

UKROC 2027 Indicative Materials List

Detailed on this page are indicative materials and costs which could be useful in your rocket project. This is a generic parts list, **NOT A KIT LIST**, your design may not need all these parts or may need additional parts.

Quantity	Item	Approx. cost per Item - £	Description/Comments
1	Body Tube 1		Tube length cut to suit
As required	Body Tube 2		Tube lengths cut to suit
As required	Tube Coupler (s)	£2.25	Vendor or make your own
1	Nose Cone	£6.50 - £16.00	Various designs from vendors or make yourself from your designs
As required	Parachute (s)	Estes chutes plastic £3.00 - £4.00 Nylon chutes £8.00 - £12.00	Vendor or custom made.
2	Parachute Protection	£4.00 - £8.00	Nomex sheet, wadding, mechanical means ie piston or baffle
1	Transition (only if design requires it)		Vendor or make own bodies see note 3
2	Rail Guides/Buttons	£1.00 - £7.00	Button, conformal rail guides or 6mm launch lugs from vendors or own custom alternatives.nb. buttons must be glued and screwed in place.
1	Motor Retention	£3.00 - £5.00	Rules state friction fit of motors is not allowed see note below
1 per motor	Motor Mount Tube (18mm, 24mm or 29 mm)	£2.50 - £6.50	18mm Klima D 24mm Estes D 24mm Cesaroni 29mm Cesaroni 24mm Aerotech 29mm Aerotech Klima & Estes need motor stops & motor retention (e.g. spring clips or nuts, bolts and washer).

			Cesaroni/Aerotech need motor retention plastic screw-on (24mm or 29mm) available from Estes. All these items will be sized to the dimensions of the motor, and several motor mounts can be cut from supplied tube
2	Motor(s) centring Rings	£3.50 - £5.50	From vendors or laser cut your own from Lite Ply or Bass wood or robust 3D printed, they can get very hot
1-2	Bulk Head	£2.00 - £4.00	As above
1	Fin Material – 1/8" Balsa 4" x18"	£2.50 per sheet	Cut to suit your design. Other materials can be used including 3D printing, composites, ply wood and fibre glass. Balsa should be oriented with the grain in opposite directions when using as a laminate
5 metres	Shock Cord	£10.00	To suit design - wire/Kevlar/elastic (elastic is a lot cheaper from a market stall)
1	Altimeter Bay	£0.00	To house altimeter. Bay needs to be custom made & be capable of holding an approved altimeter – see below
1	Approved altimeters	As per vendor's website	Only approved altimeters: Mercury V1 Mercury PLUS Jolly Logic 1 & 2 Altus Metrum Micropeak Nano Perfectflite Pnut Perfectflite firefly Perfectflite APRA (this altimeter is out of production, but they are still allowed)

Notes:

1. Teams are strongly advised to make their own design decisions. The competition is intended to encourage innovation and use of available/novel technology. Whilst not all teams will be able to access all the latest technology, thinking outside the box with locally sourced parts can provide inexpensive designs.
2. Teams are encouraged to look at vendors' websites and to discuss directly with them to verify parts availability and ordering lead times.
3. See 2027 rules on overall rocket design constraints. This year's payload is two eggs to be mounted in any orientation. Egg mounting is your own choice. However, Apogee components in USA manufacture custom egg nests. Innovation is encouraged.
4. The numbers are for one rocket. Teams should consider having sufficient spares for a second rocket to cover loss /damage.
5. **Estes D12-5 motors** approx (£5.50) each. Assume minimum five flights (two trial & three at regional finals), with three motors per flight. This does not include the one to two flights you may need for the National Final.
6. **Klima D motors** approx (£5.00) each. Assume minimum five flights (two trial & three at regional finals) with three motors per flight. This does not include one to two flights you may need for the National Final.
7. **Cesaroni Reloads** 24mm 2G, or 29mm 1G approx (£20.00 to £25.00) each. Assume minimum four flights (two trial & two at regional finals) with one motor per flight. This does not include one to two flights you may need for the National Final. To this must be added the cost of motor hardware, see below.
8. **Aerotech Single use 24mm** (£12.50) each pack of two. Assume minimum five flights (two trial & three at regional finals) with one motor per flight. This does not include one to two flights you may need for the National Final.
9. **Aerotech Single use 29mm** (£28.00) each. Assume minimum five flights (two trial & three at regional finals) with one motor per flight. This does not include one to two flights you may need for the National Final.
10. **Cesaroni hardware** 24mm 2G casing approx. (£20.00). 29mm 1G – similar price. 24/29mm closure approx. £11.50. Prodat delay cutter (£16.50) with 24mm insert at (£2.75). With 29mm insert (£2.75).
11. If using balsa fins then we recommend using two sheets glued together with their grain in opposite directions to create a laminate. This method creates strength and allows for the sanding and re-shaping of fin profiles.
12. 3D and printed fins can snap on landing so always bring spares to replace or repair damaged items.
13. Other motors are available, see the current Approved Motor List.

14. Motors are sourced from overseas manufactures and may have long delivery lead times if not in stock. You will need to discuss availability and delivery with vendors. A month for out-of-stock motors is a minimum timescale and may be much longer. Be warned.
15. Igniters for single motors are included by the manufacturer. For multiple motors, see the UKROC website on ignition. Cost for kit for multi-motor launches using tape match and fast visco fuse or klima sticks is approx. £40.00 for about 100 launches. Teams should consider sharing.
16. Miscellaneous items sourced from fishing or hardware stores: wire trace swivels & eye bolts - £10.00.
17. Adhesives including PVA Epoxy and superglue - typically £10.00 - £20.00. **NB** No hot glue to be used.
18. Paint is included in this year's rules - £0.00 - £20.00 Self-coloured 3D printed colour is acceptable. Use sparingly, paint adds weight.
19. BMFA Membership is mandatory. The youth group insurance requires one adult and at least four unnamed young people at 1/3 of the junior. Insurance runs from year end to year end. As the BMFA cover is not named for the students, suggest you apply for one adult and the minimum four students. If you had BMFA insurance for the 2026 competition, check the expiry date before you re purchase for 2027.
20. Launch and ignition system: Rail with stand and Estes pro ignitions system approx £150.00. (The organisers will provide all rails and ignition systems for the regional/national finals) Rails are 30mm square with 6mm slots 2 Metre minimum (see diagram in Team Handbook).
21. On project costing, it is very dependent on motor selection, how much material you have from previous projects & how much you are able to make yourself. It is therefore suggested that an early activity will be to prepare a project cost estimate for your particular circumstances.
22. Some or most of the parts can be 3D printed. Make sure the 3D printed parts are fit for purpose ie exposure to heat and loading.
23. Teams are encouraged to use a single motor design (but not mandated) to simplify ignition and be compliant with international final rules should they win the national competition