# Parts:

[10 Drone Parts List For Building A Drone - Robocraze]

**EXAMPLES OF PARTS + DETAILS:** [How to Build a Drone from Scratch (with a Parts List) - 3D Insider]

### Drone parts shops:

* = Accessories + Kits

* = Accessories Only

- iDrones.ro ✈️ Toate dronele inteligente - Zboară cu noi! *
- Cellgsm – Accesorii GSM *
- DIY Drone Kits - Do it Yourself Bundles - Complete FPV Drone Kit *
- Propellers Parts Drones - HobbyTown *
- Drone Propellers & Parts - Best Buy
- DroneNerds.com | Drones for commercial and recreational use **(cameras & sensors)**
- UAV & Drone Parts & Accessories - RobotShop USA *
- Amazon.co.uk : Drone Parts *
- Drone Parts products for sale | eBay *
- RC Drones | Horizon Hobby
- Home - Unmanned Tech Shop *
- Drone Spare Parts & Tools | HobbyKing *
- Express Drone Parts - Quality and Fast Service for the Professional UAV operators
- DroneRacingParts.com - FPV Drone Racing Parts and Accessories *

[How to Build a Drone from Scratch (with a Parts List) - 3D Insider] **(seen in the beginning)**

1. **Quadcopter Frame**
   [How to Choose the Right Quadcopter Drone Frame - 3D Insider]

- Internal skeleton (basically with min 2/3 holes for propellers), made up of components distributed so that the (crucial) center of gravity of the drone is in the center
- Commonly used materials: **plastic, aluminum, wood, or carbon fiber**
- 2 types: **Freestyle → (recommended for beginners)** are wider and **allow greater freedom in assembling components**

  → **H** and **HX** are the most used and durable, their names define their shape (HX has its "arms" in the shape of an X but the body itself has the structure of an H)




**Racing** → as light (and compact) as possible to prioritize speed → **possible difficulties in assembly due to lack of space**

→ X and Stretch X are the most chosen, following the idea of reducing the weight of the components as much as possible → **requires certain compromises + can lead to "crowding" depending on the structure of the drone**

**Wheelbase = the distance between 2 motors**
**Prop = Propeller**

| FRAME SIZE (WHEELBASE) | PROP SIZE | MOTOR | kilovolt (kV) |
|---|---|---|---|
| 100mm | 2 inches | 1102 – 1104 | 6000+ |
| 120mm | 3 inches | 1104 – 1106 | 4000+ |
| 150mm – 180mm | 4 inches | 1306 – 1408 | 3000+ |
| 200mm – 220mm | 5 inches | 2204 – 2306 | 2100 – 2800 |
| 235mm – 280mm | 6 inches | 2205 – 2308 | 1600 – 2500 |
| 330mm – 350mm | 7–8 inches | 2208 – 2212 | 1500 – 1600 |
| 450mm – 500mm | 9-10 inches | 2212 – 2216 | 800 – 1000 |

**!!! Beware of compatibility with the following:**

2. **The Power Distribution Board (PDB)** → the power supply of all the components of the drone, some ESCs come with it included, it connects them to the drone's battery
3. **Standoffs** → usually cylindrical connectors, which are inserted into predetermined diameter holes, provide structural integrity
4. **Vibration dampening pads** → optional, but offer many benefits regarding the stability of the drone (reduce sound, eliminate certain vibrations of course, etc.) for how simple they are as components
5. **(First Person View) FPV camera mount** → not all cameras fit
6. **VTX mount** → video transmitter, if the frame does not already have a specific place must be dedicated to the antenna → **flexible antenna mounts** help in case of collisions
7. **Motor Mount** → of course, the motor must fit the frame **(see table)**

2. **Motors**
   - **Brushless > Brushed** (older technology) → are more expensive **but make less noise, do not require maintenance, also give better performance**
   - Dimensions are taken according to the frame
   - Also depending on the frame, it may or may not be necessary to design the holes for the engines

3. **Electronic Speed Controllers (ESC)**
   - **Electronic control board that controls engine speed, which also acts as a dynamic brake.** The component assists the ground pilot in **estimating the height of the drone during flight.**
   - This is done by calculating the **total amount of energy consumed by all motors.** The loss of energy from energy reservoirs is **related to altitude.**
   - !!! The voltage produced must be according to the requirements of the motors and they must withstand the strongest current that can be consumed by them

- **4** can be used (one for each engine) or just one **4-in-1**
- Attached **under the frame,** usually with zip-tie

4. **Propellers**
   - The highest quality are made of **carbon fiber**
   - Regardless of the quality, they are **relatively inexpensive,** so they are not worth the risk of a smaller investment
   - The table above is useful for identifying the **right propeller sizes**

5. **Landing Pad**
   - The need for it goes without saying, some frames come with it **already built,** others require one **purchased separately** or **built from scratch** (made of PVC, carbon, metal, rubber)

6. **Flight Controller**
   - The device that manages the flight of a drone. Essentially, it's its **heart.** It **receives information from different sensors and controls its movement and stability**
   - **FC single** best suits our main use case (the drone is too big to think of a built-in ESC)
   - **!!!** With the right sensors (magnetometer, gyroscope, accelerometer), the FC is able to **track the drone's position accurately in 3D space**
   - The information is usually processed by a **firmware** (examples on the website), which cleans up errors after a set up
   - **More detailed information:** **The Ultimate Beginner's Guide To FPV Flight Controller | FPV TO GO**

7. **RC Controller (to control the drone before the autonomous system is deployed)**
   - The number of channels accessed may **vary** (a minimum would be 4, in order to be able to control the drone itself + others for the camera)
   - **The range of connectivity** must also be addressed, depending on **the power of the transmitter, the sensitivity of the receiver** (**!!!** higher does not always mean better results) and **the quality of the antennas** (of the drone and the controller)
   - **Antenna types vary drastically** (examples on site)

8. **Battery**
    - **LiPo** → Lithium Polymer → tipul de baterie folosit **cel mai des** în cadrul dronelor cu 4 elice
    - **The average flight time** of a drone is **30 minutes**
    - The energy consumption is determined by the **speed** at which the drone moves, **its weight** (**!!!** the presence of the package can make the situation more difficult)
    - A factor to be considered in the long term is the **battery life** of the chosen model: fewer changes would make the system much more efficient and eliminate maintenance needs

9. **!!! Camera**
    - As a rule, drones come with them **prepackaged** (I haven't noticed that attaching a foreign camera is taken into consideration very often, and when this is the case, the details about the process are vague and most of the time, the camera comes attached under the drone, where the module for picking up the package would be placed for us)
    - Quality drone cameras come attached with a **gimbal** (a stand that allows rotation, some models go up to 360 degrees)
10. **Led**
    - **Complete Guide to Drone Lights | FoxFury**
11. **GPS & Senzori**
    - **What Sensors Do Drones Use? - 3D Insider**