

Liberate a motor from an old VHS deck, build a mechanism for delivering kibble to your kitty, and program the deck's recording timer to fill Fluffy's bowl on schedule. Voila - a programmable pet food dispenser!

The cat feeder utilizes the spinning drum inside the VCR (which can be turned on and off according to the machine's timer) to turn a series of belts and pulleys which ultimately turn a hopper filled with cat food. The hopper has a precisely cut hole through which dry cat food falls as the hopper rotates. The food falls down a chute into a feeding bowl.

By programming the recorder to turn on and then off at specific times, and adjusting the size of the hole in the kibble container, you can control how much food you feed your cat. (We leave the art of programming the VCR up to you!)

## Tools

Cordless electric drill, drill bits  
Screwdriver bits  
Phillips and flat-head screwdrivers  
Rotary tool with sanding attachment

## Materials

VCR with a working programmable timer  
12-inch diameter (approx), lightweight wheels with 1/2-inch diameter ball bearing hubs (3)  
1/2-inch bolts, 7 inches long(3), nuts (15), lock washers (9)  
2-inch diameter PVC smooth to smooth pipe couplings (2)  
Spool Stretch Magic cord, 1mm diameter  
Empty CD spindle  
Scrap plywood to build the frame  
Miscellaneous brackets and fasteners

## Estimated Cost:

\$25 depending on your ability to find spare parts.

## Before you begin:

You may find it necessary to modify these instructions, depending on what materials and tools you have at hand, and any improvements you might want to make in the design. Go ahead and customize the project and make it your own!



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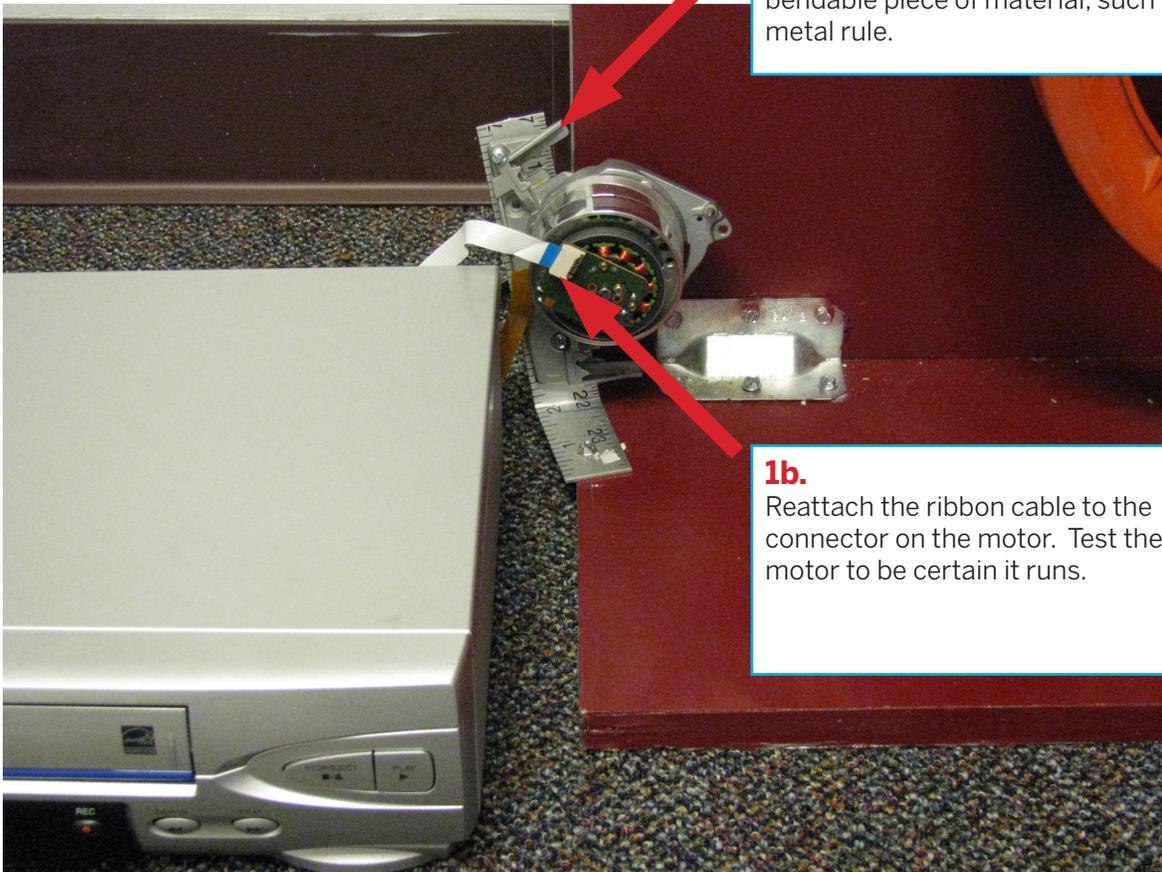


**⚠ WARNING:** As with all 110V AC-powered equipment, opening the cover of a VCR can expose you to risk of serious and possibly fatal electric shock. Generally speaking, this risk is confined to the power supply and any associated switches, cables, or connectors. While this project only involves the low-voltage sections of a VCR, it is crucial to know WHERE NOT TO TOUCH. It is a good idea to place some sort of insulating shield (e.g., a piece of plastic) on top of the power supply area. This project should only be attempted by people with a good knowledge of electricity and its risks.

## Step 1. Remove and Mount the VCR Drum Motor

Remove the cover of the VCR. Identify and remove the drum motor by unscrewing it from the bracket that holds it. Typically, the drum and motor are controlled and powered through a ribbon cable connection. Carefully detach the ribbon cable connector and unscrew the motor/drum assembly.

**1a.** Remove drum and motor from the VCR and attach securely to a bracket. Form the bracket from a bendable piece of material, such as a metal rule.



**1b.** Reattach the ribbon cable to the connector on the motor. Test the motor to be certain it runs.

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## Step 2. Build the Cat Food Delivery Mechanism

The mechanism shown below consists of 3-pulley-belt connections that reduce the speed from 1800 rpm to about 60 rpm. Three 3" sections of PVC pipe function as reducing pulleys.

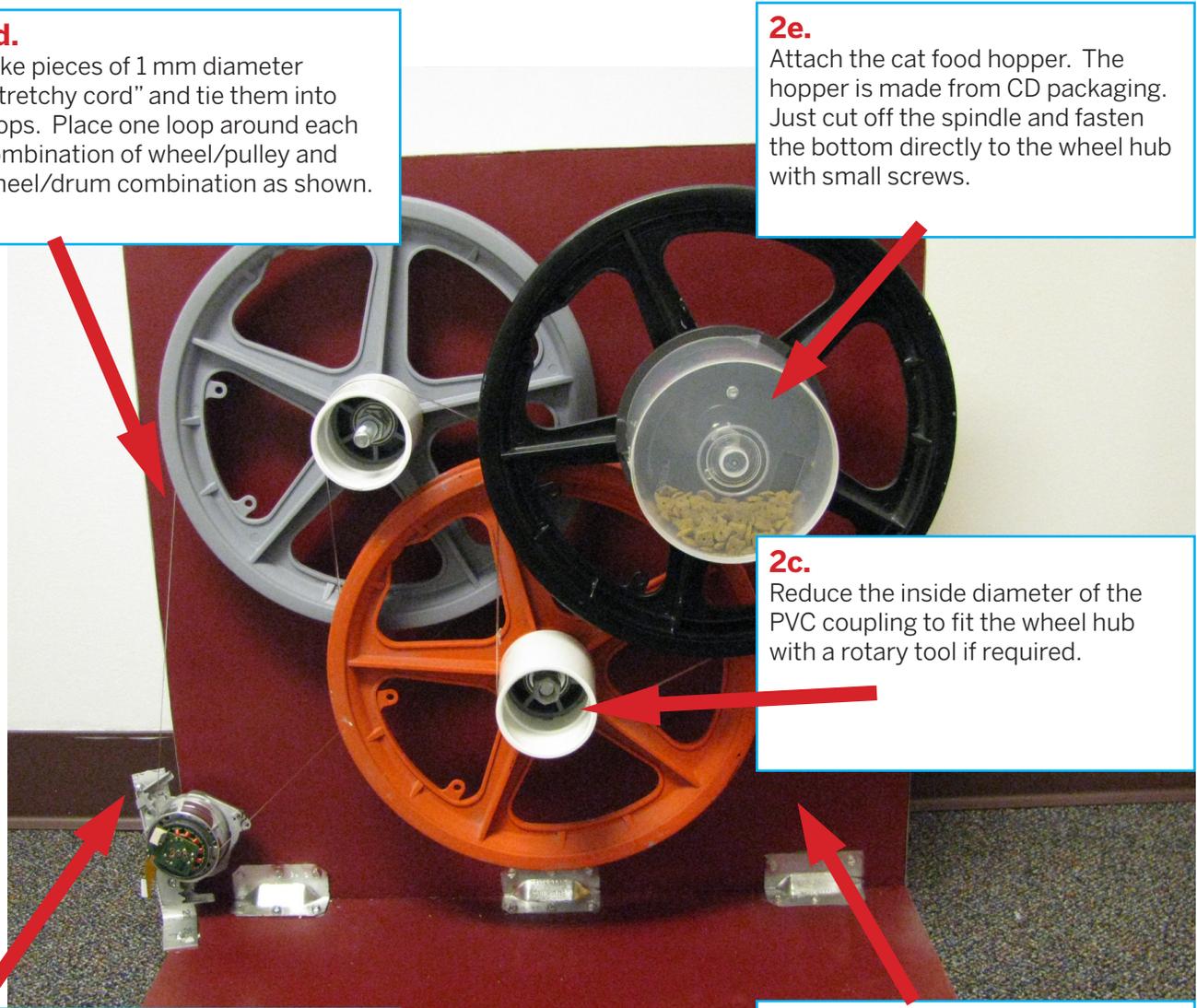
**2d.**  
Take pieces of 1 mm diameter "stretchy cord" and tie them into loops. Place one loop around each combination of wheel/pulley and wheel/drum combination as shown.

**2e.**  
Attach the cat food hopper. The hopper is made from CD packaging. Just cut off the spindle and fasten the bottom directly to the wheel hub with small screws.

**2c.**  
Reduce the inside diameter of the PVC coupling to fit the wheel hub with a rotary tool if required.

**2b.**  
Position the motor/drum bracket so that the axis of the drum is parallel to the axes of the wheels and pulleys and affix it to the frame.

**2a.**  
Build a frame from plywood. Drill three holes in the frame and insert 1/2"-diameter bolts and affix with nuts and lock washers. Place wheels and PVC couplings on the bolts.



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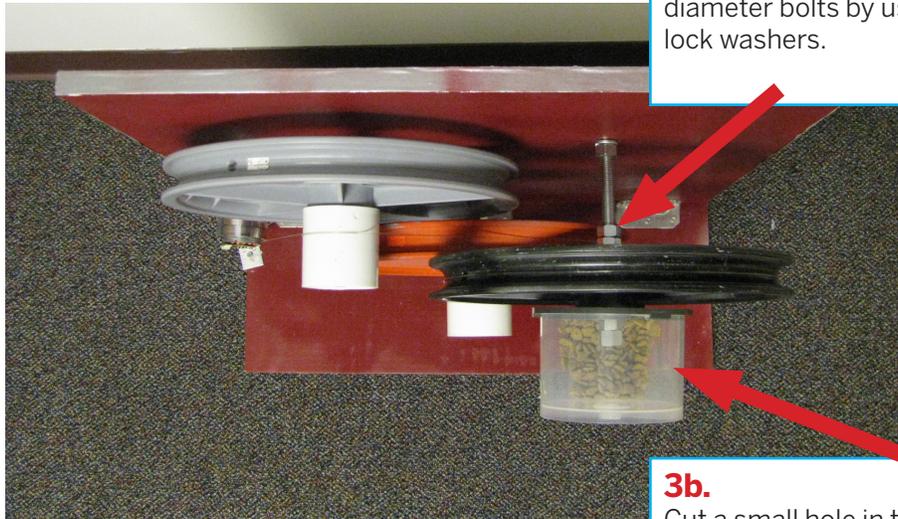


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### Step 3. Feed the Kitty

This view from above the cat feeder shows the relative positions of each belt and pulley.



#### 3a.

Fix the position of the wheels and PVC couplings that make up the pulley on the length of 1/2-inch diameter bolts by using nuts and lock washers.

#### 3b.

Cut a small hole in the plastic box, just large enough for a few bits of kibble to fall through during each revolution. The size of the hole depends on the size of the pieces of cat food.

Place a chute or funnel (easily fabricated from wood or PVC pipe) under the hopper to direct the food into the feeding dish if necessary.

With all the parts in place, press the record button on the VCR. The motors should turn, sending the cat food down the chute and into the kitty dish.

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## Troubleshooting

Ancient VCRs are the easiest to use because they're simpler. For newer VCRs, here are the most common problems you'll encounter, and how to solve them.

### Hack-resistant circuitry

Many VCR subsystems are interconnected, and some microcontrollers sense the absence of any missing circuitry. Don't disconnect or remove any circuit boards or other systems, even if they appear to play no part in your project.

### Weak signal

Some VCRs won't record a show if the TV signal is too weak. To avoid having to connect your pet feeder to a TV aerial, set it up to record from a (nonexistent) camera or other external line source instead.

### Various optical sensors

These can be sensitive to ambient light, and can cause the VCR to shut down if the case is open or there's no tape inside. You may have to work in subdued light, or locate and shield all the offending sensors.

### Tape-loaded sensors

These sense the presence of the videocassette, and are usually linked with the mechanism that loads and ejects it. The easiest remedy is to load a tape or modified tape case.

### Tape-end sensors

These detect the start and end of the tape using light. Put opaque adhesive tape over the 2 sensors that flank the cassette, or cover the corresponding holes on a cassette itself.

### Recording tab sensor

This detects whether a videocassette's record-enable tab is present. It's usually a little leaf switch. Use adhesive tape to hold it in the "pressed in" position, or else connect or break the switch's contacts as appropriate.

### Spindle motion sensors

These sense whether the cassette's reels are moving at a normal speed, triggering shutoff if the tape jams or breaks. The right-hand spindle always has one of these, but the left may not. One workaround is to drive spindles from the capstan by using rubber bands as pulleys.

Different models of VCR exhibit significant variations in system design and the type and amount of misuse they will tolerate. If nothing else works, try to determine what happens when an ordinary videocassette is loaded, and re-create these events by manually twiddling the spindles, simulating the tugging of the tape.

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**More:**

Here's how VCRs work (when they're recording television shows instead of feeding pets):

<http://www.howstuffworks.com/vcr.htm>

For the original VCR Cat Feeder instructions, see MAKE magazine, Volume 03:

<http://www.make-digital.com/make/vol03/?folio=98>

**TELL US HOW YOUR CAT FEEDER WORKS!**

LEAVE A COMMENT UNDER THE VIDEO FOR THIS PROJECT AT <http://www.makezine.tv>

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