FENSC in

## GRID COUPLINGS

Technical Overview

EMPOWERING SUPPLIER

| ISO $\mathbf{9 0 0 1}$ | Certified |
| :---: | :---: |
| ISO $\mathbf{1 4 0 0 1}$ | Certified |
| ISO $\mathbf{4 5 0 0 1}$ | Certified |

## ABOUT US

Established in 1974 as a single bearing shop in Durban, South Africa; BMG's aggressive growth strategy has included acquisitions, supplemented by a steady organic growth discipline. BMG attracts best-of-breed talent resulting in technical expertise that differentiates BMG in the industry. Staff are truly part of the BMG family and its success.

BMG boasts an accredited in-house technical and commercial training academy which fosters a culture of staff development and career advancement; it's all about sustainability.

The net result, is a company that reliably supplies and supports 70000 customers in 15 countries with the widest range of industrial engineered products and expert services in Africa via 105 branches.

BMG is positioned to deliver bespoke 360 degree solutions to its customers, and subsequently return on investment to its investors and shareholders. BMG plays a pivotal role in supporting the productivity and production targets of all Industrial, Manufacturing, Mining and Agricultural sectors of the economies in the countries it serves. With an enviable reputation as Africa's largest distributor, manufacturer and service provider of the highest quality engineering consumables and components; including

- Bearings and Seals
- Power Transmission Components
- Drives, Motors and Controllers
- Hydraulics, Pneumatics and Filtration
- Heavy and Light Duty Materials Handling
- Valves and Lubrication
- Fasteners, Gaskets and Tools

BMG is a level 4 BEE contributor with ISO 9001 Quality Assurance certification. Health and safety of its employees and customers is a paramount focus and the company adheres to ISO 45001. BMG is also committed to environmental care and sustainability and strictly follows the ISO 14001 charter.

As a key contributor to the Invicta Holdings stable, BMG has played a major part in Invicta's unique achievement of being rated in South Africa's Top 100 Companies for 21 consecutive years.


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## INTRODUCTION

## FenaGrid Premium Coupling

FenaGrid Premium Couplings are shaft-to-shaft couplings that are of compact size, yet can handle higher torque capacity due to their high strength hardened alloy steel construction.

The tapered grids are designed with a trapezoidal cross section and are tempered for spring hardness. Through a high-precision operation called shot peening, the surface molecules are compressed by high-velocity steel micro beads.

The compression of the molecules results in dramatic increase in strength rating and provides reserve strength for a longer part life. The tapered grids are accessible through the unit's removable cover. It is extremely easy to fit the trapezoidal grids into the slots of the hub, compared to fitting rectangular grids. There is no need for the equipment to be moved so that couplings can be installed.

Due to their compact size, the tapered grids can simply be placed
 directly in the slots of the hub. The practical split cover can be placed using standard tools.

## Protection against Shaft Misalignment

The tapered grids are free to rock, pivot, and float within the hub teeth. This provides generous capacity for misalignment without producing the detrimental axial loads on the bearings that are often created when couplings are misaligned.

## Protection against Shock \& Vibratory Loads

This coupling is able to deflect torsionally when subjected to normal shock or vibratory loads, so they are able to handle changing load conditions. The system truly is a shock absorber for rotary motion, relying on the predictable resilience of the grid for torsional flexibility. The tapered grids "tune" the drive system. Due to their spring hardness, the grids absorb impact by spreading the impact energy over time. The grids can also damp vibration and reduce the peak or shock loads experienced by the rest of the system.

FenaGrid Premium Coupling Types


## TAPER GRID COUPLINGS

Vibration \& Shock


Light Load
The grid contacts near the outer edges of the hub teeth. A long span between the points of contact remains free to flex under load.


## Normal Load

As the load increases, the distance between the contact points on the hub teeth is shortened, but a free span still remains to cushion the load.


## Shock Load

The coupling is flexible within its rated capacity. Under extreme overloads, the grid bears fully on the hub teeth and transmits full load directly.

## Standard Selection

The Standard Selection may be used for engine driven, motor, or turbine applications. The following information is required:

- Application or equipment type (motor to pump, reducer to conveyor)
- Shaft diameters (mm)
- Distance between shafts (mm)
- Coupling Speed (RPM)
- Power or torque ( Nm ) of driven machine


## 1. Rating:

Determine system torque. Torque is calculated as follows :
I .Torque $(\mathrm{Nm})=\frac{\mathrm{kW} \times 9,550}{\mathrm{RPM}} \quad$ II .Torque (Kg.m) $\frac{\mathrm{kW} \times 974}{\mathrm{RPM}}$
2. Service Factor: Determine appropriate service factor from page. 4-5
3. Minimum Coupling Rating: Determine the required minimum coupling rating as follows:

- Minimum Coupling Rating = Service Factor $x$ Torque (Nm)

4. Type: Select the appropriate coupling type
5. Size: Trace the Toque column to find the value that is equal or greater than value from Step 3.
6. Check: Check speed (RPM), bore, gap and dimensions.

## Formula Selection

The Standard Selection should be used for most coupling selections. The Formula Selection procedure below should be used for:

- High Peak Loads.
- Brake Applications (Brake disc or brake wheel is an integral part of coupling)

Using the Formula Selection and providing system peak torque and frequency, duty cycle, and brake torque rating will allow for a more refined selection.

1. High Peak Loads: Use formula $A$ or $B$ for applications which involve motors with higher than normal torque characteristics. Applications should also be those with intermittent operations, including shock loading, inertia effects due to starting and stopping, system-induced repetitive high peak torques. System Peak Torque is the maximum torque that can exist in the system. Select a coupling with a Torque Rating equal or greater than the Selection Torque calculated below:
A. Non-Reversing High Peak Torque: Selection torque (Nm) = System Peak Torque or

B. Reversing High Peak Torque: Selection Torque (Nm) $=2 \times$ System Peak Torque or

$$
\text { System Torque }(\mathrm{Nm})=\frac{2 \times \text { System Peak } \mathrm{kW} \times 9550}{\mathrm{RPM}}
$$

2. Brake Applications: If the torque rating of the brake exceeds the motor torque, use brake rating as below:
[^0]
## Operation of Drive System

| Application | Service Factor |
| :---: | :---: |
| AERATOR | 2.0 |
| AGITATORS |  |
| Vertical and Horizontal Screw, Propeller, and Paddle | 1.2 |
| BARGE HAUL PULLER | 1.5 |
| BLOWERS |  |
| Centrifugal | 1.2 |
| Lobe or Vane | 1.25 |
| CAR DUMPERS | 2.5 |
| CAR PULLERS | 1.5 |
| CLARIFIER or CLASSIFIER | 1.2 |
| COMPRESSORS |  |
| Centrifugal | 1.2 |
| Rotary, Lobeor Vane | 1.25 |
| Rotary, Screw | 1.2 |
| With Fly wheel and Gear between Compressor and Prime Mover |  |
| 1 Cylinder, Single Acting | 3.0 |
| 1 Cylinder, Double Acting | 3.0 |
| 2 Cylinders, Single Acting | 3.0 |
| 2 Cylinders, Double Acting | 3.0 |
| 3 Cylinders, Single Acting | 3.0 |
| 3 Cylinders, Double Acting | 2.0 |
| 4 or more Cylinders, Single acting | 1.75 |
| 4 or more Cylinders, Double Acting | 1.75 |
| CONVEYORS |  |
| Apron, Assembly, Belt, Chain, Flight and Screw | 1.2 |
| Bucket | 1.25 |
| Live Roll, Shaker and Reciprocating | 3.0 |
| CRANES AND HOIST |  |
| Main Hoist | 1.75 |
| Skip Hoist | 1.75 |
| Slope | 1.5 |
| Bridge, Travelor Trolley | 1.75 |
| DYNAMOMETER | 1.2 |
| ELEVATORS |  |
| Bucket, Centrifugal Discharge | 1.25 |
| Gravity Discharge | 1.25 |
| EXCITER, GENERATOR | 1.2 |
| EXTRUDER, PLASTIC | 1.5 |
| FANS |  |
| Centrifugal | 1.2 |
| Cooling Tower | 2.0 |
| Forced Draft-Across the Linestart | 1.5 |
| Forced Draft Motor Driven Thru Fluid or Electric Slip Clutch | 1.2 |
| Gas Recirculating | 1.5 |
| Induced Draft with Damper Control or Blade Cleaner | 1.25 |
| Induced Draft without Controls | 2.0 |
| FEEDERS |  |
| Apron, Belt, Disc, Screw | 1.2 |
| Reciprocating | 2.5 |
| GENERATORS |  |
| Even Load | 1.2 |
| Hoist or Railway Service | 1.5 |
| Welder Load | 2.0 |


| Application | Service Factor |
| :---: | :---: |
| HAMMERMILL | 1.75 |
| LAUNDRY WASHER or TUMBLER | 2.0 |
| LINE SHAFTS |  |
| Any Processing Machinery | 1.5 |
| MACHINE TOOLS |  |
| Auxiliary and Traverse Drive | 1.2 |
| Bending Roll, Notching Press, Punch Press, Planer, Plate Reversing | 1.75 |
| Main Drive | 1.5 |
| METAL FORMING MACHINES |  |
| Continous Caster | 1.75 |
| Draw Bench Carriage and Main Drive | 2.0 |
| Extruder | 2.0 |
| Farming Machine and Forming Mills | 2.0 |
| Slitters | 1.2 |
| Wire Drawing or Flattening | 1.75 |
| Wire Winder | 1.5 |
| Coilers and Uncoilers | 1.5 |
| MIXERS |  |
| Concrete | 1.75 |
| Muller | 1.5 |
| PRESS, PRINTING | 1.5 |
| PUG MILL | 1.75 |
| PULVERIZERS |  |
| Hammermill and Hog | 1.75 |
| Roller | 1.5 |
| PUMPS |  |
| Boiler Feed | 1.5 |
| Centrifugal-Constant Speed | 1.2 |
| Frequent Speed Changes under Load | 1.25 |
| Descaling with Accumulators | 1.25 |
| Gear, Rotary, or Vane | 1.25 |
| Reciprocating, Plunger Piston |  |
| 1 Cylinder, Single or Double Acting | 3.0 |
| 2 Cylinders, Single Acting | 2.0 |
| 2 Cylinders, Double Acting | 1.75 |
| 3 or more Cylinders | 1.5 |
| Screw Pump, Progressing Cavity | 1.25 |
| Vacuum Pump | 1.25 |
| SCREENS |  |
| Air Washing | 1.2 |
| Grizzly | 2.0 |
| Rotary Coal or Sand | 1.5 |
| Vibrating | 2.5 |
| Water | 1.2 |
| STEERING GEAR | 1.2 |
| STOKER | 1.2 |
| TIRE SHREDDER | 1.5 |
| TUMBLING BARREL | 1.75 |
| WINCH, MANEUVERING |  |
| Dredge, Marine | 1.5 |
| WINDLASS | 1.5 |
| WOODWORKING MACHINERY | 1.2 |

## Operation of Drive System

| Industry | Service Factor |
| :---: | :---: |
| AGGREGATE PROCESSING, CEMENT, MINING KILNS; TUBE, ROD and MILLS |  |
| Direct or on L.S. shaft of Reducer, with final drive Machined Spur Gears | 2.0 |
| Single Helical or Herringbone Gears | 1.75 |
| Crushers, Ore or Stone | 2.5 |
| Dryer, Rotary | 1.75 |
| Grizzly | 2.0 |
| Hammermill or Hog | 1.75 |
| Tumbling Mill or Barrel | 1.75 |
| BREWING and DISTILLING |  |
| Bottle and Can Filling Machines | 1.2 |
| Brew Kettle | 1.2 |
| Cookers, Continuous Duty | 1.25 |
| Lauter Tub | 1.5 |
| Mash Tub | 1.25 |
| Scale Hopper, Frequent Peaks | 1.75 |
| CLAY WORKING INDUSTRY |  |
| Brick Press, Briquette Machine, Clay Working Machine, Pug Mill | 1.75 |
| DREDGES |  |
| Cable Reel | 1.75 |
| Conveyors | 1.25 |
| Cutter Head, Jig Drive | 2.0 |
| Maneuvering Winch | 1.5 |
| Pumps (Uniformload) | 1.5 |
| Screen Drive, Stacker | 1.75 |
| Utility Winch | 1.5 |
| FOOD INDUSTRY |  |
| Beet Slicer | 1.75 |
| Bottling, Can Filling Machine | 1.2 |
| Cereal Cooker | 1.25 |
| Dough Mixer, Meat Grinder | 1.75 |
| LUMBER |  |
| Band Resaw | 1.5 |
| Circular Resaw, Cut-off | 1.75 |
| Edger, Head Rig, Hog | 2.0 |
| Log Haul | 2.0 |
| Planer | 1.75 |
| Rolls, Non-Reversing | 1.25 |
| Rolls, Reversing | 2.0 |
| Sawdust Conveyor | 1.25 |
| Slab Conveyour | 1.75 |
| Sorting Table | 1.5 |
| Trimmer | 1.75 |
| METAL ROLLING MILLS |  |
| Coilers (UporDown) Cold Mills only | 1.5 |
| Coilers (UporDown) Hot Mills only | 2.0 |
| Coke Plants |  |
| Pusher Ram Drive | 2.5 |
| Door Opener | 2.0 |
| Pusher or Larry Car Traction Drive | 3.0 |
| Continuous Caster | 1.75 |
| Colling Beds | 1.5 |
| Drawbench | 2.0 |
| Feed Rolls-Blooming Mills | 3.0 |
| Furnace Pushers | 2.0 |
| Hot and Cold Saws | 2.0 |
| Ingot Cars | 2.0 |
| Manipulators | 3.0 |
| Mill Tables |  |
| Roughing Breakdown Mills | 3.0 |
| Hot Bedor Transfer, Non-reversing | 1.5 |
| Run Out, Reversing | 3.0 |
| Run Out, Non-reversing, Non-plugging | 2.0 |
| Reel Drives | 1.75 |
| Screwdown | 2.0 |
| SeamlessTube Mills |  |
| Piercer | 3.0 |
| Thrust Block | 2.0 |
| Tube Conveyor Rolls | 2.0 |
| Reeler | 2.0 |
| Kick Out | 2.0 |
| Sideguards | 3.0 |


| Industry | Service Factor |
| :---: | :---: |
| SLITTERS, STEEL MILL ONLY | 1.75 |
| Lift | 1.2 |
| Travel | 2.0 |
| Straighteners | 2.0 |
| Unscramblers (Billet Bundle Busters) | 2.0 |
| Wire Drawing Machinery | 1.75 |
| OIL INDUSTRY |  |
| Chiller | 1.25 |
| Oilwell Pumping (not over 150\% peak torque) | 2.0 |
| Paraffin Filter Press | 1.5 |
| Rotary Kiln | 2.0 |
| PAPER MILLS |  |
| Barker Auxiliary, Hydraulic | 2.0 |
| Barker, Mechanical | 2.0 |
| Barking Drum |  |
| L.S. shaft of reducer with final drive - Helicalor |  |
| Herringbone Gear | 2.0 |
| Machined Spur Gear | 2.5 |
| Cast Tooth Spur Gear | 3.0 |
| Beater and Pulper | 1.75 |
| Bleachers, Coaters | 1.2 |
| Calender and Super Calender | 1.75 |
| Chipper | 2.5 |
| Converting Machine | 1.25 |
| Couch | 1.75 |
| Cutter, Felt Whipper | 2.0 |
| Dryer | 1.75 |
| Cylinder | 1.75 |
| Felt Stretcher | 1.25 |
| Four Drinier | 1.75 |
| Jordan | 2.0 |
| Log Haul | 2.0 |
| Line Shaft | 1.5 |
| Press | 1.75 |
| Pulp Grinder | 1.75 |
| Reel, Rewinder, Winder | 1.5 |
| Stock Chest, Washer, Thickener | 1.5 |
| Stock Pumps, Centrifugal |  |
| Constant Speed | 1.2 |
| Frequent Speed Changes Underload | 1.25 |
| SuctionRoll | 1.75 |
| Vacuum Pumps | 1.25 |
| RUBBER INDUSTRY |  |
| Calender | 2.0 |
| Cracker, Plasticator | 2.5 |
| Extruder | 1.75 |
| Intensive or Banbury Mixer | 2.5 |
| Mixing Mill, Refiner or Sheeter |  |
| One or two in line | 2.5 |
| Three or four in line | 2.0 |
| Five or more in line | 1.75 |
| Tire Building Machine | 2.5 |
| Tire and Tube Press Opener (Peak Torque) | 1.2 |
| Tuber, Strainer, Pelletizer | 1.75 |
| Warming Mill |  |
| One or two Mills inline | 2.0 |
| Three or more Mills inline | 1.75 |
| Washer | 2.5 |
| SEWAGE DISPOSAL EQUIPMENT |  |
| Bar Screen, Chemicalfeeders, Collectors, Dewatering Screen, Grit Collector | 1.2 |
| SUGAR INDUSTRY |  |
| Cane Carrier and Leveler | 1.75 |
| Cane Knife and Crusher | 2.0 |
| Mill Stands, Turbine Driver with all Helicalor Herringbone,or Spur Gears with any Prime Mover | 1.75 |
| TEXTILE INDUSTRY |  |
| Batcher | 1.25 |
| Calender, Card Machine | 1.5 |
| Cloth Finishing Machine | 1.5 |
| Dry Can, Loom | 1.5 |
| Dyeing Machinery | 1.25 |
| Mangle, Napper, Soaper | 1.25 |
| Spinner, Tenter Frame, Winder | 1.5 |

## SELECTION PROCESS

## Standard Selection

Service Factors for engine drives are required for applications where good flywheel regulation prevents torque fluctuations greater than $\pm 20 \%$. For drives where torque fluctuations are greater or where the operation is near a serious critical or torsional vibration, a mass elastic study is necessary.

| Number of Cylinders | 4 or 5 |  |  |  | 6 or more |  |  |  |  |  |
| :--- | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Service Factor | 1.5 | 1.75 | 2 | 2.25 | 2.5 | 1.5 | 1.75 | 2 | 2.25 | 2.5 |
| Engine Service Factor | 2.5 | 2.75 | 3 | 3.25 | 3.5 | 2.5 | 2.75 | 3 | 3.25 | 3.5 |

To use Engine Drive Service Factors, first determine application Service Factor from page 4-5. When Service Factor is greater than 2.0 , or where 1,2 or 3 cylinder engines are involved, refer complete application details to BMG for engineering review.

Service Factors are a guide, based on experience, of the ratio between coupling catalogue rating and system characteristics. The system characteristics are best measured with a torque meter.

| Torque Demands Driven Machine | Typical Applications for Driven Equipment | Typical Service Factor |
| :---: | :---: | :---: |
|  | Constant torque such as Centrifugal Pumps, Blowers and Compressors. | 1.2 |
|  | Continuous duty with some torque variations including Plastic Extruders, Forced Draft Fans. | 1.5 |
|  | Light shockloads from Metal Extruders, Cooling Towers, Cane Knife, Log Haul. | 2.0 |
| $\forall \sqrt{N} \sqrt{n}$ | Moderate shock loading as expected from a Car Dumper, Stone Crusher, Vibrating Screen. | 2.5 |
|  | Heavy shockload with some negative torques from Roughing Mills, Reciprocating Pumps, Compressors, Reversing Runout Talbes. | 3.0 |
| $V^{W} N^{W}$ | Applications like Reciprocating Compressors with frequent torque reversals, which do not necessarily cause reverse rotations. | Refer to BMG |

## T10 Type

Close Coupled
Horizontal Split Aluminium Cover


| Size | Torque Rating (Nm) | Allow Speed RPM | Max Bore (mm) | Min Bore (mm) | Coupling Weight (Kg) | Lube Qty (Kg) | Dimensions (Millimeters) |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  |  |  |  |  |  |  | A | B | C | D | J | GAP |
| 1020 | 52 | 4500 | 28 | 13 | 1.92 | 0.027 | 101.0 | 98.2 | 47.6 | 39.7 | 67.8 | 3 |
| 1030 | 149 | 4500 | 35 | 13 | 2.58 | 0.04 | 109.0 | 98.2 | 47.6 | 49.2 | 71.9 | 3 |
| 1040 | 249 | 4500 | 43 | 13 | 3.34 | 0.05 | 116.0 | 104.6 | 50.8 | 57.2 | 72.0 | 3 |
| 1050 | 435 | 4500 | 50 | 13 | 5.44 | 0.07 | 137.8 | 123.6 | 60.3 | 66.7 | 81.6 | 3 |
| 1060 | 684 | 4350 | 56 | 20 | 7.44 | 0.09 | 147.0 | 130.0 | 63.5 | 76.2 | 97.9 | 3 |
| 1070 | 994 | 4125 | 67 | 20 | 10.40 | 0.11 | 162.2 | 155.4 | 76.2 | 87.3 | 99.2 | 3 |
| 1080 | 2050 | 3600 | 80 | 27 | 17.90 | 0.17 | 193.0 | 180.8 | 88.9 | 104.8 | 118.4 | 3 |
| 1090 | 3730 | 3600 | 95 | 27 | 25.60 | 0.25 | 212.0 | 199.8 | 98.4 | 123.8 | 127.4 | 3 |
| 1100 | 6280 | 2440 | 110 | 42 | 42.00 | 0.43 | 250.7 | 246.2 | 120.6 | 142.1 | 156.6 | 5 |
| 1110 | 9320 | 2250 | 120 | 42 | 54.30 | 0.51 | 270.0 | 259.0 | 127.0 | 160.3 | 162.6 | 5 |
| 1120 | 13700 | 2025 | 140 | 61 | 81.20 | 0.74 | 306.4 | 304.4 | 149.2 | 179.4 | 191.7 | 6 |
| 1130 | 19900 | 1800 | 170 | 67 | 121.00 | 0.91 | 343.8 | 329.8 | 161.9 | 217.5 | 195.5 | 6 |
| 1140 | 28600 | 1650 | 200 | 67 | 178.00 | 1.13 | 383.8 | 374.4 | 184.2 | 254.0 | 201.7 | 6 |
| 1150 | 39800 | 1500 | 215 | 108 | 234.00 | 1.95 | 453.1 | 371.8 | 182.9 | 269.2 | 271.5 | 6 |
| 1160 | 55900 | 1350 | 240 | 121 | 317.00 | 2.81 | 501.9 | 402.2 | 198.1 | 304.8 | 278.4 | 6 |
| 1170 | 74600 | 1225 | 280 | 134 | 448.00 | 3.49 | 566.9 | 437.8 | 215.9 | 355.6 | 307.3 | 6 |
| 1180 | 103000 | 1100 | 300 | 153 | 619.00 | 3.76 | 629.9 | 483.6 | 238.8 | 393.7 | 321.1 | 6 |
| 1190 | 137000 | 1050 | 335 | 153 | 776.00 | 4.40 | 675.6 | 524.2 | 259.1 | 436.9 | 325.1 | 6 |
| 1200 | 186000 | 900 | 360 | 178 | 1058.00 | 5.62 | 756.9 | 564.8 | 279.4 | 497.8 | 355.6 | 6 |
| 1210 | 249000 | 820 | 390 | 178 | 1424.00 | 10.50 | 844.6 | 622.6 | 304.8 | 533.4 | 431.8 | 13 |
| 1220 | 336000 | 730 | 420 | 203 | 1785.00 | 16.10 | 920.8 | 663.2 | 325.1 | 571.5 | 490.2 | 13 |
| 1230 | 435000 | 680 | 450 | 203 | 2267.00 | 24.00 | 1,003.3 | 703.8 | 345.4 | 609.6 | 546.1 | 13 |
| 1240 | 559000 | 630 | 480 | 254 | 2950.00 | 33.80 | 1,087.1 | 749.6 | 368.3 | 647.7 | 647.7 | 13 |
| 1250 | 746000 | 580 | - | 254 | 3833.00 | 50.10 | 1,181.1 | 815.6 | 401.3 | 711.2 | 698.5 | 13 |
| 1260 | 932000 | 540 | - | 254 | 4682.00 | 67.20 | 1,260.9 | 876.6 | 431.8 | 762.0 | 762.0 | 13 |

T20 Type

Close Coupled
Vertical Split Steel Cover


| Size | Torque Rating (Nm) | Allow Speed RPM | Max <br> Bore <br> (mm) | Min <br> Bore (mm) | Coupling Weight (Kg) | Lube Qty (Kg) | Dimensions (Millimeters) |  |  |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  |  |  |  |  |  |  | A | B | C | D | F | J | M | GAP |
| 1020 | 52 | 6000 | 28 | 13 | 1.94 | 0.03 | 112.3 | 98.2 | 47.6 | 39.7 | 64.3 | 23.9 | 47.8 | 3 |
| 1030 | 149 | 6000 | 35 | 13 | 2.58 | 0.04 | 121.8 | 98.2 | 47.6 | 49.2 | 73.8 | 24.9 | 47.8 | 3 |
| 1040 | 249 | 6000 | 43 | 13 | 3.35 | 0.05 | 129.8 | 104.6 | 50.8 | 57.2 | 81.8 | 25.9 | 50.8 | 3 |
| 1050 | 435 | 6000 | 50 | 13 | 5.32 | 0.07 | 148.8 | 123.6 | 60.3 | 66.7 | 97.6 | 30.5 | 60.5 | 3 |
| 1060 | 684 | 6000 | 56 | 20 | 7.01 | 0.09 | 163.1 | 130.0 | 63.5 | 76.2 | 111.1 | 31.8 | 63.5 | 3 |
| 1070 | 994 | 5500 | 67 | 20 | 10.20 | 0.11 | 174.2 | 155.4 | 76.2 | 87.3 | 122.3 | 33.5 | 66.5 | 3 |
| 1080 | 2050 | 4750 | 80 | 27 | 17.60 | 0.17 | 201.2 | 180.8 | 88.9 | 104.8 | 149.2 | 43.7 | 88.9 | 3 |
| 1090 | 3730 | 4000 | 95 | 27 | 25.40 | 0.25 | 232.9 | 199.8 | 98.4 | 123.8 | 168.3 | 47.0 | 95.2 | 3 |
| 1100 | 6280 | 3600 | 110 | 42 | 42.00 | 0.43 | 267.9 | 246.2 | 120.6 | 142.1 | 198.0 | 59.7 | 120.7 | 5 |
| 1110 | 9320 | 3000 | 120 | 42 | 54.40 | 0.51 | 286.9 | 259.0 | 127.0 | 160.3 | 216.3 | 62.7 | 124.0 | 5 |
| 1120 | 13700 | 2700 | 140 | 61 | 81.80 | 0.74 | 320.2 | 304.4 | 149.2 | 179.4 | 245.5 | 73.7 | 142.7 | 6 |
| 1130 | 19900 | 2400 | 170 | 67 | 122.00 | 0.91 | 379.0 | 329.8 | 161.9 | 217.5 | 283.8 | 74.9 | 146.0 | 6 |
| 1140 | 28600 | 2200 | 200 | 67 | 180.00 | 1.13 | 417.1 | 374.4 | 184.2 | 254.0 | 321.9 | 78.2 | 155.4 | 6 |
| 1150 | 39800 | 2000 | 215 | 108 | 230.00 | 1.95 | 476.2 | 371.8 | 182.9 | 269.2 | 374.4 | 107.3 | 203.2 | 6 |
| 1160 | 55900 | 1750 | 240 | 121 | 321.00 | 2.81 | 533.4 | 402.2 | 198.1 | 304.8 | 423.9 | 115.3 | 215.9 | 6 |
| 1170 | 74600 | 1600 | 280 | 134 | 448.00 | 3.49 | 584.2 | 437.8 | 215.9 | 355.6 | 474.7 | 120.1 | 226.1 | 6 |
| 1180 | 103000 | 1400 | 300 | 153 | 591.00 | 3.76 | 630.0 | 483.6 | 238.8 | 393.7 | 546.0 | 130.0 | - | 6 |
| 1190 | 137000 | 1300 | 335 | 153 | 761.00 | 4.40 | 685.0 | 524.2 | 259.1 | 436.9 | 589.0 | 135.0 | - | 6 |
| 1200 | 186000 | 1100 | 360 | 178 | 1021.00 | 5.62 | 737.0 | 564.8 | 279.4 | 497.8 | 652.0 | 145.0 | - | 6 |

[^1]
## T50 Type

Floating Shaft
Steel Cover


| Size | Torque Rating (Nm) | Max Bore |  | Min Bore (mm) | Coupling Weight (Kg) | $\begin{aligned} & \text { Lube } \\ & \text { Qty } \\ & \text { (Kg) } \end{aligned}$ | Dimensions (Millimeters) |  |  |  |  |  |  |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  |  | Flanged Hub | Pilot <br> Hub |  |  |  | A | BE <br> Min | C | D | DD | F | J | M | P | SB | SD | GAP |
| 1030 | 149 | 35 | 27.0 | 13 | 3.90 | 0.04 | 115.9 | 162 | 47.6 | 49.2 | 83.7 | 80.8 | 50.3 | 77.7 | 26.8 | 27.0 | 28.6 | 3 |
| 1050 | 435 | 50 | 36.5 | 13 | 8.84 | 0.07 | 157.5 | 195 | 60.3 | 66.7 | 105.2 | 104.8 | 59.2 | 94.0 | 36.2 | 36.5 | 38.1 | 3 |
| 1070 | 994 | 67 | 49.2 | 20 | 15.60 | 0.11 | 182.9 | 213 | 76.2 | 87.3 | 126.5 | 129.0 | 65.9 | 103.1 | 49.8 | 49.2 | 50.8 | 3 |
| 1080 | 2050 | 80 | 61.9 | 27 | 26.40 | 0.17 | 218.4 | 275 | 88.9 | 104.8 | 154.9 | 156.2 | 85.9 | 134.1 | 52.1 | 61.9 | 63.5 | 3 |
| 1090 | 3730 | 95 | 74.6 | 27 | 37.20 | 0.25 | 244.9 | 294 | 98.4 | 123.8 | 180.3 | 175.8 | 92.2 | 143.8 | 58.5 | 74.6 | 76.2 | 3 |
| 1100 | 6280 | 110 | 92.1 | 42 | 62.80 | 0.43 | 286.0 | 372 | 120.6 | 142.1 | 211.3 | 208.3 | 117.3 | 181.4 | 69.3 | 92.1 | 95.2 | 5 |
| 1110 | 9320 | 120 | 101.6 | 42 | 83.60 | 0.51 | 324.1 | 391 | 127.0 | 160.3 | 245.4 | 228.6 | 122.2 | 190.5 | 73.9 | 101.6 | 104.8 | 5 |
| 1120 | 13700 | 140 | 117.5 | 61 | 97.90 | 0.74 | 327.2 | 453 | 149.2 | 179.4 | 179.3 | 257.0 | 146.3 | 220.0 | 83.6 | 117.5 | 120.6 | 6 |
| 1130 | 19900 | 170 | 133.4 | 67 | 140.00 | 0.91 | 365.3 | 463 | 161.9 | 217.5 | 217.4 | 295.1 | 149.5 | 225.0 | 94.8 | 133.4 | 136.5 | 6 |
| 1140 | 28600 | 200 | 142.9 | 67 | 210.00 | 1.13 | 419.1 | 482 | 184.2 | 254.0 | 254.0 | 335.8 | 155.8 | 234.7 | 113.8 | 142.9 | 146.0 | 6 |
| 1150 | 39800 | 215 | 161.9 | 108 | 277.00 | 1.95 | 477.5 | 549 | 182.9 | 271.4 | 269.2 | 391.2 | 177.4 | 268.2 | 101.7 | 161.9 | 165.1 | 6 |
| 1160 | 55900 | 240 | 200.0 | 121 | 381.00 | 2.81 | 548.6 | 587 | 198.1 | 304.8 | 304.8 | 442.0 | 189.4 | 287.0 | 111.9 | 200.0 | 203.2 | 6 |
| 1170 | 74600 | 280 | 200.0 | 134 | 519.00 | 3.49 | 604.5 | 622 | 215.9 | 355.6 | 355.6 | 494.3 | 201.0 | 304.8 | 124.6 | 200.0 | 203.2 | 6 |
| 1180 | 103000 | 300 | 225.4 | 153 | 718.00 | 3.76 | 665.5 | 673 | 238.8 | 393.7 | 393.7 | 556.3 | 226.9 | 330.2 | 141.4 | 225.4 | 228.6 | 6 |
| 1190 | 137000 | 335 | 250.8 | 153 | 898.00 | 4.40 | 708.7 | 711 | 259.1 | 436.9 | 436.9 | 599.4 | 241.7 | 349.5 | 157.6 | 250.8 | 254.0 | 6 |
| 1200 | 186000 | 360 | 276.2 | 178 | 1,205.00 | 5.62 | 782.3 | 744 | 279.4 | 497.8 | 497.8 | 622.9 | 251.8 | 365.8 | 172.8 | 276.2 | 279.4 | 6 |

*Coupling Weight is without Bore Machining
** Contact BMG for availability.

## Special Request Types

## T31 Type

Full Spacer
Horizontal Split Aluminium Cover


T35 Type
Half Spacer
Horizontal Split Aluminium Cover


T63 Type
Disc Brake


KBW Type
Brake Wheel


## Special Grease for Lubricating Couplings under Heavy Loads, Water \& Temperature

BMG's Coupling Grease HD is a grease specifically formulated for those couplings which are subjected to the combined action of high load, shock load, water and high temperature. It has also a very high stability to mechanical work and excellent extreme pressure properties that allow providing a stable and adherent film, highly resistant to mechanical action and water washing.

Besides this, this grease shows excellent anti-corrosive properties, both ferrous materials as for copper alloys, bronze and brass. Due to its excellent physical and chemical properties, the lubrication frequency can be reduced, extending the life of the mechanisms. It also prevents wear and tears, it is able to work in a wide temperature range, especially at high temperatures, thanks to the sulfonate complex calcium soap and solid lubricants with excellent lubricity at high temperature.

## Applications

- Couplings with great presence of water and high temperature.
- Links rolled (steel industry). Cardan couplings and gear couplings.
- Power transmissions in heavy industry (cement, mining, steel mills) and in general.


## Benefits

- Very high anti-corrosive power.
- High resistance to loads.
- Good pump ability.
- Great resistance to water and water wash.
- High working temperature range ( -15 to $180^{\circ} \mathrm{C}$ ); dry lubrication up to $450^{\circ} \mathrm{C}$.
- Excellent resistance to mechanical work.
- High EP properties
- Good adhesion and lubricity.
- Comes in 500 g containers.

Physical - Chemical Characteristics

| Feature | Standard | Typical Value | Unit |
| :---: | :---: | :---: | :---: |
| Colour | - | Black | - |
| Thickener |  | Calcium sulfonate | - |
| Base oil | ASTM D-128 | Mineral | - |
| Base oil viscosity at $40^{\circ} \mathrm{C}$ | ISO | 1000 | cSt |
| Solid Lubricants | - | Graphite | - |
| NLGI consistency | DIN 51818 | Grade 1 | - |
| Penetration 60 W at $25^{\circ} \mathrm{C}$ | ASTM D-217 | 325 | 0,1 mm |
| Drop point | DIN 51801/1 | 280 | ${ }^{\circ} \mathrm{C}$ |
| Welding load | IP 239 | 700 | Kg |
| Wear scar diameter | IP 239 | 0,45 | Mm |
| Stability to oxidation at $100 \mathrm{~h} / 100^{\circ} \mathrm{C}$ | ASTM D-942 | -0,2 | $\mathrm{Kg} / \mathrm{cm}^{2}$ |
| Water wash at $1 \mathrm{~h} / 80^{\circ} \mathrm{C}$ | ASTM D-1264 | 2 | \% |
| EMCOR corrosion | DIN 51802 | Grade 0 | - |
| Working temperature [dry lubrication] | - | -15 to 180 [450] | ${ }^{\circ} \mathrm{C}$ |

## CAUTIONS

The usual ones when handling and using lubricants.

Keep the packaging closed to avoid contamination.

Do not mix with different nature grease.

PART NO: Coupling Grease 500 g or 5 kg
The information contained in this document faithfully reflects our present technical knowledge, besides it provides a suitable description of the product characteristics and enumerates the different applications the product can be suitable for. In any case, the user will have to make sure of the adjustment of the product for each particular use.

BMG reserves the right to make modifications in the products after the date of edition of the present document in order to improve its quality and optimize its output. The values of the given physic-chemical characteristics are typical values. The specification sheets in force are at your disposal for each of the products.

## INSTALLATION

Requirements are wrenches, a straight edge and feeler gauges to install FenaGrid Premium Couplings. Grid Coupling sizes 1020 to 1090 are furnished for a clearance fit with a setscrew over the keyway. Larger sizes (from 1100 and up) are furnished for an interference fit without a setscrew

Clearance Fit Hubs: Clean all parts using a non-flammable solvent. Check hubs, shafts and key ways for burrs. Install keys. Mount hubs with the flange face flush with shaft ends (or as otherwise specified). Tighten setscrews. Do not heat clearance fit hubs.
Interference Fit Hubs: Furnished without setscrews.
Grease Lubrication: Grease on the Grid \& Hub teeth before assembling covers. Fill up grease through the lubrication plug of the assembled coupling.

Selection: Select grease according to the ambient temperature range.

Supplement: Every three months or 250 operating hours is recommended for grease replenishment.

Replacement: Every three years or 4,000 operating hours is recommended for grease replenishment of deteriorated grease.

## 1) Mount Seals and Hubs

Lock out starting switch of prime mover. Clean metal parts using a nonflammable solvent. Lightly coat seals with grease and place on shafts before mounting hubs. Heat interference fit hubs. Seal keyways to prevent leakage.

Mount hubs on their corresponding shafts so that the hub face is flush with the end of the shaft (unless otherwise indicated).


## 2) Gap and Alignment

Use a spacer bar equal in thickness to the gap between shafts Insert bar and same depth at $90^{\circ}$ intervals and measure clearance between bar and hub face with feelers.

The difference in minimum and maximum measurements must not exceed the angular installation limits.


## 3) Offset Alignment

Align a straight edge so that it rests squarely on both hubs as shown in the diagram. Check with feelers. The clearance must not exceed the parallel offset installation limits. Tighten all foundation bolts and repeat Steps 2 and 3. Realign coupling if necessary.


## INSTALLATION

## 4) Insert Grid

Pack the gap and grooves with specified lubricant before inserting grid. When grids are furnished in two or more segments, install them so that all cut ends extend in the same direction. This will assure correct contact between the grid and any non-rotating pins in each half of the covers. Spread the grid just enough so that it passes over the coupling teeth. Seat with a soft mallet.


## 5) Pack

Pack any spaces between and around the grid with as much lubricant as possible. Wipe off any excess so that any remaining lubricant is flush with top of grid. Position hub seals to line up with the grooves in the cover. Position gaskets on lower cover half flange and assemble the two covers so that the match marks are on the same side. If shafts are not horizontally level, or if the coupling is to be used vertically, assemble cover halves with the lug so that the match marks are up or are on the high side. Push gaskets in against the seals as far as possible. Secure cover halves with fasteners and tighten to torque. Make sure gaskets stay in position while the fasteners are tightened.


## Annual Maintenance

Items to perform annually :

1. Check alignment. If the maximum operating misalignment limits are exceeded, realign the coupling to the recommended installation limits.
2. Check that all fasteners are tightened to torque.
3. Inspect Oil Seal and Gasket to determine if replacement is required. Replace if the Seal and Gasket is leaking grease.
4. Disassemble the coupling and inspect for wear. Replace any worn parts. Clean grease from coupling and repack with new grease. Install coupling using a new gasket.


## ALIGNMENT DATA

Accurate alignment results in the maximum life and minimum maintenance for the coupling and the connected machinery. The amount of time for a coupling to reach its maximum operating limits is a function of load, operating speed, and lubrication. Maximum operating values listed in the table below are based on the allowable RPM listed on the catalogue. Values listed are based on the use of the specified gaps, use of standard coupling components, standard assemblies, and catalogue allowable speeds.

Values may be combined for an installation or operating condition. Parallel misalignment is the distance between the centers of each shaft. Angular misalignment is dimension X minus dimension Y as shown in the drawing below. End float is the axial movement of the hubs within the covers as measured from " 0 " gap. This measure assumes zero angular and zero parallel misalignment.

## Parallel Misalignment



Angular Misalignment


End Float


Misalignment Capacity

| Size | Recommended Installation |  |  | Operating |  |  | Fastener Tightening Torque Rating (Nm) |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  | Parallel Offset-P Max (mm) | Angular (X-Y) $\operatorname{Max}(\mathrm{mm})$ | Hub Gap (10\%) Max (mm) | Parallel Offset-P Max (mm) | $\begin{gathered} \text { Angular (X-Y) } \\ \text { Max (mm) } \end{gathered}$ | $\text { End Float ( } 2 \times F)$ $\operatorname{Max}(m m)$ |  |
| 1020 | 0.15 | 0.08 | 3 | 0.30 | 0.25 | 5.33 | 11.30 |
| 1030 | 0.15 | 0.08 | 3 | 0.30 | 0.30 | 5.03 | 11.30 |
| 1040 | 0.15 | 0.08 | 3 | 0.30 | 0.33 | 5.36 | 11.30 |
| 1050 | 0.20 | 0.10 | 3 | 0.41 | 0.41 | 5.38 | 22.60 |
| 1060 | 0.20 | 0.13 | 3 | 0.41 | 0.46 | 6.55 | 22.60 |
| 1070 | 0.20 | 0.13 | 3 | 0.41 | 0.51 | 6.58 | 22.60 |
| 1080 | 0.20 | 0.15 | 3 | 0.41 | 0.61 | 7.32 | 22.60 |
| 1090 | 0.20 | 0.18 | 3 | 0.41 | 0.71 | 7.26 | 22.60 |
| 1100 | 0.25 | 0.20 | 3 | 0.51 | 0.84 | 10.90 | 35.00 |
| 1110 | 0.25 | 0.23 | 5 | 0.51 | 0.91 | 10.90 | 35.00 |
| 1120 | 0.28 | 0.25 | 5 | 0.56 | 1.02 | 14.12 | 73.00 |
| 1130 | 0.28 | 0.30 | 6 | 0.56 | 1.17 | 14.00 | 73.00 |
| 1140 | 0.28 | 0.33 | 6 | 0.56 | 1.35 | 14.50 | 73.00 |
| 1150 | 0.28 | 0.41 | 6 | 0.60 | 1.57 | - | - |
| 1160 | 0.30 | 0.46 | 6 | 0.60 | 1.78 | - | - |
| 1170 | 0.30 | 0.51 | 6 | 0.60 | 2.01 | - | - |
| 1180 | 0.38 | 0.56 | 6 | 0.76 | 2.26 | - | - |
| 1190 | 0.38 | 0.61 | 6 | 0.76 | 2.46 | - | - |
| 1200 | 0.38 | 0.69 | 6 | 0.76 | 2.72 | - | - |
| 1210 | 0.46 | 0.74 | 13 | 0.91 | 3.00 | - | - |
| 1220 | 0.46 | 0.81 | 13 | 0.91 | 3.28 | - | - |
| 1230 | 0.46 | 0.89 | 13 | 0.97 | 3.61 | - | - |
| 1240 | 0.48 | 0.97 | 13 | 0.97 | 3.91 | - | - |
| 1250 | 0.51 | 1.07 | 13 | 1.02 | 4.29 | - | - |
| 1260 | 0.51 | 1.17 | 13 | 1.02 | 4.65 | - | - |

## Puller Holes



| Size | B.C.D (mm) | Tap Size | Size | B.C.D (mm) | Tap Size |
| :---: | :---: | :---: | :---: | :---: | :---: |
| 1150 | 263 | M16x2.0x24 | 1210 | 497 | M36x4.0×45 |
| 1160 | 298 | M $22 \times 2.5 \times 27$ | 1220 | 541 | M $36 \times 4.0 \times 45$ |
| 1170 | 338 | M $30 \times 3.5 \times 32$ | 1230 | 586 | M $36 \times 4.0 \times 45$ |
| 1180 | 378 | M $30 \times 3.5 \times 38$ | 1240 | 633 | M $36 \times 4.0 \times 45$ |
| 1190 | 413 | M $36 \times 4.0 \times 45$ | 1250 | 690 | M $36 \times 4.0 \times 45$ |
| 1200 | 456 | M $36 \times 4.0 \times 45$ | 1260 | 749 | M $36 \times 4.0 \times 45$ |

$\qquad$

## BRINGING THE WORLD'S BEST BRANDS TO YOU

In the bid to procure cutting-edge components at competitive prices, BMG is able to capitalise on long-standing relationships with leading manufacturers dedicated to excellence in design and production.

Products are imported from around the globe and brought to BMG's strategically located distribution facilities and regional service centres via the main distribution hub in Johannesburg - BMG World. A world-class facility boasting 308 $000 \mathrm{~m}^{3}$ of fully stocked warehouse space, an accredited training facility and unlimited engineering capabilities.

## Our Extensive Coverage Throughout Africa

Products and services are distributed via BMG's extensive distribution network. It's through the sheer size and reach of our infrastructure, that BMG can be found wherever industry has established itself; delivering the correct components at the right time, to the far-flung coalface of our customers' operations.

- Over 300000 product line items
- Around 4500 transfers per day out of BMG World in Johannesburg
- Over 1000 tons of imported stock landing per month
- 105 strategically situated branches throughout Africa
- Vendor Managed Inventory sites (dedicated on-site stockholding)
- International exports
- Locally empowered distribution chains



## 24 HR TOLL-FREE EMERGENCY BRANCH HELPLINE:

0800022224
WEBSITE:
www.bmgworld.net



[^0]:    Selection Torque (Nm) = Brake Torque Rating x Service Factor

[^1]:    *Coupling Weight is without Bore Machining Standard Stock Item

