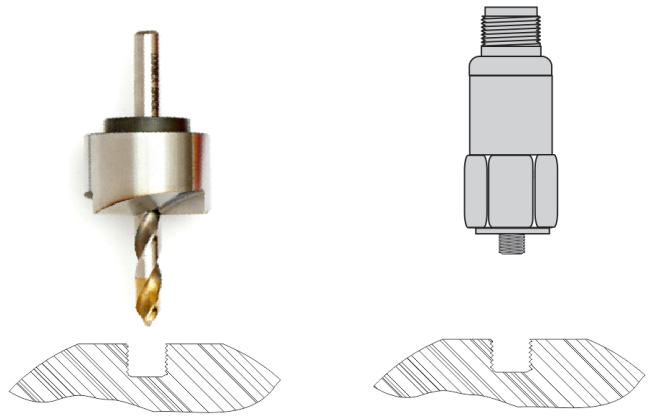

Fig.2 One of the best ways to mount an accelerometer is to counterbore a flat surface on the bearing cap of the machine you wish to monitor. However finding suitable 'real estate' on smaller machines can sometimes present a challenge.

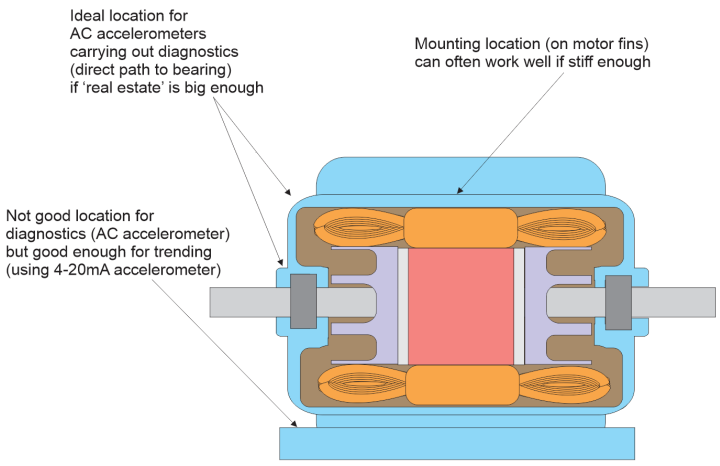

Fig.3 On smaller machines ideal mounting locations can be hard to find. AC accelerometers with their wide frequency response and their need to preserve frequency content for diagnostics, are ideally located on a direct line to the bearing.
4-20mA accelerometers are easier to locate because of their limited frequency response and that the data is only being used for trending (frequency content not important).

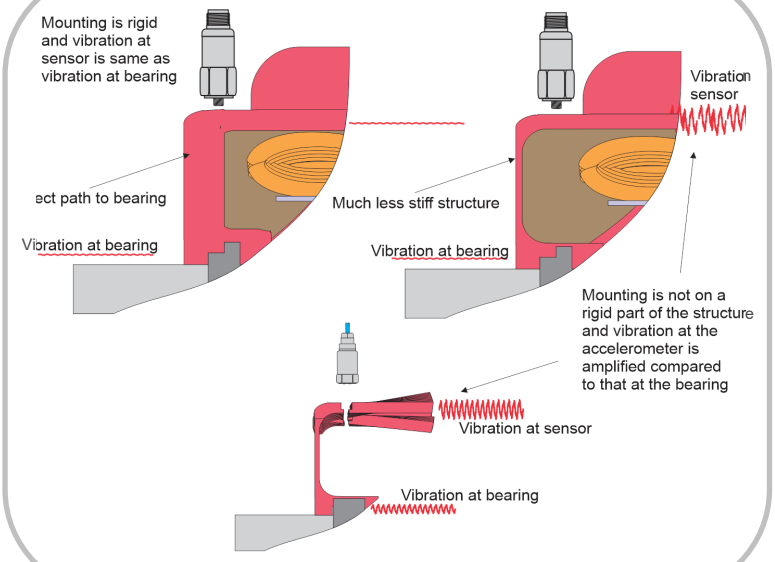

Fig.4 Locating the sensor at the wrong part of the machine where the structure is not rigid and where there is not a rigid vibration path between the bearing and the sensor can amplify the vibration and make it difficult to get good data.

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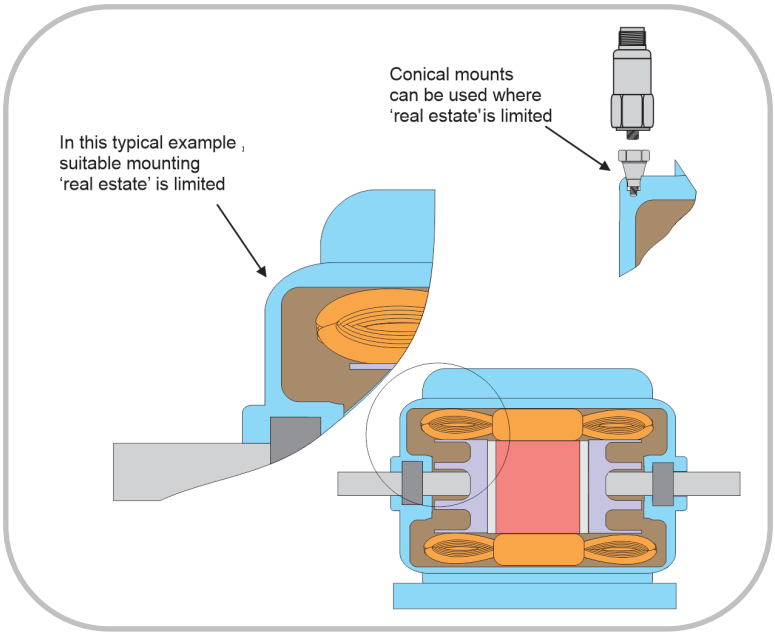

Fig.5 Sometimes the stiff locations with a direct line to the bearing have little 'real estate'. If this is the case sometimes a conical mount can be a solution.

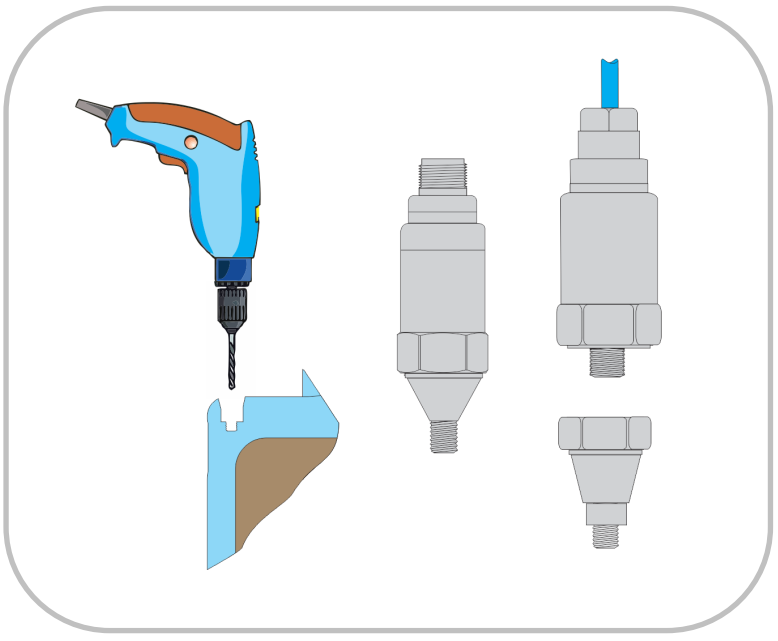

Fig.6 Conical mount fittings can be good, stiff mountings which take up a small amount of space. The conical mount can either be integral to the accelerometer as part of its body or as a separate mounting stud. Conical mounts are easy to install and can often be carried out by using hand tools.

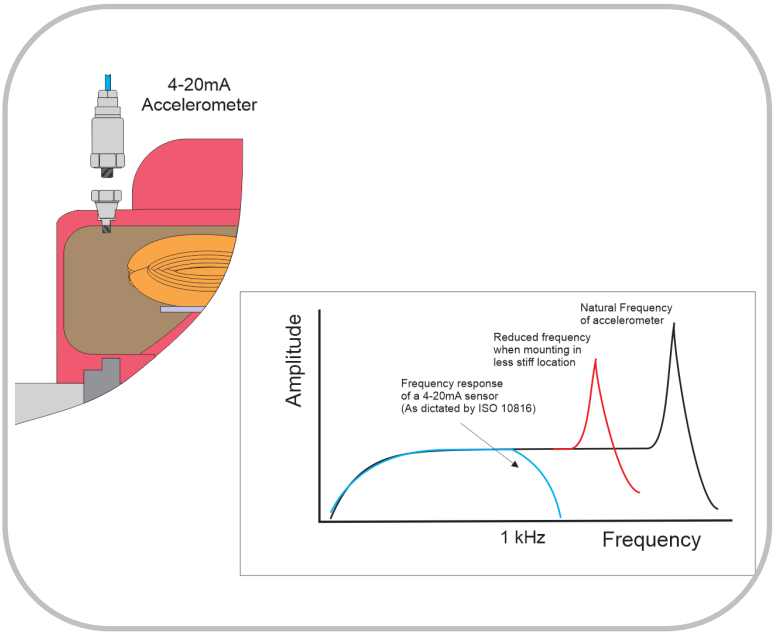

Fig.7 The mounting of 4-20mA accelerometers is much less critical than with AC accelerometers. This is because the frequency content is not measured and secondly because velocity vibration measurements are normally carried out frequencies below 1-2kHz (as specified by ISO 10816) and high frequency attenuation or distortion is immaterial.

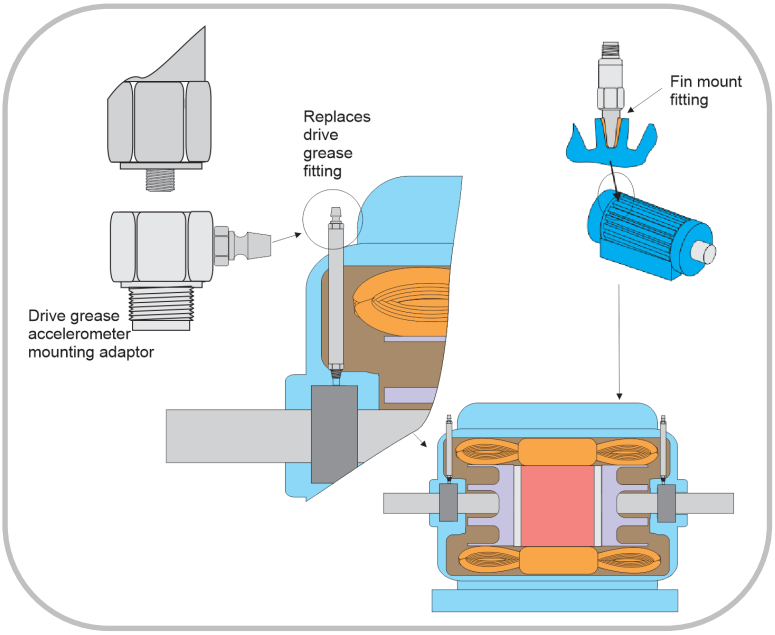

Fig.8 Other methods of mounting accelerometers on small electric motors include substituting the drive grease fitting at the end of the grease tube with an accelerometer adaptor give an ideal and direct line to the bearing vibration. Another method involves gluing a fin mounting stud into the fins of the motor to provide a stable accelerometer mounting location.