



Moon Lifter

Intelligent Assist Balancer

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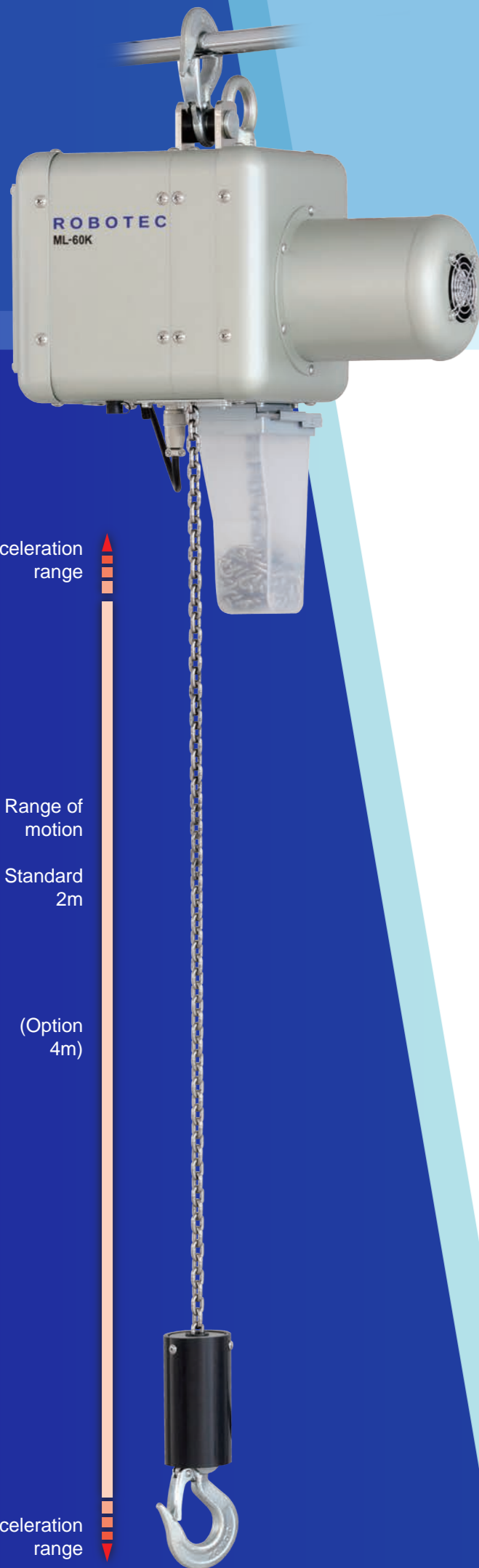
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Moon Lifter supports
your operation
easily & smoothly



Deceleration
range

Range of
motion

Standard
2m

(Option
4m)

Deceleration
range

ML-30K
ML-60K
ML-120K
ML-240K
ML-480K

ML-30K Max load:30kg Max lifting/lowering speed:500mm/s
ML-60K Max load:60kg Max lifting/lowering speed:500mm/s
ML-120K Max load:120kg Max lifting/lowering speed:250mm/s
ML-240K Max load:240kg Max lifting/lowering speed:125mm/s
ML-480K Max load:480kg Max lifting/lowering speed:62.5mm/s

MLH-480K
MLH-960K
MLH-1500K

MLH-480K Max load:480kg Max lifting/lowering speed:250mm/s
MLH-960K Max load:960kg Max lifting/lowering speed:125mm/s
MLH-1500K Max load:1500kg Max lifting/lowering speed:100mm/s



Moon Lifter is...

Intelligent Assist Balancer which **only requires power supply of AC100V or AC200V.**

Always detect actual weight (by load cell) & position (by servo motor),
while supporting reeling up and lowering of workpieces.

Thus, smooth positioning and safe operation with both hands can be achieved.

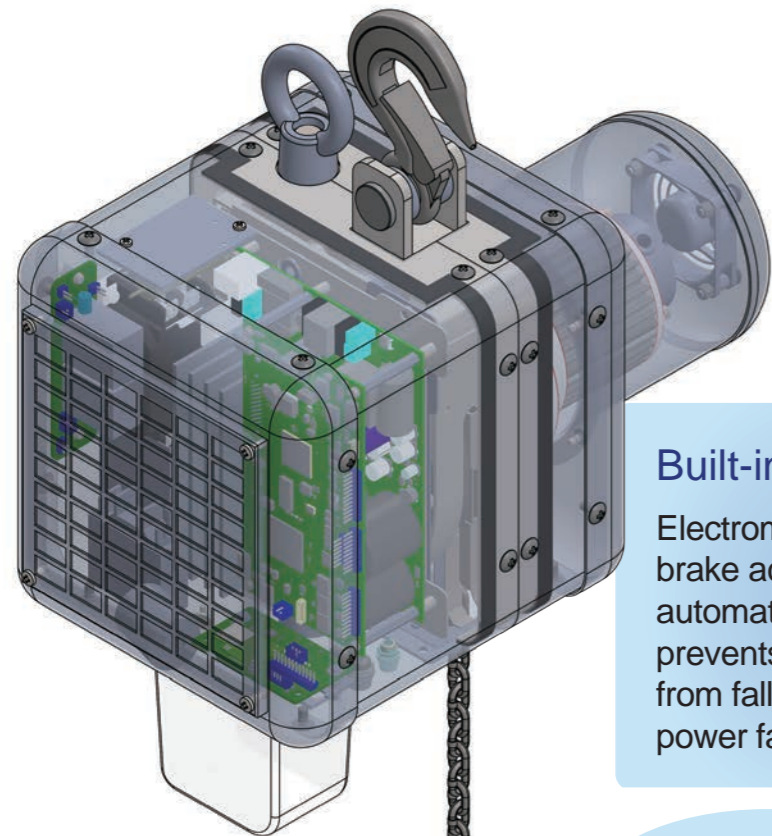
Adjustable to various weights of workpieces.

Unipulse Youtube Channel
Video of Moon Lifter is
available on Youtube!



About Moon Lifter

Moon Lifter leads electric driven sensing & control technologies



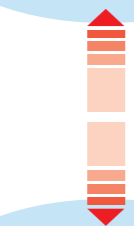
Adjust speed freely

Handling by human strength allows operation at desired speed, moves fastly or lifts down slowly.

Built-in brake

Electromagnetic brake activates automatically & prevents workpiece from falling during power failure.

Moon Lifting force



Weight of product

In summary, can operate with both your hands!

It controls the motor so that workpiece balances in midair. Easier to pull heavy components up & down.



Suitable for positioning with both hands



How is it different from hoist crane?

Moon Lifter differs from Hoist Crane. It is a Balancer to assist your operation. It strongly supports the precise positioning & assembly of heavy components.



High operability



I do not want complicated handling in the production line...

One-touch & able to "Balance" different weights of workpieces. During "Balance", it senses human strength & supports your handling, so anyone can operate it..



Practicality & effectiveness



We used Air Balancer, but it was a hassle to change the layout...

It is easy to use Moon Lifter, only requires AC100V or AC200V power supply. Air compressors and tubes are NOT REQUIRED, so it is simpler to change the layout.



High degree of safety



I am not sure how does it work... Is "Electric Balancer" safe?

Moon Lifter moves only if you apply force on it to move and stops instantly after releasing it, thus operating safely and efficiently.



Weight is measured real time!



ML-WD100

Moon Lifter is user-friendly

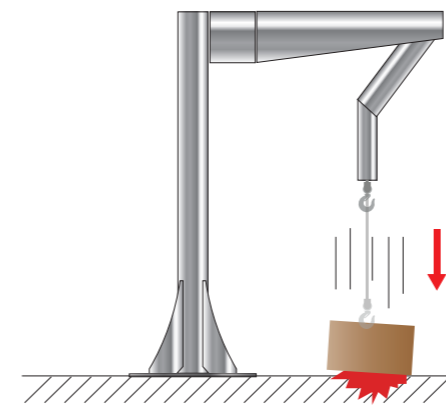
Moon Lifter is an **Electric** Balancer.
Moon Lifter has more benefits than
Air Balancer or Hoist Crane.

Air Balancer Pneumatic Balancer	Moon Lifter
Installation of air compressors tubes are necessary	Only requires AC100V or AC200V power supply
Takes time to adjust the weight	One touch possible with built-in force sensor
Very dangerous if the weight changes during the process	Hold function enables us to assemble & dismantle workpiece in midair
If hook comes off suddenly, the wire might hit the operator	Chain is locked immediately when load cell detects sudden changes of load
There is a repulsing force when operator puts down workpieces	Less repulsing force with stress-free handling heavy components
If workpiece is unbalanced, will be lifted down partially & dangerous	Even if unbalanced, can be lifted down entirely
High running cost	Energy efficient & environment friendly as it is electric

Hoist Crane	Moon Lifter
One hand is needed for button control, so it is impossible to handle workpiece with both hands.	Intuitive handling without button control can be done during "Balance" mode.
Stubborn movement, inching to adjust the position.	Precise & smooth positioning is achievable by using both hands.
Collision when lifting down	Lift down gently with no scratches on work

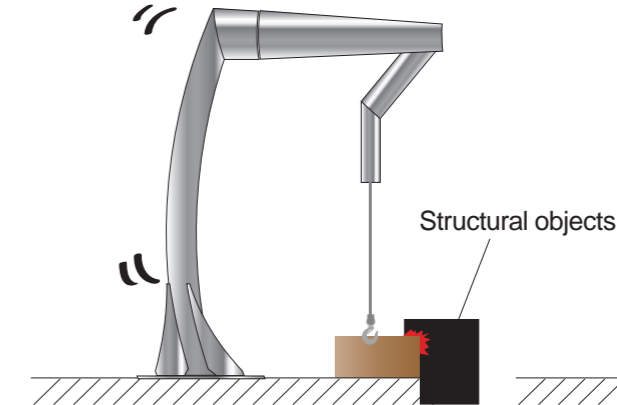
Improving safety

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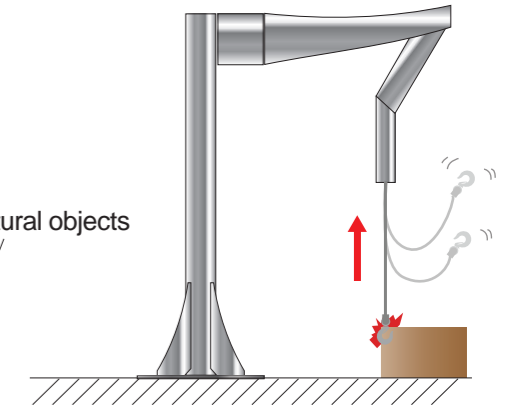
Moon Lifter prevents the workpiece from falling. (Built-in brake)

<Overload>



Moon Lifter monitors regularly, so it does not actuate over the specified load.

<Irregular bounce>



Moon Lifter will never let chain bounce even if the workpiece is let go accidentally.

Moon Lifter's own control "Inertia canceller"



Although Moon Lifter can handle heavy objects, it is necessary to continue applying force in opposite direction to stop momentum of workpiece.

With new "Inertia canceller", you can lift up & down safely while improving efficiency.

Emphasis on safety

"Release your hands & it stops instantly."

You can stop it instantly by releasing your strength applied onto the workpiece.



Video is available!

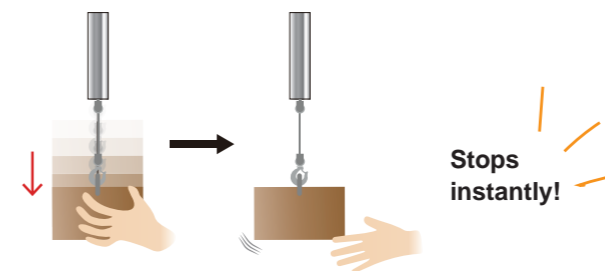
Emphasis on operability

"Touch a little & it stops instantly."

Workpiece continue to move with inertia, but will stop instantly if it touches or hits something.



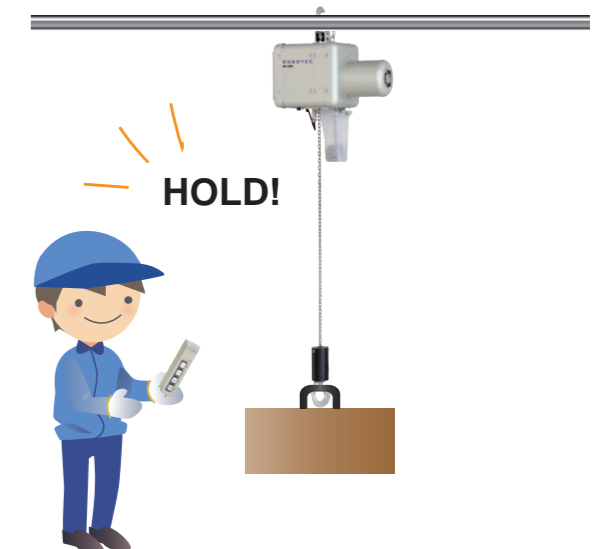
Video is available!



Hold functions best suited for assembly processes

Holds workpiece at any position, and assemble parts in midair.

If weight changes, one touch & "Balance" again!
Better productivity comes with easier handling at suitable height.



Selectable operational feel

Moon Lifter has 4 operation modes to suit your application.

Hold function is available for all modes.
Holds workpiece at any position, assemble parts in midair, and lift it up or down.

Controller

- Balance —
- Hold —
- Up —
- Down —

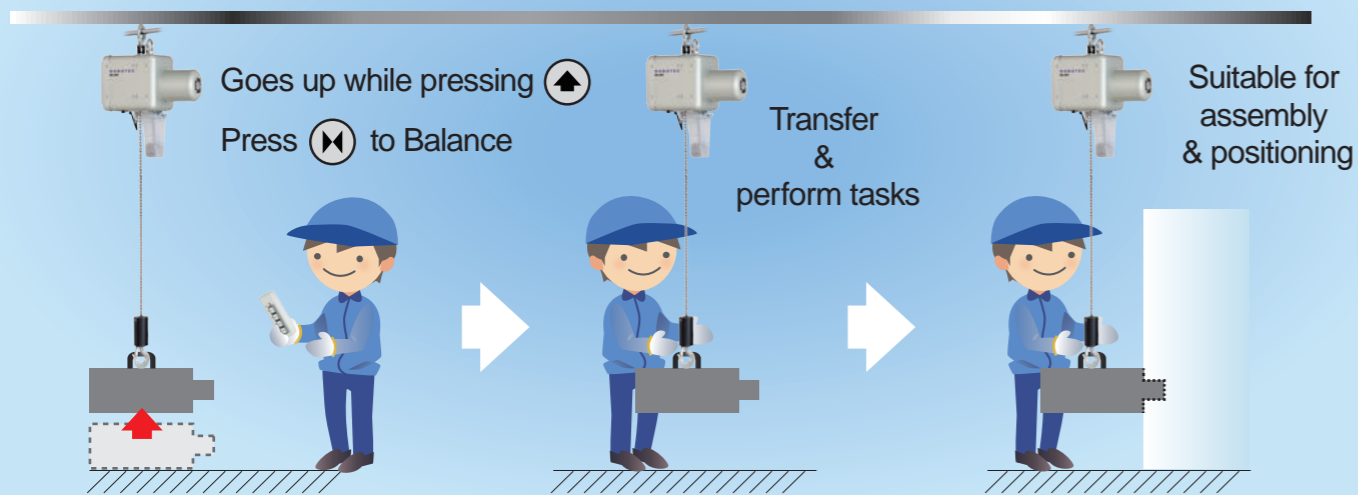


Manual mode (Operation mode A)

Basic operation
Can be used in any application

Used in applications such as

Shape & weight different every time



Implement for various purpose

With Moon Lifter choose best operational feel for better operability!

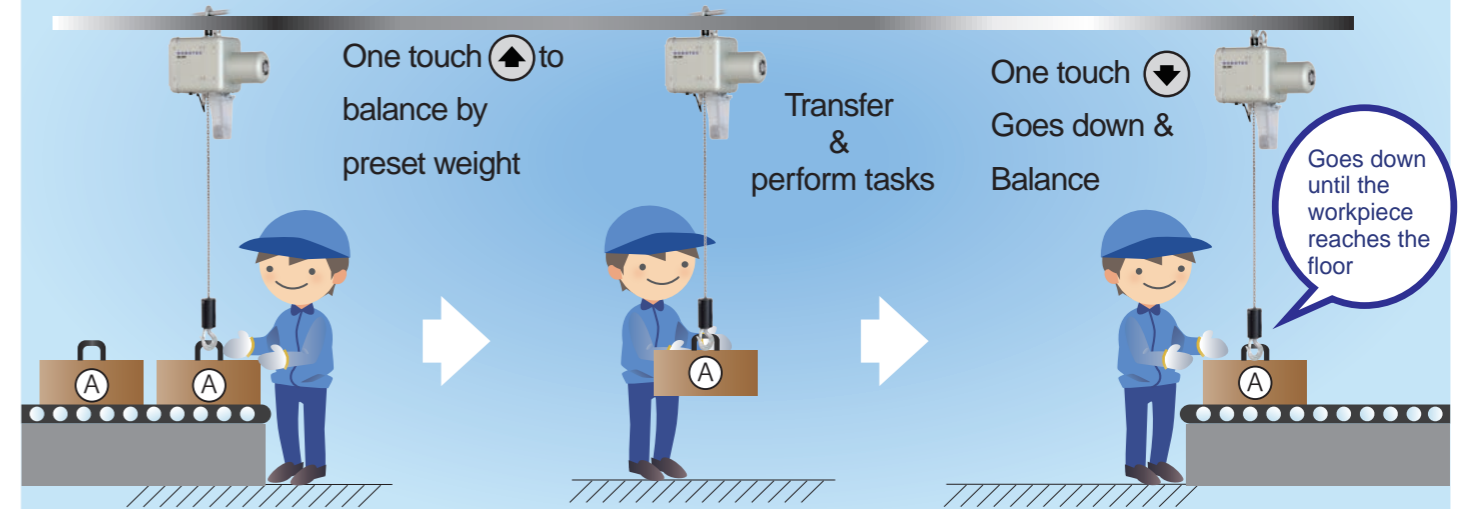
- Avoid heavy work
- Safety first for operators
- Improve operational efficiency
- Create better workplace for everyone

Single workpiece mode (Operation mode C)

Balance instantly from preset weight

Used in applications such as

Workpiece's is same constantly

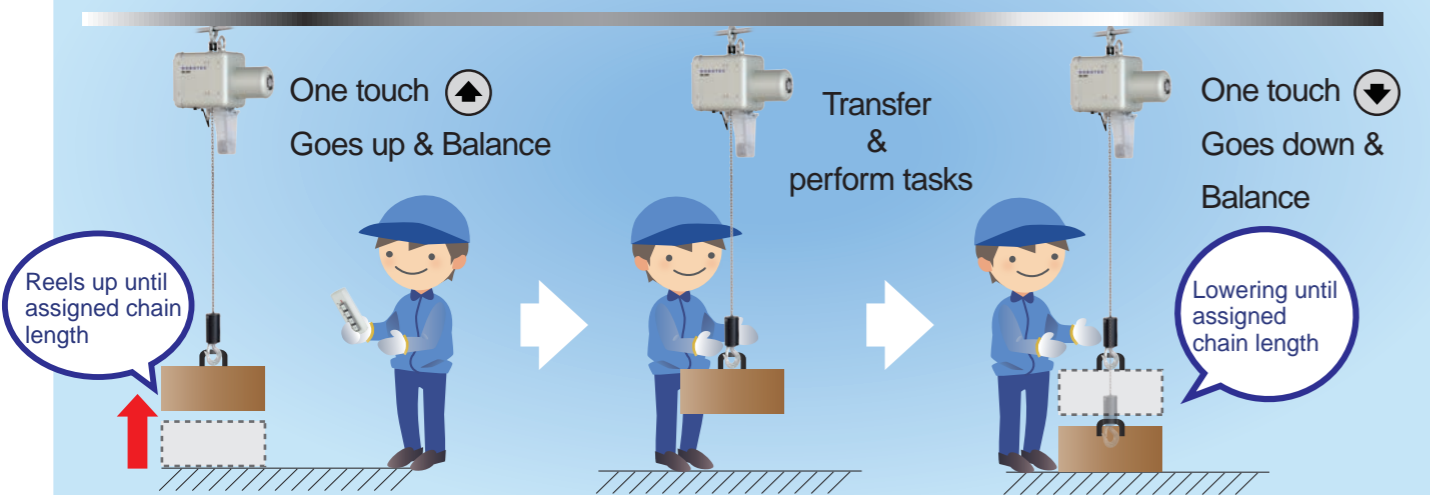


One touch mode (Operation mode B)

One touch, then Balance/Assist OFF
Push fewer buttons for better operability

Used in applications such as

Weight changes every time but wants to reduce buttons

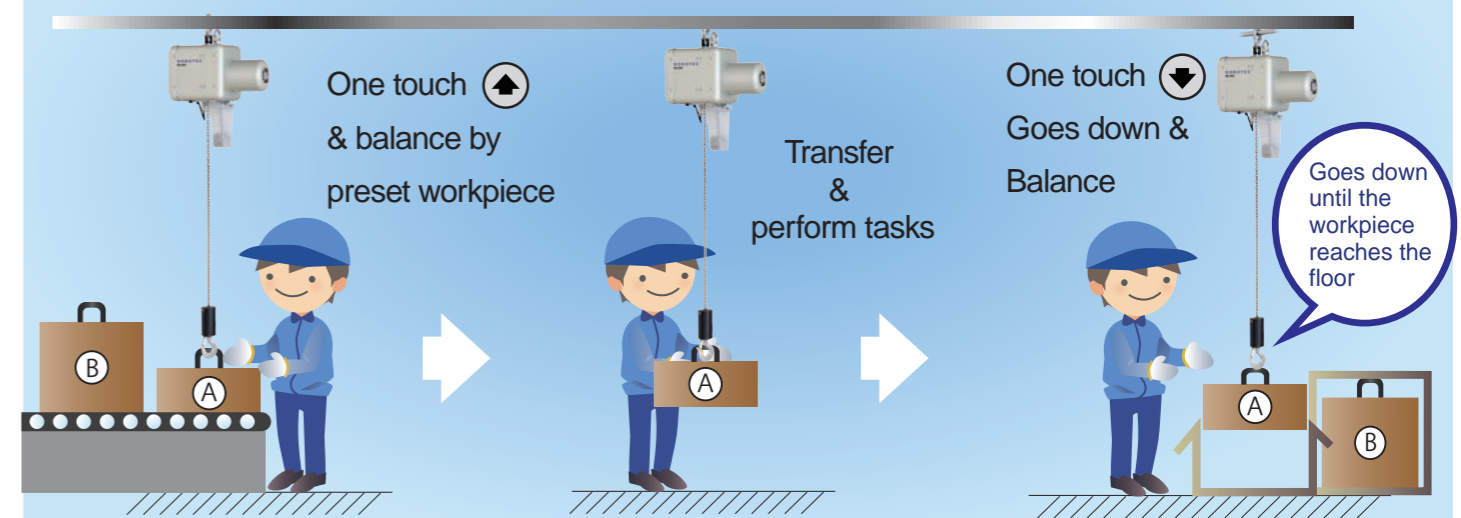


Multi workpieces mode (Operation mode D)

Variable workpiece can be switched & balance

Used in applications such as

A few types of work & weight



Various options

MLP-00K	Dustproof type
MLF-00K	HACCP type
ML-CBR1	Attachment to mount controller(ML-30K to 240K)
ML-CBR2	Attachment to mount controller(ML-480K)
ML-CBR3	Attachment to mount controller(MLH-480K to 1500K)
MLX-C-TS2M	Control input/output signal cable (Bare wire) 2m
MLX-C-TS4M	Control input/output signal cable (Bare wire) 4m
ML-00K(PGS)	Spiral cable for controller 2m*
ML-00K(PGW)	Straight cable for controller 4m*

ML-00K-200V	Single-phase AC200-240V specification*
ML-00K(M)	Parallel Operation Option*
ML-00K(EXO)	External I/O options*
ML-00K(L4)	Lifting Range 4m Option*
ML-WD100	Large weight display (Character height 100 mm) option

*For dustproof type, change from ML to MLP
*For HACCP type, change from ML to MLF

	ML-30K	ML-60K	MLP-60K	MLF-60K	ML-120K	MLP-120K	MLF-120K	ML-240K	MLP-240K	MLF-240K	ML-480K	MLP-480K	MLH-480K	MLH-960K	MLH-1500K
Supports dustproof	×	×	(ST)	(ST)	×	(ST)	(ST)	×	(ST)	(ST)	×	(ST)	×	×	×
Supports HACCP	×	×	×	(ST)	×	×	(ST)	×	×	(ST)	×	×	×	×	×
AC100V	(ST)	(ST)	(ST)	(ST)	(ST)	(ST)	(ST)	(ST)	(ST)	(ST)	(ST)	(ST)	×	×	×
AC200-240V (Single phase)	○	●	●	●	●	●	●	●	●	●	●	●	(ST)	(ST)	(ST)
Cable specifications for controller	×	○	○	○	○	○	○	○	○	○	○	○	○	○	○
Parallel operation option	×	○	○	○	○	○	○	○	○	○	○	○	○	○	○
External I/O options	×	○	○	○	○	○	○	○	○	○	○	○	○	○	○

(ST):Standard ○:Option ●:Specified upon order

Attachment to mount controller



Installable controller onto the chain

Control input/output signal cable



Balance, Hold, Up & Down relay input & LED signal input can be taken and use to make your own controller freely.

Controller cable specification



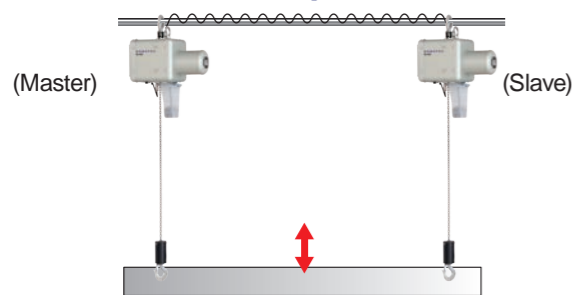
Spiral cable (2m)



Straight cable (4m)

Parallel operation option

With option



Balance operation possible while maintaining posture!

Without option

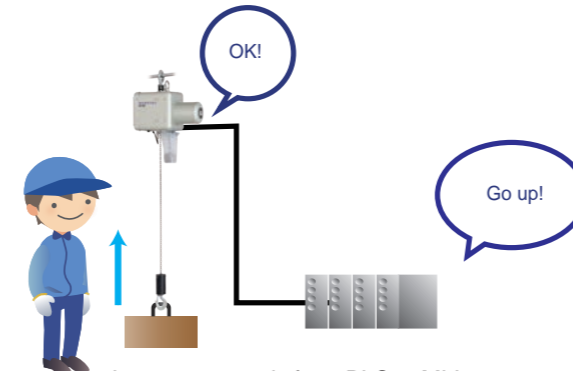


Loss of posture is dangerous

External I/O options

Other than usual operation command, 4 bits of input and output can be assigned from various functions (force comparison, down position, etc)

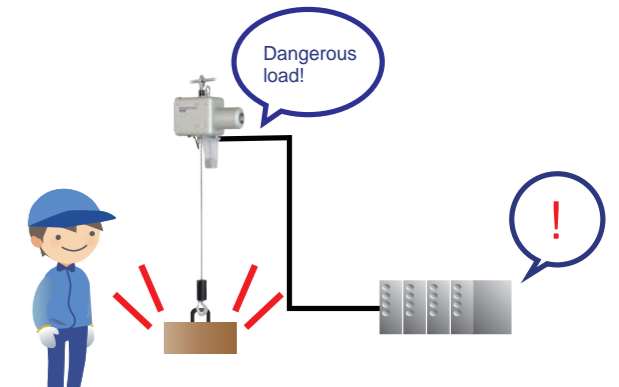
How to use input signal



Issue commands from PLC to ML!
Switch preset weights and tare from PLC!

Supports semi and full automation!

How to use output signal



Notify PLC of control status from ML!
Send abnormalities from ML to PLC!

Auto detect danger and stop!

Optional accessories

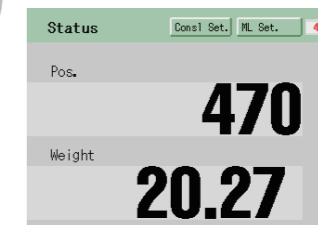
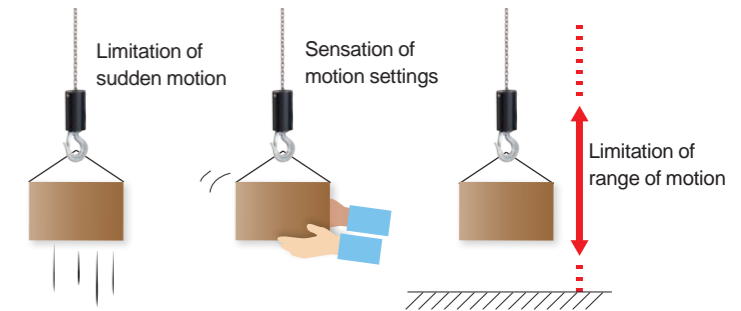
ML-CONSOLE

Console unit or tuning of Moon Lifter

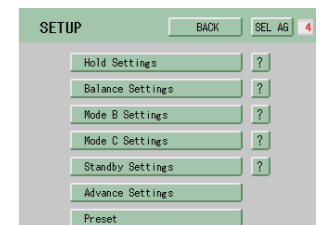


Write & read setting parameters

You can customize it to fit your style



Load and chain length display



Parameter settings display

Dustproof/HACCP type



Dustproof type

Enclosed heat exchanger fan equipped for internal cooling of control unit. You can use in dusty work environment.

Using **at open-air space** with roof Loading and unloading materials for shipping, and transporting heavy components outside as well.

Casting/ foundry line
Spreading of dust and fume during pouring of molten metal from furnaces into vessel or sand mold.

Metal processing line
Spreading of **swarf, chip, and oil mist** in the air during processes of cutting, grinding, and blasting.

Welding•Fusing line
A lot of dust spread during processes of welding, fusing, and laser beam machining.

...Specify MLP-60K, MLP-120K, MLP-240K, MLP-480K if you select Dust-proof type

HACCP type



This specification takes hygiene management for F&B business into consideration.

- Upper & lower hooks, main body & chain bucket are made of stainless steel
- 3 dust pans equipped as standard
- Lubricant for food machinery is used
- Chain bellow is available as option

Chain bellow



More functions!

Supports weight increase/decrease while suspended. Rebalance with one touch & transport immediately.

More functions!

You may set motion limit so that workpiece will not touch the floor even if you lower it too much.

...Specify MLF-60K, MLF-120K, MLF-240K if you select HACCP type

Installation & Gripping tool examples

We provide consultation for various installations and gripping tools. Please contact us.

Installation examples

Slide arm



Use only at specific place

Overhead rails



Slide to X/ Yaxis

Jib lift



Mobile balancer with battery

Insertion type



Can be inserted horizontally if there is an overhead wall

Gripping tool examples



Suction cup



Clamp



Cardboard box



Pail can



5-gallon square can

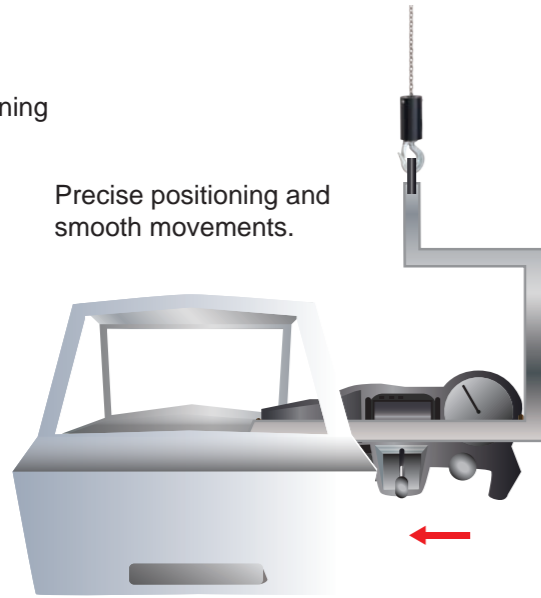


Bag

How Moon Lifter can assist

Positioning

Precise positioning and smooth movements.



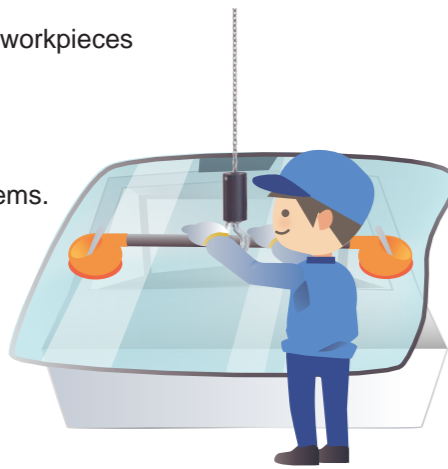
Insertion

Easy to put in with assist force offset.

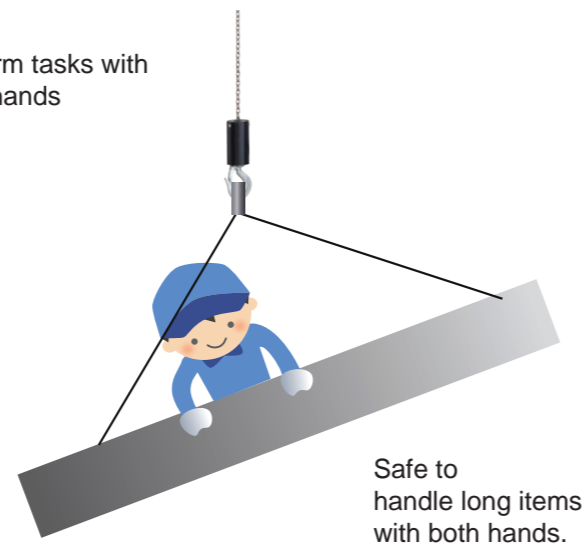


No damage to workpieces

Ease of use to handle fragile items.



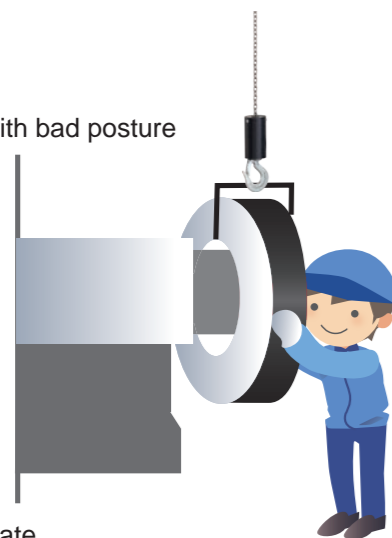
Perform tasks with both hands



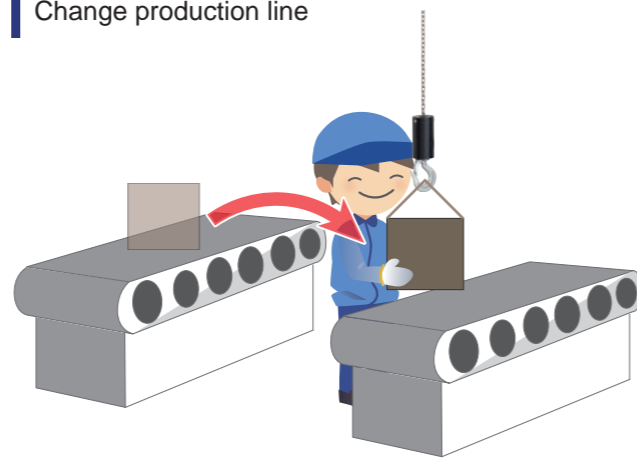
Safe to handle long items with both hands.

Operate with bad posture

Eliminate dangerous operation!



Change production line



Fast handling & shorten takt time!

Implementation examples①

Moon Lifter® Article

Kyowa Sangyo Co., Ltd.
(Hakusan, Ishikawa)

Severe & heavy work of door fitting

To fit a door into cabin, we have to stay put while fastening it. Thus this task causes a lot of stress to the waist. Reducing exerted stress assures workplace safety and health.

Precise positioning & intuitive control

It is typical heavy work to fit a door (over 20kg) into cabin, especially assembly of construction & agricultural machinery. Right hand holds the door, while left hand tightens the bolt. Can perform task simpler & fastening at the exact position.

Protects employee's health and creates diverse career
Moon Lifter innovates door fitting operation.

Huge promise in automation to encourage women involvements

Applicable machine like Moon Lifter eliminates heavy work, thus women can play more active role in workplace.



Before using Moon Lifter.

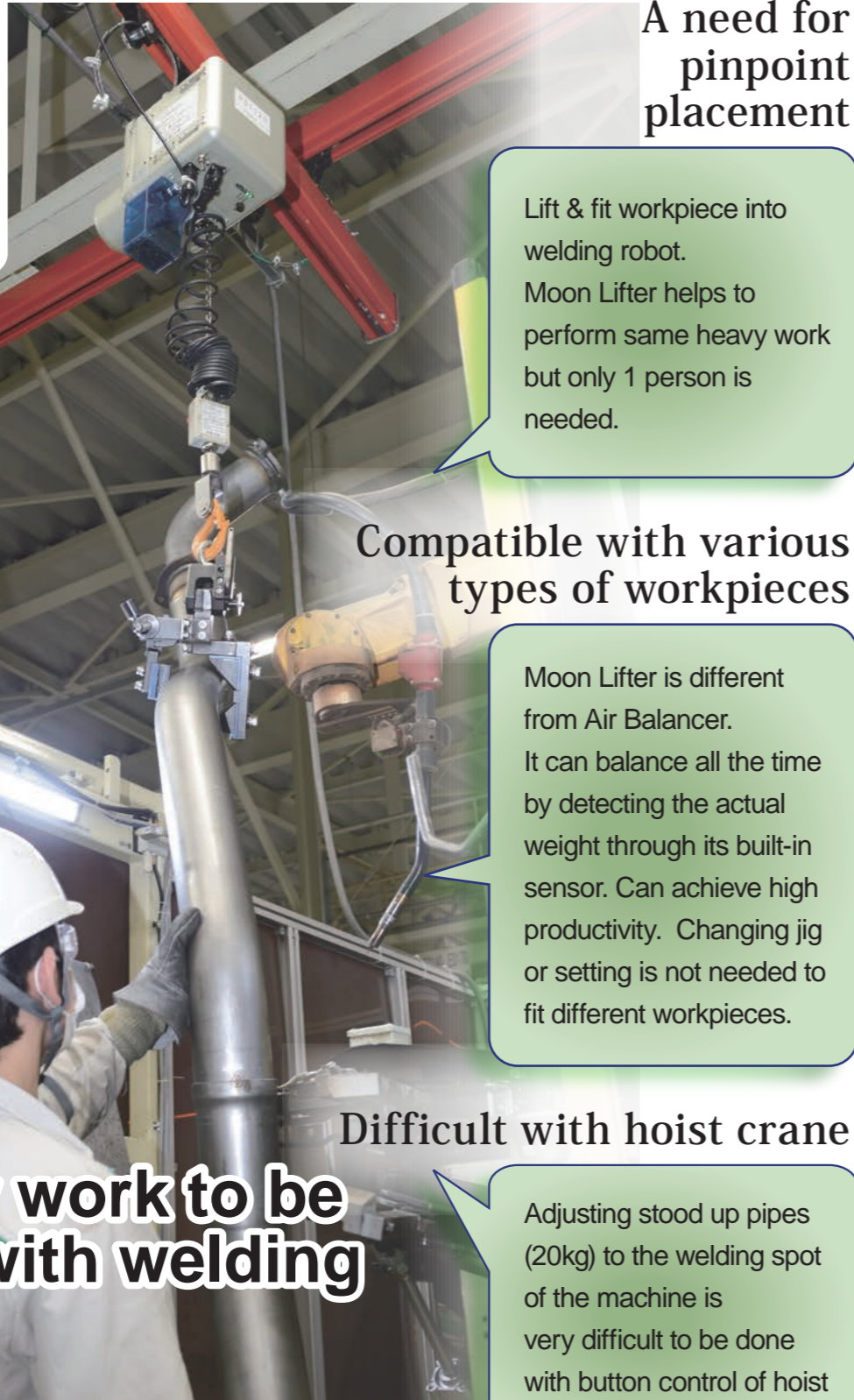


After installing Moon Lifter.

Implementation examples②

Moon Lifter® Article

Sango Kanto Co., Ltd.
(Shimotsuma, Ibaraki)



A need for pinpoint placement

Lift & fit workpiece into welding robot.
Moon Lifter helps to perform same heavy work but only 1 person is needed.

Compatible with various types of workpieces

Moon Lifter is different from Air Balancer.
It can balance all the time by detecting the actual weight through its built-in sensor. Can achieve high productivity. Changing jig or setting is not needed to fit different workpieces.

Difficult with hoist crane

Adjusting stood up pipes (20kg) to the welding spot of the machine is very difficult to be done with button control of hoist crane.

Safety first

A need of suitable equipment for heavy work, & plan safe working environment.

Avoid heavy work to be associated with welding robots.



Before using Moon Lifter.



After installing Moon Lifter.

Implementation examples③

Moon Lifter® Article

Onchi Shokuhin Co., Ltd.
(Yawata, Kyoto)



Lifting container easily with only 1 person

Solved heavy workload by placing 15kg container repeatedly onto a trolley with both hands & simple operation.

Easier alignment

Since it is handled directly by human hands, position of container is controllable.

Moving freely

Only 100V outlet needed, thus ML can be moved aside if not being used. Space is being used efficiently.

Better environment to operate longer

Work environment must be able to support aging staffs.
By eliminating heavy workload, women can work comfortably too.

Saving labor & strength for plastic container handling



Before using Moon Lifter.



After installing Moon Lifter.

Implementation examples④

Moon Lifter® Article

Yamato Press Co., Ltd.
(Fujisawa, Kanagawa)

Improves productivity when new factory establishes

At the old factory, workpieces between production lines were transported by 2 operators, hence opportunity to improve work efficiency.

Embrace manpower diversity for better workplace where "Anyone can do it"

Anyone can do it. In addition, if one operator can do the work, productivity will increase.

Utilizing your senses

You won't feel any heaviness while using Moon Lifter, so you can place workpieces anywhere & effortlessly.

Better workplace and higher productivity.



Before using Moon Lifter.



After installing Moon Lifter.

Specifications

Main unit (Standard)

Model	ML-30K	ML-60K	ML-120K	ML-240K	ML-480K
Maximum load	30kg	60kg	120kg	240kg	480kg
Maximum lifting/lowering speed	500mm/s	500mm/s	250mm/s	125mm/s	62.5mm/s
Lift	2000mm				
Chain	φ 4.0 × 12 (Electroless nickel plating)				
Chain breaking strength	20kN or more				
Power supply	AC power supply 100V (-15% +10%) 5A(30K) AC power supply 100V (-15% +10%) 8A(60K to 480K)				
Main unit dimensions	314 × 179 × 176mm(30K) 394 × 212 × 221mm				
Main unit weight	Approx.8.5kg	Approx.20kg			Approx.23kg
Operating temperature range	0 to 40°C				
Operating humidity range	80% RH or less (No condensation)				
Power cable	Approx. 3 m (Exchangeable)				

Main body (Dustproof type) (HACCP type)

Model	MPL-60K MLF-60K	MPL-120K MLF-120K	MPL-240K MLF-240K	MPL-480K
Maximum load	60kg	120kg	240kg	480kg
Maximum lifting/lowering speed	500mm/s	250mm/s	125mm/s	62.5mm/s
Lift	2000mm			
Chain	φ 4.0 × 12 (Electroless nickel plating)			
Chain breaking strength	20kN or more			
Power supply	AC power supply 100V (-15% +10%) 8A			
Main unit dimensions	470 × 213 × 221mm			
Main unit weight	Approx.23kg		Approx.26kg	
Operating temperature range	0 to 40°C			
Operating humidity range	80% RH or less (No condensation)			
Power cable	Approx. 3 m (Exchangeable)			

Main unit (High output type)

Model	MLH-480K	MLH-960K	MLH-1500K
Maximum load	480kg	960kg	1500kg
Maximum lifting/lowering speed	250mm/s	125mm/s	100mm/s
Lift	2000mm		
Chain	φ 8 × 23		
Chain breaking strength	100kN or more		
Power supply	AC power supply 200 to 240V (-15% +10%) 16A (Single phase)		
Main unit dimensions	492 × 261 × 274mm		
Main unit weight	Approx.56 kg		
Operating temperature range	0 to 40°C		
Operating humidity range	80% RH or less (No condensation)		
Power cable	Approx. 3 m (Exchangeable)		

★ Maintenance ★

- Do not use any lubricant other than our designated lubricant.
- Clean and lubricate the chain once every three months.

★ Safety precautions ★

The safety precautions in the instruction manual that comes with the product serve a purpose to use it correctly & safely, preventing harm to users & damages to property.

Please read it carefully and keep it in a safe place where you can reconfirm it at any time.

The manufacturer/distributor is not liable for any personal injury or accidental damage caused by misuse or improper operation.