

UKROC Approved Motor List 2027

Only motors from this list may be used in the UKROC competition.

IMPORTANT: Please note that, depending on the motor classification, certain rocket motors are illegal for individuals under 18 to purchase. In this instance, motor purchases must be made by a supervising adult. In 2026, we were made aware of instances where some under-18 participants were misrepresenting their age to vendors in order to purchase motors. This is taken seriously. If this occurs again, the team involved will be disqualified. Thank you for your cooperation in keeping the competition safe and compliant

When you have a preliminary design for your rocket approach the vendors ASAP to establish availability of a particular motor. Procurement timescales can be months (since none are manufactured in the UK!!). Consider using motors which are available and adjust your design. If you decide to use reloadable motors, ensure that you are completely familiar with the assembly process before the regional event.

Please read:

- When you talk to vendors, particularly for Estes and Klima motors, establish that the batches you have or intend to procure do not come from the batches which may have uncertain performance, the vendors have the latest information.
- **Designation:** The number after the letter indicates the average thrust in Newtons. Fliers should aim to have a thrust at least five times the weight of the rocket. For example, a rocket weighing 2N (approximately 200g) should have an average thrust of 10N or higher.
- **Diameter:** Standard motor diameters are 18mm, 24mm and 29mm. Please check your design/kit to see which motor diameter is suitable. A smaller motor may be installed in a larger motor mount (e.g. 24mm in a 29mm) if a suitable adapter is used, a good approach when motors are scarce. Note that motor diameters are nominal dimensions and the motors are not exactly 18, 24 or 29mm in diameter.
- **Type:** Single-use motors are a fully self-contained motor where the entire purchased motor is disposable. A reloadable motor has a separate reusable casing and the 'reload' is a separately purchased propellant. Typically a single-use motor is more expensive than the 'reload' of an equivalent reloadable, however the entire motor is disposable and there is no need to purchase, rent or borrow the reloadable motor casing. If clustering motors we recommend only using single use motors as they are more reliable.
- **Total Impulse:** The total impulse listed has been rounded to the nearest Newton-second.
- **Delay:** Most reloadable motors have adjustable delays, the delays listed here are illustrative rather than limited. A zero delay means that the motor will immediately burn through to ignite an upper stage motor after the propellant has burned through. A plugged (or P) delay means that the motor has no ejection charge or delay grain. Ejection delays may vary by up to one second from the advertised delay.

- **Igniters:** Always check that igniters are fitted in accordance with manufacturer's instructions - read carefully, different motor types have different requirements and where instructed are fully inserted. Always take spares with you.
- **Total Weight:** The total weight is the full weight of the motor at lift-off

Storage and transport:

- Before purchase, check with manufacturers and vendors for information regarding the classification and restrictions associated with your intended motors.
- Your vendor may or may not offer shipping options depending on the specific classification of their motors. If your vendor does not offer shipping options, it is probable that the respective motors cannot be shipped and you will need to arrange collection.
- Ensure that you have arranged with your teams or institutions regarding suitable storage before collecting your motors.
- Ensure that you are compliant with the age restrictions associated with the motors you have purchased.
- Pyrotechnic articles and other class 1 goods may not be carried on public transport, including buses or trains and most taxi or private hire vehicles. Plan how you're going to transport your motors!
- Do not transport or store motors with igniters installed.

Manufacturer	Designation	Diameter	Type	Total Impulse	Burn Time	Delay (s)	Total Weight (g)	Propellant
Klima	A6	18mm	Single-use	2.5 Ns	0.6s	4	14.5g	Potassium Perchlorate
Estes	A8	18mm	Single-use	2.5 Ns	0.5s	3,5	16g	Black Powder
Estes	B4	18mm	Single-use	5 Ns	1.1s	2,4	20-21g	Black Powder
Klima	B4	18mm	Single-use	5 Ns	1.3s	0,4	16-17g	Potassium Perchlorate
Estes	B6	18mm	Single-use	5 Ns	0.8s	0,2,4,6	16-22g	Black Powder
Estes	C11	24mm	Single-use	10 Ns	0.8s	0,3	32g	Black Powder
Klima	C2	18mm	Single-use	10 Ns	5.0s	0,P	22-23g	Potassium Perchlorate
Estes	C6	18mm	Single-use	10 Ns	1.6s	0,3,5,7	23-27g	Black Powder
Klima	C6	18mm	Single-use	10 Ns	1.6s	0,3,5,7,P	19-22g	Potassium Perchlorate
Klima	D3	18mm	Single-use	19 Ns	6.0s	0,P	28g	Potassium Perchlorate
Estes	D12	24mm	Single-use	20 Ns	1.6s	0,3,5,7	41-44g	Black Powder
Klima	D9	18mm	Single-use	20 Ns	2.1s	0,3,5,7,P	26-28g	Potassium Perchlorate
Cesaroni	E22 (24E22)	24mm	Reloadable	24 Ns	1.0s	4,6,8,10,13	56.5g	Smoky Sam
Cesaroni	E31 (26E31)	24mm	Reloadable	26 Ns	0.9s	6,8,10,12,15	52g	White Thunder

Manufacturer	Designation	Diameter	Type	Total Impulse	Burn Time	Delay (s)	Total Weight (g)	Propellant
Quest	E26	24mm	Single-use	28 Ns	1.2s	4,7,10	44g	White Lightning
Aerotech	E30	24mm	Single-use	34 Ns	1.0s	4,7	47g	Blue Thunder
Aerotech	E23	29mm	Single-use	35 Ns	1.6s	5,8	104g	Blue Thunder
Aerotech	E20	24mm	Single-use	35 Ns	1.6s	4,7	49g	White Lightning
Quest	E35	24mm	Single-use	40 Ns	1.1s	5,8,11	55g	White Lightning
Cesaroni	F36 (41F36)	29mm	Reloadable	41 Ns	1.1s	2,4,6,8,11	104g	Smoky Sam
Aerotech	F44	24mm	Single-use	42 Ns	1.0s	4,8	48g	White Lightning
Aerotech	F30	24mm	Single-use	47 Ns	1.6s	4,6,8	71g	Black Max
Quest	F41	24mm	Single-use	48 Ns	1.1s	5, 8, 11	57g	White Lightning
Aerotech	F27	29mm	Single-use	50 Ns	2.0s	4,8	80g	Redline
Cesaroni	F51 (50F51)	24mm	Reloadable	50 Ns	1.0s	4,6,8,10,13	73g	Blue Streak
Cesaroni	F36 (51F36)	29mm	Reloadable	51 Ns	1.4s	5,7,9,11,14	101g	Blue Streak
Aerotech	F20	29mm	Single-use	52 Ns	2.5s	4,7	80g	White Lightning
Aerotech	F42	29mm	Single-use	53 Ns	1.3s	4,8	76g	Blue Thunder
Cesaroni	F32 (53F32)	29mm	Reloadable	53 Ns	1.7s	3,5,7,9,12	107g	White
Cesaroni	F70 (53F70)	24mm	Reloadable	53 Ns	0.8s	5,7,9,11,14	73g	White Thunder
Cesaroni	F31 (56F31)	29mm	Reloadable	56 Ns	1.8s	3,5,7,9,12	102g	Classic
Aerotech	F32	24mm	Single-use	57 Ns	1.7s	4,6,8	64g	Blue Thunder
Cesaroni	F59 (57F59)	29mm	Reloadable	57 Ns	1.0s	3,5,7,9,12	99g	White Thunder
Aerotech	F67	29mm	Single-use	61 Ns	0.9s	4,6,9	81g	White Lightning
Aerotech	F26	29mm	Single-use	62 Ns	2.4s	6, 9	101g	Black Max
Cesaroni	F79 (68F79)	24mm	Reloadable	68 Ns	0.9s	4,6,8,10,13	107.5g	Smoky Sam
Cesaroni	F30 (73F30)	24mm	Reloadable	73 Ns	2.4s	2,4,7	102.2g	White Longburn
Cesaroni	F85 (74F85)	24mm	Reloadable	74 Ns	0.9s	6,8,10,12,15	96g	White Thunder
Cesaroni	F51	24mm	Reloadable	75NS	1.5	3-12	95g	Classic
Aerotech	F50	29mm	Single-use	77 Ns	1.4s	4,6,9	85g	Blue Thunder
Aerotech	F25	29mm	Single-use	78 Ns	3.1s	4,6,9	90g	White Lightning