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Sensor Report

The contact detection sensor consists of two parts: a contact bump detection system and a towing rod contact detection system. The contact bump detection system will notify each robot that it has bumped into the other robot. The towing rod contact detection system will notify each robot that the offender's towing rod has bumped into the officer robot.

I constructed the bump detection out of two pieces of aluminum foil. I wrapped one piece around the top half of the bump skirt and I wrapped one piece around the bottom half of the bump skirt. I wired the top foil to PORTB[1] and I wired the bottom foil to ground. When the robots bump into each other, the top foil on the officer robot shorts the pieces of foil on the offender robot and the bottom foil on the offender robot shorts the pieces of foil on the officer robot. In this way, both robots simultaneously become aware that they have bumped into each other. Figure 1 shows the circuitry of the bump detection system.
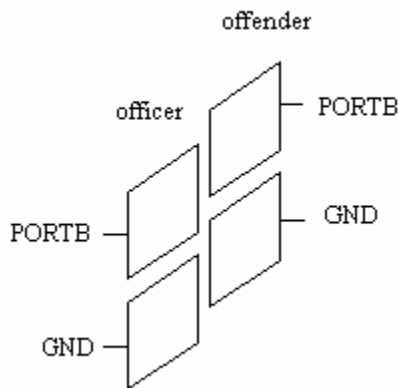

Figure 1: Contact Bump Detection System

I constructed the towing detection system in a similar manner. I wrapped one piece of foil around the towing rod and taped another piece of foil below the first piece so that the

end of the second piece hangs in front of the first piece. I connected the first piece to

PORTB[3] and I connected the second piece to ground. When the offender's towing rod

touches the officer's bump skirt, the second piece of foil pushes against the first piece of

foil and pushes against the two pieces of foil on the officer's bump skirt. Thus the second

piece of foil shorts itself to the first piece and shorts the foil on the officer's bump skirt

together. Figure 2 shows the circuitry of the towing rod contact detection system.
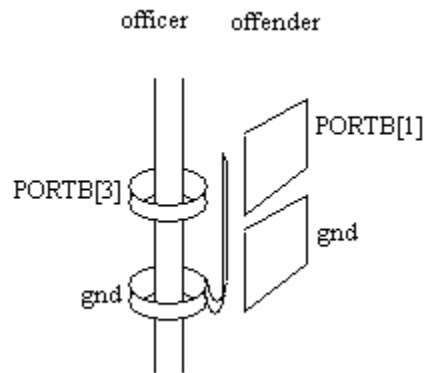
Figure 2: Towing Rod Contact Detection System