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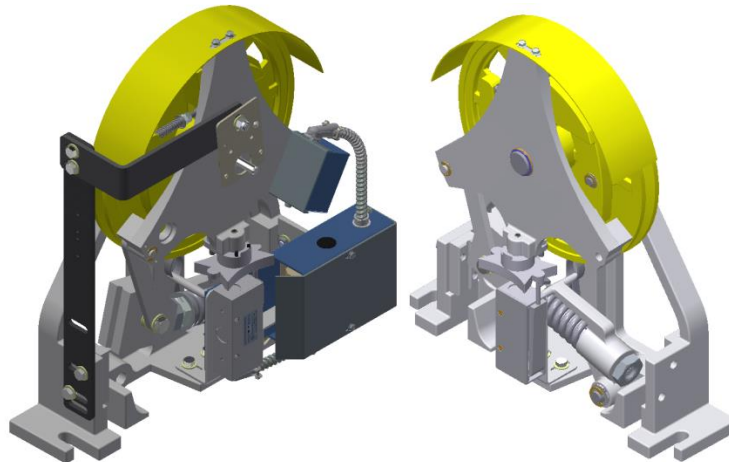
Hollister-Whitney Elevator Corporation

Governor Testing Instructions

For Use with All 201, 202, 207, 207RS, 208, & 210 Governor Models

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I. Instructions for Testing Hollister-Whitney Speed Governors


Hollister-Whitney Governors comply with ASTM A17.1/CSA B-44 Elevator Code

A. Receiving Inspection

- Upon delivery of the Governor, inspect the Governor Packaging for damage. If any damage due to transportation is noted, document the damage and contact the carrier and Hollister-Whitney. The same is true if damage is noted after the Governor is unpackaged, whether damage to the packaging was noted or not.
- Check the Governor Data Tag to ensure the Governor conforms to your order (Contract Serial Number, Speeds, Rope Diameter and Pull Through (Thru). Note: A blank Rope Pull-Thru space indicates the governor is meant to be tested, set, sealed and recorded in the field.

B. Bench Inspection, Testing, & Qualification - The Governor Sheave must be free to rotate with no obstruction.

- 1) **General Inspection, Governor On Bench**
 - a. Verify that the governor is securely fastened in place to the bench or work surface.
 - b. Examine all linkages, pins, collars, bushings, and latching assemblies that are used to connect the weights and the rope gripping devices.
 - c. Manually lift the pawls (fly weights) and note whether all moving parts, including the governor-rope jaws, operate freely. Note that all bearing and rubbing surfaces are not restricted by paint or other foreign substances. Note that there is ample room for the rotation of governor pawls (fly weights) in their extreme extended position. Check all parts of the governor for lubrication.
 - d. Examine rope gripping surfaces.
 - e. All H-W governors are provided with an overspeed (stopping) switch, and may also have a speed-reducing switch installed. Where practical, determine whether these switches operate by manually triggering the governor mechanisms for operating these switches.
 - f. Verify that means of adjusting tripping speed and pull-through force are sealed. Note: A Blank Rope Pull-Thru space on the Governor Tag indicates the governor is meant to be tested, set, sealed and recorded in the field. In this case, the seal will be present, but not factory sealed.
- 2) **Qualification and Testing, Governor On Bench**
 - a. The sheave must be free to rotate with no obstruction.
 - b. Turn the switch triggering mechanism (trigger) away to the fully open position.
 - c. With a rubber drive wheel held against the governor sheave driven by a variable speed drill motor, slowly and gradually build up the governor speed until it trips and record the speed.
 - i. To read the tripping speed, use a calibrated tachometer reading in ft/min. Hold the wheel inside the governor sheave groove at the centerline of the rope.

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- ii. Holding the tachometer wheel in the inside of a groove or at rope centerline can be difficult as the rope centerline is difficult to determine. It is more practical to use the Sheave Outer Diameter. See Section II for Speed Calculations to use either the bottom of the groove or top of the sheave.
- iii. Analog tachometers typically provide better service as sampling and refresh rates in electronic tachometers can be problematic. Note it is doubly important to slowly and gradually build up the speed if an electronic tachometer is used.


Take several readings (3 to 5 should be sufficient) and record the average.

- d. If any adjustments are necessary (See Section II), be sure the locknuts are tight after resetting and install a new seal. For drilling the locknuts prior to resealing, use a No. 36 drill bit or smaller. Use wire and lead seal. Install the seal with a sealing (crimping) tool which identifies the re-sealer. Retest as outlined above to confirm nothing changed during the resealing process, and record the tripping speed.
- e. Close the switch and return the trigger to keep the switch in the fully closed position.
- f. Check the Switch Speed in the same manner as step “c.” above.
- g. If any adjustments are necessary, be sure the adjustment screw locknut is tight after resetting, and record the switch speed.

C. Field Inspection, Testing, & Qualification - The Governor Sheave must be free to rotate with no obstruction by the governor rope. To accomplish this, have the person performing the test park the elevator car about 1 foot below the top opening and open the main line disconnect switch.

- 1) **General Inspection, Governor Installed - Made With Power Off**
 - a. Verify that the governor is securely fastened in place and that the governor rope is free of the governor jaws and/or other obstructions.
 - b. Examine all linkages, pins, collars, bushings, and latching assemblies that are used to connect the weights and the rope gripping devices for evidence of excessive wear and lost motion.
 - c. Manually lift the pawls (fly weights) and note whether all moving parts, including the governor-rope jaws, operate freely. Note whether all bearings and rubbing surfaces are not restricted by paint or other foreign substances. Note that there is ample room for the rotation of governor pawls (fly weights) in their extreme extended position. Check all parts of the governor for lubrication.
 - d. Examine rope gripping surfaces.
 - e. All H-W governors are provided with an overspeed (stopping) switch, and may also have a speed-reducing switch installed. Where practical, determine whether these switches operate by manually triggering the governor mechanisms for operating these switches.
 - f. Verify that means of adjusting tripping speed and pull-through force are sealed.


- 2) **Field Qualification and Testing, Governor Installed - Made With Power Off**
 - a. The sheave must be free to rotate with no obstruction by the governor rope. To accomplish this, have the person performing the test park the elevator car about 1 foot below the top opening and open the main line disconnect switch.
 - b. Block up the Tension Weight to provide slack in the governor rope.

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- c. Lift the governor rope to ensure sufficient slack to spin sheave. Secure rope off to the side to allow room to work with the sheave. If installing a clamp to secure the governor rope, be careful not to damage the rope.
- d. Turn the switch triggering mechanism (trigger) away to the fully open position.
- e. With a rubber drive wheel held against the governor sheave driven by a variable speed drill motor, slowly and gradually build up the governor speed until it trips and record the speed.
 - i. To read the tripping speed, use a calibrated tachometer reading in ft/min. Hold the wheel inside the governor sheave groove at the centerline of the rope.
 - ii. Holding the tachometer wheel in the inside of a groove or at rope centerline can be difficult as the rope centerline is difficult to determine. It is more practical to use the Sheave outer diameter. See Section II for Speed Calculations to use either the bottom of the groove or top of the sheave.
 - iii. Analog tachometers typically provide better service as sampling and refresh rates in electronic tachometers can be problematic. It is doubly important to slowly and gradually build up the speed if an electronic tachometer is used.
- f. Take several readings (3 to 5 should be sufficient) and record the average.
- g. If any adjustments are necessary (See Section II), be sure the locknuts are tight after resetting and install a new seal. For drilling the locknuts prior to resealing, use a No. 36 drill bit or smaller. Use wire and lead seal. Install the seal with a sealing (crimping) tool which identifies the re-sealer. Retest as outlined above to confirm nothing changed during the resealing process, and record the tripping speed.
- h. Close the switch and return the trigger to keep the switch in the fully closed position.
- i. Check the Switch Speed in the same manner as step “e.” above.
- j. If any adjustments are necessary, be sure the adjustment screw locknut is tight after resetting, and record the switch speed.
- k. Place the rope on the governor sheave. Remove the clamp and inspect the governor rope for any damage or kinks. Reinstall all sheave and switch covers. Check the releasing carrier. On drum-operated safeties, check for slack rope between the releasing carrier and drum.

3) **Checking Governor Rope Pull Through - Made With Power Off**

- a. Check pull through from the top of the car using a come-along and a dynamometer (analog preferred). Typically the governor rope and release carrier are easily accessible here.
- b. Make the governor rope connection as directly as possible with minimum angle between the governor rope and the sling. When connecting or clamping to the governor rope, regardless of the method used, take extra special care to provide a secure connection that will not damage the governor rope.
- c. Note the spring tension of the safety releasing carrier so that it can be restored to its original setting after completion of the test.
- d. Remove the spring tension from the releasing carrier so that it will not restrain the rope.

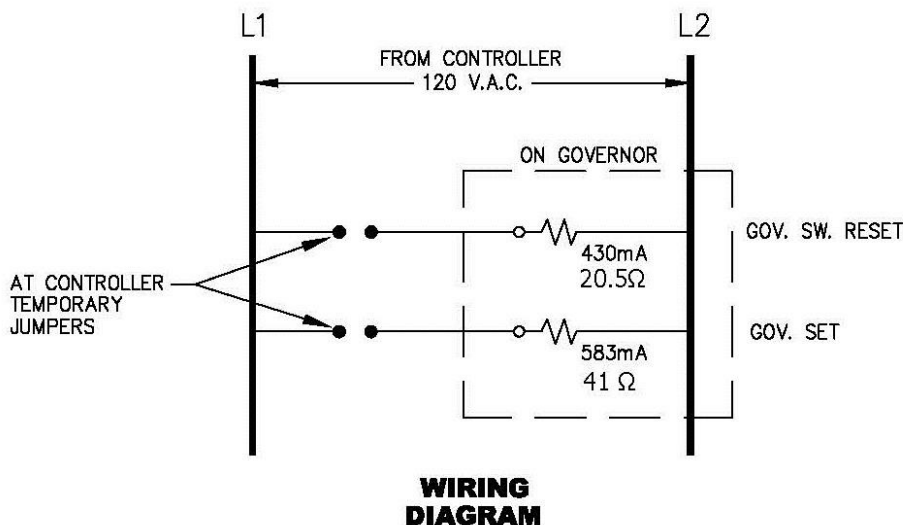
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- e. Trip the governor by hand, setting the jaws on the rope, and block up the governor tension weight to provide at least 1 foot of governor rope movement without lifting the tension weight.
- f. Operate the come-along pulling at least 6 in. of the governor rope through the governor. Note the reading on the dynamometer.
- g. If adjustment is necessary (See Section III), be sure the locknuts are secure and install a new wire and lead seal. Install the seal with a sealing (crimping) tool which identifies the re-sealer.
- h. After the test, perform the following three steps:
 - i. Carefully inspect the governor rope at the point of connection to assure that it has not been damaged.
 - ii. Restore the governor release carrier.
 - iii. Reset and inspect the governor.
- i. Record the pull through. Note: If Pull Through is not marked on the tag (blank), it is the responsibility of the Installer to check the force necessary to bring the safety to the rails and adjust the governor pull through to match field conditions.


4) **After all tests are complete**, ensure governor has been sealed and tagged.

D. Additional Installation and Adjustment Instructions for #207-RS Governor

The “RS” style governors are capable of being set and reset from a remote location. They are designed for those situations where the governor is generally inaccessible, or where it is not practical to over-speed the car in the normal way.



Setting the governor is accomplished by activating a solenoid at any speed less than normal over-speed, thus setting the grips and activating the safety.


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Resetting is accomplished by first running the car briefly in the “UP” direction to release the Safeties, then activating the Governor Set Solenoid to reset the Governor Grips. When the Governor Grips have been reset, a second Solenoid is activated to reset the Governor Switch. See the detailed instructions below.

- 1) SEQUENCE OF OPERATION: To set governor & safety at contract speed or less:
 - a. Set up for normal safety test.
 - b. With car running in “DOWN” direction, energize the Governor Set Solenoid.
 - c. After the governor trips and the safety stops the car, de-energize the Governor Set Solenoid.
- 2) TO RESET:
 - a. Run car on “Inspect” in “UP” direction until safeties release the rail, DO NOT energize the Governor Switch Reset Solenoid at this time.
 - b. When Safeties have released the rail, Energize the Governor Set Solenoid and run the car “UP” approximately 5 feet at 35 to 40 fpm. This will return the Governor Grips into Retaining Clip: the “Open” or “Ready” position.
 - c. De-energize the Governor Set Solenoid and run car down approximately 1 foot to release the Solenoid plunger from the Governor Pawls. The Governor Grips will be held “Open” or “Ready” by the Retaining Clip.
 - d. Energize the Governor Switch Reset Solenoid briefly, 2 times. This ensures proper reset of the switch.
 - e. The Governor is now reset Mechanically and Electrically.

E. Safety Tests – Instructions

- Examine and inspect Safeties and Rails for proper working conditions and functions according to all applicable federal, state and local codes. Rails must be clean and dry, free of rust and debris.
 - Ensure that the Governor have been inspected and tested to the applicable sections above.
 - Ensure all proper procedures are followed for testing car (or counter weight) safeties.
- At Contact Speed - If Governor/Car Safety, or Governor/Counterweight Safety tests are to be performed at contract speed, follow all Code Instructions and Guidelines for car loading and tripping of the governor.
- Above Contract and Switch Speed (at Tripping Speed) – **Additional Requirements.** If Governor/Car Safety, or Governor/Counterweight Safety tests are to be performed above the speed the switch trips, for example at Governor Tripping Speed, follow all Code Instructions and Guidelines and:
 - **Additionally, when jumping out the governor switches, turn the switch triggering mechanism (trigger) away to the fully open position.**
 - When all tests have been successfully completed and switch connections are being restored, also close the governor switch and return the trigger to the “set” position to keep the switch in the fully closed position.
- Follow all normal guidelines and safety procedures for returning the elevators to service.

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II. Instructions to Set, Check or Re-set Nameplate Electrical & Mechanical Trip Speeds for H-W Governor Assemblies


IMPORTANT: Check Both Mechanical and Electrical Tripping Speeds Before and After any Work is Performed on Governor

1) **Procedure:**

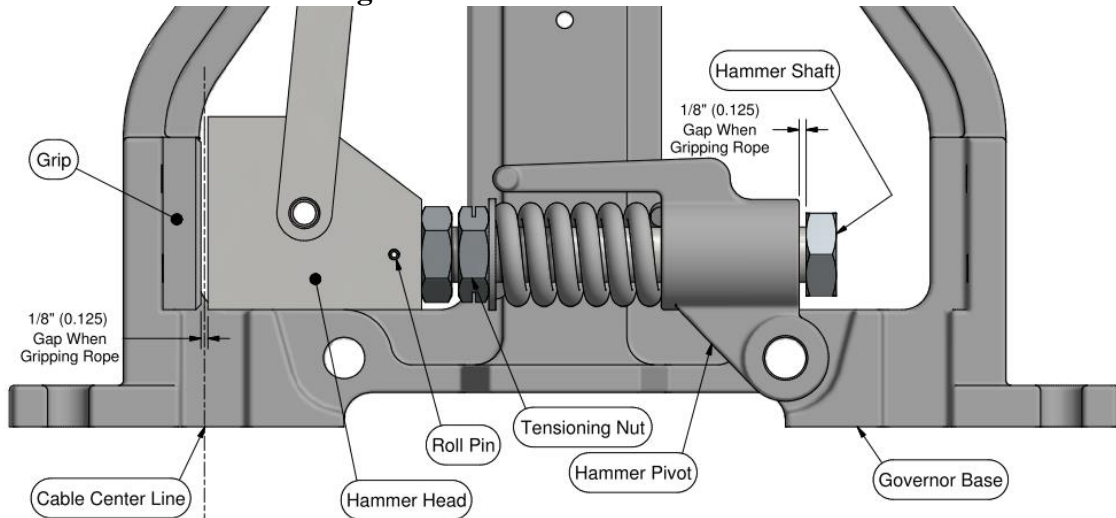
- a. Remove Rope from Governor
- b. Check Mechanical Speed First.
- c. Run hand tachometer wheel on Governor Sheave and spin Governor with a wheel on a variable speed drill motor and check the tachometer reading with one of the following methods:
 - i. With Hand Tachometer in **bottom** of Governor Sheave Groove, multiply Name Plate Value by number called out in the table below; Example use 0.97 for 207 Governor. This Calculated Value will be **Lower** than Name Plate Value. Or;
 - ii. With Hand Tachometer on **outside rim** of Governor Sheave, multiply Name Plate Value by number called out in the table below; Example use 1.08 for 207 Governor. This Calculated Value will be **Higher** than Name Plate Value.
- d. Mechanical trip speed must be confirmed and set **prior** to Electrical switch speed.

GOVERNOR	SHEAVE SIZE	ROPING	In Groove Bottom	On Outside Rim
205, 206, 207	12.5"	3/8"	0.97	1.08
201, 202, 208, 209, 210	16"	3/8"	0.97	1.0625
201, 208	16"	7/16"	0.973	1.0625
201, 202, 208, 209, 210	16"	1/2"	0.977	1.0625

- e. If adjustment is required:
 - i. Remove the Seal on the Spring/Eyebolt Assembly that connects one Pawl to the Sheave.
 - ii. Adjust the Spring to Correct the Mechanical Trip Speed
 - iii. After the Mechanical Trip Speed is correct, re-adjust Bolt on Trigger to Correct Electrical Trip speed if required.
 - iv. Reseal the Spring/Eyebolt Assembly.

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III. Instructions to Set or Change Governor Pull



Governor Model	Rope Diameter	Hammer Head P/N	Grip P/N	Hammer Pivot Ass'y	
				500lbs Pull Thru or Less	501lbs Pull Thru or Greater
201, 202	3/8"	201-005	201-012	201-039-1	201-039
	7/16"	201-005-1	201-012-1		
	1/2"	201-006	201-013		
207, 207RS	3/8"	207-005	205-013	207-039	
208, 209, 210	3/8"	208-005	208-012	208-039-1	208-039
	7/16"	208-005-1	208-012-1		
	1/2"	208-006	208-013		

1) **Procedure:**


- To change Pull Through, turn the Tensioning Nut.
 - Tighten against spring to increase Pull Through, or
 - Loosen to decrease Pull Through.

2) **Inspection and Setting of Proper Gaps**

- When the Cable is gripped (Hammer Head down as shown) the gap between Hammer Head and Grip should be not less than 3/32" and no greater than 1/8". The corresponding gap between the Hammer Pivot and the Hammer Shaft should equal this gap, but may be greater by 1/32".

Note: if replacing the Hammer Head of Obsoleted 205 or 206 Governors, the following parts are necessary:

- 207-005 Hammer Head,
- 207-039 Hammer Pivot Assembly, and
- 201-019 Hammer Head Link.

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IV. Governor Ratings Charts

	201 & 202	207 & 207RS	208 & 210
MAX. CAR SPEED	500 fpm		501 to 800 fpm
MAX. TRIPPING SPEED	625 fpm		626 to 970 fpm
SHEAVE (Rope Pitch) DIAMETER	16"	12.5"	16"
OVERSPEED SWITCH	Standard		
SPEED REDUCING SWITCH	Available Option		
ROPE DIAMETER	3/8", 7/16" or 1/2"	3/8"	3/8", 7/16" or 1/2"
ROPE TYPE	Traction Steel 8x19, 8x21, or 8x25		
HAND	Left or Right		
MAXIMUM PULL THRU	1200 lbs		
MINIMUM PULL THRU	300 lbs		
SHIPPING WEIGHT	180 lbs	130 lbs	150 lbs

1) All Governors:

- Notes:
 - Governor Switch is CSA Approved
 - Encoder Mount Options Available for Shaft Sizes: 0.25", 12mm (0.472"), 0.75", or 1.00"
 - Sheave Recommended Maximum Load Limit 650 lbs (Consult Hollister-Whitney if exceeding this load.)

2) #201 and #202 Governor Ratings Chart


- Notes:
 - #201 Governor is Dead Shaft Model (no Encoder Mount)
 - #202 Governor has Encoder Mount Options Available; see above for options.

3) #207 Governor Ratings Chart

- Notes:
 - The #205 and #206 models are obsolete and have been Replaced by the #207 Governor.
 - Dead Shaft Models (no Encoder Mount) are Standard
 - Live Shaft Encoder Mount Options Available; see above for options
 - Remote Set/Reset Governor available, Model #207-RS

4) #208 and #210 Governor Ratings Chart

- Notes:
 - #209 Governor is Obsolete and has been Replaced by the #210 Governor.
#209 Governor Sheave Load Restricted to 390-395 lbs (Tension Weight plus Governor Cable) Total Hanging Load.
 - #208 Governor is Dead Shaft (no Encoder Mount)
 - #210 Governor has Encoder Mount Options Available; see above for options.

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V. Lubrication Instructions for H-W Governors

Bearing Grease: POLYREX EP2 by EXXON

Bushing Lubrication (Oil): SAE 30Wt Non-Detergent Oil

1) General Notes about Lubrication:

- Rule of Thumb: If a grease zerk is provided, grease needs to be checked and maintained.
- The bearings and bearing cavities for all governors (needle and ball bearings) are completely filled with lubrication at the H-W plant.
- Check grease at least yearly and re-lubricate as necessary at the Zerk Fitting until Cavity is filled.
- Governor Models with sealed bearings in the Sheave/Shaft Assembly and do not require grease for these bearings.
- Bushings (Oilube or Oilite): It may be necessary to apply a few drops of lubricant (oil) as required to the bushings on all live shaft governors.
 - These bushings should be checked at least every 6 to 8 months.
 - Simply add a few drops of oil at the front and back of the yoke assembly to maintain lubrication.
 - Note however, that some environments, including those with salt air and/or high dust content (such as fly ash, grain or concrete dust, construction dust), may severely shorten this maintenance period.

2) Governors with fillable sheave or shaft bearings:

- Models #201, #205, #206, #207 (Dead Shaft), #208, #209, #210

3) Zerk Locations on Governors with fillable sheave or shaft bearings:

- Sheave Hub: Models #201, #205, #207 (Dead Shaft), #208
- Shaft Housing on Base: Models #206, #209, #210

4) Governors with sealed sheave bearings:

- Models #202, #207 (Live Shaft)

5) Governors with YOKE ASSEMBLY Bushings:

- Live Shaft Models: #202, #206, #207, #209, #210