

Workplace Safety Training Tools

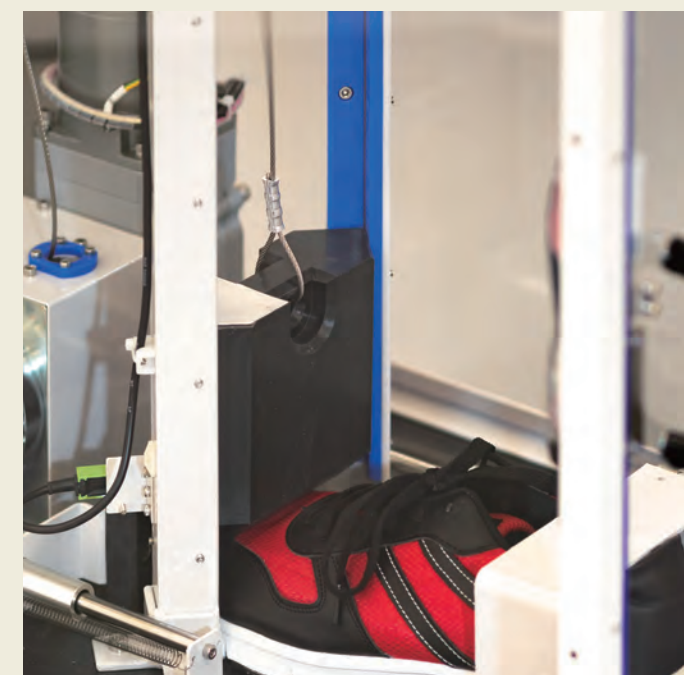
Hazard Simulation Devices

NST

NST Co., Ltd.



Learn through experience



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If used outside of Japan, the specifications can be adapted for the respective country. Please contact us.

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The importance of safety training

Workplace accidents can occur in all types of fields, and training to prevent accidents from happening is of utmost importance. Providing safety training increases the awareness of safety of each individual operator and prevents workplace accidents.

Safety training for new employees and employees with little experience

On work sites, a large percentage of accidents are caused by new employees and those with little experience. This is due to lack of skills and lack of awareness. As the safety of mechanical equipment has improved in recent years, there are apprehensions of decreased sensitivity to danger among less experienced employees. That is why safety training is so important for new and less experienced employees.

Safety training for older employees

As society ages, so does the age of operators, and we can expect more accidents and injuries among older employees. Unlike workplace accidents among employees with little experience, accidents leading to injury among older employees are often caused by decreased physical capacities. Safety training for older employees helps increase their awareness of their decreased physical abilities and offers a reminder on the importance of safety.

Safety training for expert employees

Accidents among highly experienced expert employees are often the result of human error due to old habits and overconfidence. Failure to check for safety before starting operations, improper operation of machinery, careless behavior, mishandling of machinery, getting caught in machinery while cleaning it and other cases of human error can happen to anyone, not only less experienced or older employees. It is important to always remain aware of safety to prevent accidents caused by old habits and overconfidence. Providing safety training periodically can increase awareness of safety and reduce the risk of human error.

Examples of close calls

Nearly getting an electric shock when connecting wires on a distribution panel.



Electric shocks

Nearly getting one's fingers caught in the V-belt when checking operation.



Entanglement

Nearly getting one's gloves caught when drilling with a drill press.



Entanglement

Nearly getting one's hands caught when cleaning a scutching machine.



Entanglement

Nearly dropping a steel piece on one's foot when moving it.



Falling objects

Dropping an aluminum panel when carrying it and nearly hitting one's foot.



Falling objects

Source: "Examples of close calls" on the Ministry of Health, Labor and Welfare's workplace safety website

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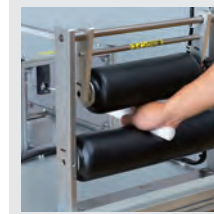
Before a workplace accident occurs.

Learn through experience!
Workplace safety training tools



KT-100 Electric Shock Simulator

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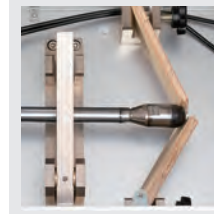
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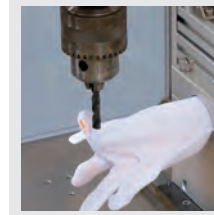
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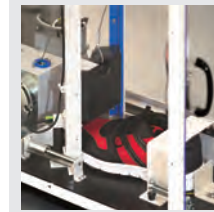
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Electric Shock Simulator KT-100

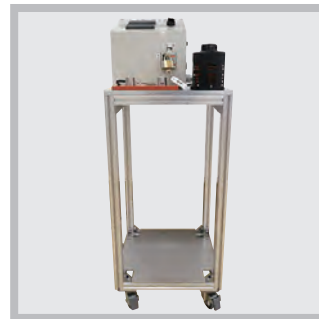
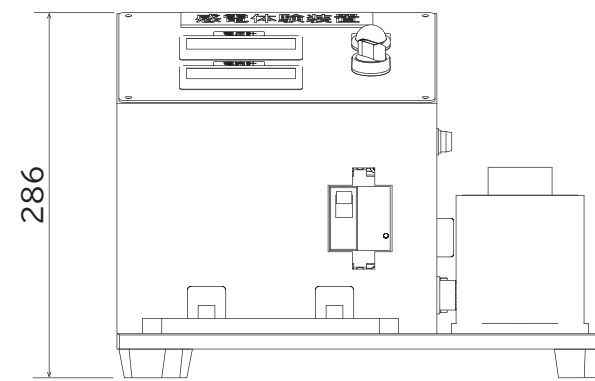
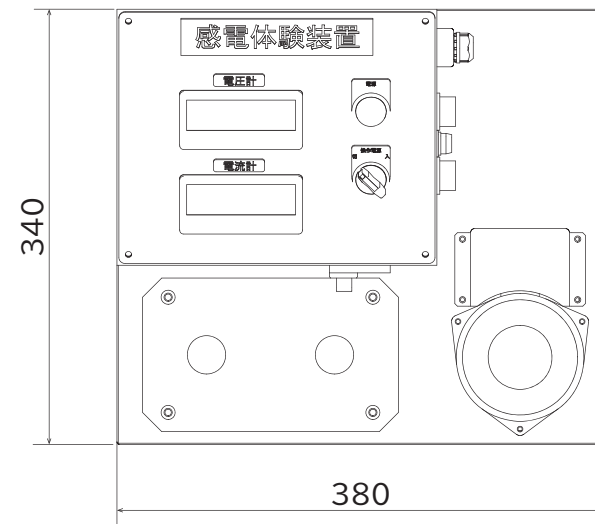
With / Without frame

Description of the device

This device applies voltage to the palm of the hand to simulate an electric shock accident. The user touches the shock bar (electrode) with their thumb and index finger, the output voltage is adjusted with the variable transformer, and a shock (a tingling feeling from the current flowing through the fingers) is felt when the power is turned on.



External View



Type with frame



Functions



Adjustable voltage

The voltage and current values are displayed numerically on the device, and the voltage value can be set freely. By comparing the shocks experienced at the same voltage among different people, users learn how currents flow differently in different people and shocks are also felt differently from one person to the next.



Safety feature included

The device is equipped with an abnormal voltage detection function which sounds a buzzer if an abnormal voltage is input.

Teaching how current flows differently and shocks are felt differently from person to person

1. Teaches that the amount of current that flows differs from person to person because resistance differs between persons.

Have several people try and compare the differences in current value.



2. Teaches that with moisture present (reducing the resistance), electrical current flows with greater ease and the feeling experienced differs.

Compare with different external environments and conditions.



With the finger wet



With the finger dry

3. Teaches that the amount of electricity and the feeling experienced differs according to the surface area of the shock bar (electrode) that is touched.

Compare with different contact surface areas.



Touching with the palm



Touching with fingers

Specifications

Test area output	Max. voltage	AC 50 V or less
	Max. current	12 mA or less (with 4.7 kΩ current limiter)
Input power voltage and rating		AC 100 V, single phase, 50/60 Hz, 0.3 kVA * Abnormal voltage detection function included
Without frame (with frame)	External dimensions (mm)	W 380 × D 340 × H 286 (H 976)
	Weight (kg)	15.3 (25.8)
Others		This device is designed for use in Japan.

Roller Entanglement Simulator

RT-100

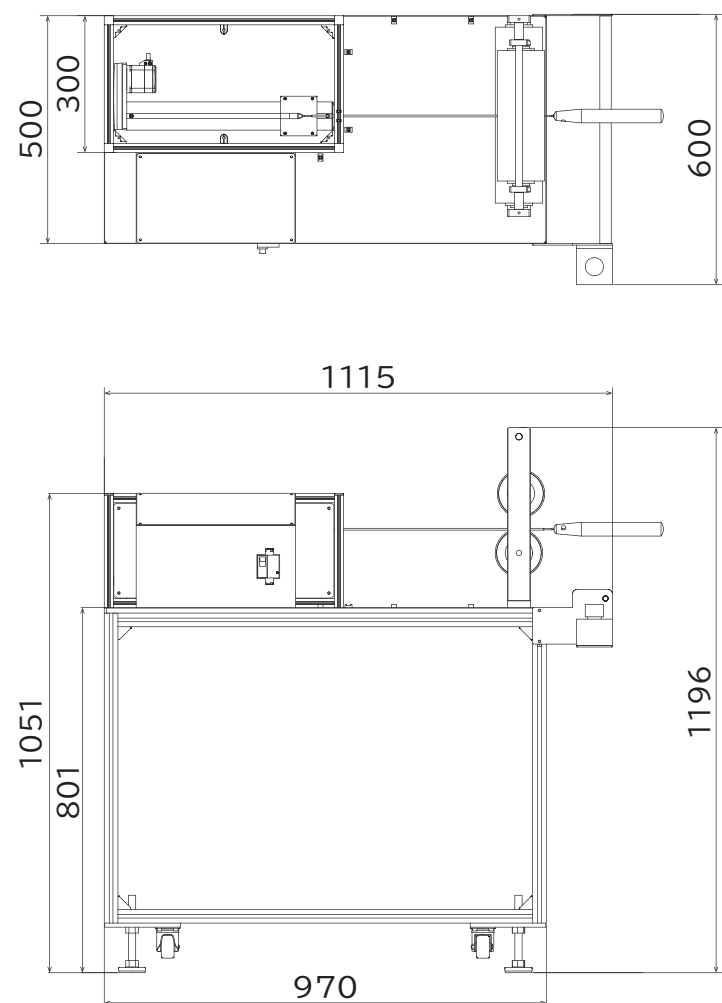
With frame

Description of the device

This device allows users to experience the speed and distance within which they can take safety actions when their hand is at risk of being drawn into a rotating part. Users can experience the danger of operating a machine while a rotating part is moving.



External View



Functions



Equipped with speed setting switch

The speed at which the grip is drawn in can be set in 10 steps from low speed to high speed.



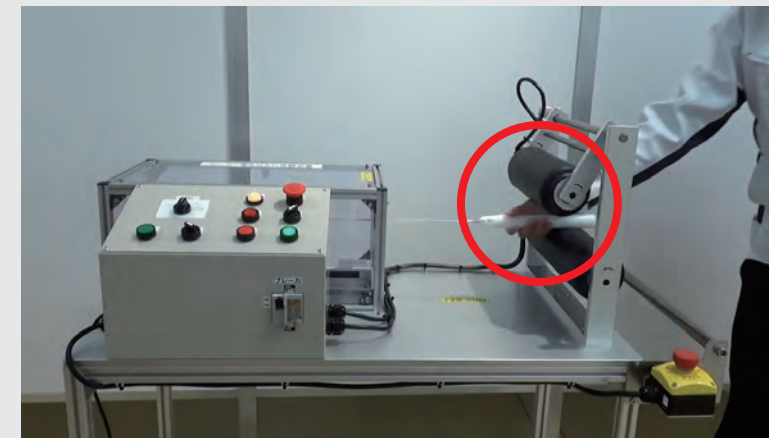
Safety feature included

An overload detection function stops the movement if an excessive load is detected while the electrically driven cylinder is being drawn in.

Teaching what having one's hand drawn into a roller feels like and the mechanism by which the hand is drawn in

This device teaches users that if their hand starts getting drawn into the roller, they will not have time to react appropriately unless they have determined ahead of time what action to take to avoid getting their hand drawn in.

When the action has not been determined ahead of time



The user's hand gets drawn in.

When the action has been determined ahead of time



The user can avoid getting their hand drawn in can by pressing the emergency stop button.

Specifications

Motor	60 W, 1/50 reduction ratio
Running torque	89 kgf·m
Input power voltage and rating	AC 100 V, single phase, 50/60 Hz, 0.5 kVA
External dimensions (mm)	W 1115 × D 600 × H 1196
Weight (kg)	87.0
Others	This device is designed for use in Japan.

CT-100 VT-100

With / Without frame

With / Without frame

Description of the device

This device allows users to experience the risk of getting their hand caught in a rotating chain or V-belt. Users wear a leather glove and experience the impact of getting their hand caught in the machine by inserting a piece of wood into the rotating unit.

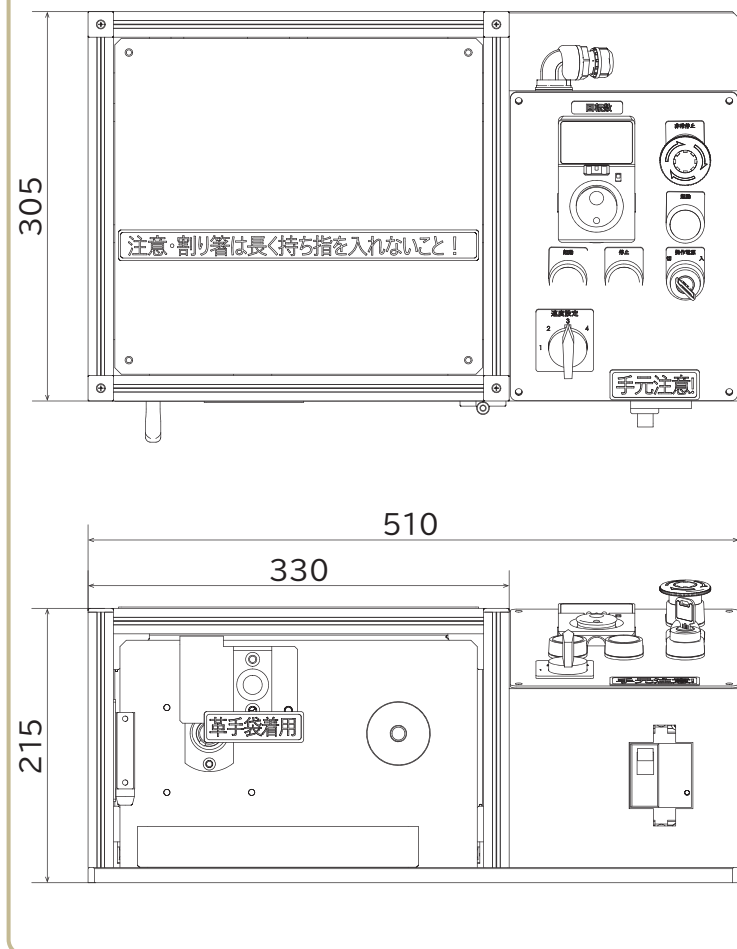
Chain



V-belt



External View



Functions



Equipped with speed setting switch

The speed of rotation of the chain or V-belt can be set in four steps, from low speed to high speed. By changing the speed, users can experience the relationship between the apparent risk and the actual torque.



Safety feature included

Thanks to the door sensor, rotation stops if the door is opened while the chain or V-belt is rotating.

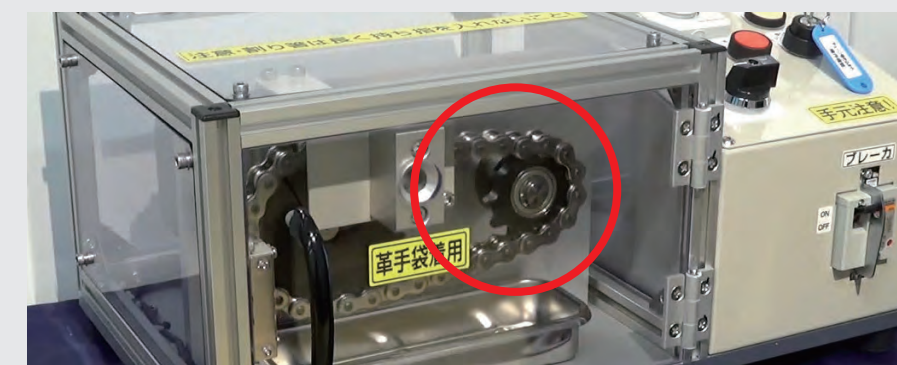
Teaching the relationship between the apparent danger and the actual torque according to the speed of rotation

Demonstrating the danger when the chain is rotating **at high speed**



When the chain is rotating at high speed, the danger is apparent at a glance.

Demonstrating the danger when the chain is rotating **at low speed**



When the chain is rotating at low speed, the danger is not as obvious.

Regardless of the apparent speed, rotating objects have an extremely high force.

When pinched in a part that is rotating at low speed, the piece of wood breaks easily. When performing cleaning or maintenance, never put your hands into a machine that is rotating even if the machine is rotating at low speed.

Specifications

Motor	60 W, 1/50 reduction ratio	
Running torque	89 kgf·m	
Input power voltage and rating	AC 100 V, single phase, 50/60 Hz, 0.5 kVA	
Without frame (with frame)	External dimensions (mm)	W 510 × D 305 × H 215 (H 1044)
	Weight (kg)	20.0(29.0)
Others	This device is designed for use in Japan.	

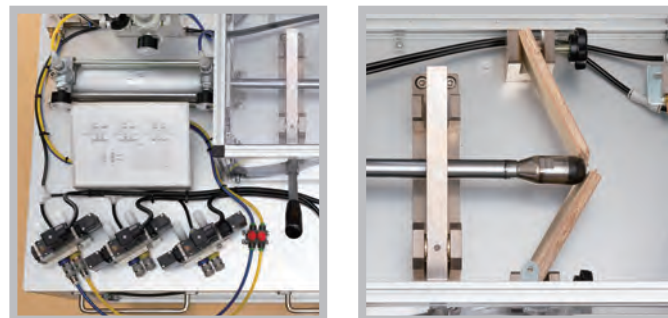
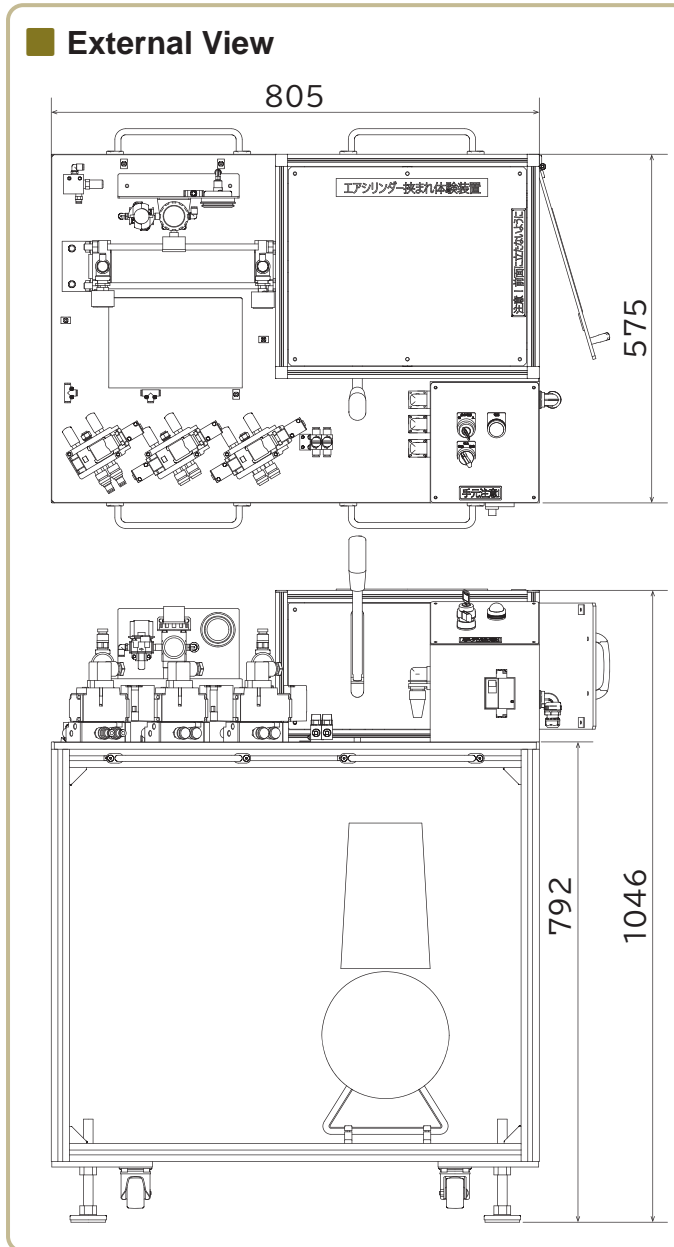
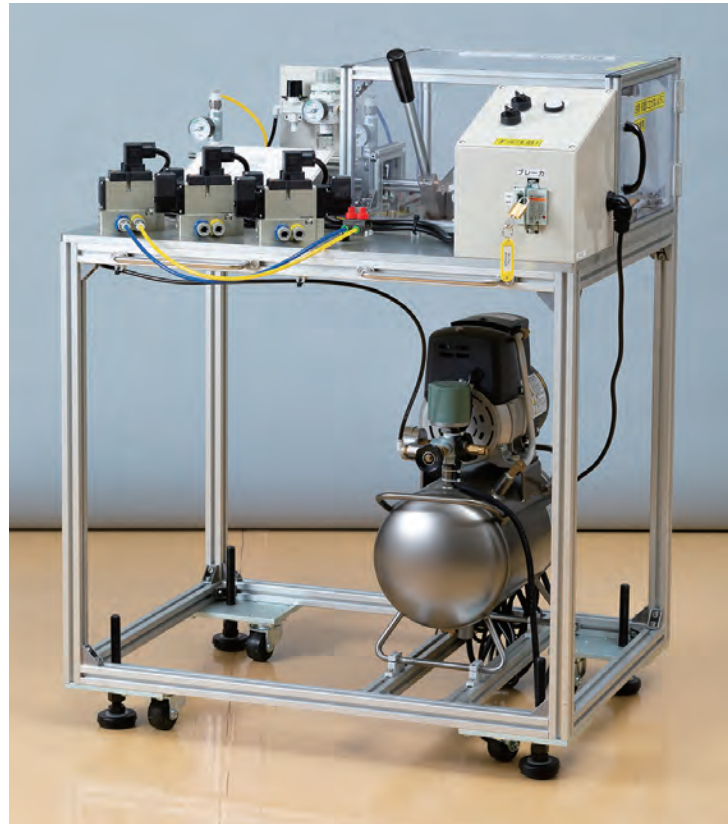
Air Cylinder Pinch Simulator

AT-100

With frame

Description of the device

This device allows users to experience the danger of air pressure when a stopper is removed without releasing the residual pressure at the time of air cylinder impact. Users can also learn how the operating characteristics of air cylinders differ according to the solenoid valve and the dangers of air cylinder operation.



Functions

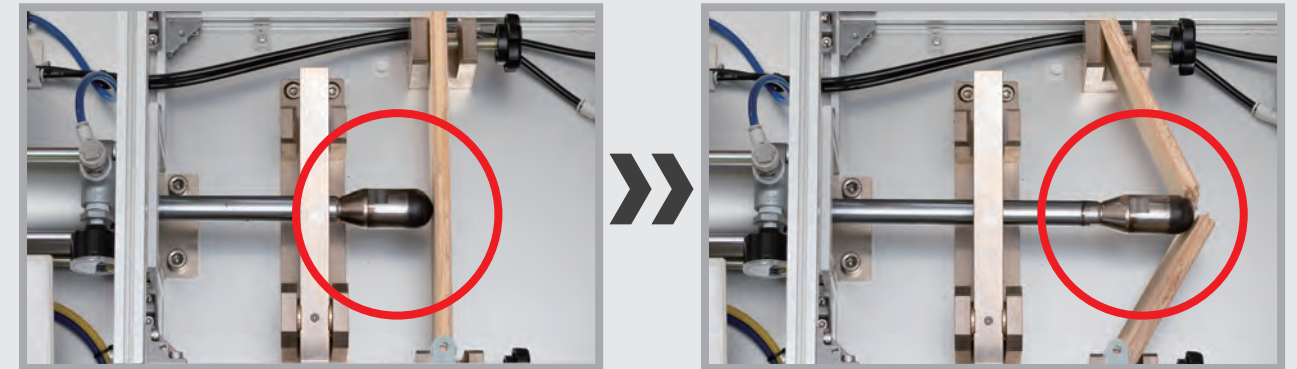


Safety feature included

The safety cover stops the device if the door is opened during operation.

Teaching the dangers of residual pressure

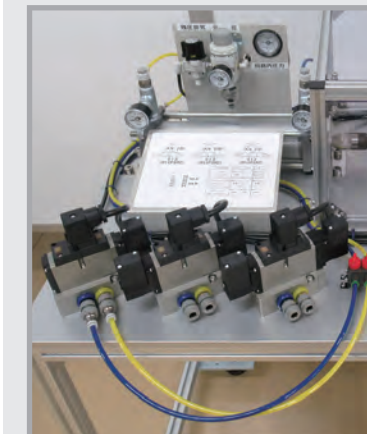
Users can visually check the impact and destructive force of air pressure when the stopper is removed without first releasing the cylinder's residual pressure.



The cylinder moves forward and the piece of wood placed in front of the stopper is destroyed.

Teaching the operating characteristics and dangers of air cylinder operation

Users can learn how the operating characteristics and dangers of air cylinder operation change according to the solenoid valve when the piping is connected in different ways.



Single solenoid valve

The air cylinder can only advance or retreat, and cannot stop immediately. When the power is turned off, the valve status changes and the air cylinder may operate. Operation can be prevented by turning off the air pressure source.

Double solenoid valve, 2 positions

The air cylinder can only advance or retreat, and cannot stop immediately. Air pressure continues to be supplied even when the power is turned off, and the air cylinder operates when the stopper is released. Operation can be prevented by turning off the air pressure source.

Double solenoid valve, 3 positions, closed center

There are three statuses, advance, retreat and stop, and the air cylinder can be stopped at once. The air cylinder operates when the stopper is released, even if the power is turned off and the air pressure source is cut off. To be sure the air cylinder does not operate, both the power supply and air pressure source must be cut off and the residual pressure must be released.

Air cylinder operation is restrained by changing the piping.

Specifications

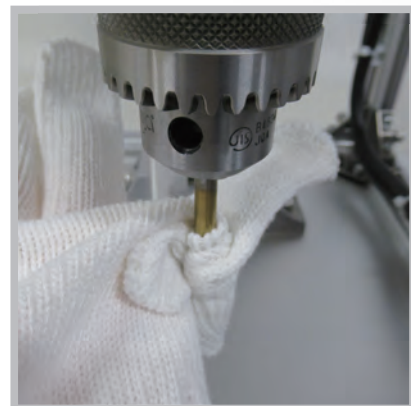
Air cylinder		φ 63 × 200 st		
Solenoid valves – 3 types		- Single solenoid valve - Double solenoid valve, 2 positions - Double solenoid valve, 3 positions, closed center		
Compressor	Voltage	100 V 50/60 Hz	Discharge	24 l/min (60 Hz)
	Set pressure	8 kg/cm ² (0.8 MPa)	Weight (kg)	16.0
Input power voltage and rating		AC 100 V, single phase, 50/60 Hz, 0.3 kVA		
External dimensions (mm)		W 805 × D 575 × H 1046		
Weight (kg)		75.0		
Others		This device is designed for use in Japan.		

Drill Press Entanglement Simulator BT-100

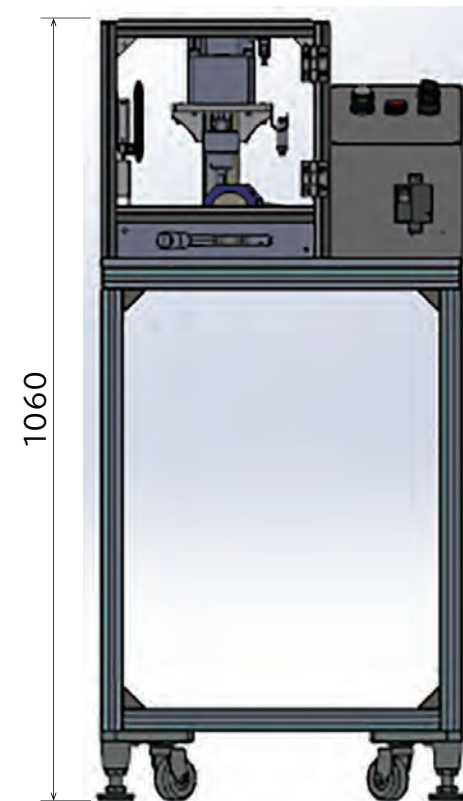
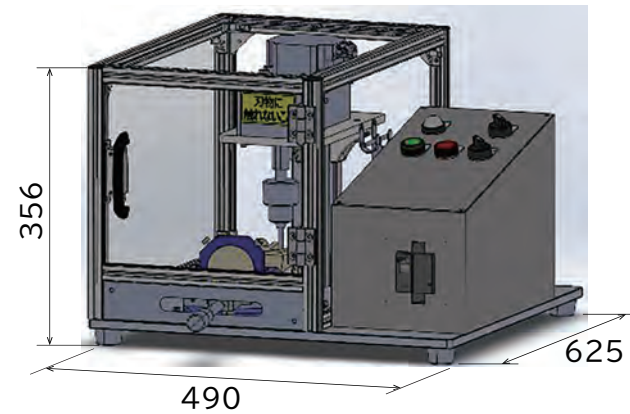
With frame

Description of the device

This device allows users to experience the danger of getting their glove caught when using a drill press. An artificial hand wearing the glove touches the rotating drill to demonstrate to users what happens if their glove is actually drawn into the drill press.



External View



Functions



Overload detection function

If the load on the motor exceeds the rated value, rotation stops automatically.

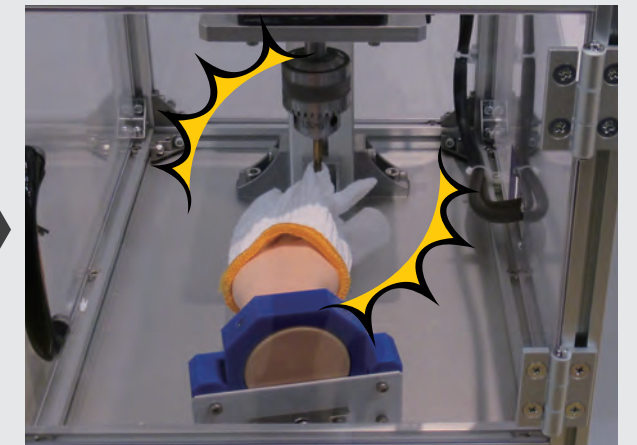
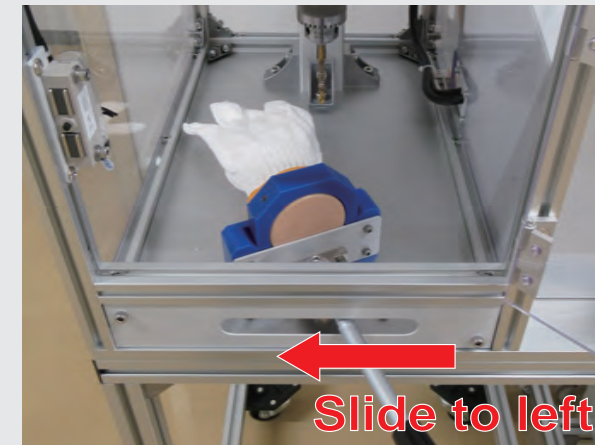


Door detection function

This detects if the safety door is opened or closed, and prevents the drill from rotating when the safety door is open.

Teaching the dangers of getting one's hand drawn into the drill when wearing gloves

Users can visually see how the glove is drawn in immediately even when the rotating drill is only lightly touched.



When the handle is slid and the artificial hand touches the rotating drill, the glove is immediately drawn into the drill.

Specifications

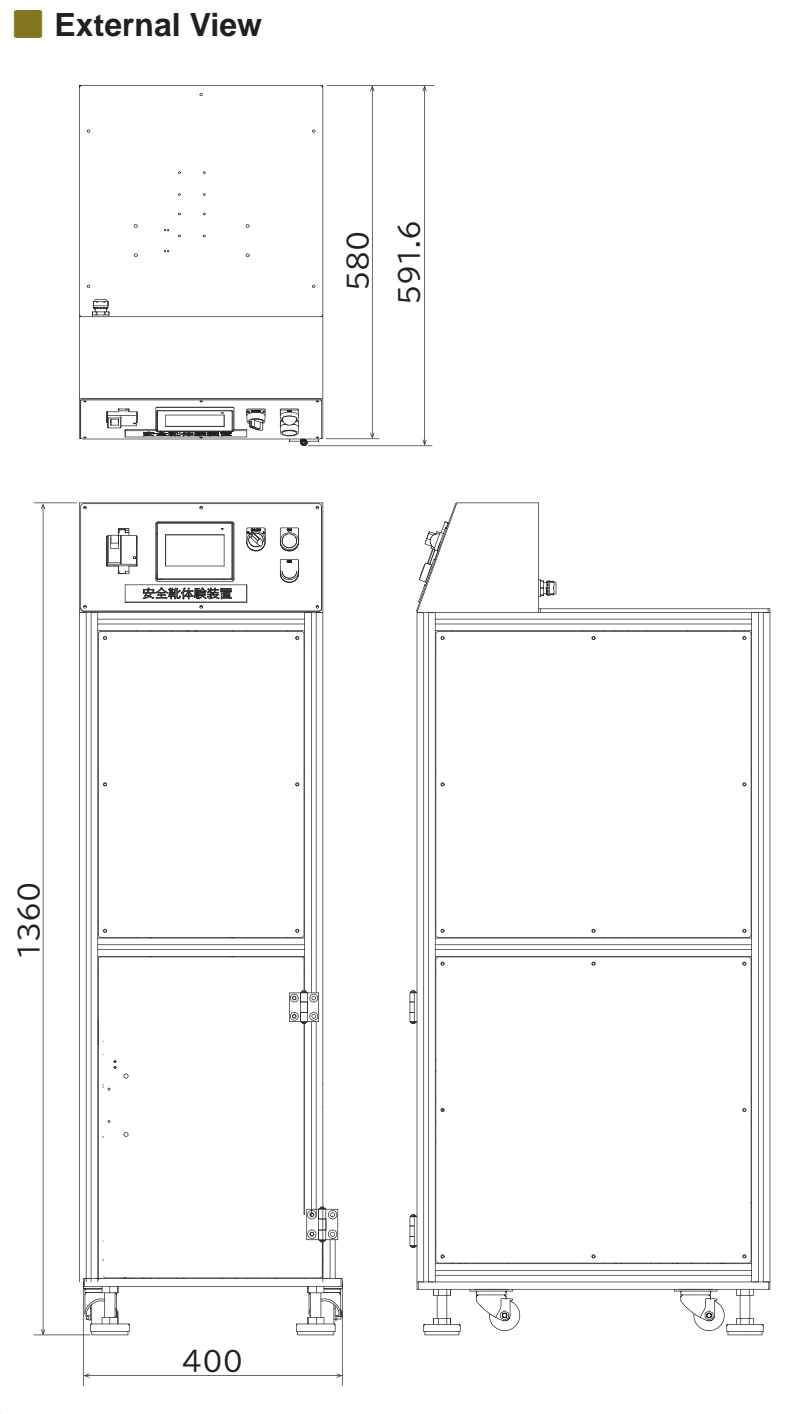
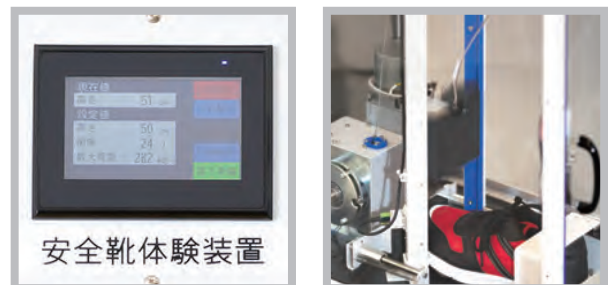
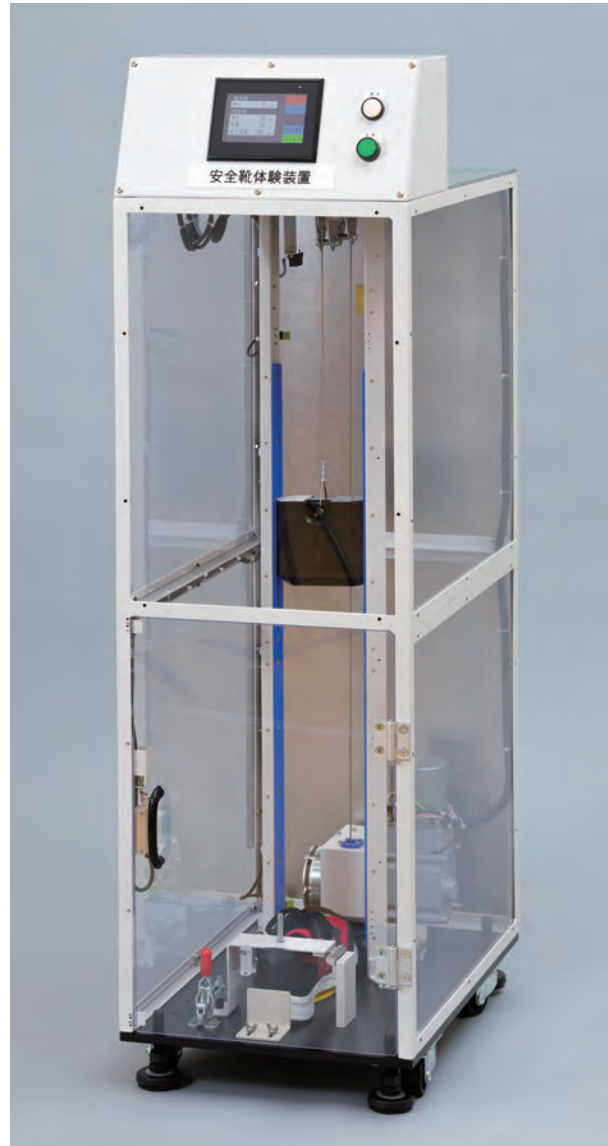
Motor output	Speed of rotation	500 rpm
	Torque	2.0 N·m
Input voltage and rating	AC 100 V 1000 VA	
External dimensions (mm)	W 490 × D 625 × H 1060	
Weight (kg)	36.5	
Others	This device is designed for use in Japan.	

Safety Shoe Simulator GT-100

With frame

Description of the device

It is extremely important to wear safety shoes to protect the feet. This device teaches the dangers of heavy objects falling on the feet and the importance of wearing safety shoes.



Functions



Safety feature included

The auto door lock function prevents the door from opening or closing when the weight is rising. In addition, for safety, the weight does not drop unless the "Start" button is pressed while pressing the "Prepare to drop" button.



The dropping height can be set from the touch panel.

When any one of the height, impact or maximum load settings is made, the numerical values of the other parameters are calculated automatically. The weight can also be raised to the desired height manually.

Main screen

現在値		上昇停止
高さ	0 cm	上昇開始
設定値		
高さ	0 cm	手動画面
衝撃	0 J	落下準備
最大荷重	0 kgf	
扉を閉めてください		

(Settable values)

Height: 30 to 70 cm Impact: 14 to 34J

Max. load: 155 to 419 kgf

Manual screen

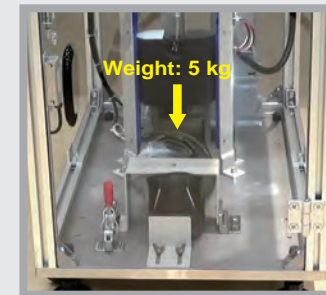
現在値		
高さ	0 cm	手動上昇
メイン		
落下準備		

Press the "Manual raise" button to raise the weight.

Teaching the dangers of heavy objects falling on the feet and the importance of wearing safety shoes

Users can learn the durability of different types of shoes and the importance of wearing safety shoes by checking how the clay inside the shoes gets deformed when the weight is dropped on them.

Safety shoe for general work



Drop height: 70 cm
Impact: 34J
Maximum load: 419 kgf

No change to clay in shoe

Light safety shoe



Drop height: 70 cm
Impact: 34J
Maximum load: 419 kgf

Clay in shoe is deformed

Sport shoes



Drop height: 40 cm
Impact: 20J
Maximum load: 217 kgf

Clay in shoe is deformed

Specifications

Fall energy	Up to 34J (when weight is dropped from a height of 70 cm)
Power supply	AC 100 V, single phase, 50/60 Hz, 0.5 kVA
External dimensions (mm)	W 400 × D 580 × H 1360 (excluding protruding parts)
Weight (kg)	88.5
Others	This device is designed for use in Japan.