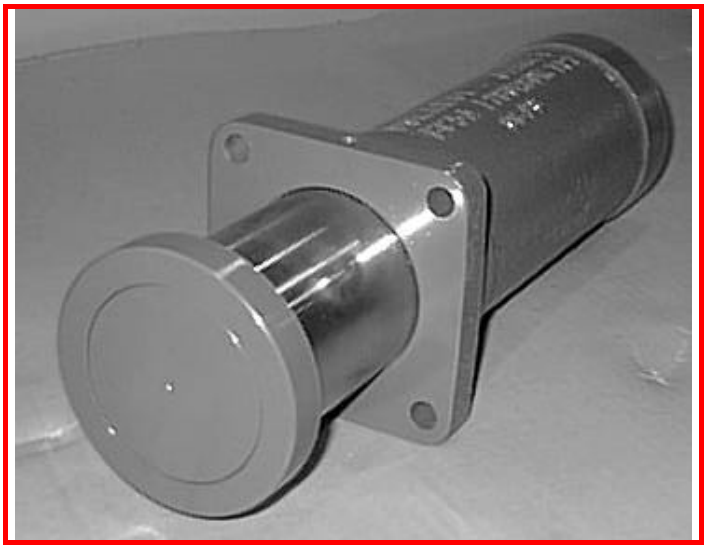
BC5 SERIES



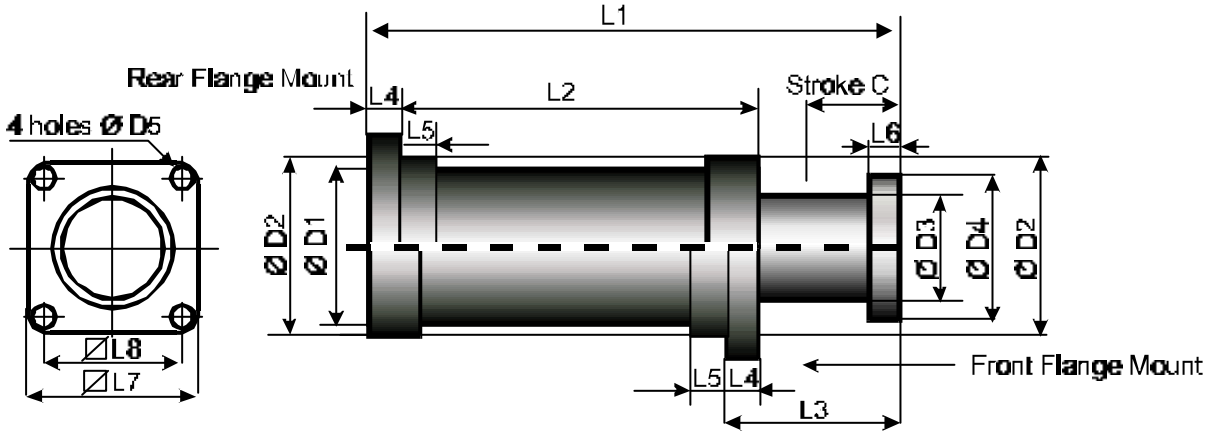
The design of JARRET Industrial Shock Absorbers utilizes the unique compression and shear characteristics of specially formulated silicone elastomers.

These characteristics allow the energy absorption and return spring functions to be combined into a single unit **without the need for an additional gas or mechanical spring stroke return mechanism**.

Advantages :
- Simple design - High reliability
- High damping coefficient
- Low sensitivity to temperature variances

Applications
Shock protection for all types of industry including : **defense, automobile, railroad, materials handling, marine, pulp and paper and metal producing and processing**

DIMENSIONS



Type	L1 mm	L2 mm	L3 mm	L4 mm	L5 mm	L6 mm	L7 mm	L8 mm	D1 mm	D2 mm	D3 mm	D4 mm	D5 mm	Mass kg
BC5A-105	415	275	140	20	30	15	135	105	/	116	87	120	14	25
BC5B	500	325	175	25	33	30	155	125	142	142	115	138	15	40
BC5C	520	315	205	30	36	35	175	140	160	160	132	158	18	45
BC5D	585	350	235	35	40	40	215	170	180	180	153	185	22	73
BC5E	670	405	265	40	45	45	250	195	215	215	182	220	26	117

***Impact speed :** BC5 series shock absorbers are designed for impact velocities of up to 4 m/se. Higher impact velocities require custom modification.

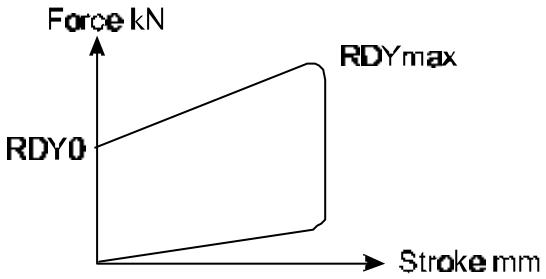
SELECTION OF A BC5 SERIES SHOCK ABSORBER USING SIMPLIFIED FORMULAE

1 - STANDARD MECHANICAL CHARACTERISTICS

	En kJ	Stroke mm	Rdy0 kN	RDYmax kN
BC5A-105	25	105	167	310
BC5B	50	120	310	540
BC5C	75	140	400	700
BC5D	100	160	470	820
BC5E	150	180	640	1 100

BASED ON

- ☐ Impact velocity : 2 m/s
- ☐ Operating temperature : - 20° C to + 40° C
- ☐ Surface protection : Electrolytic zinc
- ☐ Dynamic performance diagram



Symbols :

En = Energy Capacity
C = Maximum Stroke
Rdy = Dynamic Reaction

2 - ENERGY CALCULATION

$$E = \frac{1}{2}\, m_e\, V_e^2$$

3 - ALLOWABLE IMPACT FREQUENCY

$$F < 15 \times \frac{En}{E} \text{ Impacts/hour}$$

4 - EFFECTIVE STROKE CALCULATION

$$Ce = C\left(\sqrt{\frac{E}{En\ (0{,}03\ V + 0{,}24)}} + 1{,}36 \ - \ 1{,}17\right)$$

5 - CALCULATION OF EFFECTIVE MAXIMUM REACTION Rdymax

$$Rdy_e = \left[\left(\frac{Rdymax - Rdy0}{C}\right) x\ Ce + Rdy0\right](0{,}1V + 0{,}8)$$

6 - APPLICATION EXAMPLE

Data : Two shock absorbers in series, Effective mass m = 300 t, Impact speed v = 1,2 m/s (which is an impact of 0,6 m/s on each shock absorber), Impact frequency = 15 impacts/hour, Maximum allowable structural load 1000 kN

① : $E = \frac{1}{2}\left(\frac{1}{2}\ mV^2\right)$ - Selection BC5-E

② : Mechanical characteristics for each shock absorber are : En = 150 kJ, C = 180 mm, Rdy0 = 640 kN and Rdy_{max} = 1100 kN

③ : Maximum allowable impact frequency is $15 \times \frac{150}{108}$, 21 impacts / hour. Therefore 15 impacts/hour is acceptable.

④ : Required stroke is 167 mm

$$Ce = 180 \times \left(\sqrt{\frac{108}{150\ (0{,}03 \times 0{,}6 + 0{,}24)}} + 1{,}36 \ - 1{,}17\right) = 156 \text{ mm}$$

⑤ : $Rdye = \left[(1\,100 \ - \ 640) \times \frac{156}{180} \ + \ 640\right](0{,}1 \times 0{,}6 + 0{,}8)$

= 893 kN < 1000 kN, maximum allowable impact frequency

All performance characteristics can be modified. Please advise us of your specific requirements.

JARRET

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