Ordering code

NACA 3/4X5/8 - 1 N

① NACA ② 3/4X5/8 ③ - 1 ④ ⑤ N

①Model	②Body male thread	③Stroke	④Impact speed	⑤Prevention crash cap
NACA: Self-compensation type shock absorber	3/8 : 3/8-32UNEF 1/2 : 1/2-20UNF 9/16 : 9/16-18UNF	The specification for detail	1: High speed(Light load) 2: Middle speed(Middle load) 3: Low speed(Heavy load)	Blank: Plastic cap N: No cap
	3/4 : 3/4-16UNF 1 : 1-12UNF			Blank: Plastic cap F: Iron cap N: No cap
	1-1/4 : 1-1/4-12UNF			Blank: Plastic cap F: Iron cap
NACJ: Adjustable type shock absorber	3/8: 3/8-32UNEF 1/2: 1/2-20UNF 9/16: 9/16-18UNF		Not this code	Blank: Plastic cap N: No cap
	3/4: 3/4-16UNF 1: 1-12UNF			Blank: Plastic cap F: Iron cap N: No cap
	1-1/4: 1-1/4-12UNF 1-3/4: 1-3/4-12UNF			Blank: Plastic cap F: Iron cap

Product feature

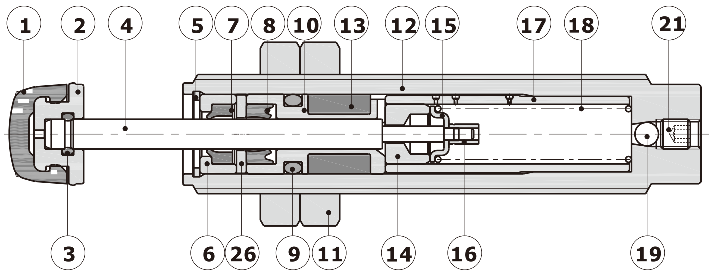
1. Excellent and stable deceleration and shock absorbing; if impacted by load, the resistance will automatically adjust.
2. Outer body of integrated structure is treated by dyed black , which has optimum corrosion and wear resistance and can withstand high pressure; it is easy to install and adjust for all threaded outer body which has good heat dissipation.
3. With high hardness stainless steel shaft, the shock absorber has better impact and corrosion resistance, and it can work under adverse conditions.
4. Special oiling process leads to stable shock absorbing.
5. Compact structure and high max. absorbed energy.
6. We use Special lubricants as buffer medium, which adapts to wide temperature range and ensures stable cushioning.

AirTAC

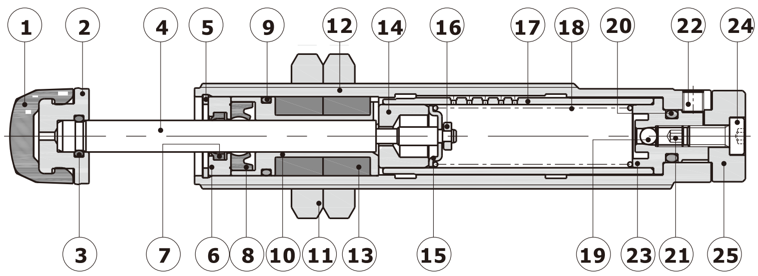
NACA, NACJ Series

Inner structure

NACA



NACJ



No.	Item	No.	Item
1	Bump cap	14	Piston
2	Bump cap(core)	15	Spring seat
3	O-ring	16	Busher
4	Piston rod	17	Inlet body
5	Clip	18	Spring
6	Front cover	19	Ball
7	Front cover gasket	20	O-ring
8	Front cover gasket	21	Set screw
9	O-ring	22	Set screw
10	Correcting body	23	Back cover
11	Nut	24	Screw
12	Body	25	Knob
13	Accumulator	26	Washer

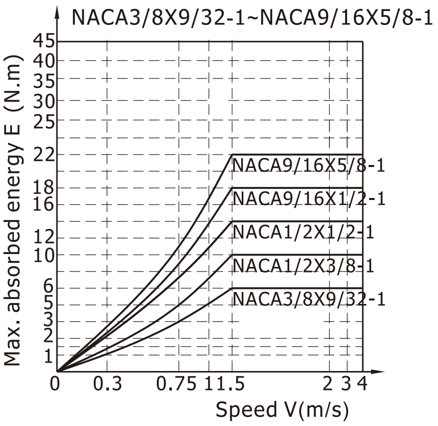
Specification

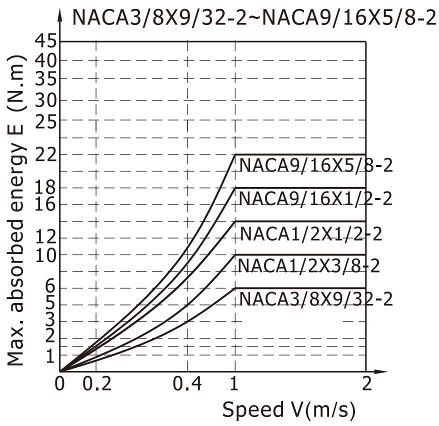
Model	Stroke (inch)	Max. energy absorbed (N.m)	Max. energy absorbed/hour(Nm/h)	Max. effective mass(lb)			Max. impact speed(m/s)			Weight (lb)
				High speed	Middle speed	Low speed	High speed	Middle speed	Low speed	
NACA3/8X9/32	9/32	6	14500	22	88	110	4	2	1	0.06
NACA1/2X3/8	3/8	10	30000	40	132	176	4	2	1	0.09
NACA1/2X1/2	1/2	14	35000	55	198	253	4	2	1	0.11
NACA9/16X1/2	1/2	18	36000	66	243	331	4	2	1	0.15
NACA9/16X5/8	5/8	22	39000	88	309	397	4	2	1	0.17
NACA3/4X5/8	5/8	55	46000	485	1322	1940	4	2	1	0.36
NACA3/4X3/4	3/4	60	50000	529	1455	2116	4	2	1	0.39
NACA3/4X1	1	65	54000	573	1653	2293	4	2	1	0.41
NACA1X1	1	100	77500	882	2425	3527	4	2	1	0.64
NACA1X1-1/4	1-1/4	112	80000	992	2723	3968	4	2	1	0.68
NACA1X1-1/2	1-1/2	125	85000	1102	3031	4409	4	2	1	0.73
NACA1-1/4X1	1	180	100000	1587	4409	6349	4	2	1	1.31
NACA1-1/4X1-1/2	1-1/2	240	110000	2116	5842	8466	4	2	1	1.48
NACA1-1/4X2	2	300	120000	2646	7175	10582	4	2	1	1.65

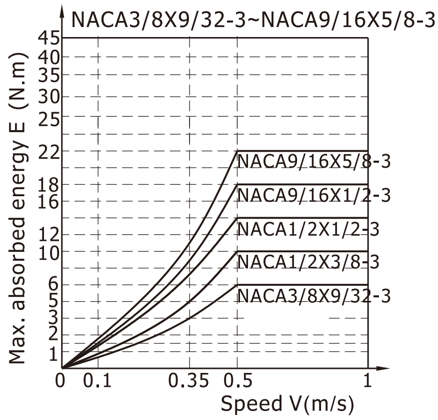
Model	Stroke (inch)	Max. energy absorbed (N.m)	Max. energy absorbed/hour(Nm/h)	Max. effective mass(lb)	Max. impact speed(m/s)	Weight (lb)
NACJ3/8X9/32	9/32	6	14500	110	4	0.06
NACJ1/2X3/8	3/8	10	30000	176	4	0.09
NACJ9/16X1/2	1/2	20	36000	388	4	0.17
NACJ3/4X3/4	3/4	60	50000	2116	4	0.42
NACJ1X1	1	100	75000	3527	4	0.68
NACJ1-1/4X1	1	180	100000	6349	4	1.19
NACJ1-1/4X2	2	300	110000	10582	4	1.76
NACJ1-3/4X1	1	350	150000	12346	4	2.54
NACJ1-3/4X2	2	700	180000	24691	4	3.13
NACJ1-3/4X3	3	1050	210000	37038	4	3.79

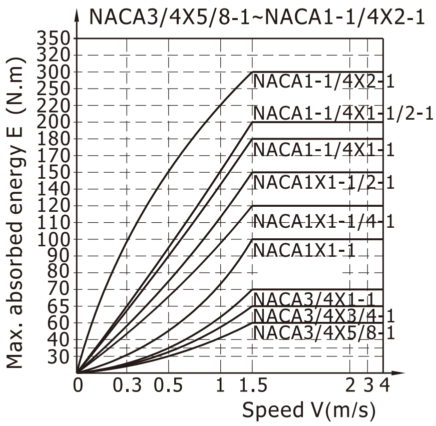
NACA, NACJ Series

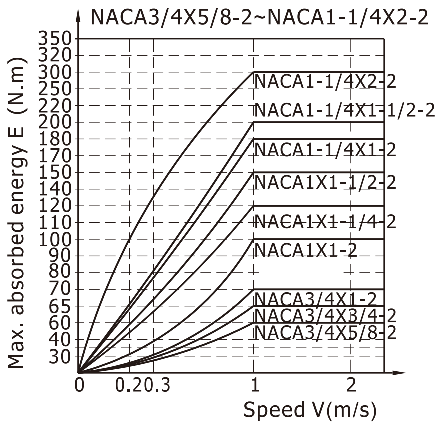
Max. absorbed energy and speed curve

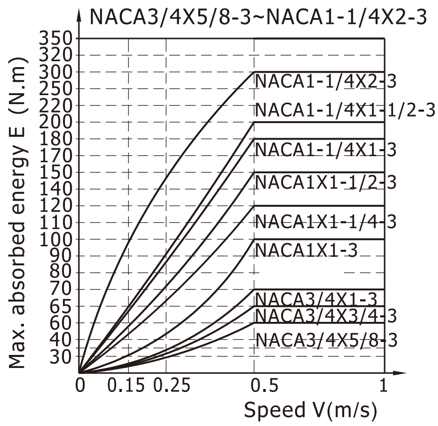






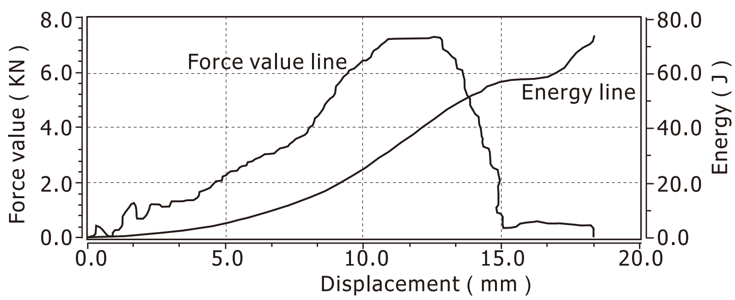






Note: 1. The interval under the red line shows the energy range absorbed by corresponding shock absorber.
2. It is better to use 20%-80% of the Max. absorbed energy.

Buffer curve

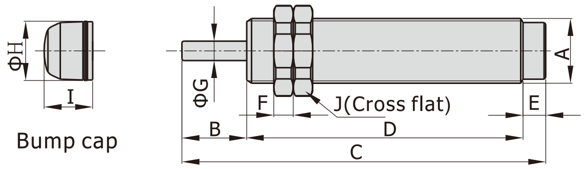


Note: As the chart shows, energy is absorbed by a lower reaction force at the beginning of the stroke, then by a smooth linear deceleration. It decelerates smoothly at last.

NACA, NACJ Series

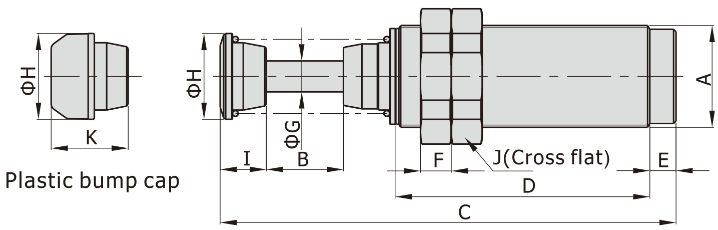
Dimensions

NACA



[Unit: inch]

Model\Item	A	B	C	D	E	F	G	H	I	J
NACA3/8X9/32	3/8-32 UNEF	9/32	2.20	1.73	0.20	0.16	0.12	0.33	0.30	7/16
NACA1/2X3/8	1/2-20 UNF	3/8	2.50	1.91	0.20	0.16	0.12	0.39	0.30	11/16
NACA1/2X1/2	1/2-20 UNF	1/2	2.91	2.22	0.20	0.16	0.12	0.39	0.30	11/16
NACA9/16X1/2	9/16-18 UNF	1/2	3.19	2.50	0.20	0.25	0.16	0.47	0.47	3/4
NACA9/16X5/8	9/16-18 UNF	5/8	3.64	2.81	0.20	0.25	0.16	0.47	0.47	3/4
NACA3/4X5/8	3/4-16 UNF	5/8	3.66	2.76	0.28	0.25	0.24	0.67	0.59	1
NACA3/4X3/4	3/4-16 UNF	3/4	4.39	3.37	0.28	0.25	0.24	0.67	0.59	1
NACA3/4X1	3/4-16 UNF	1	4.82	3.54	0.28	0.25	0.24	0.67	0.59	1
NACA1X1	1-12 UNF	1	4.84	3.52	0.31	0.25	0.24	0.91	0.63	1-1/4
NACA1X1-1/4	1-12 UNF	1-1/4	5.37	3.80	0.31	0.25	0.24	0.91	0.63	1-1/4
NACA1X1-1/2	1-12 UNF	1-1/2	5.85	4.04	0.31	0.25	0.24	0.91	0.63	1-1/4

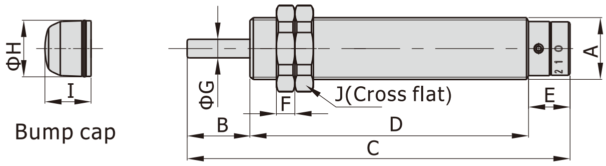


[Unit: inch]

Model\Item	A	B	C	D	E	F	G	H	I	J	K
NACA1-1/4X1	1-1/4-12 UNF	1	5.83	3.25	0.33	0.38	0.39	1.09	0.59	1-1/2	0.98
NACA1-1/4X1-1/2	1-1/4-12 UNF	1-1/2	7.17	4.09	0.33	0.38	0.39	1.09	0.59	1-1/2	0.98
NACA1-1/4X2	1-1/4-12 UNF	2	8.43	4.86	0.33	0.38	0.39	1.09	0.59	1-1/2	0.98

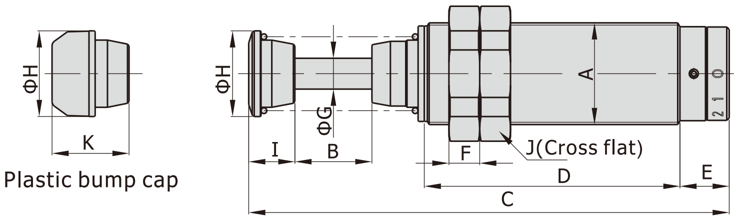
NACA, NACJ Series

NACJ



[Unit: inch]

Model\Item	A	B	C	D	E	F	G	H	I	J
NACJ3/8X9/32	3/8-32 UNEF	9/32	2.64	1.93	0.43	0.16	0.12	0.33	0.30	7/16
NACJ1/2X3/8	1/2-20 UNF	3/8	2.91	2.05	0.43	0.16	0.12	0.39	0.30	11/16
NACJ9/16X1/2	9/16-18 UNF	1/2	3.60	2.66	0.45	0.24	0.16	0.47	0.47	3/4
NACJ3/4X3/4	3/4-16 UNF	3/4	4.86	3.58	0.53	0.24	0.24	0.67	0.59	1
NACJ1X1	1-12 UNF	1	5.22	3.64	0.57	0.24	0.24	0.91	0.63	1-1/4

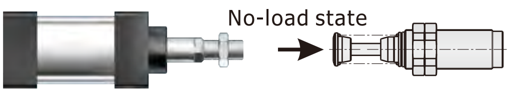


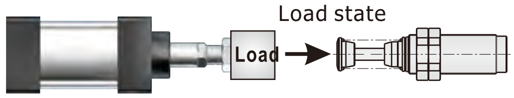
[Unit: inch]

Model\Item	A	B	C	D	E	F	G	H	I	J	K
NACJ1-1/4X1	1-1/4-12 UNF	1	6.14	3.27	0.63	0.37	0.39	1.09	0.59	1-1/2	0.98
NACJ1-1/4X2	1-1/4-12 UNF	2	9.13	4.88	0.63	0.37	0.39	1.09	0.59	1-1/2	0.98
NACJ1-3/4X1	1-3/4-12 UNF	1	6.36	3.41	0.63	0.50	0.47	1.37	0.59	2-1/8	0.98
NACJ1-3/4X2	1-3/4-12 UNF	2	8.92	4.98	0.63	0.50	0.47	1.37	0.59	2-1/8	0.98
NACJ1-3/4X3	1-3/4-12 UNF	3	11.93	6.59	0.63	0.50	0.47	1.37	0.59	2-1/8	0.98

NACA, NACJ Series

How to select





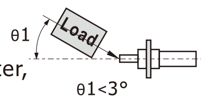
Theoretical energy parameter table for cylinders under no-load state — Unit：J (N.m)

Bore size (inch) \ Stroke(inch)	9/32	3/8	1/2	5/8	3/4	1	1-1/4	1-1/2	2	3
5/16	0.212	0.283	0.377	0.471	0.565	0.754	0.942	1.131	1.507	2.261
7/16	0.415	0.554	0.739	0.923	1.108	1.477	1.847	2.216	2.955	4.432
9/16	0.687	0.916	1.221	1.526	1.832	2.442	3.053	3.663	4.884	7.326
3/4	1.221	1.628	2.171	2.713	3.256	4.342	5.427	6.512	8.683	13.025
7/8	1.662	2.216	2.955	3.693	4.432	5.909	7.387	8.864	11.819	17.728
1-1/16	2.451	3.267	4.357	5.446	6.535	8.713	10.892	13.070	17.426	26.140
1-1/4	3.392	4.522	6.030	7.537	9.045	12.060	15.075	18.090	24.120	36.180
1-1/2	4.884	6.512	8.683	10.854	13.025	17.366	21.708	26.049	34.732	52.099
1-3/4	6.648	8.864	11.819	14.773	17.728	23.637	29.547	35.456	47.275	70.912
2	8.683	11.577	15.437	19.296	23.155	30.873	38.592	46.310	61.746	92.620
2-1/2	13.567	18.090	24.120	30.150	36.180	48.239	60.299	72.359	96.479	144.718
3	19.537	26.049	34.732	43.415	52.099	69.465	86.831	104.197	138.930	208.394
3-1/4	22.929	30.572	40.762	50.953	61.143	81.525	101.906	122.287	163.049	244.574
4	34.732	46.310	61.746	77.183	92.620	123.493	154.366	185.239	246.986	370.479
5	54.269	72.359	96.479	120.599	144.718	192.958	241.197	289.437	385.915	578.873

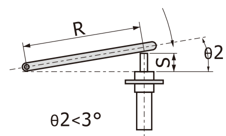
For example:
When the pressure is 90psi, bore size of ϕ1-1/2 under no-load state plus shock stroke of 1/2inch can produce energy of 8.68 N.m.
Refer to the specification table, you will find NACA1/2X1/2 fits.
Note: Cylinders under full-load state can produce as twice as the energy shown above.

Installation and Operation

1. The scale range of adjustable shock absorbers is 0 to 9 (8). Factory set is at 6 (4) position. 0 means the softest, while 9 means the hardest;
2. Correct selection of shock absorbers can ensure a smooth deceleration and good shock absorbing properties;
3. If there exists rebounding at the beginning of the stroke, it shows the effective weight is too high. In this case, self-compensation type shall be replaced by high speed type (-1), while adjustable type shall be adjusted to softer, that is closer to 0;



4. If there exists rebounding at the end of the stroke, it shows the effective weight is too low. In this case, self-compensation type shall be replaced by low speed type (-3), while adjustable type shall be adjusted to harder, that is closer to 9;



5. In the work process, lateral load should be avoided as possible as one can. Eccentric angle must be controlled within 3°. Shock absorbers shall be securely locked;
6. The operating temperature range shall be 14℉~176℉;
7. To extend the service life, piston shall be stopped 1mm before reaching the end. It is better to install set screw with positioning and precise adjustment;
8. If two or more shock absorbers are installed at the same side, please make sure that they act synchronously;
9. No painting, welding or cleaning with corrosive substance on the body as well as the piston rod.
10. when installed the absorber, the moment forced on absorber can't be out of the range given in below list or may cause the absorber damage.

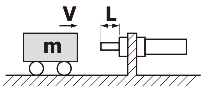
Compatible absorber	Male thread Spec(of body)	Max. Assembly Force on Absorber(N.m)
NACA3/8X9/32、NACJ3/8X9/32	3/8-32 UNEF	3.5
NACA1/2X3/8、NACA1/2X1/2、NACJ1/2X3/8	1/2-20 UNF	8.0
NACA9/16X1/2、NACA9/16X5/8、NACJ9/16X1/2	9/16-18 UNF	11.0
NACA3/4X5/8、NACA3/4X3/4、NACA3/4X1、NACJ3/4X3/4	3/4-16 UNF	24.0
NACA1X1、NACA1X1-1/4、NACA1X1-1/2、NACJ1X1	1-12 UNF	40.0

NACA, NACJ Series

Calculation of energy under load state

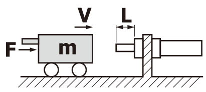
Horizontal impact

1)Horizontal impact



Impact weight (kg): m
Impact speed (m/s): v
Kinetic energy (J(N.m): $E1=\frac{m\times v^2}{2}$
Propelling energy(J(N.m): E2=0
Gross energy (J(N.m): E=E1+E2

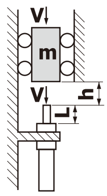
2)Horizontal impact with cylinder thrust



Impact weight (kg): m
Impact speed (m/s): v
Kinetic energy (J(N.m): $E1=\frac{m\times v^2}{2}$
Propelling energy(J(N.m): E2=F×L
Gross energy (J(N.m): E=E1+E2

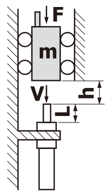
Vertical impact

1)Free fall



Impact weight (kg): m
Impact speed (m/s): v
Kinetic energy (J(N.m): E1=m×g×h
Propelling energy(J(N.m): E2=m×g×L
Gross energy (JN.m): E=E1+E2

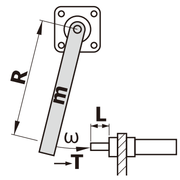
2)Push-down by cylinder



Impact weight (kg): m
Impact speed (m/s): v
Kinetic energy (J(N.m): $E1=\frac{m\times v^2}{2}$
Propelling energy(J(N.m): E2=(mg+F)×L
Gross energy (J(N.m): E=E1+E2

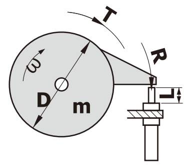
Rotation impact

1) Rocker



Impact weight (kg): m
Impact speed (m/s): v=R×ω
Kinetic energy (J(N.m): $E1=\frac{I\times \omega^2}{2}$
Propelling energy(J(N.m): $E2=\frac{T\times L}{R}$
Gross energy (J(N.m): E=E1+E2

2)Rotation



Impact weight (kg): m
Impact speed (m/s): v=R×ω
Kinetic energy (J(N.m): $E1=\frac{I\times \omega^2}{2}$
Propelling energy(J(N.m): $E2=\frac{T\times L}{R}$
Gross energy (J(N.m): E=E1+E2

Code	Explanation	Unit	Code	Explanation	Unit	Code	Explanation	Unit
m	Impact weight	kg	F	Thrust(($\pi\times D^2\times P$)/4)	N	N	Round per Minute	rpm
v	Impact speed	m/s	D	Nore size	mm	R	Distance fron rotation center to impact point	m
E	Gross energy	J(N.m)	P	Air pressure	MPa			
E1	Kinetic energy(Potential energy)	J(N.m)	L	Shock stroke	m	I	Moment of Inertia ($I=mr^2/2$)	$kg\times m^2$
E2	Propelling energy	J(N.m)	h	Height	m	ω	Angular velocity(ω=2πN/60) (90°=1.57rad/s)	rad/s
g	Gravity acceleration	9.8(m/s^2)	T	Torque	N.m			