

2/4/19

7407 Pneumatics Wiring Guide

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Wiring Walkthrough



This guide will include instructions for wiring the following components: solenoids, the pressure switch, and the air compressor. For instructions on how to wire the PCM to the rest of the electronics system please reference the general electronics wiring guide here: (000)

This guide includes technical language that is reviewed in the general electronics wiring guide. Please reference that guide if you struggle with general wiring skills and/or language.

Pneumatics Control Module (PCM)



- All components in this guide will be connected to the PCM. The PCM is in charge of supplying power to the robot's pneumatics system. The PCM itself is given power through and connected to the general electronics system of the robot (PDP and RoboRio).

- The two 'Vin' ports shown above are connected to the PDP. These ports supply power to the module.
- The yellow and green 'CAN' ports are connected to the RoboRio. They are responsible for giving and receiving digital signals from the brain of the robot.
- The red and black ports labeled 0-7 are for solenoid connections
- The red and black 'compressor out' ports are for the two air compressor wires.
- The remaining two 'pressure sw' ports adjacent to the compressor ports are for the pressure switch wires.
- Most wire connections going into the PCM should be from 12-16 AWG

Air Compressor



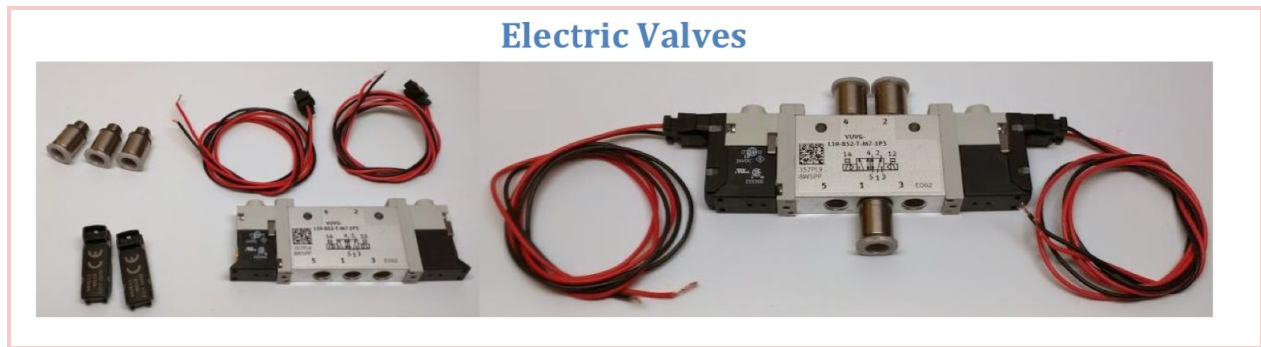
- There is one red wire and one black wire that are attached to the air compressor. The black wire has a ring connector and the red wire has a butt connector (<https://images.app.goo.gl/NKpHDdjqBY1TBeCs9>). You will have to connect additional wire (ideally 12-16 AWG) to these connectors so that the end of the compressor wires can be inserted directly into the PCM. The opposite end of the wires should be bare copper wire that has been stripped with ~1 cm of exposed wire.
- Insert the red wire into the red 'compressor out' port on the PCM
- Insert the black wire into the black 'compressor out' port

Pressure Switch



- As seen above, the switch has two screw connection ports. In order to attach wires to the switch, use ring wire connectors. The opposite end of the wires should be bare copper wire that has been stripped with ~1 cm of exposed wire.
- Insert both wires into the 'pressure sw' ports on the PCM. It does not matter which wire goes into which port.
- Again, you should be using wire anywhere from 12-16 AWG

Solenoids



- Most solenoids will not come packaged with their wires attached. In the left of the above photo there are wire clips that can be inserted into the side of the solenoid.
- If you are using a single solenoid (it will only have room for one wire clip to be attached) then connect the red and black wires to the numbered ports on the PCM. If you are using a double solenoid, then make sure to connect both sets of wires in consecutive numbered ports on the PCM.

General Overview

- The air compressor is given power by and connected to the designated ports on the PCM
- The pressure switch is given power through its designated ports on the PCM
- Solenoids are given information through the digital numbered ports on the PCM. The RoboRio, the robot's brain, gives a signal to these ports which then send that signal to the solenoids. The solenoids then control the actuation of the air cylinders.

