

Diagraph IJ4000 Series

High Resolution Inkjet
Case Coding Solution



Cost Effective Real Time Printing of
High Quality Alphanumerics, Barcodes and Graphics
Directly onto Secondary Packaging

we mark your products.

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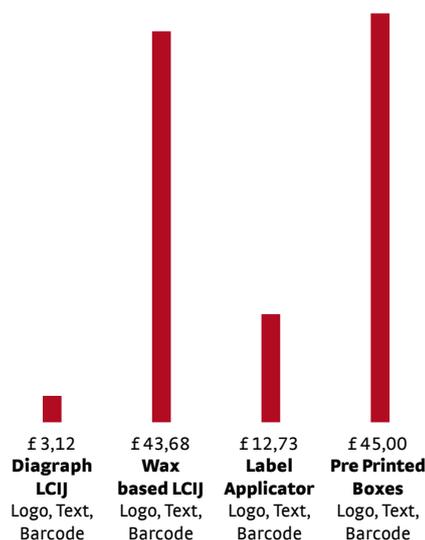
ALLEN CODING
A DIVISION OF ITW

How to save time and money on your secondary packaging

High Resolution Inkjet Case Coding

High Resolution Inkjet Printing is **the most-cost effective and efficient solution** for printing highquality alphanumerics, high-contrast scannable barcodes and crisp graphics directly onto secondary packaging. Variable information can be quickly and easily changed adding flexibility to your printing line. Consumables are significantly more cost-effective and easily managed compared to competing technologies.

Cost Impact of Enhancing Shipping Cartons
(Per 1000 cartons)



1. vs. Wax-Based Inkjet

Wax based systems **require as much as a 36x higher volume of consumables at up to 14x higher cost** than porous systems. Additional costs are incurred as printheads require complete replacement on average every 1.5 to 2 years (compared to every 10 years with the Diagraph IJ4000). Wax print adheres to the surface of a product and is therefore susceptible to abrasion and smudging due to contact with guard rails or the challenges of operating in hot environments or handling hot materials. This can result in costly reworks and inconsistent print quality. Finally, a lack of auto clean maintenance features and the need to wait for wax-based systems to warm up and cool down throughout the print cycle, makes these systems significantly more time consuming to operate and maintain.

2. vs. Labels

Similarly, both manual and automated labelling systems involve higher costs and more time intensive maintenance than the Diagraph IJ4000. The cost per mark of a label based system is often **as much as 8 times more expensive** than that of a porous inkjet system. Labelling systems also have more moving parts which require frequent adjustments and wear more quickly. Production must be stopped in order for consumables to be replaced and there are more consumable elements to manage (the large variety of label stock as well as thermal transfer ribbons). Message changeovers are a multi-step process compared to a single-step solution for the Diagraph IJ4000.

3. vs. Pre-Printed Boxes

By far the most expensive and space consuming option, pre-printed boxes **can cost over 90% more** than those printed by the Diagraph IJ4000. Additional costs are incurred when evolving market priorities require certain SKU's to be more or less demanded than anticipated. Storage of pre-printed boxes can take up significant space on crowded factory floors and changeovers are a complicated, multi-step process.

Generate significant savings in time, money and space.

Why the Diagraph IJ4000?



- **Superior print consistency**
- **Maximum system flexibility**
- **30% less downtime**
- **5x greater lifespan**

Four years of intense research into real world customer needs and challenges laid the foundation for the Diagraph IJ4000. The resulting customer-focused design provides best-in-class performance in key areas, making it the preferred case coding solution for manufacturers of all sizes. Well-known users of the technology include **Nestle, Kraft Heinz, Schreiber Foods, Dial and Anheuser-Busch**. The Diagraph IJ4000 offers:



Industry-Leading PRINT CONSISTENCY

Four unique features combine to provide best-in-the-market print consistency on challenging packaging lines where boxes are rarely perfectly uniform. Industry-leading ink throw distance, precision placement via a unique roller retractor, patented shock resistant design and an exclusive ink delivery system work together to provide **superior print consistency** compared to competing systems.

CUSTOMER-FOCUSED Design

To best address your unique printing challenges, the Diagraph IJ4000 was designed to allow **maximum system flexibility**. Simple message editing can be completed on either a personal PC or HMI controller. Features such as industry-leading print height, the ability to drive up to four printheads on two separate production lines, and genuine Unicode performance allow the Diagraph IJ4000 to grow with your company to meet evolving packaging challenges both today and tomorrow.

Industry-Leading LOW MAINTENANCE

Allowing for **30% less downtime than competing systems**, our users are empowered to spend less time servicing their printers and dramatically improve operational efficiencies. The Diagraph IJ4000 features the most-effective Automatic Cleaning System on the market, a unique centralised ink delivery system that minimises time spent monitoring and refilling ink, self-service/quick change filters and user-friendly printer health check features. All of these capabilities combine to ensure you stay focused on your product – not ours.

Industry-Leading DURABILITY

The printhead is the element of an inkjet case coding system that suffers the most wear and tear. The stainless steel construction, unique repairable (rather than disposable) printhead design and industry-leading linear retraction clearance system allow our printheads to last up to 10 years even in the most challenging of industrial environments. This is a **5x greater lifespan** than provided by competing technologies.

Read on to learn more about how these features and many others can save you time and money.

Customer-Focused Design

Meeting Your Needs Today and Tomorrow

Industry Leading Print Height

The availability of both 50mm and 100mm printheads allows users to **print images up to 40% taller** than other systems. This generates significant cost savings as fewer printheads are required to cover the desired print surface and provides users with the flexibility to add additional lines of print or larger graphics.



A Single Controller for as many as 4 Printheads

A single Diagraph IJ4000 HMI can control **as many as four printheads on two completely independent packaging lines**. In addition to generating cost savings, this provides added flexibility to users.

True Unicode

While many printing technologies advertise that they are 'Unicode-ready' they often mean that language characters are used as locked images. This is not the same as true real-time, variable print Unicode capabilities. The Diagraph IJ4000 was specially designed to provide **real-time printing in 11 languages**, meaning it is ready to grow with you as your business becomes more international.

User-Friendly HMI

Intuitive, Simple User Interface

The 26cm colour touch screen controller is intuitive and easy to use via large graphic icons. A Smart Connection Hub with industry leading networking capabilities allows the system to control multiple production lines from remote locations.

Flexible Message Editing – from Controller or PC

Message design- including alphanumerics, barcodes and graphics- can be quickly and easily changed with just a few intuitive clicks. Real time printing can be easily programmed to provide automated adjustments of print fields such as incrementing time and date codes. Standard Arial font is optimised for ink conservation, while true type fonts are available and multiple image formats can be used for incorporating logos and other graphics.



Message editing can be performed on the factory floor on the HMI or from an office on a personal PC. **The HMI can be placed as far as 100 meters away** from the printer when connected via Ethernet and an unlimited distance when connected through a network, giving users flexibility to select which operational configuration best meets their needs.

Factory Floor Flexibility

The Diagraph IJ4000 was designed with a small footprint in order to fit on crowded factory floors. A dovetail track on both sides of the print engine allows for mounting on either side of the conveyor. The system is compatible with both down and angled print orientations. A green LED on the digital level accelerometer indicates with the print engines are perfectly aligned and perpendicular with the packaging material, regardless of floor variations- ensuring quick and precise installation.



Industry-Leading Print Consistency



European GS1-128 barcode printed with an industry leading at 6 mm print throw distance. Industry-leading ink throw distance provides consistently higher quality print despite the irregularities of factory floor environments.

Industry-leading print throw distance of more than 12 mm for alphanumerics and 6 mm for barcodes.

The Diagraph IJ4000 has several unique features that work together to ensure reliable high quality print – including crisp graphics and high-contrast barcodes.

Precision Placement

It is a simple reality that cases are rarely perfectly square. Overfilling and irregularities in the distance between the print engine and carton can result in lower quality print performance. The Diagraph IJ4000 ensures consistent spacing during the printing process via a unique Roller Retractor System. In addition to ensuring precision placement for optimal print quality, this unique roller material handling method minimises corrugated debris generated by competing systems that use "rub plates".

Industry-Leading Ink Throw Distance

Print quality is further enhanced due to the Diagraph IJ4000's **industry-leading print throw distance** of more than 12mm for alphanumerics and 6mm for barcodes, which allows for more consistent print quality across irregular surfaces. This is double the ink throw distance offered by competing systems and has a significant impact on ensuring consistently high print quality.

Superior Design for Print Performance

Enhanced print engine design delivers sharper high-resolution barcodes, logos, graphics, alphanumerics, nutritional fact panels, ingredient statements and more. Increased throw distance as a result of higher ink velocity and larger ink drop size combine with our unique ink bleed management feature to ensure superior legibility and scanner recognition.

Factory-Floor Ready

The Diagraph IJ4000 linear slide retractor design allows **the greatest linear motion out of any system on the market, making it more impact resistant.** A patented shock resistant design further reduces the impact of vibrations. To reduce the chance of air reaching the ink line, the Diagraph IJ4000 features a unique centralised ink delivery method that delivers pressurised ink directly to the small reservoir located behind the IJ Series print engine, greatly reducing the depriming issues found in competing technologies.

Industry-Leading Low Maintenance

Unique Centralised Ink Delivery System

The Diagraph IJ4000 features a unique Centralised Ink Delivery System that supplies ink to as many as four individual printheads on up to two production lines. **This single access point for fluid monitoring and refilling simplifies system operator workflows and eliminates the risk of running out of ink in individual heads.** To work around this, many customers with competitor systems will change all of their ink bottles at the same time which causes a significant amount of ink waste. The Diagraph IJ4000 provides a clear flashing light indicator when ink levels are running low and allows for ink to be replaced while the printer is running, all at a convenient centralised hub.

Most Effective Auto-Cleaning System in the Industry

Automatic Cleaning Systems (ACS) keeps dust, glue and debris from getting inside the printhead nozzles, maintaining excellent print quality without creating a need to stop the printing line. The Diagraph IJ4000 features the most effective ACS available in the market today. **The user-defined ACS can be triggered on demand or programmed to run at regular intervals** that fit seamlessly into a user's production schedule. The ACS will wait until the printer is between prints to trigger the programmed cycle, allowing the printer to be cleaned while it is in use. ACS cycles take only a few seconds to complete.

Unlike competitor systems that either do not offer ACS or introduce additional fluids (like solvent) for cleaning processes the Diagraph IJ4000 ACS method pushes ink through the nozzles to clear the area of any debris before it permanently settles. This reduces the expense and complications of adding additional consumables to the packaging line.

User-Friendly Maintenance

The Diagraph IJ4000 was designed to simplify and minimise operator intervention at every level. Simple maintenance access points allow for quick changes of self-service filters and ink and waste bottles. Printer Health Check features are built directly into the printhead to allow you to check print quality and trigger print cycles right at the printhead instead of walking back and forth from the printhead to the system controls.

The Diagraph IJ4000 was designed to simplify and minimise operator intervention at every level.



Helping You Go Green



Industry Leading Durability

Print engines are the component of inkjet systems that suffer the greatest wear and tear. Featuring stainless steel construction, a unique repairable (rather than disposable) design, a patented shock resistant design and automatic maintenance modules, the Trident print engines in the Diagraph IJ4000 provide industry-leading system durability.

Rather than needing to be replaced every few months, the Trident print engines can be disassembled, ultrasonically cleaned and put back in use. This significantly reduces total cost of ownership and allows the Diagraph IJ4000 to provide industry-leading durability **with projected lifespan being as much as five times longer than competitive technologies**. Whereas traditional print engines might need to be replaced as often as every few months, Trident technology can last as long as 10 years or 300 billion firings.

Printhead Durability Comparison



Reduced Waste

Direct printing on boxes saves money, eliminating the need to buy and store expensive labels. This also reduces the waste associated with labels and their accompanying liner.

Environmentally Friendly Ink

The Scan True II ink, which was especially designed for the Diagraph IJ4000 printhead, does not contain dangerous substances, mineral oil or harmful solvents.

Low Energy Consumption - Imitating Nature

The inkjet print engine draws the ink from the ink supply through capillary action – the same way trees draw water from roots to the branches. No shop air is required. As a result, total system power consumption is very low – only 60 watts on average, which saves costs and energy.

IJ Series



Printer	IJ 384E	IJ768E
Print Height	2" (50 mm)	4" (100 mm)
Print Technology	Piezoelectric (Trident)	
Print Speed	up to 60 m /min	
Resolution (vertical/ horizontal)	64 x 300 dpi	
Orientation	Straight, Side, Top Down	
Print Throw Distance	up to 12 mm (6 mm Barcodes)	
Measurement Printer (H x B x T)	117 x 67 x 280 mm	161 x 71 x 338 mm
Central Ink Delivery/Controller	for up to 4 printers	for up to 2 printers
Operating Environment	10–40 °C; relative humidity, 10 %–80 % non-condensing	
I/O	optional I/O board (programmable)	
Auto Codes	Time, Date, Use By, Julian, Count, User Defined, Shifts, Variable Input	
Barcodes	UPC, GTIN, I2of5, 128, Code 39, EAN, UCC, 2D Data Matrix	
Logos	BMP, TIF, JPG, PNG	
Fonts	Arial Standard, True Type Available	
Enhanced Communication	Network Software incl. Database Connection, Direct Via Protocol	
User interface	PC Software	Controller IJ4000 HMI
Measurement (H x B x T)		331 x 196 x 41 mm (Display: 10,2" colour)
User interface	Windows®-Compatible Program, Graphic User Interface (GUI), WYSIWYG Editor	Graphic User Interface (GUI), WYSIWYG Editor
Enclosure		Stainless Steel, IP20
Connectivity	Ethernet	2 x RS 232, 1 x Ethernet, 1 x USB
Memory		512 MB
Ink		
Ink Type	Porous Inks. Black Pigmented for Bar Coding	
Supplies	500 ml & 1000 ml	
Colour	Black, Red, Blue	

For more than thirty years, Allen Coding, a Division of ITW, has been at the forefront of innovation within the coding and marking sector. Allen Coding's products include thermal transfer, hot foil, Hitachi continuous inkjet and laser, Diagraph high resolution inkjet and all-electric labelling technologies.



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