

STANDARD COMPONENTS &
SPECIAL ORDER PARTS FOR PRESS DIES

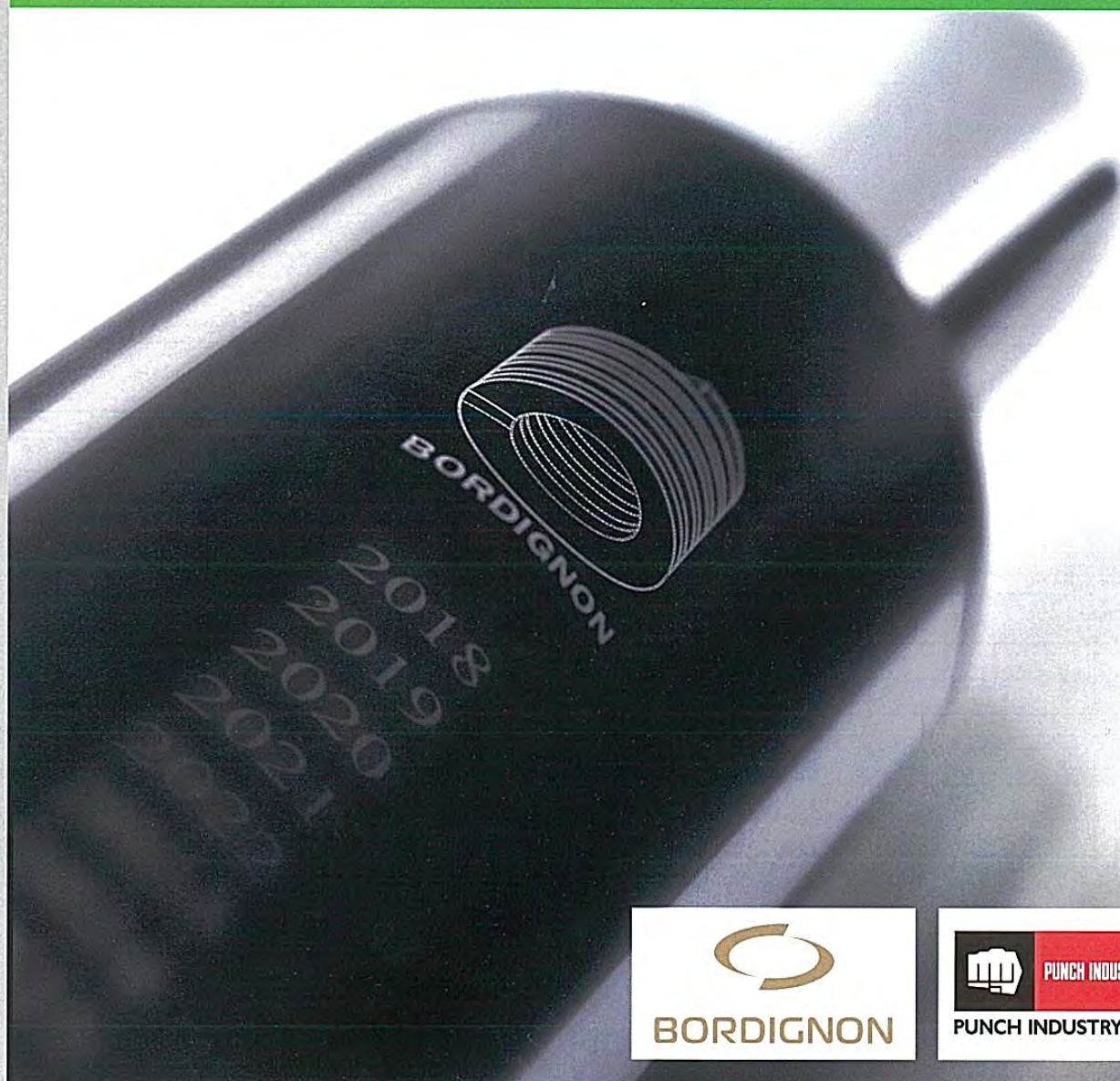


PUNCH

Nanotechnology

GAS SPRINGS

High performance line



BORDIGNON



PUNCH INDUSTRY

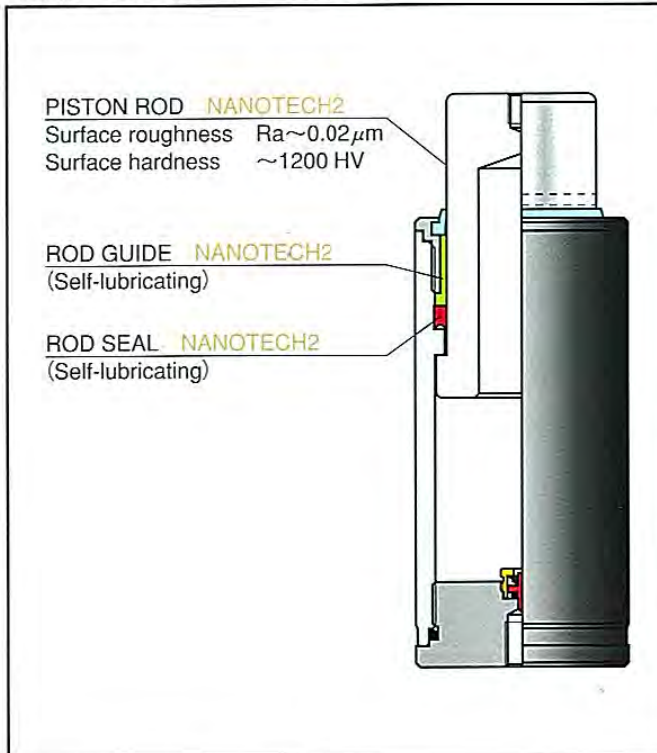
PUNCH INDUSTRY CO., LTD.

► NANOTECH2

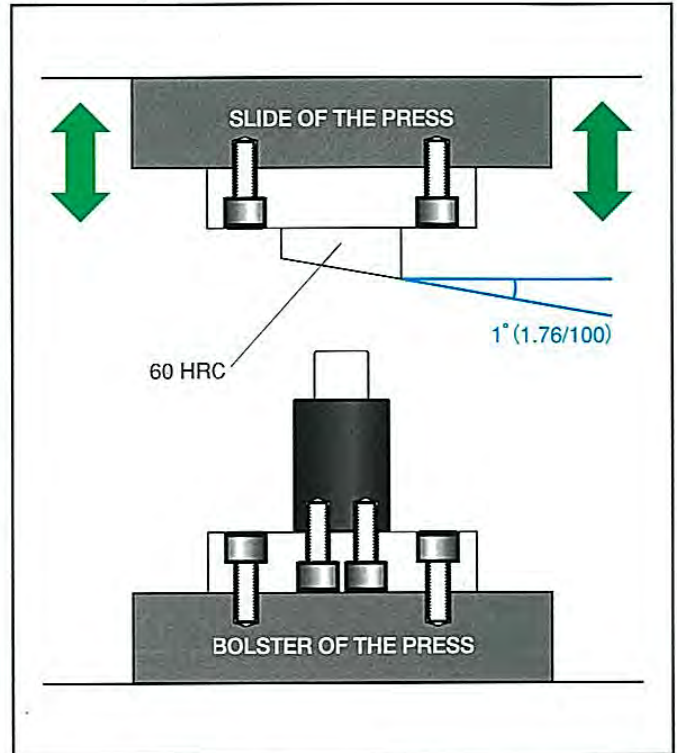
The performance and durability of the nitrogen gas springs series CSX, 2XCSX32, SMLX, MSML and MCSM have been upgraded to a higher level thanks to the introduction of the NANOTECH2 nanotechnologies, now improved over the previous version.

- Improvement for the working speed (cycles per minute) For example, the existing product "SMLX25-5 : 1000SPM" → the new product "SMLX25-5 : 1250SPM"
- Improvement for the life time (Long-life)
- Improvement for the durability against the biased load

•NANOTECH2 TECHNOLOGY PARTS



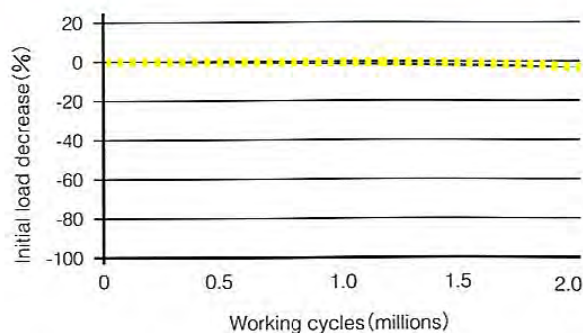
• (For example) METHOD FOR THE ECCENTRICITY TEST



HIGH SPEED TEST

Durability test result

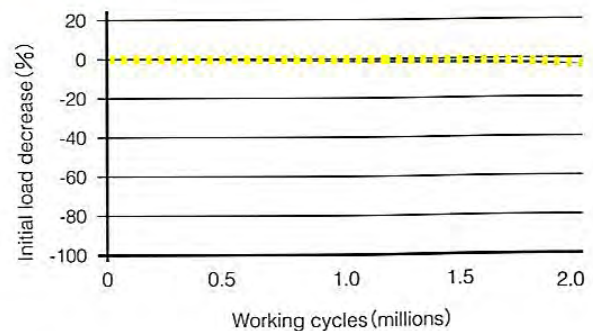
Code No.	Stroke	Working speed	Inclination
CSX 19-25	25 mm	250 cycles/minute	0°
SMLX 25-25	25 mm	250 cycles/minute	0°



ECCENTRICITY TEST

Durability test result

Code No.	Stroke	Working speed	Inclination
CSX 32-50	48 mm	50 cycles/minute	1° (1.76 mm / 100 mm)
SMLX 38-38	35 mm	70 cycles/minute	1° (1.76 mm / 100 mm)



※The graph shows is for reference values.

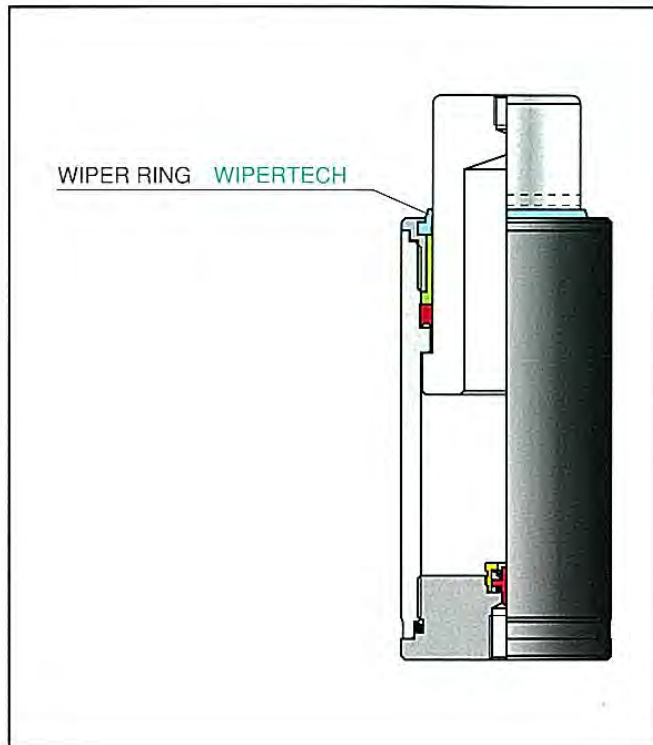
※Working speed is for the gas springs, but it is NOT for the press machine.

► WIPERTECH

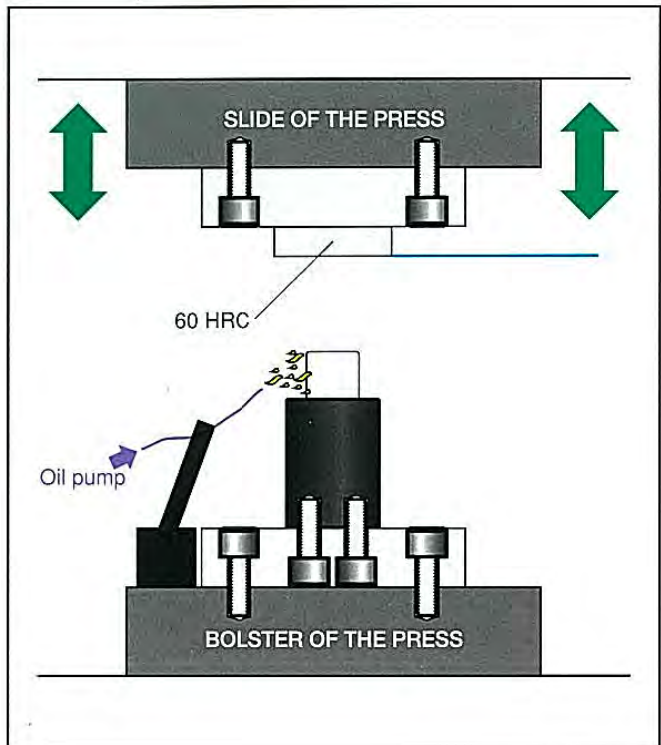
The nitrogen gas spring series CSX, 2XCSX32, SMLX, MSML and MCSM are now equipped with the WIPERTECH nanotechnology, which ensures an improved protection against the liquid contaminants that are often present in press dies, thus increasing the potential service life of nitrogen gas springs in such conditions (aggressive environment).

- Improvement for the life time (Long-life)

•WIPERTECH TECHNOLOGY PARTS



• (For example) METHOD FOR THE ECCENTRICITY TEST

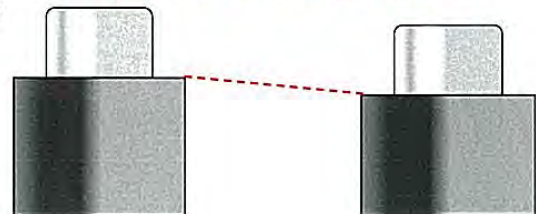


► NEXT STANDARD MODEL 「 SMLX 」 RELEASE !

- COMPACT TYPE to be decreased the height
It contributes to the press dies which have the height restriction.
- Wide selection of STROKE SIZES.(5mm~125mm)
It contributes to the flexibility for designing press dies.
- Correspond with HIGH SPEED PRESS.
(50spm~1250spm)
It applies to more press dies than ever.
It contributes to the productivity improvement.

(INITIAL LOAD and BODY DIAMETER is the same specification as existing product)

Cylinder body is up to 9 mm lower than existing product



Initial load (N)		Body diameter "D" (mm)		Stroke "C" (mm)		Total height "N" (mm)		Maximum speed (SPM)	
Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.
3000	20000	25	63	5	125	40	285	50	1250

GAS SPRINGS GUIDE

NANOTECH GAS SPRING HIGH PRESSURE TYPE		NANOTECH GAS SPRING EXTRA HIGH PRESSURE TYPE		NANOTECH GAS SPRING HIGH PRESSURE COMPACT TYPE		DISC PLATE (FOR SMLX)	
							
CSX	P.10	2XCSX32	P.11	SMLX	P.12	HCD	P.13

NANOTECH GAS SPRING HIGH PRESSURE MINI TYPE		NANOTECH GAS SPRING EXTRA MINI TYPE	
			
MSML	P.14	MCSM	P.14

► NEW PRODUCT LINEUP — HIGH PERFORMANCE LINE —

Catalog page		Code No.	Characteristic	Piping availability	Pressure adjusting availability
GAS SPRINGS	P. 10	CSX	•Fine variety of size and load, new standard model	—	—
	P. 11	2XCSX32	•High pressure model for CSX32	—	—
	P. 12	SMLX	•High pressure and more compact, next standard model	—	—
	P. 14	MSML	•Small size, but model is for middle load line	—	—
	P. 14	MCSM	•Model is for low load line	—	—

► EXISTING PRODUCT LINEUP

Catalog page		Code No.	Characteristic	Piping availability	Pressure adjusting availability
PRESS 2012	P. 990	RGP	•Fine variety of size and load, current standard model	○	○
	P. 994	RGT	•Derived model for RGP, standard model for piping system	○	○
	P. 996	RGC	•High pressure and super compact model	△	○
	P. 998	RGH	•RG250/500/750, different pressure, but flat height model	○	○
	P.1002	RMG	•Unity body dia. 25mm, high pressure compared to coil springs	—	—
	P.1003	MRG	•Pressure same as RMG, but height lower than RMG	—	—
	P.1004	RG	•Old model, gas springs starting model	○	○

NANOTECH GAS SPRINGS STRUCTURE

CSX / 2XCSX32

PISTON ROD **NANOTECH2**

Surface roughness $Ra \sim 0.02 \mu m$

Surface hardness $\sim 1200 \text{ HV}$

WIPER RING **WIPERTECH**

ROD GUIDE **NANOTECH2**

(Self-lubricating)

ROD SEAL **NANOTECH2**

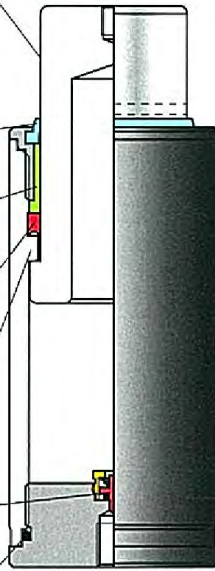
(Self-lubricating)

MECHANICAL STOP

(Single-piece body construction)

NON-RETURN VALVE

O-RING SEAL



SMLX

PISTON ROD **NANOTECH2**

Surface roughness $Ra \sim 0.02 \mu m$

Surface hardness $\sim 1200 \text{ HV}$

WIPER RING **WIPERTECH**

ROD GUIDE **NANOTECH2**

(Self-lubricating)

ROD SEAL **NANOTECH2**

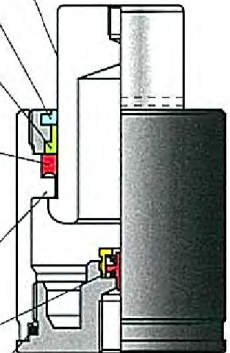
(Self-lubricating)

MECHANICAL STOP

(Single-piece body construction)

NON-RETURN VALVE

O-RING SEAL



MSML

PISTON ROD **NANOTECH2**

Surface roughness $Ra \sim 0.02 \mu m$

Surface hardness $\sim 1200 \text{ HV}$

WIPER RING **WIPERTECH**

ROD GUIDE **NANOTECH2**

(Self-lubricating)

ROD SEAL **NANOTECH2**

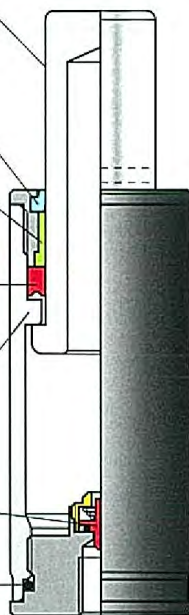
(Self-lubricating)

MECHANICAL STOP

(Single-piece body construction)

NON-RETURN VALVE

O-RING SEAL



MCSM

PISTON ROD **NANOTECH2**

Surface roughness $Ra \sim 0.02 \mu m$

Surface hardness $\sim 1200 \text{ HV}$

WIPER RING **WIPERTECH**

ROD GUIDE **NANOTECH2**

(Self-lubricating)

ROD SEAL **NANOTECH2**

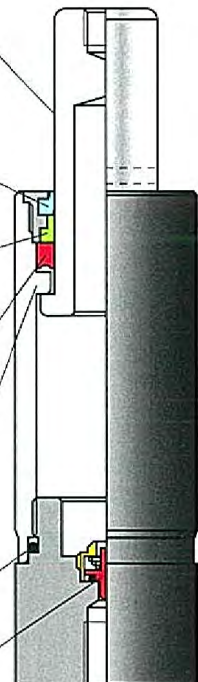
(Self-lubricating)

MECHANICAL STOP

(Single-piece body construction)

O-RING SEAL

NON-RETURN VALVE



NOTE TO USERS & DISPOSAL METHOD

► NOTE TO USERS

no

 	The threaded hole on the piston rod is for maintenance purposes only. Do not use it for fastening the nitrogen gas spring.
	No side loads. Work stroke always perpendicular to the base of the nitrogen gas spring.
	Avoid scratching and scoring on the piston rod.
	Do not make mechanical work on the nitrogen gas spring.
	Do not disassemble the nitrogen gas spring. Maintenance only by authorized people. The authorization is given only after a class held by Bordignon.
	Max impact and max release speed: 1 m/s. Maximum number of working shots per minute: see product series tables in the catalog (page 9)
  	Do not freely release the piston rod. The piston rod goes up together with the press. If the screws used for the base-mounting are broken or deformed (stretched), find out the possible causes and eliminate them: there might have been free/uncontrolled releases of the piston rod.
	Protect against liquid or solid contaminants. The nitrogen gas springs are protected against contaminants by wiper ring. Do not use chemical products with low flash point (petrol, solvents, alcohol, etc.). Clean only with a dry cloth.
	The products in this catalog are designed for the use in press-die/mold tools. We can not take any responsibility for any other use.

yes

 	Always fasten the nitrogen gas spring at the base to a flat and clean support surface with high resistance screws. Gas springs with more than one threaded hole at the base: the center hole is for charging/discharging only. Use all the other holes at the base for fixing.
	Charge only with NITROGEN (N ₂).
	Hole for cylinder body $\phi + 1$ mm. Draining hole for liquids.
	Lubricate the piston rod with grease with disulfide molybdenum (MoS ₂).
	Operating temperature: MIN 0°C (32°F) ~ MAX 80°C (176°F). Do not heat.
 	Protect against solid contaminants with a metal bellow, liquid contaminants with a polymeric bellow. Fasten the protection bellow to the die plate.
	Do not overstroke.

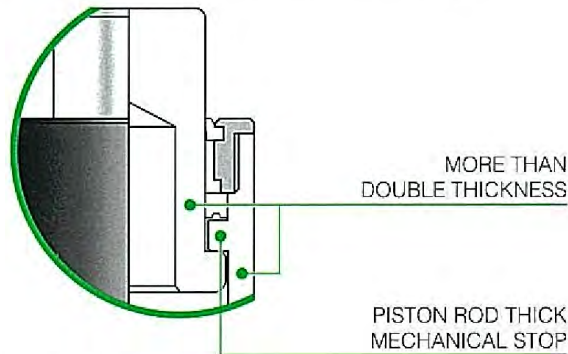
► DISPOSAL METHOD

Discharge a gas entirely when you dispose of gas springs. Wear protective goggles and use specialized tools properly. Check if there's anyone or anything in the direction of a blowout of gas.
Consult our sales office if you can't dispose of gas springs safely.

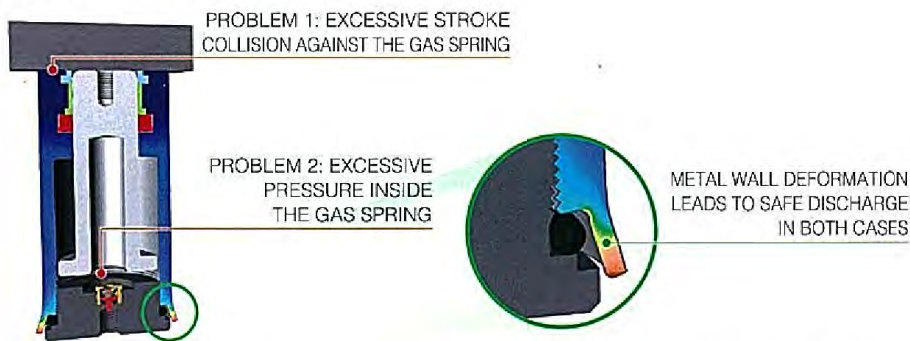
NANOTECH GAS SPRINGS SAFETY & RELIABILITY

► SAFETY

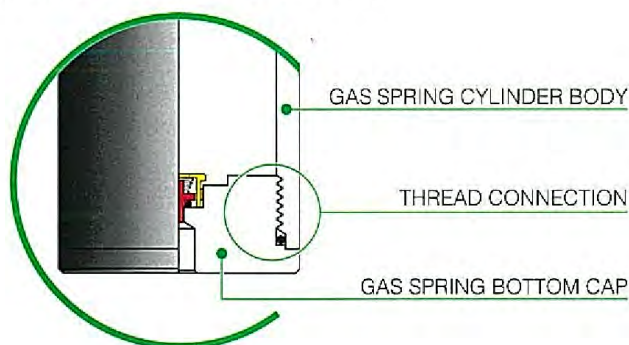
NANOTECH GAS SPRINGS have always been built with single (‘monolithic’) thick mechanical components, in order to ensure product integrity and maximum user’s safety even under extremely severe conditions (collisions, etc.). The piston rod is blocked by a thick mechanical stop inside the cylinder body.



NANOTECH GAS SPRINGS have always been built with a safety system for both internal over-pressure and over-stroke: the cylinder body metal wall is thinner at the bottom and gets deformed in such critical conditions, allowing a safe gas spring discharge.



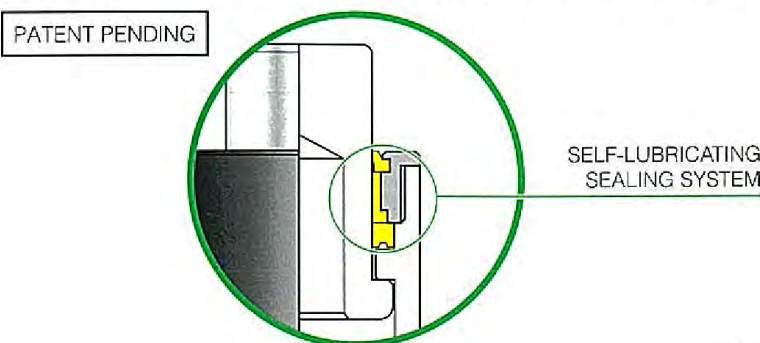
NANOTECH GAS SPRINGS components are coupled through thread connections, for the highest possible safety. Thread connections are standard in high pressure equipment around the world, such as waterjet cutting nozzles and ultra high pressure vessels (~10000 bar).



Gas Springs

► RELIABILITY

NANOTECH GAS SPRINGS are self-lubricated, for millions of cycles, thanks to a solid lubricant (PATENT PENDING).



BORDIGNON COMPANY GUIDE / CERTIFIED QUALITY

► COMPANY GUIDE



BORDIGNON TRADING SRL

BORDIGNON SILVANO SRL

Headquarters : Rossano Veneto, Italy

Establishment : 1958

URL : <http://www.bordignon.com/>



► CERTIFIED QUALITY

The Bordignon nitrogen gas springs are designed and built to guarantee the longest service life: they are the end result of many years of experience, research and innovative technology rewarded by the UNI EN ISO 9001 CERTIFICATION.



• CERTIFICATE of UNI EN ISO9001

ITALCERT

CERTIFICATO N° 009SGQ05
CERTIFICATE N° 009SGQ05

Si certifica che il
It is certified that
Sistema di Gestione per la Qualità
Quality Management System

messo in atto da
implemented by
BORDIGNON SILVANO S.r.l.
Via A. Volta, 2 - IT 36028 ROSSANO VENETO (VI)
nella Sede Operativa di
Zona Industriale - IT 38055 GRIGNO (TN)
è conforme alla norma
is in compliance with the standard
UNI EN ISO 9001:2015 (ISO 9001:2015)
per i seguenti Processi
concerning the following kinds of Processes

**Progettazione e fabbricazione di cilindri e serbatoi all'azoto,
espulsori, cilindri all'azoto per manifold e manifold**
Design and production of nitrogen gas springs and tanks, ejectors,
nitrogen gas springs for manifold and manifold

Il presente Certificato è soggetto al rispetto delle condizioni stabilite dai Regolamenti per la certificazione in vigore applicati.
This Certificate shall be subject to the requirements established in the Rules for the certification in force applied.
In case of discrepancy between the languages used in the translation of the content of the present certificate, fare riferimento alla lingua italiana.
In case of discrepancy between the languages used in the translation of the content of the present certificate, please refer to the Italian language.

IL PRESIDENTE
Prof. Dr. Carlo Tribuno

Data di Prima Emissione
First Issue Date
1995-07-19

Data di Rinnovo
Renewal Date
2017-10-15

Data di Scadenza
Expiration Date
2020-10-15

ACCREDITA

ITALCERT S.r.l. | Viale Sarca, 336 - 20126 Milano (MI) | tel. +39 0266504816 | fax. +39 0266501479 | www.italcert.it | italcert@italcert.it

• CERTIFICATE of TUV

TUV
AUTOMOTIVE

TÜV AUTOMOTIVE GMBH
Betriebsfestigkeit
Ridlerstraße 57
D - 80339 München

Seite 1

Auftrags-Nr. : 950 18675
Prüf-Nr. : 950 18675/2
Sachverständiger : Herr Glas
TA - MU - BF/mf

München, den 20.10.99
Telefon: 089/ 5190-3357
Fax : 089/ 5190-3368

PRÜFBERICHT

TEST ORDERED BY: BORDIGNON SPA
Rossano Veneto - ITALY
on July 9th 1999

OBJECT OF THE TEST: LIFETIME OF ON OILLESS GAS SPRING
„C 038-50“
UP TO 300.000 MT. OF TOTAL STROKE

PLACE OF THE TEST: TÜV AUTOMOTIVE GmbH
Ridlerstraße 57
D-80339 MUNICH

TEST CONDITIONS: STROKE: 50MM.
FREQUENCY: 0,63 Hz
WITHOUT LUBRIFICATION

TEST RESULT: THE CYLINDER WORKED WELL.
AFTER 3.000.000 STROKES
(= 300.000 MT.) IT WAS STILL CHARGED
AND PERFORMING PERFECTLY.

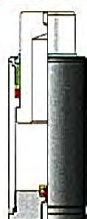
Betriebsfestigkeit
Dr.-Ing. A. Weiß

Der Sachverständige
A. Glas

Die auszugsweise Wiedergabe dieses Prüfberichtes und die Verwendung zu Werbezwecken bedürfen der schriftlichen Genehmigung der TÜV Automotive GmbH

TÜV Automotive GmbH | Linienenergiegeräte TÜV Südwestfalen + Geschäftsbereich | Dr.-Ing. Michael Seifert
50549 Eschweiler | 50549 Eschweiler | 50549 Eschweiler | 50549 Eschweiler | 50549 Eschweiler | 50549 Eschweiler | 50549 Eschweiler | 50549 Eschweiler | 50549 Eschweiler | 50549 Eschweiler
Akkreditiert unter DAkk-Registrierungsnummer KDA-P 0001-95 von der Akkreditierungsstelle
des Kraftfahrt-Bundesamtes, Bundesrepublik Deutschland.

NANOTECH GAS SPRINGS QUICK CHART OF SIZES

CSX		Diameter D	Initial load (N)	Stroke																
				5	10	13	15	20	25	32	38	45	50	56	63	75	80	100	125	160
		19	1500		*		*	*	*	*	*	*	*	*		*				
		25	3000		*		*	*	*	*	*	*	*	*		*				
		32	5000		*		*	*	*	*	*	*	*	*		*				
		38	10000		*		*	*	*	*	*	*	*	*		*				
		50	20000		*		*	*	*	*	*	*	*	*		*				
		63	30000		*		*	*	*	*	*	*	*	*		*				
Maximum speed (SPM)					625		415	310	250	195	160	135	125	110	95		75			

2XCSX32		Diameter D	Initial load (N)	Stroke																		
				5	10	13	15	20	25	32	38	45	50	56	63	75	80	100	125	160	200	
																						
32 6600					*		*	*	*	*	*	*	*	*	*		*					
Maximum speed (SPM)					625		415	310	250	195	160	135	125	110	95		75					

SMLX		Diameter D	Initial load (N)	Stroke																
				5	10	13	15	20	25	32	38	45	50	56	63	75	80	100	125	160
		25	3000	*	*	*	*	*	*	*		*		*	*	*	*	*		
		32	5000	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*		
		38	7500	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	
		50	15000	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	
		63	20000	*	*		*	*	*	*	*		*		*	*	*	*	*	
Maximum speed (SPM)			1250	625	480	415	310	250	195	160	135	125	110	95	80	75	60	50		

MSML 		Diameter D	Initial load (N)	Stroke																
				5	10	13	15	20	25	32	38	45	50	56	63	75	80	100	125	160
		16	1000		•		•		•		•									
		19	1700		•		•		•		•									
		25	3600		•		•		•		•									
Maximum speed (SPM)					400		260		160		105									

MCSM		Diameter D	Initial load (N)	Stroke																
		5	10	13	15	20	25	32	38	45	50	56	63	75	80	100	125	160	200	
	19	800		•		•		•		•		•			•					
	25	1600		•		•		•		•		•			•					
Maximum speed (SPM)				625		415		250		160		125			75					

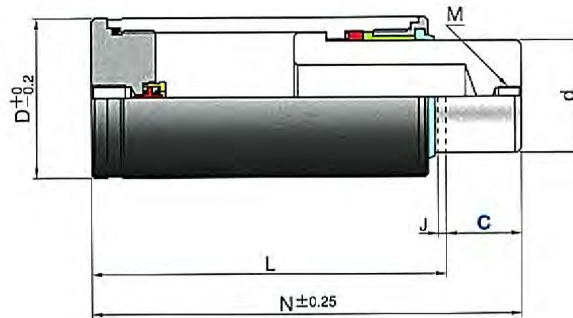
NANOTECH GAS SPRINGS

HIGH PRESSURE TYPE & EXTRA HIGH PRESSURE TYPE



RoHS

Code No.
CSX 19
CSX 25
CSX 32
CSX 38
CSX 50
CSX 63

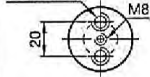


Working condition

Stroke C	Maximum speed		Working temperature
	m/s	SPM	
10	1.0	625	0°C ~ 80°C
15		415	
20		310	
25		250	
32		195	
38		160	
45		135	
50		125	
56		110	
63		95	
80		75	

⚠ The maximum speed (SPM) is the number of shots per minute. SPM may be affected by the operating environment. The figures shown here are for reference only. It is NOT press machine speed.

Code No.		Stroke C	Charge pressure (Mpa)	Initial load (N) (N) kgt	Maximum load (N) kgt	L	N	D	d	M	J	Bottom view Tap hole for fixing	Weight (kg)
Code	No.												
CSX	19	10	19.1	1500 [153]	2000 [204]	65	75	19	10	M5	2		0.10
		15			2100 [214]	70	85						0.10
		20			2200 [224]	75	95						0.11
		25			2300 [235]	80	105						0.12
		32			2300 [235]	88	120						0.13
		38			2300 [235]	97	135						0.14
		45			2400 [245]	105	150						0.15
		50			2400 [245]	110	160						0.15
		56			2400 [245]	119	175						0.16
		63			2400 [245]	127	190						0.17
	25	80			2500 [255]	140	220						0.19
		10	19.5	3000 [306]	4300 [439]	65	75	25	14	M6	2		0.18
		15			4500 [459]	70	85						0.19
		20			4800 [490]	75	95						0.20
		25			5000 [510]	80	105						0.21
		32			5200 [530]	88	120						0.23
		38			5300 [541]	97	135						0.26
		45			5400 [551]	105	150						0.28
		50			5500 [561]	110	160						0.29
		56			5500 [561]	119	175						0.31
		63			5500 [561]	127	190						0.33
	32	80			5800 [592]	145	225						0.37
		10	19.7	5000 [510]	6800 [694]	65	75	32	18	M6	2		0.29
		15			7700 [785]	70	85						0.31
		20			8000 [816]	75	95						0.33
		25			8400 [857]	80	105						0.36
		32			8700 [887]	88	120						0.39
		38			8700 [887]	97	135						0.42
		45			8900 [908]	105	150						0.45
		50			9000 [918]	110	160						0.47
		56			9100 [928]	119	175						0.50
		63			9100 [928]	132	195						0.55
	38	80			9200 [938]	150	230						0.62
		10	20.5	10000 [1020]	15300 [1561]	65	75	38	25	M6	2		0.42
		15			17300 [1765]	70	85						0.45
		20			18800 [1918]	75	95						0.48
		25			20000 [2040]	80	105						0.51
		32			20800 [2122]	88	120						0.55
		38			20900 [2132]	97	135						0.59
		45			21000 [2142]	105	150						0.64
		50			21100 [2152]	110	160						0.67
		56			21300 [2173]	119	175						0.71
		63			21400 [2183]	142	205						0.80
		80			21500 [2193]	160	240						0.91

Code No.		Stroke	Charge pressure	Initial load (N)	Maximum load	L	N	D	d	M	J	Bottom view	Weight
Code	No.	C	(Mpa)	(N) kgf	(N) kgf							Tap hole for fixing	(kg)
CSX	50	10	20.9	20000 [2040]	30000 [3060]	80	90	50	35	M6	2		0.94
		15			30500 [3111]	100	115						1.08
		20			31000 [3162]	105	125						1.13
		25			32000 [3264]	110	135						1.18
		32			35000 [3570]	118	150						1.26
		38			36000 [3672]	127	165						1.35
		45			37000 [3774]	135	180						1.42
		50			38000 [3876]	140	190						1.47
		56			39000 [3978]	149	205						1.56
		63			41000 [4182]	157	220						1.63
		80			44000 [4488]	175	255						1.83
	63	10	18.9	30000 [3060]	39000 [3978]	85	95	63	45	M6	2		1.55
		15			40000 [4080]	100	115						1.71
		20			42000 [4284]	105	125						1.78
		25			44000 [4488]	110	135						1.86
		32			46000 [4692]	118	150						1.98
		38			47000 [4794]	127	165						2.10
		45			49000 [4998]	135	180						2.22
		50			50000 [5100]	140	190						2.30
		63			52000 [5304]	157	220						2.54
		80			55000 [5610]	175	255						2.82



Code No. | C |
CSX19 — 10

▶ EXTRA HIGH PRESSURE TYPE

RoHS

Code No.

2XCSX32

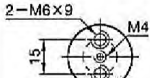
PED
In accordance with
2014/68/EU

Technical drawing of a gas spring showing dimensions: $D \pm 0.2$, L , $N \pm 0.25$, J , C , d , and M .

▶ Working condition

Stroke C	Maximum speed		Working temperature
	m/s	SPM	
10	1.0	625	0°C ~ 80°C
15		415	
20		310	
25		250	
32		195	
38		160	
45		135	
50		125	
56		110	
63		95	
80		75	

⚠ The maximum speed (SPM) is the number of shots per minute. SPM may be affected by the operating environment. The figures shown here are for reference only. It is NOT press machine speed.

Code No.		Stroke	Charge pressure	Initial load (N)	Maximum load	L	N	D	d	M	J	Bottom view	Weight
Code	No.	C	(Mpa)	(N) kgf	(N) kgf							Tap hole for fixing	(kg)
2XCSX	32	10	21.0	6600 [673]	9500 [969]	65	75	32	20	M6	2		0.28
		15			10000 [1020]	70	85						0.30
		20			10500 [1071]	75	95						0.31
		25			11000 [1122]	80	105						0.33
		32			11500 [1173]	88	120						0.36
		38			11500 [1173]	97	135						0.38
		45			11600 [1183]	105	150						0.41
		50			11700 [1193]	110	160						0.43
		56			11800 [1204]	119	175						0.45
		63			11900 [1214]	132	195						0.49
		80			12000 [1224]	150	230						0.55



Code No. | C |
2XCSX32 — 10

NANOTECH GAS SPRINGS

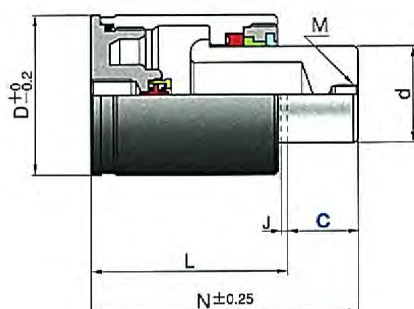
HIGH PRESSURE COMPACT TYPE

WIPERTECH

NANOTECH2

RoHS

Code No.
SMLX 25
SMLX 32
SMLX 38
SMLX 50
SMLX 63



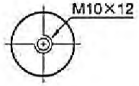
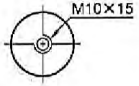
Working condition

Stroke C	Maximum speed m/s	SPM	Working temperature
5		1250	
10		625	
13		480	
15	1.0	415	0°C ~ 80°C
20		310	
25		250	
32		195	
38		160	

⚠ The maximum speed (SPM) is the number of shots per minute. SPM may be affected by the operating environment. The figures shown here are for reference only. It is NOT press machine speed.

Code No.	Stroke C	Charge pressure (Mpa)	Initial load (N) (N) kgf	Maximum load (N) (N) kgf	L	N	D	d	M*	J	Bottom view Tap hole for fixing	Weight (kg)
SMLX	25	19.5	3000 [306]	4500 [459]	35	40	25	14	M6	1		0.10
				5400 [551]	40	50						0.12
				5500 [561]	43	56						0.12
				5800 [592]	45	60						0.13
				6200 [632]	50	70						0.14
				6500 [663]	55	80						0.15
				6500 [663]	62	94						0.17
				6600 [673]	68	106						0.18
				6800 [694]	80	130						0.21
				6800 [694]	93	156						0.25
				6900 [704]	105	180						0.28
				6900 [704]	110	190						0.29
	32	19.6	5000 [510]	6900 [704]	130	230	32	18	M6	1		0.34
				6900 [704]	155	280						0.40
				7500 [765]	35	40						0.17
				7900 [806]	40	50						0.18
				8300 [847]	43	56						0.19
				8500 [867]	45	60						0.20
				8700 [887]	50	70						0.21
				8800 [898]	55	80						0.23
				8800 [898]	62	94						0.25
				8900 [908]	68	106						0.27
				9000 [918]	75	120						0.29
				9000 [918]	80	130						0.31
	38	19.7	7500 [765]	9100 [928]	86	142	38	22	M6	1		0.33
				9300 [949]	93	156						0.35
				9300 [949]	105	180						0.39
				9300 [949]	110	190						0.41
				9400 [959]	130	230						0.47
				9400 [959]	155	280						0.55
				10500 [1071]	35	40						0.24
				12000 [1224]	40	50						0.26
				12500 [1275]	43	56						0.28
				12700 [1295]	45	60						0.29
				12800 [1306]	50	70						0.31
				13500 [1377]	55	80						0.33
				13700 [1397]	62	94						0.36
				13700 [1397]	68	106						0.39
				14000 [1428]	75	120						0.42
				14100 [1438]	80	130						0.44
				14200 [1448]	86	142						0.47
				14300 [1459]	93	156						0.50
				14400 [1469]	105	180						0.55
				14400 [1469]	110	190						0.57
				14400 [1469]	130	230						0.66
				14500 [1479]	155	280						0.77

⚠ * No threaded hole on the piston rod

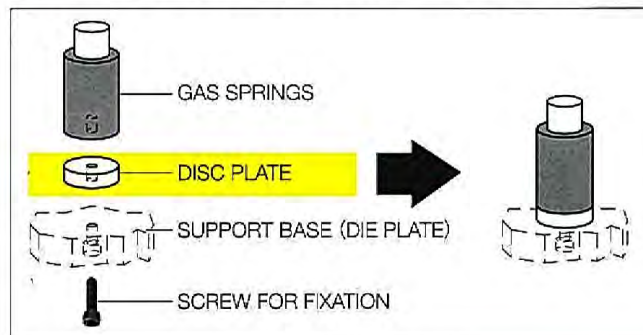
Code No.		Stroke C	Charge pressure (Mpa)	Initial load (N) (N) kgf	Maximum load (N) kgf	L	N	D	d	M*	J	Bottom view Tap hole for fixing	Weight (kg)
Code	No.												
SMLX	50	5*	21.2	15000 [1530]	26000 [2652]	40	45	50	30	M6	1		0.49
		10			28000 [2856]	45	55						0.54
		13			29000 [2958]	48	61						0.56
		15			30000 [3060]	50	65						0.57
		20			30400 [3101]	55	75						0.60
		25			30500 [3111]	60	85						0.64
		32			30600 [3121]	67	99						0.69
		38			30700 [3131]	73	111						0.74
		45			30800 [3142]	80	125						0.79
		50			30900 [3152]	85	135						0.83
		56			31000 [3162]	91	147						0.87
		63			31100 [3172]	98	161						0.92
		75			31200 [3182]	110	185						1.02
		80			31300 [3193]	120	200						1.07
		100			31500 [3213]	135	235						1.21
		125			32000 [3264]	160	285						1.40
	63	5*	15.9	20000 [2040]	30000 [3060]	40	45	63	40	M6	1		0.77
		10			36000 [3672]	45	55						0.85
		15			38000 [3876]	50	65						0.91
		20			38500 [3927]	55	75						0.96
		25			38800 [3958]	60	85						1.02
		32			38900 [3968]	67	99						1.10
		38			39000 [3978]	73	111						1.17
		50			39100 [3988]	85	135						1.30
		63			39300 [4009]	98	161						1.45
		75			39500 [4029]	110	185						1.59
		80			39800 [4060]	120	200						1.67
		100			40000 [4080]	135	235						1.87
		125			40200 [4100]	160	285						2.17

⚠ * No threaded hole on the piston rod



Code No. | C
SMLX25 - 5

• HOW TO USE THE HCD DISC PLATE (FIXING METHOD)



Code No. | C | (HCD)
SMLX25 - 5 - HCD

Add.	Code	Spec.																																																																									
DISC PLATE for height adjustment	HCD	※SMLX25/63 is NOT applicable. It can't choose the addition code (HCD). ※SMLX32-5/13/75/100/125 is NOT applicable. It can't choose the addition code (HCD). ※SMLX38-5/13/75/100/125 is NOT applicable. It can't choose the addition code (HCD). ※SMLX50-5/13/75/80/100/125 is NOT applicable. It can't choose the addition code (HCD). ※It can't choose DISC PLATE other than the "Application of size for gas springs"																																																																									
		<table> <tr> <th>Code</th><th>D</th><th>H</th><th>Application of size for gas springs</th></tr> <tr> <td rowspan="8">HCD32-5</td><td rowspan="8">32</td><td rowspan="8">5</td><td>SMLX32-10</td></tr> <tr><td>SMLX32-15</td></tr> <tr><td>SMLX32-20</td></tr> <tr><td>SMLX32-25</td></tr> <tr><td>SMLX32-38</td></tr> <tr><td>SMLX32-45</td></tr> <tr><td>SMLX32-50</td></tr> <tr><td>SMLX32-80</td></tr> <tr> <td>HCD32-6</td><td>32</td><td>6</td><td>SMLX32-32</td></tr> <tr> <td>HCD32-8</td><td>32</td><td>8</td><td>SMLX32-56</td></tr> <tr> <td>HCD32-9</td><td>32</td><td>9</td><td>SMLX32-63</td></tr> <tr> <td rowspan="6">HCD38-5</td><td rowspan="6">38</td><td rowspan="6">5</td><td>SMLX38-10</td></tr> <tr><td>SMLX38-15</td></tr> <tr><td>SMLX38-20</td></tr> <tr><td>SMLX38-25</td></tr> <tr><td>SMLX38-38</td></tr> <tr><td></td></tr> <tr> <td rowspan="6">HCD38-5</td><td rowspan="6">38</td><td rowspan="6">5</td><td>SMLX38-45</td></tr> <tr><td>SMLX38-50</td></tr> <tr><td>SMLX38-80</td></tr> <tr><td>SMLX38-32</td></tr> <tr><td>SMLX38-56</td></tr> <tr><td>SMLX38-63</td></tr> <tr> <td rowspan="6">HCD50-5</td><td rowspan="6">50</td><td rowspan="6">5</td><td>SMLX50-10</td></tr> <tr><td>SMLX50-15</td></tr> <tr><td>SMLX50-20</td></tr> <tr><td>SMLX50-25</td></tr> <tr><td>SMLX50-38</td></tr> <tr><td>SMLX50-45</td></tr> <tr> <td rowspan="4">HCD50-5</td><td rowspan="4">50</td><td rowspan="4">5</td><td>SMLX50-50</td></tr> <tr><td></td></tr> <tr><td></td></tr> <tr><td></td></tr> <tr> <td>HCD50-6</td><td>50</td><td>6</td><td>SMLX50-32</td></tr> <tr> <td>HCD50-8</td><td>50</td><td>8</td><td>SMLX50-56</td></tr> <tr> <td>HCD50-9</td><td>50</td><td>9</td><td>SMLX50-63</td></tr> </table>	Code	D	H	Application of size for gas springs	HCD32-5	32	5	SMLX32-10	SMLX32-15	SMLX32-20	SMLX32-25	SMLX32-38	SMLX32-45	SMLX32-50	SMLX32-80	HCD32-6	32	6	SMLX32-32	HCD32-8	32	8	SMLX32-56	HCD32-9	32	9	SMLX32-63	HCD38-5	38	5	SMLX38-10	SMLX38-15	SMLX38-20	SMLX38-25	SMLX38-38		HCD38-5	38	5	SMLX38-45	SMLX38-50	SMLX38-80	SMLX38-32	SMLX38-56	SMLX38-63	HCD50-5	50	5	SMLX50-10	SMLX50-15	SMLX50-20	SMLX50-25	SMLX50-38	SMLX50-45	HCD50-5	50	5	SMLX50-50				HCD50-6	50	6	SMLX50-32	HCD50-8	50	8	SMLX50-56	HCD50-9	50	9	SMLX50-63
Code	D	H	Application of size for gas springs																																																																								
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			SMLX38-25																																																																								
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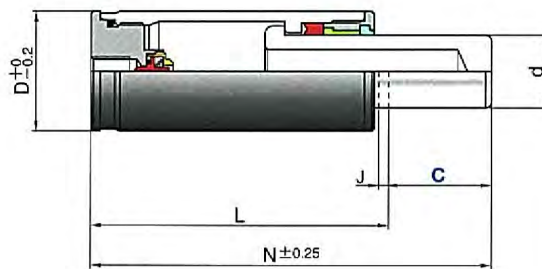
NANOTECH GAS SPRINGS

HIGH PRESSURE MINI TYPE & EXTRA MINI TYPE



RoHS

Code No.
MSML 16
MSML 19
MSML 25



Working condition

Stroke C	Maximum speed		Working temperature
	m/s	SPM	
10	1.0	400	0°C ~ 80°C
15		260	
25		160	
38		105	

⚠ The maximum speed (SPM) is the number of shots per minute. SPM may be affected by the operating environment. The figures shown here are for reference only. It is NOT press machine speed.

Code No.		Stroke C	Charge pressure (Mpa)	Initial load (N) (N) k[fr]	Maximum load (N) k[fr]	L	N	D	d	J	Bottom view Tap hole for fixing	Weight (kg)
Code	No.											
MSML	16	10	19.9	1000 [102]	1400 [143]	45	55	16	8	1	M5×7	0.05
		15			1500 [153]	50	65				M5×7	0.05
		25			1600 [163]	60	85				M5×7	0.06
		38			1700 [173]	73	111				M5×7	0.08
	19	10	21.6	1700 [173]	2400 [245]	45	55	19	10	1	M5×7	0.07
		15			2600 [265]	50	65				M5×7	0.08
		25			2800 [286]	60	85				M5×7	0.09
		38			3000 [306]	73	111				M5×7	0.11
	25	10	20.4	3600 [367]	5500 [561]	45	55	25	15	1	M6×8	0.13
		15			6000 [612]	50	65				M6×8	0.14
		25			6500 [663]	60	85				M6×8	0.16
		38			7000 [714]	73	111				M6×8	0.19

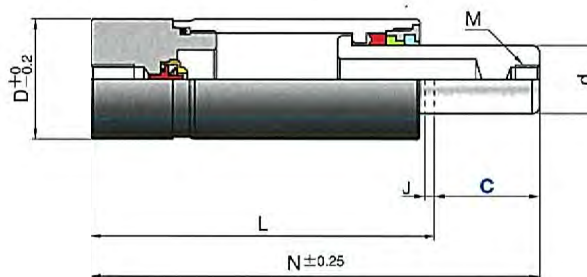


Code No. C
MSML16 - 10

EXTRA MINI TYPE

RoHS

Code No.
MCSM 19
MCSM 25



Working condition

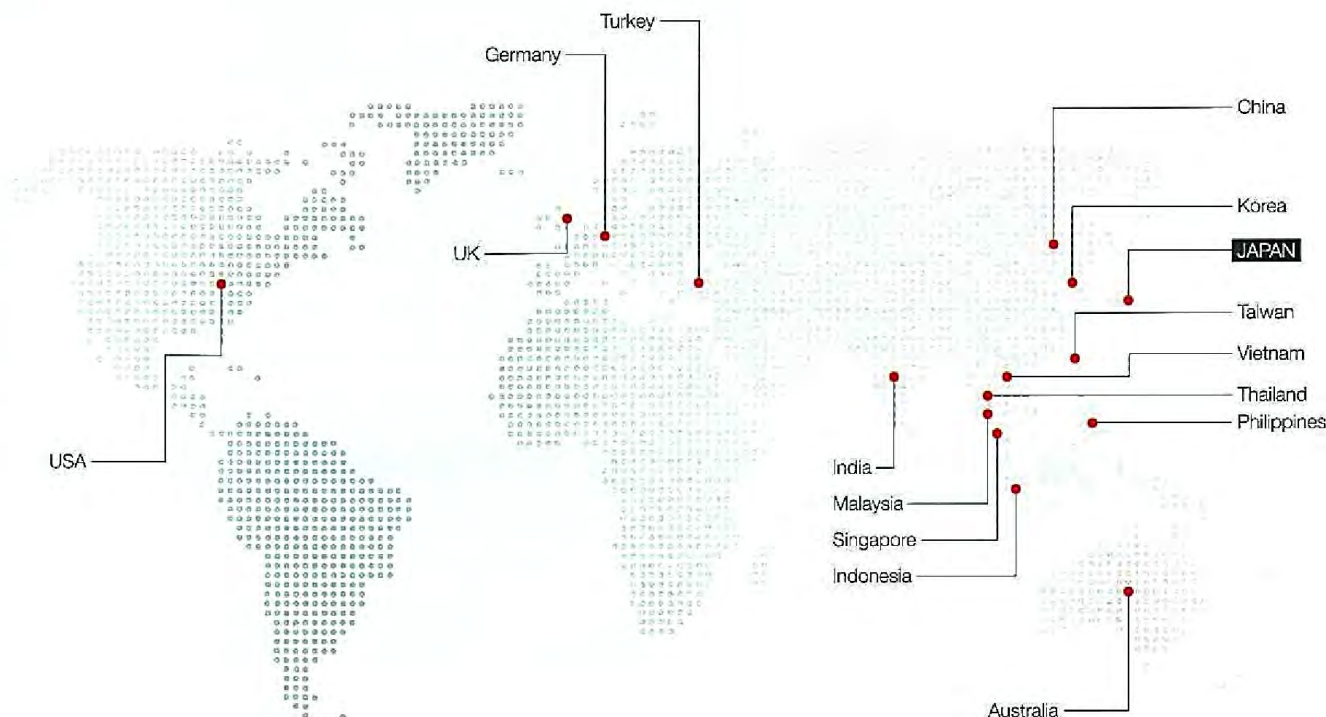
Stroke C	Maximum speed		Working temperature
	m/s	SPM	
10	1.0	625	0°C ~ 80°C
15		415	
25		250	
38		160	
50		125	
80		75	

⚠ The maximum speed (SPM) is the number of shots per minute. SPM may be affected by the operating environment. The figures shown here are for reference only. It is NOT press machine speed.

Code No.		Stroke C	Charge pressure (Mpa)	Initial load (N) (N) k[fr]	Maximum load (N) k[fr]	L	N	D	d	M	J	Bottom view Tap hole for fixing	Weight (kg)
Code	No.												
MCSM	19	10	10.2	800 [82]	1050 [107]	55	65	19	10	-	1	M6×12	0.09
		15			1100 [112]	60	75					M6×12	0.09
		25			1150 [117]	70	95					M6×12	0.11
		38			1200 [122]	83	121					M6×12	0.12
		50			1300 [133]	95	145					M6×12	0.14
		80			1400 [143]	125	205					M6×12	0.18
	25	10	10.4	1600 [163]	2300 [235]	55	65	25	14	M6	1	M6×8	0.16
		15			2400 [245]	60	75					M6×8	0.17
		25			2600 [265]	70	95					M6×8	0.20
		38			2800 [286]	83	121					M6×8	0.23
		50			2900 [296]	95	145					M6×8	0.26
		80			3000 [306]	125	205					M6×8	0.33



Code No. C
MCSM19 - 10



< Production Sites >

		Japan 1 Kitakami Plant Kitakami-shi, Iwate prefecture 024-0004 Japan 2 Miyako Plant Miyako-shi, Iwate prefecture 027-0037 Japan 3 Hyogo Plant Kasai-shi, Hyogo prefecture 679-0104 Japan 4 Pintec Corporation Yamagata-shi, Yamagata prefecture 990-2338 Japan
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