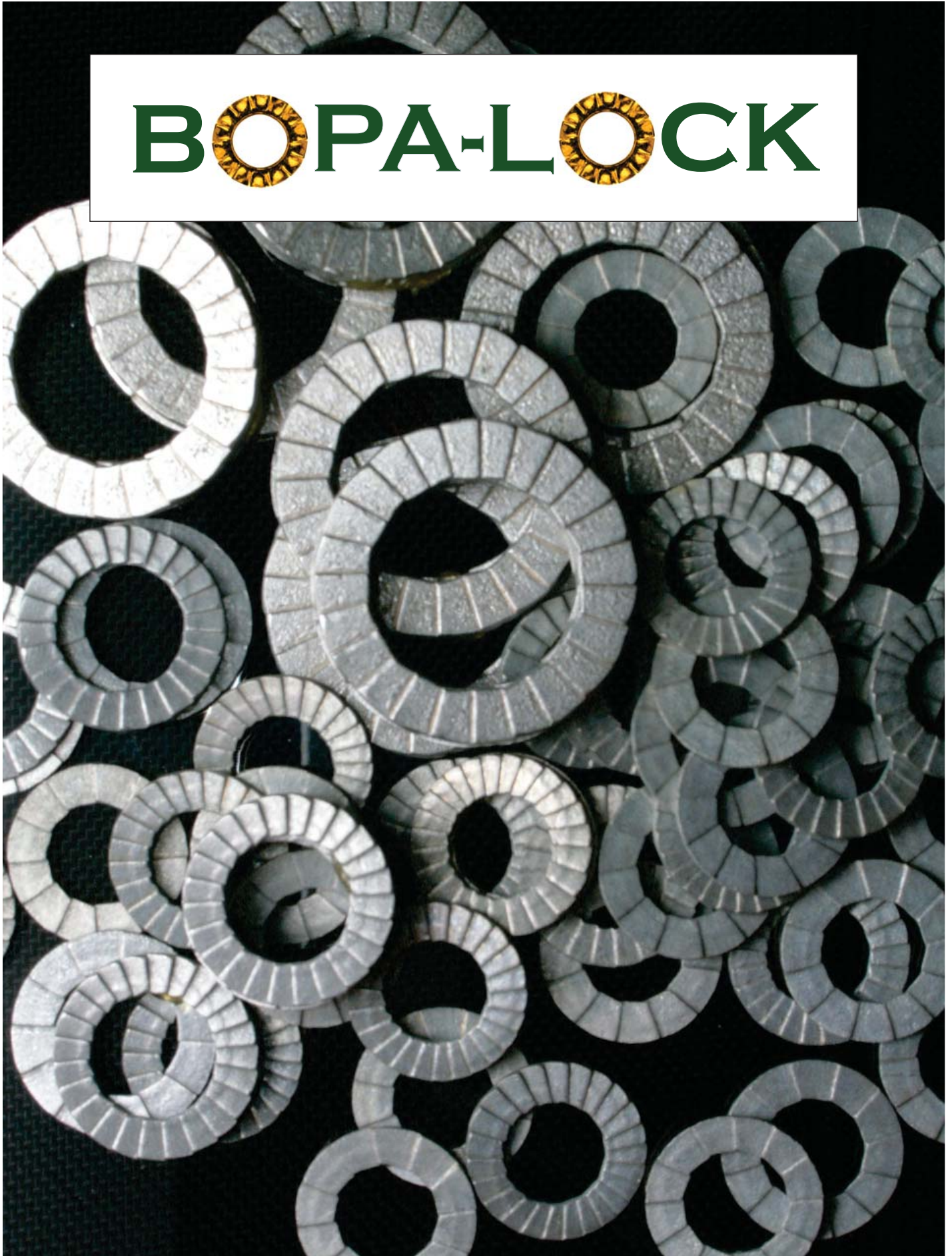


BOPA-LOCK



BOPA-LOCK

BOPA-LOCK Washers

In the mining industry, BOPA-LOCK has proven to be very effective against bolt loosening in tunnelling, mining and drilling equipment. BOPA-LOCK is a reliable securing component, commonly used in applications generally exposed to severe vibration and dynamic loads, such as hydraulic hammers, crusher units, screens, feeders, raise borers, drill rigs, underground loaders, pumps, compressors, tracks and conveyors.

We offer a superior bolt securing system that provides safe locking for bolted joints even when exposed to severe vibration and dynamic loads.

We help you optimize your bolted joints in order to minimize overall cost and maximize safety

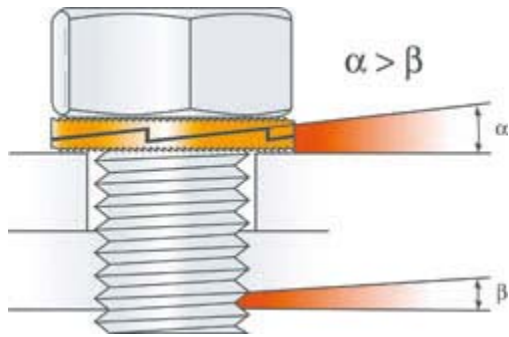
Products

The BOPA-LOCK securing system uses geometry to safely lock bolted joints in the most critical applications.

This unique wedge-locking system offers the following advantages:

- Maximum safety
- Resists loosening caused by vibration and dynamic loads
- Ease of assembly and disassembly
- Locking function is not affected by lubrication
- Positive locking at low and high preload levels
- Controllable preload
- Same temperature characteristics as standard bolt/nut
- Reusable





Tension makes the bolt self-locking

The key is the difference in angles. Since the cam angle " α " is larger than the thread pitch " β ", the pair of washers expand more than the corresponding pitch of the thread. BOPA-LOCK washers positively lock the fastener in a joint which is subjected to extreme vibration or dynamic loads.

Steel washers



Dimensions for steel washers

Type	Inner d (mm)	Outer D (mm)	Thickness T (mm)
6	6,4	12,6	2,6
8	8,5	15,4	2,2
10	10,5	17,5	2,4
12	12,6	21,8	2,5
16	16,7	27	3,2

Material and dimensions are subject to change without prior notice.

Hardness

In order to assure the unique locking function of the BOPA-LOCK washers, the hardness of the mating surfaces should not exceed the hardness of the BOPA-LOCK washers.

The unique wedge-locking action of the BOPA-LOCK washers can be easily verified. Tighten the bolted joint with BOPA-LOCK washers, then loosen, during loosening, sliding must occur between the pair of BOPA-LOCK washers. Upon overriding of the cam faces a "click" should be felt when the bolt/nut comes loose. Upon inspection the surfaces should show clear impression marks made by the BOPA-LOCK washers. When all these criteria are fulfilled, BOPA-LOCK washers will always lock bolted joints exposed to severe vibration or dynamic loads.

BOPA-LOCK Hardness

(Hardness of BOPA-LOCK washers)

40 – 50 Rockwell

BOPA-LOCK Mechanical Plating

Light Mechanical Plating

Material information

BOPA-LOCK washers are made of Cold Rolled Commercial Mild Steel or equivalent alloy. All BOPA-LOCK steel washers are Case Hardened.





PART #	SIZE	A	B	C	# OF CAMS	# OF SIEZING RIDGES
STD-M6	M6	6.4 mm	12.6 mm	2.6 mm	12	24

NAME:

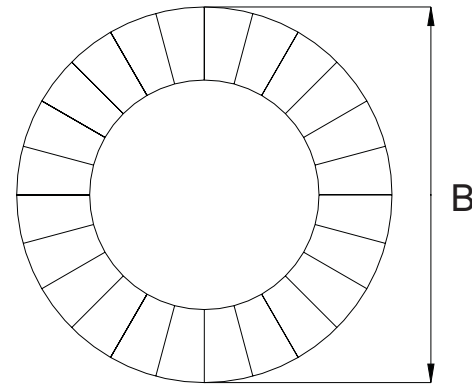
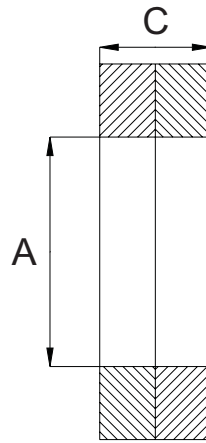
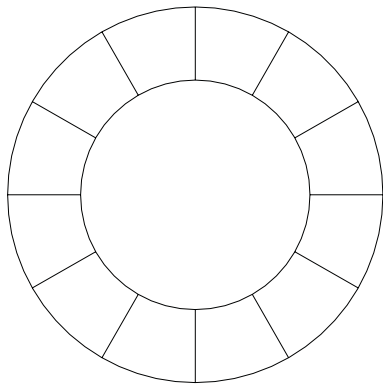
MATERIAL: COLD ROLLED MILD STEEL

SCALE:

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PAGE:

NOTES: HEAT TREATMENT CASE HARDENED TO HRC 40-55
LIGHT MECHANICAL PLATING





PART #	SIZE	A	B	C	# OF CAMS	# OF SIEZING RIDGES
STD-M8	M8	8.5 mm	15.4 mm	2.2 mm	12	24

NAME:

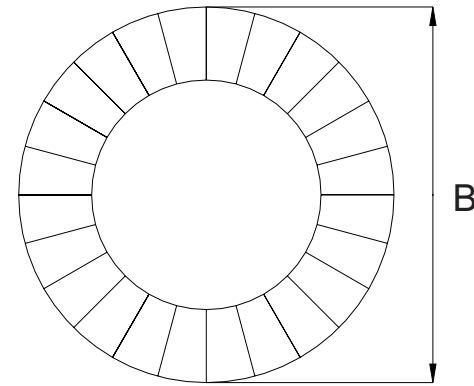
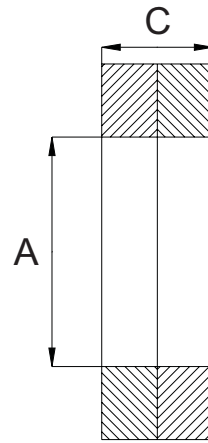
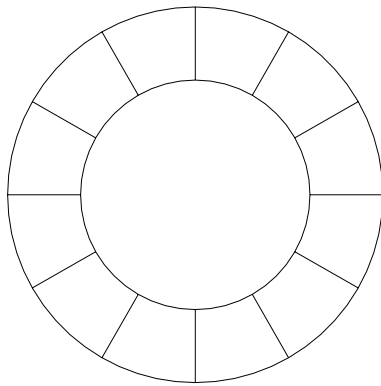
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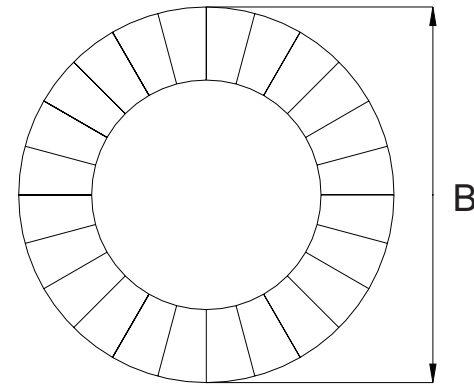
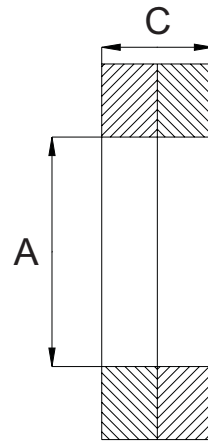
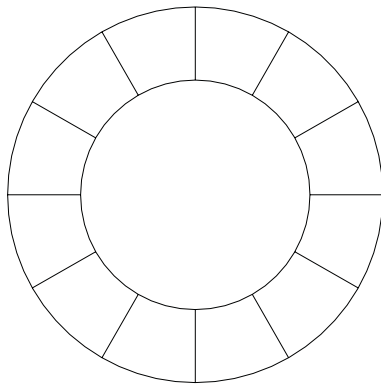
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NOTES: HEAT TREATMENT CASE HARDENED TO HRC 40-55
LIGHT MECHANICAL PLATING





PART #	SIZE	A	B	C	# OF CAMS	# OF SIEZING RIDGES
STD-M10	M10	10.5 mm	17.5 mm	2.4 mm	12	24
NAME:		MATERIAL: COLD ROLLED MILD STEEL				
SCALE:	DWG NO:	PAGE:	NOTES: HEAT TREATMENT CASE HARDENED TO HRC 40-55 LIGHT MECHANICAL PLATING			





PART #	SIZE	A	B	C	# OF CAMS	# OF SIEZING RIDGES
STD-M12	M12	12.6 mm	21.8 mm	2.5 mm	12	24

NAME:

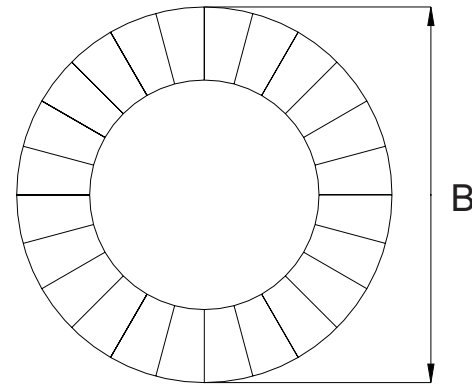
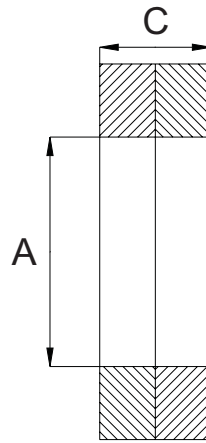
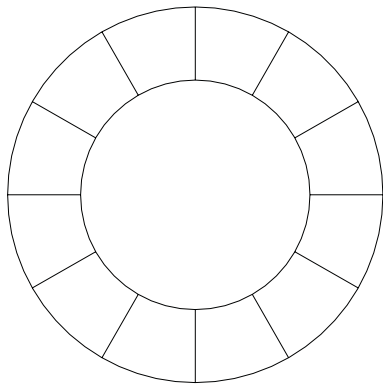
MATERIAL: COLD ROLLED MILD STEEL

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NOTES: HEAT TREATMENT CASE HARDENED TO HRC 40-55
LIGHT MECHANICAL PLATING





PART #	SIZE	A	B	C	# OF CAMS	# OF SIEZING RIDGES
STD-M16	M16	16.7 mm	27 mm	3.2 mm	12	24

NAME:

MATERIAL: COLD ROLLED MILD STEEL

SCALE:

DWG NO:

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NOTES: HEAT TREATMENT CASE HARDENED TO HRC 40-55
LIGHT MECHANICAL PLATING

