Atos spa
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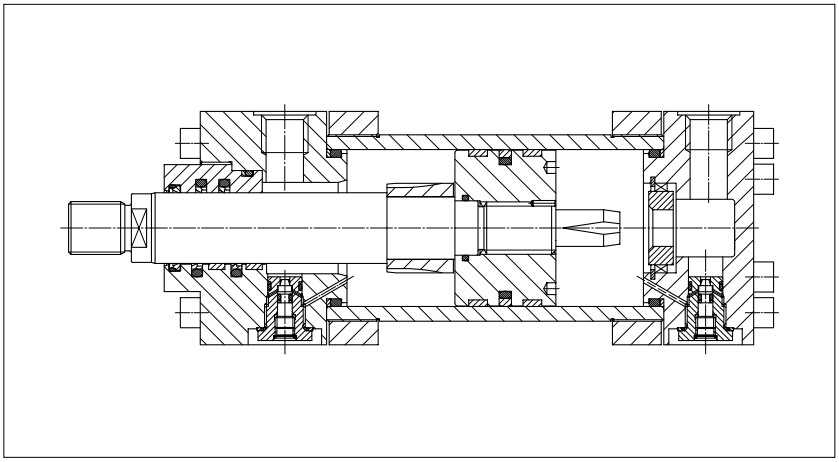
Hydraulic cylinders type CN • standard round heads

ISO 6020-1, DIN-ISO 6020-1, AFNOR NFE 48-015, CNOMO E05.22-313.N standard
double acting - nominal pressure 160 bar - maximum pressure 250 bar



- **Seven bore diameters from 50 to 200 mm.**
- **Round heads with counterflanges.**
- **Strokes on request.**
- **Dimensions according to ISO 6020-1.**
- **Seals with grooves according to ISO 7425.**
- **Guides designed with abundant overload margin.**

- Available options: air bleeds, adjustable cushioning devices, SAE 3000 flanges, rod surface processing.
- Also in version with built-in position transducer (see tab. B310).
- Rod attachments: see tab. B500.

1 MODEL CODE

CN	F	–	200	/	110 /110	*	0500	–	S	3	0	8	A	10

Cylinder series
CN = ISO 6020-1
nominal pressure: 160 bar
max pressure: 250 bar

Eventual transducer for servocylinder
P = potentiometric
M = magnetosonic programmable
V = inductive
F = magnetosonic analog
Dimension and performance: see tab. B310

Bore diameter [mm]

Rod diameter [mm].
Report the second dimension only for double-rod cylinders, for which consult our technical office.

Stroke [mm].
Max stroke 5000 mm. For longer strokes consult our technical office.
For tolerances and further information see tab. B005.

Attachments - sect. 4

	REF. ISO	
A = round front flange	MF3	
B = round rear flange	MF4	*
D = male clevis	MP3	*
E = feet	MS2	
L = mid-body trunnion	MT4	
N = square front flange	MF1	
P = square rear flange	MF2	*
S = swivel with eye	MP5	*
X = basic execution		

*: Double rod not available.
For double rod types the attachment refers to rod 1.

Cushionings
0 = none cuschioning
1 = rear adjustable cuschioning
2 = front adjustable cuschioning
3 = front and rear adjustable cuschioning
7 = rear fixed cushioning
8 = front fixed cuschioning
9 = front and rear fixed cuschioning
For manufacture characteristic and performances see tab. B005 e B015.

Spacers: **2** = 50 mm - **4** = 100 mm - **6** = 150 mm - **8** = 200 mm.
See note 5 for the recommended dimension according to the stroke
For the further information see tab. B005.

Seals
2 = (VITON + PTFE) anti-friction, for high fluid temperature, for speed up to 1 m/sec; for mineral oil, water-glycol and phosphate ester based fluid.
4 = (NITRILE + PTFE) anti-friction, for speed up to 2 m/sec; for mineral oil, water-glycol and organic ester based fluids.
8 = (NITRILE + PTFE e POLIURETANO) low-friction. Speed up to 1 m/sec; for mineral oil.
For other characteristics see tab. B005.
Consult our technical office for typologies and/or rod-draining.

Options - to report in alphabetical order
ROD PROCESSING:
K = NIKROM - for rod ø 28÷110 - 350 h resistance in saline mist according to ISO 3768. For pressure >100 bar consult our technical office.
T = hardening and crome plating.
For other features see tab. B005.
FURTHER OPTIONS:
A = front air-bleed - opposite to the oil port;
M = front and rear flange type SAE 3000. Nominal size: see sect. 6;
W = rear air-bleed - opposite to the oil port.

Drawing number
Always indicate the drawing number of the label in case you require spare parts.

2 MODEL CODE FOR SPARE KIT OF SEALS

SP	-	G	8	–	CN	–	200	/	110 / 110	10

Spare kit of seals

Type seals

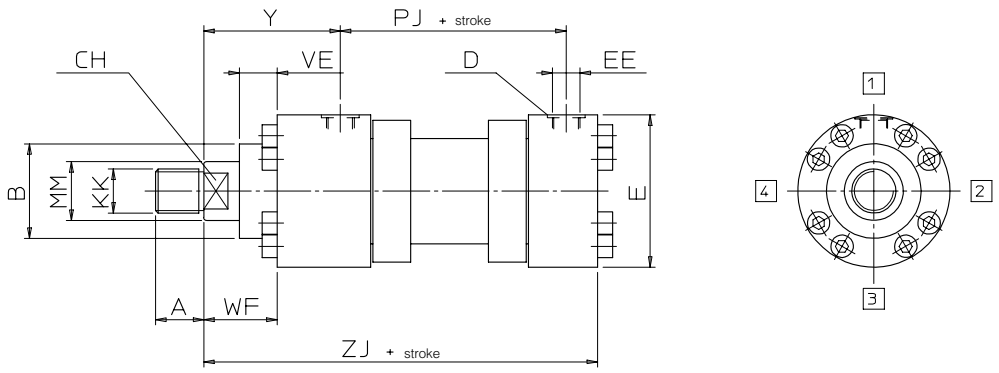
Cylinder series

Piston diameter [mm]

Rod diameter [mm]
Indicate the second dimension for double rod cylinder only

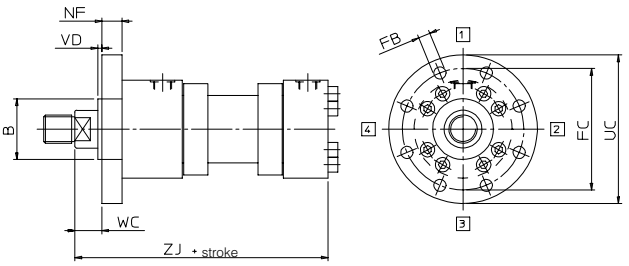
Drawing number
Always indicate the drawing number of the label

3 **CN BASIC CONFIGURATION** - dimension on table **5**

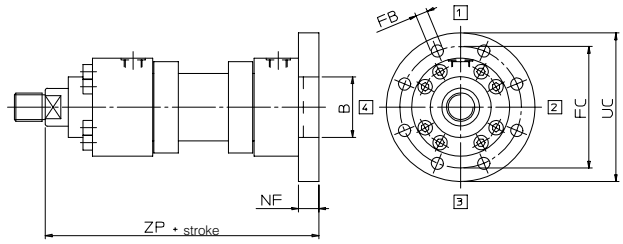


Basic configuration: X - Cushioning adjustament on side 3

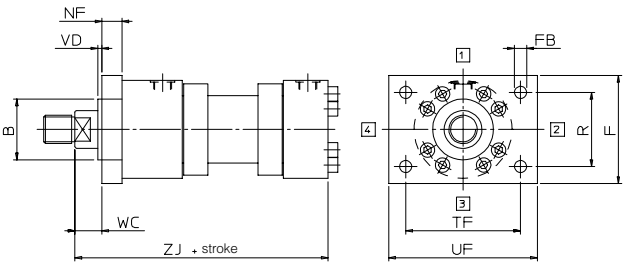
4 **ATTACHMENTS** - dimension on table **5**



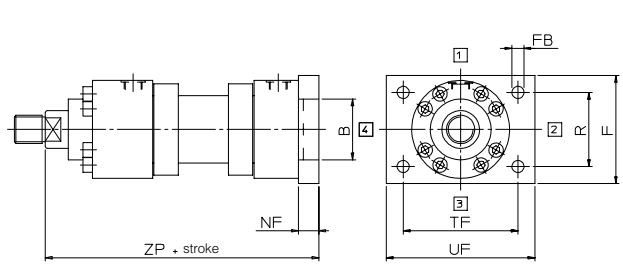
Round front flange attachment: A (ISO MF3)



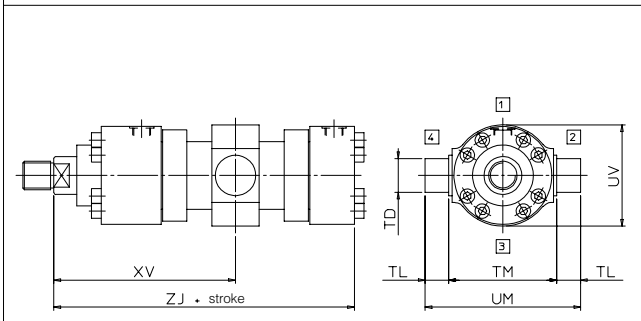
Round rear flange attachment: B (ISO MF4)



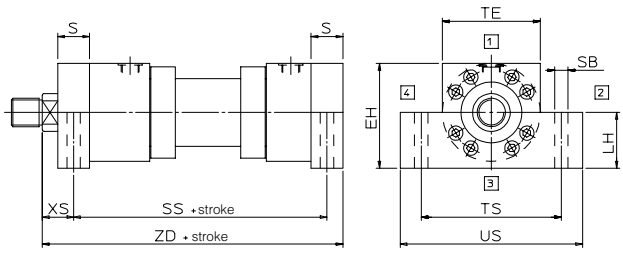
Square front flange attachment: N (ISO MF1)



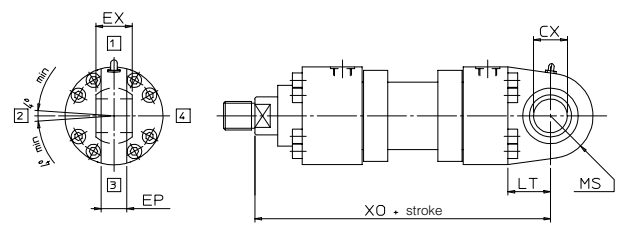
Square rear flange attachment: P (ISO MF2)



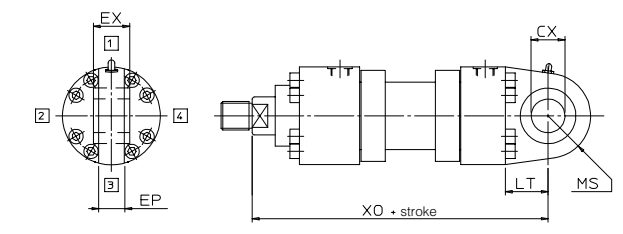
Mid-body trunnion attachment: L (ISO MT4)



Feet attachment: E (ISO MS2)



Swivel with eye attachment: S (ISO MP5)



Male clevis attachment: D (ISO MP3)

5 **DIMENSIONS [mm]** - see drawing sect. 3 and 4.

PISTON	50	63	80	100	125	160	200
ROD 1 Normal	**28**	**36**	**45**	**56**	**70**	**90**	**110**
A	28	36	45	56	63	85	95
CH	22	30	39	48	62	80	100
KK	M20X1,5	M27X2	M33X2	M42X2	M48X2	M64X3	M80X3
ROD 2 Differential	**36**	**45**	**56**	**70**	**90**	**110**	**140**
A	36	45	56	63	85	95	112
CH	30	39	48	62	80	100	128
KK	M27X2	M33X2	M42X2	M48X2	M64X3	M80X3	M100X3

B f9	60	70	85	106	132	160	200
CX H7	25	32	40	50	63	80	100
D	29	36	36	42	42	52	52
E	95	116	130	158	192	238	285
EE	1/2"	3/4"	3/4"	1"	1"	1 1/4"	1 1/4"
EH	100	120	135	161	196	238	288
EP	22	27	35	40	52	66	84
EX h12	25	32	40	50	63	80	100
F	100	120	135	160	195		
FB	11	13.5	17.5	22	22	22	26
FC Js13	126	145	165	200	235	280	340
Lf (indicative)	30	30	32	32	32	41	56
LH h10	52	62	70	82	100	119	145
LT	52	65	82	95	103	135	165
MS	32	40	50	63	71	90	112
MT [Nm]	78	137	78	137	226	471	471
NF	20	25	32	32	32	36	40
R Js13	48.2	55.5	63.1	76.5	90.2		
S	32	32	40	50	56	60	72
SB	14	18	22	26	33	33	39
TD F8	25	32	40	50	63	80	100
TE	95	116	130	158	192	238	285
TF Js16	116.4	134	152.5	184.8	217.1		
TL Js16	20	25	32	40	50	63	80
TM h12	105	120	135	160	195	240	295
TS Js13	120	150	170	205	245	295	350
UC	148	170	195	238	272	316	385
UF	140	160	185	225	255		
UM	145	170	199	240	295	366	455
US	145	180	210	250	300	350	415
UV	108	124	150	180	219	280	333
VD	4	4	4	5	5	5	5
VE	24	29	36	37	37	41	45
WC	18	20	22	25	28	30	35
WF	38	45	54	57	60	66	75
XS	22	29	34	32	32	36	39
Y	72	82	91	108	121	143	190
minimum stroke L attachment	55	85	90	110	135	170	190
XV Min	160	190	215	255	290	340	420
XV max + stroke	105	105	125	145	155	170	230

PISTON	50	63	80	100	125	160	200
PJ	111	117	134	162	174	191	224
ZJ	205	224	250	300	325	370	450
ZP	225	249	282	332	357	406	490
XO	257	289	332	395	428	505	615
SS	199	211	236	293	321	364	447
ZD	237	256	290	350	381	430	522

On the side attachments and overall dimensions are reported.

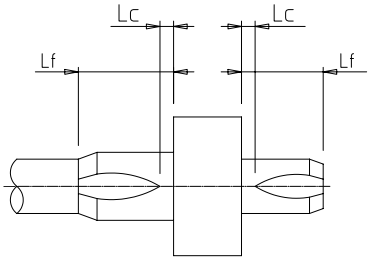
- Dimensions for double-rod executions: consult our tecnical office.

Note:

- **CH** - milling for key
- **EE** - oil port and drain are threaded according to GAS standard with counterbore dimension **D** according to DIN 3852-2.
- **XV** - for L attachment: the XV value must be included between **XV min** and **XV max** and must always be reported in the model code. For execution with L attachment, if the standard stroke is shorter than the min.value reported in the table, proper spacers are inserted and then it is necessary to take into account the complessive dimensions.
- **SPACERS**: for strokes longer than 1000 mm proper spacers are designed to increase the rod and bore guide, protecting it from overloads and easy wear. Spacers can be omitted for cylinder pulling working.
  The table below shows the recommended dimension depending on the stroke: for strokes longer than the ones shown in table, consult our technical office.

stroke [mm]	1000 ÷ 1500	1501 ÷ 2000	2001 ÷ 2500	2501 ÷ 3000
spacer code	**2**	**4**	**6**	**8**
length [mm]	50	100	150	200

- **Lf** - cushioning operates a progressive damping action and are ajustable with proper screws, Lf is the total cushioning length.
  Lc (about 8÷10 mm) is the distance, measured starting from the cylinder bottom out, where the progressive cushioning actions ends (see figure):

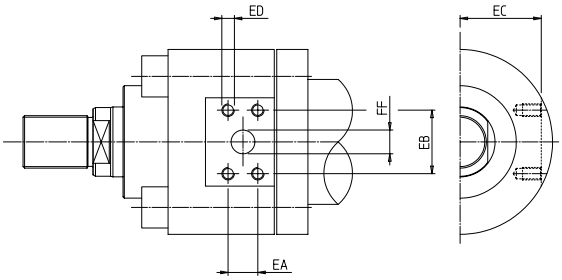


- Consult also tab. B005 and B015 to check the kinetic energy able to damp, depending on bore.
- Inductive stroke sensor available on request. Consult our technical office.
- MT: screw tightening torque (class 12.9)

To obtain the real total dimension add the values on the side to the strokes values and to the eventual spacers (see drawings of sect. 3 and 4).

N.B.: - for strokes, consider the following tolerances:
- 0 + 1,2 mm for strokes up to 1000 mm;
- 0 + 2,5 mm for strokes longer strokes.

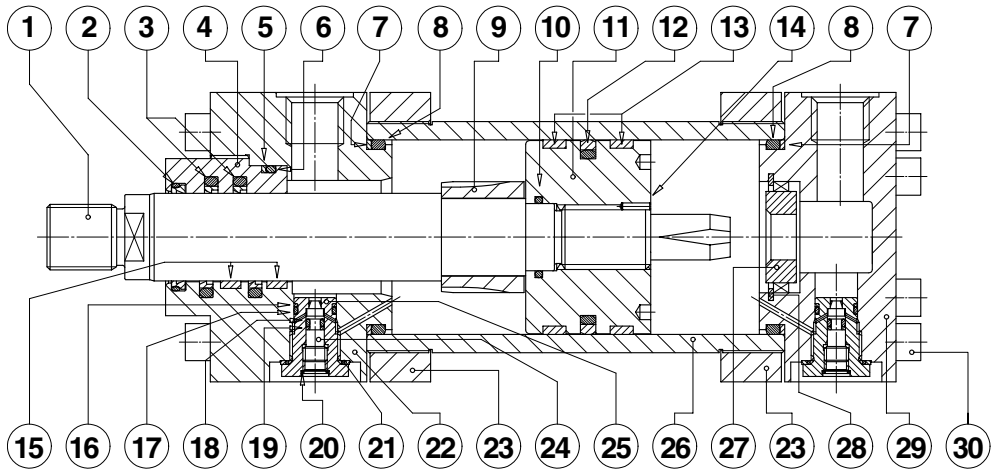
6 SAE FLANGE FITTINGS DIMENSIONS



SAE 3000 flange not available on bore ø 50.

BORING	SAE 3000 FLANGE ISO 6162-1	EC	EA	EB	ED	FF
63	1/2"	50	17.5	38.1	M8x1.25	13
80		58				
100	3/4"	71	22.2	47.6	M10x1.5	19
125		89				
160	1"	113	26.2	52.4	M10x1.5	25
200		137				

7 CN TYPICAL SECTION WITH FRONT AND REAR CUSCHIONING



POS.	DESCRIPTION	MATERIAL	POS.	DESCRIPTION	MATERIAL	POS.	DESCRIPTION	MATERIAL
1	rod	steel	11	piston	steel	21	seal	steel + nitrile
2	wiper	nitrile + PTFE	12	piston seal	nitrile + PTFE	22	forward cylinder head	steel
3	rod seal	nitrile + PTFE	13	low-friction seals	PTFE	23	counter flange	steel
4	rod guide ring	bronze	14	screw stop pin	steel	24	meterin rod	steel
5	anti-extrusion	PTFE	15	low-friction seals	PTFE	25	screw stop plug	steel
6	"O" ring seal	nitrile rubber	16	anti-extrusion	PTFE	26	cylinder housing	steel
7	anti-extrusion	PTFE	17	"O" ring seal	nitrile rubber	27	rear cushioning sleeve	bronze
8	"O" ring seal	nitrile rubber	18	"O" ring seal	nitrile rubber	28	rear stop ring	steel
9	forward cushioning piston	steel	19	anti-extrusion	PTFE	29	rear cylinder head	steel
10	"O" ring seal	nitrile rubber	20	stop ring	steel	30	screw TCEI	steel class 12.9

8 MASSES OF CN CYLINDERS (in Kg, tolerances ± 5%)

		BASIC MASS configuration X		**ADDED MASSES** according to attachments and options							
Ø Piston [mm]	**Ø Rod** [mm]	stroke 100 mm	each 100 mm added	attachment **A, B**	attachment **E**	attachment **L**	attachment **N, P**	attachment **D, S**	front cuschioning	rear cuschioning	spacer 25 mm
50	**28**	12	1.5	2.5	4.6	1.9	2	0.8	0.2	0.8	0.4
	36	12.5	2								
63	**36**	19.5	2.5	4	7	3.3	3	1.5	0.3	1	0.6
	45	20	3								
80	**45**	28	4	6	11	4.4	5	3.1	0.5	1	1
	56	28.5	4.5								
100	**56**	48.5	5.5	9	18.8	7.6	7	5.2	0.8	1.5	1.5
	70	49.5	6.5								
125	**70**	76.5	8.5	11	30.4	13	9	8	1.2	2	2.5
	90	78.5	10.5								
160	**90**	126	13	16.5	46.4	22.5		16.6	1.7	3	4
	110	128.5	15.5								
200	**110**	233.5	18.5	27	78.4	37.7		32.2	2.5	5	6
	140	238	23								