

Stepmill Noise Troubleshooting

Applies to: All Stepmills



This document reviews how to differentiate and identify brake and other mechanical noises on the Stairmaster Stepmill line including the 8G.



Warning: Moving Parts and Pinch Points

Please be aware of pinch points and take care to avoid injury while working inside of machines.

Tools Suggested:

- Mechanics Stethoscope

Diagnostic Theory

Diagnosing units for mechanical noise can be as much of an art as it is a science. The best way to narrow down what part or parts are causing the noise/grinding/rumbling/screaming is to remove the parts one by one in the drive train until you discover the part that is making the noise.

For example, in the below simple diagram (Fig. 1) you have a series of parts (A, B, and C) connected by two belts (Belt 1 and Belt 2). There is noise coming from this drive train but you don't know which part is the cause of the noise. The first step would be to isolate Part C from the drive train since it is the last piece in the system. By disconnecting Belt 2, Part C is no longer able to turn while Parts A and B continue to move. If the noise goes away after Part C has been removed from the system, that's the culprit. If not, continue to remove parts until you find the part that, when removed, causes the noise to disappear.

Remember to always start at the very end of the drive train and work your way backwards.

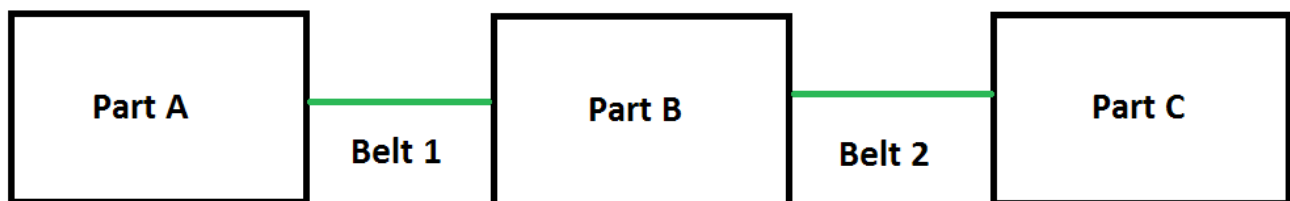


Fig. 1

This same theory can be applied when diagnosing the 8G or any machine for noise. In this case we will focus on the 8G.

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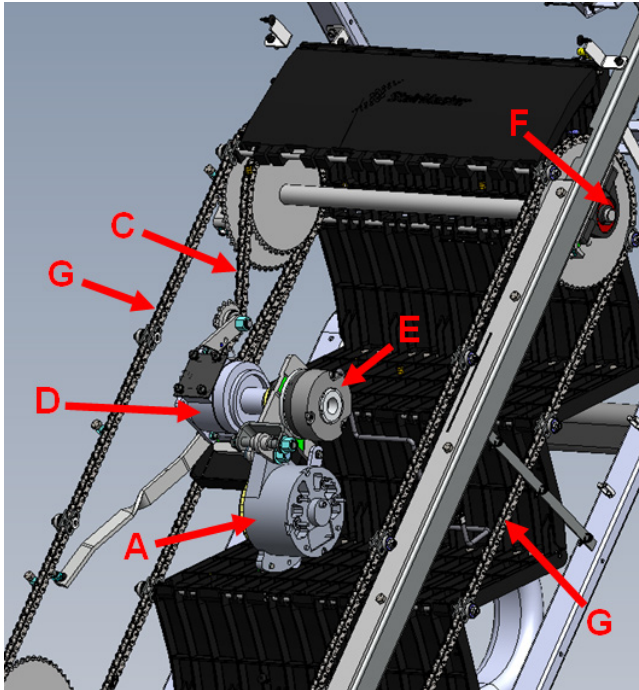


Fig. 2

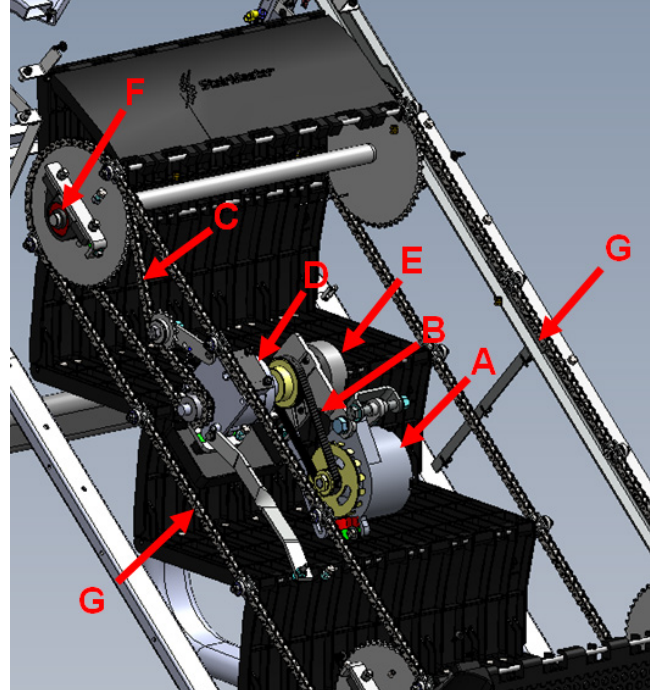


Fig. 2.1

In the above graphics, (Fig. 2 + 2.1) you can see the drive system of the 8G Stepmill. Please note that significant portions of the unit including pieces of the frame have been removed for clarity. The steps are connected to the upper and lower sprockets, the upper and lower sprockets are connected to the gear box via the drive chain, and the gear box is connected to the alternator with the alternator belt.

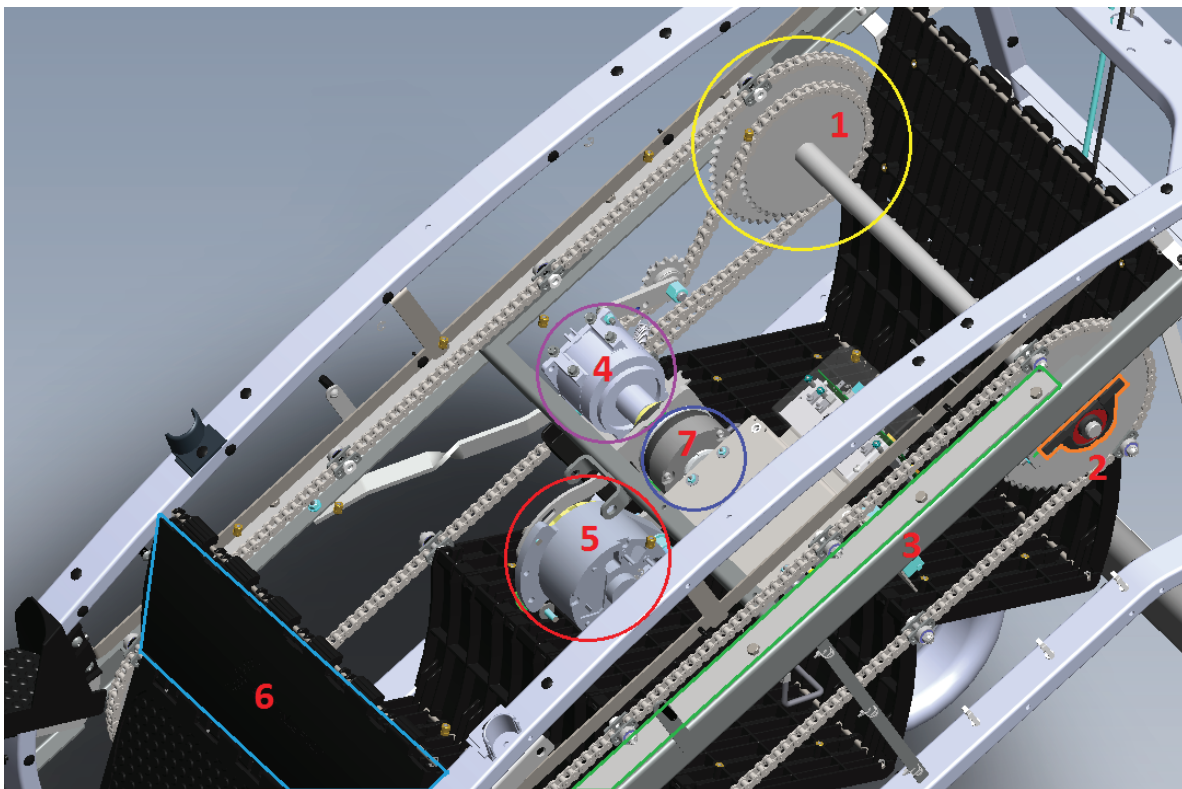
The user's weight drives the steps downward which turn the upper and lower sprockets. The drive chain connected to the upper sprocket in turn drives the gear box that increases the RPMs from X to X. The gear box is connected to the alternator via the alternator belt. The alternator is fed with electricity and acts as an electromagnet to increase or decrease the resistance causing the steps to move faster or slower.

1. Using the theory outlined above, starting with the alternator [A], remove the alternator belt [B] (**NOTE THAT THIS WILL CAUSE THE MACHINE TO LOSE RESISTANCE**). Then, while NOT standing on the unit, press the quickstart button to disengage the brake. Spin the steps by hand. Has the noise gone away? If not, proceed to step 2.
2. Remove the drive chain [C] from the gear box [D] and spin the steps, has the noise gone away? If not proceed to step 3. If the noise has gone away and the noise in question is a screeching or metal on metal grinding sound, please ensure that the brake (8G ONLY) [E] is aligned. See CSB [637-4306](#) for help on aligning the brake (8G ONLY).
3. If the noise persists after removing the drive chain, start to check the upper and lower pillow blocks [F] for

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noise. This is when a mechanics stethoscope can be extremely helpful to pinpoint the source of noise. Remember to check to wear on the step chains **[G]** as this is a sign of excessive friction due to tension or improper wear. Keep an eye out for metal shavings or particles in any part of the machine as well as this is another sign of improper wear and this metal-on-metal contact could be the source of the noise. Pay particular attention to any signs of wear on the bearing plates, if a stepshaft nut comes loose and a bearing falls off of the stepshaft, the exposed stepshaft will grind down the bearing causing noise and significant amount of metal shavings/ particles.

Troubleshooting Actions



Area	Sounds Like	Parts	Possible Cause	Next Action
1	Clicking, popping or grinding sounds	Upper/Lower Sprockets	Chain tension is causing the step chains to grind on the upper and/or lower sprocket.	Tension chains appropriately by adjusting the pillow block bearings.
2	Metal grinding/ scraping	Pillow Block Bearings	Upper/Lower sprocket is not centered between the pillow block bearings.	Loosen set screws on pillow block bearing then use a rubber mallet to tap sprocket until it sits evenly between the pillow block bearings.
3	Metal grinding/ scraping	Bearing Plates	One ore more stepshafts are missing the bearings causing the stepshaft to ride directly on the bearing plate.	Replace stepshaft and hardware, bearing plate may also need to be replaced. You can swap the left and right bearing plates then flip them over to use the other side like a new plate.

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Area	Sounds Like	Parts	Possible Cause	Next Action
4	Loud clicking, metal grinding	Gearbox	Inner workings of the gearbox are bad and the gearbox needs to be replaced	Replace gearbox.
5	Loud clicking, metal grinding	Alternator/Belt	Alternator brushes are broken and scraping inner alternator components/Belt is not tensioned properly	Remove any brush remnants and then replace brushes.
6	Popping or clicking	Steps	Step is broken or Stepshaft is misaligned inside step joint.	Replace step or ensure that stepshaft has all hardware and is seated properly within the step and the step riser.
7	Metal on metal grinding/screeching	8G Brake	Brake needs to be aligned properly.	Realign brake and tension hardware (See 637-4306)