



MiniSShot

ProtoSShot-M Mark I Rocket Motor

Thermal Label Mapping and Results from Static Firing #1

Rev. 2008/06/09

Introduction

The report illustrates the mounting locations for the thermal measurement labels mounted on the ProtoSShot-M Mk.I rocket motor, and the post-firing thermal readings collected following the first static firing which occurred on April 26, 2008.

Labels

Omega Irreversible Temperature Monitoring Labels

<i>Omega</i> P/N	Temperature Ratings							
TL-5-340	°F	340	350	360	370	380		YELLOW
	°C	171	177	182	188	193		
TL-5-450	°F	450	465	480	490	500		GOLD
	°C	232	241	249	254	260		
6MB-175/79	°F	175	200	225	250	275	300	RED
	°C	78	93	107	121	135	149	

Adhesive Backs for Easy Mounting for
Temperatures Above -40°C/°F

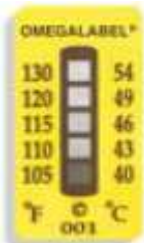
Indicator Turns Black When Exposed

Specifications (TL series)

Accuracy: Up to 99°C (210°F) is ±1°C (1.8°F)

From 100°C (212°F) to 154°C (309°F) is ±1.5°C (2.7°F)

From 160°C (320°F) to 280°C (536°F) is ±1% and ±1°C (1.8°F)



Typical appearance of TL series label.



Typical appearance of MB series label.

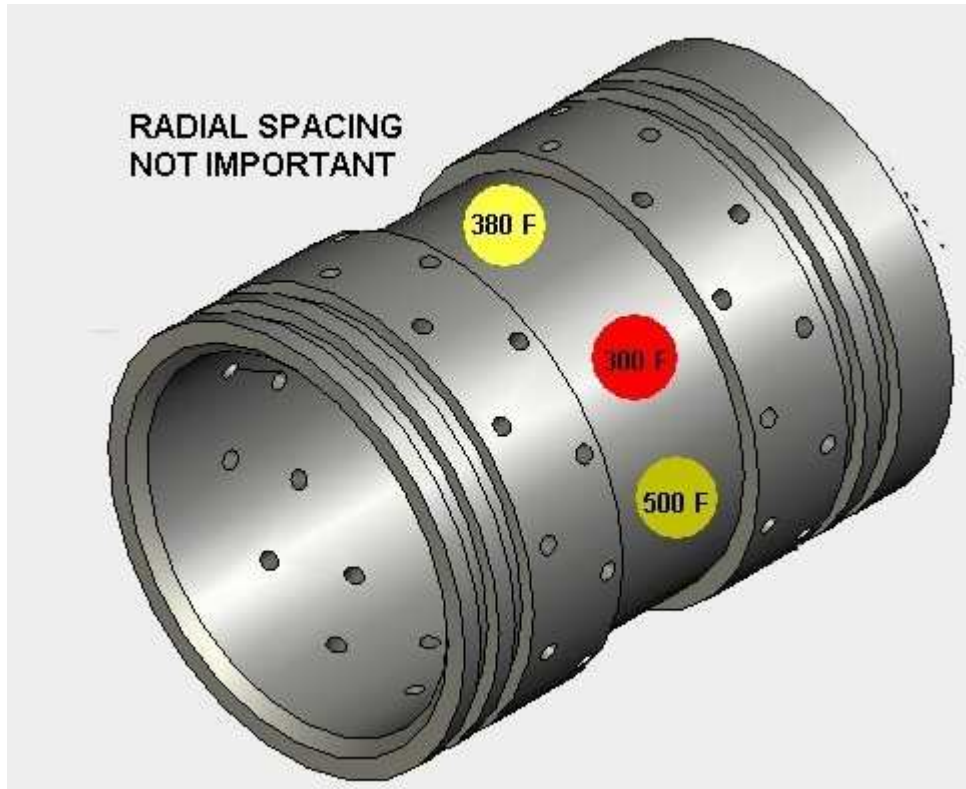


Figure 1 – Labels 300-1, 380-1, 500-1 (Mid-bulkhead)

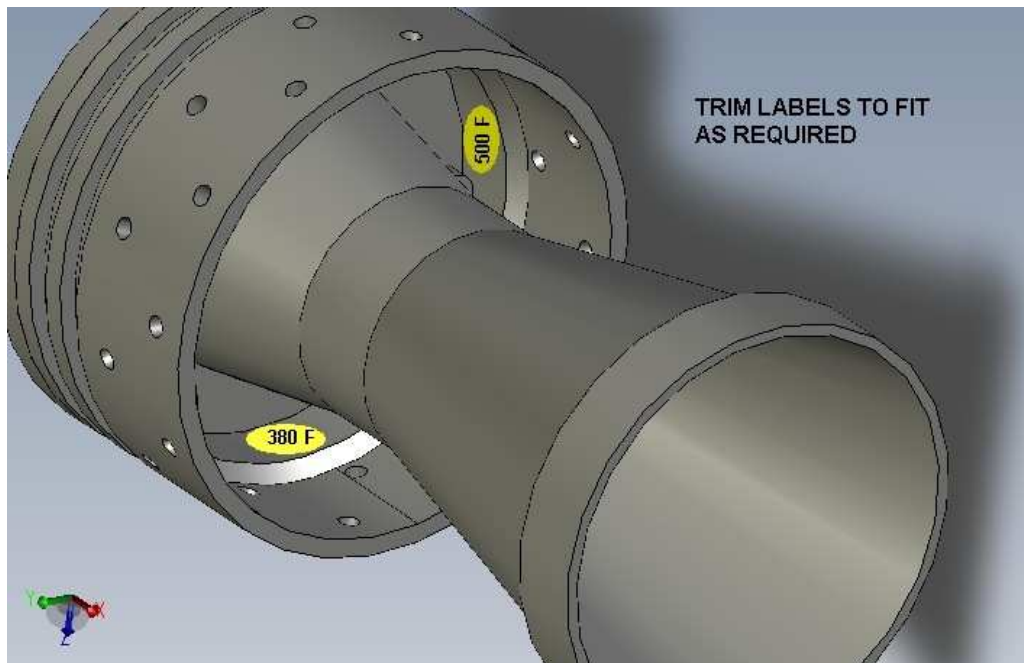


Figure 2 – Labels 380-2, 500-2 (Nozzle Ring)

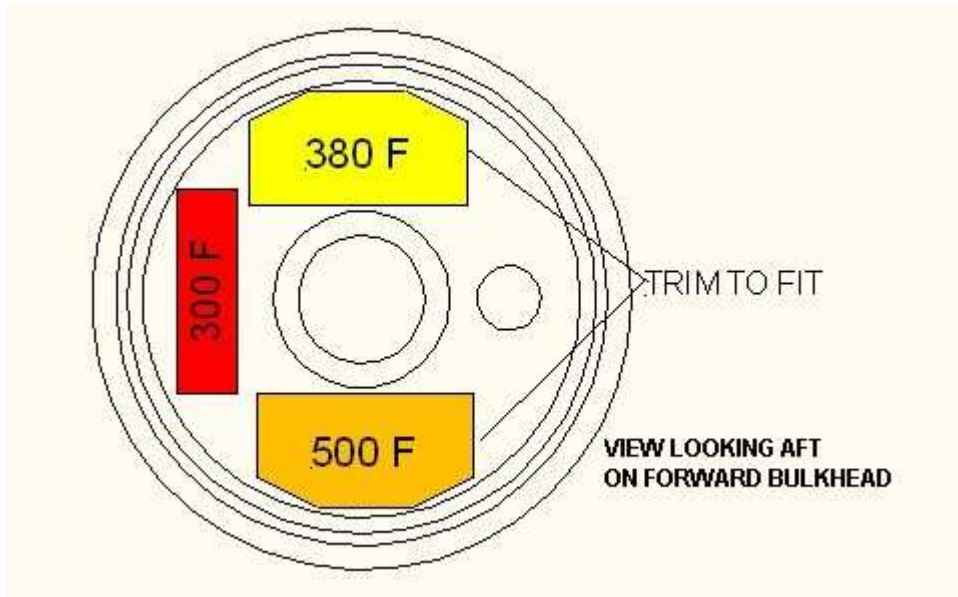


Figure 3 – Labels 300-2, 380-3, 500-3 (Forward Bulkhead)

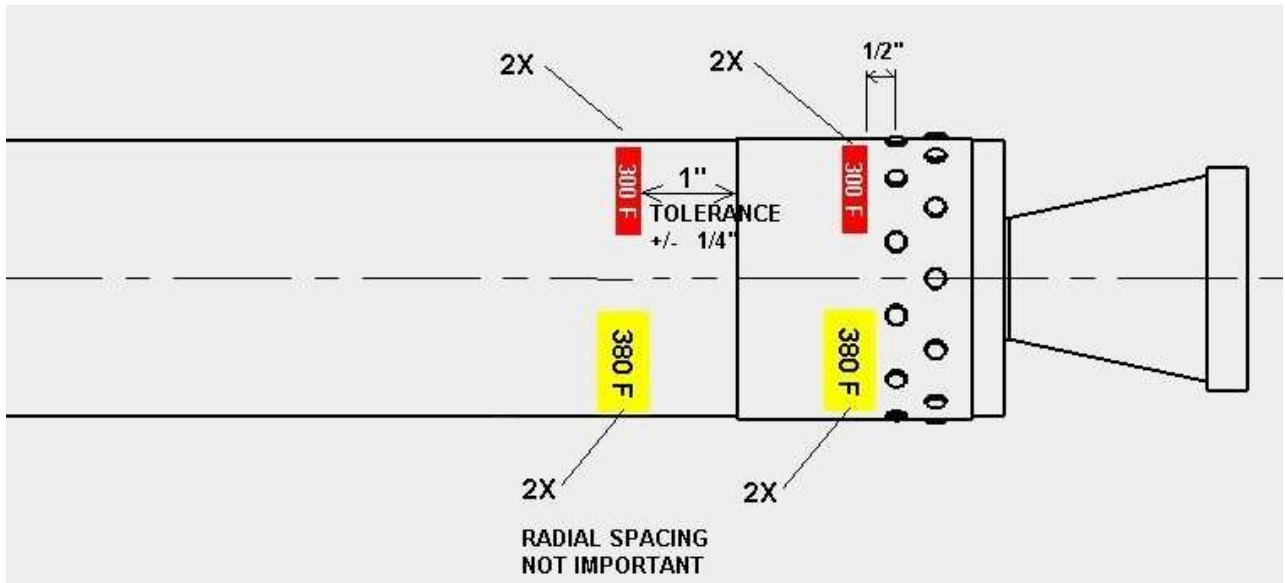


Figure 4 – Labels 300-3a, 300-3b, 380-4a, 380-4b (forward)
300-4a, 300-4b, 380-5a, 380-5b (aft)

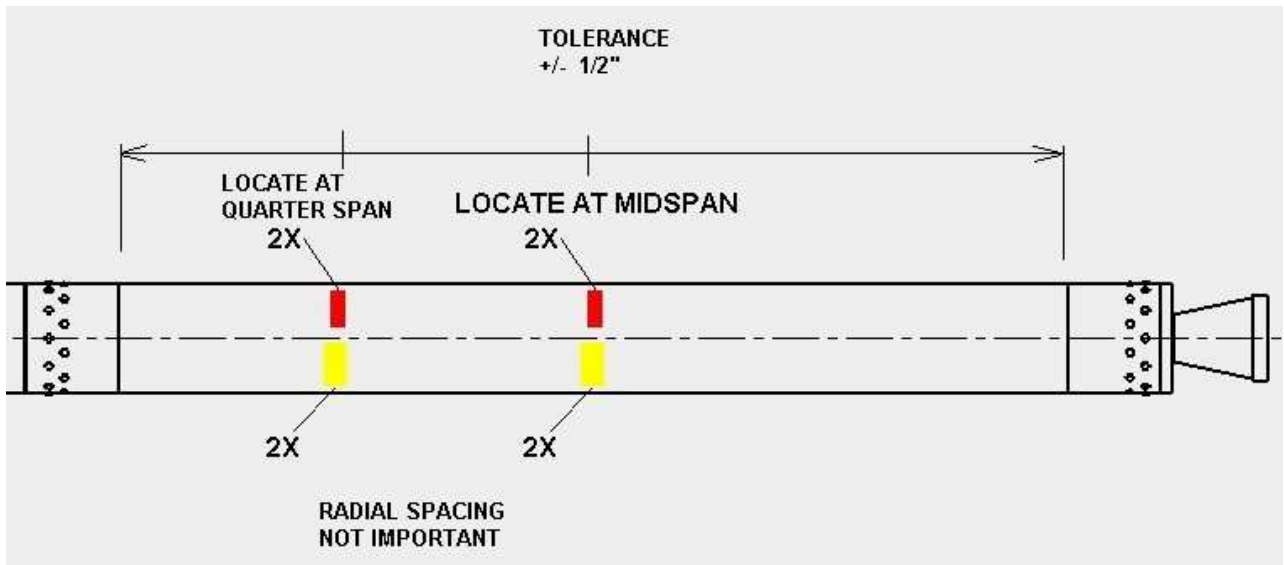


Figure 5 – Labels 300-5a, 300-5b, 380-6a, 380-6b (at midspan)
 300-6a, 300-6b, 380-7a, 380-7b (at quarter span)

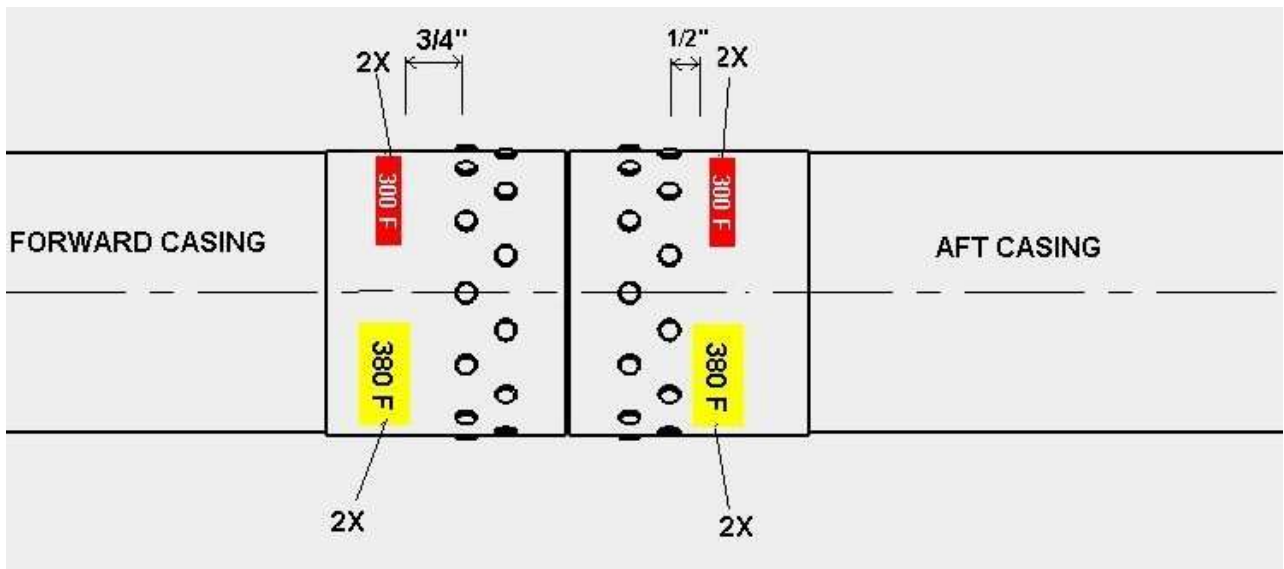


Figure 6 – Labels 300-7a, 300-7b, 380-8a, 380-8b (forward)
 300-8a, 300-8b, 380-9a, 380-9b (aft)

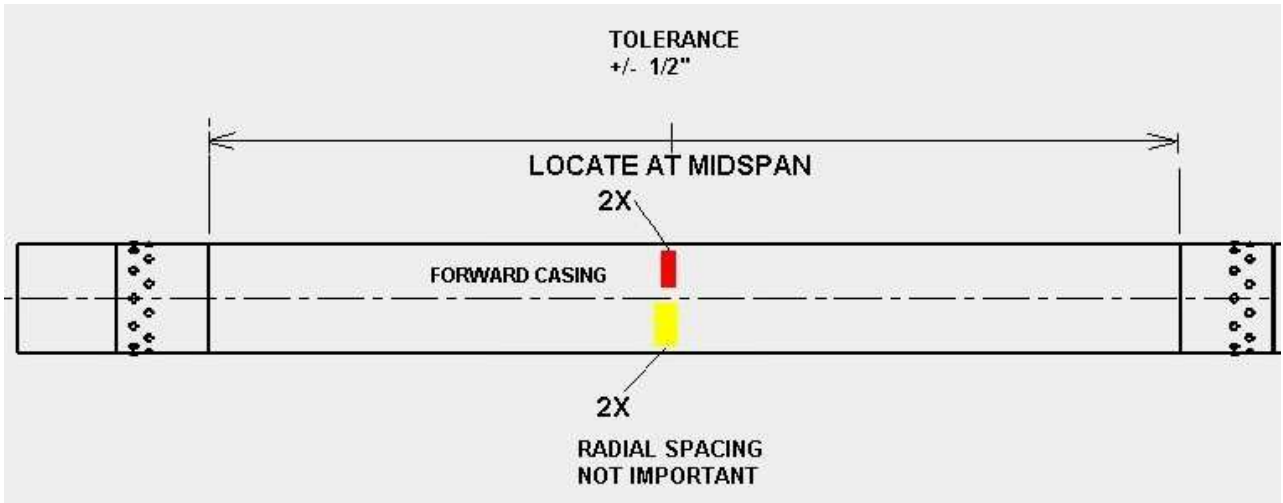


Figure 7 – Labels 300-9a, 300-9b, 380-10a, 380-10b

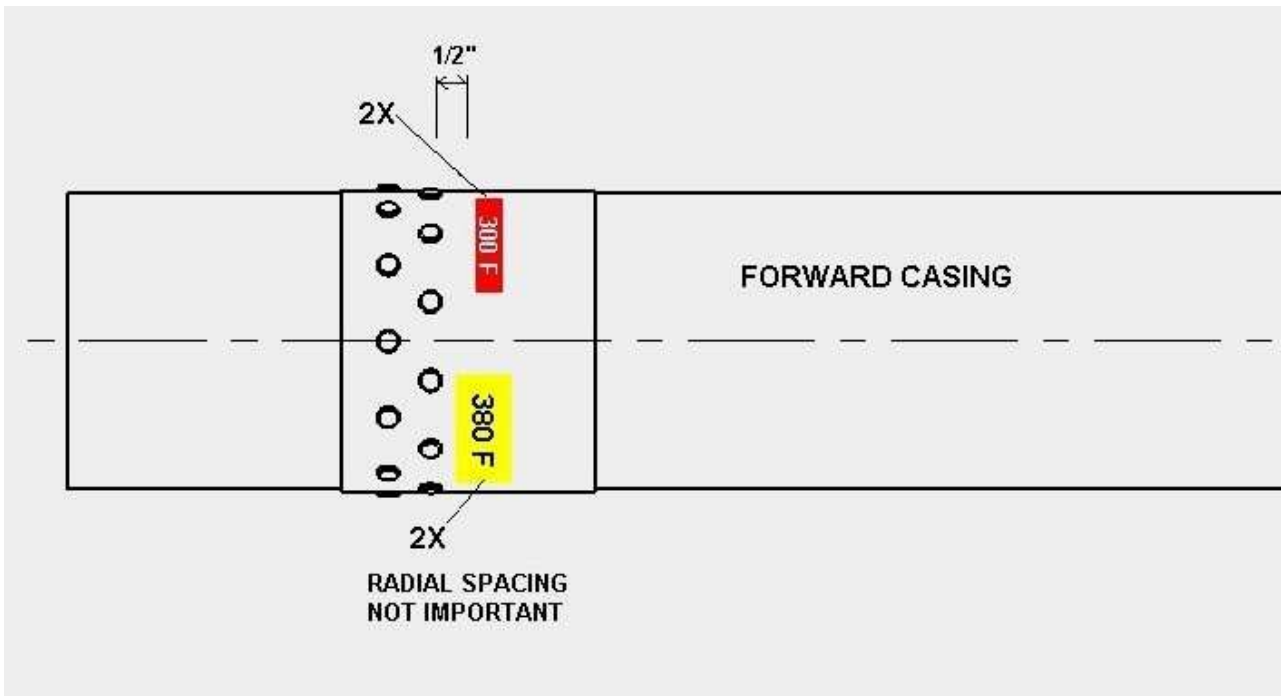


Figure 8 – Labels 300-10a, 300-10b, 380-11a, 380-11b

Table for recording post-firing temperatures

Figure	Label no.	Temperature (°F)	Notes
1	300-1		[1]
	380-1		[1]
	500-1	<450	[4]
2	380-2	>380	
	500-2	>500	
3	300-2		[2]
	380-3		[2]
	500-3		[2]
	300-3a	175	
	300-3b	175	
	380-4a		[3]
	380-4b	<340	[4]
	300-4a	175	
	300-4b	175	
	380-5a	<340	[4]
	380-5b	<340	[4]
4	300-3a	175	
	300-3b	175	
	380-4a		[3]
	380-4b	<340	
	300-4a	175	
	300-4b	175	
	380-5a	<340	[4]
380-5b	<340	[4]	
5	300-5a		[2]
	300-5b	175	
	380-6a	<340	[4]
	380-6b	<340	[4]
	300-6a		[3]
	300-6b	<175	[4]
	380-7a	<340	[4]
	380-7b	<340	[4]
6	300-7a	250	
	300-7b	250	[5]
	380-8a	<340	[4]
	380-8b	<340	[4]
	300-8a	300	
	300-8b		[2]
	380-9a	350	[5]
	380-9b	360	
7	300-9a	175	
	300-9b	>175	[3]
	380-10a	<340	[4]
	380-10b	<340	[4]

8	300-10a	175	
	300-10b	200	
	380-11a	<340	[4]
	380-11b	<340	[4]
Notes			
[1]	Not recorded.		
[2]	Label was missing.		
[3]	Label was damaged.		
[4]	Did not register, therefore, temperature less than minimum on scale.		
[5]	Appears to be greater than this value.		