

## Model D20 Owner Manual

Automatic motor lifts and lowers doors in chicken coops, pet enclosures, etc.

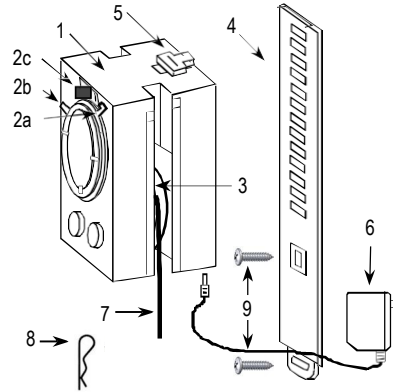
Timer Compatible.

Read Entire Manual Before Using.  
Save For Future Reference.  
US Patent 4958112 basis.

Manufactured by Add-a-Motor, Inc.  
Proudly made in the USA from domestic and imported materials.

## INDEX

Features:	1
Timer	1
Safety Information	1
How Motor Operates	2
Installation Steps	2 - 3
Inspection – Ready to use	3
Timer Operation	3
Trouble-Shooting	3
Warranty	4
Customer Service	4
Repair Parts	4
Battery Connection & Tips	4



## Furnished components

1. Housing
- 2a. Actuator (Tipped)
- 2b. Actuator (Flat)
- 2c. Stop Switch
3. Lift-Reel
4. Wall Bracket
5. Lock
6. AC-DC Adapter
7. Lift-String
8. Door Safety Connector
9. Mounting Screws



## FEATURES:

- o Motor lifts and lowers chicken coop doors, pet doors, and small mechanisms that move up and down.
- o Easily attaches to homemade and pre-made wood, aluminum and plastic doors up to 10 pounds, with openings up to 25".
- o Works like a motorized fishing reel. Motor automatically stops at open and closed-door positions you set.
- o Includes Door Safety Connector that prevents damage if door is frozen closed or jams.
- o Motor operates automatically on a time schedule when plugged into an AC lamp timer switch (Suggested operation switch).
- o Solar Power Option: If AC electric power is not available, connect motor to 12-volt battery, timer and solar charger. See below.
- o One-Year Warranty. For customers with motors up to 15 years old, we stock do-it-yourself repair parts. See page 4.

**TIMER:** Choose from following basic types to control your motor. Many brands and features are available.



Outdoor Timer

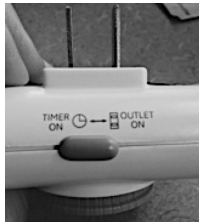


Indoor Lamp Timer Switch

Timer **MUST** have a minimum of 2 ON and 2 OFF settings.

Be Sure Timer switch is flipped to "Timer On".

Timer label "rating" **MUST** include any of the following: "appliance, motor, fan, pump, HP, 1/4 or 1/3". ✘ **NEVER** use timer with dimming feature. See Picture for more detail:



**IF YOU HAVE FREQUENT AC ELECTRIC POWER OUTAGES, A UNIVERSAL POWER SUPPLY (UPS) CAN HELP.**

Go to [www.add-a-motor.com](http://www.add-a-motor.com), select D20 motor, then scroll down and read the section about electric power outages and UPS systems.

**SOLAR POWER OPTION: BUILD A BATTERY SYSTEM WITH TIMER AND SOLAR CHARGER FROM FOLLOWING SUPPLIERS. See page 4.**

12-volt Battery: [www.cabelas.com](http://www.cabelas.com)

In Search Window enter "IK-018049 "

Battery including charger (Roughly \$30).

12-volt Solar Charger: [www.basspro.com](http://www.basspro.com)

In Search Window enter "924235 "

12V Charger w/ mount and clips. (\$25)

12-volt Timer TM619: [www.Amazon.com](http://www.Amazon.com)

[Link](#)

Other models: Google DC to AC Inverter.

**Note:** Above components successfully used to power D20 motors in remote areas. With solar charger, battery remained charged. Without it, battery needed periodic charging; more often in winter and northern areas. **Not affiliated with any of the sellers.**

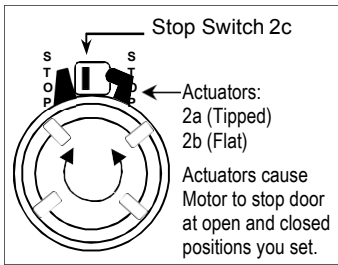
## GENERAL AND SAFETY INFORMATION

Symbols and notices such as **WARNING** and **CAUTION** are for your protection.



Small parts pose swallow-inhalation hazard. During installation keep children, chickens and pets away. If any part of body, hair, or clothing becomes entangled while motor operates, immediately actuate Stop Switch 2c and unplug Adapter. Product can operate unexpectedly if controlled by timer or remote control. After installation, check all connections and Lift-String knots. Regularly observe operation to verify it performs to your expectations. Motor is not a toy. Do not oil. Installation, operation, and service must be performed by an adult using this instruction manual.

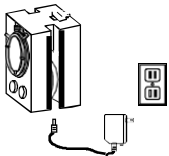
✘ **WHEN YOU SEE THIS SYMBOL, FOLLOW THE ACCOMPANYING INSTRUCTION CAREFULLY TO AVOID MALFUNCTION OR DAMAGE.**



## HOW MOTOR OPERATES

- ❑ Stop Switch 2c is similar to a light switch. However, it only stops the motor; it cannot start it.
- ❑ Actuators 2a and 2b automatically operate the Stop Switch. Stop Switch can also be operated manually by hand.
- ❑ When power is switched ON, motor runs and one Actuator moves toward the Stop Switch while the other moves away.
- ❑ When either Actuator moves the Stop Switch from one-side to the other, the motor stops.
- ❑ After motor stops, motor will not run again until power is switched OFF, and then switched back ON.
- ❑ When power is switched back ON, motor runs in opposite direction until the other Actuator moves the Stop Switch.
- ❑ You can change motor travel distance by adjusting Actuators closer to or farther away from the Stop Switch.
- ❑ Power can be switched ON and OFF automatically using a lamp timer switch, or by remote control.

## TEST MOTOR BEFORE INSTALLING

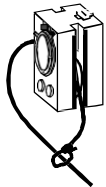
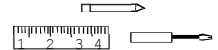


- Start by setting **BOTH** Actuators close to Stop Switch 2c as shown above. Actuators are tight – rotate by hand.
- **CAUTION:** Motor will run immediately in next step and Lift-Reel will rotate. Keep fingers and clothing away.
- Plug Adapter into an AC electric outlet. Then, plug round plug at end of Adapter cord into jack at bottom of motor.
- Observe black Actuators when motor runs. One moves toward the Stop Switch, the other moves away. Allow motor to stop itself.
- Unplug AC-DC Adapter. Wait 3 seconds, and then plug Adapter in again. Above process will repeat but in the opposite direction.
- Each time power is switched ON the motor runs then automatically stops at selected positions. After motor stops, it will remain stopped even if power stays ON.
- When power is switched OFF, motor electronics reset. When power switches ON again, motor runs in opposite direction.

## INSTALLATION STEPS: ✂ Protect from the elements; install motor and timer under roof.

**NOTE:** If your door swings-open on a hinge, convert it to vertical lift-lower for improved predator control.

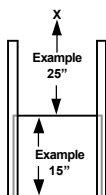
Tools needed



1. Included is a Lift-String (fishing line). Make small loop at end of the String and tie a triple-knot. Thread opposite end of String through hole in Motor Reel, and then pass the end through loop and pull tight.

✂ **LIFT-STRING REPLACEMENT AVAILABLE AT MOST FISHING SUPPLY STORES. ONLY USE BRAIDED FISHING LINE (15-80 pound test), OTHERWISE DAMAGE CAN OCCUR. IN AN EMERGENCY USE DENTAL FLOSS OR THIN STRING FOR A SHORT PERIOD.**

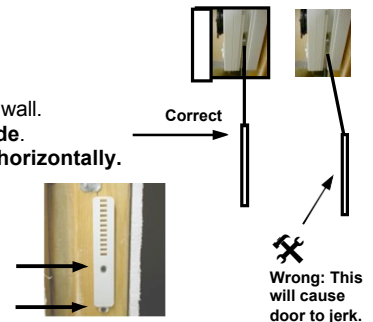
✂ **Door weight: Minimum 1 pound. Maximum 10 pounds. Damage can occur if door is too light or too heavy.**



1. Measure door height, and then add 10 inches.  
**Example:** Door height is 15". Add 10" = 25". See illustration at left.

2. With door closed, measure up **from top of door** the inches in Step 2 above and mark an "X" on wall.  
**Verify** that mark is directly above door centerline, **and on same plane when viewed from side.**  
**If overhead space is limited, add 5" or less to Step 2 and mount wall bracket and motor horizontally.**

3. Wall Bracket has front and rear side. Rear side has tabs that fit against wall.  
Position the **vertical oval hole** in Wall Bracket over the "X" you marked on wall.  
Drive included screw thru **vertical hole** into wall until screw head is recessed in Bracket.  
Make Bracket vertical and then drive second screw through **horizontal oval hole**.

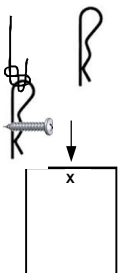


4. Slide motor onto Wall Bracket. **Leave six (6) ladder slots visible above motor.** Lock in place using Latch on Motor top.



5. Included is a Door Safety Connector and Mounting Screw to attach the Lift-String to your door. ✂ This important device can prevent damage if your door is frozen closed or jams. If Connector releases, a problem exists. After problem is resolved the Connector can be re-attached. Replacement Connector available at hardware stores: "hair-pin cotter", spring-wire 0.072" diameter.

- A. Pull end of Lift-String down from motor and tie it to **large** opening in Door Safety Connector with multiple knots as shown.
- B. Using your fingers, thread included screw about 1/8" only through **small** opening in middle of Door Safety Connector.



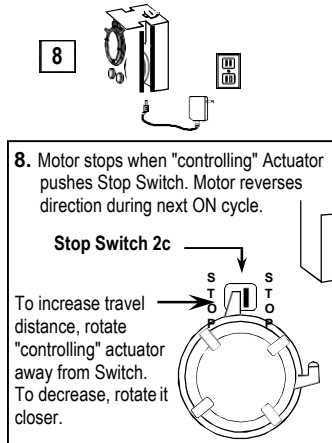
7. Door must be closed. Lift-String must be hanging down from motor at its full length with Door Safety Connector attached.
  - A. Measure center-line of door and make an "X" about 1" below top edge as shown.
  - B. Position screw in Door Safety Connector over the "X" and drive it most of the way into door with a screwdriver.

**VIP: DO NOT TIGHTEN SCREW.** Leave 1/8" gap between screw head and door. **CONNECTOR MUST MOVE FREELY.**  
**CAUTION:** Screw point must not protrude through door and restrict door motion.

In next step you will operate the Motor and set open and closed stop positions for your door. Use caution and keep children, chickens, and pets away. If something causes the Door Safety Connector to strip-out, the door will suddenly drop closed with no warning. In that event, find and resolve the cause, and then re-attach Door Safety Connector. Do not operate unless Door Safety Connector is attached.



**DO NOT PROCEED UNTIL YOU READ ALL INSTRUCTIONS IN FOLLOWING BOXES. MOTOR WILL OPERATE IMMEDIATELY IN NEXT STEP.**



**DOOR MUST BE CLOSED. SET BOTH ACTUATORS NEAR STOP SWITCH 2C AS SHOWN ON PAGE 2.**

**8.** If String is slack, pull down to remove slack and hold loosely. Plug AC-DC Adapter into an electrical outlet and then insert round plug at end of Adapter cord into jack at bottom of motor. Motor will run and gather String onto the Lift-Reel. **IMMEDIATELY RELEASE STRING WHEN SLACK IS REMOVED.** Observe door as it opens. One of the following events will occur. **BE READY TO UNPLUG ADAPTER.**

**8-A. Motor stops before door reaches desired open position.** Measure remaining distance to desired open position. Example: Remaining distance to open = 10". Then rotate "controlling" Actuator 10-clicks **AWAY** from the Switch. The "controlling" Actuator is the one **touching or nearest** the Switch as shown in illustration at left. Unplug Adapter from wall outlet. Wait 3 seconds. Plug it in again. Motor will run in opposite direction.

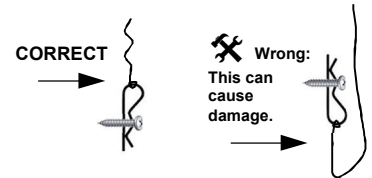
**8-B. Door reaches desired open position but keeps running. IMMEDIATELY UNPLUG Adapter.** With your finger move Stop Switch 2c from its present position to the opposite side. **DO NOT MOVE IT BACK.** If you moved the Stop Switch left, ← rotate **TIPPED** Actuator 2a until it **touches** the Switch. But if you moved the Stop Switch right, → rotate **FLAT** Actuator 2b until it **touches** the Switch.

Repeat above until desired open and closed stop positions are set.

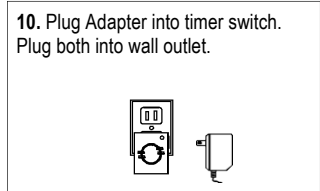
**Make small adjustments by raising or lowering Motor in Wall Bracket and lock it in place.**

**9. VIP: Final inspection – Ready to use. Inspect periodically and adjustment as needed.**

**✂ With door closed, inspect Lift-String. String must not be overly slack. To remove excess slack, raise motor in Wall Bracket. Or, adjust Actuators to stop motor at closed position with minimal slack.**



**10. PLUG AC-DC ADAPTER INTO A LAMP TIMER SWITCH. THEN PLUG THE TIMER INTO AN ELECTRICAL OUTLET. FOR BATTERY POWERED SYSTEM, READ THIS ENTIRE STEP AND THEN REFER TO BATTERY SECTION ON NEXT PAGE.**



**Timer Operation -** Timer **MUST** have a minimum of 2 ON and 2 OFF settings.

Set Timer to current time of day, AM or PM.

**HOW TO SET DOOR TO AUTOMATICALLY OPEN EACH MORNING AT 6:00 AM.**

- Set Timer to switch ON at 6:00 AM.
- Set Timer to switch OFF at 6:30 AM.
- **VIP: Timer must be set to switch OFF after every ON; otherwise motor will not reverse direction.**

**HOW TO SET DOOR TO AUTOMATICALLY CLOSE EACH EVENING AT 8:00 PM.**

- Set Timer to switch ON at 8:00 PM.
- Set Timer to switch OFF at 8:30 PM.
- **VIP: Timer must be set to switch OFF after every ON; otherwise motor will not reverse direction.**

**NOTE:** Motor will **not** be damaged if timer OFF setting is 1 hour or more after the ON setting.

**HOW TO SET MULTIPLE DOOR OPENING AND CLOSING TIMES**

- Repeat above - set an ON setting for every time you want door to move. **Always set an OFF after every ON.**

**TO OPEN OR CLOSE SOONER THAN A PRESET TIME, TURN TIMER'S SWITCH TO OFF.**

Motor will operate and stop at set position. To return to original open/closed schedule, leave timer ON and allow it to go through a normal cycle. When the next ON occurs, motor will ignore it because electronics are still ON. The next OFF will then reset the original sequence.

**TROUBLE SHOOTING:** Following steps apply to both AC and Battery operated motors.

**Motor operates erratically (starts, stops, starts ... or does not operate at all).**

- ♦ **Test as follows:** Plug AC-DC Adapter directly into AC electrical outlet. Motor should operate immediately. Allow motor to run until it automatically stops. Unplug Adapter and repeat.
- ♦ If motor does not run, manually push Switch 2c to opposite side **then back**, and repeat rapidly several times. Plug motor in and re-try.
- ♦ If motor does not run, test Adapter output voltage. Voltage should be 14 to 20 volts DC. Try using other AC-DC Adapter with output of 12 volts DC.
- ♦ Verify that your AC outlet is providing power by plugging a lamp into the outlet and switch it ON.

**Open - closed sequence has reversed.**

- ♦ An electric power failure can change Timer settings. Verify AM-PM, time of day setting, and that an OFF setting follows every ON.

## WARRANTY AND CUSTOMER SERVICE

For technical support, please email us at [info@add-a-motor.com](mailto:info@add-a-motor.com), or call 1-480-836-8170.

Product warranted for defective materials for one year from date of purchase. AC-DC Adapter warranty is 90 days. For warranty service, please follow below procedure.

- Request a Return Authorization Number by emailing [info@add-a-motor.com](mailto:info@add-a-motor.com), or calling 1-480-836-8170 (8:30 AM to 4:00 PM Arizona time, weekdays).
- Carefully pack and seal **ONLY** the defective item (Motor). **Ship or mail prepaid to: ADD-A-MOTOR, INC. 16044 E STAR GAZE, FOUNTAIN HILLS, AZ85268**
- Write your name and return address on outside of package. Inside package include the following:
  - 1). Your Return Authorization Number, and if we requested it a copy of your proof of purchase.
  - 2). An explanation of the problem.
  - 3). Your name, address, telephone and email address (**very important**).

A return shipping charge applies for product shipped back to Hawaii, Alaska and other locations outside CONUS.

Warranty void if AC-DC Adapter is plugged into any switch rated for lamp dimmer use. Lift-String and functioning of Door Safety Connector not covered by warranty.

Warranty void if product modified. Warranty applies only to original purchaser. Product failure caused by any reason not related to product materials is not covered. Damage from wear and tear is not covered. Add-a-Motor disclaims liability for use of product that results in property damage, injury and death to persons and animals whether or not product is defective, misused, abused, neglected or by acts of God. No employee, agent, dealer or other is authorized to give any warranty on behalf of Add-a-Motor, Inc. If our inspection reveals that problem was caused due to materials within the limits of this warranty, Add-a-Motor will repair or replace product free of charge. Replacement unit is under warranty for remainder of original warranty period. Add-a-Motor makes no other warranty of any kind. Any expressed or implied warranty including merchantability and fitness for a purpose which exceeds obligation in this warranty are disclaimed and excluded in all respects. User is responsible for selecting control switch appropriate for application; Add-a-Motor is not liable for how product is used or controlled. The sole obligation of Add-a-Motor is to repair or replace product at our discretion. Add-a-Motor is not liable for incidental, consequential, or any damage, loss or injury due to use or misuse of product whether or not product is found defective for any reason.

## REPAIR-IT-YOURSELF Go to [www.repairmymotor.net](http://www.repairmymotor.net)

If motor becomes damaged, you might repair it yourself and save labor and return shipping cost. The following parts are snap-in, or push-on with some screwdriver assembly required. Call us at 1-480-836-8170, or email us at [info@add-a-motor.com](mailto:info@add-a-motor.com) to order needed part.

1. Lift-Reel	Repair skill level - basic	Item No. 29138	\$9.93
2. Motor Shaft Gear	Repair skill level - basic	Item No. 465PIN	\$4.89
3. Gearmotor	Repair skill level - basic	Item No. 46555	\$19.50
4. AC-DC Adapter	Repair skill level - none	Item No. 78950	\$19.90

If you choose to return the motor for inspection, please call us to obtain a Return Authorization Number before you ship it. If motor is defective, it will be repaired or replaced no-charge as stated in our warranty. If damage repair is needed, cost normally ranges from \$14.95 to \$24.95.

**BATTERY: CONNECTING MOTOR TO A 12-VOLT BATTERY, 12-VOLT TIMER AND SOLAR CHARGER @ DO NOT** use electric fence system. **The most important first step is to fully charge battery BEFORE proceeding. WARNING:** If battery is not fully charged, motor will run, but its Stop Relay cannot work because battery voltage is low. **Damage to motor or door can result. Always start with fully charged battery. VIP: Attach Door Safety Connector in Step 6.** For **UTMOST CONFIDENCE** and to **PROTECT YOUR CHICKENS**, use 2 batteries. Keep one in house on approved trickle charger. Exchange batteries **WEEKLY** for best results.

**Items needed** For reference, the color Red is positive polarity, and Black is negative.

1. **Power Cord, 5-foot long:** After motor installation, cut-off Power Cord from AC-DC Adapter supplied with motor. ✘ Do not cut while Adapter is plugged-in AC outlet. Cutting cord voids Adapter warranty. Adapter can be re-used by splicing Cord together. Cord has dash-marks printed on one side to aid in splicing to original polarity.
2. **Insulated hookup wires:** Black and red colors. **Braided wire** preferred because it is more flexible than solid wire.
3. **Insulated "miniature" Alligator Clips:** Eight (8) each. Miniature clips help prevent short-circuits in tight spaces until permanent solder connections are made.
4. **12-volt Timer:** Model TM916 is used in following example. Order this timer at [www.timerco.com](http://www.timerco.com) or call 888-874-6280. Many similar timers available online.
5. **Battery:** Output 12-volt DC, 8Ah to 50Ah; higher Ah better. Can use old car, motorcycle, boat, tractor battery if it still holds a charge.
6. **Solar Charger:** Output 12 to 18 Volts, 1 to 2 watts. If a more powerful solar charger is used, add appropriate fuse and voltage regulator.

### Preparation

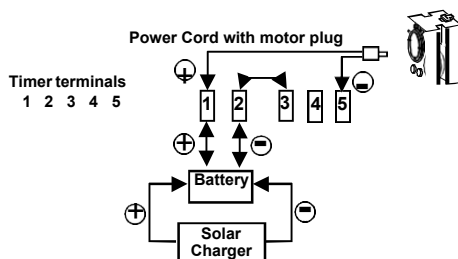
1. **Insulated hook-up wires:** Cut 1 black, and 1 red wire to about 18 inches long. Plus, cut 1 additional black wire to about 6 inches long.
2. **Strip-off 1/2 inch insulation** from ends of hook-up wires. Also, strip insulation off ends of Power Cord wires and split in center making 2 tails about 6 inches long.
3. **Attach an insulated Alligator Clip** to ends of each hook-up wire (6), and Power Cord ends (2).

**Steps** ✘ Prevent exposed wires from touching each other. **Note:** Two (2) connections are made to Timer Terminals #1 and #2. Terminal #4 is not used.

1. **Examine the Power Cord** and look for "dash-marks" printed on its insulation. The dashes indicate the negative polarity side. Attach the negative polarity side to Timer Terminal #5 as illustrated below. Then, connect the opposite side to Timer Terminal #1.
2. **Connect short black** hookup wire between Timer Terminal #2 and Timer Terminal #3.
3. **Connect long black** hookup wire to Timer Terminal #2, and connect the opposite end to Battery negative terminal (black).
4. **Connect red** hookup wire to Timer Terminal #1, and connect the opposite end to Battery positive terminal (red).
5. **Plug Power Cord** into motor power jack. **CAUTION: Battery must be fully charged to avoid motor damage.**
6. **Press Timer "manual" button** until its switches ON. Motor should run and automatically switch itself OFF. Press "manual" to OFF. **If motor runs in wrong direction**, reverse Power Cord ends at Terminals #1 and #5. Electrical set-up is now complete.
7. **Program timer settings** according to Step 10 on page 3. **VIP: MUST set an OFF after every ON, otherwise motor will not reverse.**

**Note:** After setup complete, you may eliminate Alligator Clips by soldering wires to Timer Terminals. **HOWEVER, NEVER SOLDER WIRES TO BATTERY TERMINALS.**

✘ **VIP: If Timer has "motor speed control", or "run time" adjustment, set it to its maximum value, otherwise motor will not operate properly.**



**Solar charger** is recommended. **Output** must be 12 to 18 volts.

Connect solar charger red positive alligator clip to battery positive post, then connect black alligator clip to battery negative post. Aim solar panel toward sun's midday travel arc. Affix to coop at appropriate tilt angle. For peak performance, clean panel periodically.

**Battery care:** Batteries are not weather proof. Snow and rain can short terminals. Keep covered and ventilated. Check voltage level periodically, **but first** unplug solar panel.

- ♦ If 14.0 volts or higher, temporarily unplug solar panel if in use. Overcharging can damage battery. A fuse or voltage regulator might be required.
- ♦ @ **Low voltage** (10.9 volts or less): Motor starts but stop relay might not operate. **THIS CAN CAUSE DAMAGE.** Fully charge battery, replace it, or add solar panel.