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Best Engineered For Energy Absorption Technology

Shock Absorber
Hydraulic Buffer

izmac
Fluid Damping 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.

izmac
Fluid Damping Technology

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

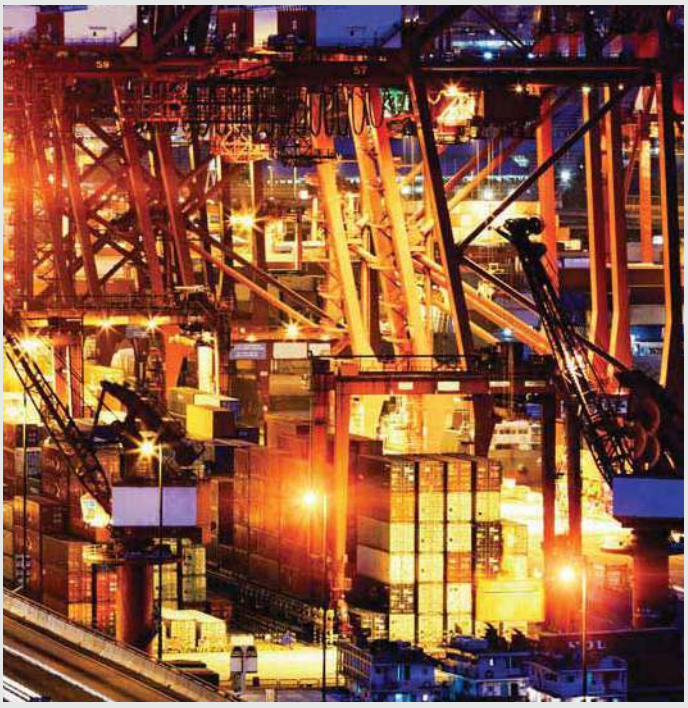
izmac
Fluid Damping Technology

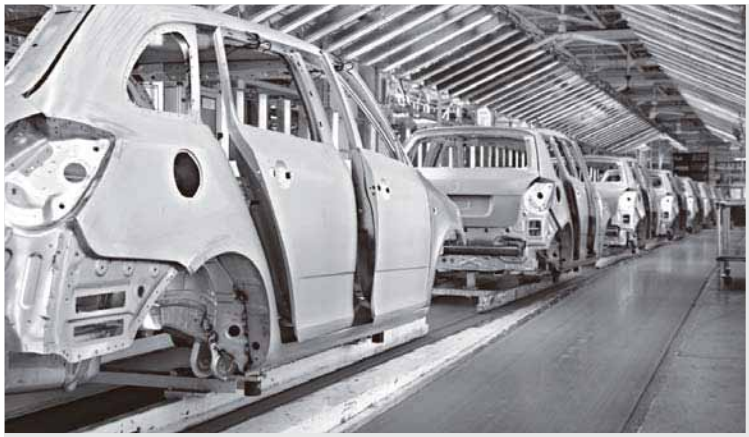
Hydraulic Buffers

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

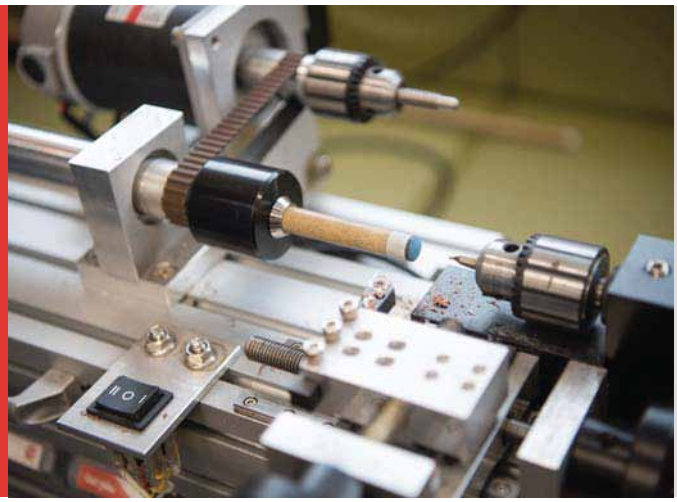
- Upgrade precision degree
- Secure stability, Optimizing control
- Reliability of production lines
- Max productivity
- Decrease failure ratio
- Increase output quality level

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

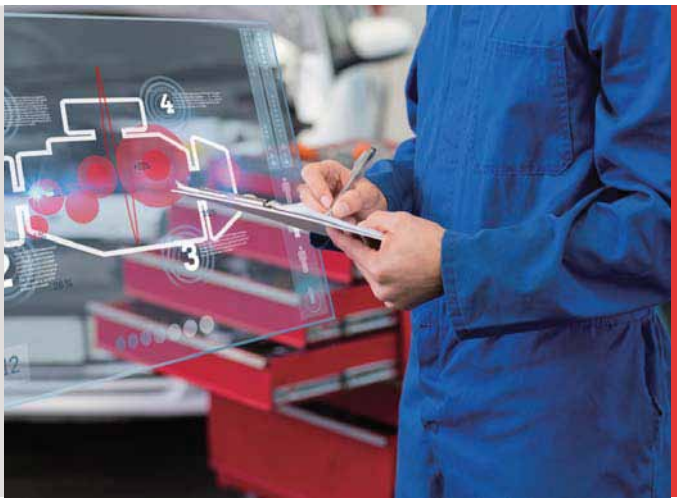
Assembly

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.

Hydraulic Buffers

Fomula and Calculation

Symbols

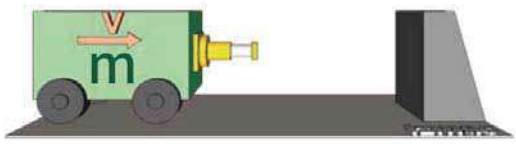
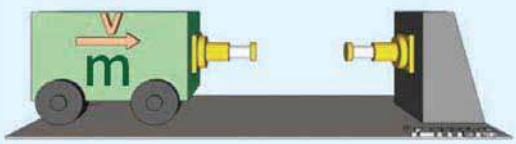
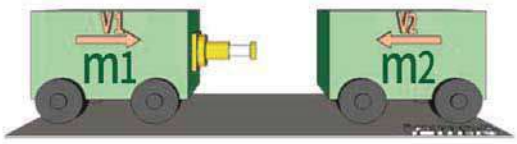
Symbol	Unit	Description
m	kg	Weight
m_e	kg	Designed/weight
H	m	Height
S	m	Stroke
V	m / s	Impact velocity
V_E	m / s	Designed velocity
ω	rad / s	Angular velocity
I	Nms^2	Moment of inertia
T	Nm	Torque

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	$t = 2.5 X S / V$

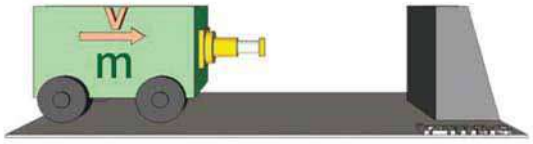
Application

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

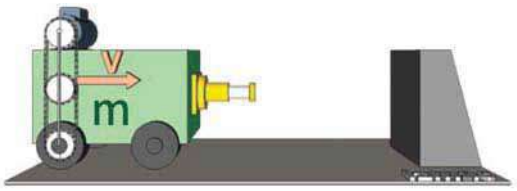
$E_T = E_K + E_W = 12.5 + 0 = 12.5$ kNm

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

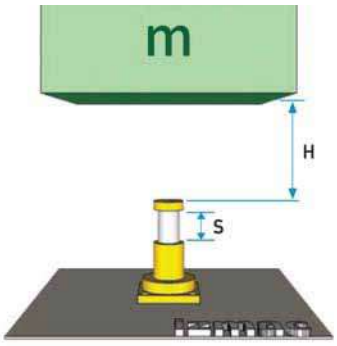
$E_T = E_K + E_W = 112.5 + 8 = 120.5$ kNm

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

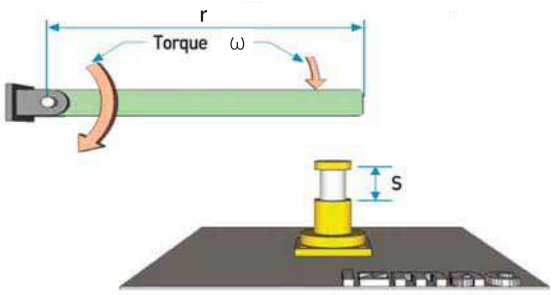
$E_T = E_K + E_W = 11.772 + 3.924 = 15.696$ kNm

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

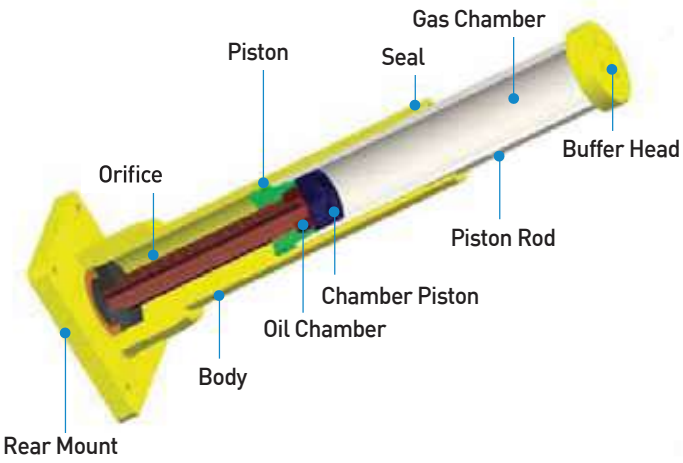
Selected Model with E_T & F_S : IHG120-200

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

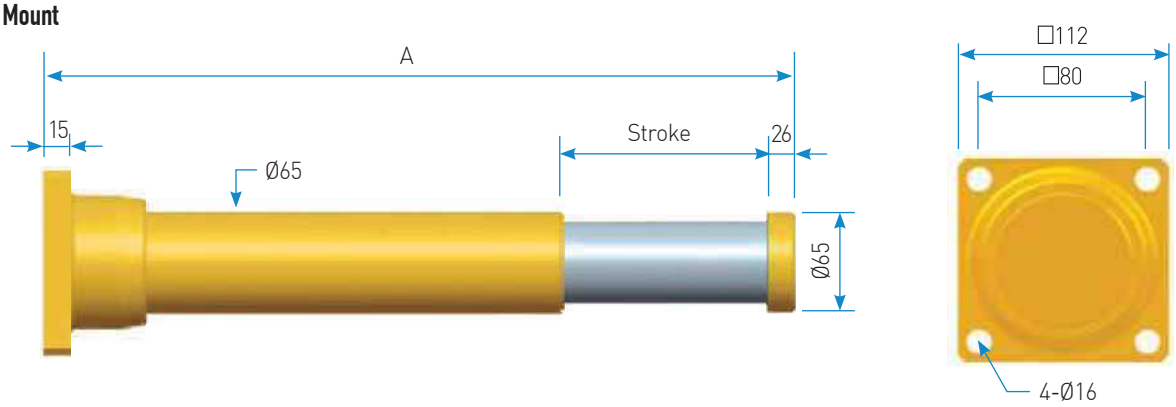
- IHG: I : Izmac / H : Hydraulic / G : Gas & Oil type Buffer
- 120: Body Thread Size
- 200: Stroke : mm
- RF: Mount Type — RS : Rear Flange Style Mount / FM : Front & Rear Foot Mount / FF : Front & Rear Mount Flange / FS : Front Flange Style Mount
- BC: B : Bellows / C : Safety Cable / UC : Urethane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

IHG65 Series

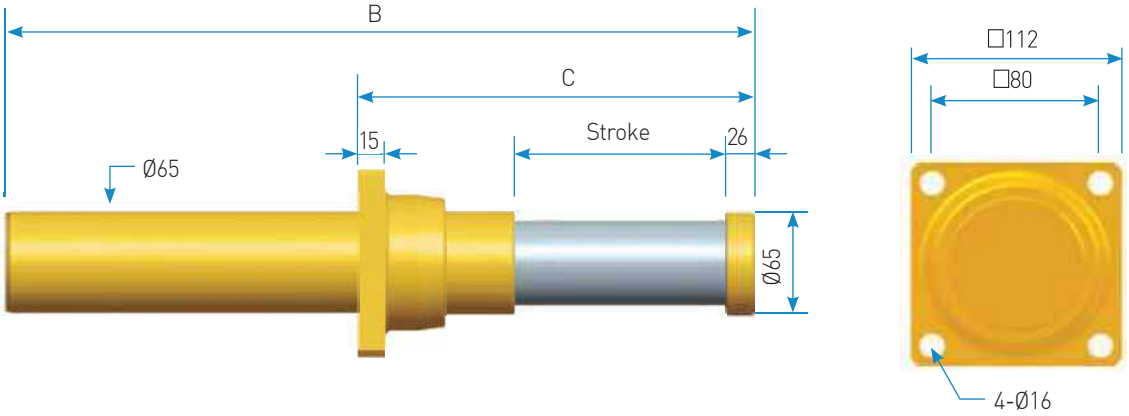
Engineering Data

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)

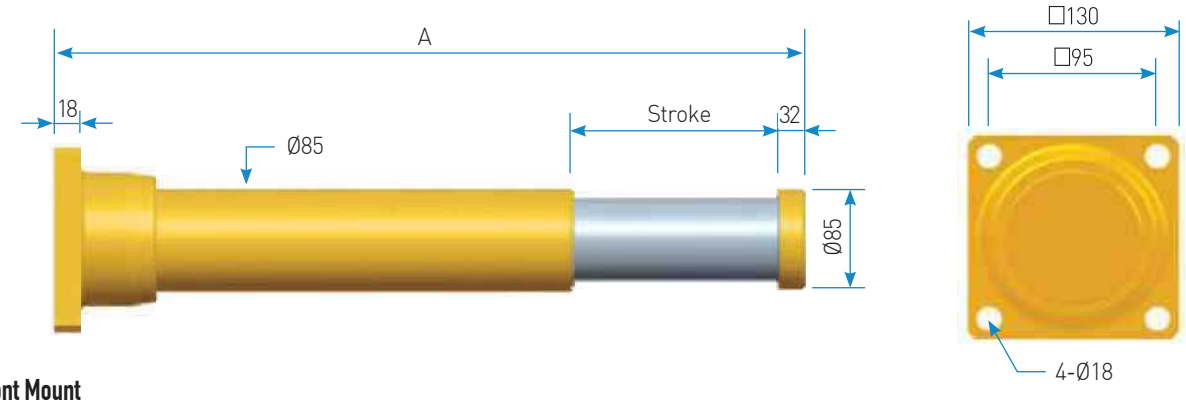
Model	Stroke (mm)	Rear Type (mm)	Front Type (mm)		Mounting Bolt Size
		A	B	C	
IHG65 - 50	50	312	300	151	14
- 75	75	372	360	176	
- 100	100	432	420	231	
- 150	150	552	540	281	
- 200	200	682	670	371	

IHG85 Series

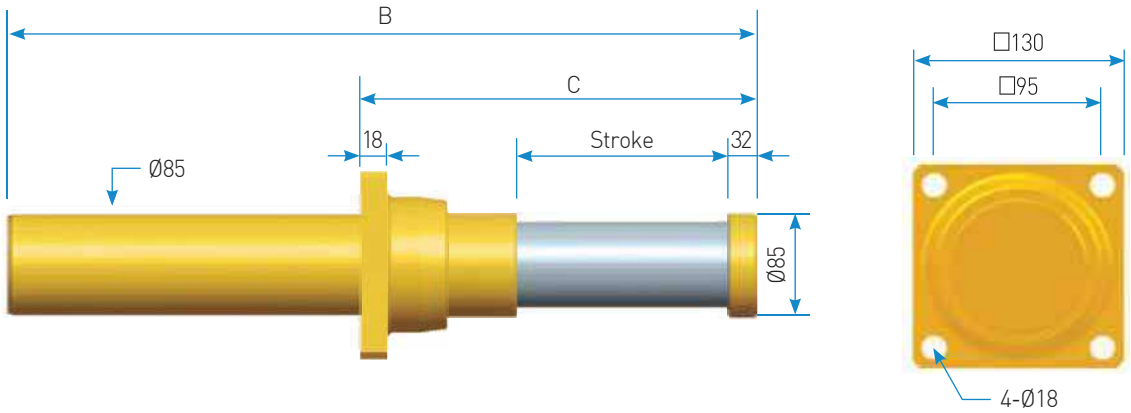
Engineering Data

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)

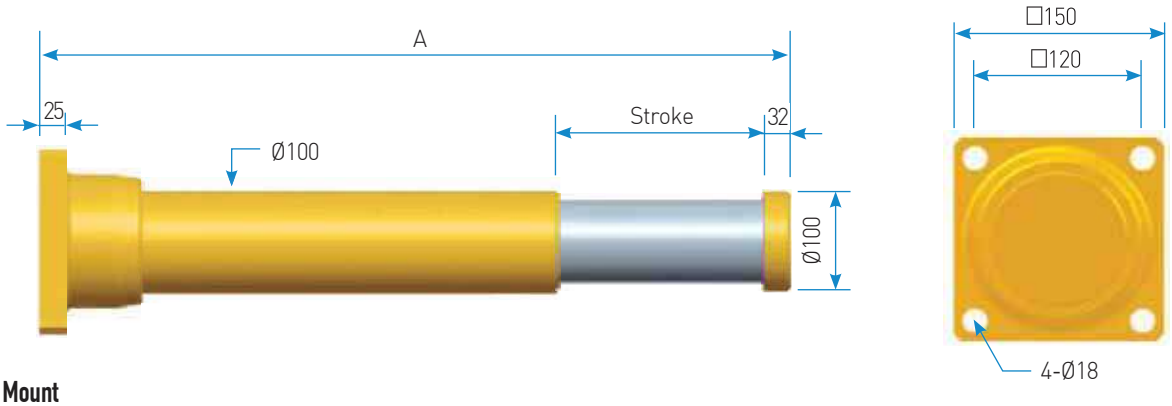
Model	Stroke (mm)	Rear Type (mm)	Front Type (mm)		Mounting Bolt Size
		A	B	C	
IHG85 - 50	50	323	310	183	16
- 100	100	463	450	242	
- 150	150	603	590	305	
- 200	200	743	730	367	
- 250	250	883	870	430	

IHG100 Series

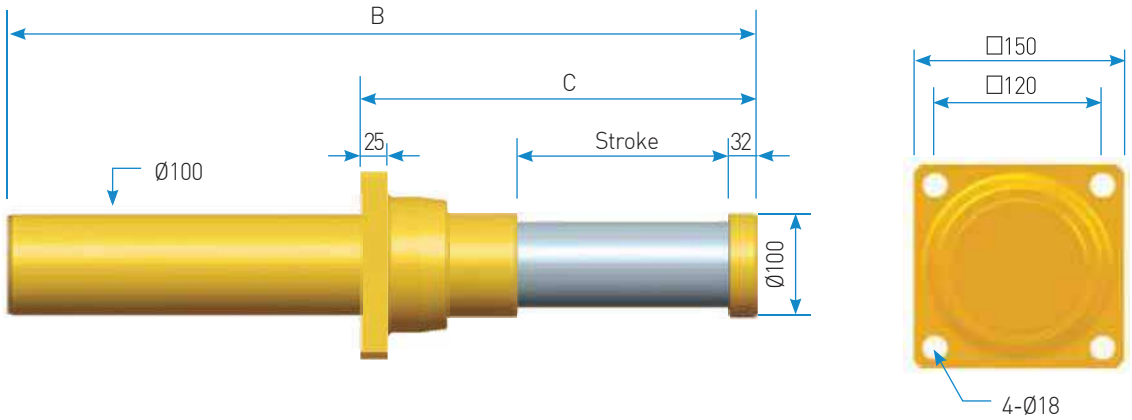
Engineering Data

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)

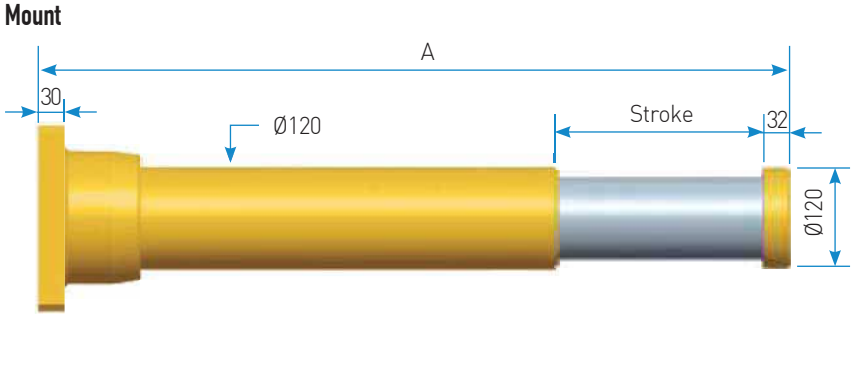
Model	Stroke (mm)	Rear Type (mm)	Front Type (mm)		Mounting Bolt Size
		A	B	C	
IHG100 - 80	80	423	403	215	16
- 100	100	450	430	252	
- 150	150	580	560	315	
- 200	200	720	700	377	
- 250	250	865	845	440	
- 300	300	1010	990	502	

IHG120 Series

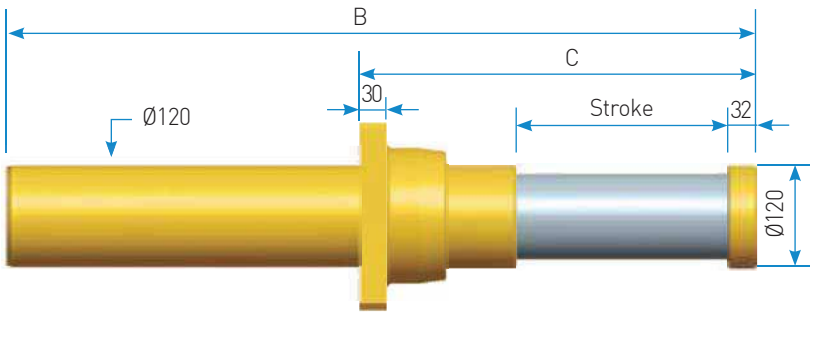
Engineering Data

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)

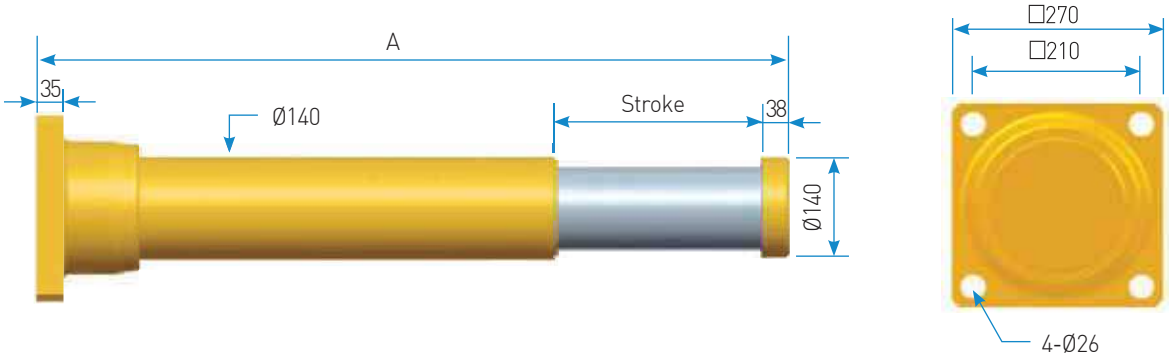
Model	Stroke (mm)	Rear Type (mm)	Front Type (mm)		Mounting Bolt Size
		A	B	C	
IHG120 - 100	100	470	450	277	24
- 150	150	610	590	340	
- 200	200	760	740	402	
- 250	250	900	880	465	
- 300	300	1050	1030	527	
- 400	400	1340	1320	680	
- 500	500	1620	1600	815	
- 600	600	1920	1900	950	
- 800	800	-	2400	1290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

IHG140 Series

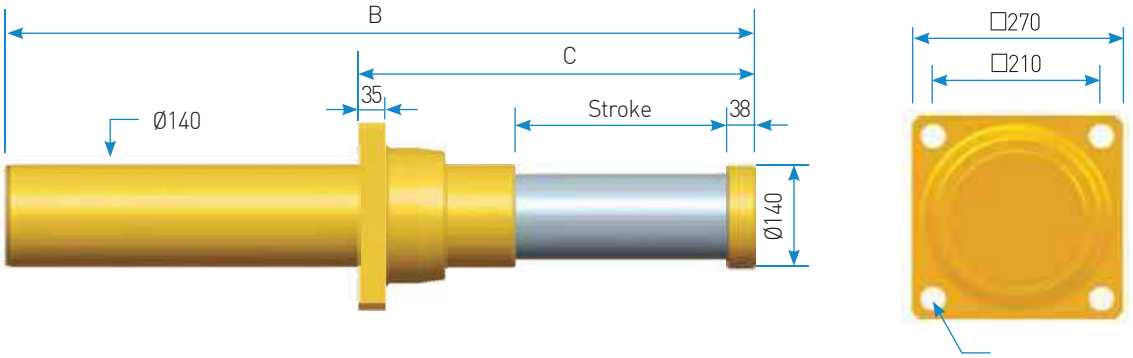
Engineering Data

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

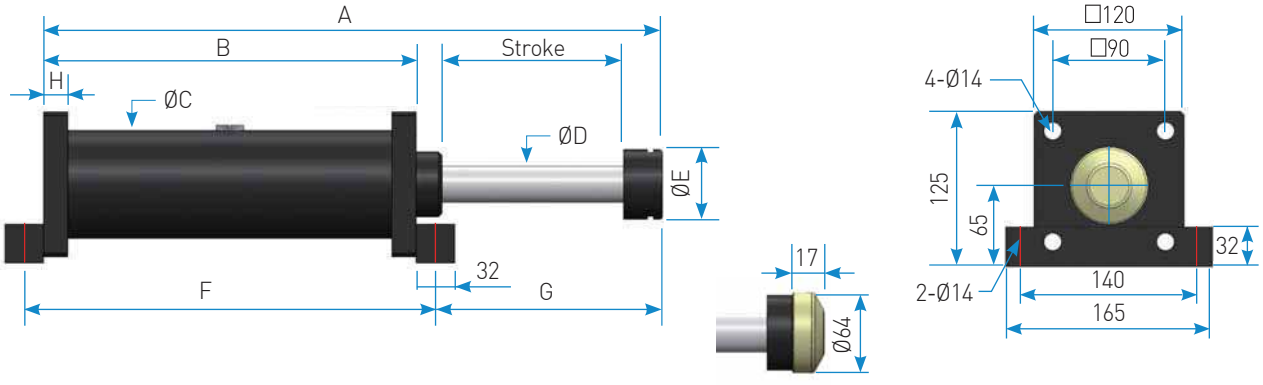
ICA - 90 - 50 - FM - BC

- 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

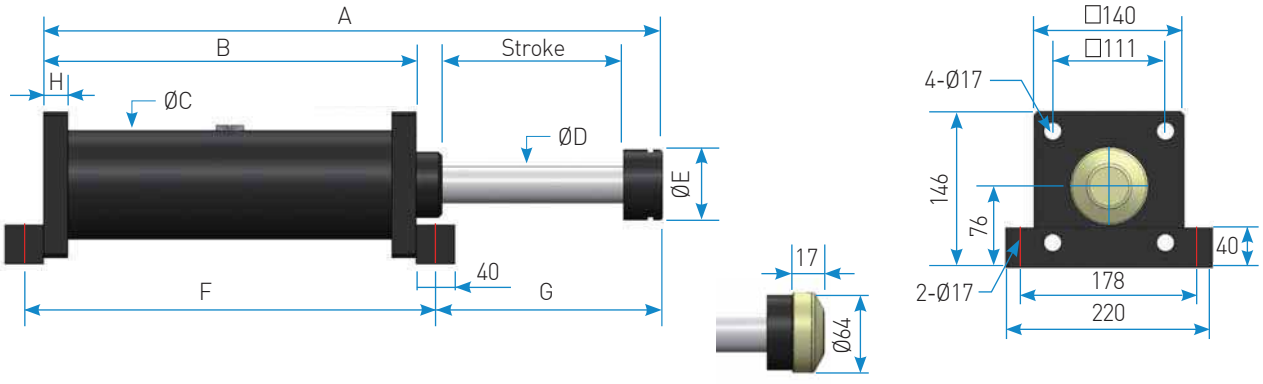
Model	Stroke (mm)	Max. Energy / Cycle(kJ) E_T	Max.Buffer Force (kN) F_S	Dimension [unit:mm]							
				A	B	C	D	E	F	G	H
ICA90 - 50	50	3	77	300	218	90	30	58	250	66	20
- 100	100	6	77	400	268	90	30	58	300	116	20
- 150	150	9	77	500	318	90	30	58	350	166	20
- 200	200	12	77	600	368	90	30	58	400	216	20
- 250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

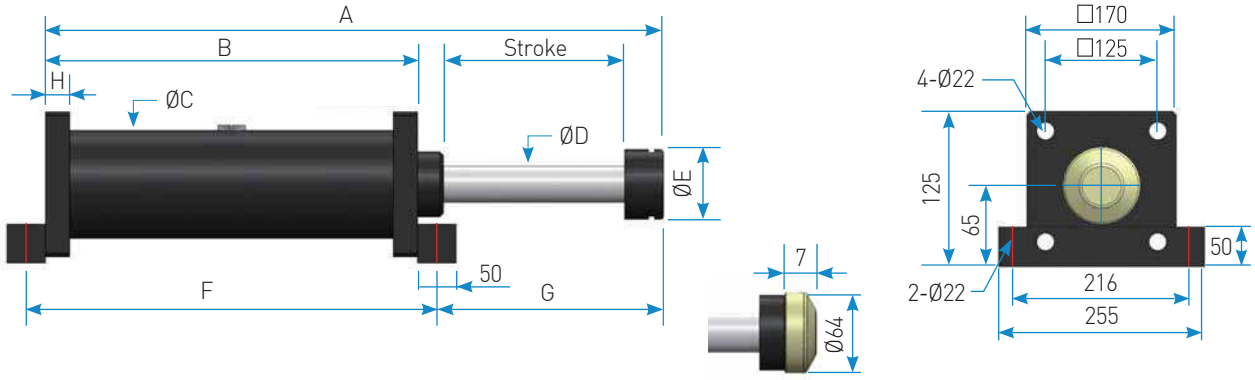
Model	Stroke (mm)	Max. Energy / Cycle(kJ) E_T	Max.Buffer Force (kN) F_S	Dimension [unit:mm]							
				A	B	C	D	E	F	G	H
ICA110 - 50	50	4	114	320	230	110	35	58	270	70	25
- 100	100	9	114	420	280	110	35	58	320	120	25
- 150	150	13	114	520	330	110	35	58	370	170	25
- 200	200	18	114	620	380	110	35	58	420	220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

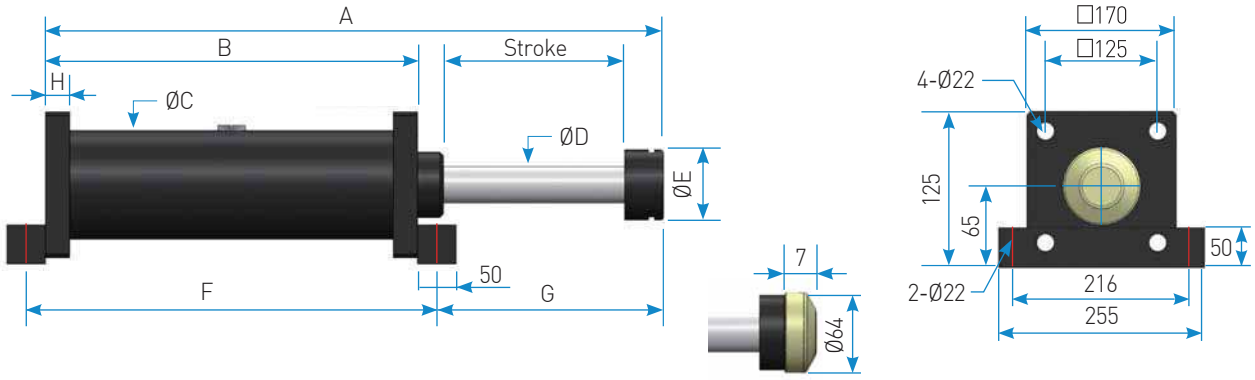
Model	Stroke (mm)	Max. Energy / Cycle(kJ) E_T	Max.Buffer Force (kN) F_S	Dimension [unit:mm]							
				A	B	C	D	E	F	G	H
ICA130 - 50	50	8	210	350	250	138	45	58	300	75	25
- 75	75	16	210	450	300	138	45	58	350	125	25
- 125	125	25	210	550	350	138	45	58	400	175	25
- 200	200	33	210	650	400	138	45	58	450	225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

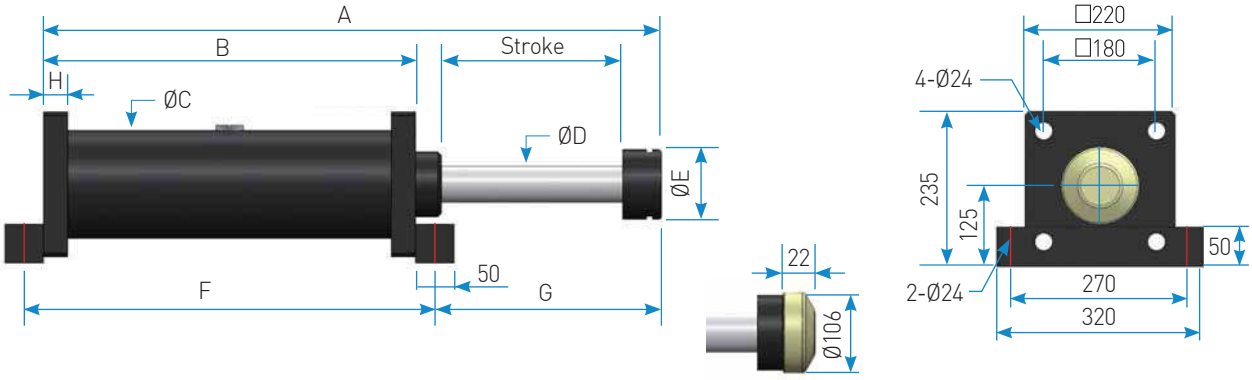
Model	Stroke (mm)	Max. Energy / Cycle(kJ) E_T	Max.Buffer Force (kN) F_S	Dimension [unit:mm]							
				A	B	C	D	E	F	G	H
ICA160 - 50	50	10	267	380	280	160	50	98	330	75	25
- 100	100	21	267	480	330	160	50	98	380	125	25
- 150	150	32	267	580	380	160	50	98	430	175	25
- 200	200	42	267	680	430	160	50	98	480	225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

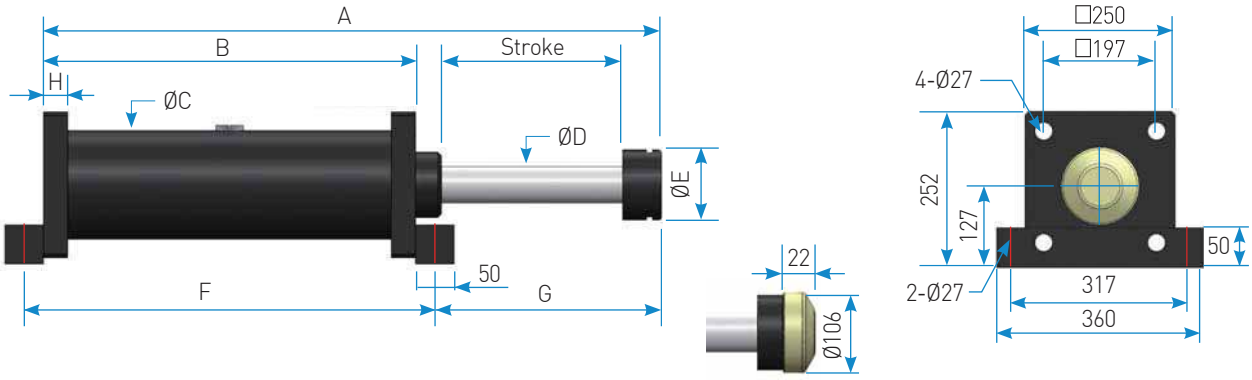
Model	Stroke (mm)	Max. Energy / Cycle(kJ) E_T	Max.Buffer Force (kN) F_S	Dimension [unit:mm]							
				A	B	C	D	E	F	G	H
ICA180 - 50	50	13	338	440	340	180	55	98	390	75	40
- 100	100	27	338	540	390	180	55	98	440	125	40
- 150	150	40	338	640	440	180	55	98	490	175	40
- 200	200	54	338	740	490	180	55	98	540	225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

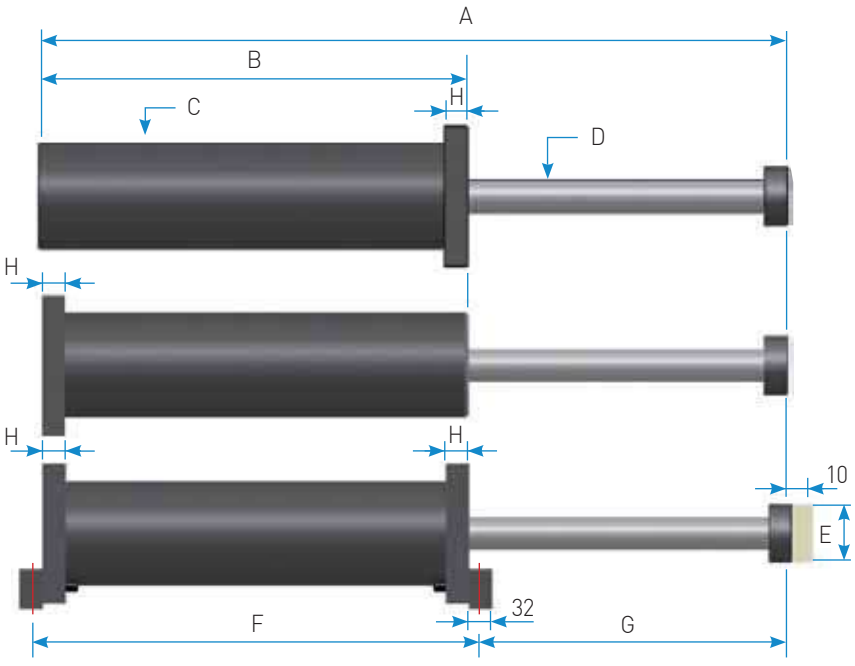
ISC - 90 - 250 - FM - BC

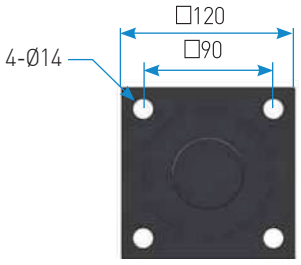
- BC: B : Bellows / C : Safety Cable / UC : Urethane Cap
- FM: RS : Rear Flange Style Mount / FM : Front & Rear Foot Mount / FF : Front & Rear Mount Flange / FS : Front Flange Style Mount
- 250: Stroke(mm)
- 90: Body Thread Size
- ISC: I : Izmac Hydraulic & Oil / S : Stacker / C : Crane Buffer

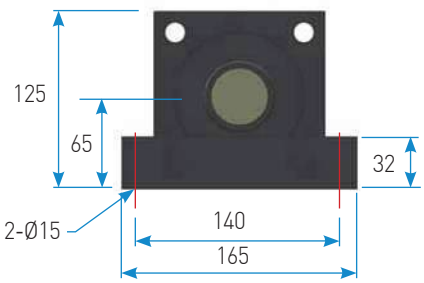
ISC90 Series

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



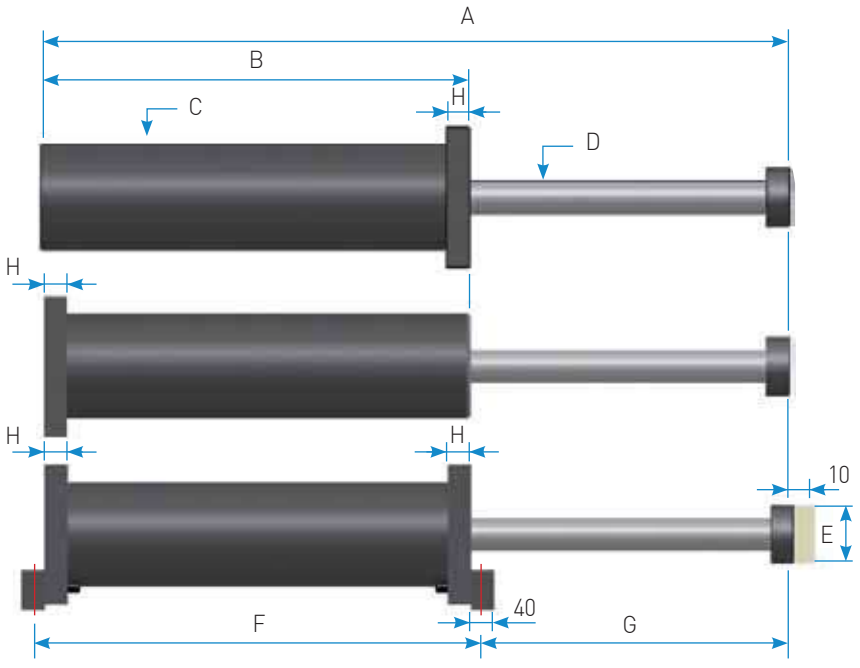


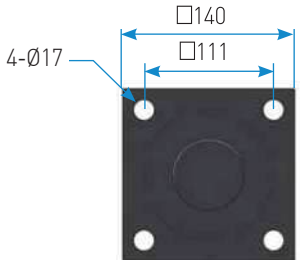


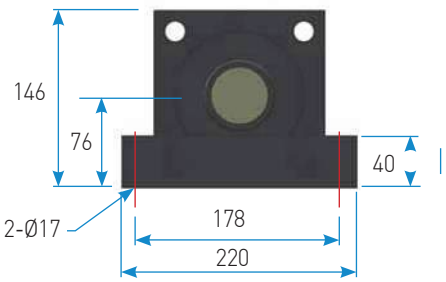
ISC110 Series

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



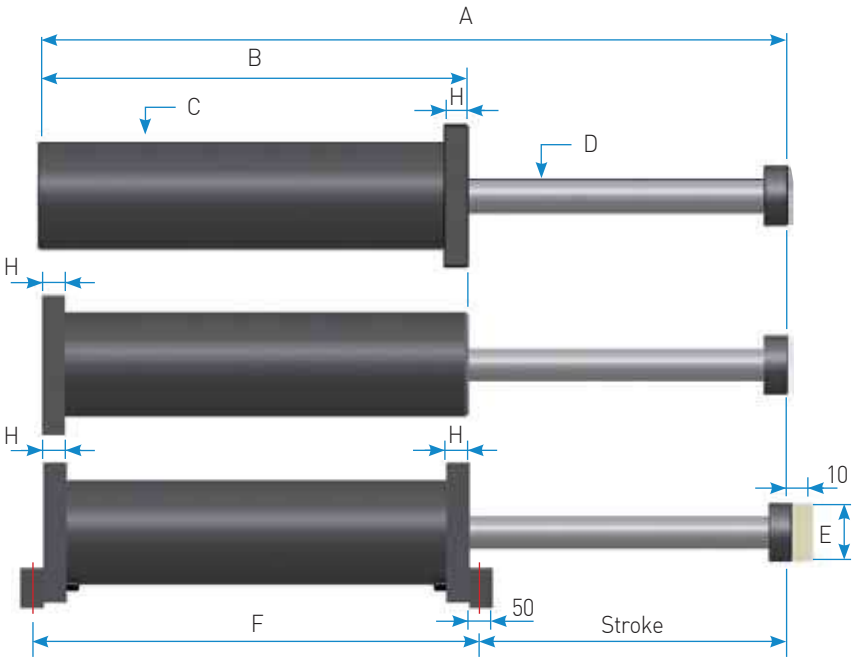


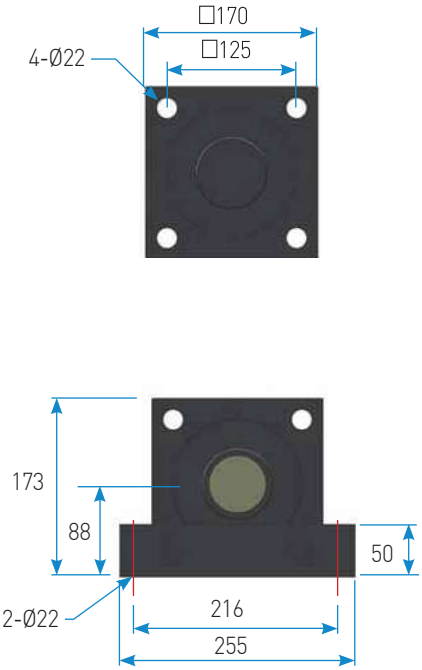


ISC130 Series

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

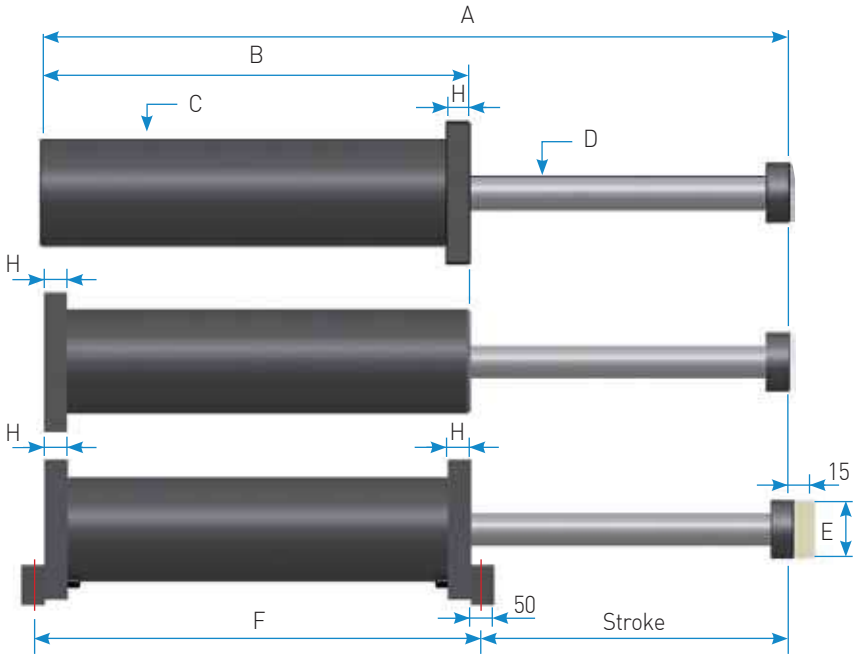


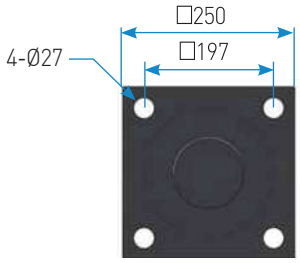


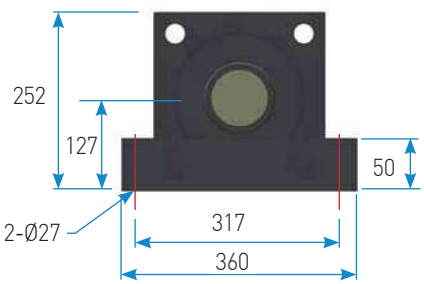
ISC200 Series

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



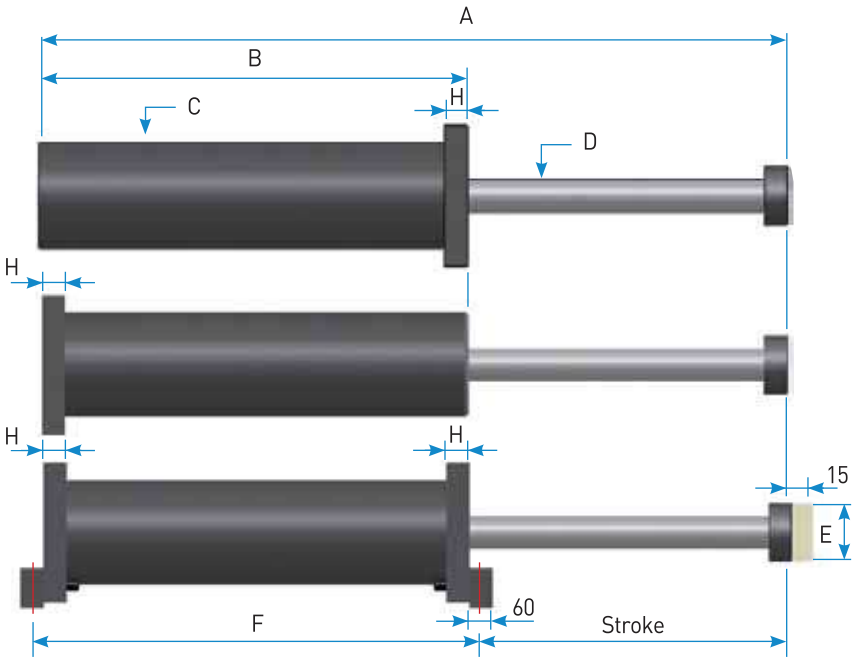


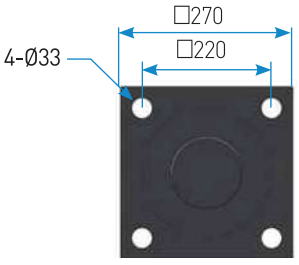


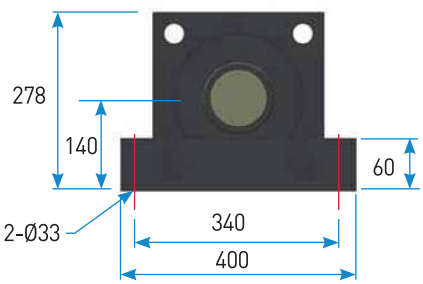
ISC215 Series

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