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Best Engineered For Energy Absorption Technology

Shock Absorber
Hydraulic Buffer

izmac
Fluid Damping Technology

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Best Engineered For Energy Absorption Technology

Overview

In many of industrial fields, production speed increased in high face for better productivity. In addition, the needs for high energy capacity with compact shock absorber has increased whereas the application product size is getting bigger.

Through intensive technical development, IZMAC upgrade all shock absorber models more than 200% capacity of previous ones and improve collision speed allowance range as 0.1m/sec~5 m/sec. Thanks to production management, IZMAC can provide low cost, long life products with short delivery time.

IZMAC would do its best to supply products that customer satisfy by way of on-going research and development with advanced production & quality management.

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Best Engineered For Energy Absorption Technology

DECELERATION CONTROL SOLUTION :

Provide customer deceleration control solution customer satisfactory policy

CREATE MAX PRODUCTIVITY :

Create maximum productivity by supplying best product to customers

INNOVATION :

On-going innovation to maintain its high level quality


MAERSK LINE


MQ-8590
制限高5.80M
GC-107

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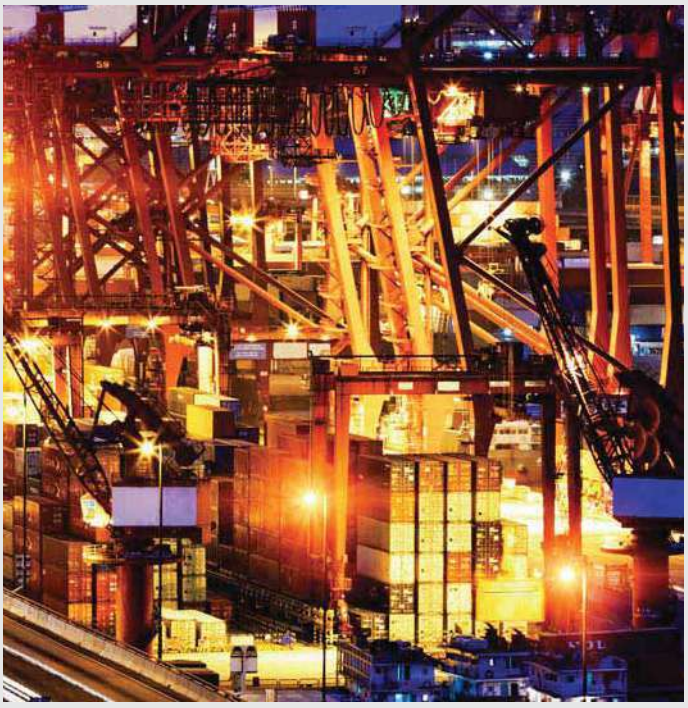
Fluid Damping Technology

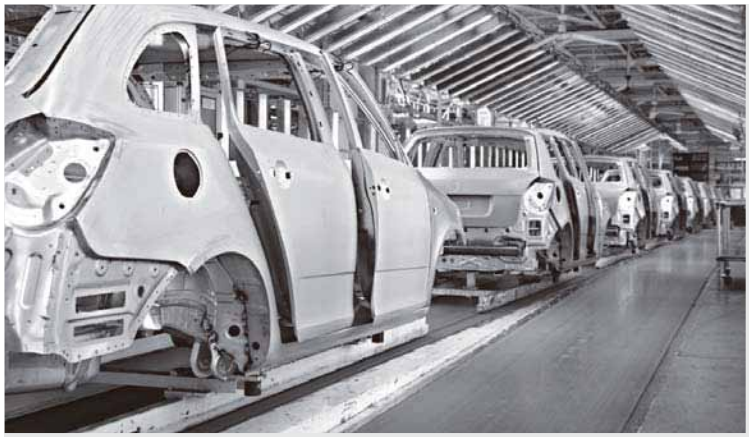
Hydraulic Buffers

Military, Bridge, Crane & Trolley, Rail End Stop,
Railway Coupler & Side Buffers, Elevator

Logistic Automation

Warehouse Automation, Mining, Conveyor Systems





Applications

Factory Automation

Automotive

- Car manufacturing(Assembly/Transfer/ Inspection/Pick & Place robot line)
- Car-Welding, Assembly line, Tire line
- Electric actuator, Rodless cylinder, High speed cylinder, Guide cylinder, Stopper cylinder, Handling system, Linear module protection
- Pneumatic components
  Grippers, Pneumatic cylinder, Pneumatic valve, Fluid control components
- Electronics
  Semi-conductor equipment, Circuit breaker
- Factory
  Steel factory, Paper factory
- Safety : Brake cylinder, Tie rod cylinder, Compact cylinder, Brake unit, Linear guide, Emergency stop

*** Warehouse Automation**

Features

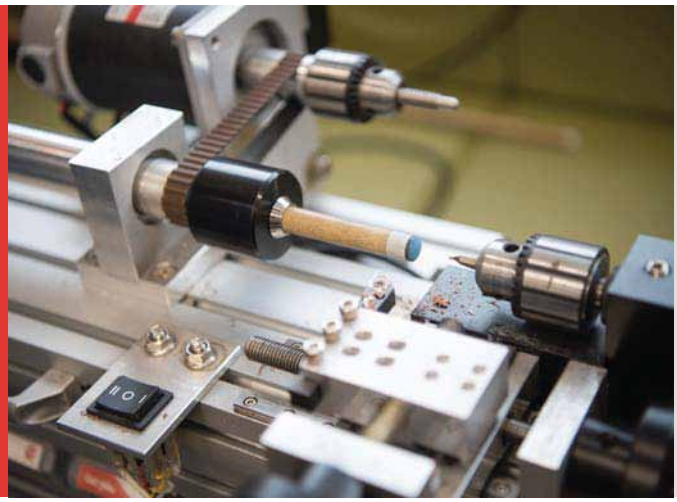
- Upgrade precision degree
- Secure stability, Optimizing control
- Reliability of production lines
- Max productivity
- Decrease failure ratio
- Increase output quality level

Production Process

01

Design

What is technology? It will be the one which makes differences. IZMAC always open ears to hear customer's voices for renovation.
IZMAC makes endless R&D and it supports to develop quality of products for customer's productivity. On time customizing is also one of helpful features of IZMAC.



02

Machining process

Clean machining clean products. IZMAC has its own fleets to doing machining process.
To minimizes defect ratio into "0", skillful engineers manage all over the process.
Advanced machineries are helpful to carry out complicate & difficult output process.

03

Part inspection

IZMAC only supply products after total inspection process. If there are any small defects found it goes directly to the beginning process.
Perfect product delivery is what IZMAC quality assurance system is aiming at.

04

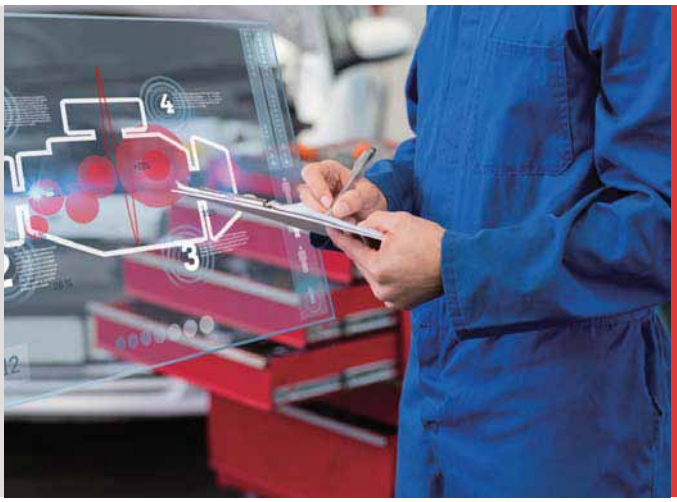
Assembly

Assembly is one of very important process of production. Every part should be inserted into the right position to do its right function.

05

Product inspection / Test

Through product inspection In the final qualifying process, IZMAC products are ready to deliver customer's places. Defective products are automatically transferred to the beginning process of production or trashed to prevent quality trouble.



06

Shipping

IZMAC only supply products in perfect condition of packing. If there are any small defects found or manager feels that package is not settled well, the packaging system is reset for safe delivery.
Perfect product delivery is what IZMAC quality assurance system is looking for.

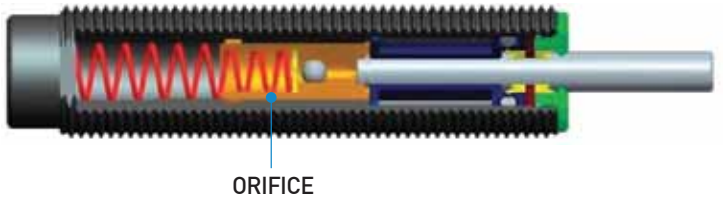
Shock Absorber

Orifice features

SINGLE ORIFICE

1 Single orifice is called as "Dashpot" and it has only one orifice on the tube as a hole or circled shape gap. It has the features that orifice dimension is maintained for total stroke when it has flow activity.

2 As per the diagram, resistance force is going high suddenly after collision and it dramatically down when the stroke is in progress. And the force is decreasing step by step.

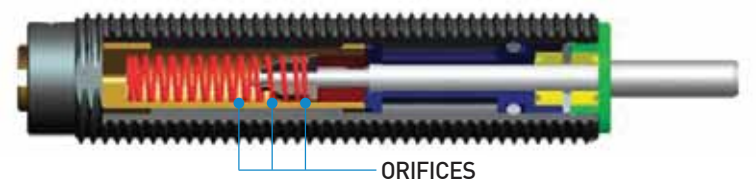


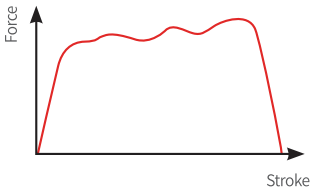
MULTIPLE ORIFICES

On the other hands, by using multiple orifices, total oil route dimension is decreasing when the stroke is on-going. It enables to maintain total shock absorption safely and softly.

■ Adjustable type

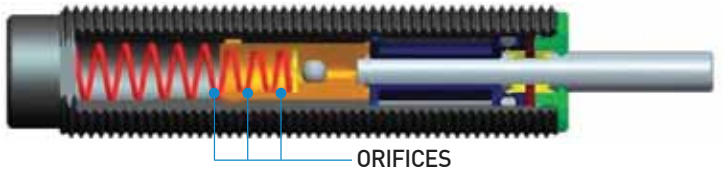
By using adjustment dial, it can provide best deceleration features against various collision cases.

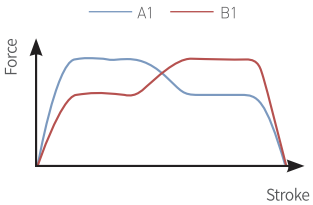




■ Self compensating

Self compensating type shock absorber is optimized for repeated work conditions and it makes ideal deceleration features by using highly optimized orifices on customized shock conditions.
Diagram A1 shows the condition of high speed/low profelling force, B1 shows low speed/high propelling forces and they show resist forces are not increased excessive manner on those contrast conditions.





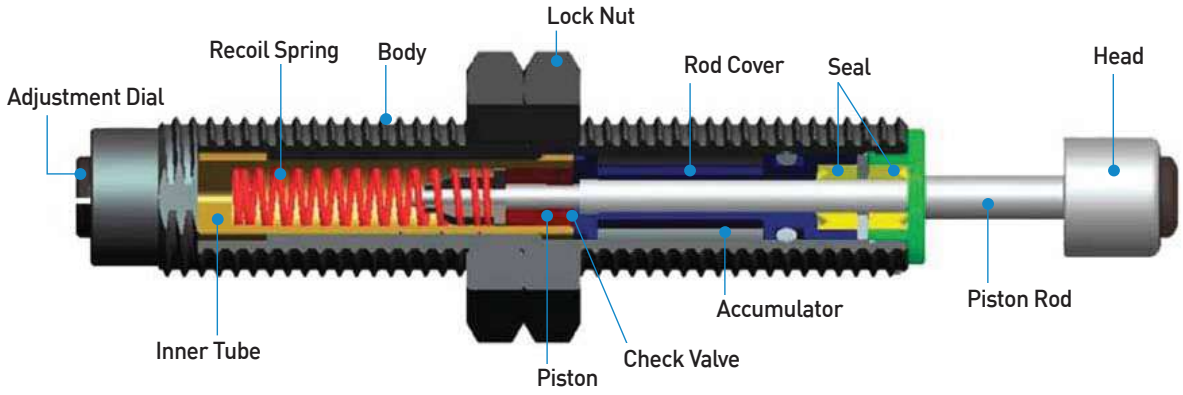
Principal of energy absorption

After impact piston is inserted into inner tube, oil flows through orifice holes made in the tube.
The impact kinetic energy is changed into thermal energy by way of rebounding activity. And the thermal energy is dissipated outside through threaded body.

Internal Structure

1 Shock absorber consists of 5 major parts : Head, Piston rod, Body, Adjustment dial and Lock nut.
2 Bumper head is the part which contact colliding object directly, and it has the function of stopper at the end of stroke with contacting body.
3 Piston rod transfer impact energy to the piston through full stroke.
4 Body outside is fully threaded for easy installation at any position and for more heat dissipation.
5 Adjustment dial is for optimum operation by setting Knob to the various impact conditions.
6 Lock nut is used for installing and fixing shock absorber tightly coupled with body thread on the machine.

Inside of shock absorber consist of piston, check valve, inner tube, multiple orifices, accumulator, return spring and oil. On impact the piston rod is inserted into inner tube and check valve is closed. And it forces oil in the chamber to flow through orifice. At the same time, damping force is generated into piston. Compressed oil which flowed into accumulator position is compensating same volume of piston inside. After one cycle ended, return process is made by coil spring and check valve is opened when it starts return process. Because the oil is moved from oil tube into inner tube, piston rod is returned to its original position for proper operation.



Ordering information

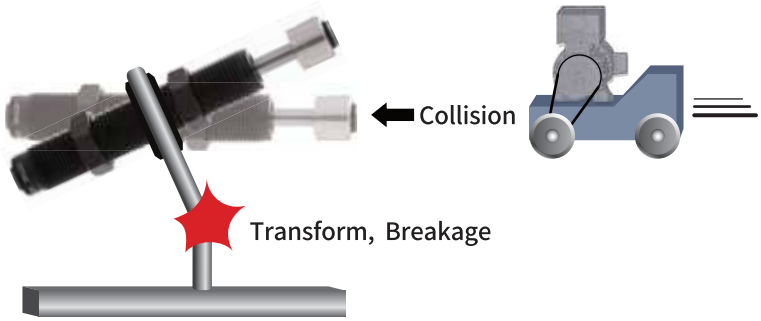
Ordering Info		Previous	Current	Explanation
Series	Absorber	IAAS SDA	IAA	**I**zmac mini **A**bsorber **A**dustable type
		IASS	IMS	**I**zmac **M**ini & **M**iddle class absorber **S**elf-compensating
		IAAH	IHA	**I**zmac **H**eavy type **A**bsorber
		IAAD	ISA	**I**zmac **S**tright type **A**bsorber (middle class)
	Buffer	IBSG	IHG	**I**zmac **H**ydraulic **G**as & oil type buffer
		IBAW	ICA	**I**zmac hydraulic & oil stacker **C**rane **A**djustable buffer
		IBSW	ISC	**I**zmac hydraulic & oil **S**tcker **C**rane buffer
	Special product	ISAA	IHC	**I**zmac **H**ydro **C**heck
		IDSM	ICD	**I**zmac **C**rash **D**amper
		IDSP	IPC	**I**zmac **P**lastic type **C**rash damper
		IRAD	IRD	**I**zmac **R**ate control **D**ouble dial
		IASR	ISR	**I**zmac **S**hort **R**ange absorber

Safety Instruction

1. Shock absorber

IZMAC shock absorber has been developped to endure up to million cycles. To assure long life cycle please be aware of the following regulations.

1-1 Ensure correct energy capacity before operation of shock absorber.
1-2 Do not paint or weld to the body of shock absorber.
1-3 Piston rod not to be marked or painted. (Shock absorber may have maifunction with oil leackage.)
1-4 Adjustment dial knob is preset to “0” by factory. Once achieved the correct damping strength, tighten the lock screw.
1-5 Shock absorber shall be kept away from fire because can be ignited by oil.
1-6 Always check strength of installation site before using and it is recommended to installing shock absorber at strong base structure.
Secure the strength as " Max shock energy x safety ratio. (2.5)"



1-7 Refer to below table of proper lock nut installation tightening torque. Tightening with excessive force may cause malfunction or damage to product.

Screw outdia (mm)	M8x1.0	M10x1.0	M12x1.0	M14x1.0 / M14x1.5	M16x1.5	M20x1.5	M25x1.5 / M25x2.0	M27x1.5 / M27x2.0 / M27x3.0	M30x1.5	M36x1.5	M42x1.5
Nut Torque (Nm)	3.9	7.8	7.8	9.8	14.7	29.4	49	58.8	78.4	98	392

It will be efficient when it apply additional anti-loosening adhesives.

1-8 Always check the operation temperature of shock absorber to get best performance.

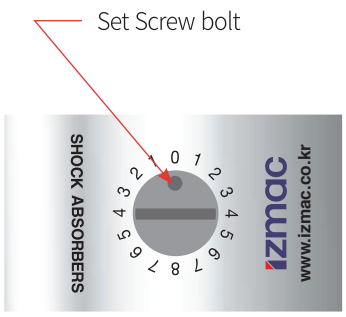
1-9 Impact mass should be perpendicular to the axis of shock absorber. In case of an side load impact especially angle of deviation over 1°, it is better to use an side load adapter. Otherwise failures can be occurred due to abrasion of inner sealings.

1-10 Shield the shock absorber to protect it from foreign material such as dust, acids, steam, solvents, cutting fluids, weld flash, and dust.

1-11 Check the operating temperature range of shock absorber (-10°C ~ 80°C) to get best performance. If you need to use shock absorber in other temperature exceed standard operating temperature, please contact us.

1-12 Adjustable type of shock absorber is designed to get suitable resistance force according to impact velocity by controlling the area of orifice. Refer to below adjustment dial of IDA series, ISA Series and IHA Series.
Lock the set screw bolt after adjust dial with fitting properly on your application conditions.

IAA & ISA & IHA Series Adjustment Dial

IAA Series	ISA Series	IHA Series
 Set Screw bolt	 Set Screw bolt	 Set Screw bolt

It will be efficient when it apply additional anti-loosening adhesives.

2. General Inspection

2-1 Regular Checking

1) Check the below points regularly.

It is impossible to disassemble and repair the shock absorber so change the shock absorber when it is broken.

2) Inspection Point

- Condition of lock nut fastened
- Condition of piston rod (Damage or Scratch)
- Checking the stroke
- Outer appearance of shock absorber
- Oil leakage
- Noise on process

If any trouble found after inspection, please do trouble shooting with considering "2-2. trouble & trouble shooting.

2-2 Trouble and trouble - shooting

Trouble	Cause	Trouble - shooting
Lock Nut is not fastened tightly.	Lack of fixing torque	Fasten the nut or bolt tightly
	Vibration of machine	Check the vibration of machine and adjust it
Not Suitable Shock absorption	The required energy is over the capacity of shock absorber	Change the shock absorber with higher capacity
	The adjustable dial step is not suitable	Set adjustment dial to"0"
	Stop the stroke by stopper	Adjust the stopper location to use long stroke
	The shock absorber is not installed in line	Install the shock absorber in line
	The moving load is hit the shock absorber over 1 degree	
	There is vibration in moving load	Install the guide to remove the vibration
	Use the body of shock absorber as stopper	Install the stop collar or other stopper
	Ambient temperature is too high	Change the shock absorber which is applicable for high temperature
	Damaged seal by other material on the piston rod	Clean the piston rod and protect it from the dust
	The rotating moving load is impacted direct to shock absorber	Install the protection object to prevent from the direct impact to shock absorber
	The lifespan of shock absorber is over	Change the shock absorber to new one
OIL Leakage	Damaged seal by other material on the piston rod	Clean the piston rod and protect it from the dust
	Ambient temperature is too low	Warm the shock absorber as temp, over -10°C or change it to shock absorber for low temperature
	The lifespan of shock absorber is over	Change the shock absorber to new one
Rod is not returned.	The shock absorber is not installed in line	Install the shock absorber in line
	The moving load is hit the shock absorber over 1 degree	
	There is vibration in moving load	Install the guide to remove the vibration
	Use the body of shock absorber as stopper	Install the stop collar or other stopper
	Ambient temperature is too low	Warm the shock absorber as temp, over -10°C or change it to shock absorber for low temperature
	The lifespan of shock absorber is over	The lifespan of shock absorber is over

※ When using the shock absorber inside the chamber, be sure to contact IZMAC before using it.

Shock Absorber

Fomula and Calculation

Symbols

Symbol	Unit	Description	Symbol	Unit	Description
E_K	Nm	Kinetic energy	T	Nm	Torque
E_W	Nm	Work energy	H	m	Height
E_T	Nm	Total energy	m	kg	Weight
E_TC	Nm / h	Total energy per hour	P	bar	Operating pressure
F_S	N	Impact force	ω	rad / s	Angular verlocity
F_P	N	Propelling force	α	°	Angle of incline
m_e	kg	Effective weight	I	kgm^2	Moment of inertia
C	Cycles / h	Cycles per hour	K	m	Turning radius
S	m	Stroke	R_S	m	Mounting distance form pivot point
V	m / s	Impact velocity	μ		Coefficient of friction
V_D	m / s	Mass velocity	g	m / s^2	Gravitational acceleration
P_M	kW	Motor power	a	m / s^2	Acceleration
D	mm	Inner diamerer of Cylinder	t	s	Time
R_S	m	Shockabsorber loaction	K	m	Radius of gyration
R_C	m	Cylinder location			

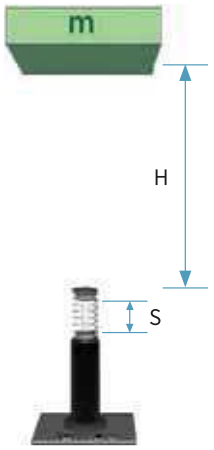
Useful formulas

Description	Symbol	Formulas
Impact force	F_S	$= E_T / S / 0.8$
Motor power	F_P	$= 3000 \times P_M / V$
Cylinder power	F_P	$= 0.0785 \times D^2 \times P$
Effective weight	m_e	$= 2 \times E_T / V^2$
Velocity (free falling)	V	$= \sqrt{2 \times g \times H}$
Velocity (with acceleration)	V	$= 2 \times D / t$
Velocity (w/o acceleration)	V	$= D / t$
Deceleration	a	$= V^2 / 2 / S$
Stoppimg time	t	$= 2.5 \times S / V$

Examples

| A | Free falling mass

- **Weight** m = 600kg
- **Height** H = 0.5m
- **Cycles per hour** C = 60Cycles/h
- **Gravitational acceleration** $g = 9.81 m/s^2$



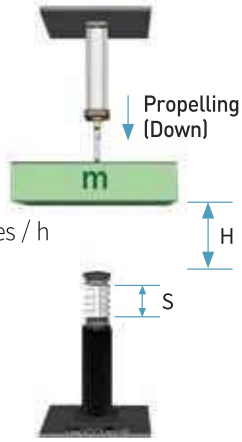
$E_K = m \times g \times H = 600 \times 9.81 \times 0.5 = 2,943$ Nm
Selected Model with E_k : ISA64 -100
$E_W = m \times g \times S = 600 \times 9.81 \times 0.1 = 589$ Nm
$E_T = E_K + E_W = 2,943 + 5\ 89 = 3,532$ Nm
$E_TC = E_T \times C = 3,532 \times 60 = 211,896$ Nm / h
$V = \sqrt{2 \times g \times H} = \sqrt{2 \times 9.81 \times 0.5} = 3.13$ m / s

$$m_e = \frac{2 \times E_T}{V^2} = \frac{2 \times 3,532}{3.13^2} = 720 \text{ kg}$$

Selected Model with E_T, E_TC & m_e : ISA 64-100

| B | Down mass with propelling force

- **Weight** m = 1,200kg
- **Impact velocity** V = 1.8m / s
- **Inner diamerer of Cylinder** D = 140mm
- **Operating pressure** P = 5bar
- **Cycles per hour** C = 125Cycles / h



$$E_K = \frac{m \times V^2}{2} = \frac{1,200 \times 1.8^2}{2} = 1,944 \text{ Nm}$$

Selected Model with E_k : ISA 85-50
$F_P = 0.0785 \times D^2 \times P + m \times g =$
$0.0785 \times 140^2 \times 5 + 1,200 \times 9.81 = 19,465$ N
$E_W = F_P \times S = 19,465 \times 0.05 = 973$ Nm
$E_T = E_K + E_W = 1,944 + 973 = 2,917$ Nm
$E_TC = E_T \times C = 2,917 \times 125 = 364,656$ Nm / h

$$m_e = \frac{2 \times E_T}{V^2} = \frac{2 \times 2,917}{1.8^2} = 1,801 \text{ kg}$$

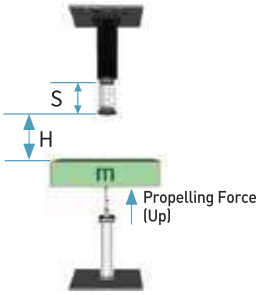
Selected Model with E_T, E_TC & m_e : ISA 85-50

Shock Absorber

Fomula and Calculation

| C | Up mass with propelling force

- Weight m = 200kg
- Impact velocity V = 2.5m/s
- Inner diamerer of Cylinder D = 150mm
- Operating pressure P = 5bar
- Cycles per hour C = 180Cycles/h



$E_K = \frac{m \times V^2}{2} = \frac{200 \times 2.5^2}{2} = 625$ Nm

Selected Model with E_k : ISA 45-50

$F_P = 0.0785 \times D^2 \times P + m \times g =$
$0.0785 \times 150^2 \times 5 - 200 \times 9.81 = 6,869$ N

$E_W = F_P \times S = 6,869 \times 0.05 = 343$ Nm

$E_T = E_K + E_W = 625 + 343 = 968$ Nm

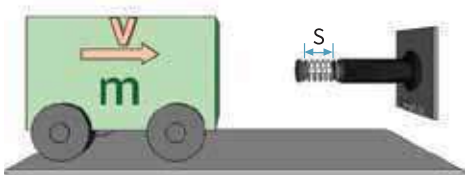
$E_TC = E_T \times C = 968 \times 180 = 174,323$ Nm / h

$m_e = \frac{2 \times E_T}{V^2} = \frac{2 \times 968}{2.5^2} = 310$ kg

Selected Model with E_T, E_TC & m_e : ISA 45-50

| D | Horizontal mass without propelling force

- Weight m = 100kg
- Impact velocity V = 1.5m/s
- Cycles per hour C = 600Cycles/h



$E_K = \frac{m \times V^2}{2} = \frac{100 \times 1.5^2}{2} = 113$ Nm

$E_T = E_K + E_W = 113 + 0 = 113$ Nm

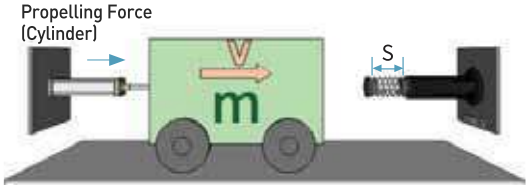
$E_TC = E_T \times C = 113 \times 600 = 67,800$ Nm / h

$m_e = \frac{2 \times E_T}{V^2} = \frac{2 \times 113}{1.5^2} = 100$ kg

Selected Model with E_T, E_TC & m_e : IAA 25-25

| E | Horizontal mass with propelling force [Cylinder]

- Weight m = 300kg
- Impact velocity V = 1.2m/s
- Inner diamerer of Cylinder D = 50mm
- Operating pressure P = 5bar
- Cycles per hour C=300Cycles /h



$E_K = \frac{m \times V^2}{2} = \frac{300 \times 1.2^2}{2} = 216$ Nm

Selected Model with E_k : IAA 36-25

$F_P = 0.0785 \times D^2 \times P = 0.0785 \times 50^2 \times 5 = 981$ N

$E_W = F_P \times S = 981 \times 0.025 = 25$ Nm

$E_T = E_K + E_W = 216 + 25 = 241$ Nm

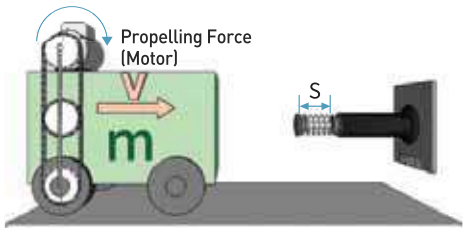
$E_TC = E_T \times C = 241 \times 300 = 72,300$ Nm / h

$m_e = \frac{2 \times E_T}{V^2} = \frac{2 \times 241}{1.2^2} = 335$ kg

Selected Model with E_T, E_TC & m_e : IAA 36-25

| F | Horizontal mass with propelling force [Motor]

- Weight m = 1,300kg
- Impact velocity V = 1.6m/s
- Motor power P = 3kW
- Cycles per hour C = 100Cycles/h



$E_K = \frac{m \times V^2}{2} = \frac{1,300 \times 1.6^2}{2} = 1,664$ Nm

Selected Model with E_k : ISA 64-50

$F_P = \frac{3,000 \times P_M}{V} = \frac{3,000 \times 3}{1.6} = 5,625$ N

$E_W = F_P \times S = 5,625 \times 0.05 = 281$ Nm

$E_T = E_K + E_W = 1,664 + 281 = 1,945$ Nm

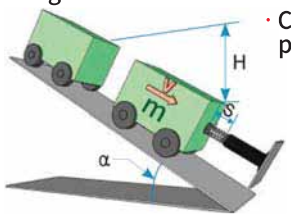
$E_TC = E_T \times C = 1,945 \times 100 = 194,500$ Nm / h

$m_e = \frac{2 \times E_T}{V^2} = \frac{2 \times 1,945}{1.6^2} = 1,520$ kg

Selected Model with E_T, E_TC & m_e : ISA 64-50

| G | Sliding down mass without propelling force

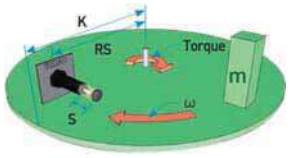
- Weight m = 800kg
- Height H = 0.7m
- Angle of incline α = 30°
- Cycles per hour C = 100Cycles/h



E_K = m X g X H = 800 X 0.7 X 9.81 = 5,494 Nm
Selected Model with E_k : ISA 85-100
F_S = m X sin(α) X g = 800 X sin(30) X 9.81 = 3,922 N
$E_W = F_S$ X S = 3,922 X 0.1 = 392 Nm
$E_T = E_K + E_W$ = 5,494 + 3 92 = 5,886 Nm
$E_TC = E_T$ X C = 5,886 X 100 = 588,600 Nm
$V = \sqrt{2 X g X H} = \sqrt{2 X 9.81 X 0.7} = 3.7$ m / s
$m_e = \frac{2 X E_T}{V^2} = \frac{2 X 5,886}{3.7^2} = 860$ Nm / h
Selected Model with E_T, E_TC & m_e : ISA 85-100

| H | Rotary table mass with propelling force

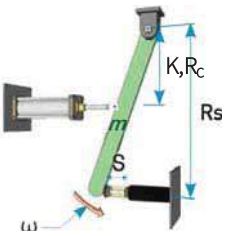
- Weight m = 200kg
- Angular Velocity ω = 2rad/s
- Mounting distance form pivot point Rs = 0.5m
- Radius of gyration K = 0.8m
- Torque T = 400Nm
- Cycles per hour C = 350Cycles/h



$I = m X K^2 = 200 X 0.8^2 = 128$ kgm²
$E_K = \frac{I X \omega^2}{2} = \frac{128 X 2^2}{2} = 256$ Nm
Selected Model with E_k : IAA 36-25
$F_P = \frac{T}{Rs} = \frac{400}{0.5} = 800$ N
$E_W = F_P$ X S = 800 X 0.05 = 20 Nm
$E_T = E_K + E_W$ = 256 + 20 = 276 Nm
$E_TC = E_T$ X C = 276 X 350 = 96,600 Nm / h
$V = R_S X \omega = 0.5 X 2 = 1$ m / s
$E_K = \frac{2 X E_T}{V^2} = \frac{2 X 276}{1^2} = 552$ kg
Selected Model with E_T, E_TC & m_e : IAA 36-25

| I | Swiveling mass with propelling force

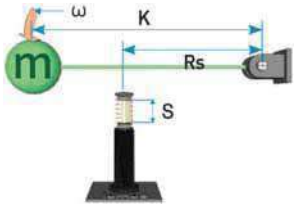
- Weight m = 50kg
- Angular Velocity ω = 2.5rad/s
- Mounting distance form pivot point Rs = 0.8m
- Radius of gyration K = 0.5m
- Inner diamerer of Cylinder D = 40mm
- Operating pressure P = 5Bar
- Cycles per hour C= 1,000Cycles/h



$I = m X K^2 = 50 X 0.5^2 = 13$ kgm²
$E_K = \frac{I X \omega^2}{2} = \frac{13 X 2.5^2}{2} = 41$Nm
Selected Model with E_k : IAA 20-15
$F_S = \frac{0.0785 X D^2 X P X R_c}{Rs} = \frac{0.0785 X 40^2 X 5 X 0.5}{0.8} = 393$ N
$E_W = F_P$ X S = 393 X 0.015 = 6 Nm
$E_T = E_K$ + Ew = 39 + 6 = 45 Nm
$E_TC = E_T$ X C = 45 X 1,000 = 45,000 Nm / h
V = Rs X ω= 2.5 X 0.8= 2 m / s
$E_K = \frac{2 X E_T}{V^2} = \frac{2 X 45}{2^2} = 23$ kg
Selected Model with E_T, E_TC & m_e : IAA 20-15

| J | Swiveling mass without propelling force

- Weight m = 200kg
- Mass velocity (from Mass Center) Vm = 2m/s
- Angular Velocity ω = 2.5rad/s
- Mounting distance form pivot point Rs = 0.6m
- Radius of gyration K = 0.8m
- Cycles per hour C= 200Cycles/h



$I = m X K^2 = 200 X 0.8^2 = 128$ kgm²
$E_K = \frac{I X \omega^2}{2} = \frac{128 X 2.5^2}{2} = 400$ Nm
Selected Model with E_k : IAA 36-50
$F_S = \frac{m X g X K}{Rs} = \frac{200 X 9.81 X 0.8}{0.6} = 2,616$ N
$E_W = F_S$ X S = 2,616 X 0.05 = 131 Nm
$E_T = E_K + E_w$ = 400 + 131 = 531 Nm
$E_TC = E_T$ X C = 531 X 200 = 106,200 Nm / h
V = Rs X ω= 0.6 X 2.5 =1.5 m / s
$m_e = \frac{2 X E_T}{V^2} = \frac{2 X 531}{1.5^2} = 472$ kg
Selected Model with E_T, E_TC & m_e : IAA 36-50

IAA Series Dial type

IZMAC mini Absorber Adustable type

DESCRIPTION

IAA has dial which can set 12 steps of shock speed ranges and it is uparaded on wider damping ranges. Energy capacity was Improved over 200% and effective weight ranges become wider than before.

IAA series

FEATURES

1 All threaded body outside helps to install shock absorber and it can be fixed at the exact position. And it helps also to dissipate more shock energy by increased surface dimension.
2 Body surface treated as alloyed black colored steel or Zn-Ni and it develops anti corrosion features highly.
3 Stop collar is not necessary when shock absorber has steel head, and poly pad & urethane cap will help to decrease collision noises efficiently.
4 Rod cover is made of long lasting materials with function of seal protection and that enable to guarantee long life.
5 Speed ranges : 0.3 ~ 5m/s • Low Velocity (LV) : 0.08 ~ 1.3m/s
6 Temperature ranges : -10 ~ 80°C • Special : -40 ~ 120°C(Oil and Seal)

APPLICATIONS

Pick N place robot, machining tools, automobile assembly line, tire assembly line, crane, safety devices and all other industrial ranges of multi purposes.

IAA SERIES ORDERING INFORMATION

IAA - 25 - 25 - SC

- SC : Stop Collar
- LN : Lock Nut
- SLA : Side Load Adaptor
- CM : Clamp Mount

Stroke

Body Thread Size

I : Izmac
A : Absorber
A : Adustable type

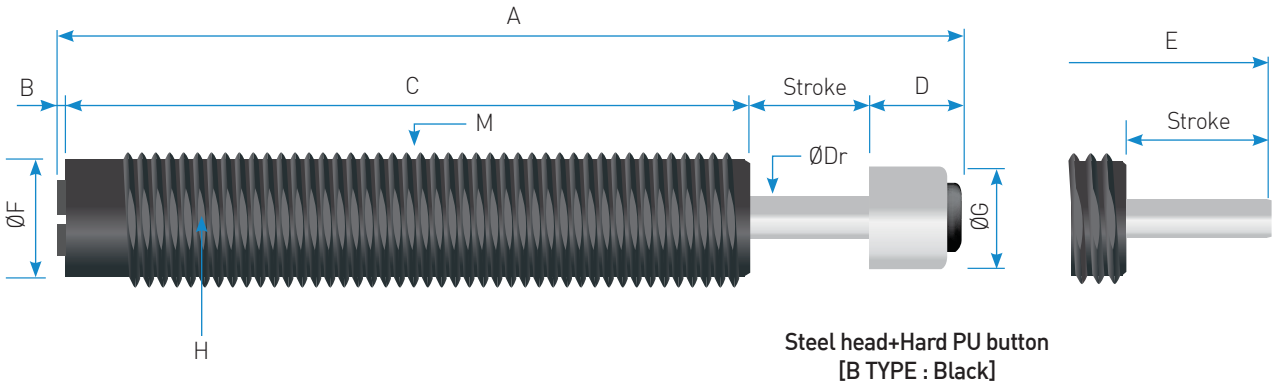
IAA10-07(B) / 12-10(B)

Engineering Data

Model	Stroke (mm)	Max.Energy / Cycle(Nm) E_T	Max.Energy / Hour(Nm/h) E_TC	Effective Weight(kg) m_e	Recoil Forec(N)		Weight(g)
					Ext.	Comp.	
IAA10 - 07(B)	7	5.5	15,000	1 - 123	2.4	5.4	21
IAA12 - 10(B)	10	16	30,500	1.5 - 333	3.6	9.8	41

Dimensions

Model	Stroke	A	B	C	D	E	F	G	H	M	Dr
IAA10 - 07(B)	7	68	1.2	52.8	7	61	Ø8.6	Ø8.6	SW:8.8	M10X1.0	Ø3
IAA12 - 10(B)	10	84	1.2	62.8	10	74	Ø10.5	Ø10.5	-	M12X1.0	Ø4



Steel head+Hard PU button
[B TYPE : Black]

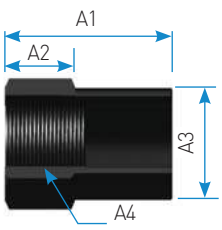
Accessories

- Two Lock Nuts included for each absorber
- Other accessories to be ordered separately

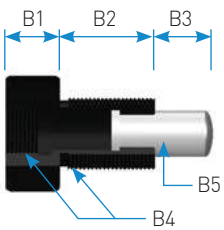
(unit : mm)

Stop Collar	Side Load Adapter	Clamp Mount	Lock Nut	A1	A2	A3	A4	B1	B2	B3	B4	B5	C1	C2	C3	C4	C5	C6	D1	D2	D3
SC10X1.0	SLA10-07	CM10X1.0	LN10X1.0	20	8	Ø12.8	M10 X 1.0	12	12.5	7	M10 X 1.0	Ø4	16	14	25	10	M10 X 1.0	M4	13	M10 X 1.0	4
SC12X1.0	SLA12-10	CM12X1.0	LN12X1.0			Ø13.8	M12 X 1.0		17.5	10	M12 X 1.0	Ø5	20	16	32	12	M12 X 1.0	M5 X 18L	14	M12 X 1.0	

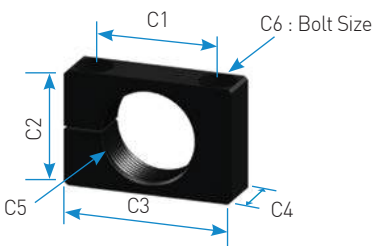
Stop Collar



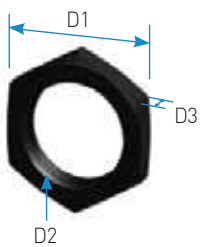
Side Load Adapter



Clamp Mount



Lock Nut



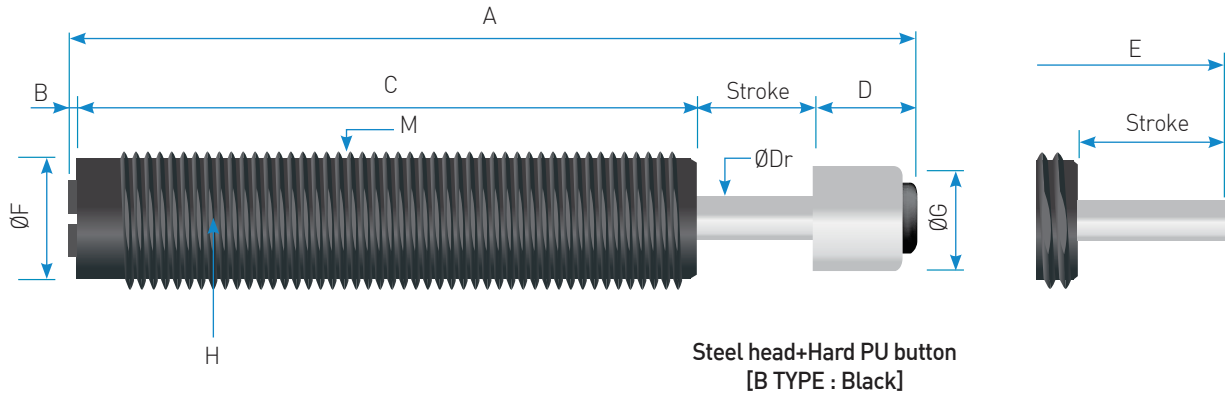
IAA14 - 12(B) / 16 - 12(B)

Engineering Data

Model	Stroke (mm)	Max.Energy / Cycle(Nm) E_T	Max.Energy / Hour(Nm/h) E_TC	Effective Weight(kg) m_e	Recoil Forec(N)		Weight(g)
					Ext.	Comp.	
IAA14 - 12(B)	12	18	38,000	1.8 - 400	4.9	11.4	60
IAA16 - 12(B)	12	24	47,200	2-530	5	11.5	84

Dimensions

Model	Stroke	A	B	C	D	E	F	G	H	M	Dr
IAA14 - 12(B)	12	96	1.2	72.8	10	86	Ø12	Ø10.5	SW:12.5	M14X1.5	Ø4
IAA16 - 12(B)	12	97	1.2	71.3	12.5	84.5	Ø10.5	Ø13.6	SW:14.5	M16X1.5	Ø5



Steel head+Hard PU button
[B TYPE : Black]

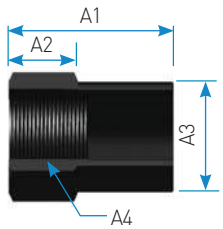
Accessories

- Two Lock Nuts included for each absorber
- Other accessories to be ordered separately

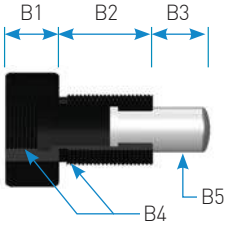
(unit : mm)

Stop Collar	Side Load Adapter	Clamp Mount	Lock Nut	A1	A2	A3	A4	B1	B2	B3	B4	B5	C1	C2	C3	C4	C5	C6	D1	D2	D3
SC14X1.5	SLA14-12	CM14X1.5	LN14X1.5	27	12	Ø18	M14 X 1.5	14	19.5	12	M14 X 1.5	Ø6	20	20	32	12	M14 X 1.5	M5 X25L	19	M14 X 1.5	5
SC16X1.5	SLA16-12	CM16X1.5	LN16X1.5			Ø19	M16 X 1.5	19	22.8		M16 X 1.5	Ø8	24	22	36	16	M16 X 1.5	M6 X25L		M16 X 1.5	6

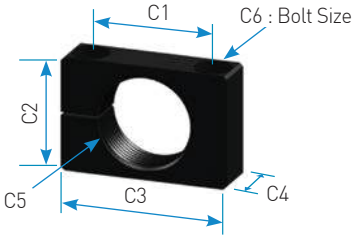
Stop Collar



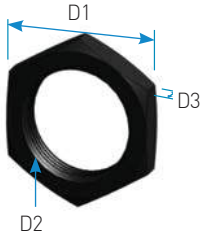
Side Load Adapter



Clamp Mount



Lock Nut



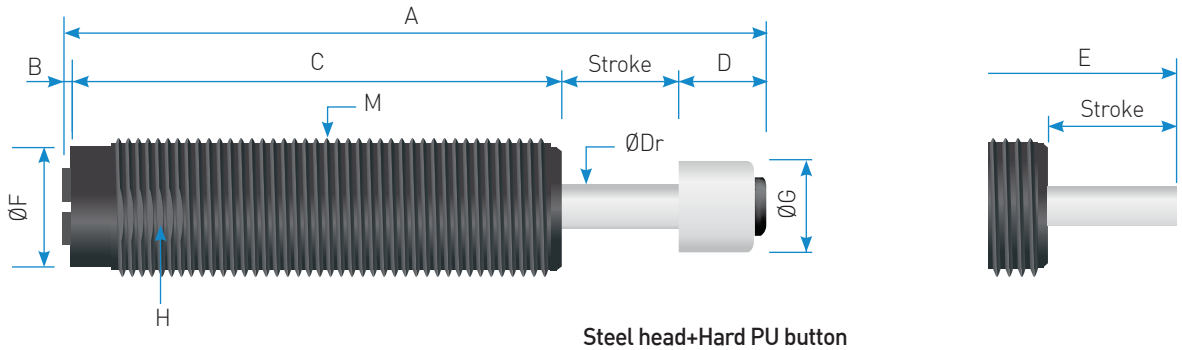
IAA20 - 15(B) / 25 - 25(B)

Engineering Data

Model	Stroke (mm)	Max.Energy / Cycle(Nm) E_T	Max.Energy / Hour(Nm/h) E_TC	Effective Weight(kg) m_e	Recoil Forec(N)		Weight(g)
					Ext.	Comp.	
IAA20 - 15(B)	15	56	58,000	4.5-1,240	8	19,6	139
IAA25 - 25(B)	25	150	96,000	11.5-3,330	10.2	29.5	285

Dimensions

Model	Stroke	A	B	C	D	E	F	G	H	M	Dr
IAA20 - 15(B)	15	109	1.5	79	13.5	95.5	Ø17.6	Ø13.5	SW:18.5	M20X1.5	Ø6
IAA25 - 25(B)	25	144	1.5	101	16.5	127.5	Ø22.6	Ø16	SW:23	M25X1.5	Ø8



Steel head+Hard PU button
[B TYPE : Black]

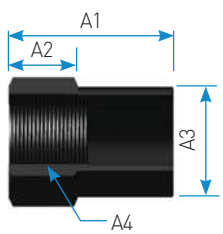
Accessories

- Two Lock Nuts included for each absorber
- Other accessories to be ordered separately

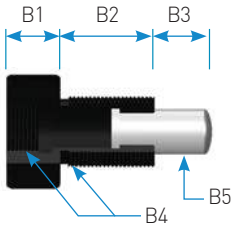
(unit : mm)

Stop Collar	Side Load Adapter	Clamp Mount	Lock Nut	A1	A2	A3	A4	B1	B2	B3	B4	B5	C1	C2	C3	C4	C5	C6	D1	D2	D3
SC20X1.5	SLA20-15	CM20X1.5	LN20X1.5	36	15	Ø24	M20 X 1.5	20	34	15	M20 X 1.5	Ø12	28	25	40	20	M20 X 1.5	M6 X30L	24	M20 X 1.5	6
SC25X1.5	SLA25-25	CM25X1.5	LN25X1.5	42	18	Ø31.5	M25 X 1.5		42	25	M25 X 1.5	Ø16	32	32	46	25	M25 X 1.5	M6 X35L	32	M25 X 1.5	8

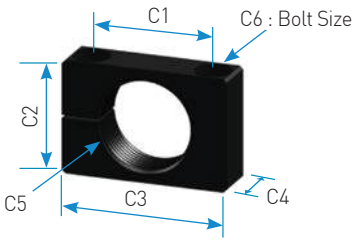
Stop Collar



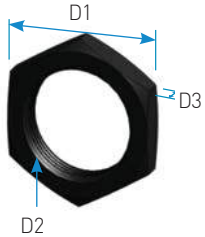
Side Load Adapter



Clamp Mount



Lock Nut



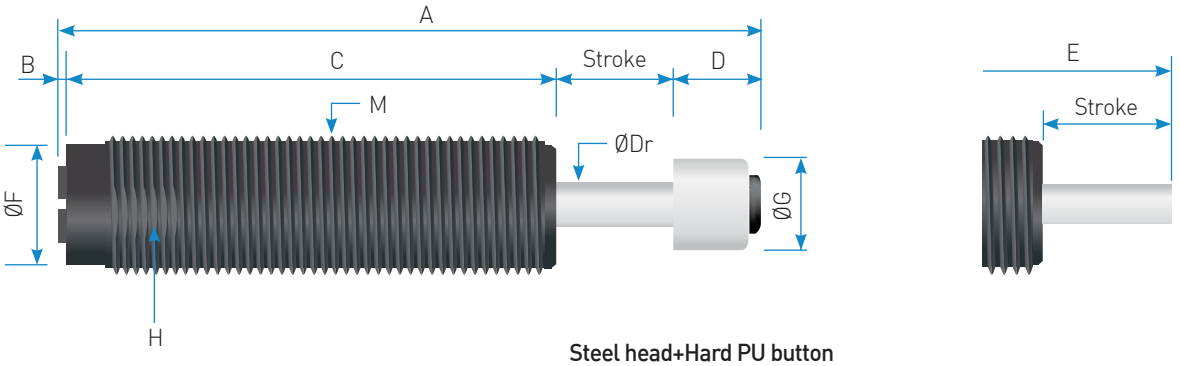
IAA27 - 25(B) / 27 - 25F(B)

Engineering Data

Model	Stroke (mm)	Max.Energy / Cycle(Nm) E_T	Max.Energy / Hour(Nm/h) E_TC	Effective Weight(kg) m_e	Recoil Forec(N)		Weight(g)
					Ext.	Comp.	
IAA27 - 25(B)	25	150	96,000	11.5-3,330	10.2	29.5	303
- 25F(B)							325

Dimensions

Model	Stroke	A	B	C	D	E	F	G	H	M	Dr
IAA27 - 25(B)	25	144	1.5	101	16.5	127.5	Ø22.6	Ø16	SW:25(23)	M27X3.0	Ø8
- 25F(B)									SW:25	M27X1.5	



Steel head+Hard PU button
[B TYPE : Black]

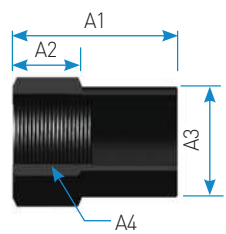
Accessories

- Two Lock Nuts included for each absorber
- Other accessories to be ordered separately

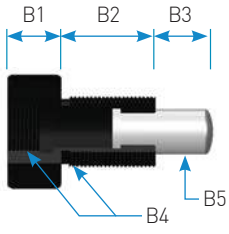
(unit : mm)

Stop Collar	Side Load Adapter	Clamp Mount	Lock Nut	A1	A2	A3	A4	B1	B2	B3	B4	B5	C1	C2	C3	C4	C5	C6	D1	D2	D3
SC27X3.0	SLA27-25	CM27X3.0	LN27X3.0	42	18	Ø31.5	M27 X 3.0	20	42	25	M27 X 3.0	Ø16	35	32	48	25	M27 X 3.0	M6 X35L	32	M27 X 3.0	8
SC27X1.5	SLA27-25F	CM27X1.5	LN27X1.5				M27 X 1.5				M27 X 1.5						M27 X 1.5			M27 X 1.5	

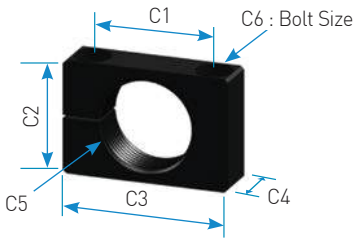
Stop Collar



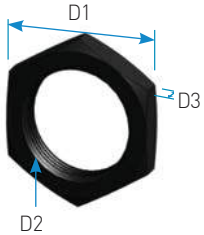
Side Load Adapter



Clamp Mount



Lock Nut



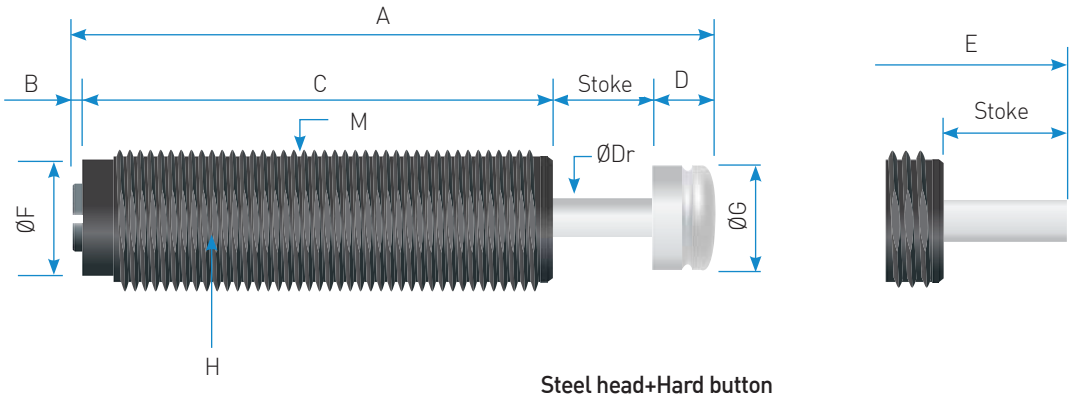
IAA36 - 25(B) / 36 -50(B)

Engineering Data

Model	Stroke (mm)	Max.Energy / Cycle(Nm) E_T	Max.Energy / Hour(Nm/h) E_TC	Effective Weight(kg) m_e	Recoil Forec(N)		Weight(g)
					Ext.	Comp.	
IAA36 - 25(B)	25	300	108,000	24 - 6,667	25	56.2	700
- 50(B)	50	615	142,000	49 - 13,667	22.5	60	811

Dimensions

Model	Stroke	A	B	C	D	E	F	G	H	M	Dr
IAA36 - 25(B)	25	158.5	2	116	15.5	143	Ø31	Ø 28	SW:34	M36 X 1.5	Ø10
- 50(B)	50	218	2	150.5	15.5	202.5	Ø31	Ø 28	SW:34	M36 X 1.5	Ø10



Steel head+Hard button

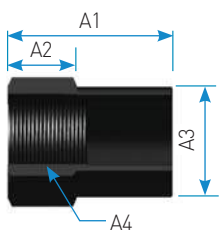
Accessories

- Two Lock Nuts included for each absorber
- Other accessories to be ordered separately

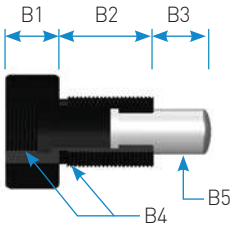
(unit : mm)

Stop Collar	Side Load Adapter	Clamp Mount	Lock Nut	A1	A2	A3	A4	B1	B2	B3	B4	B5	C1	C2	C3	C4	C5	C6	D1	D2	D3
SC36X1.5	SLA36-25	CM36X1.5	LN36X1.5	62	26	Ø45	M36 X 1.5	22	47	25	M36 X 1.5	20	45	42	61	25	M36 X 1.5	M6 X45L	46	M36 X 1.5	10
SC36X1.5	SLA36-50	CM36X1.5	LN36X1.5					22	78	50		20									

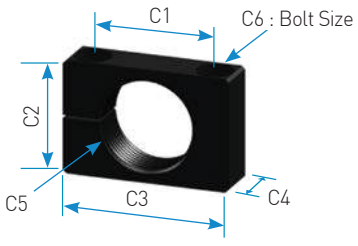
Stop Collar



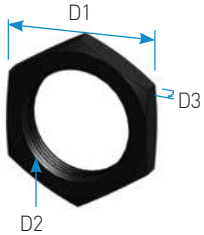
Side Load Adapter



Clamp Mount



Lock Nut



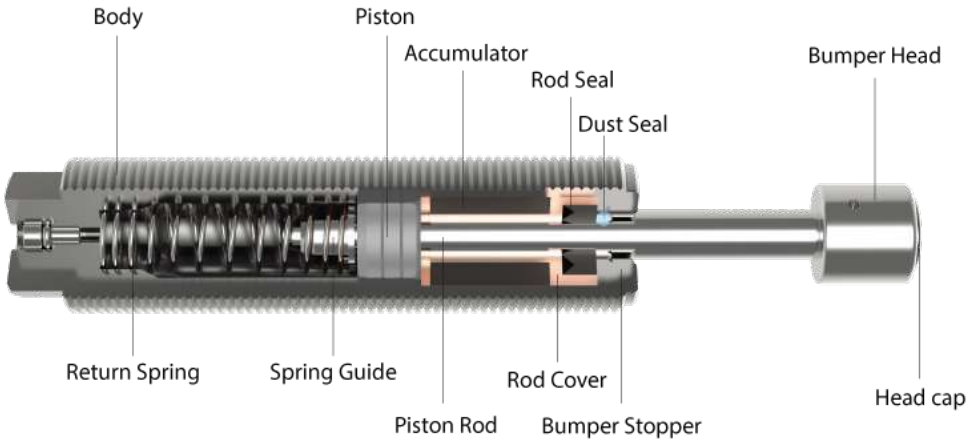
IMS Series Self Compensating type

IZMAC Mini absorber Self-compansating type

DESCRIPTION

IMS is self compensating type and it controls the damping power itself against damping speed. Energy capacity was Improved over 200% and effective weight ranges become wider than before.

IMS series



FEATURES

1 All threaded body outside helps to install shock absorber and it can be fixed at the exact position. And it helps also to dissipate more shock energy by increased surface dimension.

2 Body surface treated as alloyed black colored steel or Zn-Ni and it develops anti corrosion features highly.

3 Stop collar is not necessary when shock absorber has steel head, and poly pad & urethane cap will help to decrease collision noises efficiently.

4 Rod cover is made of long lasting materials with function of seal protection and that enable to guarantee long life.

5 Speed ranges : 0.3 ~ 5m/s

6 Temperature ranges : -10 ~ 80°C • Special : -40 ~ 120°C(Oil and Seal)

APPLICATIONS

Pick N place robotic line, machining tools, automobile assembly line, tire assembly line, crane, safety devices and all other industrial ranges of multi purposes.

IMS SERIES ORDERING INFORMATION

IMS	-	25	-	25	-	SC

- SC : Stop Collar
- LN : Lock Nut
- CM : Clamp Mount

Stroke

Body Thread Size

I : Izmac
M : Mini & Middle absorber
S : Self-compensating type

IMS04 - 04(B) / 05 - 05(B) / 06 - 05(B)

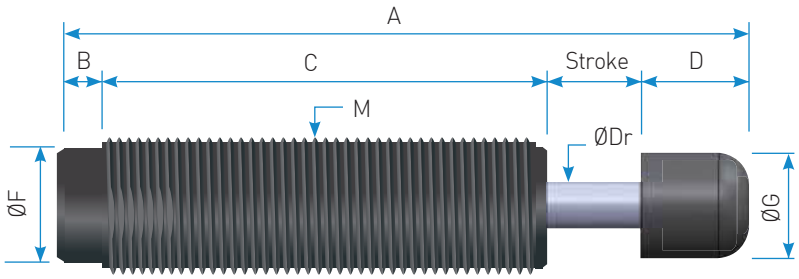
Engineering Data

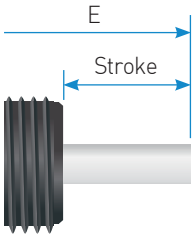
Model	Stroke (mm)	Max.Energy / Cycle(Nm) E_T	Max.Energy / Hour(Nm/h) E_TC	Effective Weight(kg) m_e			Recoil Force(N)		Weight(g)
				1	2	3	Ext.	Comp.	
IMS04 - 04(B)	4	0.4	1,500	0.1 - 1.0	0.9 - 3.2		2	7	2.5
IMS05 - 05(B)	5	0.6	1,800	0.1 - 1.2	1.0 - 5.0		2	7	2.5
IMS06 - 05(B)	5	1	2,500	0.05 - 1	0.8 - 2.8	1.5 - 4	2	5	4.0

Dimensions

(unit : mm)

Model	Stroke	A	B	C	D	E	F	G	M	Dr
IMS04 - 04(B)	4	34.5	2.4	24	4	30.5	3.4	Ø3	M4 X 0.5	Ø1.2
IMS05 - 05(B)	5	35	3.5	22.5	4	31	4.4	Ø3	M5 X 0.5	Ø1.5
IMS06 - 05(B)	5	38.5	3.5	25	5	33.5	5.3	Ø5	M6 X 0.5	Ø1.5





MC Nylon head

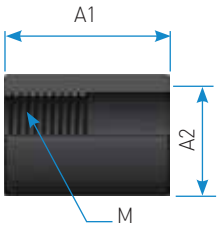
Accessories

- Two Lock Nuts included for each absorber
- Other accessories to be ordered separately

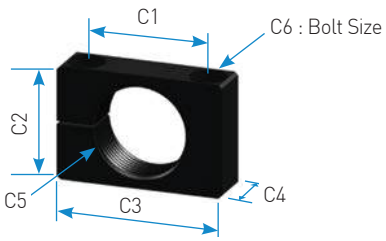
(unit : mm)

Stop Collar	Clamp Mount	Lock Nut	A1	A2	A3	C1	C2	C3	C4	C5	C6	D1	D2	D3
		LN04X0.5			M4 X 0.5							8	M4 X 0.5	5
SC05X0.5	CM05X0.5	LN05X0.5	10	7	M5 X 0.5	12	10	20	8	M5 X 0.5	M3	8	M5 X 0.5	5
SC06X0.5	CM06X0.5	LN06X0.5	12	8	M6 X 0.5					M6 X 0.5			M6 X 0.5	

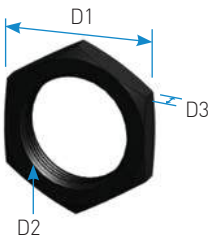
Stop Collar



Clamp Mount



Lock Nut



IMS08 - 06(B) / 10 - 08(B)

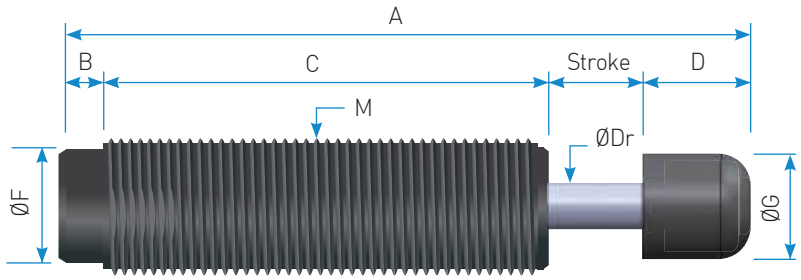
Engineering Data

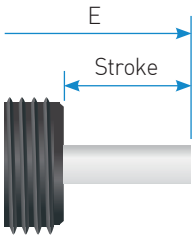
Model	Stroke (mm)	Max.Energy / Cycle(Nm) E_T	Max.Energy / Hour(Nm/h) E_TC	Effective Weight(Kg) m_e			Recoil Force(N)		Weight(g)
				1	2	3	Ext.	Comp.	
IMS08 - 06(B)	6	5	8,000	0.8 - 2.8	2.5 - 12.6	10 - 111	2.2	5.8	10
IMS10 - 08(B)	8	11	14,500	1.8 - 6.1	5.5 - 27	22 - 244	2.5	6.9	15.5

Dimensions

(unit : mm)

Model	Stroke	A	B	C	D	E	F	G	M	Dr
IMS08 - 06(B)	6	54	7.5	35	7	47	Ø6.8	Ø 6.8	M8 X 1.0	Ø2
IMS10 - 08(B)	8	64.5	7.5	42	7	57.5	Ø7	Ø 8	M10 X 1.0	Ø3





MC Nylon head

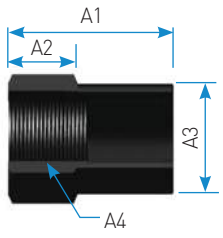
Accessories

- Two Lock Nuts included for each absorber
- Other accessories to be ordered separately

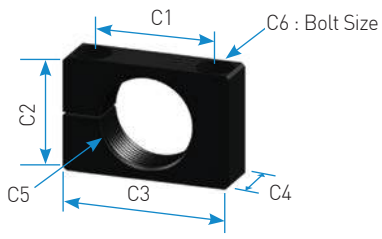
(unit : mm)

Stop Collar	Clamp Mount	Lock Nut	A1	A2	A3	A4	C1	C2	C3	C4	C5	C6	D1	D2	D3
SC08X1.0	CM08X1.0	LN08X1.0	20	8	Ø11.5	M8X1.0	16	14	25	10	M8X1.0	M4 X 16L	12	M8X1.0	3
SC10X1.0	CM10X1.0	LN10X1.0			Ø12.8	M10 X 1.0					M10 X 1.0		13	M10 X 1.0	4

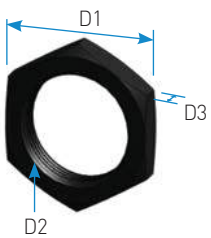
Stop Collar



Clamp Mount



Lock Nut



IMS12-10(B) / 14-15(B) / 14-15F(B)

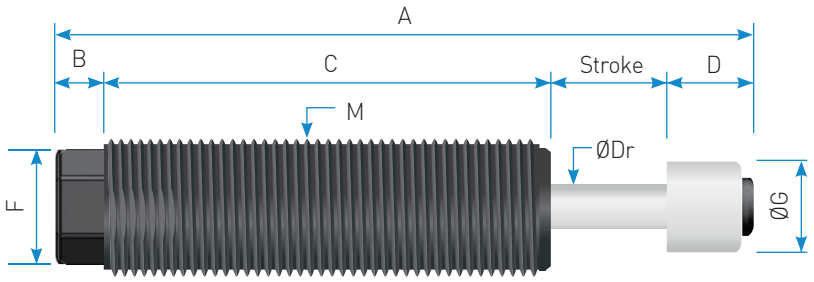
Engineering Data

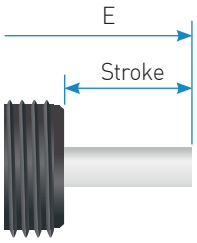
Model	Stroke (mm)	Max.Energy / Cycle(Nm) E_T	Max.Energy / Hour(Nm/h) E_TC	Effective Weight(Kg) m_e			Recoil Force(N)		Weight(g)
				1	2	3	Ext.	Comp.	
IMS12 - 10(B)	10	16	30,000	13~8	6.6~22	16~200	3.8	9.8	39
IMS14 - 15(B)	15	30	51,000	3.8~15	12~42	31~1500	3.8	13	61
- 15F(B)	15	30	51,000	3.8~15	12~42	31~1500	3.8	13	64

Dimensions

(unit : mm)

Model	Stroke	A	B	C	D	E	F	G	M	Dr
IMS12 - 10(B)	10	79	6.5	52.5	10	69	SW:10.8	Ø10.5	M12 X 1.0	Ø4
IMS14 - 15(B)	15	100.5	6.5	69	10	90.5	SW:11.8	Ø10.5	M14 X 1.5	Ø4
- 15F(B)	15	100.5	6.5	69	10	90.5	SW:11.8	Ø10.5	M14 X 1.0	Ø4





Steel head+Hard PU button
[B TYPE : Black]

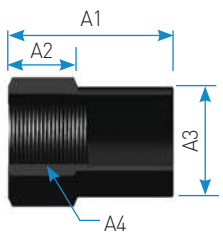
Accessories

- Two Lock Nuts included for each absorber
- Other accessories to be ordered separately

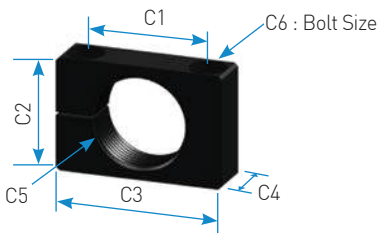
(unit : mm)

Stop Collar	Clamp Mount	Lock Nut	A1	A2	A3	A4	C1	C2	C3	C4	C5	C6	D1	D2	D3
SC12X1.0	CM12X1.0	LN12X1.0	20	8	Ø13.8	M12 X 1.0	20	16	32	12	M12 X 1.0	M5 X 18L	14	M12 X 1.0	4
SC14X1.5	CM14X1.5	LN14X1.5	27	12	Ø18	M14 X 1.5	20	20	32	12	M14 X 1.5	M5 X 25L	19	M14 X 1.5	5
SC14X1.0	CM14X1.0	LN14X1.0				M14 X 1.0					M14 X 1.0			M14 X 1.0	

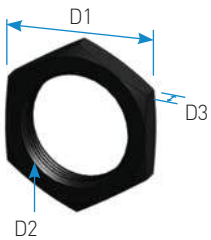
Stop Collar



Clamp Mount



Lock Nut



IMS20 - 20(B) / 25 - 25(B) / 25 - 25F(B)

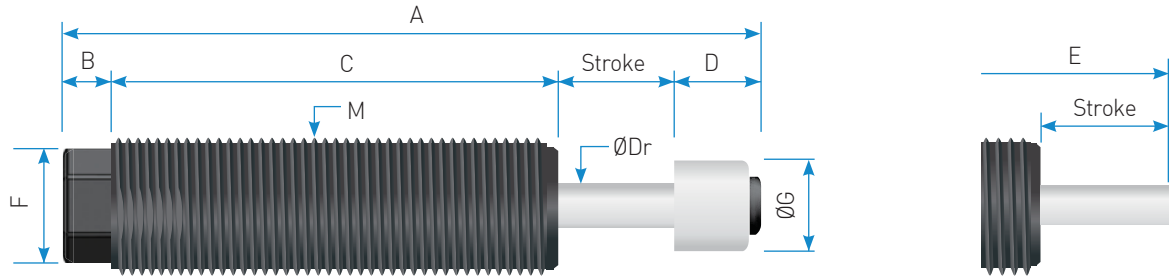
Engineering Data

Model	Stroke (mm)	Max.Energy / Cycle(Nm) E_T	Max.Energy / Hour(Nm/h) E_TC	Effective Weight(Kg) m_e			Recoil Force(N)		Weight(g)
				1	2	3	Ext.	Comp.	
IMS20 - 20(B)	20	96	55,000	9~59	48~192	133~4,800	8.1	23	138
IMS25 - 25(B)	25	205	69,000	33~209	103~1,139	641~10,250	11	29	262
- 25F(B)	25	205	69,000	33~209	103~1,139	641~10,250	11	29	271

Dimensions

(unit : mm)

Model	Stroke	A	B	C	D	E	F	G	M	Dr
IMS20 - 20(B)	20	118.5	8	77	13.5	105	SW : 15	Ø 13.5	M20 X 1.5	Ø6
IMS25 - 25(B)	25	141.5	9	91	16.5	125	SW : 19	Ø 16	M25 X 2.0	Ø8
- 25F(B)	25	141.5	9	91	16.5	125	SW : 19	Ø 16	M25 X 1.5	Ø8



Steel head+Hard PU button
[B TYPE : Black]

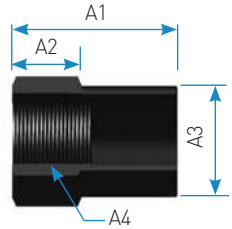
Accessories

- Two Lock Nuts included for each absorber
- Other accessories to be ordered separately

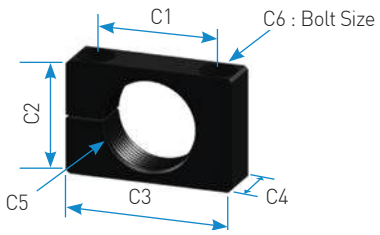
(unit : mm)

Stop Collar	Clamp Mount	Lock Nut	A1	A2	A3	A4	C1	C2	C3	C4	C5	C6	D1	D2	D3
SC20X1.5	CM20X1.5	LN20X1.5	36	15	Ø24	M20 X 1.5	28	25	40	20	M20 X 1.5	M6 X 30L	24	M20 X 1.5	6
SC25X2.0	CM25X2.0	LN25X2.0	42	18	Ø31.5	M25 X 2.0	32	32	46	25	M25 X 2.0	M6 X 35L	32	M25 X 2.0	8
SC25X1.5	CM25X1.5	LN25X1.5				M25 X 1.5					M25 X 1.5			M25 X 1.5	

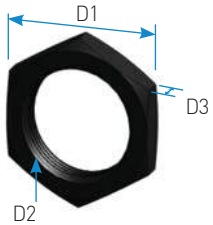
Stop Collar



Clamp Mount



Lock Nut



IMS36 - 25(B) / 36 - 50(B)

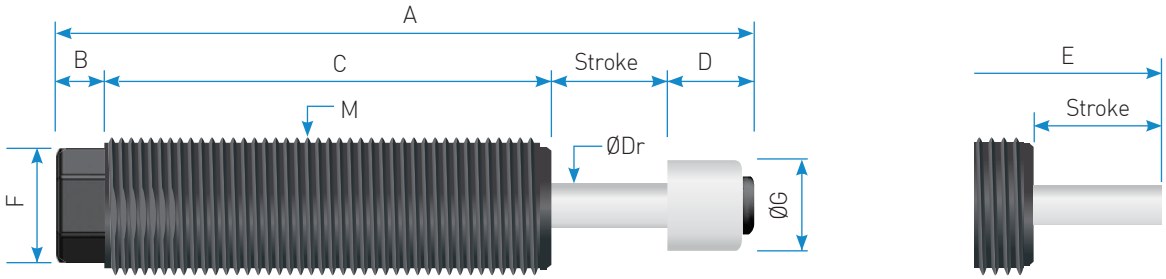
Engineering Data

Model	Stroke (mm)	Max.Energy / Cycle(Nm) E_T	Max.Energy / Hour(Nm/h) E_TC	Effective Weight(Kg) m_e			Recoil Force(N)		Weight(g)
				1	2	3	Ext.	Comp.	
IMS36 - 25(B)	25	490	115,000	61-185	170-500	435-10,888	25	64.3	758
- 50(B)	50	220	162,000	35-121	110-543	440-4,888	24.4	44.6	994

Dimensions

(unit : mm)

Model	Stroke	A	B	C	D	E	F	G	M	Dr
IMS36 - 25(B)	25	164	14	101	24	140	SW : 30	Ø28	M36 X 1.5	Ø10
- 50(B)	50	221	11	136	24	197	SW : 30	Ø28	M36 X 1.5	Ø10



Steel head+Hard PU button
[B TYPE : Black]

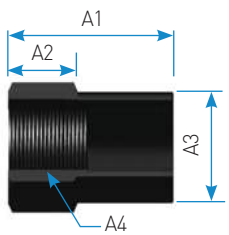
Accessories

- Two Lock Nuts included for each absorber
- Other accessories to be ordered separately

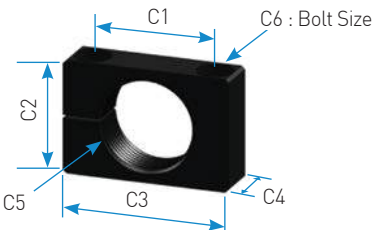
(unit : mm)

Stop Collar	Clamp Mount	Lock Nut	A1	A2	A3	A4	C1	C2	C3	C4	C5	C6	D1	D2	D3
SC36X1.5	CM36X1.5	LN36X1.5	62	26	Ø45	M36 X 1.5	45	42	61	25	M36 X 1.5	M6	46	M36 X 1.5	10
SC36X1.5	CM36X1.5	LN36X1.5													

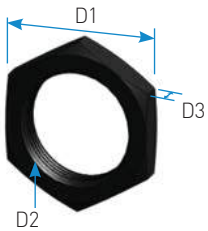
Stop Collar



Clamp Mount



Lock Nut



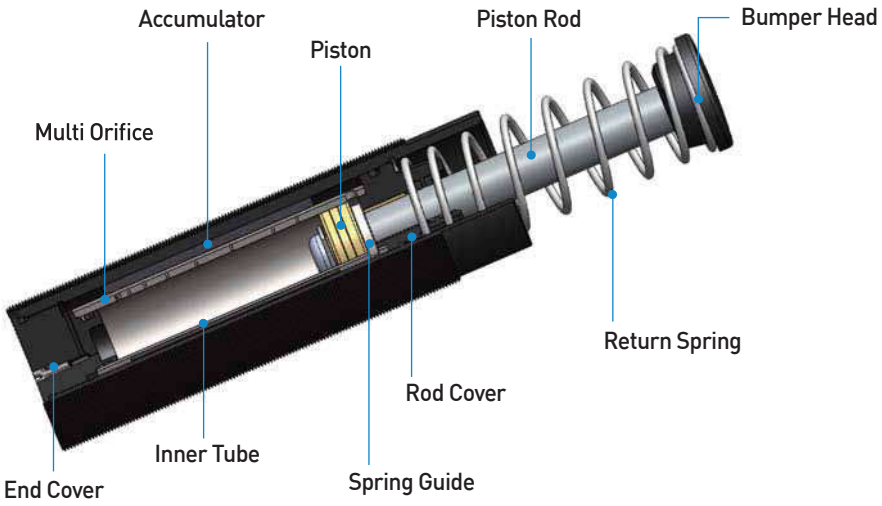
IMS Series Large bore Self compensating type

NEW

IZMAC Mini absorber Self-compansating type

DESCRIPTION

IMS is middle class shock absorber. Operation : when the collision comes pistion compress oil chamber in inner tube according to the piston rod moving. Oil flows to accumulator position through outskirt line of tube. In this process, deceleration power comes by flow resistence. And kinetic energy is dissipated in the air by changed as heat energy. Recoil spring returns piston rod into its original position when the load is disappeared.



FEATURES

1 Compact design and possible to absorb wide range of high shock energy.
2 The effective weight range is significantly expanded, resulting in a wide range of energy absorption capabilities.
3 Easy fastening and smooth heat dissipation due to the screw-type body.
4 Body surface strongly treated to prevent corrosion by nickel plating or alloy plating. (Black)
5 Body and mount : Black or Ni plating
6 Piston rod : Hard chrome (25μ or more)
7 Speed range : 0.15 ~ 5 m/s
8 Temperature range : -10 ~ 80°C • Special : -40 ~ 120°C(Oil and Seal)

IMS SERIES ORDERING INFORMATION

IMS - 45 - 25 - LC

- IMS
  - I : Izmac
  - M : Mini & Middle absorber
  - S : Self-compensating type
- 45 — Body Thread Size
- 25 — Stroke
- LC
  - LC : Lock Collar
  - SF : Square Flange
  - CM : Clamp Mount

IMS33 Series

Engineering Data

Model	Stroke (mm)	Max.Energy / Cycle(Nm) E_T	Max.Energy / Hour(Nm/h) E_TC	Effective Weight(kg) m_e	Recoil Forec(N)		Weight(kg)
					Ext.	Comp.	
IMS33-25-1	25	300	120,000	7-32	45	90	0.53
IMS33-25-2	25	300	120,000	28-130	45	90	0.53
IMS33-25-3	25	300	120,000	80-590	45	90	0.53
IMS33-25-4	25	300	120,000	440-2,050	45	90	0.53
IMS33-25-5	25	300	120,000	2,000-12,500	45	90	0.53
IMS33-50-1	50	500	150,000	13-60	45	135	0.64
IMS33-50-2	50	500	150,000	56-240	45	135	0.64
IMS33-50-3	50	500	150,000	160-1,200	45	135	0.64
IMS33-50-4	50	500	150,000	1,000-4,200	45	135	0.64
IMS33-50-5	50	500	150,000	4,000-25,000	45	135	0.64

Dimensions

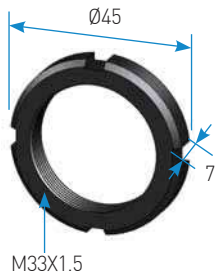
Model	Stroke	A	B	C	D	M
IMS33-25	25	138	Ø31	Ø25	95	M33*1.5P
IMS33-50	50	189	Ø31	Ø25	121	M33*1.5P

Accessories

• Other accessories to be ordered separately

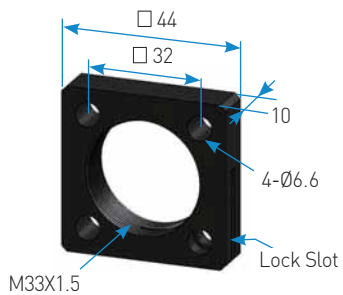
(unit : mm)

Lock Collar



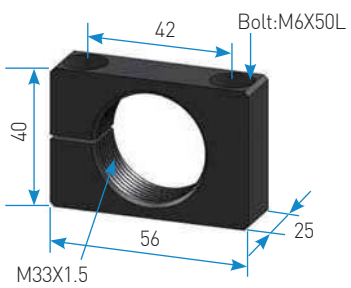
LC 33

Square Flange



SF 33

Clamp Mount

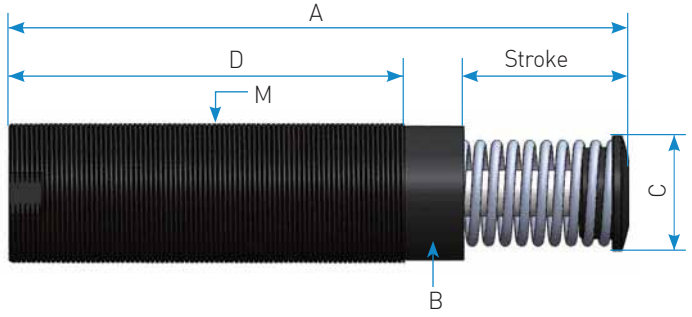


CM 33

IMS45 Series

Engineering Data

Model	Stroke (mm)	Max.Energy / Cycle(Nm) E_T	Max.Energy / Hour(Nm/h) E_TC	Effective Weight(kg) m_e		Recoil Forec(N)		Weight(kg)
						Ext.	Comp.	
IMS45 - 25 - 1	25	850	255,000	24	110	75	110	1.2
- 25 - 2	25	850	255,000	100	385	75	110	1.2
- 25 - 3	25	850	255,000	350	1,700	75	110	1.2
- 25 - 4	25	850	255,000	1,400	6,800	75	110	1.2
- 25 - 5	25	850	255,000	6,000	38,500	75	110	1.2
IMS45 - 50 - 1	50	1,300	325,000	35	170	75	150	1.4
- 50 - 2	50	1,300	325,000	160	590	75	150	1.4
- 50 - 3	50	1,300	325,000	540	2,600	75	150	1.4
- 50 - 4	50	1,300	325,000	2,150	10,400	75	150	1.4
- 50 - 5	50	1,300	325,000	3,200	58,900	75	150	1.4
IMS45 - 75 - 1	75	2,100	420,000	50	270	60	185	1.6
- 75 - 2	75	2,100	420,000	250	950	60	185	1.6
- 75 - 3	75	2,100	420,000	870	4,200	60	185	1.6
- 75 - 4	75	2,100	420,000	3,500	16,800	60	185	1.6
- 75 - 5	75	2,100	420,000	14,900	95,200	60	185	1.6



Dimensions

(unit : mm)

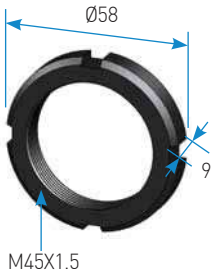
Model	Stroke	A	B	C	D	M
IMS45 - 25	25	145	Ø42	Ø35	95	M45 X 1.5P
- 50	50	195	Ø42	Ø35	120	M45 X 1.5P
- 75	75	246	Ø42	Ø35	145	M45 X 1.5P

Accessories

• Other accessories to be ordered separately

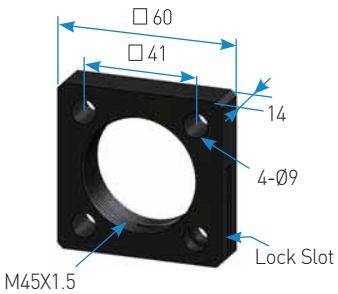
(unit : mm)

Lock Collar



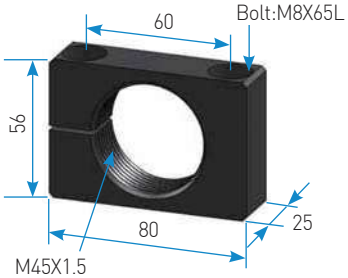
LC 45

Square Flange



SF 45

Clamp Mount



CM 45

IMS64 Series

Engineering Data

Model	Stroke (mm)	Max.Energy / Cycle(Nm) E_T	Max.Energy / Hour(Nm/h) E_TC	Effective Weight(kg) m_e		Recoil Forec(N)		Weight(kg)
						Ext.	Comp.	
IMS64 - 50 - 1	50	2,400	240,000	60	320	95	160	3
- 50 - 2	50	2,400	240,000	280	1,090	95	160	3
- 50 - 3	50	2,400	240,000	990	4,800	95	160	3
- 50 - 4	50	2,400	240,000	4,000	19,200	95	160	3
- 50 - 5	50	2,400	240,000	17,000	108,800	95	160	3
IMS64 - 100 - 1	100	5,000	350,000	140	650	110	275	3.7
- 100 - 2	100	5,000	350,000	590	2,270	110	275	3.7
- 100 - 3	100	5,000	350,000	2,050	10,000	110	275	3.7
- 100 - 4	100	5,000	350,000	8,300	40,000	110	275	3.7
- 100 - 5	100	5,000	350,000	35,600	226,700	110	275	3.7
IMS64 - 150 - 1	150	8,000	400,000	220	1,050	80	370	5
- 150 - 2	150	8,000	400,000	950	3,600	80	370	5
- 150 - 3	150	8,000	400,000	3,300	16,000	80	370	5
- 150 - 4	150	8,000	400,000	13,200	64,000	80	370	5
- 150 - 5	150	8,000	400,000	16,000	362,000	80	370	5

Dimensions

(unit : mm)

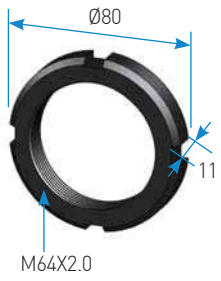
Model	Stroke	A	B	C	D	M
IMS64 - 50	50	225	60	48	140	M64 X 2.0P
- 100	100	326	60	48	191	M64 X 2.0P
- 150	150	450	60	48	241	M64 X 2.0P

Accessories

• Other accessories to be ordered separately

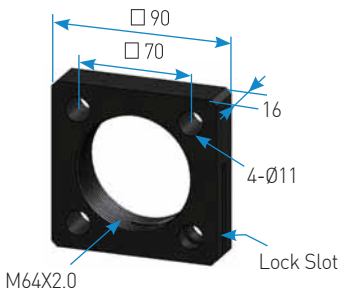
(unit : mm)

Lock Collar



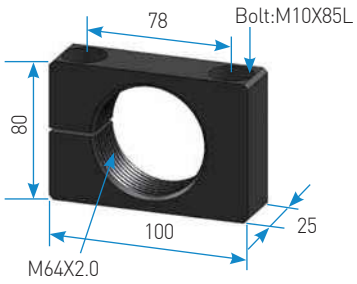
LC 64

Square Flange



SF 64

Clamp Mount

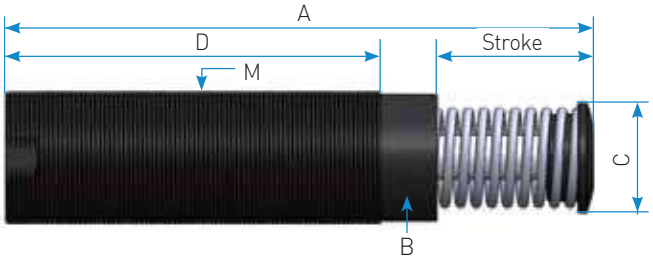


CM 64

IMS85 Series

Engineering Data

Model	Stroke (mm)	Max.Energy / Cycle(Nm) E_T	Max.Energy / Hour(Nm/h) E_TC	Effective Weight(kg) m_e		Recoil Forec(N)		Weight(kg)
						Ext.	Comp.	
IMS85 - 50 - 1	50	4,000	1,200,000	110	520	140	330	7
- 50 - 2	50	4,000	1,200,000	470	1,800	140	330	7
- 50 - 3	50	4,000	1,200,000	1,600	8,000	140	330	7
- 50 - 4	50	4,000	1,200,000	6,600	32,000	140	330	7
- 50 - 5	50	4,000	1,200,000	28,400	181,000	140	330	7
IMS85 - 100 - 1	100	8,500	1,700,000	230	1,100	120	420	9
- 100 - 2	100	8,500	1,700,000	1,000	3,800	120	420	9
- 100 - 3	100	8,500	1,700,000	3,500	17,000	120	420	9
- 100 - 4	100	8,500	1,700,000	14,100	68,000	120	420	9
- 100 - 5	100	8,500	1,700,000	60,500	385,000	120	420	9
IMS85 - 150 - 1	150	13,500	2,025,000	370	1,800	110	430	12
- 150 - 2	150	13,500	2,025,000	1,600	6,100	110	430	12
- 150 - 3	150	13,500	2,025,000	5,600	27,000	110	430	12
- 150 - 4	150	13,500	2,025,000	22,300	108,000	110	430	12
- 150 - 5	150	13,500	2,025,000	96,100	612,000	110	430	12
IMS85 - 200 - 1	200	19,000	2,660,000	530	2,500	100	430	15
- 200 - 2	200	19,000	2,660,000	2,200	8,600	100	430	15
- 200 - 3	200	19,000	2,660,000	7,800	38,000	100	430	15
- 200 - 4	200	19,000	2,660,000	31,400	152,000	100	430	15
- 200 - 5	200	19,000	2,660,000	135,000	861,000	100	430	15
IMS85 - 250 - 1	250	23,500	2,820,000	650	3,100	95	430	20
- 250 - 2	250	23,500	2,820,000	2,800	10,700	95	430	20
- 250 - 3	250	23,500	2,820,000	9,700	47,000	95	430	20
- 250 - 4	250	23,500	2,820,000	38,800	188,000	95	430	20
- 250 - 5	250	23,500	2,820,000	167,000	1,065,000	95	430	20



Dimensions

(unit : mm)

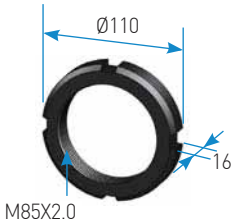
Model	Stroke	A	B	C	D	M
IMS85 - 50	50	258	81	68	165	M85 X 2.0P
- 100	100	360	81	68	218	M85 X 2.0P
- 150	150	485	81	68	285	M85 X 2.0P
- 200	200	590	81	68	330	M85 X 2.0P
- 250	250	700	81	68	390	M85 X 2.0P

Accessories

• Other accessories to be ordered separately

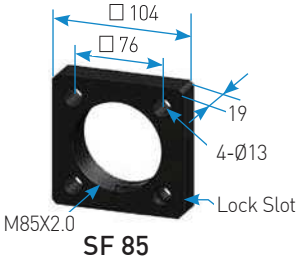
(unit : mm)

Lock Collar



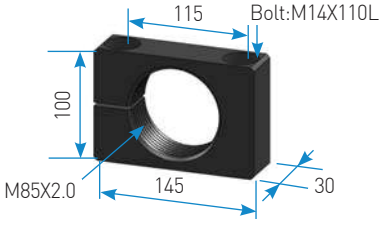
LC 85

Square Flange



SF 85

Clamp Mount

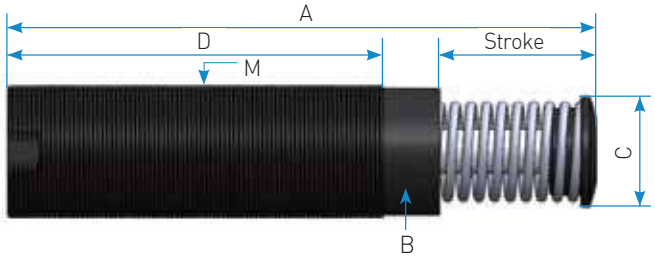


CM 85

IMS115 Series

Engineering Data

Model	Stroke (mm)	Max.Energy / Cycle(Nm) E_T	Max.Energy / Hour(Nm/h) E_TC	Effective Weight(kg) m_e		Recoil Forec(N)		Weight(kg)
						Ext.	Comp.	
IMS115 - 50 - 1	50	11,000	3,300,000	300	1,400	220	480	12
- 50 - 2	50	11,000	3,300,000	1,300	5,000	220	480	12
- 50 - 3	50	11,000	3,300,000	4,500	22,000	220	480	12
- 50 - 4	50	11,000	3,300,000	18,100	88,000	220	480	12
- 50 - 5	50	11,000	3,300,000	78,300	498,000	220	480	12
IMS115 - 100 - 1	100	22,600	4,520,000	630	3,000	220	550	14
- 100 - 2	100	22,600	4,520,000	2,700	10,300	220	550	14
- 100 - 3	100	22,600	4,520,000	9,400	45,200	220	550	14
- 100 - 4	100	22,600	4,520,000	37,300	180,800	220	550	14
- 100 - 5	100	22,600	4,520,000	160,000	1,024,000	220	550	14
IMS115 - 150 - 1	150	34,000	5,100,000	950	4,500	200	570	17
- 150 - 2	150	34,000	5,100,000	4,100	15,500	200	570	17
- 150 - 3	150	34,000	5,100,000	14,000	68,000	200	570	17
- 150 - 4	150	34,000	5,100,000	56,000	272,000	200	570	17
- 150 - 5	150	34,000	5,100,000	242,000	1,541,000	200	570	17
IMS115 - 200 - 1	200	45,000	6,300,000	1,300	6,000	180	570	20
- 200 - 2	200	45,000	6,300,000	5,400	20,500	180	570	20
- 200 - 3	200	45,000	6,300,000	18,500	90,000	180	570	20
- 200 - 4	200	45,000	6,300,000	74,300	360,000	180	570	20
- 200 - 5	200	45,000	6,300,000	320,000	2,040,000	180	570	20
IMS115 - 250 - 1	250	56,000	6,720,000	1,500	7,400	200	620	25
- 250 - 2	250	56,000	6,720,000	6,600	25,300	200	620	25
- 250 - 3	250	56,000	6,720,000	23,100	112,000	200	620	25
- 250 - 4	250	56,000	6,720,000	92,500	448,000	200	620	25
- 250 - 5	250	56,000	6,720,000	398,000	2,539,000	200	620	25



Dimensions

(unit : mm)

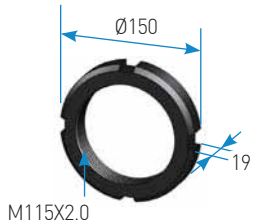
Model	Stroke	A	B	C	D	M
IMS115 - 50	50	310	Ø111	Ø98	205	M115 X 2.0P
- 100	100	420	Ø111	Ø98	265	M115 X 2.0P
- 150	150	535	Ø111	Ø98	315	M115 X 2.0P
- 200	200	655	Ø111	Ø98	380	M115 X 2.0P
- 250	250	770	Ø111	Ø98	435	M115 X 2.0P

Accessories

(unit : mm)

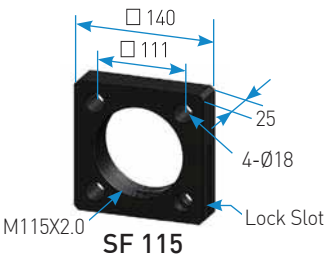
• Other accessories to be ordered separately

Lock Collar



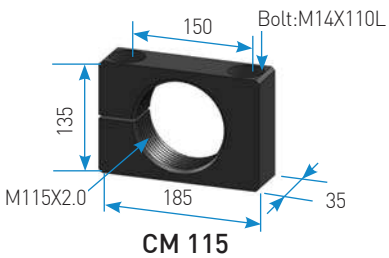
LC 115

Square Flange



SF 115

Clamp Mount



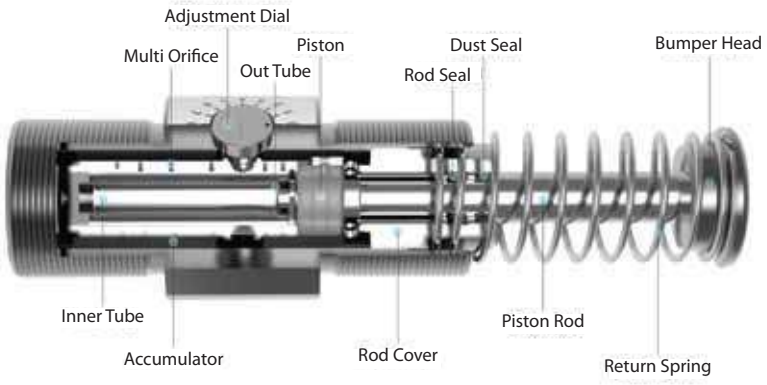
CM 115

IHA Series Mid dial type

IZMAC Heavy Type Absorber

DESCRIPTION

IHA is mid large bore series heavy type shock absorber. Operation : when the collision comes pistion compress oil chamber in inner tube according to the piston rod moving. Oil flows to accumulator through outside grooves in this process, deceleration power comes by flow resistence. And kinetic energy is dissipated in the air by changed as heat energy. Recoil Spring returns piston rod into its original position when the load is disappeared.



FEATURES

1 IHA is dial type and it can set the speed ranges as 8 steps.
2 Energy capacity was Improved over 200% and effective weight ra nges become wider than before.
3 All threaded body outside helps to install shock absorber and it can be fixed at the exact position. And it helps also to dissipate more shock energy by increased surface dimension.
4 Body surface treated as alloyed black colored steel or Zn-Ni and it develops anti corrosion features highly.
5 Stop collar is not necessary when shock absorber has steel head, and poly pad & urethane cap will help to decrease collision noises efficiently.
6 Rod cover is made of long lasting materials with function of seal protection and that enable to guarantee long life.
7 Speed ranges : 0.3 ~ 3.5m/s • Low Velocity (LV) : 0.08 ~ 1.3m/s
8 Temperature ranges : -10 ~ 80°C • Special : -40 ~ 120°C(Oil and Seal)

IHA SERIES ORDERING INFORMATION

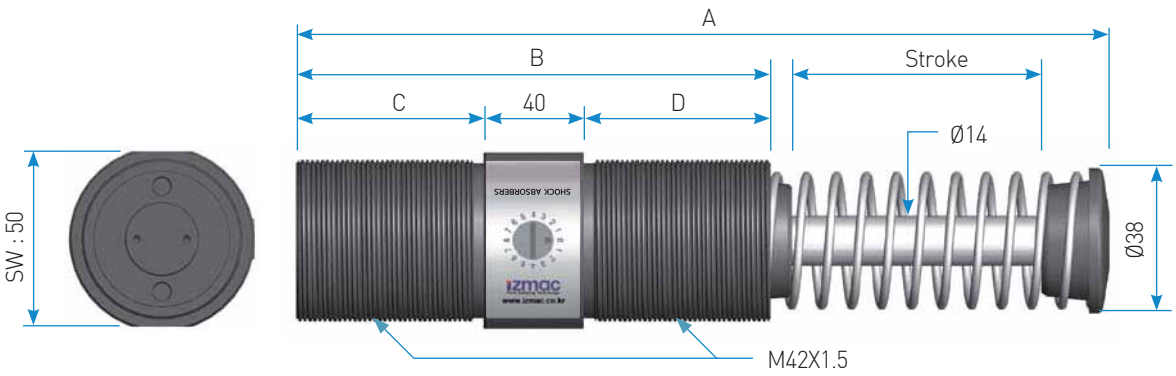
IHA - 42 - 50 - N - LV - SC

- IHA
  - I : Izmac
  - H : Heavy type
  - A : Absorber
- 42 : Body Thread Size
- 50 : Stroke
- N : Surface standard black / Nickel
- LV : Velocity(03~3.5m/s) / Low velocity(0.08~1.3m/s)
- SC : Accessory Series
  - SC : Stop Collar
  - UC : Urethane Cap
  - SF : Square Flange
  - RF : Rectangular Flange
  - LC : Lock Collar
  - RC : Rod Clevis
  - EC : End Clevis
  - CM : Clamp Mount

IHA42 Series

Engineering Data

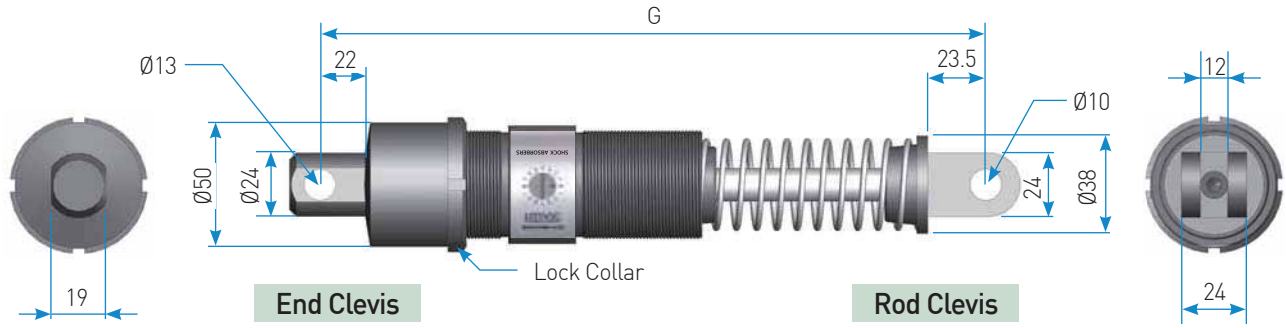
Model	Stroke (mm)	Max.Energy / Cycle(Nm) E_T	Max.Energy / Hour(Nm/h) E_TC	Effective Weight(kg) m_e	Recoil Forec(N)		Weight(kg)
					Ext.	Comp.	
IHA42 - 25	25	250	125,000	36 - 3,600	28	56	1.25
- 50	50	500	166,000	45 - 6,150	38	86	1.4
- 75	75	750	200,000	54 - 9,500	32	88	1.6



Clamp Mount

Urethane Cap

Clevis Mount



Dimensions

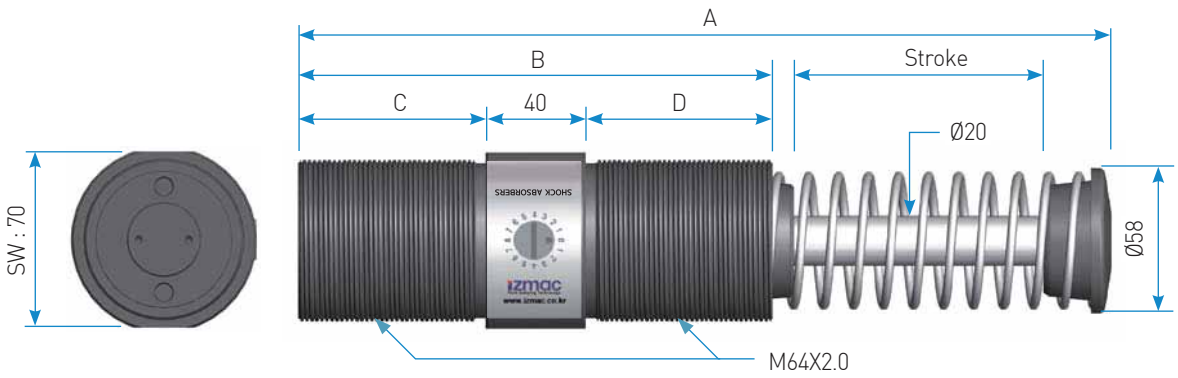
(unit : mm)

Model	Stroke	A	B	C	D	E(Min/Max)	F(Min/Max)	G
IHA42 - 25	25	145	95	28	27	65/70	62.5/64.5	200
- 50	50	195	120	40	40	65/95	87.5/102.5	250
- 75	75	245	145	52	53	65/120	117.6/145.5	300

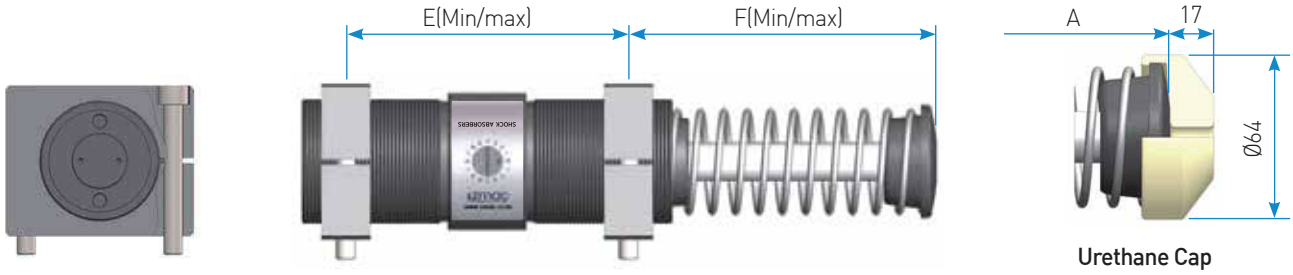
IHA64 Series

Engineering Data

Model	Stroke (mm)	Max.Energy / Cycle(Nm) E_T	Max.Energy / Hour(Nm/h) E_TC	Effective Weight(kg) m_e	Recoil Forec(N)		Weight(kg)
					Ext.	Comp.	
IHA64 - 50	50	1,300	270,000	82 - 12,600	65	148	3.7
- 100	100	2,600	360,000	115 - 17,000	45	157	4.5
- 150	150	3,900	420,000	140 - 22,000	47	199	5.3

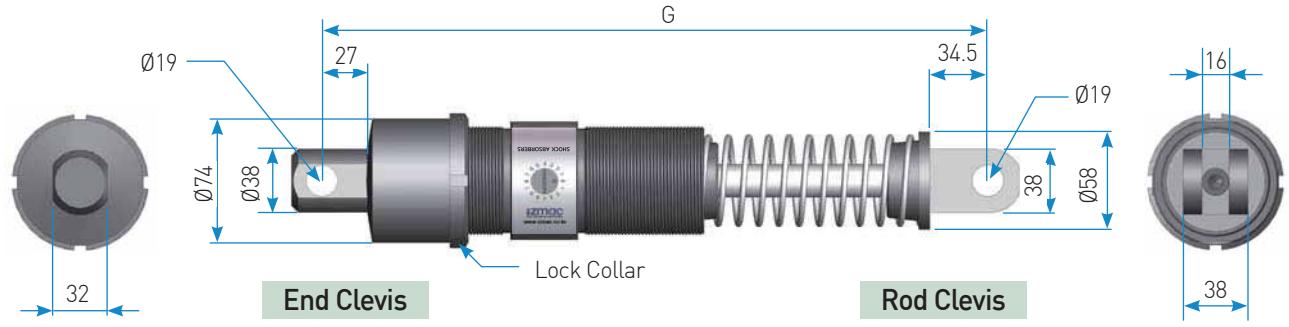


Clamp Mount



Urethane Cap

Clevis Mount



Dimensions

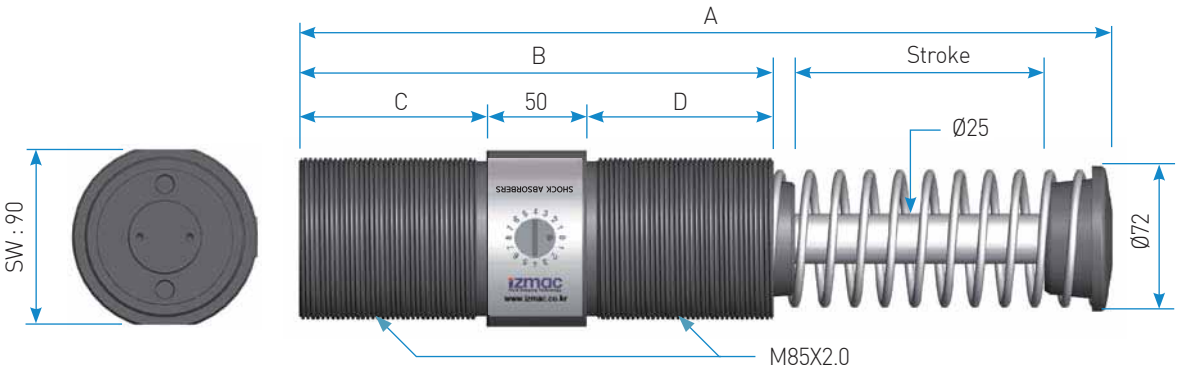
(unit : mm)

Model	Stroke	A	B	C	D	E(Min/Max)	F(Min/Max)	G
IHA64 - 50	50	225	140	50	50	65/115	97.5/122.5	305
- 100	100	327	190	75	75	65/165	147.5/197.5	409
- 150	150	455	240	100	100	65/215	197.5/272.5	534

IHA85 Series

Engineering Data

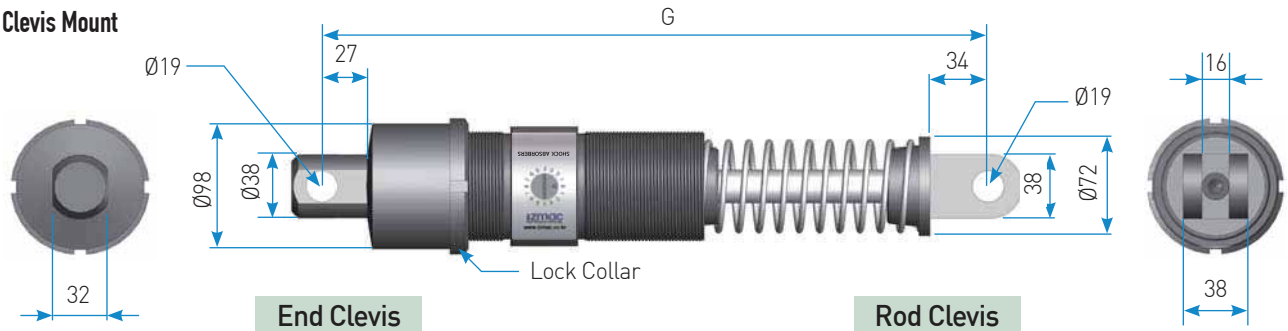
Model	Stroke (mm)	Max.Energy / Cycle(Nm) E_T	Max.Energy / Hour(Nm/h) E_TC	Effective Weight(kg) m_e	Recoil Forec(N)		Weight(kg)
					Ext.	Comp.	
IHA64 - 50	50	2,300	370,000	200 - 37,000	148	315	6.4
- 90	90	4,000	650,000	230 - 40,000	121	365	7.6
- 125	125	5,700	930,000	300 - 43,000	114	365	8.6
- 165	165	7,300	1,210,000	360 - 45,000	98	429	9.8



Clamp Mount

Urethane Cap

Clevis Mount



End Clevis **Rod Clevis**

Dimensions

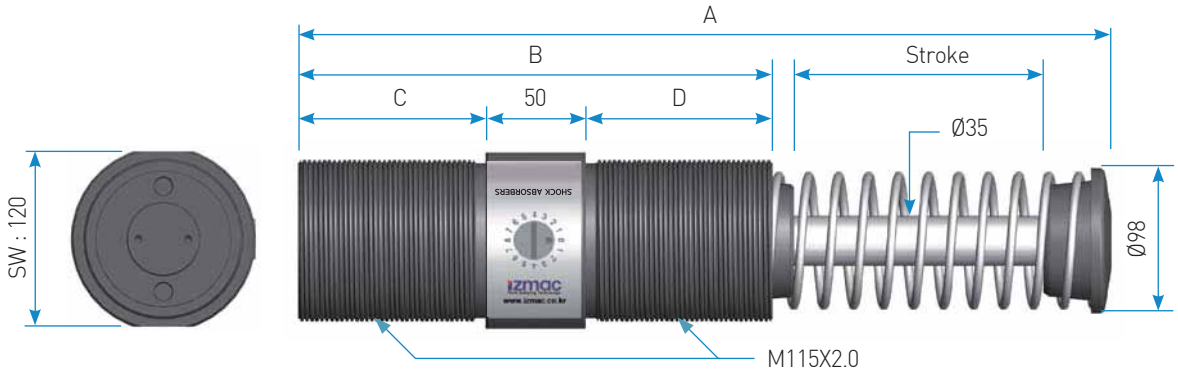
(unit : mm)

Model	Stroke	A	B	C	D	E(Min/Max)	F(Min/Max)	G
IHA64 - 50	50	245	140	42	48	80/110	120/138	325
- 90	90	325	180	60	70	80/150	160/200	405
- 125	125	400	216	82	84	80/186	195/249	480
- 165	165	494	256	106	100	80/226	220/290	575

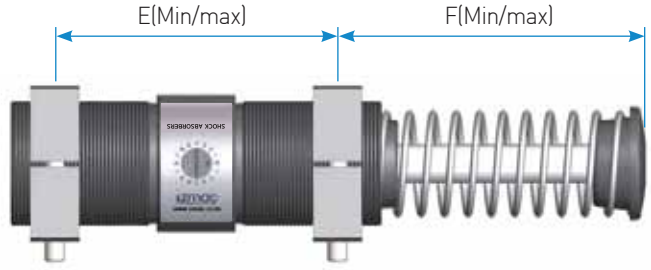
IHA115 Series

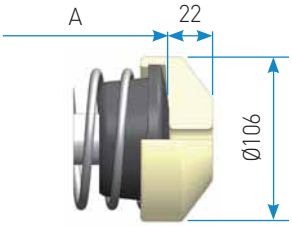
Engineering Data

Model	Stroke (mm)	Max.Energy / Cycle(Nm) E_T	Max.Energy / Hour(Nm/h) E_TC	Effective Weight(kg) m_e	Recoil Forec(N)		Weight(kg)
					Ext.	Comp.	
IHA115 - 50	50	3,700	1,501,000	370 - 44,000	187	427	16
- 100	100	7,400	1,805,000	370 - 57,000	178	482	19
- 150	150	11,100	2,100,000	370 - 89,000	185	538	21
- 200	200	14,800	2,405,000	390 - 118,000	185	665	31
- 250	250	18,500	2,710,000	440 - 145,000	184	649	34



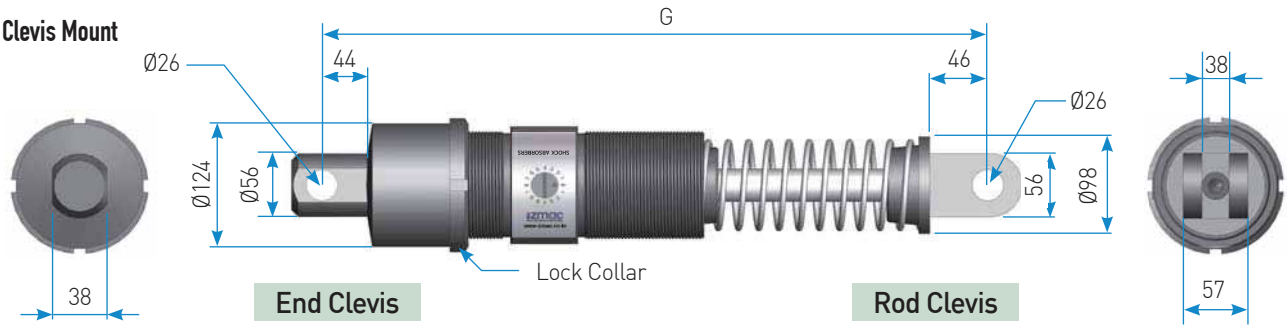
Clamp Mount





Urethane Cap

Clevis Mount



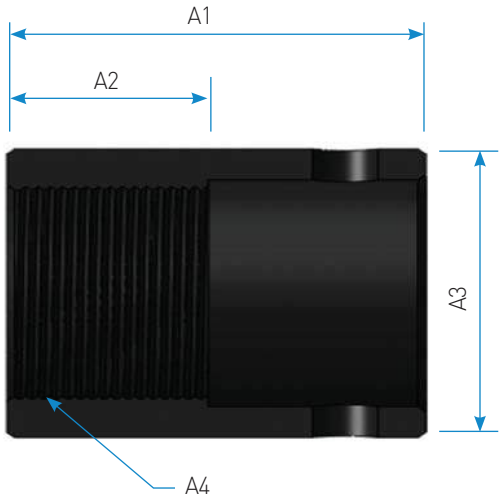
Dimensions

(unit : mm)

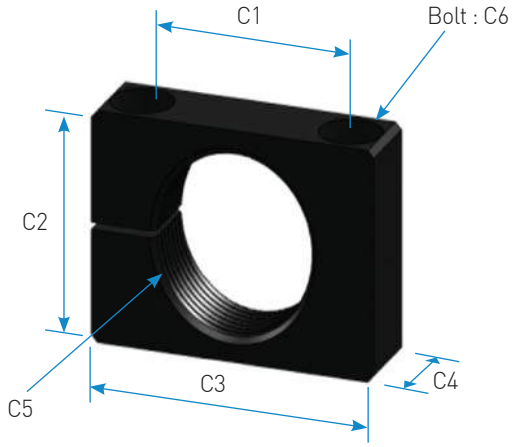
Model	Stroke	A	B	C	D	E(Min/Max)	F(Min/Max)	G
IHA115 - 50	50	314	200	75	75	80/170	129/174	430
- 100	100	414	250	100	100	80/220	179/249	535
- 150	150	514	300	125	125	80/270	229/324	635
- 200	200	644	350	150	150	80/320	279/399	760
- 250	250	744	400	180	170	80/370	329/479	865

Accessories

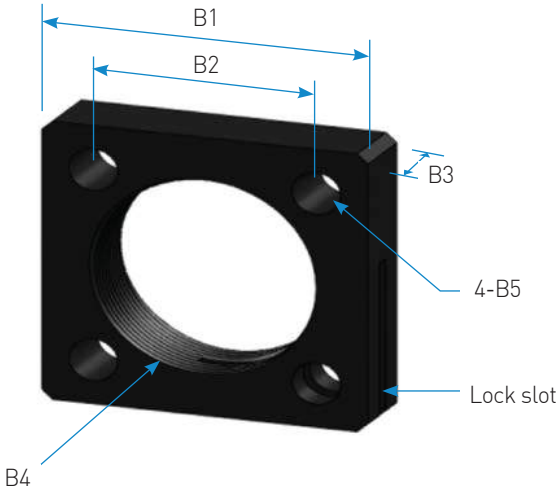
Stop Collar



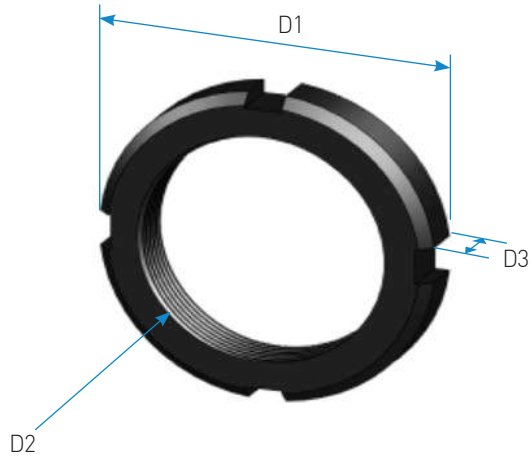
Clamp Mount



Retangular Flange



Lock Collar



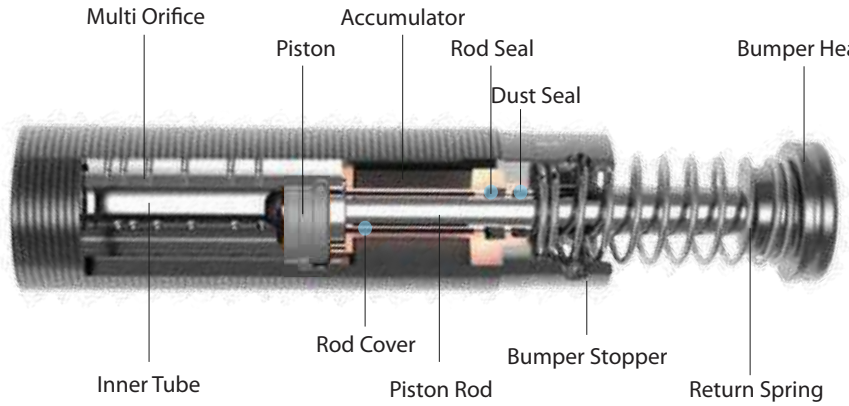
Dimensions

(unit : mm)

Stop Collar	Rectangular Flange	Clamp Mount	Lock Nut	A1	A2	A3	A4	B1	B2	B3	B4	B5	C1	C2	C3	C4	C5	C6	D1	D2	D3
SC42X1.5	RF42X1.5	CM42X1.5	LN42X1.5	52	25	Ø56	M42 X 1.5P	□60	□41	14	M42 X 1.5P	4 - Ø9	60	56	80	25	M42 X 1.5P	M8 X 60L	Ø58	M42 X 1.5P	9
SC64X2.0	RF64X2.0	CM64X2.0	LN64X2.0	85	45	Ø75	M64 X 2.0P	□90	□70	16	M64 X 2.0P	4 - Ø11	78	80	100	25	M64 X 2.0P	M10 X 80L	Ø80	M64 X 2.0P	11
SC85X2.0	RF85X2.0	CM85X2.0	LN85X2.0	95	45	Ø98	M85 X 2.0P	□104	□76	19	M85 X 2.0P	4 - Ø13	115	100	145	30	M85 X 2.0P	M14 X 100L	Ø110	M85 X 2.0P	16
SC115X2.0	RF115X2.0	CM115X2.0	LN115X2.0	130	70	Ø138	M115 X 2.0	□140	□111	25	M115 X 2.0	4 - Ø18	150	135	185	35	M115 X 2.0	M16 X 150L	Ø150	M115 X 2.0	19

ISA Series Mid dial type

IZMAC Straight Type Absorber (middle class)



FEATURES

1 According to the collision speed, you can fit the buffer dial from 0 to 300 degrees in 12 steps.
2 Adjustment is easy in various installation environment by adopting front and rear adjustment dial.
3 Shock absober body is built as one body, not only robust also fundamentally solves the shoot out trouble so called bottom out problem.
4 The entire body is threaded and easy to assemble. Also, due to the surface area is increased, the heat energy which comes from shock absorption can be emitted to the outside faster.
5 Piston rod is hard chrome-plated. Rod cover is a special material that can be used even for a long time, it protects seal and guarantees life.
6 Body surface treatment is resistant to corrosion by nickel plating or alloy plating (Black).
7 By using urethane cap, noise can be reduced.
8 Speed ranges : 0.3 ~ 5m/s
9 Temperature ranges : -10 ~ 80°C • Special : -40 ~ 120°C(Oil and Seal)

APPLICATIONS

Pick n place robot, packing machine, loom, machine tool, automobile manufacturing facility, crane etc.

ISA SERIES ORDERING INFORMATION

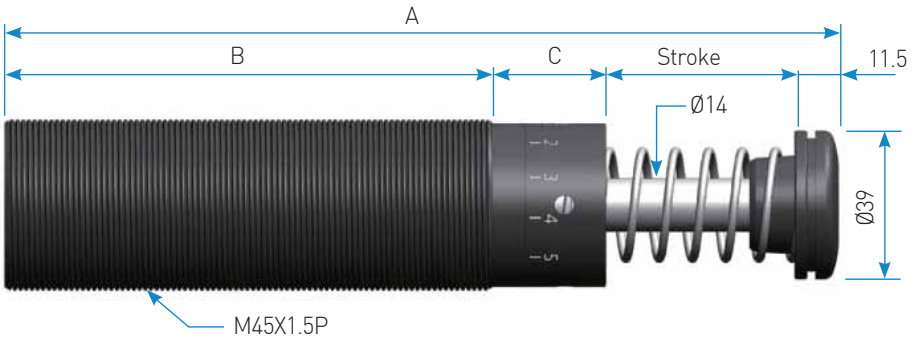
ISA - 42 - 50 - N - SC

- ISA: I : Izmac / S : straight type Absorber / A : Absorber (middle class)
- 42: Body Thread Size
- 50: Stroke
- N: Surface standard black / Nickel
- SC: Accessory Series
  - SC : Stop Collar
  - UC : Urethane Cap
  - SF : Square Flange
  - RF : Retangular Flange
  - LC : Lock Collar
  - RC : Rod Clevis
  - EC : End Clevis
  - CM : Clamp Mount

ISA45 Series

Engineering Data

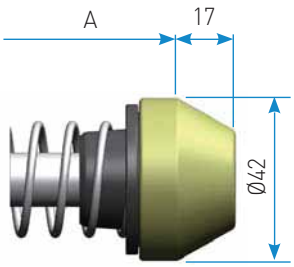
Model	Stroke (mm) St	Max.Energy / Cycle(Nm) E_T	Max.Energy / Hour(Nm/h) E_TC	Effective Weight(kg) m_e	Recoil Forec(N)		Weight(kg)
					Ext.	Comp.	
ISA45 - 25	25	650	195,000	50-13,354	49.7	82.8	1.13
- 50	50	1,300	260,000	99-26,700	45.6	54	1.3
- 75	75	2,000	300,000	148-39,060	44.3	86.3	1.52



Dimensions

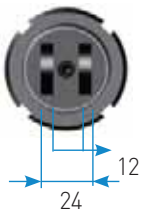
(unit : mm)

Model	Stroke	A	B	C
ISA45 - 25	25	159.5	93	30
- 50	50	220.5	129	30
- 75	75	292.5	168.5	37.5



Clevis Mount

Urethane Cap



Clamp Mount

Accessories

• Other accessories to be ordered separately

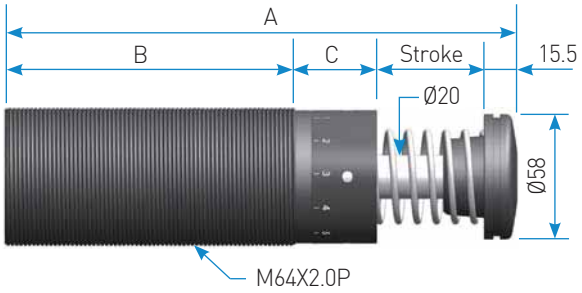
(unit : mm)

Model	ISA45-25	ISA45-50	ISA45-75
A	210	271	343
B(Min/Max)	25/68	25/104	25/143.5
C(Min/Max)	79.5/100.5	104/143.5	37.5129/170.75

ISA64 Series

Engineering Data

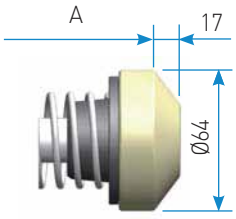
Model	Stroke (mm)	Max.Energy / Cycle(Nm) E_T	Max.Energy / Hour(Nm/h) E_TC	Effective Weight(kg) m_e	Recoil Forec(N)		Weight(kg)
					Ext.	Comp.	
ISA64 - 25	25	1,250	152,000	92~24,400	61.8	110	2.9
- 50	50	2,500	248,000	185-48.800	60.8	133.2	3.3
- 75	75	3,750	265,000	277-73,240	61.4	148.3	3.8
- 100	100	5,000	360,000	370-97,650	59.4	140.1	4
- 125	125	6,250	413,000	462-122,000	57.1	160.4	7.7
- 150	150	7,500	450,000	555-146,480	51	166.8	8.9



Dimensions

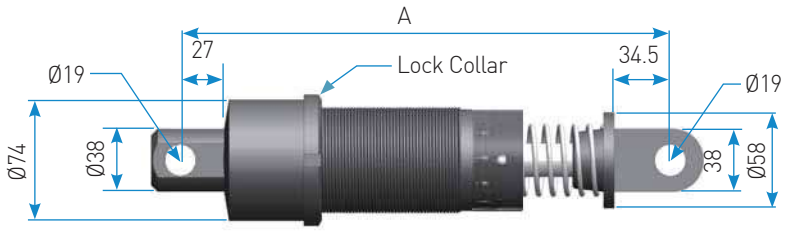
(unit : mm)

Model	Stroke	A	B	C
ISA64 - 25	25	176	97.5	38
- 50	50	239	135.5	38
- 75	75	309	173.5	45
- 100	100	375	214.5	45
- 125	125	452	256.5	55
- 150	150	518.5	294.5	58.5



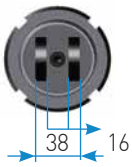
Urethane Cap

Clevis Mount

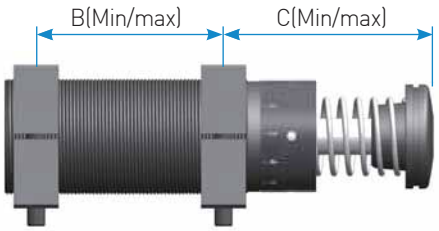


End Clevis

Rod Clevis



Clamp Mount



Accessories

• Other accessories to be ordered separately

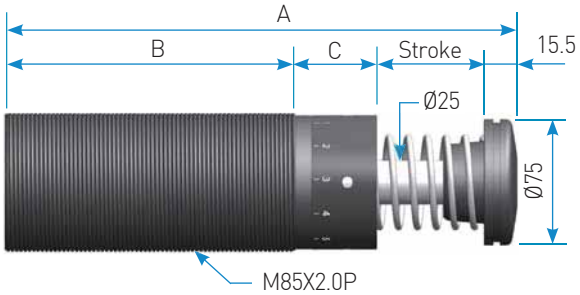
(unit : mm)

Model	ISA64 -25	ISA64 -50	ISA64 -75	ISA64 -100	ISA64 -125	ISA64 -150
A	244	307	377	442	520	-
B(Min/Max)	25/72.5	25/110.5	25/148.5	25/189.5	25/231.5	25/269.5
C(Min/Max)	92.5/116.25	117.5/160.25	149.5/211.25	174.5/256.75	209.5/312.75	238/360.25

ISA85 Series

Engineering Data

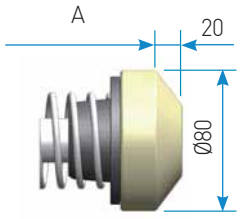
Model	Stroke (mm)	Max.Energy / Cycle(Nm) E_T	Max.Energy / Hour(Nm/h) E_TC	Effective Weight(kg) m_e	Recoil Forec(N)		Weight(kg)
					Ext.	Comp.	
ISA85 - 25	25	2,000	330,000	148-39,600	132	245.8	5.4
- 50	50	4,000	462,000	296-78,100	131.6	271.7	6.5
- 75	75	6,000	680,000	444-117,200	130	325.1	7.9
- 100	100	8,000	825,000	591-156,300	125.4	327.7	9.2
- 125	125	10,000	859,000	740-195,300	126.6	343.3	10.4
- 150	150	12,000	901,000	930-220,300	126.6	386.7	12



Dimensions

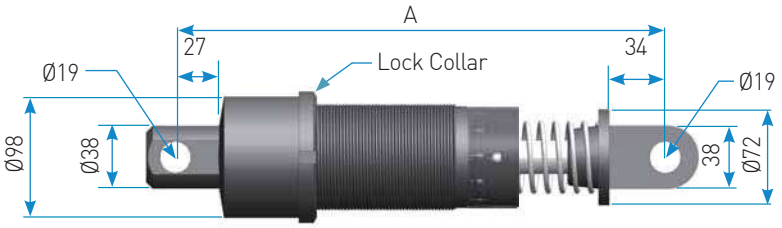
(unit : mm)

Model	Stroke	A	B	C
ISA85 - 25	25	189.5	109	40
- 50	50	251	145.5	40
- 75	75	314.5	180	44
- 100	100	384.5	217	52
- 125	125	452.5	256	56
- 150	150	513.5	292	56



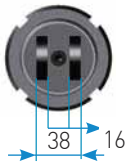
Urethane Cap

Clevis Mount

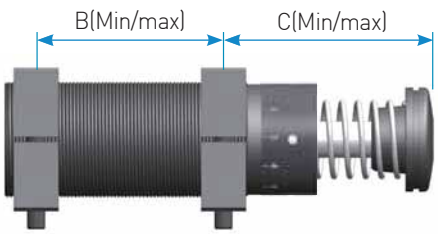


End Clevis

Rod Clevis



Clamp Mount



Accessories

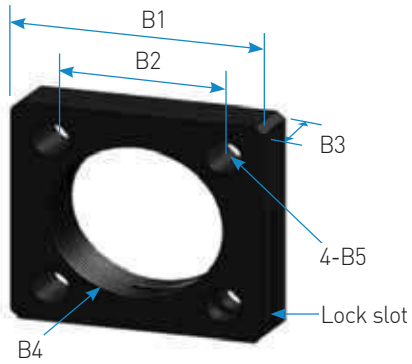
• Other accessories to be ordered separately

(unit : mm)

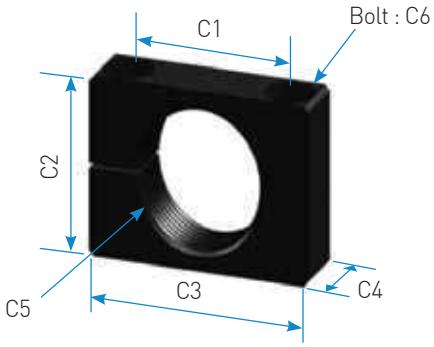
Model	ISA85 -25	ISA85 -50	ISA85 -75	ISA85 -100	ISA85 -125	ISA85 -150
A	256	316	381	451	519	-
B(Min/Max)	25/79	25/114	25/150	25/187	25/226	25/262
C(Min/Max)	95.5/120	120.5/162.5	149/209.5	182.5/261	211.5/309.5	236.5/352.5

Accessories

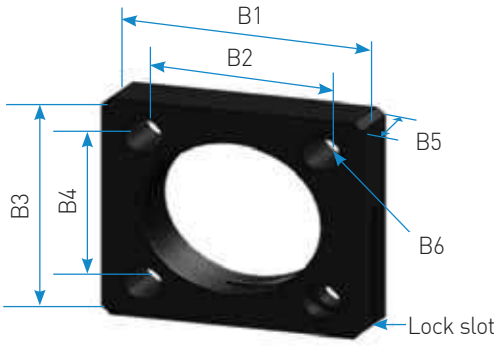
Square Flange



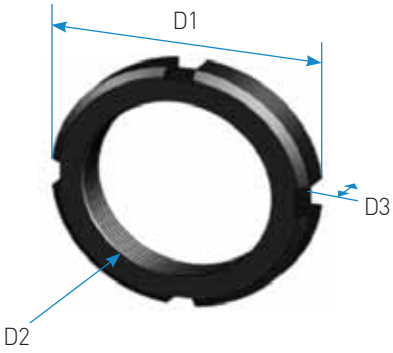
Clamp Mount



Rectangular Flange



Lock Collar



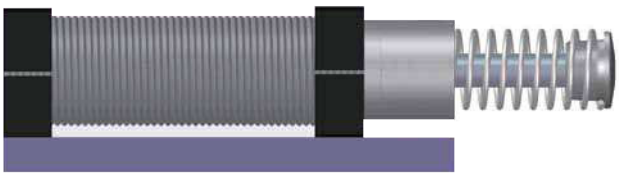
Rectangular Flange	B1	B2	B3	B4	B5	B6
RF45X1.5	78	60	60	41	14	Ø9
RF64X2.0	115	87.6	90	70	16	Ø11

Dimensions

(unit : mm)

Square Flange	Clamp Mount	Lock Nut	B1	B2	B3	B4	B5	C1	C2	C3	C4	C5	C6	D1	D2	D3
SF45X1.5	CM45X1.5	LN45X1.5	□60	□41	14	M45 X 1.5P	Ø9	60	56	80	25	M45 X 1.5P	M8 X 60L	Ø58	M45 X 1.5P	9
SF64X2.0	CM64X2.0	LN64X2.0	□90	□70	16	M64 X 2.0P	Ø11	78	80	100	25	M64 X 2.0P	M10 X 80L	Ø80	M64 X 2.0P	11
SF85X2.0	CM85X2.0	LN85X2.0	□104	□76	19	M85 X 2.0P	Ø13	115	100	145	30	M85 X 2.0P	M14 X 100L	Ø110	M85 X 2.0P	16

ISA Accessories : Instruction

NAME	Installation Drawing	
Lock Collar		As a basic mounting way by using lock collar, shock absorber can be installed easily.
Flange Mount		Flange or rectangular flange can br used to fix the shock abosorber convenicntly.
Clamp Mount		Clamp mount is mainly used for horizontal sufaces and is useful when the length of the shock absorber is long.
Clevis Mount		It is mainly used in rotary motion and it is used to absorb shock indirectly by using clevis. Shock absorber can be protected from side loads.

Hydraulic Buffers

Fomula and Calculation

Symbols

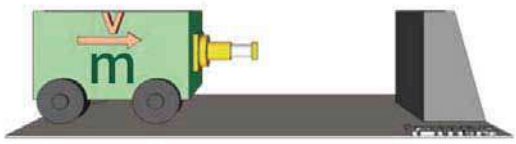
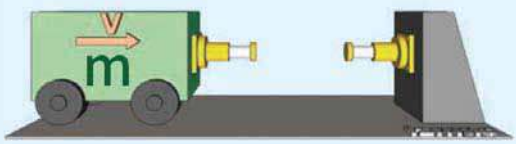
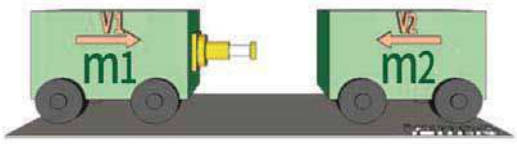
Symbol	Unit	Description
m	kg	Weight
m_e	kg	Designed/weight
H	m	Height
S	m	Stroke
V	m / s	Impact velocity
V_E	m / s	Designed velocity
ω	rad / s	Angular velocity
I	Nms^2	Moment of inertia
T	Nm	Torque

Symbol	Unit	Description
r	m	Radius of rotation
g	m / s^2	Gravitational acceleration
d	m / s^2	Deceleration
E_K	Nm	Kinetic energy
E_W	Nm	Work energy
E_T	Nm	Total energy
P	kW	Motor power
F_S	N	Impact force
η	s	Efficiency

Useful Formulas

Maximum Shock Force	$F_S = E_T / S / 0.8 + F_D$
Stroke	$S = V_E^2 / 2 / d / 0.8$
Deceleration	$d = V_E^2 / 2 / S / 0.8$
Deceleration Time	$t = 2.5 X S / V$

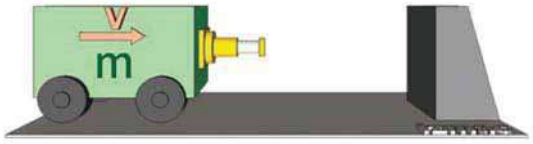
Application

Arrangement	Design Speed (V_E)	Design Weight (M_E)
	V	m
	$\frac{V}{2}$	2m
	$V_1 + V_2$	$\frac{m_1 \times m_2}{m_1 + m_2}$
	$\frac{V_1 + V_2}{2}$	$\frac{2 \times m_1 \times m_2}{m_1 + m_2}$

Examples

| A | Horizontal Mass without Propelling Force

- Weight m = 100ton
- Impact velocity V = 0.5m/s



$E_K = \frac{m \times V^2}{2} = \frac{100 \times 0.5^2}{2} = 12.5$ kNm

Selected Model with E_k : IHG65-200

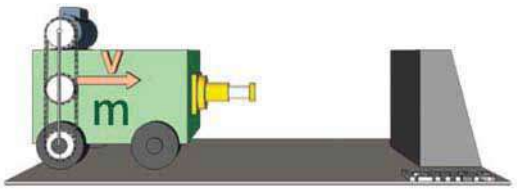
$E_T = E_K + E_W = 12.5 + 0 = 12.5$ kNm

$F_S = \frac{E_T}{S \times \eta} = \frac{12.5}{0.2 \times 0.8} = 78.13$ kN

Selected Model with E_T & F_S : IHG65-200

| B | Horizontal Mass with Propelling Force [Motor]

- Weight m = 100ton
- Motor Power P = 12kW
- Impact velocity V = 1.5m/s



$E_K = \frac{m \times V^2}{2} = \frac{100 \times 1.5^2}{2} = 112.5$ kNm

$F_P = \frac{2.5P}{V} = \frac{2.5 \times 12}{1.5} = 20$ kN

Selected Model with E_k : IHG120-400

$E_W = F_P \times S = 20 \times 0.4 = 8$ kNm

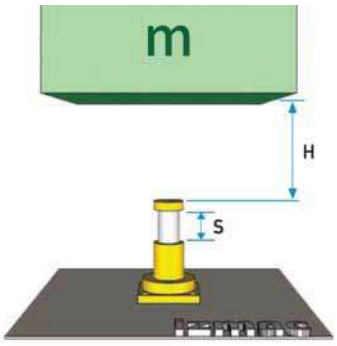
$E_T = E_K + E_W = 112.5 + 8 = 120.5$ kNm

$F_S = \frac{E_T}{S \times \eta} = \frac{120.5}{0.4 \times 0.8} = 376.6$ kN

Selected Model with E_T & F_S : IHG120-400

| C | Free Falling Mass

- Weight m = 4ton
- Height H = 0.3m



$E_K = m \times g \times H = 4 \times 9.81 \times 0.3 = 11.772$ kNm

Selected Model with E_k : IHG100-10

$E_W = m \times g \times S = 4 \times 9.81 \times 0.1 = 3.924$ kNm

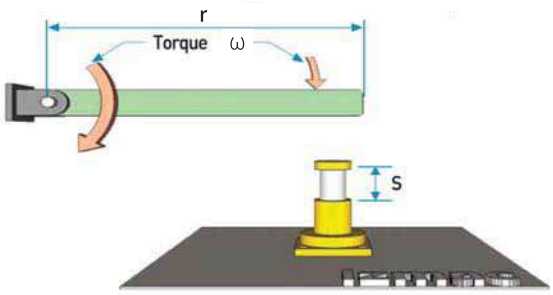
$E_T = E_K + E_W = 11.772 + 3.924 = 15.696$ kNm

$F_S = \frac{E_T}{S \times \eta} = \frac{15.696}{0.1 \times 0.8} = 196.2$ kN

Selected Model with E_T & F_S : IHG100-100

| D | Swiveling Mass with Propelling Force

- Torque T = 200Nm
- Impact velocity ω = 2rad/s
- Radius of gyration r = 8m
- Mass mommet I = 35Nms^2
- Stroke S = 0.2 m



$E_K = \frac{I \times \omega^2}{2} = \frac{35 \times 2^2}{2} = 70$ kNm

Selected Model with Ek : IHG120-200

$E_W = \frac{T \times S}{r} = \frac{200 \times 0.2}{8} = 5$ kNm

$E_T = E_K + E_W = 70 + 5 = 75$ kNm

$F_S = \frac{E_T}{S \times \eta} = \frac{75}{0.2 \times 0.8} = 468.75$ kN

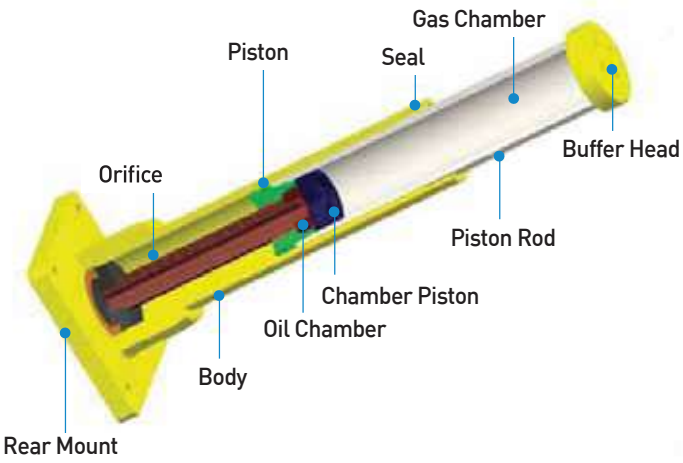
Selected Model with E_T & F_S : IHG120-200

IHG Series

IZMAC Hydraulic Gas & Oil type Buffer

DESCRIPTION

IHG is a heavy-duty application product that has a high impact energy absorption capacity compared to its size. Operation : When an object collides, the piston enters the oil chamber by the tube shape piston rod, and the oil flows through the orifice of the throttle port and finally oil is pushing floating piston up to compress gas. In this process, flow resistance power arouse and gas pressure takes a role of accumulator which compensating piston rod space and compressed gas has the role of returning piston rod to its original position when the load is released.



FEATURES

1 IHG is high capable efficient energy hydraulic buffer.
2 Customizing orifice
3 Fulfilled international standards : OSHA, AIST, CMMA, DIN, FEM etc.
4 Operation temperature : -10 ~ 80°C • Special : -40 ~ 120°C
5 Piton rod surface treatment : Hard Chrome Plated
6 Body surface treatment : Epoxy Painting

APPLICATION

Container crane, overhead crane, stacker crane, transfer car, rail end stop, heavy industry, steel mill

IHG SERIES ORDERING INFORMATION

IHG - 120 - 200 - RF - BC

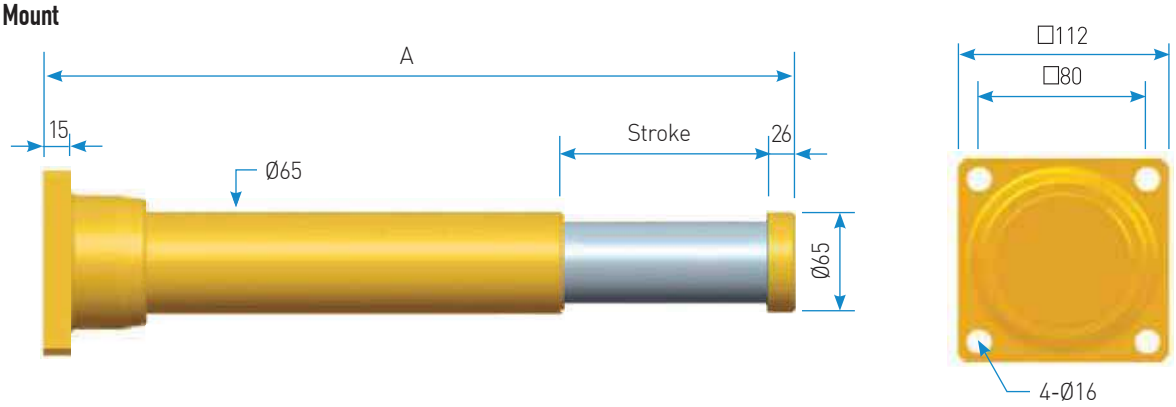
- IHG: I : Izmac / H : Hydraulic / G : Gas & Oil type Buffer
- 120: Body Thread Size
- 200: Stroke : mm
- RF: Mount Type — RS : Rear Flange Style Mount / FM : Front & Rear Foot Mount / FF : Front & Rear Mount Flange / FS : Front Flange Style Mount
- BC: B : Bellows / C : Safety Cable / UC : Urethane Cap

IHG65 Series

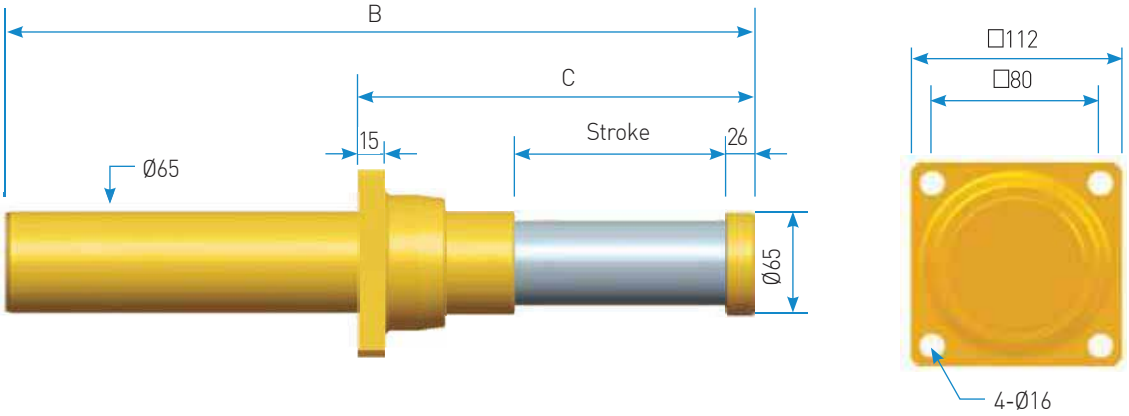
Engineering Data

Model	Stroke (mm)	Max.Energy / Cycle(kJ) E_T	Max.Buffer Force (kN) F_S	Recoil Force (kN)		Weight(kg)
				Ext.	Comp.	
IHG65 - 50	50	3.8	95	1.0	3.5	6
- 75	75	5.7	95	1.0	3.5	8
- 100	100	7.5	95	1.0	3.5	9
- 150	150	11	95	1.0	3.5	11
- 200	200	14.7	95	1.0	3.5	12

Rear Mount



Front Mount



Dimensions

(unit : mm)

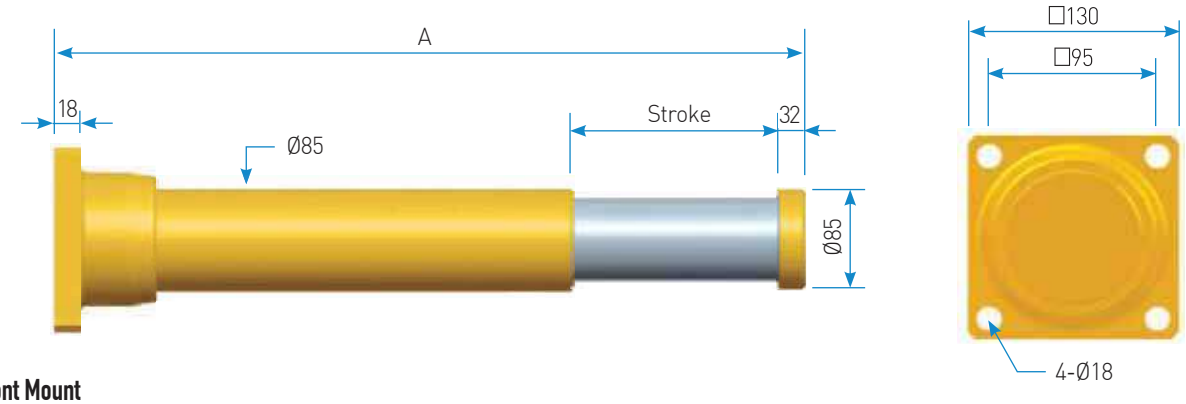
Model	Stroke (mm)	Rear Type (mm)	Front Type (mm)		Mounting Bolt Size
		A	B	C	
IHG65 - 50	50	312	300	151	14
- 75	75	372	360	176	
- 100	100	432	420	231	
- 150	150	552	540	281	
- 200	200	682	670	371	

IHG85 Series

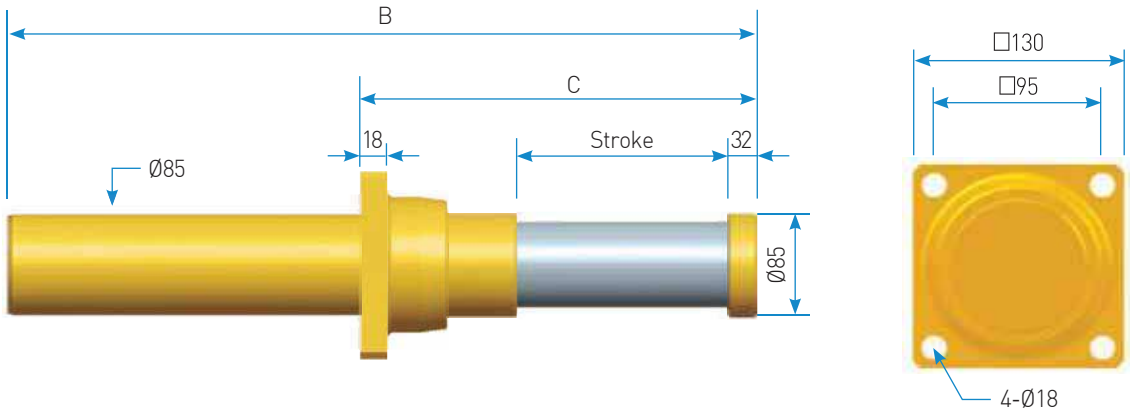
Engineering Data

Model	Stroke (mm)	Max.Energy / Cycle(kJ) E_T	Max.Buffer Force (kN) F_S	Recoil Force (kN)		Weight(kg)
				Ext.	Comp.	
IHG85 - 50	50	7.5	188	1.5	13	12
- 100	100	15	188	1.5	13	14
- 150	150	22.5	188	1.5	20	17
- 200	200	30	188	1.5	20	20
- 250	250	37.5	188	1.5	20	22

Rear Mount



Front Mount



Dimensions

(unit : mm)

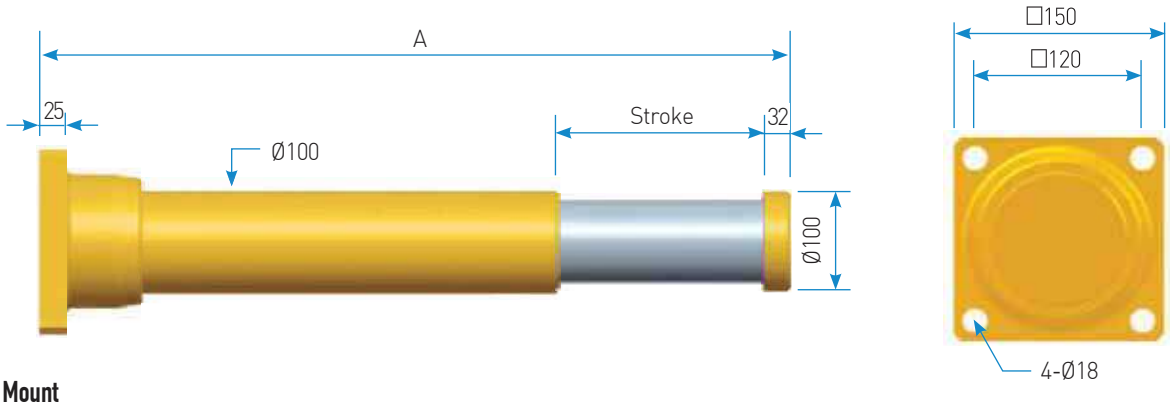
Model	Stroke (mm)	Rear Type (mm)	Front Type (mm)		Mounting Bolt Size
		A	B	C	
IHG85 - 50	50	323	310	183	16
- 100	100	463	450	242	
- 150	150	603	590	305	
- 200	200	743	730	367	
- 250	250	883	870	430	

IHG100 Series

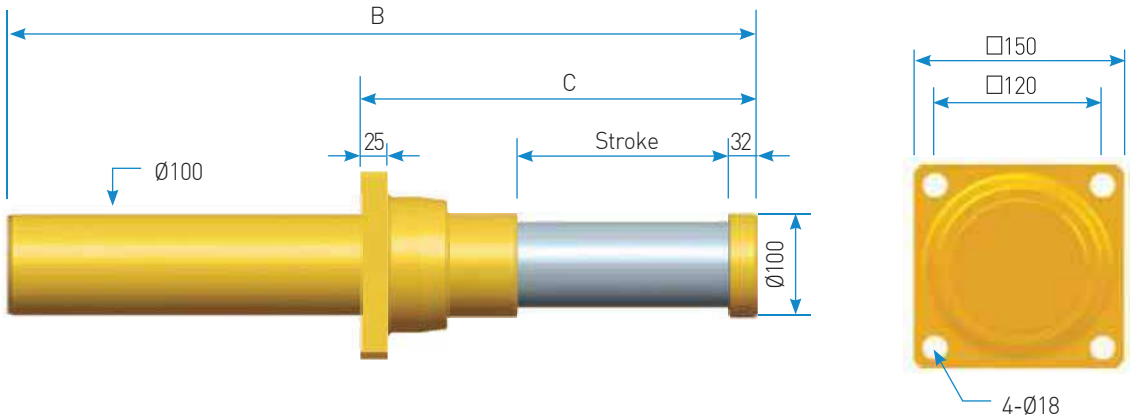
Engineering Data

Model	Stroke (mm)	Max.Energy / Cycle(kJ) E_T	Max.Buffer Force (kN) F_S	Recoil Force (kN)		Weight(kg)
				Ext.	Comp.	
IHG100 - 80	80	16	250	2.4	16	20
- 100	100	20	250	2.4	16	25
- 150	150	30	250	2.4	20	28
- 200	200	40	250	2.4	20	34
- 250	250	50	250	2.4	25	39
- 300	300	60	250	2.4	25	43

Rear Mount



Front Mount



Dimensions

(unit : mm)

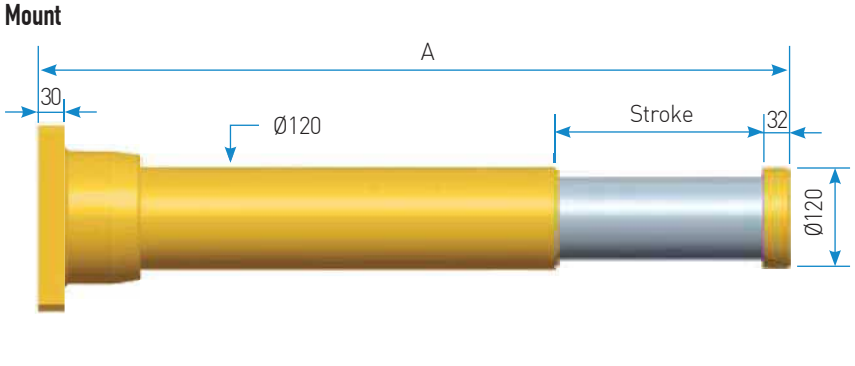
Model	Stroke (mm)	Rear Type (mm)	Front Type (mm)		Mounting Bolt Size
		A	B	C	
IHG100 - 80	80	423	403	215	16
- 100	100	450	430	252	
- 150	150	580	560	315	
- 200	200	720	700	377	
- 250	250	865	845	440	
- 300	300	1010	990	502	

IHG120 Series

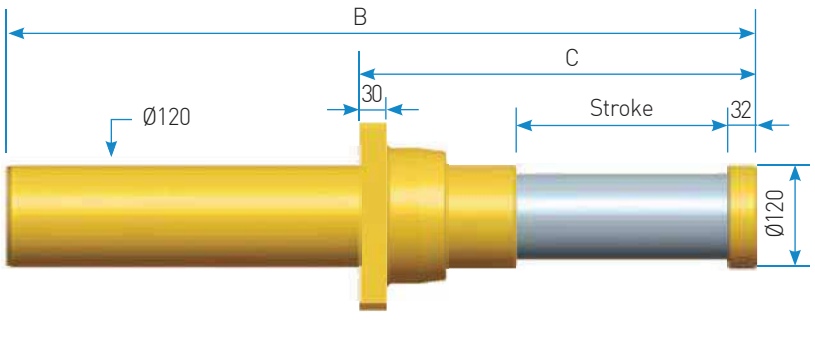
Engineering Data

Model	Stroke (mm)	Max.Energy / Cycle(kJ) E_T	Max.Buffer Force (kN) F_S	Recoil Force (kN)		Weight(kg)
				Ext.	Comp.	
IHG120 - 100	100	40	500	3.5	40	41
- 150	150	60	500	3.5	40	48
- 200	200	80	500	3.5	40	58
- 250	250	100	500	3.5	40	65
- 300	300	120	400	3.5	40	72
- 400	400	160	400	3.5	40	78
- 500	500	180	400	3.5	40	86
- 600	600	200	400	3.5	40	95
- 800	800	240	375	3.5	40	112
- 1000	1000	280	350	3.5	40	118

Rear Mount



Front Mount



Dimensions

(unit : mm)

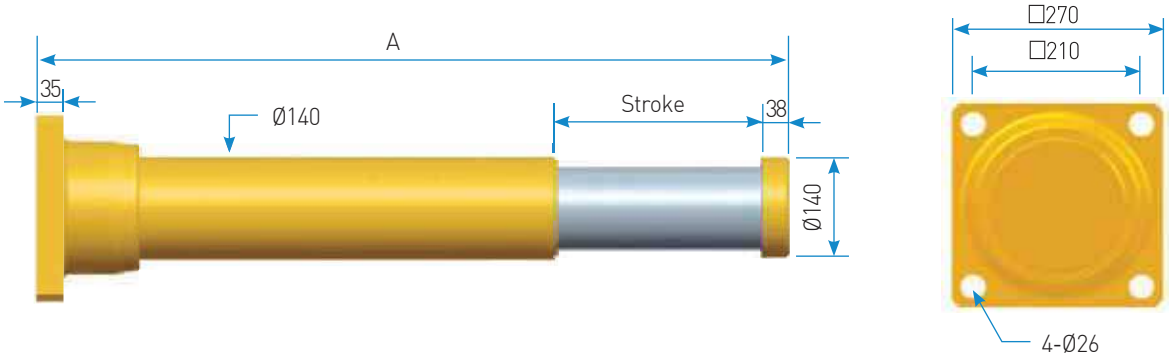
Model	Stroke (mm)	Rear Type (mm)	Front Type (mm)		Mounting Bolt Size
		A	B	C	
IHG120 - 100	100	470	450	277	24
- 150	150	610	590	340	
- 200	200	760	740	402	
- 250	250	900	880	465	
- 300	300	1050	1030	527	
- 400	400	1340	1320	680	
- 500	500	1620	1600	815	
- 600	600	1920	1900	950	
- 800	800	-	2400	1290	
- 1000	1000	-	2960	1360	

IHG140 Series

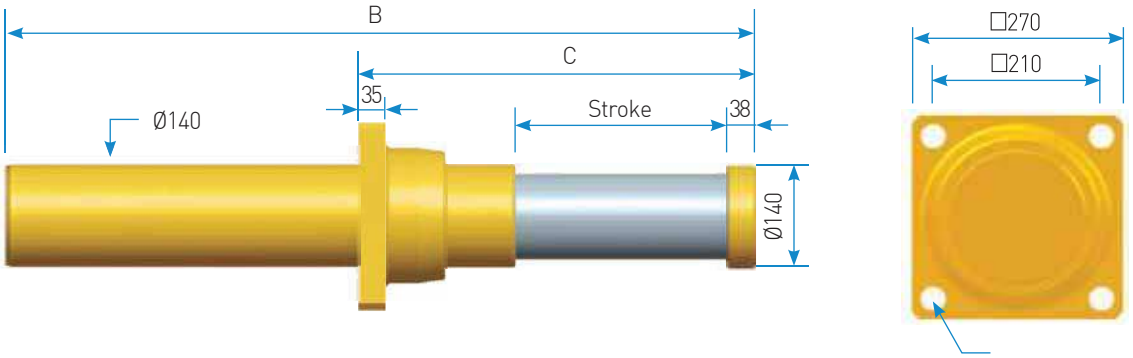
Engineering Data

Model	Stroke (mm)	Max.Energy / Cycle(kJ) E_T	Max.Buffer Force (kN) F_S	Recoil Force (kN)		Weight(kg)
				Ext.	Comp.	
IHG140 - 100	100	55	688	6	70	60
- 200	200	110	688	6	70	85
- 300	300	165	688	6	70	110
- 400	400	220	688	6	78	135
- 500	500	270	680	6	78	150
- 600	600	300	630	6	78	160
- 800	800	325	510	6	78	185
- 1000	1000	360	450	6	78	200

Rear Mount



Front Mount



Dimensions

(unit : mm)

Model	Stroke (mm)	Rear Type (mm)	Front Type (mm)		Mounting Bolt Size
		A	B	C	
IHG140 - 100	100	480	460	297	24
- 200	200	770	750	422	
- 300	300	1060	1040	547	
- 400	400	1350	1330	712	
- 500	500	1630	1610	847	
- 600	600	1930	1910	982	
- 800	800	2350	2330	1252	
- 1000	1000	-	2880	1595	

ICA Series Stacker Crane Buffers

NEW

IZMAC Hydraulic & Oil Stacker Crane Adjustable Buffer

DESCRIPTION

ICA is newly launched state-of-the-art dial type buffer which is engineered to select damping forces against wide application conditions. Engineered to maintain rather low peak figures & rebounding forces. Therefore it can be operated by lowest rebounding force and decelerate softly in emergency stop conditions. Used for mainly stacker crane application in automated logistic system, dial type has models upto 300mm stroke and maximum energy 376 kJ, there are front dial control type & back dial control type according to the dial location.

FEATURES

1 Customized orifice
2 Piston rod surface treatment : Hardened, Hard chrome plated
3 Body surface treatment : White zinc plated
4 Operation temperature : -10 ~ 80°C • Special : -40 ~ 120°C
5 Fullfilled international standards : OSHA, AIST, CMAA, DIN, FEM etc.
6 Option : Urethane cap, Safety cable, Mounting plates, Adjustment dial position

APPLICATION

Automatic warehouse stacker crane, logistic automation system, amusement park, STS crane, production facilities.

ICA SERIES ORDERING INFORMATION

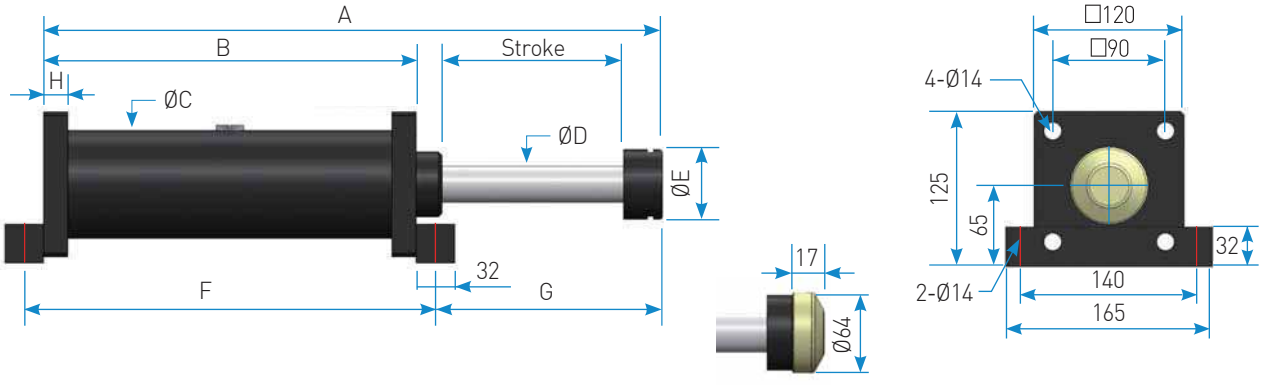
ICA - 90 - 50 - FM - BC

- ICA
  - I : Izmac Hydraulic & Oil Stacker
  - C : Crane
  - A : Adjustable Buffer
- 90 : Body Thread Size
- 50 : Stroke : mm
- FM
  - RS : Rear Flange Style Mount
  - FM : Front & Rear Foot Mount
  - FF : Front & Rear Mount Flange
  - FS : Front Flange Style Mount
- BC
  - B : Bellows
  - C : Safety Cable
  - UC : Urethane Cap

ICA90 Series

Engineering Data

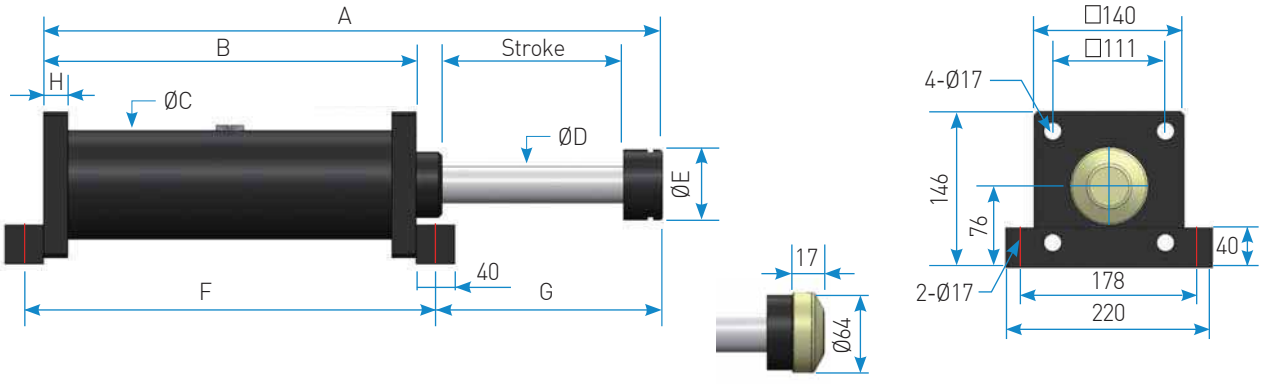
Model	Stroke (mm)	Max. Energy / Cycle(kJ) E_T	Max.Buffer Force (kN) F_S	Dimension [unit:mm]							
				A	B	C	D	E	F	G	H
ICA90 - 50	50	3	77	300	218	90	30	58	250	66	20
- 100	100	6	77	400	268	90	30	58	300	116	20
- 150	150	9	77	500	318	90	30	58	350	166	20
- 200	200	12	77	600	368	90	30	58	400	216	20
- 250	250	15	77	700	418	90	30	58	450	266	20
- 300	300	18	77	800	468	90	30	58	500	316	20



ICA110 Series

Engineering Data

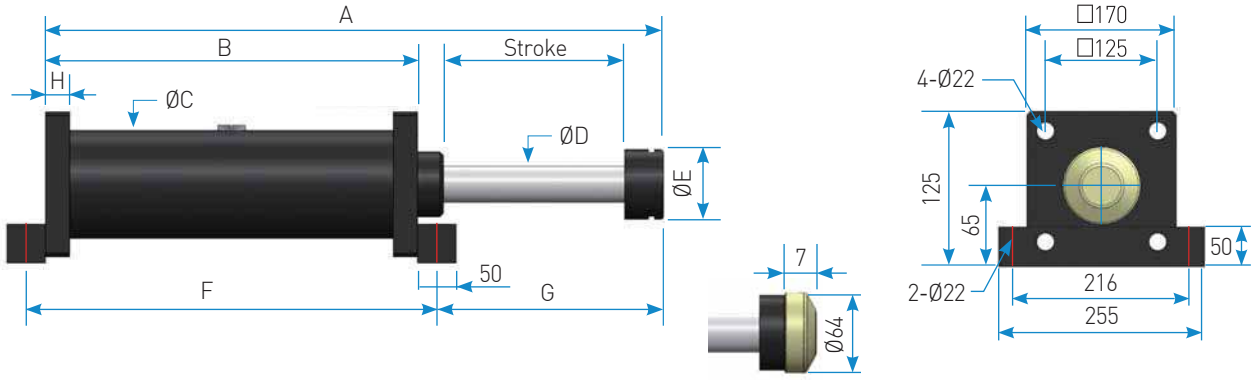
Model	Stroke (mm)	Max. Energy / Cycle(kJ) E_T	Max.Buffer Force (kN) F_S	Dimension [unit:mm]							
				A	B	C	D	E	F	G	H
ICA110 - 50	50	4	114	320	230	110	35	58	270	70	25
- 100	100	9	114	420	280	110	35	58	320	120	25
- 150	150	13	114	520	330	110	35	58	370	170	25
- 200	200	18	114	620	380	110	35	58	420	220	25
- 250	250	23	114	720	430	110	35	58	470	270	25
- 300	300	27	114	820	480	110	35	58	520	320	25



ICA130 Series

Engineering Data

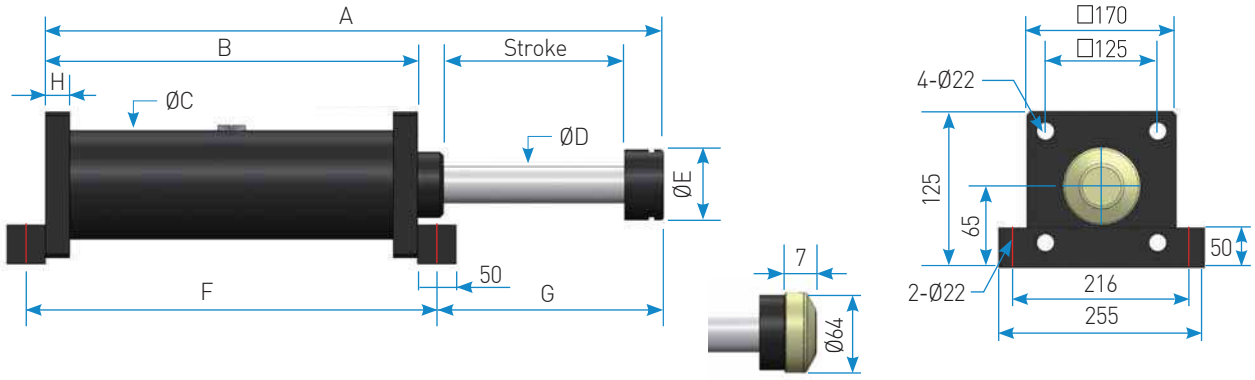
Model	Stroke (mm)	Max. Energy / Cycle(kJ) E_T	Max.Buffer Force (kN) F_S	Dimension [unit:mm]							
				A	B	C	D	E	F	G	H
ICA130 - 50	50	8	210	350	250	138	45	58	300	75	25
- 75	75	16	210	450	300	138	45	58	350	125	25
- 125	125	25	210	550	350	138	45	58	400	175	25
- 200	200	33	210	650	400	138	45	58	450	225	25
- 250	250	42	210	750	450	138	45	58	500	275	25
- 300	300	50	210	850	500	138	45	58	550	325	25



ICA160 Series

Engineering Data

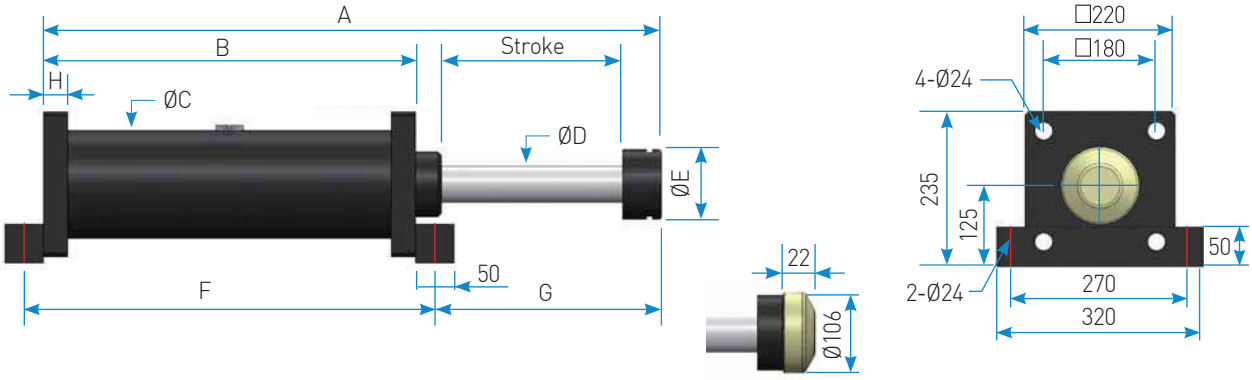
Model	Stroke (mm)	Max. Energy / Cycle(kJ) E_T	Max.Buffer Force (kN) F_S	Dimension [unit:mm]							
				A	B	C	D	E	F	G	H
ICA160 - 50	50	10	267	380	280	160	50	98	330	75	25
- 100	100	21	267	480	330	160	50	98	380	125	25
- 150	150	32	267	580	380	160	50	98	430	175	25
- 200	200	42	267	680	430	160	50	98	480	225	25
- 250	250	53	267	780	480	160	50	98	530	275	25
- 300	300	64	267	880	530	160	50	98	580	325	25



ICA180 Series

Engineering Data

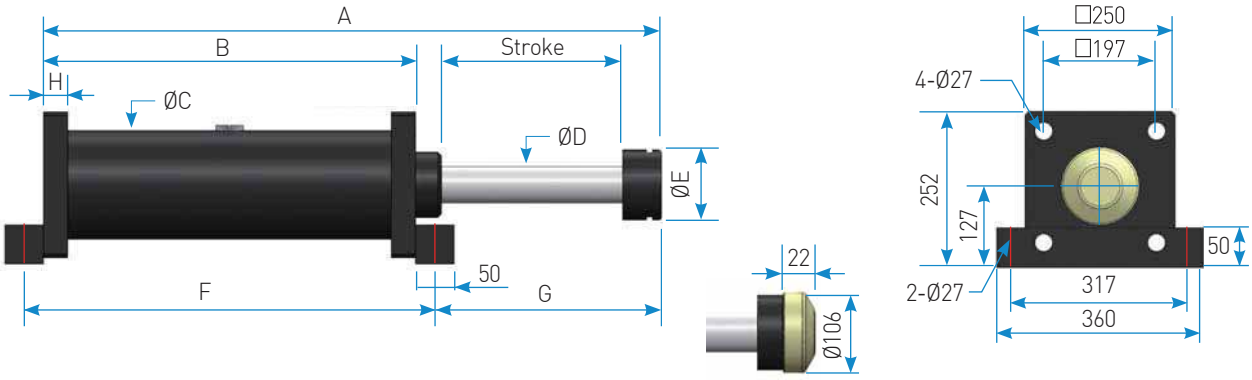
Model	Stroke (mm)	Max. Energy / Cycle(kJ) E_T	Max.Buffer Force (kN) F_S	Dimension [unit:mm]							
				A	B	C	D	E	F	G	H
ICA180 - 50	50	13	338	440	340	180	55	98	390	75	40
- 100	100	27	338	540	390	180	55	98	440	125	40
- 150	150	40	338	640	440	180	55	98	490	175	40
- 200	200	54	338	740	490	180	55	98	540	225	40
- 250	250	67	338	840	540	180	55	98	590	275	40
- 300	300	81	338	940	590	180	55	98	640	325	40



ICA200 Series

Engineering Data

Model	Stroke (mm)	Max. Energy / Cycle(kJ) E_T	Max.Buffer Force (kN) F_S	Dimension [unit:mm]							
				A	B	C	D	E	F	G	H
ICA200 - 50	50	15	376	450	350	200	65	98	400	75	40
- 100	100	30	376	550	400	200	65	98	450	125	40
- 150	150	45	376	650	450	200	65	98	500	175	40
- 200	200	60	376	750	500	200	65	98	550	225	40
- 250	250	75	376	850	550	200	65	98	600	275	40
- 300	300	90	376	950	600	200	65	98	650	325	40



ISC Series Stacker Crane Buffers

IZMAC Hydraulic & Oil Stacker Crane Buffer

DESCRIPTION

ISC model max energy capacity is upto 915kNm, and it's longest stroke is 1,200mm and it is mainly applied for automatic logistic warehouse system(AS/RS). Engineered to maintain rather Low Peak figures & Low Recoil Force figures. Therefore it can be operated by lowest rebounding force and decelerate softly in emergency stop conditions.

FEATURES

1 Custom orifice
2 Piston rod : Hardened, hard chrome plated
3 Cylinder : Zinc plated
4 Operation temperature : -10 ~ 80°C • Special : -40 ~ 120°C
5 Fullfilled international standards : OSHA, AIST, CMAA, DIN, FEM etc.
6 Option : Urethane cap, Safety cable, Mounting plates

APPLICATION

Automatic warehouse system(AS/RS), Theme park, Stacker crane, Automobile assembly line, Overhead crane

ISC SERIES ORDERING INFORMATION

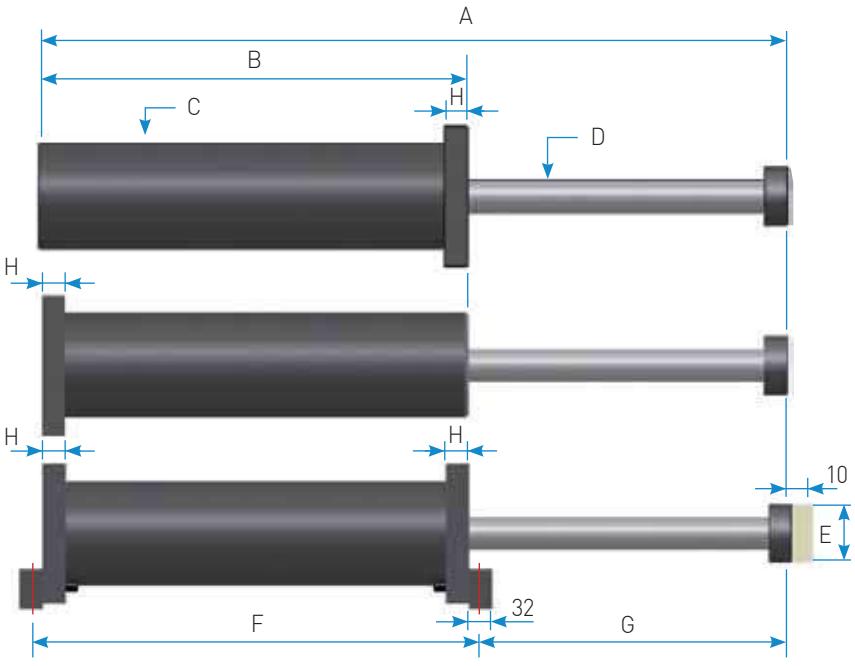
ISC - 90 - 250 - FM - BC

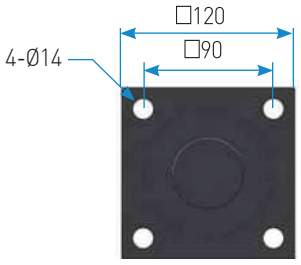
- BC: B : Bellows / C : Safety Cable / UC : Urethane Cap
- FM: RS : Rear Flange Style Mount / FM : Front & Rear Foot Mount / FF : Front & Rear Mount Flange / FS : Front Flange Style Mount
- 250: Stroke(mm)
- 90: Body Thread Size
- ISC: I : Izmac Hydraulic & Oil / S : Stacker / C : Crane Buffer

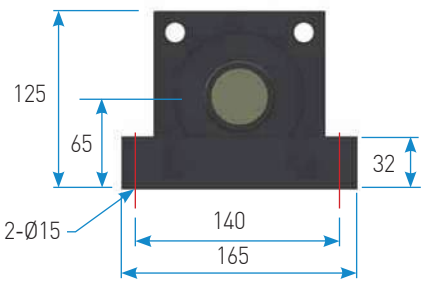
ISC90 Series

Engineering Data & Dimensions

Model	Stroke (mm)	Max. Energy / Cycle(kJ) E_T	Max. Energy / Hour(kJ/hr) E_TC	Max.Buffer Force(kN) F_S	Dimension [unit:mm]							
					A	B	C	D	E	F	G	H
ISC90 - 50	50	4	190	75	310	208	90	30	50	240	86	20
- 100	100	7	390	75	410	258	90	30	50	290	136	20
- 150	150	10	580	75	510	308	90	30	50	340	186	20
- 200	200	13	780	75	613	360	90	30	50	392	237	20
- 250	250	16	830	75	715	411	90	30	50	443	288	20
- 300	300	20	940	75	817	462	90	30	50	496	339	20
- 350	350	23	1,260	75	918	512	90	30	50	544	390	20
- 400	400	21	1,150	67	1,019	563	90	30	50	595	440	20
- 450	450	20	1,090	55	1,121	614	90	30	50	646	491	20
- 500	500	19	1,060	47	1,223	665	90	30	50	697	542	20
- 600	600	15	880	31	1,427	767	90	30	50	799	644	20
- 700	700	13	610	24	1,668	910	90	30	50	956	742	20
- 800	800	12	530	19	1,888	1,030	90	30	50	1,076	842	20



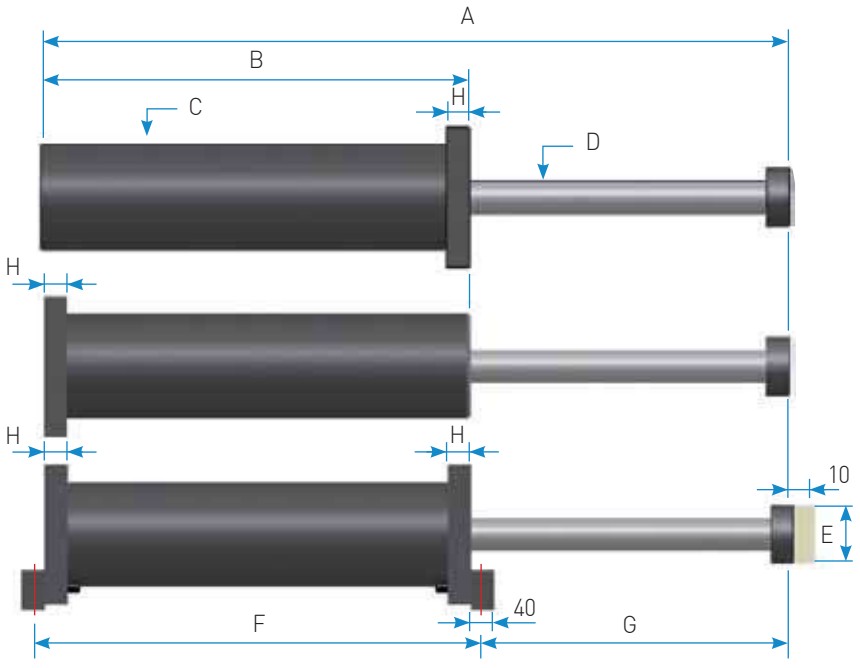


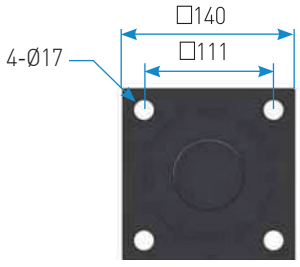


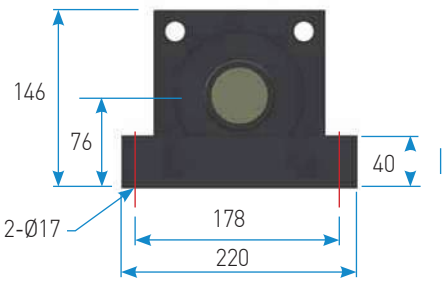
ISC110 Series

Engineering Data & Dimensions

Model	Stroke (mm)	Max. Energy / Cycle (kJ) E_T	Max. Energy / Hour (kJ/hr) E_TC	Max.Buffer Force (kN) F_S	Dimension [unit:mm]							
					A	B	C	D	E	F	G	H
ISC110 - 50	50	5	290	115	370	203	Ø110	40	60	270	120	25
- 100	100	10	560	115	470	280	Ø110	40	60	320	170	25
- 150	150	15	880	115	553	339	Ø110	40	60	379	194	25
- 200	200	20	930	115	655	390	Ø110	40	60	430	245	25
- 250	250	25	1,050	115	757	441	Ø110	40	60	481	296	25
- 300	300	29	1,180	115	859	492	Ø110	40	60	532	347	25
- 350	350	34	1,350	115	960	543	Ø110	40	60	583	397	25
- 400	400	39	1,510	115	1,062	594	Ø110	40	60	634	448	25
- 450	450	44	1,680	115	1,164	645	Ø110	40	60	685	499	25
- 500	500	49	1,840	115	1,265	695	Ø110	40	60	735	550	25
- 600	600	59	2,160	115	1,469	797	Ø110	40	60	837	652	25
- 700	700	69	2,480	115	1,672	899	Ø110	40	60	937	753	25
- 800	800	79	2,800	115	1,953	1,079	Ø110	40	60	1,119	854	25
- 900	900	88	3,130	115	2,151	1,179	Ø110	40	60	1,219	952	25
- 1000	1000	73	3,480	92	2,351	1,279	Ø110	40	60	1,319	1,052	25
- 1200	1200	60	2,750	63	2,751	1,479	Ø110	40	60	1,519	1,252	25
- 1400	1400	41	1,910	37	3,171	1,689	Ø110	40	60	1,729	1,462	25



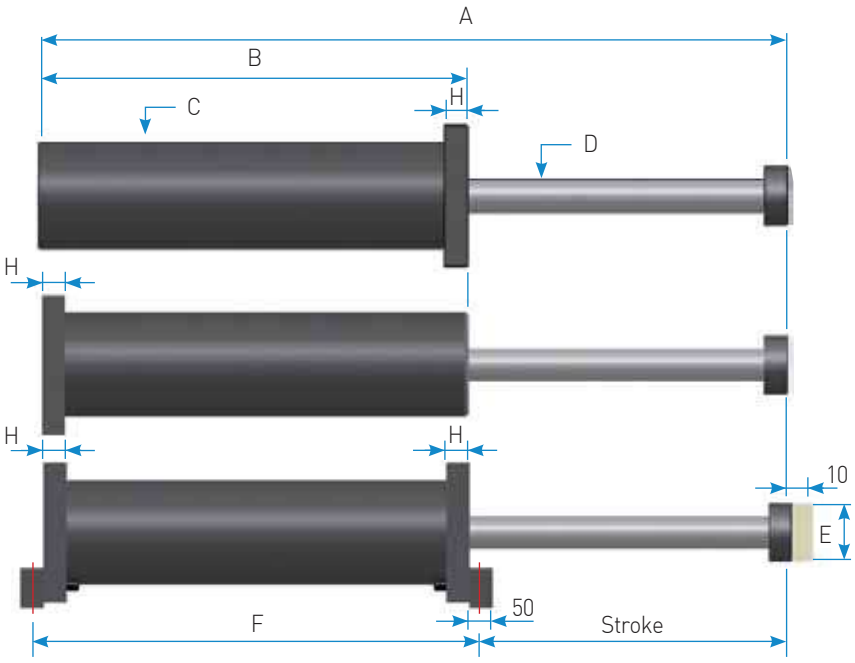


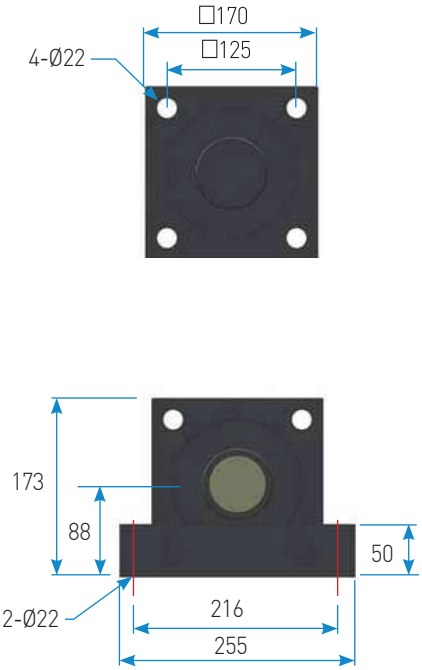


ISC130 Series

Engineering Data & Dimensions

Model	Stroke (mm)	Max. Energy / Cycle (kJ) E_T	Max. Energy / Hour (kJ/hr) E_TC	Max.Buffer Force (kN) F_S	Dimension [unit:mm]							
					A	B	C	D	E	F	G	H
ISC130 - 50	50	10	590	245	336	260	138	45	70	310	112	25
-75	75	15	650	245	387	285	138	45	70	335	137	25
-125	125	25	810	245	489	335	138	45	70	385	187	25
-200	200	39	1,110	245	640	410	138	45	70	460	262	25
-250	250	49	1,310	245	742	460	138	45	70	510	312	25
-300	300	58	1,510	245	844	511	138	45	70	561	362	25
-350	350	68	1,730	245	995	558	138	45	70	608	412	25
-400	400	78	1,930	245	1,097	609	138	45	70	659	463	25
-450	450	88	2,130	245	1,199	660	138	45	70	710	514	25
-500	500	97	2,320	245	1,301	711	138	45	70	761	565	25
-600	600	116	2,710	245	1,504	812	138	45	70	862	667	25
-700	700	136	3,100	245	1,707	914	138	45	70	964	768	25
-800	800	155	3,480	215	1,910	1,015	138	45	70	1,065	870	25
-900	900	167	3,780	181	2,156	1,164	138	45	70	1,214	967	25
-1000	1,000	117	3,820	147	2,356	1,264	138	45	70	1,314	1,067	25
-1200	1,200	103	4,720	107	2,756	1,464	138	45	70	1,514	1,267	25
-1400	1,400	73	2,850	66	3,156	1,664	138	45	70	1,714	1,467	25
-1500	1,500	66	2,430	55	3,384	1,778	138	45	70	1,828	1,581	25

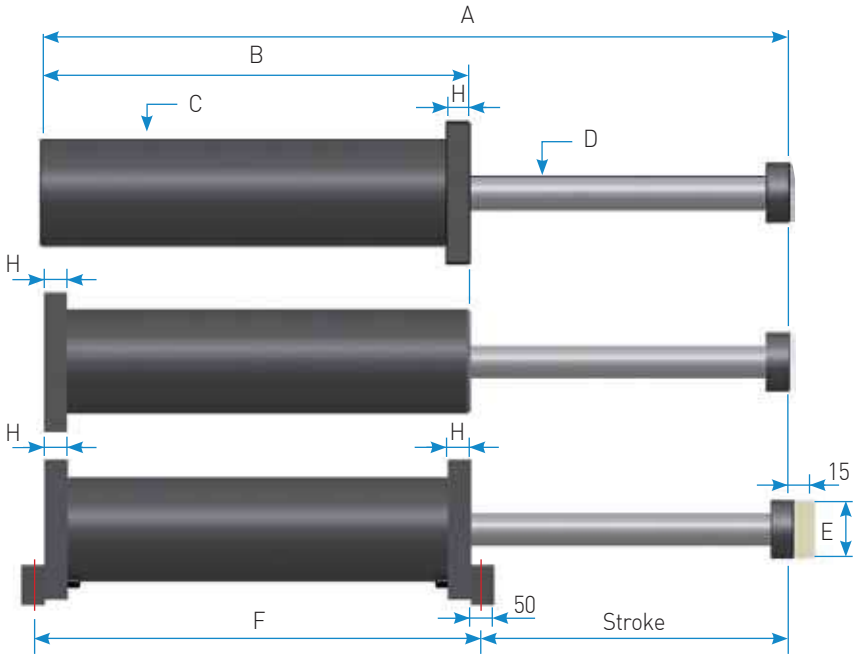


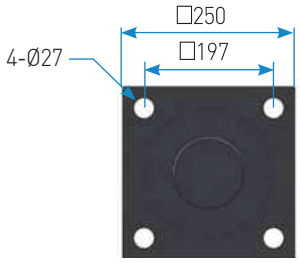


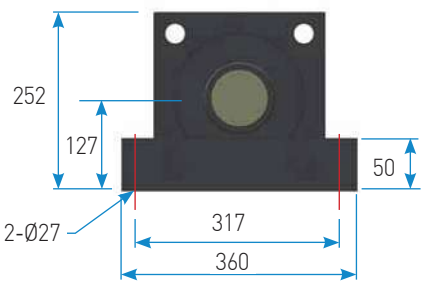
ISC200 Series

Engineering Data & Dimensions

Model	Stroke (mm)	Max. Energy / Cycle (kJ) E_T	Max. Energy / Hour (kJ/hr) E_TC	Max.Buffer Force (kN) F_S	Dimension [unit:mm]							
					A	B	C	D	E	F	G	H
ISC200 - 50	50	16	940	370	430	394	200	65	100	444	115	40
- 100	100	31	1,530	370	532	445	200	65	100	495	164	40
- 150	150	47	1,750	370	632	495	200	65	100	545	215	40
- 200	200	63	1,980	370	735	547	200	65	100	597	263	40
- 250	250	79	2,210	370	836	597	200	65	100	647	314	40
- 300	300	93	2,850	370	1,032	642	200	65	100	692	365	40
- 400	400	126	3,300	370	1,234	743	200	65	100	793	466	40
- 500	500	157	3,750	370	1,438	845	200	65	100	895	568	40
- 600	600	188	4,210	370	1,642	947	200	65	100	997	670	40
- 700	700	220	4,660	370	1,844	1,048	200	65	100	1098	771	40
- 800	800	251	5,110	370	2,048	1,150	200	65	100	1,200	873	40
- 900	900	283	5,560	370	2,252	1,252	200	65	100	1,302	975	40
- 1000	1,000	240	6,110	300	2,454	1,353	200	65	100	1,403	1,076	40
- 1200	1,200	210	4,920	200	2,854	1,553	200	65	100	1,603	1,276	40



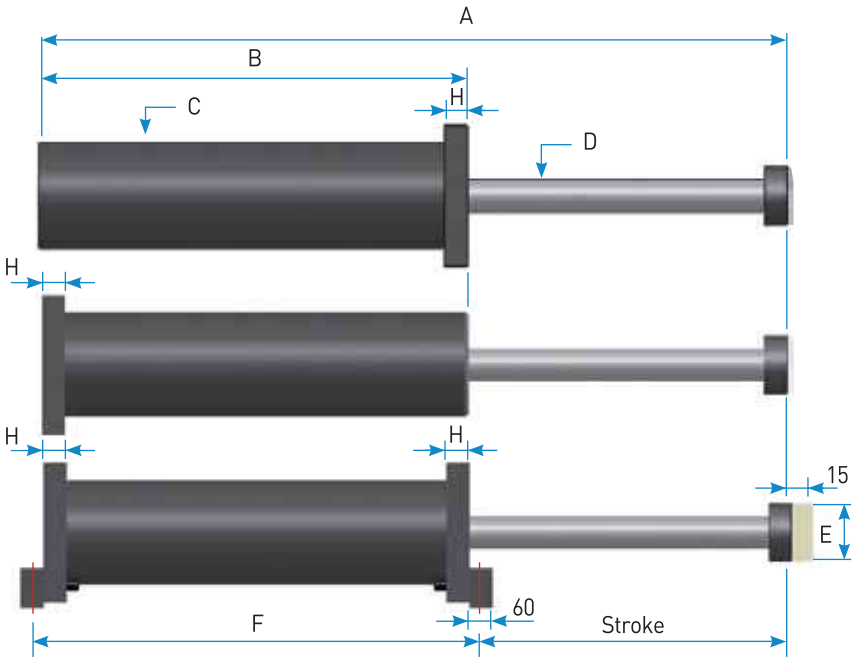


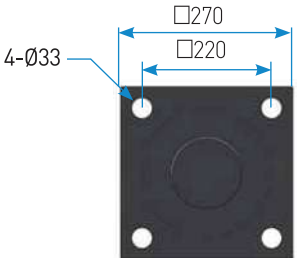


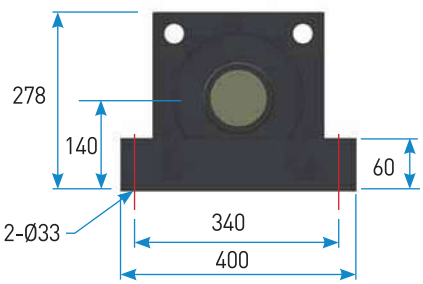
ISC215 Series

Engineering Data & Dimensions

Model	Stroke (mm)	Max. Energy / Cycle (kJ) E_T	Max. Energy / Hour (kJ/hr) E_TC	Max.Buffer Force (kN) F_S	Dimension [unit:mm]							
					A	B	C	D	E	F	G	H
ISC215 - 100	100	48	1,800	560	591	375	215	80	125	435	186	40
- 150	150	72	2,050	560	693	426	215	80	125	486	237	40
- 200	200	96	2,290	560	795	477	215	80	125	537	288	40
- 250	250	120	2,530	560	895	527	215	80	125	587	338	40
- 300	300	143	2,750	560	997	578	215	80	125	638	389	40
- 400	400	191	3,260	560	1,201	680	215	80	125	740	491	40
- 500	500	239	4,230	560	1,504	882	215	80	125	942	592	40
- 600	600	287	4,740	560	1,708	984	215	80	125	1,044	694	40
- 700	700	334	5,200	560	1,910	1,085	215	80	125	1,145	795	40
- 800	800	382	5,690	560	2,114	1,187	215	80	125	1,247	897	40
- 1000	1,000	478	6,680	560	2,520	1,390	215	80	125	1,450	1,100	40
- 1200	1,200	417	6,250	435	2,920	1,590	215	80	125	1,650	1,300	40



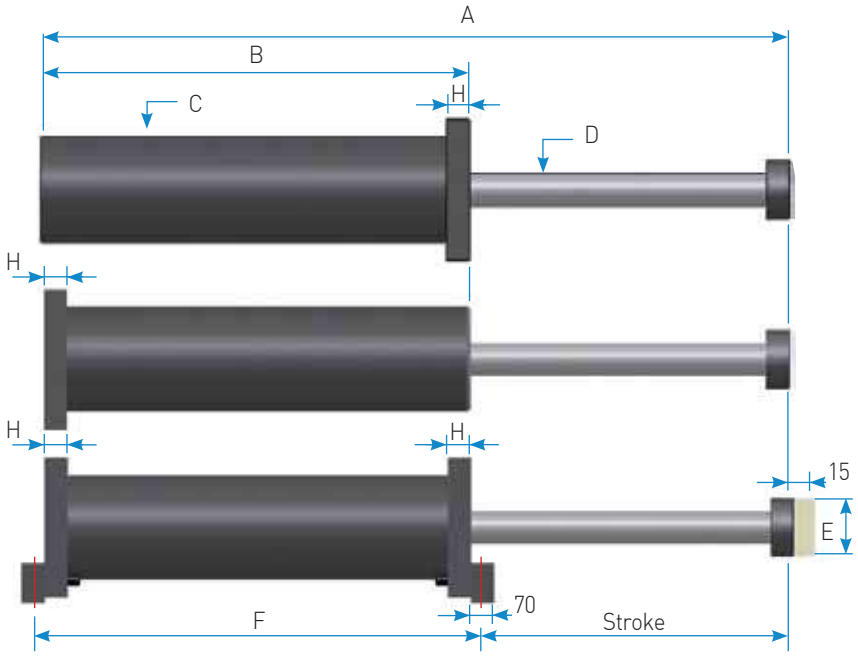


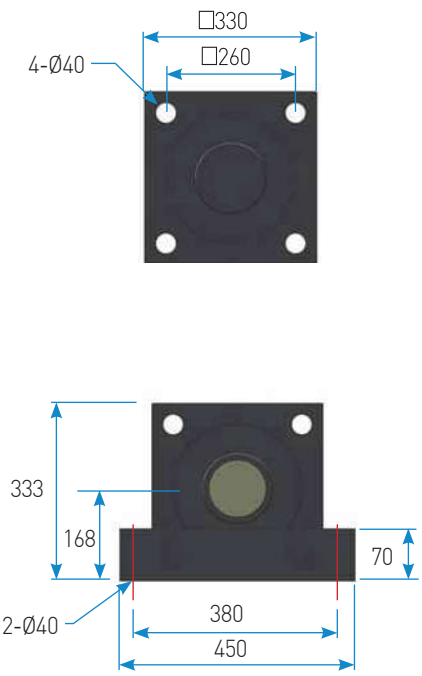


ISC275 Series

Engineering Data & Dimensions

Model	Stroke (mm)	Max. Energy / Cycle (kJ) E_T	Max. Energy / Hour (kJ/hr) E_TC	Max.Buffer Force (kN) F_S	Dimension [unit:mm]							
					A	B	C	D	E	F	G	H
ISC275 - 100	100	78	2,440	915	637	391	275	100	160	461	211	50
- 150	150	117	2,760	915	737	441	275	100	160	511	261	50
- 200	200	156	3,050	915	839	492	275	100	160	562	312	50
- 250	250	194	3,370	915	941	543	275	100	160	613	363	50
- 300	300	233	3,760	915	1,043	594	275	100	160	664	414	50
- 400	400	311	4,300	915	1,246	696	275	100	160	766	515	50
- 500	500	389	4,930	915	1,450	798	275	100	160	868	617	50
- 600	600	467	6,180	915	1,769	1,015	275	100	160	1,085	719	50
- 750	750	583	7,110	915	2,073	1,167	275	100	160	1,237	871	50
- 900	900	700	8,040	915	2,379	1,320	275	100	160	1,390	1,024	50
- 1050	1,050	816	8,970	915	2,683	1,472	275	100	160	1,542	1,176	50
- 1200	1,200	790	8,060	827	2,989	1,625	275	100	160	1,695	1,329	50





IHC Series Speed Control

NEW

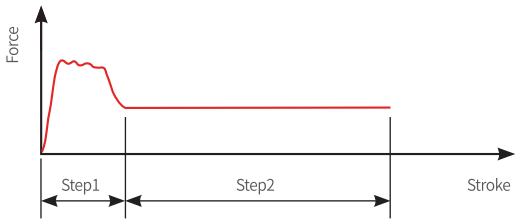
IZMAC Hydro Check

DESCRIPTION

IHC is an absorption function added product that absorbs the initial collision of the existing product, in addition to the capability of precise speed control according to the control range, it is possible to control the constant speed of various weights according to the stroke, so it protects the equipment and extends the life of the machine tool.

- Process

① Step1 : shock absorption
② Step2 : Control same speed



FEATURES

1 The device enables easy control precise speed according to 30 steps of adjustment Knob.
2 It can be installed simply by using snap ring mounting block, and it can be changed the location also. In addition it can be fixed easily.
3 Oil is internally filtered by itself, and speed is controlled always at the same speed.
4 Application : Auto feed drilling, Cutting machine, Grinding machine, Boring machine, Sawing machine etc. that require same speed control.
5 Application temperature
: -10~80°C • Special -30~100°C
6 Accurate two step speed control

APPLICATION

Widely used where speed control is required, such as drilling, cutting, safety devices, and drilling machines.

IHC SERIES ORDERING INFORMATION

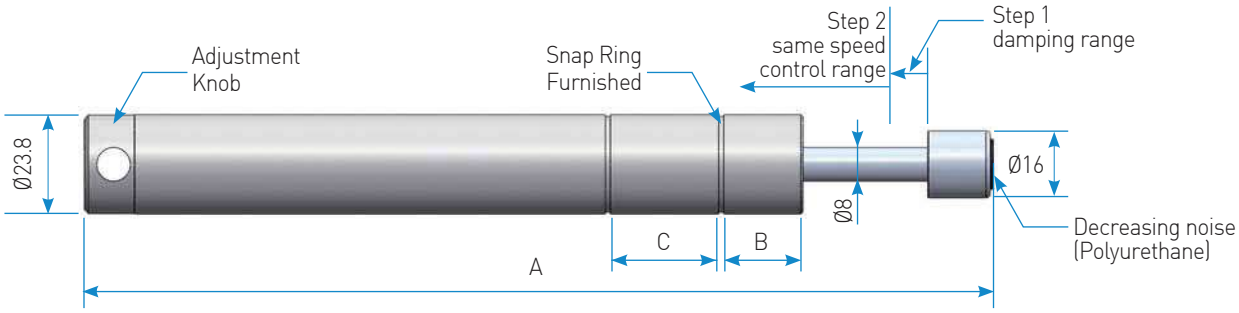
IHC - 24 - 13 - B - SO

- SO : Customizing production / No mark : Standard
- No mark : Without bumper head / B : With bumper head
- Stroke
- Body Thread Size
- I : Izmac, H : Hydro, C : Check

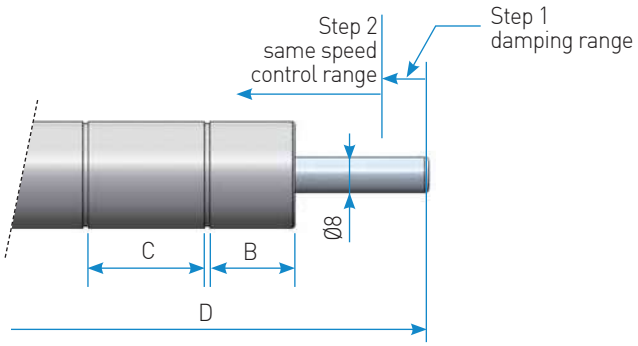
IHC24 Series

Engineering Data

Model	Damping Range [mm] Step1	Stroke [mm] Step2	Dimensions [mm]				Max. Load Angle [°]	Speed Adjustment Range		Weight (g)
			A	B	C	D		Load Limits [N]	Feed Rate Limits [mm/s]	
IHC24 - 13B	5	13	174	21	26	165.4	0.5	100~3,000	0.2~30	415
- 25B	5	25	213	19		204.4	1			465
- 51B	5	51	314	16		305.4	0.5			645

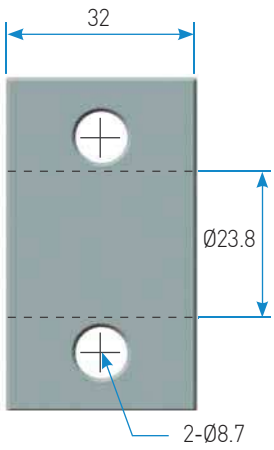


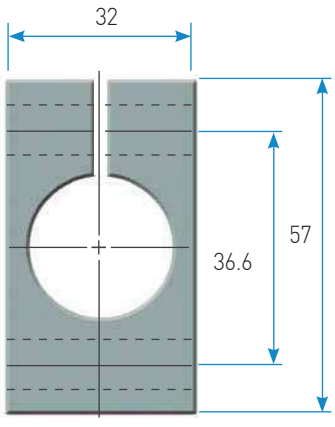
Steel head+Hard PU button
[B TYPE : Black]



Mount Block

MB 24





ICD Series Crash Damper

NEW

IZMAC Crash Damper

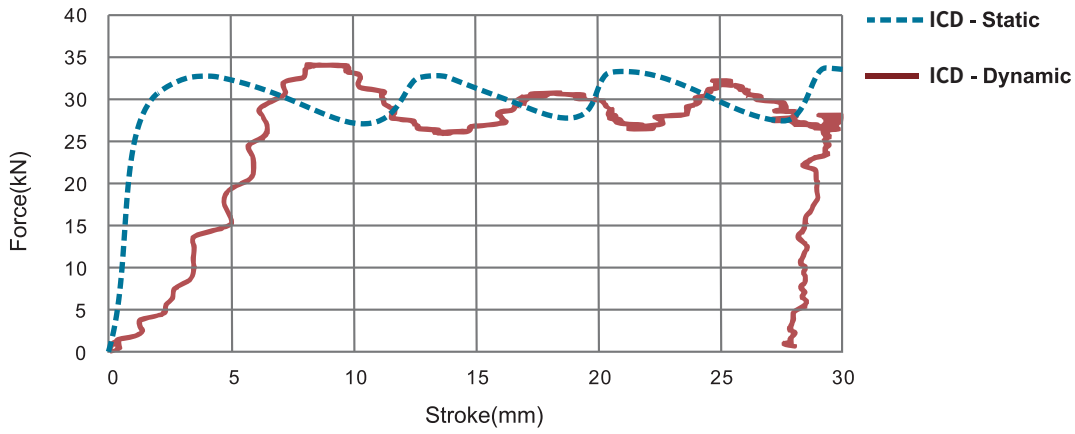
DESCRIPTION

ICD has multi-steps bumpy shape and it absorbs shock energy on collision moment with compressing step by step.
Engineered to maintain rather low peak & recoil force.

FEATURES

1 Shock absorption response function is steady and absorption efficiency is high.
2 It has multi-steps bumpy shape and it absorb shock energy on collision moment with compressing step by step.
3 Compact (small and sturdy) and easy to handling.
4 Body surface strongly treated to prevent corrosion by nickel plating or alloy plating (black).
5 Various sizes, forces, strokes with customizing models are available.
6 Temperature range : -40 ~ 90°C

GRAPH



ICD SERIES ORDERING INFORMATION

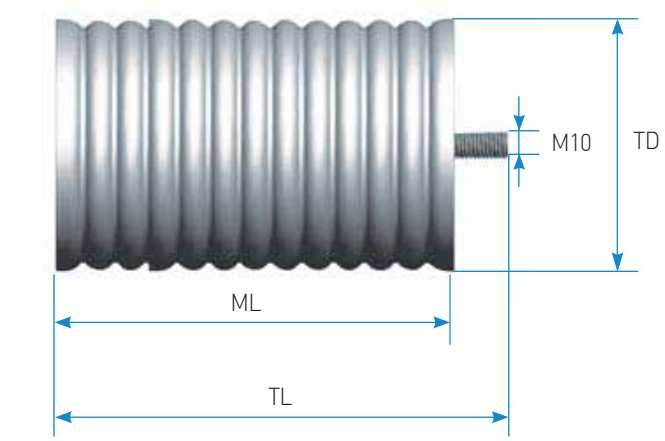
ICD - 087 - 53

- 53 : Nominal stroke
- 087 : Tube outer diameter
- ICD : I : Izmac, C : Crash, D : Damper

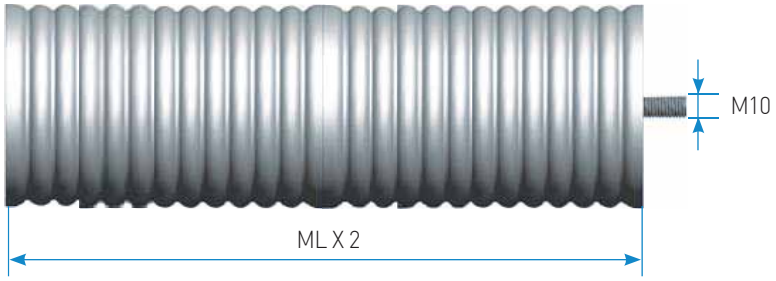
ICD87 Series

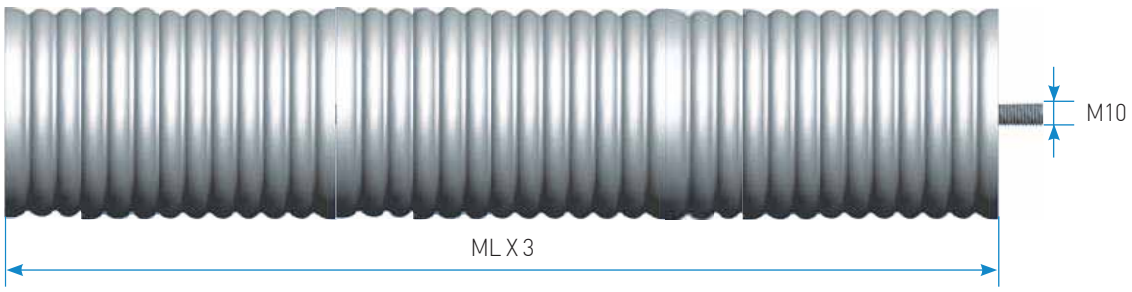
Dimensions & Engineering Data

Model	TD	ML	TL	Thread	stroke[mm]	Force[kN]	Energy[J]
ICD - 87 - 53	87.5	110	134.3	M10	53	30	1450
- 106	87.5	220	244	M10	105	30	2900



How to use





IPC Series Crash Damper

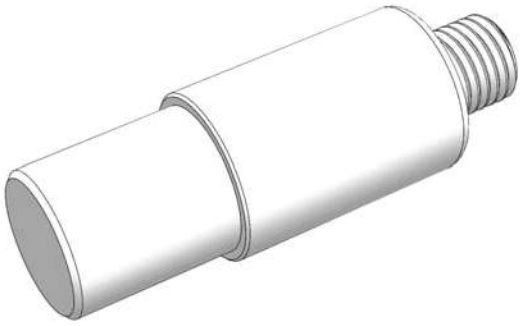
NEW

IZMAC Plastic Type Crash Damper

DESCRIPTION

IPC is a disposable damping product that absorbs high energy by being made of heterogeneous engineering plastics, and it has a structure that converts kinetic energy from impact into deformation energy.

We provide damping solutions to meet the best performance in various industries. This product is suitable for emergency purpose.

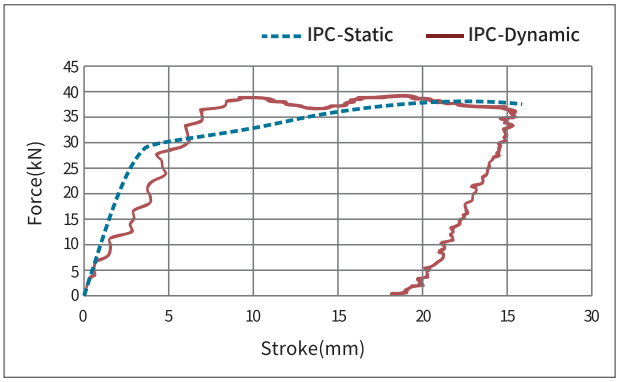


FEATURES

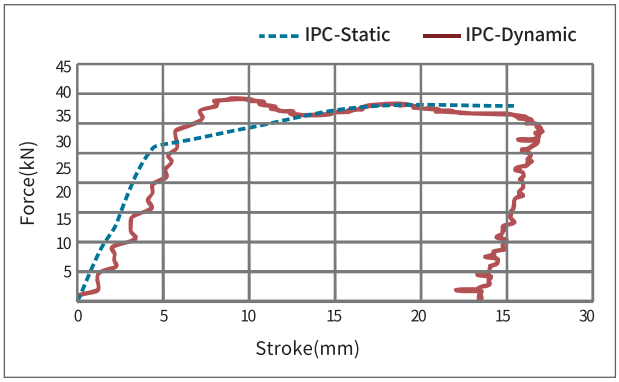
1 High deceleration performance.
2 Shock absorption response function is steady and absorption efficiency is high.
3 Low price, narrow space installation is available.
4 No maintenance required, no corrosion.
5 Customization is possible for various sizes, forces, strokes and capacities.
6 Operating temperature: -40~90°C

GRAPH

IPC 2-038-030



IPC 2-034-030



IPC SERIES ORDERING INFORMATION

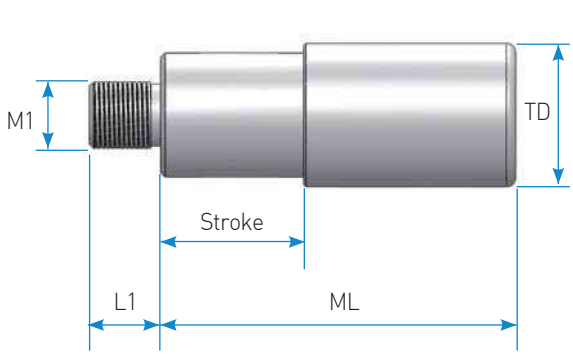
IPC - 1 - 028 - 035

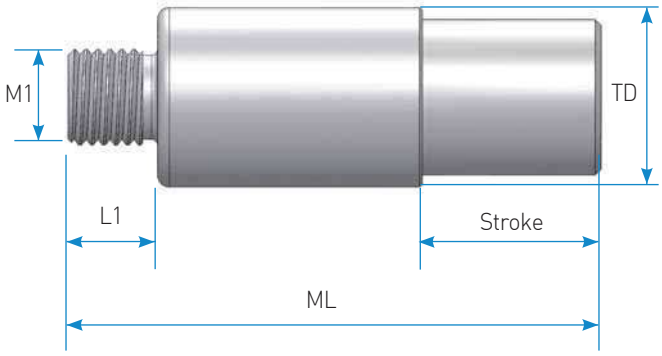
- 035: Nominal stroke
- 028: Tube outer diameter
- 1: Thread type(1 : threaded type, 2 : wrench bolt type)
- IPC: I : Izmac, P: Plastic Type, C: Crash Damper

IPC20 ~ 24 Series

Dimensions & Engineering Data

Model	Stroke[mm]	Fn[kN]	En[J]	TD[mm]	ML[mm]	M1[mm]	L1[mm]
IPC-1-20-15	15	9.1	122.8	20	43.0	M12	10
-32-25	25	28.0	631	32	70.0	M16	15
-40-30	30	46.5	1255.4	40	85.0	M20	18
-52-40	40	82.9	2985.6	52	111.0	M30	25
-64-50	50	129.9	5,846.2	64	136.5	M36	30
IPC-2-24-30	30	15.6	420.7	24	74.5	M8 x 1.25P	14.5
-34-30	30	34.8	940	34	79.0	M12 x 1.75P	18
-38-30	30	44.6	1204.3	38	81.0	M12 x 1.75P	21
-52-40	40	88.3	3180.6	52	108.0	M16 x 2.00P	19
-64-50	50	137.5	6,187.1	64	132.5	M20 x 2.50P	23.5





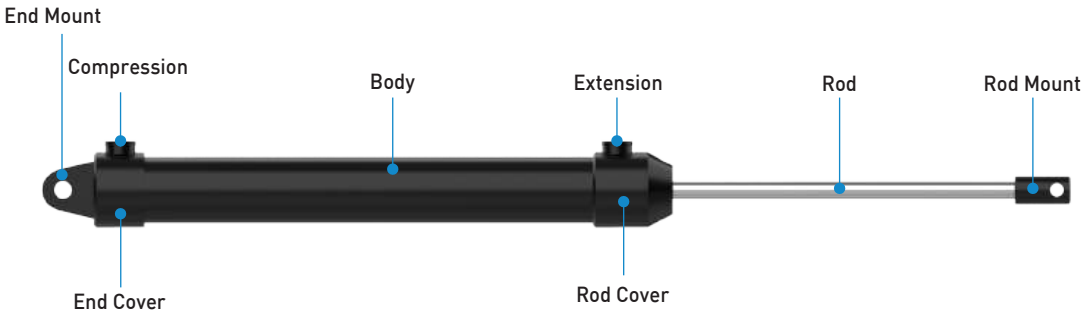
IRD Series Rate Controls

NEW

IZMAC Rate control Double dial

DESCRIPTION

IRD provides stable and accurate single directional/bi-directional speed control for the object when it moves from one position to another. This product is designed to set precise adjustment dial in 12 steps according to the user's application conditions. With speed control, you can significantly reduce shock and vibration to the machine which may effect on uncontrolled & unexpected operation troubles.



FEATURES

1 Guarantees product life through perfect quality control.
2 Reinforced materials are used to enhance durability.
3 Perfect speed control : For safe machine operation and longer machine life
4 For safety device : Equipment cover (open / close)
5 Operating temperature : -10 ~ 80°C • Special -30 ~ 100°C

APPLICATION

Automotive , mechanical engineering, electronics industries.

IRD SERIES ORDERING INFORMATION

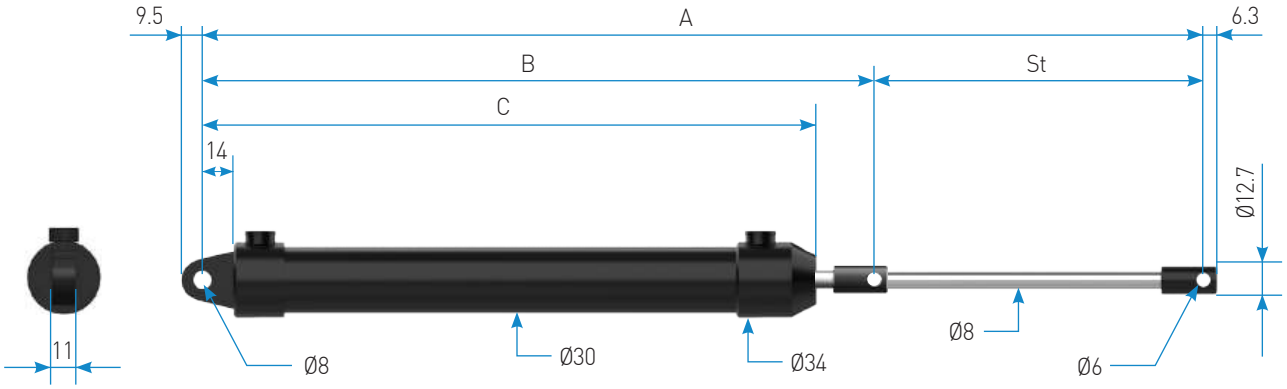
IRD - 30 - 50 - EC

- EC: E(Extension) C(Compression) EC(Both Sided)
- 50: Stroke
- 30: Body Thread Size
- IRD: I : Izmac R : Rate control D : Double dial

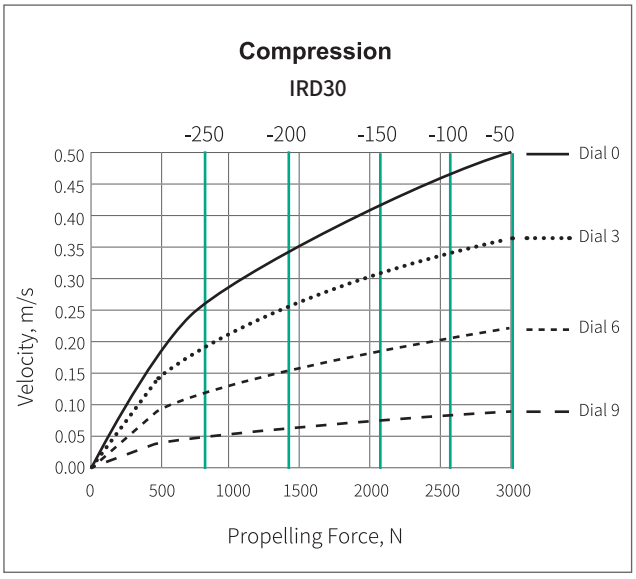
IRD30 Series

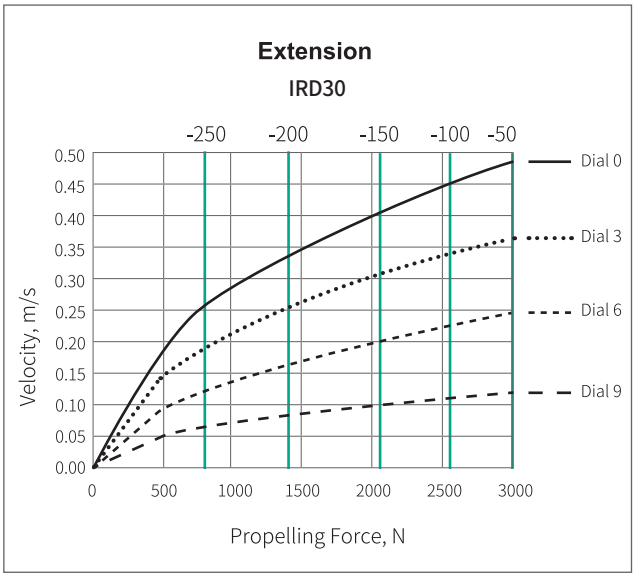
Dimensions & Engineering Data

Model	Stroke (mm) s	Max. Propelling Force (N)		Weight (g)	Dimensions (mm)			Direction
		Ext	Comp		A	B	C	
IRD30 - 50	50	3,000	3,000	310	250	200	176	E,C,E&C
- 100	100	3,000	2,600	380	350	250	226	E,C,E&C
- 150	150	3,000	2,100	450	450	300	276	E,C,E&C
- 200	200	3,000	1,400	530	550	350	326	E,C,E&C
- 250	250	3,000	800	600	650	400	376	E,C,E&C



Graph





ISR Series Shock Absorber : Short Type

NEW

IZMAC Short Range Absorber

DESCRIPTION

ISR can be installed in a limited space and is suitable for industrial applications requiring high energy absorption. And it is a suitable compact industrial hydraulic product. Unlike general absorber series, it is designed with a unique structure and by way of fast braking time, shock, and noise reduction function, it provides optimum results of best productivity improvement.

FEATURES

1 There are various models of different sizes from M16 to M32.
2 Specially, it has more than three times maximum energy performance compared to other existing products.
3 Improve noise reduction function and increase product durability
4 Thanks to the unique orifice structure, it enables smooth absorption characteristics to stop collision material softly.
5 Maximum impact speed : 0.05 ~ 3m/s
6 Piston rod : Hard Chrome : 25㎛
7 Available to use without an external stopper.

APPLICATION

Automotive , Mechanical engineering, Electronics industries

ISR SERIES ORDERING INFORMATION

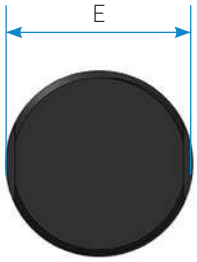
ISR - 16 - 04 - LN

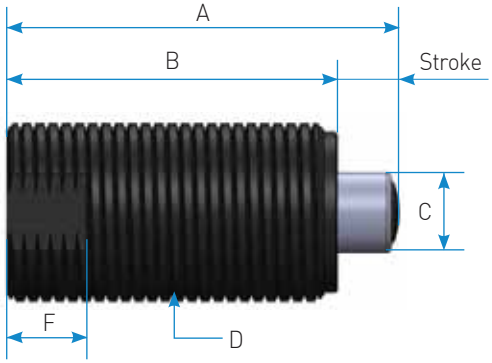
- LN : SC : Stop Collar / LN : Lock Nut
- 04 : Stroke
- 16 : Body Thread Size
- ISR : I : Izmac / S : Short / R : Range Absorber

ISR16 ~ 25 Series

Engineering Data

Model	Stroke (mm)	Max.Energy / Cycle(Nm) E_T	Max.Energy / Hour (Nm / h) E_TC	Recoil Forec(N)		Weight (g)
				Ext.	Comp.	
ISR16 - 04	4	12	18,000	8	16	1.25
- 09	9	28	42,300	8	17	1.4
ISR20 - 07	7	40	64,600	11	18	65
- 12	12	70	110,700	12	18	75
ISR25 - 08	8	70	108,900	15	20	105
- 15	15	130	204,000	16	21	115





Dimensions

(unit : mm)

Model	Stroke	A	B	C	D	E	F
ISR16 - 04	4	31	27	6	M16 X 1.5P	14	7
- 09	9	49	41	6	M16 X 1.5P	14	7
ISR20 - 07	7	44.5	37.5	9	M20 X 1.5P	18	9
- 12	12	63.5	51.5	9	M20 X 1.5P	18	9
ISR25 - 08	8	52	44	12	M25 X 1.5P	23	10
- 15	15	78	63	12	M25 X 1.5P	23	10

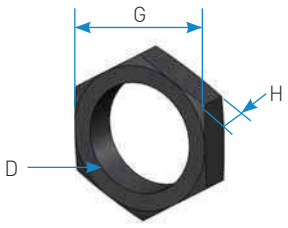
Accessories

- Two Lock Nuts included for each absorber
- Other accessories to be ordered separately

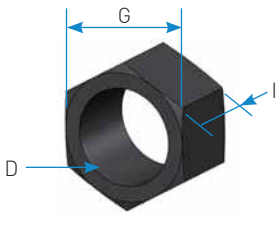
(unit : mm)

Model	G	H	I
ISR16 - 04	19	6	12
ISR20 - 07	24	6	16
ISR25 - 08	32	8	18

Lock Nut



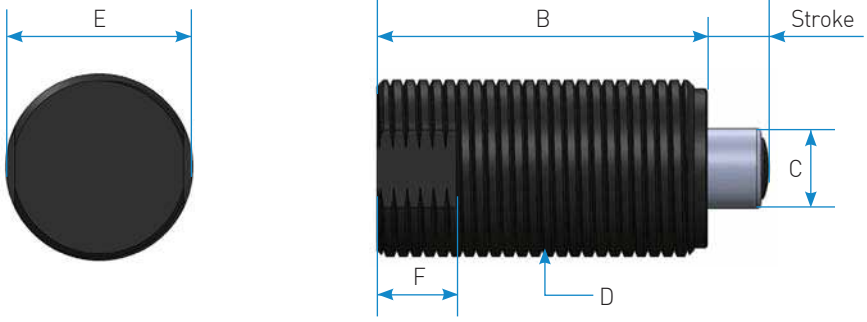
Stop Collar



ISR30 ~ 32 Series

Engineering Data

Model	Stroke (mm)	Max.Energy / Cycle(Nm) E_T	Max.Energy / Hour (Nm / h) E_TC	Recoil Forec(N)		Weight (g)
				Ext.	Comp.	
ISR30 - 09	9	120	186,000	17	30	200
- 15	15	200	311,000	17	31	210
ISR32 - 13	13	210	323,000	17	30	270
- 20	20	330	498,000	17	31	280



Dimensions

(unit : mm)

Model	Stroke	A	B	C	D	E	F
ISR30 - 09	9	61.5	52.5	16	M30 X 1.5P	28	12
- 15	15	88.5	73.5	16	M30 X 1.5P	28	12
ISR32 - 13	13	76	63	18	M32 X 1.5P	30	13
- 20	20	105	85	18	M32 X 1.5P	30	13

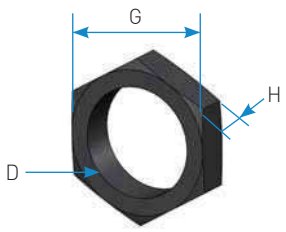
Accessories

- Two Lock Nuts included for each absorber
- Other accessories to be ordered separately

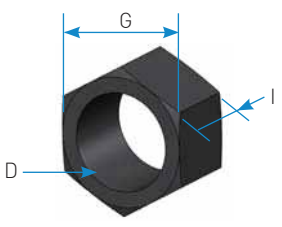
(unit : mm)

Model	G	H	I
ISR30 - 09	36	8	20
ISR32 - 13	44	8	25

Lock Nut



Stop Collar



Best Engineered For Energy Absorption Technology

Shock Absorber
IAA Series
(Steel Head)

Shock Absorber
IMS Series

Shock Absorber
IHA Series

Hydraulic Buffer
IHG Series

Hydraulic Buffer
ISC Series

Damper & Rate control
IHC Series

Damper & Rate control
IRD Series

Damper & Rate control
ICD Series

Damper & Rate control
ISR Series

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