

## 2810 Series Flexure Fixture | Catalog Number 2810-400

The Instron® 2810 Series Flexure Fixture allows a variety of flexural tests to be performed, including determination of flexural modulus, flexural strength, and flexural yield strength. Easy to install, the three-point fixture can be modified with an optional conversion kit to provide a four-point bending conversion.

The fixture includes a 10 mm (0.4 in) diameter upper anvil and two 4 mm (0.16 in) or 10 mm (0.4 in) diameter lower anvils that are adjustable to accommodate specimens of different spans. Deflection of the specimen can be measured either through crosshead displacement or more precisely, through the mid-span direct measurement deflectometer plunger with a clip-on extensometer.

### Features

- Rated capacity 5 kN (500 kgf, 1,125 lbf)
- Three-point flexure fixture with an optional conversion kit for four-point loading
- Conforms to ISO, ASTM, DIN, and many other standards
- Fully adjustable span distance to suit a wide range of specimen sizes
- Adjustable stops for specimen widths up to 50 mm (2 in) for precise alignment
- Optional deflectometer plunger assembly
- Rugged design for minimum maintenance
- Temperature range: -100 to +350 °C (-148 to +660 °F)

### Accuracy

- Type of loading: Static flexure
- Specimen material: Plastics, composites, ceramics, thin metals and other materials
- Specimen shapes: Strip, bar, and components

### Principle of Operation

The specimen is supported on two precision machine-fixed anvils of a defined radius. The force is applied either centrally (three-point) or at a defined distance on either side of the center (four-point). The support beam is graduated lengthwise in metric units for accurate positioning of the anvils and is equally spaced to the center line. This feature also applies to the four-point loading beam and anvils. Adjustable specimen stops are provided so that the specimen may be quickly and accurately positioned on the lower anvils.



## Specifications

### 2810-400<sup>1</sup>

|                                |     |              |
|--------------------------------|-----|--------------|
| Maximum Capacity               | kN  | 5            |
|                                | kgf | 500          |
|                                | lbf | 1,125        |
| Temperature Range <sup>2</sup> | °C  | -100 to +350 |
|                                | °F  | -148 to +660 |

#### Anvil Dimensions

|  |    |      |
|--|----|------|
| Lower Support Anvils 2810-400A1 Diameter | mm | 10   |
|  | in | 0.39 |
| Lower Support Anvils 2810-400A2 Diameter | mm | 4    |
|  | in | 0.16 |
| Upper Loading Anvils Diameter            | mm | 10   |
|  | in | 0.39 |
| Anvil Depth (Maximum Specimen Width)     | mm | 50   |
|  | in | 2    |

#### Span Distance (Adjustable)

|                                     |    |                         |
|-------------------------------------|----|-------------------------|
| Minimum                             | mm | 10                      |
|                                     | in | 0.39                    |
| Minimum with Deflectometer 2810-403 | mm | 23 plus Anvil Diameter  |
|                                     | in | 0.9 plus Anvil Diameter |
| Maximum                             | mm | 200                     |
|                                     | in | 7.87                    |

#### Mechanical Connection

|                                   |    |     |
|-----------------------------------|----|-----|
| Upper Fitting Clevis Pin (Type O) | mm | 6   |
| Lower Fitting Clevis Pin (Type D) | in | 0.5 |

#### Overall Dimensions

|                        |    |      |
|------------------------|----|------|
| Overall Width (A)      | mm | 234  |
|                        | in | 9.2  |
| Lower Fixture (B)      | mm | 140  |
|                        | in | 5.51 |
| Upper Anvil Height (C) | mm | 73   |
|                        | in | 2.87 |
| Lower Anvil Height (D) | mm | 60   |
|                        | in | 2.36 |

#### Weight

|                              |     |           |
|------------------------------|-----|-----------|
| Lower Support with No Anvils | kg  | 2.8       |
|                              | lbs | 6         |
| Lower Anvils                 | kg  | 0.32 each |
|                              | lbs | 0.7 each  |
| Upper Anvil                  | kg  | 0.29      |
|                              | lbs | 1.6       |

#### Notes:

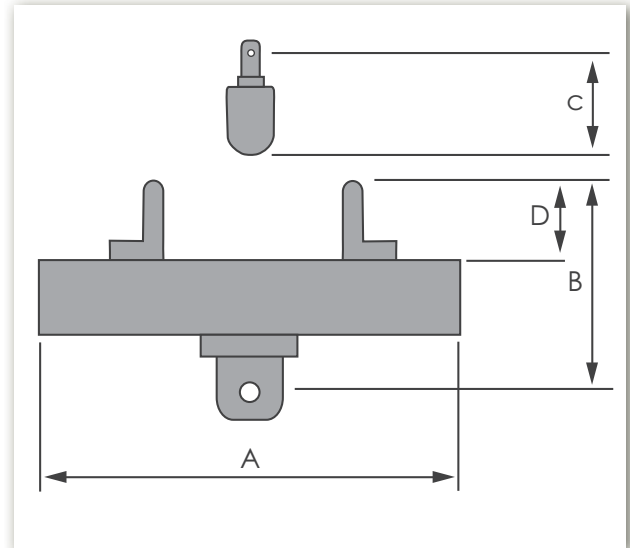
- Catalog number provides a support frame, one upper and two lower anvils
- Maximum temperature rating for plunger 2810-403 is 260 °C (500 °F)



Four-Point Flexure Fixture using  
Midpoint Deflectometer



Deflectometer using Clip-On  
Extensometer



Flexure fixture dimensions

## Accessories

|                       | Description   |
|-----------------------|---|
| 2810-401              | Anvil <sup>1</sup> set for 2810-401 has a diameter of 4 mm (0.16 in) and includes two lower anvils.   |
| 2810-402              | Anvil set for 2810-402 has a diameter of 10 mm (0.39 in) and includes two lower anvils.   |
| 2810-405              | Four-point bend upper anvil assembly used with 2810-400; Converts 2810-400 to four-point flexure (requires 2810-403 deflectometer) <ul style="list-style-type: none"> <li>Span distance (adjustable): 10 to 100 mm (0.39 to 3.94 in)</li> <li>Weight Support (No anvils): 0.862 kg (1.9 lb)</li> <li>Weight of Anvil: 0.32 kg (0.7 lb)</li> </ul> |
| 2810-403 <sup>1</sup> | <ul style="list-style-type: none"> <li>Deflectometer plunger for 2810-400 (requires suitable extensometer)</li> <li>Plunger clamping area: From 25 to 50 mm (1-2 in)</li> <li>Plunger deflection: 21 mm (0.82 in) (compressive)</li> <li>Limits the lower support anvil span to a minimum of 23 mm (0.9 in) plus the anvil diameter</li> </ul>    |

#### Notes:

- Extensometer is used to determine actual deflection and is not included in the deflectometer package. The recommended extensometers are 2630-107 or 2630-110.
- The anvils comply to ATSM D 790 (three-point test), ASTM D 6272 (four-point test), and ISO 178.

[www.instron.com](http://www.instron.com)



Worldwide Headquarters  
825 University Ave, Norwood, MA 02062-2643, USA  
Tel: +1 800 564 8378 or +1 781 575 5000

European Headquarters  
Coronation Road, High Wycombe, Bucks HP12 3SY, UK  
Tel: +44 1494 464646

Instron Industrial Products  
900 Liberty Street, Grove City, PA 16127, USA  
Tel: +1 724 458 9610