Pneumatics

Compressed Air

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What you need to know

Probably my personal least favorite part of electrical: **Pneumatics**

Pneumatics: The use of compressed air for quicker and faster movements that a motor can not provide

Parts:

Compressor

Charges air for components on the robot.

Pressure Switch

Works with a controller to tell the compressor when to shut off.

Solenoid Valves

Electronically controlled valves.

Pneumatic Controllers

PH/PCM

Controls the compressor and up to 8 solenoids.

It gains input for a pressure sensor to control the compressor when needed.

CAN based communication

Pressure Switch

Manages amount of pressure in the robot

Acts as “go-between” for the PCM and compressor.

Dump Valve

Releases (or dumps) all air out of the robot.

Electrical Solenoid Valve(s)

Actuates the different sides of a pneumatic component such as a shifter or piston. Can be single or double action.

Compressor

Charges air for components such as pistons and shifters on the robot. FRC-legal amount of air is 120 psi (pounds per square inch).

Emergency Relief Valve

Keeps the air under 125 psi if the compressor or pressure switch is working incorrectly

Pneumatic Practices:

- For cutting tube use a special tube cutter to get clean cuts
- To make seals tight we use 2 and a half layers of teflon tape for brass fitting threads
- Make sure tube don’t kink or fold and don’t touch the tips of tubes

General Pneumatic Layout:

Image result for frc pneumatics layout

NOTE: We usually don’t use pneumatics unless the robot requires quick movements (in one motion) in a short time span

Pneumatics 101 Presentation

https://docs.google.com/presentation/d/e/2PACX-1vR-i7oRZenEp6F4HAv6h24qBD8LX4rffiXThL8gi0fSKKrH94giUg90wJJneNPlyb_5jHdq_vsgh5C2/pubembed?start=falseloop=false&delayms=6000000