NATIONAL ASSOCIATION OF ROCKETRY
CERTIFIED MODEL ROCKET MOTORS
APPROVED FOR USE IN ARC 2025

The commercially-made model rocket motors listed below have been subjected to rigorous safety and reliability testing conducted by the NAR Standards & Testing (S&T) Committee and are the only ones approved for sale in the U.S. or for use in this Challenge. All motors listed here are in current production. Every motor listed here will continue to be approved for use in the ARC 2025 event regardless of any subsequent announced changes to the NAR's overall official engine certification list. This list may be expanded if new motors are certified during the period of ARC; this expansion and any revised list will be communicated to all those teams enrolled in the ARC.

IMPORTANT NOTE: There are motor types in the databases for the rocket flight simulation programs (RockSim, Open Rocket, etc.) that are NOT on this approved motor list for a variety of reasons. And not all motor types listed here are readily available all the time, depending on manufacturer.

Download "Motor Data Sheets" from the NAR web site if you desire additional information. Each data sheet contains a thrust curve together with values from a test firing, including measured average thrust and total impulse, plus 32 data points for use in altitude simulation computer programs.

Abbreviation	Full Manufacturer Name
Aerotech	Aerotech
Cesaroni	Cesaroni Technology Incorporated
Estes	Estes Industries
Quest or QJet/AT	Quest Aerospace Education (a subsidiary of Aerotech)

Note: (R) following the listed casing dimensions denotes that the motor is a reloadable motor system certified only with the manufacturer-supplied casing, closures, nozzle, and propellant. Reloadable motors are not available for sale to persons under age 18, per U.S. Consumer Products Safety Commission regulations. But if the performance of these types of model rocket motor happens to be exactly what you need for your design, your supervising teacher/adult advisor can purchase them and supervise your use of them.

Manufacturer**s** of E and F motors often use letter codes right after the motor average thrust value on the label (e.g. the “FJ” in an F23FJ motor type) which designate the type of that manufacturer’s propellant used in the motor. This code, or the absence of a code, does not affect status of certification for ARC.

Motors with “sparky” propellant or with an average thrust higher than 80 N are officially classified as “high power motors” even if their total impulse is in the F power class or below, and such motors are not listed or approved for use in ARC. Motors that are no longer in production are also not listed and may not be used.

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As of September 14, 2024

Designation		Mfgr.	Casing Size (mm)	Propellant Mass (grams)	Total Impulse (N-sec.)
1/2A3-2T,4T		Estes	13 x 45	2.0	1.25
A3-2,4,6T		Estes	13 x 45	3.3	2.50
A10-0T		Estes	13 x 45	3.6	1.88
A10-3T,PT		Estes	13 x 45	3.8	2.50
C6-0,3,5,7		Estes	18 x 70	10.8	9.0
C11-0,3,5,7		Estes	24 x 70	12.0	9.0
C12-4,6,8		QJet/AT	18 x 70	10.4	9.8
C18W-4,6,8		QJet/AT	18 x 70	5.6	9.8
D8-0,3,5		QJet/AT	24 x 70	22.0	18.6
D9W-4,7	R	Aerotech	24 x 70	10.1	20.0
D12-0,3,5,7		Estes	24 x 70	21.1	17.0
D13W-4,7,10	R	Aerotech	18 x 70	9.8	20.0
D15T-4,7	R	Aerotech	24 x 70	8.9	20.0
D16-4,6,8		QJet/AT	18 x 79	12.5	12.4
D20W-4,6,8		QJet/AT	18 x 70	8.7	13.8
D22W-4,7,10		QJet/AT	24 x 87	12.0	19.3
D24T-4,7,10	R	Aerotech	18 x 70	8.8	18.5
E12-0,4,6,8		Estes	24 x 95	35.9	27.2
E16-0,4,6,8		Estes	29 x 114	40.0	33.4
E16W-4,7	R	Aerotech	29 x 124	19.0	40.0
E18W-4,8	R	Aerotech	24 x 70	20.7	39.0
E20W-4,7		Aerotech	24 x 65	16.2	35.0
E22SS-13A	R	Cesaroni	24 x 69	13.4	24.2
E23T-5,8	R	Aerotech	29 x 124	17.4	37.0
E24C-4,7,10		Aerotech	29 x 110	18.4	36.3
E26W-4,7,10		QJet/AT	24 x 70	18.3	27.8
E28T-4,7	R	Aerotech	24 x 70	18.4	40.0
E30T-4,7		Aerotech	24 x 70	17.8	33.6
E30-4,7		Estes	24 x 70	17.8	33.6
E31WT-15A	R	Cesaroni	24 x 69	11.2	26.1
E35W-5,8,11		QJet/AT	24 x 113	25.4	39.4
E75VM-17A	R	Cesaroni	24 x 69	10.4	24.8
F15-0,4,6,8		Estes	29 x 114	60.0	49.6
F20W-4,7		Aerotech	29 x 73	30.0	51.8
F22J-5,7	R	Aerotech	29 x 124	46.3	65.0
F23FJ-4,7		Aerotech	29 x 83	30.0	41.2
F24W-4,7	R	Aerotech	24 x 70	19.0	50.0
F25W-4,6,9		Aerotech	29 x 98	35.6	80.0
F26FJ-6,9		Aerotech	29 x 98	43.1	62.2
F26FJ-6		Estes	29 x 98	43.1	62.2
F27R-4,8		Aerotech	29 x 83	28.4	49.6
F29-12A	R	Cesaroni	29 x 98	30.9	54.8

F30FJ-4,6,8		Aerotech	24 x 90	31.2	47.0
F30WH/LB-6A	R	Cesaroni	24 x 133	40.0	73.1
F31CL-12A	R	Cesaroni	29 x 98	25.7	55.5
F32T-4,6,8		Aerotech	24 x 90	25.8	56.9
F32WH-12A	R	Cesaroni	29 x 98	29.9	52.8
F35W-5,8,11	R	Aerotech	24 x 95	30.0	57.1
F36SS-11A	R	Cesaroni	29 x 98	29.5	41.2
F36BS-14A	R	Cesaroni	29 x 98	25.6	51.5
F37W-6,10,14	R	Aerotech	29 x 99	28.2	50.0
F39T-3,6,9	R	Aerotech	24 x 70	22.7	50.0
F40W-4,7,10	R	Aerotech	29 x 124	40.0	80.0
F41W-5,8,11		QJet/AT	24 x 114	30.0	45.5
F42T-4,8		Aerotech	29 x 83	27.0	52.9
**F44W-4,8		Aerotech	24 x 70	19.7	41.5
F50T-4,6,9		Aerotech	29 x 98	37.9	80.0
F50T-4,6		Estes	29 x 98	37.9	80.0
F51BS-13A	R	Cesaroni	24 x 101	22.0	49.9
F51CL-12A	R	Cesaroni	24 x 133	33.0	75.0
F51NT-10	R	Aerotech	24 x 70	26.5	55.1
F52C-5,8,12		Aerotech	29 x 112	30.0	66.2
F52T-6,8,11	R	Aerotech	29 x 124	36.6	78.0
F59WT-12A	R	Cesaroni	29 x 98	26.1	57.0
F62T-S,M,L	R	Aerotech	29 x 89	30.5	51.0
F62FJ-10	R	Aerotech	24 x 95	32.2	47.6
F63R-10	R	Aerotech	24 x 95	27.6	49.5
F67C-6,9,14		Aerotech	29 x 112	36.8	77.5
F67W-4,6,9		Aerotech	29 x 89	30.0	61.1
F70WT-14A	R	Cesaroni	24 x 101	22.5	52.9
F79SS-13A	R	Cesaroni	24 x 133	40.1	67.8

Additional notes:

- The manufacturer-reported total impulse and propellant mass of motors often differs from the values reported above, which are based on testing by the NAR Standards & Testing Committee. The values above are the ones that will be used in ARC.

**** Aerotech F44 motors made before August 2024 are not recommended for use due to performance reliability issues that have been corrected in recent production.