

**Bodine Speed Adjusting Motor Cover
Assembly for PSG and SG Governors**

Operation Manual



General Precautions

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.



Revisions

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Proper Use

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.



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Warnings and Notices

Important Definitions



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.

- **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

**Overspeed /
Overtemperature /
Overpressure**

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.

WARNING

**Personal Protective
Equipment**

The products described in this publication may present risks that could lead to personal injury, loss of life, or property damage. Always wear the appropriate personal protective equipment (PPE) for the job at hand. Equipment that should be considered includes but is not limited to:

- Eye Protection
- Hearing Protection
- Hard Hat
- Gloves
- Safety Boots
- Respirator

Always read the proper Material Safety Data Sheet (MSDS) for any working fluid(s) and comply with recommended safety equipment.

WARNING

Start-up

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.

WARNING

**Automotive
Applications**

On- and off-highway Mobile Applications: Unless Woodward's control functions as the supervisory control, customer should install a system totally independent of the prime mover control system that monitors for supervisory control of engine (and takes appropriate action if supervisory control is lost) to protect against loss of engine control with possible personal injury, loss of life, or property damage.

NOTICE**Battery Charging
Device**

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.

Electrostatic Discharge Awareness

NOTICE**Electrostatic
Precautions**

Electronic controls contain static-sensitive parts. Observe the following precautions to prevent damage to these parts:

- Discharge body static before handling the control (with power to the control turned off, contact a grounded surface and maintain contact while handling the control).
- Avoid all plastic, vinyl, and Styrofoam (except antistatic versions) around printed circuit boards.
- Do not touch the components or conductors on a printed circuit board with your hands or with conductive devices.

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*.

Follow these precautions when working with or near the control.

1. Avoid the build-up of static electricity on your body by not wearing clothing made of synthetic materials. Wear cotton or cotton-blend materials as much as possible because these do not store static electric charges as much as synthetics.
2. Do not remove the printed circuit board (PCB) from the control cabinet unless absolutely necessary. If you must remove the PCB from the control cabinet, follow these precautions:
 - Do not touch any part of the PCB except the edges.
 - Do not touch the electrical conductors, the connectors, or the components with conductive devices or with your hands.
 - When replacing a PCB, keep the new PCB in the plastic antistatic protective bag it comes in until you are ready to install it. Immediately after removing the old PCB from the control cabinet, place it in the antistatic protective bag.

Bodine Speed Adjusting Motor Cover Assembly for PSG and SG Governors

Adjustments

A friction coupling is incorporated in these cover assemblies to permit overtravel of the motor with no resulting damage. This coupling should be adjusted to slip at 4 to 5 1/2 lb-in (0.4 to 0.6 N·m) of torque and be locked in place with the set screw. The motor must be mounted in such a manner as to center the shaft in the coupling. Full travel of the shaft in each direction should produce no bind.

Information and Parts Replacement

When requesting information concerning the Speed Adjusting Motor Cover Assembly, or when ordering replacement parts, it is essential that the following information accompany the request:

- Governor serial number (shown on nameplate)
- The part reference number as shown in this manual
- Manual number (this is manual 04018)
- Part name

Parts List for Figure 1

Ref. No.	Part Name	Quantity
04018-1	Motor.....	1
04018-2	Friction cover	1
04018-3	Friction disc.....	1
04018-4	Friction spring	1
04018-5	Set screw 6-32	1
04018-6	Speed adjusting screw	1
04018-7	Cover	1
04018-8	0.203 x 3/8" x 1/32" copper washer.....	4
04018-9	No. 10-32 x 3/4" fil. hd. screw	4
04018-10	Lockwire.....	AR
04018-11	Micarta washer.....	1

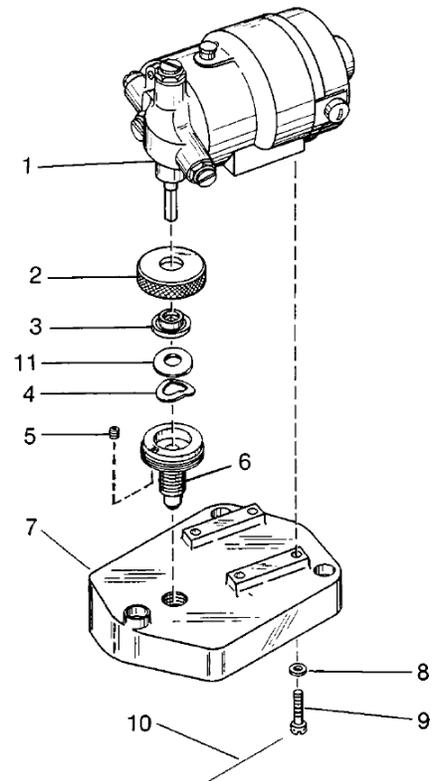


Figure 1. Cover Assembly with Synchronizing Motor

Synchronizing Motor Information and Parts Replacement

When requesting information concerning motors, or when ordering spare parts, it is essential that this information accompany the request:

- Serial number of the governor (the motor serial alone is not sufficient)
- Voltage of the motor
- Part number and name or description of part
- Manual number (this is manual 04018)

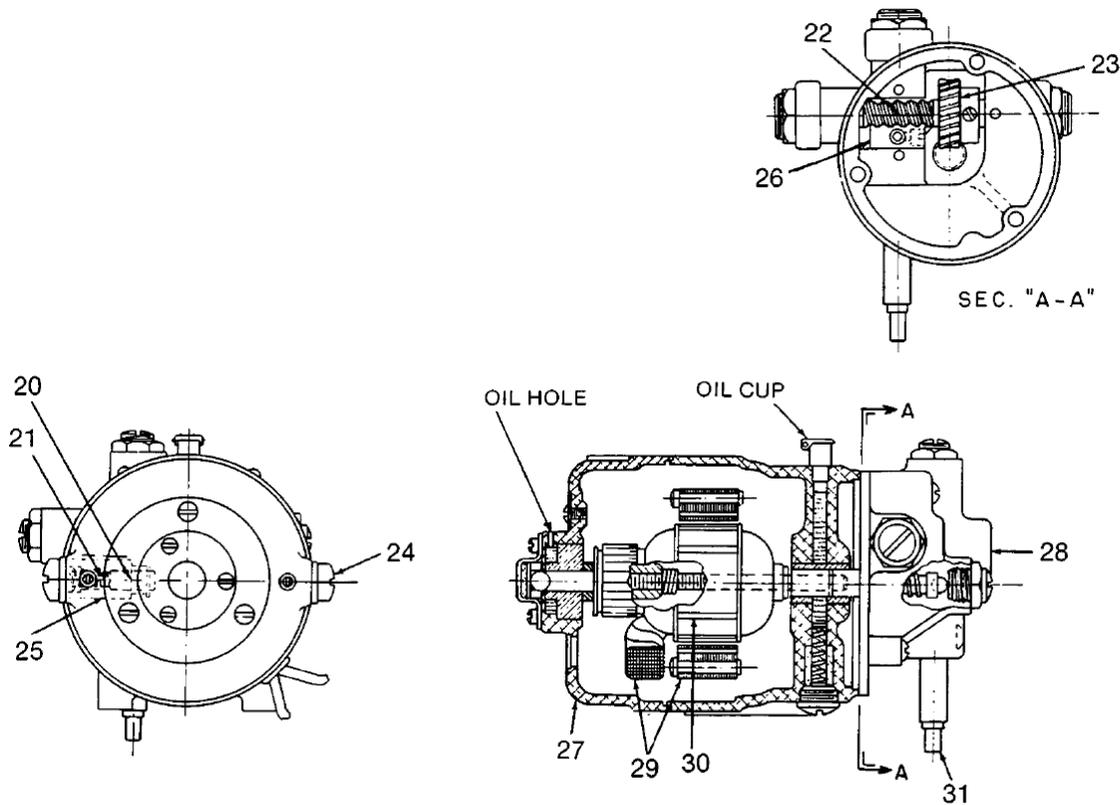


Figure 2. Synchronizing Motor

Parts List for Figure 2

Ref. No.	Part Name	Quantity
04018-20	Motor brush.....	2
04018-21	Brush spring.....	2
04018-22	Worm shaft	1
04018-23	Bakelite gear.....	1
04018-24	Brushholder cap screw	2
04018-25	Brushholder	2
04018-26	Bronze gear	1
04018-27	End shield, front.....	1
04018-28	Gear housing	1
04018-29	Field frame assembly complete	1
04018-30	Armature wound complete	1
04018-31	Output shaft	1

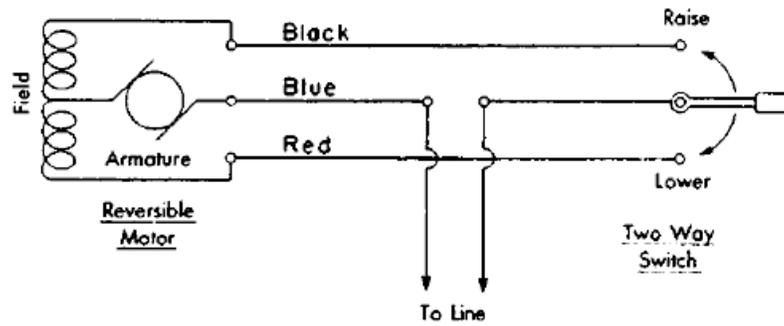


Figure 3. Wiring Diagram for Synchronizing Motor
(switch not furnished)

Bearing Lubrication

Use Regal A oil or a good SAE 10 weight oil for bearing lubrication. Under normal, intermittent operation, apply 5 drops of oil to the oil hole and oil cup every year. If the motor is run for long periods of time, apply 5 drops of oil to the oil hole and oil cup every six months.

Gear Lubrication

The speed reduction gear housing of a new motor is filled with sufficient lubricant to last for two years under normal, intermittent operation. Under extensive use, when the motor is run for long periods of time, the lubricant will last about one year.

To replace grease, clean out the old grease and refill the gear housing 3/4 full of one of the following greases:

- Bodine
- Supermil Grease No. A72832, by Standard Oil Company
- Dow Corning Grease No. 44, when specified. (Temperature range is -40 to $+400$ °F [-40 to $+204$ °C])

Make sure that the ball thrust bearing is reinstalled with the gearbox.

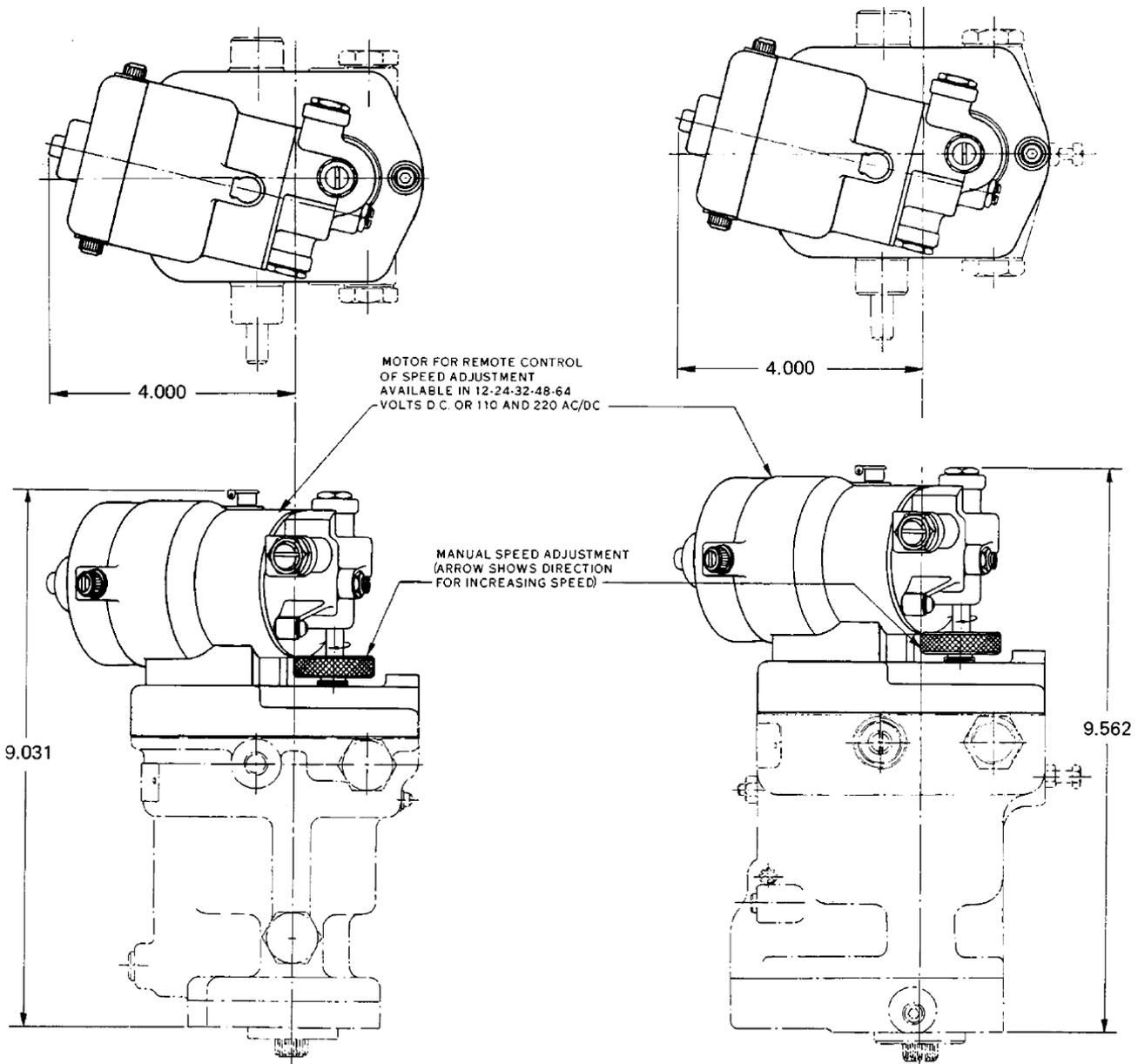


Figure 3. SG Governor Outline with Speed Adjusting Motor Cover Assembly

Figure 4. PSG Governor Outline with Speed Adjusting Motor Cover Assembly

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Please reference publication **04018E**.



PO Box 1519, Fort Collins CO 80522-1519, USA
1000 East Drake Road, Fort Collins CO 80525, USA
Phone +1 (970) 482-5811 • Fax +1 (970) 498-3058

Email and Website—www.woodward.com

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