Overview

Enidine's **Heavy Industry (HI) Series** buffers safely protect heavy machinery and equipment during the transfer of materials and movement of products. The large-bore, high-capacity buffers are individually designed to decelerate moving loads under various conditions and in compliance with industry mandated safety standards. Control of bridge cranes, trolley platforms, large container transfer and transportation safety stops are typical installation examples. Industry-proven design technologies, coupled with the experience of a globally installed product base, ensure deliverable performance that exceeds customer expectations.

Prior to HI Series buffer manufacture, computer-simulated response curves are generated to model actual conditions, verify product performance, confirm damping characteristics and generate unique custom-orificed designs that accommodate multi-condition or specific damping requirements.

Characteristics of the HI Series include a nitrogen-charged return system that allows for soft deceleration and positive return in a maintenance-free package. The oversize bore area results in optimal energy absorption capabilities and increased internal safety factors. State-of-the-art testing facilities ensure integrity of design and product performance.

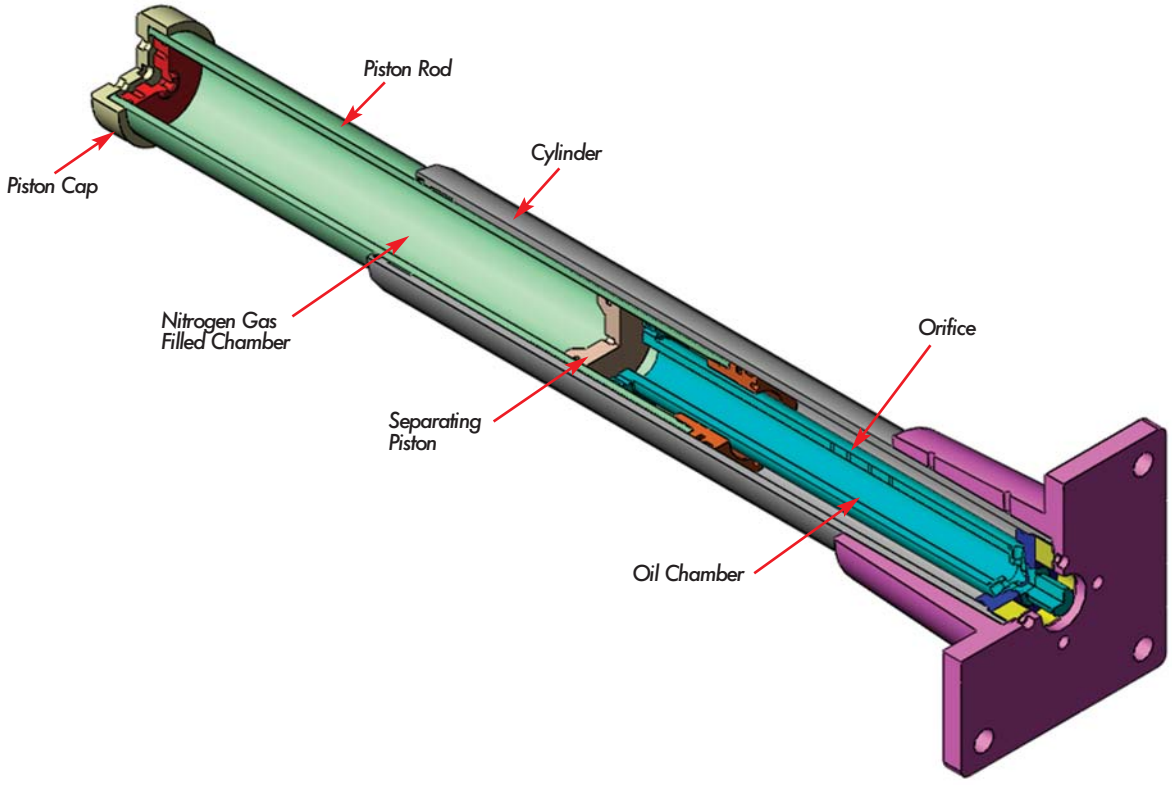
HI Series

Features and Benefits

- Compact design smoothly and safely decelerates large energy capacity loads up to 500 kNm per cycle with standard stroke lengths.
- Engineered to meet OSHA, AISE, CMMA and other safety specifications such as DIN and FEM.
- Nitrogen-charged return system allows for soft deceleration and positive return in a maintenance-free package.
- Wide variety of optional configurations including protective bellows and safety cables.
- Available in custom-orificed non-adjustable models.
- Special epoxy painting and rod materials are available for use in highly corrosive environments.
- Surface treatment (Sea water resistant)
  Housing: gray color, three-part epoxy
  Piston Rod: hard-chrome plated steel.
- Incorporating optional fluids and seal packages available to expand standard operating temperature range from (-10°C to 60°C) and (-35°C to 100°C).

Ordering Information

Enidine Heavy Industry (HI) Series Buffers



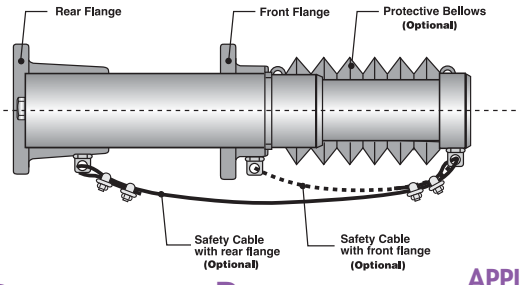
The **Heavy Industry (HI) Series** buffer design incorporates the proven damping system of multiple orifice patterns drilled down the shock tube length, for precise deceleration profiles, coupled with a nitrogen return system for controlled extension of the piston rod to its original position.

During piston movement, oil is forced through the orifice pattern into the oil reservoir chamber. This controlled movement of a piston head by decreasing the orifice area results in precise decay of impact velocity and safe deceleration of the moving load. The oil volume evacuated from the high pressure chamber moves the separating piston, compensating for the oil differential within the unit.

Extension of the piston rod for the next impact is accomplished by the force created from the compressed nitrogen chamber, which acts as both a oil volume compensator, and return force mechanism. The pressure created pushes the fluid back into the oil chamber and creates a force to reposition the piston rod to the fully extended position, ready for the next impact sequence. The nitrogen return system enables the HI Series to be designed for the maximum energy absorption within the smallest envelope size.

Ordering Example

Mounting Bracket flange:
Standard: Rear or Front mount



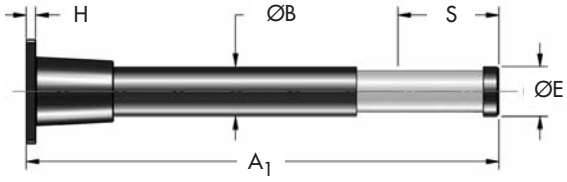
Example:

4	HI 120 x 100	FR	B	APPLICATION DATA
Select quantity	Select HI Series model from Engineering Data Chart	Select mounting method • FF (Flange Front) • FR (Flange Rear)	Additional Options • B Protective bellows • C Safety cable	Required for all models: • Vertical/Horizontal Motion • Mass • Impact Velocity • Propelling Force (if any) • Cycles/Hour • Temperature/Environment • Applicable Standards

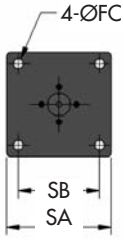
Heavy Industry Shock Absorbers
HI Series

HI 50 x 50 → HI 120 x 1000 Series

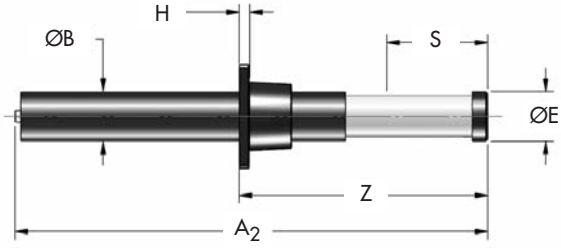
Technical Data



FR (FLANGE REAR)



MOUNTING FLANGE



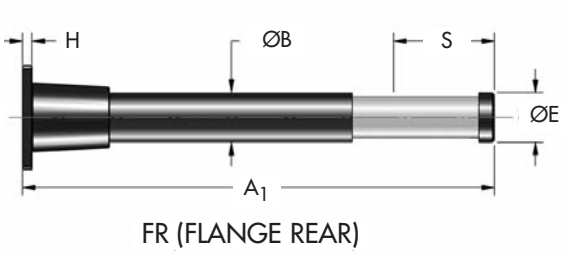
FF (FLANGE FRONT)

Catalog No./ Model	(S) Stroke mm	Max. Energy/cycle Nm/c	Max. Reaction Force kN	Return Force		Mass Kg	A_1 mm	A_2 mm	Z mm	H mm	ØB mm	SA mm	SB mm	ØFC mm	BOLT SIZE mm	ØE mm
				Extension kN	Compression kN											
HI 50 x 50	50	3 050	67	0,3	0,6	5	262	–	–	15	60	100	70	15	M14	58
HI 50 x 100	100	6 200	67	0,3	0,6	9	392	–	–	15	60	100	70	15	M14	58
HI 80 x 50	50	6 700	168	1,0	1,9	15	290	–	–	15	80	128	89	20	M18	79
HI 80 x 100	100	13 500	168	1,0	8,0	21	425	–	–	15	80	128	89	20	M18	79
HI 100 x 50	50	10 000	250	1,65	18,0	16	302	301	175	20	100	150	120	18	M16	99
HI 100 x 100	100	20 000	250	1,65	18,0	22	479	473	245	20	100	150	120	18	M16	99
HI 100 x 150	150	30 000	250	1,65	18,0	28	618	612	300	20	100	150	120	18	M16	99
HI 100 x 200	200	40 000	250	1,65	18,0	32	756	750	390	20	100	150	120	18	M16	99
HI 100 x 400	400	80 000	235	1,65	18,0	46	1 349	1 345	645	25	100	150	120	18	M16	99
HI 100 x 500	500	94 000	235	1,65	18,0	52	–	1 616	890	20	100	150	120	18	M16	99
HI 100 x 600	600	112 000	230	1,65	18,0	58	–	1 888	1 040	20	100	150	120	18	M16	99
HI 100 x 800	800	132 000	205	1,65	18,0	69	–	2 426	1 345	20	100	150	120	18	M16	99
HI 120 x 100	100	32 000	400	2,8	50,0	34	471	467	270	20	120	220	170	26	M24	119
HI 120 x 150	150	48 000	400	2,8	50,0	39	597	593	330	20	120	220	170	26	M24	119
HI 120 x 200	200	64 000	400	2,8	50,0	43	724	720	390	20	120	220	170	26	M24	119
HI 120 x 300	300	94 000	400	2,8	50,0	53	973	969	520	20	120	220	170	26	M24	119
HI 120 x 400	400	125 000	400	2,8	50,0	87	1 225	1 221	680	25	120	220	170	26	M24	119
HI 120 x 600	600	188 000	400	2,8	50,0	105	–	1 725	915	25	120	220	170	26	M24	119
HI 120 x 800	800	225 000	350	2,8	50,0	110	–	2 332	1 290	25	120	220	170	26	M24	119
HI 120 x 1000	1000	260 000	325	2,8	50,0	116	–	2 836	1 360	25	120	220	170	26	M24	119

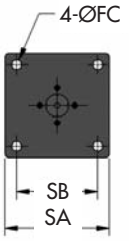
Heavy Industry Shock Absorbers
HI Series

HI 130 x 250 → HI 150 x 1000 Series

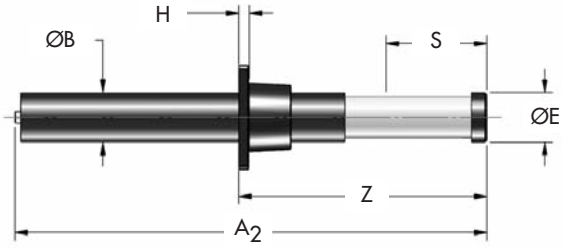
Technical Data



FR (FLANGE REAR)



MOUNTING FLANGE



FF (FLANGE FRONT)

Catalog No./ Model	S Stroke mm	Max. Energy/cycle Nm/c	Max. Reaction Force kN	Return Force		Mass Kg	A_1 mm	A_2 mm	Z mm	H mm	ØB mm	SA mm	SB mm	ØFC mm	BOLT SIZE mm	ØE mm
				Extension kN	Compression kN											
HI 130 x 250	250	100 000	500	3,2	64,0	72	897	893	545	25	130	270	210	26	M24	129
HI 130 x 300	300	120 000	500	3,2	64,0	79	1 029	1 025	605	25	130	270	210	26	M24	129
HI 130 x 400	400	160 000	500	3,2	64,0	90	1 293	1 289	735	25	130	270	210	26	M24	129
HI 130 x 600	600	210 000	435	3,2	64,0	119	–	1 917	1 060	25	130	270	210	26	M24	129
HI 130 x 800	800	270 000	420	3,2	64,0	140	–	2 445	1 350	25	130	270	210	26	M24	129
HI 150 x 115	115	62 000	670	5,0	96,0	56	517	513	320	20	150	270	210	26	M24	149
HI 150 x 150	150	82 000	670	5,0	96,0	59	606	602	355	25	150	270	210	26	M24	149
HI 150 x 400	400	220 000	670	5,0	96,0	98	1 249	1 245	710	25	150	270	210	26	M24	149
HI 150 x 500	500	275 000	670	5,0	96,0	110	–	1 498	770	25	150	270	210	26	M24	149
HI 150 x 600	600	330 000	670	5,0	96,0	120	–	1 752	875	25	150	270	210	26	M24	149
HI 150 x 800	800	448 000	700	5,0	96,0	165	–	2 363	1 240	25	150	270	210	26	M24	149
HI 150 x 1000	1000	510 000	635	5,0	96,0	180	–	2 880	1 595	25	150	270	210	26	M24	149