



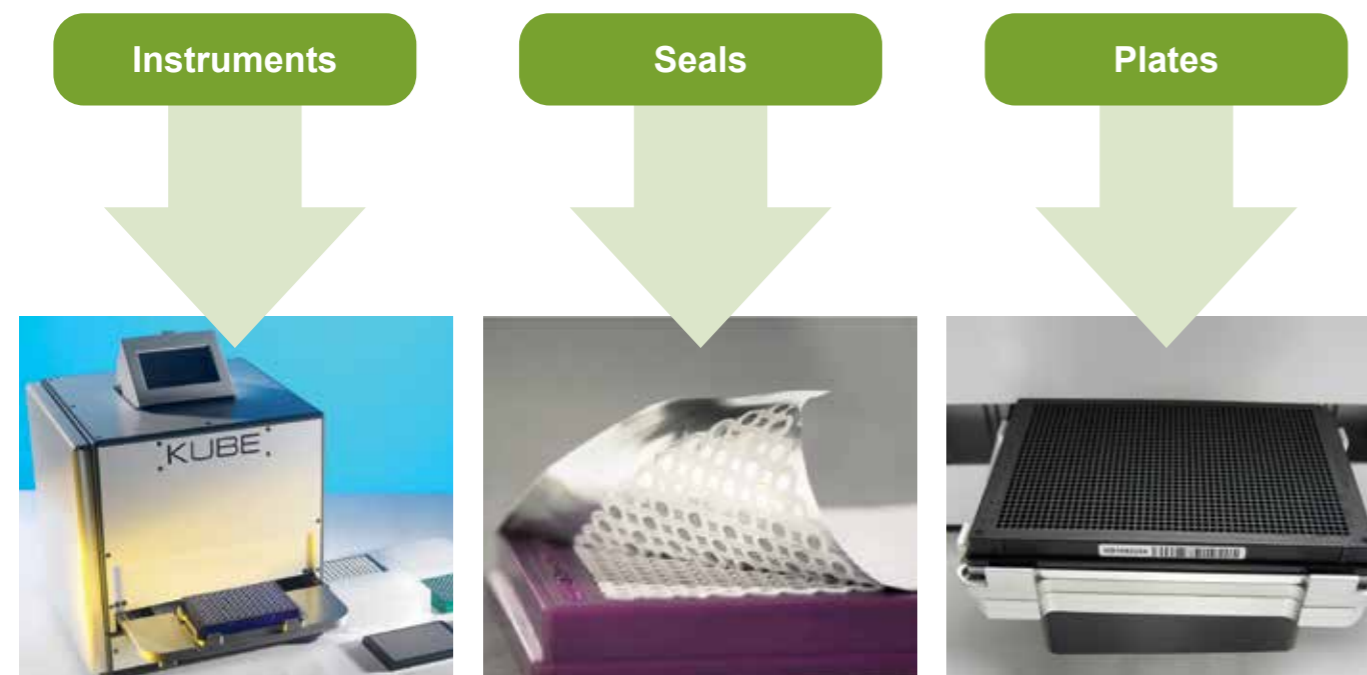
## Introduction

At LGC we know all plate sealers are not the same, we use them everyday. We've been developing and optimising a high-throughput PCR workflow for over ten years in support of our genotyping service, and because we employ water bath thermal cycling, it is critical that we have a highly robust plate sealing solution in place.

Having evaluated a number of commercially available sealing instruments over the years, we unfortunately found none that could effectively meet all our requirements. We turned to our team of instrument design and development engineers to develop a state-of-the-art plate sealing solution that would. Ultimately they produced not just one, but two plate sealing solutions that truly represent the leading edge of plate sealing technology today.

Both our **Kube™** heat sealing and **Fusion<sup>3</sup>™** laser sealing instruments are used day-in and day-out by our service labs in North America and Europe, and have enabled tremendous increases in our throughput and productivity. With leading edge capabilities and standards of performance that are second to none, we are confident they can do the same for your lab.

In addition to our instruments, we have also produced our own line of fully skirted 384- and 1536-well PCR microtitre plates that are robotic friendly and designed for optimum sealing. And of course we offer a range of plate sealing films as well, including optically clear films ideal for fluorescent, luminescent, and colorimetric assays, and a host of other films for short and long term storage applications.



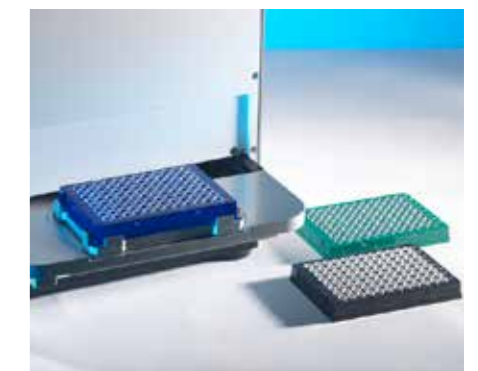
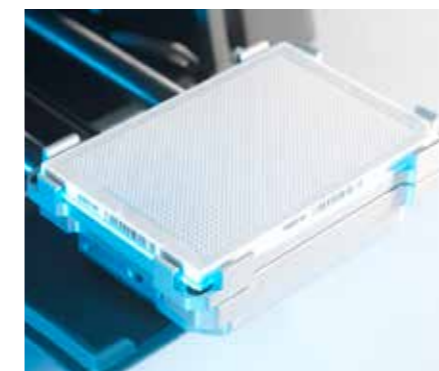
## Kube - a fully automated heat sealing solution



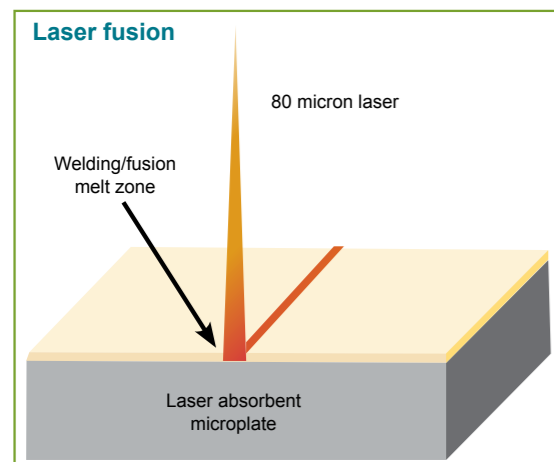
The Kube automated heat sealing instrument is a versatile instrument that delivers unsurpassed levels of **speed, performance, flexibility, and ease-of-use**. Controlled through an intuitive on-board touch screen interface, or remotely via an RS 232 connection, the Kube can seal and re-seal a wide range of standard height and deepwell microplates, from 24- to 384-well formats. Also, incorporated in the advanced design of the Kube are many unique features that facilitate ease-of-use and extend performance capabilities beyond that of competing instruments.

### Key benefits

- Heat seals a wide range of microplate formats using either singulated seals or a roll of sealing film
- 24- to 384-well polypropylene and polystyrene plates; 9 to 45 mm high
  - Includes 6 plate support adapters and a plate adaptor to support 384-well skirted and semi-skirted plates
  - Optional 96-well adapter for skirted, semi-skirted and unskirted 96-well plates
- Reseals up to 5 times with standard block
  - Typical 6-8 second plate sealing cycle
- Fast sealing time; up to 50 % faster than competing instruments
- Easy to operate; seal rolls loaded by hand – no tools necessary, safely load in external slots
  - do not need to load through heated chamber
- Seal length programmable through the software to support varying application needs
  - Tight-cropped for automated processing; overhanging tab for manual peeling, etc.
- Automation friendly – easily integrated into fully automated systems
  - RS232 controllable, low height profile, stacker compatible
  - Presents plates in either portrait or landscape orientation
- Small footprint conserves valuable bench space
- Loads a 265 mm diameter roll of sealing film



## Fusion<sup>3</sup> – patented laser sealing technology



Our patented Fusion<sup>3</sup> plate sealer<sup>1</sup> is a fully automated benchtop instrument that uses a directed laser beam to quickly “fuse” seals on to flat-top microplates. It has the flexibility and precision to seal plate densities from single well reservoirs to 3456-well format.

The Fusion<sup>3</sup> utilises a 50 w 976 nm laser mounted to an XY robot. End users can easily program the desired welding pattern through an intuitive on-board control interface, or remotely via an RS232 connection.

Designed to work in combination with the Kube heat sealer the Fusion<sup>3</sup> laser plate sealer has the ability to hermetically seal high density microplates with great reliability, including 1536-well plates, and can reseal plates up to **50 times or more**. The laser directs its energy to just a thin 80 µm line in between wells, making the Fusion<sup>3</sup> ideal for working with sensitive, heat-labile samples as no heat is passed to the sample.

(Note: due to the physics of the laser fusion process, the Fusion<sup>3</sup> is limited to sealing either clear sealing film onto opaque black polypropylene (PP) or polystyrene (PS) plates. We can apply black DMSO resistant peel seal film onto Cyclic Olefin (COC) or PS clear and white plates. In all cases the plates must have flat top surfaces - no chimneys. See sealing film cross reference chart for further information.)

<sup>1</sup> Complies with FDA performance standards for laser products except for deviations pursuant to Laser Notice No. 50, dated (June 24, 2007).

### Key benefits

- Seals high density flat top microplates perfectly – every well, every time!
- No heat passed to the sample; ideal for heat-labile samples
- Robotic friendly; RS 232 interface with front plate load
- Fast sealing time: typically 10-20 seconds for 384-well plates and 20-30 seconds for 1536-well plates
- Plates can be sealed and re-sealed up to 50 times or more (seal dependent)
- Uses single sheets or a 265 mm diameter film-roll with a capacity of >4,000 seals, both initially prealigned using the Kube heat sealer



Part number	Description	Quantity	Sealer
KBS-0612-001	Polypropylene Vision Film	750 m x 78 mm reel	Fusion <sup>3</sup>
KBS-0612-003	Polypropylene Vision Film	100 sheet pack	Fusion <sup>3</sup>

## 384- & 1536-well flat top PCR plates optimum performance

LGC service labs utilise a high-throughput PCR workflow that generates upwards of one million genotyping data points per day for customers worldwide. To streamline our workflow and enhance productivity even further, we designed our own automation friendly 384- and 1536-well PCR plates with flat top surfaces to facilitate optimum sealing with both heat and adhesive seals. (The flat top surface increases adherence of adhesive plate seals when compared to other PCR plates with raised rims, or “chimneys” around each well).

To ensure the physical integrity of every well and consistent performance overall, we subject every plate to 100 % leak testing using electrostatic and pressure techniques, and samples from every lot are inspected for flatness and dimensional accuracy, and are functionally validated using a panel of standard KASP™ genotyping assays.

For genotyping work done in our service labs we use opaque black versions of the 384- and 1536-well PCR plates, where reaction volumes are miniaturised to 5 µL and 1 µL respectively. The opaque black material prevents fluorescent signal from carrying over into adjacent wells and is required when sealing with the Fusion<sup>3</sup> laser sealing instrument. To facilitate sample management and tracking, all our standard PCR plates are pre-barcoded with identical barcodes affixed to both the portrait and landscape side of each plate. Custom barcoded plates are available upon request.

### Key benefits

- Flat top surface for optimal sealing
- Automation friendly design
- SBS footprint
- Tight control on flatness and dimensional accuracy
- Available in opaque black
- Pre-barcoded with custom barcoding available upon request
- Easy removal of seals for post-PCR plate processing (seal dependant)



### Compatibility

- All 384- and 1536-well PCR plates compatible with water bath thermal cycling
- V-shaped wells ensure good thermal conduction
- Opaque black plates compatible with Fusion<sup>3</sup> laser sealing instruments

## Ordering information

The standard black 384- and 1536-well PCR plates compatible with the Fusion<sup>3</sup> are presented in the table below.

Part number	Description	Quantity	Sealer
KBS-0750-031	384-well plate black landscape twin barcode	Box of 20	Fusion <sup>3</sup> /Kube
KBS-0750-001	384-well plate black, landscape barcode	Box of 20	Fusion <sup>3</sup> /Kube
KBS-0751-021	1536-well plate v2, ASHD, single barcode	Box of 20	Fusion <sup>3</sup>
KBS-0751-022	1536-well plate v2, ASHD, double barcode	Box of 20	Fusion <sup>3</sup>

Note: all plates are pre-barcoded with either a single barcode on the landscape side, or two identical barcodes affixed to both the landscape and portrait sides of the plate. Standard barcode numbers are guaranteed never to repeat. Custom barcoding available upon request.

Additional 96-well and 384-well plates compatible with the Kube sealer include those listed below. Additional plates may be available; please contact your LGC representative or LGC Customer Service.

Part number	Description	Quantity	Sealer
KBS-0752-001	FrameStar 384-well and 96-well PCR plate, white wells, black frame	Box of 50	Kube
KBS-0752-032	FrameStar 384-well and 96-well PCR plate, clear wells, clear frame	Box of 50	Kube
KBS-0752-022	FrameStar 384-well and 96-well PCR plate, white wells, clear frame, barcoded	Box of 50	Kube
KBS-0752-021	FrameStar 384-well and 96-well PCR plate, white wells, clear frame	Box of 50	Kube
KBS-0752-037	FrameStar 384-well and 96-well PCR plate, clear wells, clear frame, barcoded	Box of 50	Kube
KBS-0752-011	FrameStar 384-well and 96-well PCR plate, clear wells, clear frame	Box of 50	Kube
KBS-0752-023	FrameStar 384-well and 96-well PCR plate, white wells, clear frame, triple barcoded	Box of 50	Kube
KBS-0752-002	FrameStar 384-well and 96-well PCR plate, black wells, black frame	Box of 50	Kube
KBS-0752-033	FrameStar 384-well and 96-well PCR plate, clear wells, green frame	Box of 50	Kube
KBS-0752-035	FrameStar 384-well and 96-well PCR plate, clear wells, black frame	Box of 50	Kube
KBS-0752-043	FrameStar 384-well and 96-well, skirted PCR plate, clear wells, clear frame	Box of 50	Kube
KBS-0752-051	FrameStar 384-well and 96-well non-skirted PCR plate, clear wells, black frame	Box of 50	Kube

### Adhesive plate seals

The following seals are available for manual application.

Part number	Description	Quantity
KBS-0600-011	Adhesive clear seals qPCR, roll, portrait	200 m x 78 mm roll
KBS-0619-001	Adhesive foil piercable solvent resistant	100 Pack (125 x 78 mm)
KBS-0618-001	Adhesive microplate seals, individual seals	100 Pack (125 x 78 mm)
KBS-0606-002	Adhesive PCR film	100 Pack (125 x 78 mm)
KBS-0606-001	Adhesive PCR film, roll, portrait	200 m x 78 mm roll
KBS-0600-002	Adhesive PCR foil, individual sheets	100 Pack (125 x 78 mm)
KBS-0620-001	Adhesive seal gas permeable cuts sheets (100)	Please contact us for more information

## Example Kube seal selection guide

Products	Clear Seal 3730	Clear Seal	Super Optic Version 2	Foil Seal	DMSO Resistant Peel Seal	Peel Seal	Pierce Seal	Thermal Bond
<b>Description</b>	Clear polymer. Seals to polypropylene, polystyrene, polyethylene and cyclic olefin copolymer. Good optical clarity, some solvent resistance.	Clear polymer film forming a peelable seal to polypropylene, polystyrene, polyethylene and cyclic olefin and cyclic olefin copolymer plates. Good optical clarity. Moderate solvent resistance.	Clear polymer film forming a permanent seal to polypropylene that can not be peeled and is difficult to pierce. Good optical clarity and solvent resistance.	Heat seal to polypropylene and polystyrene plates that can be pierced with a tip or peeled off by hand. Good solvent resistance including DMSO. Resealing onto existing seal is possible. A colour print identifies the non-sealing surface.	Identical sealing characteristics to Peel Seal but with a high resistance at elevated temperatures. Excellent seal on COC plates.	This popular laminate material gives a peelable heat seal to polypropylene plates. Can be peeled directly from -80 °C freezer. Good barrier to aqueous solutions. Moderate resistance to solvents at room temperature.	Foil based material. Heat seals to polypropylene plates and polystyrene plates. Very good solvent resistance including DMSO. Seals can be applied on top of each other allowing multiple access/resealing of samples. A colour print identifies the non-sealing surface.	Heavy duty laminate material that seals to polypropylene to give a very strong peelable seal. High degree of sample protection. Good solvent resistance including DMSO.
<b>Application</b>	Recommended for use with the ABI 3730 Gene Analyzer as the thinner structure pierces more easily.	qPCR, short term compound storage.	PCR, especially water bath thermal cyclers, qPCR Storage and disposal of hazardous materials. Sample inspection. Recommended for use with DMSO.	Low temperature compound storage, short term room temperature compound storage, PCR.	Both low temperature and room temperature compound storage with DMSO and other organic solvents.	Low temperature, compound storage, short term room temperature compound storage.	PCR, compound storage, sample shipping.	Long term storage including storage and transportation at low temperature PCR, especially water bath cyclers. Storage of organic solvents, acids and alkalines.
<b>Seal integrity</b>	-80 °C to 80 °C or 110 °C with pressurised PCR heated lids.	-80 °C to 80 °C or 110 °C with pressurised PCR heated lids.	-80 °C to 110 °C	-20 °C to 110 °C	-80 °C to 80 °C	-80 °C to 110 °C	-20 °C to 120 °C	-200 °C to 110 °C
<b>Pierceable</b>	✓	✓	✗	✓	✗	✗	✓	✗
<b>Peelable</b>	✗	✗	✗	✓	✓	✓	✗	✓
<b>Sterile</b>	✗	✗	✗	✗	✗	✗	✗	✗
<b>Dimensions</b>	610 m x 78 mm	500 m x 78 mm 125 mm x 78 mm 350 m x 115 mm	610 m x 78 mm 500 m x 115 mm 125 mm x 78 mm	610 m x 78 mm 125 mm x 78 mm	500 m x 78 mm 500 m x 115 mm 125 mm x 78 mm	610 m x 78 mm 125 mm x 78 mm 500 m x 115 mm	610 m x 78 mm 125 mm x 78 mm 500 m x 115 mm	500 m x 78 mm 300 m x 115 mm 125 mm x 78 mm
<b>Catalogue number</b>	KBS-0608-001	KBS-0605-001 KBS-0605-004 KBS-0605-005	KBS-0607-002 KBS-0607-004	KBS-0604-001 KBS-0604-004	KBS-0611-001 KBS-0611-003 KBS-0611-005	KBS-0601-001 KBS-0601-005 KBS-0601-006	KBS-0603-001 KBS-0603-004 KBS-0603-005	KBS-0609-001 KBS-0609-004 KBS-0609-005

(1) For further information on our complete range of seals and plates contact our customer service team.

# Genomics - products and services

## Services

- KASP™ SNP and InDel genotyping
- DNA and RNA extraction services
- Sanger sequencing
- Next-generation sequencing services (Illumina HiSeq and MiSeq)
- Whole Genome Amplification (WGA)

## Products

- KASP SNP and InDel genotyping chemistry
- Dual-labeled BHQ® probes, BHQplus® probes and BHQnova™ probes
- DNA extraction products (sbeadex™, Kleargene™ and mag™ kits)
- Enzymes and PCR reagents (KlearKall™, KlearTaq™ and KlearTaq™ HiFi)
- Whole Genome Amplification (WGA) kits and services
- Microtitre plates and seals for heat or laser sealing (96, 384 and 1536)
- SNPline PCR workflow instrumentation:
  - Plate heat sealers (Kube™)
  - Plate laser sealer (Fusion³™)
  - Thermal cycling instrument (Hydrocycler²™)
  - Assay dispensing system (Meridian²™)
  - Software (SNPviewer™, KlusterCaller™ and Kraken™)
  - DNA extraction instruments (oKtopure™ and Genespin™)
  - DNA plate replicating instruments (repliKator™ and K-pette)
  - Plate readers (FLUOstar® Omega and PHERAstar® Plus)
- Integrated PCR and qPCR instrument (IntelliQube®)
- Integrated liquid handling and assay processing (Nexar® System)
- Fluorescent detection system (Araya®)
- High-capacity thermal cycler (Soellex® 2.0)
- Array Tape® consumable and cover seal
- Array Tape software (Intellics® and IntelliScore®)
- Diagenode shearing solutions (Bioruptor® Pico, Bioruptor Plus, Megaruptor®, Diagenode One, and IP-Star®)

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Science for a safer world