



AZOL 
GAS
Service in Motion

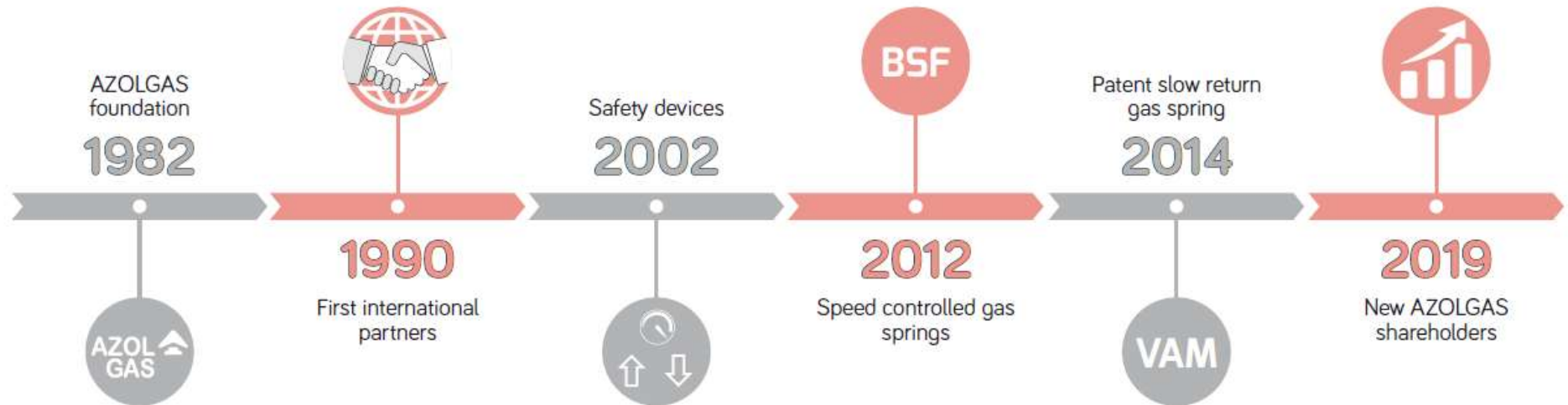
AZOLGAS-ARTEM

2023-04

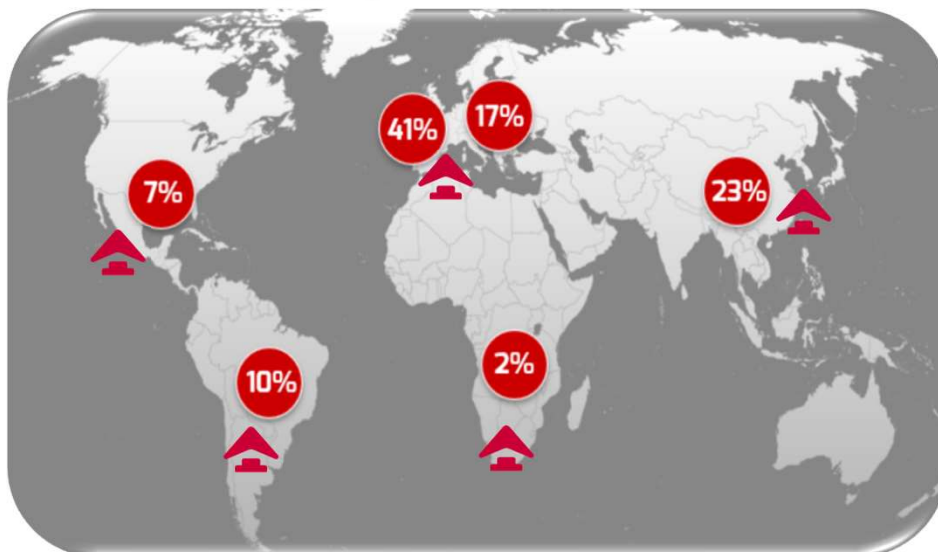


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- II. PRODUCT IMPROVEMENT & QUALITY
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40 years of experience in design-manufacturing-servicing gas springs targeted on a permanent INNOVATION and customer's SERVICE for our partners.



DISTRIBUTION BY AREAS

- Africa 2%
- Asia 23%
- America North 7%
- America South 10%
- Europe North 17%
- Europe South 41%

▪ Gas springs		▪ Controlled gas springs	
▪ Mounts		▪ Wedge cams	
▪ Hosed systems		▪ Roller cams	
▪ Spring plungers		▪ Pneumatic springs	
▪ Flange strippers		▪ Scrap removers	
▪ Manifold		▪ ER-Manifold	

CUSTOMER'S SERVICE

- Comply with Global Standards
- Warehousing stocks
- Competitive Corporate price
- Technical Assistance Service
- Global Project Management
- Training stamping plants staff
- User's Guides in local language
- Tools set for repair and maintenance

GLOBAL distribution network who ensure CUSTOMER'S SERVICE in 30 countries.

CHALLENGES: productivity-cost-safety-hot forming

- In the recent years AZOLGAS succeeded in meeting quality challenges caused by:
 - The increasing stamping needs (speed/frequency)
 - The limits in die design (space)
 - Harsh working environment (Hot Forming)
 - Integration of VDI-safety
- Main actions taken:
 - Use of improved Materials and protection of parts
 - Innovative technical solutions on Guiding systems
 - Reduction of friction and temperature
 - Fine-tuning of technical component properties
- As a result of the actions taken:
 - New product generation with longer lifetime
 - Consistent compliance with VDI safety standards
 - Positive customer feedback compared to gas springs from other competitors



Challenges: Productivity – Cost effective – Safety – Hot Stamping.
TECHNICAL IMPROVEMENT in gas springs lead to meet required LONGER service LIFE.

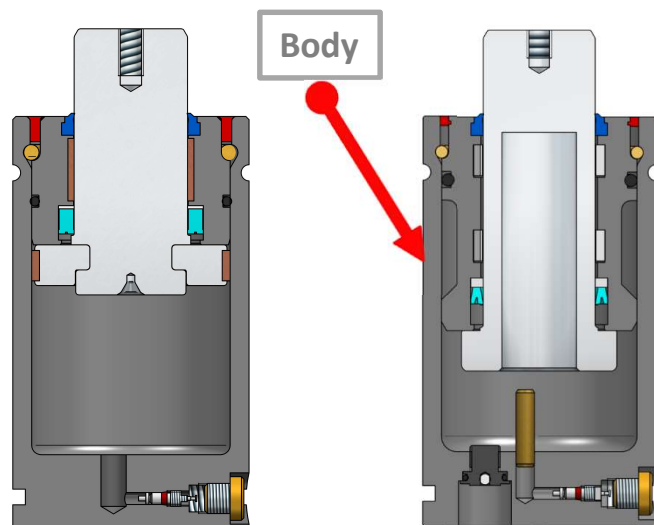


II. PRODUCT IMPROVEMENT & QUALITY

HARDNESS AND SURFACE PROTECTION

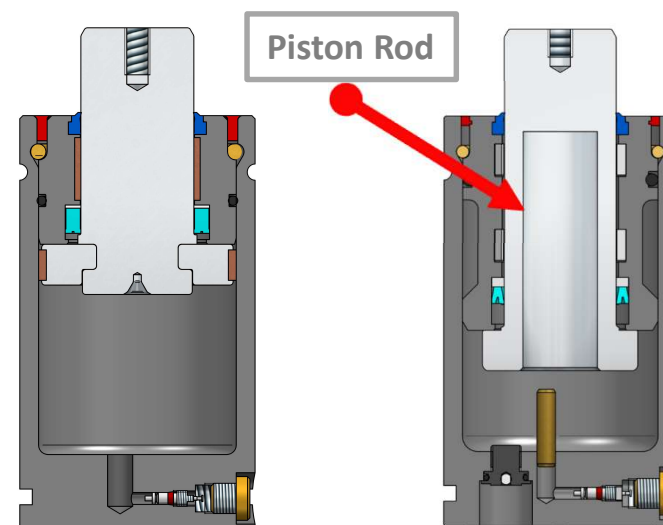
Previous

New Generation



Previous

New Generation



Body	Previous	New
Material	C45	P355NH-EN 10273 42CrMo4+QT-ISO 683-2
Treatment	Black oxide	Black oxide
Manufacture	Monoblock	Monoblock

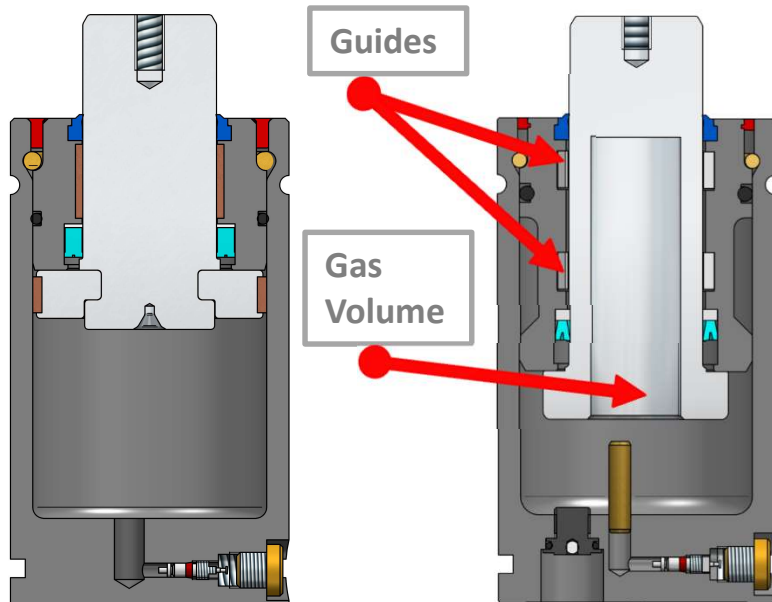
Piston Rod	Previous	New
Material	42CrMo4	34CrNiMo6-ISO 683-2 42CrMo4+QT-ISO 683-2
Treatment	Flash Cr	Nitrided
Thickness mm	0,005	0,5
Hardness HRc	>60	>62
Roughness Rz	0,6-0,8	0,2-0,3

Differential features from AZOLGAS:
1. Lower friction between spare parts.
2. Piston Rod with safety system SV (VDI).

GUIDING ELEMENTS AND GAS VOLUME

Previous

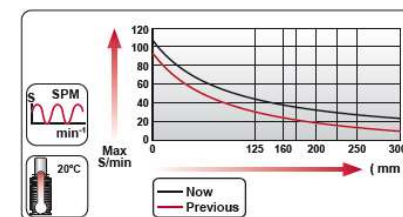
New Generation



AG 7500 300	Previous	New
Cycles x minute	10	20
Temperature °C	80°	62-72°
Initial Pressure	150 bar	150 bar
Final Pressure	294 bar	268 bar
Pressure at 150 bar / 90% stroke / Temperature 20°C		

Summary of new designs, process and materials:

- Spare parts geometrical tolerances adjustment
- Consistency by manufacturing process
- Superior tolerance to side-loads
- Higher gas volumen
- Inferior compression rate
- Lower friction
- Lower warming (15-20°C less heat)
- Posibility of use at a higher frequency
- Suitable for tool-separation applications



TEMPERATUR SIMULATOR

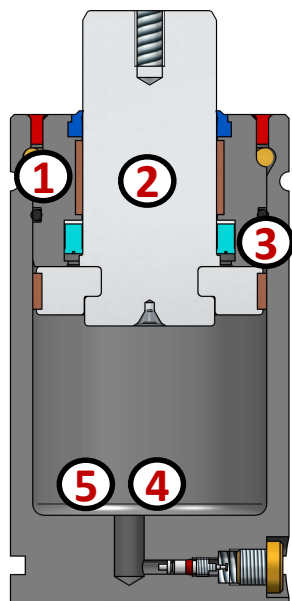
SERIES	MODEL	NOMINAL STROKE (mm)	USED STROKE (mm)	FILLING PRESSURE (bar)	FREQUENCY (spm)	ENVIRONMENT TEMPERATURE (°C)	INITIAL FORCE (daN)	ESTIMATED TEMPERATURE (°C)	ESTIMATED PRESSURE (bar)	ESTIMATED FORCE (daN)
ISO	AG 150	10	7	180	30	20	204	33	216	244
	AG 250	10	7	125	30	20	251	31	152	305
	AG 500	10	7	150	30	20	471	31	168	527
	AG 750	12,7	7	150	30	20	736	35	175	847
	AG 1500	12,7	7	150	30	20	1527	35	169	1715
	AG 3000	12,7	7	150	30	20	2945	35	168	3300
	AG 5000	12,7	7	150	30	20	4977	35	167	5536
	AG 7500	12,7	7	150	30	20	7540	35	167	8373
	AG 10000	12,7	7	145	30	20	10278	35	161	11412

Differential features from AZOLGAS:

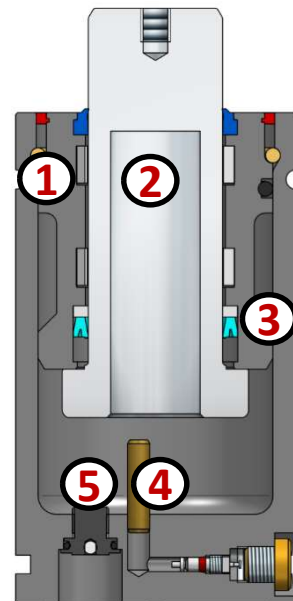
1. Lower working temperature.
2. Posibility of higher working frequency.

GAS SPRINGS ISO STANDARD

Previous



New Generation

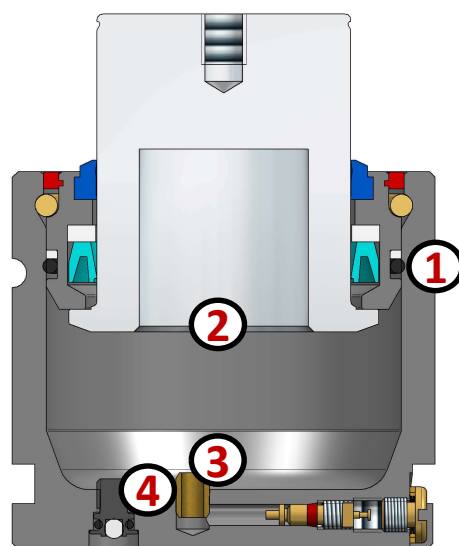
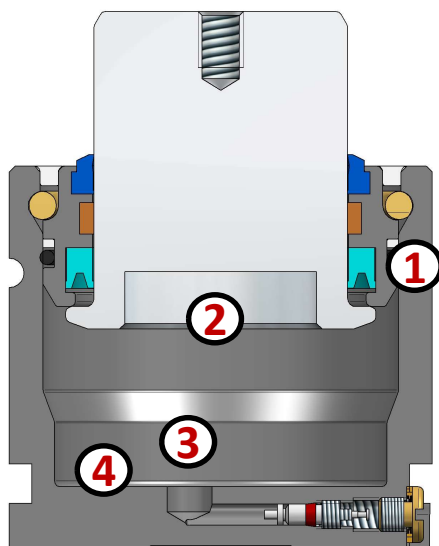


1. Guide (low friction double guide)
2. Hollow rod (superior gas volume)
3. High temperature seals (110°C)
4. Protection on lubrication system
5. Safety CNOMO-VDI

Body	Previous	New Generation
Material	C45	P355NH-EN 10273 42CrMo4+QT-ISO 683-2
Piston rod	Previous	New Generation
Material	42CrMo4	34CrNiMo6-ISO 683-2 42CrMo4+QT-ISO 683-2
Treatment	chrome	nitrided
Thickness mm	0,005	0,5
Hardness HRC	≤60	>62
Roughness Rz	0,6-0,8	0,2-0,3

AG 7500 200 (N000 701 263)	Previous	New Generation
Gas volume (l)	2,884	3,483
Max strokes /Min	10	20
Temperature °C	80°	65°
Initial Pressure	150 bar	150 bar
Final Pres. (20°C)	230 bar	211 bar
Final Pres. (80°C)	277 bar	254 bar
Pres. 150 bar / 90% stroke / Temperature 20°C		

GAS SPRINGS COMPACT HEIGHT

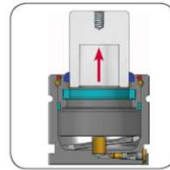
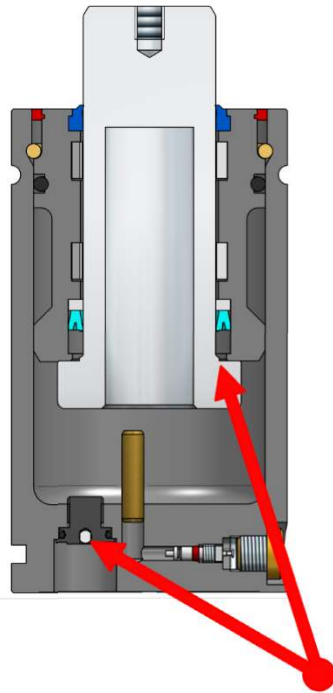
Previous
New Generation


1. High temperature seals (110°C)
2. Hollow rod (superior gas volume)
3. Protection on lubrication system
4. Safety CNOMO-VDI

Body	Previous	New Generation
Material	C45 / S355J2	42CrMo4+QT-ISO 683-2

Piston rod	Previous	New Generation
Material	42CrMo4	42CrMo4+QT-ISO 683-2
Treatment	chrome	nitrided
Thickness mm	0,005	0,5
Hardness HRC	≤60	>62
Roughness Rz	0,6-0,8	0,2-0,3

CW 2400 125 (2000 459 184)	Previous	New Generation
Gas volume (l)	0,4091	0,4898
Max strokes / Min	20	20
Temperature °C	80°	65°
Initial Pressure	150 bar	150 bar
Final Pres. (20°C)	292 bar	252 bar
Final Pres. (80°C)	352 bar	304 bar
Pres. 150 bar / 90% stroke / Temperature 20°C		



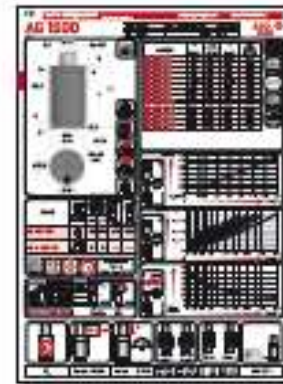
1. SV Safety over-speed



2. SP Safety over-pressure



3. SS Safety over-stroke



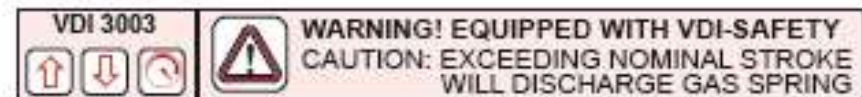
Over-Speed safety



Over-Stroke safety



Over-Pressure safety



New Generation of Safety Systems:

- Designed to bear (M6) 1500 daN / (G1/8) 2000 daN
- Supplied with protection cap to prevent wrong manipulation

AZOLGAS fit safety systems as standard since 2002.

Differential features from AZOLGAS:
1. Pioneer in safety systems since 2002.
2. Hydrostatic test bunker.

INTERCHANGEABILITY WITH OTHER BRANDS

[illegible][illegible]

www.azolgas.com
service in Monterrey
azolgasmex@azolgas.com
Tel. +34 945290030

AZOL GAS
AG 750

ISO 9001

		(1.1-138) (1.1-152) (1.1-152)		(1.1-138) (1.1-150) (1.1-150)		(1.1-170) (1.1-182) (1.1-182)		(1.1-165) (1.1-175) (1.1-175)	
MODEL	X	X							
	CW 1000 RT 1000	X	CY 750 CP 1000 PD 1000		GH 750 CM 1000 CD 1000		AG 750	CPH 1700 CP 2000	CS 1800

MOUNTING OPTIONS

Drop-in	Top Mount	Base Mount	Foot Mount	Support Mount
HOW TO ORDER 	A14-050 A34-050	B21-050 B31-050 B76-050	C06-050 C20-050	D02-050 D07-050

PROTECTION OPTIONS

Longer life to your gas springs by using protective solutions from harsh working environment, specially designed to minimize the impact of solid or liquid contaminants and extending the useful life of gas springs.

PW Protective Wiper

HOW TO ORDER
 + **PW 025 050**
 + **PW 025 050 050**

PW does not involve any variation of the dimensions of the gas spring. The useful stroke keeps the same as nominal stroke.

Protective Wiper


PC Protective Cover

HOW TO ORDER
 + **PC 025 050 050**
 + **PC 025 050 050**

The body diameter (ØD) increases to the size of (ØPC). PC can be used with mounts B and C, but not with mounts type A and D.




Protective Cover

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azolgas@azolgas.com
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AZOL GAS

AG 750
ISO

	16 mm	25 mm	32 mm	40 mm	50 mm	63 mm	80 mm	100 mm
								
								
								
MODEL	X	X						
	CW 1050 RT 1050			CH 750 TD 750	GA 750 CD 1050	AG 750	CPH 1700 CT 2050	CS 1800
	(1.4-138) (1.4-152) (1.4-152)	(1.4-152) (1.4-160) (1.4-160)	(1.4-152) (1.4-160) (1.4-160)	(1.4-170) (1.4-185) (1.4-185)	(1.4-195) (1.4-195) (1.4-195)	(1.4-195) (1.4-195) (1.4-195)	(1.4-195) (1.4-195) (1.4-195)	(1.4-220) (1.4-220) (1.4-220)


MOUNTING OPTIONS

	Drop-in	Top Mount	Base Mount	Foot Mount	Support Mount
					
HOW TO ORDER		A14-050 A34-050	B21-050 B31-050 B76-050	C06-050 C20-050	D02-050 D67-050

PROTECTION OPTIONS

Longer life to your gas springs by using protective solutions from harsh working environment, specially designed to minimize the impact of solid or liquid contaminants and extending the useful life of gas springs.


PW Protective Wiper



HOW TO ORDER
AG 750 050 + PW 025 050


PW does not involve any variation of the dimensions of the gas spring. The useful stroke keeps the same as nominal stroke.

Protective Wiper



Protective Wiper


PC Protective Cover



HOW TO ORDER
AG 750 050 + PC 025 050 050

The body diameter (ØD) increases to the size of (ØPC). PC can be used with mounts B, C, but not with mounts type A and D.

Protective Cover



Protective Cover

- Automotive Standards

BMW B2 4006	FORD W-DX35-6203	PSA E24.54.815.G
MB B8 3180 220 000 001	GM 90.25.00	RENAULT EM24.54.700
VW 39D 878		NISSAN K32S0

- Standard Committees

- Metric & Inch

ORDER	S		L1 ±0.25		L	
	mm	inch	mm	inch	mm	inch
AG 750 013	13	0.51	121	4.76	108	4.25
AG 750 025	25	0.98	145	5.71	120	4.72
AG 750 038	38	1.50	171	6.73	133	5.24
AG 750 050	50	1.97	195	7.68	145	5.71
AG 750 063	63.5	2.50	222	8.74	158.5	6.24
AG 750 080	80	3.15	255	10.04	175	6.89
AG 750 100	100	3.94	295	11.61	195	7.68
AG 750 125	125	4.92	345	13.58	220	8.66
AG 750 160	160	6.30	415	16.34	255	10.06
AG 750 175	175	6.89	445	17.52	270	10.63
AG 750 200	200	7.87	495	19.49	295	11.61
AG 750 225	225	8.86	545	21.46	320	12.60
AG 750 250	250	9.84	595	23.43	345	13.58
AG 750 300	300	11.81	695	27.36	395	15.55

AZOLGAS gas springs meet automotive standards.
100% gas springs interchangeability: size-stroke-base threads-filling port
and also periferical components: mounts – adapters -hoses.

INTERCHANGEABILITY WITH OTHER BRANDS

AZOL GAS	AZOLGAS	FIBRO	KALLER	HYSON	QUIRI	NAAMS	VDI	PSA	OPEL	FIAT
1010932640250	AG 3000 025	2480.13.03000.025	TU 3000-025 // TUS	NP-3000x25	RG 3000 C25	N033002	VDI	X346 590 026	M16040332	39-673-5302
1010932640380	AG 3000 038	2480.13.03000.038	TU 3000-038 // TUS	NP-3000x38	RG 3000 C38	N033003				39-673-5303
1010932640500	AG 3000 050	2480.13.03000.050	TU 3000-050 // TUS	NP-3000x50	RG 3000 C50	N033005	VDI	X346 590 294	M16040333	39-673-5305
1010932640630	AG 3000 063	2480.13.03000.063	TU 3000-064 // TUS	NP-3000x63	RG 3000 C63			Z000 459 069		39-673-5306
1010932640800	AG 3000 080	2480.13.03000.080	TU 3000-080 // TUS	NP-3000x80	RG 3000 C80	N033008	VDI	X346 590 293	M16040334	39-673-5308
1010932641000	AG 3000 100	2480.13.03000.100	TU 3000-100 // TUS	NP-3000x100	RG 3000 C100	N033010	VDI	X346 590 028	M16040335	39-673-5310
1010932641250	AG 3000 125	2480.13.03000.125	TU 3000-125 // TUS	NP-3000x125	RG 3000 C125	N033012	VDI	X346 590 339	M16040336	39-673-5312
1010932641600	AG 3000 160	2480.13.03000.160	TU 3000-160 // TUS	NP-3000x160	RG 3000 C160	N033016	VDI	X346 590 252	M16040337	39-673-5316
1010932641750	AG 3000 175	2480.13.03000.175	TU 3000-175 // TUS							
1010932642000	AG 3000 200	2480.13.03000.200	TU 3000-200 // TUS	NP-3000x200	RG 3000 C200	N033020				39-673-5320
1010932642250	AG 3000 225	2480.13.03000.225	TU 3000-225 // TUS							
1010932642500	AG 3000 250	2480.13.03000.250	TU 3000-250 // TUS	NP-3000x250	RG 3000 C250					39-673-5325
1010932643000	AG 3000 300	2480.13.03000.300	TU 3000-300 // TUS	NP-3000x300	RG 3000 C300					39-673-5330
1010932720250	AG 5000 025	2480.13.05000.025	TU 5000-025 // TUS	NP-5000x25	RG 5000 C25	N035002	VDI	Z000 410 553	M16040338	39-673-5402
1010932720380	AG 5000 038	2480.13.05000.038	TU 5000-038 // TUS	NP-5000x38	RG 5000 C38	N035003				39-673-5403
1010932720500	AG 5000 050	2480.13.05000.050	TU 5000-050 // TUS	NP-5000x50	RG 5000 C50	N035005	VDI	X346 590 027	M16040339	39-673-5405
1010932720630	AG 5000 063	2480.13.05000.063	TU 5000-064 // TUS	NP-5000x63	RG 5000 C63			Z000 492 150		39-673-5406
1010932720800	AG 5000 080	2480.13.05000.080	TU 5000-080 // TUS	NP-5000x80	RG 5000 C80	N035008	VDI	Z000 492 151	M16040340	39-673-5408
1010932721000	AG 5000 100	2480.13.05000.100	TU 5000-100 // TUS	NP-5000x100	RG 5000 C100	N035010	VDI	Z000 301 877	M16040341	39-673-5410
1010932721250	AG 5000 125	2480.13.05000.125	TU 5000-125 // TUS	NP-5000x125	RG 5000 C125	N035012	VDI	Z000 239 128	M16040342	39-673-5412
1010932721600	AG 5000 160	2480.13.05000.160	TU 5000-160 // TUS	NP-5000x160	RG 5000 C160	N035016	VDI	Z000 134 786	M16040343	39-673-5416
1010932721750	AG 5000 175	2480.13.05000.175	TU 5000-175 // TUS							
1010932722000	AG 5000 200	2480.13.05000.200	TU 5000-200 // TUS	NP-5000x200	RG 5000 C200	N035020		Z000 508 066	M16021983	39-673-5420
1010932722250	AG 5000 225	2480.13.05000.225	TU 5000-225 // TUS							
1010932722500	AG 5000 250	2480.13.05000.250	TU 5000-250 // TUS	NP-5000x250	RG 5000 C250					39-673-5425
1010932723000	AG 5000 300	2480.13.05000.300	TU 5000-300 // TUS	NP-5000x300	RG 5000 C300					39-673-5430

AZOLGAS 100% interchangeable as per dimensions, force, stroke, threads, filling port and peripheral equipment: mounts - adapters - hosed systems.



III. INNOVATION & HOT FORMING

CHALLENGE: harsh working environment



Main concerns from harsh environment:

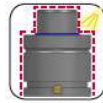
- NO, over-heat from environment.
- ✓ YES, boron steel coating particles (metal sheets).
- ✓ YES, water condensation (quenching process).
- ✓ YES, water leaks (die set parts and hoses).
- ✓ YES, die set cleaning.



On of the main challenges on hot forming applications is dirty working environment. Hot forming die set standard parts become worn easily with short life-time. Root causes are solid dirty particles and rust: PROTECTION must be used.

PROTECTIONS: harsh working environment

HOW TO PROTECT FROM HARSH WORKING ENVIRONMENT:



1. SURFACE TREATMENTS.

Body surface plated + Piston rod Nitrided-Post Oxidation.

Disadvantages:

- Seals become destroyed.
- Higher roughness $R_z > 1$.
- More expensive solution.
- Longer delivery terms.

Advantages:

- Keep the same size.



2. PROTECTIONS.

Different types of protections: wiper / cover.

Disadvantages:

- Cover (PC) increase the size \emptyset .
- Loss of useful stroke.
- Additional part.

Advantages:

- High protection on piston rod (PC).
- Cost effective (cheaper).
- Shorter delivery terms.
- Product versatility (use in cold-hot forming).



PW Wiper PC Cover



**SURFACE TREATMENTS do NOT solve the problem (rod scratches – seals wearing).
Solutions with GOOD BALANCE between life-time / cost-effective / quick delivery.
PROTECTIONS achieve the maximum protection with the minimum cost-timing.**

SOLUTIONS FOR GAS SPRINGS PROTECTION

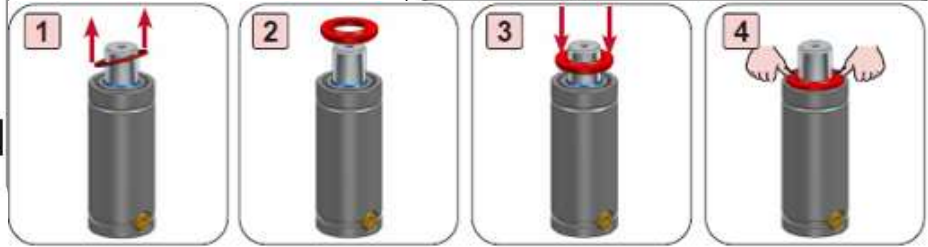
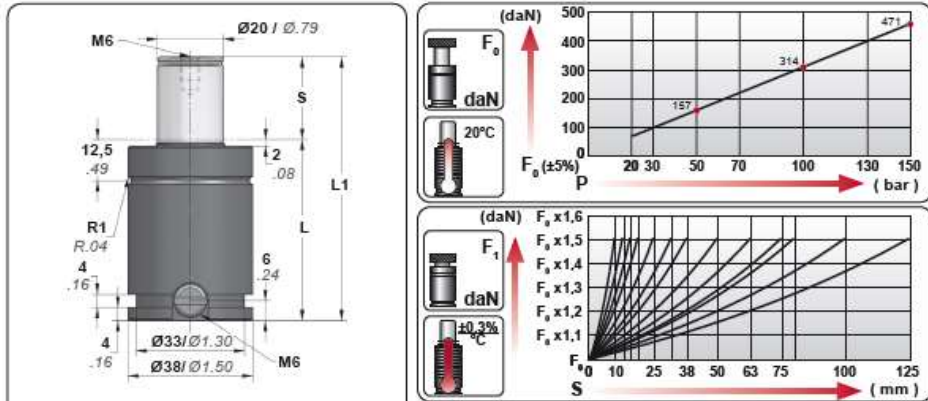
Environment and Solution	Protective Solution	Features
Medium harsh environment PW (Protective Wiper) Most series  		<ul style="list-style-type: none"> ✓ Use in existing applications ✓ Use 100% of nominal stroke ✓ Keep the same size ✓ Mount fitting ✓ Cost effective ✓ Total protection      
High harsh environment PG (Protective Guard) Only small series (body Ø 19 – 25)  		<ul style="list-style-type: none"> ✓ Use in existing applications ✓ Use 100% of nominal stroke ✓ Keep the same size (increase Ø) ✓ Mount fitting ✓ Cost effective ✓ Total protection      
Extreme harsh environment PC (Protective Cover) Series CS-CP and CW (power line)  		<ul style="list-style-type: none"> ✓ Use in existing applications ✓ Use 100% of nominal stroke ✓ Keep the same size (increase Ø) ✓ Mount fitting ✓ Cost effective ✓ Total protection      
Extreme harsh environment PT (Protective Textile) Series CS-CP and ()   <div> <p><u>Solutions for protection</u></p>   <p>Small series (body Ø19-25) Most series</p> </div>		<ul style="list-style-type: none"> ✓ Use in existing applications ✓ Use 100% of nominal stroke ✓ Keep the same size ✓ Mount fitting ✓ Cost effective ✓ Total protection      

LONGER LIFE to your gas springs by using AZOLGAS protective systems.
Differential feature from Azolgas: use without missing nominal stroke.

PROTECTIONS: solution PW WIPER

CW 500 V1

Compact Height



PW Protective Wiper

HOW TO ORDER

CW 500 050 V1 20 38

CW 500 050 V1 + PW 020 038

PW does not involve any variation of the dimensions of the gas spring. The useful stroke keeps the same as nominal stroke.

Protective Wiper

Dimensions: Su, S, ØD

Wiper option (TW)

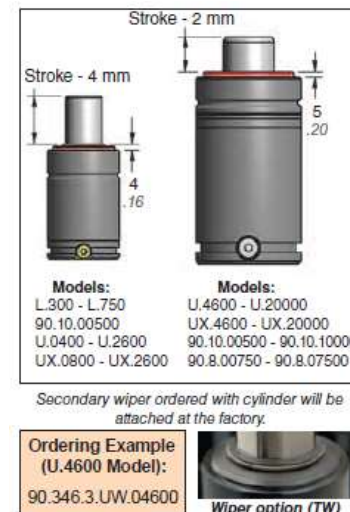


PW protective wiper: (most of series)

- ✓ Temp range: 0-80°C / Material: TPU.
- ✓ Ready to be fitted on standard gas springs.
- ✓ Easy assembling.
- ✓ Possibility of use with all types of mounts.
- ✓ NOT missing nominal stroke.
- ✓ NOT modifying dimensions of gas springs.

DADCO

SPECIAL SPRINGS



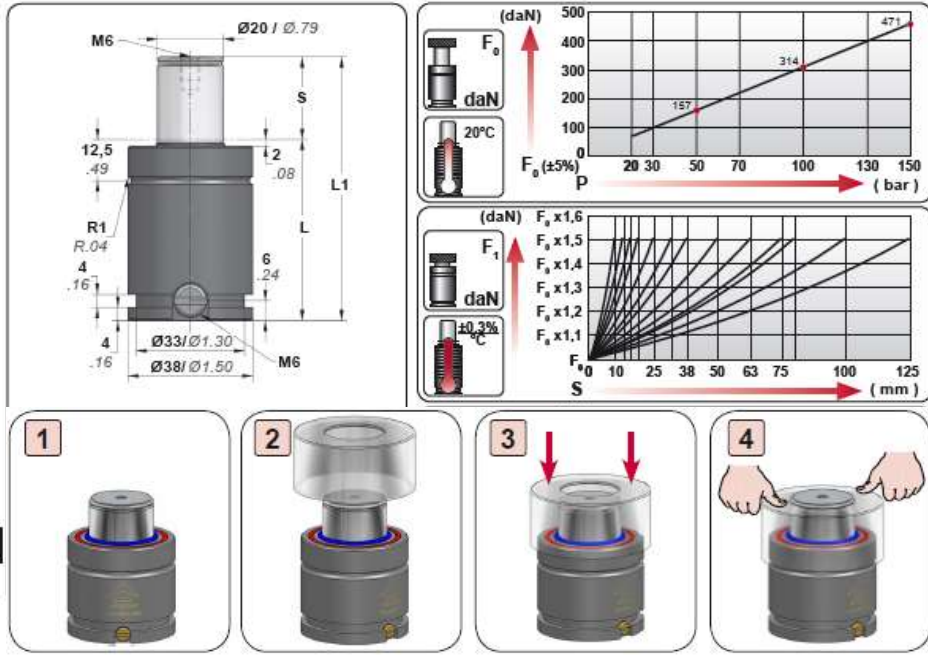
A = Nominal stroke reduction Cu = Nominal Stroke

Gas spring Code	A mm	B mm	Secondary Wiper Code
M 300	2	4	59SW001
RV / RT 350	2	4	59SW002
RV / RT 500	2	4	59SW003
RV / RF / RG / RT 750	2	4	59SW004
RV / RF / RG / RT 1000	2	5	59SW005
RV / RF / RT 1200	2	5	59SW006
RV / RF / RG / RT 1500	2.5	5.5	59SW007
RV / RF / RG / RT 2400	2.5	5.5	59SW008
RV / RG / RT 4200	2.5	5.5	59SW009
RV / RG / RT 6600	2.5	5.5	59SW010
RV / RT 9500	3	6	59SW011
RV 12000	3	6	59SW012
RV 20000	3	6	59SW012
RV 10000	3	6	59SW012

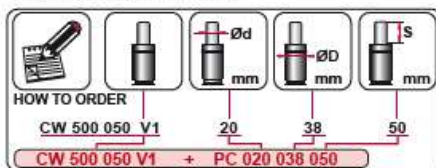
LIMITED PROTECTION: piston rod is NOT protected.
Only intended for low dirty working environment or low cost solution.
AZOLGAS PW differential features vs competitors: Use 100% nominal stroke.

CW 500 V1

Compact Height



PC Protective Cover



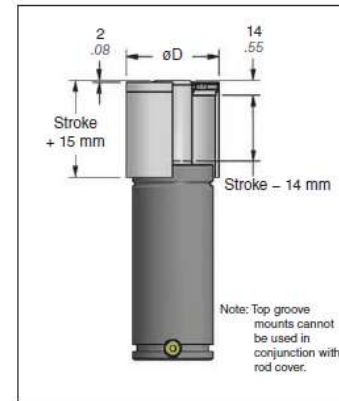
The body diameter ($\varnothing D$) increases to the size of ($\varnothing PC$).
PC can be used with mounts B and C, but not with mounts type A and D.



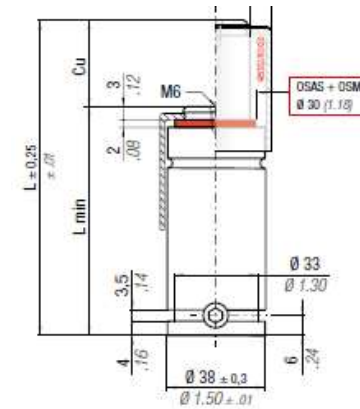
PC protective cover: (series CW – CS)

- ✓ Temp range: 0-80°C / Material: PP-POM.
- ✓ Ready to be fitted on standard gas springs.
- ✓ Short delivery terms.
- ✓ Easy assembling.
- ✓ NOT missing of nominal stroke.
- ✓ Minimum increase of diameter.
- ✓ Cost-effective solution.

DADCO



SPECIAL SPRINGS

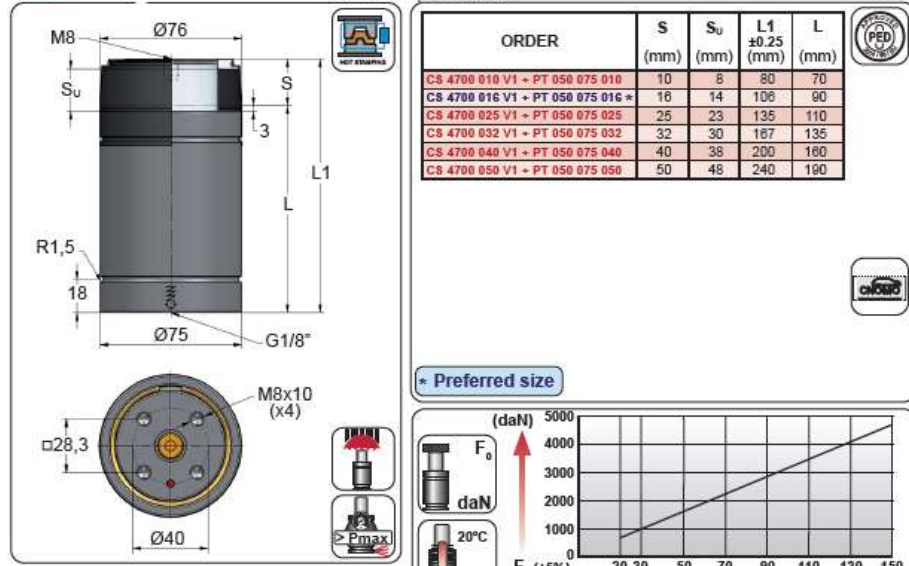


AZOLGAS PC protective cover differential features vs competitors:

- No missing of nominal stroke on CW – CS series
- Ready to be used on standard gas springs

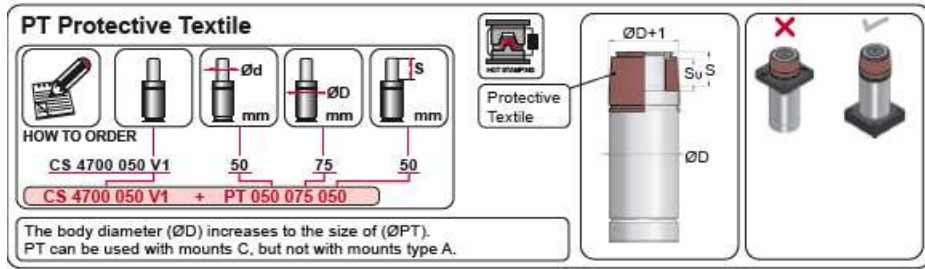
CS 4700 V1 + PT 050 075

Power Compact Stroke



PT protective cover: (series CS - BSF)

- ✓ Temp range: 0-80°C / Material: textile.
- ✓ Ready to be fitted on standard gas springs.
- ✓ Short delivery terms.
- ✓ NOT missing of nominal stroke.
- ✓ NOT increase of size nor Ø.



KALLER-FIBRO

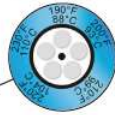


Only intended when there is NO SPACE for PC cover solution: i.e superior mount fixing.
AZOLGAS PT protective textile differential features vs competitors:
not missing of nominal stroke on CW-CS series.

VAM GAS SPRING



1 - THERMOMETER



VAM gas springs equipped with temperature thermometer.
If thermometer shows 3 out of 5 points in black color, the gas spring started becoming overheated

2 - HIGH TEMPERATURE SEALS



VAM gas springs equipped with high temperature seals

3 - LABELLING



VAM gas springs labelled with max. pressure charge

4 - CATALOGUE SPECIFICATION



Examples to clarify how to increase working frequency.

5 - SIMULATOR



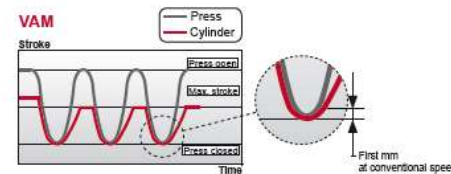
VAM gas springs application to simulate working conditions (pressure-force-temperature)

6 - DIE INFORMATION TAG



Die identification tag to show the maximum charging pressure to the end user when charging from control panel

HOW IT WORKS



NOMINAL FORCE (daN)	CONSTANT (k)	MAXIMUM SLOWED RETURN (t _{max})
300	0.015	t _{max} = k x S _U

EXAMPLE: VAM 300 080 (300 daN)

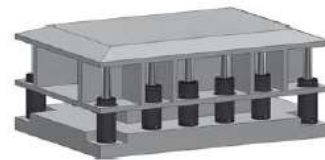
$$t_{max} = k \times S_U = 0.015 \times 80 = 1,2 \text{ seconds}$$

Stroke used (S_U)

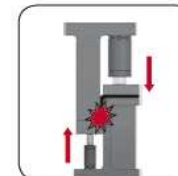
VAM gas spring when return to its initial position, the first mm backs at the same speed as a conventional gas spring and subsequently slowed.

Maximum slowed return stroke is defined to every model depending on used stroke.

APPLICATIONS



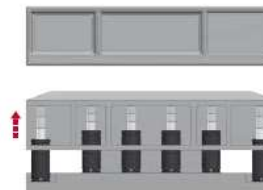
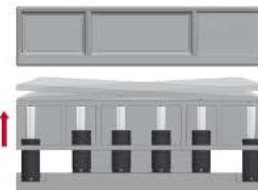
BLANK HOLDER BOUNCE



RAMMER RISE & MATRIX REMOVE

- A) Increasing return speed in high speed presses (e.g. link drive presses) cause blank holder bounce back.
- B) The ejector part starts working when the rammer is still holding it.

CHALLENGE AND SOLUTION



CHALLENGE: Blank holder bounce, difficult part transfer.

SOLUTION: VAM slow return piston rod eliminates blank holder bounce.

VAM slow return gas springs used to prevent blank holder bounce back.

BSF controlled gas springs: technical features

BSF Technical features:

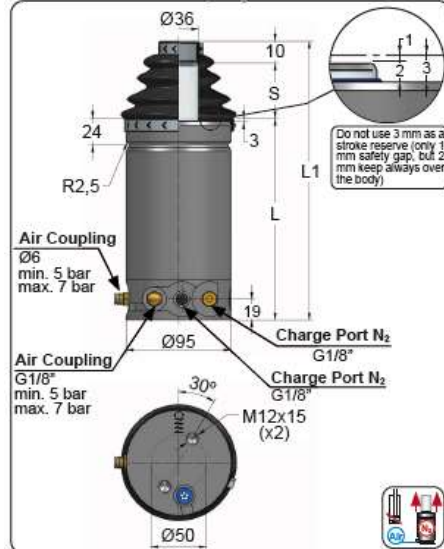


- ✓ Piston rod lock down and release at will.
- ✓ Pneumatic & Gas systems.
- ✓ 100% nominal stroke to be used.
- ✓ Max. bounce back 1mm.
- ✓ Limited working frequency (heating).

**BSF controlled gas springs with piston rod lock down and release at will.
AZOLGAS BSF are 100% equivalent to: Kaller KF2-A, CS2-A Fibro 2489.14.**

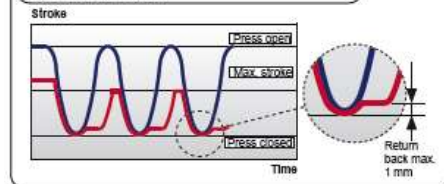
BSF-PB 1500

Speed Controlled Gas Spring



CODE	bar	psi	F ₀ daN	F ₁ daN
BSF-PB 1500 050 050	150	2175	1530	1840

Only if using 100% useful stroke will ensure a maximum bounce back of 1mm. WARNING: should not be used 100% useful stroke, the bounce back will be higher than 1 mm.



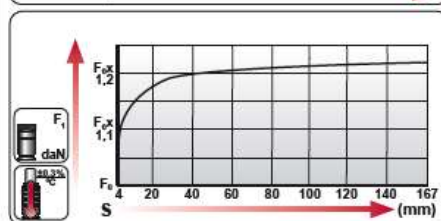
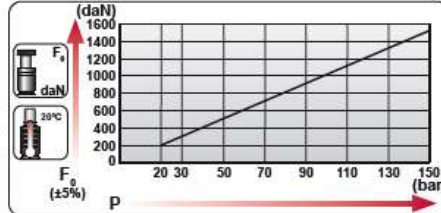
ORDER	NOMINAL STROKE S _N (mm)	USEFUL STROKE S _U (mm)	L1 ±0.25 (mm)	L (mm)
BSF-PB 1500 010 XXX	10	4	17	146
BSF-PB 1500 020 XXX	20	12	27	154
BSF-PB 1500 030 XXX	30	22	37	164
BSF-PB 1500 040 XXX	40	32	47	174
BSF-PB 1500 050 XXX	50	42	57	184
BSF-PB 1500 060 XXX	60	52	67	194
BSF-PB 1500 070 XXX	70	62	77	204
BSF-PB 1500 080 XXX	80	72	87	214
BSF-PB 1500 090 XXX	90	82	97	224
BSF-PB 1500 100 XXX	100	92	107	234
BSF-PB 1500 110 XXX	110	102	117	244
BSF-PB 1500 120 XXX	120	112	127	254
BSF-PB 1500 130 XXX	130	122	137	264
BSF-PB 1500 140 XXX	140	132	147	274
BSF-PB 1500 150 XXX	150	142	157	284
BSF-PB 1500 160 XXX	160	152	167	294

For a given nominal stroke (S_N) (eg 050 mm) it is possible to select a useful stroke (S_U) for example 45 mm within the range (S_U min) 42 mm and (S_U max) 57 mm.

Example: BSF 1500 050 045

The selection of the working stroke within the minimum and maximum range can be done of a millimeter to a millimeter.

Never over-stroke > 100% useful stroke, it would cause damages to the gas spring and serious risks.



PB protective bellow: (series BSF)

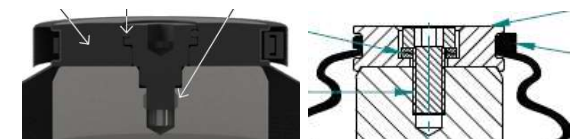
- ✓ Temp range: 0-80°C / Material: neoprene.
- ✓ Short delivery terms.
- ✓ NOT modifying dimensions of gas springs.
- ✓ NOT missing of nominal stroke.
- ✓ NOT increase of size or Ø.

KALLER-FIBRO



Kaller KF2-A + HDP

- 100% stroke must be used.
- HDP increase size in 10mm.
- Higher bounce back.
- Cannot retrofit exiting dies.



KALLER

AZOLGAS

AZOLGAS PB protective bellow differential features vs competitors:

- 100% use of nominal stroke
- keep the same size as standard

BSF controlled gas springs advantages



BSF gas springs vs hydraulics solutions:

- ✓ Hydraulics require specific press functions.
- ✓ Hydraulics cannot be extended to many applications.
- ✓ Hydraulics leaks under pressure are safety hazards.
- ✓ Hydraulic fluid leak can be flammable in hot forming.
- ✓ Hydraulic fluid leak can be an environmental risk.
- ✓ Hydraulics are cheaper.



Azolgas advantages vs Kaller-Hyson-Fibro:

- ✓ Keep same total size of gas spring.
- ✓ Retrofit existing applications with BSF-PB.
- ✓ Azolgas stock policy.
- ✓ Total protection: (longer life-time)



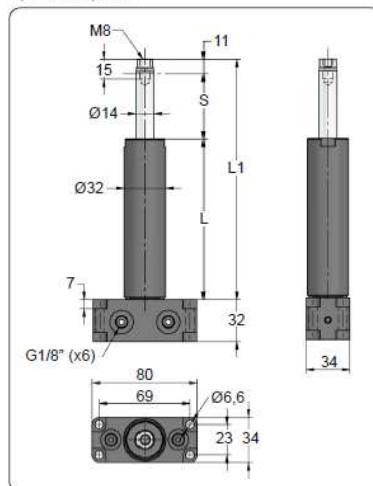
- superior on piston rod

- inferior on pneumatic system

Azolgas BSF differential features:

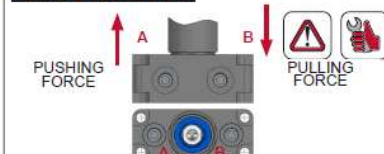
- protection on piston rod
- protection on pneumatic system.

HSCE
Hydraulic Ejector



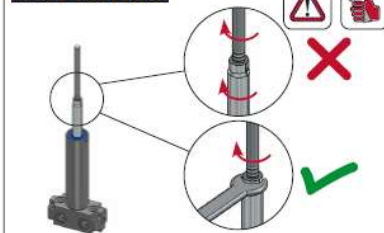
ORDER	S (mm)	L1 ±0.25 (mm)	L (mm)
HSCE 45-45 025	25	133	97
HSCE 45-45 050	50	183	122
HSCE 45-45 075	75	233	147
HSCE 45-45 100	100	283	172
HSCE 45-45 125	125	333	197
HSCE 45-45 150	150	383	222
HSCE 45-45 175	175	433	247
HSCE 45-45 200	200	483	272
HSCE 45-45 250	250	583	322

PERFORMANCE



WARNING: fastening (A) corresponds to pushing force and fastening (B) corresponds to pulling force.

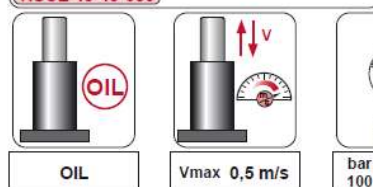
ASSEMBLING



WARNING: when threading ejector rods to the HSCE hydraulic ejector, the HSCE piston rod must be well fastened as shown to prevent its rotation.

Pmax (bar)	Pmax (psi)	Pushing Force (N)	Pulling Force (N)
100	1450	4626	4626

ENG ORDER	DEU BESTELL	FRA COMMANDE	ITA ORDINE	ESP PEDIDO	POR PEDIDO
HSCE 45-45					
HSCE 45-45 050					





A circular pressure gauge icon. The needle points to the 100 mark on the scale. The scale has two units: bar (0 to 100) and psi (0 to 1450). The needle is positioned at the 100 bar mark, which corresponds to 1450 psi.

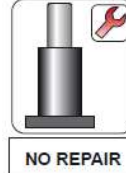
Pmax
(20°C)

bar psi

100 1450

°C	°F	°C	°F
0	32	80	176

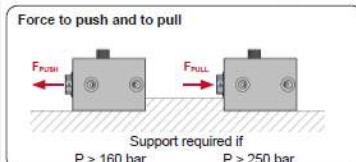
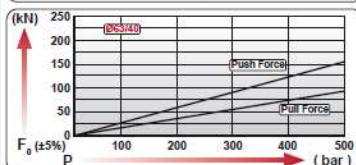
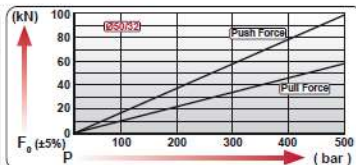
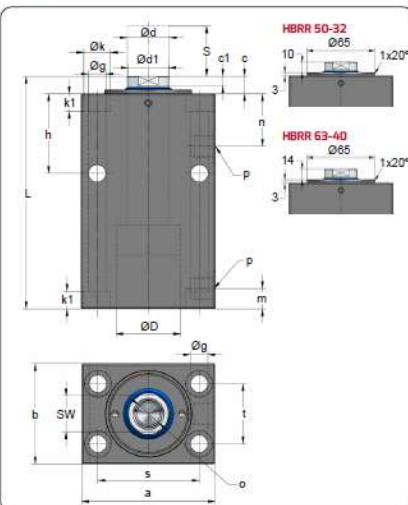


Azolgas advantages:

- ✓ HSE standard size.
- ✓ HSCE compact size.
- ✓ 100% equivalent Rexroth.
- ✓ Anti-ejection device.
- ✓ Non-rotating device.
- ✓ PERMANENT STOCK.

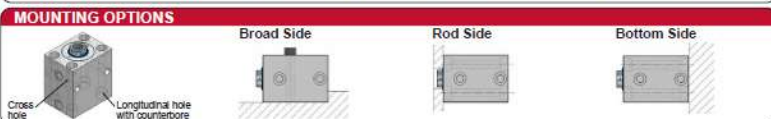
AZOL GAS	AZOL GAS	REXROTH	REXROTH
101C454640250	HSCE 15-30 025	CYL1MFX/25/14/25 D10	
101C454640500	HSCE 15-30 050	CYL1MFX/25/14/50 D10	
101C454640750	HSCE 15-30 075	CYL1MFX/25/14/75 D10	
101C454641000	HSCE 15-30 100	CYL1MFX/25/14/100 D10	
101C454641250	HSCE 15-30 125	CYL1MFX/25/14/125 D10	
101C454641500	HSCE 15-30 150	CYL1MFX/25/14/150 D10	
101C454641750	HSCE 15-30 175	CYL1MFX/25/14/175 D10	
101C454642000	HSCE 15-30 200	CYL1MFX/25/14/200 D10	
101C454642250	HSCE 15-30 225	CYL1MFX/25/14/225 D10	
101C454642500	HSCE 15-30 250	CYL1MFX/25/14/250 D10	
101F854640250	HSCE 45-45 025	6000/MFX/25/14/25/X	530E/MFX/25/14/25/X
101F854640500	HSCE 45-45 050	6000/MFX/25/14/50/X	530E/MFX/25/14/50/X
101F854640750	HSCE 45-45 075	6000/MFX/25/14/75/X	530E/MFX/25/14/75/X
101F854641000	HSCE 45-45 100	6000/MFX/25/14/100/X	530E/MFX/25/14/100/X
101F854641250	HSCE 45-45 125	6000/MFX/25/14/125/X	530E/MFX/25/14/125/X
101F854641500	HSCE 45-45 150	6000/MFX/25/14/150/X	530E/MFX/25/14/150/X
101F854641750	HSCE 45-45 175	6000/MFX/25/14/175/X	530E/MFX/25/14/175/X
101F854642000	HSCE 45-45 200	6000/MFX/25/14/200/X	530E/MFX/25/14/200/X
101F854642250	HSCE 45-45 225	6000/MFX/25/14/225/X	530E/MFX/25/14/225/X
101F854642500	HSCE 45-45 250	6000/MFX/25/14/250/X	530E/MFX/25/14/250/X

AZOLGAS hydraulic ejectors for hot forming applications.
Differential feature from Azolgas: safety devices and permanent STOCK.



ORDER	ØD	Ød	S	L	a	b	c	Ød1xc1	Øg	h	Øk	k1	n	m	o	p	s	t	SW
HBRR 50-32 050	50	32	50	152	100	75	10	31x8,2	13	62	20	13	42	15	M20x35	G3/8"	76	45	27
HBRR 50-32 100	50	32	100	202	100	75	10	31x8,2	13	62	20	13	42	15	M20x35	G3/8"	76	45	27
HBRR 50-32 160	50	32	160	262	100	75	10	31x8,2	13	62	20	13	42	15	M20x35	G3/8"	76	45	27
HBRR 63-40 100	63	40	100	220	125	95	14	38,7x10,2	17	75	26	17	51	18	M27x39	G1/2"	95	65	36

ORDER	ØD	Ød	S	Push Force (100 bar) [kN]	Push Force (500 bar) [kN]	Pull Force (100 bar) [kN]	Pull Force (500 bar) [kN]	Oil Vol. to extend [cm³]	Oil Vol. to retract [cm³]	Kg
HBRR 50-32 050	50	32	50	19,5	98,5	11,6	57,9	98,15	58	6,73
HBRR 50-32 100	50	32	100	19,5	98,5	11,6	57,9	196,30	116	9,00
HBRR 50-32 160	50	32	160	19,5	98,5	11,6	57,9	314,08	185,6	11,74
HBRR 63-40 100	63	40	100	31,2	156,0	18,6	93,0	311,70	186	15,12



TECHNICAL DATA		HOW TO ORDER	
Fluid Hydraulic OIL HLP 46	Pmax 500 bar 7252 psi	HBRR 50	32
Vmax 0,5 m/s	Tmin Tmax 0 °C 100 °C 32 °F 212 °F	50	50

DESCRIPTION

Hydraulic block cylinders are widely used on industrial applications where a high force and small dimensions are required.

HBR hydraulic block cylinders tolerate heavy loads on metal stamping and mould injection applications such as punching, bending, deburring.

Featured with double-acting function, HBR cylinders guarantee safety, high performance and repeatable functionality.

HBR cylinders are equipped with wipers to reduce the effects of harsh working environment.

Piston rod guide rings minimize the impact of side loads and ensure longer life performance.

MAIN FEATURES

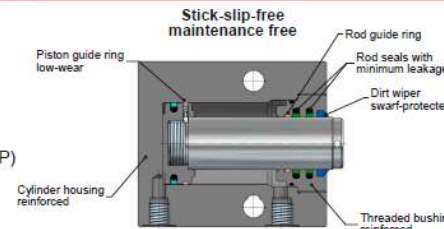
Type:	Hydraulic Block Cylinders (HBRS Standard / HBRR Reinforced)
Function:	Double acting
Max. Operating pressure:	500 bar
Fixing holes:	4x longitudinal fixing holes + 2x cross fixing holes

TECHNICAL CHARACTERISTICS

Piston rod material:
- Casehardening Steel

Cylinder body material:
- High-alloy Steel

Seals material:
- NBR/PU (-30°C + 100°C with HLP)



OPERATING INSTRUCTIONS

On HBR hydraulic block cylinders use only the specified hydraulic oil.

If cylinders are fixed by screws across the cylinder axis, support is required when (p > 160 bar pushing force and p > 250 bar pulling force).

In punching operations, due to heavy side loads, it is necessary to reduce the maximum operating pressure up to 250 bar.

Strokes can be limited by using distance washers.

Safety warnings:

- High forces from hydraulic cylinders must be absorbed by the tool
- Tool manufacturer must prevent potential risk of injuries by providing effective protection devices



Azolgas features:

- ✓ Double acting force:
 - Pushing force
 - Pulling force
- ✓ Tolerate heavy loads.
- ✓ High-force in small-size.
- ✓ HBRS standard.
- ✓ HBRR reinforced.
- ✓ 100% to Rohemheld.

AZOLGAS hydraulic ejectors for hot forming applications.
Differential feature from Azolgas: safety devices and permanent STOCK.

Challenge:

Monitoring gas springs:

- Pressure
- Temperature

Target:

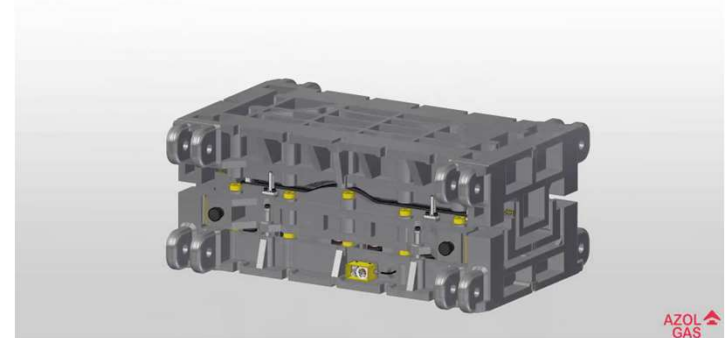
- ✓ Early detection-prediction of pressure drops.
- ✓ Achieve a higher efficiency in production.

Advantages:

- Reduce premature failure in gas springs
- Prevent damage of die set parts
- Avoid scrap of defective metal parts
- Minimize stop in Production
- Discard uncertainty variables
- Improve efficiency in production
- Know data just in time
- Automate response actions
- Increase productivity



INDUSTRY 4.0: pressure & temperature sensor



CHALLENGE: Increase productivity in a harsh working environment.
SOLUTION: SMART 4.0 gas springs.

MONITORING: CHALLENGES & FEATURES

- ✓ Pressure range 0-600 bar.
- ✓ Temperature range -10 to +125°C.
- ✓ No additional space in the Tool casting needed.
- ✓ Possibility to retrofit existing Tools with New Sensorized Gas Spring.
- ✓ 100% interchangeable with Standard Gas Springs.
- ✓ Gas Spring Filling Port not blocked (easy filling-draining).
- ✓ Sensorized Gas Spring with sensor integrated into its body.
- ✓ Sensor easy to removed-replaced-installed.
- ✓ Wireless Data Transmission (from Tool to Press control).
- ✓ Protected from harsh working environment (IP67).



CHALLENGES: size – accuracy – protection - cost.
FEATURES: SMART 4.0 self-contained gas springs.



HOT FORMING MAIN REFERENCES

MAIN AZOLGAS CUSTOMERS IN HOT STAMPING

BENTELER



MAGNA

CLN
GROUP

PM
POLMOTORS

SHIN YOUNG

STELLANTIS

PSA
GROUPE

FCA
Fiat Chrysler Automobiles

Gestamp

KIRCHHOFF
GROUP

Mubea

u.form

RENAULT NISSAN

屹豐集團
YIFENG GROUP

**15 years of EXPERIENCE in main Hot Forming TIER-1 worldwide.
Protective systems used for Hot Forming applications.**

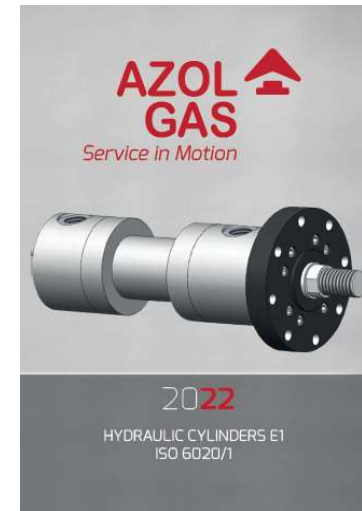
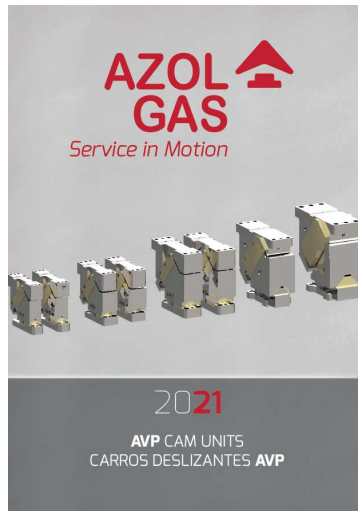
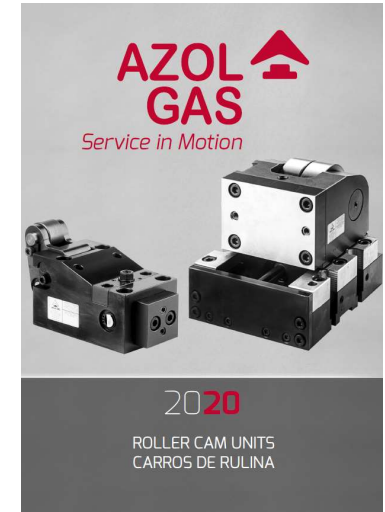
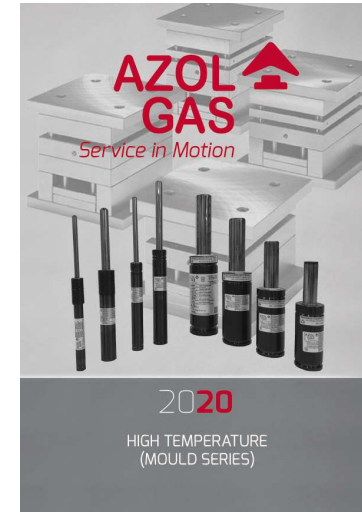
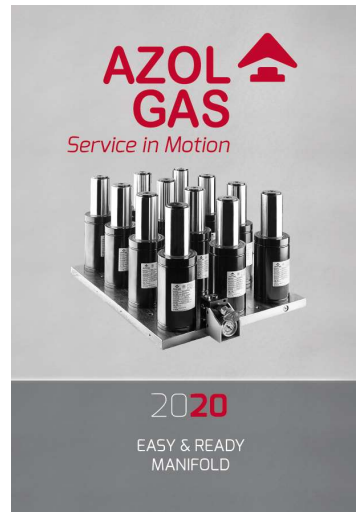
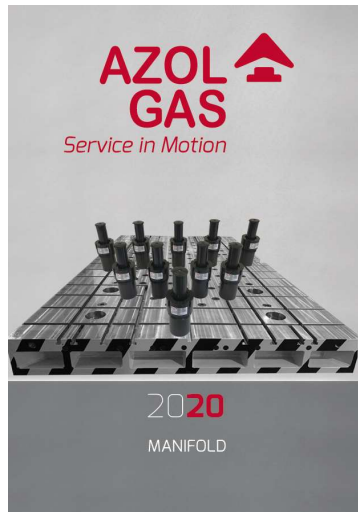


IV. MULTI-TECHNOLOGY IN METAL FORMING

IV. Multi-Technology in metal forming

AZOLGAS: MUCH MORE THAN GAS SPRINGS

- Slow return gas springs
- Controlled gas springs
- Flange strippers
- Stock lifters
- Manifold
- ER-Manifold
- Scrap removers
- Wedge cams
- Roller Cams
- Cam units
- Hydraulic cams
- Hydraulic cylinders



Multitechnology for stamping: manifold, controlled gas springs, flange strippers, stock lifters, roller cams, cam units, hydraulic cylinders.

GAS SPRINGS

**AZOL
GAS**



HIGH FREQUENCY HF

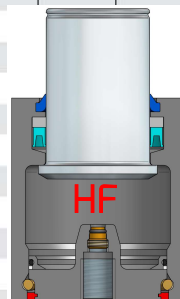
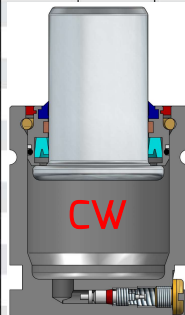
- The shortest height size gas springs
- Most powerful per diameter
- Medium range contact force (300-5000 daN)
- Ideal for high frequency applications









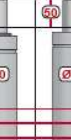









**AZOL
GAS**



HF HIGH FREQUENCY-FORCE

MODEL	F ₀ daN lb	Ø mm inch	S mm inch	L1 mm inch	Pmax bar psi	Charge Port		
HF 300	300 674	Ø25 Ø0.98	5 - 125 0.20 - 4.92	40 - 280 1.57 - 11.02	170 2466	M6	X	✓
HF 500	500 1124	Ø32 Ø1.26	5 - 125 0.20 - 4.92	40 - 280 1.57 - 11.02	160 2321	M6	X	✓
HF 750	750 1686	Ø38 Ø1.50	5 - 125 0.20 - 4.92	40 - 280 1.57 - 11.02	160 2321	M8	X	✓
HF 1500	1500 3372	Ø50 Ø1.97	5 - 125 0.20 - 4.92	45 - 285 1.77 - 11.22	212 3075	M10	X	✓
HF 3000	3000 6744	Ø75 Ø2.95	5 - 125 0.20 - 4.92	50 - 295 1.97 - 11.61	190 2755	M12	X	✓
HF 5000	5000 11240	Ø95 Ø3.74	5 - 125 0.20 - 4.92	60 - 300 2.36 - 11.81	180 2610	M12	X	✓



 S mm	 Ø mm	 L1 mm							
			Ø50 L1=135	Ø50 L1=138 L1=148 L1=152	Ø50 L1=138 L1=150 L1=150	Ø50 L1=170 L1=185 L1=195	Ø50 L1=195	Ø50 L1=165 L1=175	Ø50 L1=220
MODEL	X		HF 1500	CW 1000 CWC 1000 KZ/KT 1000	CT 1000 CK 1000 FD 750	GN 750 CM 1000 CD 1000	AG 750	CPH 1700 CP 2000	CS 1800
SERIES	MINI	HIGH FREQUENCY FORCE		COMPACT HEIGHT	LOW PROFILE	HEAVY DUTY	ISO	HEAVY LOAD	POWER SHORT STROKE
									

TECHNICAL FEATURES

- ✓ Smallest compact size.
- ✓ 50% higher force vs CW.
- ✓ High pressure up 212 bar.
- ✓ Piston Rod:
 - Hardness HV 1000
 - Material 41CrAlMo7-10
- ✓ No locking ring used
(> tolerance to side-loads).

CUSTOMER'S APPLICATIONS

- Compact size tools.
- High frequency tools.
- 50-100 strokes/minute.
- Electronics
- Home appliances
(Bordignon SMLX series)

**Home appliances (Arcelik/BSH/Electrolux/LG/Liebherr/Mabe/Miele/Samsung/Whirlpool).
High Frequency HF gas springs (shortest size – most powerful – highest frequencies).
100% interchangeable to BORDIGNON series SMLX.**

GAS SPRINGS

**AZOL
GAS**



HIGH TEMPERATURE HT

- Suit higher temperatures up to 120°C
- Ideal for plastic mould injection
- Replacing coil springs
- Greater force in a more compact size
- Extended life and cost-effective solution
- VDI-safety devices included

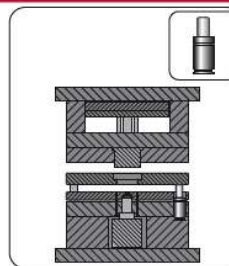
**AZOL
GAS**



CW-HT HIGH TEMPERATURE

HT SERIES

- To be used in the injection and ejector unit.
- Same functions as a latch lock.
- Higher reproductibility and productivity.
- Lower tools repair.
- Cost-effective solution, saving costs.



TECHNICAL FEATURES

MODEL	F ₀ daN lb	Ø mm inch	S mm inch	L ₁ mm inch	Pmax bar psi	Charge Port		
CW-HT 300 V1	300 674	Ø32 1.26	10 - 125 0.39 - 4.92	50 - 280 1.97 - 11.02	115-150 1668-2175	M6	✓	✓
CW-HT 500 V1	500 1124	Ø38 1.50	10 - 125 0.39 - 4.92	50 - 280 1.97 - 11.02	115-150 1668-2175	M6	✓	✓
CW-HT 750 V1	750 1686	Ø45 1.77	10 - 125 0.39 - 4.92	52 - 292 2.05 - 11.10	115-150 1668-2175	M6	✓	✓
CW-HT 1000 V2	1000 2248	Ø50 1.97	10 - 125 0.39 - 4.92	58 - 288 2.28 - 11.34	115-150 1668-2175	M6	✓	✓

Max. working temperature interval °C	Max strokes per minute spm	Max. charge pressure at 20°C bar psi	Spring temperature °C	Initial force							
				CW-HT 300 V1		CW-HT 500 V1		CW-HT 750 V1		CW-HT 1000 V2	
0 - 80	20	150	80	363	816	568	1277	887	1994	1113	2502
0 - 176	20	2175	68	300	674	470	1057	740	1664	920	2068
80 - 100	15	125	100	320	719	500	1124	781	1756	980	2203
176 - 212	10	1813	68	251	564	393	883	614	1380	770	1731
100 - 120	10	115	120	248	559	485	1090	757	1702	950	2136
212 - 249	10	1668	68	231	519	361	812	565	1270	708	1592

Compact size gas springs with a wide range of forces and strokes for applications where temperature will exceed the standard operating temperature.

HT gas spring series are linkable in a hosed systems and also repairable.

HT gas spring forces and maximum stroke frequencies depending on the working operating temperature.

© Azolgas 2022

TECHNICAL FEATURES

- ✓ Compact size = CW series.
- ✓ Large strokes up 125mm.
- ✓ High temp. Seals 120°C.
- ✓ Customized (AG-CR 750 125-250)

Piston rod Chrome-plated

CUSTOMER'S APPLICATIONS

- Mould injection.
- Ejector unit.
- Lifting movements.
- Replacing coil springs.

Next developments:

- Gas strippers type EF



**Plastic MOULD injection field.
High temperature CW-HT gas springs to replace coil springs.**

GAS SPRINGS



MANIFOLD (SERIES Z)

- High initial force in a limited space
- Lower compression rate
- Hose-free system
- Higher performance and lifetime
- High precision and complex tooling
- High efficiency and low maintenance



MANIFOLD

ADVANTAGES OF MANIFOLD SYSTEMS

AZOLGAS manifold systems are suitable for tools demanding:

- High initial **force** in limited space
- High **performance** and lifetime
- High **precision** and complex tooling
- High **efficiency** and low maintenance

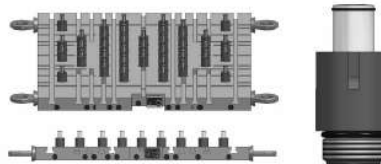
Feature

- Consistent force
- Lower pressure rise
- Higher forces in less space
- Lower compression rate
- Balanced force
- Hose-free system
- Easy adjustable force
- Distribution of pressure points

Advantage

for long-term performance to improve metal part forming for a cost-effective die construction to reduce press wearing to increase productivity to minimize leaking points to reduce maintenance timing for press versatility

ZP / ZR / ZB / ZC / ZF



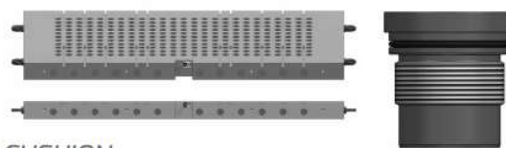
MANIFOLD

ZH



MANIFOLD HIGH FORCE

ZT



MANIFOLD DIE CUSHION

TECHNICAL FEATURES

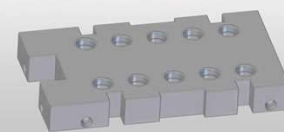
- ✓ Higher force.
- ✓ Low compression rate.
- ✓ Balanced force.
- ✓ Hose-free (direct threaded).
- ✓ Long-life.

CUSTOMER'S APPLICATIONS

- Complex tooling.
- Low end force request.

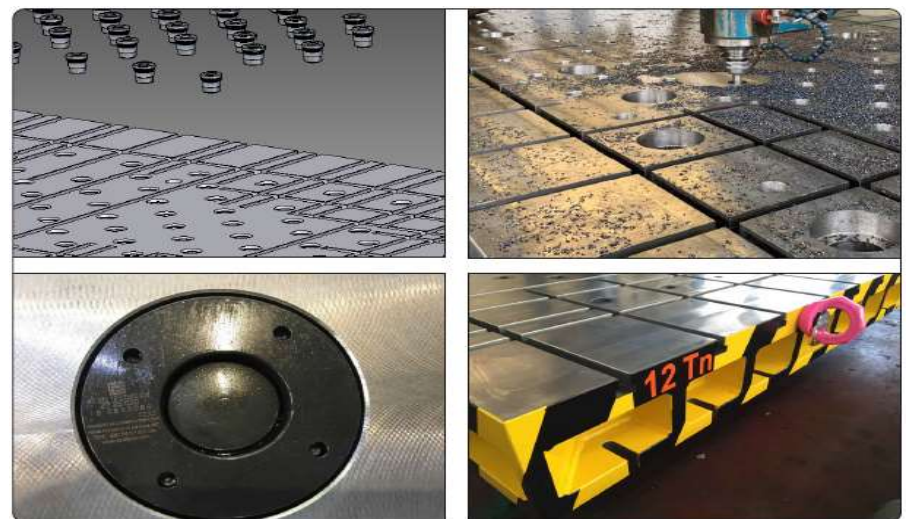
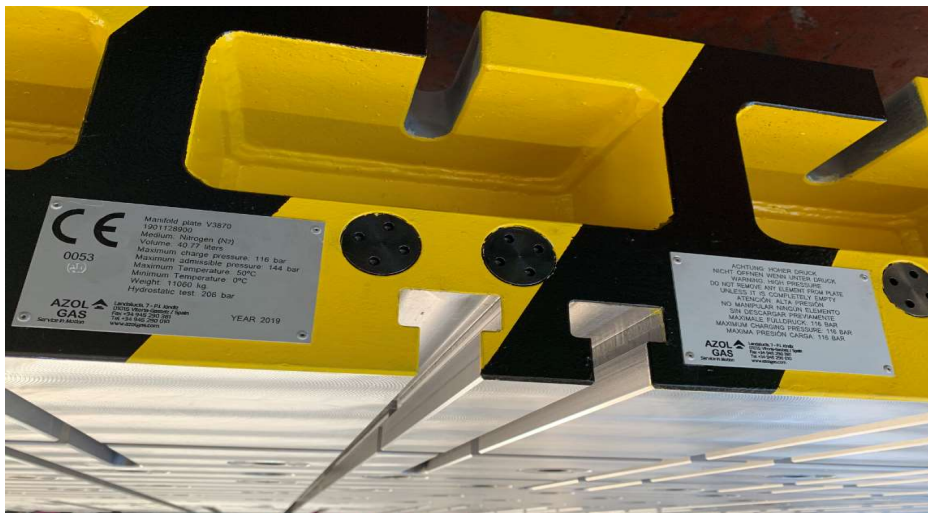
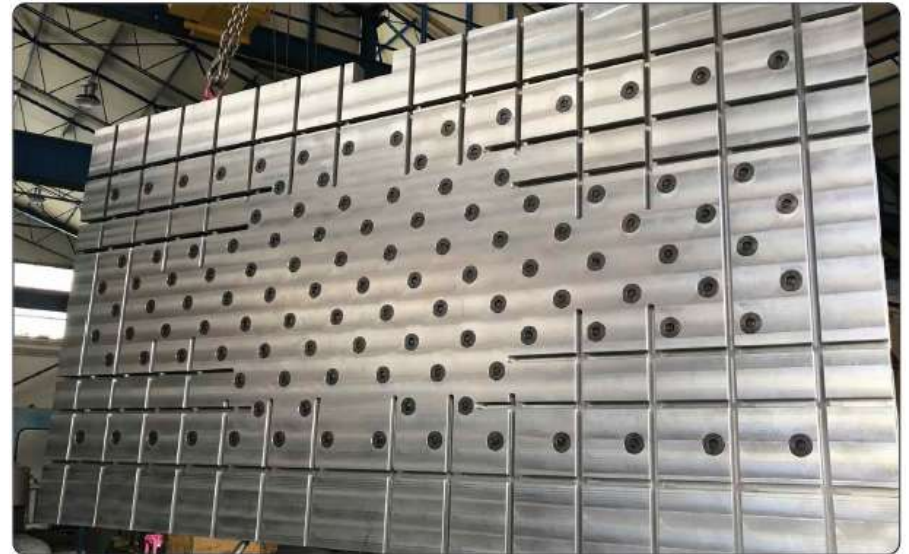
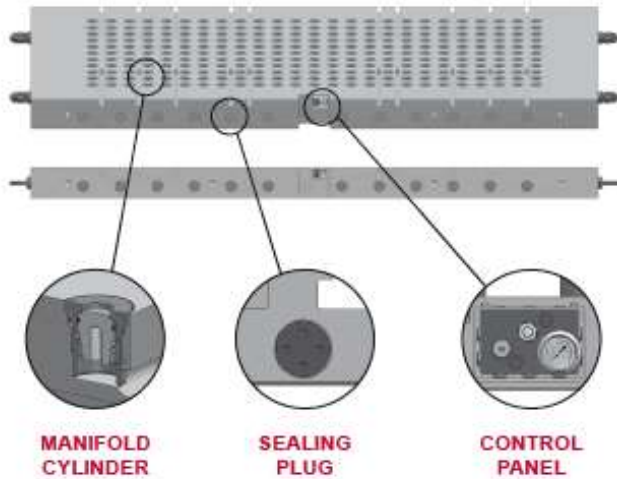


Manifold: lower pressure



**Manifold for high precision complex tooling.
Low compression rate, balanced force and hose-free system.**

MANIFOLD PLATES AS PRESS DIE CUSHIONS



MANIFOLD as alternative to PRESS DIE CUSHIONS.

Size 4600x2500x250.

25 years of experience on key accounts (16 plates and 2.700 manifold installed).

GAS SPRINGS



**AZOL
GAS**

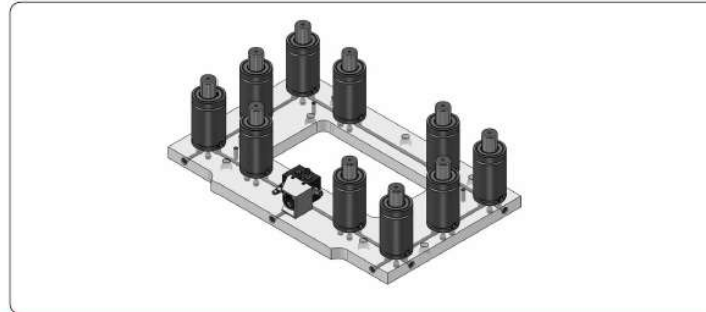


EASY & READY MANIFOLD (-ER)

- Consistent force and reduced pressure increase
- More compact: higher force in less space
- More simple: hose-free die design
- Quicker delivery and easier installation
- Cost effective alternative to manifold
- Leak-free tested and ready to be installed

**AZOL
GAS**

EASY & READY MANIFOLD



TECHNICAL DATA

- All benefits of self-contained gas springs into a linked system.
- Gas springs mounted to a customer specified plate.
- Valveless gas springs fixed by screws on a low thickness plate.
- Bottom port gas springs attached to the plate with sealing washers.
- Connecting holes are drilled within the plate (uniform pressure).
- Filling, draining and monitoring from control panel.

ADVANTAGES

- Conforms VW 39D 22100 Standards.
- Cost effective alternative to manifold.
- More compact: higher force in less space.
- More simple: hose-free die design.
- Easier installation and maintenance.
- Quicker delivery.
- Possibility to keep consistent force and reduce pressure increase.
- Leak-free tested and ready to be installed.

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TECHNICAL FEATURES

- ✓ Compact size.
- ✓ Low compression rate.
- ✓ Balanced force.
- ✓ Hose-free (direct threaded).
- ✓ Long-life.
- ✓ Types of gas springs: (AG – CD – KZ – CW – CS)

CUSTOMER'S APPLICATIONS

- Compact size tools.
- Hose-free request.

EASY & READY MANIFOLD as alternative to hosed systems in a compact size tooling.

Customers automotive (OPEL).

Customers home appliances (Electrolux / Teka) .

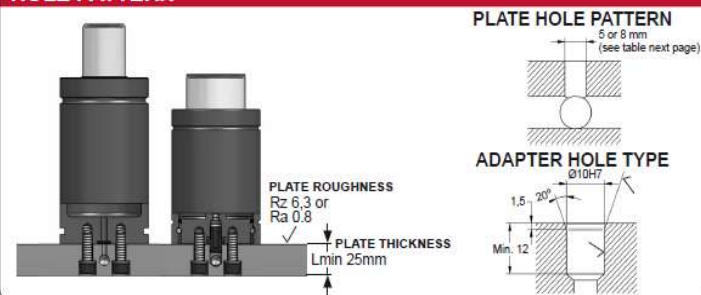
EASY & READY MANIFOLD

-ER MANIFOLD PLATE

- Avoid blind holes.
- Align gas springs as much as possible.
- Use existing port to mount control panel.
- Avoid interference between cylinder fixing holes and gas ports.

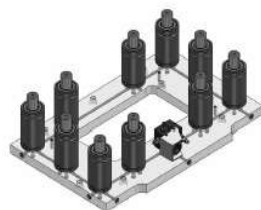
Design guidelines recommended to achieve the best performing solution and the most efficient machining.

HOLE PATTERN



-ER MANIFOLD PLATE TECHNICAL DATA

Pressure Medium:	N2
Min charging pressure:	20 bar / 290 psi
Max charging pressure:	150 bar / 2175 psi
Operating temperature:	0 - 80 °C / 32 - 176 °F
Plate thickness:	Min. 25 mm / 0,98"
Plate wall thickness:	Min. 2,5 mm / 0,098"
Plate fasteners:	Metric High grade bolts
Plate edges:	Burned out
Plate drilled holes:	5 mm / 8 mm



When quoting -ER manifold plate, please provide with CAD files and detailed plate information.



-ER GAS SPRINGS

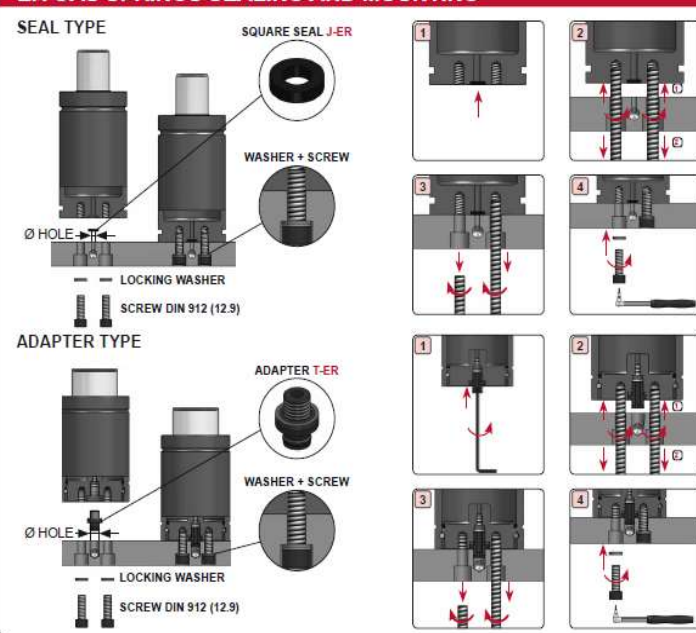
MODEL	THREAD	Ø HOLE	SEAL / ADAPTER	TORQUE (Nm)
AG-ER 1500	M8	8	J-ER-9	38
AG-ER 3000	M8	8	J-ER-9	38
AG-ER 5000	M10	8	J-ER-9	75
AG-ER 7500	M10	8	J-ER-9	75
AG-ER 10000	M12	8	J-ER-9	128
CD-ER 1500 V2	M8	5	J-ER-6	38
CD-ER 2000	M8	8	J-ER-9	38
CD-ER 4200	M8	8	J-ER-9	38
CD-ER 6600	M10	8	J-ER-9	75
CD-ER 9600	M10	8	J-ER-9	75
CD-ER 18500	M12	8	J-ER-9	128
KZ-ER 1500 V1	M8	5	J-ER-6	38
KZ-ER 2400	M8	8	J-ER-9	38
KZ-ER 4200	M8	8	J-ER-9	38
KZ-ER 6600	M10	8	J-ER-9	75

Recommended gas springs to be used in ER manifold plates, other gas springs under request.
-ER gas springs are supplied with the corresponding seal J-ER / adapter T-ER

EASY & READY MANIFOLD

MODEL	THREAD	Ø HOLE	SEAL / ADAPTER	TORQUE (Nm)
CW-ER 1500 V1	M8	5	J-ER-6	38
CW-ER 2400 V1	M8	8	J-ER-9	38
CW-ER 4200 V1	M8	8	J-ER-9	38
CW-ER 6600	M10	8	J-ER-9	75
CW-ER 9500	M10	8	J-ER-9	75
CW-ER 11800	M10	8	J-ER-9	75
CW-ER 20000	M12	8	J-ER-9	128
CS-ER 1800 V1	M8	10	T-ER	15
CS-ER 3000 V2	M8	10	T-ER	38
CS-ER 4700 V1	M8	10	T-ER	38
CS-ER 7500 V1	M8	10	T-ER	38
CS-ER 11800 V1	M10	10	T-ER	75
CS-ER 18300 V1	M10	10	T-ER	75

-ER GAS SPRINGS SEALING AND MOUNTING



HIGH VALUE OFFER:

Azolgas Project Management
Including:

- ✓ Engineering.
- ✓ Design.
- ✓ Manufacturing.
- ✓ Leak-free inspection test.
- ✓ Conformity PED.
- ✓ Delivery ready to install.

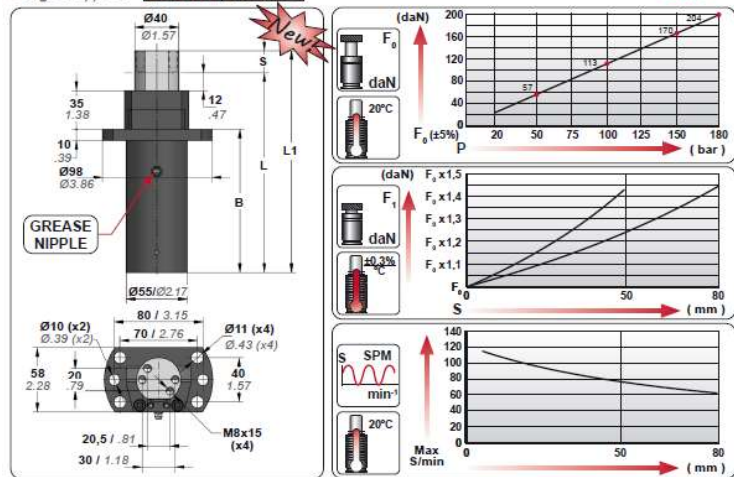
AZOLGAS EASY & READY MANIFOLD:
whole Project Management from engineering to ready for installed.

IV. Multi-Technology in metal forming

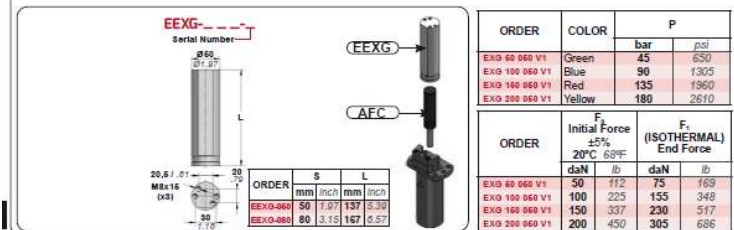
FLANGE STRIPPERS

420 www.azolgas.com Service in Motion azolgas@azolgas.com Tel. +34 945290010

EXG V1
Flange Strippers



ORDER	S		L1 ±0.25		L		B		GAS SPRING		
	mm	inch	mm	inch	mm	inch	mm	inch		Kg.	lb
EXG ... 050 V1	50	1.97	200	7.87	150	5.91	103	4.06	AFC ... 050	2.53	5.58
EXG ... 080 V1	80	3.15	260	10.24	180	7.09	133	5.24	AFC ... 080	3.09	6.81



TECHNICAL DATA									
	Fluid	N ₂			Pmin 20°C / 68°F	Pmax 180 bar 2610 psi		Gas Spring	AFC _ _ _ 050
	Smax	< 90%		Tmin Tmax	0 °C 32 °F	80 °C 176 °F		Cap	X
	Vmax	1,6 m/s		Force variation by temperature	±0,3% / °C			Rod	EEEXG _ _ _

Flange strippers used
AZOLGAS EXG flange

PSA PEUGEOT CITROËN

PSA PEUGEOT - CITROËN

Normes Biens d'Equipement

E24.57.420.G

ICS : 25.120.10

**OUTILLAGES DE PRESSE
EXTRACTEURS DE PIÈCES
MISE EN OEUVRE**

Sans restriction d'utilisation

Page 1/19

Cette norme est publiée par le service normalisation PSA (DRD/DAPF/RHN/NCF).
Pour toute question, contactez-nous à l'adresse suivante : normespsa@mps.com.
Cette norme est disponible dans l'intranet [NORMES](#) et sur le [portail B2B](#).
En cas de litige, seule la version française de la présente norme fait foi.

AVANT-PROPOS

A la date de publication du présent document, il n'existe pas de norme française, européenne ou internationale traitant du même objet.

Toutes les cotes données dans le document sont exprimées en millimètres (mm).

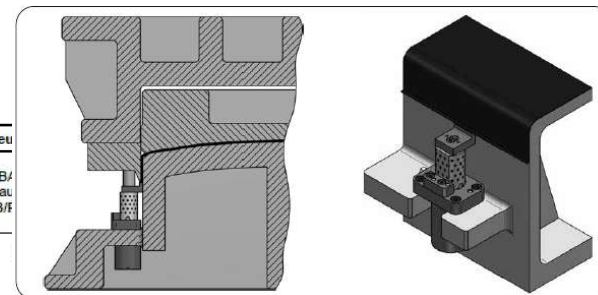
Les modifications apportées par rapport au précédent indice de la norme sont signalées par un trait bleu épais dans la marge.

Norme E24 existante en version numérisée 3D Catia V5
Norm E24 existing in digitized version 3D Catia V5



Rédacteur(s)		Vérificateur(s)		Approuvé	
Patrick HERVIOU DRD/DCHM/CEMB/RSTM/GSTD		Voir liste des intervenants		Christophe B/ RT du réseau DRD/DCHM/CEMB/f	
Date	Signature	Date	Signature	Date	
11/03/2015	-	11/03/2015	-	11/03/2015	

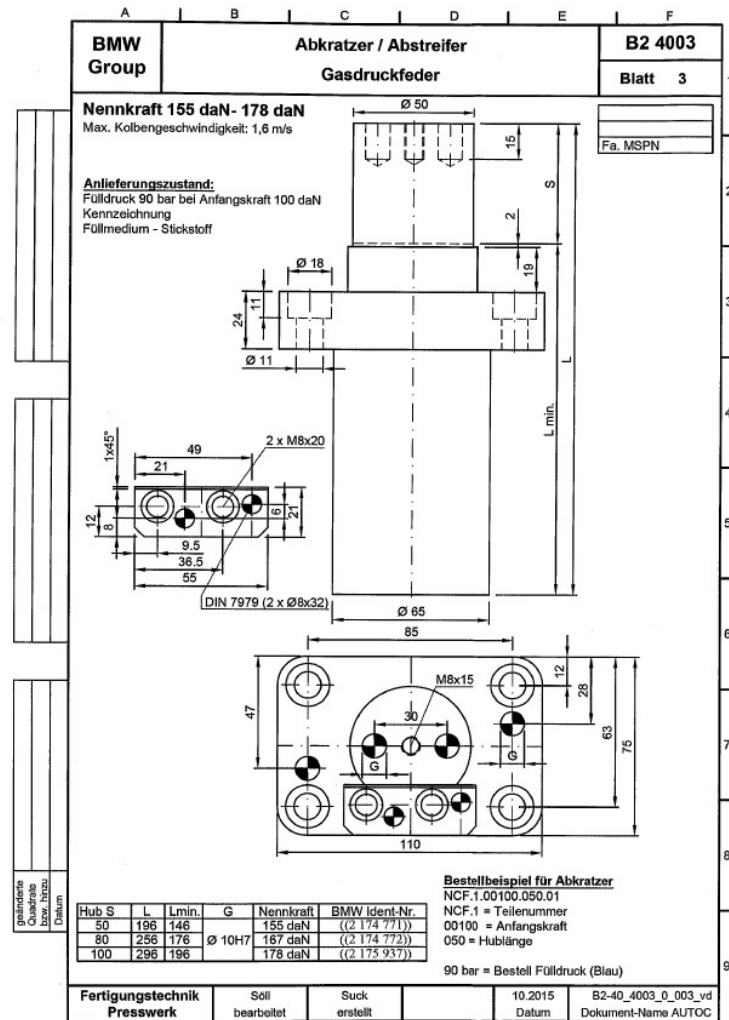
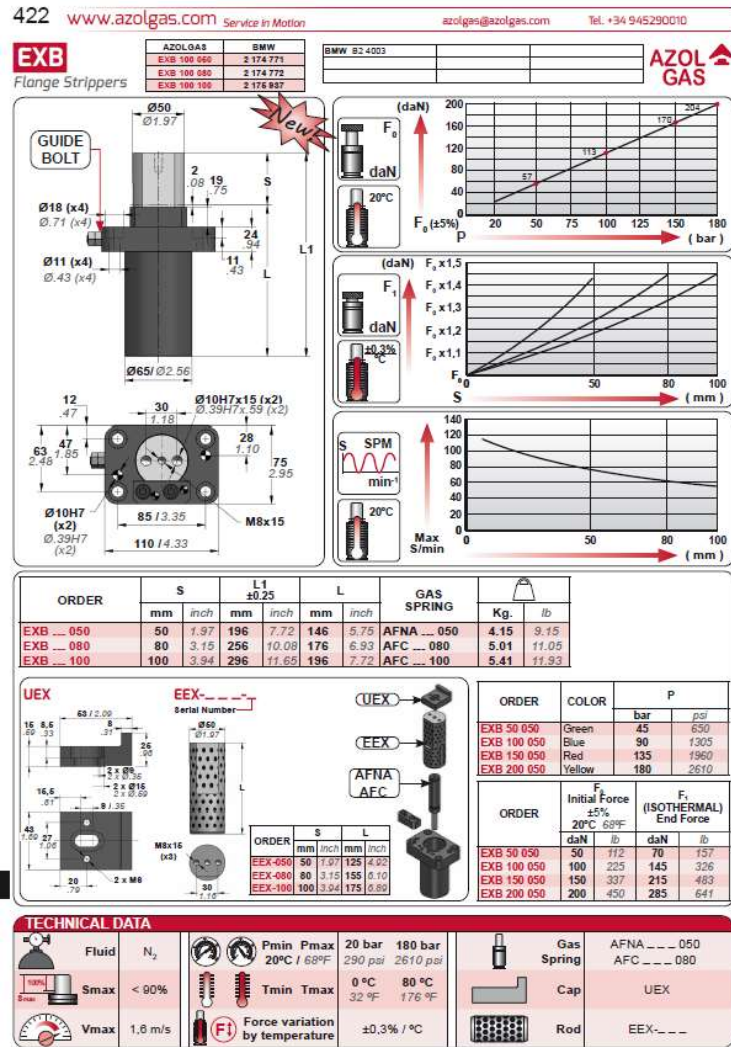
OR : 01/04/1998 E : 31/03/2015 Réseau de compétence : 24A USAGE INTERNE (C1)



Flange strippers used for stripping parts on flanging dies operations.
AZOLGAS EXG flange stripper meets PSA Standards E24.57.420.G.

IV. Multi-Technology in metal forming

FLANGE STRIPPERS



Flange strippers used for stripping parts on flanging dies operations.
AZOLGAS EXG flange stripper meets BMW Standards B2 4003.

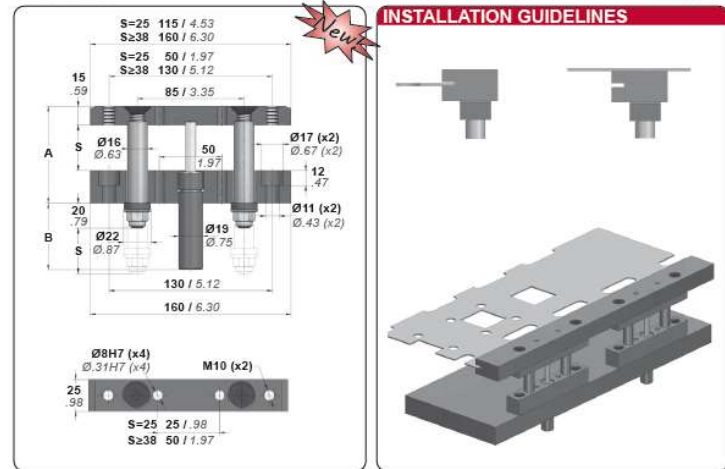
IV. Multi-Technology in metal forming

DUAL POST LIFTERS

428 www.azolgas.com Service in Motion azolgas@azolgas.com Tel. +34 945290010

LPG 90

Guided Lifters



ORDER	S	A	B	F _i Initial Force	F _e (ROTHERMAL) End Force	GAS SPRING	Kg.	lb
LPG 90 025	23	0.91	64	2.52	40	1.57	1.36	3.00
LPG 90 038	36	1.42	77	3.03	53	2.09	1.42	3.13
LPG 90 050	48	1.89	89	3.50	65	2.56	1.47	3.24
LPG 90 063	61.5	2.42	102.5	4.04	81.5	3.21	1.53	3.37
LPG 90 080	78	3.07	119	4.69	98	3.86	1.60	3.53
LPG 90 100	98	3.86	139	5.47	118	4.65	1.69	3.73
LPG 90 125	123	4.84	164	6.46	143	5.63	1.80	3.97
LPG 90 150	148	5.83	189	7.44	168	6.61	1.91	4.21

Ram Velocity	Attachment Mass
mm/s	g
300	12
400	16
500	20
600	24
700	28
800	31

TECHNICAL DATA	Fluid	N ₂	Pmin	Pmax	20 bar	180 bar	Charging Adapter	06 CG 2-Q
			20°C / 68°F	20°C / 68°F	290 psi	2610 psi		
			Tmin	Tmax	0 °C	80 °C		
			32 °F	176 °F				
			Force variation by temperature		±0,3% / °C			

TECHNICAL FEATURES

LPG nitrogen Guided Stock Lifters

- are recommended to progressive dies
- for lifting and work holding applications.
- ✓ Thin size simplify design / tooling space.
- ✓ Maintenance-free guide bushings.
- ✓ Smooth stroke return reduce bounce.
- ✓ Easy to be installed, maintenance replacement and adjustable force.



Dual Post Lifters are used in progressive stamping dies for lifting and work holding operations.
AZOLGAS LPG dual post lifters are 100% equivalent to DADCO SL2 / KALLER DPL.

ROLLER CAMS



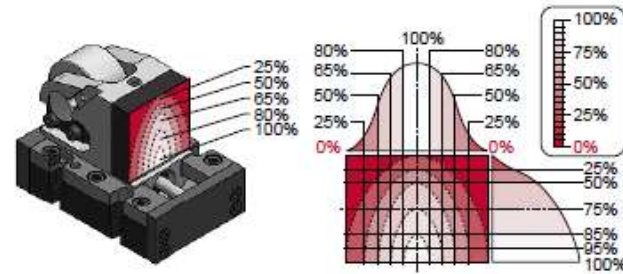
	FORCE (Tn)	03	05	07	15	16	20	Pag.
		STROKES						
01	ACX	50 80 100	50 80 100		50 80 100		50 80 100	1 - 18
02	FCX			50 80	50 80 100			19 - 32
03	JCX			50 80	50 80 100	50 80 100		33 - 48

PUNCHING UNITS



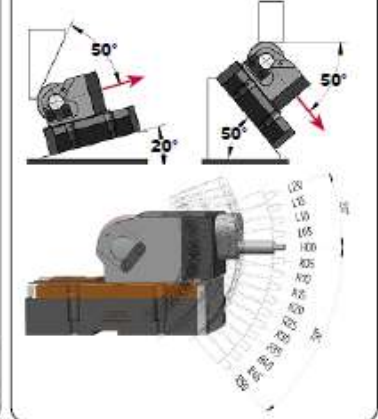
	FORCE (Tn)	03	05	07	10	Pag.
		STROKES				
04	NXR	20	30	40	50	49 - 60
05	NXS	20	30	40	50	61 - 72
06	NXC	20	30	40	50	73 - 84
07	NXD	20	30	40	50	85 - 96

MAXIMUM WORKING FORCE



It is recommended to use punching force as much centered as possible on the surface of the cam slider working area to prevent irregular wearing of components and enlarge life expectancy.

MAXIMUM WORKING ANGLES



Azolgas Roller Cams advantages:

- ✓ High precision
- ✓ Superior performance longevity
- ✓ Wide variety of drivers
- ✓ Safety positive return
- ✓ Equipped with gas springs
- ✓ Easy maintenance

**AZOL
GAS**
Service in Motion



2020

ROLLER CAM UNITS
CARROS DE RULINA

**Differential features from AZOLGAS Roller Cams:
High precision guiding allows more OFF-CENTER FORCES.**



Capabilities

Human Ressources

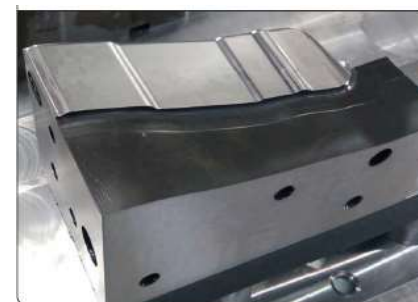
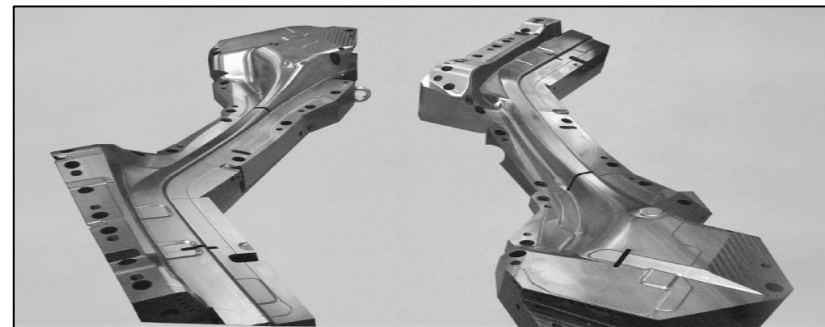
ITM has a qualified and experienced human team in machining technology, and its own Engineering Department that supports the Group, with a proven **innovative profile** in permanent collaboration with prestigious Technological Centers.

Technological Ressources

Integrated ERP and CAD-CAM enable optimal scheduling and production planning.

The productive capabilities provides ITM with the appropriate **agility and flexibility** to satisfy your needs.

MACHINE	BRAND	MODEL	FEATURES
TURNING 1	MORI SEKI	SL-250	Travel 500mm Swing 360mm Bar Feeder
TURNING 2	MORI SEKI	SL-250	Travel 1000mm Swing 360mm
MACHINING CENTRE1	MORI SEKI	SV-500	Travel: X 800mm Y 500mm Z 650mm 4 axis head (NIKKEN)
MACHINING CENTRE2	MORI SEKI	GV-503 5-EIES	5 axis Travel: X 610mm Y 765mm Z 460mm Rotary table 500x500
MACHINING CENTRE3	AXA	VHC2-2360 XTS	5 axes Travel: X 2360mm Y 600mm Z 850mm
TURNING CENTRE 1	DMG	GMX 400	11 axes Swing 500mm Travel 1930mm
TANGENTIAL GRINDING MACHINE	GER	S100/60-CNC	5 axis head (SPRISIN) Travel: X 3800mm Y 500mm Z 800mm
MILLING CENTRE	ZAYER	3000 BF3	Travel: X 2360mm Y 600mm Z 850mm
MILLING MACHINE	LAGUN		3 axes Travel: X 2600mm Y 960mm Z 960mm



Complete offer of CNC machining precision parts for hot stamping die sets:

- Turning
- Milling
- Flat and cylindrical grinding
- 3D control
- Part finishing treatments

- ✓ 3D measurement report
- ✓ Sealing plugs
- ✓ Hydrostatic test

ITM machining centre is an experienced supplier of hot stamping die set parts, for new hot stamping die sets and also spare parts replacements.



Country	Production Plant	City	Plant State/Province	Source Plant	Manufacturer	Production Brand	Platform	Program	Production Nameplate	SOP (Start of Production)	EOP (End of Production)	Global Nameplate	Global Production Segment	Bodytype
Romania	Pitesti-Colibasi	Mioveni	Arges County	Pitesti-Colibasi	Renault-Nissan-Mitsubishi	Dacia	CMF-B	RJI	Lodgy	2022-03	2030-06	Lodgy	C-Segment	SUV
Romania	Craiova	Craiova	Dolj County	Craiova	Ford	Ford	B2E	V769	Transit Courier	2023-07	2030-06	Transit Courier	B-Segment	Van
Romania	Pitesti-Colibasi	Mioveni	Arges County	Pitesti-Colibasi	Renault-Nissan-Mitsubishi	Dacia	CMF-B	HJP	Duster	2024-04	2031-06	Duster	C-Segment	SUV

Country/Territory	Production Plant	Plant State/Province	Production Brand	Platform	Program	Production Nameplate	SOP (Start of Production)	EOP (End of Production)
Morocco	Tangier	Tanger-Tetouan-AI Hoceima	Dacia	CMF-B	BJI	Sandero	2020-09	2028-12
Morocco	Casablanca	Casablanca-Settat	Dacia	CMF-B	BJI	Sandero	2021-02	2029-03
Morocco	Tangier	Tanger-Tetouan-AI Hoceima	Dacia	B0	B52	Sandero	2013-01	2020-12
Morocco	Casablanca	Casablanca-Settat	Dacia	B0	B52	Sandero	2013-01	2022-02
Morocco	Tangier	Tanger-Tetouan-AI Hoceima	Dacia	B0	J92	Lodgy	2012-01	2022-03
Morocco	Casablanca	Casablanca-Settat	Dacia	CMF-B	LJI	Logan	2021-10	2029-12
Morocco	Casablanca	Casablanca-Settat	Dacia	B0	X52	Logan	2012-11	2022-03
Morocco	Tangier	Tanger-Tetouan-AI Hoceima	Dacia	B0	X52	Logan	2017-10	2020-07
Morocco	Tangier	Tanger-Tetouan-AI Hoceima	Dacia	B0	K67	Dokker	2012-03	2021-08
Morocco	Tangier	Tanger-Tetouan-AI Hoceima	Dacia	B0	K67	Dokker	2012-03	2021-08
Morocco	Tangier	Tanger-Tetouan-AI Hoceima	Dacia	B0	K67	Dokker	2012-03	2021-08
Morocco	Tangier	Tanger-Tetouan-AI Hoceima	Dacia	B0	K67	Dokker	2012-03	2021-08

**Azolgas GLOBAL TRACK on OEM projects,
closed to stamping plants worldwide.**

EM24.54.700

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3.2 Choices of gas springs

3.2.1 Ruggedness criterion of the rod and anti-eject safety rod

Rule 1 : Air springs must imperatively have a stem which the abutment of retention device in the body is assured as long as the internal gas at spring is under pressure.

Rule 2 : The stems in 2 screwed parts or retention devices only by half shrouds are excluded.

3.2.2 Body ruggedness criterion

Rule 1 : Single block body or welded-assembled springs are mandatory.

Any welding must be certified by a proof test according to the procedure defined by the 'Service des mines' organization.

Rule 2 : Bodies in 2 screwed parts are banned.



3.2.3 Speed criterion

The production or backup press being set at maximum rate, the maximum displacement speed of the spring is 1.3 m/s.

For the press TGPR and some press with big speed, we integrate gas springs said about type "RGV" (Spring Big Speed) specially conceived for very fast movements.

These equipments allow a reliability in the time on Speeds of going rod 2m / and great cadences of functioning of the order of 25cp / mm until 40cp / mm.

Warning see Service bill N 07-009: for criteria of use and condition of mounting. (This note is available with the writer of this standard).

3.2.4 Sealing durability criterion

200 km minimum including rod to and fro

Example: 2 Million cycles for a stroke = 50 mm

1 Million cycles for a stroke = 100 mm

3.3 Fitting gas springs

No machining is accepted on the springs.

All springs must be fitted except micro-springs.

The spring fitting must not be fitted by the rod.

No element must be fastened at the end of the rod

The gas springs fastened using 1/2 flanges or flanges MUST be tightened using self-locking washers (see standard EM24.55.300).

In a tool, we recommend selecting springs of the same brand for the same use.

For gas springs compliant with standards ISO 11901-1 and ISO 11901-2, combining spring brands is tolerated during a repair.

Ensure accessibility of springs for easy removal/refitting.

Information plates must be fitted on the front of the press of each tool fitted with springs (see paragraphs 6.2 and 6.3).

Fit a supporting plate in treated steel (see paragraph 8.1) for supporting the spring rod.

Use fastening and linking elements of the same brand as the spring concerned.

We recommend to avoid linking more than 20 gas springs per filling unit.

Micro spring

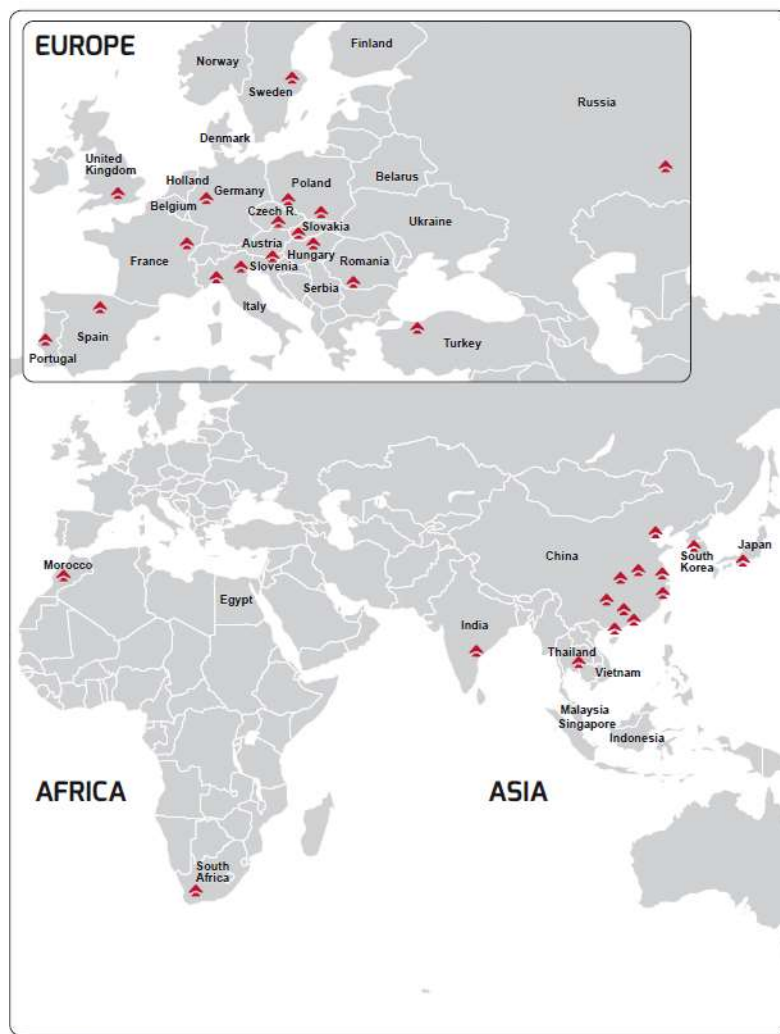
Gas micro springs must be fastened using 1/2 flanges. Holes tapered at the bottom of the spring are eliminated, which allows the implementation of the air venting system in case of overstroke.

3.4 Traceability and marking

Springs are engraved with a reference # specific to each supplier, manufacturing date, max pressure, type of spring and its stroke.

AZOL GAS	AZOLGAS	PSA	FIAT	OPEL	OPEL-GM	200 KMS SERVICE INTERVAL (STROKES)
1010932540130	AG 1500 013					2.000.000
1010932540250	AG 1500 025	X346 590 295	39-673-5202	M16040326	90.25.00-15-25	2.000.000
1010932540380	AG 1500 038		39-673-5203			2.000.000
1010932540500	AG 1500 050	X346 590 041	39-673-5205	M16040327	90.25.00-15-50	2.000.000
1010932540630	AG 1500 063	Z000 296 562	39-673-5206			1.574.803
1010932540800	AG 1500 080	X346 590 042	39-673-5208	M16040328	90.25.00-15-80	1.250.000
1010932541000	AG 1500 100	X346 590 031	39-673-5210	M16040329	90.25.00-15-100	1.000.000
1010932541250	AG 1500 125	X346 590 030	39-673-5212	M16040330	90.25.00-15-125	800.000
1010932541600	AG 1500 160	X346 590 029	39-673-5216	M16040331	90.25.00-15-160	625.000
1010932541750	AG 1500 175					571.428
1010932542000	AG 1500 200		39-673-5220		90.25.00-15-200	500.000
1010932542250	AG 1500 225					444.444
1010932542500	AG 1500 250		39-673-5225		90.25.00-15-250	400.000
1010932543000	AG 1500 300		39-673-5230		90.25.00-15-300	333.333
1010932640250	AG 3000 025	X346 590 026	39-673-5302	M16040332	90.25.00-30-25	2.000.000
1010932640380	AG 3000 038		39-673-5303			2.000.000
1010932640500	AG 3000 050	X346 590 294	39-673-5305	M16040333	90.25.00-30-50	2.000.000
1010932640630	AG 3000 063	Z000 459 069	39-673-5306			1.574.803
1010932640800	AG 3000 080	X346 590 293	39-673-5308	M16040334	90.25.00-30-80	1.250.000
1010932641000	AG 3000 100	X346 590 028	39-673-5310	M16040335	90.25.00-30-100	1.000.000
1010932641250	AG 3000 125	X346 590 339	39-673-5312	M16040336	90.25.00-30-125	800.000
1010932641600	AG 3000 160	X346 590 252	39-673-5316	M16040337	90.25.00-30-160	625.000
1010932641750	AG 3000 175					571.428
1010932642000	AG 3000 200		39-673-5320		90.25.00-30-200	500.000
1010932642250	AG 3000 225					444.444
1010932642500	AG 3000 250		39-673-5325		90.25.00-30-250	400.000
1010932643000	AG 3000 300		39-673-5330		90.25.00-30-300	333.333

Azolgas GLOBAL GUARANTEE
according to AUTOMOTIVE STANDARDS.



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**Azolgas GLOBAL distribution network in 30 countries,
closed to stamping plants worldwide.**

WHY AZOLGAS?

- Proven **reliability**, over meet requirements of globally active OEMs.
- **Competitive Product**, Corporate pricing and cost-effective technology.
- Innovative **Safety** in Gas springs, comply with VDI 3003 & PED 2014/68/EU.
- **Widest portfolio** of gas springs and **Lightweighting** metal stamping solutions.
- **10 years** of sucessfull experience in harsh working environments (**Hot Forming**).
- **Long-term cooperation** with largest TIER-1 by global network and local partners.
- The only available alternative 100% interchangeable to Fibro-Kaller controlled gas springs.
- European Engineering and Manufacturing tailored **Multi-technology**: gas-hydraulics-pneumatics.

We kindly ask you to consider AZOLGAS as a partner and to give us a chance to demonstrate you our product and service performance.

THANKS SO MUCH!!



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