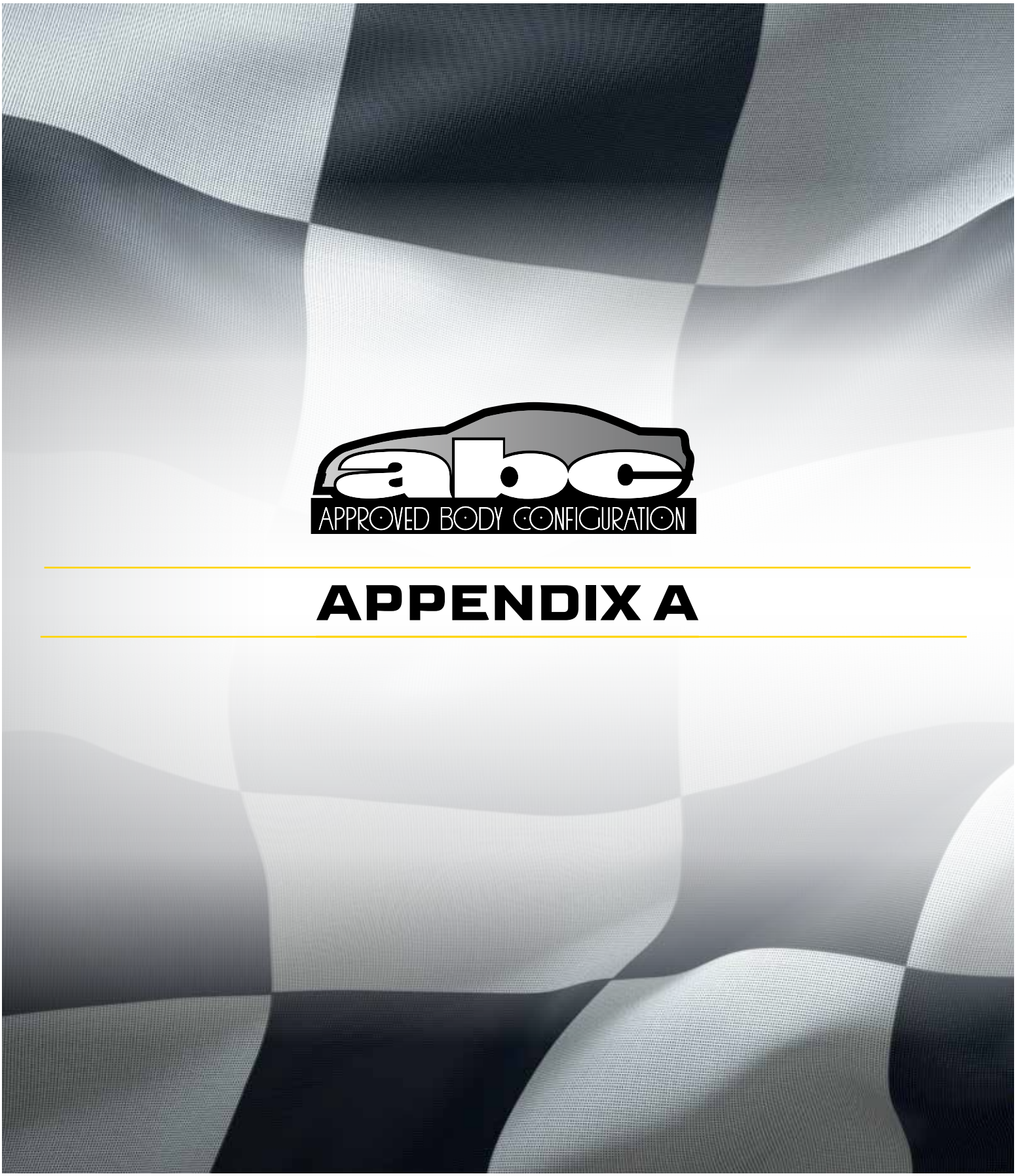

APPENDIX A

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ABC BODY APPROVAL TEST PROCESS

The goal of the ABC Body Program is to control the shape and aerodynamics of short track late model bodies to maintain an even playing field for all racers and body manufacturers. To accomplish that goal successfully, aerodynamic testing must be done by the body manufacturers to prove aerodynamic equality to within plus or minus 1 ½ % for all bodies regardless of body style or manufacturer in order to achieve ABC Program approval.

A wind tunnel parity test comparing production panels of an ABC body approved (target) body and production panels of the new proposed ABC body is required. If the new proposed body has different brand specific front fascias or other body parts, all parts must be tested at the same time and must be equal aerodynamically. This test is also required if any panels on a previously approved ABC body are updated.

The future of the ABC Program depends on an accurate way of aerodynamically testing future body designs in order to maintain equality for all approved ABC bodies.

TEST PROCEDURE AND RULES:

- The target body to be used for all test comparisons is the ABC Approved Five Star Next Gen body with the Ford front fascia and a 6 ½ inches tall x 64 ½ inch wide spoiler mounted at 70 degrees.

- All comparison testing must be done using the ABC Committee submission chassis that has been used in all previous wind tunnel parity testing to ensure accuracy. This chassis must not be modified or changed in any way.

- The test must be conducted at the full scale Aerodyn Wind Tunnel, not the A2 tunnel, in Mooresville NC.

- The testing must be conducted by a qualified aerodynamic engineer familiar with the facility and the testing required. After testing is completed, a report stating the results of the testing must be supplied to the ABC Program Committee for final approval.

- The body manufacturer submitting a body for approval is responsible for scheduling and paying for expenses including the wind tunnel expenses.

- The ABC Committee must be represented as well as the other ABC approved body manufacturers for the test. The submitting manufacturer is responsible for informing representatives of the ABC Program Committee and other ABC approved body manufacturers of the test day and time at least 60 days prior to the wind tunnel test via electronic correspondence and or certified mail.

- The chassis must have the ability to receive both the target ABC body and the new proposed ABC body. Once the chassis is installed in the test section, it must not be removed until the test is complete. This must be a test of body comparisons only, therefore, changing the target body and the proposed new body must occur inside the wind tunnel with the chassis installed in the tunnel. Both bodies must have sufficient mounting braces to prevent deflection and maintain their original shape at wind tunnel speed. The body mounts for the proposed new body must not interfere with the mounts for the target body.

abc APPROVED BODY CONFIGURATION

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• Both bodies must be installed using enough templates to ensure shape control on every part of the body. The body must fit the templates with no tolerance to achieve accurate results. These templates must be provided by the company submitting the new proposed body. The templates required for the test and approval must in the following locations:

1. A front nose side-to-side template at the bottom of the nose *(photo 1 on page 47)*.

2. Nose/hood template from the base of the windshield to the bottom of the nose at the body centerline *(photo 2 on page 47)*.

3. Left and right fender/nose templates that start at the base of the windshield "A" post, follow the hood/fender line and extend to the bottom of the front nose. A specific dimension from the centerline of the nose to the correct position of each template must be provided *(photo 3A & photo 3B on page 47)*.

4. A centerline template that starts at the base of the windshield and wraps around the top of the rear bumper cover on the centerline of the body *(photo 4A & photo 4B on page 47)*.

5. A side-to-side template at the front of the windshield at a 90-degree angle to the roof that extends down to the top of the door and continues down the side of each door 10" *(photo 5A, photo 5B & photo 5C on pages 47 & 48)*.

6. A side-to-side template at the rear of the roof at a 90-degree angle to the roof that extends down to the top of the rear quarter panels and extends down the side of the quarter panels to the top of the rear wheel opening *(photo 6 on page 48)*.

7. A side-side template halfway down the rear window at a 90-degree angle to the rear window that extends around the "C" posts and down the top of the rear quarter panels and ends at the wheel openings *(photo 7 on page 48)*.

8. A side-to-side template at the leading edge of the deck lid between the rear window and rear bumper cover that wraps around the quarter panels and extends down the sides to the bottom of the quarter panels *(photo 8A, photo 8B and photo 8C on page 48)*.

• All air openings must be closed including grill screen, brake duct openings, cowl intake, etc.

• The new proposed body must be tested using 6 ½" tall maximum height by 60" wide spoiler mounted at 70 degrees. Final width required to equalize the proposed body with the target body will be determined by the wind tunnel test.

The ABC Committee members present at the test reserve the right to add additional templates or any other inspection method necessary to insure shape retention and accuracy of the test. The submitting manufacturer is responsible for the installation and removal of their body panels in the tunnel.

TEST SEQUENCE

The target ABC body is tested first to establish the baseline. Afterwards, the target body is then removed and the new proposed ABC body installed. The test process sequence is as follows:

• Install submission chassis with target body in the wind tunnel and set inspection height.

• Shake down run.

• Reset inspection heights.

• Warm up. 10-12 minutes.

• Conduct two test runs and average data from both.

• Remove target body, install new proposed ABC body and set inspection heights.

• Shake down run and re-check heights.

• Warm up. 10-12 minutes.

• Conduct two test runs and average data from both.

PHOTO 1

PHOTO 2

PHOTO 3A

PHOTO 3B

PHOTO 4A

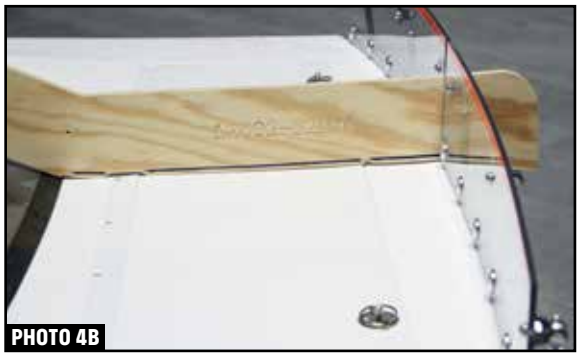

PHOTO 4B

PHOTO 5A

PHOTO 5B

PHOTO 5C

PHOTO 6

PHOTO 7

PHOTO 8A

PHOTO 8B

PHOTO 8C

ABC BODY APPROVAL TEST PROCESS

WIND TUNNEL MAP AND SPECS

• The ride height map must be the same for both bodies.

• Bodies must be installed so that the ride height maps are measured at the same location.

• The wind tunnel speed must be 100 mph.

• Use 24.111 sq. ft. for frontal area for all tests.

• Ride Height Map:

Point	Yaw	Front Valence Gap (in)	Rear Spoiler Height (in)
1	0	1.00	42 7/16
2	0	0.25	41 11/16
3	-4	0.25	41 11/16
4	-4	0.25	42 3/16
5	-4	0.25	42 1/16

The following coefficients must be tested:

• Drag, CD

• Total downforce, CL

• Front downforce, CLF

• Rear Downforce, CLR

• Side Force, CS

All average coefficients must not vary more than 1 ½% from body to body.

After all requirements have been met and the wind tunnel testing proves that the submitted body is aerodynamically close enough to be considered equal, the ABC Program Committee will vote to approve the body for competition.