

## MECHANICAL GOVERNOR—HGJAB, HGJAC, HGJAE, HGJAF

The mechanical governor (Figure 8-18) operates the throttle plate in the carburetor or mixer to maintain constant engine speed (within a range of 5 percent) as load varies. See Page 9-14 regarding the internal governor parts.

See Table 8-3 for rated voltage and frequency versus allowable voltage range and droop (the difference between No-Load frequency and Full-Load frequency).

**TABLE 8-3 VOLTAGE / FREQUENCY / DROOP**

Rated Voltage	Voltage		Frequency	
	Max No Load	Min Full Load	No Load	Droop
<b>60 HERTZ GENSETS</b>				
<b>100</b>	108	93	63/62	2–4
<b>120</b>	125	112	63/62	2–4
<b>200</b>	216	186	63/62	2–4
<b>240</b>	250	224	63/62	2–4
<b>50 HERTZ GENSETS</b>				
<b>100</b>	108	93	52.5/51.5	2–4
<b>200</b>	216	186	52.5/51.5	2–4
<b>220</b>	238	205	52.5/51.5	2–4
<b>230</b>	249	215	52.5/51.5	2–4
<b>240</b>	250	224	52.5/51.5	2–4

Before making governor adjustments, check for other causes of hunting or excessive droop, such as binding governor linkage, fouled spark plugs, improper valve lash, and dirty fuel filters.

**⚠ CAUTION** *Voltage/frequency-sensitive equipment such as VCRs, televisions, computers, etc. may be damaged by power line frequency variations. Some solid-state devices are powered whenever connected to an AC outlet even if the device is not in actual operation. For this reason, disconnect all devices which are voltage or frequency-sensitive before attempting any carburetor/governor adjustments. If disconnecting the devices is not possible, open the circuit breaker(s) at the distribution panel or at the genset, if so equipped.*

Accurate governor adjustments require a variable load bank of up to 7 kW capacity and accurate meters for measuring frequency (within 0.3%), voltage (within 0.5%) and output current (AC).

## Assembling Governor Linkage

Reassemble the throttle link and its tension spring if they have not been assembled as shown in Figure 8-18. The easiest way is to hook both ends of link and spring while the governor arm is detached. *Hook the tension spring below the throttle link in the throttle lever so that it can pull down on the bottom of the hole while the throttle link can push up on the top of the hole without interfering with each other.*

To detach the governor arm, remove the governor shaft nut by turning it **clockwise** and then pull the arm away from the shaft hub. To reattach the arm, see Resetting Governor Arm.

## Resetting Governor Arm

Anytime the carburetor or governor linkage has been disturbed by disassembly and reassembly, it will be necessary to reset the governor arm on the governor shaft, as follows (see Figure 8-18):

1. Loosen the governor shaft nut by turning it **clockwise** and remove the arm.
2. Use a battery terminal puller or equivalent tool to break the taper fit of the shaft in the arm hub.
3. Reattach arm and hub, making sure the two pins and holes engage, and thread the shaft nut on **counterclockwise**. Check for free rotation of the arm around the shaft and let the governor spring take up all play in the linkage. The linkage must push the throttle up against the wide open throttle stop.
4. Torque the shaft nut to 8 lb-ft (11 N-m), **counterclockwise**. (By design, tightening counterclockwise takes up play between the internal governor parts.)
5. Gently push the governor arm down and check for binding, rubbing against adjacent parts, interference with wiring and looseness.

## Adjusting Governor

Adjust the governor as follows (see Figure 8-18):

1. Warm up the genset for at least 5 minutes at 1/2 to 3/4 rated load. The choke must be completely open. Adjust frequency as close as possible to the appropriate Table 8-3 value with the speed adjusting nut to keep the genset from shutting down (most likely on Fault 14—Overfrequency or Fault 15—Underfrequency). Restart in 5 seconds if it shuts down.

2. When the engine is warm remove all loads and adjust the idle (throttle) stop screw to obtain 51 to 53 Hz on a 60 Hz genset or 41 to 43 Hz on a 50 Hz genset, holding down the throttle lever with your finger.
3. Let the throttle lever go and recheck and re-adjust No-Load frequency (speed), as necessary, to Table 8-3. Bump the governor arm to see that frequency stabilizes.
4. Connect rated load. If droop is greater than specified in Table 8-3, move the governor spring hook one or two notches towards the governor shaft and recheck frequency and droop. Repeat the procedure as necessary. If droop is less than specified, or the genset hunts, move the spring hook one or two notches away from the governor shaft and recheck frequency and droop. Repeat the procedure as necessary.
5. The governor must not hunt. Check for hunting under the following loading sequence:
  - A. No-Load • 3/4-Load • No-Load • 1/2-Load • No-Load • 1/4-Load • No-Load.
6. See Section 11. *Troubleshooting* if output voltage does not fall within the range specified in Table 8-3.
7. Check for binding, interference with wiring and rubbing against adjacent parts. Reset the governor arm if governor performance does not improve.

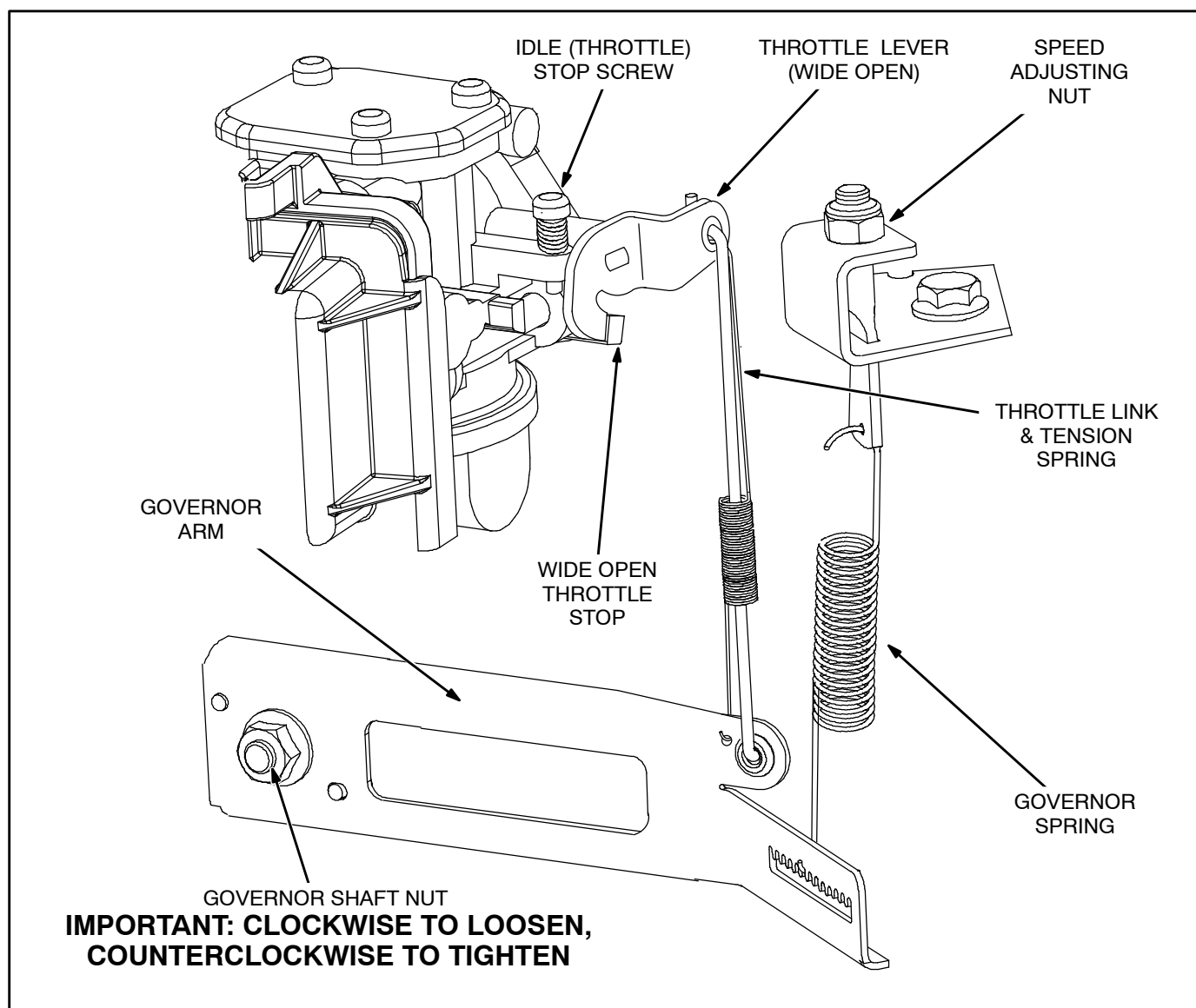


FIGURE 8-18. MECHANICAL GOVERNOR