

**Overspeed Trip Test Device
for PG Governors**

Installation and 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.



Translated Publications

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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.

Overspeed Trip Test Device for PG Governors

Description

The overspeed trip test device shown in Figure 1 manually increases the governor speed setting to check the operation of the engine overspeed trip mechanism. It can be installed on any PG governor which has a shutdown rod, including one already in service.

The device should be installed at a Woodward facility, but field installation is possible.



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.

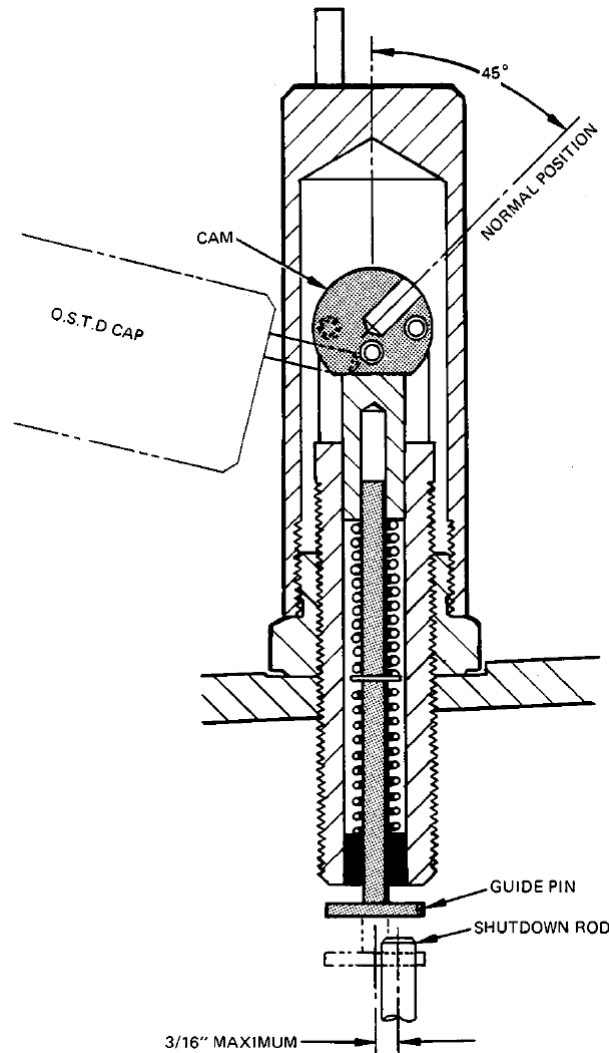


Figure 1. Overspeed Trip Test Device

Adjustment

The following sequence of operations should be followed to adjust the overspeed Trip Test Device on the prime mover.

1. Bring the governed unit to full speed by advancing the governor speed setting until the high-speed stop is contacted.

WARNING

The Overspeed Trip Test Device purposely causes an overspeed condition. Should the prime mover's overspeed trip mechanism fail, a damaging overspeed condition could occur. Do not continue adjustment of the test device if shutdown does not occur at the proper overspeed trip point. If the overspeed shutdown mechanism does not operate at the maximum specified trip point, follow proper shutdown procedures and check the overspeed trip mechanism for malfunction or misadjustment.

2. Before installing the overspeed test device on the governor, remove the red cap and insert the pin into the socket on the cam face. Rotate the cam downward until the roll pin stop contacts the threaded sleeve. This is the "overspeed" position. Thread the assembly down through the cover until the shutdown rod is contacted. The prime mover speed will then begin to rise as the overspeed test device is threaded clockwise into the cover. Increase speed until the overspeed trip is activated or until the specified trip point is reached. If the overspeed shutdown mechanism does not operate at the maximum specified speed, discontinue further adjustment, shut down the prime mover and repair or readjust the overspeed shutdown mechanism.
3. With the overspeed test device in the position where shutdown was achieved, rotate the cam to the normal running position. (The flat on the cam should be horizontal). Restart the prime mover and bring it to full speed. The speed should return to the normal governed high speed as in step 1.
4. Proper governor operation requires adequate clearance between the shutdown rod and the guide pin, when the overspeed test device is in its normal running position. To check this clearance, rotate the test device clockwise one additional turn. The governor speed should not raise above the normal high-speed setting. An increase in speed indicates insufficient clearance between the guide pin and the shutdown rod, which may hinder the governor response in the decrease fuel direction. Contact Woodward for recommendations if adequate clearance cannot be attained on your unit. After completing this check, back the assembly counterclockwise one turn, returning the device to the position obtained in step 2 and lock the assembly by tightening the base nut.
5. Check the performance of the overspeed test device by rotating the cam SLOWLY to the overspeed position. The prime mover's overspeed trip should activate at, or just before, reaching the maximum stop. Repeat steps 2 through 4 if further adjustment is required.

Following any adjustment of the Overspeed Trip Test Device, check the operation of the shutdown mechanism. Properly adjusted, the Overspeed Trip Test Device will not affect the operation of the pneumatic or solenoid shutdown mounted in the governor.

Operation

To test the overspeed trip mechanism, remove the test device cap (13) and slide the pin in the top of the cap into the socket in the cam face. Move the cam SLOWLY to the overspeed position. The guide pin (3) is pushed against the shutdown rod, which causes the control port in the pilot valve bushing to open. The governor power piston is forced in the increase fuel direction, accelerating the engine to the speed level at which the engine mounted over-speed trip shuts down the engine.

Replacement Parts Information

When ordering replacement parts, it is essential to include the following information:

- Actuator serial number and part number shown on nameplate
- Manual number (this is manual 36605)
- Parts reference number in parts list and description of part or part name

The illustrated parts breakdown (Figure 2) shows all the replaceable parts for the Overspeed Trip Test Device. The numbers assigned are used as reference numbers and are not specific Woodward part numbers. Woodward will determine the exact part number for your particular governor.

Ref. No.	Part Name	Quantity
36605-1	Governor cover	1
36605-2	Nut	1
36605-3	Guide pin.....	1
36605-4	Oilite bushing, 0.314 O.D.	1
36605-5	Spring.....	1
36605-6	Retaining ring	1
36605-7	Spring.....	1
36605-8	Guide sleeve	1
36605-g	Adjusting sleeve	1
36605-10	Cam	1
36605-11	Roll pin, 0.125 dia. x 0.625.....	1
36605-12	Roll pin, 0.125 dia. x 0.500.....	1
36605-13	O.T.T.D. cap assembly	1

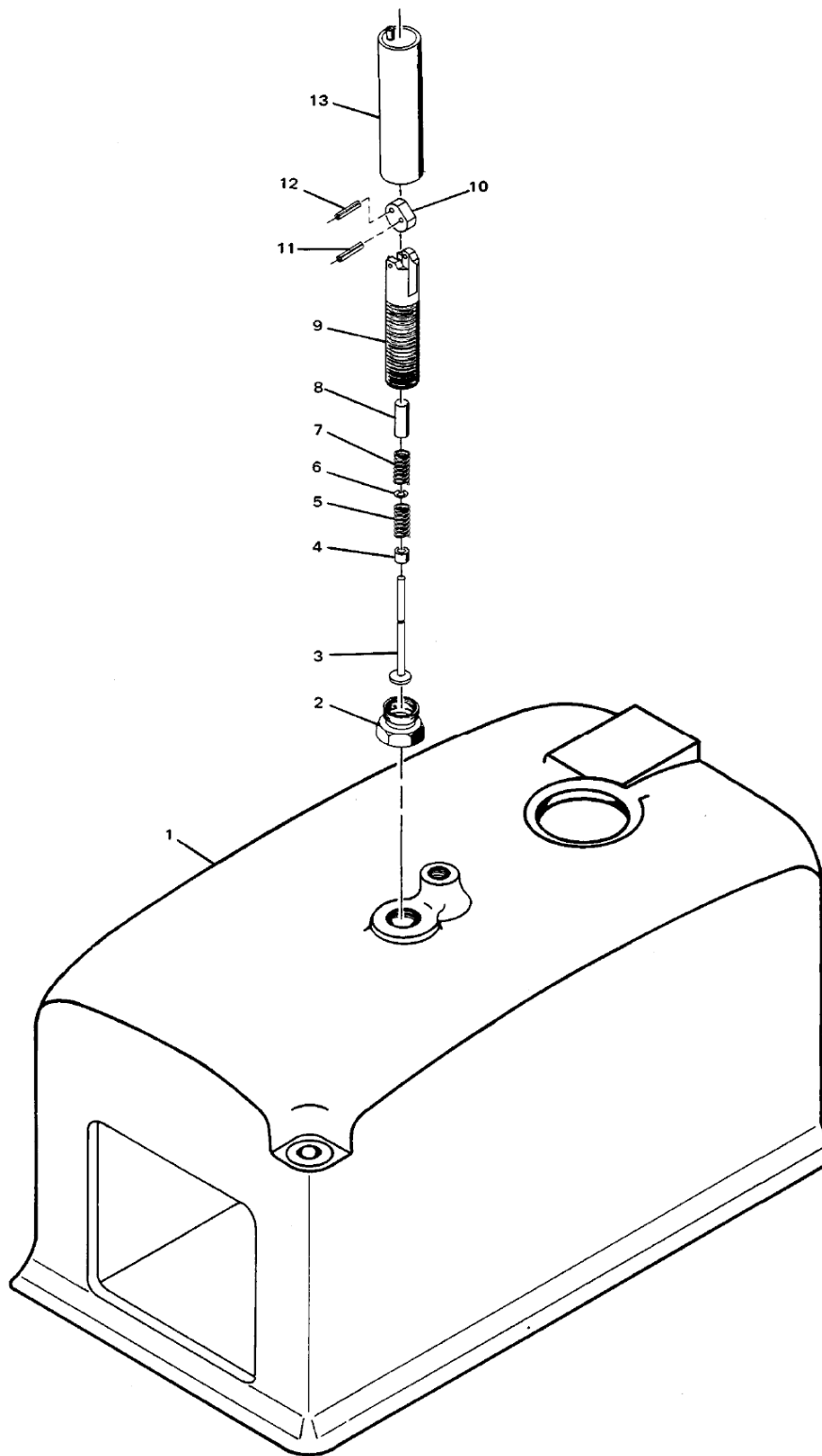


Figure 2. Exploded View of the Overspeed Trip Test Device

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Send comments to: icinfo@woodward.com

Please reference publication **36605C**.



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