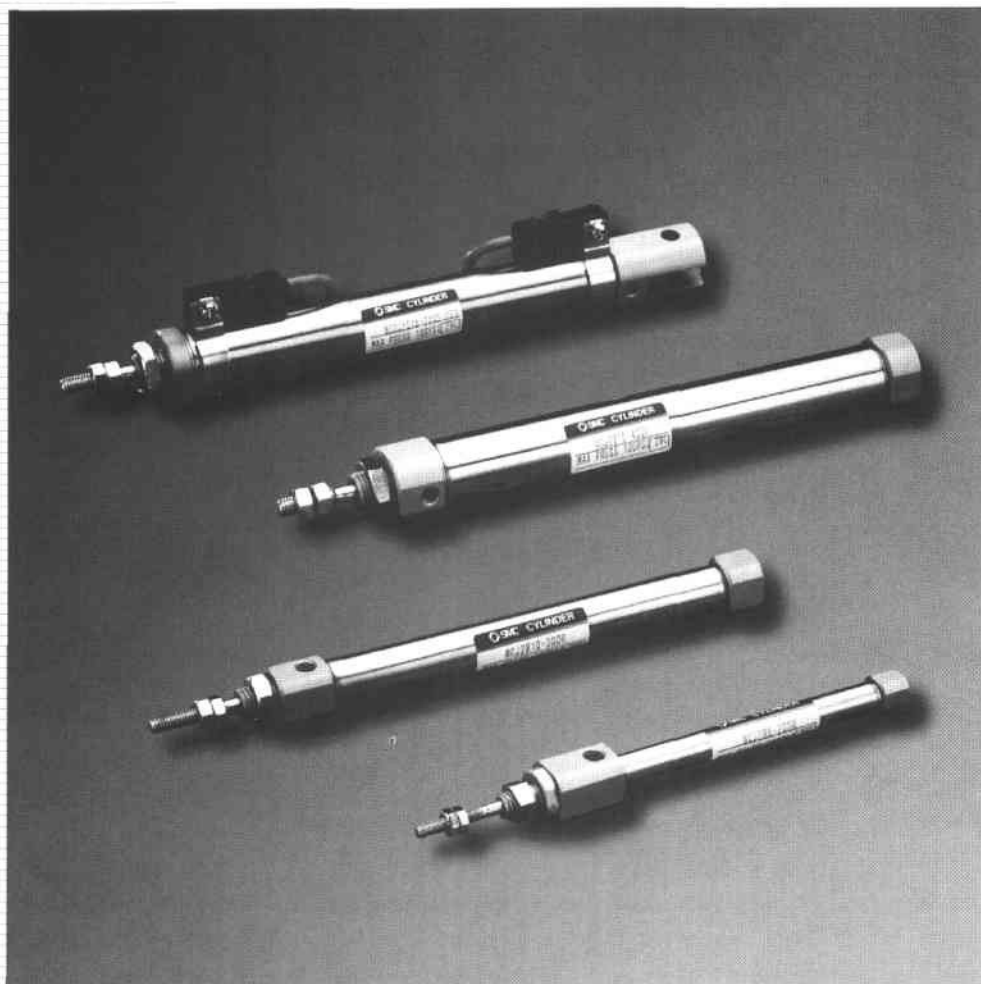




Air Cylinder

NCJ2 Series

Miniature Stainless Steel Body



High Speed Actuation
Tight Machining Tolerances
Compact and Lightweight
Easy Mounting
Auto Switch Capable

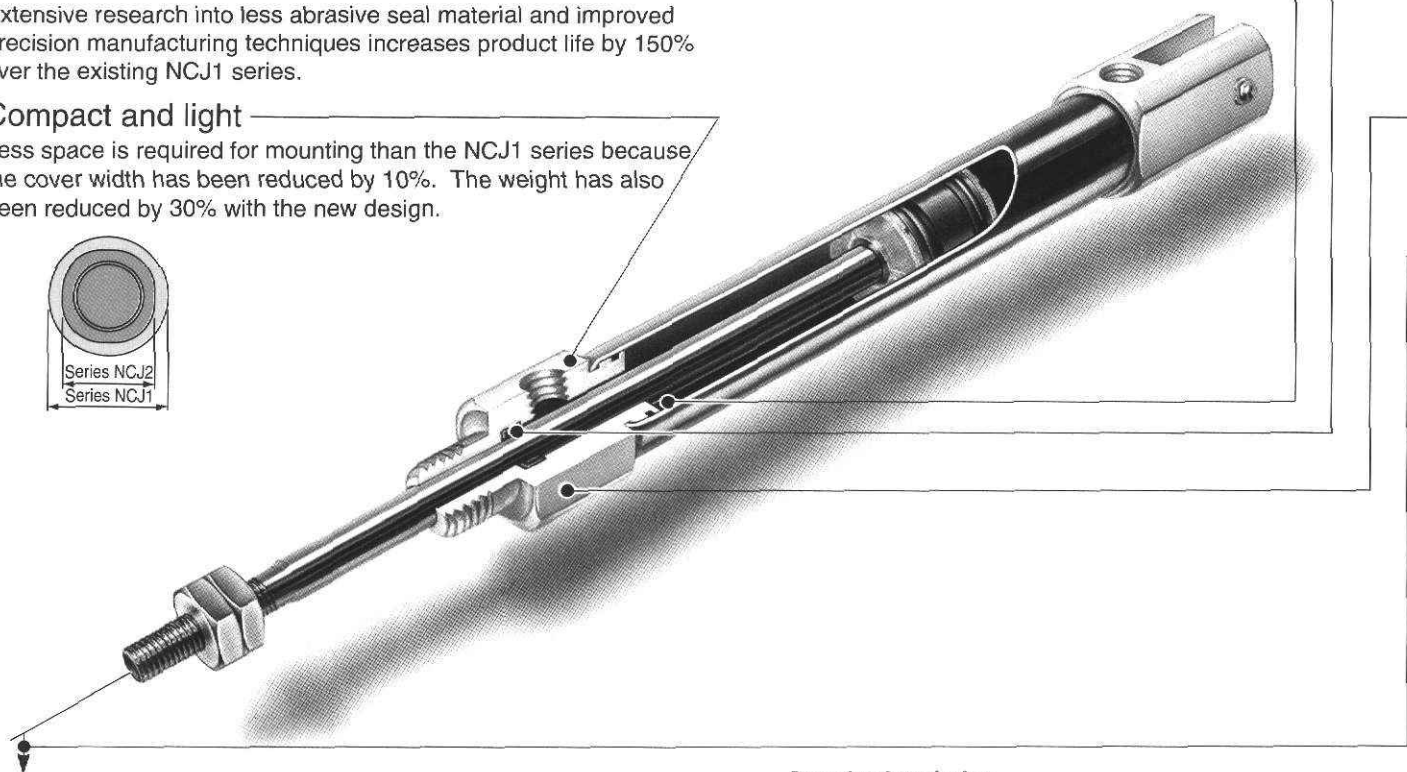
Series NCJ2: ø6, ø10, ø16

Greater Life

Extensive research into less abrasive seal material and improved precision manufacturing techniques increases product life by 150% over the existing NCJ1 series.

Compact and light

Less space is required for mounting than the NCJ1 series because the cover width has been reduced by 10%. The weight has also been reduced by 30% with the new design.



Standard variation

Built-in magnet

Series Variation/INDEX

Standard type

Double acting

Single rod

Double acting

Double rod

Single acting

Spring return, Spring extend

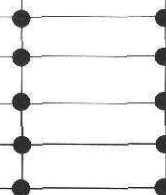
Non-rotating piston rod type

Double acting

Single rod

Single acting

Spring return, Spring extend



High speed actuation

By adding rubber cushions as standard equipment, piston speeds have been increased by 150%.

Reduced wear characteristics

Improved material in the rod bearing and rear clevis reduces wear – greatly prolonging cylinder life.

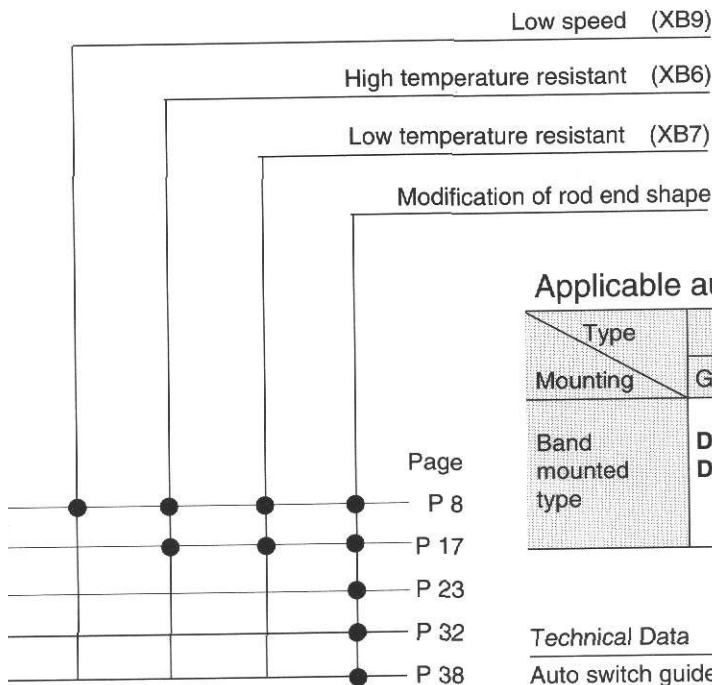
Easy mounting

Wrench flats on each cover allow easy and precise mounting.

Negligible rod shear drop

Tight machining tolerances and improved materials ensure minimal inclination of the rod at full extension.

Made to order options (see page 55)



Applicable auto switch

Type	Reed switch		Solid state auto switch	
Mounting	Grommet	Connector	Grommet	Connector
Band mounted type	D-C7 type D-C8 type	D-C73C type D-C80C type	3 wire type D-H7A type 2 wire type D-H7B type	2 wire type D-H7C type

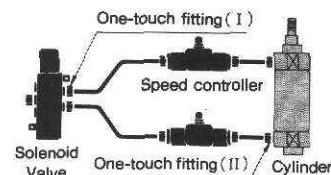
Technical Data	4 ~ 7
Auto switch guide	P 46

Technical Data

Suggested System Components for use with High Speed Applications

The following table should be used as a guide when selecting system components for use with NCJ2 series cylinders in high speed applications. Allowable kinetic energy must be calculated first to determine applicable cylinder.

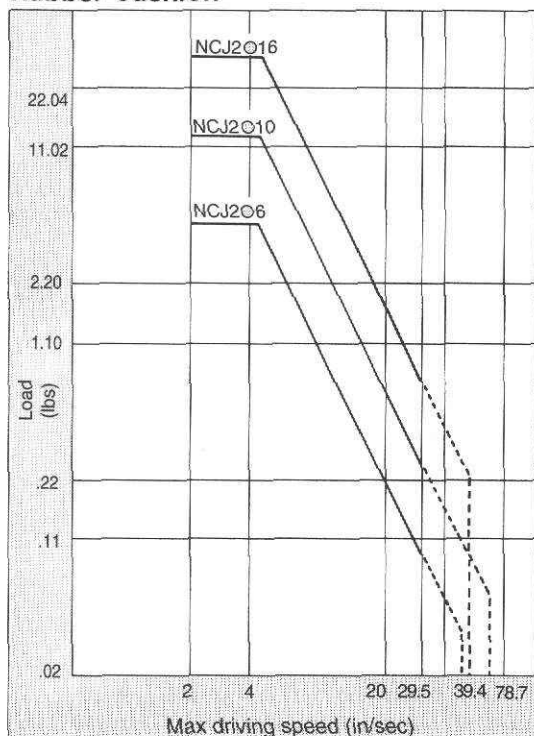
System diagram



System	Bore size	Cylinder port size	Tubing	Solenoid valve (Rubber seal)	Silencer	Speed controller	One-touch fitting		Max. driving speed mm/sec (in/sec) (No load)	
							I	II	OUT	IN
A	NCJ2O6	#10-32	T0425	NVJ3O40-M5	NAN120-M5	NAS1001F-03	KQH03-32	KQH03-32	950 (37.4)	650 (25.6)
	NCJ2O10								1600 (63.0)	650 (25.6)
	NCJ2O16								1050 (41.3)	780 (30.7)
B	NCJ2O6	#10-32	T0425	NVZ3O40-01	NAN101-N01	NAS2001F-03	KQH03-32	KQH03-32	950 (37.4)	700 (27.6)
	NCJ2O10								1600 (63.0)	650 (25.6)
	NCJ2O16								1100 (43.3)	800 (31.5)

Allowable Kinetic Energy

Rubber cushion



With rubber cushion(standard equipment)

Rubber cushions on both ends of the cylinder help to relieve the noise and shock of piston impact at the end of the stroke during high speed operation. Care should be taken to avoid "kickback" of the load at stroke end. Kinetic energy developed by the load during high speed operations can be absorbed by the rubber cushions as indicated by the graph to the left. If the kinetic energy is within the allowable range, the life of the cushion packing can be expected to exceed a million cycles, (all other conditions being ideal).

The load kinetic energy can be obtained by the following equation.

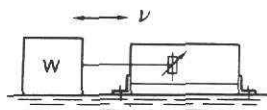
$$Ke = \frac{W}{2g} V^2$$

Ke: Kinetic energy (lbs/in)

W: Weight in lbs

g: Weight acceleration (386 in/sec²)

V: Piston speed (in/sec)



How to use figure

(Example) To obtain the load at the rod tip for a maximum driving speed of 20 in/sec with a cylinder bore size of 16 mm: Extend upward from the abscissa at 20in/sec. At the intersection point with the line of bore size 16mm move leftward and obtain a load of 1.54 lbs.

Technical Data

Selection of bore size

Series and bore size

Series	Action	Bore size (mm)		
		6	10	16
NCJ2	Double acting	●	●	●
	Single acting	●	●	●



Series CJ2

Relationship of power generation, bore size, and pressure

Power generation, bore size, and pressure can be expressed by the following equations:

$$Fp_1 = \mu \times Ff_1 \dots\dots\dots (1)$$

$$Fp_2 = \mu \times Ff_2 \dots\dots\dots (2)$$

$$Ff_1 = \frac{1}{4} D^2 \times P \dots\dots\dots (3)$$

$$Ff_2 = \frac{1}{4} (D^2 - d^2) \times P \dots\dots\dots (4)$$

- Fp_1 : Cylinder power generation in the push side (lbs)
 Fp_2 : Cylinder power generation in the drawing side (lbs)
 Ff_1^* : Theoretical output in the push side (lbs)
 Ff_2^* : Theoretical output in the drawing side (lbs)
 P : Operating pressure (PSI)
 D^{**} : Bore size (in)
 d^{**} : Piston rod diameter (in)
 μ : Load pressure factor

* Theoretical cylinder forces are listed on page 6.

** To convert mm to inches divide by 25.4 (25.4mm = 1 in)

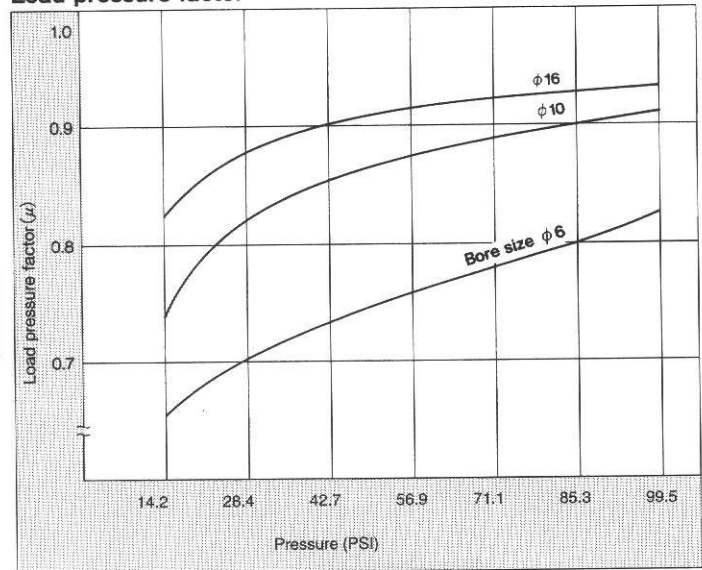
Selection Reference

Theoretical power generation and the pressure load factor of a cylinder from a rest condition to an energized condition is demonstrated from the pressure load factor table and the preceding equations. In selecting an applicable cylinder, a load factor of 0.7 or less should be specified in consideration of lower operating pressures.

Piston speed is influenced by the difference between the pressure supplied to one side of the piston and the air exhausting on the other side, and the weight and inertia of the load.

When higher speeds are required, a lower ratio is preferable. Generally in high speed applications, a cylinder should be selected so that the ratio between the theoretical output and the load is 0.5 or less.

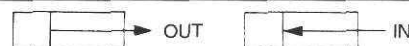
Load pressure factor



Technical Data

Theoretical cylinder force

Double acting type cylinder



Unit: kgf (lbf)

Series	Bore size (mm)	Rod dia (mm)	Operating direction	Piston area cm ² (in ²)	Operating pressure kgf/cm ² (PSI)							
					2 (28.4)	3 (42.7)	4 (56.9)	5 (71.1)	6 (85.3)	7 (99.5)		
NCJ2	6	3	OUT	0.283 (.043)	0.57 (1.2)	0.85 (1.8)	1.13 (2.5)	1.41 (3.1)	1.70 (3.7)	1.98 (4.3)		
			IN	0.212 (.032)	0.42 (0.9)	0.64 (1.4)	0.85 (1.8)	1.06 (2.3)	1.27 (2.8)	1.48 (3.2)		
	10	4	OUT	0.785 (.121)	1.57 (3.4)	2.36 (5.2)	3.14 (6.9)	3.93 (8.6)	4.71 (10.4)	5.50 (12.1)		
			IN	0.660 (.102)	1.32 (2.9)	1.98 (4.3)	2.64 (5.8)	3.30 (7.3)	3.96 (8.7)	4.62 (10.2)		
	16	5	OUT	2.010 (.311)	4.02 (8.8)	6.03 (13.3)	8.04 (17.7)	10.05 (22.1)	12.06 (26.6)	14.07 (31)		
			IN	1.814 (.281)	3.63 (8.0)	5.44 (12.0)	7.26 (16.0)	9.07 (20.0)	10.89 (24.0)	12.70 (27.9)		

Single acting type cylinder (Spring return)

Unit: kgf (lbf)

Series	Bore size (mm)	Rod dia (mm)	Operating direction	Piston area cm ² (in ²)	Operating pressure kgf/cm ² (PSI)							
					2 (28.4)	3 (42.7)	4 (56.9)	5 (71.1)	6 (85.3)	7 (99.5)		
NCJ2	6	3	OUT	0.283 (.043)	0.18 (0.4)	0.46 (1.0)	0.74 (1.6)	1.02 (2.2)	1.31 (2.9)	1.59 (3.5)		
			IN	-			0.18 (.39) (Note 2)					
	10	4	OUT	0.785 (.121)	0.87 (1.9)	1.66 (3.6)	2.44 (5.3)	3.23 (7.1)	4.01 (8.8)	4.80 (10.5)		
			IN	-			0.36 (.79) (Note 2)					
	16	5	OUT	2.010 (.311)	2.57 (5.6)	4.58 (10)	6.59 (14.5)	8.60 (18.9)	10.61 (23.4)	12.62 (27.8)		
			IN	-			0.7 (1.54) (Note 2)					

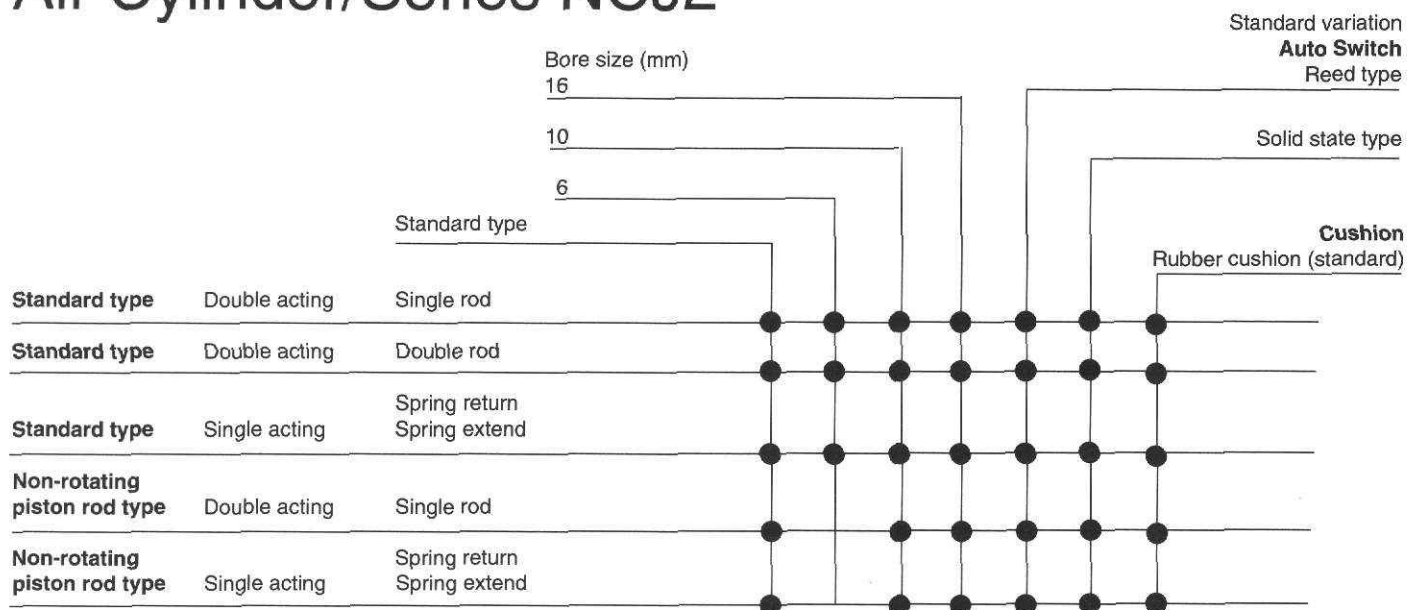
Note 1) The theoretical output of single acting cylinders for the out stroke is the same as the double acting cylinders minus the compressed spring's force when relaxed.

Note 2) Do not use spring force to move a load.

Installation and Maintenance

Precautions

- ▶ Flush piping thoroughly before connection in order to prevent dust or chips entering the cylinder.
- ▶ Take care not to mark or damage the piston rod. A damaged piston rod can quickly ruin the rod packing resulting in leakage and shortened cylinder life.
- ▶ Always avoid lateral, (side), loads. The load should be applied to the piston rod in an axial direction.
- ▶ Do not use the spring force of single acting cylinders to move a load.
- ▶ Consult your local SMC representative for additional technical information if required.



- XB6** High temperature resistant cylinder
XB7 Low temperature resistant cylinder
XB9 Low speed cylinder
 Modification of rod end

Series NCJ2

Bore Size $\phi 6$, $\phi 10$, $\phi 16$

How to Order

NCJ2 L 16 100 R XB6

NC D **J2** L 16 100 R C73

Special options

XB6	High temperature type
XB7	Low temperature type
XB9	Low speed operation

See page 16 for specifications of special options.

XB6 is for non-switch capable only;
XB9 is applicable to both types.

Auto switch capable

—	Not switch capable
D	Switch capable (Built-in magnet)

Mounting

B	Basic type
L	Axial foot type
F	Rod side flange type
D	Double clevis type (Except for $\phi 6$)

Bore size - Standard stroke/Hundredths of an inch

$\phi 6$(1/4in.)	050, 100, 150, 200
$\phi 10$(3/8in.)	050, 100, 150, 200, 300, 400, 500, 600
$\phi 16$(5/8in.)	050, 100, 150, 200, 300, 400, 500, 600, 700, 800

Port location on head cover

Bore size	$\phi 6$	$\phi 10, \phi 16$
R	In-line	In-line
—	—	Perpendicular

Applicable auto switch

Reed switch (Band mounted type)

B	Built-in magnet
C73	D-C73
C76	D-C76
C80	D-C80
C73C	D-C73C
C80C	D-C80C

Solid state auto switch (Band mounted type)

H7A1	D-H7A1
H7A2	D-H7A2
H7B	D-H7B
H7C	D-H7C

Number of switches

—	2 pcs.
S	1 pc.
n	n pcs.

Note 1) Standard Auto Switch lead wire length is 20 inches.
118 inch leads available on all models by adding an "L" suffix to the part number.

(Example)
D-C73 → D-C73L.
See page 15 minimum Auto Switch mountable strokes.

Parts No. of mounting brackets

Mounting Bracket	Bore size (mm)		
	6	10	16
Foot	NCJ-L006B	NCJ-L010B	NCJ-L016B
Flange	NCJ-F006B	NCJ-F010B	NCJ-F016B

Parts No. of auto switch mounting bands

Bore size (mm)	Parts No. of auto switch mounting band	Note
$\phi 6$ (1/4 in.)	BJ2-006	Common use to all of D-C7, C8, D-H7 types.
$\phi 10$ (3/8 in.)	BJ2-010	
$\phi 16$ (5/8 in.)	BJ2-016	

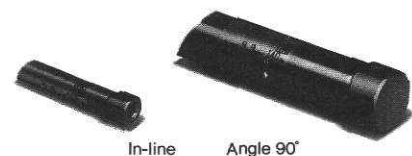
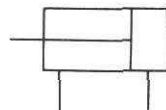


Specifications

Action	Double acting single rod	
Fluid	Air	
Proof pressure	10.5gf/cm ² {1050kPa}, 150 PSI	
Max. operating pressure	7.0kgf/cm ² {700kPa}, 100 PSI	
Min. operating pressure	ø6	1.2kgf/cm ² {120kPa}, 17 PSI
	ø10,ø16	0.6kgf/cm ² {60kPa}, 8.5 PSI
Ambient and fluid temperature	-10° ~ +70° C (14° ~ +158°F)	
Cushion	Rubber cushion (Standard)	
Lubrication	None (Non-lube)	
Stroke tolerance	+1.0 mm (+.04 in) 0	
Piston speed	50 ~ 750mm/s 2 ~ 29.5 in/s	
Allowable kinetic energy	ø6	0.12kgf-cm 0.10lb-in
	ø10	0.35kgf-cm 0.30lb-in
	ø16	0.9kgf-cm 0.78lb-in

Symbol

Double acting/Single rod



In-line

Angle 90°

Auto switch specification

Model	Lead wire entry	Applications	Load voltage	Max load current Load current range
D-C73	Grommet	Relay Sequence controller	24VDC 110VAC	5 ~ 40mA 5 ~ 20mA
D-C76	Grommet	IC Circuit	4 ~ 8VDC	20mA
D-C80	Grommet	Relay	24V ^{AC} _{DC} or less	50mA
		Sequence controller	48V ^{AC} _{DC}	40mA
		IC Circuit	100V ^{AC} _{DC}	20mA
D-C73C	Connector	Sequence controller	24VDC	5 ~ 22mA
D-C80C	Connector	Relay Sequence controller	24V ^{AC} _{DC} or less	50mA
D-H7A1	Grommet	IC Circuit, Relay Sequence controller	28VDC	150mA
D-H7A2	Grommet	IC Circuit, Relay Sequence controller	28VDC	150mA
D-H7B	Grommet	24VDC Relay	24VDC	5~150mA
D-H7C	Connector	Sequence Controller	(10~28VDC)	

Mounting and Accessories/Please refer to p14 for details.

Mounting		Basic type	Foot type	Rod side flange type	Double clevis
Standard	Mounting nut	●	●	●	—
	Rod end nut	●	●	●	●
	Clevis pin	—	—	—	●
Option	Double knuckle joint (with pin)	●	●	●	●

Port location on head cover

Perpendicular to the cylinder axis or in-line with the cylinder axis locations are available for basic type.
(ø6 is not available in perpendicular type.)

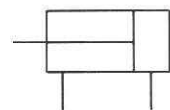
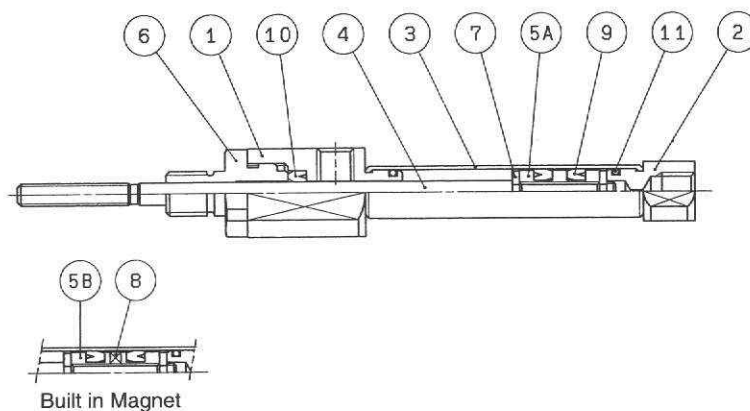
Weight Table

Bore size(mm)		gf (oz)		
		6	10	16
Basic weight		15 (.52)	24 (.84)	55 (1.94)
Additional weight for each 1/2" of stroke		1.70 (.03)	3.38 (.11)	5.5 (.19)
Mounting bracket weight	Foot type	7 (.24)	7 (.24)	19 (.67)
	Rod side flange type	5 (.17)	5 (.17)	13 (.45)
	Double clevis type (with pin)	—	2 (.07)	8 (.28)

Calculation (Example) NCJ2L10-050

- Basic weight.....84oz (ø10)
- Additional weight.....11 oz
- (Cylinder stroke.....1/2")
- Mounting bracket weight.....24 oz (Foot type)
- .84 + .11 + .24 = 1.19 oz

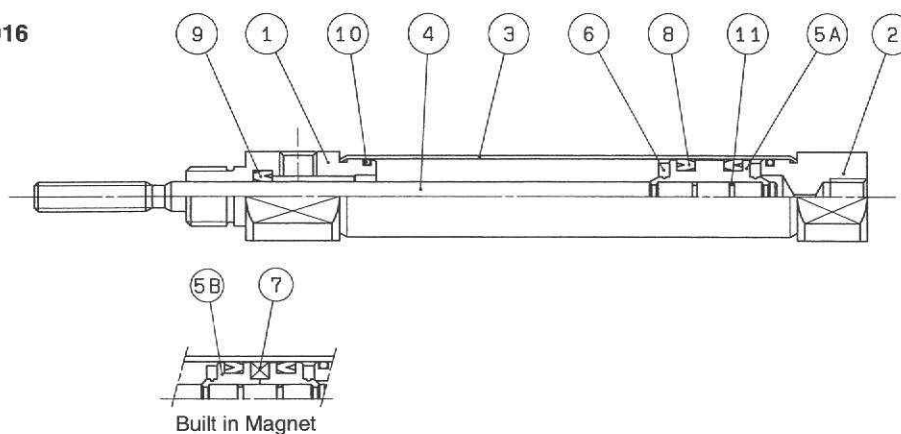
Construction/Parts List (Disassembly is not possible)


NCJ206-OR

Parts List

Item	Part Name	Material	Qty	Remarks
1	Rod Cover	Aluminum Alloy	1	White Alumite
2	Head Cover	Aluminum Alloy	1	White Alumite
3	Cylinder Tube	Stainless Steel	1	
4	Piston Rod	Stainless Steel	1	
5A	Piston A	Brass	1	
5B	Piston B	Brass	1	(Switch Type Piston)
6	Packing Retainer	Aluminum Alloy	1	White Alumite
7	Bumper	Urethane	2	
8	Magnet	Magnet	1	

Packing List

No.	9	10	11
Name	Piston Packing	Rod Packing	Tube Gasket
Material	NBR	NBR	NBR
Quantity	2	1	2

NCJ2010, NCJ2 016

Parts List

Item	Part Name	Material	Qty	Remarks
1	Rod Cover	Aluminum Alloy	1	White Alumite
2	Head Cover	Aluminum Alloy	1	White Alumite
3	Cylinder Tube	Stainless Steel	1	
4	Piston Rod	Stainless Steel	1	
5A	Piston A	Brass	1	
5B	Piston B	Brass	2	(Switch Type Piston)
6	Bumper	Urethane	2	
7	Magnet	Magnet	1	

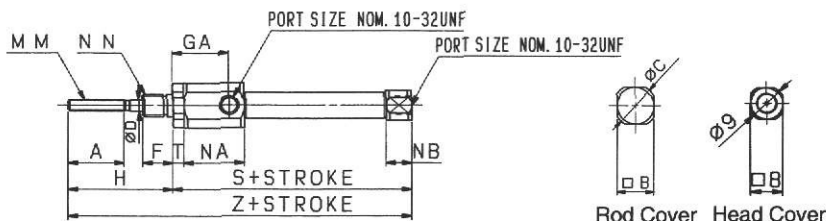
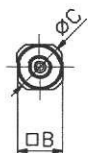
Packing List

No.	8	9	10	11
Name	Piston Packing	Rod Packing	Tube Gasket	Piston Gasket
Material	NBR	NBR	NBR	NBR
Quantity	2	1	2	1

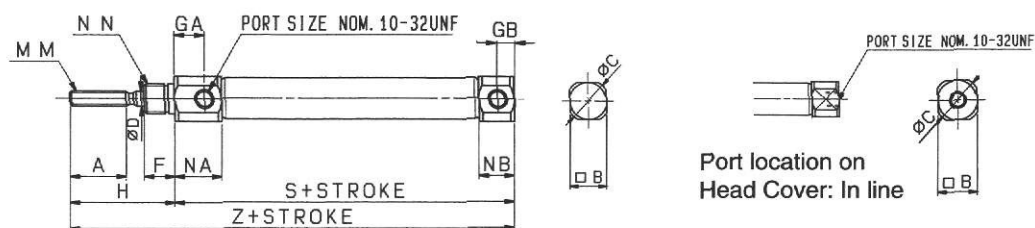
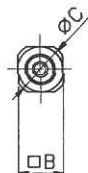
Basic Type (B)

CJ2B Bore size Stroke R

NCJ2B6



NC 2B10, 16



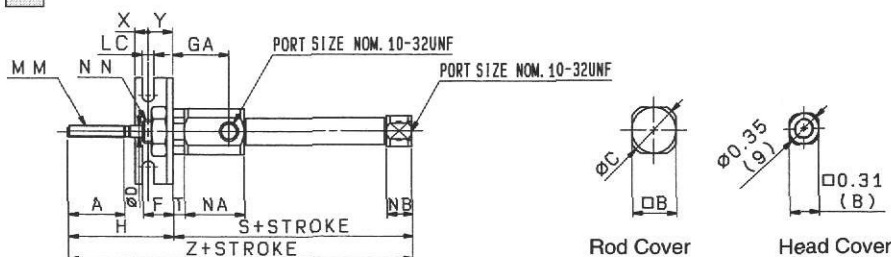
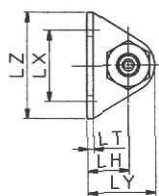
UNIT INCH (MM)

BORE SIZE	A	B	C	D	F	GA	GB	H	MM	NN	NA	NB	T	S	Z
ø6 (1/4")	0.60 (15)	0.47 (12)	0.55 (14)	0.125 (3.175)	0.31 (8)	0.57 (14.5)	—	1.10 (28)	No. 5-40UNC	1/4-28UNF	0.63 (16)	0.28 (7)	0.12 (3)	1.93 (49)	3.03 (77)
ø10 (3/8")	0.60 (15)	0.47 (12)	0.55 (14)	0.157 (4)	0.31 (8)	0.31 (8)	.196 (5)	1.10 (28)	No. 6-40UNF	5/16-24UNF	0.49 (12.5)	0.37 (9.5)	—	1.81 (46)	2.91 (74)
ø16 (5/8")	0.60 (15)	0.71 (18)	0.79 (20)	0.196 (5)	0.31 (8)	0.31 (8)	.196 (5)	1.10 (28)	No. 10-32UNF	3/8-24UNF	0.49 (12.5)	0.37 (9.5)	—	1.85 (47)	2.95 (75)

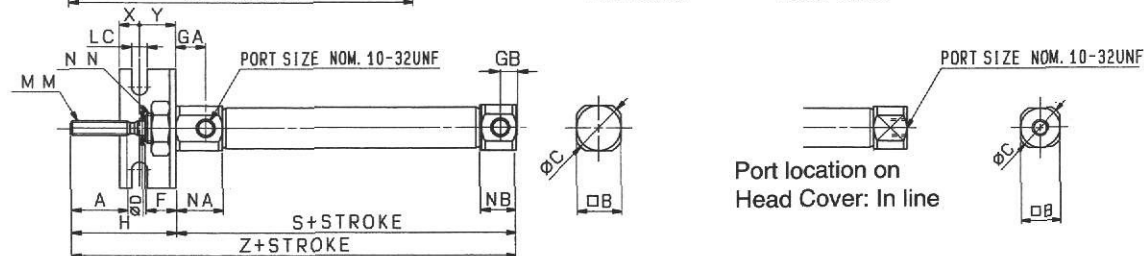
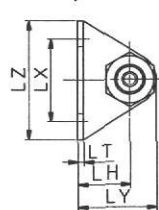
Foot Type (L)

CJ2L Bore size Stroke R

CJ2L6



CJ2L10, 16

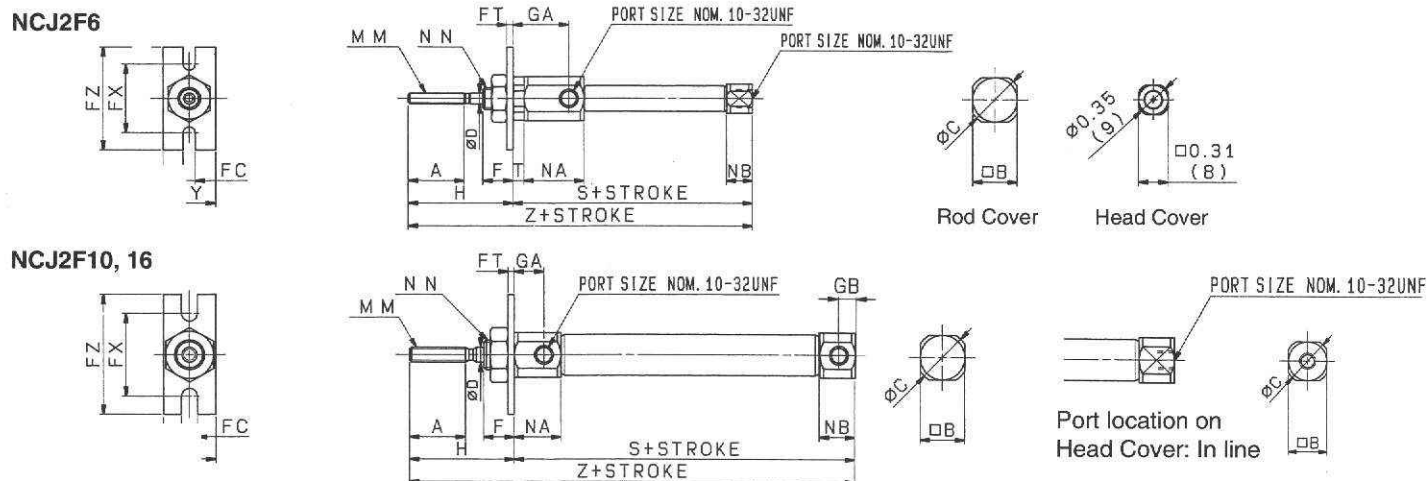


UNIT INCH (MM)

BORE SIZE	A	B	C	D	F	GA	GB	H	LC	LH	LT	LX	LY	LZ	MM	NN	NA	NB	T	X	Y	S	Z
ø6 (1/4")	0.60 (15)	0.47 (12)	0.55 (14)	0.125 (3.175)	0.31 (8)	0.57 (14.5)	—	1.10 (28)	0.13 (3.2)	0.43 (11)	0.06 (1.6)	0.74 (19)	0.71 (18)	1.10 (28)	No. 5-40UNC	1/4-28UNF	0.63 (16)	0.28 (7)	0.12 (3)	0.14 (3.5)	0.26 (6.5)	1.93 (49)	3.03 (77)
ø10 (3/8")	0.60 (15)	0.47 (12)	0.55 (14)	0.157 (4)	0.31 (8)	0.31 (8)	.196 (5)	1.10 (28)	0.17 (4.2)	0.55 (14)	0.06 (1.6)	0.87 (22)	0.83 (21)	1.26 (32)	No. 6-40UNF	5/16-24UNF	0.49 (12.5)	0.37 (9.5)	—	0.21 (5.4)	0.38 (9.6)	1.81 (46)	2.91 (74)
ø16 (5/8")	0.60 (15)	0.71 (18)	0.79 (20)	0.196 (5)	0.31 (8)	0.31 (8)	.196 (5)	1.10 (28)	0.20 (5)	0.55 (14)	0.09 (2.3)	1.18 (30)	0.94 (24)	1.38 (35)	No. 10-32UNF	3/8-24UNF	0.49 (12.5)	0.37 (9.5)	—	0.21 (5.4)	0.38 (9.6)	1.85 (47)	2.95 (75)

Rod Side Flange Type (F)

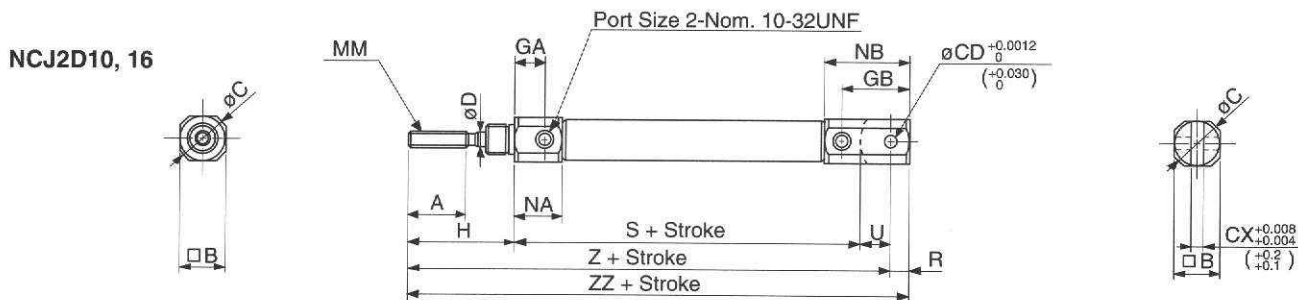
NCJ2F Bore size — Stroke R



UNIT INCH (MM)																				
BORE SIZE	A	B	C	D	F	FC	FT	FX	FY	FZ	GA	GB	H	MM	NN	NA	NB	T	S	Z
ø6 (1/4")	0.60	0.47	0.55	0.125	0.31	0.13	0.06	0.74	0.55	1.10	0.57	—	1.10	No. 5-40UNC	1/4-28UNF	0.63	0.28	0.12	1.93	3.03
	(15)	(12)	(14)	(3.175)	(8)	(3.2)	(1.6)	(19)	(14)	(28)	(14.5)	—	(28)			(16)	(7)	(3)	(49)	(77)
ø10 (3/8")	0.60	0.47	0.55	0.157	0.31	0.17	0.06	0.87	0.55	1.26	0.31	.196	1.10	No. 6-40UNF	5/16-24UNF	0.49	0.37	—	1.81	2.91
	(15)	(12)	(14)	(4)	(8)	(4.2)	(1.6)	(22)	(14)	(32)	(8)	(5)	(28)			(12.5)	(9.5)	—	(46)	(74)
ø16 (5/8")	0.60	0.71	0.79	0.196	0.31	0.20	0.09	1.18	0.79	1.38	0.31	.196	1.10	No. 10-32UNF	3/8-24UNF	0.49	0.37	—	1.85	2.95
	(15)	(18)	(20)	(5)	(8)	(5)	(2.3)	(30)	(20)	(35)	(8)	(5)	(28)			(12.5)	(9.5)	—	(47)	(75)

Double Clevis Type (D)

NCJ2D Bore size — Stroke



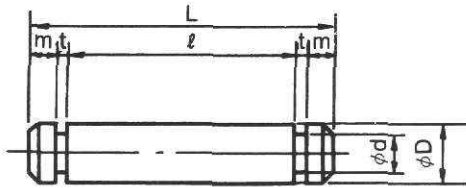
Clevis Pin Included

Clevis Pin Included											UNIT INCH (MM)							
BORE SIZE	A	B	C	CD	CX	D	GA	GB	H	MM	NA	NB	R	S	U	Z	ZZ	
ø10 (3/8")	0.60	0.47	0.55	0.187	0.188	0.157	0.31	0.75	1.10	No. 6-40UNF	0.49	0.93	0.24	1.81	0.31	3.22	3.46	
	(15)	(12)	(14)	(4.77)	(4.78)	(4)	(8)	(19)	(28)		(12.5)	(23.5)	(6)	(46)	(8)	(82)	(88)	
ø16 (5/8")	0.60	0.71	0.79	0.187	0.188	0.196	0.31	0.91	1.10	No. 10-32UNF	0.49	1.08	0.31	1.85	0.39	3.35	3.66	
	(15)	(18)	(20)	(4.77)	(4.78)	(5)	(8)	(23)	(28)		(12.5)	(27.5)	(8)	(47)	(10)	(85)	(93)	

Accessories

(inch)

Rear Clevis Pin

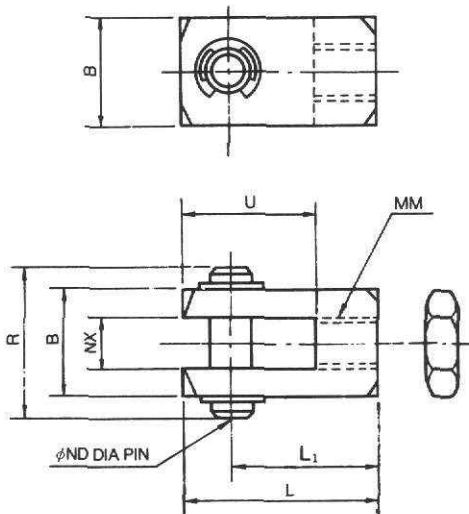


Note: Includes 2 retaining rings.

Part No.	Bore Size	øD	L	ød	l	M	t
NCD-J010	ø10 (3/8")	0.188	0.59	0.147	0.48	0.03	0.03
NCD-J016	ø16 (5/8")	0.187	0.90	0.147	0.72	0.06	0.03

(inch)

Piston Rod Clevis

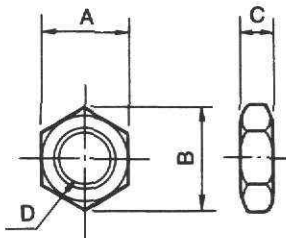


Note: Includes rod jam nut, clevis pin and two retaining rings.

Part No.	Bore size	B	R	NX	øND	U	MM	L	L ₁
NY-J010B	ø10 (3/8")	0.39	0.54	0.188	0.188	0.56	No.6-40UNF	0.94	0.75
NY-J016B	ø16 (5/8")						No.10-32UNF		

(inch)

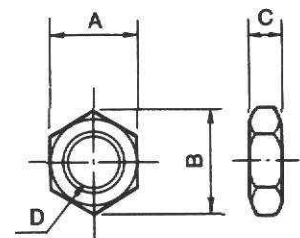
Mounting Nut



Part No.	Bore size	A	B	C	D
JM-025	ø6 (1/4")	0.44	0.50	0.16	1/4-28 UNF
JM-03	ø10 (3/8")	0.50	0.58	0.19	5/16-24 UNF
JM-04	ø16 (5/8")	0.56	0.65	0.23	3/4-24 UNF

(inch)

Rod Jam Nut

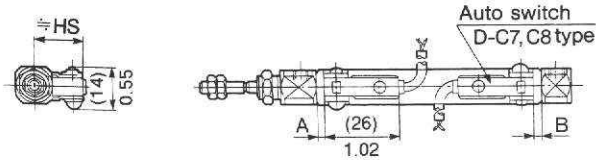


Part No.	Bore size	A	B	C	D
JM-005	ø6 (1/4")	0.31	0.11	0.11	5-40 UNC
JM-006	ø10 (3/8")	0.31	0.36	0.11	6-40 UNF
JM-02	ø16 (5/8")	0.38	0.43	0.13	10-32 UNF

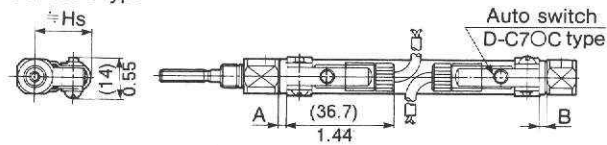
Reed Switch Setting Position (Stroke End)
Band Mounted Type

D-C7/C8 type

inch (mm)

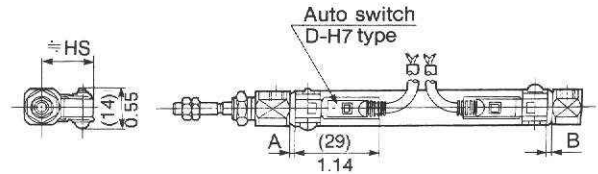


D-C73C/C80C type

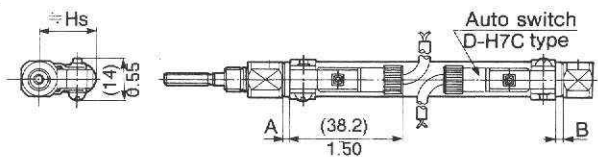

Solid State Switch Setting Position (Stroke End)
Band Mounted Type

D-H7 type

inch (mm)



D-H7C type


Auto switch mounting, minimum possible cylinder stroke in(mm)

Auto switch mounting method	Auto switch type	No. of auto switch	Min. cylinder stroke
Band Mounted type	D-C7/C8 type D-H7 type	2pcs. (Same orientation)	1.96 (50)
		2pcs. (Different orientation)	0.59 (15)
		1pc.	0.39 (10)
	D-C73C/C80C type D-H7C type	2pcs. (Same orientation)	2.59 (65)
		2pcs. (Different orientation)	0.59 (15)
		1pc.	0.39 (10)

< >: Double Rod (NCJ2W6) inch (mm)

Bore Size	D-C7•C8 type			D-C73C•C80C type			D-H7 type			D-H7C type		
	A	B	Hs	A	B	Hs	A	B	Hs	A	B	Hs
6 (1/4")	.07 (2)	.07 (2)	.59 (15)	.07 (2)	.07 (2)	.68 (17.5)	.04 (1)	.04 (1)	.59 (15)	.04 (1)	.04 (1)	.68 (17.5)
	<.33 (8.5)>	<.02 (0.5)>		<.33 (8.5)>	<.02 (0.5)>		<.29 (7.5)>	(0)		<.29 (7.5)>	(0)	
10 (3/8")	.09 (2.5)	.09 (2.5)	.67 (17)	.09 (2.5)	.09 (2.5)	.76 (19.5)	.06 (1.5)	.06 (1.5)	.67 (17)	.06 (1.5)	.06 (1.5)	.76 (19.5)
16 (5/8")	.11 (3)	.11 (3)	.80 (20.5)	.11 (3)	.11 (3)	.90 (23)	.07 (2)	.07 (2)	.80 (20.5)	.07 (2)	.07 (2)	.90 (23)

High Temperature Resistant Cylinder

NCJ2 Mounting Bore size Stroke XB6

Heat resistant packing material allows use of the cylinder from 14° F to 302° F.

Specifications

Applicable cylinder bore size	ø6, ø10, ø16
Action	Double acting
Ambient temperature range	-10°~+150°C (14°~+302°F)
Packing Material	Fluorocarbon rubber
Special grease	Fluoroplastics grease
Mounting	Basic type, Foot type, Rod side flange type

※ Other specifications are the same as for standard type.

Low Temperature Resistant Cylinder

NCJ2 Mounting Bore size Stroke XB7

Cold resistant packing material allows use of the cylinder from -67° F to 158° F.

Specifications

Applicable cylinder bore size	ø6, ø10, ø16
Action	Double acting
Ambient temperature range	-55°~+70°C (-67°~+158°F)
Packing Material	NBR
Special grease	Fluoroplastics grease
Mounting	Basic type, Foot type, Rod side flange type

※ Other specifications are the same as for standard type.

Low Friction Cylinder

NCJ2 Mounting Bore size Stroke XB9

There is no stick-slip phenomenon at a low-speed drive of 10~50mm/s, (0.2 ~ 2 in/s), and all strokes drive at a constant speed smoothly.

Specifications

Applicable cylinder bore size	ø6, ø10, ø16
Action	Double acting
Ambient temperature range	-10°~+70°C (14°~+158°F)
Piston velocity	10~50mm/S (.4~2.0 in/S)
Mounting	Basic type, Foot type, Rod side flange type

Series NCJ2W

Bore Size $\phi 6$, $\phi 10$, $\phi 16$

How to Order

NCJ2W L 16 100 XB6

NC D J2W L 16 100 C73

Auto switch capable

—	Not switch capable
D	Switch capable (Built-in magnet)

Mounting

B	Basic type
L	Axial foot type
F	Rod side flange type

Bore size - Standard stroke/Hundreths of an inch

$\phi 6(1/4in.)$	050, 100, 150, 200
$\phi 10(3/8in.)$	050, 100, 150, 200
$\phi 16(5/8in.)$	050, 100, 150, 200

Special options

XB6	High temperature type
XB7	Low temperature type

See page 22 for specifications of special options.
XB6 is for non-switch capable only.

Number of switches

—	2 pcs.
S	1 pc.
n	n pcs.

Applicable auto switch

Reed switch
(Band mounted type)

B	Built-in magnet
C73	D-C73
C76	D-C76
C80	D-C80
C73C	D-C73C
C80C	D-C80C

Solid state auto switch
(Band mounted type)

H7A1	D-H7A1
H7A2	D-H7A2
H7B	D-H7B
H7C	D-H7C

Note 1) Standard auto switch lead wire length is 20 inches.
118 inch leads available on all models by adding an "L" suffix to the part number.

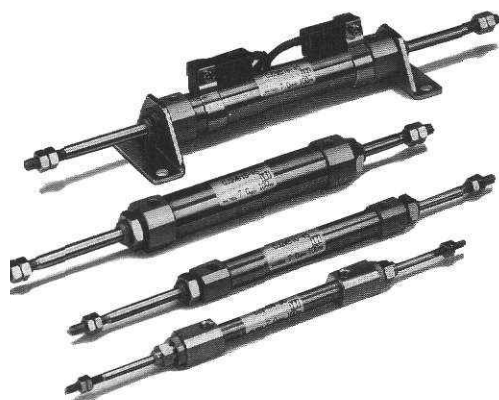
(Example)
D-C73 → D-C73L

Parts No. of mounting brackets

Mounting Bracket	Bore size (mm)		
	6	10	16
Foot	NCJ-L006B	NCJ-L010B	NCJ-L016B
Flange	NCJ-F006B	NCJ-F010B	NCJ-F016B

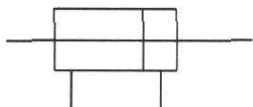
Parts No. of auto switch mounting bands

Bore size (mm)	Parts No. of mounting band	Note
6	BJ2-006	Common use to all of D-C7, C8, D-H7 types.
10	BJ2-010	
16	BJ2-016	



Symbol

Double acting/Double rod



Specifications

Action	Double acting double rod	
Fluid	Air	
Proof pressure	10.5gf/cm ² {1050kPa}, 150 PSI	
Max. operating pressure	7.0kgf/cm ² {700kPa}, 100 PSI	
Min. operating pressure	ø6	1.5kgf/cm ² {150kPa}, 21PSI
	ø10,ø16	1.0kgf/cm ² {100kPa}, 14 PSI
Ambient and fluid temperature	-10° ~ + 70° C (14° ~ + 158°F)	
Cushion	Rubber cushion (Standard)	
Lubrication	None (Non-lube)	
Stroke tolerance	+1.0 (+.04 in) 0 0	
Piston speed	50 ~ 750mm/s 2 ~ 29.5 in/s	
Allowable kinetic energy	ø6	0.12kgf-cm 0.10 lb-in
	ø10	0.35kgf-cm 0.30 lb-in
	ø16	0.9kgf-cm 0.78 lb-in

Auto switch specification

Model	Lead wire entry	Applications	Load voltage	Max load current Load current range
D-C73	Grommet	Relay Sequence controller	24VDC 110VAC	5 ~ 40mA 5 ~ 20mA
D-C76	Grommet	IC Circuit	4 ~ 8VDC	20mA
D-C80	Grommet	Relay	24V ^{AC} _{DC} or less	50mA
		Sequence controller	48V ^{AC} _{DC}	40mA
		IC Circuit	100V ^{AC} _{DC}	20mA
D-C73C	Connector	Sequence controller	24VDC	5 ~ 22mA
D-C80C	Connector	Relay Sequence controller	24V ^{AC} _{DC} or less	50mA
D-H7A1	Grommet	IC Circuit, Relay Sequence controller	28VDC	150mA
D-H7A2	Grommet	IC Circuit, Relay Sequence controller	28VDC	150mA
D-H7B	Grommet	24VDC Relay	24VDC	5~150mA
D-H7C	Connector	Sequence Controller	(10~28VDC)	

Mounting and Accessories/Please refer to p14 for details.

	Mounting	Basic type	Foot type	Flange type
Standard	Mounting nut	●	●	●
	Rod end nut	●	●	●
Option	Single knuckle joint	●	●	●
	Double knuckle joint (with pin)	●	●	●

Weight Table

		gf (oz)		
Bore size(mm)		6	10	16
Basic weight		27 (.95)	35 (1.23)	70 (2.47)
Additional weight for each 1/2" of stroke		2.54 (.08)	5.08 (.17)	7.62 (.26)
Mounting bracket weight	Foot type	14 (.49)	14 (.49)	38 (1.34)
	Flange type	5 (.17)	5 (.17)	13 (.46)

Calculation (Example) NCJ2WL10-050

•Basic weight.....1.23 oz (ø10)

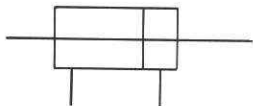
•Additional weight......17 oz

(Cylinder stroke.....1/2")

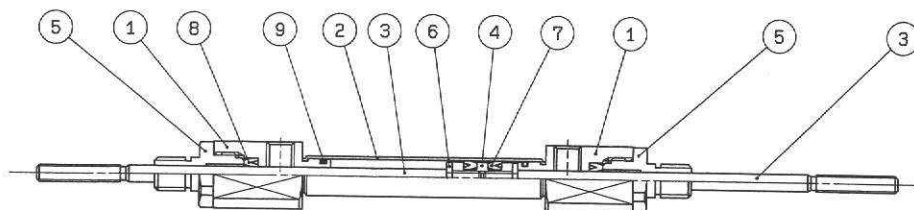
•Mounting bracket weight......49 oz (Foot type)

1.23 + .17 + .49 = 1.89 oz

Construction/Parts List (Disassembly is not possible)



NCJ2W06



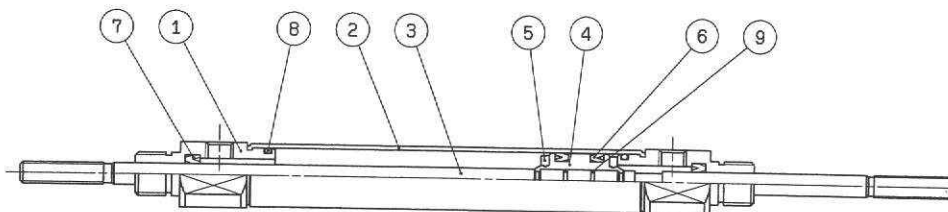
Parts List

Item	Part Name	Material	Qty	Remarks
1	Rod Cover	Aluminum Alloy	2	White Alumite
2	Cylinder Tube	Stainless Steel	1	
3	Piston Rod	Stainless Steel	2	
4	Piston	Brass	1	
5	Packing Retainer	Aluminum Alloy	2	White Alumite
6	Bumper	Urethane	2	

Packing List

No.	7	8	9
Name	Piston Packing	Rod Packing	Tube Gasket
Material	NBR	NBR	NBR
Quantity	2	2	2

NCJ2W010, NCJ2W016



Parts List

Item	Part Name	Material	Qty	Remarks
1	Rod Cover	Aluminum Alloy	2	White Alumite
2	Cylinder Tube	Stainless Steel	1	
3	Piston Rod	Stainless Steel	1	
4	Piston	Brass	1	
5	Bumper	Urethane	2	

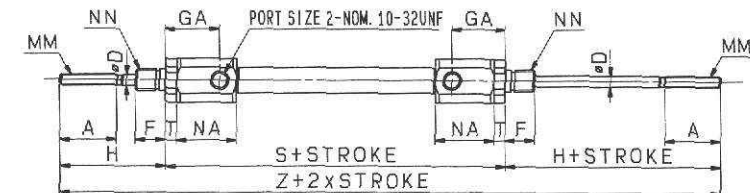
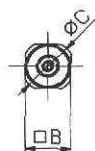
Packing List

No.	6	7	8	9
Name	Piston Packing	Rod Packing	Tube Gasket	Piston Gasket
Material	NBR	NBR	NBR	NBR
Quantity	2	2	2	1

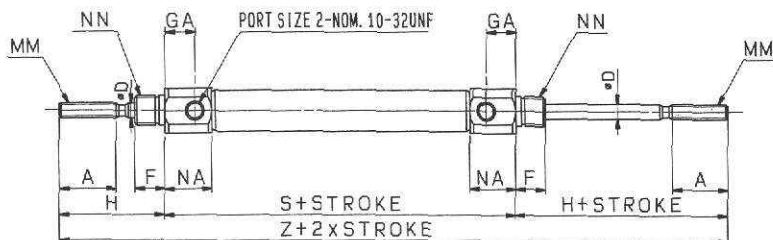
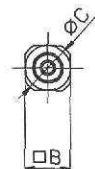
Basic Type (B)

NCJ2WB Bore size Stroke

NCJ2WB6



NCJ2WB10, 16



UNIT INCH (MM)													
BORE SIZE	A	B	C	D	F	GA	H	MM	NN	NA	T	S	Z
*ø6 (1/4")	0.60	0.47	0.55	0.125	0.31	0.57	1.10	No. 5-40UNC	1/2-28UNF	0.63	0.12	2.40	4.61
	(15)	(12)	(14)	(3.175)	(8)	(14.5)	(28)			(16)	(3)	(61)	(117)
ø10 (3/8")	0.60	0.47	0.55	0.157	0.31	0.31	1.10	No. 6-40UNF	3/4-24UNF	0.49	—	1.93	4.13
	(15)	(12)	(14)	(4)	(8)	(8)	(28)			(12.5)	—	(49)	(105)
ø16 (5/8")	0.60	0.71	0.79	0.196	0.31	0.31	1.10	No. 10-32UNF	3/8-24UNF	0.49	—	1.97	4.17
	(15)	(18)	(20)	(5)	(8)	(8)	(28)			(12.5)		(50)	(106)

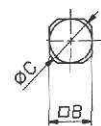
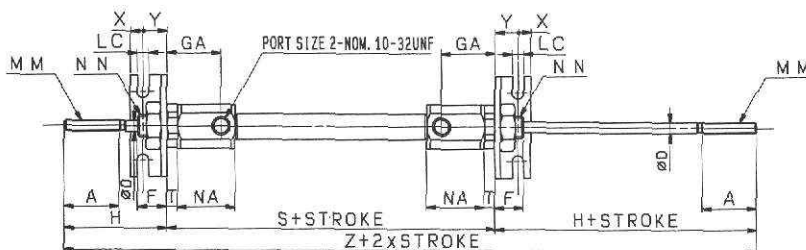
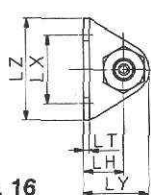
* In case of auto switch with ø6 bore, add 5mm to S and Z.

Foot Type (L)

NCJ2WL Bore size Stroke

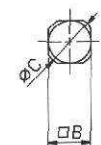
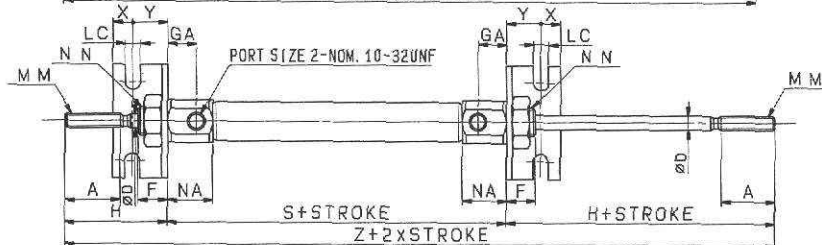
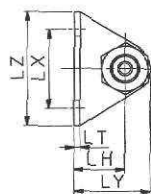
NCJ2WL6

Rod Cover



Rod Cover

NCJ2WL10, 16

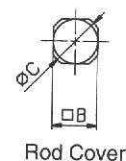
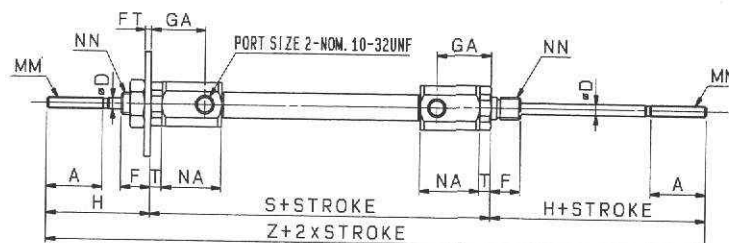
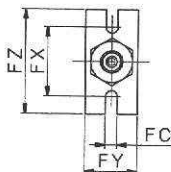
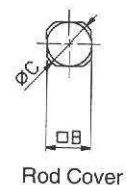
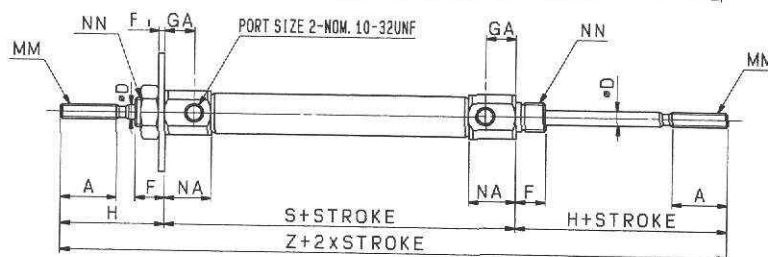
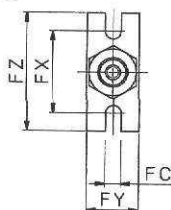


UNIT INCH (MM)																		
BORE SIZE	A	B	C	D	F	GA	H	LC	LH	LT	LX	LY	LZ	MM	NN	NA	T	Z
*ø6 (1/4")	0.60 (15)	0.47 (12)	0.55 (14)	0.125 (3.175)	0.31 (8)	0.57 (14.5)	1.10 (28)	0.13 (3.2)	0.43 (11)	0.06 (1.6)	0.74 (19)	0.71 (18)	1.10 (28)	No. 5-40UNC	1/4-28UNF	0.63 (16)	0.12 (3)	4.61 (117)
ø10 (3/8")	0.60 (15)	0.47 (12)	0.55 (14)	0.157 (4)	0.31 (8)	0.31 (8)	1.10 (28)	0.17 (4.2)	0.55 (14)	0.06 (1.6)	0.87 (22)	0.83 (21)	1.26 (32)	No. 6-40UNF	5/16-24UNF	0.49 (12.5)	-	4.13 (105)
ø16 (5/8")	0.60 (15)	0.71 (18)	0.79 (20)	0.196 (5)	0.31 (8)	0.31 (8)	1.10 (28)	0.20 (5)	0.55 (14)	0.09 (2.3)	1.18 (30)	0.94 (24)	1.38 (35)	No. 10-32UNF	3/8-24UNF	0.49 (12.5)	-	4.17 (106)

* In case of auto switch with ø6 bore, add 5mm to S and Z.

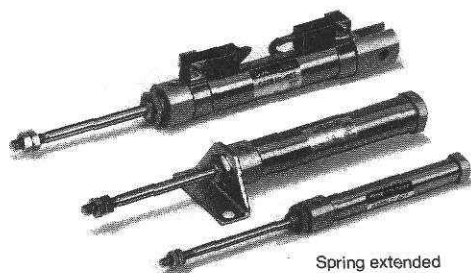
Flange Type (F)

NCJ2WF Bore size Stroke

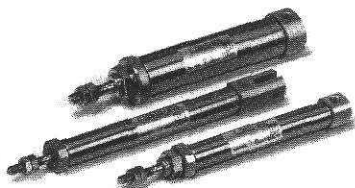
NCJ2WF6

NCJ2WF10, 16


BORE SIZE	UNIT INCH (MM)															
	A	B	C	D	F	FC	FT	FX	FY	FZ	GA	H	MM	NN	NA	T
*ø6 (1/4")	0.60	0.47	0.55	0.125	0.31	0.13	0.06	0.74	0.55	1.10	0.57	1.10	No. 5-40UNC	1/4-28UNF	0.63	0.12
	(15)	(12)	(14)	(3.175)	(8)	(3.2)	(1.6)	(19)	(14)	(28)	(14.5)	(28)			(16)	(3)
ø10 (3/8")	0.60	0.47	0.55	0.157	0.31	0.17	0.06	0.87	0.55	1.26	0.31	1.10	No. 6-40UNF	5/16-24UNF	0.49	1.93
	(15)	(12)	(14)	(4)	(8)	(4.2)	(1.6)	(22)	(14)	(32)	(8)	(28)			(12.5)	(49)
ø16 (5/8")	0.60	0.71	0.79	0.196	0.31	0.20	0.09	1.18	0.79	1.38	0.31	1.10	No. 10-32UNF	3/8-24UNF	0.49	1.97
	(15)	(18)	(20)	(5)	(8)	(5)	(2.3)	(30)	(20)	(35)	(8)	(28)			(12.5)	(50)

* In case of auto switch with ø6 bore, add 5mm to S and Z.



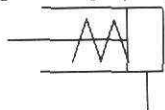
Spring extended



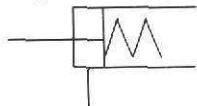
Spring return

Symbol

Single acting/Spring return



Single acting/Spring extended



Specifications

Action		Spring Return	Spring extend
Fluid		Air	
Proof pressure		10.5kgf/cm ² {1050kPa}	150 psi
Max. operating pressure		7.0kgf/cm ² {700kPa}	100 psi
Min. operating pressure	ø6	3.5kgf/cm ² {350kPa}	50 psi
	ø10,ø16	1.5kgf/cm ² {150kPa}	21 psi
Ambient and fluid temperature		-10° ~ +70° C (14° ~ +158°F)	
Cushion		Rubber cushion (Standard)	
Lubrication		None (Non-Lube)	
Stroke tolerance		+1.0mm	(+.04 in)
		0	0
Piston speed		50 ~ 750mm/s	2 ~ 29.5 in/s
Allowable kinetic energy	ø6	0.12kgf/cm	0.10 lb-in
	ø10	0.35kgf/cm	0.30 lb-in
	ø16	0.9kgf/cm	0.78 lb-in

Auto switch specification

Model	Lead wire entry	Applications	Load voltage	Max load current Load current range
D-C73	Grommet	Relay Sequence controller	24VDC 110VAC	5 ~ 40mA 5 ~ 20mA
D-C76	Grommet	IC Circuit	4 ~ 8VDC	20mA
D-C80	Grommet	Relay	24V ^{AC} _{DC} or less	50mA
		Sequence controller	48V ^{AC} _{DC}	40mA
		IC Circuit	100V ^{AC} _{DC}	20mA
D-C73C	Connector	Sequence controller	24VDC	5 ~ 22mA
D-C80C	Connector	Relay Sequence controller	24V ^{AC} _{DC} or less	50mA
D-H7A1	Grommet	IC Circuit, Relay Sequence controller	28VDC	150mA
D-H7A2	Grommet	IC Circuit, Relay Sequence controller	28VDC	150mA
D-H7B	Grommet	24VDC Relay	24VDC	5~150mA
D-H7C	Connector	Sequence Controller	(10~28VDC)	

Mounting and Accessories/Please refer to p14 for details.

	Mounting	Basic type	Foot type	Rod side flange Type	Double clevis type
Standard	Mounting nut	●	●	●	—
	Rod end nut	●	●	●	●
	Clevis pin	—	—	—	●
Option	Double knuckle joint (with pin)	●	●	●	●

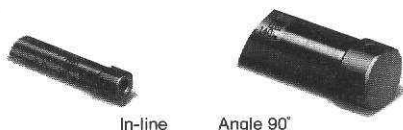
Spring retracting force

kgf (lbs)

Bore size (mm)	Compressed	At Rest
6	0.38 (.83)	0.18 (.39)
10	0.70 (1.54)	0.36 (.79)
16	1.45 (3.19)	0.70 (1.54)

Port location on head cover

Perpendicular to the cylinder axis or in-line with the cylinder axis locations are available for basic type.
(ø6 is not available in perpendicular type.)



Weight Table/Spring Return

gf (oz)

Bore size(mm)		6	10	16
Basic Weight	1/2" stroke	10.6 (.37)	27.3 (.96)	62 (2.18)
	1" stroke	15.4 (.54)	33.7 (1.18)	78 (2.75)
	1 1/2" stroke	17.7 (.60)	42.1 (1.48)	97 (3.42)
	2" stroke	21.7 (.76)	50.5 (1.78)	120 (4.23)
Mounting bracket weight	Foot type	7 (.24)	7 (.24)	19 (.67)
	Rod side flange type	5 (.17)	5 (.17)	13 (.46)
	Double clevis type	—	2 (.07)	8 (.28)

Calculation(Example)NCJ2L10-050s

- Basic weight.....1.48 oz (1 1/2" stroke)
- Mounting bracket weight......24 (Foot type)

$$1.48 + .24 = 1.72 \text{ oz}$$

Weight Table/Spring Extended

gf (oz)

Bore size(mm)		6	10	16
Basic Weight	1/2" stroke	16.7 (.58)	27.3 (.97)	63 (2.22)
	1" stroke	20.3 (.71)	32.7 (1.15)	78 (2.75)
	1 1/2" stroke	22.0 (.77)	41.1 (1.44)	97 (3.42)
	2" stroke	25.7 (.90)	48.5 (1.71)	117 (4.12)
Mounting bracket weight	Foot type	7 (.24)	7 (.24)	19 (.67)
	Rod side flange type	5 (.17)	5 (.17)	13 (.46)
	※Double clevis type(with pin)	—	2 (.07)	8 (.28)

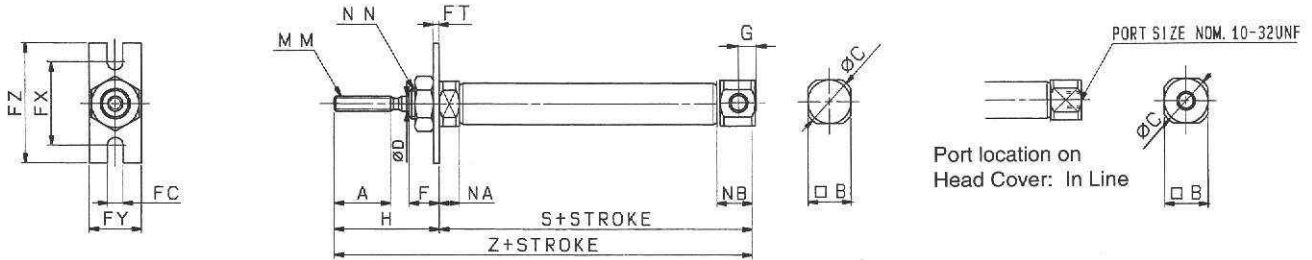
Calculation(Example)NCJ2L10-050T

- Basic weight.....1.44 oz (1 1/2" stroke)
- Mounting bracket weight......24 oz (Foot type)

$$1.44 + .24 = 1.68 \text{ oz}$$

Spring Return/Rod Side Flange Type (F)

NCJ2F Bore size Stroke S R



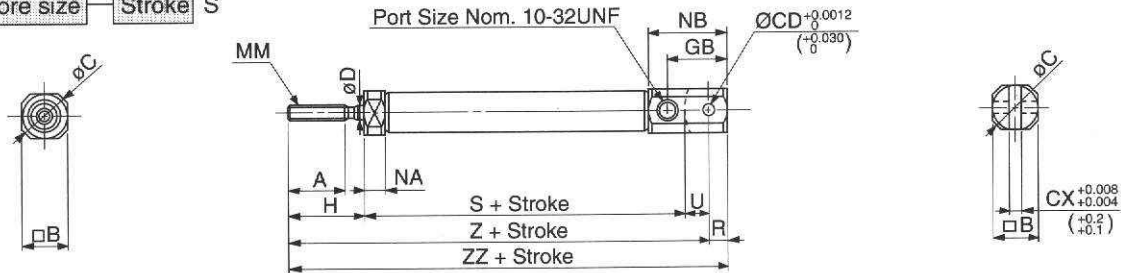
													UNIT INCH (MM)			
BORE SIZE	A	B	C	D	F	G	FC	FT	FX	FY	FZ	H	MM	NN	NA	NB
*ø6 (1/4")	0.60 (15)	0.31 (8)	0.35 (9)	0.125 (3.175)	0.31 (8)	—	0.13 (3.2)	0.06 (1.6)	0.74 (19)	0.55 (14)	1.10 (28)	1.10 (28)	No. 5-40UNC	1/4-28UNF	0.12 (3)	0.28 (7)
ø10 (3/8")	0.60 (15)	0.47 (12)	0.55 (14)	0.157 (4)	0.31 (8)	.196 (5)	0.17 (4.2)	0.06 (1.6)	0.87 (22)	0.55 (14)	1.26 (32)	1.10 (28)			0.21 (5.5)	0.37 (9.5)
ø16 (5/8")	0.60 (15)	0.71 (18)	0.79 (20)	0.196 (5)	0.31 (8)	.196 (5)	0.20 (5)	0.09 (2.3)	1.18 (30)	0.79 (20)	1.38 (35)	1.10 (28)	No. 10-32UNF	3/8-24UNF	0.21 (5.5)	0.37 (9.5)

													UNIT INCH (MM)				
BORE SIZE	S							Z									
	50	100	150	200	300	400	500	50	100	150	200	300	400	500			
*ø6 (1/4")	1.45 (36.8)	1.73 (44.1)	1.98 (50.4)	2.47 (62.7)	—	—	—	2.55 (64.8)	2.84 (72.1)	3.09 (78.4)	3.57 (90.7)	—	—	—			
ø10 (3/8")	1.80 (45.8)	2.01 (51.1)	2.30 (58.4)	2.78 (70.7)	—	—	—	2.91 (73.8)	3.11 (79.1)	3.40 (86.4)	3.89 (98.7)	—	—	—			
ø16 (5/8")	1.82 (46.3)	2.03 (51.6)	2.32 (58.9)	2.80 (71.2)	3.22 (81.8)	3.83 (97.4)	4.61 (117)	2.93 (74.3)	3.13 (79.6)	3.42 (86.9)	3.91 (99.2)	4.32 (109.8)	4.94 (125.4)	5.71 (145)			

* In case of auto switch with ø6 bore, add 5mm to S and Z.

Spring Return/Double ClevisType (D)

NCJ2D Bore size Stroke S



													UNIT INCH (MM)				
BORE SIZE	A	B	C	CD	CX	D	GB	H	MM	NA	NB	R	U				
ø10 (3/8")	0.60 (15)	0.47 (12)	0.55 (14)	0.187 (4.77)	0.188 (4.78)	0.157 (4)	0.75 (19)	.79 (20)	No. 6-40UNF	0.22 (5.5)	0.93 (23.5)	0.24 (6)	0.31 (8)				
ø16 (5/8")	0.60 (15)	0.71 (18)	0.79 (20)	0.187 (4.77)	0.188 (4.78)	0.196 (5)	0.91 (23)	.79 (20)		0.22 (5.5)	1.08 (27.5)	0.31 (8)	0.39 (10)				

UNIT INCH (MM)																					
BORE SIZE	S							Z							ZZ						
	50	100	150	200	300	400	500	50	100	150	200	300	400	500	50	100	150	200	300	400	500
ø10 (3/8")	1.80	2.01	2.30	2.78	—	—	—	2.91	3.11	3.40	3.89	—	—	—	3.14	3.35	3.64	4.12	—	—	—
	(45.8)	(51.1)	(58.4)	(70.7)				(73.8)	(79.1)	(86.4)	(98.7)				(79.8)	(85.1)	(92.4)	(104.7)			
ø16 (5/8")	1.82	2.03	2.32	2.80	3.22	3.83	4.61	3.00	3.21	3.50	3.98	4.40	5.02	5.79	3.32	3.53	3.81	4.30	4.72	5.33	6.10
	(46.3)	(51.6)	(58.9)	(71.2)	(81.8)	(97.4)	(117)	(76.3)	(81.6)	(88.9)	(101.2)	(111.8)	(127.4)	(147)	(84.3)	(89.6)	(96.9)	(109.2)	(119.8)	(135.4)	(155)

Clevis pin included

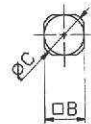
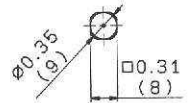
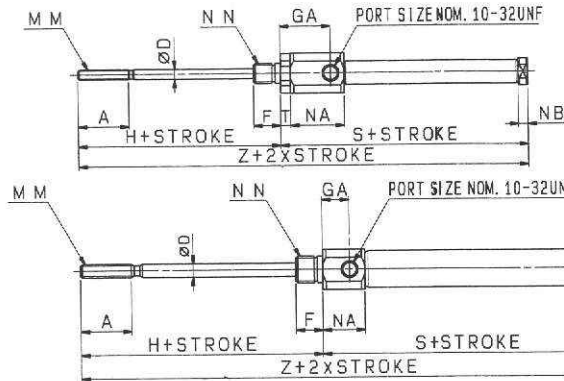
Spring Extend/Basic Type (B)

NCJ2B Bore size Stroke T

NCJ2B6



NCJ2B10, 16



UNIT INCH (MM)

BORE SIZE	A	B	C	D	F	GA	H	MM	NN	NA	NB	T
*ø6 (1/4")	0.60 (15)	0.47 (12)	0.55 (14)	0.125 (3.175)	0.31 (8)	0.57 (14.5)	1.10 (28)	No. 5-40UNC	1/4-28UNF	0.63 (16)	0.12 (3)	0.12 (3)
ø10 (3/8")	0.60 (15)	0.47 (12)	0.55 (14)	0.157 (4)	0.31 (8)	0.31 (8)	1.10 (28)	No. 6-40UNF	3/16-24UNF	0.49 (12.5)	0.22 (5.5)	—
ø16 (5/8")	0.60 (15)	0.71 (18)	0.79 (20)	0.196 (5)	0.31 (8)	0.31 (8)	1.10 (28)	No. 10-32UNF	1/2-24UNF	0.49 (12.5)	0.22 (5.5)	—

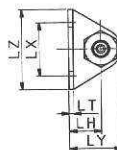
UNIT INCH (MM)

BORE SIZE	S							Z						
	50	100	150	200	300	400	500	50	100	150	200	300	400	500
*ø6 (1/4")	1.92 (48.8)	2.20 (56.1)	2.45 (62.4)	2.94 (74.7)	—	—	—	3.02 (76.8)	3.31 (84.1)	3.56 (90.4)	4.04 (102.7)	—	—	—
ø10 (3/8")	1.92 (48.8)	2.13 (54.1)	2.42 (61.4)	2.90 (73.7)	—	—	—	3.02 (76.8)	3.23 (82.1)	3.52 (89.4)	4.00 (101.7)	—	—	—
ø16 (5/8")	1.94 (49.3)	2.15 (54.6)	2.44 (61.9)	2.92 (74.2)	3.34 (84.8)	3.95 (100.4)	4.72 (120)	3.04 (77.3)	3.25 (82.6)	3.54 (89.9)	4.02 (102.2)	4.44 (112.8)	5.06 (128.4)	5.83 (148)

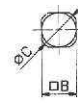
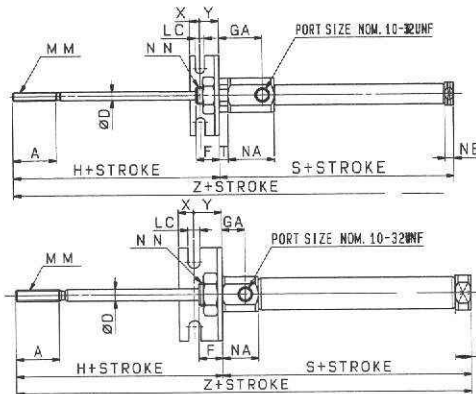
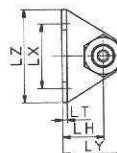
Spring Extend/Foot Type (L)

NCJ2L Bore size Stroke T

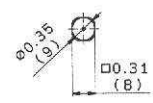
NCJ2L6



NCJ2L10, 16



Rod Cover



Head Cover

UNIT INCH (MM)

BORE SIZE	A	B	C	D	F	GA	H	LC	LH	LT	LX	LY	LZ	MM	NN	NA	NB	T	X	Y
*ø6 (1/4")	0.60 (15)	0.47 (12)	0.55 (14)	0.125 (3.175)	0.31 (8)	0.57 (14.5)	1.10 (28)	0.13 (3.2)	0.43 (11)	0.06 (1.6)	0.74 (19)	0.71 (18)	1.10 (28)	No. 5-40UNC	1/4-28UNF	0.63 (16)	0.12 (3)	0.12 (3)	0.14 (3.5)	0.26 (6.5)
ø10 (3/8")	0.60 (15)	0.47 (12)	0.55 (14)	0.157 (4)	0.31 (8)	0.31 (8)	1.10 (28)	0.17 (4.2)	0.55 (14)	0.06 (1.6)	0.87 (22)	0.83 (21)	1.26 (32)	No. 6-40UNF	3/16-24UNF	0.49 (12.5)	0.22 (5.5)	—	0.21 (5.4)	0.38 (9.6)
ø16 (5/8")	0.60 (15)	0.71 (18)	0.79 (20)	0.196 (5)	0.31 (8)	0.31 (8)	1.10 (28)	0.20 (5)	0.55 (14)	0.09 (2.3)	1.18 (30)	0.94 (24)	1.38 (35)	No. 10-32UNF	1/2-24UNF	0.49 (12.5)	0.22 (5.5)	—	0.21 (5.4)	0.38 (9.6)

UNIT INCH (MM)

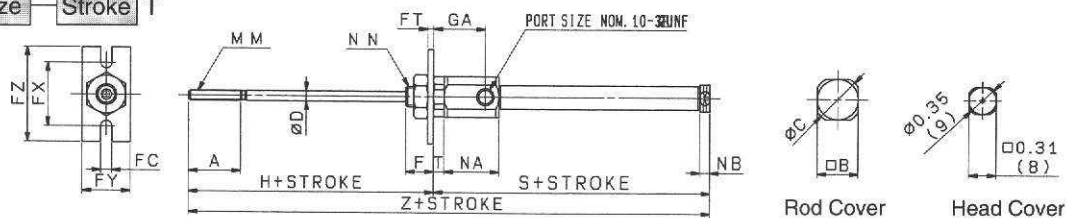
BORE SIZE	S							Z						
	50	100	150	200	300	400	500	50	100	150	200	300	400	500
*ø6 (1/4")	1.92 (48.8)	2.20 (56.1)	2.45 (62.4)	2.94 (74.7)	—	—	—	3.02 (76.8)	3.31 (84.1)	3.56 (90.4)	4.04 (102.7)	—	—	—
ø10 (3/8")	1.92 (48.8)	2.13 (54.1)	2.42 (61.4)	2.90 (73.7)	—	—	—	3.02 (76.8)	3.23 (82.1)	3.52 (89.4)	4.00 (101.7)	—	—	—
ø16 (5/8")	1.94 (49.3)	2.15 (54.6)	2.44 (61.9)	2.92 (74.2)	3.34 (84.8)	3.95 (100.4)	4.72 (120)	3.04 (77.3)	3.25 (82.6)	3.54 (89.9)	4.02 (102.2)	4.44 (112.8)	5.06 (128.4)	5.83 (148)

* In case of auto switch with ø6 bore, add 5mm to S and Z.

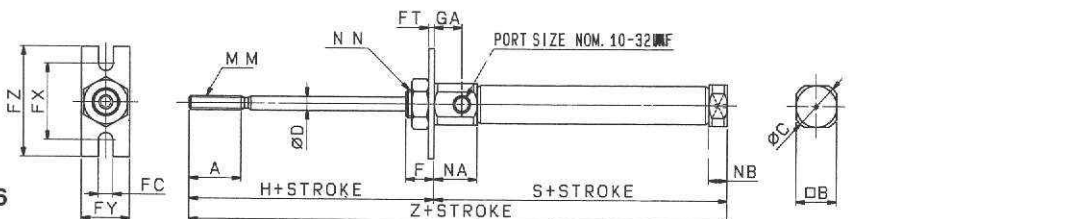
Spring Extend/Rod Side Flange Type (F)

NCJ2F Bore size Stroke T

NCJ2F6



NCJ2F10, 16



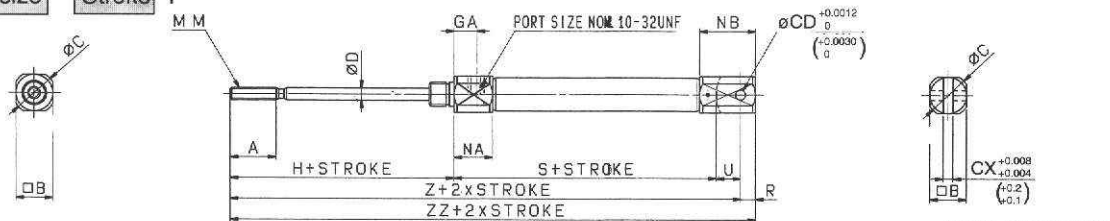
														UNIT INCH (MM)			
BORE SIZE	A	B	C	D	F	FC	FT	FX	FY	FZ	GA	H	MM	NN	NA	NB	T
*ø6 (1/4")	0.60	0.47	0.55	0.125	0.31	0.13	0.06	0.74	0.55	1.10	0.57	1.10	No. 5-40UNC	¼-28UNF	0.63	0.12	0.12
	(15)	(12)	(14)	(3.175)	(8)	(3.2)	(1.6)	(19)	(14)	(28)	(14.5)	(28)			(16)	(3)	(3)
ø10 (3/8")	0.60	0.47	0.55	0.157	0.31	0.17	0.06	0.87	0.55	1.26	0.31	1.10	No. 6-40UNF	⅝-24UNF	0.49	0.22	
	(15)	(12)	(14)	(4)	(8)	(4.2)	(1.6)	(22)	(14)	(32)	(8)	(28)			(12.5)	(5.5)	
ø16 (5/8")	0.60	0.71	0.79	0.196	0.31	0.20	0.09	1.18	0.79	1.38	0.31	1.10	No. 10-32UNF	⅜-24UNF	0.49	0.22	
	(15)	(18)	(20)	(5)	(8)	(5)	(2.3)	(30)	(20)	(35)	(8)	(28)			(12.5)	(5.5)	

UNIT INCH (MM)															
BORE SIZE	S							Z							
	50	100	150	200	300	400	500	50	100	150	200	300	400	500	
*ø6 (1/4")	1.92 (48.8)	2.20 (56.1)	2.45 (62.4)	2.94 (74.7)	-	-	-	3.02 (76.8)	3.31 (84.1)	3.56 (90.4)	4.04 (102.7)	-	-	-	
ø10 (3/8")	1.92 (48.8)	2.13 (54.1)	2.42 (61.4)	2.90 (73.7)	-	-	-	3.02 (76.8)	3.23 (82.1)	3.52 (89.4)	4.00 (101.7)	-	-	-	
ø16 (5/8")	1.94 (49.3)	2.15 (54.6)	2.44 (61.9)	2.92 (74.2)	3.34 (84.8)	3.95 (100.4)	4.72 (120)	3.04 (77.3)	3.25 (82.6)	3.54 (89.9)	4.02 (102.2)	4.44 (112.8)	5.06 (128.4)	5.83 (148)	

Spring Extend/Double ClevisType (D)

* In case of auto switch with ø6 bore, add 5mm to S and Z.

NCJ2D Bore size Stroke T



UNIT INCH (MM)													
BORE SIZE	A	B	C	CD	CX	D	GA	H	MM	NA	NB	R	U
ø10 (3/8")	0.60 (15)	0.47 (12)	0.55 (14)	0.187 (4.77)	0.188 (4.78)	0.157 (4)	0.31 (8)	1.10 (28)	No. 6-40UNF	0.49 (12.5)	0.93 (23.5)	0.24 (6)	0.31 (8)
ø16 (5/8")	0.60 (15)	0.71 (18)	0.79 (20)	0.187 (4.77)	0.188 (4.78)	0.196 (5)	0.31 (8)	1.10 (28)	No. 10-32UNF	0.49 (12.5)	1.08 (27.5)	0.31 (8)	0.39 (10)

UNIT INCH (MM)																					
BORE SIZE	S							Z							ZZ						
	50	100	150	200	300	400	500	50	100	150	200	300	400	500	50	100	150	200	300	400	500
ø10 (3/8")	2.08	2.29	2.57	3.06	—	—	—	3.50	3.70	3.99	4.48	—	—	—	3.73	3.94	4.23	4.71	—	—	—
	(52.8)	(58.1)	(65.4)	(77.7)				(88.8)	(94.1)	(101.4)	(113.7)				(94.8)	(100.1)	(107.4)	(119.7)			
ø16 (5/8")	2.10	2.31	2.59	3.08	3.50	4.11	4.88	3.59	3.80	4.09	4.57	4.99	5.61	6.38	3.91	4.12	4.41	4.89	5.31	5.92	6.69
	(53.3)	(58.6)	(65.9)	(78.2)	(88.8)	(104.4)	(124)	(91.3)	(96.6)	(103.9)	(116.2)	(126.8)	(142.4)	(162)	(99.3)	(104.6)	(111.9)	(124.2)	(134.8)	(150.4)	(170)

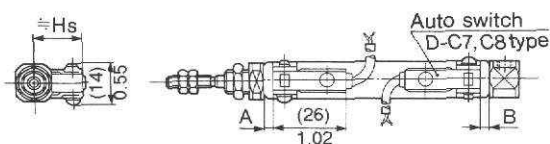
Clevis pin included

Band Mounted Type: Auto Switch Setting Position/Stroke End

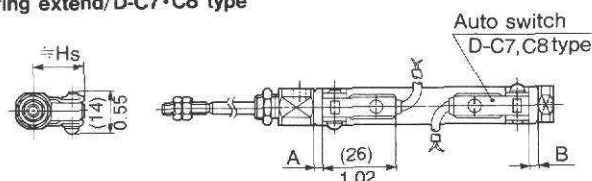
inch (mm)

Reed Switch/D-C7·C8 Type

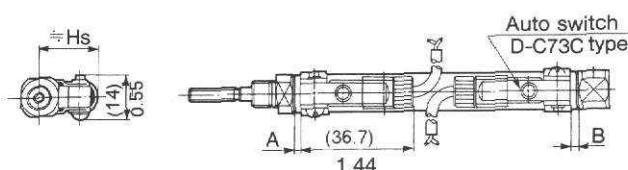
Spring return/D-C7·C8 type



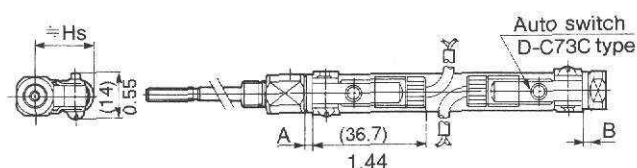
Spring extend/D-C7·C8 type



D-C73C·C80C type

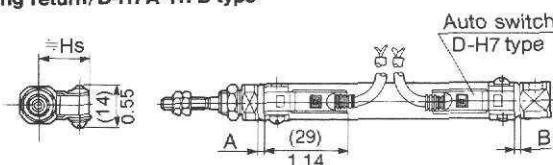


D-C73C·C80C type

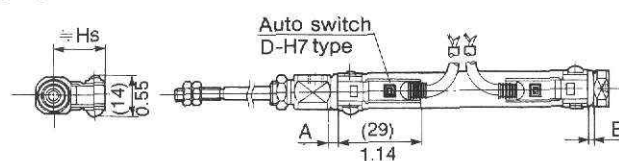


Solid State Switch/D-H7A·H7B Type

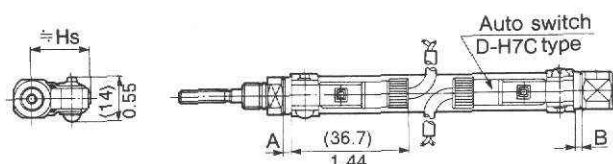
Spring return/D-H7A·H7B type



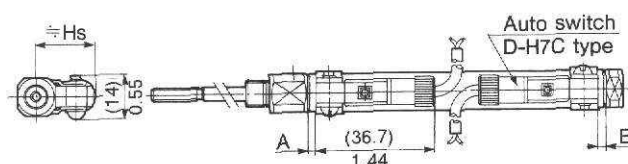
Spring extend/D-H7A·H7B type



D-H7C type



D-H7C type



Auto switch mounting, minimum possible cylinder strokes inch (MM)

Auto switch mounting method	Auto switch type	No. of Auto switch	Min. cylinder stroke
Band mounted type	D-C7/C8 type D-H7 type	2pcs. (Same orientation)	2.0 (50)
		2pcs. (Different orientation)	0.6 (15)
		1pc.	0.4 (10)
	D-C73C/C80C type D-H7C type	2pcs. (Same orientation)	2.6 (65)
		2pcs. (Different orientation)	0.6 (15)
		1pc.	0.4 (10)

UNIT INCHES

Auto switch type	Bore size	Spring Return								Spring Extend								Hs
		A							B	A	B							
		3/8-1/2	1/2-1	1-1 1/2	1 1/2-2	2-3	3-4	4-5			3/8-1/2	1/2-1	1-1 1/2	1 1/2-2	2-3	3-4	4-5	
D-C7 type D-C8 type	6	.43	.70	.96	1.43	-	-	-	.07	.07	.43	.70	.96	1.43	-	-	-	.60
	10	.37	.57	.86	1.33	-	-	-	.09	.09	.37	.57	.86	1.33	-	-	-	.67
	16	.37	.57	.86	1.33	1.77	2.38	3.14	.11	.11	.37	.57	.86	1.33	1.77	2.38	3.14	.81
D-C73C type D-C80C type	6	.43	.70	.96	1.43	-	-	-	.07	.07	.43	.70	.96	1.43	-	-	-	.69
	10	.37	.57	.86	1.33	-	-	-	.09	.09	.37	.57	.86	1.33	-	-	-	.77
	16	.37	.57	.86	1.33	1.77	2.38	3.14	.11	.11	.37	.57	.86	1.33	1.77	2.38	3.14	.91
D-H7 type	6	.39	.66	.92	1.39	-	-	-	.04	.04	.39	.66	.92	1.39	-	-	-	.60
	10	.33	.53	.82	1.29	-	-	-	.06	.06	.33	.53	.82	1.29	-	-	-	.67
	16	.33	.53	.82	1.29	1.73	2.34	3.11	.07	.07	.33	.53	.82	1.29	1.73	2.34	3.11	.81
D-H7C type	6	.39	.66	.92	1.39	-	-	-	.04	.04	.39	.66	.92	1.39	-	-	-	.69
	10	.33	.53	.82	1.29	-	-	-	.06	.06	.33	.53	.82	1.29	-	-	-	.77
	16	.33	.53	.82	1.29	1.73	2.34	3.11	.07	.07	.33	.53	.82	1.29	1.73	2.34	3.11	.91

Series NCJ2K

Bore Size: $\varnothing 10$. $\varnothing 16$

How to Order

NCJ2K L 16 100 R

NC D J2K L 16 100 R C73

Auto switch capable

—	Not switch capable
D	Switch capable (Built-in magnet)

Mounting

B	Basic type
L	Foot type
F	Rod side flange type
D	Double clevis type

Bore size - Standard stroke/Hundredths of an inch

$\varnothing 10(3/8\text{in.})$	050, 100, 150, 200, 300, 400, 500, 600
$\varnothing 16(5/8\text{in.})$	050, 100, 150, 200, 300, 400, 500, 600, 700, 800

Port location on head cover

Symbol	Port location on head cover
R	In-line
—	Perpendicular

Number of switches

—	2 pcs.
S	1 pc.
n	n pcs.

Applicable auto switch Reed switch (Band mounted type)

B	Built-in magnet
C73	D-C73
C76	D-C76
C80	D-C80
C73C	D-C73C
C80C	D-C80C

Solid stated auto switch (Band mounted type)

H7A1	D-H7A1
H7A2	D-H7A2
H7B	D-H7B
H7C	D-H7C

Note 1) Standard Auto Switch lead wire length is 20 inches.

118 inch leads available on all model's by adding an "L" suffix to the part number.

(Example)

D-C73 → D-C73L.

Parts No. of mounting brackets

Mounting Bracket	Bore size (mm)	
	10	16
Foot	NCJ-L016B	NCJK-L016B
Flange	NCJ-F016B	NCJK-F016B

Parts No. of auto switch mounting bands

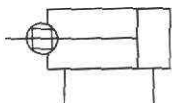
Bore size (mm)	Parts No. of auto switch mounting band	Note
10	BJ2-010	Common use to all of
16	BJ2-016	D-C7, C8, D-H7 types.

Specifications

Action		Double acting single rod	
Fluid		Air	
Proof pressure		10.5gf/cm ² {1050kPa} 150 PSI	
Max. operating pressure		7.0kgf/cm ² {700kPa} 100 PSI	
Min. operating pressure		0.6kgf/cm ² {60kPa} 8.5 PSI	
Ambient and fluid temperature		-10° ~ + 70° C (14° ~ + 158°F)	
Cushion		Rubber cushion (Standard)	
Lubrication		None (Non-lube)	
Stroke tolerance		+1.0mm (+.04 in) 0 0	
Non-rotating Accuracy	ø10	±1.5°	
	ø16	±1°	
Piston speed		50 ~ 750mm/s	2.0 ~ 29.5 in/s
Allowable kinetic energy	ø10	0.35kgf-cm	0.30 lb-in
	ø16	0.9kgf-cm	0.78 lb-in

Symbol

Double acting/Single rod
(non-rotating)



Auto switch specification

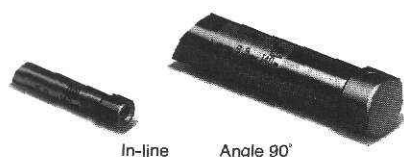
Model	Lead wire entry	Applications	Load voltage	Max load current Load current range
D-C73	Grommet	Relay Sequence controller	24VDC 110VAC	5 ~ 40mA 5 ~ 20mA
D-C76	Grommet	IC Circuit	4 ~ 8VDC	20mA
D-C80	Grommet	Relay	24V ^{AC} _{DC} or less	50mA
		Sequence controller	48V ^{AC} _{DC}	40mA
		IC Circuit	100V ^{AC} _{DC}	20mA
D-C73C	Connector	Sequence controller	24VDC	5 ~ 22mA
D-C80C	Connector	Relay Sequence controller	24V ^{AC} _{DC} or less	50mA
D-H7A1	Grommet	IC Circuit, Relay Sequence controller	28VDC	150mA
D-H7A2	Grommet	IC Circuit, Relay Sequence controller	28VDC	150mA
D-H7B	Grommet	24VDC Relay	24VDC	5~150mA
D-H7C	Connector	Sequence Controller	(10~28VDC)	

Mounting and Accessories/Please refer to p14 for details.

Mounting		Basic type	Foot type	Rod side flange type	Double clevis type
Standard	Mounting nut	●	●	●	—
	Rod end nut	●	●	●	●
	Clevis pin	—	—	—	●
Option	Double knuckle joint (with pin)	●	●	●	●

Port location on head cover

Perpendicular to the cylinder axis or in-line with the cylinder axis locations are available for basic type.



Weight Table

Bore size (mm)		Weight (oz)	
		10	16
Basic weight		24 (.84)	55 (1.94)
Additional weight for each 1/2" of stroke		3.38 (.11)	5.5 (.19)
Mounting bracket weight	Foot type	7 (.24)	19 (.67)
	Rod side flange type	5 (.17)	13 (.45)
	Double clevis type	2 (.07)	8 (.28)

Calculation (Example) NCJ2KL10-050

Basic weight.....84 oz (ø10)

Additional weight.....11 oz

Cylinder stroke.....1/2"

Mounting bracket weight.....24 oz (Foot type)

1 + .11 + .24 = 1.19 oz

Precautions

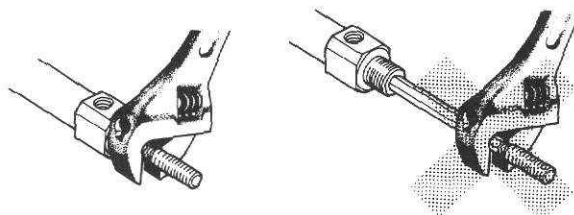
Installation

•Avoid applying rotational torque to piston rod in order to prevent deformation of the non-rotating rod bushing.

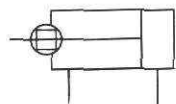
Allowable rotating torque kgf•cm (lbs•in) or less	ø10	ø16
	0.2 (.17)	0.4 (.34)

•Load of piston rod should always be aligned with the cylinder axis.

•Retract the rod fully before applying any kind of tightening torque on the rod end nut and prevent torque from being transmitted to the rod bushing by holding the rod stationary with a wrench.



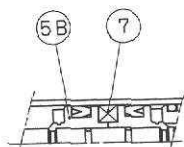
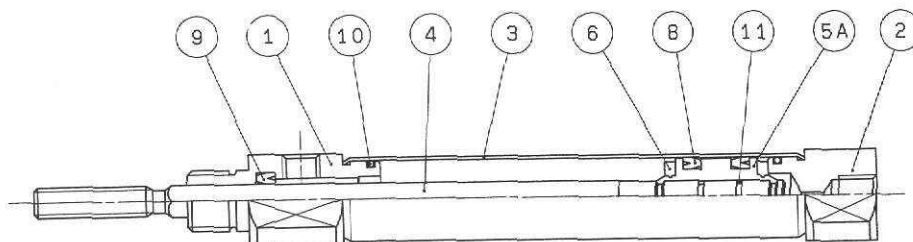
Construction/Parts List (Disassembly is not possible)



NCJ2K06



Rod Cross Section



Built in Magnet

Parts List

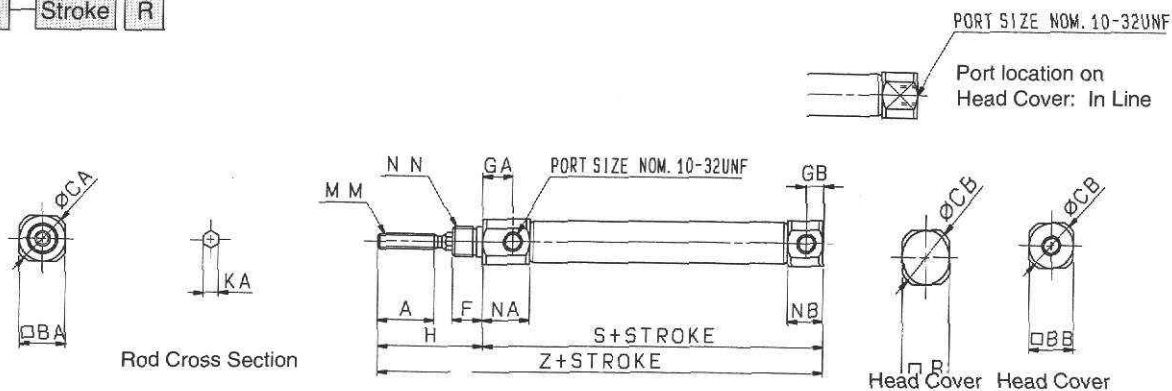
Item	Part Name	Material	Qty	Remarks
1	Rod Cover	Aluminum Alloy	1	White Alumite
2	Head Cover	Aluminum Alloy	1	White Alumite
3	Cylinder Tube	Stainless Steel	1	
4	Piston Rod	Stainless Steel	1	
5A	Piston A	Brass	1	
5B	Piston B	Brass	2	(Switch Type Piston)
6	Bumper	Urethane	2	
7	Magnet	Magnet	1	

Packing List

No.	8	9	10	11
Name	Piston Packing	Rod Packing	Tube Gasket	Piston Gasket
Material	NBR	NBR	NBR	NBR
Quantity	2	1	2	1

Basic Type (B)

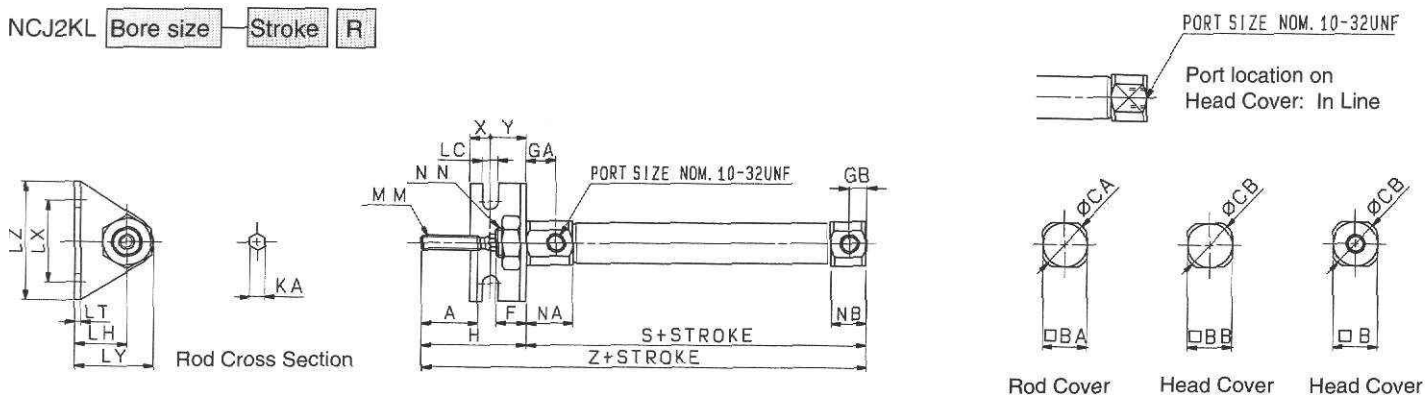
NCJ2KB Bore size Stroke R



UNIT INCH (MM)																
BORE SIZE	A	BA	BB	CA	CB	F	GA	GB	H	KA	MM	NN	NA	NB	S	Z
ø10 (3/8")	0.60	0.60	0.47	0.67	0.55	0.31	0.31	.196	1.10	0.17	No.6-40UNF	3/8-24UNF	0.49	0.37	1.81	2.91
	(15)	(15)	(12)	(17)	(14)	(8)	(8)	(5)	(28)	(4.2)			(12.5)	(9.5)	(46)	(74)
ø16 (5/8")	0.60	0.71	0.71	0.79	0.79	0.31	0.31	.196	1.10	0.20	No.10-32UNF	7/16-20UNF	0.49	0.37	1.85	2.95
	(15)	(18)	(18)	(20)	(20)	(8)	(8)	(5)	(28)	(5.2)			(12.5)	(9.5)	(47)	(75)

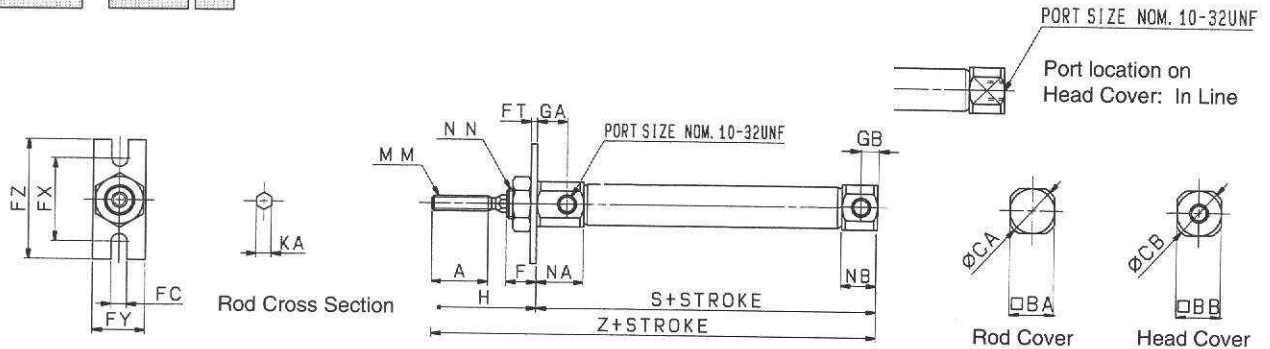
Foot Type (L)

NCJ2KL Bore size Stroke R



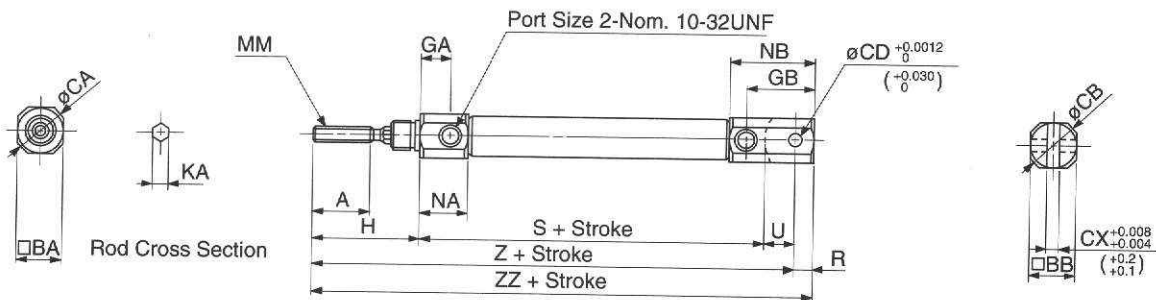
UNIT INCH (MM)																								
BORE SIZE	A	BA	BB	CA	CB	F	GA	GB	H	KA	LC	LH	LT	LX	LY	LZ	MM	NN	NA	NB	X	Y	S	Z
ø10 (3/8")	0.60	0.60	0.47	0.67	0.55	0.31	0.31	.196	1.10	0.17	0.20	0.55	0.09	1.18	0.94	1.38	No.6-40UNF	3/8-24UNF	0.49	0.37	0.21	0.38	1.81	2.91
	(15)	(15)	(12)	(17)	(14)	(8)	(8)	(5)	(28)	(4.2)	(5)	(14)	(2.3)	(30)	(24)	(35)			(12.5)	(9.5)	(5.4)	(9.6)	(46)	(74)
ø16 (5/8")	0.60	0.71	0.71	0.79	0.79	0.31	0.31	.196	1.10	0.20	0.20	0.55	0.09	1.18	0.94	1.65	No.10-32UNF	7/16-20UNF	0.49	0.37	0.21	0.38	1.85	2.95
	(15)	(18)	(18)	(20)	(20)	(8)	(8)	(5)	(28)	(5.2)	(5)	(14)	(2.3)	(30)	(24)	(42)			(12.5)	(9.5)	(5.4)	(9.6)	(47)	(75)

Rod Side Flange Type (F)

NCJ2KF Bore size Stroke R


Bore Size	A	BA	BB	CA	CB	F	FC	FT	FX	FY	FZ	GA	GB	H	KA	MM	NN	NA	NB	S	Z
ø10 (3/8")	0.60 (15)	0.60 (15)	0.47 (12)	0.67 (17)	0.55 (14)	0.31 (8)	0.20 (5)	0.09 (2.3)	1.14 (29)	0.79 (20)	1.38 (35)	0.31 (8)	.196 (5)	1.10 (28)	0.17 (4.2)	No.6-40UNF	3/8-24UNF	0.49 (12.5)	0.37 (9.5)	1.81 (46)	2.91 (74)
ø16 (5/8")	0.60 (15)	0.71 (18)	0.71 (18)	0.79 (20)	0.79 (20)	0.31 (8)	0.20 (5)	0.09 (2.3)	1.18 (30)	0.79 (20)	1.38 (35)	0.31 (8)	.196 (5)	1.10 (28)	0.20 (5.2)	No.10-32UNF	7/16-20UNF	0.49 (12.5)	0.37 (9.5)	1.85 (47)	2.95 (75)

Double Clevis Type (D)

NCJ2KF Bore size Stroke


BORE SIZE	A	BA	BB	CA	CB	CD	CX	GA	GB	H	KA	MM	UNIT INCH (MM)						
													NA	NB	R	S	U	Z	ZZ
ø10 (3/8")	0.60 (15)	0.60 (15)	0.47 (12)	0.67 (17)	0.55 (14)	0.187 (4.77)	0.188 (4.78)	0.31 (8)	0.75 (19)	1.10 (28)	0.17 (4.2)	No.6-40UNF	0.49 (12.5)	0.93 (23.5)	0.24 (6)	1.81 (46)	0.31 (8)	3.22 (82)	3.46 (88)
ø16 (5/8")	0.60 (15)	0.71 (18)	0.71 (18)	0.79 (20)	0.79 (20)	0.187 (4.77)	0.188 (4.78)	0.31 (8)	0.91 (23)	1.10 (28)	0.20 (5.2)	No.10-32UNF	0.49 (12.5)	1.08 (27.5)	0.31 (8)	1.85 (47)	0.39 (10)	3.35 (85)	3.66 (93)

Clevis pin included

Series NCJ2K

Bore Size $\phi 10$, $\phi 16$

How to Order

NCJ2K L 16 100 S R
NC D J2K L 16 100 S R C73

Auto switch capable

—	Not switch capable
D	Switch capable (Built-in magnet)

Mounting

B	Basic type
L	Foot type
F	Rod side flange type
D	Double clevis type

Bore size - Standard stroke/Hundreths of an inch

$\phi 10(3/8\text{in.})$	050, 100, 150, 200,
$\phi 16(5/8\text{in.})$	050, 100, 150, 200, 300, 400, 500

Action

S	Single acting spring return
T	Single acting spring extent

Port location on head cover

Symbol	Port location on head cover
R	In-line
—	Perpendicular

Number of switches

—	2 pcs.
S	1 pc.
n	n pcs.

Applicable auto switch Reed switch

	(Band mounted type)
B	Built-in magnet
C73	D-C73
C76	D-C76
C80	D-C80
C73C	D-C73C
C80C	D-C80C

Solid state auto switch (Band mounted type)

H7A1	D-H7A1
H7A2	D-H7A2
H7B	D-H7B
H7C	D-H7C

Note 1) Standard Auto Switch lead wire length is 20 inches.
118 inch leads available on all models by adding an "L" suffix to the part number.

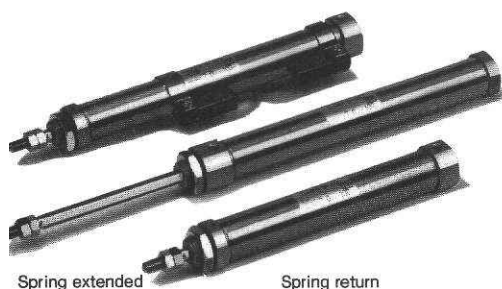
(Example)
D-C73 → D-C73L.

Parts No. of mounting brackets

Mounting Bracket	Bore size (mm)	
	10	16
Foot	NCJ-L016B	NCJ-L016B
Flange	NCJ-F016B	NCJ-F016B

Parts No. of auto switch mounting bands

Bore size (mm)	Parts No. of auto switch mounting band	Note
10	BJ2-010	Common use to all of D-C7, C8, D-H7 types.
16	BJ2-016	



Spring extended

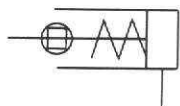
Spring return

Specifications

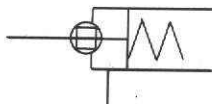
Action		Spring Return	Spring Extend
Fluid		Air	
Proof pressure		10.5gf/cm ² {1050kPa}	150 PSI
Max. operating pressure		7.0kgf/cm ² {700kPa}	100 PSI
Min. operating pressure		1.5kgf/cm ² {150kPa}	21 PSI
Ambient and fluid temperature		-10° ~ + 70° C (14° ~ + 158°F)	
Cushion		Rubber cushion (Standard)	
Lubrication		None (Non-lube)	
Stroke tolerance		+1.0mm 0 (+.04 in) 0	
Non-rotating Accuracy	ø10	±1.5°	
	ø16	±1°	
Piston speed		50 ~ 750mm/s	2 ~ 29.5 in/s
Allowable kinetic energy	ø10	0.35kgf-cm	0.30 lb-in
	ø16	0.9kgf-cm	0.78 lb-in

Symbol

Single acting/Spring return
(non-rotating)



Single acting/Spring Extend
(non-rotating)



Auto switch specification

Model	Lead wire entry	Applications	Load voltage	Max load current Load current range
D-C73	Grommet	Relay Sequence controller	24VDC 110VAC	5 ~ 40mA 5 ~ 20mA
D-C76	Grommet	IC Circuit	4 ~ 8VDC	20mA
D-C80	Grommet	Relay	24V ^{AC} _{DC} or less	50mA
		Sequence controller	48V ^{AC} _{DC}	40mA
		IC Circuit	100V ^{AC} _{DC}	20mA
D-C73C	Connector	Sequence controller	24VDC	5 ~ 22mA
D-C80C	Connector	Relay Sequence controller	24V ^{AC} _{DC} or less	50mA
D-H7A1	Grommet	IC Circuit, Relay Sequence controller	28VDC	150mA
D-H7A2	Grommet	IC Circuit, Relay Sequence controller	28VDC	150mA
D-H7B	Grommet	24VDC Relay	24VDC	
D-H7C	Connector	Sequence Controller	(10~28VDC)	5~150mA

Mounting and Accessories/Please refer to p14 for details.

Mounting		Basic type	Foot type	Rod side flange type	Double clevis type
Standard	Mounting nut	●	●	●	—
	Rod end nut	●	●	●	●
	Clevis pin	—	—	—	●
Option	Single knuckle joint	●	●	●	●
	Double knuckle joint (With pin)	●	●	●	●
	T mounting	—	—	—	●

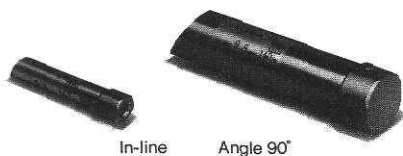
Spring retracting force

lbs. (kgf)

Bore size (mm)	Extended position	Retracted position
10	1.54 (0.70)	.79 (0.36)
16	3.19 (1.45)	1.54 (0.70)

Port location on head cover

Perpendicular to the cylinder axis or in-line with the cylinder axis locations are available for basic type.



Weight Table

		Spring Return		Spring Extend		gf (oz)
Bore size(mm)		10	16	10	16	
Basic Weight	1/2" stroke	27.3 (.96)	62 (2.18)	27.3 (.96)	63 (2.22)	
	1" stroke	33.7 (1.19)	78 (2.75)	32.7 (1.15)	78 (2.75)	
	1 1/2" stroke	42.1 (1.48)	99 (3.49)	41.1 (1.45)	97 (3.42)	
	2" stroke	50.5 (1.78)	120 (4.23)	48.5 (1.71)	117 (4.12)	
Mounting bracket weight	Foot type	7 (.24)	19 (.67)	7 (.24)	19 (.67)	
	Rod side flange type	5 (.17)	13 (.45)	5 (.17)	13 (.45)	
	Double clevis type	2 (.07)	8 (.28)	2 (.07)	8 (.28)	

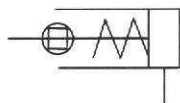
Calculation(Example)NCJ2KL10-150S

•Basic weight.....1.48 oz (1 1/2" stroke)

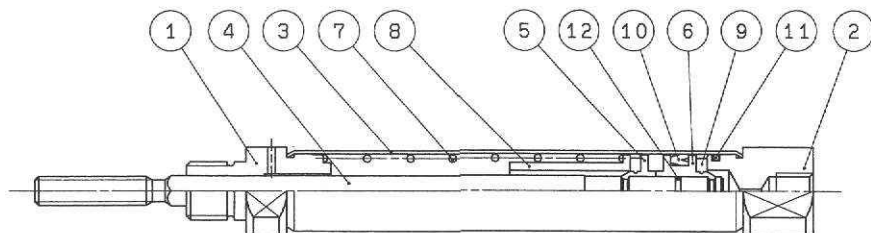
•Mounting bracket weight......24 oz (Foot type)

1.48 + .24 = 1.72 oz

Construction/Parts List (Disassembly is not possible)

Single Acting/Spring Return


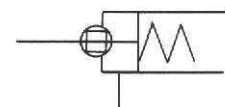
Rod Cross Section


Parts List

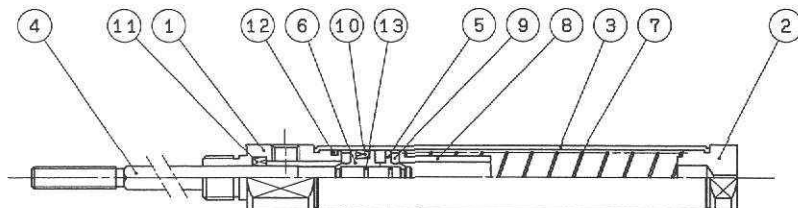
Item	Part Name	Material	Qty	Remarks
1	Rod Cover	Aluminum Alloy	1	White Alumite
2	Head Cover	Aluminum Alloy	1	White Alumite
3	Cylinder Tube	Stainless Steel	1	
4	Piston Rod	Stainless Steel	1	
5	Piston A	Brass	1	
6	Piston B	Brass	1	
7	Return Spring	Piano Wire	1	
8	Spring Seat	Brass	1	
9	Bumper	Urethane	2	

Packing List

No.	10	11	12
Name	Piston Packing	Tube Gasket	Piston Gasket
Material	NBR	NBR	NBR
Quantity	1	1	1

Single Acting/Spring Extend


Rod Cross Section


Parts List

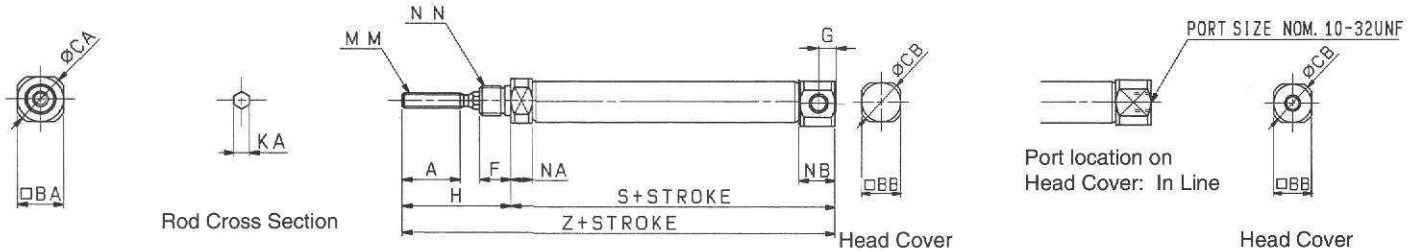
Item	Part Name	Material	Qty	Remarks
1	Rod Cover	Aluminum Alloy	1	White Alumite
2	Head Cover	Aluminum Alloy	1	White Alumite
3	Cylinder Tube	Stainless Steel	1	
4	Piston Rod	Stainless Steel	1	
5	Piston A	Brass	1	
6	Piston B	Brass	1	
7	Return Spring	Piano Wire	1	
8	Spring Seat	Brass	1	
9	Bumper	Urethane	2	

Packing List

No.	10	11	12	13
Name	Piston Packing	Rod Packing	Tube Gasket	Piston Gasket
Material	NBR	NBR	NBR	NBR
Quantity	1	1	1	2

Spring Return/Basic Type (B)

NCJ2KB Bore size Stroke S R

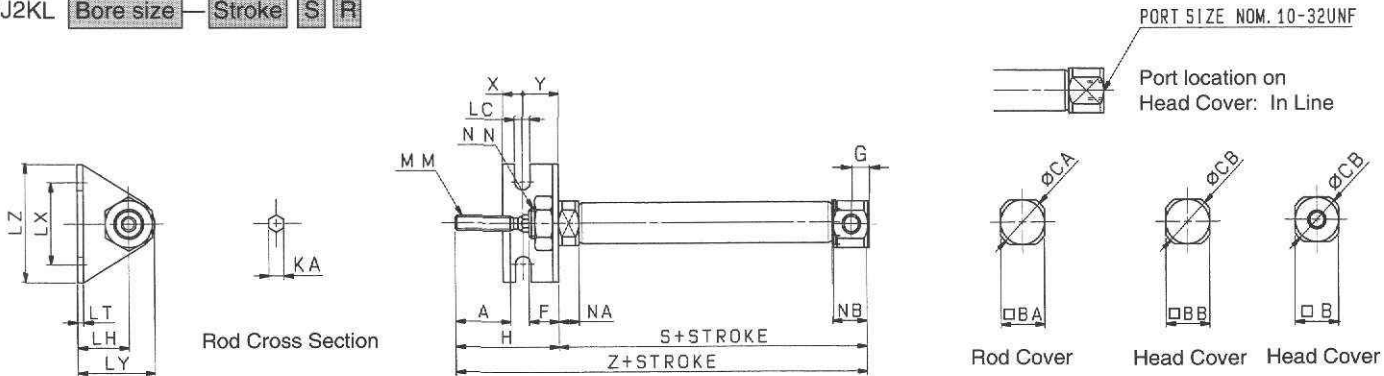


UNIT INCH (MM)													
BORE SIZE	A	BA	BB	CA	CB	F	G	H	KA	MM	NN	NA	NB
ø10 (3/8")	0.60	0.60	0.47	0.67	0.55	0.31	.196	1.10	0.17	No. 6-40UNF	3/8-24UNF	0.21	0.37
	(15)	(15)	(12)	(17)	(14)	(8)	(5)	(28)	(4.2)			(5.5)	(9.5)
ø16 (5/8")	0.60	0.71	0.71	0.79	0.79	0.31	.196	1.10	0.20	No. 10-32UNF	7/16-20UNF	0.21	0.37
	(15)	(18)	(18)	(20)	(20)	(8)	(5)	(28)	(5.2)			(5.5)	(9.5)

UNIT INCH (MM)														
BORE SIZE	S							Z						
	50	100	150	200	300	400	500	50	100	150	200	300	400	500
ø10 (3/8")	1.80	2.01	2.30	2.78	-	-	-	2.91	3.11	3.40	3.89	-	-	-
	(45.8)	(51.1)	(58.4)	(70.7)				(73.8)	(79.1)	(86.4)	(98.7)			
ø16 (5/8")	1.82	2.03	2.32	2.80	3.22	3.83	4.61	2.93	3.13	3.42	3.91	4.32	4.94	5.71
	(46.3)	(51.6)	(58.9)	(71.2)	(81.8)	(97.4)	(117)	(74.3)	(79.6)	(86.9)	(99.2)	(109.8)	(125.4)	(145)

Spring Return/Foot Type (L)

NCJ2KL Bore size Stroke S R

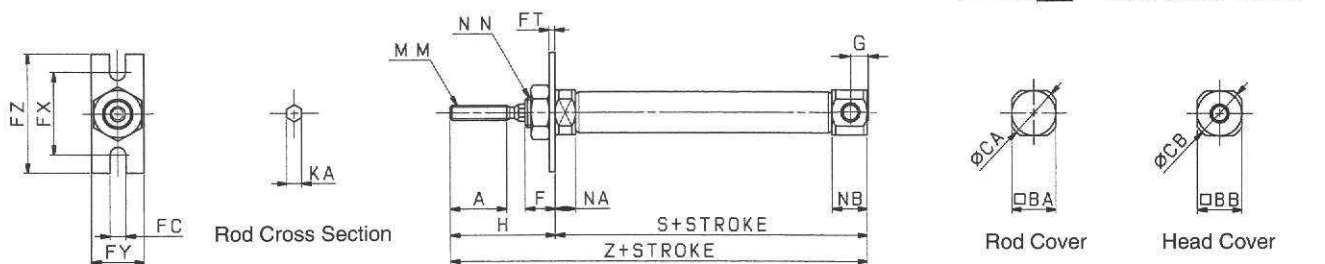


UNIT INCH (MM)																		
BORE SIZE	A	BA	BB	CA	CB	F	H	KA	LC	LH	LT	LX	LY	LZ	MM	NN	NA	NB
ø10 (3/8")	0.60	0.60	0.47	0.67	0.55	0.31	1.10	0.17	0.20	0.55	0.09	1.18	0.94	1.38	No. 6-40UNF	3/8-24UNF	0.21	0.37
	(15)	(15)	(12)	(17)	(14)	(8)	(28)	(4.2)	(5)	(14)	(2.3)	(30)	(24)	(35)			(5.5)	(9.5)
ø16 (5/8")	0.60	0.71	0.71	0.79	0.79	0.31	1.10	0.20	0.20	0.55	0.09	1.18	0.94	1.65	No. 10-32UNF	7/16-20UNF	0.21	0.37
	(15)	(18)	(18)	(20)	(20)	(8)	(28)	(5.2)	(5)	(14)	(2.3)	(30)	(24)	(42)			(5.5)	(9.5)

UNIT INCH (MM)														
BORE SIZE	S							Z						
	50	100	150	200	300	400	500	50	100	150	200	300	400	500
ø10 (3/8")	1.80	2.01	2.30	2.78	-	-	-	2.91	3.11	3.40	3.89	-	-	-
	(45.8)	(51.1)	(58.4)	(70.7)				(73.8)	(79.1)	(86.4)	(98.7)			
ø16 (5/8")	1.82	2.03	2.32	2.80	3.22	3.83	4.61	2.93	3.13	3.42	3.91	4.32	4.94	5.71
	(46.3)	(51.6)	(58.9)	(71.2)	(81.8)	(97.4)	(117)	(74.3)	(79.6)	(86.9)	(99.2)	(109.8)	(125.4)	(145)

Spring Return/Rod Side Flange Type (F)

ICJ2KF Bore size — Stroke S R



UNIT INCH (MM)

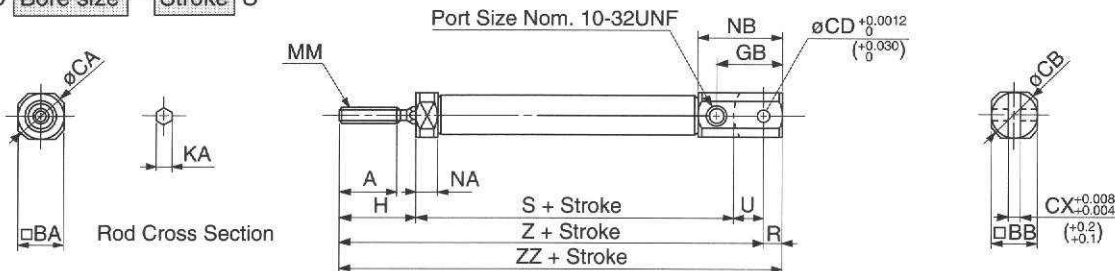
BORE SIZE	A	BA	BB	CA	CB	F	G	FC	FT	FX	FY	FZ	H	KA	MM	NN	NA	NB
ø10 (3/8")	0.60	0.60	0.47	0.67	0.55	0.31	.196	0.20	0.09	1.18	0.79	1.38	1.10	0.17	No. 6-40UNF	3/8-24UNF	0.21	0.37
	(15)	(15)	(12)	(17)	(14)	(8)	(5)	(5)	(2.3)	(30)	(20)	(35)	(28)	(4.2)			(5.5)	(9.5)
ø16 (5/8")	0.60	0.71	0.71	0.79	0.79	0.31	.196	0.20	0.09	1.18	0.79	1.38	1.10	0.20	No. 10-32UNF	3/8-20UNF	0.21	0.37
	(15)	(18)	(18)	(20)	(20)	(8)	(5)	(5)	(2.3)	(30)	(20)	(35)	(28)	(5.2)			(5.5)	(9.5)

UNIT INCH (MM)

BORE SIZE	S							Z						
	50	100	150	200	300	400	500	50	100	150	200	300	400	500
ø10 (3/8")	1.80	2.01	2.30	2.78	—	—	—	2.91	3.11	3.40	3.89	—	—	—
	(45.8)	(51.1)	(58.4)	(70.7)				(73.8)	(79.1)	(86.4)	(98.7)			
ø16 (5/8")	1.82	2.03	2.32	2.80	3.22	3.83	4.61	2.93	3.13	3.42	3.91	4.32	4.94	5.71
	(46.3)	(51.6)	(58.9)	(71.2)	(81.8)	(97.4)	(117)	(74.3)	(79.6)	(86.9)	(99.2)	(109.8)	(125.4)	(145)

Spring Return/Double Clevis Type (D)

ICJ2KD Bore size — Stroke S



UNIT INCH (MM)

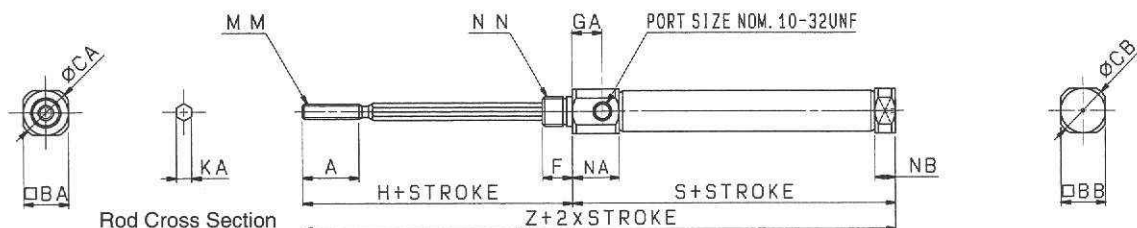
BORE SIZE	A	BA	BB	CA	CB	CD	CX	GB	H	KA	MM	NA	NB	R	U
ø10 (3/8")	0.60	0.47	0.47	0.55	0.55	0.187	0.188	0.75	0.79	0.17	No. 6-40UNF	0.22	0.93	0.24	0.31
	(15)	(12)	(12)	(14)	(14)	(4.77)	(4.78)	(19)	(20)	(4.2)		(5.5)	(23.5)	(6)	(8)
ø16 (5/8")	0.60	0.71	0.71	0.79	0.79	0.187	0.188	0.91	0.79	0.20	No. 10-32UNF	0.22	1.08	0.31	0.39
	(15)	(18)	(18)	(20)	(20)	(4.77)	(4.78)	(23)	(20)	(5.2)		(5.5)	(27.5)	(8)	(10)

UNIT INCH (MM)

BORE SIZE	S							Z							ZZ						
	50	100	150	200	300	400	500	50	100	150	200	300	400	500	50	100	150	200	300	400	500
ø10 (3/8")	1.80	2.01	2.30	2.78	—	—	—	2.91	3.11	3.40	3.89	—	—	—	3.14	3.35	3.64	4.12	—	—	—
	(45.8)	(51.1)	(58.4)	(70.7)				(73.8)	(79.1)	(86.4)	(98.7)				(79.8)	(85.1)	(92.4)	(104.7)			
ø16 (5/8")	1.82	2.03	2.32	2.80	3.22	3.83	4.61	3.00	3.21	3.50	3.98	4.40	5.02	5.79	3.32	3.53	3.81	4.30	4.72	5.33	6.10
	(46.3)	(51.6)	(58.9)	(71.2)	(81.8)	(97.4)	(117)	(76.3)	(81.6)	(88.9)	(101.2)	(111.8)	(127.4)	(147)	(84.3)	(89.6)	(96.9)	(109.2)	(119.8)	(135.4)	(155)

Spring Extend/Basic Type (B)

NCJ2KB Bore size Stroke T

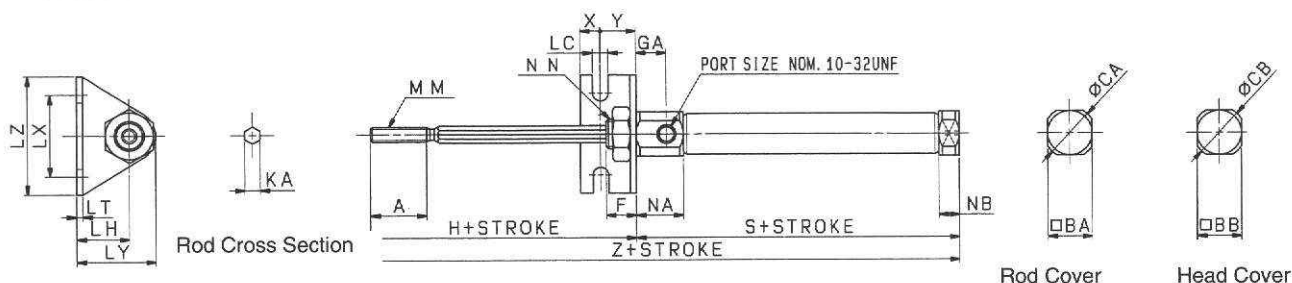


UNIT INCH (MM)													
BORE SIZE	A	BA	BB	CA	CB	F	GA	H	KA	MM	NN	NA	NB
ø10 (3/8")	0.60	0.60	0.47	0.67	0.55	0.31	0.31	1.10	0.17	No. 6-40UNF	3/8-24UNF	0.49	0.22
	(15)	(15)	(12)	(17)	(14)	(8)	(8)	(28)	(4.2)			(12.5)	(5.5)
ø16 (5/8")	0.60	0.71	0.71	0.79	0.79	0.31	0.31	1.10	0.20	No. 10-32UNF	7/16-20UNF	0.49	0.22
	(15)	(18)	(18)	(20)	(20)	(8)	(8)	(28)	(5.2)			(12.5)	(5.5)

UNIT INCH (MM)														
BORE SIZE	S							Z						
	50	100	150	200	300	400	500	50	100	150	200	300	400	500
ø10 (3/8")	1.92	2.13	2.42	2.90	-	-	-	3.02	3.23	3.52	4.00	-	-	-
	(48.8)	(54.1)	(61.4)	(73.7)				(76.8)	(82.1)	(89.4)	(101.7)			
ø16 (5/8")	1.94	2.15	2.44	2.92	3.34	3.95	4.72	3.04	3.25	3.54	4.02	4.44	5.06	5.83
	(49.3)	(54.6)	(61.9)	(74.2)	(84.8)	(100.4)	(120)	(77.3)	(82.6)	(89.9)	(102.2)	(112.8)	(128.4)	(148)

Spring Extend/Foot Type (L)

NCJ2KL Bore size Stroke T

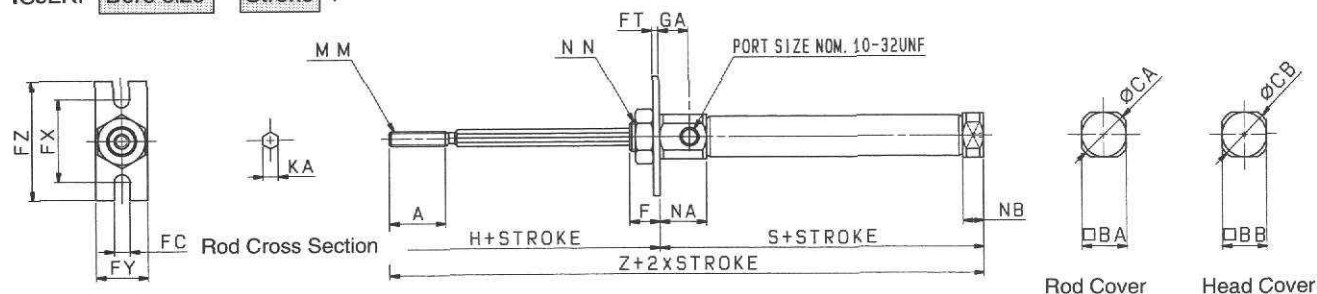


UNIT INCH (MM)																		
BORE SIZE	A	BA	BB	CA	CB	F	GA	H	KA	LC	LH	LT	LX	LY	LZ	MM	NN	NA
ø10 (3/8")	0.60	0.60	0.47	0.67	0.55	0.31	0.31	1.10	0.17	0.20	0.55	0.09	1.18	0.94	1.38	No. 6-40UNF	3/8-24UNF	0.49
	(15)	(15)	(12)	(17)	(14)	(8)	(8)	(28)	(4.2)	(5)	(14)	(2.3)	(30)	(24)	(35)			(12.5)
ø16 (5/8")	0.60	0.71	0.71	0.79	0.79	0.31	0.31	1.10	0.20	0.20	0.55	0.09	1.18	0.94	1.65	No. 10-32UNF	7/16-20UNF	0.49
	(15)	(18)	(18)	(20)	(20)	(8)	(8)	(28)	(5)	(5)	(14)	(2.3)	(30)	(24)	(42)			(12.5)

UNIT INCH (MM)														
BORE SIZE	S							Z						
	50	100	150	200	300	400	500	50	100	150	200	300	400	500
ø10 (3/8")	1.92	2.13	2.42	2.90	-	-	-	3.02	3.23	3.52	4.00	-	-	-
	(48.8)	(54.1)	(61.4)	(73.7)				(76.8)	(82.1)	(89.4)	(101.7)			
ø16 (5/8")	1.94	2.15	2.44	2.92	3.34	3.95	4.72	3.04	3.25	3.54	4.02	4.44	5.06	5.83
	(49.3)	(54.6)	(61.9)	(74.2)	(84.8)	(100.4)	(120)	(77.3)	(82.6)	(89.9)	(102.2)	(112.8)	(128.4)	(148)

Spring Extend/Rod Side Flange Type (F)

ICJ2KF Bore size Stroke T

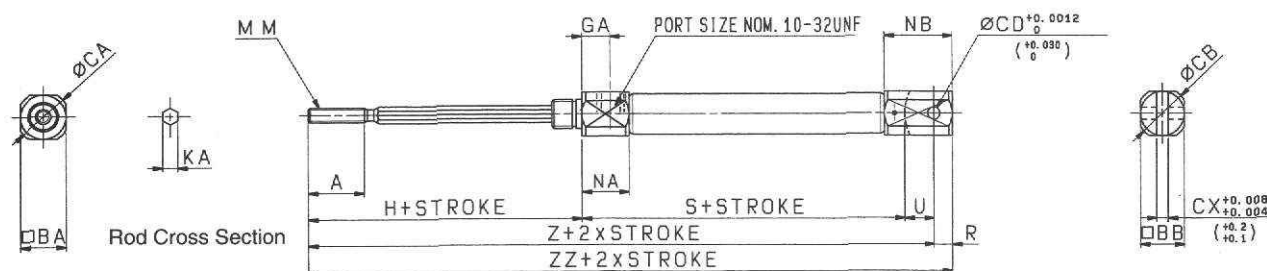


															UNIT INCH (MM)			
BORE SIZE	A	BA	BB	CA	CB	F	FC	FT	FX	FY	FZ	GA	H	KA	MM	NN	NA	NB
ø10 (3/8")	0.60	0.60	0.47	0.67	0.55	0.31	0.20	0.09	1.18	0.79	1.38	0.31	1.10	0.17	No. 6-40UNF	3/8-24UNF	0.49	0.22
	(15)	(15)	(12)	(17)	(14)	(8)	(5)	(2.3)	(30)	(20)	(35)	(8)	(28)	(4.2)			(12.5)	(5.5)
ø16 (5/8")	0.60	0.71	0.71	0.79	0.79	0.31	0.20	0.09	1.18	0.79	1.38	0.31	1.10	0.20	No. 10-32UNF	7/8-20UNF	0.49	0.22
	(15)	(18)	(18)	(20)	(20)	(8)	(5)	(2.3)	(30)	(20)	(35)	(8)	(28)	(5.2)			(12.5)	(5.5)

UNIT INCH (MM)														
BORE SIZE	S							Z						
	50	100	150	200	300	400	500	50	100	150	200	300	400	500
ø10 (3/8")	1.92	2.13	2.42	2.90	-	-	-	3.02	3.23	3.52	4.00	-	-	-
	(48.8)	(54.1)	(61.4)	(73.7)				(76.8)	(82.1)	(89.4)	(101.7)			
ø16 (5/8")	1.94	2.15	2.44	2.92	3.34	3.95	4.72	3.04	3.25	3.54	4.02	4.44	5.06	5.83
	(49.3)	(54.6)	(61.9)	(74.2)	(84.8)	(100.4)	(120)	(77.3)	(82.6)	(89.9)	(102.2)	(112.8)	(128.4)	(148)

Spring Extend/Double Clevis Type (D)

NCJ2KD Bore size Stroke T



UNIT INCH (MM)															
BORE SIZE	A	BA	BB	CA	CB	CD	CX	GA	H	KA	MM	NA	NB	R	U
ø10 (3/8")	0.60	0.60	0.47	0.67	0.55	0.187	0.188	0.31	1.10	0.17	No. 6-40UNF	0.49	0.93	0.24	0.31
	(15)	(15)	(12)	(17)	(14)	(4.77)	(4.78)	(8)	(28)	(4.2)		(12.5)	(23.5)	(6)	(8)
ø16 (5/8")	0.60	0.71	0.71	0.79	0.79	0.187	0.188	0.31	1.10	0.20	No. 10-32UNF	0.49	1.08	0.31	0.39
	(15)	(18)	(18)	(20)	(20)	(4.77)	(4.78)	(8)	(28)	(5.2)		(12.5)	(27.5)	(8)	(10)

UNIT INCH (MM)																					
BORE SIZE	S							Z							ZZ						
	50	100	150	200	300	400	500	50	100	150	200	300	400	500	50	100	150	200	300	400	500
ø10 (3/8")	2.08	2.29	2.57	3.06	—	—	—	3.50	3.70	3.99	4.48	—	—	—	3.73	3.94	4.23	4.71	—	—	—
	(52.8)	(58.1)	(65.4)	(77.7)				(88.8)	(94.1)	(101.4)	(113.7)				(94.8)	(100.1)	(107.4)	(119.7)			
ø16 (5/8")	2.10	2.31	2.59	3.08	3.50	4.11	4.88	3.59	3.80	4.09	4.57	4.99	5.61	6.38	3.91	4.12	4.41	4.89	5.31	5.92	6.69
	(53.3)	(58.6)	(65.9)	(78.2)	(88.8)	(104.4)	(124)	(91.3)	(96.6)	(103.9)	(116.2)	(126.8)	(142.4)	(162)	(99.3)	(104.6)	(111.9)	(124.2)	(134.8)	(150.4)	(170)

Mounting

Band mounted type

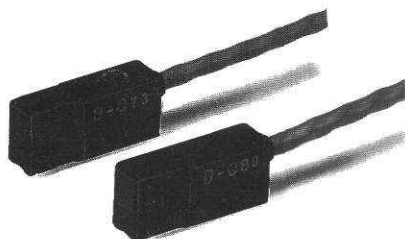


Lead wire entry	Auto switch type	Auto switch model	Applicable cylinder bore size (mm)		
			6	10	16
Grommet	Reed Switch	D-C73, D-C76, D-C80	●	●	P 47
Grommet	Solid State Auto Switch	D-H7A1, D-H7A2, D-H7B	●	●	P 48
Connector	Reed Switch	D-C73C, D-C80C	●	●	P 49
Connector	Solid State Auto Switch	D-H7C	●	●	P 50

Data

• Differential response of auto switch • Contact protective box • Mounting and moving method of auto switch • Plug-in connector assembly • Solid state auto switch/Connection method and connection example • Precautions

Grommet



Applicable cylinder series

Series	Bore size(mm)
NCDJ2	6,10,16

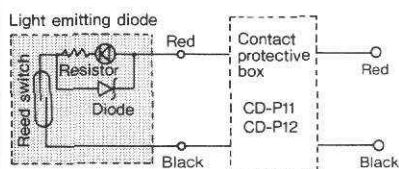
Specifications

D-C7 type(With indicator lamp)			
Auto switch model	D-C73		D-C76
Application	Relay, Sequence controller		IC circuit
Load voltage	24VDC	110VAC	4 ~ 8VDC
Max. load current and range of load current	5 ~ 40mA	5 ~ 20mA	20mA
Protection circuit for contract breaker point	None		
Internal voltage drop	2.4V or less		0.7V or less
Indicator lamp	ON:Red light emitting diode		
D-C8 type(Without indicator lamp)			
Auto switch model	D-C80		
Application	Relay, Sequence control, IC circuit		
Load voltage	24V $\frac{AC}{DC}$ or less	48V $\frac{AC}{DC}$	110V $\frac{AC}{DC}$
Max. load current	50mA	40mA	20mA
Protection circuit for contact breaker point	None		
Internal resistance	0		

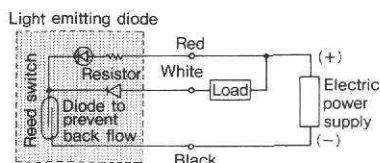
- Leak current - None
 - Response time - 1.2ms
 - Lead wire - Oil proof vinyl, $\phi 3.4$, 0.008 in.² 2 wire(red, black), 3 wire(red, white, black), 20 in²
 - Impact resistance - 30G
 - Insulation resistance - 50m Ω or more under the test voltage 500VDC(Between case and cable)
 - Withstand voltage - 1500VAC 1min(Between case and cable)
 - Ambient temperature - -10 ~ 60 C^o (-14 ~ 140 F)
 - Protection structure - IEC spec IP67, Water-proof(JISC0920), Oil-proof
- ※If 118 in lead wire is required, L is put at the end of model number. (Example) D-C73L

Auto switch/Internal circuit

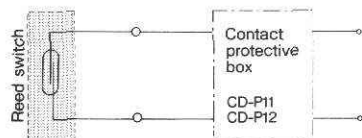
D-C73



D-C76



D-C80

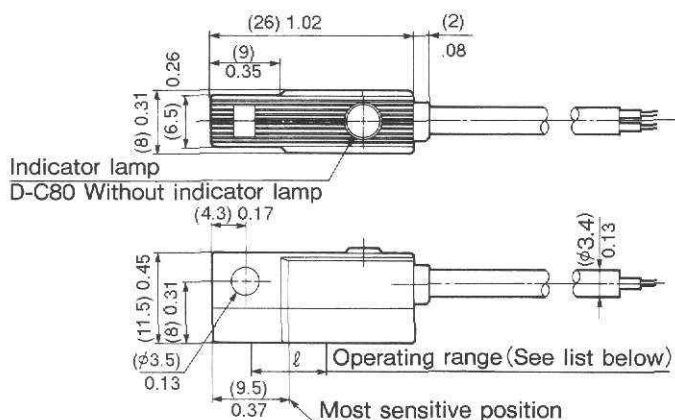


Note)

- ① Operating load is an inductive load.
- ② The wiring length to load is 16.4 ft. or less.
- ③ If the load voltage is 110 VAC, the contact protective Box should be used.

Most sensitive position/Operating range

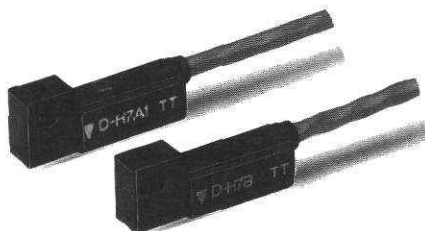
inch (mm)



Operating range (ℓ dimension) in (mm)

Series	Bore size (mm)		
	6	10	16
NCDJ2	.23 (6)	.27 (7)	.27 (7)

Grommet



Applicable cylinder series

Series	Bore size(mm)
NCDJ2	6,10,16

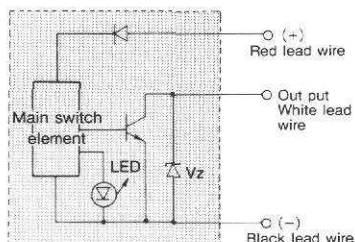
Specifications

D-H7 type(with indicator lamp)			
Auto switch model	D-H7A1	D-H7A2	D-H7B
Wiring method	3 wire type		2 wire type
Out-put method	NPN type	PNP type	—
Application	IC circuit, relay, sequence control		24 VDC Relay, Sequence control
Power source	5, 12, 24, VDC		—
Current consumption	OFF:1mA or less, ON:12mA or less		—
Load voltage	28VDC or less		24VDC(10 ~ 28VDC)
Load current	150mA or less		5 ~ 150mA
Internal voltage drop	50mA:0.4V or less, 150mA:0.8V or less		3V or less
Leak current	24VDC:10μA or less		24VDC:1mA or less
Indicator lamp	ON:Red light emitting diode		ON:Red light emitting diode

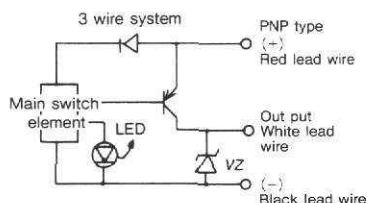
- Response time - 1ms or less
 - Lead wire - Oil proof vinyl, $\phi 3.4$, 0.008 in.² 3 wire(red, white, black), 2 wire(red, black), 20 in *
 - Impact resistance - 100G
 - Insulation resistance - 50M Ω or more under the test voltage 500VDC (Between case and cable)
 - Withstand voltage - 1500VAC1min (Between case and cable)
 - Ambient temperature - -10 ~ 60°C (14° ~ 140°F)
 - Protection structure - IEC spec IP67, Water-Proof(JISC0920)
- * If 118 in lead wire is required, L is put at the end of model number. (Example) D-H7A1L

Auto switch/Internal circuit

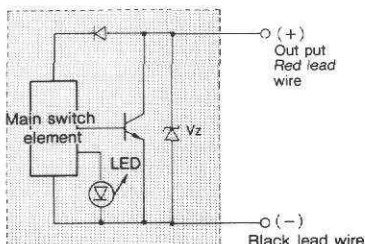
D-H7A1



D-H7A2



D-H7B



Solid state switches are interchangeable with reed switches.

(Solid state switch)

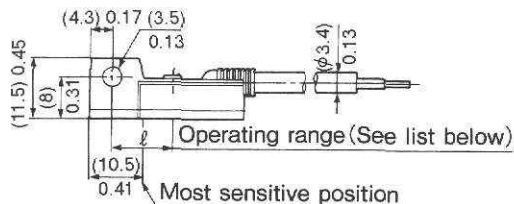
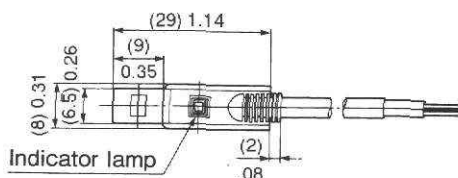
(Reed switch)

D C/ type

D-H7 type

Most sensitive position/Operating range

inch (mm)



Operating range (ℓ dimension)

in (mm)

Series	Bore size (mm)		
	6	10	16
NCDJ2	.23 (5)	.27 (6)	.27 (8)

Connector

Applicable cylinder series

Series	Bore size(mm)
NCDJ2	6,10,16

Specifications

D-C73C(With indicator lamp)

Auto switch model	D-C73C
Application	Relay, Sequence controller
Load voltage	24VDC
Max. Load current and range of load current	5 ~ 22mA
Protection circuit for contact breaker point	None
Internal voltage drop	2.4V or less
Indicator lamp	ON:Red light emitting diode

D-C80C(Without indicator lamp)

Auto switch model	D-C80C
Application	Relay, Sequence control, IC circuit
Load voltage	24V AC, DC or less
Max. load current	50mA
Protection circuit for contact breaker point	None
Internal resistance	0

- Leak current - None
 - Response time - 1.2ms
 - Lead wire - Oil proof vinyl, $\phi 3.4$, 0.008 in.* 2 wire (Red Black), 20 in *
 - Impact resistance - 30G
 - Insulation resistance - 50m or more under the test voltage 500VDC (Between case and cable)
 - Withstand voltage - 1500VAC 1min (Between case and cable)
 - Ambient temperature - $-10 \sim 60^{\circ}\text{C}$ ($14^{\circ} \sim 140^{\circ}\text{F}$)
 - Protection structure - IEC spec IP67, Water-proof(JISC0920), Oil-proof
- *How to order lead wire length

D-C73C L

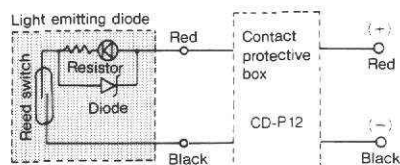
Lead Wire length	
Nil	20 in (0.5m)
L	118 in (3m)
Z	196 in (5m)
N	without lead wire

Lead wire part No. with connector

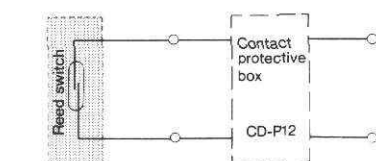
D-LC05	Lead wire length 20 in (0.5m)
D-LC30	Lead wire length 118 in (3m)
D-LC50	Lead wire length 196 in (5m)

Auto switch/Internal circuit

D-C73C



D-C80C

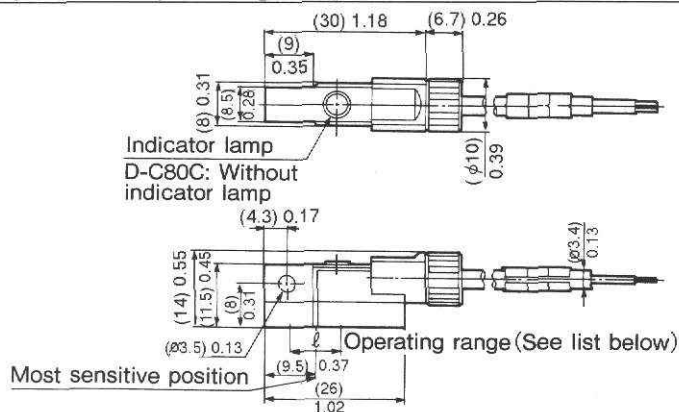


Note)

- Operating load is an inductive load.
- The wiring length to load is 16.4 ft. or less.
- Should be used with the contact protective box.

Most sensitive position/Operating range

inch (mm)

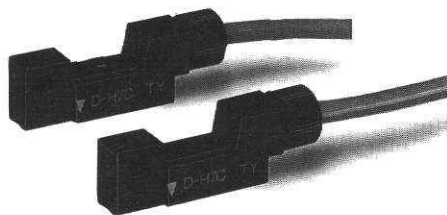


Operating range (ℓ dimension)

in (mm)

Series	Bore size (mm)		
	6	10	16
NCDJ2	.23 (6)	.27 (7)	.27 (7)

Connector



Applicable cylinder series

Series	Bore size(mm)
NCDJ2	6,10,16

Specifications

D-H7C(With indicator lamp)

Auto switch model	D-H7C
Wiring method	2 wire type
Application	24VDC Relay, sequence control
Load voltage	10 ~ 28VDC
Load current	5 ~ 150mA
Internal voltage drop	3V or less
Leak current	24VDC:1mA or less
Indicator lamp	ON:Red light emitting diode

- Response time - 1ms or less
- Lead wire - Oil proof vinyl, $\varnothing 3.4$, 0.008 in.² 2 wire(red, black), 20 in *
- Impact resistance - 100G
- Insulation resistance - 50m or more under the test voltage 500VDC (Between case and cable)
- Withstand voltage - 1000VAC1min (Between case and cable)
- Ambient temperature ~ -10 ~ 60°C (14° ~ 140°F)
- Protection structure - IEC spec IP67, Water-proof (JIS0920)

*How to order the lead wire length

D-H7C **L**

Lead Wire length

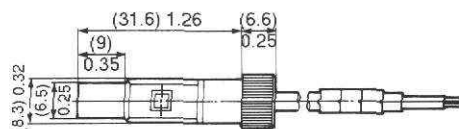
Nil	20 in (0.5m)
L	118 in (3m)
Z	196 in (5m)
N	without lead wire

Lead wire part No. with connector

D-LC05	Lead wire length 20 in (0.5m)
D-LC30	Lead wire length 118 in (3m)
D-LC50	Lead wire length 196 in (5m)

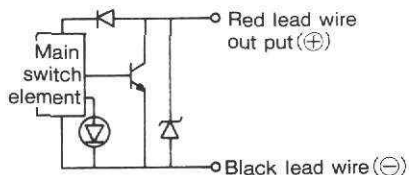
Most sensitive position/Operating range

inch (mm)



Auto switch/Internal circuit

D-H7C



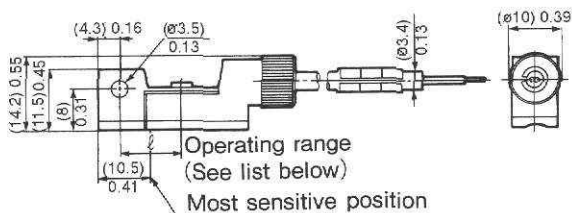
Solid state switches are interchangeable with reed switches.

(Solid state switch)

(Reed switch)

D C/ type

D-H7 type



Operating range (ℓ dimension)

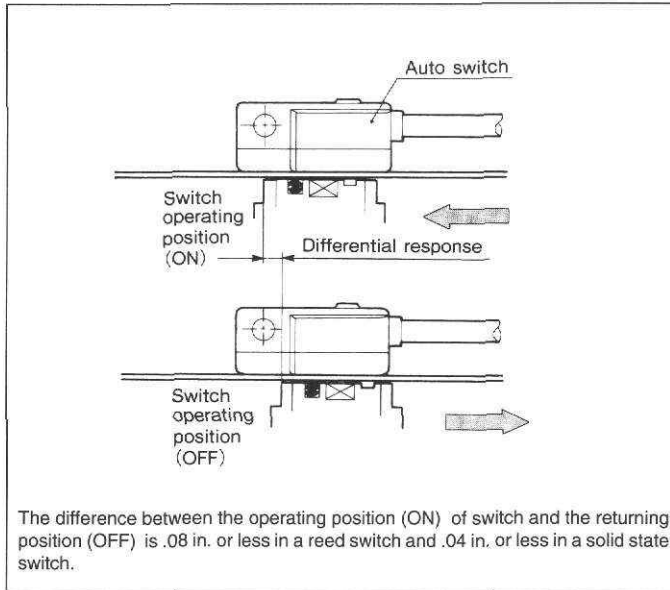
in (mm)

Series	Bore size (mm)		
	6	10	16
NCDJ2	.23 (5)	.27 (6)	.27 (8)

Data ①: Differential Response Of Auto Switch • Contact Protective Box

Differential response of auto switch

The difference between the operating position (on), of the switch and the returning nonoperating position (off), by movement of the piston magnet is called the differential response.



Contact protective box / CD-P11, CD-P12

The auto switches of D-A7•A8 type, D-A7H•A80H type, D-A7C•A80C type, D-C7•C8 type are not incorporated with contact protective circuit.

- ① Operating load in an inductive load.
- ② The wiring length to load is 16.4 ft. or less.
- ③ The load voltages are 110 or 220VAC. Either voltage should be used with the contact protective box.

Contact protective box of specification

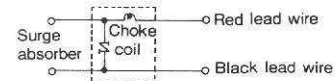
Part No.	CD-P11		CD-P12
Load voltage	110VAC	220VAC	24VDC
Max. load current	25mA	12.5mA	50mA

Lead wire length – Switch connecting side 20 in.
Load connecting side 20 in.

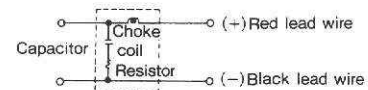


Contact protective box/Internal circuit

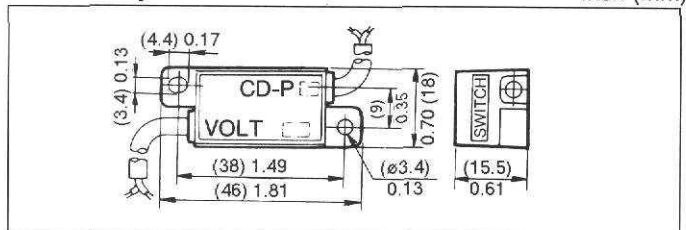
CD-P11



CD-P12



Contact protective box/Dimensions inch (mm)



Contact protective box/Connection method

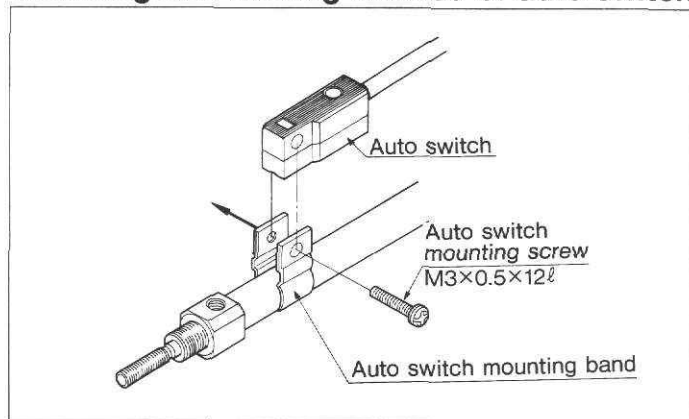
Connect the auto switch to the side of the protective box marked switch. Distance between the two should be kept to a minimum with a maximum distance of 3 feet.

Data ②: Mounting and Moving Method of Auto switch

Mounting bracket/Band mounted type

Applicable auto switch>D-C7, C8 type, D-H7 type

Mounting and moving method of auto switch



- ① For series NCDJ2-Attach the mounting band to the cylinder tube.
- ② Align the holes of the band and auto switch.
- ③ Insert screw and thread in without tightening.
- ④ Select desired position by sliding switch along tube and tighten screw. Tightening torque is approximately 8 lbs in.

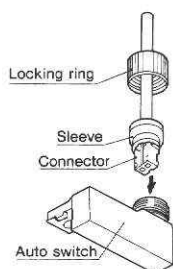
Parts No.

Series	Bore size (mm)		
	6	10	16
NCDJ2	BJ2-006	BJ2-010	BJ2-016

Data ③: Plug-in Connector Assembly

Plug-in connector assembly

D-A7○C, A80C
D-J79C
D-C73C, C80C
D-H7C

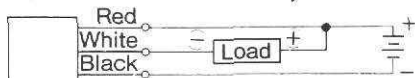


With the convex port of the connector uppermost, insert the connector into the auto switch up to the sleeve. Screw the locking ring on to the switch. (Do not tighten with pliers.)

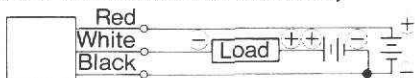
Data 4 : Solid State Type/Connection Method and Connection Example

Basic wiring

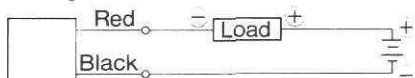
3 wire system (When power source for switch and load is common)



3 wire system (When power source for switch and load is not common)



2 wire system



Red lead wire: Connect to the power source $\oplus$ (power source terminal) to operate main circuit of switch. In case of 2 wire systems connect with $\ominus$ side of load.

White lead wire: Connect to load (to the input of sequence controller and outlet relay)

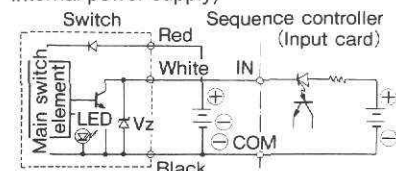
Black lead wire: Connect to the power source $\ominus$ (Power source GND terminal)

Typical sequence controller connection circuits

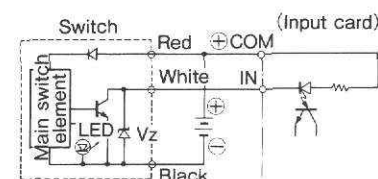
Connect according to the input specification of the sequence controller since connection methods vary with different sequence controllers.

3 wire system connection example

(For sequence controller with a $\ominus$ COM internal power supply)

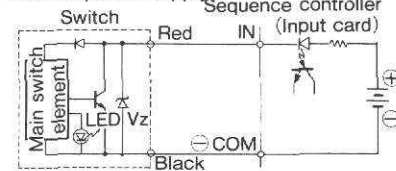


(In the case of $\oplus$ COM external power supply)

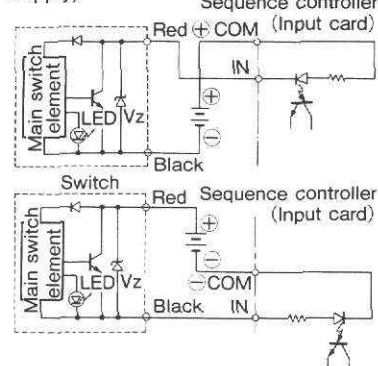


2 wire system connection example

(For sequence controller with a $\ominus$ COM internal power supply)



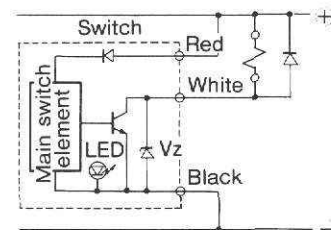
(In the case of $\oplus$ COM external power supply)



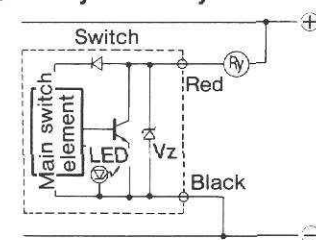
Connection examples to relay and solenoid valve

Load-DC relay, Solenoid valve

3 wire system solenoid valve load

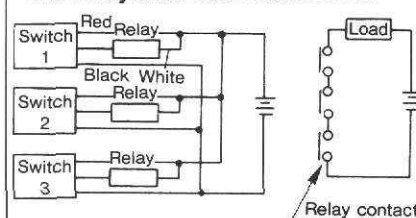


2 wire system relay load

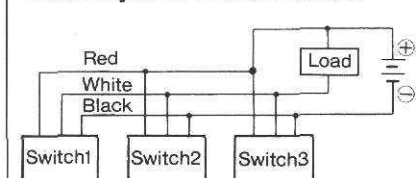


AND (Serial), OR (Parallel) Connection examples

3 wire system AND connection



3 wire system OR connection



2 wire system should not be connected by AND or OR because these connections may cause malfunction.

Precautions

Reed type

Mounting

- ❶ Take care not to drop, dent, or cause shock impact to switches.
- ❷ Don't use in strong magnetic fields.
- ❸ When using two auto switch cylinders or more mounted parallel to each other, the distance between tubes should be 1.6 in. or more.
- ❹ Wiring must not be subjected to repeated flexual stress or pulling forces.
- ❺ Consult SMC if the switch will be subjected to water or coolant.

Contact capacity

Loads over the minimum contact capacity of the switch should not be used.

Wiring/current voltage

- ❶ Connect the load to the switch before connecting the power source.
- ❷ Switches with 24VDC and an indicator lamp have polarity. The red lead is (+) and the black is (-). If connected in reverse, the switch will continue to operate, but the light emitting diode will not work. Exceeding the current specification will burn out the light and ruin the switch.
- ❸ Switch with indicator light.
 - 1) Using switch with less than specified current may cause the light not to work or to dim.
 - 2) If the switches are connected in serial as shown in the following figure, it makes the voltage drop larger by the internal resistance of the light emitting diode (Refer to the internal resistance voltage in the auto switch specifications).



- 3) Using less than the specified voltage may not allow the load to operate because of the internal voltage drop in the switch.
- ❹ When the internal resistance of a switch with light causes problems, switches without indicator lights, (0 internal resistance), should be considered.

Cylinder piston speed

When auto switches are used in mid position on a cylinder with high piston speeds, the auto switch may malfunction. The maximum piston speed which will allow the switch to function is determined by the following formula.

$$V(\text{mm/s}) = \frac{\text{Operating range of auto switch}(\text{mm})}{\text{Operating time of load}(\text{ms})} \times 1000$$

Solid state type

- ❶ Load over the maximum load capacity of the switch should not be used.
- ❷ The switch should not be connected to the power supply until after connection to the load.
- ❸ All switch types have functions to protect against incorrect connection, output short, or overload in order to prevent damage of the switch. Since incorrect wiring may cause problems on the load side, caution should be exercised when wiring.
- ❹ Since a DC 2 wire system auto switch is 3 ~4 V or less in the internal voltage drop and 1mA or less in the weak current, it satisfies the input specifications of most sequence controllers. If trouble arises, a DC 3 wire system should be used.
- ❺ Take care not to drop, dent, or case shock impact to switches.
- ❻ Don't use in strong magnetic fields.
- ❼ Wiring must not be subjected to repeated flexual stress or pulling forces.
- ❽ When using two auto switch cylinders or more mounted parallel to each other, the distance between tubes should be 1.6 in. or more.
- ❾ Consult SMC if the switch will be subjected to water or coolant.

High Temperature Resisting Cylinder

ICJ2 Mounting Bore size — Stroke — XB6

The cylinder seals have been changed to be of heat-resistant material to enable its use under high-temperature conditions of $-10^{\circ}\text{C}\sim+70^{\circ}\text{C}$.

Specifications

Applicable cylinder bore size	$\phi 6, \phi 10, \phi 16$
Action	Double acting
Ambient temperature range	$-10^{\circ}\text{C}\sim+150^{\circ}\text{C}$
Material	Package Damper-fluorocarbon rubber
Applied grease	fluoroplastics based grease
Mounting	Basic type, Axial foot type, Rod side flange type

Other dimensions are the same as for standard type.

Low Temperature Resisting Cylinder

ICJ2 Mounting Bore size — Stroke — XB7

The cylinder seals have been changed to be of cold-resistant material to enable its use under low-temperature conditions of $-10^{\circ}\text{C}\sim+70^{\circ}\text{C}$.

Specifications

Applicable cylinder bore size	$\phi 6, \phi 10, \phi 16$
Action	Double acting
Ambient temperature range	$-55^{\circ}\text{C}\sim+70^{\circ}\text{C}$
Material	Packing, Damper—NBR
Applied grease	fluoroplastics based grease
Mounting	Basic type, Axial foot type, Rod side flange type

Other dimensions are the same as for standard type.

Consult factory for availability.

Low Friction Cylinder

NCJ2 Mounting Bore size — Stroke — XB9

There is no stick-slip phenomenon at a low-speed operation of $10\sim 50\text{mm/s}$, and all strokes advance at a constant speed smoothly.

Specifications

Applicable cylinder bore size	$\phi 6, \phi 10, \phi 16$
Action	Double acting
Ambient temperature range	$-10^{\circ}\text{C}\sim+70^{\circ}\text{C}$
Piston velocity	$10\sim 50\text{mm/S}$
Mounting	Basic type, Axial foot type, Rod side flange type

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