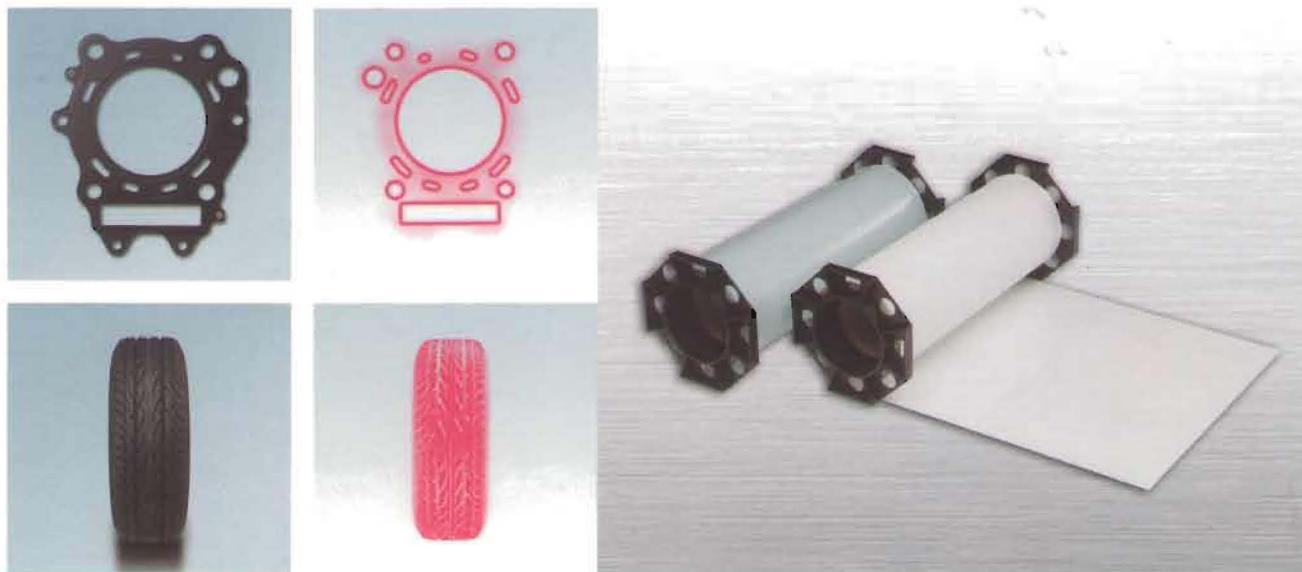


# Pressure Measurement Film **PRESCALE**

The only film in the world for measuring pressure and pressure distribution.



Simply insert and measure pressure distribution by color density.

#### Possible analysis range from visual confirmation to computer analysis after digitization.

Prescale is the world's only film that measures pressure and pressure distribution.

Areas where pressure is applied become red in response to the pressure and it is possible to check pressure magnitude and pressure balance.

The eight models of Prescale cover a wide range of pressures from extremely low pressures to super-high pressures.

Enables anyone to measure pressure easily. Just insert between two surfaces.

#### EASY VISUAL CHECK

- Measure pressure by color density
- Not just force at a single location, it measures the distribution of it

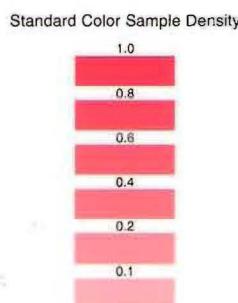
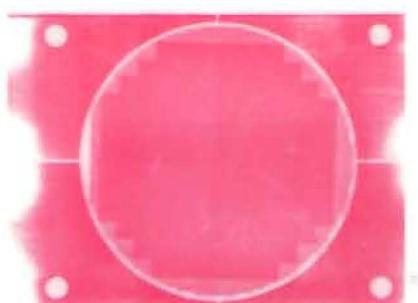
#### EASY OPERATION

- No power source required
- Cut and fit any dimensions

#### EASY DIGITIZATION

- Digitize by scanner
- Convert pressure density into quantifiable values

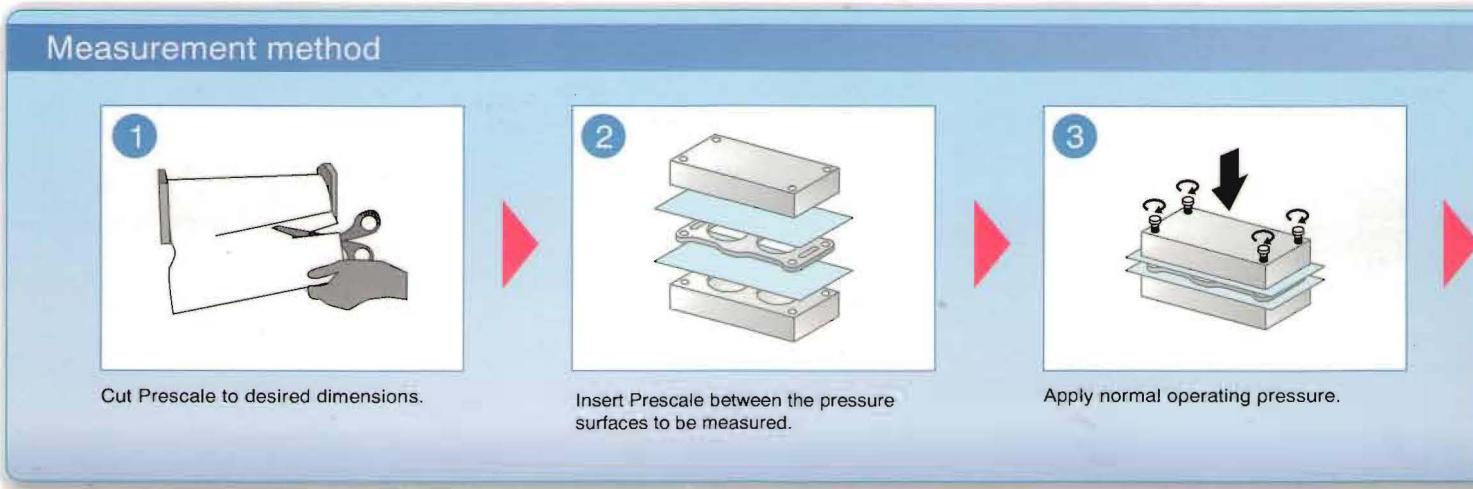
#### Visualization of surface pressure by color change



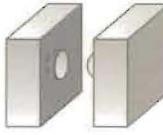
Pressure is detected by color density; unevenness and bias in surface pressure distribution can be checked.

Areas of the film where pressure is applied become red and the color density varies according to the intensity of the applied pressure. The density of red allows visual evaluation of the strength of the pressure. Also, scanning allows a quantifiable pressure map analysis to be performed.

## Work Flow



## Wide Range of Applications and Measurement Techniques

Examples of measurement types	Industries	Applications
	Tightening Pressure	<ul style="list-style-type: none"><li>Automobile</li><li>Machinery</li></ul> <ul style="list-style-type: none"><li>Pressure of fastened surfaces, e.g., engines, gearboxes, turbines, valves, pumps, hydraulic, cylinders, bolted joints and compressors</li><li>Sealing performance of gaskets, seals and O-rings</li></ul>
	Contact Pressure	<ul style="list-style-type: none"><li>Automobile</li><li>Electronics</li></ul> <ul style="list-style-type: none"><li>Contact pressure of brakes, clutch plates and pistons</li><li>Contact pressure of spot-welding machines</li><li>Contact pressure of IC heat sinks</li></ul>
	Contact Conditions	<ul style="list-style-type: none"><li>Machinery</li><li>Automobile</li></ul> <ul style="list-style-type: none"><li>Contact condition of press dies</li><li>Balance checking of press machines</li><li>Contact condition of heat seal bars</li><li>Contact condition of press machines for adhesion</li></ul>
	Support Pressure	<ul style="list-style-type: none"><li>Automobile</li></ul> <ul style="list-style-type: none"><li>Support pressure for tires and caterpillar tracks</li><li>Support pressure for machines, bridge beams and tanks</li></ul>

\*Many more applications and measurement techniques available.

## Pressure Digitizing and Analysis

**FPD-8010E**   Fuji Digital Analysis System for Prescale

Colorized Prescale is digitized using a scanner and converted into numerical data by software. Various pressure analyses can be conducted.

The FPD-8010E converts Prescale pressure values into numerical data and is a pressure mapping analysis system that allows various methods of analysis. In order to make Prescale data even more useful, we will meet your requirements for converting to numerical data, saving data and performing data analysis.

### Functions

**Overall Measurement:** Various data such as average pressure and maximum pressure are displayed.

**Partial Enlargement:** The specified field is enlarged. (x4, x8, x16) Pin point pressure values can be displayed on the image.

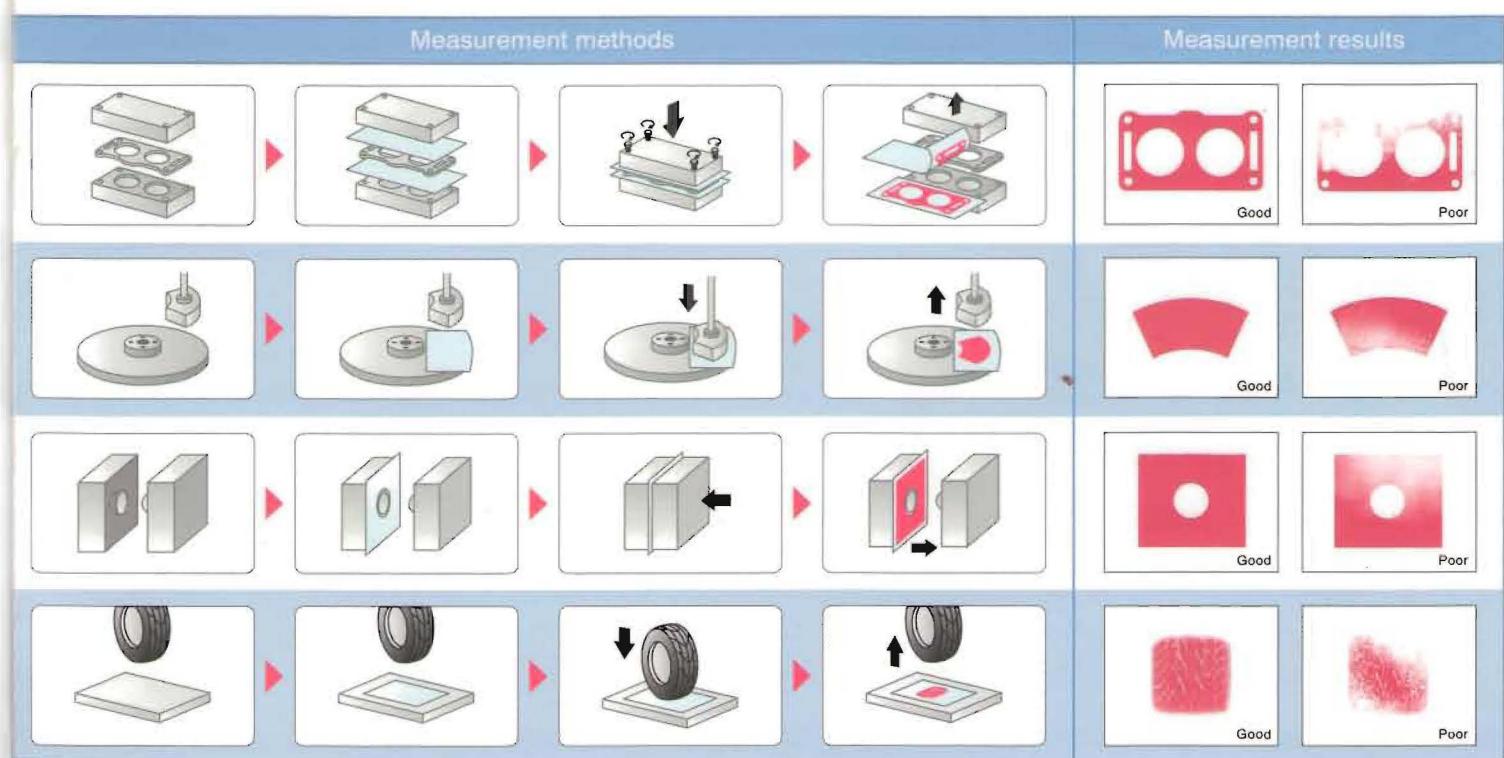
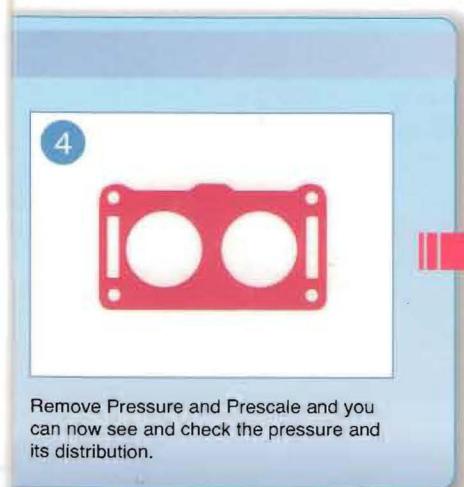
**Pressure Cross Section:** Pressure distribution on a line passing through a specified point is shown on a line graph.

**Wire Frame:** Pressure is displayed in 3-D format.

**Changing the Pressure Bar Setting:** The colored pressure bar and the pressure bar boundary can be changed.

**Text Data Output:** Pressure data is exported to a text file.

**Total Weight Distribution:** The upper and left segments of the total pressure are displayed on a bar graph.



**Pressure Distribution Animation:** Step-by-step pressure values are displayed in an animated format.

**Histogram Analysis:** Pressure on the circumference is displayed as a histogram.

**Printing and Saving:** The displayed screen and data can be printed. After stored data is re-loaded and displayed you can store it.

## Specifications

Product Name	FUJIFILM PRESSURE DISTRIBUTION MAPPING SYSTEM for PRESCALE
Model	FPD-8010E
Main Functions	Prescale image input function Pressure distribution display function/ Pressure data output function 3D display function / polar coordinate display function
Scan Sizes	Single Read : 297mm x 210mm (11.7in x 41.3in) Maximum : 891mm x 1050mm (35.1in x 41.3in)
Resolution	0.125 (200dpi), 0.25 (100dpi), 0.5, 1, 2mm sq.
Dedicated Cover Weight	570g
Dedicated Cover Dimensions	70(H) x 290(W) x 364(D) mm

Packed Items	Dedicated software, dedicated cover, calibration sheet, installation manual, software license.
Scanner	Epson V100, V200, V350, V300, V330, V33 (Buy scanner from an Epson Dealer)

### Recommended Software Environment

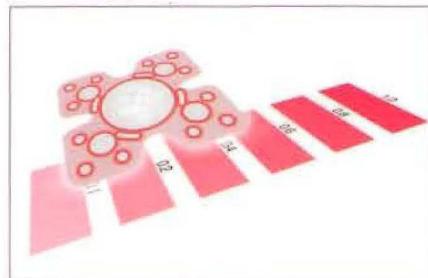
OS	Window® 2000 Professional Sp4 and more Window® XP Home Edition Windows XP / Professional Sp2 and more Windows Vista™ Business Windows Vista™ Home Premium
CPU	Pentium® III 1GHz or Higher
Memory	512MB or more
Display	XGA or better, 65,000 colors or more

## Visual Evaluation (Reference Chart)

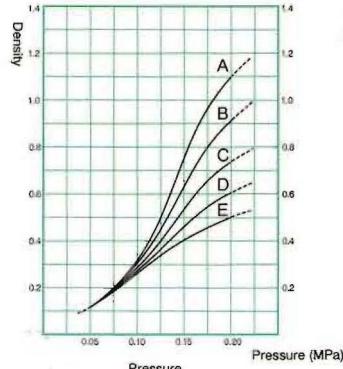
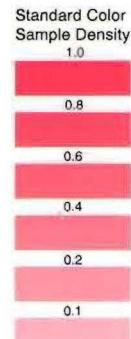
Visual

Chart

Using Prescale with the reference charts allows visual evaluation. Using the reference charts provided for each product type makes it possible to measure pressure values by viewing the Prescale color density.



Visual evaluation of density from standard color samples.



## Line Up

Eight types of Prescale are supplied according to pressure level. Select appropriate Prescale.

Product (Code)	Pressure range [Mpa] $1\text{ MPa} \approx 10.2\text{ kgf/cm}^2$ Pressure range [psi] $1\text{ psi} \approx 6895\text{ pa}$	Prescale Roll Type Product size W(mm)xL(m)	Type
Super high pressure (HHS)	0.05 - 0.2	270 x 12	Mono-sheet type
High pressure (HS)	0.2 - 0.5	270 x 12	Mono-sheet type
Medium pressure (MS)	0.5 - 0.6	270 x 12	Mono-sheet type
Medium pressure (MW)	0.6 - 2.5	270 x 12	Two-sheet type
Low pressure (LW)	2.5 - 10	270 x 12	Two-sheet type
Super low pressure (LLW)	10 - 50	270 x 6	Two-sheet type
Ultra super low pressure (LLLW)	50 - 130	270 x 5	Two-sheet type
Extreme low pressure (4LW)	130 - 300	310 x 3	Two-sheet type

Notes: W in the product codes indicates two-sheet type, S indicates mono-sheet type

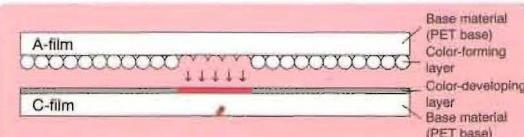
## Technology

**Two-sheet type** extreme low pressure, ultra super low pressure, super low pressure, low pressure, medium pressure (5 types)

Composed of two kinds of films: A-film and C-film

- A-film: Base material (PET base) coated with a color-forming material (microcapsules)
- C-film: Base material (PET base) coated with a color-developing material

The coated sides of each film (color-forming and color-developing) must face each other. These are the sides with the matte finish. When pressure is applied, the microcapsules are broken and the color-forming material transfers to the color-developing material and reacts, thereby generating a red color.



**Mono-sheet type** medium pressure, high pressure, super high pressure (3 types)

Measurement is possible with a single sheet of film

- A color-developing material and color-forming material (microcapsules) are coated, one above the other, on a single base material (PET base).

When pressure is applied, the microcapsules are broken and the color-developing material absorbs the color-forming material and reacts, thereby generating a red color.



## Specification and Operational Environment

### Prescale (Two-sheet type / Mono-sheet type)

Accuracy	$\pm 10\%$ or less (when measured with densitometer at $23^\circ\text{C}/73.4^\circ\text{F}$ , 65% RH)		
Recommended temperature	20°C~35°C (68°F~95°F) <sup>1</sup>	Recommended humidity	35%RH~80%RH <sup>2,3</sup>
Thickness	Mono-sheet : ca. 110 $\mu$ Two-sheet : A-film : ca. 90 $\mu$ m, C-film : ca. 90 $\mu$ m *Each type of products has different thickness		

<sup>1</sup> 1:4LW, HHS : 15 ~ 30°C \* 2:4LW : 20% RH ~ 75% RH \* 3:HHS : 35% RH ~ 70% RH