

# ESTES C5-3

## CERTIFIED VALUES

Total Impulse: 7.79 newton-seconds  
Delays: 3

Propellant Type: black powder  
Propellant Mass: 11.0 grams

Casing Dimensions: 18 mm X 70 mm

Certification Type: Model Rocket

## STATIC TEST DATA

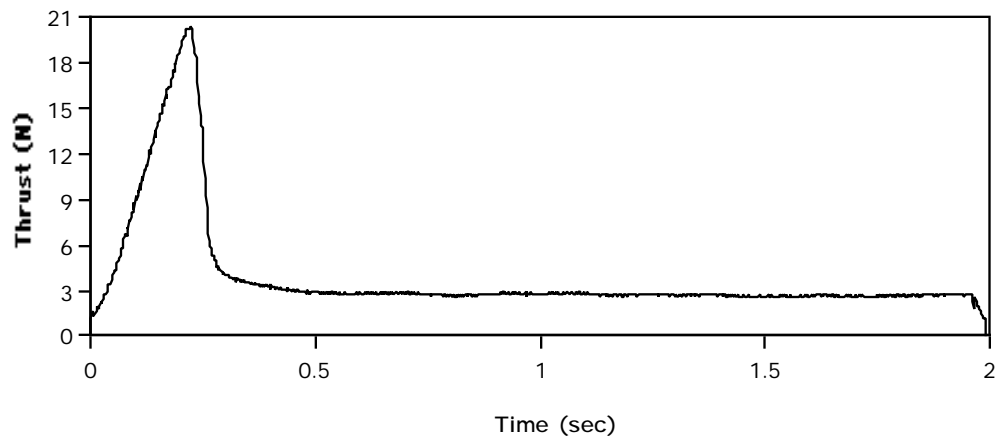
Date Tested: Dec 15, 2019

Total Impulse: 7.79 newton-seconds ( 0.11 )  
Peak Thrust: 20.41 newtons ( 0.41 )  
Burn Time: 1.99 seconds ( 0.04 )  
Average Thrust: 3.91 newtons

Mass After Firing: 10.1 grams

Delay Time	Average Measured Delay	Initial Mass
3	3.30	23.8 g

## TYPICAL THRUST-TIME CURVE



## REMARKS



FILE NAME	MANUF	MOTOR	IT	F-MAX	F-AVG	T-BURN	T-DELAY	M-INIT	M-BO
E191201	ESTES	C5-3	7.64	20.22	3.72	2.05	3.43	23.8	10.1
E191202	ESTES	C5-3	7.77	19.79	3.79	2.05	3.46	23.8	10.1
E191203	ESTES	C5-3	7.89	20.38	3.93	2.01	3.43	23.9	10.0
E191204	ESTES	C5-3	7.88	20.30	3.94	2.00	3.40	23.8	10.1
E191205	ESTES	C5-3	8.00	20.15	4.05	1.98	3.04	23.8	10.3
E191206	ESTES	C5-3	7.71	20.66	4.01	1.92	3.09	23.7	10.0
E191207	ESTES	C5-3	7.82	19.86	3.95	1.98	3.15	23.8	10.2
E191208	ESTES	C5-3	7.93	20.47	4.03	1.97	3.18	23.9	10.1
E191209	ESTES	C5-3	7.69	21.32	3.91	1.97	3.25	23.8	10.1
E191210	ESTES	C5-3	7.70	20.67	3.92	1.96	3.39	24.1	10.1
E191211	ESTES	C5-3	7.70	20.73	3.89	1.98	3.29	23.7	9.9
E191212	ESTES	C5-3	7.72	20.36	3.77	2.05	3.46	24.1	10.5
AVG			7.79	20.41	3.91	1.99	3.30	23.85	10.13
STD			0.11	0.41	0.10	0.04	0.15		
% STD			1.46	2.02	2.64	2.03	4.61		

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; Estes C5 RASP.ENG file made from NAR published data
; File produced June 25, 2020
; The total impulse, peak thrust, average thrust and burn time are
; the same as the averaged static test data on the NAR web site in
; the certification file. The curve drawn with these data points is as
; close to the certification curve as can be with such a limited
; number of points (32) allowed with wRASP up to v1.6.

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EC5  19  69  3  .011  .0238  E
0.009  1.604
0.045  4.083
0.087  7.972
0.138 13.322
0.186 17.888
0.219 20.410
0.231 18.569
0.242 14.972
0.253  9.381
0.256  6.368
0.274  4.812
0.303  3.900
0.366  3.595
0.425  3.288
0.502  2.819
0.559  2.790
0.666  2.780
0.894  2.772
1.135  2.780
1.355  2.770
1.599  2.712
1.801  2.669
1.955  2.478
1.976  1.701
1.979  0.128
1.990  0.000

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