How To Order

NC **D** A1 ☐ **B** **150** – **04** **00** ☐ ☐ – **A51** ☐ – **XB5**

Auto Switch

Nil	Standard
D	With Auto Switch (Magnetic Piston)

Model

Nil	Standard Cylinder
K	Non-Rotating Cylinder
W	Double Rod
M	Male Rod Stud

Mounting

B	MX0	Basic
L	MS1	Foot
F	MF1	Front Flange
G	MF2	Rear Flange
R	MS4	Side Tapped
D	MP2	Double Detachable Rear Clevis
T	MT4	Center Trunnion
C	MP4	Single Detachable Rear Clevis
X	MP1	Double Rear Clevis
S	MS2	Side Lug
U	MT1	Rod Trunnion
J	MT2	Head Trunnion

Bore Size

150	1.5"
200	2"
250	2.5"
325	3.25"
400	4"

For larger bore size up to 32" bore. Please consult CAT: N304-EX.

Standard Stroke
Inches

Stroke
Hundredths of an Inch

Air Cushion

Nil	Both Ends
N	None
H	Head End
R	Rod End

Rod Boot

Nil	Without Boot
J	Nylon Boot
K	Neoprene Boot

See Auto Switch Options pages

No. of Switches

Nil	2 Pieces
S	1 Piece
n	"n" Pieces

Options

XB5	Oversized Rod
XB6	High Temperature
XB7	Low Temperature
XB9	Low Speed
XC6	Stainless Steel Piston Rod
XC8	Adjustable Stroke Extended
XC9	Adjustable Stroke Return
XC10	Dual Operation/Double Rod
XC11	Dual Operation/Single Rod
XC22	Viton Seals
XC35	With Coil Scraper
X46US	Special Trunnion Location
X119US	Non-Rotating Oversize Rod
X130US	Stainless Steel Piston Rod, Tie Rod, Tie Rod Nut, Cushion Valve Needle

For special rod end modifications please see page 41.

Mounting Bracket Part Numbers

Mounting Bracket / Bore	Part Number				
	150 (1.5")	200 (2")	250 (2.5")	325 (3.25")	400 (4")
Foot	NCA1-L150	NCA1-L200	NCA1-L250	NCA1-L325	NCA1-L400
Flange	NCA1-F150	NCA1F200	NCA1-F250	NCA1-F325	NCA1-F400
Double Clevis (MP2)	NCA1-D150	NCA1-D200	NCA1-D250	NCA1-D325	NCA1-D400
Single Clevis	NCA1-C150	NCA1-C200	NCA1C250	NCA1-C325	NCA1-C400
Side Lug	NCA1-S150	NCA1-S200	NCA1-S250	NCA1-S325	NCA1-S400
Double Clevis (MP1)	NCA1-X150	NCA1-X200	NCA1-X250	NCA1-X325	NCA1-X400

* These Kits are for Standard Single Rod/Double Acting Cylinders without Options. For Option Kits, please contact your local SMC sales office. One Kit required per cylinder.

The SMC NCA1 expanded series NFPA Industrial Interchangeable Pneumatic Cylinders are now available in bore sizes ranging from 5" to 8" Medium Duty, and 1.5" to 14" Heavy Duty.

The NCA1 Expanded Series Cylinders offer:
- Replaceable Rod Gland
- A full range of NFPA interchangeable mounting configurations
- Available in three construction types: Aluminum, Steel, and Stainless Steel
- Composite fiber tube optional
- Fully adjustable cushion

For further information, please consult your local SMC sales office.

Specifications

Type	Standard	Double Rod	Non-Rotating Rod
Fluid	Air	Air	Air
Lubrication	Non-lube	Non-lube	Non-lube
Max. Operating Pressure	250psi (1.75MPa)	250 psi (1.75MPa)	250 psi* (1.75Mpa)
Min. Operating Pressure	8 psi (0.06MPa)	8 psi (0.06MPa)	15 psi (0.1MPa)
Ambient and Fluid Temp.	40 to 140F° (5 to 60°C)	40 to 140°F (5 to 60°C)	40 to 140°F (5 to 60°C)
Piston Speed	2 to 20in/s (50 to 500mm/s)	2 to 20in/s (50 to 500mm/s)	2 to 20in/s (50 to 500mm/s)
Mounting	Basic, Foot Front and Rear Flange Side Tapped, Clevis Center Trunnion, Side Lug Rod and Head Trunnion	Basic , Foot Flange Side Tapped Center and Rod Trunnion	Basic, Foot Front and Rear Flange Side Tapped, Clevis Center Trunnion, Side Lug Rod and Head Trunnion
Non-Rotating Accuracy	n/a	n/a	±0.50°

* *Rod and head trunnion maximum operating pressure for 325 and 400 bore is up to 150 psi*

Standard Strokes

(in)

Bore Size	Standard Stroke	Maximum Stroke
1.5"	1, 2, 3, 4, 5, 6, 8, 10, 12, 14, 16, 18, 20,24	
2", 2.5"	1, 2, 3, 4, 5, 6, 8, 10, 12, 14, 16, 18, 20, 24	Consult SMC
3.25", 4"	1, 2, 3, 4, 5, 6, 8, 10, 12, 14, 16, 18, 20, 24, 28, 30	

Base Material / Surface Treatment

Description	Material	Note
Cover	Aluminum alloy	Silver paint
Tube	Aluminum alloy	Hard alumite
Seals	Nitrile rubber	PLD, PLP
Piston Rod	Carbon steel	Hard chromate
Piston	Aluminum alloy	Hard alumite

Weight / Aluminum Tube

(lbs)

Bore Inch		150 (1.5")	200 (2")	250 (2.5")	325 (3.25")	400 (4")
Basic Weight	Basic type	1.58	2.35	3.19	6.03	7.79
	Foot mounting	1.95	2.86	3.80	7.45	10.1
	Flange mounting	2.30	3.22	4.34	8.85	11.66
	Clevis mounting	2.27	3.23	4.28	8.95	11.41
Additional weight per 2" stroke	Trunnion mounting	2.79	3.81	5.50	10.05	13.50
	For all mountings	0.38	0.48	0.51	0.97	1.06

Cylinder Bores and Forces: Push Stroke

Bore (in)	Piston Area (in)	Forces (lbs); Push Stroke Operating Medium Pressure (psi)					
		50	60	80	100	200	250
1.5	1.767	88	106	141	177	353	442
2	3.142	157	188	251	314	628	785
2.5	4.909	245	295	393	491	982	1227
3.25	8.296	415	498	664	830	1659	2074
4	12.566	628	754	1005	1257	2513	3142

To calculate thrust forces not shown in the table, multiply operating pressure by piston area.

How to use this table

① Locate column with desired operating pressure.
② Move down that column and locate the thrust value which is equal (or the next larger to the force to be delivered by the cylinder).
③ On that same line, locate in the first (left) column the bore size recommended for your application.

Note: These are *guide lines only,* which must be substantiated using additional data specific to your application.

Cylinder Bores and Forces: Pull Stroke

Piston Rod Diameter	Piston Rod Area	Forces (lbs); Pull Stroke *(Deduct the listed thrusts corresponding to the rod size from push stroke pressure)* Operating Medium Pressure (psi)					
(in)	(in)	50	60	80	100	200	250
0.625	0.307	15	18	25	31	61	77
1	0.785	39	47	63	79	157	196
1.375	1.485	74	89	119	148	297	371

To calculate pull forces not shown in the table, use the following formula:
Pull Force = (Piston Area-Rod Area) x Working Pressure

How to use this table

① To find the force on the pull stroke, locate the required piston rod diameter in the left most column.
② Moving to the right, locate the required working pressure.
③ Deduct the value shown at the intersection from the push stroke force value determined from the Push Stroke table. The resultant is the available pull stroke table.