



Support for the Solutions

**HIMECS PRODUCTS**

**HIMECS**

\*Our products have been a number of patents filed or abroad. The copyright of the contents of this brochure are the property of Himecs Inc., All rights reserved.



**HIMECS, INC.**

PHONE:+81-42-473-3066 FAX:+81-42-475-4110  
HIMECS USA 8 Gerald Ave.Clifton,NJ 07012 PHONE:973-471-2143

**E-mail : [aircapsule@himecs.com](mailto:aircapsule@himecs.com)**  
**U R L : <http://www.himecs.com/>**

**HIMECS, INC.**

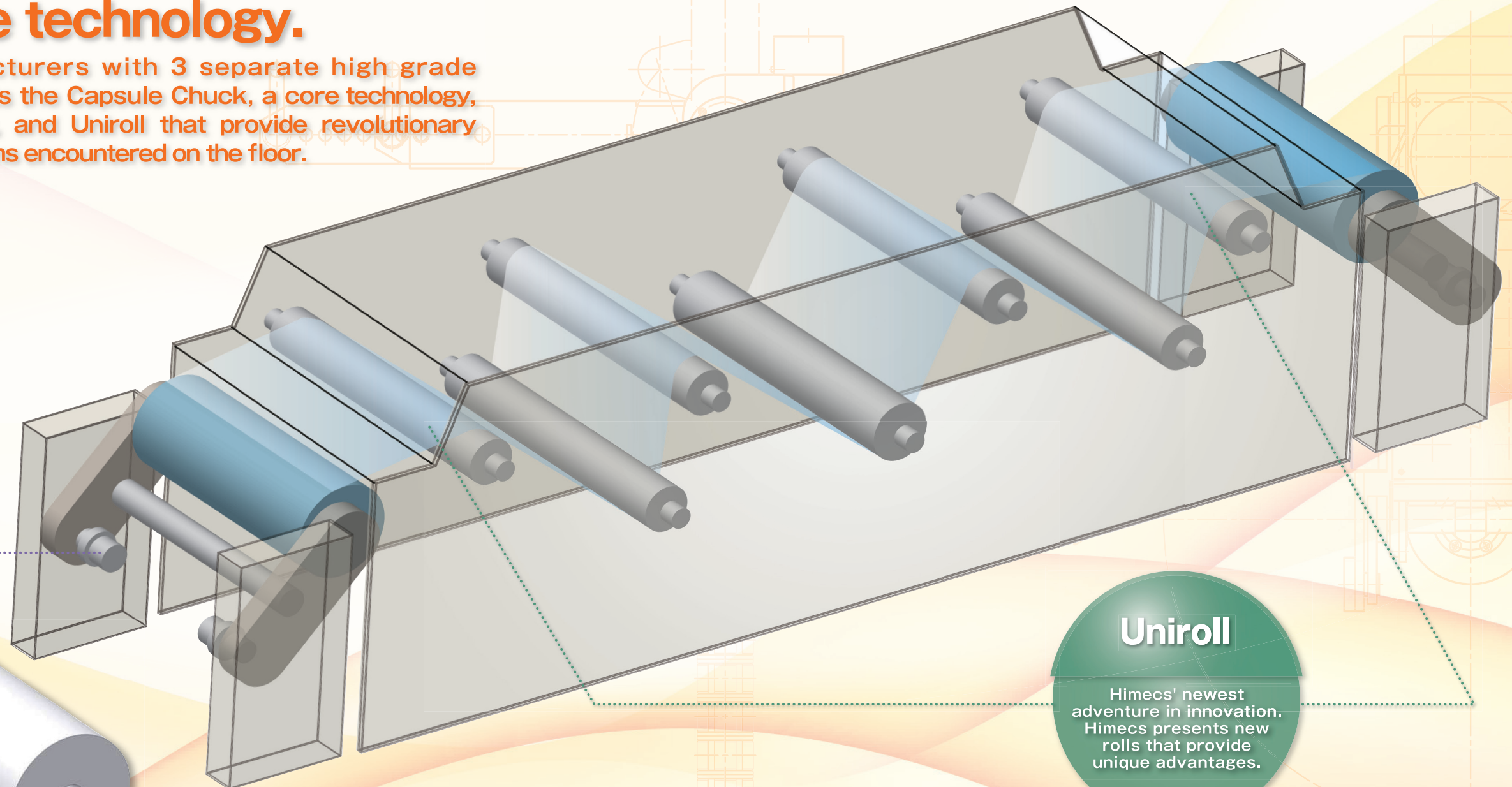
# ONLY ONE TECHNOLOGY

## Leading the future of web handling with innovative technology.

Himecs supports manufacturers with 3 separate high grade mechatronic lines of products the Capsule Chuck, a core technology, Material Handling equipment, and Uniroll that provide revolutionary solutions to a myriad of problems encountered on the floor.

### Capsule Chuck

Devices resulting from Himecs' many years of innovation in core technology. The Capsule Chuck introduces a new modernization to roll handling.

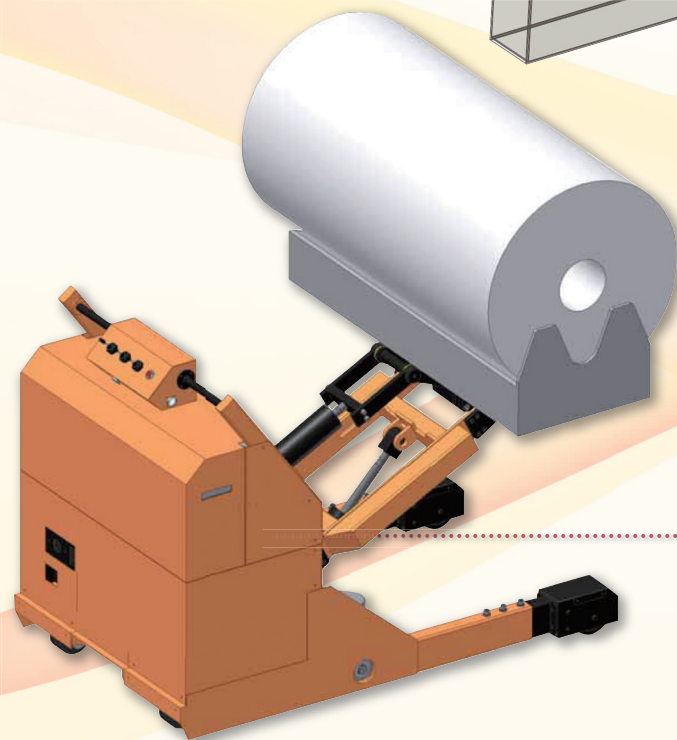


### Uniroll

Himecs' newest adventure in innovation. Himecs presents new rolls that provide unique advantages.

### Material Handling Equipment.

Unique devices that make standing up, laying down, hanging, inverting, and conveying rolls of all dimensions safe and easy.



# Capsule Chuck

## Air-Capsule

Lightweight, precise rotation, and long Life, High performance air shaft

At Himecs, we have been pursuing a lighter weight, precision rotation, longer life air shaft design for years. The Air-Capsule proudly embodies these three goals and more. The shaft, which contains a capsule, combines the journal part to the main body of the axis forming a single-piece construction. This integrated design allows for a light weight, precision rotation, long life air shaft with high retention and high transmission torque.

The Air-Capsule can be used with ultra-thin paper tubes, at high-velocity revolutions, and in a clean-room or vacuum. It is appropriate for use with all core material and thereby, within any industry.

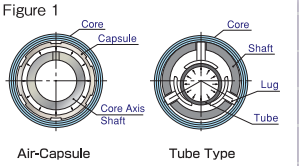


### The light weight air shaft

The Air-Capsule has a large chucking force and is light weight. Compared to conventional lug-tube type shafts, the Air-Capsule is about 50% lighter and has additional flexibility for weight reduction with further design specifications.

### A new vibration suppression design

Conventional tube shafts like the one shown in figure 1, experience rotation instability. In contrast, the Air-Capsule expands in all directions holding the center of the main shaft tightly in place inside the core providing excellent stability. Even when supporting heavy roll material such as film, this configuration effectively minimizes vibration to the material which is detrimental to the manufacturing process.

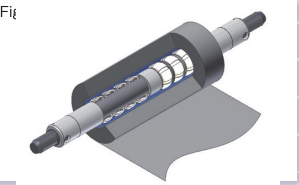


### Long life without breakdown

Without lugs, the Air-Capsule is able to avoid the disadvantages caused by the friction that occurs between the rubber tube and lugs during rotation. Elimination of this friction leads to the durability of the Air-Capsule compared to a conventional lug-tube.

### Low air pressure secures high transmission torque.

As shown in the drawing Fig 2, the Air-Capsule, which is placed on the integrated main shaft, expands under the force of compressed air and presses against the inside surface of the paper core creating large contact surface, pressing the core to the shaft. The pressure and frictional force generates high transmission torque from the shaft to the core. Being elastic, the Air-capsule returns to its original shape when the compressed air is released, freeing the fixed core.



### Excellent for use in a clean room.

In conventional air shafts, the friction of the lugs in the core produces dust that is detrimental in the clean room environment. The Air-Capsule uses compressed air to secure the core to the shaft. By eliminating the use of lugs, the Air-Capsule reduces dust and saves on wear.

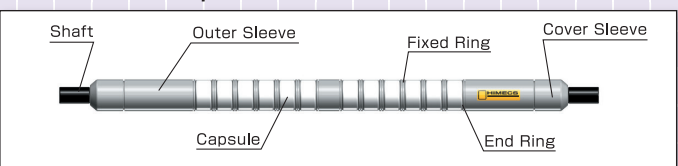
### Compatibility is preeminent with metal core and plastic core.

The high abrasion resistance urethane material of the Air-Capsule is highly compatible with paper, plastic and metal core materials and provides advantages over lug-type shafts which experience slipping when used with plastic and metal cores.

### Appropriate in vacuum

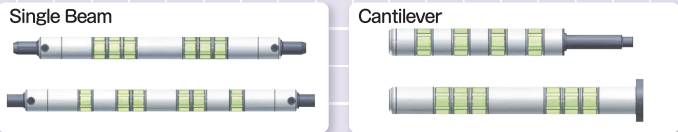
The high density urethane material used for the manufacture of the Air-Capsule allows for its use in a vacuum.

### Name of each part



### Design examples

The air capsule can be designed according to various shapes and be produced. To install the capsule as much as possible in the minimum core width, the array of the capsule is considered according to the specification.



### Specifications

Item	3 in	6 in
Inner Core Diameter	φ76~φ78	φ151~φ155
Air Pressure (Normal Use)	0.5MPa (72.5psi)	
Air Pressure (Maximum Use)	0.7MPa (101.5psi)	
Allowable Transmission Torque*1,*2	35N·m (310in-lbs)	150N·m (1330in-lbs)
Material of shaft*3	SCM · STKM · Aluminum Alloy · CFRP	

\*1 Design the number of/array of the capsule according to the specification.  
\*2 The permissible transmission torque is a numerical value when the supply pressure is 0.5MPa(72.7lbs).  
\*3 Propose the material of shaft according to each specification

### Comparison table of Air-capsule & Tube type

Item	Model	Air-Capsule	Tube Type(Steel)	Tube Type(Aluminum)	Screw Type
Lightweight		○	○	○	×
Precise Rotation		○	○	○	○
Life Time		○	○	○	○
Loading Capacity & Deflection		○	○	○	○
Thin Paper Core		○	○	○	×
Range of Inner Core Diameter		○	○	○	○
Defect by insertion and removal of Lug		○	×	×	○
Damage of Core (Produce Dust)		○	○	○	×
Protection at narrow web		×	○	○	○
Puncture by Cutter		×	○	○	○
Operation cost		○	○	○	○
Price		○	○	○	×

### Attention in handling

- Please do not inflate the capsule in the state without the core.
- Please protect the capsule with adding paper core in the part where the core doesn't cover the capsule.
- Please do not soak it in the solvent and water.
- Please avoid use in the high temperature part of 40°C(104°F) or higher.
- Please do not hit the Air-Capsule with any sharp things such as knife or nail. It may puncture of the Air-Capsule.
- Compress air must use dry air.

## Hi-Lock

An innovative multi-use core chuck system featuring unparalleled convenience

Hi-Lock uses a unique air pressure inflated molded urethane capsule to hold the core enabling a multitude of combinations for use with high-speed, precise rotation roll mechanisms. It is therefore, able to create an airshaft and core chuck system quickly, easily and economically.



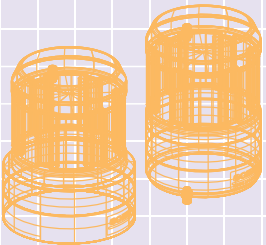
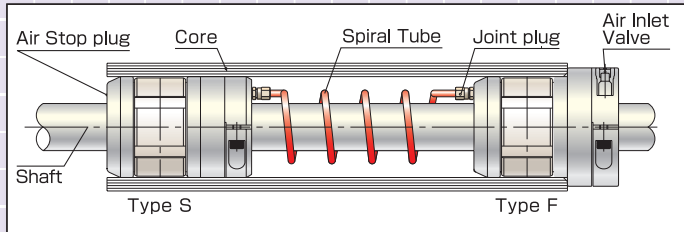
### Type-S & Type-F

- Material: Aluminum Alloy
- Surface Treatment: White Alumite

### Use as an Air Shaft

### The advantages of the type-S and type-F

- 1 Easily attaches and detaches from the core
- 2 Once installed onto the shaft, it isn't necessary to detach the Hi-Lock
- 3 When connected using a spiral tube, only one air source is necessary to supply pressure to multiple Hi-Locks
- 4 A variety of combinations can be utilized to accommodate roll needs
- 5 The Hi-Lock can handle large diameter cores easily
- 6 Has all the advantages of using an air capsule design (see Himecs' Air Capsule)
- 7 Lighter in weight than an air shaft
- 8 Easily serviced and therefore maintenance is low cost

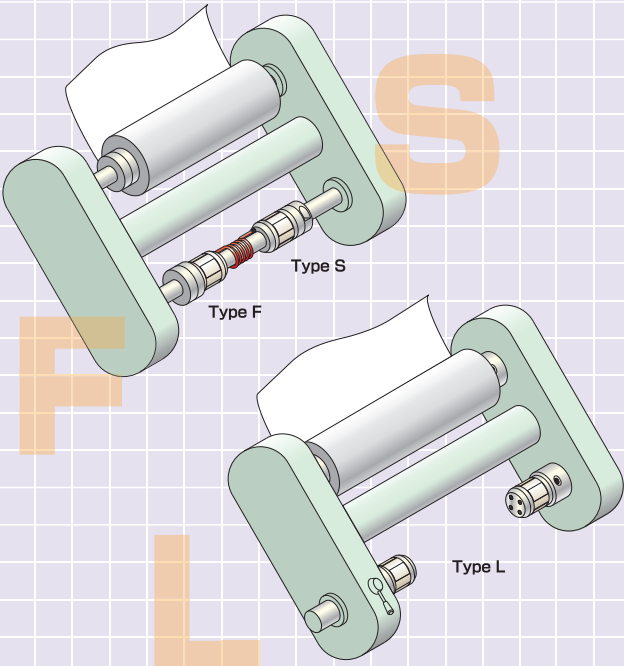


### Type-L

- Material: S45C
- Surface treatment : Nonelectrolyte nickel

### Advantages of the type-L Hi-Lock

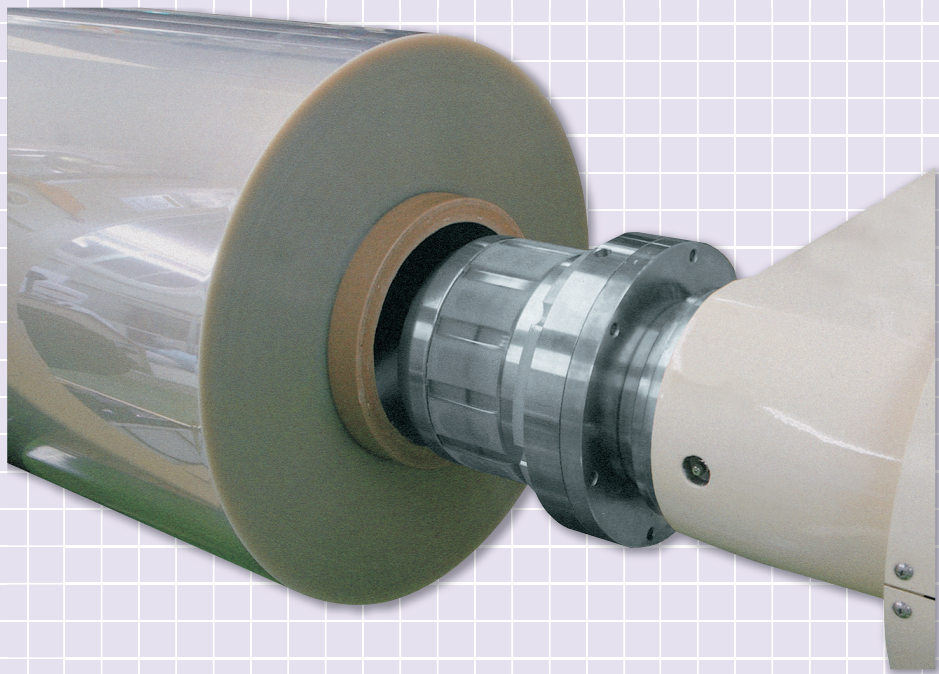
- 1 Dust creation is suppressed due to the torque generation within the capsule
- 2 Use of the air pressure capsule enables excellent compatibility with a variety of core material
- 3 Makes frame strength irrelevant because side pressure is not required; thereby the mechanism of fastening the core is simplified
- 4 High transmission torque is achieved in minimal space



# Capsule Chuck

## OBS LOCK

A super chuck for superior quality manufacturing



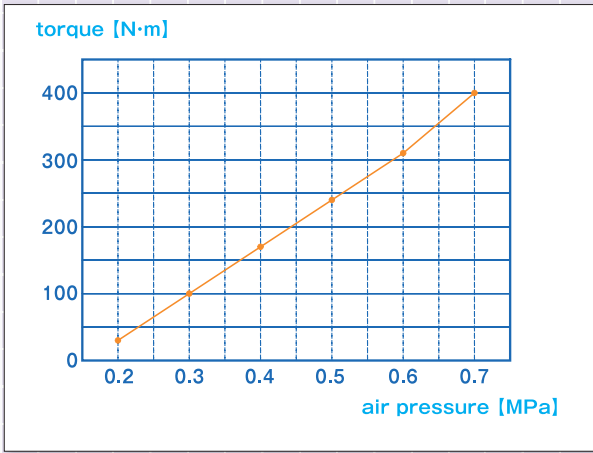
The OBS LOCK uses the urethane technology of the Air Capsule and Hi-Lock and further promotes manufacturing quality and precision. The OBS LOCK achieves a swing accuracy of 5/100mm guaranteeing mechanical centering accuracy and the sealed mechanical parts of the OBS LOCK provide added quality assurance. Furthermore, the OBS LOCK can handle high transmission torque and be used with a variety of core material because of its use of urethane to grip the core. It is compatible with the Hi-Lock for a space-saving, flexible design.

### ■ Features

- Uses a mechanism that guarantees chuck accuracy in the core
- Designed to withstand varying roll weight
- Mechanical parts are completely sealed in urethane thereby preventing lubricant powders and oil leakage, making the device conducive to use in a clean room environment
- Urethane construction provides high transmission torque and enables utilization with a variety of core material from paper to plastic to metal.
- Compatible with the Hi-Lock providing a space-saving design.

### ■ Applied Air Pressure vs Torque Characteristic

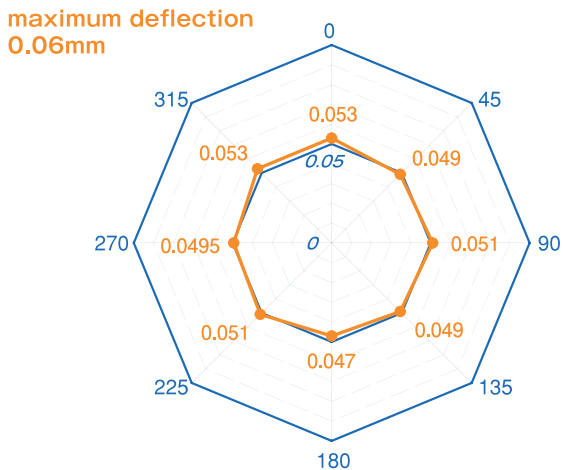
In a Chart, measured static torque characteristic that proportionally to applied air pressure.



### ■ Static Chucking Characteristic of OBS LOCK

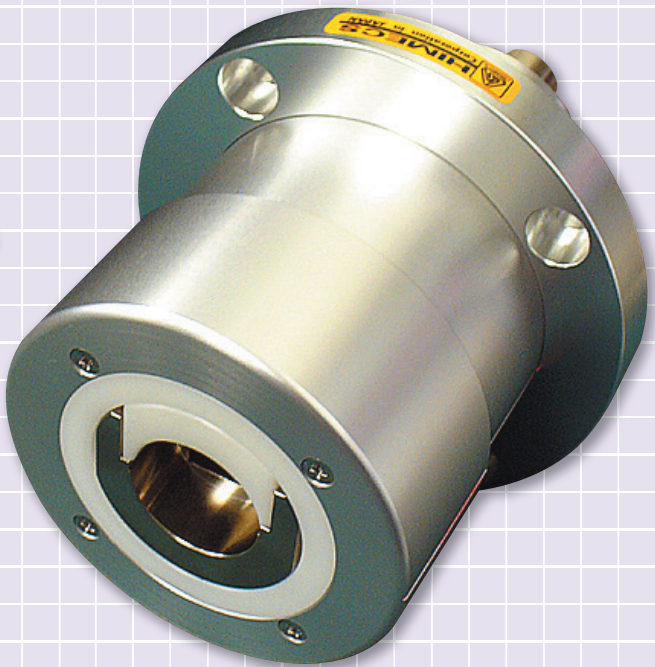
Showing in a Chart, Measuring accuracy of chuck with no load and maximum deflection is 0.06mm. For the measurement, Testing Core was used steel pipe which processed inner and outer diameter at same time. Attaching OBS LOCK on the Lathe after setting deflection below 0.05mm, polishing down Obsule and then insert into Core (At this point, set as 0=zero), increasing air pressure and chucking testing core. Following result is measured with this condition.

Obsule Outer Diameter: 151mm  
Inner Diameter of testing Core: 151mm  
DBIO(Diameter between inner and outer): 1mm



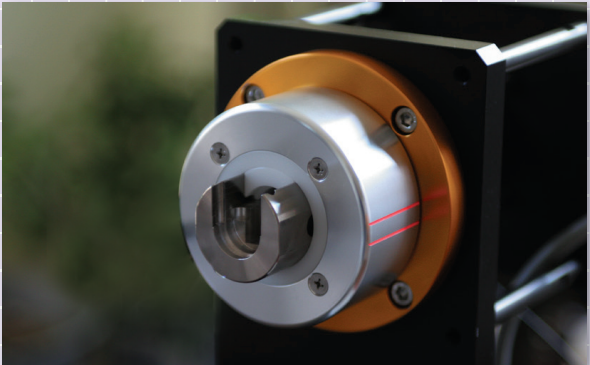
## SELF LOCK

A winding shaft support device that achieves safety and cost reduction

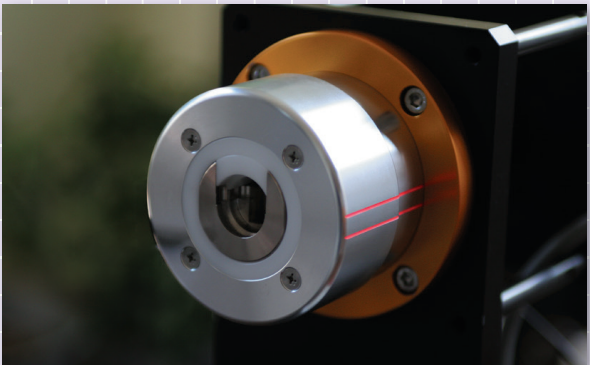


The Self Lock supports the winding shaft and can apply a driving or braking force to the shaft. As a safety mechanism, the device will naturally close and lock the cover if the winding shaft turns more than 90 degrees preventing the shaft from falling.

### OPEN(As removed Winding Shaft)



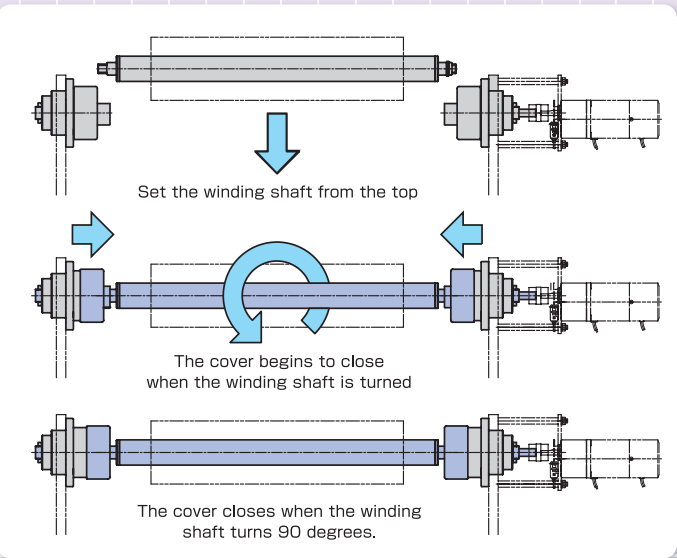
### CLOSE(As operating Winding Shaft)



### ■ Features

- By combining the bearing of the winding shaft into a single unit, designing and operation labor is reduced
- Reduction in costs of the mechanical device is possible.
- Safety and efficiency are enhanced by the device's universal design
- Winding is possible at low tensions.
- Built in anti-fall mechanism for winding/unwinding shaft

### ■ The Self-Lock mechanism



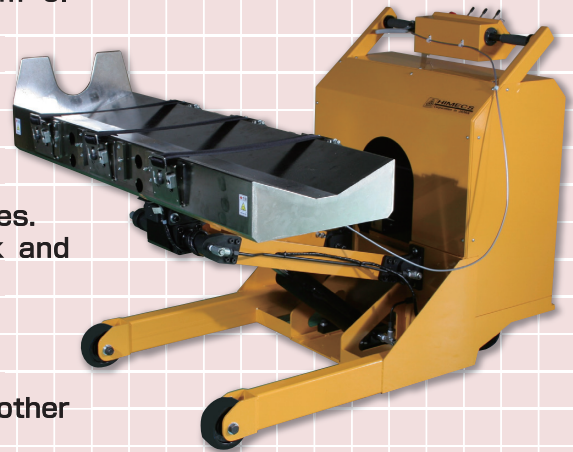
ROLL PICKER A Vertical roll lifter that assists in worker safety and efficiency

This handy instrument transports and transfers rolls from palette to machine or machine to palette. The freedom of movement that the roll lifter provides in the vertical and horizontal directions allows for easy transference and improved safety and efficiency.

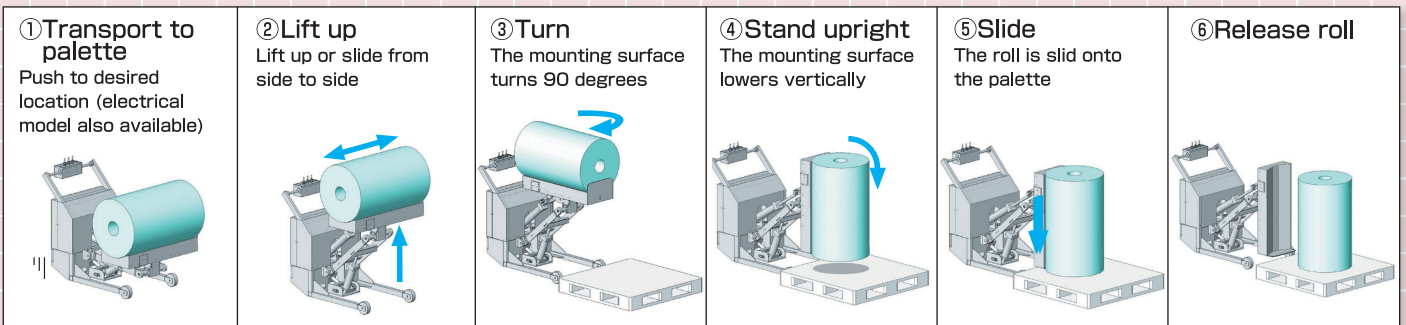
Rolls of paper or aluminum are often heavy. Even in modern factories, they are still handled manually becoming a source of back and other injuries during transfer, laying down and setting up of the rolls into machines. At Himecs, we observed the need to assist in this task and created the Roll Picker.

The Roll Picker will

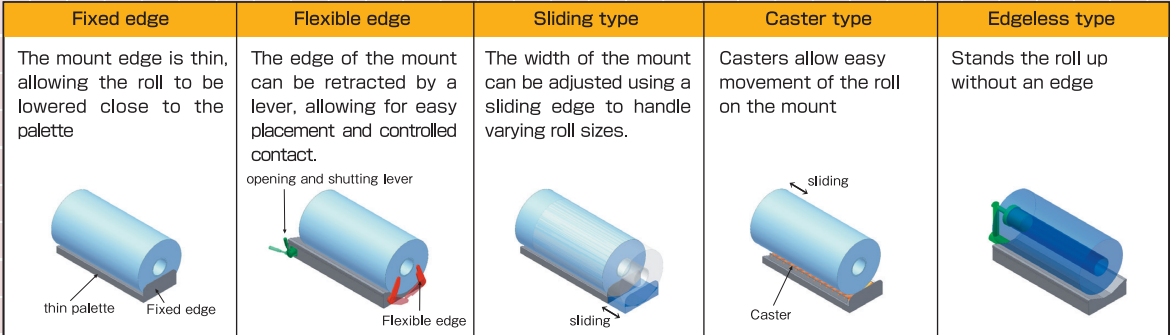
- allow heavy loads to be handled by one person easily.
- move loads smoothly with the use of a hydraulic system.
- increase directional mobility because it is not 'fixed' like other transfer vehicles
- answer the workers' needs for lifting rolls at various sites



How to use



Types of roll mounts



Typical uses(RP300)

Application range	Roll Weight	Max 300 Kg
	Roll Width	600mm~1400mm
Features	Roll Diameter	Max 800mm
	Vertical roll movement	Height of table 380mm~1100mm
Driving Methods	Vertical stand of roll	Horizontal to vertical
	Moving cart	Manual
Features	Vertical moving time	No Load 8 Sec (Normal) 4 Sec (Fastest) 300Kg Load 12 Sec (Normal)
	Vertical standing time	No Load 12 Sec (Normal) 6 Sec (Fastest) 300Kg Load 15 Sec (Normal)
Driving Methods	Battery Hydraulic System	DC 24 Volts 1.2 Kw (30 sec running)
		Oil Pressure 12MPa Flow 2.9 l/min

Model

Model	Handling Roll weight	Driving type
RP 150	150 Kg	Manual
RP 300	300 Kg	Manual/ Electric
RP 500	500 Kg	Manual/ Electric
RP 750	750 Kg	Electric

Electric Roll Picker

Heavy rolls are easily transported using the power of electricity

This roll lifter has 2 electric motors that run the front wheels of the lifter, thereby making transport of heavy materials nearly effortless. Additionally, the center of gravity is positioned on the front wheel as well to aid in precise turning.



ROLL LIFTCAR

Easier use and increased safety from a core chuck manufacturer!

In the converting world, efficiency and safety in roll transfer to and from the winder is an important topic. As a core chuck manufacturer, Himecs is in a unique position to assist in the task of transporting rolls.

ROLL LIFTCAR

Roll transportation truck equipped with shaft built in bearing

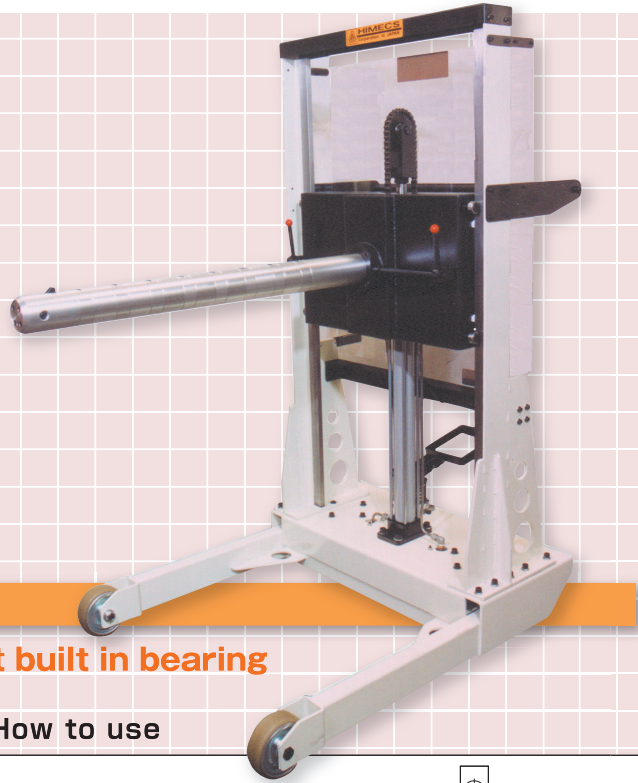
The Roll Liftcar is specially designed to take a cantilevered roll off of the machine and transport it to its next destination. The extended shaft is equipped with a bearing tip that reduces the friction when the roll is moved from the machine to the truck.

The bearing tip on the Liftcar shaft is positioned up against the roll core on the machine. The roll is drawn onto the Liftcar, and the Liftcar transports it.

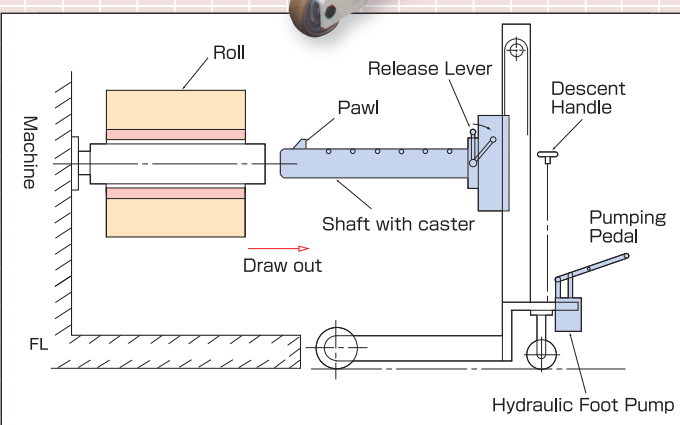
The built in safety device prevents product from falling.

Specification

Roll Weight	Under 300 kg
Roll Width	Under 800mm
Inner Core Diameter	Over $\phi$ 75mm
Shaft Range of Height	400~1100mm
Driving type	Hand Cart



How to use



Multi-directional electric drive– Liftcar

The car can move perpendicularly to its forward direction, right and left, by a switch of the driving wheel adapting to very small work spaces.

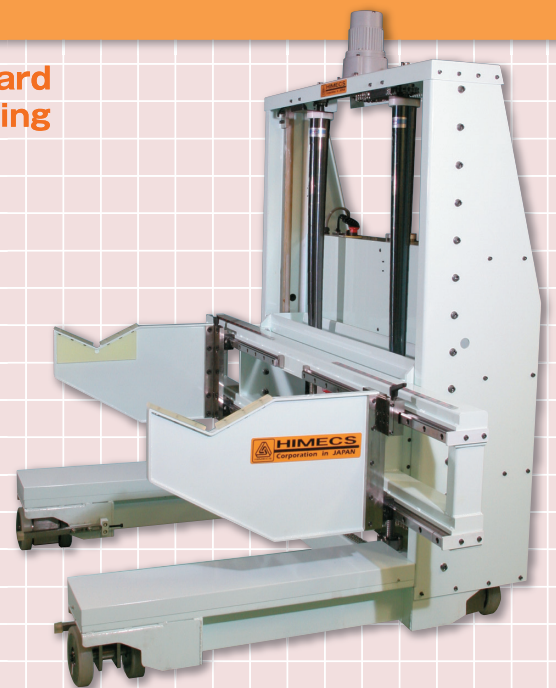
Since the driving wheel can actually adjust to angles, the car can move in a diagonal direction as well. Additionally, because of the small turning radius, the car can spin on its axis in a tight circle.

Features

- It runs to all direction equipped with the electric steering wheel function.
- From a vertical running to the horizontal running in one steering wheel
- The minimization of the turnabout space is achieved by rotating at center point of Roll Liftcar.

Specification

Maximum Loading capacity	1000kg	Driving type	Electric drive
Roll Width	450mm~1800mm	Driving directions	enable all directions * X, Y, at position 45 degree * Others set free angle
Roll Diameter	Max $\phi$ 800mm		
Lifting range	670mm~1410mm	Electric Power	DC24V
Support Core diameter	3inch/6inch		



# Material Handling

## ROLL CATCHER

Improve efficiency and workplace environment with this roll controller.  
High Performance Roll Flipping Unit

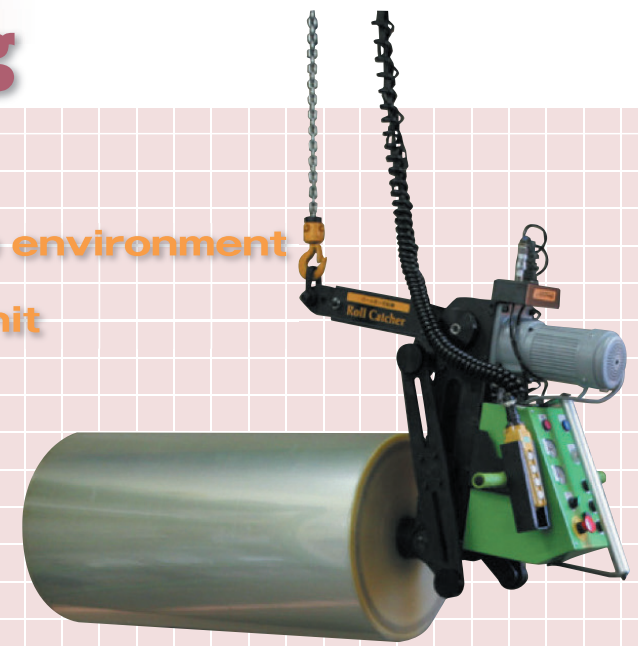
This device is installed onto the existing hoisting chain and can maneuver a roll, for example, parallel or vertically onto a pallet, or to take out boxed rolls to maneuver them for unloading. Because the roll catcher is installed on the existing chain block, there is a low maintenance cost associated with its use.

- Features
- The roll catcher device balances the roll's center of gravity against its pivoting force, thereby improving stability and increasing its handling ability. The tool can accept a large variety of roll widths.
  - A 25 seconds/roll handling speed can be achieved, thereby shortening work time.
  - The work space is not considerably restricted.
  - A variety of core chuck diameters can be accommodated.
  - Hanging space required is only a minimum of roll width + 1650mm (subject to specific balance adjustment needs)

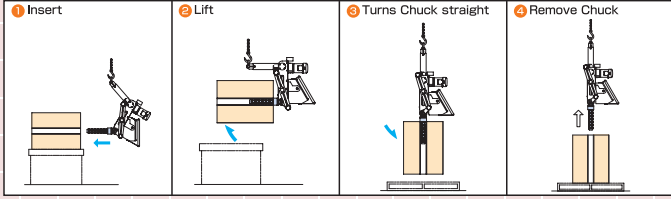
### Typical uses (RP300) Specification for each Model

Model	Handling Roll Weight	Model	Handling Roll Weight	Driving source
Roll Weight	Max 300 Kgf	RC100	100kg	3 Phase RC300
Roll Width	500mm~1500mm	RC300	300kg	0.4kW
Roll Diameter	Max φ800mm	RC600	600kg	1.5kW
Hori/Vert move time	about 25 Sec			

\*Please inquire for other models



### How to use



## Explosion proof Roll catcher

An explosion proof roll reversing device RCP70  
This roll catcher is designed for smaller sized rolls with a width of less than 500mm and weight of less than 70kgf. The device is made explosion proof by using air pressure for its driving force instead of oil powered motor. Because the device can change its point of force, ease of use is greatly improved.

### Features

Max Roll Weight	70Kg
Max Roll Diameter	φ600mm
Max Roll Width	500mm
Driving source	Air Pressure 0.5 MPa
Operating Time	about 10 Sec
Variable operating Speed	smooth movement by adjusting oil pressure
Intermittent Stopping	Complete stop by controlled oil pressure
Core Chuck	Air chucking Methods
Body Weight	about 21 Kg

\*Including indicator for balance of chuck



## その他のツール

### Hand Catcher

Prevents injury to the hands during boxing of products

Chucking is done by self-powered roll so less grip pressure is necessary  
Weight: 750g



### Air Catcher

Will accommodate 1 to 15 inches

Hanging tools designed adopting capsule structure



### Robot Hand

Automatically adjusts production to manufacture anything from a coffee cup to a 1 ton roll

This tool was designed using material handling knowledge and urethane molding technology



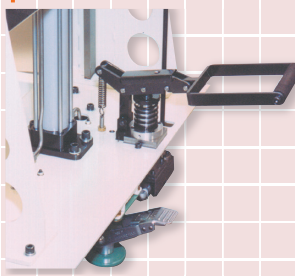
### Hydraulic Foot Pump

A minimum of foot pressure is required to use the pump for high loads

This unique pump combines 2 different sized pistons to bring improvement to work efficiency. At no load, this pump rises at a speed 4x faster than the careful speed during lifting of a load. Additionally, the mechanism allows for less foot pressure in its operation allowing for wider use by staff.

### Features

Max Discharge Pressure (Low speed)	80 Kgf /cm <sup>2</sup> (when stepping power 40 Kgf)
Discharge rate	Hi-Speed (No Load) 28 cc/ Step Low-Speed (Load) 7.8 cc/ Step



### Hand / Foot operated Combination Two-step Hydraulic Pump System [In collaboration with Hirano Tecseed, Inc.]

#### Making roll transfer easy and safe

Aligning the chuck and core is one of the crucial steps in transferring film and paper rolls. With the Combination Two-step Hydraulic Pump System, the roll is moved horizontally on the cart and then moved vertically by a powerful piston during transfer to the machine using the hydraulic foot pump. Accurate alignment of the roll to the chuck is then done by the hand controlled hydraulic pump allowing for precise control.

For rolls that are too heavy to lift by manpower using the high speed piston, switch to the lower speed piston to increase power allowing for a heavier load to be lifted.



# Uniroll

## Freecon Roll

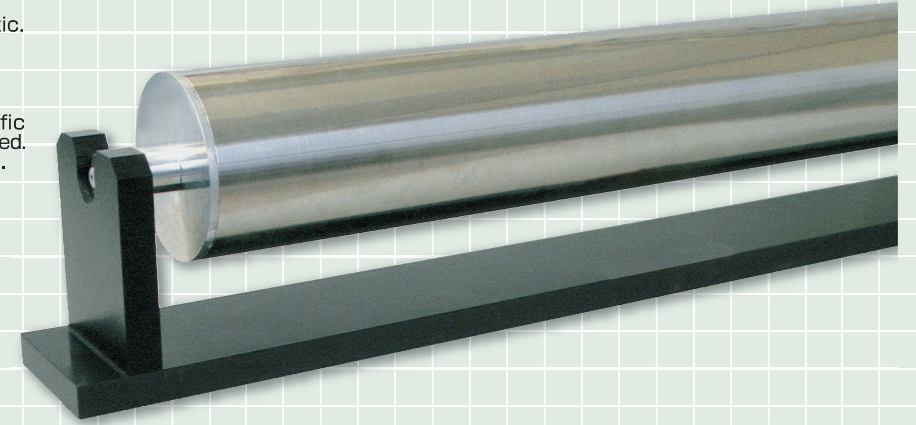
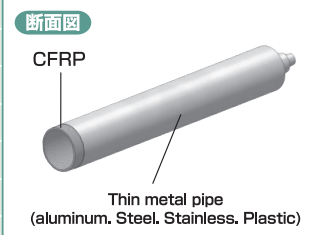
Discovering the possibilities of "light weight" and more!  
The CFRP metal composite roll

The Freecon Roll expands the possibilities of the CFRP roller by using patented technology that molds the CFRP directly into the metal pipe.  
To support the widening trend of web size and reduction trend in winding tension, it has become increasingly important to decrease the weight and increase the rigidity of the CFRP roller.  
Himecs' molding of the metal pipe to the CFRP enables a wider range of surface hardness and surface treatment.

### Features

- Possible to integrate with various metals/plastic.
- Various surface coating is possible.
- Low moment of inertia
- High-rigidity & Lightweight

Himecs will design the roll according to specific coating material / surface processing / rigidity desired. For more information, please contact the roll division.



## Porux Roll

Himecs' years of focused research on a seamless ceramic permeable pipe produces the experimental 'porous roll'.  
Himecs adopts a novel ['porous pipe']

### Features

- 20μm ~ 40μm Fine vent holes
- 40%~ 50% Vent rate
- Incorporated automatic vent self cleaning system

### Automatic Self Cleaning System

