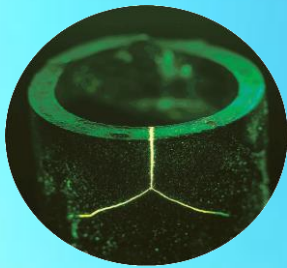
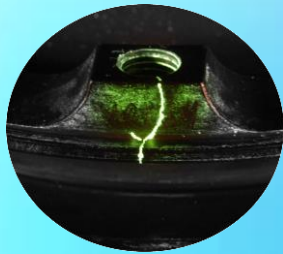


Non Destructive Testing Material & Systems



EISHIN KAGAKU

Quality & Security

Eishin contributes to the 21st century society
with the cutting-edge NDT technologies

Quality, the foundation of all industry fields. Non-Destructive testing technologies assure the quality, and support the industrial infrastructures.

As technology innovation has produced highly-advanced and complicated products, the needs of NDT have been getting higher for quality assurance purpose.

Eishin was found in 1957, and the company has been growing along with the development of Japanese industries and has been supporting the expansion of industries.

We now are recognized as an NDT specialist in a wide range of fields such as Nuclear power plants, steel, aviation, automobile, power generation, electronics, architecture, and food industries.

Eishin leads the NDT industry with its comprehensive ability to cover all technologies of Penetrant, Magnetic Particle, Ultrasonic and Eddy Current inspections, as well as to make full use of “Know-how” cultivated in abundant experiences over so many years.

Not only high quality and high accuracy, we also focus on the safety of the products, workability improvement and environmental protection. From the viewpoint of users, we are dedicated to developing the products that meet the needs of the age.

Our business stage expands on global basis by importing the most advanced technologies from other countries and vice versa.

Eishin promises to continue making the best effort to contribute to the realization of more affluent society through advanced NDT technologies as the most reliable brand.

Our Ibaraki factory has been certified according to ISO 9001:2008 to confirm the establishment of quality assurance system.

Company History

1957 Eishin kagaku Established

1961 Penetrant and Fluorescent approval MIL Standard and Ministry of defense Japan

1970 High Sensitivity Fluorescent Water Washable Penetrant approval Douglas USA and Boeing

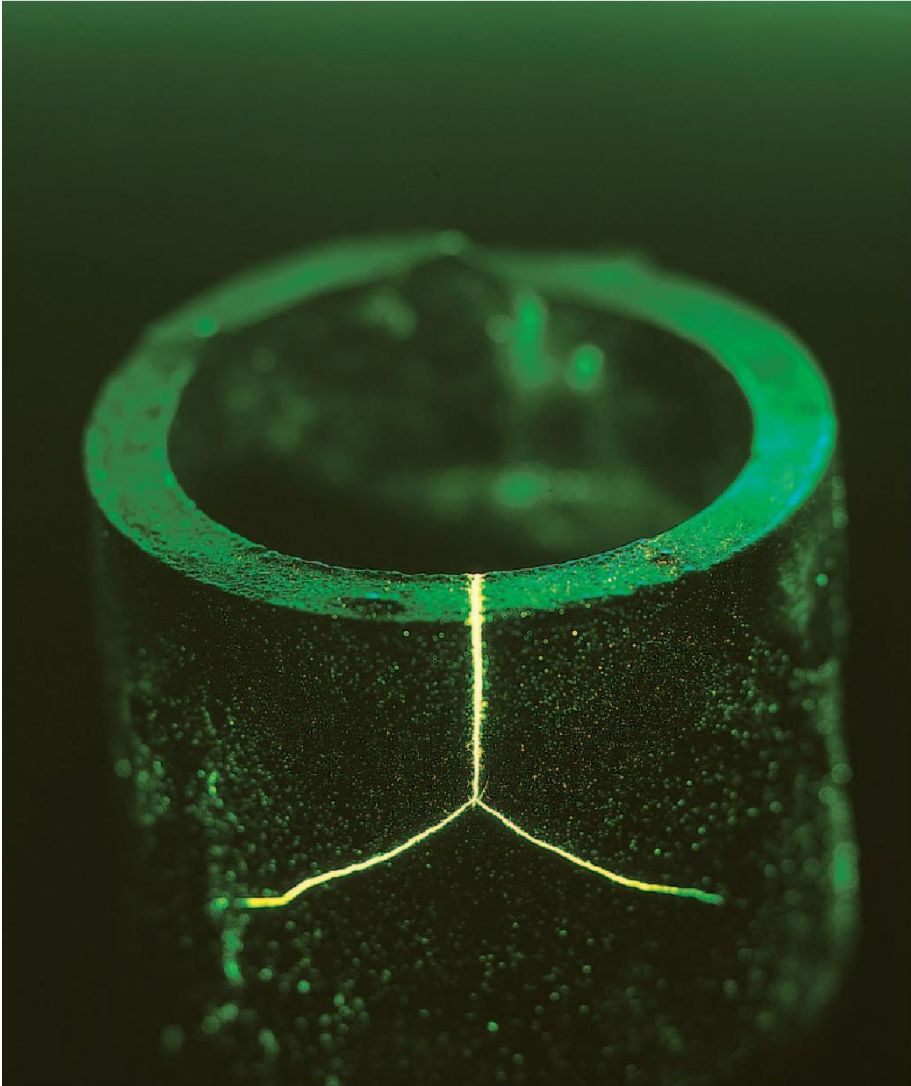
1973 High Sensitivity Fluorescent Water Washable Penetrant approval MIL Standard

1980 Fluorescent Penetrant approval GE and Rolls-Royce

1986 With MIL revision, got approval GE and Rolls Royce

1990 Fluorescent Penetrant approval P&W

2007 Approval ISO9001:2008 (Ibaraki Factory)



Contents

PENETRANT

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Fluorescent inspection system (Neoglo-Units) 3

MAGNETIC PARTICLE

Magnetic particle inspection material 4
(MAGNATRON)
Portable yoke electromagnet 5
(HANDY MAGNA)

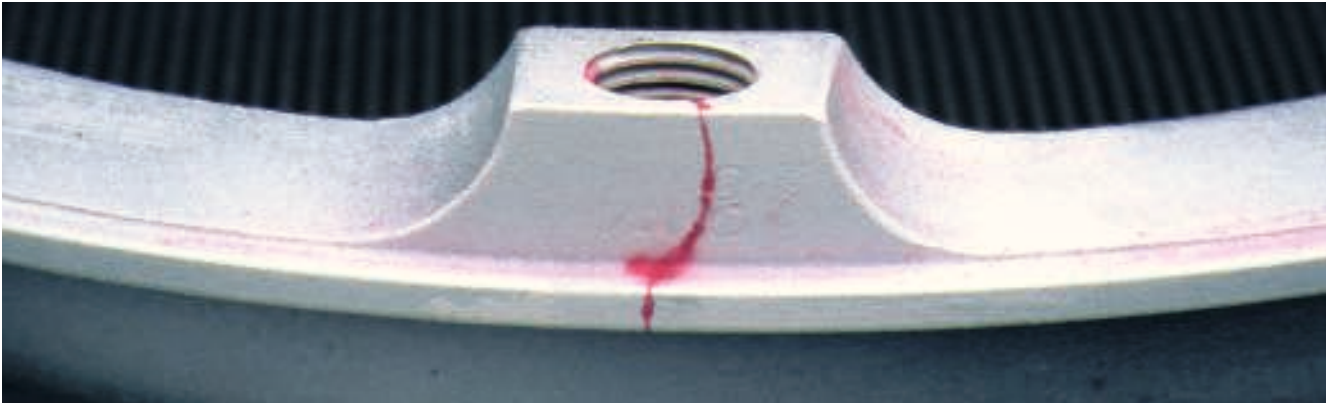
BLACK LIGHT

S-35LC, L-500LC, UV-365-Z, L-1000 6

OTHER PRODUCTS

Test Panel 7
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Cleaner 9

RED MARK



● SOLVENT REMOVABLE TYPE

REGULAR TYPE	Penetrant	R-1A (NT)
	Developer	R-1S (NT)
	Remover	R-1M (NT)
AMS Qualified Products	Penetrant	R-1A (NT) /1
	Developer	R-1S (NT) /1
	Remover	R-1M (NT) /1
LOW HALOGEN/SULPHUR TYPE For stainless steel, Ni, Ti alloys	Penetrant	R-1A (NT) Special
	Developer	R-1S (NT) Special
	Remover	R-1M (NT) Special
HIGH TEMPERATURE TYPE Used for hot surfaces (90-200°C) <small>Note: Contained in 3.8 liter and 18 liter cans are allowed to export Aerosol type can not be exported</small>	Penetrant	R-1AH (NT)
	Developer	R-1SH (NT)
	Remover	R-1MH (NT)

● WATER WASHABLE PENETRANT

REGULAR TYPE	R-3B (NT) PLUS	casting, keyway, and screw thread
LOW HALOGEN/SULPHUR TYPE	R-3B (NT) Special PLUS	welding bead on stainless steel and Ti-alloys
WATER BASE TYPE	R-3B (NT) W-1 PLUS	Used for raw materials like slab Non-flammable

● SPECIAL DEVELOPER

EASY REMOVABLE TYPE	R-1SB	Easy removal of developer coating after inspection
FAST DRYING TYPE	R-1SD (NT)	Used at high humidity, low temperature
	R-1SD (NT) Special	Low halogen/sulphur
WET SUSPENDABLE TYPE	R-3W	Developer particles suspend in water Non-flammable
PASTE TYPE	DP-1S	Applied with sprayer High viscosity, non-flammable

● SPECIAL REMOVER

SLOW DRYING TYPE	R-1MS (NT)	Slow Volatilization
	R-1MS (NT) Special	Low halogen/sulphur
WATER AEROSOL TYPE	R-3M (NT)	Filled with purified water
	R-3M (NT) Special	Low halogen/sulphur

● Separate-type water washable penetrant

Easy wastewater treatment and recycling
RB-300

Safety, High-accuracy, environmental protection, and we always pursue the “NEXT” in Visible dye penetrant inspection technique.

Visible dye penetrant inspection materials indicate defects open to the surfaces of all kinds of materials in “RED”.

Visible dye penetrant inspection is the technique to detect the surface defects and through cracks easily using penetrant, developer and remover. Applying these three materials indicates clear and accurate patterns of the defects in “RED” against the “WHITE” background.

Various types of RED MARK are in our product lines, and you can choose the best one for your application.

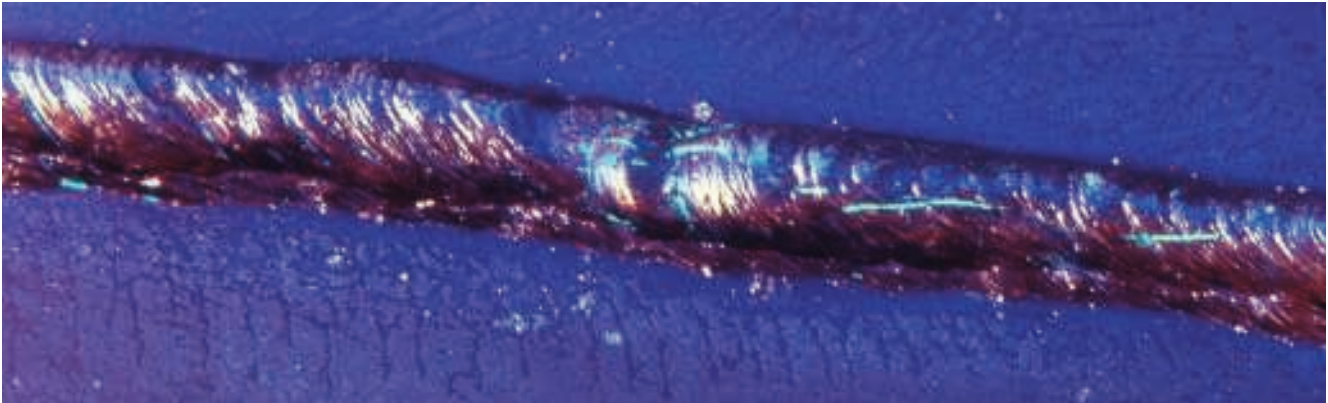


Container

Aerosol type: 450cc

Can type: 3.8liter, 18liter, 200liter (drum)

NEO GLO



Ideal for detecting fine defects. Fluorescent patterns of defects are more perceptible to naked eye.

NEO GLO series have been qualified by U.S. Air Force, Japan Self-Defense Force, Aircraft manufacturers in U.S. and U.K., etc. as highly reliable inspection materials. The Scope of NEO GLO has been expanded to inspections for auto parts, new materials, semiconductors, and rocket parts.

PENETRANT LINEUP

STANDARD SENSITIVITY FLUORESCENT WATER WASHBLE PENETRANTS

F-4A/1	Casting, raw material parts and steels
F-4A-Au PLUS	
F-4A-W PLUS	Coarse surface, ceramics, plastic, porous materials

MEDIUM HIGH SENSITIVITY FLUORESCENT WATER WASHBLE PENETRANTS

F-4A-B PLUS	Machine parts, automobile parts, plants, aircraft, forging, welding
F-4A-B/1	

HIGH SENSITIVITY FLUORESCENT WATER WASHBLE PENETRANTS

F-4A-C PLUS	Machined surface, very smooth surface
F-4A-C/1	

ULTRA HIGH SENSITIVITY FLUORESCENT WATER WASHBLE PENETRANTS

F-4A-E PLUS	Special parts. stainless steel, Ti, Ni, Co, Mo, and their alloys
F-4A-E/2	

POST-EMULSIFIABLE FLUORESCENT PENETRANTS

STANDARD SENSITIVITY:	F-5L/1	Machine parts, aircraft, automobile parts, precision casting and forging
MEDIUM HIGH SENSITIVITY:	F-5L-SP/1	
HIGH SENSITIVITY:	F-6A/1	
ULTRA HIGH SENSITIVITY:	F-6A-SP/1	

Separate-type water washable fluorescent penetrants

- Easy wastewater treatment and recycling
- Standard sensitivity : FB-3100
- Medium sensitivity : FB-3500
- High sensitivity : FB-3600M

Emulsifiers

- Lipophilic : F-5E-SP/1
- Hydrophilic : F-6E-W/1

Developers

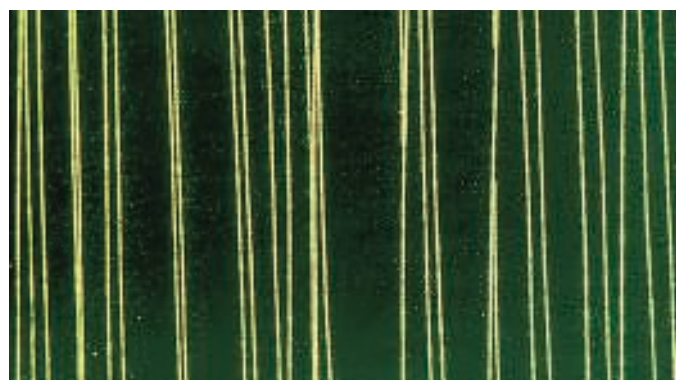
- Dry powder : F-5D/1
- Water suspendable : F-4W-SP/1
- Fast drying : F-4S(NT), F-4S(NT)/1

Removers

- Flammable : R-1M(NT), R-1M(NT)/1

Container

- Penetrants, Emulsifiers, Fast-drying Developers, Removers3.8, 18 liter can
- Dry Developers1, 2 kg in corrugated carton
- Water suspendable Developer1 kg, 6 kg can



NEOGLO-UNITS

Most efficient and economical inspection systems

Fluorescent penetrant inspection systems, with that a large amount of test objects can be inspected efficiently and economically, have been widely used for precise inspections of various types of parts including those in the aviation industry. NEOGLO-UNITS have been designed and made to satisfy users' needs adequately by making full use of "know-how" cultivated in long-term experiences and abundant sales achievements.

Eishin's penetrant inspection systems are mainly divided into four types. Test objects are transferred manually by hand or with hoists. Automatic system is also available. Every inspection process can be automated from penetration to inspection, and the test objects are transferred automatically.

●EF-A type system

Small-sized penetrant testing system (about 5m in total length) for small and light weight test objects. Basically, test objects are manually transferred between the stations.

●EF-B type system

Medium-sized penetrant testing system (about 10m in total length) for large and heavy weight test objects. Usually, test objects are transferred on the roller conveyer between the stations. Each station is equipped with a lifter or a door.

●EF-C type system

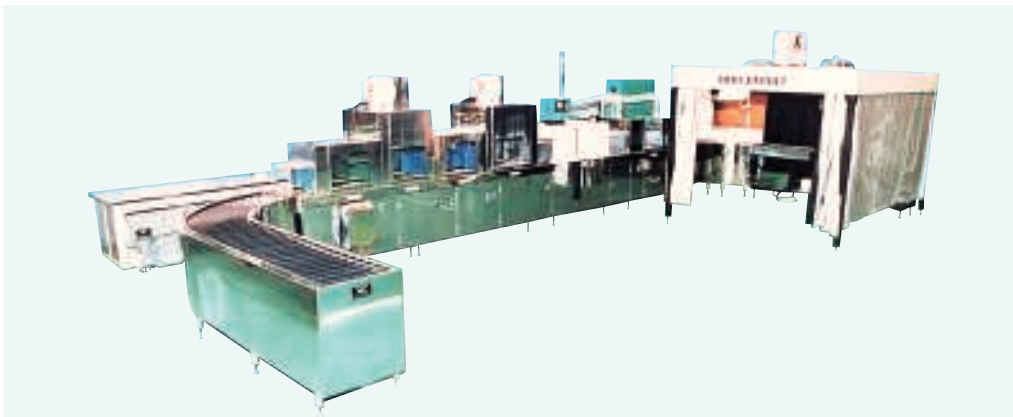
Large-sized penetrant testing system (more than 10m in total length) for mass-produced parts. The test objects are automatically transferred on the independently-driving roller or chain conveyer.

●EF-D type system

EF-D type system is equipped with the waste water treatment system dedicated to separate-type water washable fluorescent penetrants. Rinse water can be recycled with this system.

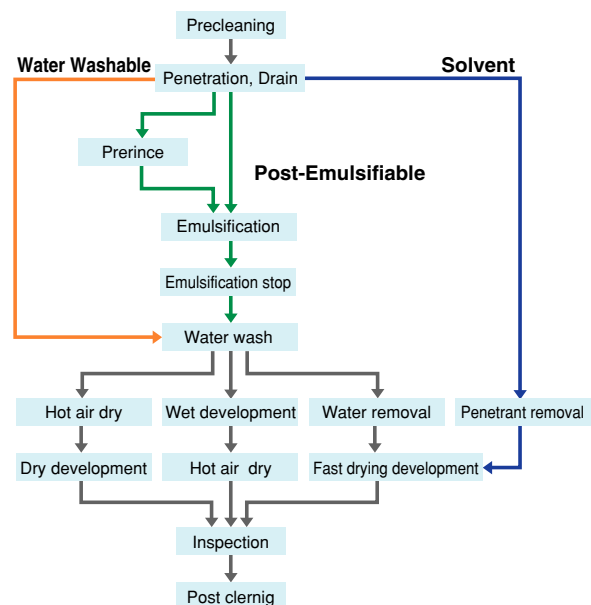
* Waste water treatment systems for standard penetrants (MIZUSUMASHI) are also available.

* Custom-designed system is available.



Procedures for fluorescent penetrant inspection

Fluorescent penetrant inspections may be performed in three methods. Select any of these methods and the type of the penetrant to be used depending on the material type of test objects, the surface condition and the defect type.



MAGNATRON

MAGNATRON is high-sensitive magnetic particle and it gives a clear contrast between defects and the background. The best type for your application can be selected from abundant types. BLENDEX and MAGNATRON OIL can suspend magnetic particles very well.

Magnetic particles

Fluorescent magnetic particles

Fluorescent magnetic particles show brilliant fluorescent under black light. Even a lower concentration of suspension than 1g/liter achieves high sensitivity.

TYPE	USAGE	PARTICLE SIZE (μm)	RECOMMENDED CONCENTRATION (g/l)	SETTING PARTICLES (ml)
SY-6000	Raw materials	5 ~ 30	0.5 ~ 2.0	0.04 ~ 0.12
SY-7000	General inspection	5 ~ 20	0.3 ~ 2.0	0.02 ~ 0.12
SY-7000S	General or semi-precision inspection	1 ~ 15	0.3 ~ 2.0	0.04 ~ 0.21
SY-7500	Semi-precision inspection	2 ~ 5	0.3 ~ 2.0	0.03 ~ 0.20
SY-8000	Precision inspection	Less than 3	0.1 ~ 2.0	0.02 ~ 0.40

HIGH LUMINANCE

SY-6000Br	General inspection	1 ~ 15	0.3 ~ 2.0	0.03 ~ 0.20
SY-6300	General inspection	1 ~ 10	0.1 ~ 2.0	0.02 ~ 0.25
SY-8500	Precision inspection	1 ~ 7	0.1 ~ 2.0	0.02 ~ 0.32

●Aerosol type

Ready-to-use suspension is contained in aerosol cans. Correct amount of fluorescent magnetic particle is suspended in oil. Four types of magnetic particles are provided, SY-7500, SY-7500 Special, SY-8000 and SY-8000BX. We offer water-based SY-8000W also.

●Premixed type

Premixed fluorescent magnetic particles with conditioning powder. The solution can be easily prepared by simply putting a predefined amount of particles into water and stirring. Two types, SY-7500WS and SY-7000SP are provided.

Disperser

BLENDEX

To disperse magnetic particles in water, any disperser should be added. Make a paste with disperser (BLENDEX) and magnetic particles before disperse in water.

TYPE	COLOR	RECOMMENDED CONCENTRATION	FEATURES
Blendex-B	Light milky white, viscous liquid	0.5 ~ 2.0% to water	Regular type, Well suspended
Blendex-D			Non-forming, use when bubbling during circulation of magnetic particle solutions
Blendex-RH		3 ~ 5% to water	Stolon rust-prevention. Can paint directly on the parts without cleaning after inspection

Non-fluorescent magnetic particles

●Wet type

Wet type magnetic particle is used for observing under white light. Select the best type for your application and test conditions by color contrast against the surface of the test objects.

COLOR	TYPE	COLOR TONE	USAGE	PARTICLE SIZE (μm)	RECOMMENDED CONCENTRATION (g/l)	SETTING PARTICLES (ml)
Red	MA-30	Reddish Brown	General inspection	5 ~ 30	10 ~ 20	0.55 ~ 1.10
Black	MK-10	Black	Precision inspection	Less than 3	2 ~ 10	0.95 ~ 5.00
	MK-15	Black	Precision inspection	2 ~ 5	2 ~ 10	0.15 ~ 1.40
White	MS-30	Off-White	General inspection	5 ~ 30	10 ~ 20	0.70 ~ 1.40

●Dry type

Dry type is used by spraying with air on the surfaces of the test objects. Apply this type to the dry surface.

COLOR	TYPE	COLOR TONE	PARTICLE SIZE (μm)
Red	MA-100	Reddish Brown	5 ~ 50
	MA-200	Reddish Brown	5 ~ 30
	MA-100B	Reddish Brown	40 ~ 100
Black	MK-300	Black	30 ~ 50
White	MS-200	Off-White	5 ~ 50
	MS-300	Off-White	5 ~ 40
	MS-400	Off-White	5 ~ 30
	MS-300M	Off-White	40 ~ 100

Remarks : High-temperature white magnetic particle MS-200H.....applicable for up to 500°C tested object.

●Transfer premixed type (Aerosol)

Black magnetic particles, MK-10, is suspended in a fast drying solvent. Ideal for transferring and recording the defects.



●Container

Magnetic particles: 1kg, 5kg can
Conditioners, Rust preventives: 3.8 liter, 18 liter can
MAGNATRON OIL: 18 liter can

MAGNATRON OIL (Oil for particle suspension)

Use this oil product instead of kerosene to suspend magnetic particles in oil. Due to its flash point of above 93 °C, it is less flammable than kerosene at normal temperature and even odorless.

RESMIN (Rust preventive)

Adding this rust preventive agent to a magnetic particle water solution prevents the test objects from rusting for several days after inspection. (Adjust the amount depending on your requirement.)

RESMIN.....For general steel materials. Add 1-5% to magnetic particle suspension.

RESMIN C.....For casting materials. Add 0.5-5% to magnetic particle suspension.

HANDYMAGNA



A-1



A-2



A-4



A-6



TE-2



HM-4AX

HM-5AX

The best-selling portable yoke electromagnet HANDY MAGNA has a dominant market share for its excellent detection ability and abundant variety of types. Contact magnetic poles directly with test objects and apply magnetic particles, hold down the switch and magnetic particles indications will appear where the defects are. Best for welded area.

●Type

A-1	Standard type. Mainly used for welding, universal yoke
A-2	Small and light-weight type of A-1 convenient for long time inspections. Universal yoke is optional
A-4	Flexible yoke. Multi-purposes and wide applications
A-6	Small and light-weight type of A-4
TE-2	Ideal for local and small area, Good portability inspections

●Configuration

- Body (with a micro switch)
- 5 meter power cord (3-core, two-type rubber cap tire cable)
- Steel carrying case

●Features

- AC continuous method achieves higher ability to detect surface defects by the skin effect.
- Yoke method suppresses an electric current flowing directly into the test objects, and avoids the possibility of sparking.
- Small, light, AC 200V or 220V (other voltage option) portable size.
- Any test objects can be inspected with HANDY MAGNA yokes.
- Waterproof switches minimize the risks of layer short or electric shock to human bodies in wet method.
- Type A-1, A-2 and A6 are with potted cable. Tough and waterproof.

●SPECIFICATIONS

	A-1	A-2	A-4	A-6	TE-2
Rated current (A) 50Hz	4,0	2,5	4,0	3,5	1,2
Magnetizing power (AT)	2,400	2,100	2,500	2,600	1,500
Magnetic flux (mWb)	0.80	0.60	0.70	0.57	0.30
Yoke pole Leg spacing (mm)	140	110	140	110	70
Magnetic pole section size (mm)	25X25	20X20	25X25	20X20	15X15
Weight without cable (kg)	3.2	2.0	3.6	2.0	1.2

●Duty cycle

A-1, A-2 and A-670% (5-sec on, 2-sec off)
 TE-250% (5-sec on, 5-sec off)
 Lifting power (excluding TE-2)Above 10 pounds
 A-1 and A-6 are designed for 50 Hz · 60Hz

●4-pole electromagnet

Developed specially for inspections for the welded area on tank bottoms and pressure vessels. Defects in all directions can be easily detected simultaneously by rotating magnetic field. Continuous inspection can be performed fast and efficiently while the Handy Magna is moving on the welded area.

●SPECIFICATIONS

	HM-4AX	HM-5AX
Magnetizing power (AT)	2400X2	3500X2
Effective insection width	80mm	100mm
Body weight	4kg	8kg
Duty cycle	5 sec ON 5 sec OFF	5 sec ON 5 sec OFF

BLACK LIGHT

Best black light for your application.

Eishin UV-LED Black Light Series are Portable and Light weight, Long Life. High power model L-1000 can be used in a non-complete dark-room.

Portable Type

Model S-35LC

Standard portable model. UV-LED black light can be also used with its stand or suspended. Also attached halation cut filter.



S-35LC

Suspension Type

Model L-500LC

Model L-500LC is Suspension model. It is using high power UV-LED by four. User-friendly and less work load to operators. Also attached halation cut filter.



L-500LC

Portable Type

Model UV-365-Z

Pocketable and portable type UV-LED black light. Include two recharge battery and charger. Also attached halation cut filter.



UV-365-Z

High Power Type

Model L-1000

High intensity BLACK LIGHT with a metal halide lamp(1000W). Effective for line inspection.



L-1000

Specification

Type	S-35LC	L-500LC	UV-365-Z	L-1000
Lamp power	23 W	40 W	0.1W	1000W
Stabilizer dimension	W300 × H185 × D204 mm	—————	—————	W553 × H241 × D152 mm
Stabilizer weight	About 3.4kg	—————	0.2kg	29kg
Lamp head/housing dimensions	OD:92 L:237 mm	W220 × H160 × D220 mm	OD 40 mm L:170 mm	W700 × H250 × D290 mm
Lamp head/housing weights	0.6kg	6.0 kg	0.1kg	9.2kg
UV intensity	Over 4,500 μ w/ at 381 mm	4,200 μ w/ at 600 mm	Over 4,000 μ w/ at 381 mm	4,000 μ w/ at 650 mm
Power source voltage	AC100 - 220V ± 10%	AC100 - 240V ± 10%	Li-ion Battery	AC200V 50Hz/220V60Hz
Primary current	0.3A	0.4A	0.1A	6.0A
Cable	Primary 2.5m, Secondary 3 m	3 m	—————	Primary 3m, Secondary 3 m

Eishin Test panels shall be recommended for penetrant-effectiveness testing and result validation. Eishin Test Panels made under full use of “Know-How” cultivated in abundant experiences are widely used in all over the world.

Category

Type 1 : ISO 3452-3 JIS Z 2343-3

Single Type : 1 mm thickness

Twin Type : 2 mm thickness

Crack depth : 10, 20, 30, and 50 μm

Material : Brass with Ni-Cr coating

Type 2 : ISO 3452-3 JIS Z 2343-3

Having two functions, crack and roughness

Material : Stainless with Ni-Cr coating

Type 3 : AMS 2644 JIS Z 2343-3

24S aluminum quenching crack test panel

Material : Aluminum

ASME Type : ASME Sec. 5 Art. 6

Twin Type : 10mm thickness

Material : Aluminum

●Sensitivity

Type 1

Crack Depth	Level
50 μm	1, 2, 3, 4
30 μm	2, 3, 4
20 μm	3, 4
10 μm	4

Type 3

Crack Depth	Level
Approx 100 μm	1

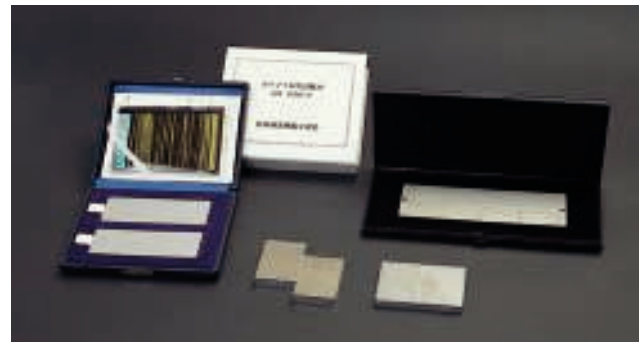
How to use Test Panels

- 1) Test Panels are used for penetrant-effectiveness testing and judgment of testing process.
- 2) ASME Type is used in principle as a pair of test panels separated to two portions by the slit (center line). And the test panel also can be used by cutting-off to two panels.
- 3) Regarding to the penetrant-effectiveness testing, two kinds of penetrant materials to be compared shall be respectively applied to the pair of test panels separated by the center slit. And tested under the same condition for the comparison of the effectiveness.
- 4) For the judgment of testing process, the same penetrant material shall be applied to the two test panels, and tested respectively by the different process for the comparison of the testing process.
- 5) One test panel should be used in common for testing of dye penetrant suspension and testing of fluorescent penetrant suspension.

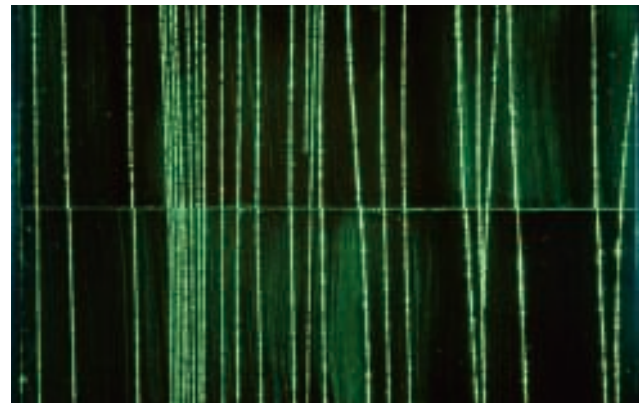
Maintenance

Maintenance after using is generally performed.

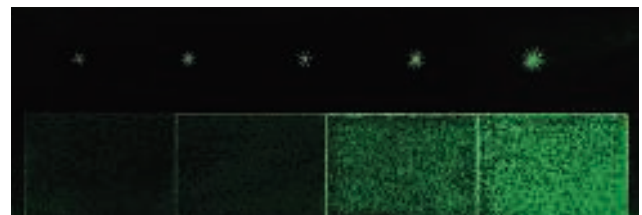
- 1) Ultrasonic cleaning with acetones should be applied.
- 2) After ultrasonic cleaning, the panel should be drained.
- 3) And wrapping with towel and keep it in the store keepin



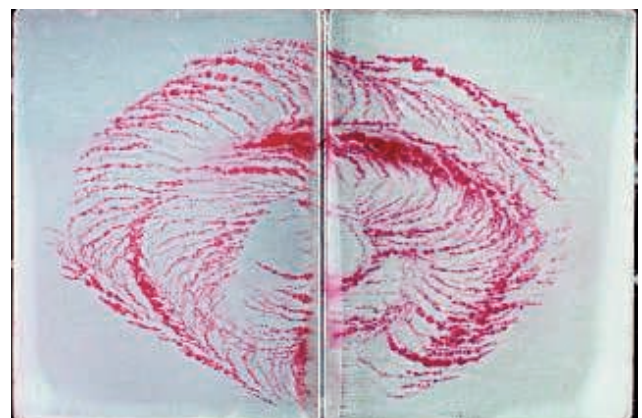
Test Panels



Type 1



Type 2



Type 3

Low-halogen and sulfur type

Marking pens with minimized impurities such as chlorine, fluorine and sulfur. Used for marking on the surfaces of stainless steels and nickel-titanium alloys. Black, Red, White and Blue.

●Material Regulation

Chlorine · Fluorine content	Less than 200ppm
Sulfur content	Less than 50ppm

●Colors and Tips

	Standard - 3mm tip	Small - 1mm tip	Fine - 0.5mm tip
Black	○	○	○
Red	○		○
White	○		
Blue	○		



marking-pens



compare tip

●Foaming gas leakage detector

GL-1B/GL-1B Special

Apply GL-1B/GL-1B Special, and even a minute amount of gas leakage can be instantly seen as bubbles. Widely used for gas leakage detecting for various type of tanks and piping systems. GL-1B Special is applicable for austenite stainless steels, titanium alloys and nickel alloys.



GL-1B/GL-1B Special

●Industrial Degreaser

ACE Cleaner

Application

Degrease machine parts

Degrease and cleaning of metal products, ceramic and plastic products

Erase Marking pen ink and marking-off

Clean off rust-preventive agent, etc

Container

550 type aerosol can (degreaser contained: 400ml)

3.8 liter, 18 liter can



ACE Cleaner



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