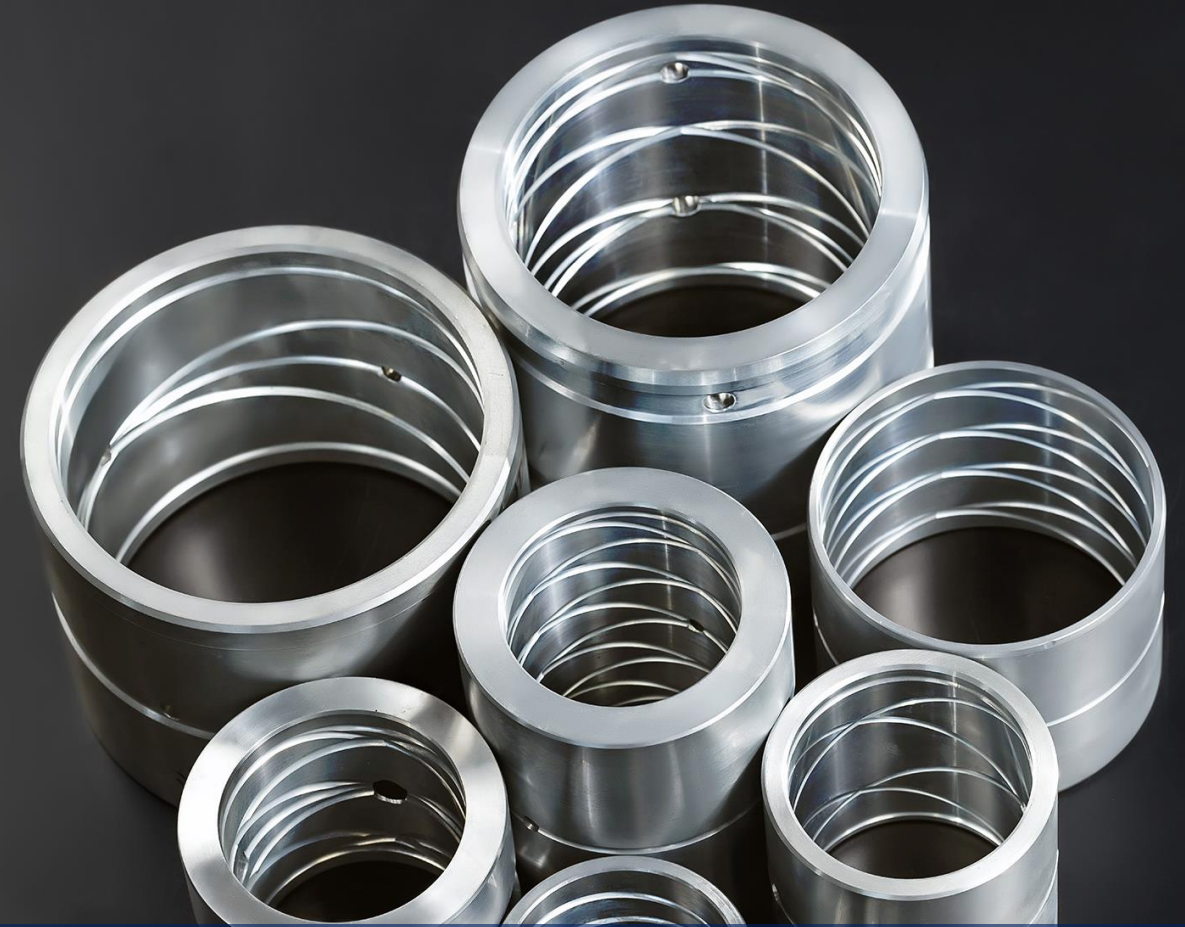




ENGINEERED
ZINC BEARING
SOLUTIONS



**Zincaloy ZA-12 Series
Standard Sleeve Bearings**

Zinealloy

ZA-12 SLEEVE BEARINGS

ZA-12 bearings are the cost effective alternative to traditional SAE-660 bronze sleeve bearings

- **RESILIENCE** - Protects bearing housings from deformation due to pounding.
- **BETTER DRY RUNNING PROPERTIES** - Resists damage to shaft if lubrication fails.
- **LOW COEFFICIENT OF FRICTION**
- **BETTER MECHANICAL PROPERTIES** - Especially strength, toughness and hardness.
- **BETTER DAMPENING PROPERTIES** - Absorbs impact energy well to reduce vibration.
- **HIGHER TOLERANCE OF FOREIGN SUBSTANCES** - Ability to absorb foreign particles to avoid shaft damage.
- **LIGHTER WEIGHT** - 32% Lighter.
- **FREE MACHINING** - Excellent surface finish.
- **LONGER BEARING LIFE**
- **LEAD FREE**



**The Cost
Effective
Alternative to
Bronze**

Zincalloy

ZA-12 HOLLOW BAR STANDARD SIZES

ZA-12 Bearings are stocked in semi-finished state for fast delivery to specific sizes

Stock sizes range from 1¾" O.D. through to 8¾" O.D. in 0.125" increments for small diameters to 0.25" increments for larger sizes

- Minimum O.D. 1½"
- Maximum O.D. 9"

As cast hollow stock sizes include a ⅛ inch machining allowance on the I.D. and O.D. i.e. a 5 x 6 inch hollow is actually 4⅞ inches x 6⅞ inches, which is designed to finish to 5 x 6 inches. The ZA-12 hollow stock sizes are listed in these nominal sizes.

FINISH CAST ZA-12 BEARING SIZES			
O.D.	W.T.	I.D.	lb/ft
1 3/4	0.375	1	5.9
2	0.500	1	8.0
	0.25	2-1/2	5.6
2 1/4	0.563	1-1/8	9.9
	0.500	1-1/4	9.3
	0.25	1-3/4	6.4
2 1/2	0.750	1	13.0
	0.688	1-1/8	12.5
	0.25	2	7.2
2 3/4	0.500	1-3/4	12.0
	0.375	2	10.1
	0.250	2-1/4	8.2

FINISH CAST ZA-12 BEARING SIZES			
O.D.	W.T.	I.D.	lb/ft
3	0.625	1-3/4	15.1
	0.500	2	13.3
	0.250	2-1/2	8.8
3 1/4	0.750	1-3/4	18.6
	0.625	2	16.7
	0.500	2-1/4	14.6
	0.375	2-1/2	12.2
	0.250	2-3/4	9.6
3 1/2	0.875	1-3/4	22.3
	0.750	2	20.4
	0.500	2-1/2	15.9
	0.375	2-3/4	13.3
3 3/4	1.25	1-1/2	27.8
	0.5	2-3/4	17.2
	0.375	3	14.3

All dimensions shown are in inches unless otherwise noted

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ZA-1 2 HOLLOW BAR STANDARD SIZES

For diameters in excess of 9 in. and technical support please contact Zincaloy



FINISH CAST ZA-1 2 BEARING SIZES			
O.D.	W.T.	I.D.	lb/ft
4	1	2	28.6
	0.875	2-1/4	26.5
	0.75	2-1/2	24.1
	0.5	3	18.6
4 1/4	0.875	2-1/2	28.6
	0.750	2-3/4	26.0
	0.375	3-1/2	16.4
4 1/2	0.875	2-3/4	30.7
	0.625	3-1/4	24.7
	0.500	3-1/2	21.2
4 3/4	1.000	2-3/4	35.7
	0.375	4	18.6
5	1.000	3	38.1
	0.875	3-1/4	34.9
	0.500	4	23.8
5 1/2	0.625	4-1/4	31.0
	0.500	4-1/2	26.5

FINISH CAST ZA-1 2 BEARING SIZES			
O.D.	W.T.	I.D.	lb/ft
5 3/4	0.750	4-1/4	37.1
	0.375	5	22.8
6	1.750	2-1/2	67.5
	1.625	2-3/4	64.9
	1.500	3	61.9
	1.000	4	47.6
	0.875	4-1/4	43.4
	0.750	4-1/2	38.9
6 1/4	1.875	2-1/2	74.1
7	1.875	3-1/4	86.8
	0.625	5-3/4	43.4
7 1/4	1.625	4	83.4
	0.750	5-3/4	49.4
8	1.000	6	71.5
	0.625	6-3/4	46.6
8 1/4	0.75	6.75	54.3

All dimensions shown are in inches unless otherwise noted

ZA-12 PROPERTIES

CHEMICAL COMPOSITION wt. % ASTM B86 ZA-12

Al	Cu	Mn	Zn
10.5 - 11.5	0.5 - 1.2	0.015 - 0.030	Balance

ZA-12 As Cast Properties

PROPERTY	English	Metric
Tensile Strength (ksi) (Mpa)	61-69	420.6-475.7
Yield Strength - 0.2% offset (ksi) (Mpa)	45-58	310.3-400.0
Elongation (%)	1-4	1-4
Hardness (BHN @ 250 kg load - 5mm ball)	130-150	130-150
Density (lb/in.3) (g/cm.3)	0.218	6.034



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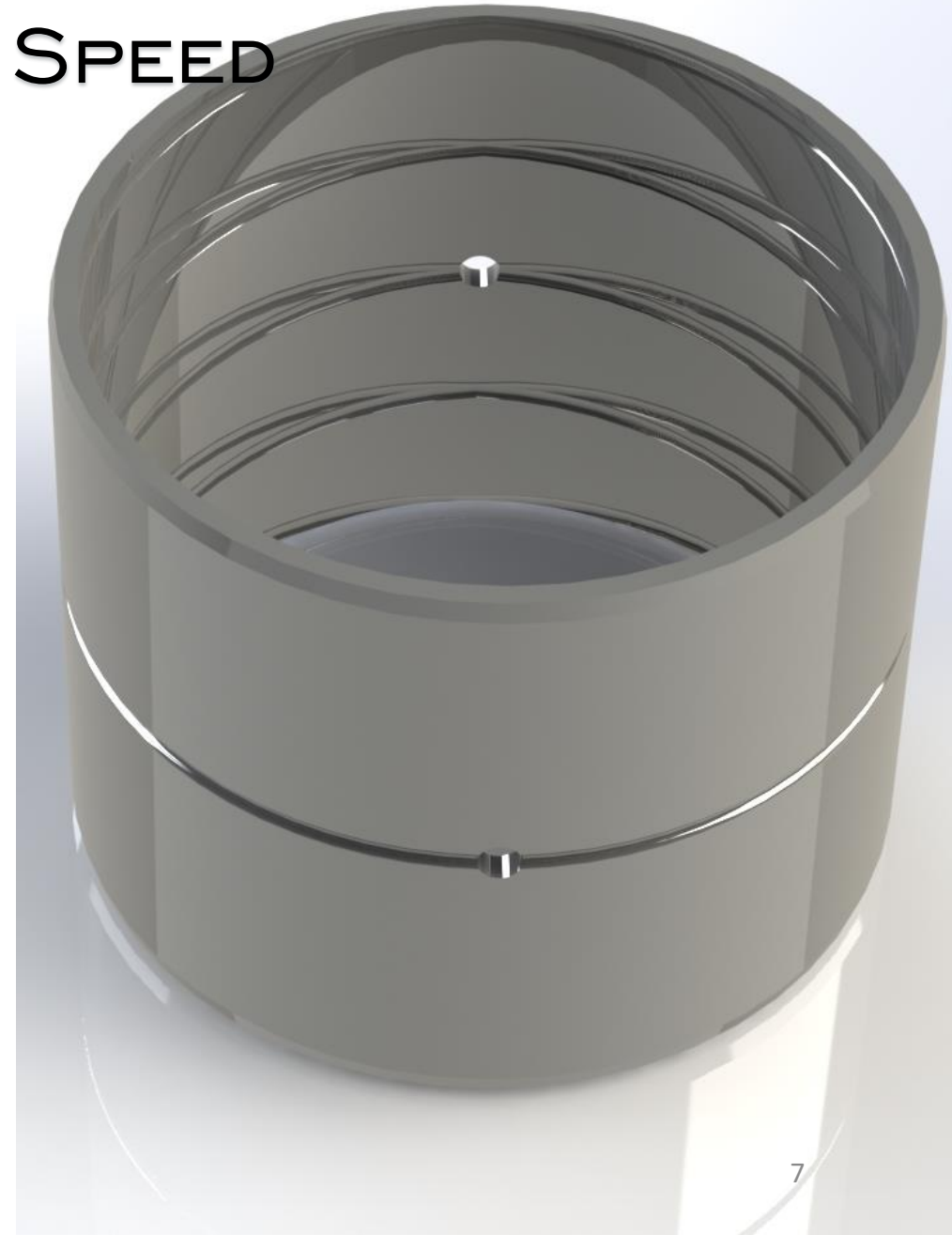
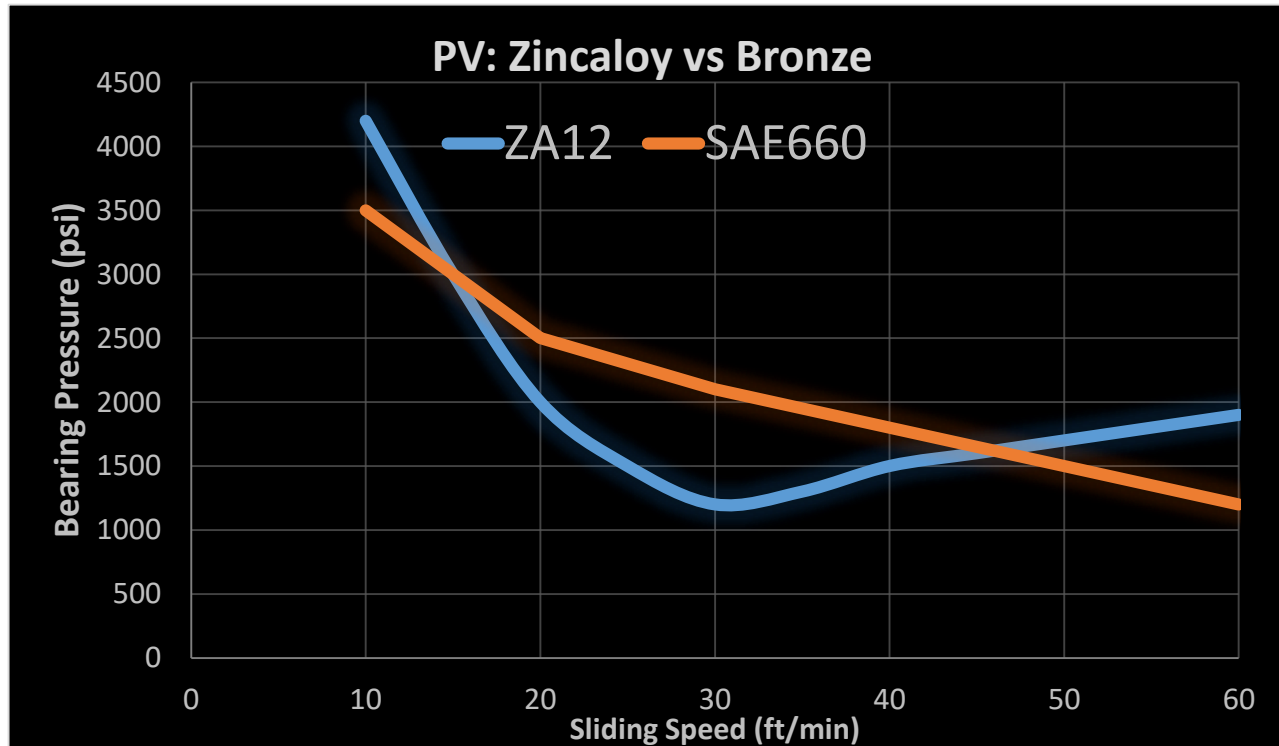
ZA-12 COMPARISON

ZA-12 Bearings are reliable alternatives to Bronze and Aluminum Bronzes with very low sensitivity to pounding, lack of lubrication and contamination

ZA-12 vs Bronze vs Aluminum Bronze			ZA-12		Bronze SAE 660		Aluminum Bronze 954	
PROPERTY	English	Metric	English	Metric	English	Metric	English	Metric
Ultimate Tensile Strength (psi) (Mpa)	65,000	448	35,000	241	85,000	586		
Yield Strength (psi) (Mpa)	50,000	345	20,000	138	32,000	221		
Elongation (%)	2	2	10	10	12	12		
Hardness (BHN)	130	130	60	60	170	170		
Density (lb/in.3) (g/cm.3)	0.218	6.034	0.322	8.913	0.269	7.446		
Melting Range (°F) (°C)	710-810	377-432	1570-1790	854-977	1880-1990	1027-1088		
Electrical Conductivity (%IACS) (MSm ⁻¹)	28	0.00048	12	0.00021	13	0.00022		
Thermal Conductivity (BTU/ft-hr-°F) [W/(m*K)]	67	115.88	34	58.80	35	60.54		
Coef. of Thermal Expansion (µin/in/°F) (µm/m/°C)	13	23.4	10	18	9	16.2		

Zincalloy BEARING PRESSURE VS SLIDING SPEED

ZA-12 bearings can be substituted for SAE-660 bronze bearings in most cases without any design changes. Guidelines only differ in relation to press fits and clearances at elevated temperatures



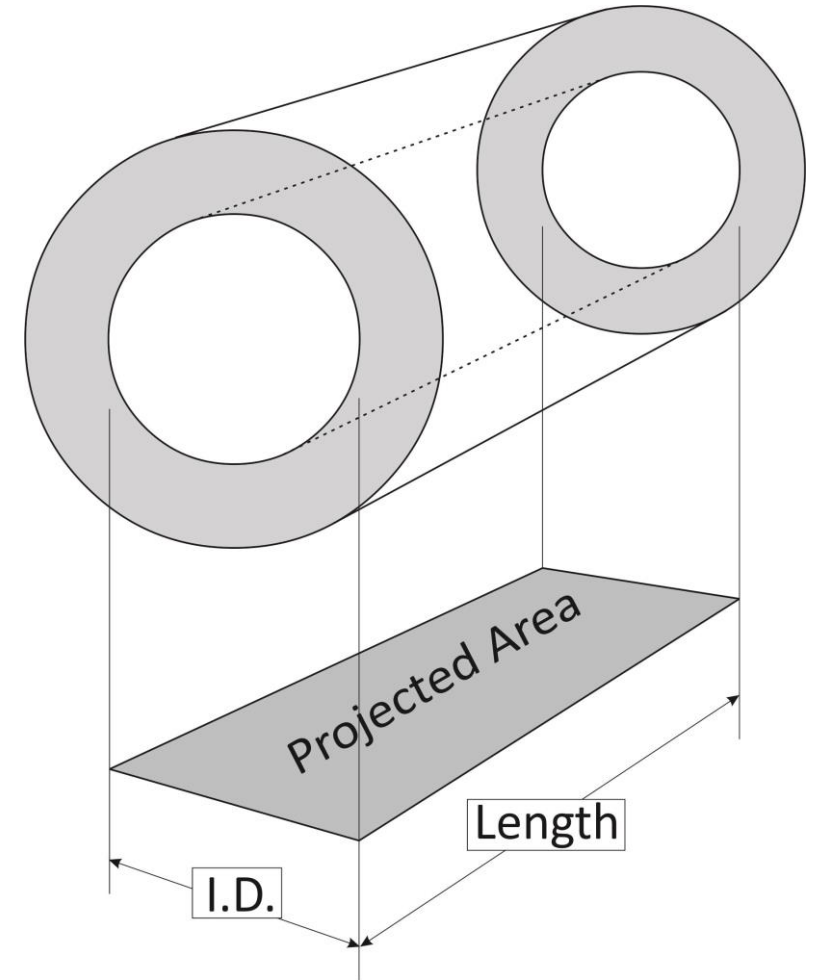
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BEARING PRESSURE CALCULATION

ZA-12 stock is suitable for bearing use under the following operating conditions: Maximum pressure on the bearing at a low shaft rotation speed (less than 10 ft/min surface speed) should be kept between 4500 and 6000 psi. As shaft speed increases to 60 ft/min and beyond, the recommended operating pressure decreases to about a 1000 psi. ZA-12 bearings can operate well at very high speeds under low loads as long as the heat generated does not exceed 100°C (212°F) and the bearings are well lubricated.

$$\text{Bearing Pressure, (psi)} = \frac{\text{Total Load (lb) on Bearing}}{\text{Projected Bearing Area (in}^2\text{)}}$$

$$\text{Shaft Speed, (ft./min)} = \frac{3.14 \times \text{Shaft Dia. (in.)} \times \text{RPM}}{12}$$

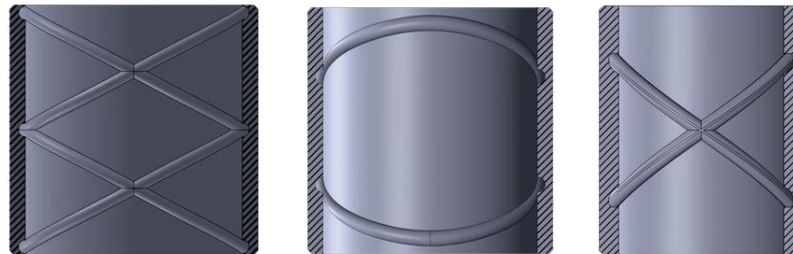


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ZA-12 BEARING DESIGN NOTES

Corrosion

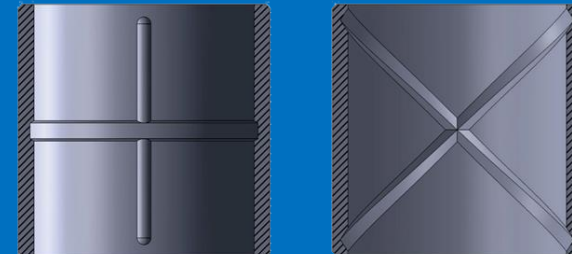
Zincalloy bearings offer good resistance to atmospheric corrosion as well as a variety of plant environments. However, direct exposure to corrosive liquids and gases should be avoided. Contact liquids should have a pH of 6-11.5 to avoid corrosion problems. Zincalloy may experience bimetallic galvanic corrosion if in contact with other metals, however, under atmospheric conditions this is generally small and of no concern. It can be of concern in a constantly wet environment or in sea water. Under these circumstances the material should be tested to determine its suitability



Dry Running

Most bearings perform best if lubricated, including Zincalloy bearings. However, under extreme conditions of dry running, Zincalloy is superior to bronze under such conditions because a thin film of Zincalloy is smeared over the shaft which protects it from wear and damage

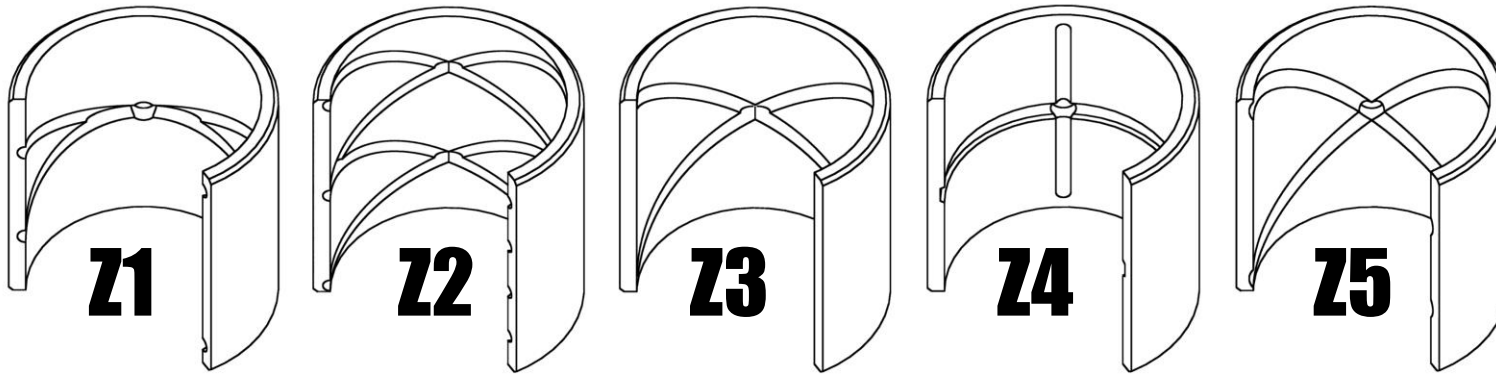
Zinc alloy metals generally do not spark when struck by rusted ferrous materials



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SLEEVE BEARING LUBRICATION

Standard grease groove designs for bronze bearings are suitable for Zincaloy. Small diameter bearings under 3 inches (75mm) usually require no grooving. Groove edges should be rounded to prevent lubrication from being scraped from the shaft. Standard greases normally used for bronze bearings are compatible with Zincaloy. Acidic, alkaline or sulphur containing lubricants should be avoided to prevent corrosion.



The maximum recommended running temperature for Zincaloy bearings is 100°C (212°F)



Standard grease grooves are available, Z1, through Z5.

Special groove configurations can be supplied based on operational requirements

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ZA-1 2 SLEEVE BEARINGS

For fast response and engineering support contact
Zincaloy Toll Free at **+1.800.963.9863**

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