

# What kind of stamping challenge you can get solved by AZOLGAS?



**SAFETY**



**TEMPERATURE**



**PROTECTION**



**GUIDING**



**SPEED  
CONTROL**



**HOT STAMPING**



**AZOLGAS**

Global customer's service

## SOLUTIONS FOR SPECIAL OR EXTREME APPLICATIONS





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# CHALLENGES AND SOLUTIONS

## 1 PROTECTION

Solutions for gas springs working in harsh environment (liquid or solid particles and corrosion).



### CHALLENGES

### SOLUTIONS

- |   |              |
|---|--------------|
| 1.1. Solid or liquid particles. _____   | <b>PS</b>    |
| 1.2. Solid or liquid particles. _____   | <b>PW</b>    |
| 1.3. Solid or liquid particles. _____   | <b>PV</b>    |
| 1.4. Solid or liquid particles + piston rod surface damage. _____             | <b>PC</b>    |
| 1.5. Solid or liquid particles + corrosion. _____                             | <b>PQ</b>    |
| 1.6. Solid or liquid particles + piston rod surface damage + corrosion. _____ | <b>PC-PQ</b> |

## 2 GUIDING

Solutions for gas springs in sideload or non perpendicular applications.



### CHALLENGES

### SOLUTIONS

- |  |              |
|--|--------------|
| 2.1. Deviations from perpendicularity up to 1°. _____                          | <b>FR</b>    |
| 2.2. Sideloads up to 1 mm. _____   | <b>FS</b>    |
| 2.3. Deviations from perpendicularity up to 3° and sideloads up to 5 mm. _____ | <b>FP</b>    |
| 2.4. Spring plungers with deviation from perpendicularity up to 15°. _____     | <b>FMBHR</b> |

## 3 SAFETY

Safety systems for gas springs and connected systems.



### CHALLENGES

### SOLUTIONS

- |  |                 |
|--|-----------------|
| 3.1. Safety in design and manufacturing.                 |                 |
| 3.2. Over-speed safety device (> <b>Vmax</b> ). _____    | <b>SV</b>       |
| 3.3. Over-pressure safety device (> <b>Pmax</b> ). _____ | <b>SP</b>       |
| 3.4. Over-stroke safety device (> <b>Smax</b> ). _____   | <b>SS</b>       |
| 3.5. Safety in connected systems _____                   | <b>SD / SPS</b> |

# CHALLENGES AND SOLUTIONS



## 4 TEMPERATURE

Solutions for gas springs in high temperature applications.



### CHALLENGES

### SOLUTIONS

4.1. Temperature > 80° C (**Refrigeration**). \_\_\_\_\_ **TR**

## 5 SPEED CONTROL

Solutions for slow return or speed controlled gas springs.



### CHALLENGES

### SOLUTIONS

- 5.1. Slow return gas spring. \_\_\_\_\_ **VAM**
- 5.2. Tool separation gas spring. \_\_\_\_\_ **VMD**
- 5.3. Speed controlled gas spring. \_\_\_\_\_ **BSG**
- 5.4. Speed controlled gas spring without passive. \_\_\_\_\_ **BSR**

## 6 HOT STAMPING

Solutions for hot stamping applications.



- 6.1. Hydraulic ejector (**HSE**).
- 6.2. Heaters & Thermocouples.
- 6.3. Quick coupling. (**HSC**).
- 6.4. Temperature equipment.
- 6.5. Lubrication.
- 6.6. Cheking pump.



# SOLUTIONS GUIDE

SOLUTION	PROTECTION						GUIDING			SAFETY		
	PS	PW	PV	PC	PQ	PC PQ	FR	FS	FP	SV	SP	SS
AFB V2	✓		✓									
AFH V1	✓		✓									
AFJ V1	✓		✓									
AFK V1	✓											
AFD V1	✓		✓							✓		
AFC	✓									✓		
AFNA	✓									✓		
AF V1	✓		✓							✓		
AFT V1	✓									✓		
AS 200										✓		
AS 300										✓		
AS 500 V1										✓		
AS 600 V1										✓		
AS 700 V1										✓		
AS 1000										✓		
ASP 250										✓		
ASP 300										✓		
ASP 500 V1										✓		
AST 200 V1										✓		
AST 250										✓		
AST 300 V1										✓		
AST 1000										✓		
APFA 150	✓	✓	✓			✓	✓			✓	✓	✓
APFA 250	✓	✓	✓	✓		✓	✓			✓	✓	✓
APF 500	✓											
AG 750		✓	✓	✓		✓	✓		✓	✓	✓	✓
AG 1500		✓	✓	✓		✓	✓		✓	✓	✓	✓
AG 3000		✓	✓	✓		✓	✓		✓	✓	✓	✓
AG 5000		✓	✓	✓		✓	✓		✓	✓	✓	✓
AG 7500		✓	✓	✓		✓	✓		✓	✓	✓	✓
AG 10000		✓	✓	✓		✓	✓		✓	✓	✓	✓
CD 300 V1	✓	✓	✓	✓		✓			✓	✓	✓	✓
CD 500 V1	✓	✓	✓	✓		✓			✓	✓	✓	✓
CD 700		✓	✓	✓		✓	✓		✓	✓	✓	✓
CD 1000 V1		✓	✓	✓		✓	✓		✓	✓	✓	✓
CD 1500 V1		✓	✓	✓		✓	✓		✓	✓	✓	✓
CD 2400		✓	✓	✓		✓	✓		✓	✓	✓	✓
CD 4200		✓	✓	✓		✓	✓		✓	✓	✓	✓
CD 6600		✓	✓	✓		✓	✓		✓	✓	✓	✓
CD 9600		✓	✓	✓		✓	✓		✓	✓	✓	✓
CD 18500		✓	✓	✓		✓	✓		✓	✓	✓	✓
CM 200	✓									✓		
CM 300		✓	✓	✓		✓				✓		
CM 350 V1	✓	✓	✓	✓		✓				✓		
CM 500 V1	✓									✓		
CM 600 V1		✓	✓	✓		✓			✓	✓		
CM 1000		✓	✓	✓		✓	✓			✓		
CM 1500		✓	✓	✓		✓	✓			✓		
CM 2500		✓	✓	✓		✓	✓			✓		
CM 4000		✓	✓	✓		✓	✓		✓	✓		
CM 6500		✓	✓	✓		✓	✓		✓	✓		
CM 10000		✓	✓	✓		✓	✓		✓	✓		
GN 750		✓	✓	✓		✓	✓			✓		
GN 1500		✓	✓	✓		✓	✓		✓	✓		
GN 3000		✓	✓	✓		✓	✓		✓	✓		
GN 5000		✓	✓	✓		✓	✓		✓	✓		
GN 7500		✓	✓	✓		✓	✓		✓	✓		
FD 300	✓	✓	✓	✓		✓			✓	✓	✓	✓
FD 500	✓	✓	✓	✓		✓	✓		✓	✓	✓	✓
FD 750 V1		✓	✓	✓		✓		✓	✓	✓	✓	✓
FD 1500 V2		✓	✓	✓		✓	✓		✓	✓	✓	✓
FD 3000		✓	✓	✓		✓	✓		✓	✓	✓	✓
FD 5000 V1		✓	✓	✓		✓	✓		✓	✓	✓	✓















# 1 - PROTECTION

CHALLENGE \ SOLUTION	Medium High Extreme	Medium High Extreme	Medium High Extreme	Medium High Extreme
<b>PS</b>	✓			
<b>PW</b>	✓			
<b>PV</b>		✓		
<b>PC</b>		✓		
<b>PQ</b>			✓	
<b>PC-PQ</b>				✓

<ul style="list-style-type: none"> <li>• <b>Medium incident:</b> Solid or liquid particles without corrosion nor piston rod surface damage.</li> </ul> <p><b>Solution:</b>  <b>PS</b> (Protective Scraper)      <b>PW</b> (Protective Wiper)     </p>
<ul style="list-style-type: none"> <li>• <b>High incident:</b> Solid or liquid particles without corrosion nor piston rod surface damage.</li> </ul> <p><b>Solution:</b>  <b>PV</b> (Active Seal)     </p>
<ul style="list-style-type: none"> <li>• <b>High incident:</b> Solid or liquid particles without corrosion but with piston rod surface damage.</li> </ul> <p><b>Solution:</b>  <b>PC</b> (Protective Cover)     </p>
<ul style="list-style-type: none"> <li>• <b>Extreme incident:</b> Solid or liquid particles with corrosion.</li> </ul> <p><b>Solution:</b>  <b>PQ</b> (Q Treatment)     </p>
<ul style="list-style-type: none"> <li>• <b>High incident:</b> Solid or liquid particles with corrosion and with piston rod surface damage.</li> </ul> <p><b>Solution:</b>  <b>PC-PQ</b> (Q Treatment + Protective Cover)     </p>









# 1 - PROTECTION

SOLUTION	 PS	 PW	 PV	 PC	 PQ	 PC PQ
MODEL						
AFB V2	✓ PS 006 012		✓ PV			
AFH V1	✓ PS 008 015		✓ PV			
AFJ V1	✓ PS 008 019		✓ PV			
AFK V1	✓ PS 009 020					
AFD V1	✓ PS 012 025		✓ PV			
AFC	✓ PS 012 025					
AFNA	✓ PS 012 025					
AF V1	✓ PS 012 025		✓ PV			
AFT V1	✓ PS 016 032					
AS 200						
AS 300						
AS 500 V1						
AS 600 V1						
AS 700 V1						
AS 1000						
ASP 250						
ASP 300						
ASP 500 V1						
AST 200 V1						
AST 250						
AST 300 V1						
AST 1000						
APFA 150	✓ PS 012 032	✓ PW 012 032	✓ PV		✓ PQ	
APFA 250	✓ PS 016 038	✓ PW 016 038	✓ PV	✓ PC 016 038	✓ PQ	✓ PC-PQ
APF 500	✓ PS 020 045	✓ PW 020 045	✓ PV	✓ PC 020 045	✓ PQ	✓ PC-PQ
AG 750		✓ PW 025 050	✓ PV	✓ PC 025 050	✓ PQ	✓ PC-PQ
AG 1500		✓ PW 036 075	✓ PV	✓ PC 036 075	✓ PQ	✓ PC-PQ
AG 3000		✓ PW 050 095	✓ PV	✓ PC 050 095	✓ PQ	✓ PC-PQ
AG 5000		✓ PW 065 120	✓ PV	✓ PC 065 120	✓ PQ	✓ PC-PQ
AG 7500		✓ PW 080 150	✓ PV	✓ PC 080 150	✓ PQ	✓ PC-PQ
AG 10000		✓ PW 095 195	✓ PV	✓ PC 095 195	✓ PQ	✓ PC-PQ
CD 300 V1	✓ PS 016 032	✓ PW 016 032	✓ PV	✓ PC 016 032	✓ PQ	✓ PC-PQ
CD 500 V1	✓ PS 020 038	✓ PW 020 038		✓ PC 020 038		
CD 700	✓ PS 025 045	✓ PW 025 045	✓ PV	✓ PC 025 045	✓ PQ	✓ PC-PQ
CD 1000 V1		✓ PW 028 050	✓ PV	✓ PC 028 050	✓ PQ	✓ PC-PQ
CD 1500 V1		✓ PW 036 063	✓ PV	✓ PC 036 063	✓ PQ	✓ PC-PQ
CD 2400		✓ PW 045 075	✓ PV	✓ PC 045 075	✓ PQ	✓ PC-PQ
CD 4200		✓ PW 060 095	✓ PV	✓ PC 060 095	✓ PQ	✓ PC-PQ
CD 6600		✓ PW 075 120	✓ PV	✓ PC 075 120	✓ PQ	✓ PC-PQ
CD 9600		✓ PW 090 150	✓ PV	✓ PC 090 150	✓ PQ	✓ PC-PQ
CD 18500		✓ PW 125 195	✓ PV	✓ PC 125 195	✓ PQ	✓ PC-PQ
CM 200	✓ PS 012 025					
CM 300	✓ PS 016 032	✓ PW 016 032	✓ PV	✓ PC 016 032	✓ PQ	✓ PC-PQ
CM 350 V1	✓ PS 016 032	✓ PW 016 032	✓ PV	✓ PC 016 032	✓ PQ	✓ PC-PQ
CM 500 V1	✓ PS 022 038	✓ PW 022 038		✓ PC 022 038		
CM 600 V1		✓ PW 022 045	✓ PV	✓ PC 022 045	✓ PQ	✓ PC-PQ
CM 1000		✓ PW 028 050	✓ PV	✓ PC 028 050	✓ PQ	✓ PC-PQ
CM 1500		✓ PW 036 063	✓ PV	✓ PC 036 063	✓ PQ	✓ PC-PQ
CM 2500		✓ PW 045 075	✓ PV	✓ PC 045 075	✓ PQ	✓ PC-PQ
CM 4000		✓ PW 060 095	✓ PV	✓ PC 060 095	✓ PQ	✓ PC-PQ
CM 6500		✓ PW 075 120	✓ PV	✓ PC 075 120	✓ PQ	✓ PC-PQ
CM 10000		✓ PW 090 150	✓ PV	✓ PC 090 150	✓ PQ	✓ PC-PQ
GN 750		✓ PW 025 050	✓ PV	✓ PC 025 050	✓ PQ	✓ PC-PQ
GN 1500		✓ PW 036 075	✓ PV	✓ PC 036 075	✓ PQ	✓ PC-PQ
GN 3000		✓ PW 050 095	✓ PV	✓ PC 050 095	✓ PQ	✓ PC-PQ
GN 5000		✓ PW 065 120	✓ PV	✓ PC 065 120	✓ PQ	✓ PC-PQ
GN 7500		✓ PW 080 150	✓ PV	✓ PC 080 150	✓ PQ	✓ PC-PQ
FD 300	✓ PS 016 038	✓ PW 016 038	✓ PV	✓ PC 016 038	✓ PQ	✓ PC-PQ
FD 500	✓ PS 020 045	✓ PW 020 045	✓ PV	✓ PC 020 045	✓ PQ	✓ PC-PQ
FD 750 V1		✓ PW 025 050	✓ PV	✓ PC 025 050	✓ PQ	✓ PC-PQ
FD 1500 V2		✓ PW 036 075	✓ PV	✓ PC 036 075	✓ PQ	✓ PC-PQ
FD 3000		✓ PW 050 095	✓ PV	✓ PC 050 095	✓ PQ	✓ PC-PQ
FD 5000 V1		✓ PW 065 120	✓ PV	✓ PC 065 120	✓ PQ	✓ PC-PQ

# 1 - PROTECTION

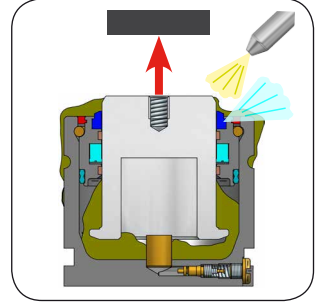
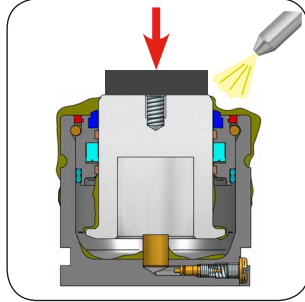
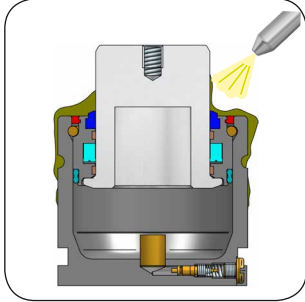
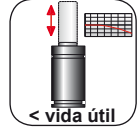
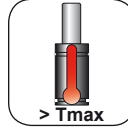
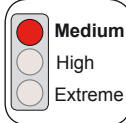


SOLUTION	 PS	 PW	 PV	 PC	 PQ	 PC PQ
MODEL						
CK 200 V1	✓ PS 012 025		✓ PV			
CK 300 V1	✓ PS 016 032		✓ PV			
CK 570 V1	✓ PS 022 038	✓ PW 022 038		✓ PC 022 038		
CK 750 V1	✓ PS 025 045	✓ PW 025 045	✓ PV	✓ PC 025 045	✓ PQ	✓ PC-PQ
CK 1000 V1		✓ PW 028 050	✓ PV	✓ PC 028 050	✓ PQ	✓ PC-PQ
CK 1500 V2		✓ PW 036 063	✓ PV	✓ PC 036 063	✓ PQ	✓ PC-PQ
CK 2500 V1		✓ PW 045 075	✓ PV	✓ PC 045 075	✓ PQ	✓ PC-PQ
CK 4000 V1		✓ PW 060 095	✓ PV	✓ PC 060 095	✓ PQ	✓ PC-PQ
CT 200 V1	✓ PS 012 025		✓ PV			
CT 300 V1	✓ PS 016 032		✓ PV			
CT 550 V1	✓ PS 022 038	✓ PW 022 038		✓ PC 022 038		
CT 750		✓ PW 028 050	✓ PV	✓ PC 028 050	✓ PQ	✓ PC-PQ
CT 1000		✓ PW 028 050	✓ PV	✓ PC 028 050	✓ PQ	✓ PC-PQ
CT 1500		✓ PW 036 063	✓ PV	✓ PC 036 063	✓ PQ	✓ PC-PQ
CT 2500		✓ PW 050 075	✓ PV	✓ PC 050 075		
CT 3000		✓ PW 050 075	✓ PV	✓ PC 050 075		
CT 5000		✓ PW 065 105	✓ PV	✓ PC 065 105	✓ PQ	✓ PC-PQ
KZ 350	✓ PS 016 032	✓ PW 016 032	✓ PV	✓ PC 016 032	✓ PQ	✓ PC-PQ
KZ 500	✓ PS 020 038	✓ PW 020 038	✓ PV	✓ PC 020 038	✓ PQ	✓ PC-PQ
KZ 750	✓ PS 025 045	✓ PW 025 045	✓ PV	✓ PC 025 045	✓ PQ	✓ PC-PQ
KZ 1000		✓ PW 028 050	✓ PV	✓ PC 028 050	✓ PQ	✓ PC-PQ
KZ 1500		✓ PW 036 063	✓ PV	✓ PC 036 063	✓ PQ	✓ PC-PQ
KZ 2400		✓ PW 045 075	✓ PV	✓ PC 045 075	✓ PQ	✓ PC-PQ
KZ 4200		✓ PW 060 095	✓ PV	✓ PC 060 095	✓ PQ	✓ PC-PQ
KZ 6600		✓ PW 075 120	✓ PV	✓ PC 075 120	✓ PQ	✓ PC-PQ
CW 170 V1	✓ PS 011 019					
CW 320 V1	✓ PS 015 025		✓ PV			
CW 350	✓ PS 016 032	✓ PW 016 032	✓ PV	✓ PC 016 032	✓ PQ	✓ PC-PQ
CW 500	✓ PS 020 038	✓ PW 020 038	✓ PV	✓ PC 020 038	✓ PQ	✓ PC-PQ
CW 750	✓ PS 025 045	✓ PW 025 045	✓ PV	✓ PC 025 045	✓ PQ	✓ PC-PQ
CW 1000 V1		✓ PW 028 050	✓ PV	✓ PC 028 050	✓ PQ	✓ PC-PQ
CW 1500		✓ PW 036 063	✓ PV	✓ PC 036 063	✓ PQ	✓ PC-PQ
CW 2400 V1		✓ PW 045 075	✓ PV	✓ PC 045 075	✓ PQ	✓ PC-PQ
CW 4200 V1		✓ PW 060 095	✓ PV	✓ PC 060 095	✓ PQ	✓ PC-PQ
CW 6600		✓ PW 075 120	✓ PV	✓ PC 075 120	✓ PQ	✓ PC-PQ
CW 9500		✓ PW 090 150	✓ PV	✓ PC 090 150	✓ PQ	✓ PC-PQ
CW 11800		✓ PW 100 150	✓ PV	✓ PC 100 150	✓ PQ	✓ PC-PQ
CW 20000		✓ PW 130 195	✓ PV	✓ PC 130 195	✓ PQ	✓ PC-PQ
CP 150						
CP 300						
CP 500						
CP 1000 V1						
CP 2000 V1						
CP 3000 V1						
CP 5000 V1						
CP 8000 V1						
CPH 850						
CPH 1250						
CPH 1700						
CPH 2800						
CPH 4300						
CS 420 V1	✓ PS 012 025					
CS 770 V2	✓ PS 020 032			✓ PC 020 032		
CS 1000 V1	✓ PS 020 038			✓ PC 020 038		
CS 1800 V1				✓ PC 030 050		
CS 3000 V2				✓ PC 036 063		
CS 4700 V1				✓ PC 050 075		
CS 7500 V1				✓ PC 065 095		
CS 11800 V1				✓ PC 080 120		
CS 18300 V1				✓ PC 100 150		



# 1.1 - PS (PROTECTIVE SCRAPER)

## CHALLENGE

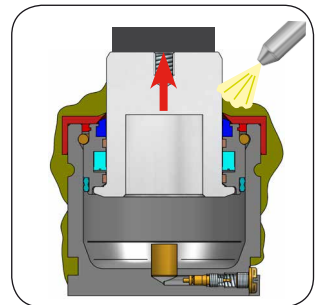
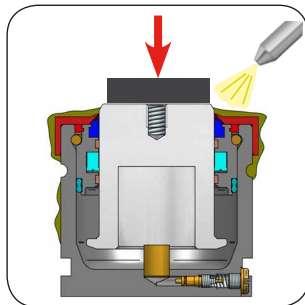
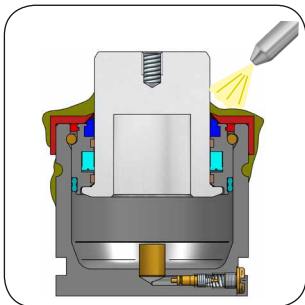
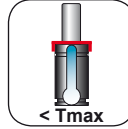
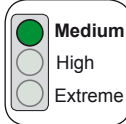


Certain application conditions involve the presence of liquid or solid **contaminants**.

The volume of solid or liquid particles and the time of use determine that the scraper gas springs are equipped with is not sufficient to protect them in those conditions.

The solid or liquid pollution is introduced into the gas springs increasing the pressure and temperature that causes gas leaks and **reduce the useful life** of gas springs.

## SOLUTION



AZOLGAS designed a protective scraper **PS** that fits both the body and the piston rod of the gas spring succeeding to minimize the impact of solid or liquid contaminants and **extending the useful life** of the gas springs.

**PS** protective scraper adds **double protection**, and is particularly suitable for medium duty incidents (solid or liquid particles without the presence of corrosion nor surface damage on the piston rod).

The solution of **PS** protective scraper **saves costs**, it is easy to assemble by the user, supports use with all types of flanges and causes minimal loss of useful stroke.



# 1.1 - PS (PROTECTIVE SCRAPER)

## ADVANTAGES



• Easy to assemble.



• Saves costs.



• Supports all type of flanges.



• Minimal loss of useful stroke.

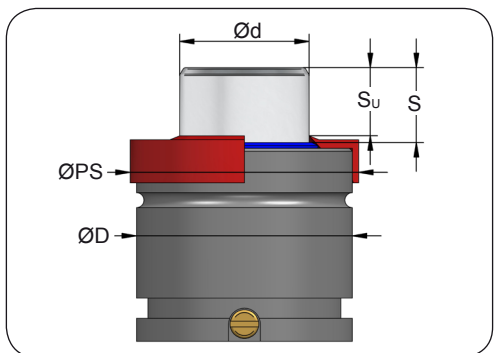


• Extra protection. Medium incident.

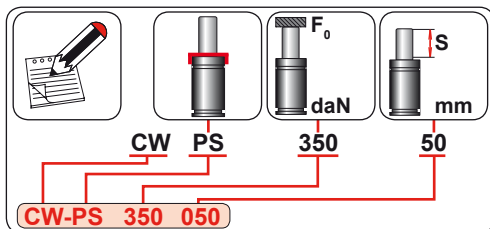
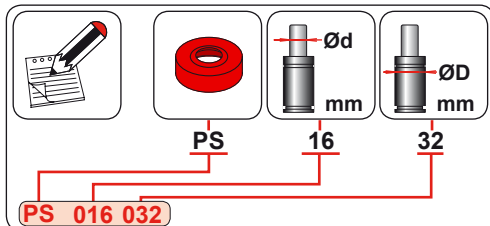
**PHOTO**

## TECHNICAL DATA

PS	MODEL	Ød (mm)	ØD (mm)	Su (mm)	ØPS (mm)
PS 006 012	AFB V2	6	12	S-1	16
PS 008 015	AFH V1	8	15	S-1	19
PS 008 019	AFJ V1	8	19	S-1	23
PS 009 020	AFK V1	9	20	S-1	24
PS 011 019	CW 170 V1	11	19	S-2	23
PS 012 025	AFD V1	12	25	S-1	29
	AFC	12	25	S-2	29
	AFNA	12	25	S-2	29
	AF V1	12	25	S-1	29
	CM 200	12	25	S-2	29
	CK 200 V1	12	25	S-2	29
	CT 200 V1	12	25	S-2	29
CS 420 V1	12	25	S-1	29	
PS 012 032	APFA 150	12	32	S-1	36
PS 015 025	CW 320 V1	15	25	S-2	29
PS 016 032	AFT V1	16	32	S-1,7	36
	CD 300 V1	16	32	S-1	36
	CM 300	16	32	S	36
	CM 350 V1	16	32	S-1	36
	CK 300 V1	16	32	S-1	36
	CT 300 V1	16	32	S-2	36
	KZ 350	16	32	S-1	36
CW 350	16	32	S-1	36	
PS 016 038	APFA 250	16	38	S-1	42
FD 300	16	38	S-1	42	
PS 020 032	CS 770 V1	20	32	S	36
PS 020 038	CD 500 V1	20	38	S-2	42
	KZ 500	20	38	S-1	42
	CW 500	20	38	S-1	42
	CS 1000 V1	20	38	S	42
PS 020 045	APF 500	20	45	S-1	49
	FD 500	20	45	S-1	49
PS 022 038	CM 500 V1	22	38	S-1	42
	CK 570 V1	22	38	S-2	42
	CT 550 V1	22	38	S-2	42
PS 025 045	CD 700	25	45	S-1	49
	CK 750 V1	25	45	S-1	49
	KZ 750	25	45	S-1	49
	CW 750	25	45	S-1	49



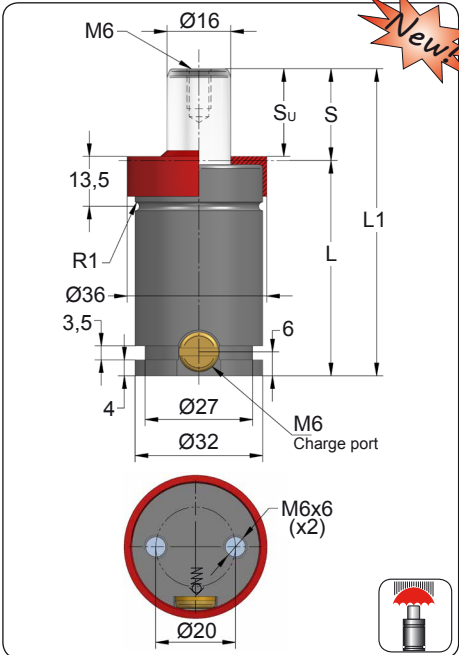
## HOW TO ORDER



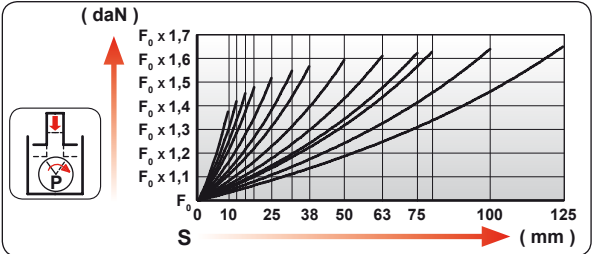
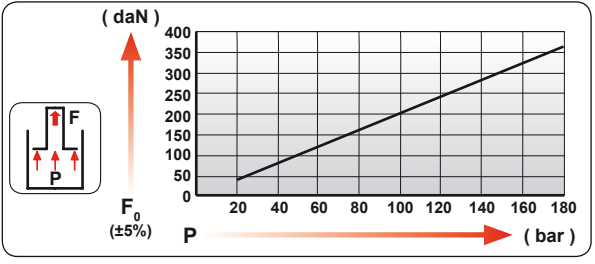
PS available for the following models



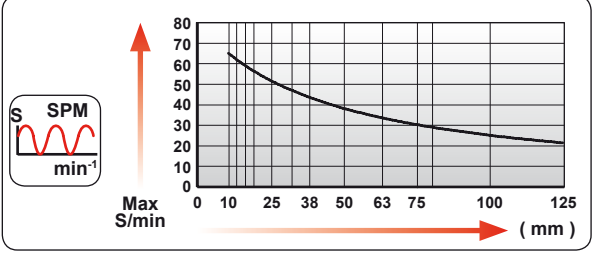
# CW-PS 350



ORDER	S (mm)	Su (mm)	L1 ±0,25 (mm)	L (mm)
CW-PS 350 010	10	9	50	40
CW-PS 350 013	13	12	56	43
CW-PS 350 016	16	15	62	46
CW-PS 350 019	19	18	68	49
CW-PS 350 025	25	24	80	55
CW-PS 350 032	32	31	94	62
CW-PS 350 038	38	37	106	68
CW-PS 350 050	50	49	130	80
CW-PS 350 063	63	62	156	93
CW-PS 350 075	75	74	180	105
CW-PS 350 080	80	79	190	110
CW-PS 350 100	100	99	230	130
CW-PS 350 125	125	124	280	155



CODE	Pressure		Force	
	bar	psi	daN	daN
CW-PS 350 050	180	2610	360	575

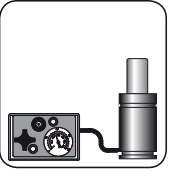
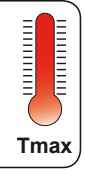
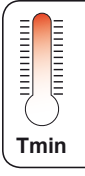
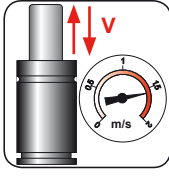
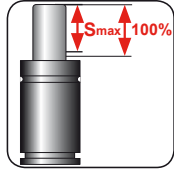


ENG ORDER  
 DEU BESTELL  
 FRA COMMANDE  
 ITA ORDINE  
 ESP PEDIDO  
 POR PEDIDO

F<sub>0</sub> daN  
 S mm

**CW-PS 350 50**

**CW-PS 350 050**

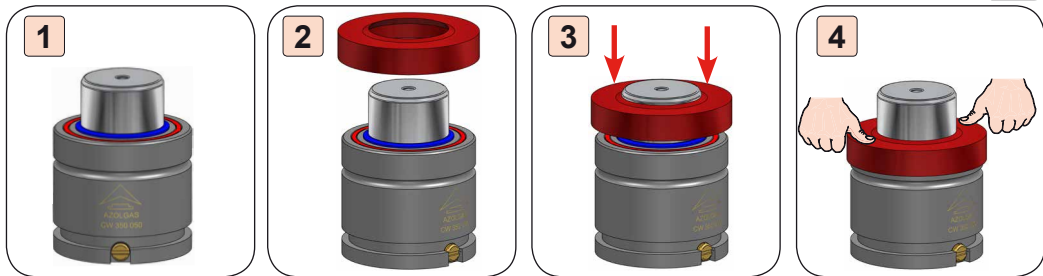


N <sub>2</sub>	Smax < 90%	Vmax 1,6 m/s	bar psi	bar psi	°C °F	°C °F	600 CP-
			20 290	180 2610	0 32	80 176	



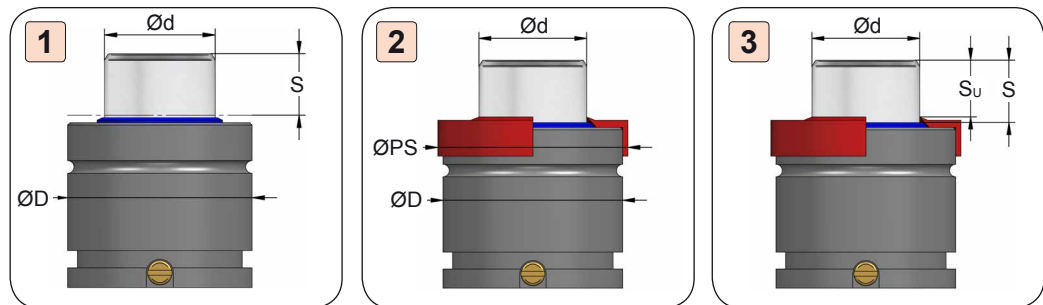
# PS (PROTECTIVE SCRAPER)

## ASSEMBLING



1. Identify the gas spring model.
2. Select the corresponding PS protective scraper.
3. Insert the protector through the piston rod manually.
4. Ensure the optimal settlement.

## DIMENSIONS

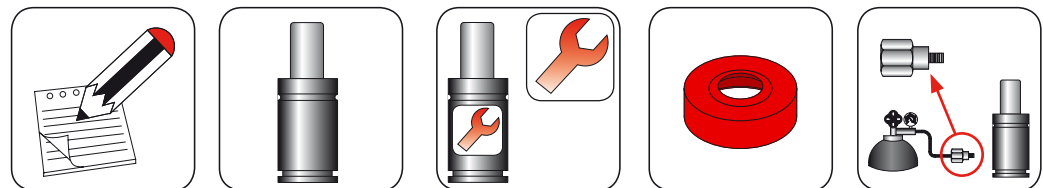


**CW 350**

**CW-PS 350**

**CW-PS 350**

1. The use of PS protective scraper involves a variation of the dimensions of the gas spring.
2. The body diameter ( $\varnothing D$ ) increases to the size of the diameter of the protective scraper ( $\varnothing PS$ ).
3. The nominal stroke ( $S$ ) decreases to the size of the useful stroke ( $S_u$ ).

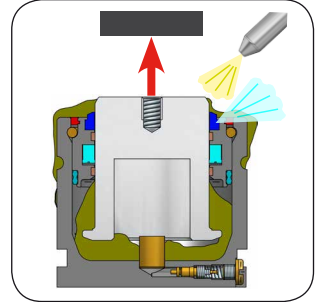
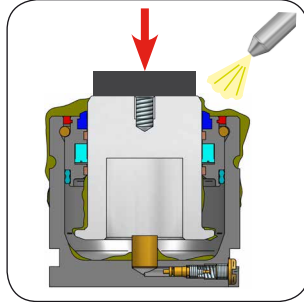
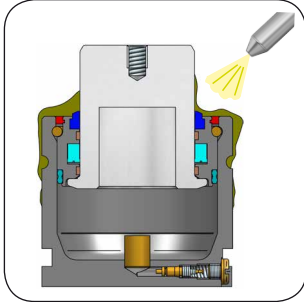
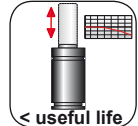
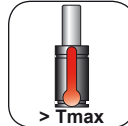
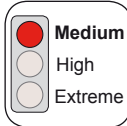


CODE	CW-PS 350 050	KIT <b>CW 350</b> <small>Serial Number</small>	PS 016 032	18 GA 5
ENG	ORDER	GAS SPRING	REPAIR KIT	CHARGING ADAPTER
DEU	BESTELL	GASDRUCKFEDER	ERSATZ	LADEADAPTER
FRA	COMMANDE	RESSORT À GAZ	KIT DE RÉPARATION	RACCORD DE CHARGE
ITA	ORDINE	CILINDRO AD AZOTO	KIT DI MANUTENZIONE	ADATTATORE DI CARICO
ESP	PEDIDO	RESORTE DE GAS	KIT DE REPARACION	ADAPTADOR DE CARGA
POR	PEDIDO	CILINDRO DE GÁS	KIT DE MANUTENÇÃO	ADAPTADOR DE CARGA
			SCRAPER	
			RACLEUR	
			RASCHIASTELLO	
			PROTECTOR	



# 1.2 - PW (PROTECTIVE WIPER)

## CHALLENGE

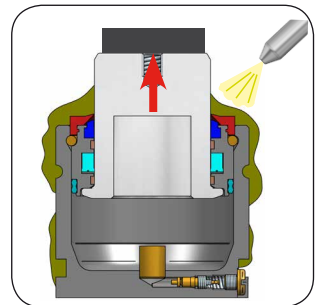
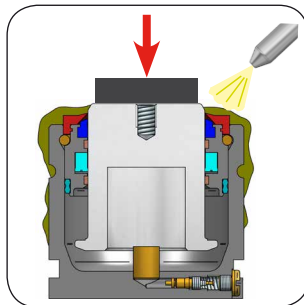
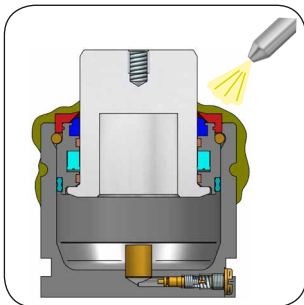
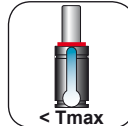
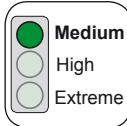


Certain application conditions involve the presence of liquid or solid **contaminants**.

The volume of solid or liquid particles and the time of use determine that the wiper gas springs are equipped with is not sufficient to protect them in those conditions.

The solid or liquid pollution is introduced into the gas springs increasing the pressure and temperature that causes gas leaks and **reduce the useful life** of gas springs.

## SOLUTION



AZOLGAS designed a protective wiper **PW** that fits both the body and the piston rod of the gas spring succeeding to minimize the impact of solid or liquid contaminants and **extending the useful life** of the gas springs.

**PW** protective wiper adds **double protection**, and is particularly suitable for medium duty incidents (solid or liquid particles without the presence of corrosion nor surface damage on the piston rod).

The solution of **PW** protective wiper **saves costs**, it is easy to assemble by the user, supports use with all types of flanges, do not increase the body  $\varnothing$  and causes minimal loss of useful stroke.



# 1.2 - PW (PROTECTIVE WIPER)



## ADVANTAGES



• Easy to assemble.



• Saves costs.



• Supports all type of flanges.



• Minimal loss of useful stroke.



• No increase  $\varnothing$  of gas springs.



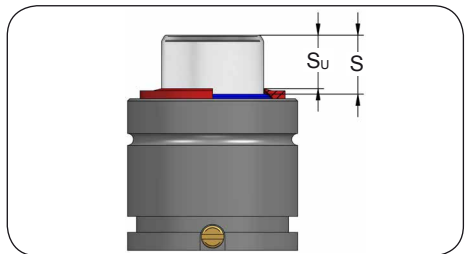
• Extra protection. Medium incident.

**PHOTO**

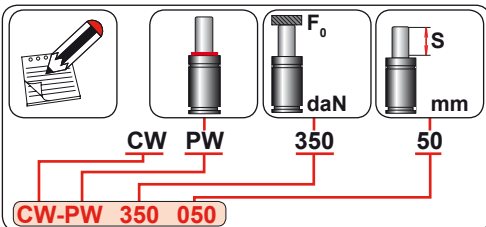
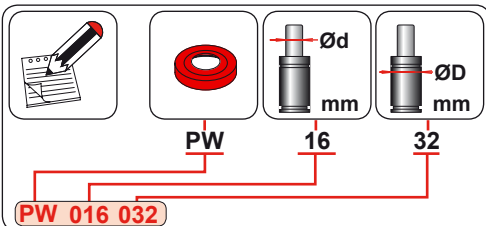
## TECHNICAL DATA

PW	MODEL	S <sub>u</sub> (mm)
PW 012 032	APFA 150	S-1
	CD 300 V1	S-1
	CM 300	S
PW 016 032	CM 350 V1	S-1
	CW 350	S-1
	KZ 350	S-1
PW 016 038	APFA 250	S-1
	FD 300	S-1
PW 020 038	CD 500 V1	S-1
	KZ 500	S-1
PW 022 038	CM 500 V1	S-1
	CT 550 V1	S-2
	CK 570 V1	S-2
PW 020 045	APF 500	S-1
	FD 500	S-1
PW 022 045	CM 600 V1	S-1
	CD 700	S-1
	CK 750 V1	S-1
PW 025 045	KZ 750	S-1
	CW 750	S-1
	AG 750	S
PW 025 050	GN 750	S
	FD 750 V1	S
	CD 1000 V1	S
PW 028 050	CM 1000	S-1
	CK 1000 V1	S
	CT 750/1000	S-2
	CK 1000	S
	CW 1000 V1	S
PW 036 063	CD 1500 V1	S
	CM 1500	S-1
	CK 1500 V2	S
	CT 1500	S-1
	KZ 1500	S
CW 1500	S	

PW	MODEL	S <sub>u</sub> (mm)
PW 036 075	AG 1500	S
	GN 1500	S
	FD 1500 V2	S
PW 045 075	CD 2400	S
	CM 2500	S-1
	CK 2500 V1	S
PW 050 075	KZ 2400	S
	CW 2400 V1	S
	CT 2500/3000	S-1
PW 050 095	AG 3000	S
	GN 3000	S
	FD 3000	S
PW 060 095	CD 4200	S
	CM 4000	S-1
	CK 4000 V1	S
	KZ 4200	S
	CW 4200 V1	S
PW 065 105	CT 5000	S
	AG 5000	S
PW 065 120	GN 5000	S
	FD 5000 V1	S
	CD 6600	S
PW 075 120	CM 6500	S-1
	KZ 6600	S
	AG 6600	S
PW 080 150	AG 7500	S
	GN 7500	S
	CD 9600	S
PW 090 150	CM 10000	S
	CW 9500	S
PW 095 195	AG 10000	S
PW 100 150	CW 11800	S
PW 125 195	CD 18500	S
PW 130 195	CW 20000	S



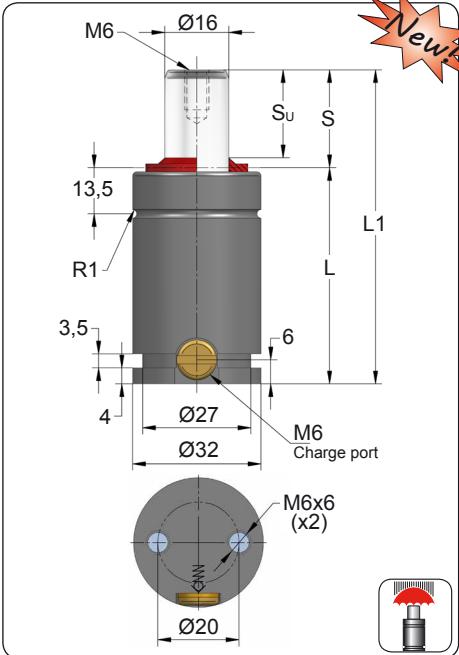
## HOW TO ORDER



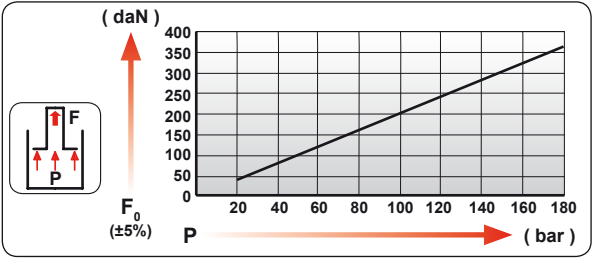
PW available on models



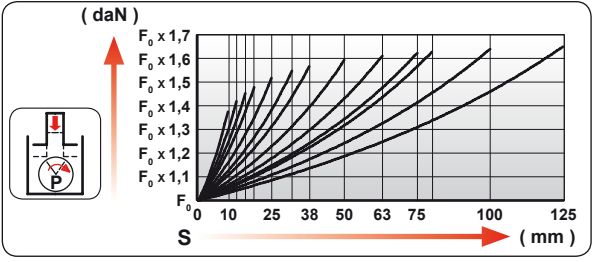
# CW-PW 350



ORDER	S (mm)	S <sub>u</sub> (mm)	L1 ±0,25 (mm)	L (mm)
CW-PW 350 010	10	9	50	40
CW-PW 350 013	13	12	56	43
CW-PW 350 016	16	15	62	46
CW-PW 350 019	19	18	68	49
CW-PW 350 025	25	24	80	55
CW-PW 350 032	32	31	94	62
CW-PW 350 038	38	37	106	68
CW-PW 350 050	50	49	130	80
CW-PW 350 063	63	62	156	93
CW-PW 350 075	75	74	180	105
CW-PW 350 080	80	79	190	110
CW-PW 350 100	100	99	230	130
CW-PW 350 125	125	124	280	155



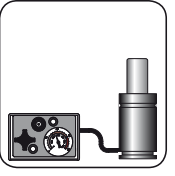
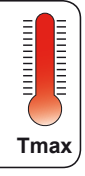
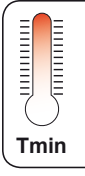
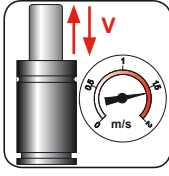
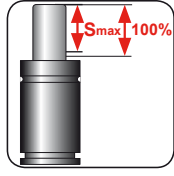
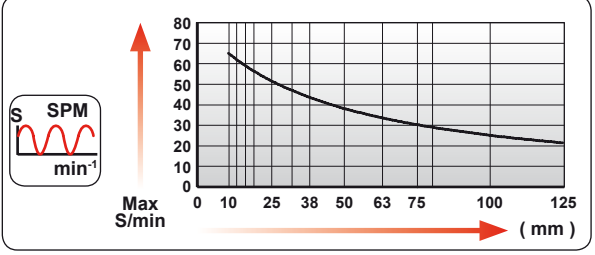
CODE				
	bar	psi	F <sub>0</sub> daN	F <sub>1</sub> daN
CW-PW 350 050	180	2610	360	575



	ENG ORDER		F <sub>0</sub> daN		S mm
	DEU BESTELL				
	FRA COMMANDE				
	ITA ORDINE				
	ESP PEDIDO				
	POR PEDIDO				

**CW-PW 350**      **50**

**CW-PW350 050**

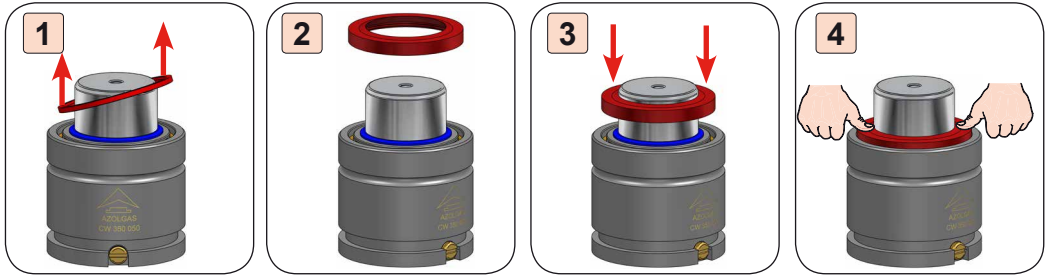


N <sub>2</sub>	Smax < 90%	Vmax 1,6 m/s	bar psi	bar psi	°C °F	°C °F	600 CP-
			20 290	180 2610	0 32	80 176	

# PW (PROTECTIVE WIPER)

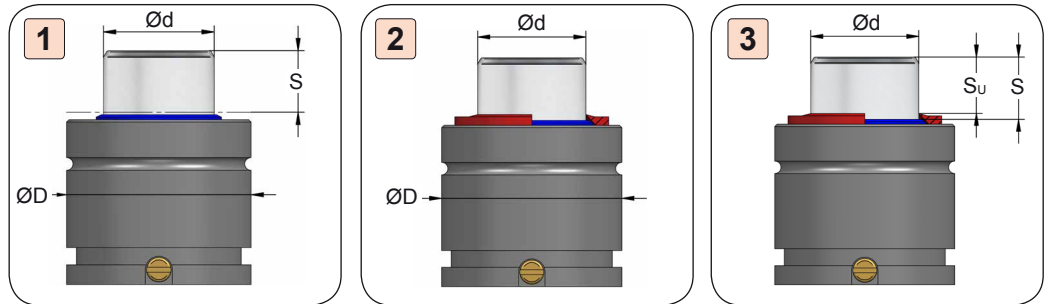


## ASSEMBLING



1. Identify the gas spring model and take off the scraper.
2. Select the corresponding PW protective wiper.
3. Insert the protector through the piston rod manually.
4. Ensure the optimal settlement.

## DIMENSIONS



**CW 350**

**CW-PW 350**

**CW-PW 350**

1. The use of PW protective wiper involves a variation of the dimensions of the gas spring.
2. The body diameter ( $\varnothing D$ ) do not increase by using PS protective wiper.
2. The nominal stroke ( $S$ ) decreases to the size of the useful stroke ( $S_u$ ).

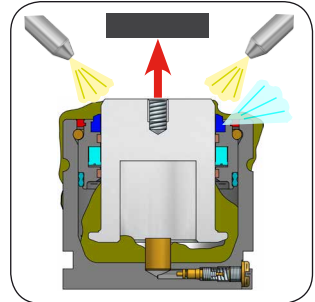
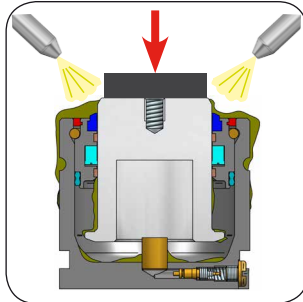
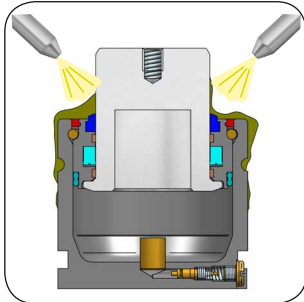
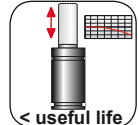
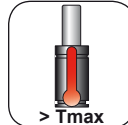


CODE		CW-PW 350 050	KIT  CW-PW 350 <small>Serial Number</small>	PW 016 032	18 GA 5
ENG	ORDER	GAS SPRING	REPAIR KIT	SCRAPER	CHARGING ADAPTER
DEU	BESTELL	GASDRUCKFEDER	ERSATZ		LADEADAPTER
FRA	COMMANDE	RESSORT À GAZ	KIT DE RÉPARATION	RACLEUR	RACCORD DE CHARGE
ITA	ORDINE	CILINDRO AD AZOTO	KIT DI MANUTENZIONE	RASCHIASTELLO	ADATTATORE DI CARICO
ESP	PEDIDO	RESORTE DE GAS	KIT DE REPARACION	PROTECTOR	ADAPTADOR DE CARGA
POR	PEDIDO	CILINDRO DE GÁS	KIT DE MANUTENÇÃO		ADAPTADOR DE CARGA



## 1.3 - PV (ACTIVE SEAL)

### CHALLENGE

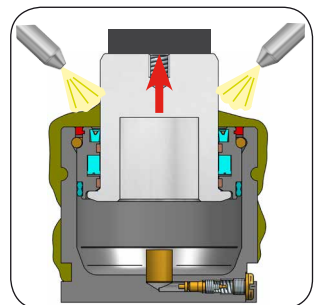
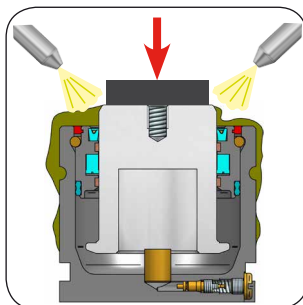
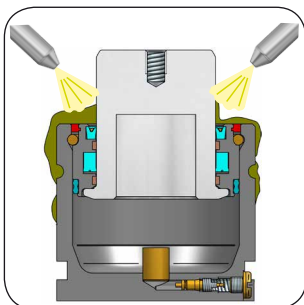
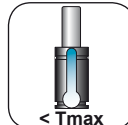
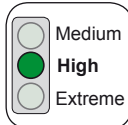


Certain application conditions involve the presence of liquid or solid **contaminants**.

The volume of solid or liquid particles and the time of use determine that the scraper gas springs are equipped with is not sufficient to protect them in those conditions.

The solid or liquid pollution is introduced into the gas springs increasing the pressure and temperature that causes gas leaks and **reduce the useful life** of gas springs.

### SOLUTION



AZOLGAS designed a protective system **PV** through an active seal into the gas spring succeeding to minimize the impact of solid or liquid contaminants and **extending the useful life** of the gas springs.

**PV** protective active seal adds **double protection**, and is particularly suitable for **high duty incidents** (significant solid or liquid particles without the presence of corrosion nor surface damage on the piston rod).

The solution of **PV** protective active seal **saves costs**, increases productivity, supports use with all types of flanges and let use in existing applications.



# 1.3 - PV (ACTIVE SEAL)

## ADVANTAGES



• Saves costs.



• Increases productivity.



• Supports all type of flanges.



• Use in existing applications.



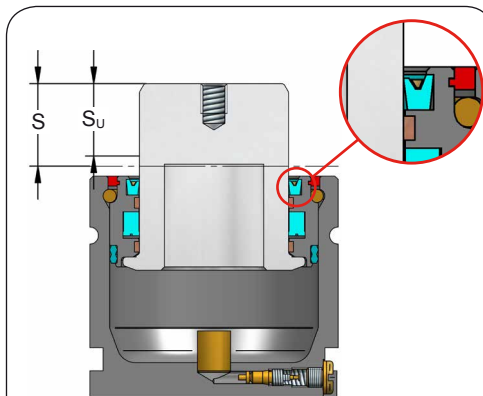
• Extra protection. High incident.

**PHOTO**

## TECHNICAL DATA

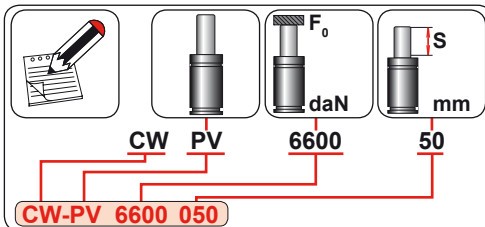
MODEL	S <sub>u</sub> (mm)
AFB V2	S
AFH V1	S
AFJ V1	S
AFD V1	S-1
AF V1	S-1
CK 200 V1	S-2
CT 200 V1	S-2
APFA 150	S
CW 320 V1	S
CD 300 V1	S
CM 300	S
CM 350 V1	S
CK 300 V1	S-1
CT 300 V1	S-2
KZ 350	S-1
CW 350	S-1
APFA 250	S
FD 300	S
KZ 500	S-1
CW 500	S-1
APF 500	S
FD 500	S-1
CM 600 V1	S
CD 700	S
CK 750 V1	S-1
KZ 750	S-1
CW 750	S-1
AG 750	S
GN 750	S
FD 750 V1	S
CD 1000 V1	S
CM 1000 V1	S
CT 750/1000	S-2
CK 1000 V1	S
KZ 1000	S
CW 1000 V1	S
CD 1500 V1	S
CM 1500	S

MODEL	S <sub>u</sub> (mm)
CT 1500	S-1
CK 1500 V2	S
KZ 1500	S
CW 1500	S
AG 1500	S
GN 1500	S
FD 1500 V2	S
CD 2400	S
CM 2500	S
CK 2500 V1	S
KZ 2400	S
CW 2400 V1	S
AG 3000	S
GN 3000	S
FD 3000	S
CD 4200	S
CM 4000	S
CK 4000 V1	S
KZ 4200	S
CW 4200 V1	S
CT 5000	S
AG 5000	S
GN 5000	S
FD 5000 V1	S
CD 6600	S
CM 6500	S
KZ 6600	S
CW 6600	S
AG 7500	S
GN 7500	S
CD 9600	S
CM 10000	S
CW 9500	S
CK 11800	S
AG 10000	S
CD 18500	S
CW 20000	S



Gas spring equipped with protective active seal that avoids solid or fluid contaminants to be inserted.

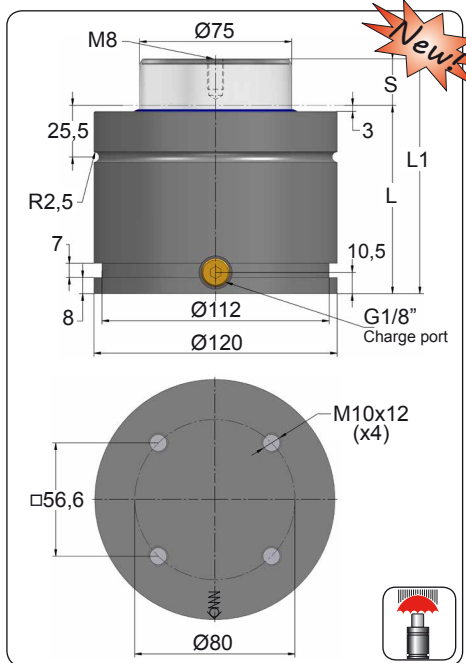
## HOW TO ORDER



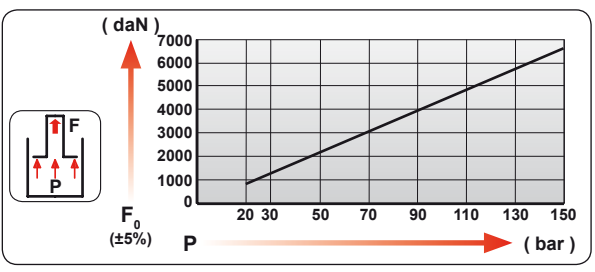
PV available for the following models



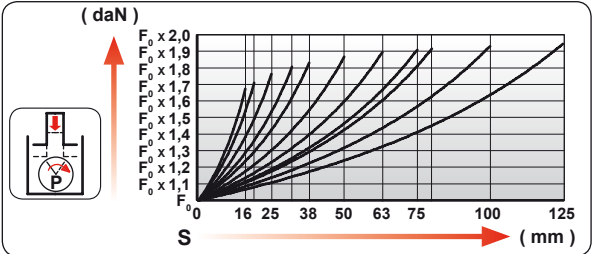
# CW-PV 6600



ORDER	S (mm)	L1 ±0,25 (mm)	L (mm)	Kg.
CW-PV 6600 016	16	100	84	6.08
CW-PV 6600 019	19	106	87	6.24
CW-PV 6600 025	25	118	93	6.57
CW-PV 6600 032	32	132	100	6.95
CW-PV 6600 038	38	144	106	7.27
CW-PV 6600 050	50	168	118	7.92
CW-PV 6600 063	63	194	131	8.63
CW-PV 6600 075	75	218	143	9.28
CW-PV 6600 080	80	228	148	9.55
CW-PV 6600 100	100	268	168	10.64
CW-PV 6600 125	125	318	193	12.00



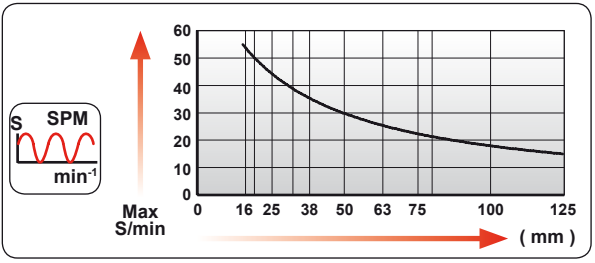
CODE	Pressure		Force	
	bar	psi	daN	daN
CW-PV 6600 050	150	2175	6630	12380



	ENG ORDER		
	DEU BESTELL		
	FRA COMMANDE		
	ITA ORDINE		
	ESP PEDIDO		
POR PEDIDO			

**CW-PV 6600**      **50**

**CW-PV 6600 050**



N <sub>2</sub>	S <sub>max</sub> < 90%	V <sub>max</sub> 1,6 m/s	P <sub>min</sub> (20°C)	P <sub>max</sub> (20°C)	T <sub>min</sub>	T <sub>max</sub>	600 CP-

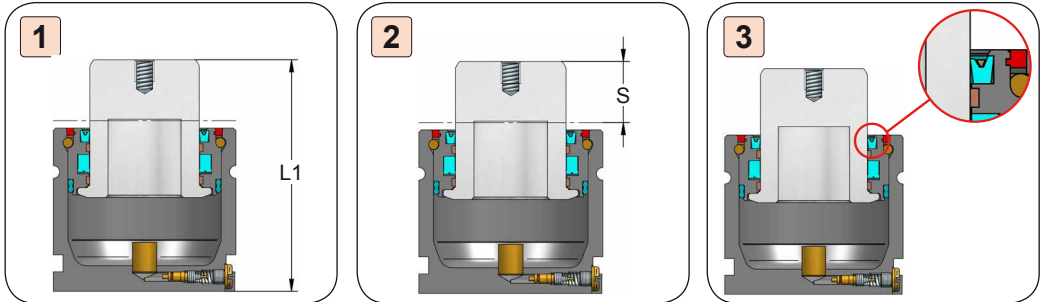
bar	psi	bar	psi	°C	°F	°C	°F
20	290	150	2175	0	32	80	176



# PV (ACTIVE SEAL)

**CASE HISTORY**

## DOUBLE PROTECTION



1-2. The use of PV protective active seal does not involve a variation of the dimensions of the gas spring.

3. Protective active seal that avoids solid or fluid contaminants to be inserted into the gas spring.

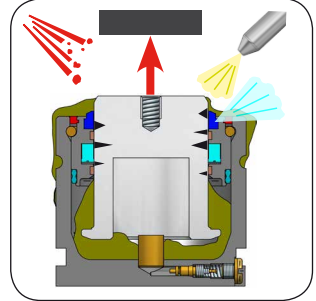
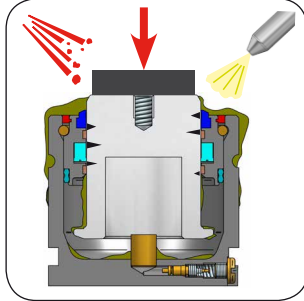
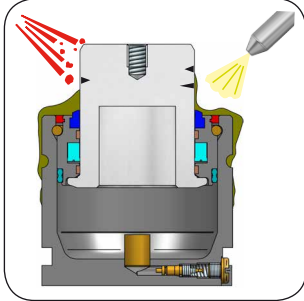
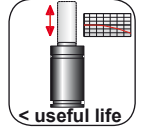
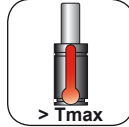


CODE	CW-PV 6600 050	KIT <sub>⌊</sub> CW-PV 6600 Serial Number	A14-120	18 GA 5
ENG ORDER	GAS SPRING	REPAIR KIT	FLANGE	CHARGING ADAPTER
DEU BESTELL	GASDRUCKFEDER	ERSATZ	FLANSCH	LADEADAPTER
FRA COMMANDE	RESSORT À GAZ	KIT DE RÉPARATION	BRIDE	RACCORD DE CHARGE
ITA ORDINE	CILINDRO AD AZOTO	KIT DI MANUTENZIONE	FLANGE	ADATTATORE DI CARICO
ESP PEDIDO	RESORTE DE GAS	KIT DE REPARACION	BRIDA	ADAPTADOR DE CARGA
POR PEDIDO	CILINDRO DE GÁS	KIT DE MANUTENÇÃO	FLANGE	ADAPTADOR DE CARGA



# 1.4 - PC (PROTECTIVE COVER)

## CHALLENGE

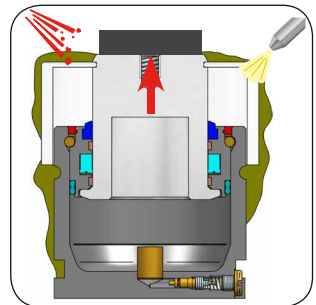
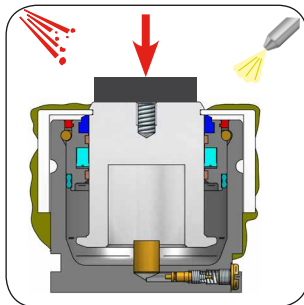
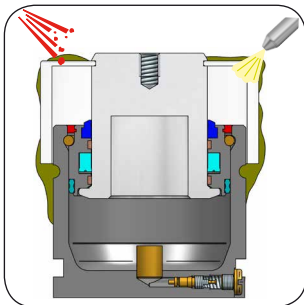
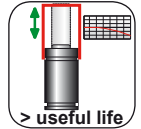
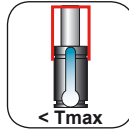


Certain application conditions involve the presence of **liquid or solid contaminants**.

The volume of solid or liquid particles and the time of use determine that the scraper gas springs are equipped with is not sufficient to protect them in those conditions.

The solid or liquid pollution is introduced into the gas springs increasing the pressure and temperature that causes gas leaks and **reduce the useful life** of gas springs.

## SOLUTION



AZOLGAS designed a protective cover **PC** that fits both the body and piston rod of the gas spring succeeding to minimize the impact of solid or liquid contaminants and **extending the useful life** of the gas springs.

**PC** protective cover adds **double protection**, and is particularly suitable for **high duty incidents** (significant solid or liquid particles without the presence of corrosion but with surface damage on the piston rod).

The solution of **PC** protective cover **saves costs**, increases productivity, it is easy to assemble by the user, and causes minimal loss of useful stroke.



# 1.4 - PC (PROTECTIVE COVER)



## ADVANTAGES



• Easy to assemble.



• Saves costs.



• Increases productivity.



• Minimal loss of useful stroke.

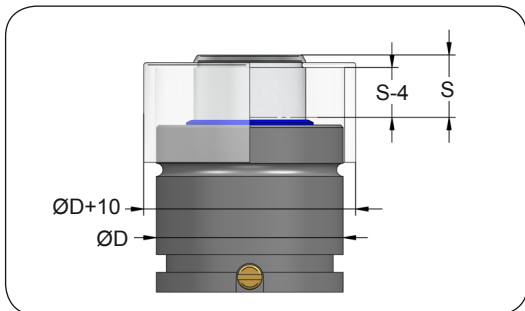


• Extra protection. High incident.

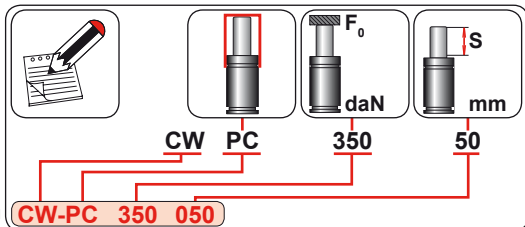
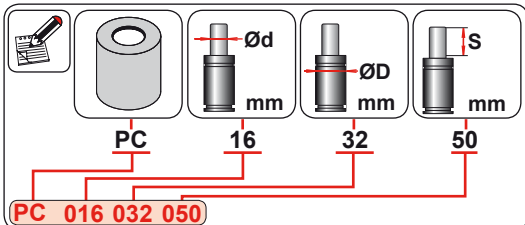
**PHOTO**

## TECHNICAL DATA

PC	MODEL	PC	MODEL	
PC 016 032	CD 300 V1	PC 036 075	AG 1500	
	CM 300		GN 1500	
	CM 350 V1		FD 1500 V2	
	CW 350		CD 2400	
	KZ 350		CM 2500	
PC 016 038	APFA 250	PC 045 075	CK 2500 V1	
	FD 300		KZ 2400	
PC 020 032	CS 770 V1	PC 050 075	CW 2400 V1	
	CD 500 V1		CT 2500/3000	
PC 020 038	KZ 500	PC 050 095	CS 4700 V1	
	CW 500		AG 3000	
	CS 1000 V1		GN 3000	
PC 022 038	CM 500 V1	PC 060 095	FD 3000	
	CK 570 V1		CD 4200	
PC 020 045	CT 550 V1		PC 065 095	CM 4000
	APF 500			CK 4000 V1
PC 022 045	FD 500			PC 065 105
	CM 600 V1	CW 4200 V1		
PC 025 045	CD 700	PC 065 120		
	CK 750 V1		CT 5000	
	KZ 750		AG 5000	
	CW 750		GN 5000	
	AG 750		FD 5000 V1	
PC 025 050	GN 750	PC 075 120	CD 6600	
	FD 750 V1		CM 6500	
	CD 1000 V1		KZ 6600	
	CM 1000		CW 6600	
	CK 1000 V1		CS 11800 V1	
PC 028 050	CT 750/1000	PC 080 120	AG 7500	
	KZ 1000		GN 7500	
	CW 1000 V1		CD 9600	
	CS 1800 V1		CM 10000	
	CD 1500 V1		CW 9500	
PC 030 050	CM 1500	PC 095 195	AG 10000	
	CK 1500 V2		CS 11800	
	CT 1500		CS 18300 V1	
	KZ 1500		CD 18500	
	CW 1500		CW 20000	
PC 036 063	CS 3000 V1	PC 100 150		
		PC 125 195		
			PC 130 195	



## HOW TO ORDER

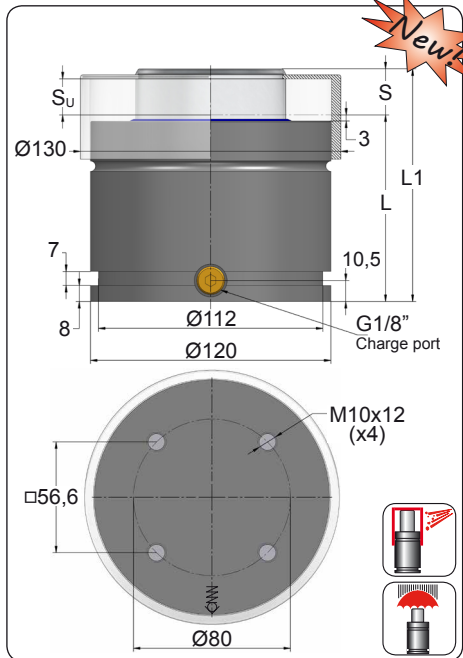


PC available for the following models

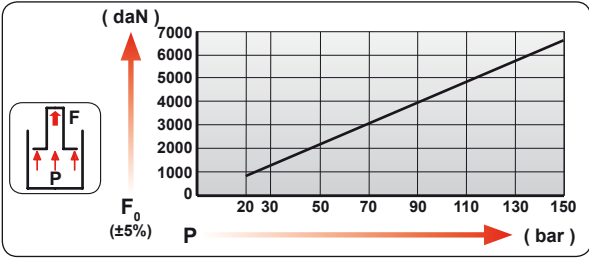
CW-PC 350 050



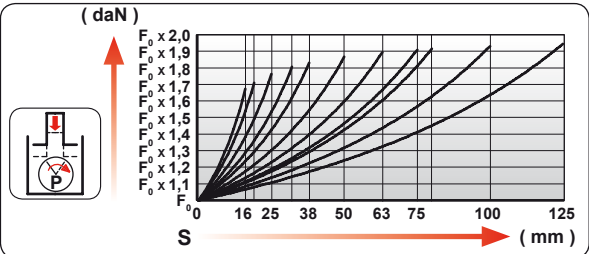
# CW-PC 6600



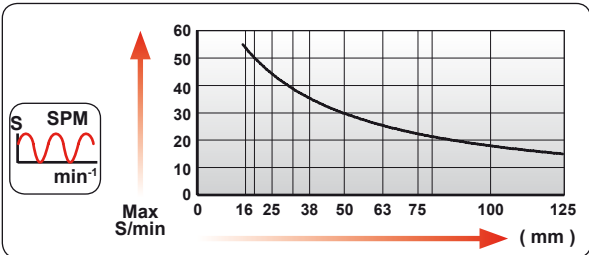
ORDER	S (mm)	S <sub>u</sub> (mm)	L1 ±0,25 (mm)	L (mm)
CW-PC 6600 016	16	12	100	84
CW-PC 6600 019	19	15	106	87
CW-PC 6600 025	25	21	118	93
CW-PC 6600 032	32	28	132	100
CW-PC 6600 038	38	34	144	106
CW-PC 6600 050	50	46	168	118
CW-PC 6600 063	63	59	194	131
CW-PC 6600 075	75	71	218	143
CW-PC 6600 080	80	76	228	148
CW-PC 6600 100	100	96	268	168
CW-PC 6600 125	125	121	318	193



CODE	Pressure		Force	
	bar	psi	daN	daN
CW-PC 6600 050	150	2175	6630	12380



	ENG ORDER DEU BESTELL FRA COMMANDE ITA ORDINE ESP PEDIDO POR PEDIDO		
		daN	mm
		6600	50
		CW-PC 6600 050	



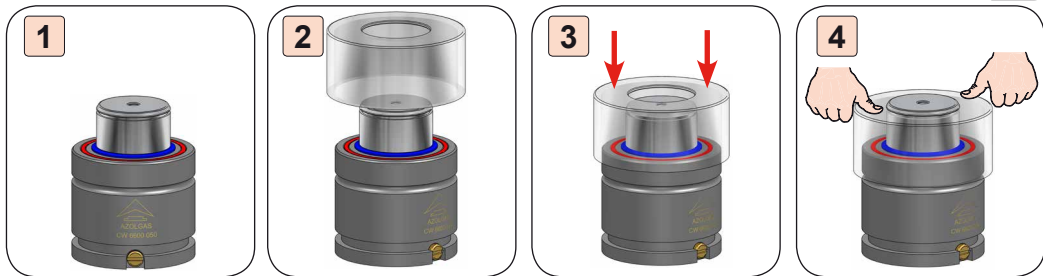
N <sub>2</sub>	S <sub>max</sub> < 90%	V <sub>max</sub> 1,6 m/s	Pmin (20°C) Pmax (20°C)	Tmin Tmax	600 CP-

N <sub>2</sub>	S <sub>max</sub> < 90%	V <sub>max</sub> 1,6 m/s	bar psi	bar psi	°C °F	°C °F	600 CP-
			20 290	150 2175	0 32	80 176	

# PC (PROTECTIVE COVER)

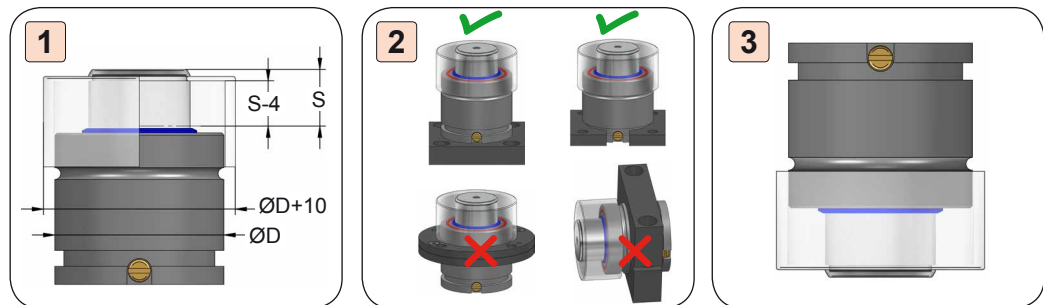


## ASSEMBLING

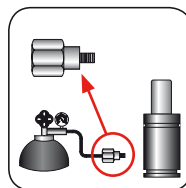
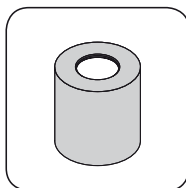
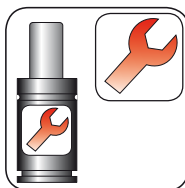
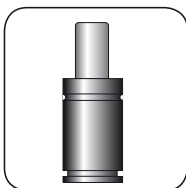


1. Identify the gas spring model.
2. Select the corresponding PC protective cover.
3. Insert the protective cover through the piston rod manually.
4. Ensure the optimal settlement.

## DIMENSIONS AND MOUNT ASSEMBLING



1. The use of PC involves that the body diameter ( $\varnothing D$ ) increases to the diameter of the protective cover PC, and the nominal stroke ( $S$ ) decreases to the size of the useful stroke ( $S_u$ ).
2. The protective cover PC can be used with mounts A and C, but not with mounts type B and D.
3. Notify AZOLGAS if fixed gas spring upside down.

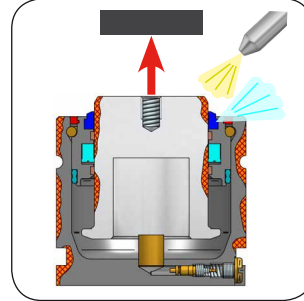
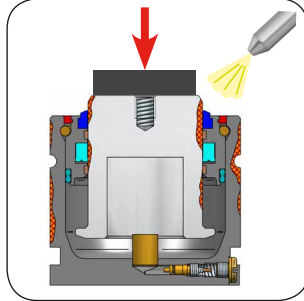
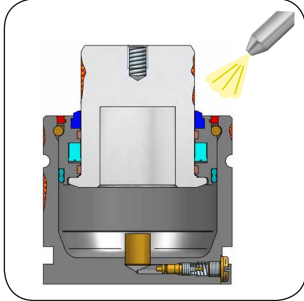
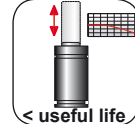
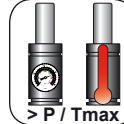


CODE	CW-PC 6600 050	KIT CW-PC 6600 Serial Number	PC 075 120 _ _ _	18 GA 5
ENG ORDER	GAS SPRING	REPAIR KIT	COVER	CHARGING ADAPTER
DEU BESTELL	GASDRUCKFEDER	ERSATZ		LADEADAPTER
FRA COMMANDE	RESSORT À GAZ	KIT DE RÉPARATION		RACCORD DE CHARGE
ITA ORDINE	CILINDRO AD AZOTO	KIT DI MANUTENZIONE		ADATTATORE DI CARICO
ESP PEDIDO	RESORTE DE GAS	KIT DE REPARACION	CUBIERTA	ADAPTADOR DE CARGA
POR PEDIDO	CILINDRO DE GÁS	KIT DE MANUTENÇÃO		ADAPTADOR DE CARGA



# 1.5 - PQ (Q TREATMENT)

## CHALLENGE

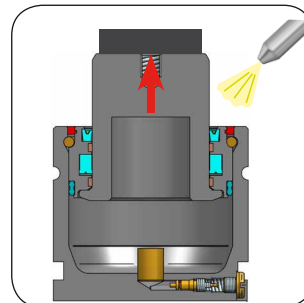
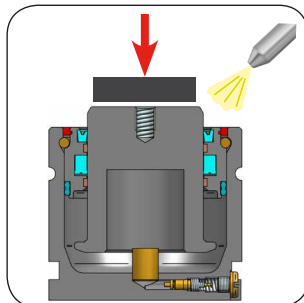
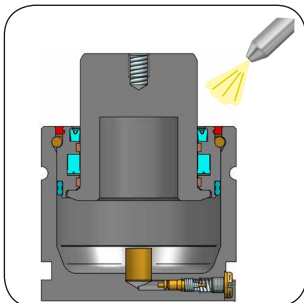
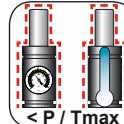
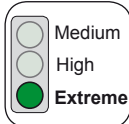
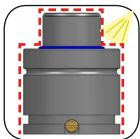


Certain application conditions involve the presence of **corrosive contaminants**.

The volume of solid or liquid particles and the time of use determine that the scraper gas springs are equipped with is not sufficient to protect them in those conditions.

The corrosive pollution increases the pressure and temperature, causes structural damages into the gas spring (**warning!**) and **reduce the useful life** of gas springs.

## SOLUTION



AZOLGAS designed a protective system **PQ** over the surfaces in contact with corrosive contaminants succeeding to minimize the impact of corrosive contaminants and **extending the useful life** of the gas springs.

**PQ** protective treatment adds double protection (against pollution and corrosion), and is particularly suitable for **extreme duty incidents** (significant solid or liquid particles with the presence of corrosion).

The solution of PQ protective treatment increase structural safety, saves costs, increases productivity, and let use in existing applications

# 1.5 - PQ (Q TREATMENT)



## ADVANTAGES



• Saves costs.



• Increases productivity.



• Increases structural safety.



• Use in existing applications.



• Extra protection. Extreme incident.

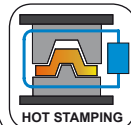
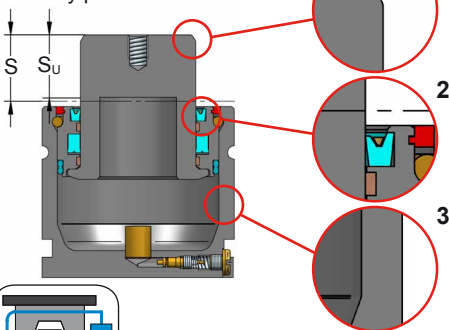
**PHOTO**

## TECHNICAL DATA

MODEL	Su (mm)
APFA 150	S
CD 300 V1	S
CM 300	S
CM 350 V1	S
KZ 350	S-1
CW 350	S-1
APFA 250	S
FD 300	S
KZ 500	S-1
CW 500	S-1
APF 500	S
FD 500	S-1
CM 600 V1	S
CD 700	S
CK 750 V1	S-1
KZ 750	S-1
CW 750	S-1
AG 750	S
GN 750	S
FD 750 V1	S
CD 1000 V1	S
CM 1000	S
CT 750/1000	S-2
CK 1000 V1	S
KZ 1000	S
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CD 1500 V1	S
CM 1500	S
CT 1500	S-1
CK 1500 V2	S
KZ 1500	S
CW 1500	S
AG 1500	S

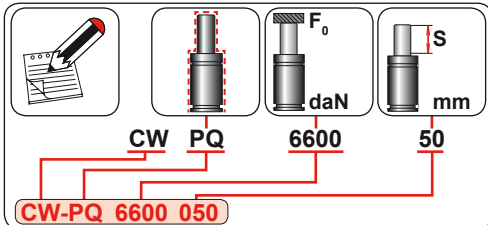
MODEL	Su (mm)
GN 1500	S
FD 1500 V2	S
CD 2400	S
CM 2500	S
CK 2500 V1	S
KZ 2400	S
CW 2400 V1	S
AG 3000	S
GN 3000	S
FD 3000	S
CD 4200	S
CM 4000	S
CK 4000 V1	S
KZ 4200	S
CW 4200 V1	S
CT 5000	S
AG 5000	S
GN 5000	S
FD 5000 V1	S
CD 6600	S
CM 6500	S
KZ 6600	S
CW 6600	S
AG 7500	S
GN 7500	S
CD 9600	S
CM 10000	S
CW 9500	S
CW 11800	S
AG 10000	S
CD 18500	S
CW 20000	S

1. Rod protection.
2. Cartridge protection.
3. Body protection.



Especially suitable for certain applications of hot stamping

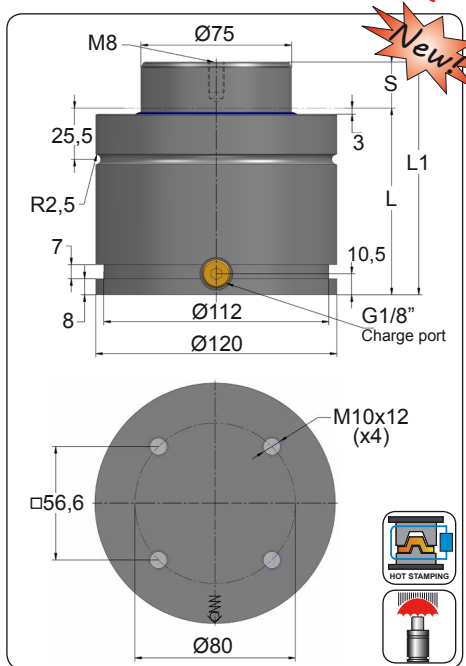
## HOW TO ORDER



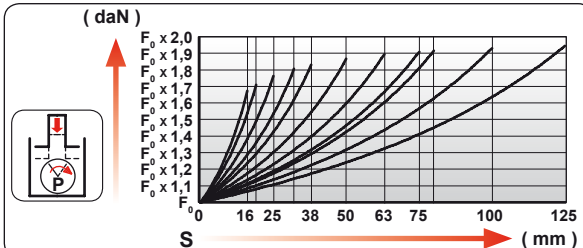
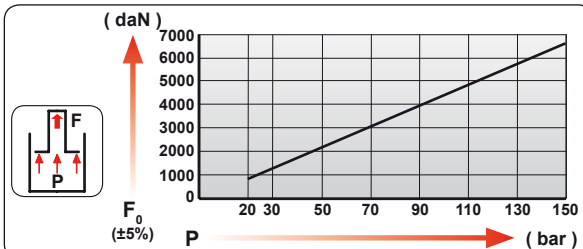
PQ available for the following models



# CW-PQ 6600



ORDER	S (mm)	L1 ±0,25 (mm)	L (mm)	Kg.
CW-PQ 6600 016	16	100	84	6.08
CW-PQ 6600 019	19	106	87	6.24
CW-PQ 6600 025	25	118	93	6.57
CW-PQ 6600 032	32	132	100	6.95
CW-PQ 6600 038	38	144	106	7.27
CW-PQ 6600 050	50	168	118	7.92
CW-PQ 6600 063	63	194	131	8.63
CW-PQ 6600 075	75	218	143	9.28
CW-PQ 6600 080	80	228	148	9.55
CW-PQ 6600 100	100	268	168	10.64
CW-PQ 6600 125	125	318	193	12.00

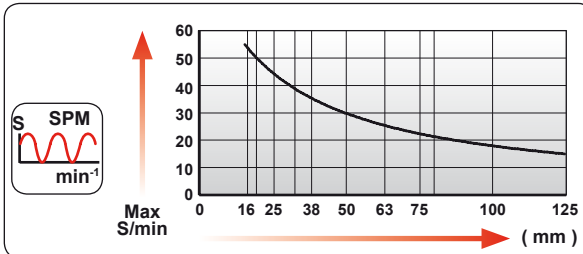


CODE	Pressure		Force	
	bar	psi	daN	daN
CW-PQ 6600 050	150	2175	6630	12380

ENG ORDER  
 DEU BESTELL  
 FRA COMMANDE  
 ITA ORDINE  
 ESP PEDIDO  
 POR PEDIDO

**CW-PQ 6600**     **50**  
 daN     mm

**CW-PQ 6600 050**



	$S_{max} < 100\%$	$v$	Pmin (20°C)	Pmax (20°C)	Tmin	Tmax	
--	-------------------	-----	-------------	-------------	------	------	--

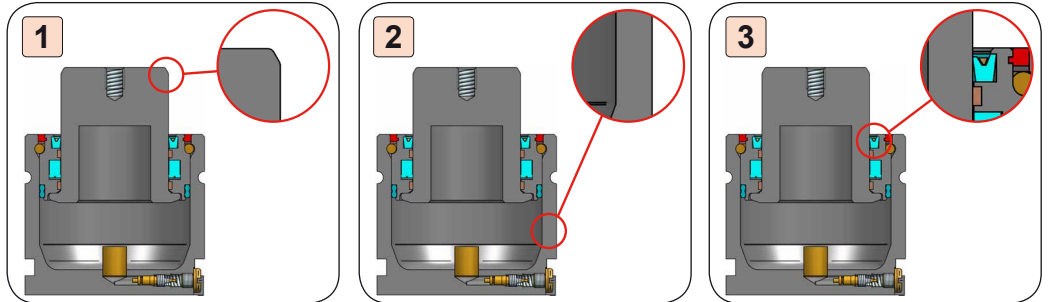
N <sub>2</sub>	S <sub>max</sub> < 90%	V <sub>max</sub> 1,6 m/s	bar psi	bar psi	°C °F	°C °F	600 CP-
			20 290	150 2175	0 32	80 176	

# PQ (Q TREATMENT)



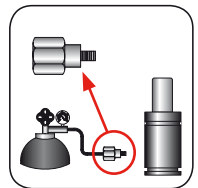
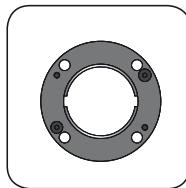
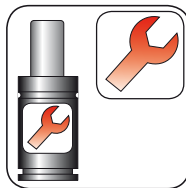
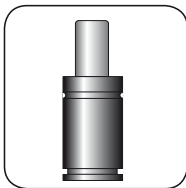
**CASE HISTORY**

## DOUBLE PROTECTION



1-2. Surface protection against corrosion on the piston rod and body.

3. Surface protection on the cartridge, equipped with active seal that prevents solid or fluid contaminants to be inserted.

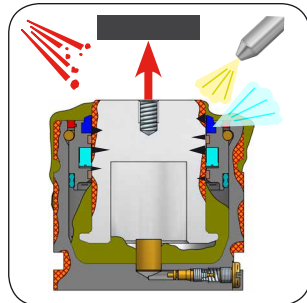
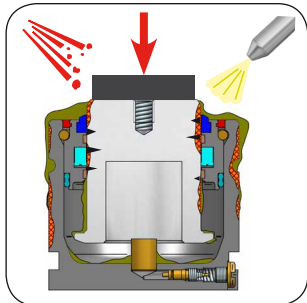
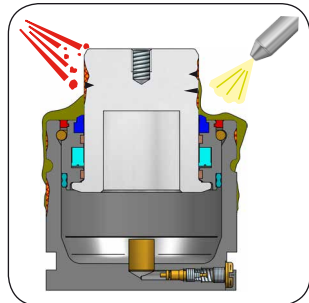
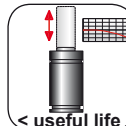
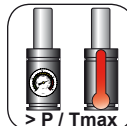
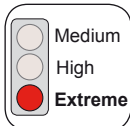


CODE	CW-PQ 6600 050	KIT CW-PQ 6600 Serial Number	A14-120	18 GA 5
ENG ORDER	GAS SPRING	REPAIR KIT	FLANGE	CHARGING ADAPTER
DEU BESTELL	GASDRUCKFEDER	ERSATZ	FLANSCH	LADEADAPTER
FRA COMMANDE	RESSORT À GAZ	KIT DE RÉPARATION	BRIDE	RACCORD DE CHARGE
ITA ORDINE	CILINDRO AD AZOTO	KIT DI MANUTENZIONE	FLANGE	ADATTATORE DI CARICO
ESP PEDIDO	RESORTE DE GAS	KIT DE REPARACION	BRIDA	ADAPTADOR DE CARGA
POR PEDIDO	CILINDRO DE GÁS	KIT DE MANUTENÇÃO	FLANGE	ADAPTADOR DE CARGA



# 1.6 - PC-PQ (Q TREATMENT + COVER)

## CHALLENGE

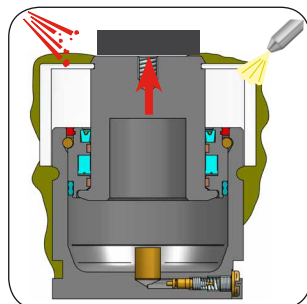
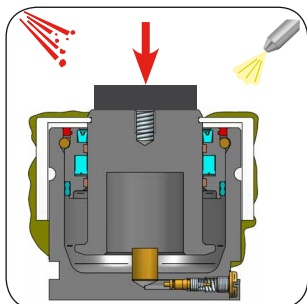
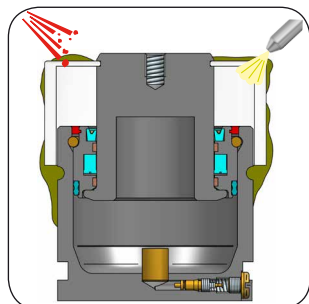
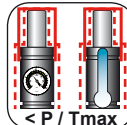
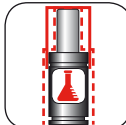
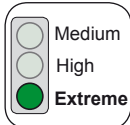
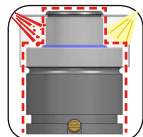


Certain application conditions involve the presence of **solid or fluid corrosive contaminants**.

The corrosive pollution increases the pressure and temperature, causes structural damages into the gas spring (**warning!**).

The impact of solid particles makes scratches on the piston rod surface what causes micro-leaks and **reduce the useful life** of gas springs.

## SOLUTION



AZOLGAS designed a protective system **PQ** over the surfaces in contact with corrosive contaminants succeeding to minimize the impact of corrosive contaminants and **extending the useful life** of the gas springs.

**PC** protective cover adds **double protection** from solid or liquid particles and from damages on the piston rod surface.

The solution **PC-PQ** increase structural **safety**, saves costs, increases productivity, and is particularly suitable for **extreme duty incidents** (significant solid or liquid particles with the presence of corrosion and with surface damage on the piston rod).



# 1.6 - PC-PQ (Q TREATMENT + COVER)



## ADVANTAGES



• Easy to assemble.



• Saves costs.



• Increases productivity.



• Increases structural safety.

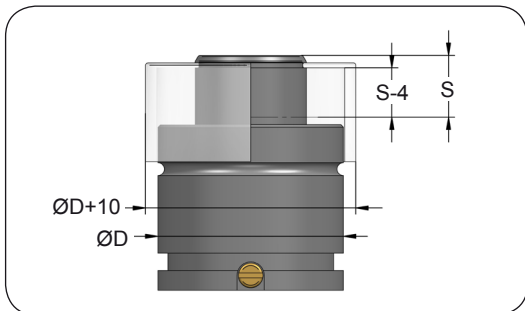


• Extra protection. Extreme incident.

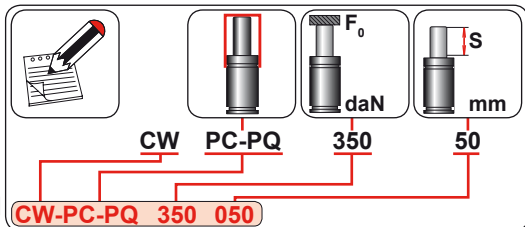
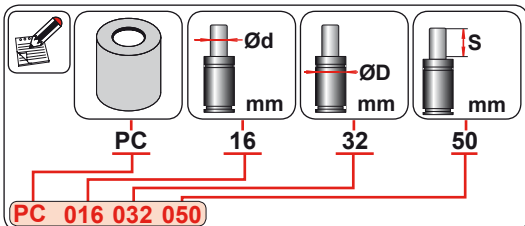
**PHOTO**

## TECHNICAL DATA

PC	MODEL	PC	MODEL	
PC 016 032	CD 300 V1	PC 045 075	CD 2400	
	CM 300		CM 2500	
	CM 350 V1		CK 2500 V1	
	CW 350		KZ 2400	
	KZ 350		CW 2400 V1	
PC 016 038	APFA 250	PC 050 095	AG 3000	
	FD 300		GN 3000	
	KZ 500		FD 3000	
	CW 500	CD 4200		
PC 020 045	APF 500	PC 060 095	CM 4000	
	FD 500		CK 4000 V1	
PC 022 045	CM 600 V1		PC 065 105	KZ 4200
				CD 700
PC 025 045	CK 750 V1	PC 065 120	CT 5000	
	KZ 750		AG 5000	
	CW 750		GN 5000	
PC 025 050	AG 750	PC 075 120	FD 5000 V1	
	GN 750		CD 6600	
	FD 750 V1		CM 6500	
PC 028 050	CD 1000 V1	PC 080 150	KZ 6600	
	CM 1000		CW 6600	
	CK 1000 V1		AG 7500	
	CT 750/1000		GN 7500	
	KZ 1000		CD 9600	
PC 036 063	CW 1000 V1	PC 090 150	CM 10000	
	CD 1500 V1		CW 9500	
	CM 1500		PC 095 195	AG 10000
	CK 1500 V2	PC 100 150	CW 11800	
	CT 1500	PC 125 195	CD 18500	
PC 036 075	KZ 1500	PC 130 195	CW 20000	
	CW 1500			
	AG 1500			
	GN 1500			
	FD 1500 V2			



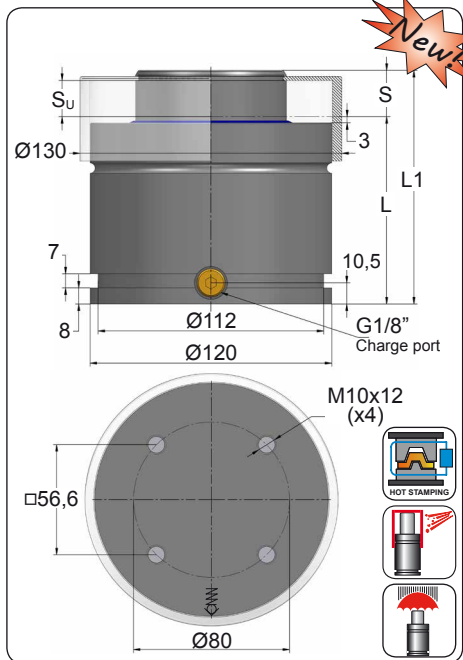
## HOW TO ORDER



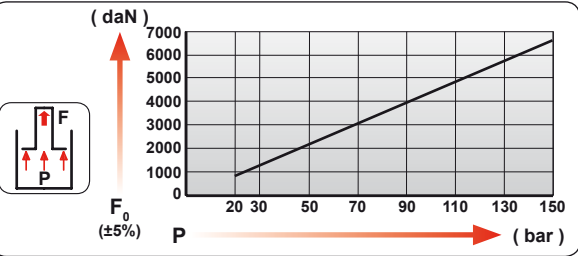
PC-PQ available for the following models



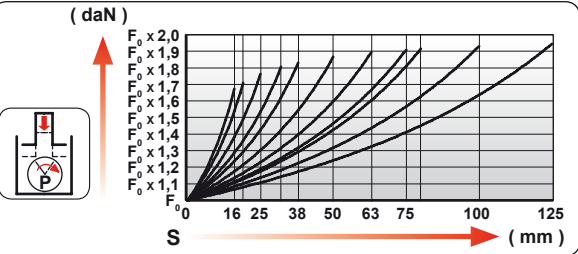
# CW-PC-PQ 6600



ORDER	S (mm)	S <sub>u</sub> (mm)	L1 ±0,25 (mm)	L (mm)
CW-PC-PQ 6600 016	16	12	100	84
CW-PC-PQ 6600 019	19	15	106	87
CW-PC-PQ 6600 025	25	21	118	93
CW-PC-PQ 6600 032	32	28	132	100
CW-PC-PQ 6600 038	38	34	144	106
CW-PC-PQ 6600 050	50	46	168	118
CW-PC-PQ 6600 063	63	59	194	131
CW-PC-PQ 6600 075	75	71	218	143
CW-PC-PQ 6600 080	80	76	228	148
CW-PC-PQ 6600 100	100	96	268	168
CW-PC-PQ 6600 125	125	121	318	193



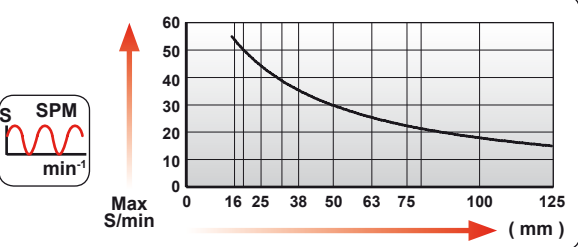
CODE	Pressure		Force	
	bar	psi	daN	daN
CW-PC-PQ 6600 050	150	2175	6630	12380



ENG ORDER  
 DEU BESTELL  
 FRA COMMANDE  
 ITA ORDINE  
 ESP PEDIDO  
 POR PEDIDO

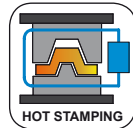
**CW-PC-PQ 6600**    **50**  
 daN    mm

**CW-PC-PQ 6600 050**



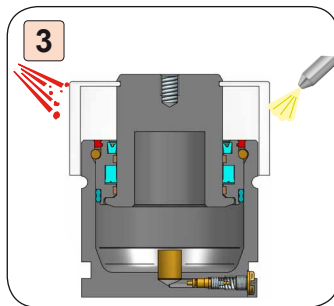
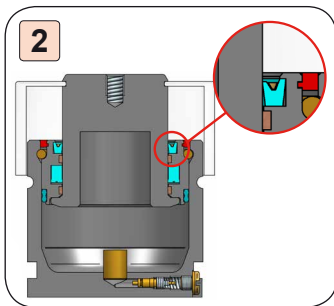
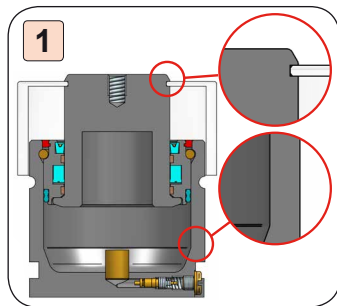
N <sub>2</sub>	S <sub>max</sub> < 90%	V <sub>max</sub> 1,6 m/s	bar psi	bar psi	°C °F	°C °F	600 CP-
			20 290	150 2175	0 32	80 176	

# PC-PQ (Q TREATMENT + COVER)

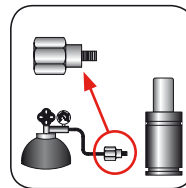
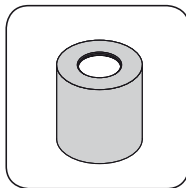
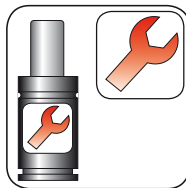
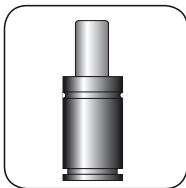


**CASE HISTORY**

## TRIPLE PROTECTION



1. Surface protection against corrosion on the piston rod and body.
2. Surface protection on the cartridge, equipped with active seal that prevents solid or fluid contaminants to be inserted.
3. Protection from impacts of solid particles on piston rod surface through cover.




CODE		CW-PC-PQ 6600 050	KIT_CW-PC-PQ 6600 Serial Number	PC 075 120 _ _ _	18 GA 5
ENG	ORDER	GAS SPRING	REPAIR KIT	COVER	CHARGING ADAPTER
DEU	BESTELL	GASDRUCKFEDER	ERSATZ		LADEADAPTER
FRA	COMMANDE	RESSORT À GAZ	KIT DE RÉPARATION		RACCORD DE CHARGE
ITA	ORDINE	CILINDRO AD AZOTO	KIT DI MANUTENZIONE		ADATTATORE DI CARICO
ESP	PEDIDO	RESORTE DE GAS	KIT DE REPARACION	CUBIERTA	ADAPTADOR DE CARGA
POR	PEDIDO	CILINDRO DE GÁS	KIT DE MANUTENÇÃO		ADAPTADOR DE CARGA





## 2 - GUIDING

CHALLENGE SOLUTION	 <ul style="list-style-type: none"> <li><span style="color: red;">●</span> Medium</li> <li><span style="color: grey;">●</span> High</li> <li><span style="color: grey;">●</span> Extreme</li> </ul>	 <ul style="list-style-type: none"> <li><span style="color: red;">●</span> Medium</li> <li><span style="color: red;">●</span> High</li> <li><span style="color: grey;">●</span> Extreme</li> </ul>	 <ul style="list-style-type: none"> <li><span style="color: red;">●</span> Medium</li> <li><span style="color: grey;">●</span> High</li> <li><span style="color: red;">●</span> Extreme</li> </ul>
<p style="color: red; font-weight: bold;">FR</p> 			
<p style="color: red; font-weight: bold;">FS</p> 			
<p style="color: red; font-weight: bold;">FP</p> 			

Gas springs may be affected by sideloads or deviations from perpendicularity that depending on its intensity, cause a higher friction on the sealing elements of the gas spring, what increases the pressure and the temperature and reduce its useful life.



● **Medium incident:**  
 Deviation from perpendicularity up to 1°.

**Solution:**  
**FR** (Flex Rod)



● **High incident:**  
 Sideloads up to 1 mm (0,5 mm to any position).

**Solution:**  
**FS** (Flex Sideload)









● **Exteme incident:**  
 Deviations from perpendicularity up to 3° and sideloads up to 5 mm.

**Solution:**  
**FP** (Flex Plate)








## 2 - GUIDING

SOLUTION	FR	FS	FP	
MODEL	 	 	 	
AFB V2				
AFH V1				
AFJ V1				
AFK V1				
AFD V1				
AFC				
AFNA				
AF V1				
AFT V1				
AS 200				
AS 300				
AS 500 V1				
AS 600 V1				
AS 700 V1				
AS 1000				
ASP 250				
ASP 300				
ASP 500 V1				
AST 200 V1				
AST 250				
AST 300 V1				
AST 1000				
APFA 150	✓ FR			
APFA 250	✓ FR			
APF 500	✓ FR			
AG 750	✓ FR	✓ FS		
AG 1500	✓ FR	✓ FS	✓ FP	
AG 3000	✓ FR	✓ FS	✓ FP	
AG 5000	✓ FR	✓ FS	✓ FP	
AG 7500		✓ FS	✓ FP	
AG 10000		✓ FS	✓ FP	
CD 300 V1				
CD 500 V1				
CD 700	✓ FR	✓ FS		
CD 1000 V1	✓ FR	✓ FS		
CD 1500 V1	✓ FR	✓ FS		
CD 2400	✓ FR	✓ FS	✓ FP	
CD 4200	✓ FR	✓ FS	✓ FP	
CD 6600	✓ FR	✓ FS	✓ FP	
CD 9600		✓ FS	✓ FP	
CD 18500		✓ FS	✓ FP	
CM 200				
CM 300				
CM 350 V1				
CM 500 V1		✓ FS		
CM 600 V1		✓ FS		
CM 1000	✓ FR	✓ FS		
CM 1500	✓ FR	✓ FS		
CM 2500	✓ FR	✓ FS	✓ FP	
CM 4000	✓ FR	✓ FS	✓ FP	
CM 6500	✓ FR	✓ FS	✓ FP	
CM 10000		✓ FS	✓ FP	
GN 750	✓ FR	✓ FS		
GN 1500	✓ FR	✓ FS	✓ FP	
GN 3000	✓ FR	✓ FS	✓ FP	
GN 5000	✓ FR	✓ FS	✓ FP	
GN 7500		✓ FS	✓ FP	
FD 300				
FD 500	✓ FR			
FD 750 V1	✓ FR	✓ FS		
FD 1500 V2	✓ FR	✓ FS	✓ FP	
FD 3000	✓ FR	✓ FS	✓ FP	
FD 5000 V1	✓ FR	✓ FS	✓ FP	



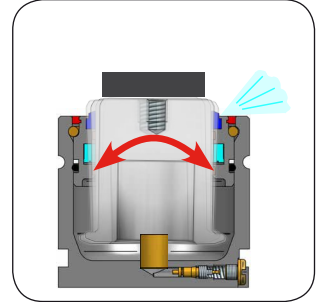
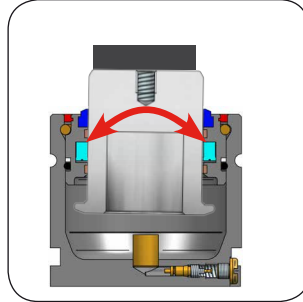
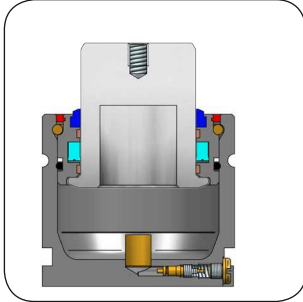
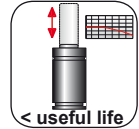
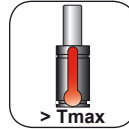
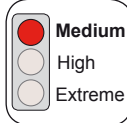
## 2 - GUIDING

SOLUTION MODEL	FR	FS	FP	
	 <ul style="list-style-type: none"> <li><input checked="" type="radio"/> Medium</li> <li><input type="radio"/> High</li> <li><input type="radio"/> Extreme</li> </ul>	 <ul style="list-style-type: none"> <li><input type="radio"/> Medium</li> <li><input checked="" type="radio"/> High</li> <li><input type="radio"/> Extreme</li> </ul>	 <ul style="list-style-type: none"> <li><input type="radio"/> Medium</li> <li><input type="radio"/> High</li> <li><input checked="" type="radio"/> Extreme</li> </ul>	
CK 200 V1				
CK 300 V1				
CK 570 V1		✓ FS		
CK 750 V1		✓ FS		
CK 1000 V1		✓ FS		
CK 1500 V2		✓ FS		
CK 2500 V1	✓ FR	✓ FS	✓ FP	
CK 4000 V1	✓ FR	✓ FS	✓ FP	
CT 200 V1				
CT 300 V1				
CT 550 V1		✓ FS		
CT 750		✓ FS		
CT 1000		✓ FS		
CT 1500		✓ FS		
CT 2500	✓ FR	✓ FS	✓ FP	
CT 3000	✓ FR	✓ FS	✓ FP	
CT 5000	✓ FR	✓ FS	✓ FP	
KZ 350				
KZ 500				
KZ 750		✓ FS		
KZ 1000		✓ FS		
KZ 1500		✓ FS		
KZ 2400	✓ FR	✓ FS	✓ FP	
KZ 4200	✓ FR	✓ FS	✓ FP	
KZ 6600	✓ FR	✓ FS	✓ FP	
CW 170 V1				
CW 320 V1				
CW 350				
CW 500				
CW 750		✓ FS		
CW 1000 V1		✓ FS		
CW 1500		✓ FS		
CW 2400 V1	✓ FR	✓ FS	✓ FP	
CW 4200 V1	✓ FR	✓ FS	✓ FP	
CW 6600	✓ FR	✓ FS	✓ FP	
CW 9500	✓ FR	✓ FS	✓ FP	
CW 11800	✓ FR	✓ FS	✓ FP	
CW 20000				
CP 150				
CP 300				
CP 500				
CP 1000 V1				
CP 2000 V1				
CP 3000 V1				
CP 5000 V1				
CP 8000 V1				
CPH 850				
CPH 1250				
CPH 1700				
CPH 2800				
CPH 4300				
CS 420 V1				
CS 770 V2				
CS 1000 V1				
CS 1800 V1				
CS 3000 V2				
CS 4700 V1				
CS 7500 V1				
CS 11800 V1				
CS 18300 V1				



## 2.1 - FR (FLEX ROD)

### CHALLENGE

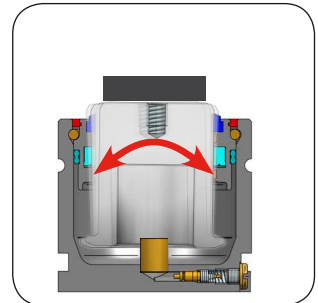
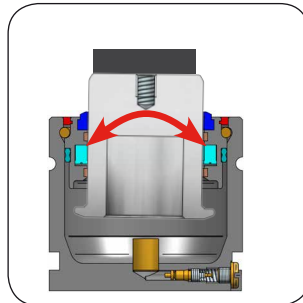
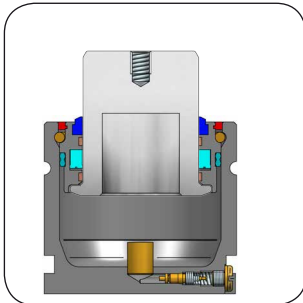
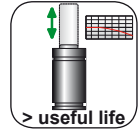
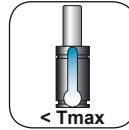
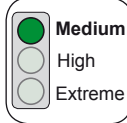


Certain application conditions involve the existence of side loads or **deviations from perpendicularity**.

Depending on the intensity of side load or perpendicularity deviation, a rigid guiding of a gas spring is not sufficient to achieve optimal performance at the above conditions.

Side loads or deviations from perpendicularity cause a higher friction on the sealing elements of the gas spring, what increases the pressure and the temperature and **reduce its useful life**.

### SOLUTION



AZOLGAS designed a flex rod system **FR** that swings over the cartridge, succeeding to minimize the impact of side loads or deviations from perpendicularity and **extending the useful life** of the gas springs.

The **FR sytem improves** the guiding of gas springs, and is particularly suitable for medium duty incidents (deviations from perpendicularity up to 1°).

**FR** solution is incorporated in most of AZOLGAS gas springs, **saves costs**, increases productivity, and let use in existing applications without modification of any dimension.





## 2.1 - FR (FLEX ROD)

### ADVANTAGES



- Fitted as **standard**.



- **Saves costs**.



- Increases **productivity**.



- Use in **existing applications**.

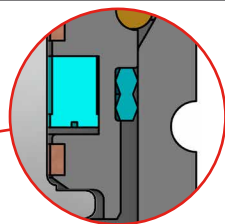
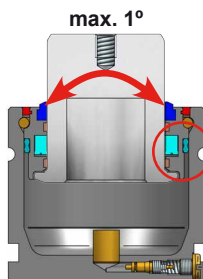


- **Extra guiding**. Medium incident.

**PHOTO**

### TECHNICAL DATA

MODEL	MODEL
APFA 150	AG 3000
APFA 250	GN 3000
APF 500	FD 3000
FD 500	CD 4200
CD 700	CM 4000
AG 750	CK 4000 V1
GN 750	KZ 4200
FD 750 V1	CW 4200 V1
CD 1000 V1	CT 5000
CM 1000	AG 5000
CD 1500 V1	GN 5000
CM 1500	FD 5000 V1
AG 1500	CD 6600
GN 1500	CM 6500
FD 1500 V2	KZ 6600
CD 2400	CW 6600
CM 2500	CW 9500
CK 2500 V1	CW 11800
KZ 2400	
CW 2400 V1	
CT 2500/3000	

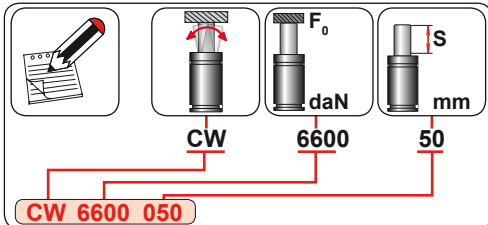


◦ **FR** (Flex Rod) design enables a flexible joint between the cartridge and the piston rod of the gas spring, so that it can absorb certain inclination without the gas leak.

◦ **FR** system achieves that the axial forces make swing the set cartridge-piston rod, without damage neither dynamic guiding nor sealing elements.

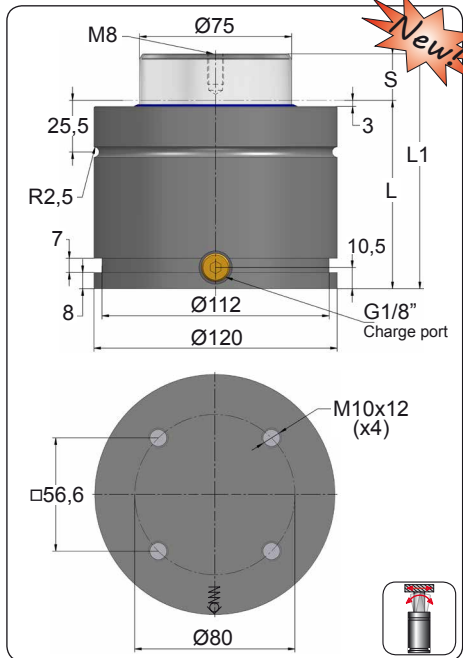
**FR** available for the following models

### HOW TO ORDER

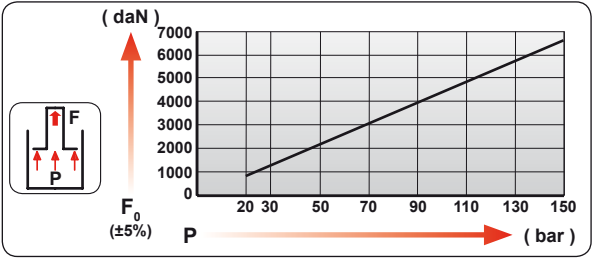




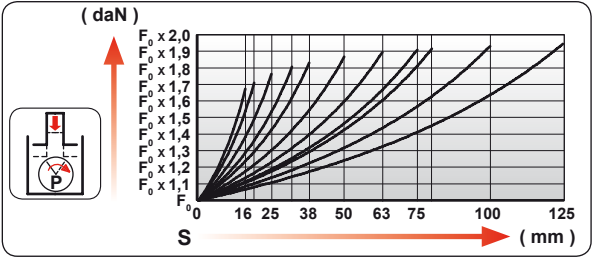
# CW 6600



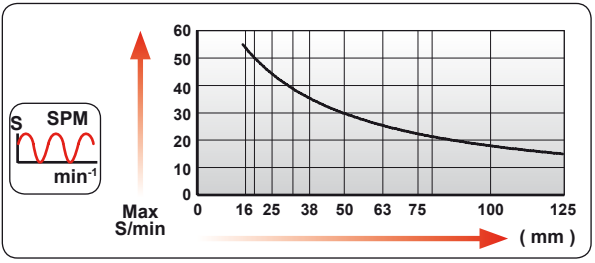
ORDER	S (mm)	L1 ±0,25 (mm)	L (mm)	Kg.
CW 6600 016	16	100	84	6.08
CW 6600 019	19	106	87	6.24
CW 6600 025	25	118	93	6.57
CW 6600 032	32	132	100	6.95
CW 6600 038	38	144	106	7.27
CW 6600 050	50	168	118	7.92
CW 6600 063	63	194	131	8.63
CW 6600 075	75	218	143	9.28
CW 6600 080	80	228	148	9.55
CW 6600 100	100	268	168	10.64
CW 6600 125	125	318	193	12.00



CODE	Pressure		Force	
	bar	psi	daN	daN
CW 6600 050	150	2175	6630	12380



	ENG ORDER DEU BESTELL FRA COMMANDE ITA ORDINE ESP PEDIDO POR PEDIDO		
		daN	mm
		6600	50
<b>CW 6600 050</b>			



N <sub>2</sub>	S <sub>max</sub> < 90%	V <sub>max</sub> 1,6 m/s	P <sub>min</sub> (20°C)	P <sub>max</sub> (20°C)	T <sub>min</sub>	T <sub>max</sub>	600 CP-

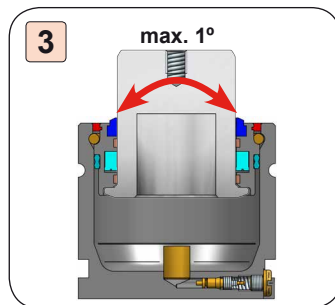
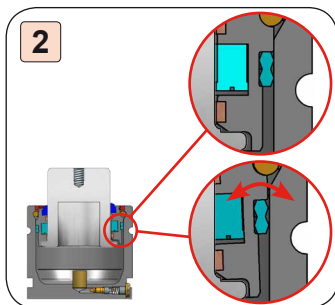
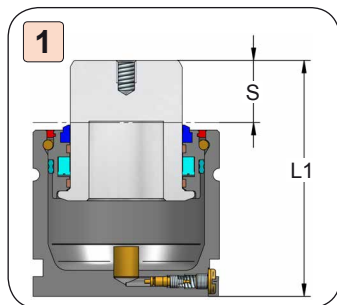
bar	psi	bar	psi	°C	°F	°C	°F
20	290	150	2175	0	32	80	176



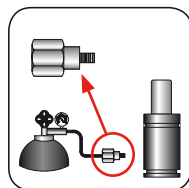
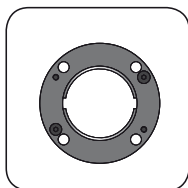
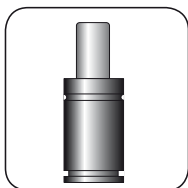
# FR (FLEX ROD)

**CASE HISTORY**

## FLEX ROD



1. The FR system does not involve a variation of the dimensions of the gas spring.
2. FR (Flex Rod) design enables a flexible joint between the cartridge and the piston rod of the gas spring.
3. Allows deviation from perpendicularity up to 1°.

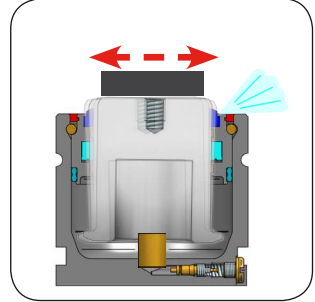
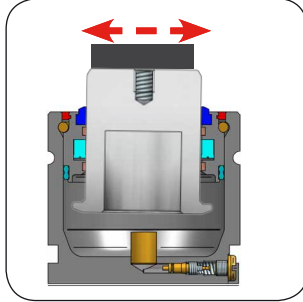
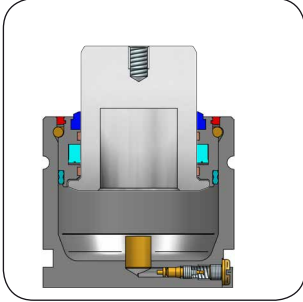
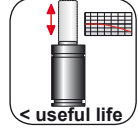
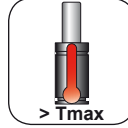


CODE	CW 6600 050	KIT_CW 6600 Serial Number	A14-120	18 GA 5
ENG ORDER	GAS SPRING	REPAIR KIT	FLANGE	CHARGING ADAPTER
DEU BESTELL	GASDRUCKFEDER	ERSATZ	FLANSCH	LADEADAPTER
FRA COMMANDE	RESSORT À GAZ	KIT DE RÉPARATION	BRIDE	RACCORD DE CHARGE
ITA ORDINE	CILINDRO AD AZOTO	KIT DI MANUTENZIONE	FLANGE	ADATTATORE DI CARICO
ESP PEDIDO	RESORTE DE GAS	KIT DE REPARACION	BRIDA	ADAPTADOR DE CARGA
POR PEDIDO	CILINDRO DE GÁS	KIT DE MANUTENÇÃO	FLANGE	ADAPTADOR DE CARGA



## 2.2 - FS (FLEX SIDELOAD)

### CHALLENGE

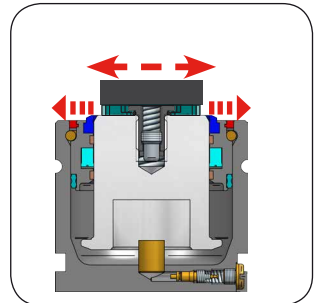
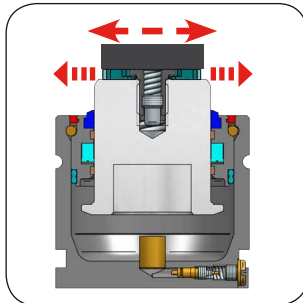
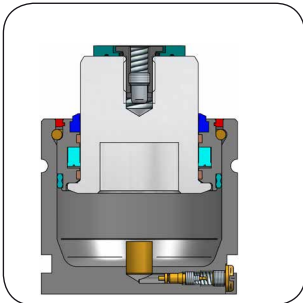
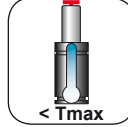


Certain application conditions involve the existence of **sideloads**.

Depending on the intensity of the side load, a rigid guiding of a gas spring is not sufficient to achieve optimal performance at the above conditions.

Sideloads cause a higher friction on the sealing elements of the gas spring, what increases the pressure and the temperature and **reduce its useful life**.

### SOLUTION



AZOLGAS designed a flex side load system **FS** that acts on the piston rod, succeeding to minimize the impact of side loads and **extending the useful life** of the gas springs.

The **FS** system **improves the guiding** of gas springs, and is particularly suitable for high duty incidents (sideloads up to 1 mm, 0.5 to any position).

**FS** solution **saves costs**, increases productivity, and let use in existing applications without modification of any dimension.



## 2.2 - FS (FLEX SIDELOAD)

### ADVANTAGES



- Saves costs.



- Increases productivity.



- Same standard dimensions.



- Use in existing applications.



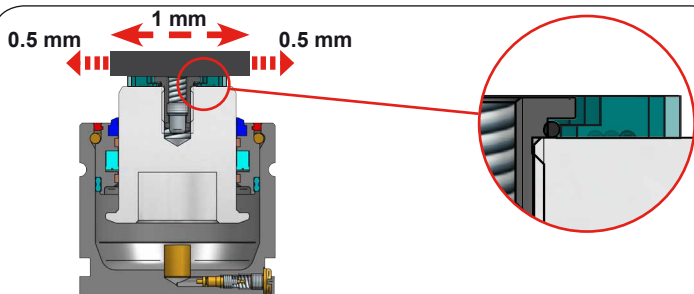
- Extra guiding. High incident.

**PHOTO**

### TECHNICAL DATA

MODEL
CM 500 V1
CM 600 V1
CK 570 V1
CT 550 V1
AG 750
CD 700
GN 750
FD 750 V1
CK 750 V1
KZ 750
CW 750
CD 1000 V1
CM 1000
CK 1000 V1
CT 750/1000
KZ 1000
CW 1000 V1
AG 1500
CD 1500 V1
GN 1500
FD 1500 V2
CM 1500
CK 1500 V2
CT 1500
KZ 1500
CW 1500
CD 2400
CM 2500
CK 2500 V1

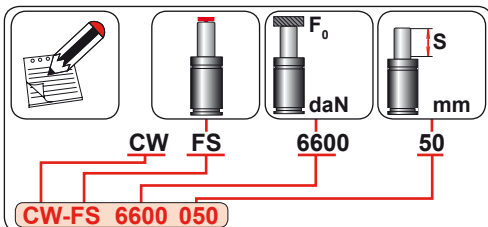
MODEL
KZ 2400
CW 2400 V1
AG 3000
GN 3000
FD 3000
CT 2500/3000
CD 4200
CM 4000
CK 4000 V1
KZ 4200
CW 4200 V1
AG 5000
GN 5000
FD 5000 V1
CT 5000
CD 6600
CM 6500
KZ 6600
CW 6600
AG 7500
GN 7500
CD 9600
CW 9500
CM 10000
AG 10000
CW 11800
CD 18500
CW 20000



- The sliding system **FS** installed on the top of the piston rod moves with the mobile part of the die and achieves that sideloads are not transmitted to the gas spring.

- The total range of the slide is 1mm (0.5 mm in any direction from the centered position).

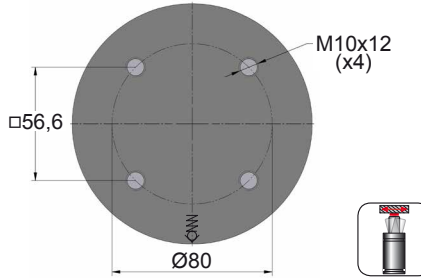
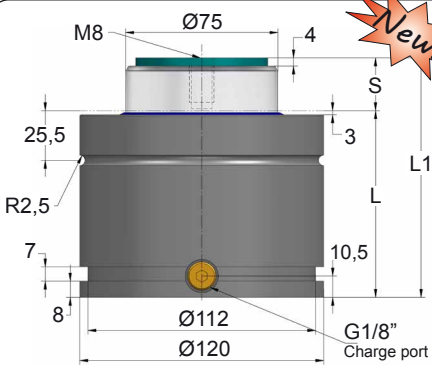
### HOW TO ORDER



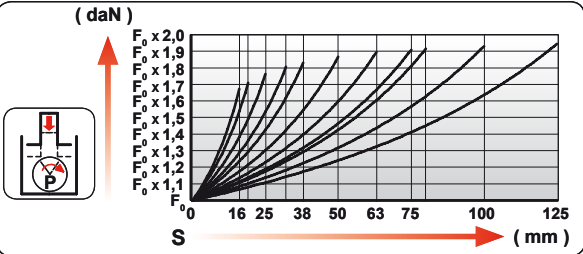
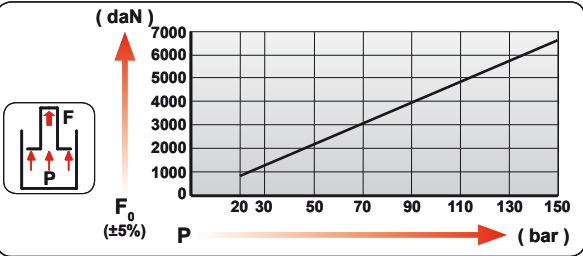
**FS** available for the following models



# CW-FS 6600



ORDER	S (mm)	L1 ±0,25 (mm)	L (mm)	Kg.
CW-FS 6600 016	16	100	84	6.08
CW-FS 6600 019	19	106	87	6.24
CW-FS 6600 025	25	118	93	6.57
CW-FS 6600 032	32	132	100	6.95
CW-FS 6600 038	38	144	106	7.27
CW-FS 6600 050	50	168	118	7.92
CW-FS 6600 063	63	194	131	8.63
CW-FS 6600 075	75	218	143	9.28
CW-FS 6600 080	80	228	148	9.55
CW-FS 6600 100	100	268	168	10.64
CW-FS 6600 125	125	318	193	12.00

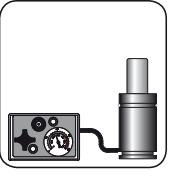
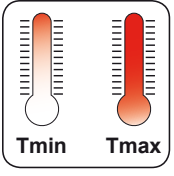
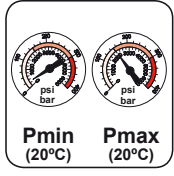
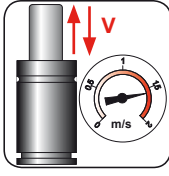
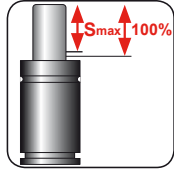
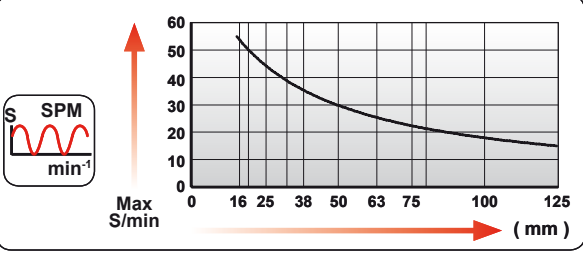


CODE	Pressure		Force	
	bar	psi	daN	daN
CW-FS 6600 050	150	2175	6630	12380

	ENG ORDER		daN		mm
	DEU BESTELL				
	FRA COMMANDE				
	ITA ORDINE				
	ESP PEDIDO				
POR PEDIDO					

**CW-FS 6600 50**

**CW-FS 6600 050**

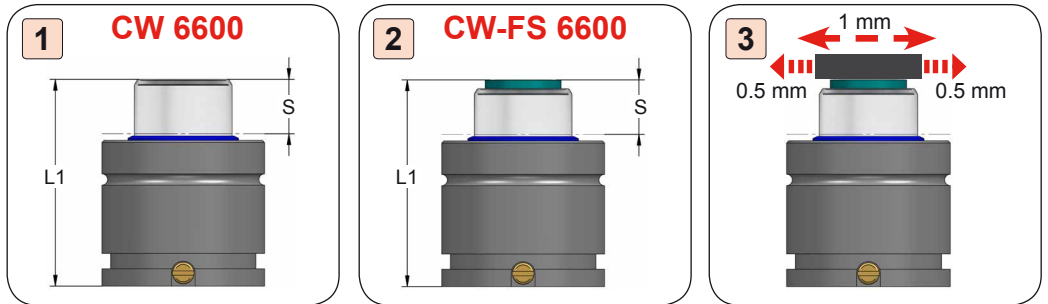


N <sub>2</sub>	Smax < 90%	Vmax 1,6 m/s	bar psi	bar psi	°C °F	°C °F	400 CP-
			20 290	150 2175	0 32	80 176	

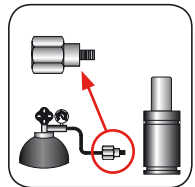
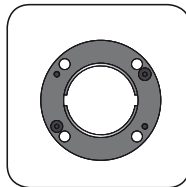
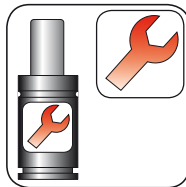
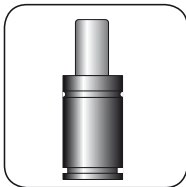


**CASE HISTORY**

**FLEX SIDELOAD**



1. The FS system does not involve a variation of the dimensions of the gas spring.
2. Respects the same overall length L1 and the same nominal stroke S than a standard gas spring.
3. Allows lateral movement up to 1 mm, 0.5 mm in any direction from its centered position.

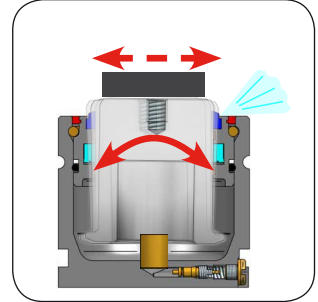
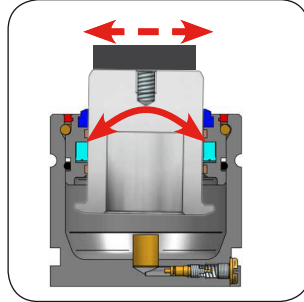
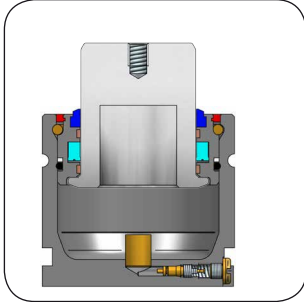
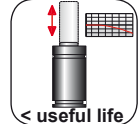
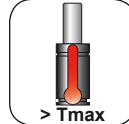


CODE		CW-FS 6600 050	KIT CW 6600 Serial Number	A14-120	18 GA 5
ENG	ORDER	GAS SPRING	REPAIR KIT	FLANGE	CHARGING ADAPTER
DEU	BESTELL	GASDRUCKFEDER	ERSATZ	FLANSCH	LADEADAPTER
FRA	COMMANDE	RESSORT À GAZ	KIT DE RÉPARATION	BRIDE	RACCORD DE CHARGE
ITA	ORDINE	CILINDRO AD AZOTO	KIT DI MANUTENZIONE	FLANGE	ADATTATORE DI CARICO
ESP	PEDIDO	RESORTE DE GAS	KIT DE REPARACION	BRIDA	ADAPTADOR DE CARGA
POR	PEDIDO	CILINDRO DE GÁS	KIT DE MANUTENÇÃO	FLANGE	ADAPTADOR DE CARGA



## 2.3 - FP (FLEX PLATE)

### CHALLENGE

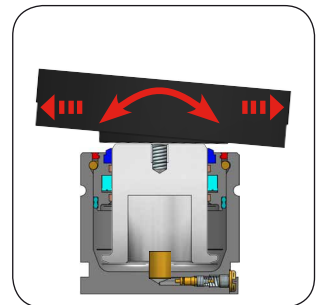
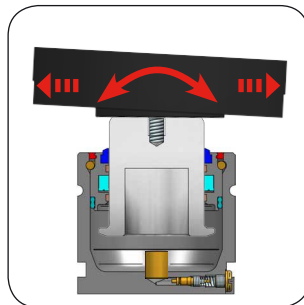
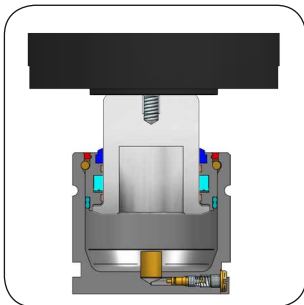
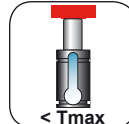
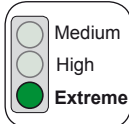


Certain application conditions involve the existence of **sideloads** or **deviations from perpendicularity**.

Depending on the intensity of side load or perpendicularity deviation, a rigid guiding of a gas spring is not sufficient to achieve optimal performance at the above conditions.

Sideloads or deviations from perpendicularity cause a higher friction on the sealing elements of the gas spring, what increases the pressure and the temperature and **reduce its useful life**.

### SOLUTION



AZOLGAS designed a flex plate system **FP** sliding-swinging, succeeding to minimize the impact of sideloads or deviations from perpendicularity and extending the useful life of the gas springs.

The **FP sytem improves the guiding** of gas springs, and is particularly suitable for extreme duty incidents (sideloads up to 5 mm and deviations from perpendicularity up to 3°).

**FP** solution is easy to assemble by user, **saves costs**, increases productivity, and let be used with most of gas springs.





## 2.3 - FP (FLEX PLATE)

### ADVANTAGES



• Easy to assemble.



• Saves costs.



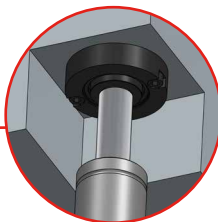
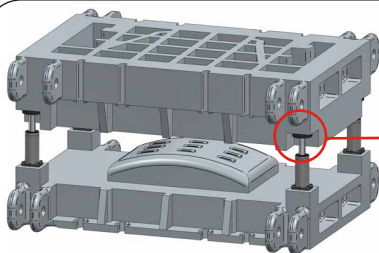
• Increases productivity.



• Extra guiding. Extreme incident.

**PHOTO**

### TECHNICAL DATA



- The design of FP (Flex Plate) allows flexible contact between the pushing surface and the gas spring piston rod, in such a way that is able to absorb significant side loads and deviations from perpendicularity.
- The system FP (Flex Plate) achieves that axial forces move and swing the flexible plate without damage neither dynamic guiding nor sealing elements of gas springs.
- The total side sliding movement is 5 mm (2.5 mm in either direction from the centered position) and inclination to 3°.

MODEL	MODEL	MODEL
AG 1500	CD 4200	CW 6600
GN 1500	CM 4000	AG 7500
FD 1500 V2	CK 4000 V1	GN 7500
CD 2400	KZ 4200	CD 9600
CM 2500	CW 4200 V1	CW 9500
CK 2500 V1	CT 5000	AG 10000
KZ 2400	AG 5000	CM 10000
CW 2400 V1	GN 5000	CW 11800
CT 2500/3000	FD 5000 V1	CD 18500
AG 3000	CD 6600	CW 20000
GN 3000	CM 6500	
FD 3000	KZ 6600	

FP available for the following models

### HOW TO ORDER





## 2.3 - FP (FLEX PLATE)

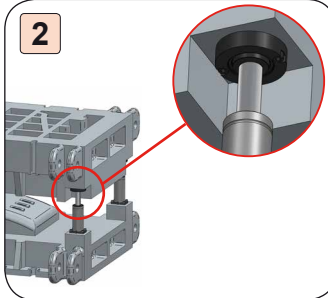
**PHOTO**

### HOW TO ASSEMBLE

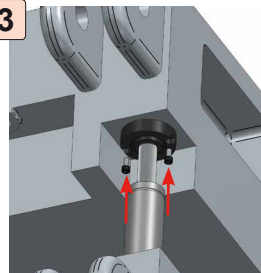
#### 1 CW-FP 6600



2

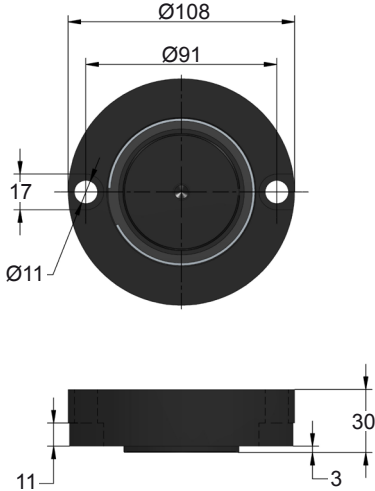


3

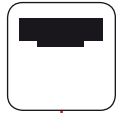


1. Check the gas spring model is suitable for use with the FP plate.
2. Verify that there is space enough to fit the FP plate into the tool.
3. Fix the FP plate to the die with screws 2x M10.

## 2.3 - FP (FLEX PLATE)



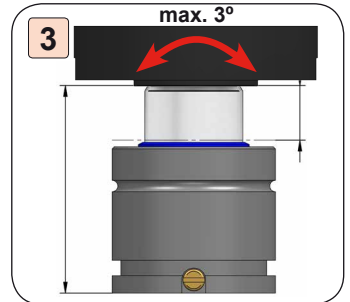
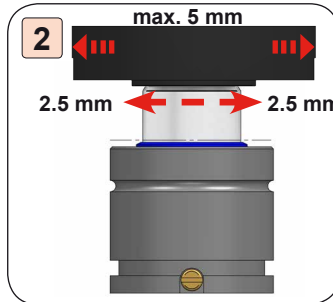
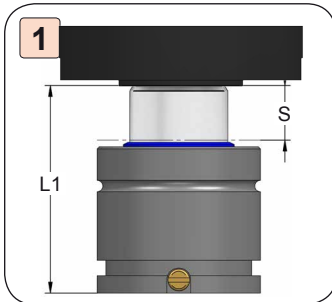
### HOW TO ORDER



FP

FP

### FLEX PLATE (SLIDING & SWINGING)



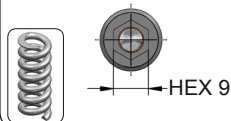
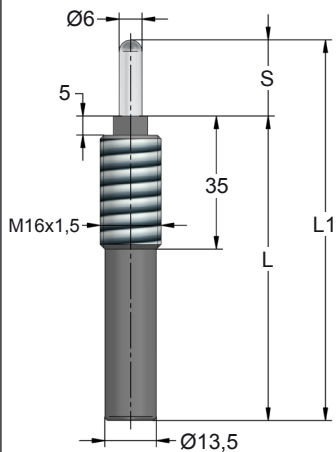
1. The use of FP system does not involve a variation of the dimensions of the gas spring, the location of the plate is inserted in the die itself.
2. Allows side loads up to 5 mm.
3. Allows deviations from perpendicularity up to 3°.

- Range forces 1500 - 20000 daN.
- Fix with screws 2x M10.
- Hardened surface contact.
- Compact plate.
- Flexible support.

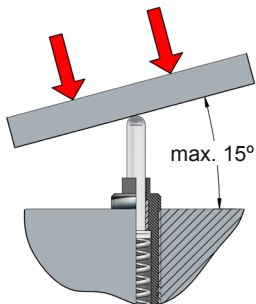


# 2.4 - FMBHR (SPRING PLUNGER 15°)

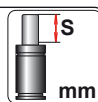
## FMBHR



ORDER	S (mm)	L1 (mm)	L (mm)	F <sub>0</sub> (N)	F <sub>1</sub> (N)	Key
<b>FMBHR 16 020</b>	20	100	80	24	186	LPV 8-9



ENG ORDER  
DEU BESTELL  
FRA COMMANDE  
ITA ORDINE  
ESP PEDIDO  
POR PEDIDO



**FMBHR M16**

**20**

**FMBHR 16 020**



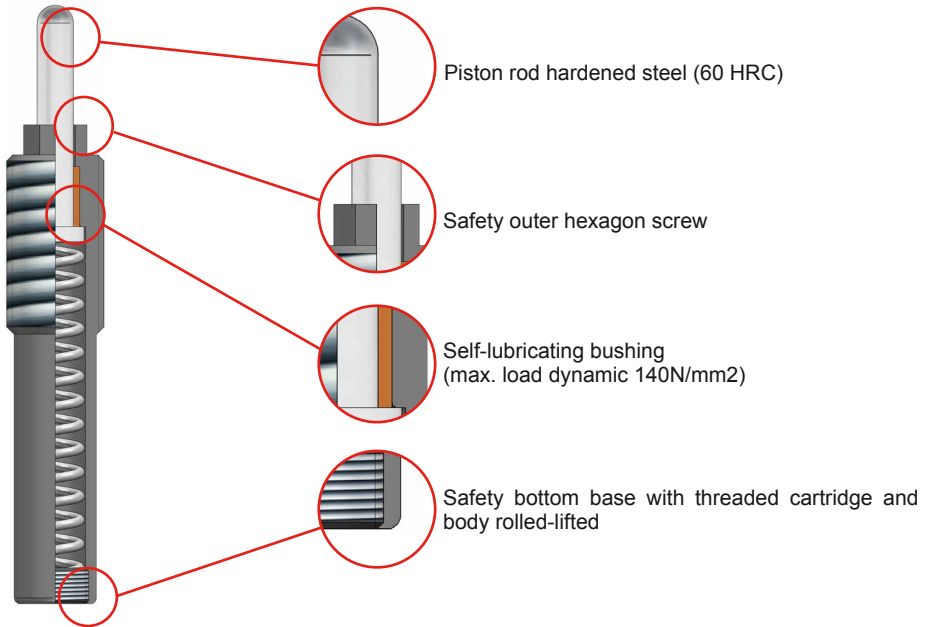
**LPV 8-9**

**PHOTO**

## 2.4 - FMBHR (SPRING PLUNGER 15°)



### TECHNICAL DATA



### CASE HISTORY

A large automotive assembly plant faces stamping problems (metal sheet removal) in applications with deviations from perpendicularity up to 15 ° regarding the strength of the press:

- The conventional spring plungers have a useful life <300,000 cycles.
- Broken parts cause damage into the matrix.

AZOLGAS studies the case and propose FMBHR solution, the assembly plant makes an intensive fatigue test with the following results:






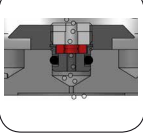

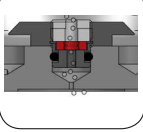

- The ejector spring FMBHR is able to exceed expectations >2,000,000 cycles.
- No loose parts or broken parts are detected.


The ejector spring of AZOLGAS FMBHR is approved and incorporated into the Standard.







# 3 - SAFETY

CHALLENGE SOLUTION	 OVER-SPEED	 OVER-PRESSURE	 OVER-STROKE
 SV			
 SP			
 SS			



**• Incident:**  
 Over-speed gas spring piston rod return.


**Solution:**  
 SV Safety system to prevent piston rod projection in case of over-speed.





**• Incident:**  
 Over-pressure in gas springs.

**Solution:**  
 SP Safety system of controlled gas discharging from the gas spring to prevent projection of parts under pressure in case of over-pressure.




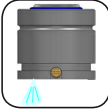


**• Incident:**  
 Over-stroke.

**Solution:**  
 SS Safety system of controlled gas discharging from the gas spring to prevent projection of parts under pressure in case of over-stroke.






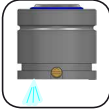

## 3 - SAFETY

SOLUTION		SV		SP		SS
MODEL						
AFB V2						
AFH V1						
AFJ V1						
AFK V1		✓ SV				
AFD V1		✓ SV				
AFC		✓ SV				
AFNA		✓ SV				
AF V1		✓ SV				
AFT V1		✓ SV				
AS 200		✓ SV				
AS 300		✓ SV				
AS 500 V1		✓ SV				
AS 600 V1		✓ SV				
AS 700 V1		✓ SV				
AS 1000		✓ SV				
ASP 250		✓ SV				
ASP 300		✓ SV				
ASP 500 V1		✓ SV				
AST 200 V1		✓ SV				
AST 250		✓ SV				
AST 300 V1		✓ SV				
AST 1000		✓ SV				
APFA 150		✓ SV		✓ SP		✓ SS
APFA 250		✓ SV		✓ SP		✓ SS
APF 500		✓ SV		✓ SP		✓ SS
AG 750		✓ SV		✓ SP		✓ SS
AG 1500		✓ SV		✓ SP		✓ SS
AG 3000		✓ SV		✓ SP		✓ SS
AG 5000		✓ SV		✓ SP		✓ SS
AG 7500		✓ SV		✓ SP		✓ SS
AG 10000		✓ SV		✓ SP		✓ SS
CD 300 V1		✓ SV		✓ SP		✓ SS
CD 500 V1		✓ SV		✓ SP		✓ SS
CD 700		✓ SV		✓ SP		✓ SS
CD 1000 V1		✓ SV		✓ SP		✓ SS
CD 1500 V1		✓ SV		✓ SP		✓ SS
CD 2400		✓ SV		✓ SP		✓ SS
CD 4200		✓ SV		✓ SP		✓ SS
CD 6600		✓ SV		✓ SP		✓ SS
CD 9600		✓ SV		✓ SP		✓ SS
CD 18500		✓ SV		✓ SP		✓ SS
CM 200		✓ SV				
CM 300		✓ SV				
CM 350 V1		✓ SV				
CM 500 V1		✓ SV				
CM 600 V1		✓ SV				
CM 1000		✓ SV				
CM 1500		✓ SV				
CM 2500		✓ SV				
CM 4000		✓ SV				
CM 6500		✓ SV				
CM 10000		✓ SV				
GN 750		✓ SV				
GN 1500		✓ SV				
GN 3000		✓ SV				
GN 5000		✓ SV				
GN 7500		✓ SV				
FD 300		✓ SV		✓ SP		✓ SS
FD 500		✓ SV		✓ SP		✓ SS
FD 750 V1		✓ SV		✓ SP		✓ SS
FD 1500 V2		✓ SV		✓ SP		✓ SS
FD 3000		✓ SV		✓ SP		✓ SS
FD 5000 V1		✓ SV		✓ SP		✓ SS





# 3 - SAFETY

SOLUTION		SV		SP		SS
MODEL						
CK 200 V1		✓ SV				
CK 300 V1						
CK 570 V1		✓ SV				
CK 750 V1		✓ SV				
CK 1000 V1		✓ SV				
CK 1500 V2		✓ SV				
CK 2500 V1		✓ SV				
CK 4000 V1		✓ SV				
CT 200 V1		✓ SV				
CT 300 V1						
CT 550 V1		✓ SV				
CT 750		✓ SV				
CT 1000		✓ SV				
CT 1500		✓ SV				
CT 2500		✓ SV				
CT 3000		✓ SV				
CT 5000		✓ SV				
KZ 350		✓ SV		✓ SP		✓ SS
KZ 500		✓ SV		✓ SP		✓ SS
KZ 750		✓ SV		✓ SP		✓ SS
KZ 1000		✓ SV		✓ SP		✓ SS
KZ 1500		✓ SV		✓ SP		✓ SS
KZ 2400		✓ SV		✓ SP		✓ SS
KZ 4200		✓ SV		✓ SP		✓ SS
KZ 6600		✓ SV		✓ SP		✓ SS
CW 170 V1				✓ SP		✓ SS
CW 320 V1				✓ SP		✓ SS
CW 350		✓ SV		✓ SP		✓ SS
CW 500		✓ SV		✓ SP		✓ SS
CW 750		✓ SV		✓ SP		✓ SS
CW 1000 V1		✓ SV		✓ SP		✓ SS
CW 1500		✓ SV		✓ SP		✓ SS
CW 2400 V1		✓ SV		✓ SP		✓ SS
CW 4200 V1		✓ SV		✓ SP		✓ SS
CW 6600		✓ SV		✓ SP		✓ SS
CW 9500		✓ SV		✓ SP		✓ SS
CW 11800		✓ SV		✓ SP		✓ SS
CW 20000		✓ SV		✓ SP		✓ SS
CP 150						
CP 300						
CP 500						
CP 1000 V1						
CP 2000 V1						
CP 3000 V1						
CP 5000 V1						
CP 8000 V1						
CPH 850						
CPH 1250						
CPH 1700						
CPH 2800						
CPH 4300						
CS 420 V1						
CS 770 V2						
CS 1000 V1						
CS 1800 V1						
CS 3000 V2						
CS 4700 V1						
CS 7500 V1						
CS 11800 V1						
CS 18300 V1						



## 3.1 - SAFETY IN DESIGN AND MANUFACTURING

### 1 **PED**



#### What is the PED 97/23/EC Directive?

It is a European Directive harmonizing in the whole European Union the regulation of pressure vessels (e.g. gas springs) manufactured or sold in the European Union.

#### PED 97/23 Directive regulation is related to all the gas springs?

All the gas springs manufactured or sold in the European Union, as pressure equipment devices are submitted to the Directive 97/23/EC.

All the AZOLGAS gas springs comply with 97/23/EC Directive, notified body **CE 0053**.

Depending on the product of the pressure x volume, Directive 97/23/EC classify the pressure equipment devices, the main categories for gas springs are:

- |                       |  |
|-----------------------|--|
| - <b>Category I</b>   | volume > 1 liter and product of pressure x volume > 50 < 200 bar x liter |
| - <b>Category II</b>  | volume > 1 liter and product of pressure x volume > 200 bar x liter      |
| - <b>Category III</b> | volume > 1 liter and product of pressure x volume > 1000 bar x liter     |

Those gas springs below the mentioned categories are submitted to the Article 3.3., Directive 97/23/EC.

#### What 97/23/EC Directive involves to the manufacturer of pressure vessels?

Directive 97/23/EC regulation affects the design, the manufacturing and the evaluation of conformity of the pressure equipment devices (e.g. gas springs):

- Design the pressure devices to make sure its safety during its life expectancy scheduled.
- Make sure the material used meet the specifications required in the Directive 97/23/EC PED.
- Manufacture the pressure devices according to specifications detailed when designed.
- Mark the pressure devices following the Directive 97/23/EC guidelines.
- Submit the pressure devices to the process of conformity evaluation required.
- Provide to the user documentation about the safety operating instructions of pressure devices.
- Supply the Declaration of Conformity to the Directive when required.

#### What 97/23/EC Directive involves to the end user of pressure vessels?

The end user of gas springs is responsible to fulfill the regulation of the country where used. Each country has its own transposition regulation of the 97/23/EC Directive, and the legal framework usually contains the following questions about the use and maintenance of pressure vessels:

- Acknowledge receipt of documentation from manufacture.
- Get ready for inspection the documentation while the devices are on use.
- Servicing the pressure devices according to manufacturer's operating instructions.
- Make regular inspections to the devices (visual inspection and requalification).

## 3.1 - SAFETY IN DESIGN AND MANUFACTURING



### 2 MATERIAL

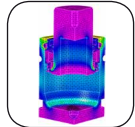


AZOLGAS meets the most exigent safety conditions in a process of continuous improvement and constant innovation in the use of materials (high strength steels fatigue probed and treatments that ensure a long service life).

AZOLGAS require as a criterion for selection of materials a manufacturing standard that specifies an elongation and resilience above the requirements of the Directive 97/23/EC.

Additionally, to ensure that the material complies with the appropriate mechanical properties, AZOLGAS requires all structural elements under pressure must withstand the maximum end pressure (final pressure at full stroke) and the maximum allowable working temperature.

### 3 FEM



According to the calculation methods of EN 13445 Method and Finite Element Analysis (FEM), all structural elements of AZOLGAS gas springs have a minimum of 2,000,000 cycles fatigue resistance.

The calculation of minimum fatigue involves:

- 2,000,000 full cycles
- For any specified flange mounting
- At the highest pressure allowed
- With the maximum allowable temperature



### 4 DESIGN



The AZOLGAS gas springs are designed and manufactured in accordance with Directive 97/23/EC and major automotive standards.

The bodies of the AZOLGAS gas springs have a unique design monoblock (no welds or threads) that ensures greater resistance to fatigue.

The cartridge of AZOLGAS gas springs provides integrated failsafe security system during gas spring assembly if proceed mounting the cartridge into the piston rod incorrectly (backwards coupling: upside down).



The piston rods of AZOLGAS gas springs are designed as a single piece (solid union of the piston rod with the mechanical stop, no loose parts or elements added), and incorporate the original design of SV AZOLGAS to avoid projection of the piston rod.



## 3.1 - SAFETY IN DESIGN AND MANUFACTURING

### 5 MANUFACTURING

AZOL GAS is a pioneer in Europe in the design and manufacture of gas springs in accordance with a Quality Management System: ISO 9001 Certificate by TÜV Rheinland, which since its implementation in 1994 has been renewed. Under AZOLGAS commitment to the environment, has also been awarded the ISO 14001 certificate by TÜV Rheinland.

The procedure traceable throughout the assembly process does ensure compliance of the material and components.

The automated load-testing-verification-labeling let ensure safety in terms of the identification of gas spring assembly, the gas pressure, the force and the indelible mark of traceability.



### 6 DYNAMIC TESTS

Through own and external laboratories AZOLGAS tests the fatigue and duration of gas springs and safety tests for the validation of technical solutions.

Both simulations and real tests considered the most extreme application conditions: presence of contaminants, deviations from guiding, over-speed, over-pressure, over-stroke, high temperature.

AZOLGAS designed tooling and special equipment for validation, as well as specific security solutions for each of the incidents described.



### 7 AUTOMOTIVE STANDARDS

AZOLGAS designed and manufactured according to the main automotive safety standards:

- CNOMO (EM24.54.700 / E24.54.815.G)
- VDI (3003)
- NAAMS
- ISO (11901)

Furthermore AZOLGAS regularly participates actively in major committees of standardization and normalization on automotive gas springs.



## 3.1 - SAFETY IN DESIGN AND MANUFACTURING



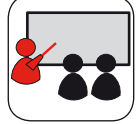
### 8 TRAINING AND TECHNICAL SERVICE



AZOL GAS has positioned itself in the market as a leader in Customer Service, ensuring its implementation by assisting all users during all phases of the project.

The following documentary support is available to our customers:

- Documentation on the operating instructions and conditions of use of gas springs.
- Manual for maintenance and repair of gas springs.
- Guide frequently asked questions (FAQ) on gas springs.
- Questionnaire for troubleshooting on gas springs.
- Dynamic-Presentations on gas springs and technical solutions.
- Brochures of technical and security solutions for gas springs.

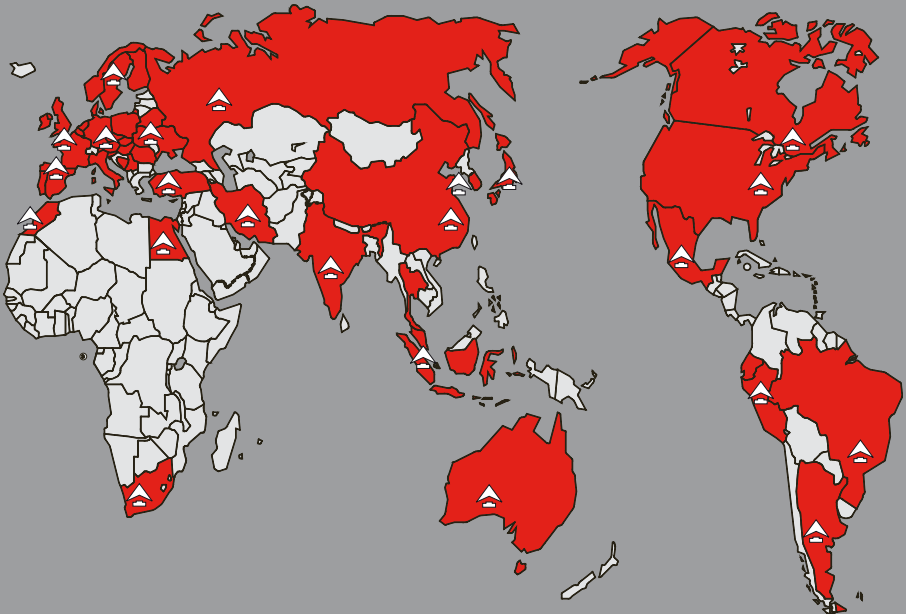


AZOLGAS has a comprehensive program of personal attention to the education and training of engineering personnel, tooling and stamping:

- Resolving queries and providing assistance to Engineering.
- Making available Technical Assistance Teams (SAT).
- Performing repairs, assemblies and connected systems.
- Providing inside training in stamping plants.
- Tuning special applications.



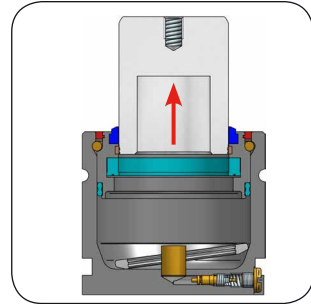
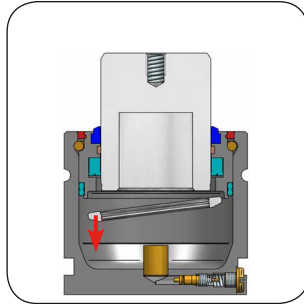
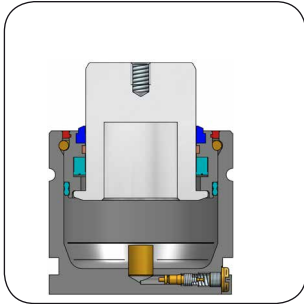
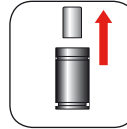
The wide experience supports the benefits of training as safety factor: the more training the greater safety and productivity.





## 3.2 - SV (SAFETY OVER-SPEED)

### CHALLENGE

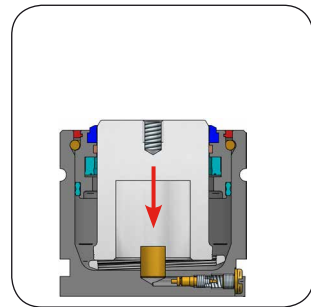
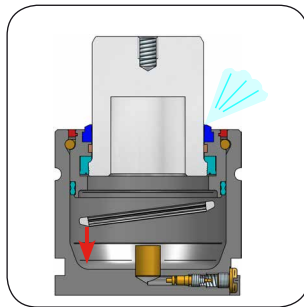
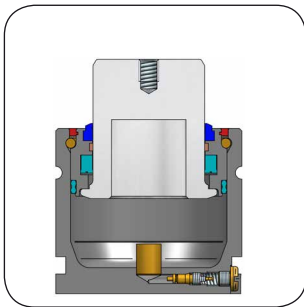
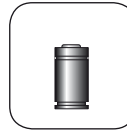


Certain application conditions may lead to a **free or uncontrolled return of the piston rod** (e.g. when the plate or stamped part is suddenly released).

Overcome  $V_{max}$  indicated in the catalog may involve not only premature leakage but also cause **structural damage** to the gas spring.

The uncontrolled expansion of the piston rod causes a sudden impact of the mechanical stop of the piston rod against the cartridge, which can break the mechanical stop of the piston rod and cause the **external projection of the piston rod**.

### SOLUTION



The AZOLGAS gas springs have the original design **SV** that consists of a safety system that prevents the external projection of the piston rod in case of free and uncontrolled return.

The system **SV** adds **double security protection**, a mechanical stop into the piston rod and a second mechanism of controlled gas discharging.

The **SV** solution is **included in most of AZOLGAS gas springs**, control the fully discharge of the pressure and prevents the external projection of the piston rod.

## 3.2 - SV (SAFETY OVER-SPEED)



### ADVANTAGES



- Fitted as **standard**.



- **Controlled complete discharge**.



- **Prevents piston rod projection**.



- **Extra safety**.

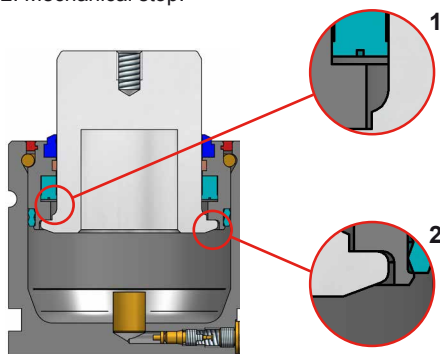
**PHOTO**

### TECHNICAL DATA

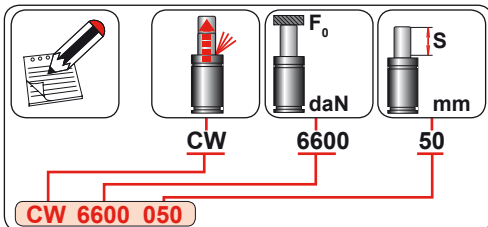
MODEL	MODEL	MODEL	MODEL
AFK V1	AG 1500	GN 750	CT 2500
AFD	AG 3000	GN 1500	CT 3000
AFC	AG 5000	GN 3000	CT 5000
AFNA	AG 7500	GN 5000	KZ 350
AF V1	AG 10000	GN 7500	KZ 500
AFT V1	CD 300 V1	FD 300	KZ 750
AS 200	CD 500 V1	FD 500	KZ 1000
AS 300	CD 700	FD 750 V1	KZ 1500
AS 500 V1	CD 1000 V1	FD 1500 V2	KZ 2400
AS 600 V1	CD 1500 V1	FD 3000	KZ 4200
AS 700 V1	CD 2400	FD 5000 V1	KZ 6600
AS 1000	CD 4200	CK 200 V1	CW 350
ASP 250	CD 6600	CK 570 V1	CW 500
ASP 300	CD 9600	CK 750 V1	CW 750
ASP 500 V1	CD 18500	CK 1000 V1	CW 1000 V1
AST 200 V1	CM 200	CK 1500 V2	CW 1500
AST 250	CM 300	CK 2500 V1	CW 2400 V1
AST 300 V1	CM 350 V1	CK 4000 V1	CW 4200 V1
AST 1000	CM 500 V1	CT 200 V1	CW 6600
APFA 150	CM 600 V1	CT 550 V1	CW 9500
APFA 250	CM 1000	CT 750	CW 11800
APF 500	CM 1500	CT 1000	CW 20000
AG 750	CM 2500	CT 1500	
	CM 4000		
	CM 6500		
	CM 10000		

1. SV safety system.

2. Mechanical stop.



### HOW TO ORDER

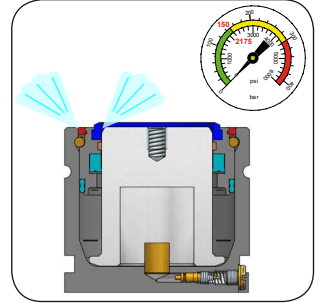
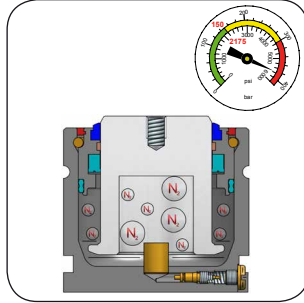
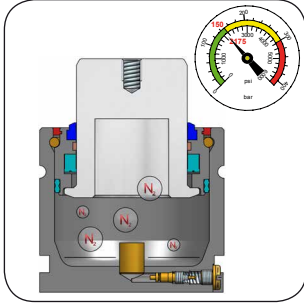
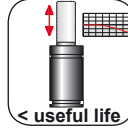
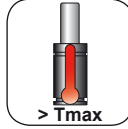


SV available for the following models



## 3.3 - SP (SAFETY OVER-PRESSURE)

### CHALLENGE

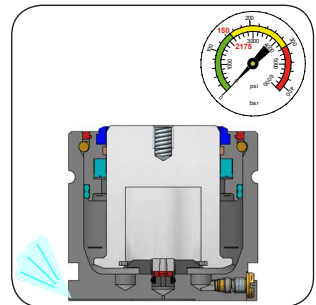
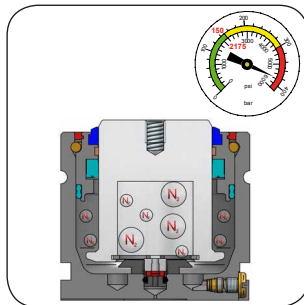
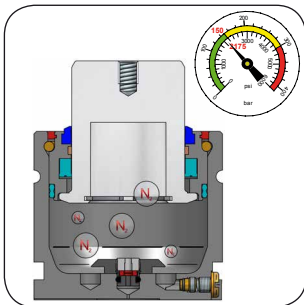
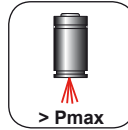
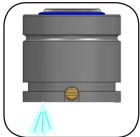


Certain conditions, incidents or errors in the application may result in an **overpressure** in the gas cylinders.

Overcome  $P_{max}$  indicated in the catalog may involve not only premature leakage but also cause structural damage to the gas spring.

The solid or liquid pollution is introduced into the gas springs increasing the pressure and temperature that causes gas leaks and **reduce the useful life** of gas springs.

### SOLUTION



The AZOLGAS gas springs offer a security system **SP** that prevents overpressure above a maximum allowable limit (maximum design pressure).

The **SP** is an **additional security** system, controlled relieving the pressure completely, and avoiding the projection of parts under pressure.

The **SP** solution is included in most of AZOLGAS gas springs, is easily replaced by the user, supports to be used with all types of flanges and prevents from a wrong manipulation.



# 3.3 - SP (SAFETY OVER-PRESSURE)



## ADVANTAGES



• Fitted as **standard**.



• Controlled and complete **discharge**.



• **Prevents** parts under pressure **projection**.



• **Extra safety**.

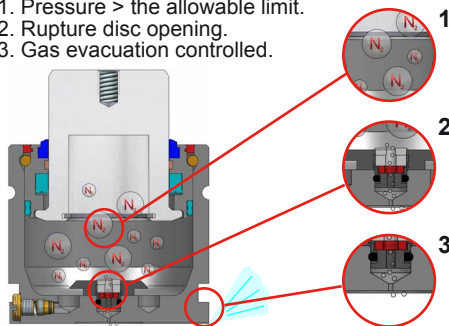


## TECHNICAL DATA

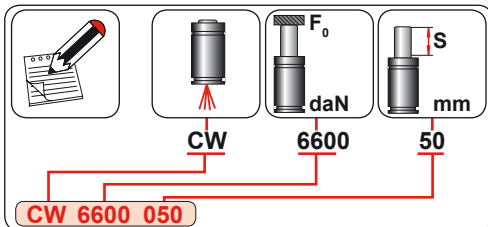
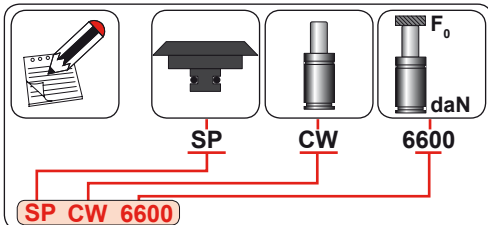
MODEL	RUPTURE DISC (Bar)
APFA 150	360
APFA 250	360
APF 500	360
AG 750	360
AG 1500	360
AG 3000	360
AG 5000	360
AG 7500	360
AG 10000	360
CD 300 V1	360
CD 500 V1	360
CD 700	360
CD 1000 V1	360
CD 1500 V1	360
CD 2400	360
CD 4200	360
CD 6600	360
CD 9600	360
CD 18500	517
FD 300	360
FD 500	360
FD 750 V1	360
FD 1500 V2	360
FD 3000	360
FD 5000 V1	360

MODEL	RUPTURE DISC (Bar)
KZ 350	360
KZ 500	360
KZ 750	360
KZ 1000	360
KZ 1500	360
KZ 2400	360
KZ 4200	360
KZ 6600	360
CW 170 V1	360
CW 320 V1	360
CW 350	360
CW 500	360
CW 750	360
CW 1000 V1	360
CW 1500	360
CW 2400 V1	360
CW 4200 V1	360
CW 6600	360
CW 9500	360
CW 11800	360
CW 20000	360

1. Pressure > the allowable limit.
2. Rupture disc opening.
3. Gas evacuation controlled.



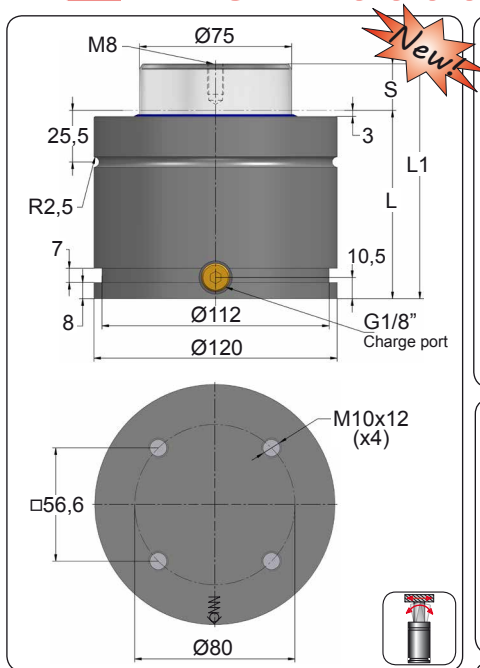
## HOW TO ORDER



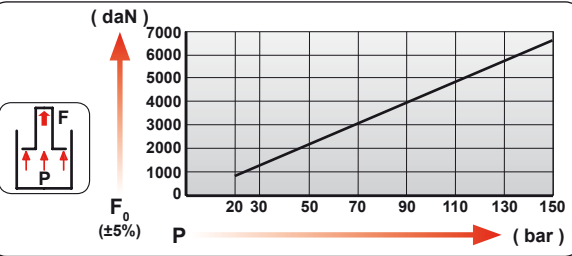
SP available for the following models



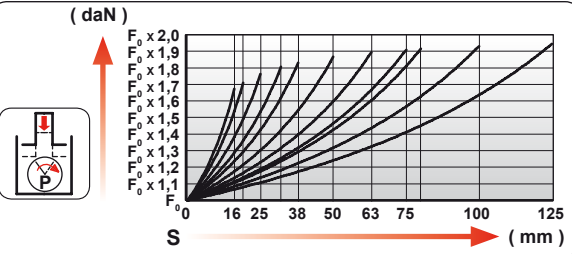
# CW 6600



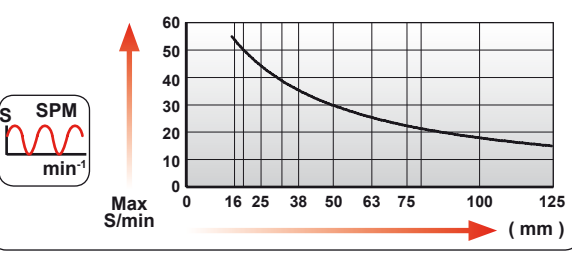
ORDER	S (mm)	L1 ±0,25 (mm)	L (mm)	Kg.
CW 6600 016	16	100	84	6.08
CW 6600 019	19	106	87	6.24
CW 6600 025	25	118	93	6.57
CW 6600 032	32	132	100	6.95
CW 6600 038	38	144	106	7.27
CW 6600 050	50	168	118	7.92
CW 6600 063	63	194	131	8.63
CW 6600 075	75	218	143	9.28
CW 6600 080	80	228	148	9.55
CW 6600 100	100	268	168	10.64
CW 6600 125	125	318	193	12.00



CODE	Pressure		Force	
	bar	psi	daN	daN
CW 6600 050	150	2175	6630	12380



 ENG ORDER DEU BESTELL FRA COMMANDE ITA ORDINE ESP PEDIDO POR PEDIDO	 F <sub>0</sub> daN	 S mm
CW 6600 50		
CW 6600 050		



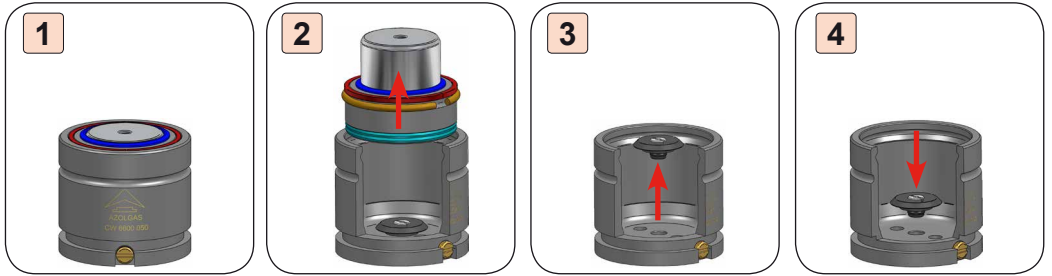
 N <sub>2</sub>	 S <sub>max</sub> < 90%	 V <sub>max</sub> 1,6 m/s	 P <sub>min</sub> (20°C)	 P <sub>max</sub> (20°C)	 T <sub>min</sub>	 T <sub>max</sub>	 600 CP-
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N <sub>2</sub>	S <sub>max</sub> < 90%	V <sub>max</sub> 1,6 m/s	bar psi	bar psi	°C °F	°C °F	600 CP-
			20 290	150 2175	0 32	80 176	

# SP (SAFETY OVER-PRESSURE)

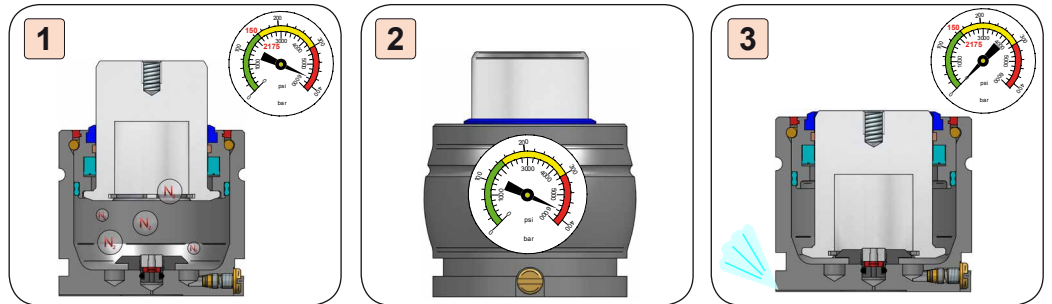


## SP REPLACEMENT



1. Ensure complete discharge of the gas spring.
2. Remove the set cartridge-piston rod to access to the damaged SP.
3. Remove the broken rupture disc SP.
4. Place the new rupture disc SP.

## DOUBLE SAFETY



1. The SP system security prevents overpressure above the maximum allowed.
2. Avoid projecting parts under pressure and wrong manipulation from the outside.
3. Discharge the pressure completely in a controlled way.

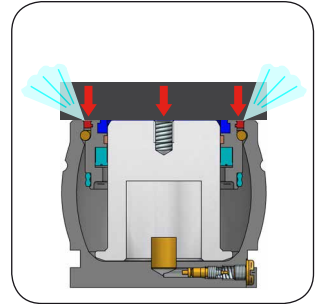
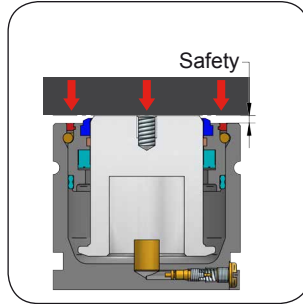
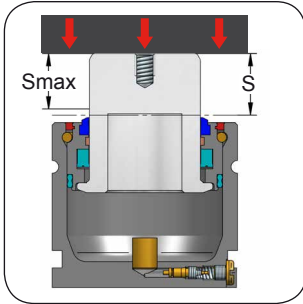
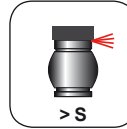


CODE	CW 6600 050	KIT  CW 6600 <small>Serial Number</small>	SP CW 6600	18 GA 5
ENG	ORDER	GAS SPRING	REPAIR KIT	CHARGING ADAPTER
DEU	BESTELL	GASDRUCKFEDER	ERSATZ	LADEADAPTER
FRA	COMMANDE	RESSORT À GAZ	KIT DE RÉPARATION	RACCORD DE CHARGE
ITA	ORDINE	CILINDRO AD AZOTO	KIT DI MANUTENZIONE	ADATTATORE DI CARICO
ESP	PEDIDO	RESORTE DE GAS	KIT DE REPARACION	ADAPTADOR DE CARGA
POR	PEDIDO	CILINDRO DE GÁS	KIT DE MANUTENÇÃO	ADAPTADOR DE CARGA
			RUPTURE DISC	
			TAPON DE RUPTURA	



## 3.4 - SS (SAFETY OVER-STROKE)

### CHALLENGE

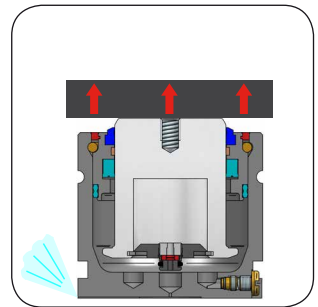
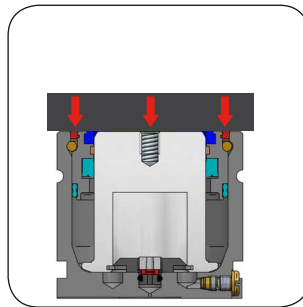
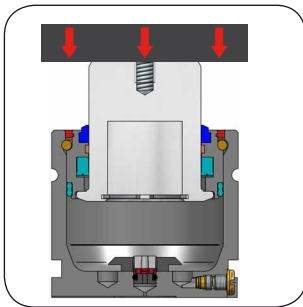
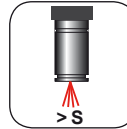
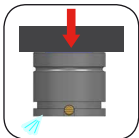


Certain conditions, incidents or errors in the application may result in an over-stroke in the gas springs.

Overcome  $S_{max}$  indicated in the catalog may involve premature leakages and **reduce the useful life** of gas springs.

If, in addition exceeds  $S$  (total working stroke), and safety distance is exceeded, they may result in **structural damage** to gas springs.

### SOLUTION



The AZOLGAS gas springs provide a safety system **SS** that **prevents the risks** of stroke over the designated limit.

The **SS** system **adds extra security** when exceeding the maximum allowed travel (total working stroke) discharging the gas spring pressure.

The **SS** solution is **included in most of AZOLGAS gas springs**, discharge completely the pressure in a controlled way, and avoids the projection of parts under pressure.



# 3.4 - SS (SAFETY OVER-STROKE)

## ADVANTAGES



• Fitted as **standard**.



• Controlled and complete **discharge**.



• **Prevents** parts under pressure **projection**.



• **Extra safety**.

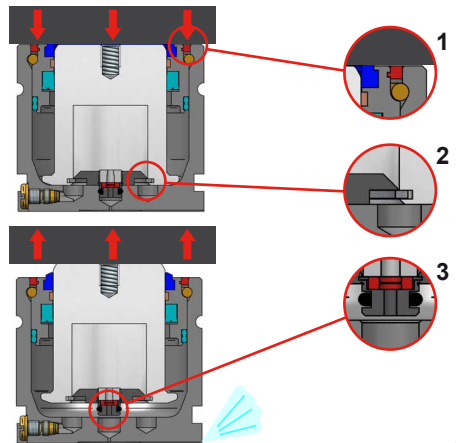
**PHOTO**

## TECHNICAL DATA

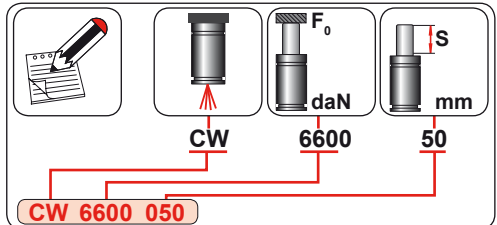
MODEL	PRESION RUPTURA (Bar)
APFA 150	360
APFA 250	360
APF 500	360
AG 750	360
AG 1500	360
AG 3000	360
AG 5000	360
AG 7500	360
AG 10000	360
CD 300 V1	360
CD 500 V1	360
CD 700	360
CD 1000 V1	360
CD 1500 V1	360
CD 2400	360
CD 4200	360
CD 6600	360
CD 9600	360
CD 18500	517
FD 300	360
FD 500	360
FD 750 V1	360
FD 1500 V2	360
FD 3000	360
FD 5000 V1	360

MODEL	PRESION RUPTURA (Bar)
KZ 350	360
KZ 500	360
KZ 750	360
KZ 1000	360
KZ 1500	360
KZ 2400	360
KZ 4200	360
KZ 6600	360
CW 170 V1	360
CW 320 V1	360
CW 350	360
CW 500	360
CW 750	360
CW 1000 V1	360
CW 1500	360
CW 2400 V1	360
CW 4200 V1	360
CW 6600	360
CW 9500	360
CW 11800	360
CW 20000	360

1. Stroke > the allowable limit.
2. SS safety system drive.
3. Gas evacuation controlled.



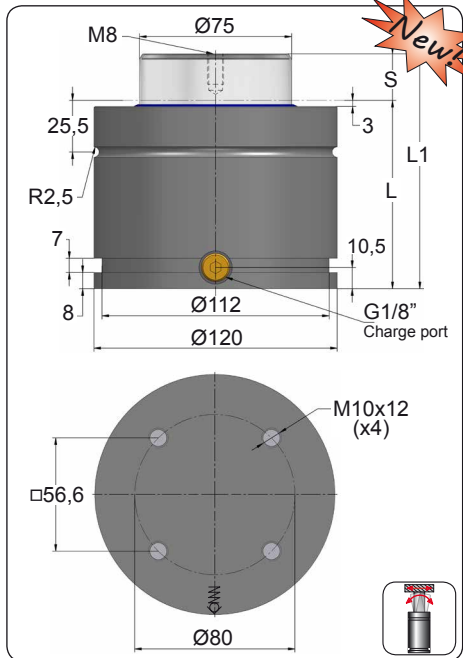
## HOW TO ORDER



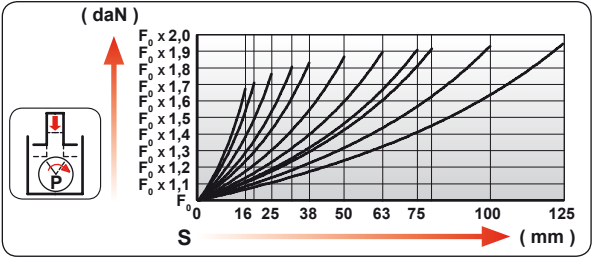
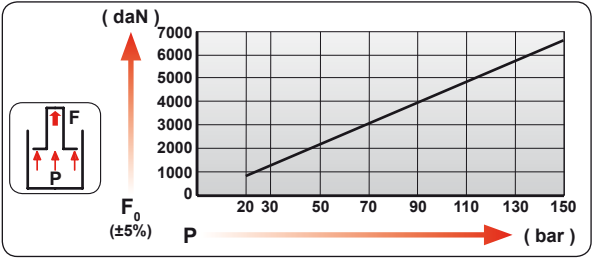
SS available for the following models



# CW 6600



ORDER	S (mm)	L1 ±0,25 (mm)	L (mm)	Kg.
CW 6600 016	16	100	84	6.08
CW 6600 019	19	106	87	6.24
CW 6600 025	25	118	93	6.57
CW 6600 032	32	132	100	6.95
CW 6600 038	38	144	106	7.27
CW 6600 050	50	168	118	7.92
CW 6600 063	63	194	131	8.63
CW 6600 075	75	218	143	9.28
CW 6600 080	80	228	148	9.55
CW 6600 100	100	268	168	10.64
CW 6600 125	125	318	193	12.00

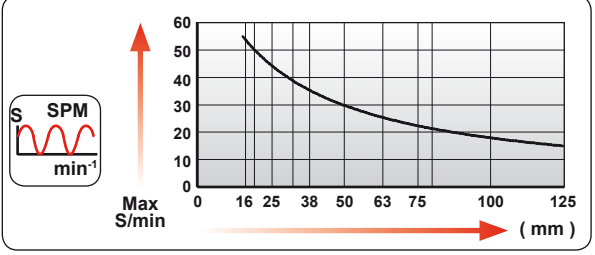


CODE	Pressure		Force	
	bar	psi	daN	daN
CW 6600 050	150	2175	6630	12380

ENG	ORDER
DEU	BESTELL
FRA	COMMANDE
ITA	ORDINE
ESP	PEDIDO
POR	PEDIDO

CW 6600 50

CW 6600 050



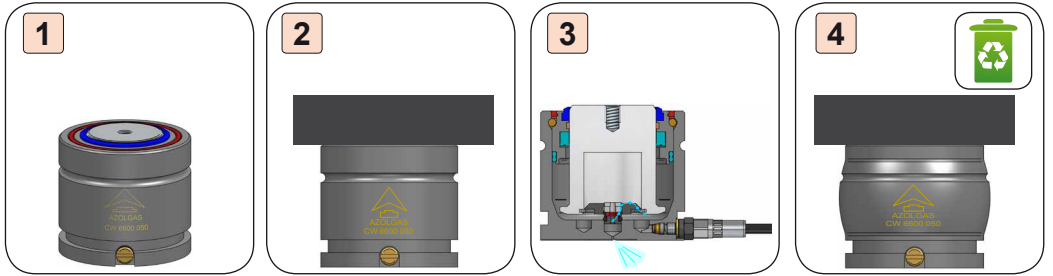
	S <sub>max</sub> < 90%	V <sub>max</sub> 1,6 m/s	P <sub>min</sub> (20°C)	P <sub>max</sub> (20°C)	T <sub>min</sub>	T <sub>max</sub>	
--	------------------------	--------------------------	-------------------------	-------------------------	------------------	------------------	--

N <sub>2</sub>	S <sub>max</sub> < 90%	V <sub>max</sub> 1,6 m/s	bar psi	bar psi	°C °F	°C °F	600 CP-
			20 290	150 2175	0 32	80 176	



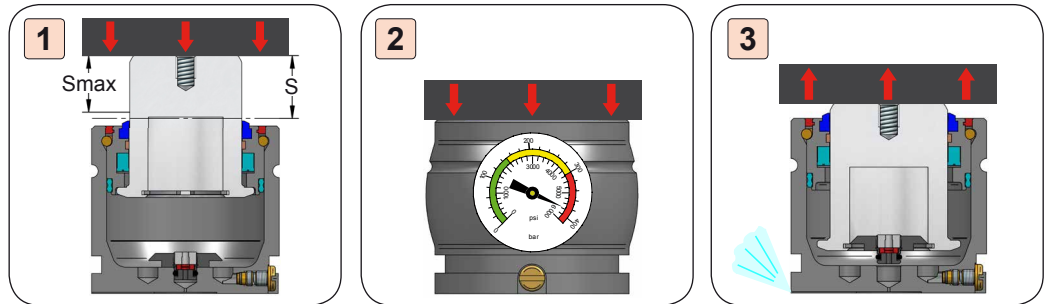
# SS (SAFETY OVER-STROKE)

## WARNING: NO REUSE



1. Ensure complete discharge of the gas spring.
2. Check if exceeded the maximum allowed stroke.
3. Once activated, the SS security system prevents the reuse or refill of gas spring.
4. Remove the gas spring.

## DOUBLE SAFETY



1. The SS security system avoids the consequences of exceeding the maximum allowable stroke.
2. Avoid projecting parts under pressure.
3. Discharge the pressure completely in a controlled way.

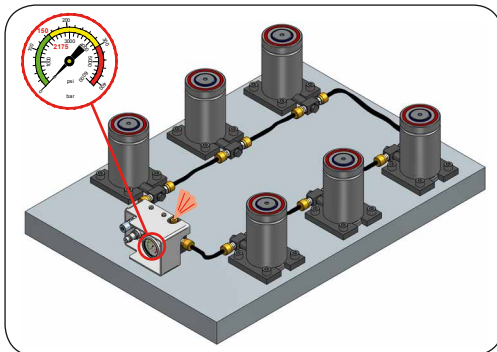
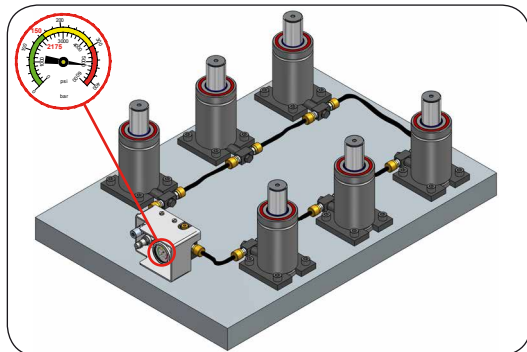


CODE	CW 6600 050	KIT <sub>T</sub> CW 6600 Serial Number	A14-120	18 GA 5
ENG ORDER	GAS SPRING	REPAIR KIT	FLANGE	CHARGING ADAPTER
DEU BESTELL	GASDRUCKFEDER	ERSATZ	FLANSCH	LADEADAPTER
FRA COMMANDE	RESSORT À GAZ	KIT DE RÉPARATION	BRIDE	RACCORD DE CHARGE
ITA ORDINE	CILINDRO AD AZOTO	KIT DI MANUTENZIONE	FLANGE	ADATTATORE DI CARICO
ESP PEDIDO	RESORTE DE GAS	KIT DE REPARACION	BRIDA	ADAPTADOR DE CARGA
POR PEDIDO	CILINDRO DE GÁS	KIT DE MANUTENÇÃO	FLANGE	ADAPTADOR DE CARGA



# 3.5 - SAFETY IN CONNECTED SYSTEMS

## CONTROL PANELS

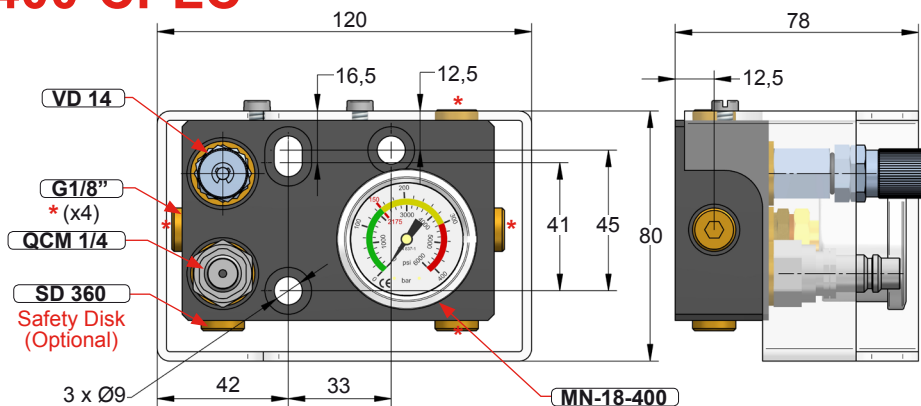


To prevent **over-pressure** in connected systems, the AZOLGAS control panels offer as an option safety rupture disc to a maximum allowable pressure (360 bars for 400-CP control panels and 517 bars for 600-CP control panels).

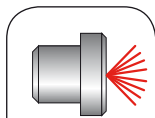
If the piping circuit exceeds the maximum allowable pressure, the control panel **discharge completely** the pressure in a **controlled** way.

Warning: If the initial pressure of the circuit exceeds 150 bar (at 20 ° C), use only safety rupture disc of 517 bars (not 360 bars).

## 400-CPLC



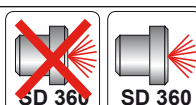
MN-18-400



SD 360

bar	psi
400	6000

bar	psi
360	5220



400-CPLC V1

400-CPLC-SD V1





# 3.5 - SPS (PRESSURE SWITCH)

**HOW TO ORDER**

**SPS 1/4**

**HOW TO ORDER**

**SPS 1/8**

## TECHNICAL DATA

<b>Range:</b>	50 - 200 bar.
<b>Tolerance:</b>	±5 bar a 20 °C.
<b>Thread:</b>	G1/4" y G1/8"
<b>Tension:</b>	Max. 250 V.
<b>Safety over-pressure:</b>	300 bar.
<b>Working temperature:</b>	-25 °C to +50 °C.

If the pressure of the piping circuit drops below a set limit user (optimal minimum operation), the switch sends a signal can be used either warn or stop mechanism that is associated.

## ADVANTAGES

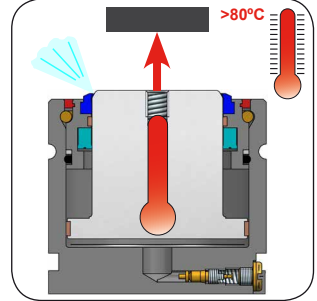
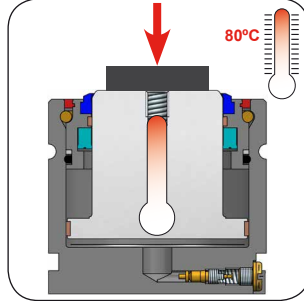
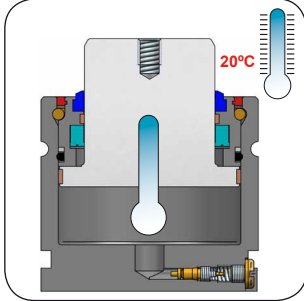
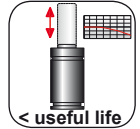
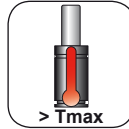
- Compact design.
- Allows automatic control of piping circuits.
- Alert previously avoiding the production of defective parts.
- Increased efficiency in production.





# 4 - TEMPERATURE

## CHALLENGE



According to the operating instructions, the maximum temperature (**T<sub>max</sub>**) that can operate gas springs is **80 ° C**.

The temperature increase above the maximum allowable (**T<sub>max</sub>**) causes deterioration of the sealing elements and **reduces the life** of the gas springs.

## FACTORS

**AG 750**

ORDER	S	L	L <sub>1</sub>	L <sub>2</sub>	L <sub>3</sub>	L <sub>4</sub>	L <sub>5</sub>	L <sub>6</sub>	L <sub>7</sub>	L <sub>8</sub>	L <sub>9</sub>	L <sub>10</sub>	L <sub>11</sub>	L <sub>12</sub>	L <sub>13</sub>	L <sub>14</sub>	L <sub>15</sub>	L <sub>16</sub>	L <sub>17</sub>	L <sub>18</sub>	L <sub>19</sub>	L <sub>20</sub>	L <sub>21</sub>	L <sub>22</sub>	L <sub>23</sub>	L <sub>24</sub>	L <sub>25</sub>	L <sub>26</sub>	L <sub>27</sub>	L <sub>28</sub>	L <sub>29</sub>	L <sub>30</sub>	L <sub>31</sub>	L <sub>32</sub>	L <sub>33</sub>	L <sub>34</sub>	L <sub>35</sub>	L <sub>36</sub>	L <sub>37</sub>	L <sub>38</sub>	L <sub>39</sub>	L <sub>40</sub>	L <sub>41</sub>	L <sub>42</sub>	L <sub>43</sub>	L <sub>44</sub>	L <sub>45</sub>	L <sub>46</sub>	L <sub>47</sub>	L <sub>48</sub>	L <sub>49</sub>	L <sub>50</sub>
01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50			

- 1
- 2
- 3
- 4

1. Initial pressure: the higher initial charging pressure, the higher temperature into the gas spring during operation.

2. Gas volume: the higher is volume inside the gas spring, the lower is the compression rate and temperature.

3. Frequency and stroke used: the major stroke used, higher friction and greater temperature increase in the gas spring, so that the maximum rate in cycles per minute SPM is smaller.

4. Working temperature: minimum and maximum limits.

It should be taken into account that the gas springs are heated during operation (due to friction) and the gas pressure increases with increasing temperature (about 0.33% for every 1 ° C).

The main factors affecting the temperature increase in gas springs are:

- P<sub>0</sub> Initial pressure (bar)
- S Working stroke (mm)
- SPM Frequency (cycles per minute)



## 4 - TEMPERATURE

### CONVENTIONAL GAS SPRINGS



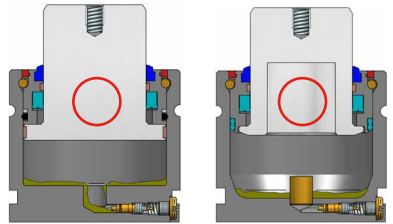
When the press downs and acts to compress the gas spring, the press energy is transmitted to the gas spring.

When the press goes up and returns to its initial position, a **conventional gas spring** at the same time pushes the press upward, so that it returns to the majority of the energy received.

Only the frictional heat remains in the gas cylinder, which must be dissipated by its own radiant surface.

### GAS VOLUME

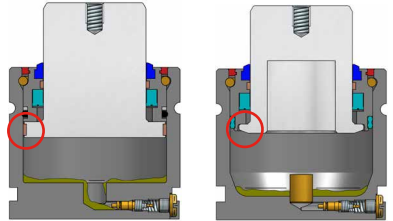
The AZOLGAS gas springs are designed to contain higher gas volume and lower compression ratio, which means a substantial reduction of the working temperature.



### FRICTION

The AZOLGAS gas springs incorporates floating rod that prevent friction of the piston rod guiding against the body and allow a free flow of gas into the cylinder.

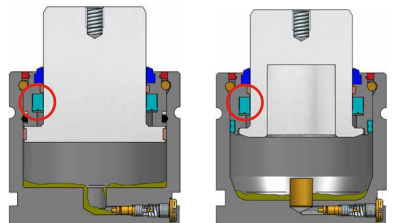
Additionally, the systems FR (Flex Rod) included in most of AZOLGAS gas springs, minimizes friction caused by side loading or deviations from perpendicularity.



### SEALING ELEMENTS

The sealing elements of the AZOLGAS gas springs incorporate low friction designs and materials.

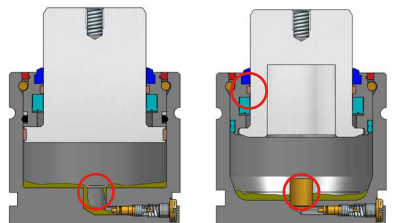
In parallel, the new sealing elements can withstand higher dynamic working temperatures.



### LUBRICATION

The self-lubricating guiding components prevent metal to metal contact, achieving a significant reduction of friction / temperature.

The AZOLGAS gas springs are equipped with special synthetic lubrication that reduces wear of the components.



# 4.1 - TR (REFRIGERATION)



## SPEED CONTROLLED GAS SPRINGS



When press downs and acts to compress the gas spring, the press energy is transmitted to the gas spring.

When press ups and returns to its initial position, a **speed controlled gas spring** does not return upwards with the press, so it can not return the received energy.

Most of the energy transmitted by the press to the speed controlled gas spring is converted into heat, but the radiating surface of the gas spring itself is insufficient to dissipate the heat.

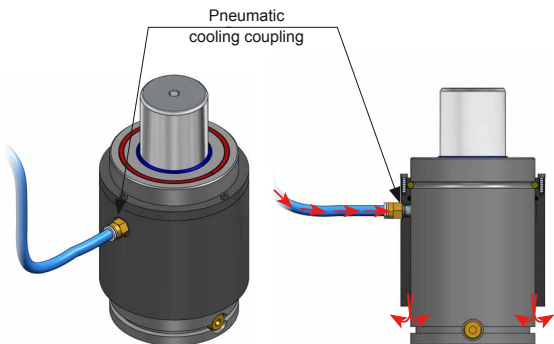
Because of this, in the speed controlled gas springs, heat generation must be rather limited (SPM cycles per minute) or dissipated (**TR** cooling systems).

## OPERATION

To cool the gas spring and to increase the number of cycles per minute, is added a cooling jacket (**TR**).

This jacket has an air intake G1/8" at the top and an internal circuit. In the pneumatic coupling is threaded a fitting a pneumatic tube is coupled to air supply network.

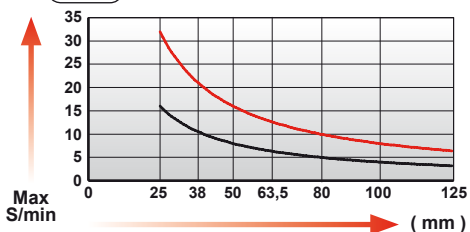
The pressurized air flowing through the internal circuit of the cooling jacket and out through its lower part, making the temperature of the cylinder decrease and can work at a higher frequency.



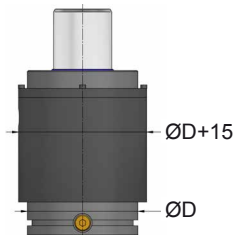
## TECHNICAL DATA

The **TR** system allows significant cooling of speed controlled gas springs:  
 With a flow of 200 liters of air per minute (for each gas cylinder) can be Doubled rate (SPM x 2) in relation to the same application without cooling system.

Consult AZOLGAS on cooling systems with other fluids.

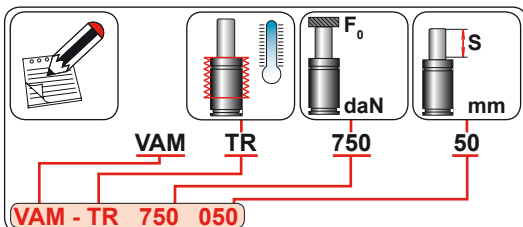


## DIMENSIONS



The cooling jacket increases the cylinder diameter 15mm

## HOW TO ORDER





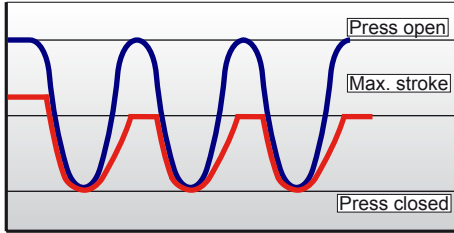


# 5 - SPEED CONTROL

## VAM

Stroke

— Press  
 — Cylinder

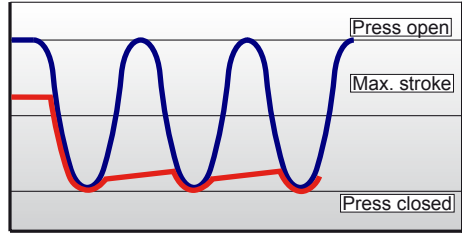


Time

## VMD

Stroke

— Press  
 — Cylinder

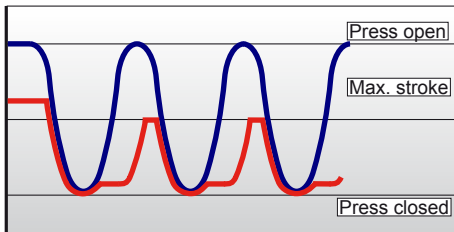


Time

## BSG

Stroke

— Press  
 — Cylinder

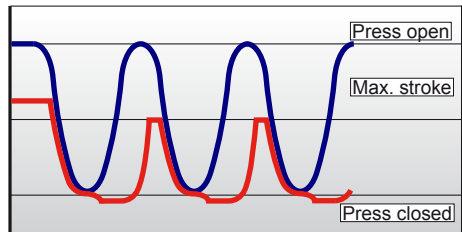


Time

## BSR

Stroke

— Press  
 — Cylinder



Time



• **Challenge:**

Slow return of piston rod for applications requiring a delayed time relative to the die parts.

**Solution:**

**VAM** gas springs with slowed return enabling removal of the matrix before the pressing completely rises.



• **Challenge:**

Prevent gas springs used as tool separation work unnecessarily and prematurely wear.

**Solution:**

**VMD** gas spring with very slowed return for tool separation applications using only 10% of the nominal stroke, extending its life.



• **Challenge:**

Block the gas cylinder in the desired working position and get them to return at will.

**Solution:**

**BSG** controlled gas spring achieves lock the piston rod in the defined position and can be operated according to the needs of the application.



• **Challenge:**

Avoid positive back of controlled gas springs.

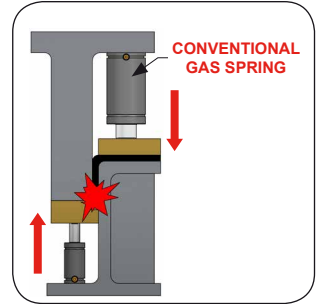
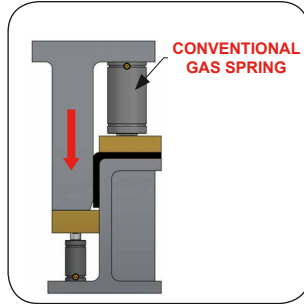
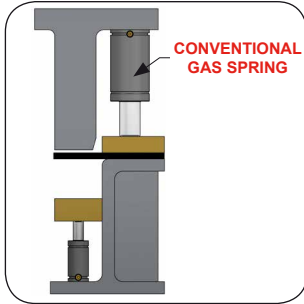
**Solution:**

**BSR** speed controlled gas spring avoiding unwanted positive rebound without external passive.



## 5.1 - VAM (SLOWED RETURN)

### CHALLENGE

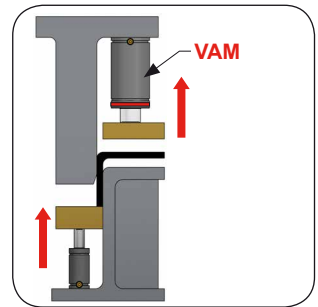
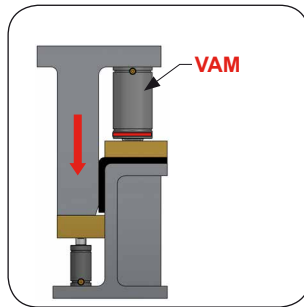
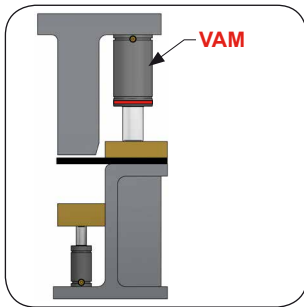


In conventional gas cylinder the piston rod return to its initial position **accompanying the movement of the press**.

Certain operations involve the ejector piece begins to work when the rammer is still holding it.

The use of conventional cylinders in these operations (synchronized movements rammer rise and removal of the matrix) and causes the **deformation of the metalsheet piece**.

### SOLUTION



**VAM** gas spring meets the needs of applications requiring a **delayed return** of the rammer about the matrix, preventing damage to the part.

**VAM** gas spring when return to its initial position, the first 5 mm backs at the same speed as a conventional gas spring, and subsequently slowed.

The slowed return of the piston rod makes possible the **removal of the metalsheet piece without deforming**.



# 5.1 - VAM (SLOWED RETURN)



## ADVANTAGES



• Easy implementation without tuning.



• Compatible with ISO dimensions.



• Use self-contained or hosed.



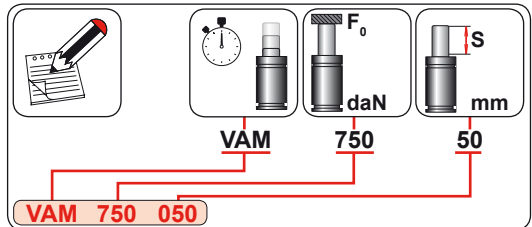
• Cost savings compared to alternative.

**PHOTO**

## TECHNICAL DATA

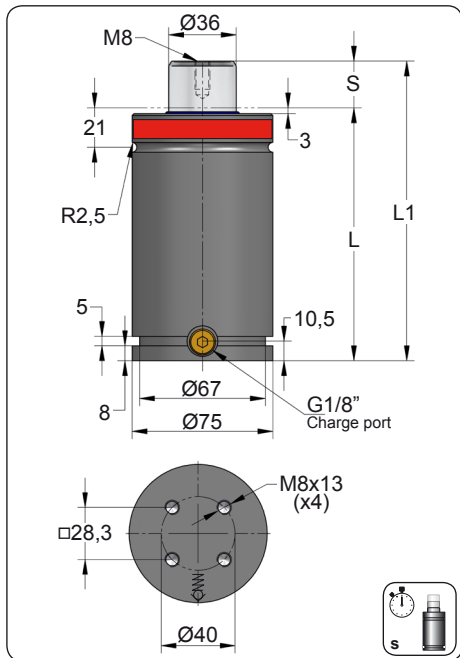
MODEL	F <sub>0</sub> daN	Ø mm	S mm	L1 mm	Pmax bar	Charge Port		
VAM 300	300	Ø45	25 - 100	147 - 297	150	G1/8"	400 CP-	✓
VAM 750	750	Ø75	25 - 125	160 - 360	75	G1/8"	400 CP-	✓
VAM 1500	1500	Ø95	25 - 125	170 - 370	75	G1/8"	400 CP-	✓
VAM 3000	3000	Ø120	25 - 125	190 - 390	90	G1/8"	400 CP-	✓
VAM 5000	5000	Ø150	25 - 125	205 - 405	100	G1/8"	400 CP-	✓
VAM 7500	7500	Ø195	25 - 125	210 - 410	105	G1/8"	400 CP-	✓

## HOW TO ORDER





# VAM 750



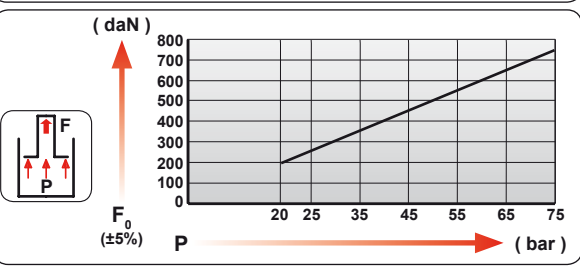
ORDER	S (mm)	L1 ±0,25 (mm)	L (mm)	Kg.
VAM 750 025	25	160	135	3.47
VAM 750 038	38	186	148	3.71
VAM 750 050	50	210	160	3.92
VAM 750 063	63.5	237	173.5	4.17
VAM 750 080	80	270	190	4.46
VAM 750 100	100	310	210	4.82
VAM 750 125	125	360	235	5.27



$t_{max} = k \times S_U$

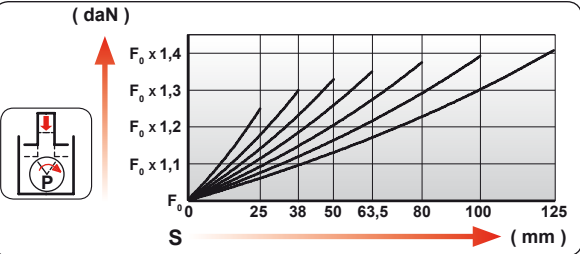
	k
VAM 750	0.062

Max. delay time ( $t_{max}$ )  
Constant (k)  
Stroke used ( $S_U$ )



CODE	Pressure		Force	
	bar	psi	daN	daN
VAM 750 050	75	1088	760	1010

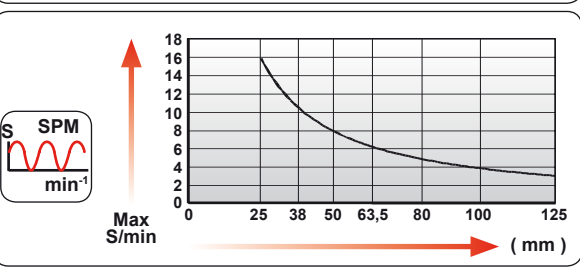
-Slight initial return back depends on the stroke used.  
-Return at constant slowed speed.



ENG ORDER  
 DEU BESTELL  
 FRA COMMANDE  
 ITA ORDINE  
 ESP PEDIDO  
 POR PEDIDO

**VAM 750**      **50**

**VAM 750 050**

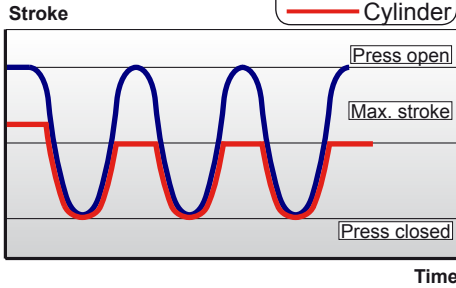


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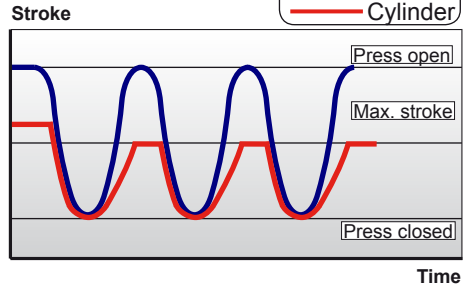
N <sub>2</sub>	Smax < 90%	Vmax 0,5 m/s	bar psi 20 290	bar psi 75 1088	°C °F 0 32	°C °F 80 176	400 CP-
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**CONVENTIONAL**



**VAM**



**DATA REQUIRED**



• Desired force ( daN ):.....



• Total stroke ( mm ):.....



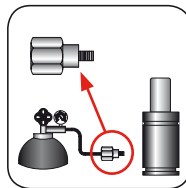
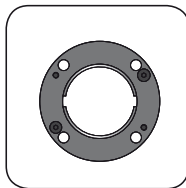
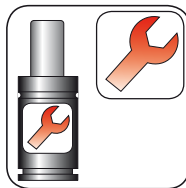
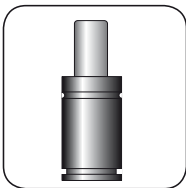
• Stroke used ( mm ):.....



• Number of cycles per minute:.....



• Desired delay time ( eg. 1 segundo):.....

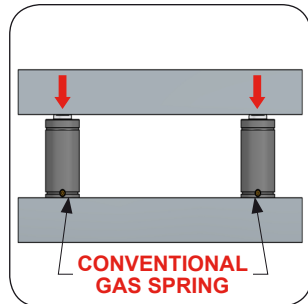
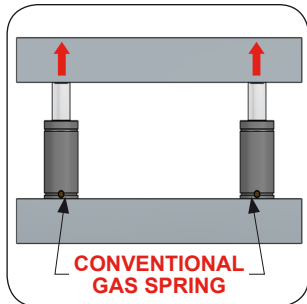
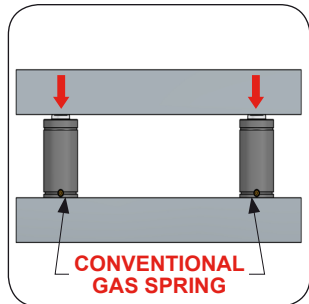
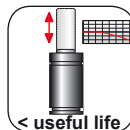
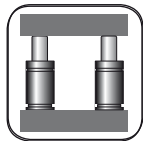


	<b>CODE</b>	<b>VAM 750 050</b>	<b>KIT VAM 750</b> Serial Number	<b>A14-075</b>	<b>18 GA 5</b>
ENG	ORDER	GAS SPRING	REPAIR KIT	FLANGE	CHARGING ADAPTER
DEU	BESTELL	GASDRUCKFEDER	ERSATZ	FLANSCH	LADEADAPTER
FRA	COMMANDE	RESSORT À GAZ	KIT DE RÉPARATION	BRIDE	RACCORD DE CHARGE
ITA	ORDINE	CILINDRO AD AZOTO	KIT DI MANUTENZIONE	FLANGE	ADATTATORE DI CARICO
ESP	PEDIDO	RESORTE DE GAS	KIT DE REPARACION	BRIDA	ADAPTADOR DE CARGA
POR	PEDIDO	CILINDRO DE GÁS	KIT DE MANUTENÇÃO	FLANGE	ADAPTADOR DE CARGA



## 5.2 - VMD (SLOWED RETURN TOOL SEPARATION)

### CHALLENGE

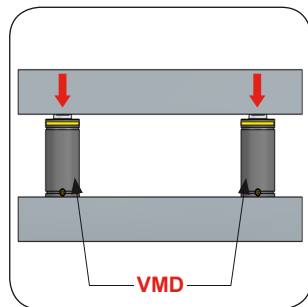
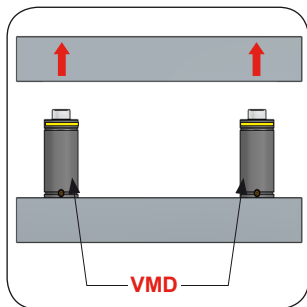
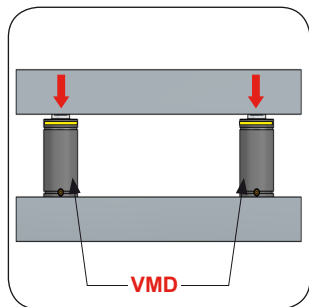
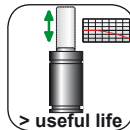


Certain dies are equipped with **storage** or tool separation gas springs replacing mechanical stops in the die sets..

The tool separation gas springs are used to separate portions of the die and prevent contact between surfaces during transport or storage of the die.

When in production, conventional gas springs used for storage **work unnecessarily**, consume energy useless and wear prematurely.

### SOLUTION



**VMD** gas spring meets the needs of applications requiring storage cylinders.

**VMD** gas spring is compressed like a conventional cylinder but returns to its initial position very slowly.

The slowed return of the piston rod allows **minimal use of the nominal stroke** (about 10% depending on the frequency), **saving energy**, preventing deterioration of press and die, **and prolonging its life**.

## 5.2 - VMD (SLOWED RETURN TOOL SEPARATION)



### ADVANTAGES



• Easy implementation without tuning.



• Compatible with ISO dimensions.



• Use self-contained or hosed.



• Cost savings compared to alternative.



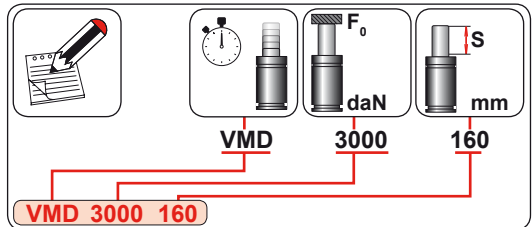
• Increases productivity.

**PHOTO**

### TECHNICAL DATA

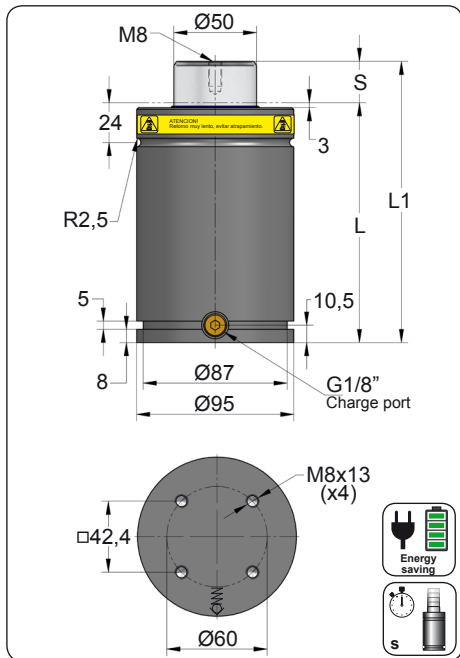
MODEL	F <sub>0</sub> daN	Ø mm	S mm	L1 mm	Pmax bar	Charge Port		
VMD 3000	3000	Ø95	160 - 300	440 - 720	150	G1/8"	400 CP-	✓
VMD 5000	5000	Ø120	160 - 300	460 - 740	150	G1/8"	400 CP-	✓
VMD 7500	7500	Ø150	160 - 300	475 - 755	150	G1/8"	400 CP-	✓

### HOW TO ORDER





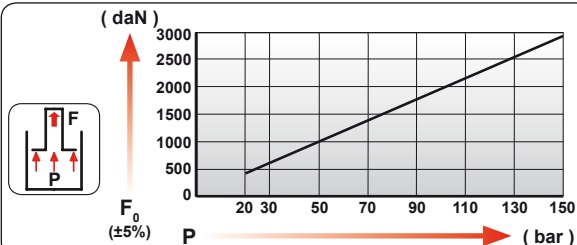
# VMD 3000



ORDER	S (mm)	L1 ±0,25 (mm)	L (mm)	Kg.
VMD 3000 160	160	440	280	
VMD 3000 200	200	520	320	
VMD 3000 250	250	620	370	
VMD 3000 300	300	720	420	



**WARNING!**  
Very slowed return, avoid .



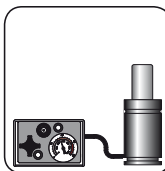
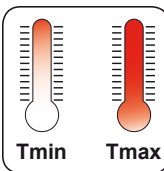
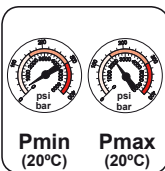
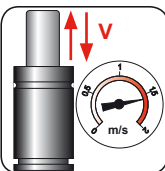
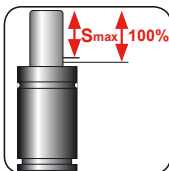
CODE	Pressure		F <sub>0</sub>	F <sub>1</sub>
	bar	psi	daN	daN
VMD 3000 160	150	2175	2945	

ENG ORDER  
 DEU BESTELL  
 FRA COMMANDE  
 ITA ORDINE  
 ESP PEDIDO  
 POR PEDIDO

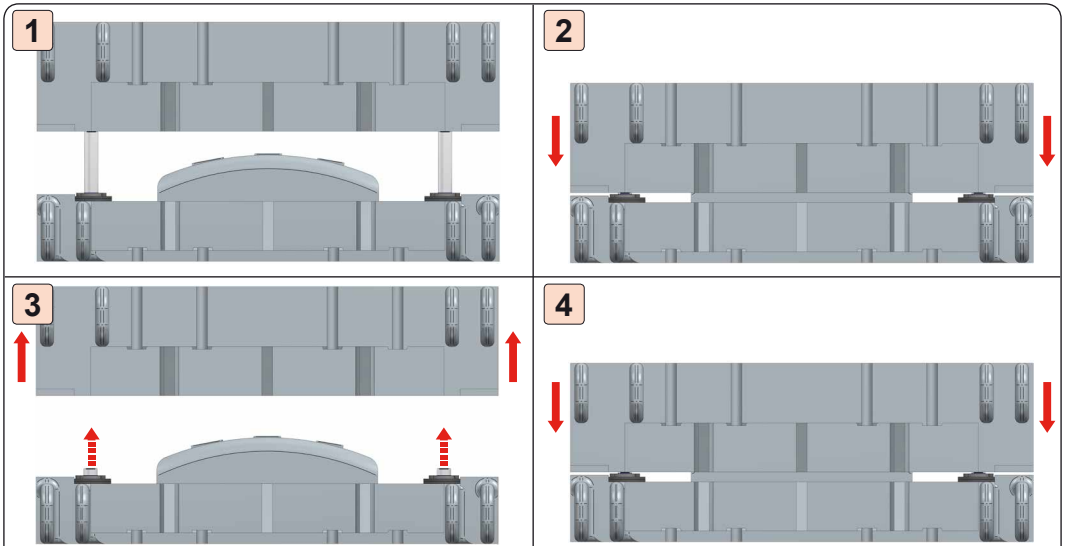
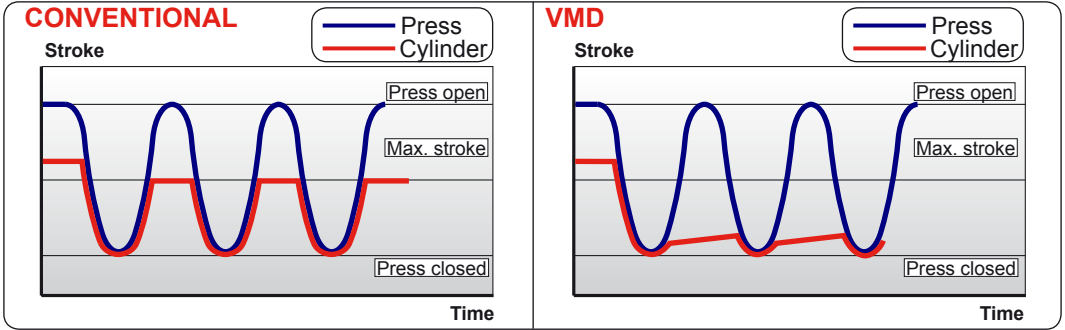
F<sub>0</sub> daN  
 S mm

VMD 3000 160

VMD 3000 160



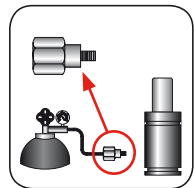
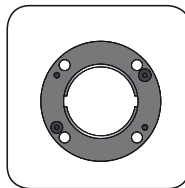
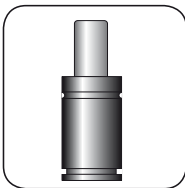
N <sub>2</sub>	Smax < 90%	Vmax 1,6 m/s	bar psi	bar psi	°C °F	°C °F	400 CP-
			20 290	150 2175	0 32	80 176	



Storage or tool separation gas springs replace mechanical stops.

The function of the mechanical stops or storage gas springs is to separate parts of the die and avoid contact between surfaces during transport or storage.

**VMD** gas springs have a very slowed return allowing minimal use of nominal career.

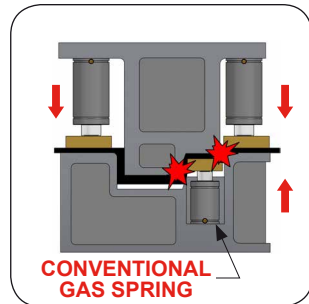
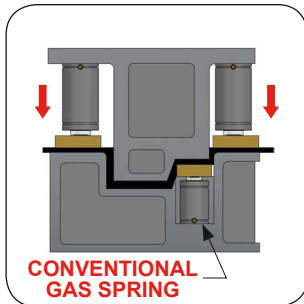
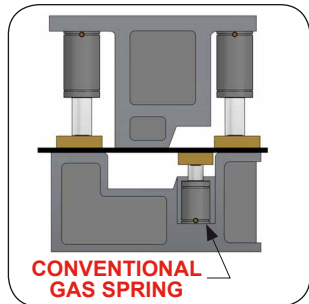
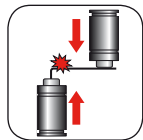


CODE	VMD 3000 160	KIT_VMD 3000 Serial Number	A14-075	18 GA 5	
ENG	ORDER	GAS SPRING	REPAIR KIT	FLANGE	CHARGING ADAPTER
DEU	BESTELL	GASDRUCKFEDER	ERSATZ	FLANSCH	LADEADAPTER
FRA	COMMANDE	RESSORT À GAZ	KIT DE RÉPARATION	BRIDE	RACCORD DE CHARGE
ITA	ORDINE	CILINDRO AD AZOTO	KIT DI MANUTENZIONE	FLANGE	ADATTATORE DI CARICO
ESP	PEDIDO	RESORTE DE GAS	KIT DE REPARACION	BRIDA	ADAPTADOR DE CARGA
POR	PEDIDO	CILINDRO DE GÁS	KIT DE MANUTENÇÃO	FLANGE	ADAPTADOR DE CARGA



## 5.3 - BSG (SPEED CONTROLLED)

### CHALLENGE

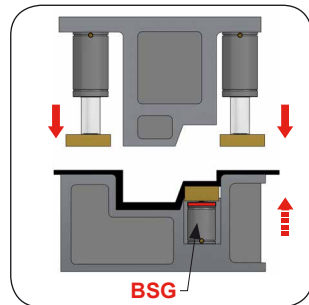
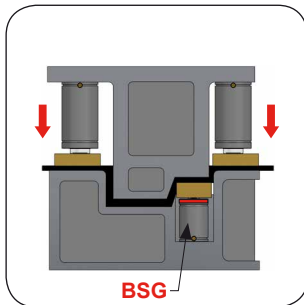
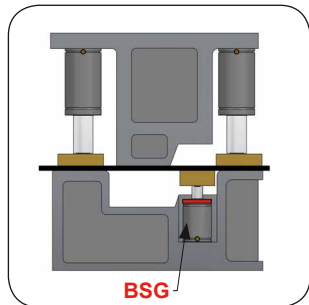
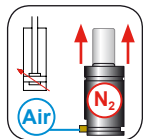


Certain applications (eg draw die) require the gas spring piston rod return can be **controlled** at will.

Some forming operations require the action of **two independent-separate parts**.

If a conventional gas spring is used, when the piston rod returns to its initial position while the metalsheep piece is hold, it causes **damage** to it.

### SOLUTION



**BSG** gas spring meets the needs of applications requiring **controlled return** of gas spring piston rod.

When the **BSG** gas spring travels the entire stroke a signal (pneumatic or electro-pneumatic) active lets the piston rod stays locked in its compressed position (1 mm back), and subsequent deactivation allows a controlled return of the piston rod to its initial position.

The **locking of the piston rod** in its compressed position and its **controlled release** enables the part forming without damaging it.





# 5.3 - BSG (SPEED CONTROLLED)

## ADVANTAGES



• **Locking** the piston rod compressed.



• **Return** the piston rod at will.



• Compatible with **ISO** dimensions.



• **Saves costs.**



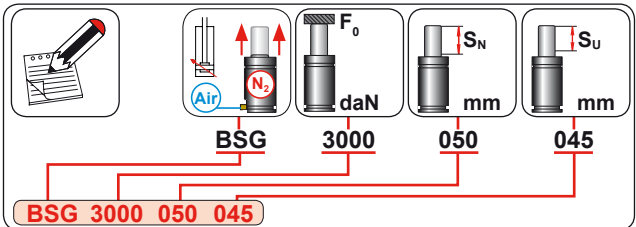
• Increases **productivity.**

**PHOTO**

## TECHNICAL DATA

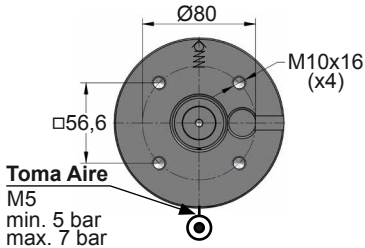
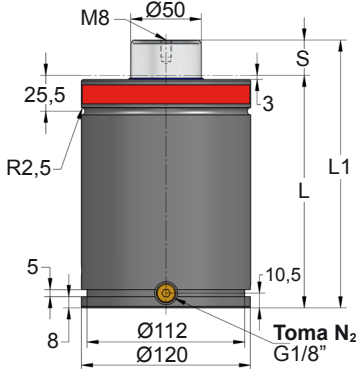
MODEL	F <sub>0</sub> daN	Ø mm	S mm	L1 mm	Pmax bar	Charge Port		
<b>BSG 1500</b>	1500	Ø95	5 - 160	138 - 440	150	G1/8"	400 CP-	✓
<b>BSG 3000</b>	3000	Ø120	5 - 160	158 - 460	150	G1/8"	400 CP-	✓
<b>BSG 5000</b>	5000	Ø150	5 - 160	173 - 475	150	G1/8"	400 CP-	✓
<b>BSG 7500</b>	7500	Ø195	5 - 160	178 - 480	150	G1/8"	400 CP-	✓

## HOW TO ORDER

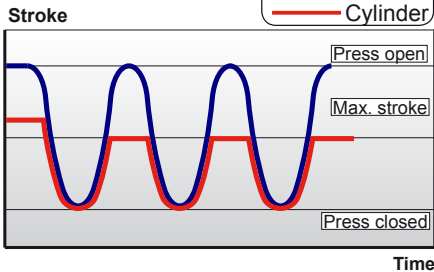




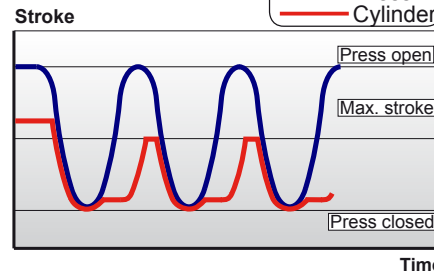
# BSG 3000



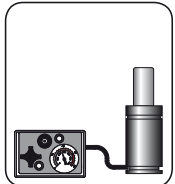
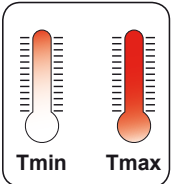
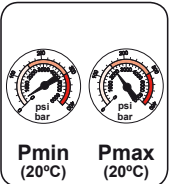
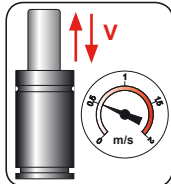
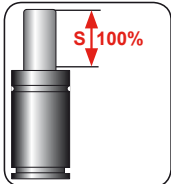
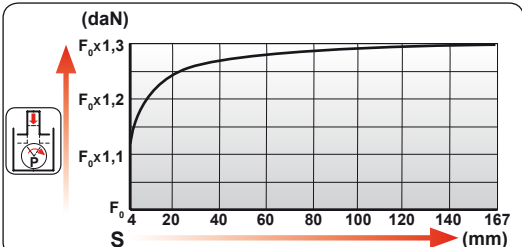
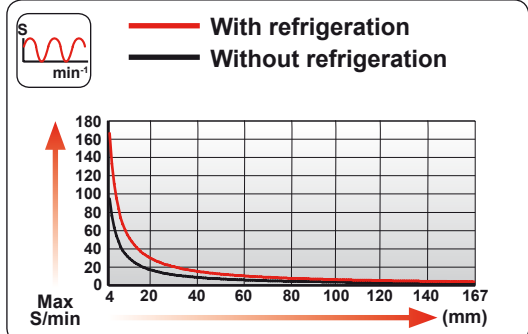
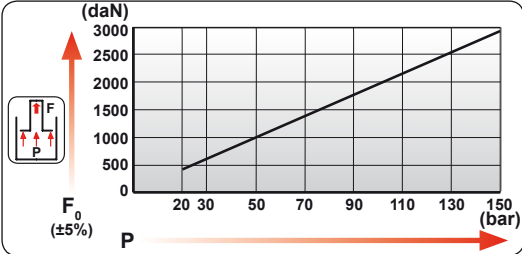
## CONVENTIONAL



## BSG



CODIGO				
	bar	psi	daN	daN
<b>BSG 3000 050 050</b>	150	2175	2945	3760

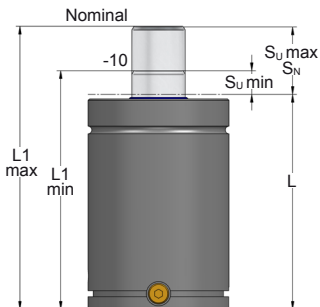


<b>N<sub>2</sub></b>	<b>Use 100% of useful stroke</b>	<b>Vmax 0,5 m/s</b>	<b>bar psi</b> 20 290	<b>bar psi</b> 150 2175	<b>°C °F</b> 0 32	<b>°C °F</b> 80 176	<b>400 CP-</b>
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# BSG 3000



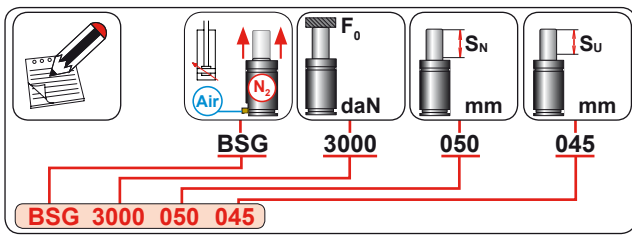
CODE	NOMINAL STROKE $S_n$ (mm)	USEFUL STROKE $S_u$ (mm)		$L1 \pm 0.25$ (mm)		L (mm)
		$S_u$ min	$S_u$ max	$L1$ min	$L1$ max	
BSG 3000 013 XXX	13	5	13	158	166	153
BSG 3000 020 XXX	20	10	20	170	180	160
BSG 3000 025 XXX	25	15	25	180	190	165
BSG 3000 030 XXX	30	20	30	190	200	170
BSG 3000 038 XXX	38	28	38	206	216	178
BSG 3000 045 XXX	45	35	45	220	230	185
BSG 3000 050 XXX	50	40	50	230	240	190
BSG 3000 055 XXX	55	45	55	240	250	195
BSG 3000 063 XXX	63	53	63	256	266	203
BSG 3000 070 XXX	70	60	70	270	280	210
BSG 3000 080 XXX	80	70	80	290	300	220
BSG 3000 090 XXX	90	80	90	310	320	230
BSG 3000 100 XXX	100	90	100	330	340	240
BSG 3000 110 XXX	110	100	110	350	360	250
BSG 3000 120 XXX	120	110	120	370	380	260
BSG 3000 125 XXX	125	115	125	380	390	265
BSG 3000 130 XXX	130	120	130	390	400	270
BSG 3000 140 XXX	140	130	140	410	420	280
BSG 3000 150 XXX	150	140	150	430	440	290
BSG 3000 160 XXX	160	150	160	450	460	300



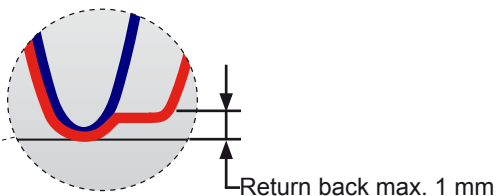
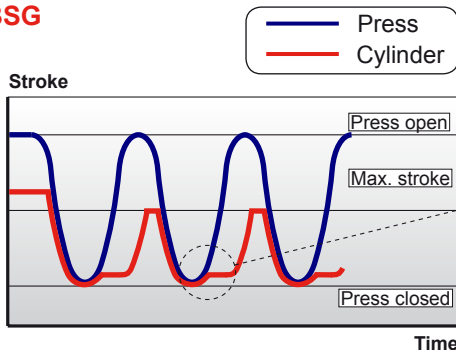
For a given nominal stroke ( $S_n$ ) (eg 050 mm) it is possible to select a useful stroke ( $S_u$ ) within the range ( $S_u$  min) and ( $S_u$  max), for example 45 mm.

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

## HOW TO ORDER



## BSG

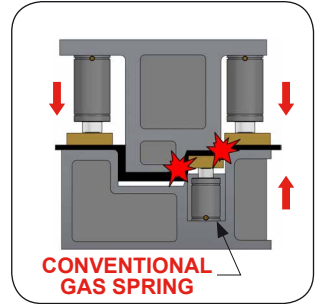
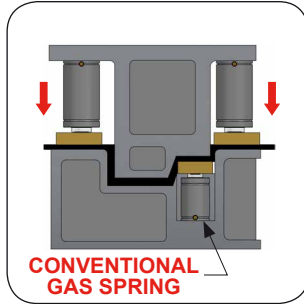
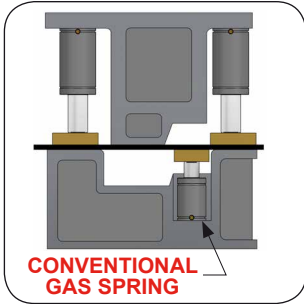


BSG gas spring bounces 1mm before keeps locked in the compressed position



## 5.4 - BSR (SPEED CONTROLLED WITHOUT BOUNCE)

### CHALLENGE

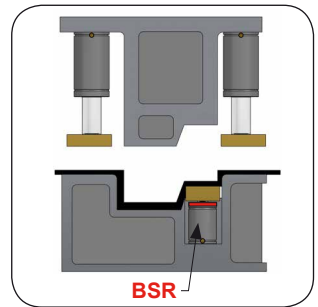
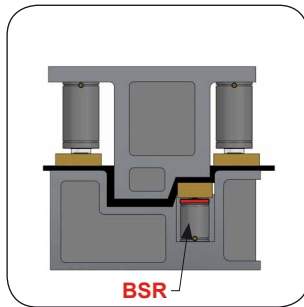
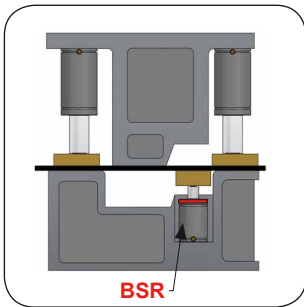
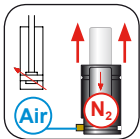


Certain applications (eg double-stage draw die) require the return speed controlled gas spring piston rod does not have a positive return (bounce).

Some forming operations need to do a **double step in a single press stroke**.

If a conventional speed controlled gas spring is used, when the piston rod is locked in its compressed position, it **bounces up 1 mm** while the metalsheet part is hold, it causes damage to it.

### SOLUTION



**BSR** gas spring meets the needs of applications requiring speed controlled gas springs **without rebound or negative rebound**.

When the **BSR** gas spring travels the entire stroke a signal (pneumatic or electro-pneumatic) active lets the piston rod stays locked in its compressed position, and subsequent deactivation allows a controlled return of the piston rod to its initial position.

The locking of the piston rod in its compressed position joined to the negative rebound and its controlled release enables the part forming without damaging it.

## 5.4 - BSR (SPEED CONTROLLED WITHOUT BOUNCE)



### ADVANTAGES



• **Locking** the piston rod compressed.



• **Return** the piston rod at will.



• No need external passive.



• **Saves costs.**



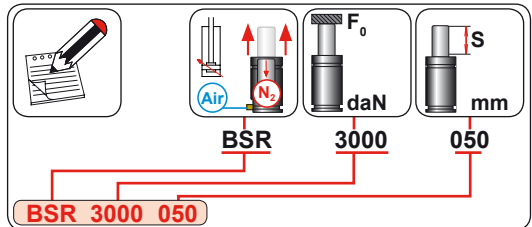
• Increases **productivity.**

**PHOTO**

### TECHNICAL DATA

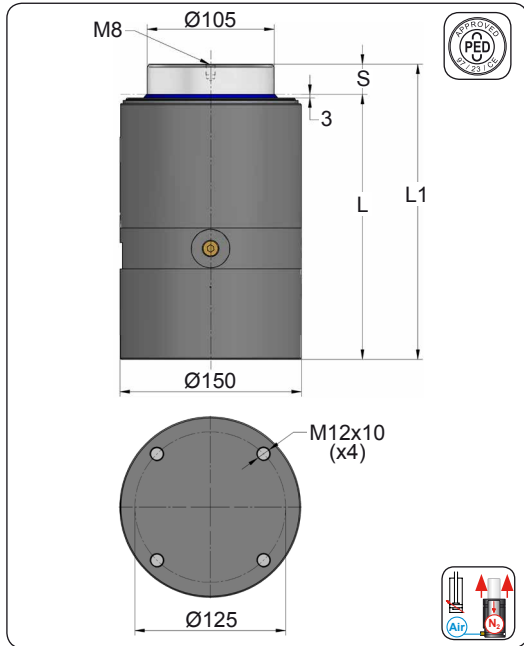
MODEL	F <sub>0</sub> daN	Ø mm	S mm	L1 mm	Pmax bar	Charge Port		
<b>BSR 1500</b>	1500	Ø120	10 - 100	210 - 390	35	G1/8"	400 CP-	✓
<b>BSR 3000</b>	3000	Ø150	10 - 100	215 - 395	35	G1/8"	400 CP-	✓
<b>BSR 5000</b>	5000	Ø185	10 - 100	225 - 405	35	G1/8"	400 CP-	✓
<b>BSR 7500</b>	7500	Ø230	10 - 100	255 - 435	35	G1/8"	400 CP-	✓

### HOW TO ORDER



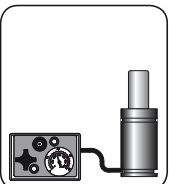
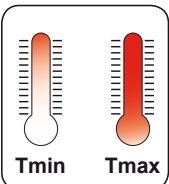
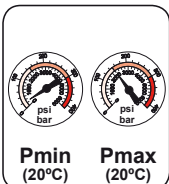
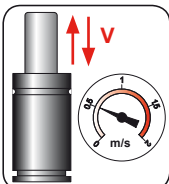
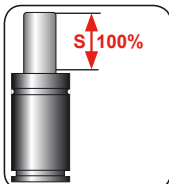
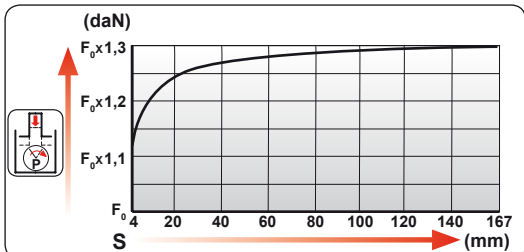
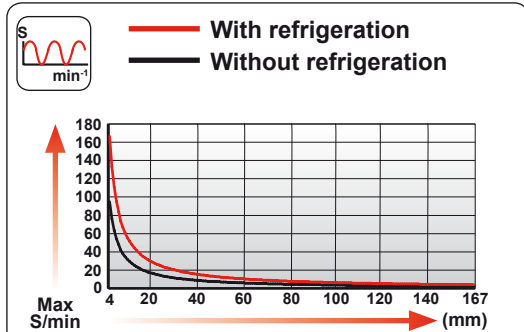
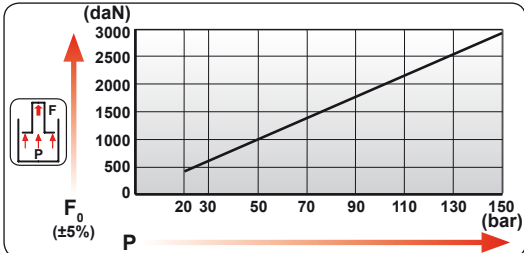


# BSR 3000



ORDER	S (mm)	L1 ±0,25 (mm)	L (mm)
BSR 3000 010	10	215	205
BSR 3000 020	20	235	215
BSR 3000 030	30	255	225
BSR 3000 040	40	275	235
BSR 3000 050	50	295	245
BSR 3000 060	60	315	255
BSR 3000 070	70	335	265
BSR 3000 080	80	355	275
BSR 3000 090	90	375	285
BSR 3000 100	100	395	295

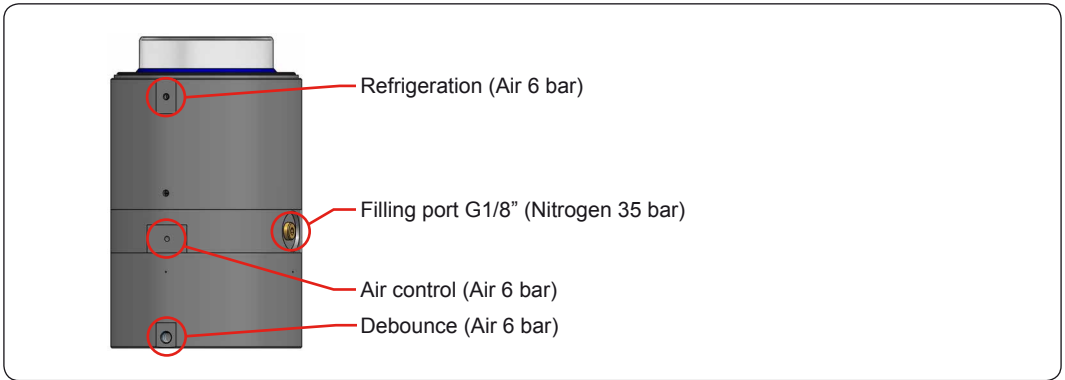
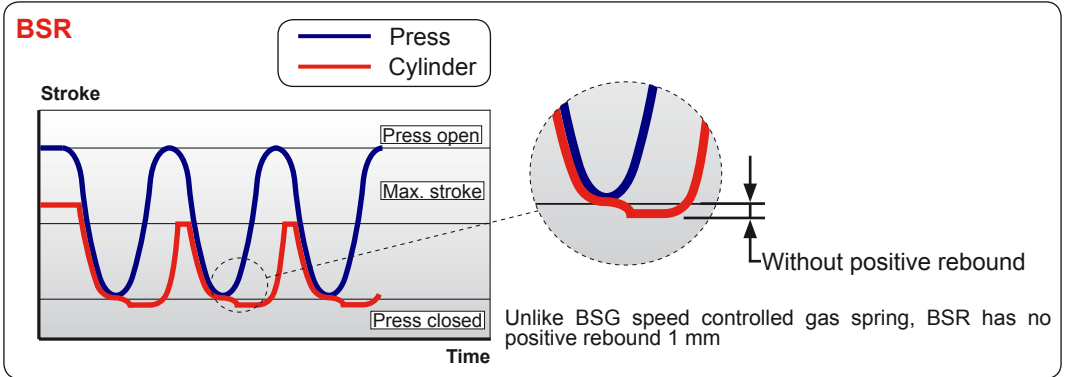
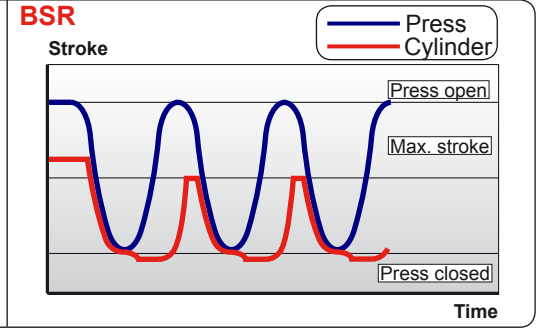
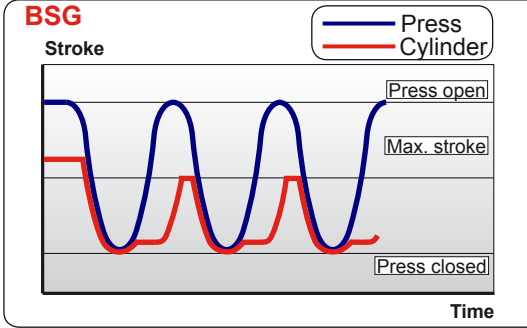
CODIGO	Pressure		F <sub>0</sub>	F <sub>1</sub>
	bar	psi	daN	daN
BSR 3000 050	35	507	3030	



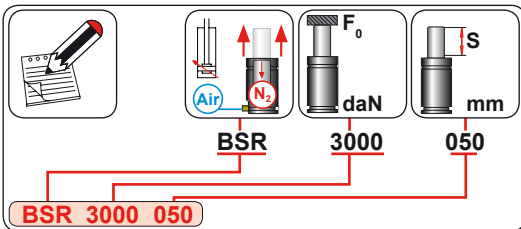
N <sub>2</sub>	Use 100% of useful stroke	Vmax 0,5 m/s	bar psi	bar psi	°C °F	°C °F	400 CP-
			20 290	150 2175	0 32	80 176	



# BSR 3000



## HOW TO ORDER









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