Morgan Advanced Materials

AEGIS® iPRO Bearing Protection Ring

High Current Bearing Protection

- Medium Voltage Motors
- Large Motors and Generators over 750kW
- Power Generators over 750kW

Large motors and generators often have much higher induced shaft voltages and bearing currents which require a high current capable Bearing Protection Ring. High frequency circulating currents induced by variable frequency drives (VFD) will cause bearing fluting and catastrophic failure in these motors. Generators experience current surges which can cause electrical arcing in bearings and equipment.

Features:

- 6 rows conductive microfiber
- High current capable
- AEGIS® iPRO shaft current monitoring compatible
- Long term reliable performance
- Available in sizes up to 30" (762mm) shaft diameter

Application:

- One end of the motor should be insulated. Install AEGIS® iPRO on opposite end of insulation to protect the non-insulated bearing.
- Coat shaft with AEGIS® Colloidal Silver Shaft Coating (ships with iPRO)

Purpose of Application Notes: Application notes are intended as general guidance to assist with proper application. All statements and technical information are rendered in good faith. User must assume responsibility to determine suitability of the product for its intended use.

Bearing Protection Facts:

Bearing protection for motors and attached equipment:

Only AEGIS® SGR will protect both motor bearings and the bearings in attached equipment. VFD induced currents on the shaft can discharge through motor bearings or coupled equipment like gear boxes, pumps, fan bearings, pillow blocks, encoders, brake motors, etc. AEGIS® SGR addresses the root of the problem and channels harmful currents to ground.

Maintenance free bearing protection for life:

Hundreds of thousands of conductive micro fibers have virtually zero wear during operation, even at high RPM and high surface rates. Unlike carbon block brushes, there is no spring pressure on fibers. AEGIS® SGR Bearing Protection Ring will last for the service life of the motor.

AEGIS® SGR is effective in grease, oil, dirt or dust:

Lab and field tested. The conductive micro fibers "sweep" away contaminants from the shaft surface and maintain a conductive path even when oil, grease, dirt or dust get on the shaft.

Operation in harsh environments where fibers are exposed to excessive debris:

To prevent particles from damaging the fibers, install a slinger or O-ring against the AEGIS® SGR.

Colloidal Silver Shaft Coating*:

NEW TECHNOLOGY

Improving the conductivity of the steel shaft surface enhances the shaft voltage discharge capability in AEGIS® shaft grounding applications. Maintaining a highly conductive shaft surface is especially important in critical applications or in applications where the conductive shaft surface of steel could become compromised. Environmental elements could create a potential for decreased conductivity on the shaft of the motor.

*Recommended for all AEGIS® SGR installations.

AEGIS® SGR Bearing Protection Ring current handling capability:

AEGIS® SGR is rated to discharge high frequency current. Variable frequency drives (VFD) induce high frequency EDM currents of up to 2 amps in 50 billionths of a second. AEGIS® SGR protects the bearing by safely channelling the energy away from the motor bearings to ground.

AEGIS® Bearing Protection Ring - the most reliable bearing protection:

Production up-time and reliability improve when AEGIS® SGR is installed. The patented ring of hundreds of thousands of conductive micro fibres provide protection for the service life of the motor. The fibres will always surround the shaft with a conductive path for destructive shaft currents while the motor is running.

Vertical Motors:

Insulate top bearing or shaft with non conductive coating. For bottom bearing, coat shaft with Colloidal Silver Shaft Coating and install AEGIS® Bearing Protection Ring.

Motors with Ceramic Bearings

Insulating both bearing journals or using ceramic coated bearings in the motor does not prevent VFD induced currents from discharging through the bearings on attached equipment and may present a voltage hazard.

Whenever ceramic bearings are used in a motor, AEGIS® SGR is required to protect attached equipment and reduce potentially dangerous shaft voltages.

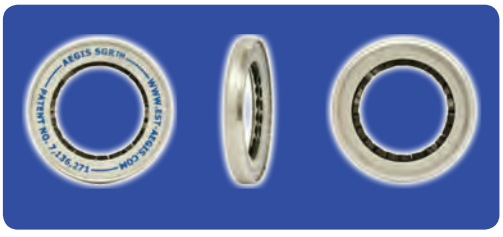
Selecting the right size Bearing Protection Ring for your motor

Mounting Options shown on page 8

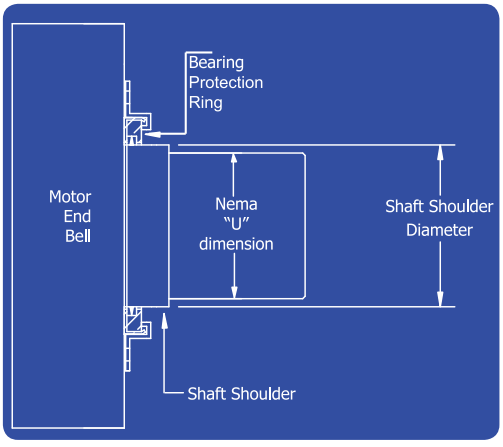
1. Measure shaft diameter at a point 3mm from motor end bell.
2. Refer to the part lists to locate the correct SGR part number.

Note: If you have a slinger or a shaft shoulder that is less than 9.5mm, you will need the IEC kit. See page 13 for more information.

Example shaft measurement 10.8mm*				
Catalogue Number	**Min. Shaft Diameter**	**Max. Shaft Diameter**	**Outside Diameter**	**Thickness Max.**
SGR-6.9-2	7.9	9.0	40.6	7.5
SGR-8.0-2	9.0	10.0	40.6	7.5
SGR-9.0-2	10.1	*11.0	40.6	7.5
SGR-10.1-2	11.1	12.2	40.6	7.5
SGR-11.2-2	12.2	13.2	40.6	7.5



Front view Side view Back view



Shaft Shoulder:

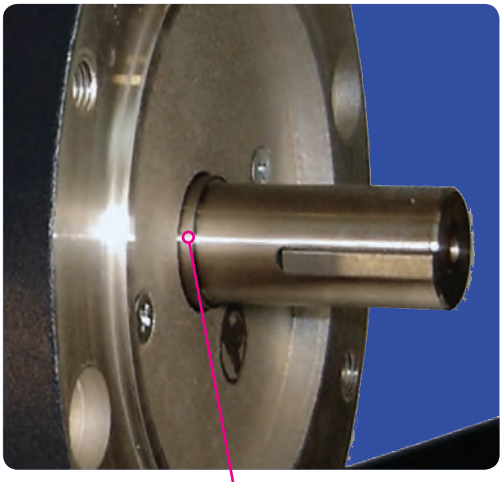
The standard SGR can be mounted to the shaft shoulder but the shoulder should be at least 9.5mm in length so that all of the fibers are in contact with the rotating shaft. Measure the diameter of the shaft shoulder then locate the correct SGR on the part lists.

Custom Option for Short Shaft Shoulders:

If the shaft shoulder is between 4.7mm and 9.5mm we offer a custom part. For this option, we place the fibers closer to the back of the ring to allow for fiber contact on a shorter shoulder. To order this option, add an "X" or "AX" to the suffix of the part.

Example:

Standard SGR	Short Shoulder SGR
PN: SGR-6.9-0A4W	PN: SGR-6.9-0A4WX
PN: SGR-6.9-0AW	PN: SGR-6.9-0AWX
PN: SGR-6.9-2	PN: SGR-6.9-2AX
PN: SGR-6.9-2A4	PN: SGR-6.9-2A4X
PN: SGR-6.9-3	PN: SGR-6.9-3AX



Shaft Shoulder

AEGIS® SGR - Press Fit Mounting

Dimensions in mm

Catalog Number	Min.shaft diameter	Max.shaft diameter	SGR OD Tolerance +0/-0.025	Thickness Max	Bore Tolerance +0.025/-0
SGR-6.9-0A6	7.9	9.0	40.132	7.5	40.030
SGR-8.0-0A6	9.1	10.0	40.132	7.5	40.030
SGR-9.0-0A6	10.1	11.0	40.132	7.5	40.030
SGR-10.1-0A6	11.1	12.2	40.132	7.5	40.030
SGR-11.2-0A6	12.3	13.2	40.132	7.5	40.030
SGR-12.2-0A6	13.3	14.2	40.132	7.5	40.030
SGR-13.2-0A6	14.3	15.4	40.132	7.5	40.030
SGR-14.4-0A6	15.5	16.4	40.132	7.5	40.030
SGR-15.4-0A6	16.5	17.4	52.832	7.5	52.730
SGR-16.4-0A6	17.5	18.5	52.832	7.5	52.730
SGR-17.6-0A6	18.6	19.7	52.832	7.5	52.730
SGR-18.7-0A6	19.8	20.7	52.832	7.5	52.730
SGR-19.7-0A6	20.8	21.7	52.832	7.5	52.730
SGR-20.7-0A6	21.8	22.7	52.832	7.5	52.730
SGR-21.7-0A6	22.8	23.7	52.832	7.5	52.730
SGR-22.8-0A6	23.8	24.9	52.832	7.5	52.730
SGR-23.9-0A6	25.0	25.9	52.832	7.5	52.730
SGR-24.9-0A6	26.0	26.9	52.832	7.5	52.730
SGR-25.9-0A6	27.0	28.1	52.832	7.5	52.730
SGR-27.1-0A6	28.2	29.1	52.832	7.5	52.730
SGR-28.1-0A6	29.2	30.1	52.832	7.5	52.730
SGR-29.1-0A6	30.2	31.2	52.832	7.5	52.730
SGR-30.3-0A6	31.3	32.3	52.832	7.5	52.730
SGR-31.3-0A6	32.4	33.3	52.832	7.5	52.730
SGR-32.3-0A6	33.4	34.4	52.832	7.5	52.730
SGR-33.4-0A6	34.5	35.4	52.832	7.5	52.730
SGR-34.4-0A6	35.5	36.4	67.564	7.5	67.462
SGR-35.5-0A6	36.5	37.6	67.564	7.5	67.462
SGR-36.6-0A6	37.7	38.6	67.564	7.5	67.462
SGR-37.6-0A6	38.7	39.6	67.564	7.5	67.462
SGR-38.6-0A6	39.7	40.8	67.564	7.5	67.462
SGR-39.8-0A6	40.9	41.8	67.564	7.5	67.462
SGR-40.8-0A6	41.9	42.8	67.564	7.5	67.462
SGR-41.8-0A6	42.9	43.9	67.564	7.5	67.462
SGR-43.0-0A6	44.0	45.0	67.564	7.5	67.462
SGR-44.0-0A6	45.1	46.0	67.564	7.5	67.462
SGR-45.0-0A6	46.1	47.1	67.564	7.5	67.462
SGR-46.1-0A6	47.2	48.1	67.564	7.5	67.462
SGR-47.1-0A6	48.2	49.1	67.564	7.5	67.462
SGR-48.2-0A6	49.2	50.3	67.564	7.5	67.462
SGR-49.3-0A6	50.4	51.3	67.564	7.5	67.462
SGR-50.3-0A6	51.4	52.3	78.232	7.5	78.130
SGR-51.3-0A6	52.4	53.5	78.232	7.5	78.130
SGR-52.5-0A6	53.6	54.5	78.232	7.5	78.130
SGR-53.5-0A6	54.6	55.5	78.232	7.5	78.130
SGR-54.5-0A6	55.6	56.6	78.232	7.5	78.130
SGR-55.7-0A6	56.7	57.7	78.232	7.5	78.130
SGR-56.7-0A6	57.8	58.7	78.232	7.5	78.130
SGR-57.7-0A6	58.8	59.8	78.232	7.5	78.130
SGR-58.8-0A6	59.9	60.8	78.232	7.5	78.130
SGR-59.8-0A6	60.9	61.8	90.932	7.5	90.830
SGR-60.9-0A6	61.9	63.0	90.932	7.5	90.830
SGR-62.0-0A6	63.1	64.0	90.932	7.5	90.830
SGR-63.0-0A6	64.1	65.0	90.932	7.5	90.830
SGR-64.0-0A6	65.1	66.2	90.932	7.5	90.830
SGR-65.2-0A6	66.3	67.2	90.932	7.5	90.830
SGR-66.2-0A6	67.3	68.2	90.932	7.5	90.830
SGR-67.2-0A6	68.3	69.3	90.932	7.5	90.830
SGR-68.4-0A6	69.4	70.4	90.932	7.5	90.830
SGR-69.4-0A6	70.5	71.4	90.932	7.5	90.830
SGR-70.4-0A6	71.5	72.5	90.932	7.5	90.830
SGR-71.5-0A6	72.6	73.5	90.932	7.5	90.830
SGR-72.5-0A6	73.6	74.5	103.632	7.5	103.530
SGR-73.6-0A6	74.6	75.7	103.632	7.5	103.530
SGR-74.7-0A6	75.8	76.7	103.632	7.5	103.530
SGR-75.7-0A6	76.8	77.7	103.632	7.5	103.530
SGR-76.7-0A6	77.8	78.9	103.632	7.5	103.530
SGR-77.9-0A6	79.0	79.9	103.632	7.5	103.530
SGR-78.9-0A6	80.0	80.9	103.632	7.5	103.530

Catalog Number	Min.shaft diameter	Max.shaft diameter	SGR OD Tolerance +0/-0.025	Thickness Max	Bore Tolerance +0.025/-0
SGR-79.9-0A6	81.0	82.0	103.632	7.5	103.530
SGR-81.1-0A6	82.1	83.1	103.632	7.5	103.530
SGR-82.1-0A6	83.2	84.1	103.632	7.5	103.530
SGR-83.1-0A6	84.2	85.2	103.632	7.5	103.530
SGR-84.2-0A6	85.3	86.2	103.632	7.5	103.530
SGR-85.2-0A6	86.3	87.2	116.332	7.5	116.230
SGR-86.3-0A6	87.3	88.4	116.332	7.5	116.230
SGR-87.4-0A6	88.5	89.4	116.332	7.5	116.230
SGR-88.4-0A6	89.5	90.4	116.332	7.5	116.230
SGR-89.4-0A6	90.5	91.6	116.332	7.5	116.230
SGR-90.6-0A6	91.7	92.6	116.332	7.5	116.230
SGR-91.6-0A6	92.7	93.6	116.332	7.5	116.230
SGR-92.6-0A6	93.7	94.7	116.332	7.5	116.230
SGR-93.8-0A6	94.8	95.8	116.332	7.5	116.230
SGR-94.8-0A6	95.9	96.8	116.332	7.5	116.230
SGR-95.8-0A6	96.9	97.9	116.332	7.5	116.230
SGR-96.9-0A6	98.0	98.9	116.332	7.5	116.230
SGR-97.9-0A6	99.0	99.9	129.032	7.5	128.930
SGR-99.0-0A6	100.0	101.1	129.032	7.5	128.930
SGR-100.1-0A6	101.2	102.1	129.032	7.5	128.930
SGR-101.1-0A6	102.2	103.1	129.032	7.5	128.930
SGR-102.1-0A6	103.2	104.3	129.032	7.5	128.930
SGR-103.3-0A6	104.4	105.3	129.032	7.5	128.930
SGR-104.3-0A6	105.4	106.3	129.032	7.5	128.930
SGR-105.3-0A6	106.4	107.4	129.032	7.5	128.930
SGR-106.5-0A6	107.5	108.5	129.032	7.5	128.930
SGR-107.5-0A6	108.6	109.5	129.032	7.5	128.930
SGR-108.5-0A6	109.6	110.6	129.032	7.5	128.930
SGR-109.6-0A6	110.7	111.6	129.032	7.5	128.930
SGR-110.6-0A6	111.7	112.6	141.732	7.5	141.630
SGR-111.7-0A6	112.7	113.8	141.732	7.5	141.630
SGR-112.8-0A6	113.9	114.8	141.732	7.5	141.630
SGR-113.8-0A6	114.9	115.8	141.732	7.5	141.630
SGR-114.8-0A6	115.9	117.0	141.732	7.5	141.630
SGR-116.0-0A6	117.1	118.0	141.732	7.5	141.630
SGR-117.0-0A6	118.1	119.0	141.732	7.5	141.630
SGR-118.0-0A6	119.1	120.1	141.732	7.5	141.630
SGR-119.2-0A6	120.2	121.2	141.732	7.5	141.630
SGR-120.2-0A6	121.3	122.2	141.732	7.5	141.630
SGR-121.2-0A6	122.3	123.3	141.732	7.5	141.630
SGR-122.3-0A6	123.4	124.3	141.732	7.5	141.630
SGR-123.3-0A6	124.4	125.3	154.432	7.5	154.330
SGR-124.4-0A6	125.4	126.5	154.432	7.5	154.330
SGR-125.5-0A6	126.6	127.5	154.432	7.5	154.330
SGR-126.5-0A6	127.6	128.5	154.432	7.5	154.330
SGR-127.5-0A6	128.6	129.7	154.432	7.5	154.330
SGR-128.7-0A6	129.8	130.7	154.432	7.5	154.330
SGR-129.7-0A6	130.8	131.7	154.432	7.5	154.330
SGR-130.7-0A6	131.8	132.8	154.432	7.5	154.330
SGR-131.9-0A6	132.9	133.9	154.432	7.5	154.330
SGR-132.9-0A6	134.0	134.9	154.432	7.5	154.330
SGR-133.9-0A6	135.0	136.0	154.432	7.5	154.330
SGR-135.0-0A6	136.1	137.0	154.432	7.5	154.330
SGR-136.0-0A6	137.1	138.0	167.132	7.5	167.030
SGR-137.1-0A6	138.1	139.2	167.132	7.5	167.030
SGR-138.2-0A6	139.3	140.2	167.132	7.5	167.030
SGR-139.2-0A6	140.3	141.2	167.132	7.5	167.030
SGR-140.2-0A6	141.3	142.4	167.132	7.5	167.030
SGR-141.4-0A6	142.5	143.4	167.132	7.5	167.030
SGR-142.4-0A6	143.5	144.4	167.132	7.5	167.030
SGR-143.4-0A6	144.5	145.5	167.132	7.5	167.030
SGR-144.6-0A6	145.6	146.6	167.132	7.5	167.030
SGR-145.6-0A6	146.7	147.6	167.132	7.5	167.030
SGR-146.6-0A6	147.7	148.7	167.132	7.5	167.030
SGR-147.7-0A6	148.8	149.7	167.132	7.5	167.030
SGR-148.7-0A6	149.8	150.7	179.832	7.5	179.730
SGR-149.8-0A6	150.8	151.9	179.832	7.5	179.730
SGR-150.9-0A6	152.0	152.9	179.832	7.5	179.730