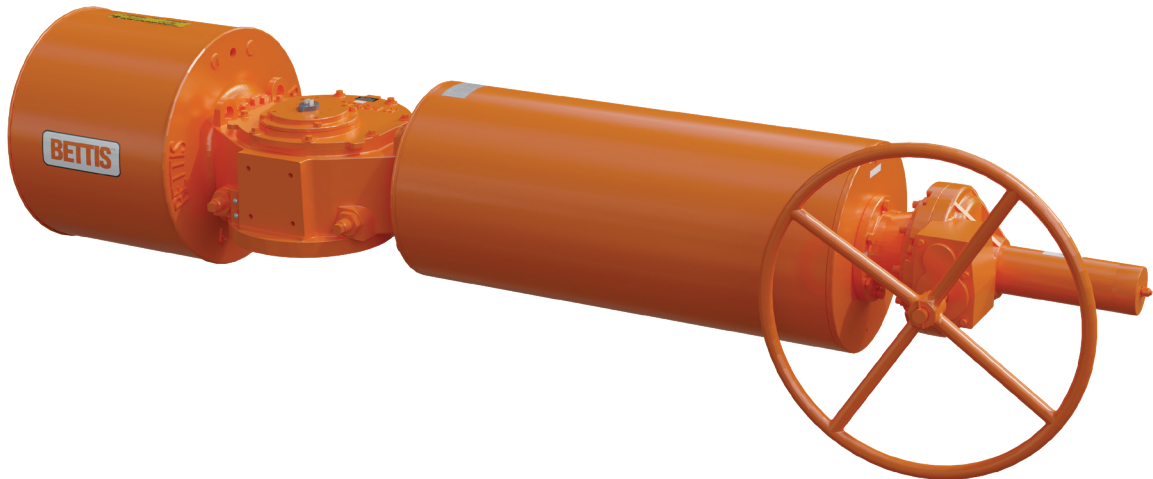


Bettis MG, MG24 and MG30 G-Ride Manual Gear Override for G4 and G5 Series

Spring-Return Actuators



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Section 1: MG, MG24 and MG30 G-Ride

General Information

- 1.1 The Bettis MG manual gear override is basically a gear driven jackscrew mechanism. In the event that there is no pneumatic or hydraulic power available to operate the actuator, the MG override can be used to manually operate the actuator in the power stroke direction - compressing the actuator spring i.e. opposite the fail mode direction. In the reverse operation, the MG allows the spring to extend under control, causing the actuator to rotate to the actuator fail-safe position.
- 1.2 The MG is equipped with a visual safety indicator (located on the outboard most end of the MG jackscrew cover). The sole purpose is to indicate whether the MG is at least partially engaged (under load from spring) or fully disengaged from contact with the spring (no load from spring). When the indicator shows green or extends at least +1 in. (+25.4 mm) from the jackscrew cover, the MG is fully disengaged from the spring and therefore is not under any spring load.

CAUTION

The visual indicator does not indicate the full scale of the actuator's stroke.

WARNING

Do not use the MG G-Ride to mechanically assist the actuator while simultaneously applying pneumatic/hydraulic pressure to the actuators power module.

Section 2: Definitions

WARNING

If not observed, user may incur a high risk of severe damage to actuator and/or fatal injury to personnel.

CAUTION

If not observed, user may incur damage to actuator and/or injury to personnel.

NOTE

Advisory and information comments provided to assist maintenance personnel to carry out maintenance procedures.

Section 3: MG G-Ride Operating Procedure

3.1 MG Engagement (Spring Compression)

- 3.1.1 Bleed off, vent and leave vented to atmosphere all pressure to the actuator power module (cylinder).
- 3.1.2 Rotate the MG drive nut or handwheel counterclockwise (CCW) to engage and compress the spring sufficiently to allow for the desired degrees of actuator rotation. As the MG is compressing the spring, the green visual safety indicator should disappear into the jackscrew cover and not be seen. Additionally, the shoulder nut should be contacting the jackscrew cover.

CAUTION

The drive pin that locates, drives and connects the hex drive nut or handwheel to the MG's input shaft is intended to shear before any components of the MG and/or actuator are damaged or destroyed due to excessive input torque. Should this drive pin shear, the handwheel or other leverage device will suddenly swing or spin freely. Maintain a safe and secure position when operating the MG in the event that the drive pin should shear.

WARNING

Contact the factory should the pin shear. Do not substitute with a non-Bettis supplied pin.

CAUTION

Do not use levers, "cheater pipes" or other mechanical leverage devices in conjunction with the handwheel option.

CAUTION

Do not use levers, wrenches or other mechanical leverage devices in excess of 15 in. (254 mm) of effective radius for MGs equipped with the standard hex drive nut.

CAUTION

Do not use any type of power assist to rotate MG drive nut or handwheel without consulting factory.

3.2 MG Disengagement (Spring Extension)

CAUTION

The visual safety indicator actively protrudes from the outer end of the jackscrew cover a maximum of 1.25 in. (31.75 mm). Do not block this active travel zone in any way or restrict the movement of the indicator.

- 3.2.1. Rotate the MG drive nut or handwheel clockwise (CW) to disengage the spring sufficiently to allow for the visual safety indicator to show green or extend fully. The visual safety indicator is fully extended (disengaged from spring forces) when the indicator protrudes more than +1 in. (25.4 mm) from the jackscrew cover.

CAUTION

Do not continue to rotate MG drive nut, or handwheel, clockwise (CW) after the “Visual Safety Indicator” (located on the outboard end of the jackscrew cover) indicates green and extends +1 in. (25.4 mm) from the jackscrew cover.

WARNING

The actuator is only ready for normal power operation or is capable of fail-safe function if the MG is fully disengaged.

- 3.2.2 Restore supply pressure to the actuator’s power module.

WARNING

Ensure that all control components and other devices are reconnected to ensure proper actuator operation.

Section 4: MG G-Ride Installation/Field Repositioning Procedure

4.1 MG Installation onto G4/G5 Spring Module

WARNING

Prior to installation ensure the MG override is placed in the fully disengaged position i.e. The “visual safety indicator” is showing green and extends at least +1 in. (+25.4 mm) from the jackscrew cover.

- 4.1.1. The MG module is retained to the G4/G5 spring module by six (G4) or eight (G5) 12 pt head cap screws that are wired together. The safety wire acts as a warning that these bolts could be under load and should not be removed prior to a thorough review of the relevant Installation, Operation and Maintenance Manual/documentation.
- 4.1.2 The standard factory mounting of the MG override positions the handwheel/ drive nut 180° opposite the housing mounted travel stops; however, the MG can be positioned in any orientation allowed by the mounting bolt pattern e.g. the G4 allows for six mounting positions in 60° increments while the G5 allows for eight mounting positions in 45° increments.
- 4.1.3 If the SR module is already mounted on an actuator - bleed off, vent and leave vented to atmosphere all pressure to the actuator power module (cylinder).
- 4.1.4 While adequately supporting its weight, engage the pilot diameter of the MG drive housing into the bore of the outer endcaps of the SR module. Align the mounting holes to achieve the desired orientation of the MG override. Lubricate their screw threads, then install the 1/2”-13 UNC 12 pt head cap screws and lock washers. Tighten the cap screws evenly using a 3/4” wrench/socket to 45 lbf-ft (61 Nm) torque.

NOTE

G4 MG weight 140 lb (64 kg), G5 MG weight 160 lb (73 kg).

- 4.1.5 Safety wire the cap screw heads together as detailed on Bettis drawing 136366.

4.2 MG Field Adjustment of Orientation

WARNING

Prior to orientation adjustment ensure the MG override is placed in the fully disengaged position i.e. The “visual safety indicator” is showing green and extends at least +1 in. (+25.4 mm) from the outer end of the jackscrew cover. The weight of the MG module must be adequately supported throughout the re-orientation process of the MG module.

- 4.2.1 Bleed off, vent and leave vented to atmosphere all pressure to the actuator power module (cylinder).
 - 4.2.2 Adequately support the entire weight of the MG module while allowing it freedom to rotate on the end of the SR module.
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NOTE

G4 MG weight 140 lb (64 kg), G5 MG weight 160 lb (73 kg).

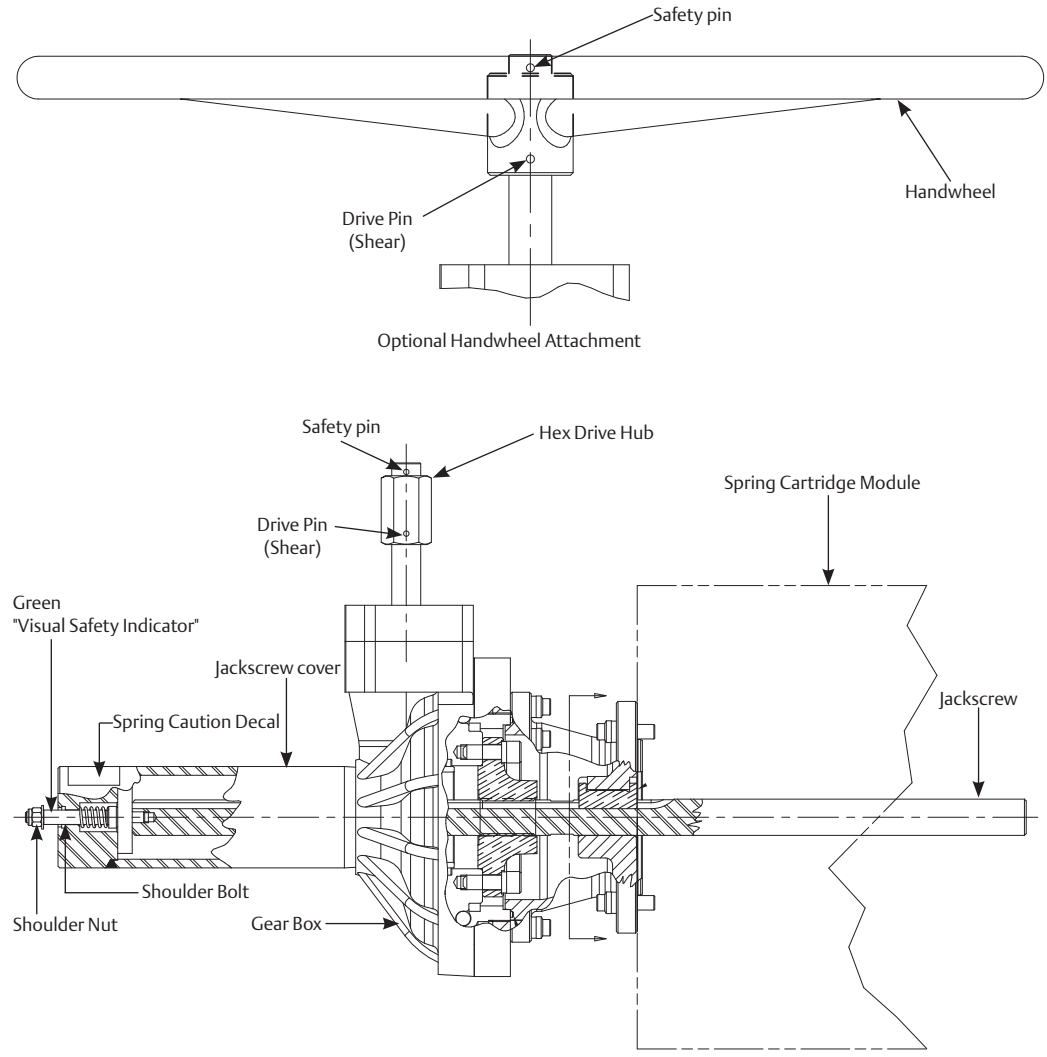
- 4.2.3 Remove the safety wire from the 12 pt head cap screws retaining the MG module to the outer endcaps of the SR module.

CAUTION

Do not remove the safety wire from the cap screws retaining the MG drive housing to the MG gearbox - these screws are not to be removed.

- 4.2.4 Remove the cap screws (3/4” wrench/socket) while keeping the pilot diameter of the MG Drive Housing fully engaged with the bore of the SR Module endcaps. Rotate the MG module to its new desired position.
- 4.2.5 Lubricate their threads and reinstall all cap screws and lock washers, tightening evenly to 45 lbf-ft (61 Nm) torque using a 3/4” wrench/socket.
- 4.2.6 Safety wire the cap screw heads together as detailed on Bettis drawing 136366.

Figure 1 G-Ride (MG) Module



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