




Doctor Unit Assembly

SunRay



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A photograph of a SunRay facility. In the foreground, there is a white fence. Behind it, several cars are parked in a lot. In the background, there is a large, modern building with a curved roof and several windows. The sky is overcast.

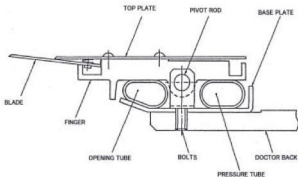
Double air tube type Doctor

A: Automatic adjusting touching force distribution

Two double tubes which assembled across the width, can make whole holder rotate from pivot rod. Holder has fingers which located every 50mm pitch. Doctoring blade is installed between finger and flexible top plate. When closing tube is pressurized, holder rotates until top of blade will touch against roll. Pressure distribution will be almost even across the width by each separated finger and flexible top plate. This double tube type doctor can follow much more deformation in this function, like roll irregular change, roll profile(crown), compared with another type Doctor. When opening tube is pressurized, holder will rotate to detach from roll.

B: Controllable structure

This double tube type Doctor is designed to fit to all kinds of roll. We recommend that especially this machine should be used for important roll. Air pressure setting of closing tube can be very low, because blade touching situation becomes almost even automatically. As a result, the life of blade is extended, and delay time for roll maintenance can be shortened. When operating condition is changed, it is easy to change setting in the control panel by changing air setting.



Double air tube type Doctor

C: Holder structure

Double air tube Doctor holder is made of stainless steel, and have enough rigidity to operate in severe circumstance.

Tubes material for opening and closing has heat, chemical, weather oil resistance to have good life in the various circumstance. Fingers are made in accurate casting, so it is easy to clean, and have enough strength and life.

Blade is installed into finger guide, can be changed from Operation side or line direction. (line direction is option)

D: Oscillation of Doctor

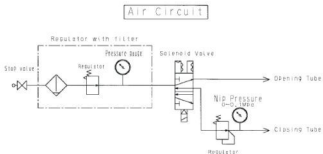
Doctor can get more effective by using oscillating function. We recommend this function to be installed as much as possible. Oscillator is driven by electric motor or air cylinder.

Either way, machine is stopped automatically to prevent gouge by installing interlock, when roll rotation is stopped.

E: Air circuit

Air circuit is designed to change air pressure easily under any circumstance.

Air which is supplied from factory will go through finger to get rid of dust, and reduced pressure by reducing valve, and connected to opening/closing tubes. Since air tube has enough strength, it is ok against frequent operation and high pressure.



Double air tube type Doctor

F: Operating situation indicator

You can check operating situation by watching pressure gauge and switch in the control panel. Please check setting pressure compared with Air pressure VS nip pressure diagram. (attached)

G: Convert to double tube type from another type

You can change current doctor to double tube type Doctor by using adaptor. And some parts need to be changed.

We believe higher performance doctor will give you more benefit, so we recommend you to change doctor to higher performance one.

Oil-tube type special holder

• Oil tube type holder

It is a doctor holder with the blade self adjustment .

【 Feature of holder 】

- Utility from the outside such as air is not needed at all.
- The change in the contact pressure in the roll surface and the blade top is sensitively perceived with the oil tube, and the blade top can be pressurized automatically and uniformly.
- Even if it is a machine frame of the movability type, an efficient doctor unit can be easily set up in the pressure device by the thing to select the non-air type like the human strength lever type etc.
- Because the operation from the outside is not needed for the holder, the doctor system of a simple composition can be constructed.
- Because the use blade form has a blade for the double air tube type holder and complete interchangeability, the blade can be easily exchanged.

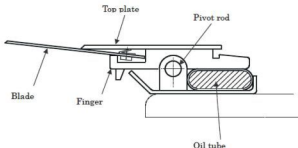
【 Operation of holder 】

〈 Basic structure 〉

- The double air tube type holder is adopted and the oil tube where a special liquid of a constant amount was enclosed with the base instead of the pressurizing air tube is adopted.
- The oil tube is completely sealed up, and does OPEN/CLOSE by the thing to be separately attached to the doctor unit of a special mechanism.

〈 Correction mechanism with oil tube 〉

- The doctor is separately rotated with the pressure device and pressure in the oil tube goes up through the finger if the blade top is touch the roll.
- The liquid in the oil tube moves so that all points of contact of the tube and the finger may become the same pressures, and the correction pressure is transmitted to the blade through the finger.
- The blade top can come in contact by following to the roll with constant pressure kept.

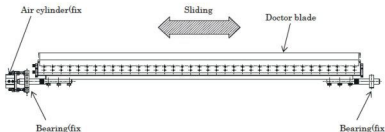


• Oscillation device(sliding device)

【 Oscillation device outline 】

- It is a device which makes the slide move periodically in the main body of the doctor blade.
- Amount of basic, set stroke 15mm , round trip time ten seconds.
- Air cylinder/electricity and the oil pressure motor, etc. are used and driven.
- Oscillation device is controlled in a special electrical circuit. The drive of the line and the thing which tunes and interlocks are also possible.

◀ Composition example : Air cylinder type ▶



【 Feature of Oscillation device 】

The doctor blade always comes in contact with the rotating roll because the doctor is a machine which cleans the roll surface. However, the garbage which has placed to the roll piles up in the top of blade when the doctor used. The garbage which piled up might put a slit pattern on the roll, and there is a possibility to damage the roll furthermore, too. Such a situation can be solved by installing the oscillation device in the doctor. The blade must sliding always, prevent garbage from piling up in the top of blade, and make the wear-out of the total length of the blade uniform. As a result, a steady effect of the doctoring can be achieved by the adverse effect on the roll is able not only to be prevented but also postponing the braid life.

The oscillation device is an indispensable device because it demonstrates doctor's ability to its maximum as shown in above. Therefore, we will recommend adopting it for all doctors.

BLADE

【 Feature of Oscillation device 】

Recently the machine shows improvement in its ability. And so we are demanded an authentic selection to doctor ablade.

The doctor-blade has to exhibit the enough ability under any circums tances.

Conspicuous

Superior 'DOCTOR BLADE' has

Excellent

- Flexility and tightness to all rolls
- Enough anti-frayrd
- Moderate hardness and precise treatment

Our company produces the best 'Doctor Blade' with the best techniques and accomplishment based on a number of experience.

Should there be any way in which we can be of assistance,please do not hesitate to contact me personally.

We hope you will use our product effectively.

Blade Test Machine



BLADE (METALLIC)

METALLIC BLADE < typical and the feature >



● STAINLESS BLADE

Material : SUS440A

Hardness : HS65±5%

Thickness : 1.0/1.2mm(standard)

【 feature 】

- It is possible to use for all metallic rolls with the most standard blade.
- Because hardness is high, it is excellent in both doctor rings and wear-out-proof in wear-out It is excellent.



● PHOSPHORUS BLONZE BLADE

Material : PBP-3EH

Hardness : HS30±5%

Thickness : 1.2mm(standard)

【 feature 】

- It can have the lowest friction coefficient in a metallic braid, and it use for the roll by the low load.
- Because the frictional spark is not generated, it is possible to use as a fire prevention braid.



● HEATPROOF BLADE

Material : HA230

Hardness : HRB93(normal temperature)

Thickness : 1.0mm(standard)

【 feature 】

- Excels in the high temperature oxidation and high temperature strength, and a steady doctor ring is possible by even making to the high temperature.
- It is possible to use for the doctoring under the high temperature environment such as in the annealing furnaces in the steel manufacture plant.

There is a braid of other various materials.

Please inquire in charge of our company sales in detail.

BLADE (RESIIN)

RESIN BLADE < typical and the feature >



● FRP BLADE

Material : Epoxy resin with glass fiber

Heatproof temperature : 120℃

Thickness : 1.8mm(standard)

【 feature 】

- It is possible to use for all rolls with the blade with the highest generality.
- The doctoring performance is the highest in the resin blade, and wear-out-proof It is excellent. wear-out is also excellent.
- The substitution of a metallic blade is also possible.



● POLYETHYLENE BLADE (UHMW-PE)

Material : Super-polymer polyethylene

Heatproof temperature : 90℃

Thickness : 6.0mm(standard)

【 feature 】

- The load to the roll is the least blade.
- The specular plating roll etc. which do not want to apply the soft rubber roll and wound can be used.
- It is the best because there is little water attracted for the drainer blade.



● BAKELITE BLADE

Material : Phenolic resin with paper fiber material

Heatproof temperature : 130℃

Thickness : 3.0mm(standard)

【 feature 】

- A steady doctor ring is a possible braid also under the high temperature environment.
- Chemical resistance is excellent.

There is a braid of other various materials.

Please inquire in charge of our company sales in detail.

COMPANY PROFILE

Company Name SunRay Co.,Ltd.

Logo Mark



Capital 10,000,000. yen

History:

1989

The doctor Unit in Shizuoka City in the private operation.
The design, production, sales, and the improvement begin.

1993

The old name Sunray factory at the same time as reorganizing into incorporated
The title is changed into 'SunRay Ltd.'.

2002

The name is changed into 'SunRay Co.,Ltd.' at the same time as reorganizing
into the company.

Directors

Reiji Yamamoto (President and CEO)

Kiyomi Yamamoto

Kazuhito Oyaizu

Address

Factory and Business office

1188 Kishimachi , Shimada-City , Shizuoka , Japan

TEL (81/547)-33-3150

FAX (81/547)-33-3151

Dealings bank

Shizuoka Bank , Seishin Shinkin

SunRay

At the main delivery destination

Steel company

- Nippon Steel Corporation
- JFE Steel Corporation
- Sumitomo Metal Industries, Ltd.
- Kobe Steel, Ltd.
- Nisshin Steel Co.,Ltd.
- Other many ***

Plant engineering company

- Nippon Steel Corporation (Steel Plant & Environmental Engineering Division)
- Mitsubishi-Hitachi metals Machinery,Inc.
- JP Steel Plantech Co.
- Other many ***

Lines of Business

Design, production, sales, and repair of industrial machinery

Doctor unit / remodeling , design , production , sales , repair

Blade holder

Strong type holder

Oil tube type holder

Air tube type holder

Coating holder

Above-mentioned, various division type holder

Doctor Blade / sales and production

- High-carbon steel(SK material)
- Stainless steels
- Bronze alloy
- Nickel base alloy
- FRP resin
- Carbon
- The polyethylene resin
- Special resin

Production plant (Factory/Office)

Factory : Shimada Works

Site 805.2 m2

Factory 475.2 m2

Office 49.5 m2

Production facility

The welding equipment is various. (Tig/Arc/Gus)

Two lathes

Two milling machines

Radial boring machine

Six boring machines

Crane of running in ceiling

Buff grinding machine

Steel cutter

Numerical control set press

Blade grinding machine

Blade correction machine

CAD design system

(CADSUPER JX / CADSUPER FX / AUTOCAD LT)



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