J.G.S. Engineering Inc.

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JGS
SATELLITE ACTUATOR

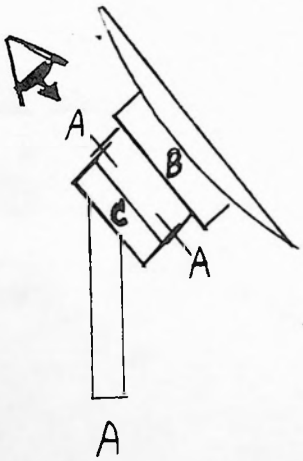
PLEASE READ THIS BEFORE INSTALLING OR USING THIS ACTUATOR

The actuator of a satellite antenna has one of the hardest jobs to do. It is asked to be a trouble free unit under very adverse conditions. It must be outside in all weather conditions; rain, snow, ice, dust, heat, etc. It must operate from temperatures of -40°F to 140°F, move smoothly, and stop accurately.

It will do this if the following principles and instructions are observed.

PRINCIPLE OF OPERATION:

These principles remain the same for all antenna mount situations and are basic rules to remember.



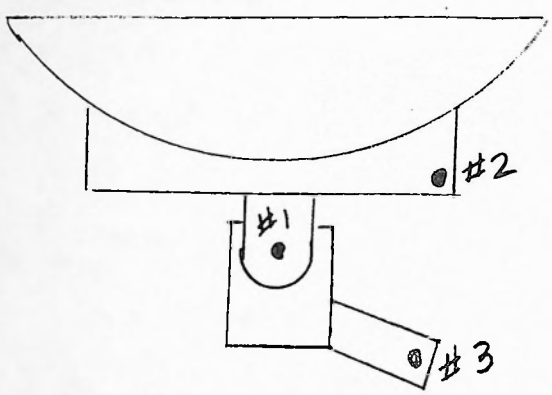
The satellite dish is mounted on a frame which is to rotate the dish. Rotating point A on the dish mount is called the dish axis. (Refer to sketch A) These points should have very little loose movement. They should allow the dish to move free and easy but not be loose.

Item B is the dish mount and item C is the stationary mount. The actuator is connected to the dish mount and the stationary mount and rotates the antenna around its axis A.

This means there are three major points.

1) Dish Mount Axis
2) Actuator Dish Mount
3) Actuator Stationary Mount

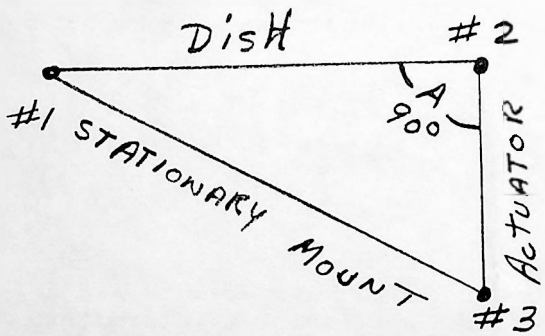
If in sketch A we look down the dish mount axis, we see the following in sketch B.



B

The actuator is connected between #2 and #3. The motorized or stationary portion of the actuator would be connected at point #3 and the movable tube connected at point #2.

This is where the basic rules of actuator movement and force principles come in to play and should be remembered whenever installing an actuator.

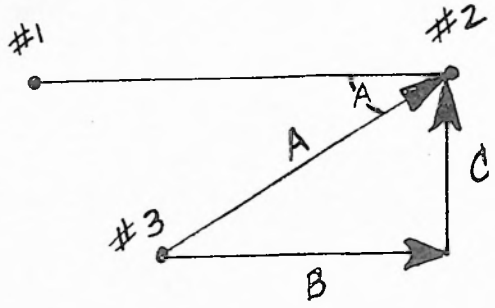


C

Refer to sketch C. By drawing lines between point #1 to #2, #2 to #3, and #3 to #1 we create a triangle. Remember the line from #2 to #3 is the actuator.

With the antenna set at its lowest desirable location, we want to mount the actuator in its retracted position so that the angle it makes at A is as close to 90° degrees or perpendicular as possible.

There is a reason for this. To make use of the total force of the actuator, the actuator is to be at 90 degrees to a straight line from where it is connected (#2) to the point the dish is being pushed around (#1). If this angle is not 90 degrees you get only a portion of the force. This is shown in sketch D.

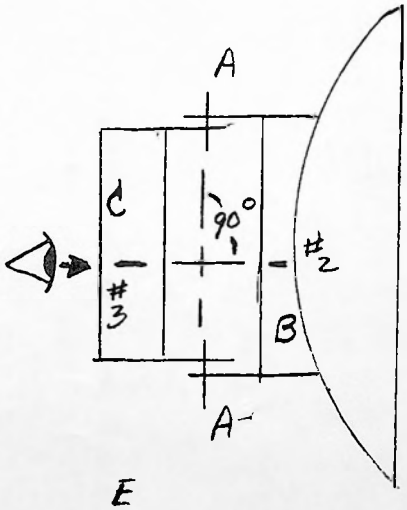


D

If the actuator force is A, the available force to move the dish is only C, and the force B is putting pressure on the antenna bearings at point #1 by trying to push it out, not around. This adds extra load to the antenna which must be moved.

You can see from the diagram you only get a portion of the actuator force. Why not make sure it is at 90 degrees and get all the actuator force you have available?

Now let us look at another principle. Let us view the antenna mount at 90 degrees to the dish axis.



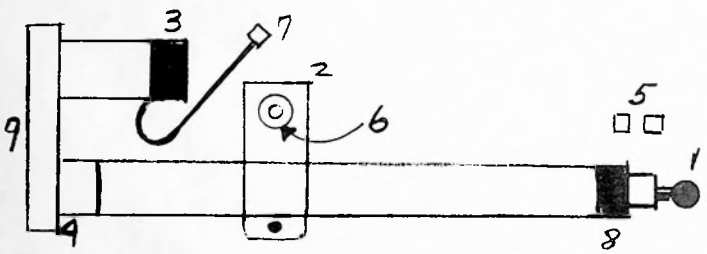
E

The actuator mounted between points #2 and #3 should be as close to 90 degrees as possible to the dish axis A. If not, the same force principle applies. Not all the force will be used to move the dish. This is why the actuator should be able to swivel at points #2 and #3 so it can adjust any misalignment.

Remember the capabilities of the antenna is only as good as the combination of all its parts. It does no good to have an actuator that can function in .01 inch increments if the mounting holes have an 1/8 inch of slop in them or the antenna mount moves a 1/4 of an inch. These items must all be free of excessive movement. Now let us install the actuator.

INSTALLATION OF ACTUATOR

The JGS Actuator comes complete with all items to install the actuator properly.



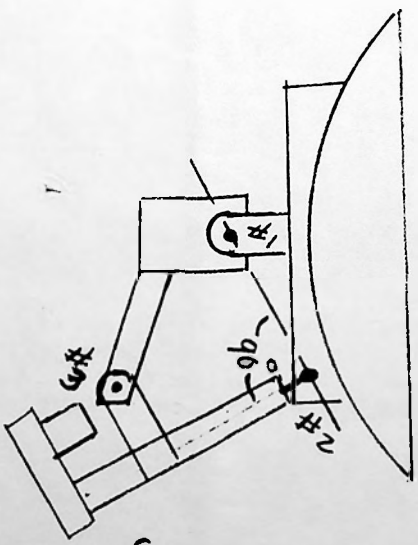
F

1) Rod Bearing
2) Mounting Clamp 18" & 30"
3) Motor Connections
4) Drain Holes
5) Rod Bearing Spacers
6) Mounting Clamp Bushing 18" & 30"
7) Cable
8) Rain Boot
9) Gear Cover

1. Loosen the mounting clamp (2) so that it can be moved on the tube.

2. Determine where the actuator clamp is to be bolted to the antenna mount. If it requires a 1/2 inch bolt use the mounting clamp bushing. If a 3/4 inch bolt is necessary do not use the bushing. It is to be bolted down tight after the actuator has been aligned. (This is having the actuator at 90 degrees to the dish axis.)

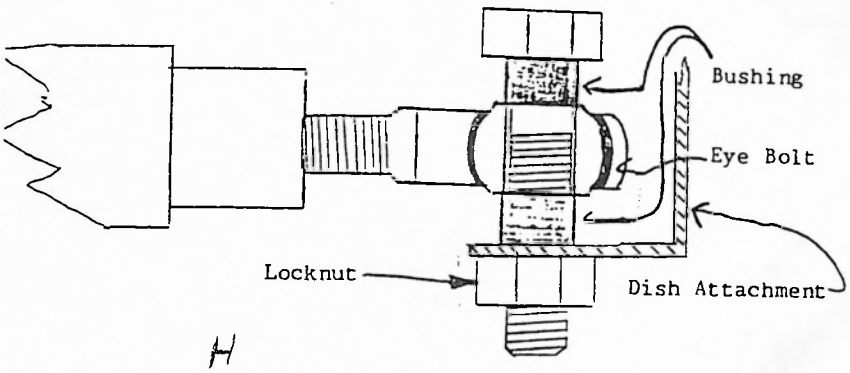
3. Set the antenna to its lowest desireable location and mount the rod end bearing to the antenna so that the angle between the actuator and a line from the dish mount axis to the rod end bearing is approximately 90 degrees. (See sketch G and H)



G

Use the bushing spacers provided to give the proper mounting clearances. (See drawing H)

Eye Bolt bushings are provided for proper eye bolt pivoting.



H

4. With the rod end bearing and spacers in place, tighten the bolt holding it to the dish mount.

5. Align the actuator with the dish axis and tighten the bolt.
Note: Since these instructions are general and apply to all antenna mounts it may be necessary in some instances to use spacers, washers and drill holes to comply with these principles.

6. Rotate the actuator motor so that the drain holes in the tube and gear housing are at the bottom. DO NOT SEAL THESE HOLES.

7. Tighten the bolt holding the tube in the tube clamp.

8. Bring the cable to the actuator control and connect it.

9. Move the dish through its scanning arc while someone is watching its movement so that no binds or contact is made with the actuator moving parts and the antenna mount. Areas where contact occurs may be:

   1) Actuator tube where rod end bearing is assembled.

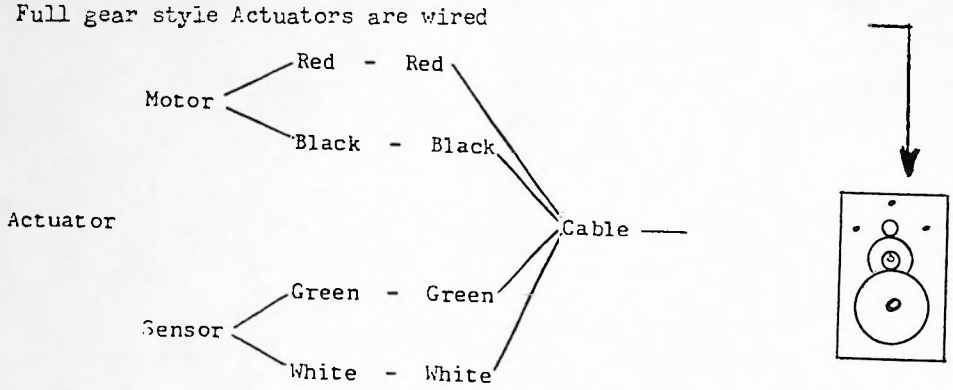
   2) Mounting Clamp with antenna mount.

   3) Tube coming in contact with mount at the dish axis (A) into the control.

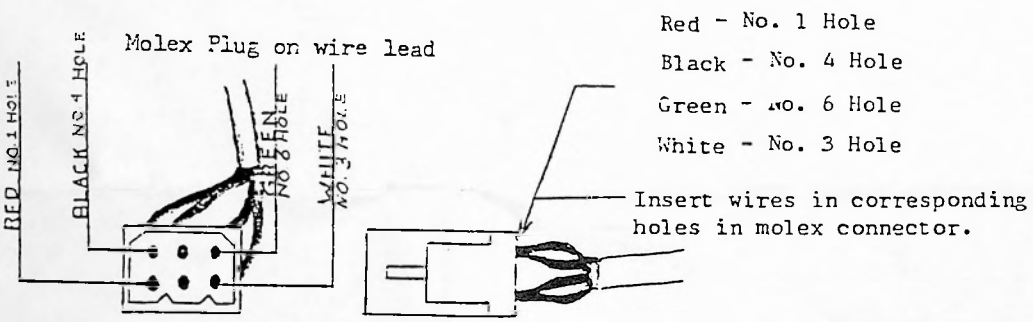
10. Now the lower and upper limits may be programed.

WIRING CONNECTIONS

Full gear style Actuators are wired



Cable connections for all 36V units -



SERVICE CHECKS

Problem: The actuator does not move.

a) Check visually for any obstructions at the antenna, physical binds at the antenna, mount or actuator mounts.

b) Check the cable connected to the control. Is the power on in the control?

c) Refer to sketch F, item #3, the black motor terminal cover. Remove the black motor cover and make sure all leads are connected.

d) With a D.C. Voltmeter, check the motor voltage at the black and red motor leads when the manual up button on the control is pressed. This should read over 30 volts D.C. If not, check the voltage at the control.

e) To check the sensor count, remove either the green or white lead from the sensor leads. Connect an Ohm meter across the sensor leads. Refer to sketch F item #9 gear cover. Remove this cover by removing the 2 bolts. Now rotate the large gear by hand and watch the Ohm meter. For one revolution of the large gear you should get 3 distinct meter movements showing the sensor switch opening and closing. Reconnect leads and replace gear cover.

f) If a problem still exists, disconnect the red or black motor lead and connect an Ohm meter across motor leads. If no continuity or meter movement is shown, the brush spring in the motor may have come loose.

g) If continuity is shown connect a separate power supply of the proper voltage to the motor to see if it operates. If it does the problem is not in the actuator. If the motor does not run, it should be replaced.

WARRANTY

J.G.S. ENGINEERING WARRANTS THAT THE ACTUATOR SHALL BE FREE FROM DEFECTS IN MATERIAL AND WORKMANSHIP FOR A PERIOD OF TWELVE MONTHS AFTER DATE OF MANUFACTURE. J.G.S. ENGINEERING OBLIGATION UNDER THIS WARRANTY SHALL BE LIMITED TO THE REPAIR OR EXCHANGE OF ANY PART OR PARTS WHICH MAY THUS BECOME DEFECTIVE UNDER NORMAL USE AND SERVICE AND WHICH J.G.S. ENGINEERING EXAMINATION SHALL DISCLOSE TO BE DEFECTIVE. THIS WARRANTY IS EXPRESSLY IN LIEU OF ALL OTHER WARRANTIES EXPRESSED OR IMPLIED INCLUDING THE WARRANTIES OF MERCHANTABILITY AND FITNESS FOR USE AND OF ALL OTHER OBLIGATIONS OR LIABILITIES ON J.G.S. ENGINEERING AND J.G.S.ENGINEERING NEITHER ASSUMES NOR AUTHORIZES ANY OTHER PERSON TO ASSUME FOR J.G.S. ANY OTHER LIABILITY IN CONNECTION WITH THE SALE OF THE ACTUATOR. THIS WARRANTY SHALL NOT APPLY TO AN ACTUATOR OR ANY PART THEREOF WHICH HAS BEEN SUBJECT TO ACCIDENT, NEGLIGENCE, ALTERATION, ABUSE OR MUSUSE. J.G.S. ENGINEERING MAKES NO WARRANTY WHATSOEVER IN RESPECT TO ACCESSORIES OR PARTS NOT SUPPLIED BY J.G.S. ENGINEERING.