

GEAR/TCEA Robotics

Challenge 6: Helping Hand



Challenge 6.2: Carrying and Dropping the 2-Gang Switch Plate

THE OBJECT:

The aim of this challenge is to add a motorized arm to the robot in order to carry and drop a **2-Gang Switch Plate** into the blue 3-gang electrical box. The motorized arm must be able to drop the object automatically once it approaches the box, with no human assistance. You may pre-load the switch plate into or onto the arm before you run the program. The robot and arm must be able to carry the object at least three feet before it gets to the box, and must be able to return to the starting location after dropping the object in the box.

1. What design changes need to be made to the arm and robot, to re-tool it from carrying and dropping the PVC coupler to now carrying and dropping the switch plate?
2. How does the extreme change of weight and dimensions (from PVC coupler to switch plate) affect how your robot and motorized arm carry the switch plate?
3. Does the number of programming blocks you need to complete this challenge have to change because you are carrying a different payload?

4. Did the overall height of your motorized arm change from 6.1 to 6.2? If so, record the two measurements below and explain why you made the change.

5. How could you solve this challenge without using a motorized arm?