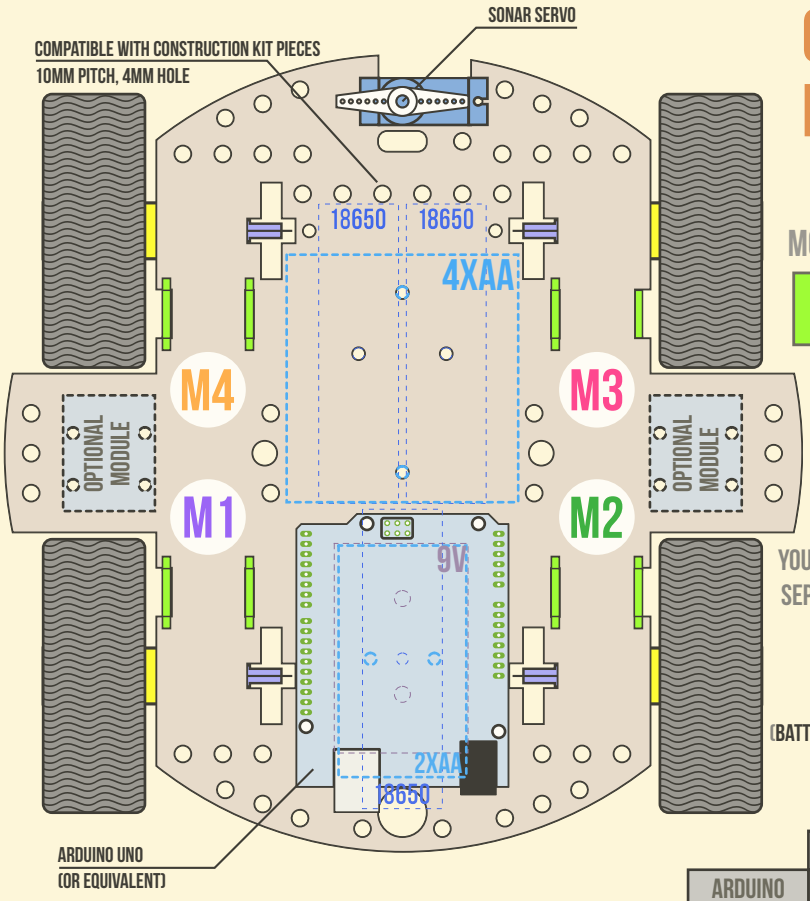
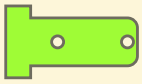
GENERAL DIAGRAM

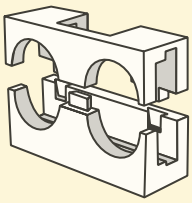
ORC-KIT



MOTOR MOUNT



SONAR MOUNT



YOU CAN POWER YOUR **ARDUIINO BOARD** AND YOUR MOTORS SEPARATELY OR BOTH FROM THE SAME POWER SUPPLY. SEE THE TABLE BELOW FOR POSSIBLE CONFIGURATIONS).

(**BATTERIES** THAT OVERLAP THE ARDUINO BOARD IN THE DIAGRAM SHOULD BE INSTALLED UNDERNEATH THE PLATFORM)

POWER OPTIONS

	AA+9V	18650+9V	6XAA	18650
ARDUINO	9V	9V	6XAA	2* OR 3 18650
MOTORS	4XAA	2X18650		

DUAL-POWERED

* RECOMMENDED

THINGS YOU WILL NEED!

FROM THE ORC-KIT PROJECT REPOSITORY

- 1 ORC-KIT ROBOT BASE (LASER-CUT)
- 8 ORC-KIT MOTOR MOUNTS (ALSO LASER-CUT)
- 1 SONAR MOUNT (3D PRINTED)
- 1 **POWER HUB** BOARD (OPTIONAL. SEE PAGE 2)
- 1 ORC-KIT 9V BATTERY HOLDER (3D PRINTED. REQUIRED ONLY FOR DUAL POWER CONFIG.)

STANDARD STUFF

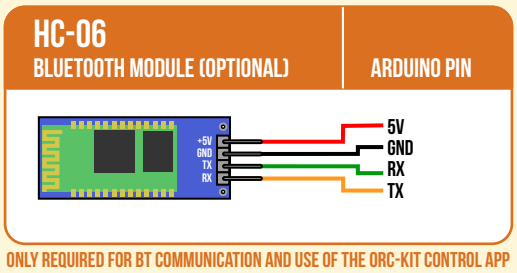
- 4 HOBBY DC MOTORS WITH TIRES (THEY COME IN 48:1 AND 120:1 GEAR RATIOS)
- 8 25MM (OR 30MM) M3 SCREWS + BOLTS (FOR THE MOTOR MOUNTS)
- 2 12MM M2 SCREWS + BOLTS (FOR THE SONAR)
- 1 **ARDUINO UNO** OR SIMILAR BOARD
- 1 **ADAFRUIT MOTOR SHIELD** OR 2X DUAL **H-BRIDGES** TO DRIVE THE MOTORS (*)
- 1 **HC-SR04** OR SIMILAR ULTRASONIC RANGEFINDER
- 1 **SG90** MICROSERVO
- BATTERIES & HOLDERS (DEPENDING ON YOUR CHOSEN POWER CONFIGURATION)
- PCB SPACERS/STANDOFFS AND THEIR RESPECTIVE M3 SCREWS AND BOLTS
- 1 **HC-06** BLUETOOTH MODULE (OPTIONAL. TO BE USED WITH THE **BT CONTROL APP**!)
- 1 TOGGLE SWITCH (OPTIONAL. **NOT** NEEDED IF USING A **POWER HUB** WITH SWITCH)

(*) THE SPOTS LABELED "OPTIONAL MODULE" IN THE DIAGRAM CAN HOLD IN PLACE TWO **L9110S** (OR SIMILAR) **H-BRIDGES** FOR SHIELD-LESS BUILDS. IF A DEDICATED ARDUINO **SHIELD** IS USED, HOWEVER, YOU CAN INSTALL SIMPLE CIRCUITS THERE, LIKE A BT/RADIO TRANSCEIVER, ORC KIT'S POWER HUB, EXTRA SENSORS, ETC.

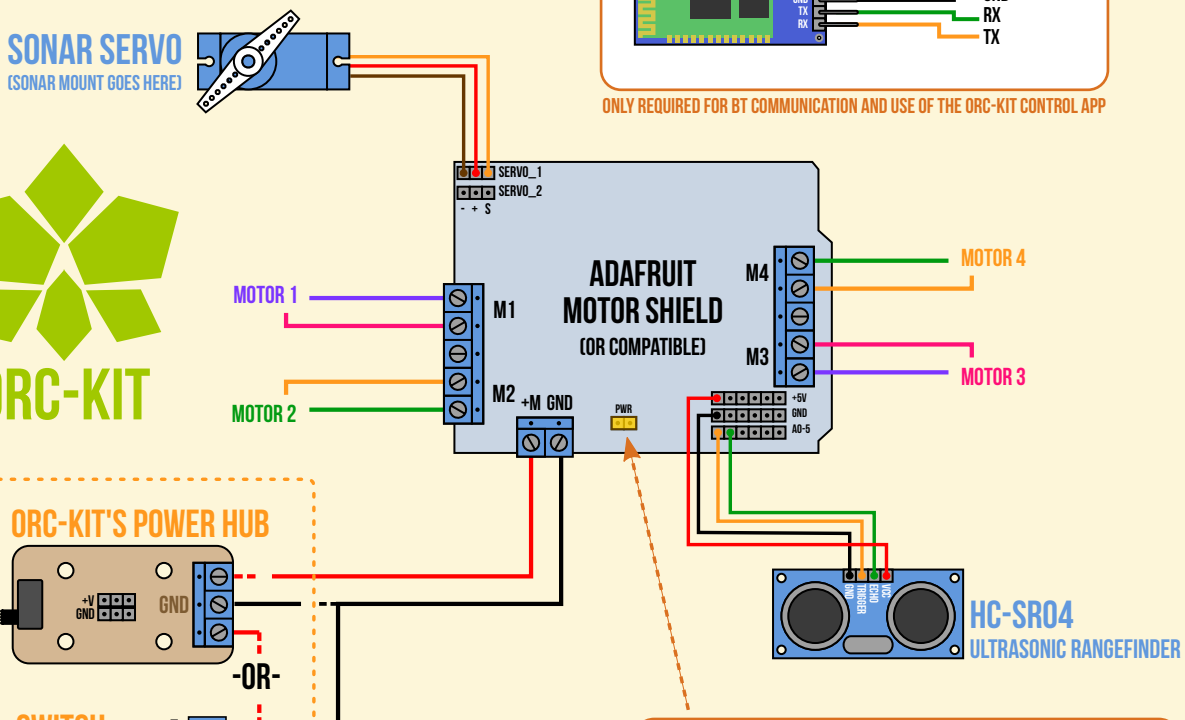
CONSTRUCTION PROCESS OVERVIEW

- SOLDER WIRES TO THE **MOTORS** AND INSTALL THEM UNDER THE BASE USING THE MOTOR MOUNTS.
- SCREW THE **BATTERY HOLDERS** REQUIRED BY YOUR SELECTED POWER CONFIGURATION IN PLACE.
- INSTALL THE **SONAR SERVO** (PLUS SERVO ARM) AND ATTACH THE SONAR MOUNT TO IT.
- MOUNT AND WIRE THE **ELECTRONICS**: ARDUINO, RANGE-FINDER, SHIELDS, ETC.
- WRITE AN ARDUINO **SKETCH** TO CHECK THAT EVERYTHING WORKS!
  (IF YOU USED THE COMPONENTS RECOMMENDED HERE YOU CAN USE THE SKETCHES FROM THE **ORC-KIT PROJECT REPOSITORY**)

CONNECTION DIAGRAM
(USING AN ADAFRUIT MOTOR SHIELD OR EQUIVALENT)

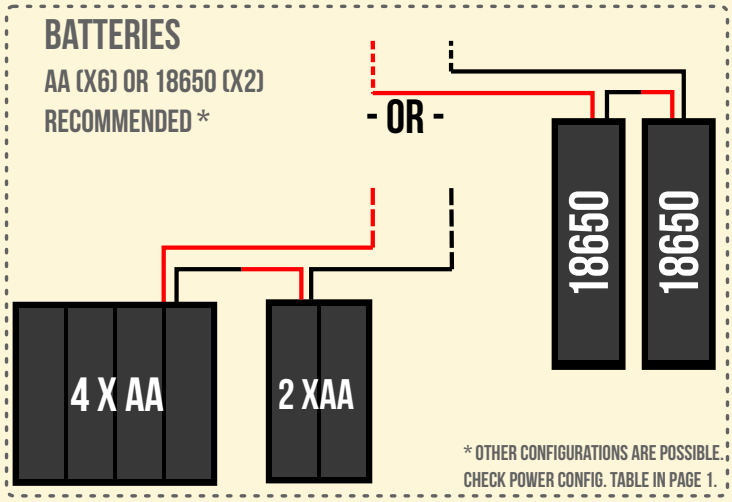


ONLY REQUIRED FOR BT COMMUNICATION AND USE OF THE ORC-KIT CONTROL APP



DUAL POWERED CONFIGURATION

IF YOU WANT TO POWER MOTORS AND ARDUINO INDEPENDENTLY, REMOVE THE "PWR" JUMPER FROM THE MOTOR SHIELD, AND CONNECT ONLY THE BATTERIES THAT WILL POWER THE MOTORS. THEN INSTALL A 9V BATTERY UNDER THE BODY OF THE ROBOT AND CONNECT IT TO THE ARDUINO BOARD VIA A STANDARD 2.1MM BARREL PLUG.



SOFTWARE:

IN THE PROJECT REPOSITORY YOU WILL FIND 2 ARDUINO SKETCHES, DESIGNED TO WORK WITH THE COMPONENTS SHOWN HERE:

TEST: ACTIVATES THE MOTORS SO THEY MOVE "FORWARD", AND CENTERS THE SONAR SERVO, REPORTING VIA SERIAL INTERFACE THE MEASURED DISTANCE.
USE THIS SKETCH TO MAKE SURE EVERYTHING IS WIRED CORRECTLY AND AS A BASE FOR YOUR OWN CODE!

BT-REMOTE: A SIMPLE SERIAL REMOTE CONTROL SCHEME TO BE USED WITH THE ORC-KIT REMOTE CONTROL APP (ANDROID). REQUIRES THE HC-06 BLUETOOTH MODULE.

USEFUL LINKS:

- ORC-KIT PROJECT REPOSITORY
  HTTPS://GITHUB.COM/BATTLECODER/ORC-KIT
- ORC-KIT BUILD TUTORIAL / RESOURCE PAGE
  HTTP://DAMNSOFT.ORG/ORC-KIT
- ADAFRUIT MOTOR SHIELD INFORMATION PAGE
  HTTPS://LEARN.ADAFRUIT.COM/ADAFRUIT-MOTOR-SHIELD