



MagnaGuard Economizer Coupling Installation Instructions

Read the following precautions before proceeding:

**Pacemakers,
defibrillators,
or other
electronic
medical devices**

Warning! Magnets can cause pacemakers, defibrillators, or other electronic medical devices to malfunction or reset to factory settings. People with any of these medical devices must stay at least 10 feet from coupling.

**Rotating
equipment**

Warning! Avoid loose clothing, long hair, or jewelry that can become entangled with equipment.

Warning! Wear eye protection when coupling is in operation.

Warning! Clear the area of all loose items before starting coupling. Strong wind from rotating coupling can cause loose items to become airborne. Loose hardware left on coupling can become a projectile.

Crushing hazard

Warning! Keep hands out of area between magnet rotors and conductors to prevent crushing injury.

**Magnetic
attraction**

Caution! Ferrous metals are powerfully drawn to the magnets and are very difficult to separate. Keep conductor components, tools, fasteners, and metal work surfaces such as steel benches away from the magnets.

**Magnetic
storage
medium**

Caution! Magnetic storage medium (floppy disks, credit cards, etc.) may be corrupted or destroyed when exposed to magnets.

Read the following precautions before proceeding; Continued

Electronic equipment

Caution! Cell phones, instrument panels, CD players, DVD players, etc. may be adversely affected when exposed to magnets.

Introduction to the MagnaDrive MagnaGuard Economizer (MGE) Coupling

What is the MagnaDrive MGE?

- The MagnaDrive MGE transmits torque using the principals of magnetic induction. It consists of two independent components that have no physical contact.
 - ⇒ A precision rotor assembly that contains high-strength permanent magnets mounts on the load shaft.
 - ⇒ A conductor assembly with copper rings connects to the motor shaft.
 - Relative motion between the magnets and the copper rings creates eddy currents in the copper transmitting torque through the air gap between the coupling's components.
-

Unpack and Inspect Coupling

Lifting precautions

Follow safe lifting procedures.
Warning! Use certified lifting equipment and protective footwear.

Unpack and inspect

Inspect the coupling in the box for any damage that may have occurred during shipment.

Pre-Installation

Preparation To prepare for MGE installation, follow the steps below:

Step	Action														
1	<ul style="list-style-type: none"> • Remove existing coupling, • Prepare shafts and coupling keys, • Verify shaft dimensions, and • Verify operating clearance. 														
2	Verify the following on driver and load shafts: <ul style="list-style-type: none"> • Axial End Float - .010 inch, max. • Angular Misalignment – ½ degree, greater with increased air gap. • Parallel Misalignment- $\frac{5}{64}$ inch, max. 														
3	Mark minimum hub engagement length from the end of the <i>driver</i> and <i>load</i> shafts.														
4	Check DBSE and move equipment as required, allowing for installation of hubs and center assembly (conductor and magnet rotors). <ul style="list-style-type: none"> • Standard MagnaGuard Economizer DBSE is as follows: <table border="1" data-bbox="565 1104 1385 1430"> <thead> <tr> <th data-bbox="565 1104 891 1150">MGE</th> <th data-bbox="891 1104 1385 1150">DBSE</th> </tr> </thead> <tbody> <tr> <td data-bbox="565 1150 891 1197">MGE-01</td> <td data-bbox="891 1150 1385 1197">.025 to 1.50"</td> </tr> <tr> <td data-bbox="565 1197 891 1243">MGE-03</td> <td data-bbox="891 1197 1385 1243">.025 to 2.00"</td> </tr> <tr> <td data-bbox="565 1243 891 1289">MGE-07</td> <td data-bbox="891 1243 1385 1289">.025 to 3.50"</td> </tr> <tr> <td data-bbox="565 1289 891 1335">MGE-11</td> <td data-bbox="891 1289 1385 1335">.025 to 3.50"</td> </tr> <tr> <td data-bbox="565 1335 891 1381">MGE-15</td> <td data-bbox="891 1335 1385 1381">.025 to 4.50"</td> </tr> <tr> <td data-bbox="565 1381 891 1430">MGE-19</td> <td data-bbox="891 1381 1385 1430">.025 to 4.50"</td> </tr> </tbody> </table>	MGE	DBSE	MGE-01	.025 to 1.50"	MGE-03	.025 to 2.00"	MGE-07	.025 to 3.50"	MGE-11	.025 to 3.50"	MGE-15	.025 to 4.50"	MGE-19	.025 to 4.50"
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Coupling Installation

**MGE-01 and
MGE-03**

- The smaller size MGE product uses a single conductor rotor design (1 conductor rotor plate).
- Caution!** **Exposed magnets on the magnet rotor — handle with extreme care.**
- ⇒ For the MGE-01, the coupling hubs are integral to the coupling.
- ⇒ For the MGE-03, the coupling hubs are separate and may be installed pre-assembled with the coupling magnet rotor and conductor rotor.
- To install MGE-01 and MGE-03, follow the steps below:

Step	Action
1	Visually inspect coupling hubs and wipe clean. <ul style="list-style-type: none"> • Do not disassemble magnet rotor or conductor rotor. • Do not disassemble coupling. • Do not remove magnet rotor. Contact MagnaDrive Corporation Sales and Service technician for assistance.
2	Slide magnet rotor hub onto customer load shaft.
3	Slide conductor/motor hub onto customer driver shaft.
4	<ul style="list-style-type: none"> • Insert plastic air gap spacer between magnet rotor and conductor rotor, and • Slide coupling together.
5	Center coupling in the DBSE. <ul style="list-style-type: none"> • Verify shaft engagement of 1.0 inch minimum (both hubs). • For MGE-03, torque load driver hub screws as follows: <ul style="list-style-type: none"> ⇒ Use Loctite 246 on all screws. ⇒ Torque to 18 ft-lbf (5/16-18 screws).
6	Torque load/driver hub setscrews over the shafts. <ul style="list-style-type: none"> • Use Loctite 246 on all screws. • Torque to 65 in.-lbf (1/4-20 setscrews).
7	Remove plastic air gap spacer. <ul style="list-style-type: none"> • Verify air gap. • Verify no clashing. • Verify axial endplay.

Continued on next page

Coupling Installation, Continued

**MGE-07,
MGE-11,
MGE-15,
and MGE-19**

To install MGE-07, MGE-11, MGE-15, and MGE-19, follow the steps below:

Step	Action						
1	Visually inspect coupling hubs and wipe clean. <ul style="list-style-type: none"> • Do not disassemble magnet rotor installed inside the conductor. • Do not disassemble coupling. • Do not remove magnet rotor. Contact MagnaDrive Corporation Sales & Service technician for assistance. 						
2	Slide magnet rotor hub onto customer load shaft.						
3	Slide conductor/motor hub onto customer driver shaft.						
4	<ul style="list-style-type: none"> • Insert conductor/rotor assembly between shaft ends, and • Bolt magnet rotor to rotor hub. <ul style="list-style-type: none"> ⇒ Use Loctite 246 on all screws. ⇒ Torque as follows: <table border="1" style="margin-left: 20px;"> <thead> <tr> <th style="text-align: left;">IF...</th> <th style="text-align: left;">THEN torque to...</th> </tr> </thead> <tbody> <tr> <td>MGE-07 or MGE-11,</td> <td>30 ft-lbf (3/8–16 screws).</td> </tr> <tr> <td>MGE-15 or MGE-19,</td> <td>70 ft-lbf (1/2–13 screws).</td> </tr> </tbody> </table>	IF...	THEN torque to...	MGE-07 or MGE-11,	30 ft-lbf (3/8–16 screws).	MGE-15 or MGE-19,	70 ft-lbf (1/2–13 screws).
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5	<ul style="list-style-type: none"> • Slide load side towards load until coupling is centered in the DBSE. • Verify shaft engagement as follows: <table border="1" style="margin-left: 20px;"> <thead> <tr> <th style="text-align: left;">IF...</th> <th style="text-align: left;">THEN verify shaft engagement of...</th> </tr> </thead> <tbody> <tr> <td>MGE-07 or MGE-11,</td> <td>1.50 inches, minimum, with both hubs.</td> </tr> <tr> <td>MGE-15 or MGE-19,</td> <td>3.00 inches, minimum, with both hubs.</td> </tr> </tbody> </table>	IF...	THEN verify shaft engagement of...	MGE-07 or MGE-11,	1.50 inches, minimum, with both hubs.	MGE-15 or MGE-19,	3.00 inches, minimum, with both hubs.
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Continued on next page

Coupling Installation, Continued

**MGE-07, MGE-11,
MGE-15,
and MGE-19** (continued)

6	<ul style="list-style-type: none"> • Align the conductor assembly to the conductor hub. <ul style="list-style-type: none"> ⇒ Before attempting to center the conductor to the hub, ease the jacking screws. • Bolt the conductor to the conductor/motor hub. <ul style="list-style-type: none"> ⇒ Use Loctite 246 on all screws. ⇒ Torque as follows: <table border="1" style="margin-left: 40px; margin-top: 10px;"> <thead> <tr> <th style="text-align: left;">IF...</th> <th style="text-align: left;">THEN torque to...</th> </tr> </thead> <tbody> <tr> <td>MGE-07 or MGE-11,</td> <td>30 ft-lbf (3/8" – 16 screws).</td> </tr> <tr> <td>MGE-15 or MGE-19,</td> <td>70 ft-lbf (1/2" – 13 screws).</td> </tr> </tbody> </table>	IF...	THEN torque to...	MGE-07 or MGE-11,	30 ft-lbf (3/8" – 16 screws).	MGE-15 or MGE-19,	70 ft-lbf (1/2" – 13 screws).
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7	Verify that the air gaps are equal (as held by jacking screws).						
8	<p>Torque the load hub screws that tighten hub onto shaft.</p> <ul style="list-style-type: none"> • Use equal and small advances on the two screws to help achieve small runout of the rotor assembly. <ul style="list-style-type: none"> ⇒ Use Loctite 246 on all screws. ⇒ Torque as follows: <table border="1" style="margin-left: 40px; margin-top: 10px;"> <thead> <tr> <th style="text-align: left;">IF...</th> <th style="text-align: left;">THEN torque to...</th> </tr> </thead> <tbody> <tr> <td>MGE-07 or MGE-11,</td> <td>30 ft-lbf (3/8" – 16 screws).</td> </tr> <tr> <td>MGE-15 or MGE-19,</td> <td>70 ft-lbf (1/2" – 13 screws).</td> </tr> </tbody> </table>	IF...	THEN torque to...	MGE-07 or MGE-11,	30 ft-lbf (3/8" – 16 screws).	MGE-15 or MGE-19,	70 ft-lbf (1/2" – 13 screws).
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9	<p>Torque the driver hub screws that tighten hub onto shaft.</p> <ul style="list-style-type: none"> • Use equal and small advances on the two screws to help achieve small runout of the rotor assembly. <ul style="list-style-type: none"> ⇒ Use Loctite 246 on all screws. ⇒ Torque as follows: <table border="1" style="margin-left: 40px; margin-top: 10px;"> <thead> <tr> <th style="text-align: left;">IF...</th> <th style="text-align: left;">THEN torque to...</th> </tr> </thead> <tbody> <tr> <td>MGE-07 or MGE-11,</td> <td>30 ft-lbf (3/8" – 16 screws).</td> </tr> <tr> <td>MGE-15 or MGE-19,</td> <td>70 ft-lbf (1/2" – 13 screws).</td> </tr> </tbody> </table>	IF...	THEN torque to...	MGE-07 or MGE-11,	30 ft-lbf (3/8" – 16 screws).	MGE-15 or MGE-19,	70 ft-lbf (1/2" – 13 screws).
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10	Tighten setscrew in hub over shaft key to lock key in place.						

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Coupling Installation, Continued

**MGE-07, MGE-11,
MGE-15,
and MGE-19** (continued)

11	Remove jacking screws from both sides.
12	Verify air gap is still equal.
13	Verify no clashing of rotor with conductor standoffs.
14	Verify total axial displacement of both motor and load shafts does not exceed 0.010" maximum.

Power up the System

Operation To prepare for operation, follow the steps below:

Step	Action
1	Verify conductor jacking screws are completely removed.
2	Remove equipment lockout/tagout.
3	Bump the drive motor to confirm correct direction of rotation.
4	Install coupling guard (supplied by others) and verify operating clearance. <ul style="list-style-type: none"> • Recommended clearance of 3.0 inches around rotating coupling.
5	Start the driver and operate the system. <ul style="list-style-type: none"> • Visually monitor the air gap between the conductor and the magnet rotor. • Verify vibration/balance on load side. • Verify vibration/balance on motor side. • Verify speed of load under performance variables.

Post Installation Maintenance

Coupling maintenance Periodically inspect the coupling for build-up of debris.

- If debris is noted, stop the system and clean the coupling.

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