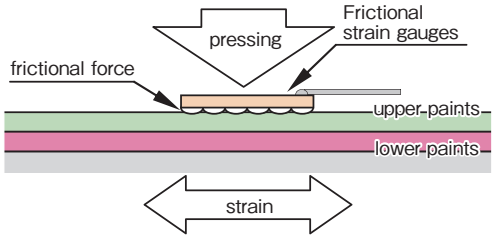
Frictional Strain Checker FGMH series

No bonding is required for strain measurement on steel

Features

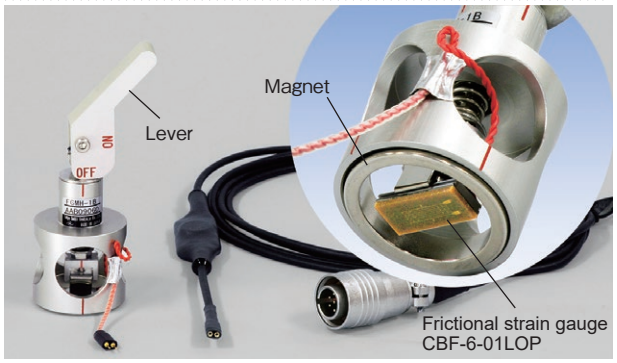
- Easy mounting and detaching by lever operation
- Paint removal, grinding, bonding and curing are not necessary
- Can be used repeatedly
- Strain measurement in three directions (FGMH-3A)



The Strain checker FGMH series measures strain using frictional force working on the contact surface of the frictional strain gauge by pressing the gauge against the structure with magnetic force. Unlike bondable strain gauges, surface preparation and bonding works are not required for this gauge, thus the works required for strain measurement are largely reduced. In combined use with a handheld type strainmeter, the strain checker

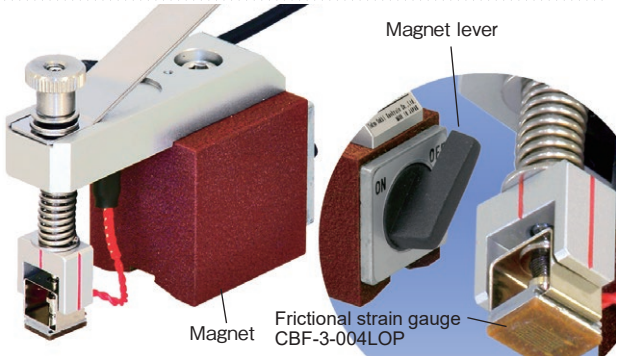
can easily measure strains on steel materials such as bridges by changing measurement point one after another. It is the most suited to preparatory measurements before starting a long term measurement.
In the FGMH series, three types are available. They are FGMH-1B and FGMH-2A both for single axis measurement and FGMH-3A for 0°/45°/90° three-axis measurement.

FGMH-1B (Single axis measurement)



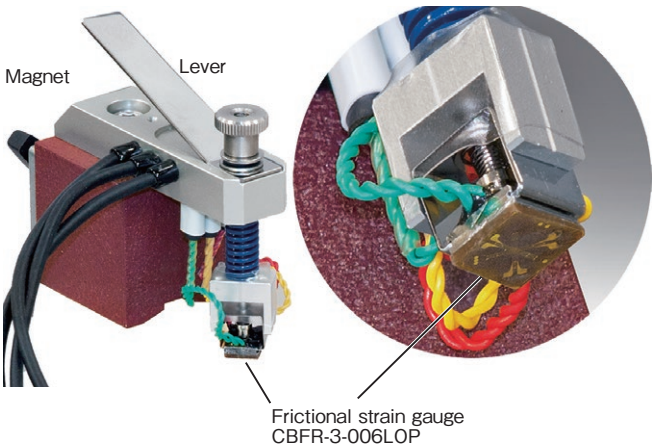
The FGMH-1B is a strain checker constructed small and light. The frictional strain gauge is set to on, off and replacing position by the operation of lever, thus allowing easy handling of the strain checker.

FGMH-2A (Single axis measurement)



The FGMH-2A is a strain checker especially designed for measurement on a small area such as the vicinity of a welded part. It can be easily attached to and detached from measurement object by the operation of magnet lever. In addition, a lever is provided on the upper part to slightly lift the frictional strain gauge from the measurement surface by pushing the lever downward. It enables easy adjustment of the direction of the strain gauge.

FGMH-3A (Three-axis measurement 0°/45°/90°)



The FGMH-3A is a strain checker for three-axis measurement in 0°/45°/90°. Principal stress (principal strain) and its direction can be found by applying rosette analysis calculation to the measured strain values in three directions. It is applicable to measurement in the vicinity of weld bead like as the FGMH-2A. Also similarly as the FGMH-2A, it can be easily attached to and detached from a measurement object by the operation of magnet lever. Another lever is provided for easy adjustment of the direction of the strain gauge.

The frictional strain gauge is a consumable part.
If it is stained, deteriorated or damaged, replace it with a new one.

Option : Applicable frictional strain gauge

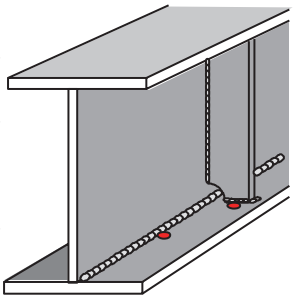
Type	Applicable frictional strain gauge (CE compliant)
FGMH-1B	CBF-6B-01LJAP-F
FGMH-2A	CBF-3B-004LJAP-F
FGMH-3A	CBFR-3B-006LJAP-F

Application examples

- Preparatory measurement of bridge which will undergo a long term measurement
- Investigation of neutral axis position of composite girder bridge
- Stress direction of structural member of bridge on which fatigue crack is initiated
- Stress measurement of newly built bridge where paint removal is not available.

Strain measurement in a narrow area

Stress concentration is caused in the vicinity of weld bead, which is deposit of welded materials along the welding pass. The strain checker FGMH-2A/FGMH-3A is capable of strain measurement in a narrow area such as the vicinity of weld bead because it is easily attached and detached by ON/OFF operation of the magnet lever. Strain in three directions can be measured simultaneously by the use of FGMH-3A.



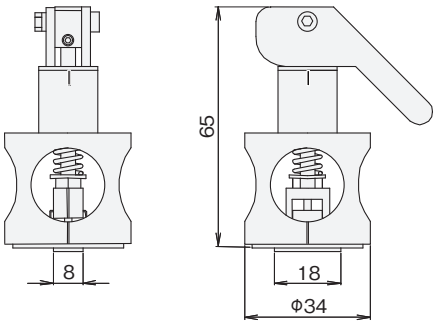
Specifications

Type	FGMH-1B	FGMH-2A	FGMH-3A
Number of axes	Single axis		Three-axis
Gauge length	6mm	3mm	
Operating temperature	0 ～ +60℃		
Compensated temperature range	0 ～ +60℃		
Objective material	Metal, Steel (Coefficient of thermal expansion 11ppm/℃)		
Gauge factor	Approx. 2.00		
Input/Output resistance	120Ω		
Measurement mode	Full bridge		
Input/Output cable	–	Φ3mm 0.05mm^2 4-core shielded chloroprene cable of 2m NDIS 7-pin plug attached	
Supplied cable	Leadwire with bridge circuit board 2m, NDIS 7-pin plug attached	–	
Weight (excluding cable)	Approx. 60 g	Approx. 260g	

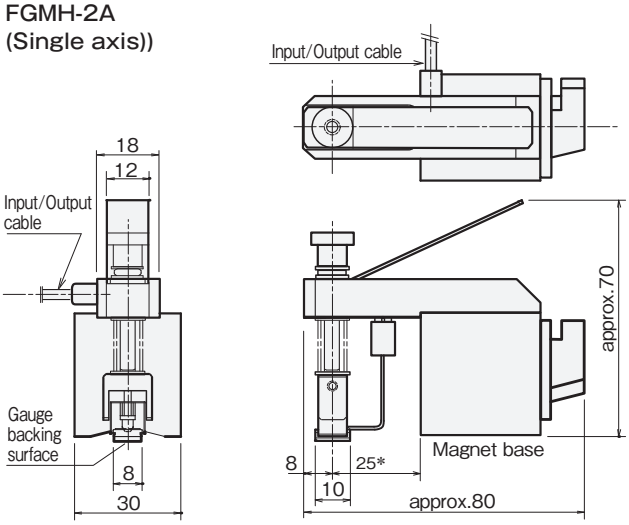
Note:
- The strain checker is installed on a measurement object by magnetic force. It is not applicable to measurement on non-magnetic materials.
- The strain checker is not applicable to the use on a curved or uneven surface.
- If the vicinity of the strain checker is hit strongly with a hammer or equivalent, a shift in the measured value may be caused.
- Correct measurement may not be possilble by the strain checker on a machine or structure experiencing strong vibration.
- For more precise measurement, it is recommended to remove the paint and to bond an ordinary strain gauge on the base metal surface.

Dimensions

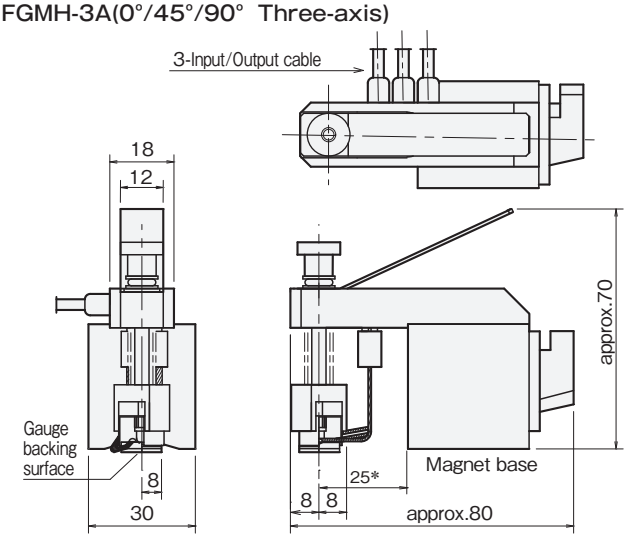
FGMH-1B
(Single axis)



FGMH-2A
(Single axis))



FGMH-3A(0°/45°/90° Three-axis)



*: Where the gauge backing surface is in parallel with the magnet base. (FGMH-2A, FGMH-3A)

Unit : mm