CARBON AND GRAPHITE BEARING

TYPICAL APPLICATIONS

Description Dry	Wet or Bearing lb/in2	Size of rev/min	Grade Load	Bearing Unit Speed temp°C	Shaft Factor	PV Operating	Max Material	Shaft
Chain Grate Stoker	Dry	.8 in ID $9^{1}/_{4}$ in OD 14/15/16in long	LINK MY3A	350 MY3A	0.2 Max. continuous	146 variable	300 max	Fine Ground Mild Steel
Flue Gas Damper	Dry	2 in ID $2^{1}/_{2}$ in OD 3 in long	LINK MY3A	20 Constant	90° slow Oscillating Movement	-	350	Fine Turned Mild Steel
10 Ton Furnace Charging Machine	Dry	$1^{3}/_{4}$ in ID $2^{1}/_{4}$ in OD 4 in long	LINK MY3A	76 Max Variable Intermittent	24	1820	Furnace Temp 900 but bearings only attain 400 as duration in furnace in short	Fine Ground Hardened Grade S80 Stainless Steel
Submersible Pump Motor	Wet	5.3 in ID 6.7 in OD 10.6 in long	LINK MY3D CY10C	17.5 Continuous	1500	36400	-	Hardend S80 Stainless Steel
Vertical Centrifugal Pump	Wet	$1^{1}/_{2}$ in ID 2 in OD $4^{5}/_{8}$ in long	LINK CY10C	Light Continuous	1450	-	100	Fine Ground Stainless Steel
Aircraft Fuel Pump	Wet	3 in ID $3^{1}/_{2}$ in OD 1 in long	LINK MY3D	600 Max. Intermittent	5000 Max. variable and Intermittent	2400000 Max.	-	Hardened Carbon Steel Fine Ground and Polished

Note : Tandem / Jointed bearing in 2/3 lengths recommended for length more than 80-100mm

1. INTRODUCTION

Morganite Carbon is self-lubricating, chemically inert, dimensionally stable, non-hygroscopic and highly resistant to wear-characteristics which make it ideal for those hostile environments where conventional bearings cannot be used. Typical of these are where:

1 oil contamination cannot be tolerated
2 temperatures exceed the limits of normal lubricants
3 operation is in a non-lubricating fluid

Morganite carbon bearings are capable of sustaining PV's (9kg/cm2 X m/s) of 1.5 at temperatures of 500° C in an oxidizing atmosphere and well above 350 PV in non-lubricating liquids.

2. MATERIALS

Carbon grades

The selection of the appropriate Morganite grade of carbon is dependent upon the bearing operating conditions and is usually from one of the following four categories:

1	CY2 CY10	amorphous carbon/graphite maximum temperature 300°C
2	CY2C CY10C	amorphous carbon/graphite Resin impregnated maximum temperature 300°C
3	MY3A MY10A	amorphous carbon/graphite copper impregnated maximum temperature 300°C
4	EY9106	electrographite maximum temperature 500°C oxidizing atmosphere 3000°C non-oxidizing atmosphere

Shaft materials

The shaft to run against a Morganite Carbon Bearing should be hard and corrosion-resistant such as austenitic iron, hardened stainless steel, thick chrome plated or stellite. Non-ferrous metals and mild steel should be avoided.
A shaft surface finish of between 0.25-0.50 microns Ra is recommended although for lightly loaded applications, 2 microns Ra may be accepted.

3. OPERATING LIMITS

Dry-running

The PV curves shown provide a guide for the continuous operation of Morganite Carbon Bearings. For short period or intermittent operations, these recommendations may be exceeded by a generous margin.

PV CURVES - for continuous dry operation and steady loads.

Wet running

Morganite Carbon Bearings running in liquids of high lubricity are capable of achieving performances approximating to those of conventional metal bearings. In more mobile liquids such as water, petrol and kerosene the special characteristics of Morganite Carbon, allied to careful design, permit operations at PV's of 350 kg/cm2 m/s and above.

Friction

The coefficient of friction is not a physical property of a material and depends on the nature and operating conditions of a rubbing pair. It will vary with the environment, load, speed, surface finish etc.
In dry operations, a Morganite Carbon Bearing running against a hard well-finished shaft may be expected to show a coefficient of friction varying between 0.10 under light and 0.25 under heavy loads.
The characteristics of the liquid will determine the coefficient of friction in a fully lubricated application whilst under boundary layer conditions it will probably be within the range of 0.01 to 0.10.