

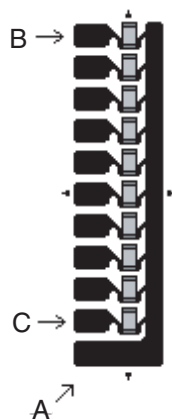
Common Tab Strip Gages

Micro-Measurements 020MT and 020PF pattern gages were designed for use as frequency detectors and strain-gradient shift detectors on structures such as turbine blades. When used to measure strain gradients, sizable errors can occur.

The 120-ohm resistance of each grid circuit is based on use of connections from Point A to the individual tabs (shown here). For example, grid one is 120 ohms from Point B to Point A. Grid ten is 120 ohms from Point C to Point A. However, the common connecting bar has a resistance of nearly 5 ohms. As a result of this, grid number one's actual strain-sensitive resistance is nearly 5 ohms less than for grid ten. This will cause an apparent gage factor desensitization of more than 4% for grid one resulting in an error in the indicated strain of about the same magnitude. The error will decrease to nearly zero for grid number ten. Correction of data is not usually practical since the common tab is strain sensitive to some degree. When connected as described above, this arrangement causes no instrument balance problems.

If the gages are open-faced, the strain measurement problems can be largely eliminated by tinning the entire common bar (being careful to protect the grids). It must be recognized, however, that doing so will result in strain indicator balance problems since the instrument will see only slightly over 115 ohms across grid number one and the others will be increasingly higher with grid number ten showing nearly 120 ohms.

In summary, careful analysis of test conditions and data obtained is necessary. Where maximum accuracy is desired (i.e., better than 95%), common tab strip gages should not be used.



020MT and 020PF Pattern Gages