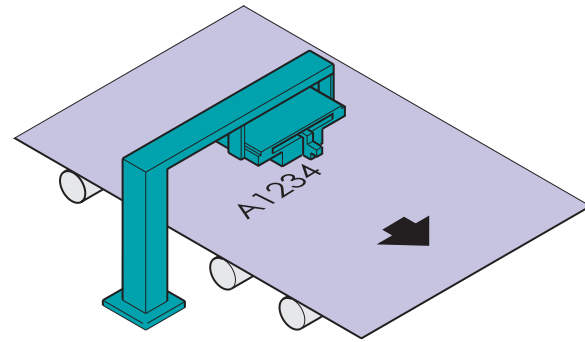
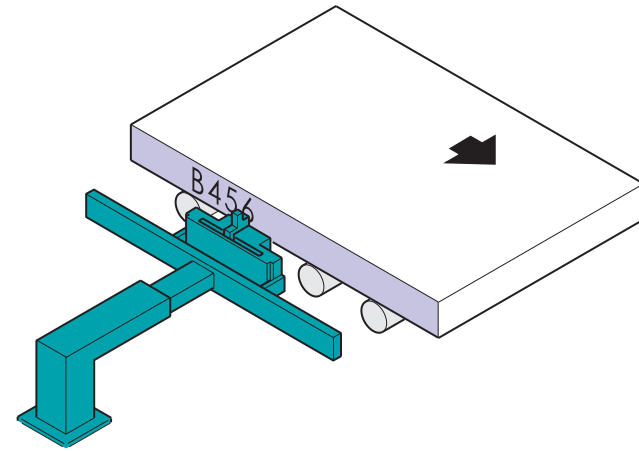


# APPLICATIONS

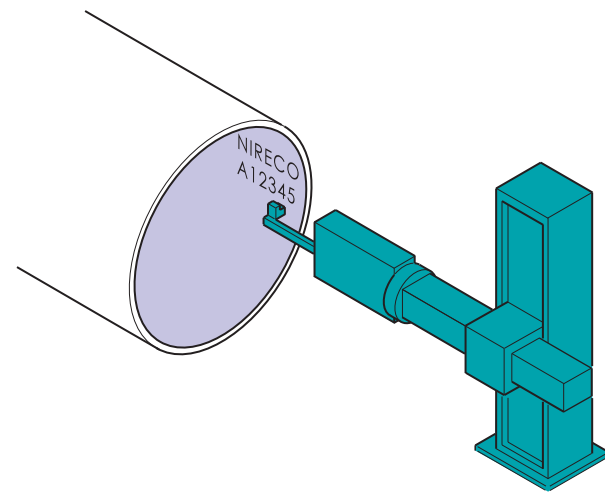
## ▼ MARKING ON TOP



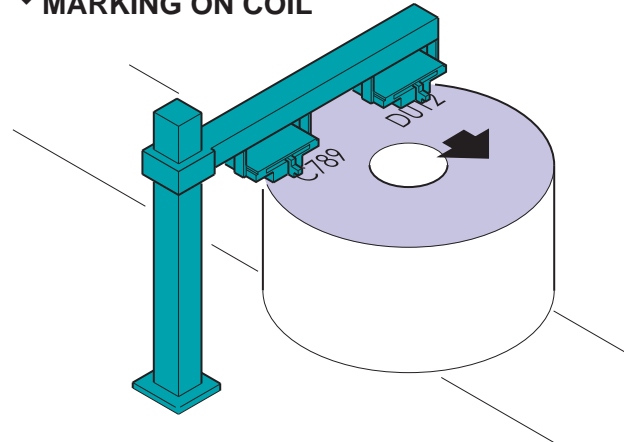
## ▼ MARKING ON SIDE



## ▼ MARKING ON INNER WALL



## ▼ MARKING ON COIL



Marking on propane gas cylinders using JET MARKER



Actual markings performed by the left machine.  
The marking are customer coded.  
(Chinese, Hangul, and special characters available)

We reserve the right to change the specifications in this catalog without prior notice for improving and updating our products.



Kyobashi Office  
Asako Kyobashi Bldg., Kyobashi 1-6-13, Chuo-ku, Tokyo, 104-0031, Japan  
TEL : +81-3-3562-2201 FAX : +81-3-3564-4316  
URL : <http://www.nireco.com>



# MARKING SYSTEM

JET MARKER

DOT MARKER

LASER MARKER



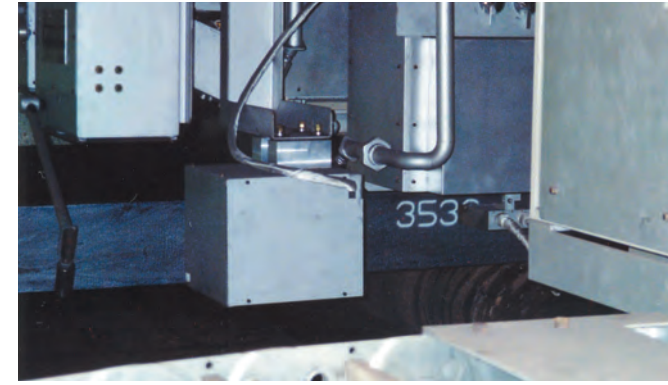
## Overview

Production lines for steel plate, coils, slabs, billets, shaped steel, pipes, and construction materials have become diversified and, accompanying the automation or streamlining of distribution, marking of information on actual articles is inevitable.

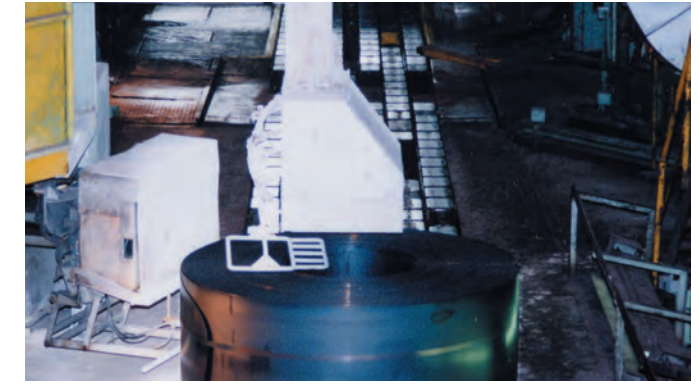
Human labor-dependent marking work is prone to problems related to the working environment, marking mistakes, work efficiency, and so forth; for this reason, automatic marking systems has become a universal practice. Nireco provides marking systems, paint, and ink appropriate for various marking objects for application to distribution control and product marks. All of Nireco's safety-conscious marking systems can be linked to host PCs and are equipped with self-diagnosis functions.



▲ Dot marking on bloom



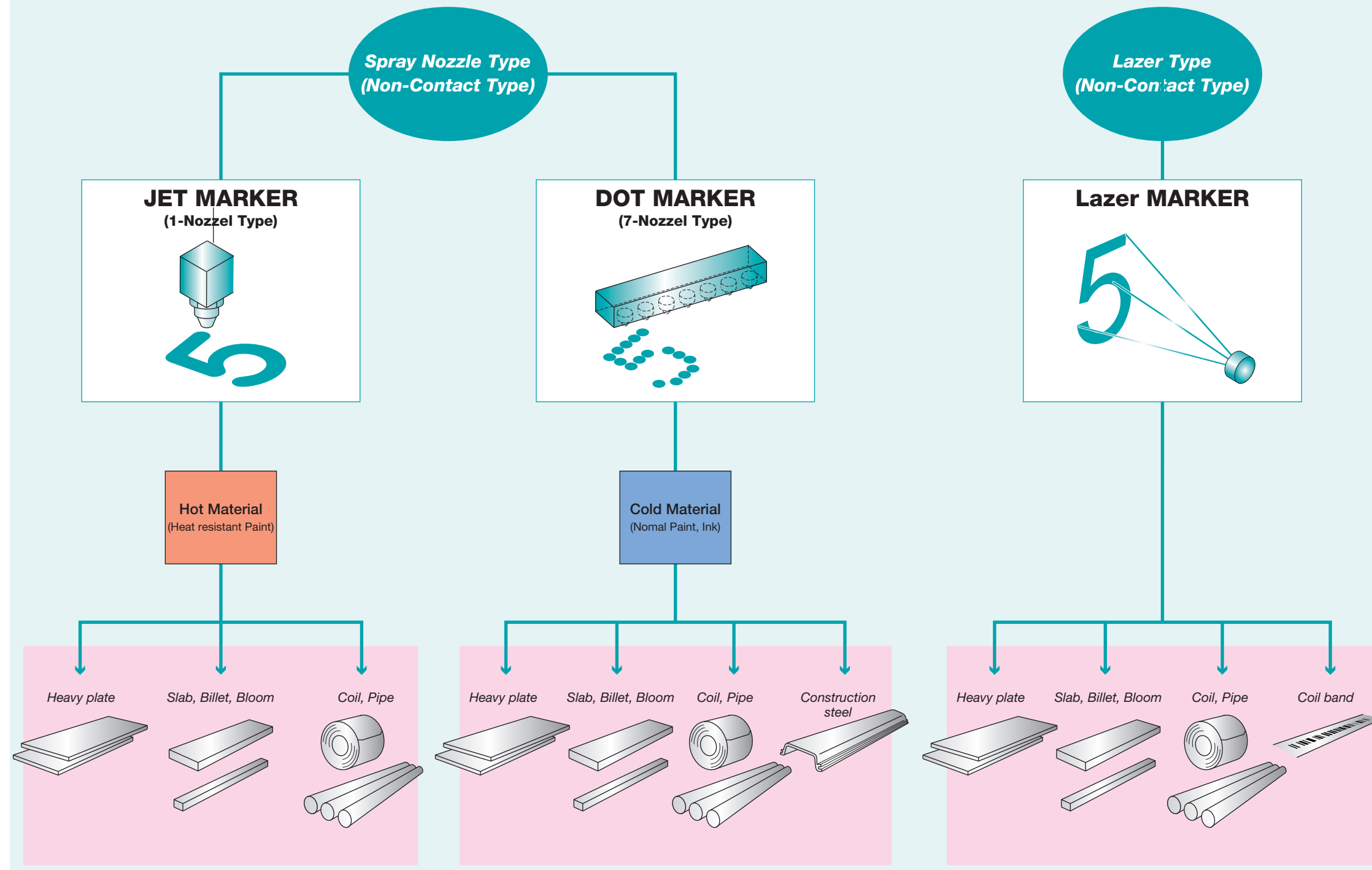
▲ Marking on Slabs



▲ Marking on Coils

## Types of Marking Systems

Nireco's marking systems are generally classified as follows.



▲ Marking on the side of 600°C to 1000°C slabs using JET MARKER



▲ Marking on the sides of 600°C to 800°C hot coils using JET MARKER



▲ Marking on the side 300°C to 1000°C slabs using DOT MARKER



▲ Example of 2D code printed on edge of a steel bar with laser marker



▲ Example of bar code and number printed on steel pipe with laser marker

## JET MARKER

Marking is performed in such a way that the nozzle is moved along the character shape in the X-Y stage and paint is ejected each time the nozzle is opened and closed as it moves a specified distance. Shortening the ejection timing produces continuous line characters; lengthening it produces dot characters.

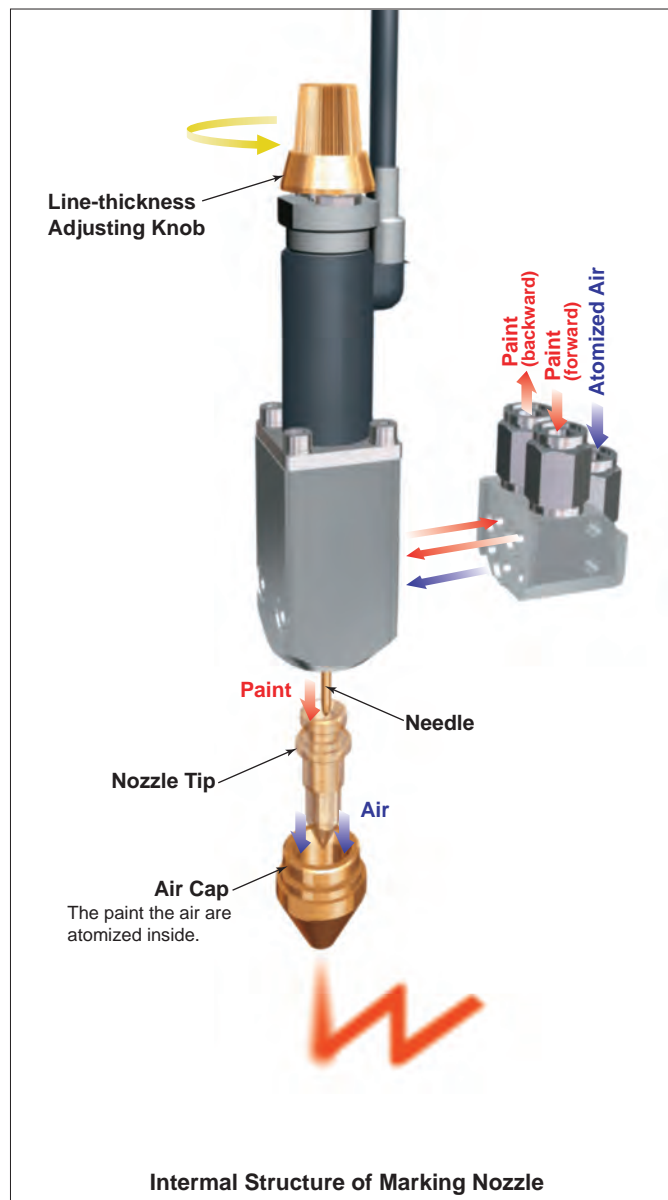
- Because one nozzle is moved in the X and Y direction to form characters, it is possible to paint any size or pattern of character or mark.
- Character shapes can be set or changed using a graphical display; when an automatic reading system is used to read characters; certain characteristics can be assigned to characters of similar shape.
- Marking of small characters can be performed. (20mm(H)×15mm(W))
- Since an atomizing nozzle is used, paint consumption is reduced, even in hot material applications.
- The amount of paint ejected is controlled for the object according to the temperature information and characters having a certain thickness can be marked.
- Clog-free nozzle.



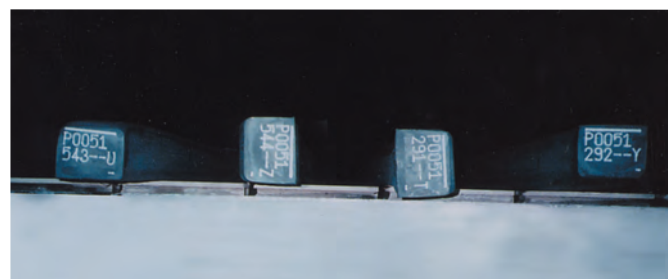
Appearance of Marking Nozzle

### Specifications

Standard stage	A type	X-axis 600 mm × Y-axis 150 mm
	B type	X-axis 500 mm × Y-axis 150 mm
	C type	X-axis 400 mm × Y-axis 150 mm
	D type	X-axis 300 mm × Y-axis 150 mm
Letter size	Any desired (character height: 20mm <)	
Marking speed	0.7sec/character (H=30mm, P=30mm)	
Character thickness	3~10 mm	
Distance between characters	30mm±5mm	
Material temperature	Normal temperature to 1100	
Paint	ink or water-based paint	
Tank capacity	15 L (standard) cold-rolling steel 50L Hot-rolling steel	
Data setting method	Manual setting and auto linkage setting	
Power supply	200/220V or 400/440 V AC 50/60 Hz	
Air source 400	400 kPa (4kgf/cm <sup>2</sup> ) or more	
Cleaning water	100 to 200 kPa (1 to 2 kgf/cm <sup>2</sup> )	



Internal Structure of Marking Nozzle



The same marking head marks on billets arranged both vertically and horizontally



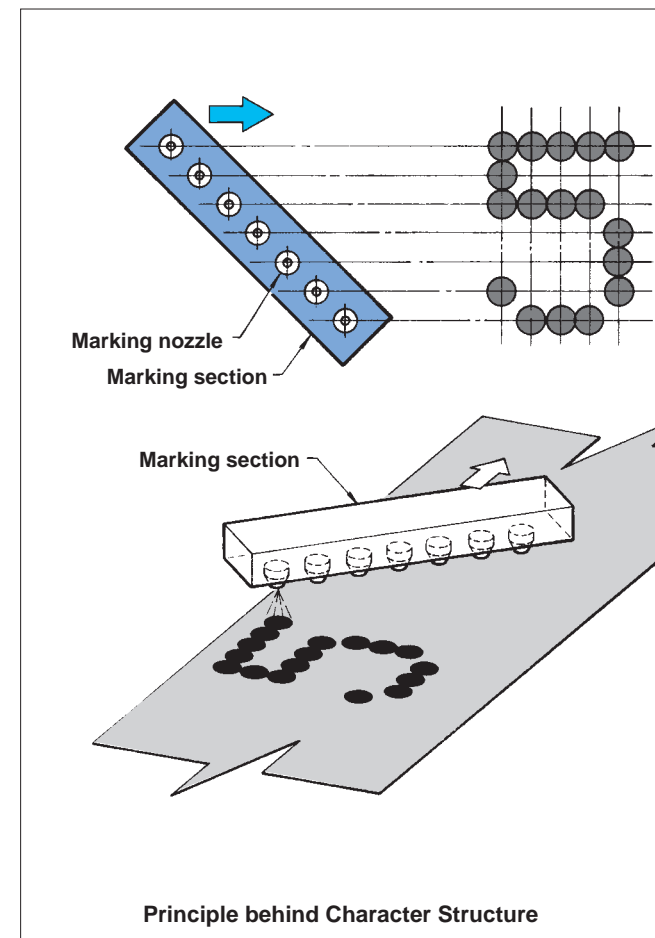
Marking on the end face of 300 to 700 billets using JET MARKER

## DOT MARKER

Seven nozzles arranged in a row are moved parallel to the object; Gpaint is ejected in a previously-specified 7×5 matrix for each character to form dot characters.

### Specifications

Character size	Height (H)	55mm or more
	Width (W)	40mm or more
	Pitch (P)	47mm or more
Dot diameter	φ6~φ12 mm	
Letter description	English letters	
	Arabic numerals	
	Other special symbols	
Marking speed	2 to 2.5 character/sec	
Material temperature	Normal temperature to 1000	
No. of characters and lines	Free selection	
Paint	Water-based paint	
Power supply	200/220 V or 400/440 V AC 50/60Hz	
Air source	400 kPa (4 kgf / cm <sup>2</sup> ) or more	
Descaling water	150 to 300L /min (at 1500 to 2000 kPa (15 to 20 kgf / cm <sup>2</sup> ))	
Cleaning water	2 to 3L /min (at 100 to 200 kPa (1 to 2 kgf / cm <sup>2</sup> ))	

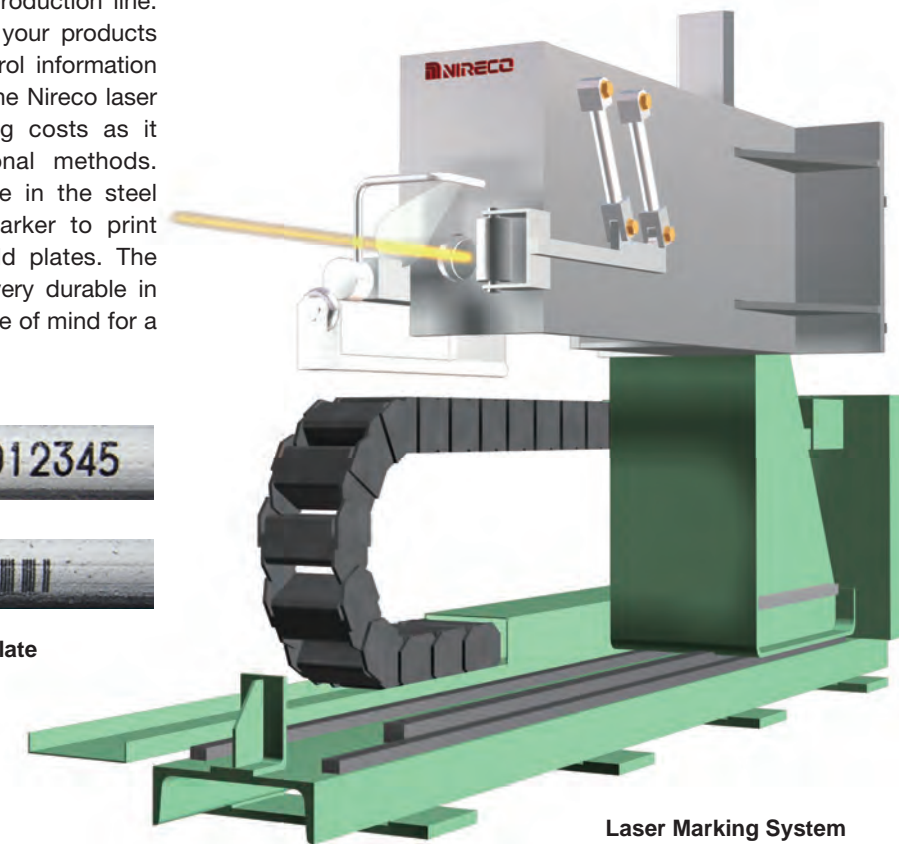


## LASER MARKER

Nireco's laser marking system is capable of directly marking the sides and edges of thick plates in your production line. The Nireco laser marker is ideal for marking your products and materials with quality and inventory control information and is capable of printing barcodes as well. The Nireco laser marker will also help reduce your operating costs as it requires less consumables than conventional methods. Drawing upon vast experience and expertise in the steel industry, Nireco has designed this laser marker to print accurately and rapidly on both hot and cold plates. The Nireco laser marker is also designed to be very durable in most work conditions to provide you with peace of mind for a long time to come.

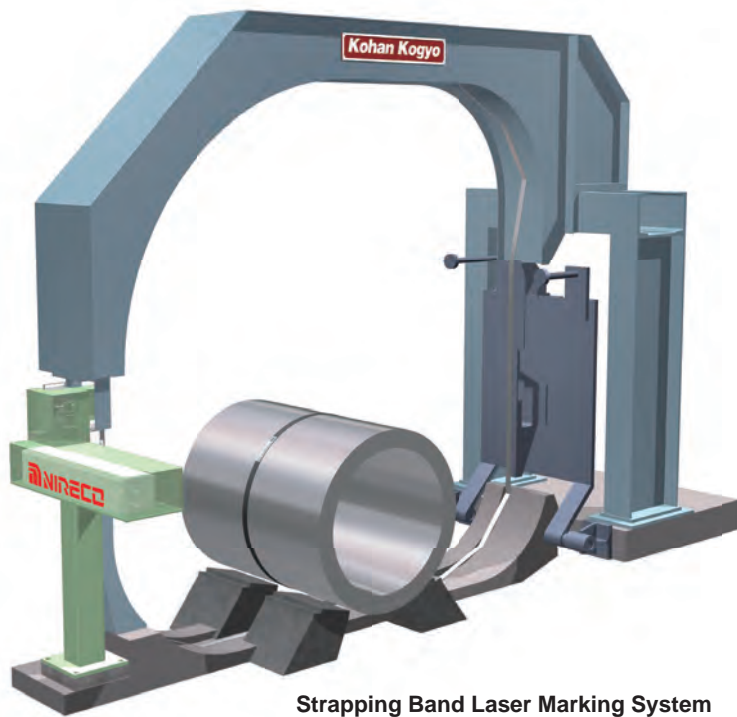


Example of text and bar code on a 6mm thick plate



Laser Marking System

# STRAPPING BAND LASER MARKER



Strapping Band Laser Marking System

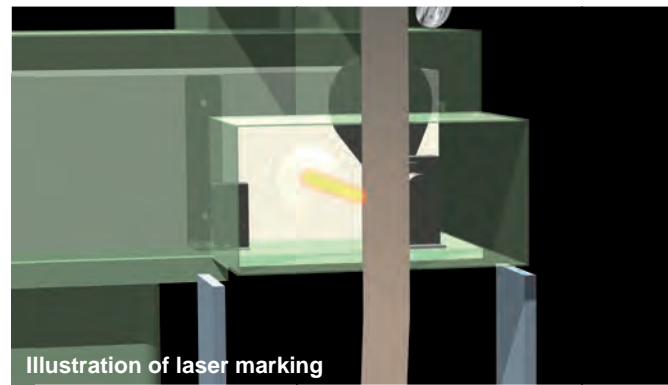
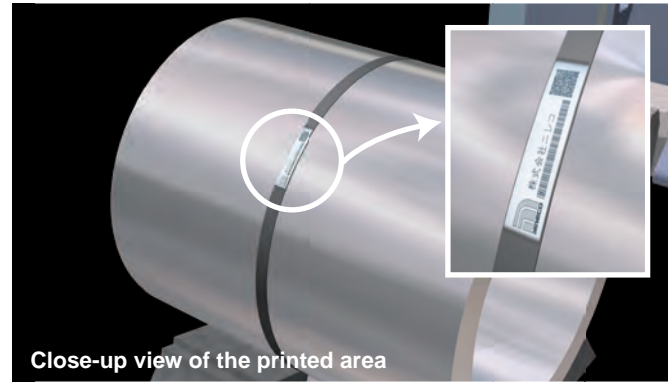


Illustration of laser marking



Close-up view of the printed area

## Specifications

Laser output:	40W
Laser type:	CO2
Hazard class:	Class 4
Product life:	10 years or 50,000 hours
Print size:	Height: 3mm – 100 mm; Width: 0.1mm -
Printing speed:	5 seconds (based on size of print sample below)
Print types:	Alphanumeric characters, Chinese characters, barcodes & QR codes
Print colors:	Basecoat: white; Print: black
Coating consumption:	Determined by print size & area
Strapping band sizes:	Width: 25mm – 32mm
Strapping band types:	Kohan Kogyo's proprietary bands etc.

The Strapping Band Laser Marker is the result of collaboration between strapping machine manufacturer Kohan Kogyo Co., Ltd. and iron & steel industry expert Nireco Corporation. The device improves the efficiency of both manufacturing & quality controls by simultaneously strapping the rolled steel coil and marking the strapping band with product management data. What's more, unlike conventional methods which directly mark the product, the Strapping Band Laser Marker only prints on the band so that the steel coil can be delivered in pristine condition.

The Strapping Band Laser Marker is capable of printing at high speed and precision on both cold and hot-rolled sheets, while its outstanding durability ensures long-lasting stable operation even in the toughest operating environments.

### Low running costs

Laser marker only consumes basecoat

### High-speed printing

Clear & instantaneous printing

### Barcode printing

Supports GS1 DataBar (formerly RSS) & 2D barcodes essential for manufacturing control

### Newly-developed basecoat nozzle

Eliminates coating clogs for smooth operation

### Easy to install on existing strapping machines

Simplified installation

## Comparison with Conventional Printing Methods

	Laser Method	Inkjet Method	Label Method
Running costs	Inexpensive basecoat only	Expensive - basecoat & ink combination requires cleaning fluids	Expensive at both normal & high operating temperatures
Print height	Variable to suit sheet thickness	Fixed at initial value	Label size is fixed
Print contrast	Basecoat ablation enables high contrast	Printing on top of basecoat reduces contrast	Good

## SYSTEM CONFIGURATION

Though the system configuration depends on the marking object, the basic configuration is as follows.

### Mechanical section of marking unit

This section moves the marking head to the marking position on the marking object; the actual configuration varies depending on the object.

### Local operation panel

Contains operation switches and LEDs used independently to operate the mechanical section from the local site. If the mechanism is simple, an operation device is provided on the front side of the terminal box. If the mechanism is complex, it is a post type panel.

### Control panel

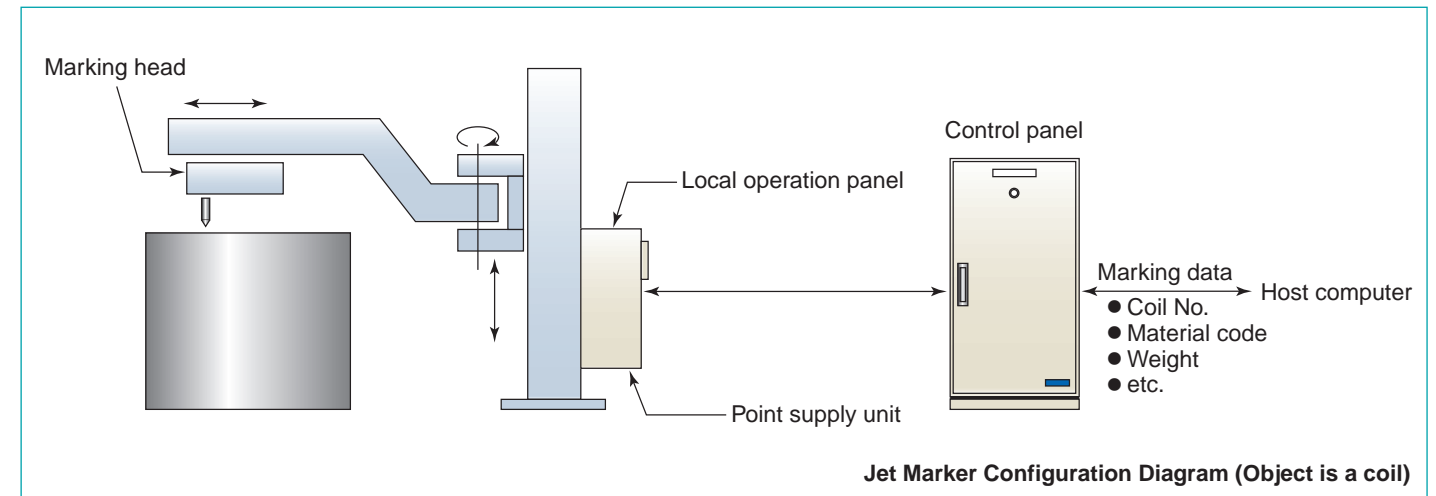
Contains the control devices used to control the entire system; the content varies depending on the structure of the mechanical section. If the marking machine is configured for a simple application, the control panel is installed at the local site; in this case it can also serve as the local operation control panel.

### Paint supply unit

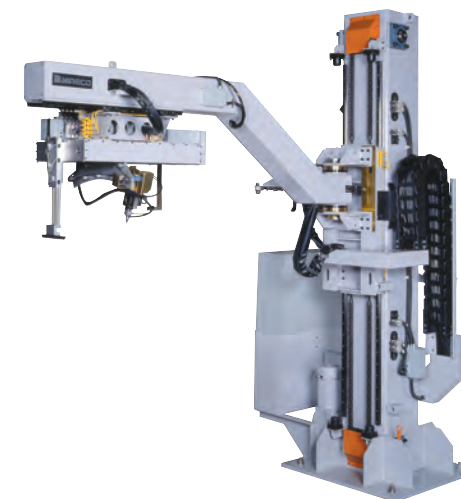
Depending on the type of marking object, there may be paint supply units for any combination of hot paint, cold paint, and ink. The paint tank is continually stirred and paint is also circulated inside the paint pipe using a paint pump.

### Descaling unit

Descaling is applied as a pre-processing measure to materials that are likely to have scales on their surface. Descaling of heated objects is performed with high-pressure water; mechanical shock is applied to cold objects.



Jet Marker Configuration Diagram (Object is a coil)



Marking Machine



Local Operation Panel



Control Panel