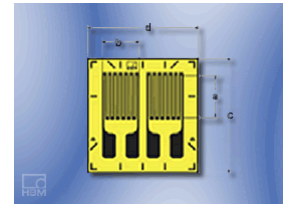


Double SG

A double SG is used whenever 2 linear measuring grids are positioned parallel and next to each other. This may happen, for example, if only the bending stress of a bending beam needs to be recorded. To compensate for possible overlaid tensile/compression loads and thermal expansion caused by temperature, 4 active SGs are normally used in the Wheatstone bridge circuit. A correspondingly higher output signal compared to a SG quarter or half-bridge is another advantage of this type of circuit.



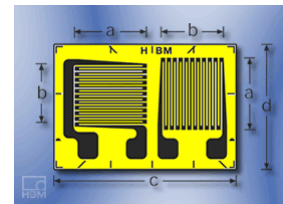
T rosettes

T rosettes have 2 measurement grids on one carrier arranged at an angle of 90° to each other.

In experimental voltage analysis, T rosettes are used to determine the biaxial stress state with *unknown* primary directions. In addition, these DGs are used to record measurement variables for constructing measurement variable recorders with a design corresponding to a tension beam.

T rosettes are also used to determine the modulus of elasticity and transverse contraction index ν (also called the transverse strain index or transverse index). Given tensile stress on a component (for example a rod), one measurement grid records positive linear expansion ϵ_l , while the measurement grid offset by 90° records negative transverse strain ϵ_q .

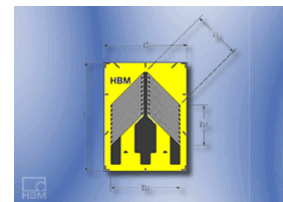
$$\text{Thus: } \nu = \frac{\epsilon_q}{\epsilon_l}$$



V-shaped SG

V-shaped SGs also have 2 measurement grids arranged at an angle of 90° to each other. These SGs are also referred to colloquially as “shear SGs” or “fishbone SGs”.

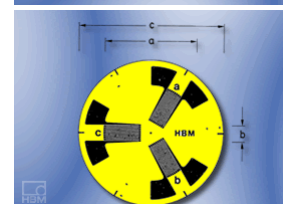
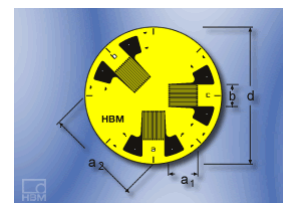
The typical application for this SG is constructing torque transducers, also called shear force transducers.



Rosettes with 3 measuring grids

Rosettes with 3 measuring grids on a shared carrier are available in two basic shapes, which are identified by the angular spacing of their measuring grids. The two designs are 0°/45°/90° rosettes and 0°/60°/120° rosettes. The angles always refer to the directions of the 3 measuring grids, regardless of how the rosette itself is structured.

The rosettes are used to determine the biaxial stress state with *unknown* primary directions according to magnitude and direction.



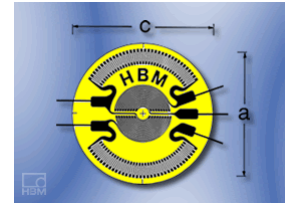
Full bridge SGs

The four measuring grids of a full bridge SG are already wired to form a Wheatstone full bridge. These SGs are used for numerous applications, for example to determine shear load on shearing rods or to determine a torsion moment of a shaft if it is only accessible on one side for SG installation..



Membrane rosettes

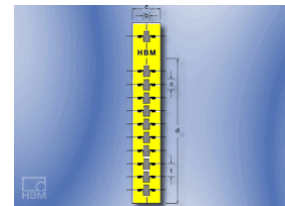
Membrane rosettes are used exclusively to construct membrane pressure transducers. Care must be taken in the design and construction of the transducer membrane (or the membrane rosette) to ensure that when stress is applied to the membrane (associated with its warping) the four measuring grids of the membrane rosette are located precisely in the expanded or compressed zones of the membrane. Positive strain proportions and negative ones of equal magnitude are added together within the Wheatstone bridge circuit.



SG chains

SG chains combine a series of similar or evenly spaced measuring grids which share the same carrier. Typical designs of SG chains are:

- Measuring grid direction parallel to the longitudinal chain axis
- Measuring grid direction perpendicular to the longitudinal chain axis
- Measuring grid alternating between parallel and perpendicular to the longitudinal chain axis,
- SG rosette chain (for example 5 rosettes in the design 0°/60°/120°).



SG chains are used to determine the stress curve (strain or the stress curve resulting from it) over a specific section or the shift in the peak value due to the effect of loading being introduced at a moving point.