WOODWARD

Product Manual 26599
(Revision NEW)
Original Instructions

UG-10 MAS Governor Cover Kit P7
Replacement from 6515-588 to 6515-658

Field Replacement Procedure

IMPORTANT

This is the safety alert symbol. It is used to alert you to potential personal injury hazards. Obey all safety messages that follow this symbol to avoid possible injury or death.

DEFINITIONS

- **DANGER**—Indicates a hazardous situation which, if not avoided, will result in death or serious injury.
- **WARNING**—Indicates a hazardous situation which, if not avoided, could result in death or serious injury.
- **CAUTION**—Indicates a hazardous situation which, if not avoided, could result in minor or moderate injury.
- **NOTICE**—Indicates a hazard that could result in property damage only (including damage to the control).
- **IMPORTANT**—Designates an operating tip or maintenance suggestion.

WARNING

The engine, turbine, or other type of prime mover should be equipped with an overspeed shutdown device to protect against runaway or damage to the prime mover with possible personal injury, loss of life, or property damage.

The overspeed shutdown device must be totally independent of the prime mover control system. An overtemperature or overpressure shutdown device may also be needed for safety, as appropriate.

Read this entire manual and all other publications pertaining to the work to be performed before installing, operating, or servicing this equipment. Practice all plant and safety instructions and precautions. Failure to follow instructions can cause personal injury and/or property damage.

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Any unauthorized modifications to or use of this equipment outside its specified mechanical, electrical, or other operating limits may cause personal injury and/or property damage, including damage to the equipment. Any such unauthorized modifications: (i) constitute "misuse" and/or "negligence" within the meaning of the product warranty thereby excluding warranty coverage for any resulting damage, and (ii) invalidate product certifications or listings.

NOTICE

To prevent damage to a control system that uses an alternator or battery-charging device, make sure the charging device is turned off before disconnecting the battery from the system.

NOTICE

To prevent damage to electronic components caused by improper handling, read and observe the precautions in Woodward manual *82715*, *Guide for Handling and Protection of Electronic Controls, Printed Circuit Boards, and Modules*.

UG-10 MAS Governor Cover Kit Replacement

Introduction

This document describes how to remove the 6515-588 MAS cover assembly and replace this with the new 6515-658 MAS cover assembly. The 6515-588 MAS cover is used on UG-10 MAS governors with designation 8527-048.

For details about these covers, please refer to the pictures below.

Old Cover Assembly 6515-588

New Cover Assembly 6515-658

Tools and Parts Required

The Woodward UG-10 MAS cover kit 8928-7390 contains the following parts:

Woodward Item Number	Qty	Description
6515-658	1	Cover, UG-10 MAS Cover P7
8996-2214	1	Tool, UG-10 MAS Cover P7
8996-2206	1	Tool, Wrench UG-10 MAS P7

The UG-10 MAS governor with designation 8527-048 is shown as below:

Replacement Procedure

1. Stop the engine and lock-out the system to prevent the engine from starting while working on it per the normal procedures.

   Exchanging the cover assemblies can be done with the governor on the engine; however, reaching the screws at the rear underneath the inlet manifold may be difficult. Alternatively, remove the governor (or governor and drive as one part) from the engine and perform the cover replacement in a more convenient location.

2. Make sure that the governor speed setting is brought to minimum speed, equivalent to 4 mA on the MAS driver.

   Remove the electrical cable from the receptacle on the cover assembly.

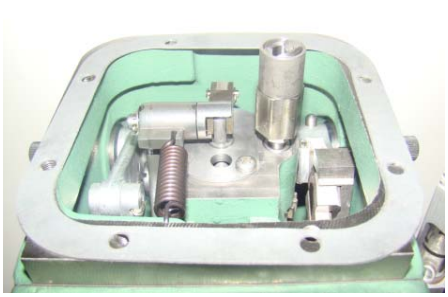
   Loosen and remove all 6x #10-32 screws 1122-001.

   Discard the old screws.

3. Lift cover assembly 6515-588 off the housing as shown.

4. Place the adjustable wrench on the coupling part inside the now open governor. Using tool 8996-2206 (included in the kit), loosen the nut underneath the coupling. Remove and discard both the coupling and the nut.

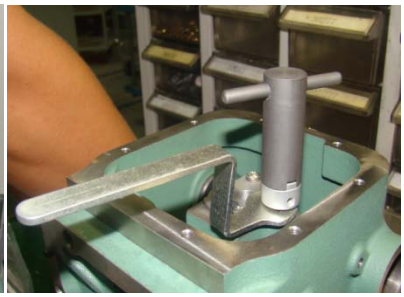
NOTICE **Be careful not to drop any parts in the governor!**

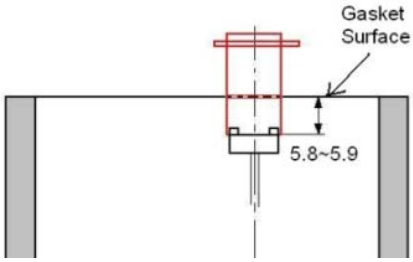


5. Install new nut 189388 (included in the kit) and new coupling 1431-573 (included in the kit) on the governor speed-setting rod.

6. Clean the top face of the governor case, and make sure there is no damage to the top plane.

   Place gasket 206068 on the top of the governor. Using tool 8996-2214, rotate coupling 1431-573 downwards until the V-groove on the tool and the top of the gasket are in line. Lock the coupling by counter-rotating the nut underneath the coupling.





7. Put coupling plate 1431-571 (included in the kit) on coupling 1431-573. The up or down position of the coupling plate is not critical.

NOTICE

The coupling plate is not fixed in any way, be careful not to drop it into the governor! Use a bit of grease to ensure the coupling plate will not slip off easily.

8. Temporarily connect the cover assembly to the engine cable and again put 4 mA (equivalent to minimum speed) on the MAS driver (similar to step 2) to bring the stepper motor to the minimum position.

   Remove the cable again.

9. Install cover assembly 6515-658 on the housing, observing the location of the receptacle: the electrical receptacle is pointing to the left with the UG-8 plate of the governor pointing to the front.

   Rotate the speed knob on the front of the UG governor panel slowly until the coupling halves fit together.

10. Install 7 new screws 1122-001 (included in the kit) on cover assembly 6515-658.

    Tighten these screws evenly with a torque of 4 N·m.

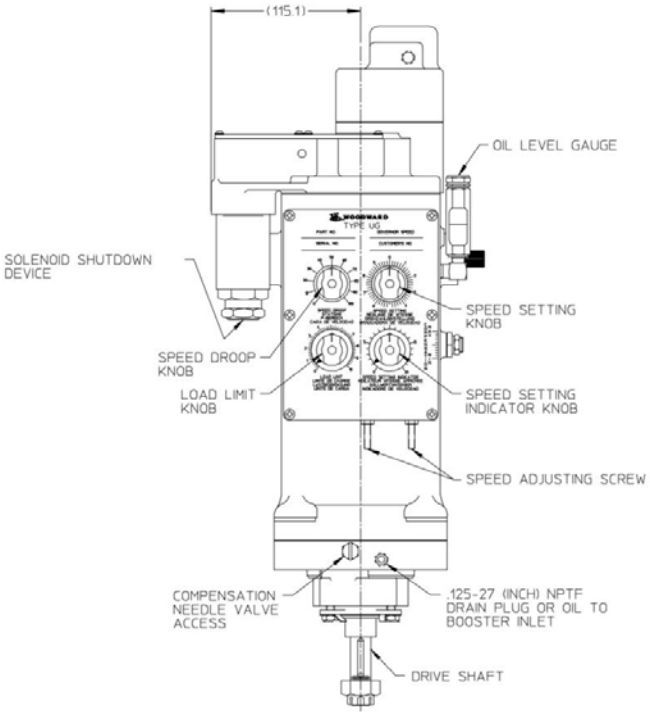
11. Re-install the electrical cable from the engine to the receptacle on the cover. It may be necessary to loosen several meters of cable in the engine cable trays to free up some slack towards the cover.

12. The UG-MAS cover has been calibrated at the factory. However, it will be necessary to recalibrate the 4 mA and 20 mA positions of the UG-MAS driver. Please follow the procedure below.

Control Adjustments

In order to achieve the best results, follow the order of adjustments as given in this section.

Set the mechanical endstops out of the way by turning them about five turns counterclockwise (the mechanical endstops are located underneath the front of the panel, refer to the drawing on the right, labeled here as speed adjusting screw).



Idle Speed Adjustment

This pot modifies the speed setting for a given milliamp input signal. It is normally adjusted at the low speed end of the range.

Set the input signal to 4 mA and adjust the IDLE SPEED pot for the desired minimum controlled speed.

Rated Speed Adjustment

This pot determines the speed change over the 4 mA to 20 mA input signal range. It should be adjusted at the upper end of the speed range.

Set the input signal to 20 mA and adjust the RATED SPEED pot for the desired maximum controlled speed.

Repeat the Idle Speed and Rated Speed Adjustments until no further adjustment is necessary.

Mechanical Endstops

The mechanical endstops limit the speed range in case of failure of the milliamp speed setting system in order to protect the engine from running at speeds either too low or too high.

1. Run the engine at 25 rpm below the normal idle speed. Rotate the left mechanical endstop clockwise until it hits the speed indicator gear. Lock the screw with the lock nut.

2. Run the engine at 25 rpm above the normal rated speed. Rotate the right mechanical endstop clockwise until it hits the speed indicator gear. Lock the screw with the lock nut.

IMPORTANT

If the motor and the coupling are connected incorrectly, the motor will not stop, but the speed setting will not be changed. Be sure that the stepper motor does not hit against the endstop under normal operation within the 4 mA to 20 mA range.

Minor Alarm Adjustment

This pot permits the operator to limit the maximum speed of the governor in case of problems such as low lube oil pressure or high cooling water temperature.

1. Run the engine at rated speed using the milliamp speed setting system.

2. Apply 24 V (dc) to terminal 8.

3. Rotate the MINOR ALARM pot until the speed of the engine is at the required level.

4. Remove the 24 V (dc) from terminal 8.

The engine should now ramp up to the rated speed.

Ramp Rates

The UP RATE and DOWN RATE pots set the minimum time period in which the engine can go from idle to rated and from rated to idle. Rotating the pot counterclockwise will make the engine react more quickly, and rotating the pot clockwise will make the engine react more slowly.

Starting Procedure

Before starting the engine, apply power to the control amplifier (terminals 1 and 2).

The following adjustments can only be made with the engine running under the control of the UG governor as described below.

1. Study the instructions and safety precautions in the engine manufacturer's manual and the Woodward UG Governor manual (number 03040).

2. Remove the 24 V (dc) from the control amplifier.

⚠WARNING

Be prepared to make an emergency shutdown when starting the engine, turbine, or other type of prime mover, to protect against runaway or overspeed with possible personal injury, loss of life, or property damage.

3. Start the engine. BE PREPARED TO SHUT DOWN IN CASE OF OVERSPEED.

4. Verify that the engine speed is under control of the UG governor by raising and lowering the mechanical speed-setting knob on the UG governor. Set the engine speed to the idle speed level.

5. Set the remote milliamp signal to 4 mA.

6. Restore the 24 V (dc) supply to the control amplifier. The engine should now run at the adjusted low speed level.

7. Set the remote signal to 20 mA. The engine should now run at the adjusted high speed level.

If the above steps have been completed successfully, the engine is ready for normal operation with the milliamp speed setting system.

If the milliamp levels do not correspond with the demanded speed levels, repeat the procedures under the Control Adjustments section.

For more information, please refer to manual 26598.

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Send comments to: icinfo@woodward.com

Please reference publication 26599.

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