



GMP

Since 1979

GENERAL METALS & POLYMERS



GMP is one of the most trusted name in the marine industry worldwide. Our bearings are used in rudder, shaft and stern gear applications for all types of marine vessels from naval ships, cargo/container ships, tankers, ocean liners, luxury yachts, to harbor tug boats, trawlers and fishing boats.

- Over 35 years of experience in manufacturing Marine Cutlass Rubber Bearings.
- GMP bearings are scientifically designed and engineered by experts in tribology.
- With continuing research and advancements in product technology, our bearings now exceed US Navy specifications in critical parameters like Tensile strength, elongation and bond strength.
- The bond strength between the shell and rubber lining is an industry leading 200 PSI (14 Kg/sq. cm)
- Our unique cylindrical grinding process ensures better concentricity as well as cylindricity to the full length of the bearing so that it is perfectly circular, perfectly straight and has no taper; as compared to bearings turned on a lathe machine.

Over 10 million GMP Cutlass bearings sold worldwide

GMP began its journey of excellence by developing and manufacturing marine Cutlass bearings for the Indian navy in 1979. Since then we have grown to become one of the world's leading manufacturer and exporter of Marine Cutlass Rubber Bearings.

With our expertise in Tribology of rubber and metal we now design and develop cutlass bearings for special applications and highly demanding environments like deep sea submersibles, shaft bearings for new generation electric propulsion systems and special industrial applications like bearings for ceramic shaft sleeves, etc.

With continuing research and advancements in product technology, our bearings now exceed US Navy specifications in critical parameters like Tensile strength, elongation and bond strength.

All GMP bearings are scientifically designed and engineered by experts in tribology; (the science and technology of interacting surfaces in relative motion for friction, lubrication and wear) and made to the highest quality standards in materials, workmanship and dimensional accuracy. Clearance and tolerance is as per U.S. Navy Standard, BuShips plan number 810-1385664. We conduct physical & chemical test of rubber and metals before manufacturing and dimensional accuracy check of every finished bearing before dispatch. Testing and quality control is conducted at our lab equipped for tensile testing, elongation testing, abrasion testing, friction testing, coefficient of thermal expansion and swell testing.

For over 35 years our bearings have proved its mettle by operating in the toughest marine conditions ranging from the arctic to the tropics, in shallow waters as well as high seas.

Our range of cutlass bearings includes metal shell and non metal shell (Hard Composite) with or without flange, inner rubber lining in specially formulated Nitrile rubber.

TRUSTED WORLDWIDE FOR OVER 35 YEARS



GMP bearings are proven in the toughest marine environments since 1979

- Environmentally safe, non hazardous and economical.
- Highly resistant to abrasion, corrosion and swelling in sea water.
- Absorbs shock and vibration.
- Specially formulated Nitrile rubber that makes it extremely tough and oil resistant with very low friction.

mm series (Shell material: Brass or Composite)					
Shaft Diameter	Outer Diameter	Bush Full Length	Bush Half Length	Brass Shell Thickness	Composite Shell Thickness
40	55	160	78	3	4
45	65	180	88	3	5
50	70	200	98	3	5
55	75	220	108	3	5
60	80	240	118	3	5
65	85	260	128	3	5
70	90	280	138	3	5
75	95	300	148	3	5
80	100	320	158	3	5
85	105	340	168	3	5
90	110	360	178	3	5
95	115	380	188	3	5
100	125	400	198	4.75	6
105	130	420	208	4.75	6
110	135	440	218	4.75	6
115	145	460	228	4.75	7
120	155	480	238	6.25	7
125	165	500	248	6.25	8
130	170	520	258	6.25	8
135	170	540	268	6.25	8
140	180	560	278	6.25	9
145	180	580	288	6.25	9
150	190	600	298	6.25	9
155	190	620	308	6.25	9

inch series (Shell material: Brass or Composite)				
Shaft Diameter	Outer Diameter	Bush Full Length	Brass Shell Thickness	Composite Shell Thickness
2	3	8	1/8	3/16
2 1/8	3 1/8	8 1/2	1/8	3/16
2 1/4	3 1/8	9	1/8	3/16
2 1/4	3 3/8	9	1/8	3/16
2 3/8	3 3/8	9 1/2	1/8	3/16
2 1/2	3 3/8	10	1/8	3/16
2 3/4	3 3/8	10 1/2	1/8	3/16
2 7/8	3 3/4	11 1/2	1/8	3/16
3	3 3/4	12	1/8	3/16
3	4	12	1/8	3/16
3 1/8	4 1/4	12 1/2	1/8	3/16
3 1/4	4	13	1/8	3/16
3 3/8	4 1/2	13 1/2	1/8	3/16
3 1/2	4 1/4	14	1/8	3/16
3 5/8	4 1/2	14 1/2	1/8	3/16
3 3/4	4 1/2	15	1/8	3/16
3 7/8	5 1/4	15	3/16	1/4
4	5	16	3/16	1/4
4 1/2	5 1/4	16 1/6	3/16	1/4
4 1/2	5 1/2	18	3/16	1/4
5	6 1/8	20	1/4	5/16
5	6 1/2	20	1/4	5/16
5 1/2	6 3/4	22	1/4	5/16
5	7 1/2	24	1/4	5/16
6 1/8	7 1/2	25	1/4	5/16

Our bearings cover a wide range of shaft diameters from 22mm to 400mm. (Bespoke sizes can also be made on request)

Inner rubber lining of GMP bearings are made of specially formulated Nitrile rubber

Rubber Properties

Density (Specific gravity)	1.25 ± 0.1
Hardness Shore A	65/75 shores A
Tensile strength	(Min) 120 Kg/cm ²
Elongation	(Min) 200%
Permanent Compression set	(Max) 20%
Co-efficient of thermal expansion	(Max) 7x10 ⁴
Bond strength (rubber lining to shell)	200 PSI (14 Kg/sq. cm)

Clearance and Tolerances: GMP bearings follow U.S. Navy Standard, according to BuShips plan number 810-1385664, as per chart below

Shaft Size or ID	Shaft Clearance
3/4" thru 1 3/8"	+0.003 to +0.008
1 7/16" thru 1 7/8"	+0.004 to +0.010
2" thru 2 3/8"	+0.006 to +0.012
2 1/2" thru 3"	+0.007 to +0.014
3 1/8" thru 3 3/4"	+0.008 to +0.015
3 7/8" thru 4 1/4"	+0.010 to +0.017
4 3/8" thru 4 7/8"	+0.012 to +0.019
5" thru 5 3/8"	+0.015 to +0.023
5 1/2" thru 5 7/8"	+0.017 to +0.025
6" thru 6 3/8"	+0.020 to +0.029
6 1/2" thru 6 7/8"	+0.022 to +0.032
7" thru 7 3/8"	+0.024 to +0.034
7 1/2" thru 7 7/8"	+0.025 to +0.035
8" thru 8 3/8"	+0.027 to +0.037
8 1/2" thru 8 7/8"	+0.028 to +0.040
9" thru 9 7/8"	+0.030 to +0.042
10" thru 10 7/8"	+0.032 to +0.044
11" thru 11 3/8"	+0.034 to +0.048
11 1/2" thru 12 3/4"	+0.035 to +0.050
12 7/8" thru 13 3/8"	+0.037 to +0.052
13 1/2" thru 14 1/2"	+0.040 to +0.055
14 5/8" thru 15"	+0.042 to +0.058

OD Tolerance

1 1/4" thru 2"	+0.001 to -0.001
2" thru 6"	+0.002 to -0.001
6" thru 7 1/2"	+0.002 to -0.002
7 3/4" thru 12"	+0.005 to -0.005
12" thru 16"	+0.006 to -0.006
16" thru 18"	+0.008 to -0.008

* All dimensions in inches

Concentricity and Cylindricity

Most manufacturers use centreless grinding techniques to finish the outside diameter but centreless grinding process does not take the inside diameter of the bearing into account, the centres of the outside diameter and inside diameter may not be the same.

GMP bearings are mounted on a mandrel and ground on a cylindrical grinder, thus achieving better concentricity as well as cylindricity to the full length of the bearing so that it is perfectly circular, perfectly straight and has no taper, as compared to bearings turned on a lathe machine.

Bearing Lining material

Nitrile Rubber

- Resistant to Oil
- Resistant to Water Swell
- Resistant to Wear
- Resistant to Heat

Bearing selection

Normally bearing length is four times of shaft diameter.

Deviations are acceptable if load requirements permit.

Load Capacity is 35 psi x Bearing Area.

Bearing Area = Shaft \varnothing x Bearing length.

Example in Metric size :

Shaft dia 100 x length 400 = 40000 sq.mm. Bearing Area.

Load Capacity = 40000 sq.mm x 0.0246 kg/sq.mm = 984 kg.

Example in Imperial Size :

Shaft dia 3.937" x length 15.748" = 62" sq.inch. Bearing Area.

Load Capacity = 62 sq.inch x 35 kg/sq.in = 2170 lbs.



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