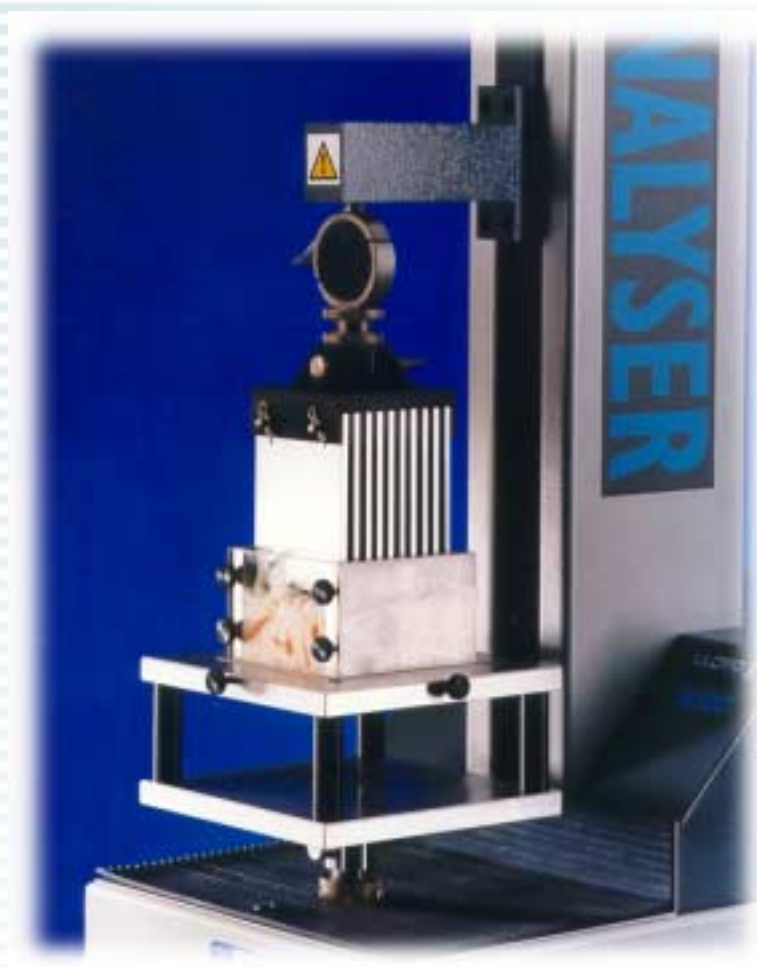


# FOOD TEXTURE



**SPECIFICATION**  
SS-FM-3420-0101  
January 2001

**INTERNET**  
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## FG/BEC: Back Extrusion Food Cell

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### Description

The Back Extrusion Food Cell consists of a circular plunger which is driven into a larger cylinder to compress the food sample and force it through the gap between the plunger and the container. This results in a peak compression force and then a fluctuating compression force. The kit is supplied with three different diameter plungers to compress the sample.

### Specification

Maximum Capacity	5 kN	1124 lbf
Minimum Load Cell	50 N	11.2 lbf
Cylinder Length	125 mm	5.0 in
Disc Diameters	35 mm	1.4 in
	40 mm	1.6 in
	45 mm	1.8 in
Weight	0.25 Kg	0.6 lb
Temperature Limits	Ambient or Food Temperature	

### Applications

The jig acts in compression for texture testing of fruit and vegetables. Software is available to allow complete texture profile analysis to be performed



## FGBCJ: Butter Cutting Jig

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### Description

The frame of the butter cutter supports a standard size cutting wire.

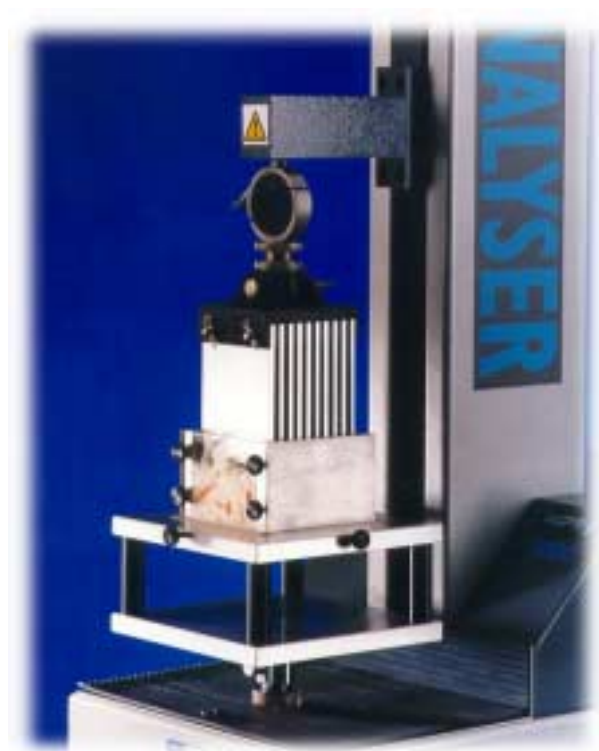
### Specification

Maximum Capacity	500 N	112 lbf
Minimum Load Cell	100 N	22.5 lbf
Eye End Diameter	15.85 mm	5/8 in
Width	95 mm	3.7 in
Height	65 mm	2.6 in
Weight	0.25 Kg	0.6 lb
Temperature Limits	-10°C to 100°C	

### Applications

This fixture is suitable for measuring consistency, spreadability, and firmness of rectangular fat samples up to 500g size, and similar sized cheese, margarine and butter samples.





## FG/KSC: Kramer Type Shear Cell

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### Description

The Kramer Type Shear Cell comprises ten parallel steel blades which are driven down through guide slots into a rectangular container with corresponding slots in the base. The sample is sheared, compressed and extruded through the bottom openings.

### Specification

Maximum Capacity	1 kN	225 lbf
Minimum Load Cell	100 N	22.5 lbf
Eye End Diameter	15.85 mm	5/8 in
Weight	1 Kg	2.2 lb
Temperature Limits	Ambient to 100°C	

### Applications

Used for the texture testing of food products such as fruit, pie fillings, baked beans, coleslaw, etc. State of the art software is available to allow complete texture profile analysis to be performed.

## FG/FEC: Ottawa Forward Extrusion Testing Cell

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### Description

The Ottawa Test jig consists of a square test cell with solid walls and an open base which can be fitted with one of a variety of plates which are included in the kit. A square plunger is fitted to the machine crosshead and provides the compression. The test method involves weighing a suitable quantity of sample which is placed in the cell with either a slotted or a perforated plate fitted. In either case the result is determined by measuring the resulting force required to extrude the sample.

### Specification

Maximum Capacity	1 kN	225 lbf
Minimum Load Cell	100 N	22.5 lbf
Extrusion Plates	4 mm (0.2 in) diameter holes	
	3 mm (0.1 in) diameter bars	
Eye End Diameter	15.85 mm	5/8 in
Weight	1 kg	2.2 lb
Temperature Limits	-10°C to 100°C	

### Applications

This jig can be used to obtain useful data for food products where an extrusion process is used in its manufacture. Ideally suited for testing beans, fruit fillings, pulses, soft vegetables and snack products.





## FG/SBS: Warner Bratzler Shear Blade Set

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### Description

The Jig consists of a rigid frame supporting a shear bar. Interchangeable shear blades fit into the frame. The kit is supplied with three blades: A square cut blade, a 'V' blade, and a 'V' blade with a hole in the apex.

### Specification

Maximum Capacity	1 kN	225 lbf
Minimum Load Cell	100 N	22.5 lbf
Eye End Diameter	15.85 mm	5/8 in
Weight	0.25 Kg	0.6 in
Temperature Limits	-10°C to 100°C	

### Applications

The jig acts in direct compression for slicing/ shearing tests on meat products and vegetables. Software is available to allow complete texture profile analysis to be performed.

## FG/SPAG: Spaghetti / Noodle Testing Fixture

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### Description

The set consists of two roller grips, designed for tensile testing of food products such as spaghetti and noodles.

### Specification

Maximum Capacity	500 N	112 lbf
Minimum Load Cell		
Eye End Diameter	15.85 mm	5/8 in
Weight	0.25 Kg	0.6 lb
Temperature Limits	-10°C to 100°C	





## FG/TPB: Food 3 Point Bend Jig

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### Description

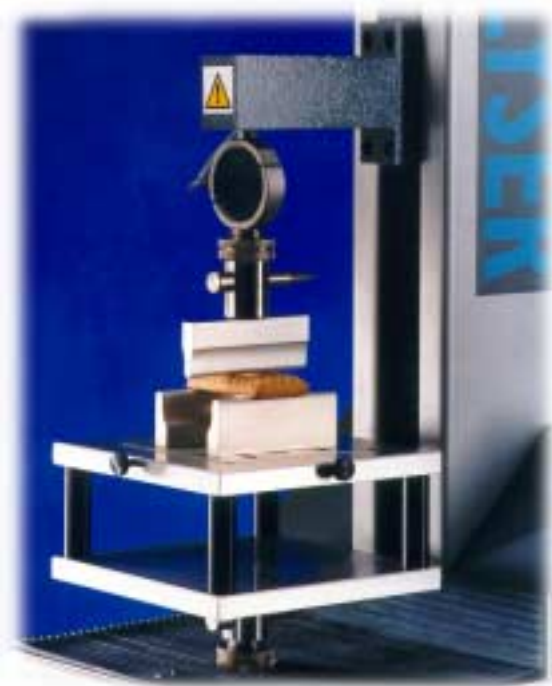
Three Point Bend Jig for general purpose food sample fracture testing.

### Specification

Maximum Capacity	1 kN	225 lbf
Minimum Load Cell	50 N	11.2 lbf
Span Range	40 - 80 mm	1.6 - 3.1 in
Eye End Diameter	15.85 mm	5/8 in
Weight	0.25 Kg	0.6 lb
Temperature Limits	-10°C to 100°C	

### Applications

The Three Point Bend Jig enables snap testing of various products such as fruit, biscuits, snack products and chocolate. It provides variable spans up to 80mm with graduated marks for easy setting. The supports are 6mm in diameter. Testing using this jig can enable measurements for snap strength and crispness.



## FG/VBS: Volodkevitch Bite Set

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### Description

Designed to imitate incisor teeth shearing through a food sample. The set comprises upper and lower 'teeth' which, during the test, are brought together until nearly touching. The sample is positioned on the lower 'tooth' and the result is measured as the peak force required to bite through the sample.

### Specification

Maximum Capacity	500 N	112 lbf
Minimum Load Cell	50 N	11.2 lbf
Eye End Diameter	15.85 mm	5/8 in
Weight	0.25 Kg	0.6 lb
Temperature Limits	-10°C to 100°C	

### Applications

Typically used to test meat products, vegetables, fruit and crispy or crunchy products. Results correlate with tenderness, toughness and firmness of the sample.



## TG82: Magnus Taylor Puncture Probe Set

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### Description

This jig consists of two sets of cylindrical probes of different sizes. Each pair has one flat end and one hemispherical end. A twist action clamping chuck fitting directly to the load cell is included together with a flat 150mm<sup>2</sup> specimen support plate

### Specification

Maximum Capacity	2 kN	450 lbf
Minimum Load Cell	50 N	11.2 lbf
Probe Diameters	7.94 mm	5/16 in
	11.11 mm	7/16 in
Temperature Limits	Ambient or Food Temperature	

### Applications

Puncture/penetration tests on fruit, vegetables and food products. Software is available to allow complete texture profile analysis to be performed.



## TG83: Texture Probe Set - 2kN Max

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### Description

This Jig consists of a range of flat ended cylindrical probes of various sizes together with a twist action clamping chuck fitting directly to the load cell shaft. A flat 150mm<sup>2</sup> specimen support plate and splash tray are provided.

### Specification

Maximum Capacity	2 kN	450 lbf
Minimum Load Cell	50 N	11.2 lbf
Probe Diameters	1.59 mm	0.06 in
	3.18 mm	0.13 in
	4.77 mm	0.19 in
	6.36 mm	0.25 in
	7.95 mm	0.31 in
	9.54 mm	0.38 in
	11.13 mm	0.44 in
	12.72 mm	0.50 in
Temperature Limits	Ambient or Food Temperature	

### Applications

Puncture/penetration tests on fruit, vegetables and food products. Software is available to allow complete texture profile analysis to be performed.





## Ball Probes

### Description

Two fundamental criteria for a good test are repeatability and resolution for comparison between results. In many cases where specimen hardness/ softness is required, a ball probe can provide both repeatability and resolution. The principle of the ball probe is that uniform compression force is distributed at a normal angle to the surface area of the ball. This gives an averaging effect over the local area being tested.

### Specification

Probe No.	Diameter of Ball	Max Load	Screw Fitting	Part No
FG/BA1	1/4 in	500N (112 lbf) ↓	6mm (0.24 in) ↓	01/2679
FG/BA2	2mm			01/2683
FG/BA3	1/2 in			01/2680
FG/BA4	4mm			01/2684
FG/BA5	3/4 in			01/2681
FG/BA6	6mm			01/2685
FG/BA7	1.0 in			01/2682
FG/BA8	8mm			01/2686
FG/BA9	10mm			01/2687
FG/BA10	10mm			

### Applications

The Three Point Bend Jig enables snap testing of various products such as fruit, biscuits, snack products and chocolate. It provides variable spans up to 80mm with graduated marks for easy setting. The supports are 6mm in diameter. Testing using this jig can enable measurements for snap strength and crispness.

## Cone Probes

### Description

Cone Probes are supplied with a range of angles, from 15° to 90°. The selection of the appropriate cone is, in some cases, dependent upon the testing standard, or alternatively can be selected appropriately for the consistency of the material being tested.

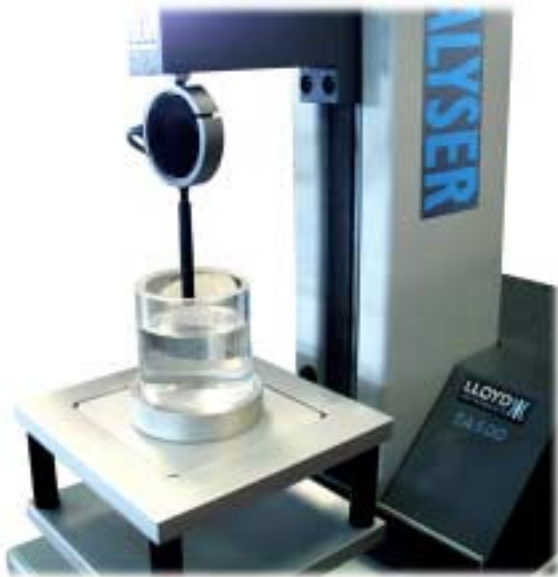
### Applications

Cone Probes have been used for many years, particularly on penetrometers, for testing building industry products such as sealants and mastics, and the cosmetics and pharmaceutical industries for testing creams and pastes. Cone Probes are useful for determining the spreadability of dairy products such as margarine, butter and spreads.



### Specification

Model	FG/CO15	FG/CO30	FG/CO45	FG/CO60	FG/CO90
Part No	01/2688	01/2689	01/2690	01/2691	01/2692
Maximum Load	500N	500N	500N	500N	500N (112 lbf)
Thread Size	6mm	6mm	6mm	6mm	6mm (0.24 in)
Cone Angle	15°	30°	45°	60°	90°



## Applications

Cylindrical probes have traditionally been used as general purpose compression probes for a wide range of applications, primarily for applying a deformation to a gel structure to determine the gel strength and elasticity. They are also useful for applying a shearing force to a gel to determine its breaking strength and elasticity. Many standards quote cylindrical probes for gel testing. The Bloom value is a recognised standard for quoting the strength of a gel structure, particularly gelatine.

## Cylinder Probes

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### Description

The principle of the cylindrical probe is that as the probe is forced into the specimen, a shearing force acts which causes the sample to deform or rupture. This produces a curve showing load resulting from deformation.

### Specification

Probe No.	Diameter of Ball	Max Load	Screw Fitting	Part No
FG/CY1	1/4 in	500N (112 lbf) ↓	6mm (0.24 in) thread ↓	01/2666
FG/CY2	2mm			01/2674
FG/CY3	1/2 in			01/2667
FG/CY4	4mm			01/2675
FG/CY5	3/4 in			01/2668
FG/CY6	6mm			01/2676
FG/CY7	1 in			01/2669
FG/CY8	8mm			01/2677
FG/CY9	1/2 in			01/2670
FG/CY10	10mm			01/2678
FG/CY11	2 in			01/2671
FG/CY13	3 in			01/2672
FG/CY15	4 in			01/2673

## FG/Base: TA500 Base Table

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### Description

The Base table is an essential part of the TA500 Texture Analyser. It is supplied with two inserts, one blank and one with a central locator hole. The blank insert provides a flat and solid base for positioning specimens for testing. The holed plate provides location for a number of test fixtures such as the back extrusion cell and Volodkevitch Bite Set. Other fixtures such as the Kramer Shear Cell, Ottawa Cell and Warner Bratzler are located in the cut-out section (without an insert plate) and are secured using the two thumb screws. This helps ensure accurate central positioning.





## Texture Analysis Accessories Kits

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A range of Texture Analysis Accessories Kits are available from Lloyd Instruments. Each kit consists of specially selected jigs and probes for analysis of specific food types.

Application of a texture analysis system in an organisation can highlight numerous quality improvement opportunities and other benefits through operations, typically research and development, production/process control, and quality assurance/control.

### Bakery Accessories Kit

A Bakery Kit containing the following items:-

- TPB - 3 point bend jig
- DPS - Dough firmness testing set
- DSJ - Comparative dough stickiness measurements jig
- CRISP - Crisp fracture support jig
- CY7 - 1 in (25.4 mm) diameter cylinder probe



### Confectionery Accessories Kit

A Confectionery Kit containing the following items:-

- TPB - 3 point bend jig
- CY2 - 2 mm (0.08 in) diameter cylinder probe
- CY7 - 1 in (25.4 mm) diameter cylinder probe
- BA2 - 2 mm (0.08 in) diameter ball probe
- BA3 - 1/2 in (12.7 mm) diameter ball probe



### Dairy Accessories Kit

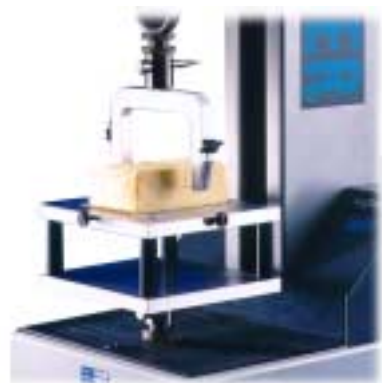
A Dairy Kit consisting of the following items:-

- ICE - Ice cream scoopability testing jig
- BCJ - Butter cutting jig
- CY11 - 2 in (50.8 mm) diameter cylinder probe
- CY2 - 2 mm (0.08 in) diameter cylinder probe
- CY4 - 4 mm (0.16 in) diameter cylinder probe

### General Food Probe Kit

This probe set contains the following items:-

- CY1 - 1/4 in (6.35 mm) diameter cylinder probe
- CY7 - 1 in (25.4 mm) diameter cylinder probe
- BA3 - 1/2 in (12.7 mm) diameter ball probe
- BA7 - 1 in (25.4 mm) diameter ball probe



## ORDERING INFORMATION

Model	Part No.	Description
FG/BEC	01/2760	Back Extrusion Food Cell
FG/BCJ	01/2664	Butter Cutting Jig
FG/KSC	01/2754	Kramer Type Shear Cell
FG/FEC	01/2758	Ottawa Forward Extrusion Cell
FG/SBS	01/2767	Warner Bratzler Shear Blade Set
FG/SPAG	01/2659	Spaghetti / Noodle Testing Fixture
FG/TPB	01/2756	Food Three Point Bend Jig
FG/VBS	01/2663	Volodkevitch Bite Set
TG82	01/1134	Magnus Taylor Puncture Probe Set
TG83	01/1114	Texture Probe Set
FG/BA1 - FG/BA10	See Above	Texture Analysis Ball Probes
FG/CO15 - FG/CO90	See Above	Texture Analysis Cone Probes
FG/CY1 - FG/CY15	See Above	Texture Analysis Cylinder Probes
FG/BAKERY	01/2696	Bakery Accessories Kit
FG/CONFECT	01/2698	Confectionary Accessories Kit
FG/DAIRY	01/2697	Dairy Accessories Kit
FG/GENERAL	01/2695	General Food Probe Kit
FG/Base	01/2757	Base Table for TA500



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