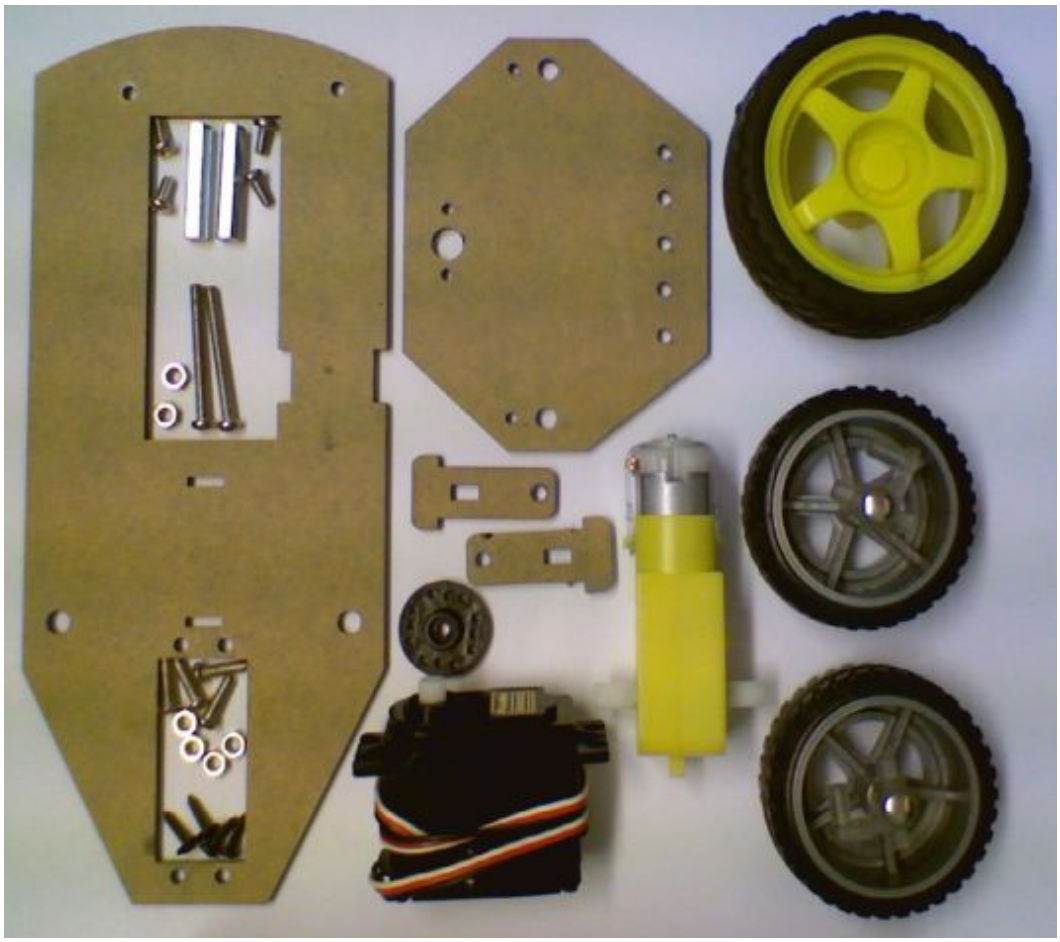
This kit is the production version of our DIYbot. No gluing required, simply screw together.



1. Check all parts are present

Basic Hardware Pack

- 1 x Main plate in transparent blue acrylic with paper covering
- 1 x Front plate (acrylic)
- 2 x Gear motor supports (acrylic)
- 1 x 6V Gear motor
- 1 x 65mm diameter rear wheel
- 2 x 50mm diameter front wheels with stub axles
- 1 x Standard S3003 servo with screws and servo horns
- 4 x M3 6mm screws
- 4 x M3 10mm screws
- 2 x M3 30mm screws
- 6 x M3 nuts
- 2 x M3 25mm hex spacers
- 1 x 6-cell battery holder
- 1 x 24cm tie-wrap

Electrics Pack

- 1 x 2.1mm jackplug and wires
- 30cm 2-core cable
- 1 x 100nF ceramic capacitor
- 4 x Female-Male Dupont wires (20cm)
- 1 x HC-SR04 Ultrasonic sensor
- 1 x 170 tie-point mini-breadboard with self-adhesive

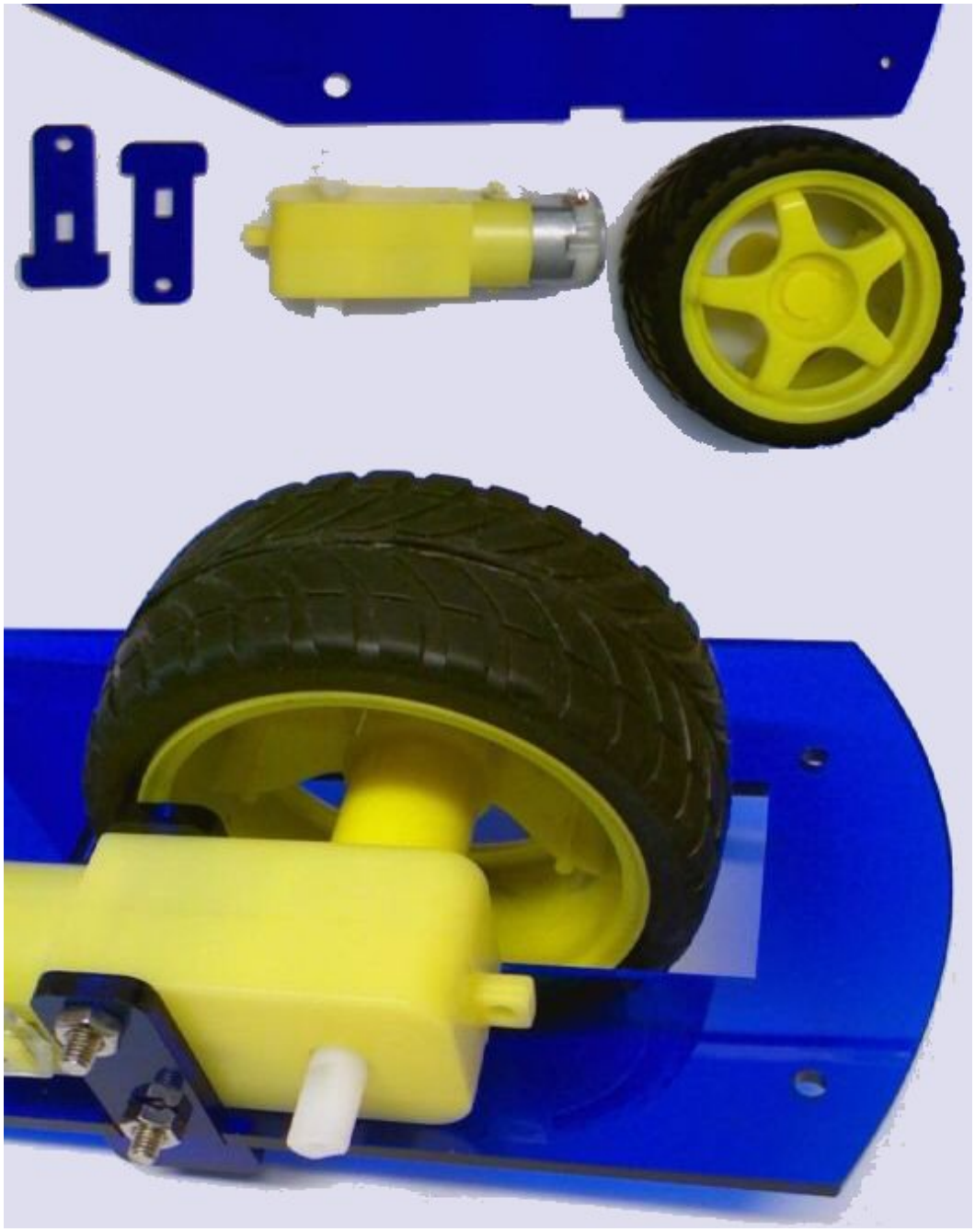
backing

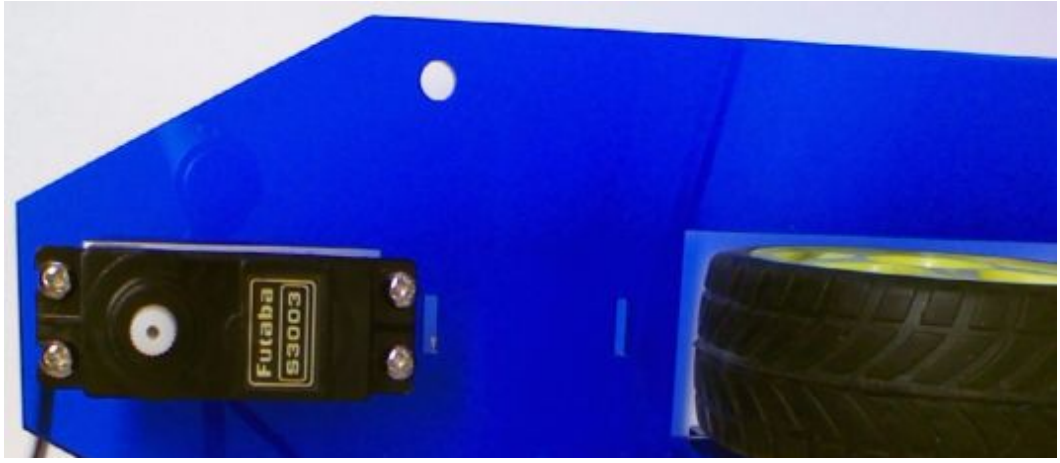
Optional Boards

- 1 x Arduino UNO or compatible
- 1 x Motor & Servo shield (Adafruit or compatible)

2. Fit the Motor and Drive Wheel

- Remove paper backing from the acrylic parts
- Requires the 30mm M3 screws and 2 nuts
- NB. ENSURE you mount the motor on the correct side (or the Arduino cannot be fitted)
- Pass the 30mm screws through the motor supports and the holes in the motor with the screw head on the inside
- Push the wheel onto the inner side of the motor
- Clip the 2 motor supports into the gaps on the side of the main plate (this will require some jiggling around)
- Then add the M3 nuts and tighten. You can pass a small screwdriver through the spokes of the wheels to the screw heads

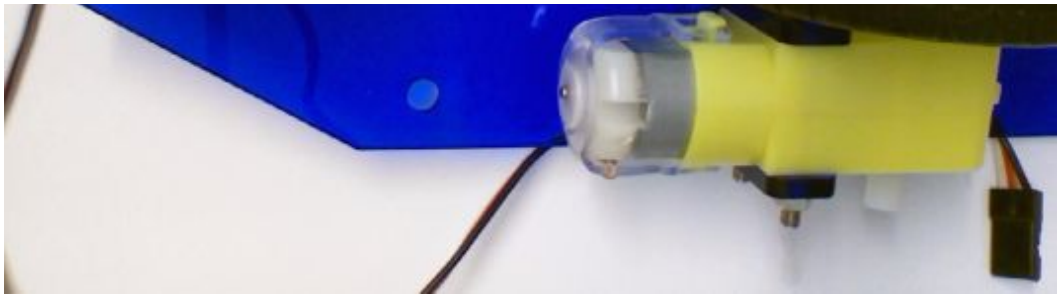




3. Add the steering servo

Make sure you attach it to the bottom of the plate (same side as the motor)

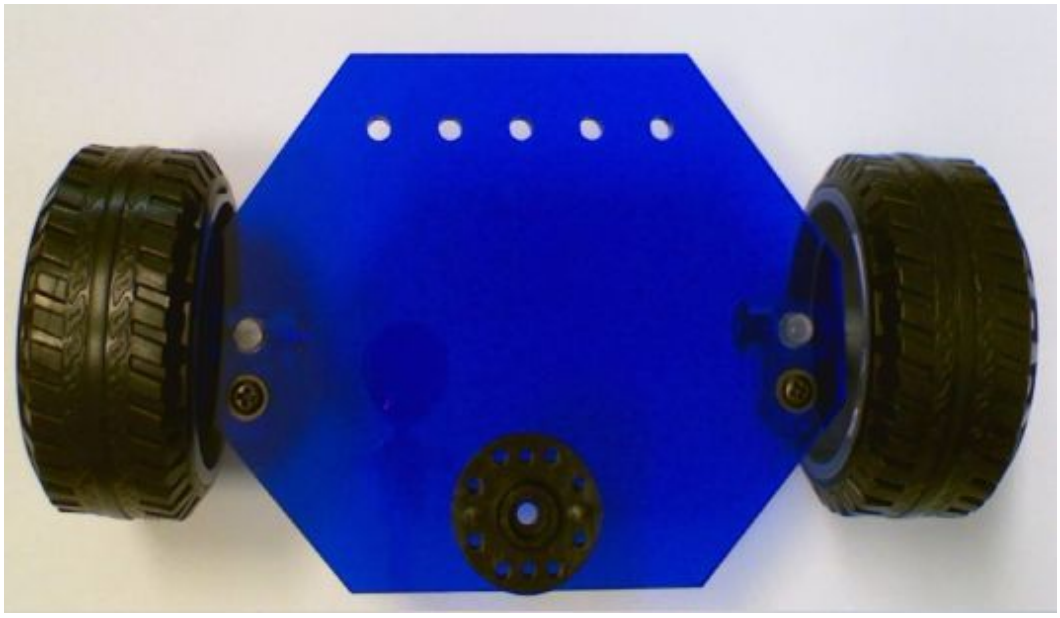
- From the bottom, feed the servo cable through the hole in the main plate
- Push the servo into the mounting hole (it is a little tight, but does fit)
- Make sure the servo shaft is at the front as shown in the photo
- Use 4 x M3 10mm screws and 4 x nuts



screws and 4 x nuts to fit in place

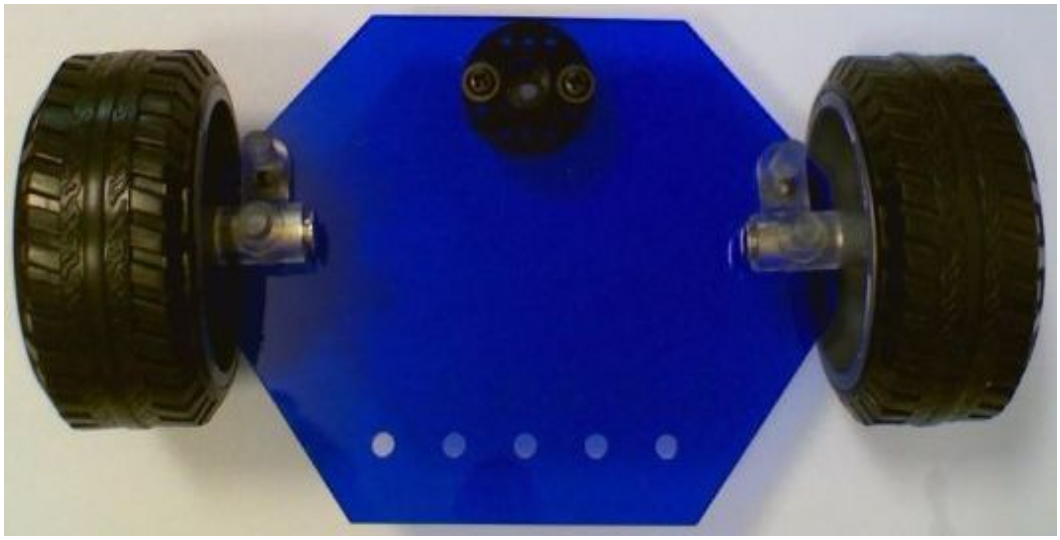
4. Add the pillars for the Arduino and Motor Shield

- Use 2 x M3 6mm screws and 2 x M3 hex pillars
- Screw the M3 screws into the pillars from the bottom of the main plate
- The other 2 x M3 6mm screws are used to fit the Arduino to the pillars



5. Assemble Front (steering) Plate

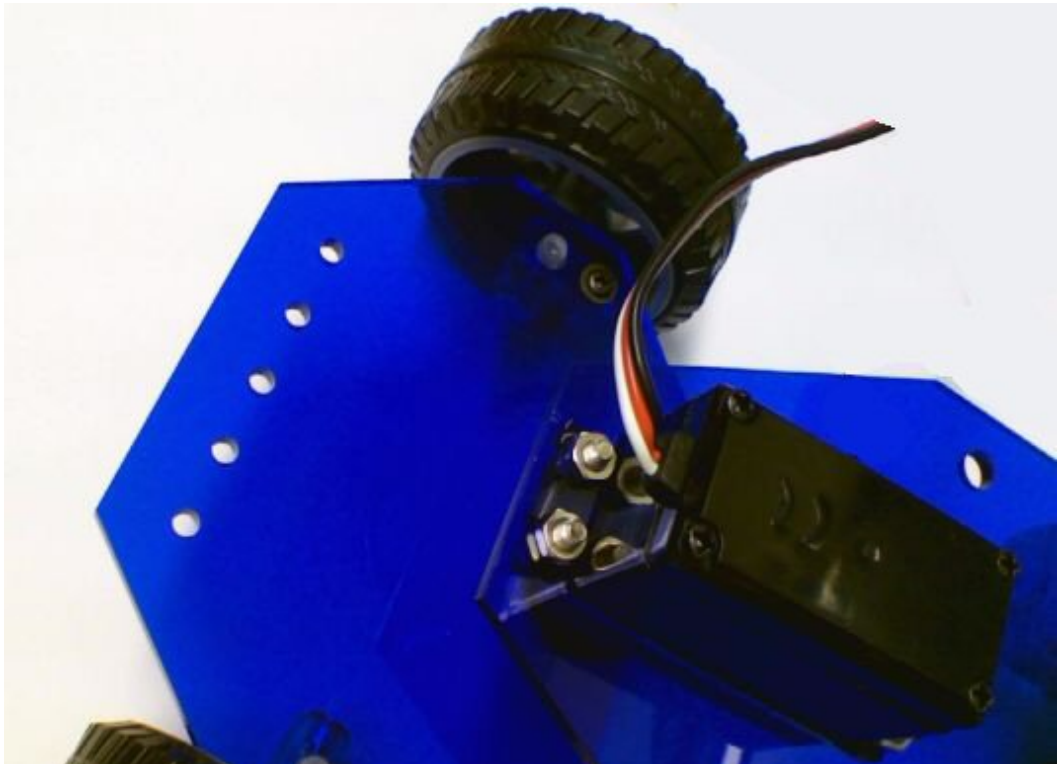
- Use the 4 small black self-tapping flange-head screws (in the servo pack)
- The round servo horn is mounted, facing up, on the top of the plate and screwed into from below
- The two wheels (one Left wheel, one Right wheel) are mounted on the bottom of the plate and screwed into from above

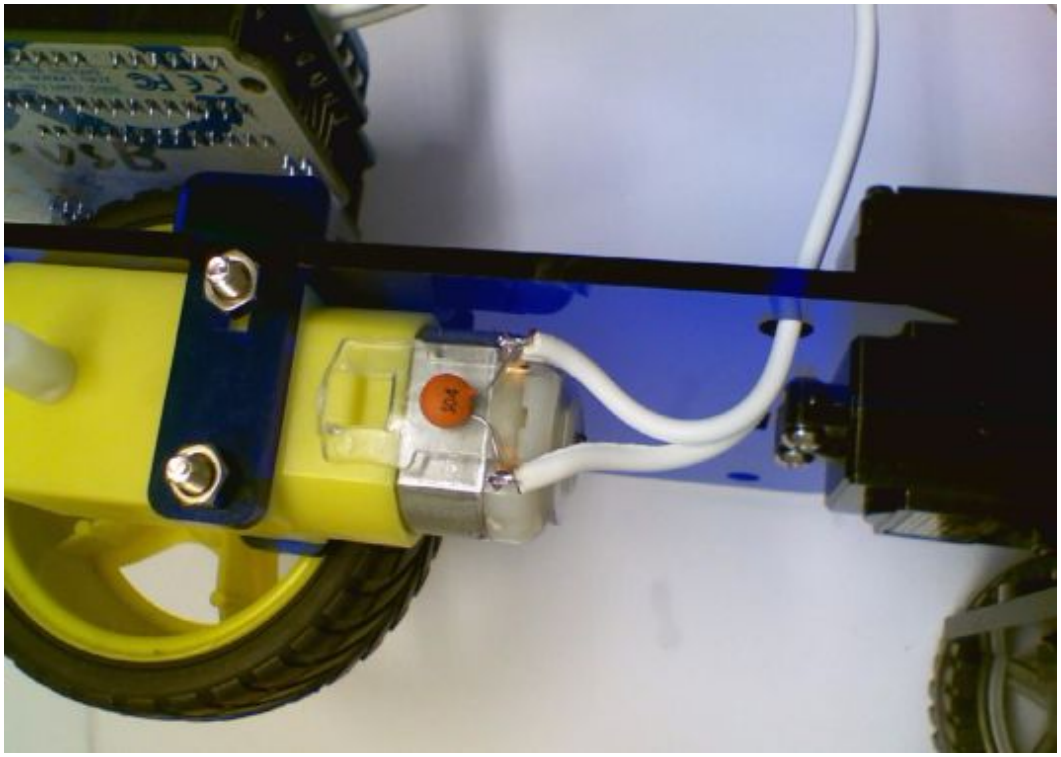


6. Connect The Front and Rear Frames together and add Mini-Breadboard

- Ensure that the servo is in its mid position by gently turning the shaft
- Push the servo shaft into the servo horn
- Use the servo mounting screw (in the servo pack) to fasten the horn to the servo
- Remove the self-adhesive backing from the mini-breadboard and place it on the top of the plate, just

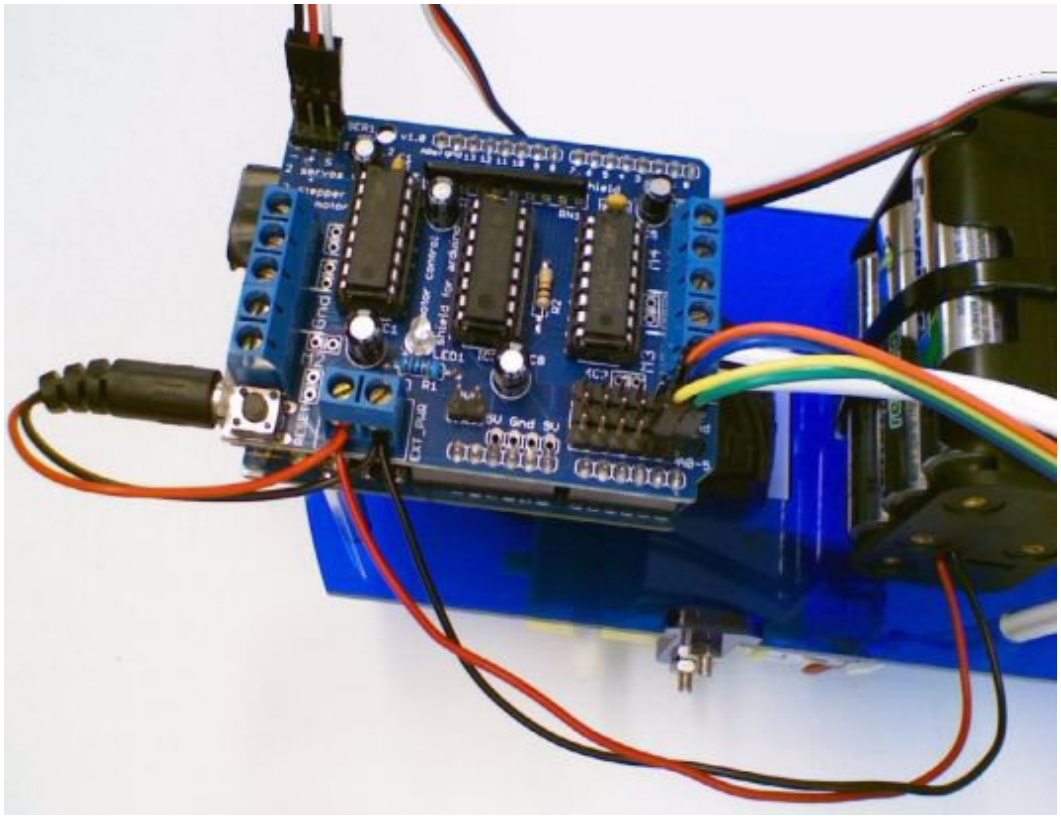
  behind the 5 small holes at the front
- The breadboard can be used to mount the ultrasonic sensor as well as light sensors





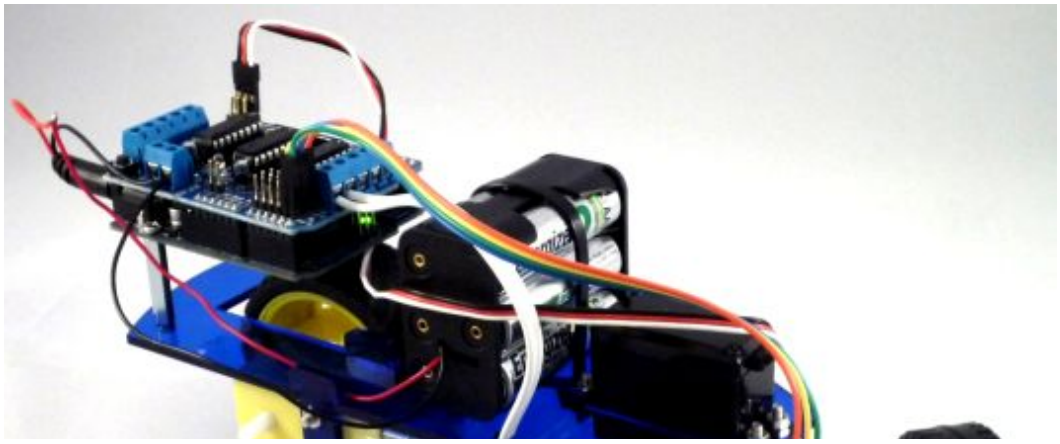
7. Add Noise suppressor and wires to Motor

- Solder the 100nF capacitor (orange blob marked 104) across the motor terminals
- Solder the 2-core white cable to the motor terminals
- Feed the white cable through the hole in the main plate



8. Complete the Wiring

- Solder three 6-way header strips to the motor shield as shown in photo for A0..A5
- IMPORTANT: Remove and throw away the jumper labelled PWR on the motor shield (near the power terminals)
- Carefully plug the motor shield onto the Arduino
- Plug the servo cable into SER1 plug, ensuring the Black wire is in the corner of the board as shown
- Plug the ultrasonic sensor into the breadboard, near the front
- Connect the Ultra-Sonic sensor using the Female-Male wires provided:
    - Vcc goes to

	the +5 (on Arduino) ◦ Trig goes to A4 ◦ Echo goes to A5 ◦ Gnd goes to Gnd • Connect the black wire from the battery box directly to the GND terminal on motor shield • **REMOVE and THROW AWAY the jumper on the PWR** - leaving this on WILL damage the Arduino • Cut the Male-Female wire provided in two pieces: ◦ Connect one bare end to the Red wire from the battery box ◦ Connect the other bare end to the +M terminal on motor shield ◦ You can now use the Male-Female jumper as a crude switch to turn off motor power • Connect the Arduino power connector to the M+ and GND terminals on Motor Shield • Take the twin-core wire from the motor and connect to the 2 M4 terminals on the motor shield
	**The Completed Robot** • Add in 6 good quality AA batteries. We prefer Energizer Rechargeable Extremes • Download some demo code from >HERE< • Switch it on by plugging together both halves of the Male-Female wire • You can add light

sensors (LDRs) mounted on the breadboard so the robot follows (or avoids) light
- Use the small holes add the front to add line detector modules (we sell a pack containing three line detectors and mounted pillars)
- Do let us know how you get on