OTHER PRODUCTS

MFG BY :

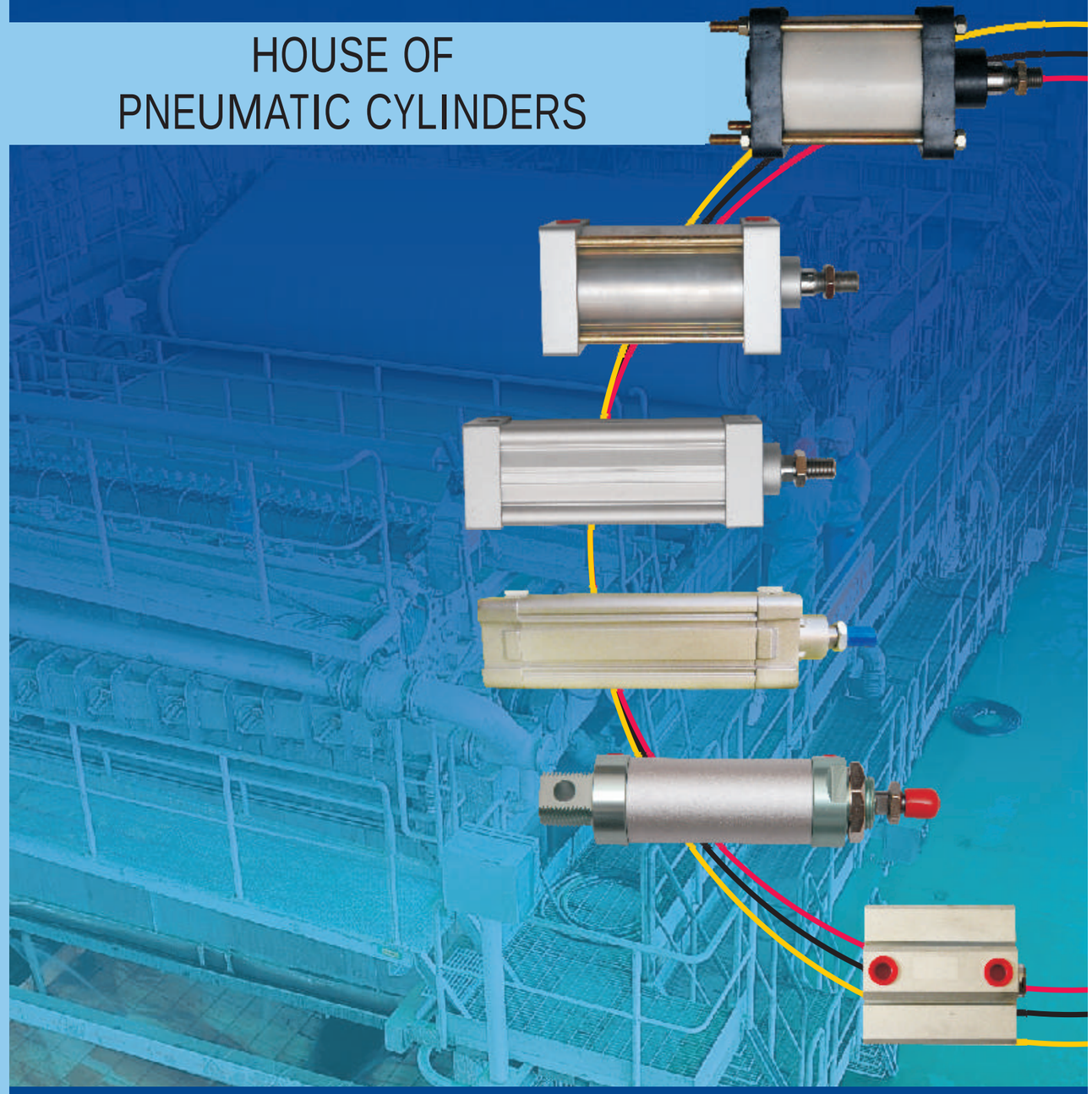
PNU AIR™ (INDIA)

26, Shreeji Estate, Raipur Mill Compound,
Opp. Narayan Estate, Saraspur, Ahmedabad - 380 024.
Phone : (F) 079-22730154,
Mobile : 093270 22607 / 093270 97475
E-mail : pnuair@yahoo.com
Web : www.pnuair.com, www.pnuairindia.in

AUTHORISED DEALER :

SPECTRUM 09824097300

HOUSE OF PNEUMATIC CYLINDERS



PNU AIR™

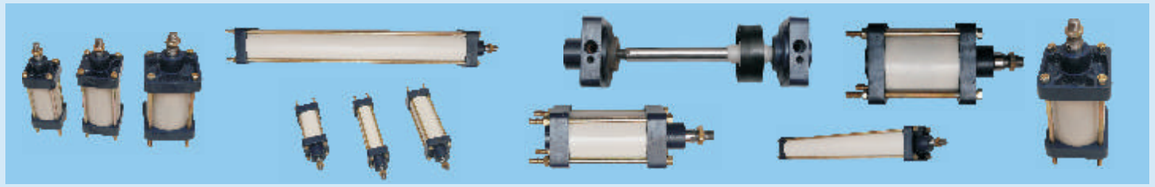
PNEUMATIC CYLINDERS

What is Pneumatic Cylinder?

Pneumatic Cylinders (known as Air Cylinder) are mechanical devices with produce force, often in combination with movement and are powered by compressed air. To perform their function, pneumatic cylinders impart a force by converting the potential energy of compressed air into knetic energy. This is achieved by the compressed air being able to expand without external energy input, which itself occurs due to the pressure gradient established by the compressed air being at a greater pressure than the atmosphere pressure. This air expansion forces a piston to move in the desired direction. The piston is a disc or cylinder, and the piston rod transfers the force it develops to the object to moved.

PNU AIR™ AIR CYLINDERS RANGE

HSC



SC

SU

DNC

SDA

MAL

MOUNTING

Fork

Female clavis

Male clavis

Front & Rear Flange

Rod End Eye

Female clavis

Foot Bracket

Center Trunnion

GOLDEN RULES OF SIZING AND CALCULATIONS IN PNEUMATICS

Calculations for Air consumption

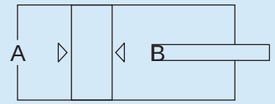
$$QA = (A1+A2) \times L \times P \frac{+ 1.033}{1.033} \times 10^{-3}$$

$$QA = 2 \times A3 \times LH \times \frac{P}{1.033} \times 10^{-3}$$

$$Qn = (QA + QB) \times n$$

Qn : Air consumption of Cylinder actuating/ each time (L/min)
QA : Air volume for Cylinder actuating to back/ each time (L/min)
QB : Air Consumption Volume of Accessaries (Valve the Cylinder) (L/min)
A1 : Push Side Pressured Area (cm^2)
A2 : Pull Side Pressured Area (cm^2)
A3 : ID of Connecting tube (cm^2)
L : Stroke of cylinder (cm)
LH : Lenth of tube (cm)
P : Operating Pressure (kgf/cm^2)
n : Operating Frequancy

PNU AIR™ CYLINDER'S THEORETIC FORCE IN KG/CM²



Cylinder Inside Diameter		25		40		50		65		80		100		125		150		200		250		300	
External Diameter Piston Rod		10		16		16		25		25		25		35		35		35		50		50	
Operation		Double Acting		Double Acting		Double Acting		Double Acting		Double Acting		Double Acting		Double Acting		Double Acting		Double Acting		Double Acting		Double Acting	
		A	B	A	B	A	B	A	B	A	B	A	B	A	B	A	B	A	B	A	B	A	B
Air Pressure (kg/cm²)	2	9	6	20	17	40	37	59	50	88	80	153	144	235	218	343	328	598	578	931	892	1333	1294
	3	13	12	30	25	60	55	88	75	132	121	230	218	353	329	519	490	897	867	1392	1338	1994	1940
	4	18	15	40	33	80	74	118	100	176	161	306	289	470	436	686	651	1196	1156	1852	1784	2656	2587
	5	22	19	50	41	101	92	147	125	225	201	392	363	598	544	862	813	1519	1440	2328	2230	3391	3234
	6	27	23	61	50	121	111	176	149	267	240	461	433	706	655	1029	976	1793	1733	2783	2675	3989	3881
	7	31	27	71	58	141	129	204	174	310	279	536	505	823	764	1200	1137	2092	2019	3242	3121	4743	4228
	8	36	31	80	67	161	147	233	199	355	321	613	578	937	872	1372	1299	2391	2308	3704	3567	5312	5169
	9	40	34	90	75	181	166	263	223	398	361	691	652	1053	980	1544	1460	2685	2598	4165	4013	5973	5821
	10	45	37	100	82	202	184	292	250	443	400	764	725	1170	1088	1715	1627	2989	2881	4635	4460	6635	6463

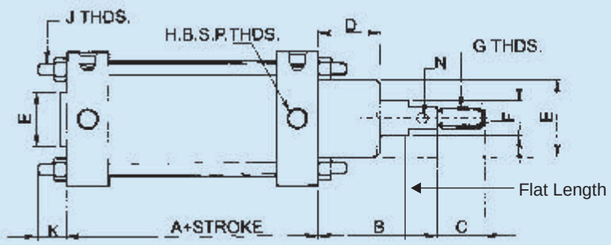
Pressure Conversion Chart

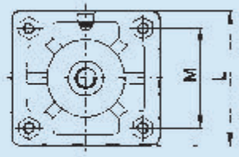
Unit	Pa	KPa	MPa	bar	mbar	kgf/cm^2	cmH_2O	mmH_2O	mmHg	p.s.i.
Pa	1	10^{-3}	10^{-6}	10^{-5}	10^{-2}	10.2×10^{-6}	1.02×10^{-3}	101.97×10^{-3}	7.5×10^{-3}	0.15×10^{-3}
KPa	10^{3}	1	10^{-3}	10^{-2}	10	10.2×10^{-3}	10.2	101.97	7.5	0.15
MPa	10^{6}	10^{3}	1	10	10^{4}	10.2	1.02×10^{3}	101.97×10^{3}	7.5×10^{3}	0.15×10^{3}
bar	10^{5}	10^{2}	10^{-1}	1	10^{3}	1.02	1.02×10^{3}	102×10^{3}	750.06	14.5
mbar	10^{2}	10^{-1}	10^{-4}	10	1	1.02×10^{-3}	1.02	10.2	0.75	14.5×10^{-3}
kgf/cm^2	98066.5	98.07	98.07×10^{-3}	0.98	980.67	1	1000	10,000	735.56	14.22
cmH_2O	98.06	98.07×10^{-3}	98.07×10^{-6}	0.98×10^{-3}	0.98	10.3	1	10	0.74	14.22×10^{3}
mmH_2O	9.806	9.807×10^{-3}	9.807×10^{-6}	98.07×10^{-6}	98.07×10^{-3}	10^{-4}	0.1	1	73.56×10^{-3}	1.42×10^{-3}
mmHg	133.32	133.32×10^{-3}	133.32×10^{-6}	1.33×10^{-3}	1.33	1.36×10^{-3}	1.36	13.6	1	19.34×10^{-3}
p.s.i.	6894.76	6.89	6.89×10^{-3}	68.95×10^{-3}	68.95	70.31×10^{-3}	70.31	703.07	51.71	1

Cylinder with piston dia mm	Valve Connection Size	Nominal Size mm Approx	Standard Nominal Flowrate ltr/min Appox
Up to 25	M5	2.5	105
> 25 - 50	G 1/8	3.5	Up to 180
> 50 - 100	G ¼	7.0	Up to 1140
> 100 - 200	G ½	12.0	Up to 3000
> 200 - 300	G ¾ G 1	18.0	Up to 6000

* Above all dimension in mm

PNU AIR™ HSC Series Standard Pneumatic Cylinders





HSC Technical Specifications

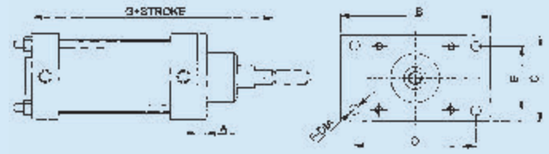
Bore Size (mm)	25	50	65	75	100	125	150	200	250	300
Stroke Size (mm)	25-50-75-100-150-200-250-300 upto 1000mm									
Action	Double Action & Single Action Type									
Medium	Air									
Working Pressure	0.5 To 10 kg/cm^2									
Operating Temperature Range	0 To 80 C									
Mounting Type	Fork		Rear Pivot			Flange		Foot		Center Trunnion
Port Size	¼"BSP			½" BSP				¾" BSP		
Material	(A) End Covers :- Cast Iron disc pipe (B) Piston :- 25 to 100 rubber moulded piston and 125 to 300mm cast Iron seal Design (C) Piston Rod (Shaft) :- EN8 Ground & Hard Chrome Plated (D) Seals :- Nitrile Rubber (NBR) (E) Cylinder Tube :- 25, 50, 65, 75, 100, 125 & 150mm Aluminum Hard Anodized Pipe. 125, 150, 200, 250 & 300mm Seam less Honed, Hard Chrome Plated Pipe.									

HSC Series Diamensions

Bore	A	B	C	D	E	F	G	H	J	K	L	M	N	Flat Lenth	Push Force Kg. at 5Kg.
25	58	16.50	15	10	20	10	M8x1.25	1/8"BSP	M5	19	38	24.25	--	5	24
40	84	38	20	26	34	16	M12x1.75	¼"BSP	M6	20	55	36.50	5	10	51
50	84	38	20	26	38	16	M12x1.75	¼"BSP	M6	20	63	47.50	5	10	100
65	102	46	32	30	48	25	M20x2.50	¼"BSP	M8	25	80	60	6.50	14	176
80	119	51	32	35	48	25	M20x2.50	½"BSP	M10	30	92	70.50	6.50	14	240
100	119	51	32	35	53	25	M20x2.50	½"BSP	M10	30	117	88	6.50	14	430
125	128	58	40	40	64	35	M24x3.00	½"BSP	M12	35	150	112	8.00	16	660
150	133	62	40	44	64	35	M24x3.00	½"BSP	M12	35	168	127	8.00	16	950
200	161	68	50	50	70	38	M30x3.50	¾"BSP	M20	45	220	170	8.00	16	1626
250	204	75	60	55	90	50	M42x4.50	¾"BSP	M20	50	276	210	10	18	2516
300	204	75	60	55	90	50	M42x4.50	¾"BSP	M24	55	324	247	10	18	3651

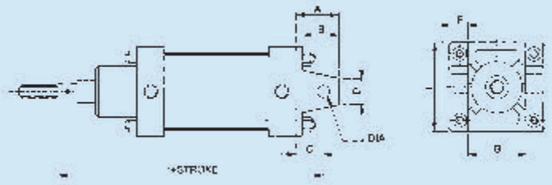
PNU AIR™ HSC Series Cylinder's Mountings

HFA/HFB Front & Rear Flange



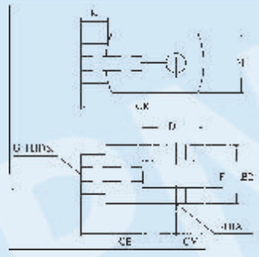
Bore	A	B	C	D	E	F	G
25	5	62	38	52	28	5.5	74.5
40	10	80	50	67	36.5	5.5	122
50	10	102	63	84	45	6.5	122
65	13	140	80	110	56	8.5	148
75	13	140	92	116	68	10.5	170
100	13	160	117	137	93	10.5	170
125	19	196	150	170	112	12.5	186
150	19	216	174	190	126	12.5	195
200	25	315	220.5	265	170.5	21	229
250	30	360	267	310	210	21	279
300	30	450	310	385	247	25	279

HCA - Female Clavis



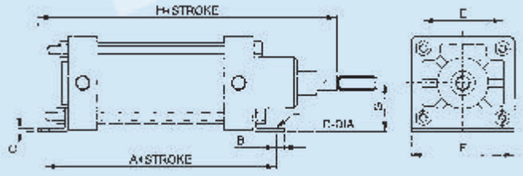
Bore	A	B	C	D	E	F	G	H	J
25	22	-	13	20	38	10	S.P	87.5	8
40	35	20	25	16	50	9.5	27.5	147	12
50	37	23	25	16	63	9.5	38.5	147	12
65	46	30	30	26.6	80	15	45	178	16
75	49	36	32	22	92	16	54.5	202	20
100	55	36	38	25	114	16	72	208	20
125	70	45	45	35	150	22	90	234	25
150	70	45	45	41	160	22	103	240	25
200	85	55	50	50	215	38	132	279	32
250	115	77	75	64	270	38	172	354	38
300	115	77	75	64	316	38	197	354	38

HY/HI - Rod End Fork



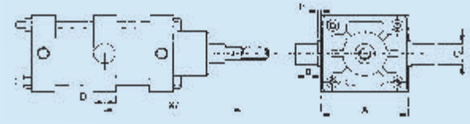
Bore DIA	D	F	G THD.	K	CV	CE	B2	H	CK	I-DIA
40	24	9.5	M12X1.25	-	10	30	19	19	40	9.5
50	50	16	M12X1.25	12	18	59	32	32	77	16
65	50	20	M16X1.5	15	18	62	38	38	80	20
75	50	20	M20X2.5	15	18	62	38	38	80	20
100	50	20	M20X2.5	15	18	62	38	38	80	20
125	60	25.7	M24X3	25	24	76	50	50	100	25.4
150	60	25.7	M24X3	25	24	76	50	50	100	25.4
200	70	34	M30X3.5	-	30	80	64	64	110	30
250	90	40	M42X4.5	-	40	125	88	80	165	36
300	90	40	M42X4.5	-	40	125	88	80	165	36

HLB - Foot Bracket



Bore	A	B	C	D	E	F	G	H
25	90	7	2	5.5	24.25	38	21.6	97.5
40	122	9	3	6.5	36.5	50	29	150
50	134	10	3	8.5	45	63	36	157
65	152	10	3	8.5	60	80	45	190
75	179	12	4	10.5	70.5	92	52	212
100	179	12	4	10.5	88	114	63	212
125	195	16	6	12.5	112	145	80	220
150	205	16	6	12.5	126	160	87	247
200	252	22	9.5	21	170.5	215	112	296.5
250	295	22	12.7	21	210	260	140	346
300	312	26	12.7	25	247	300	164	359

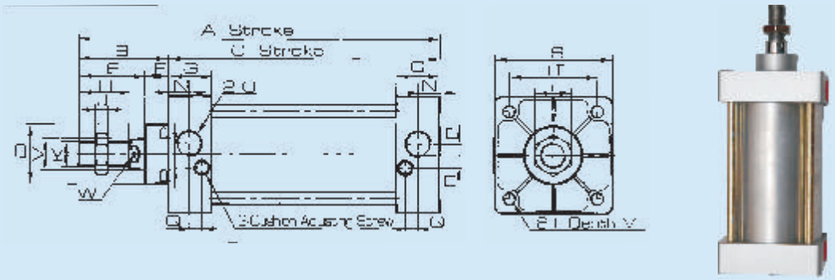
HCT - Center Trunnion



Bore DIA	A	B	H	D	E
50	70	15	15	18	0
65	80.5	20	20	25	0
75	105	25	20	25	0
100	130	30	25	32	0
150	185	40	35	38	0
250	290	50	50	52	2

* Above all dimension in mm

PNU AIR™ SU/SC Series Standard Pneumatic Cylinders



SU/SC Technical Specifications

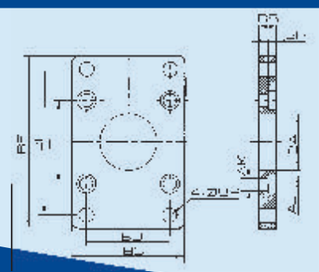
Port Size	G1/8"	G1/4"		G3/8"		G1/2"			G3/4"
Bore Size (mm)	32	40	50	63	80	100	125	150	200
Stroke Size (mm)	25-50-80-100-125-160-175-200-250-300-upto1000mm								
Action	Double Action & Single Action								
Medium	Air								
Working Pressure	0.5 To 10kg/cm^2								
Operating Temperature Range	0 To 70° C								
Mounting Type	Basic, SFA, SFB, SCA, SCB, SCT								
Material	(A) Cylinder Tube :- Aluminium Hard Anodized (B) End Covers :- Aluminium (C) Piston :- Aluminium (D) Piston Rod (Shaft) :- EN8 Ground & Hard Chrome Plated (E) Seals :- Nitrile Rubber (NBR)								

SU/SC Series Diamensions

Bore	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	V	W
32	140	47	93	28	32	15	27.5	22	17	6	M10x1.25	M6x1	9.5	13.5	G1/8	3.5	7.5	7	45	33	12	10
40	142	48	93	32	34	15	27.5	24	17	7	M12x1.25	M6x1	9.5	13.5	G1/4	6	8.2	9	50	37	16	14
50	150	57	93	38	42	15	27.5	32	23	8	M16x1.50	M6x1	9.5	13.5	G1/4	8.5	8.2	9	62	47	20	17
63	153	57	96	38	42	15	27.5	32	23	8	M16x1.50	M8x1.25	9.5	13.5	G3/8	7	8.2	8.5	75	56	20	17
80	183	75	108	47	54	15	33	40	26	10	M20x1.50	M10x1.50	11.5	16.5	G3/8	10	9.5	14	94	70	25	22
100	189	75	114	47	54	21	33	40	26	10	M20x2.00	M10x1.50	11.5	16.5	G1/2	11	9.5	14	112	84	25	22
125	226	104	122	55	70	34	33	54	40	10	M27x2.00	M12x1.75	15.5	16.5	G1/2	10	10	11	140	110	32	27
160	291	123	168	62	93	30	50	72	55	18	M36x2.00	M16x2.00	17.5	25	G1/2				180	140	40	36
200	347	167	180	80	112	55	50	72	55	18	M36x2.00	M16x2.00	17.5	25	G3/4				220	175	40	36

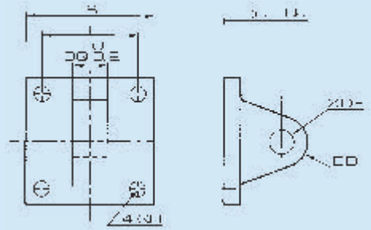
PNU AIR™ SU/SC Series Cylinder's Mountings

SFA/SFB - Front and Rear Flange



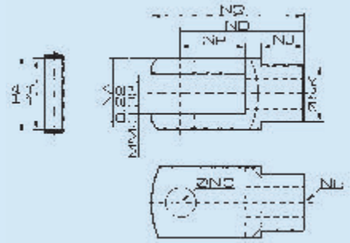
Bore/Symbol	32	40	50	63	80	100	125	160	200
BA	28.3	32.3	38.3	38.3	47.3	47.3	56	63	81
BB	10	10	10	12	16	16	20	25	25
BC	47	52	65	76	95	115	140	180	220
BD	33	36	47	56	70	84	90	115	135
BE	72	84	104	116	143	162	224	280	320
BF	58	70	86	98	119	138	180	230	270
BH	6.5	6.5	6.5	8.5	10.5	10.5	15	20	20
AJ	10.5	10.5	10.5	13.5	16.6	16.6	19	25	25
AK	6.5	6.5	6.5	8.5	10.5	10.5	12.5	16.5	16.5
BP	7	7	9	9	12	12	16	18	22
T	33	37	47	56	70	84	110	140	175

SCA - Male Clavis



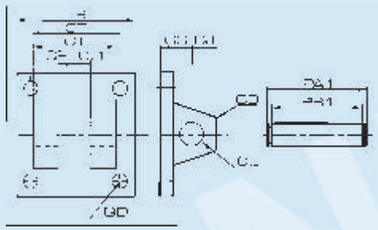
Bore/Symbol	32	40	50	63	80	100	125	160	200
S	45	50	62	75	94	112	140	180	220
T	33	37	47	56	70	84	110	140	175
DC	34	34	34	34	48	48	50	55	60
DD	14	14	15	15	20	20	25	30	30
DE	12	14	14	14	20	20	25	30	30
DJ	14	14	15	15	20	20	25	30	30
DQ	16	20	20	20	32	32	70	90	90
D	6.5	6.5	6.5	8.5	10.5	10.5	12.5	16.5	16.5

SY / SI - Rod and Fork



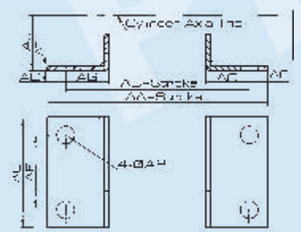
Bore/Symbol	NA	NC	ND	NH	NJ	Nk	MM	NP	NQ	PA	PB
32	19	10	40	M10x1.25	15.5	16	10	20	52	26.2	20
40	24	12	48	M12x1.25	20.5	20	12	24	62	32.8	26.5
50	32	16	64	M16x1.5	26	30	16	32	83	39.3	33
63	32	16	64	M16x1.5	26	30	16	32	83	39.3	33
80	40	20	80	M20x1.5	30	38	20	39.5	105	53.3	45
100	40	20	80	M20x1.5	30	38	20	39.5	105	53.3	45
125	62	20	99	M27x2	28	38	30	34	120	75	66
160	70	30	125	M36x2	40	53	40	34	153	96	82
200	70	30	125	M36x2	40	53	40	34	153	96	82

SCB - Female Clavis



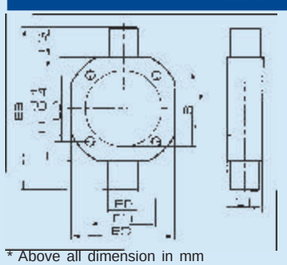
Bore/Symbol	32	40	50	63	80	100	125	160	200
CC	19	19	19	19	32	32	50	55	60
CD	5	5	3	3	8	8	25	30	30
CE	12	14	14	14	20	20	25	30	30
CJ	13	13	15	15	21	21	25	30	30
CP	16.3	20.5	20.3	20.3	32.3	32.3	70	90	90
CT	32	44	52	52	64	64	120	160	160
PAI	41	51.8	60.3	60.3	73.8	73.8	130	170	170
PBI	33.5	45.8	54	54	65.5	65.5	121.5	161.5	161.5
S	48	50	62	75	94	112	140	180	220
T	33	37	47	56	70	84	110	140	175
D	6.5	6.5	6.5	8.5	10.5	10.5	12.5	16.5	16.5

SLB - Foot Bracket



Bore/Symbol	32	40	50	63	80	100	125	160	200
AA	153	169	173	184	200	210	249	328	380
AC	134	140	149	158	168	174	249	288	320
AD	9.5	14.5	12	12	16	18	18	20	30
AE	50	57	68	80	97	112	140	180	220
AF	33	36	47	56	70	84	90	115	135
AG	20.5	23.5	28	31	30	30	45	60	70
AJ	28	30	36.5	41	49	57	90	115	135
AP	9	12	12	12	14	14	16	18	22
AT	3.2	3.2	3.2	3.2	4	4	8	8	10

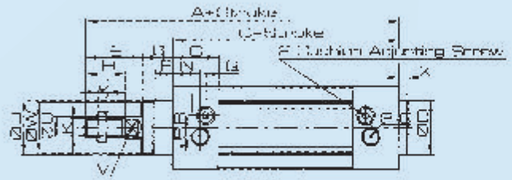
SCT - Center Trunnion

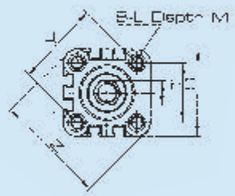


Bore/Symbol	40	50	63	80	100	125	160	200
EB	113	126	138	164	182	210	264	336
EC	63	76	88	114	132	160	200	245
ED	37	47	56	70	84	110	140	175
EE	63	76	88	114	132	160	200	245
EG	25	25	25	25	25	25	32	35
EP	25	25	25	25	25	30	32	32
ET	30	30	30	35	40	38	38	52
S	45.5	55.5	68.5	87.5	107.5	134.5	172.5	212.5

* Above all dimension in mm

PNU AIR™ DNC Series ISO 6431 Standard Cylinder's





DNC Technical Specifications

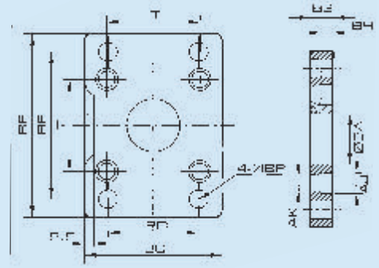
Port Size	G1/8"	G1/4"		G3/8"		G1/2"			G3/4"
Bore Size (mm)	32	40	50	63	80	100	125	150	200
Stroke Size (mm)	25-50-80-100-125-160-175-200-250-300-upto1000mm								
Action	Double Action & Single Action								
Medium	Air								
Working Pressure	0.5 To 10 kg/cm^2								
Operating Temperature Range	0 To 70° C								
Mounting Type	Basic, DFA, DFB, DCA, DCB, DLB								
Material	(A) Cylinder Tube :- Aluminium Hard Anodized (B) End Covers :- Aluminium (C) Piston :- Aluminium (D) Piston Rod (Shaft) :- EN8 Ground & Hard Chrome Plated (E) Seals :- Nitrile Rubber (NBR)								

DNC Series Diamensions

Bore	A	B	C	D	E	F	G	H	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y
32	142	16	94	30	33	10	25	22	6	M10x1.25	M6	12	15	G1/8	5	3	6.5	45	32.5	12	10	28	4	46
40	159	20	105	35	34	10	29.5	24	7	M12x1.25	M6	12	17.5	G1/4	7	3	7	52	38	16	13	33	4	53.7
50	175	27	106	40	42.5	10	32	32	8	M16x1.5	M8	12	20	G1/4	7	3	9	65	46.5	20	17	38	4	65.8
63	190	26	122	45	42	10	36	32	8	M16x1.5	M8	12	22	G3/8	8	5	9	76	56.5	20	17	38	4	79.9
80	214	35	127	45	53	10	37	40	10	M20x1.5	M10	15	23	G3/8	10	5	12	94	72	25	22	43.5	5	101.8
100	229	40	137	55	52	10	39	40	10	M20x1.5	M10	15	26	G1/2	10	5	14	112	89	25	22	47	6	125.9
125	277	46	160	60	71	10	43.5	54	10	M27x2	M12	20	29	G1/2	10	5	14	134	110	32	27	53	7	156.9

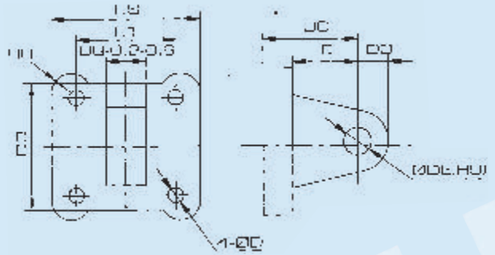
PNU AIR™ DNC Series ISO 6431 Standard Cylinder's Mountings

DFA/DFB - Front & Rear Flange



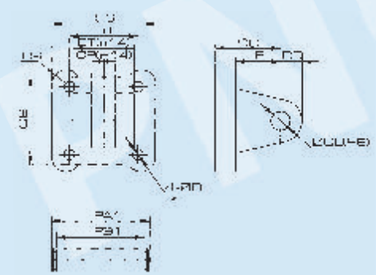
Bore/Symbol	32	40	50	63	80	100	125
BA	30.3	35.3	40.3	45.3	45.3	55.3	60.3
BB	10	10	12	12	16	16	20
BC	45	52	65	76	94	112	140
BD	32	36	45	50	63	75	90
BE	80	90	110	120	150	175	224
BF	64	72	90	100	126	150	180
BH	6.5	6.5	8.5	8.5	10.5	10.5	15
AJ	10.5	10.5	13.5	13.5	16.5	16.5	19
AK	6.5	6.5	8.5	8.5	10.5	10.5	12.5
BP	7	9	9	9	12	14	16
T	32.5	38	46.5	56.5	72	89	110

DCA - Male Clavis



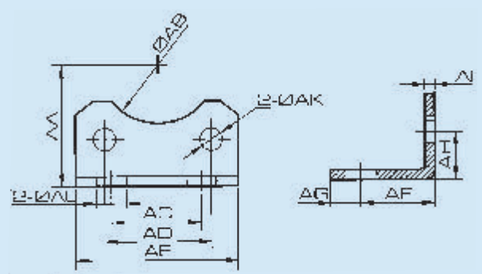
Bore/Symbol	32	40	50	63	80	100	125
S	45	52	65	76	94	112	140
T	32.5	38	46.5	56.5	72	89	110
RR	6.5	6.5	9	9.5	11	11.5	12
DB	34	41	54	65	83	101	123
DC	22	25	27	32	36	41	50
DD	10	11	13	16	16	20	25
DE	10	12	12	16	16	20	25
DQ	26	28	32	40	50	60	70
D	6.5	6.5	8.5	8.5	10.5	10.5	12.5
E	14	17	17	22	24	25	30

DCB - Female Clavis



Bore/Symbol	32	40	50	63	80	100	125
S	45	52	65	76	94	112	140
T	32.5	38	46.5	56.5	72	89	110
D	6.5	6.5	8.5	8.5	10.5	10.5	12.5
E	14	17	17	22	24	25	30
RR	6.5	6.5	9	9.5	11	11.5	12
CB	34	41	54	65	83	101	123
CC	22	25	27	32	36	41	50
CD	10	11	13	16	46	20	25
CE	10	12	12	16	16	20	25
CP	26	28	32	40	50	60	70
CT	45	52	60	70	90	110	120
PA1	53	60	68	78	100	120	130
PB1	46.5	53.5	61.5	71.5	91.5	111.5	121.5

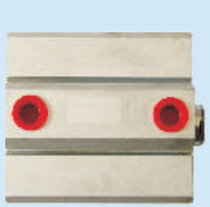
DLB - Foot Bracket

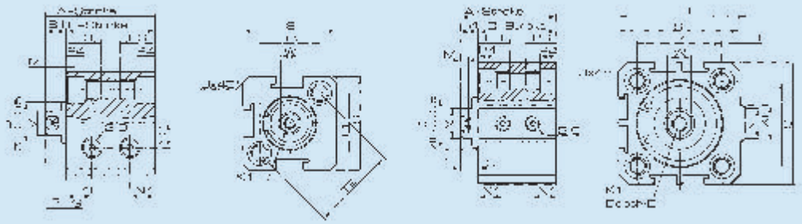


Bore/Symbol	32	40	50	63	80	100	125
AA	32	36	45	50	63	71	90
AB	30	35	40	45	45	55	60
AC	32	36	45	50	63	75	90
AD	32.5	38	46.5	56.5	72	89	110
AE	46.5	52.5	65	75	94.5	114.5	140
AF	24	28	32	32	41	41	45
AG	9	11	11	14	14	16	18
AH	15.8	17	21.8	21.8	27	26.5	35
AI	3.2	3.2	3.2	3.6	4.5	4.5	8
AK	6.5	6.5	8.5	8.5	10.5	10.5	12.5
AL	7	10	10	10	12	14.5	16.5

* Above all dimension in mm

PNU AIR™ SDA Series Standard Pneumatic Cylinders





SDA Technical Specifications

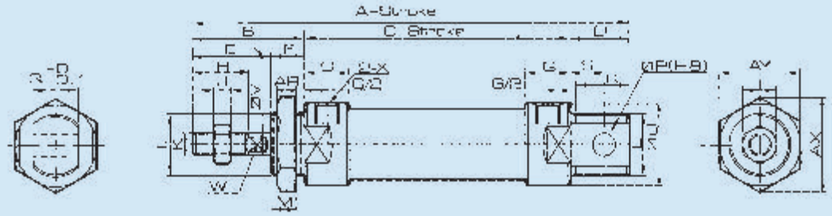
Bore (mm)		12	16	20	25	32	40	50	63	80	100
Port Size		M5 x 0.8				G1/8"		G1/4"		G3/8"	
Operation		Double Acting									
		Single Acting Spring-out, Single Acting Spring-in									
Working Medium		Air									
Operating Pressure	Double Action	1 ~ 9.0 Kg/cm^2									
	Single Action	2 ~ 9.0 Kg/cm^2									
Proof Pressure		10.5 Kg/cm^2									
Operating Temperature Range		0 ~ 70 °C									
Operating Speed Range	Double Action	30 ~ 500 mm/s				30 ~ 350 mm/s		30 ~ 250 mm/s			
	Single Action	100 ~ 500 mm/s									

SDA Series Diamensions

Bore Symbol	A	B	C	D	E	F	G	K1	L	M	N1	N2	O
12	22	4.5	17.5	-	6	4	1	M3 x 0.5	8	2.8	6.3	6	M5 x 0.8
16	24	5.5	18.5	-	6	4	1.5	M3 x 0.5	10	2.8	7.3	6.5	M5 x 0.8
20	25	5.5	19.5	36	8	4	1.5	M4 x 0.7	15	2.8	7.5	-	M5 x 0.8
25	27	6	21	42	10	4	2	M5 x 0.8	17	2.8	8	-	M5 x 0.8
32	31.5	7	24.5	50	12	4	3	M6 x 1	22	2.8	9	-	G1/8
40	33	7	26	58.5	12	4	3	M8 x 1.25	28	2.8	10	-	G1/8
50	37	9	28	71.5	15	5	4	M10 x 1.5	38	2.8	10.5	-	G1/4
63	41	9	32	84.5	15	5	4	M10 x 1.5	40	2.8	11.5	-	G1/4
80	52	11	41	104	16	6	5	M14 x 1.5	45	4	14.5	-	G3/8
100	63	12	51	124	18	7	5	M18 x 1.5	55	4	20.5	-	G3/8

Bore Symbol	P3	P4	R	S	T1	T2	U	V	W	X	Y
12	12	4.5	-	25	16.2	23	1.6	6	5	-	-
16	12	4.5	-	29	19.8	28	1.6	6	5	-	-
20	14	4.5	2	34	24	-	2.1	8	6	11.3	10
25	15	5.5	2	40	28	-	3.1	10	8	12	10
32	16	5.5	6	44	34	-	2.15	12	10	18.3	15
40	20	7.5	6.5	52	40	-	2.25	16	14	21.3	16
50	25	8.5	9.5	62	48	-	4.15	20	17	30	20
63	25	8.5	9.5	75	60	-	3.15	20	17	28.7	20
80	25	10.5	10	94	74	-	3.65	25	22	36	26
100	30	13	10	114	90	-	3.65	32	27	35	26

PNU AIR™ MAL Series Standard Pneumatic Cylinders



MAL Technical Specifications

Bore (mm)	16	20	25	32	40
Port Size	M5 x 0.8	G1/8"			G1/4"
Working Medium	Air				
Operating Pressure	1 ~ 9.0 Kg/cm^2				
Proof Pressure	13.5 Kg/cm^2				
Operating Temperature Range	0 ~ 70 °C				
Operating Speed Range	50 ~ 800 mm/s				
Cushion	Gasket Cushioning				

MAL Series Diamensions

Bore Symbol	A	B	C	D	E	F	G	H	I	J	K	L
16	104	38	52	15	24	14	11	16	10	5	M6 x 1	M16 x 1.5
20	131	40	70	21	28	12	16	20	12	6	M8 x 1.25	M22 x 1.5
25	135	44	70	21	30	14	16	22	17	6	M10 x 1.25	M22 x 1.5
32	141	44	70	27	30	14	16	22	17	6	M10 x 1.25	M24 x 2.0
40	165	46	92	27	32	14	22	24	17	7	M12 x 1.25	M30 x 2.0

Bore Symbol	M	P	Q	R	S	U	V	W	X	AR	AX	AY
16	8	6	12	13	6	20	6	/	M5	7	24	27.5
20	10	8	16	19	12	29	8	6	G 1/8	7	33	29
25	12	8	16	19	12	34	10	8	G 1/8	7	33	29
32	12	10	16	25	15	39.5	12	10	G 1/8	8	37	32
40	12	12	20	25	15	49.5	16	14	G 1/4	9	47	41

* Above all dimension in mm