

sliding applications



*Our experience ensures the best solutions...*



***Specialist in advance materials  
for use in sliding applications***



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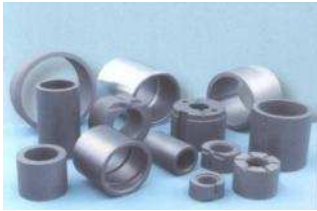
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## mechanical seals

Graphite, because of its crystalline structure, has excellent self-lubricant properties. Even dry, its friction coefficient between a carbon/graphite material and the counterface of friction is comparatively low, because of that, the sliding between their faces is satisfactory.

It is important, in any case, to know all information about the working conditions ( dry or wet ), kind of application, maximum temperature, rotary speed and counterface of sliding.

*Carbosystem can give you a technical questionnaire in order to determine the quality and impregnation most suitable on each application, as well as give you the best advice, technical support and quick service.*



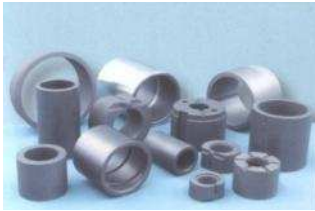
### QUALITY

- Carbón / Graphite / Electrographite
- Resin and Antimony Impregnations
- Silicon Carbide
- Tungsten Carbide
- Alumina

### APLICACIONES

- Multi-segmental rings for turbines
- Leakproof rings
- Sliding rings
- Valves seats
- Bearings and joints for heating And water pumps
- Mechanical seals





# mechanical seals

## segmental rings

Segmental rings are specially used on sliding applications and axel cleaning, if they are lubricated with water they can bear a very high rotary speed

The number of segments will depend upon the axel diameter, being necessary an elastic element around the segmental ring in order to get its closure.



## mechanical seals

For the applications with mechanical seals, a low friction coefficient and a low wear are essential on materials that will work dry and will be directly in touch.

It is important to define the quality that will be use on a maximum working temperature, pressure and counterface.

## Johnson pieces

For the self-supported rotary joints kind of Johnson SBPH and SAPH we can supply the rotule and the ring made in graphite with Antimony impregnation, quality KU118.

This kind of joints are used on the cellulose, paper and cardboard industry.

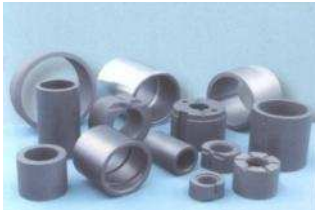


## friction bearings

The carbon bearings must be used when the working temperature will exceed the one allowed by the lubricants, also when they will have to work on an enviroment that can dissolve the lubricants, corrosion danger or if they will be in touch with liquids without any lubricant effect.

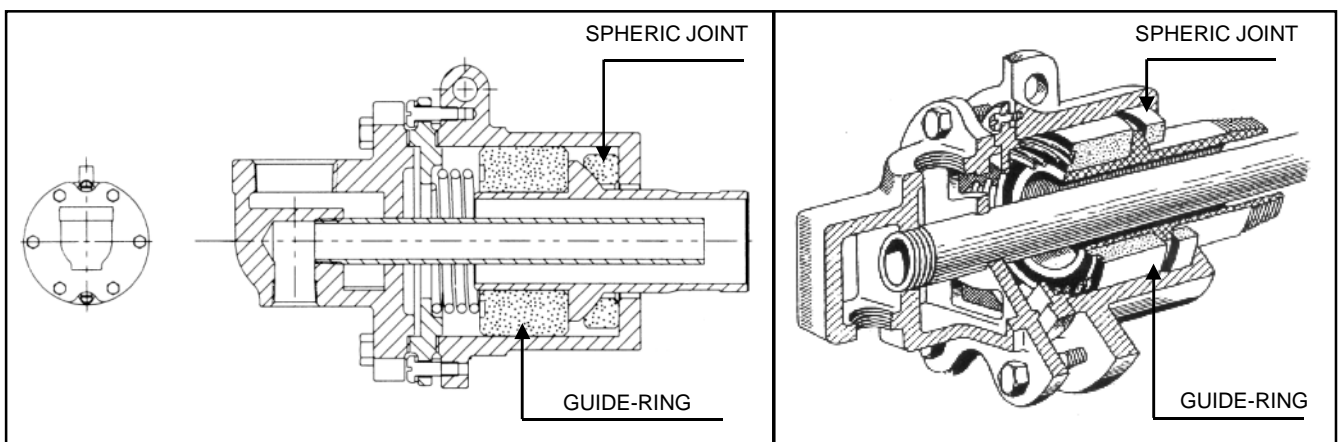
This bearings can be fit in with other materials like steel





# rotary joints

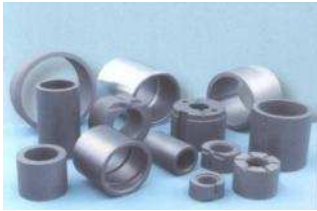
For rotary joints type **Jonhson** SBPH y SAPH, *Carbosystem supplies spheric joint and guide-rings made on graphite impregnated by Antimony.*



## MATERIAL CHARACTERISTICS

● Impregnation		ANTIMONY
● Apparente density	g/cm <sup>3</sup>	2,70
● Porosity	%	0,5
● Rockwell hardness	HR <sub>B</sub> 5/100	115
● Compression strength	N/mm <sup>2</sup>	220
● Bending strength	N/mm <sup>2</sup>	90
● Young module	KN/mm <sup>2</sup>	30
● Thermal conductivity	W/m°C	20
● Thermal expansion	10 <sup>-6</sup> /°C	8
● Max temp. oxidant atmosphere	°C	350
● Max temp. anti-oxidant atmosphere	°C	400

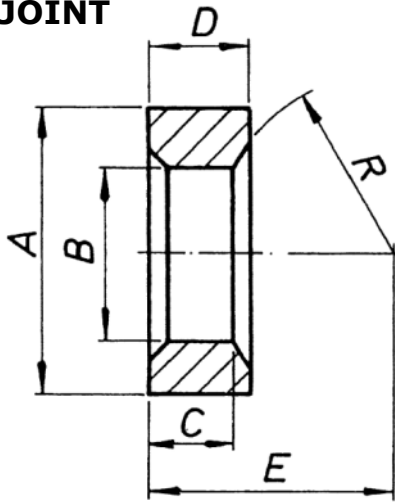
*These measurements must be taken as average values*



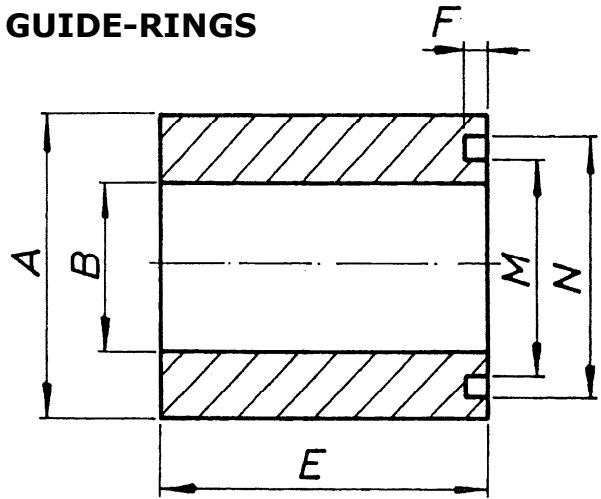
# rotary joints

## MEASUREMENTS

### SPHERIC JOINT



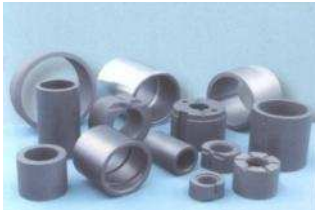
### GUIDE-RINGS



REF.	A	B	C	D	E	R	REF.	A	B	M	N	E	F
2300/3300	61,9	38,1	11,1	15,9	42	36,51	2300/3300	63,3	31,8	44,5	54	33,7	3,2
2400/3400	74,6	46	12,7	19,1	50,8	44,45	2400/3400	76	39,7	54	66,7	38,1	3,2
2500/3500	88,9	58,7	10,3	19,1	54	52,38	2500/3500	98,2	46,2	58,7	74,6	49,2	3,2
2550/3550	101,6	66,7	11,1	20,6	59,5	58,73	2550/3550	110,9	57,3	69,9	88,9	52,4	3,2
2600/3600	114,3	79,4	12,7	22,2	70,2	69,85	2600/3600	120,4	69,9	82,6	101,6	57,2	3,2
2700/3700	131,8	95,3	14,3	22,2	85,7	85,7	2700/3700	133,1	85,7	101,6	120,7	65,1	3,2
2750/3750	149,2	108	14,3	25,4	94,5	96,8	2750/3750	158,5	99,9	2 partes		76,2	3,2
2800/3800	171,4	120,6	15,9	28,6	104,8	107,95	2800/3800	180,8	111,1	2 partes		85,8	3,2







# flexible graphite

Expanded graphite sheets are from universal application for liquids and gases. They are made by pure graphite, being flexibles and soft.

They are chemically resistant against the most number of enviroments, specially corrosives and aggressives.

They can be used on high temperatures between  $-250\text{ }^{\circ}\text{C}$  to  $450\text{ }^{\circ}\text{C}$  with air, till  $500\text{ }^{\circ}\text{C}$  with steam and till  $3000\text{ }^{\circ}\text{C}$  on a inert atmosphere

*They are supplied with differents stiffness and also several thickness. In like manner we can produce any kind of joint or finished piece when measurements are indicated or a drawing is supplied.*



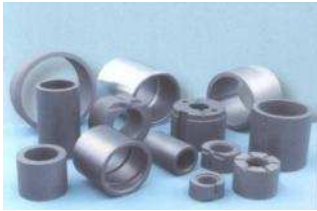
## APPLICATIONS:

- Pump joints
- Valve joints
- Machinery joints
- Joints for aggressive enviroments
- Petrochemical
- Thermoelectrical
- With gas and steam
- High and low temperature
- Flange for fragile materials

## PROPERTIES:

- Flexible and soft
- Impermeable a gases y líquids
- Usefull from  $-250\text{ }^{\circ}\text{C}$  till  $3000\text{ }^{\circ}\text{C}$
- Chemically resistant
- Excellent thermal conductivity
- Very good resistance to the thermal shock
- Easy to use and to stick
- Steable through time, unlimited stock
- Asbestos free, innocuous for health





# flexible graphite

## SUPPLIED SIZES

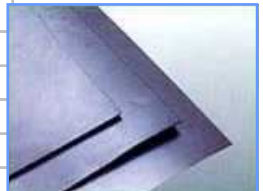
Ref.	Width (mm)	Length (mm)	Thickness (mm)	Density (g/cm <sup>3</sup> )
<b>GRAPHITE SHEET</b> Standard 50 m				

GF05	1000/1500	20 - 300	0,5	1
GF07	1000/1500	20 - 300	0,7	1
GF10	1000/1500	20 - 300	1	1



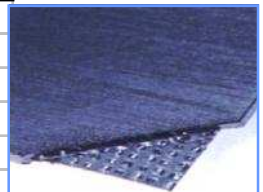
## GRAPHITE PLATE

GS10	1000	1000	1	1
GS15	1000	1000	1,5	1
GS20	1000	1000	2	1
GS30	1000	1000	3	1



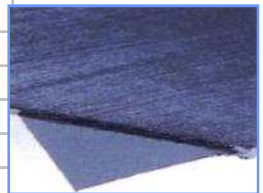
## REINFORCED GRAPHITE SHEET

GSR10316P	1000	1000	1	1
GSR15316P	1000	1000	1,5	1
GSR20316P	1000	1000	2	1
GSR30316P	1000	1000	3	1



### Reinforced plate with material AISI316 0,1 mm drilled

GSR10316L	1000	1000	1	1
GSR15316L	1000	1000	1,5	1
GSR20316L	1000	1000	2	1
GSR30316L*	1000	1000	3	1



### Reinforced plate with material AISI316 0,05 mm smooth \*2 x 0,05 mm smooth

Other sizes and material details under request

## PHYSICAL VALUES

	■ Density	g/cm <sup>3</sup>	1
	■ Carbon content	%	> 98,5
	■ Sulfur content	ppm	< 995
	■ Ash content	%	1,5
	■ Pressing values	%	35
	■ Elastic recovery	%	> 15
	■ Tension resistance	N/mm <sup>2</sup>	> 20