Reduce breakdown
Remove the need for oil replacement

MIRACLE BOY

OIL FILTRATION SYSTEM

NIHON ROKA KOGYO.CO.LTD.,

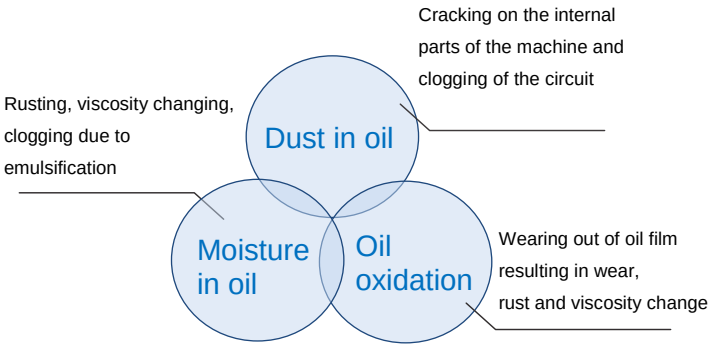
NIHON ROKA KOGYO 日本濾過工業株式会社

"Miracle Boy" prevents deterioration of lubricating/hydraulic oil

Eliminating contaminating particles, moisture and oxides all together

If the oil replacement is failed, the mechanical equipment gets broken and stops its work. It is because the degrading factors which come up in oil decrease the oil performance.
Miracle Boy which was patented keeps the oil performance at the new oil level or more.
The goal is to reduce a waste of work such as support for sudden failure and raising operation rates and reduce the running cost.
More than 10,000 units has been sold since 1970.

The reason why we need to replace oil.
(To run the machine at a high operating rate and to avoid troubles)



MIRACLE BOY 3 advantages!

❶ Remove dust from oil

Keep oil which is used in the operated machine fresh

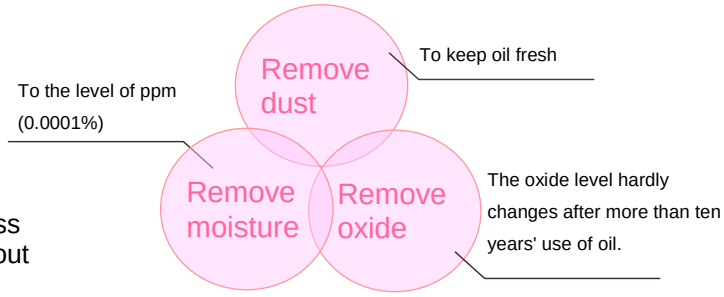
❷ Remove moisture

To the level of ppm (0.0001%)
Remove emulsion too. Cloudy oil gets clear.

❸ Keep acid value

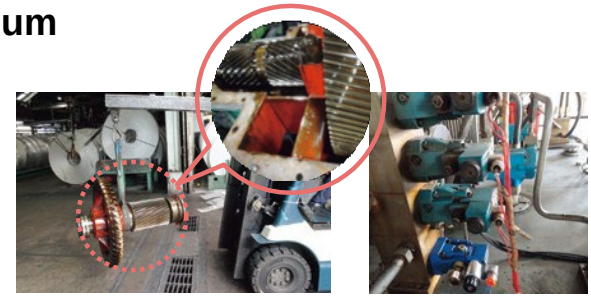
Absorb and filter oxidized sludge which occurs in oil selectively with using the patented technology and suppress the increasing of the oxide level physically and safely without chemical materials.
The oil viscosity will not change by removal of malignant oxidized sludge.

With "Miracle Boy", your machine will be free from maintenance, not requiring oil



Machine failures can be reduced to a minimum under the condition oil is kept fresh, viscosity and moisture are at the appropriate level.

- ☑ Bearing will not break
- ☑ Gear will not break
- ☑ Hydraulic pump and solenoid valve will not break
- ☑ Mechanical equipment will not break
- ☑ Sudden failure will not happen
- ☑ Wasted cost can be reduced
- ☑ Productivity will improve

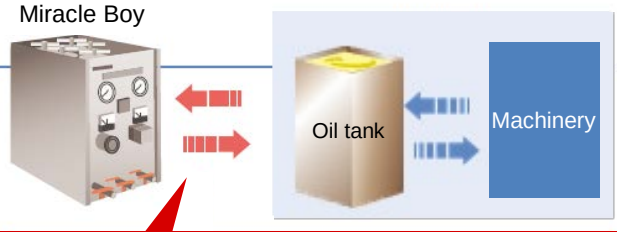


Reducer with broken gear

Replaced hydraulic part after failure

For various mechanical equipment

"Miracle Boy" works offline with the machine oil tank.
Installation is easy.
Filter elements can be replaced without stopping the production line.



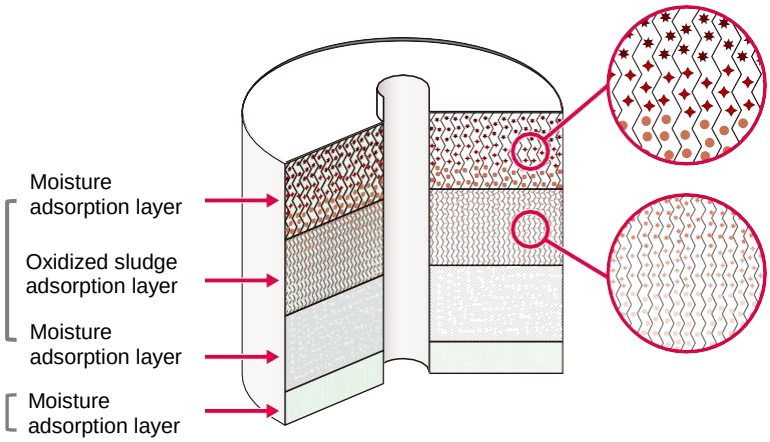
Offline setting. No need to stop the production line.

The multifunctional filter element eliminates deterioration factors all together.

The filter element is divided into adsorption layers to remove very-fine particles, moisture and oxidized sludge in oil. (W series do not remove moisture), and the element traps contaminating particles in ㎛ increments.

Depth filtration
(Depth type: Adsorption Filtration in volume)

Surface filtration
(Surface type: Filtration on the filter surface)



* Each adsorption layer collects contaminants, oxides or moisture (Max. 1,000 cc/layer), trapping and removing the deterioration factor until it becomes full (Maximum trap mass: Approx. 5,700 kg/layer).
* The standard element corresponds to low-viscosity (VG2 -) to high-viscosity (VG460) hydraulic oil.
* You can incinerate used elements and cases, which are made of inflammable materials.
* Soluble additives (equivalent to oil molecule) contained in new oil are not eliminated.

Filtration precision

The high-precision element GE-21-SHG can be used for general mineral oil. Miracle Boy is adsorption-type filtration device. The center of filtration accuracy distribution of GE-21-SHG is 3㎛, means it is designed to filter especially 3 ㎛ particles during adsorption 0.01~10~100㎛.

General mesh filter is replaced when it clogged. Against this, Miracle Boy is the special depth-type filtration and it accumulate contaminations in the element. This great filter capacity is the reason why "we can keep oil fresh at the new oil level or more.

Mechanism to remove oxidized sludge ➡ Viscosity invariance

- GE-41-DC : For oil which is easy to oxidize under the high-temperature
- GE-21-W4 : For water-glycol fluid which half consists of solution water to increase the flash point for aluminum die casting machine, etc.
- GE-41-MR1 : For synthesized ester oil which is used for hydraulic control system of the power plant steam turbine, the lubricant for jet engine, the latest aluminum die casting machine, etc.

Innovative!!

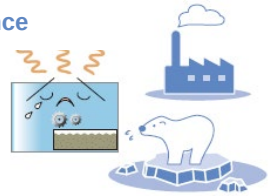
"Miracle Boy" contributes to global greenhouse gas reduction.

Burning oil about 1t (reacts with atmospheric oxygen and) causes CO2 2.5t

The appropriate disposal method is combustion (dumping in ocean and mountain is illegal). The amount of greenhouse gas which is caused by waste oil disposal is 2,500kg.

Conventional oil maintenance

Purchase of oil
The operator stops the machine for oil replacement.
Waste oil disposal
Burning of waste oil produces greenhouse gas emissions.



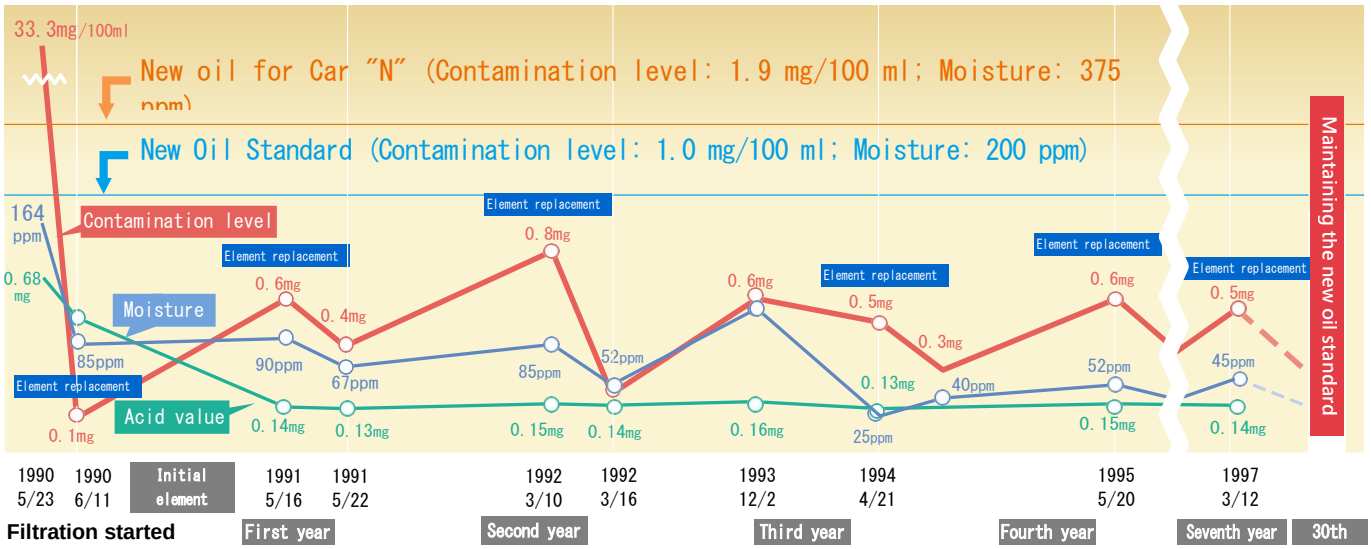
Oil maintenance with "Miracle Boy"

No purchase of oil
No oil replacement
High performance of the machine
No waste oil disposal
reduction of greenhouse gas

Maintaining the new oil level for over 30 years without oil replacement!

"Miracle Boy" (SRC-814-15V) installed at the dryer bearing lubrication oil (turbine oil) tank of the paper machine at the paper factory

Below graph shows the analysis results of the oil contamination levels and the moisture levels, total acid value since installed Miracle Boy in 1990. The contamination level is 33.3mg after one-year operation without Miracle Boy. However, it decreased to 0.1mg by using Miracle Boy for one month. At this time, the elements were replaced. One year after that, the contamination level increased to 0.6mg but decreased to 0.2mg after the second elements replacement. Since then, the contamination level increases and decreases depend on the timing of the element replacement. Nevertheless, the apex in the graph is higher than that of the new oil on the market. No oil replacement for over 30 years with the better condition than the new oil



Before/After installation of Miracle Boy

Hydraulic oil for the hydraulic Injection molding machine (850 t)
SRC-811-8V
[The automotive large parts molding plant]

	Unit	Before filtration	After filtration
Kinematic viscosity (40°C)	mm^2/s	44.78	44.78
Moisture (KF Method)	ppm	1225	67
Total acid value	mgKOH/g	0.29	0.22
Contamination level (Mass Method)	mg/100ml	6.9	0.1

Effect
*Malfunctions of hydraulic control valves are eliminated and molding accuracy is increased.
*There is no need to replace oil; oil costs, the number of times of replacing solenoid valves and hydraulic pumps and personnel costs are significantly reduced; there is no waste oil emission.

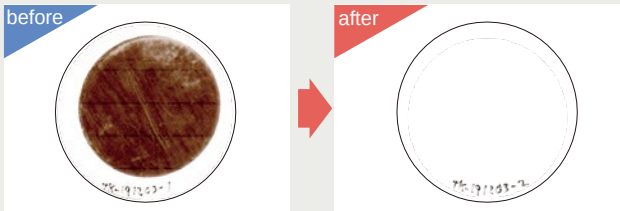
Lubricating oil (12,000 L) for the paper-making machine bearing
SRC-8124-224V
[Lubricating oil for the dryer bearing/gear in the paper factory]

	Unit	Before filtration	After filtration
Kinematic viscosity (40°C)	mm^2/s	224.9	222.1
Moisture (KF Method)	ppm	3000	59
Total acid value	mgKOH/g	0.35	0.34
Contamination level (Mass Method)	mg/100ml	12.2	0.3

Effect
*Metallic abrasion powder collected in the tank was eliminated with time. There is no need to replace oil.
*There is no failure occurring. Personnel costs are reduced and waste oil emissions are eliminated.

Varnish can be removed too!

The varnish that oxidized sludge polymerized can be removed. Avoid troubles of turbine lubricating and high-load hydraulic system



Machine trouble is solved by oxidized sludge removal!

Not only foreign materials such as wear debris, dust, moisture but oxidized sludge can be removed.

· The frequency of element replacement is ·

Once a year !

Examples

Miracle Boy is used in various fields. Sales achievement runs up to over 20,000 units.

Plastic

- Plastic injection machine
- Hydraulic oil
- Failure rate of servo valve decrease dramatically
- Improvement of molding accuracy

LNG tanker

- Lubricant of main turbine tens of thousands liters
- No oil replacement for over 30 years
- Hydraulic pressure of auxiliary machines such as steering and winch

Paper

- From 50L hydraulic control oil to 20,000L bearing lubricant
- Paper machine

Tire

- Tire factory

Hydraulic oi and gear oil of vulcanizer, kneading machine, testing machine

Power plant

- Control ten~hundred thousands of hydraulic oil and turbine oil for wind power, geothermal power, hydraulic power, nuclear power
- No need to replace expensive EHC oil!
- Significant reduction of regular maintenance
- Reduction control of RBOT rate

Aluminum diecasting

- Aluminum die-casting machine
- No oil replacement for Flame-retardant hydraulic oil
- Improvement of molding accuracy
- Failure prevention for expensive hydraulic parts

Press machine

- Lubricant of press machine
- Prevention of big accidents caused by clutch failure
- Life-prolongation and oil leakage prevention of hydraulic cylinder
- Wear prevention of jib parts

Aircraft・Defense parts

- Aircraft・Defense parts
- Control of the cleanness level of cleaning oil and testing oil

Specification for SRC-V series

(Filtration by self-suction hydraulic oil and gear box oil)

*To enhance or improve the product, the specifications are subject to change without notice. *These specifications are for Japan only.

*According to Security Trade Control, please contact us for the export.

Model	SRC-411-12V	SRC-811-8V	SRC-812-6V	SRC-813-10V	SRC-814-15V
Tank capacity	Hydraulic oil 500L/ Lubricating oil 300L	Hydraulic oil 1000L/ Lubricating oil 600L	Hydraulic oil 2000L/ Lubricating oil 1200L	Hydraulic oil 3000L/ Lubricating oil 1800L	Hydraulic oil 4000L/ Lubricating oil 2400L
Moisture removal rate (Max.)	2L	4L	8L	12L	16L
Number of elements attached	GE-21 (2 pcs) / GE-41 (1 pc)	GE-21 (4 pcs) / GE-41 (2 pcs)	GE-21 (8 pcs) / GE-41 (4 pcs)	GE-21 (12 pcs) / GE-41 (6 pcs)	GE-21 (16 pcs) / GE-41 (8 pcs)
Mounted motor	75W	0.2kW	0.2kW	0.2kW	0.4kW
Connection diameter (IN/OUT/DRAIN)	PT1/4,PT1/4, no drain	PT3/8 PT3/8 PT3/8	PT3/8 PT3/8 PT3/8	PT3/8 PT3/8 PT3/8	PT1/2 PT3/8 PT3/8
Outside dimension (mm)	300W×265L×423H	270W×435L×768H	600W×305L×801H	780W×305L×801H	440W× 700L× 750H
Weight	16Kg	31Kg	55Kg	70Kg	110Kg

Model	SRC-816-22V	SRC-8110-162V	SRC-8112-70V	SRC-8118-223V	SRC-8124-224V
Tank capacity	Hydraulic oil 6000L/ Lubricating oil 3600L	Hydraulic oil 10000L/ Lubricating oil 6000L	Hydraulic oil 12000L/ Lubricating oil 7200L	Hydraulic oil 18000L/ Lubricating oil 11000L	Hydraulic oil 24000L/ Lubricating oil 15000L
Moisture removal rate (Max.)	24L	40L	48L	72L	96L
Number of elements attached	GE-21 (24 pcs) / GE-41 (12 pc)	GE-21 (40 pcs) / GE-41 (20 pcs)	GE-21 (48 pcs) / GE-41 (24 pcs)	GE-21 (72 pcs) / GE-41 (36 pcs)	GE-21 (96 pcs) / GE-41 (48 pcs)
Mounted motor	0.75kW	0.75kW x 2units	2.2kW	0.75kW x 3units	0.75kW x 4units
Connection diameter (IN/OUT/DRAIN)	PT3/4 PT3/4 PT3/4	PT1 PT1 PT1	PT1 PT1 PT1	PT1 PT1 PT1	PT1 PT1 PT1
Outside dimension (mm)	513W×888L×1070H	530W×1238L×1070H	1050W×1038L×1170H	530W×888L×1070H (x 3 units)	530W×888L×1070H (x 4 units)
Weight	125Kg	160Kg	250Kg	375Kg	500Kg

Specification for SRC-C series

(For Oil injection type screw air compressor, Refuel type air compressor)

* SRC-V Series correspond to reciprocating oil-free turbo compressors. *To enhance or improve the product, the specifications are subject to change without notice.

* The followings are the standard specification for under 0.9MPa air. *For the bigger compressor, please contact us.

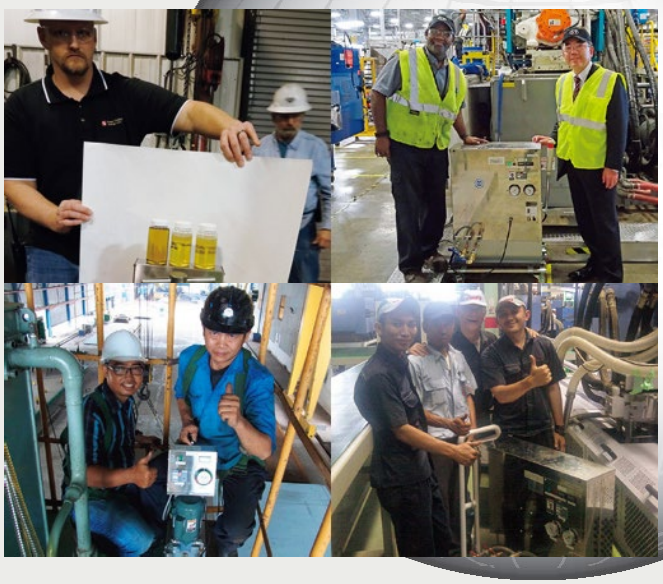
Model	SRC-811-C	SRC-812-C	SRC-813-C	SRC-814-C	SRC-815-C	SRC-816-C
Applicable compressor (output)	37kW or less	55kW or less	75～90kW	110～160kW or less	170～210kW or less	220～250kW or less
Moisture removal rate (Max.)	4L	8L	12L	16L	20L	24L
Number of elements attached	GE-21-SHG-C (4)	GE-21-SHG-C (8)	GE-21-SHG-C (12)	GE-21-SHG-C (16)	GE-21-SHG-C (20)	GE-21-SHG-C (24)
Connection diameter (IN/OUT/DRAIN)	PT3/8 PT3/8 PT3/8	PT3/8 PT3/8 PT3/8	PT3/8 PT3/8 PT3/8	PT3/8 PT3/8 PT3/8	PT3/4 PT3/4 PT3/4	PT3/4 PT3/4 PT3/4
Outside dimension (mm)	255W×380L×768H	400W×380L×768H	600W×380L×768H	513W×731L×733H	513W×888L×733H	513W×888L×733H
Weight	15Kg	30Kg	40Kg	105Kg	115Kg	125Kg

SRC-812-6V | SRC-814-15V | SRC-816-22V | SRC-814-C

MADE in JAPAN!!

ESTD.1960 TOKYO JAPAN

Our mission is to get the client's trust and contribute to world's ecology conservation and society by the world's best standard filtration technology.



Option

Miracle Boy can be designed for any mechanical system. Please feel free to contact us.

Explosion-proof

d2G4

For preprocessing to prolong the life of elements

OP10

With operating status indicator (24,000L model)

PSSIGL

For outside and dusty place, etc

IP34

Inline contamination sensor
For monitoring of oil status,
In real time measure contamination level

CSM2BT

Compliant with the original safety standard of the car manufacturer

TEMS

Low center of gravity standard for wind power generator

WPG2

For supply of new oil to equipment

TEPCOCART

Aqueous liquid specification (leak tester, etc)

SUS-TP

Customer's specified color

Specified color

When high-precision ultrasonic sensor detects oil leakage, it shuts off the power and issue an abnormal signal

Trolley with leak sensor

Industrial Oil Filtration Device

MIRACLE BOY ミラクルボーイ

Specification of MB filter element

*These specifications are for Japan only. *According to Security Trade Control, please contact us for the export.

Model	GE-21-SHG	GE-21-N	GE-21-NR	GE-41-DC
Application	**High-precision oily fluid filtration** Standard type for hydraulic oil and lubricating oil For hydraulic/lubrication circuits requiring high precision such as servo valves For reciprocating oil-free turbo compressor oil and refrigerant oil	**Medium-precision oily fluid filtration** For heavily contaminated hydraulic oil, lubricating oil, vacuum pump oil and press lubricating oil For private power generator oil and automotive engine oil For heavy/light oil and rolling mill lubricant to finish nonferrous metal	**Heavily contaminated oily fluid filtration** For degreaser and cutting/grinding fluid requiring high precision For vacuum pump oil, press lubricating oil and wash oil with frequent incorporation of foreign matters For package type diesel generator and low-viscosity quenching oil	**High-precision oily fluid filtration** Oxide removal and decoloration performance is more excellent than those of the standard types. For filtering and decoloring low-viscosity oil such as hydraulic oil and turbine oil Application for the fields which require the highest-level control standard such as test equipment
Main material	Pulp fiber resin (Filter media) PP (Case/pipe) NBR (Sealed packing)	Pulp fiber resin (Filter media) PP (Case/pipe) NBR (Sealed packing)	Pulp fiber resin (Filter media) PP (Case/pipe) NBR (Sealed packing)	Pulp fiber resin (Filter media) Special adsorbent (pigment/oxide removal) NBR (Sealed packing)
Moisture removal rate (Max.)	1L	1L	1L	1L
Center of filtration accuracy distribution	3μm	30μm	50～100μm	1μm
Outer dimension (mm)	φ145×H115	φ145×H115	φ145×H115	φ145×H240
Weight (One unit/DRY)	550g	550g	550g	1.1Kg
Date of delivery	Within 2 business days after your order	Within 2 business days after your order	Within 7 business days after your order	Within 14 business days after your order

Model	GE-21-W4	GE-21-W1	GE-41-MR1
Application	**High-precision water-soluble fluid filtration** For water-glycol fluid used for die-casting machines, etc. For fluid requiring transparency such as leak test fluid For oily fluid not requiring moisture removal	**Heavily contaminated water-soluble fluid filtration** For water-glycol fluid and water-soluble fluid used for die-casting machines, etc.	**High-precision oily fluid filtration** To remove moisture and slight oxide from refrigeration compressor oil and high-precision hydraulic oil, etc. For insulation oil of transformers and tap changers For EHC oil, etc. used in thermal/nuclear power plants
Main material	Waterproof nonwoven fabric (Filter material) PP (Case/pipe) NBR (Sealed packing)	Waterproof nonwoven fabric (Filter material) PP (Case/pipe) NBR (Sealed packing)	Pulp fiber resin (Filter media) Special adsorbent (Moisture/oxide removal) PP (Case/pipe) NBR (Sealed packing)
Moisture removal rate (Max.)	None	None	1 L + Dissolving moisture 0.4 L
Center of filtration accuracy distribution	5μm	100μm	1μm
Outer dimension (mm)	φ145×H115	φ145×H115	φ145×H240
Weight (One unit/DRY)	550g	380g	2Kg
Date of delivery	Within 14 business days after your order	Within 2 business days after your order	Within 21 business days after your order

Please visit our website for the latest data, the applications and the reference cases.

www.roka.co.jp

CAUTION

- Read the instruction manual before using "Miracle Boy".
- Installment of this product should be executed by appropriate knowledge and skills.
- Described images and datas are just example. Please note this is not to guarantee.

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