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## **ABC BODY INSTALLATION TOOLS**

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# ABC BODY INSTALLATION TOOLS

## HOW TO USE THE OFFICIAL REFEREE

The Official Referee is a quick and easy to use tech inspection device for checking seven major points on a race car body. It is not intended for use in body mounting. The body can easily be installed within specs by using the body dimension sheet and templates. **The Official Referee is to be used in conjunction with the centerline, side-to-side and fender templates and is not meant to replace these templates.** Part number TT-100-00.

This section will explain and illustrate how to check the following dimensions:

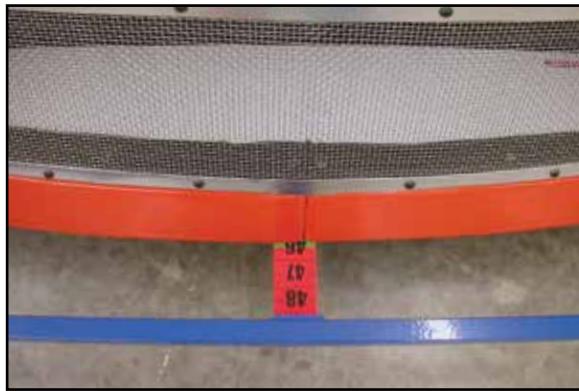
- **Front Overhang**
- **Front Tread Width**
- **Roof Height**
- **Wheelbase**
- **Rear of Door Height**
- **Rear Tread Width**
- **Rear Overhang**
- **Quarter Panel Height**

**IMPORTANT:** A flat surface at least as big as the car is essential for a tech inspection area to ensure accurate measurements.

## STEP 1: MEASURING FRONT OVERHANG



INSERT ARMS INTO FRONT WHEELS & LOCK INTO PLACE.



FRONT OVERHANG IS MEASURED BY VIEWING THE GAUGE AT THE BASE OF THE NOSE.

## STEP 2: MEASURING FRONT TREAD WIDTH



INSERT LEFT SIDE TREAD WIDTH MEASURING ARM INTO LEFT WHEEL & LOCK INTO PLACE. REPEAT THIS PROCEDURE ON THE RIGHT SIDE.



FRONT TREAD WIDTH IS MEASURED BY VIEWING GAUGE ON RIGHT SIDE MEASURING ARM.

### STEP 3: MEASURING WHEELBASE



*INSERT FRONT ARM INTO THE FRONT WHEEL. REMOVE LOCKING PIN FROM REAR ARM & INSERT INTO REAR WHEEL.*



*WHEELBASE IS MEASURED BY VIEWING THE CALIBRATED ARM ON THE REAR ARM.*

**It is acceptable to have different wheelbase measurements on each side (due to caster).**

**Wheelbase must be checked before and after the race to eliminate the possibility of a racer moving the rear axle forward to gain rear overhang after initial tech.**

### STEP 4: MEASURING ROOF HEIGHT



*MOVE CAR OR REFEREE UNTIL ROLLER CONTACTS ROOF & POLYCARBONATE GAUGE IS IN LINE WITH THE TOP EDGE OF THE WINDSHIELD*



*ALIGN POLYCARBONATE GAUGE WITH TOP EDGE OF WINDSHIELD TO LOCATE THE CALIBRATED GAUGE AT EXACTLY 10 INCHES BACK FROM THE WINDSHIELD.*



*THE ROOF HEIGHT IS MEASURED BY VIEWING THE CALIBRATED ROD ATTACHED TO THE POLYCARBONATE GAUGE.*

## STEP 5: MEASURING REAR OF DOOR HEIGHT



REAR OF DOOR HEIGHT IS CORRECT WHEN FREE-HANGING CHAIN JUST TOUCHES THE INTERSECTION POINT, AS SHOWN.

## STEP 6: MEASURING REAR TREAD WIDTH



INSERT LEFT SIDE TREAD WIDTH MEASURING ARM INTO LEFT WHEEL & LOCK INTO PLACE. REPEAT THIS PROCEDURE ON THE RIGHT SIDE (SEE STEP 2, PAGE 38). REAR TREAD WIDTH IS MEASURED BY VIEWING GAUGE ON RIGHT SIDE MEASURING ARM.

## STEP 7: MEASURING QUARTER PANEL HEIGHT & REAR OVERHANG



INSERT FRONT ARMS INTO REAR WHEELS  
AND LOCK INTO PLACE.



WHEN CHAIN TOUCHES BUMPER COVER AT BASE OF SPOILER  
ON THE CENTERLINE (AS SHOWN), REAR OVERHANG IS CORRECT.



QUARTER PANEL HEIGHT IS CORRECT WHEN FREE-HANGING  
CHAIN TOUCHES THE INTERSECTION POINT.

## HOW TO CALIBRATE THE OFFICIAL REFEREE

The Official Referee tech device is fully calibrated at the factory. During initial assembly, **Step 1 (Width of device)** will require adjustment as the hex rod was loosened during disassembly for shipping. All other calibrations should be correct during initial assembly but should be checked for accuracy.

### STEP 1: WIDTH OF THE DEVICE



CLAMP TAPE MEASURE TO OUTSIDE OF ONE SIDE OF DEVICE.



EXTEND TAPE TO OUTSIDE OF OPPOSITE SIDE OF DEVICE.



ADJUST HEX ROD TO OBTAIN 92 INCHES FROM OUTSIDE TO OUTSIDE OF DEVICE.



THE 92 INCH DIMENSION IS CRITICAL TO ENSURE TREAD WIDTH GAUGES ARE PROPERLY CALIBRATED.

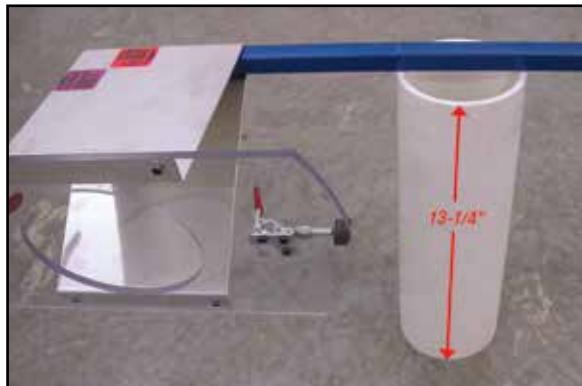
*When the dimension is correct, tighten the lock nut against the hex rod.*

### STEP 2: TREAD WIDTH GAUGE BLOCKS

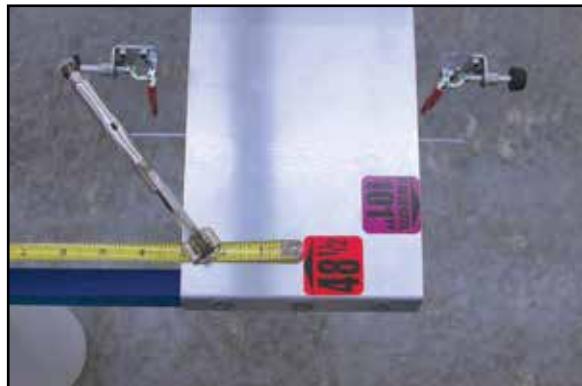


ADJUST BLOCK SO TREAD WIDTH GAUGE IS LOCATED TO CENTER OF WHEEL (APPROXIMATELY 12-1/2 INCHES UP FROM GROUND). THIS DIMENSION WILL VARY BASED ON TIRE SIZE.

### STEP 3: CALIBRATE FRONT ARMS



PLACE FRONT ARM IN HORIZONTAL POSITION & REST ON 13-1/4 INCH BLOCK.



CLAMP TAPE MEASURE SO TAPE IS RESTING ON 48-1/2 INCH STICKER LOCATED ON FRONT ARM.



EXTEND TAPE BACK TO 48-1/2 INCH STICKER LOCATED ON VERTICAL POST.



ADJUST HEIM ON FORWARD ARM TO OBTAIN 48-1/2 INCH MEASUREMENT.  
REPEAT PROCESS FOR OPPOSITE ARM.

### STEP 4: CALIBRATE WHEELBASE



LEAVE FORWARD ARM (THAT WAS JUST CALIBRATED) IN THE HORIZONTAL POSITION ON THE 13-1/4 INCH BLOCKS. PLACE REARWARD ARMS IN HORIZONTAL POSITION ON ANOTHER 13-1/4 INCH BLOCK. HOOK TAPE MEASURE ONTO FORWARD ARM ON THE 101 INCH STICKER & EXTEND TAPE TO REARWARD ARM AT 101 INCH STICKER.



ADJUST HEIM ON REARWARD ARM IF NECESSARY.  
REPEAT ON OPPOSITE SIDE.

## **STEP 5: CALIBRATE QUARTER PANEL HEIGHT CHAINS**

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Measure 34-1/2 inches from the ground up and adjust chain so bottom link is at this measurement. Repeat on other side.

## **STEP 6: CALIBRATE REAR OVERHANG CHAIN**

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Measure 34-7/8 inches from the ground up and adjust chain so bottom link is at this measurement.



## **STEP 7: CALIBRATE ROOF HEIGHT GAUGE**

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This gauge is not adjustable and is calibrated on a surface plate at the factory. The roof height gauge should show the same measure as the tape measure when properly calibrated.

# **OFFICIAL REFEREE QUESTIONS?**

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**Please call Five Star Race Car Bodies at (262) 877-2171**



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# REFEREE BODY CENTERLINE DEVICE

## STEP 1: CALIBRATING THE BODY CENTERLINE DEVICE [THESE NUMBERS ARE BASED OFF OF 66 INCH TREAD WIDTH]



BEGIN BY MEASURING FROM THE END OF THE REFEREE TO LEFT QUARTER HEIGHT BLOCK



SET LEFT SIDE QUARTER HEIGHT BLOCK TO 22 INCHES FROM END OF REFEREE



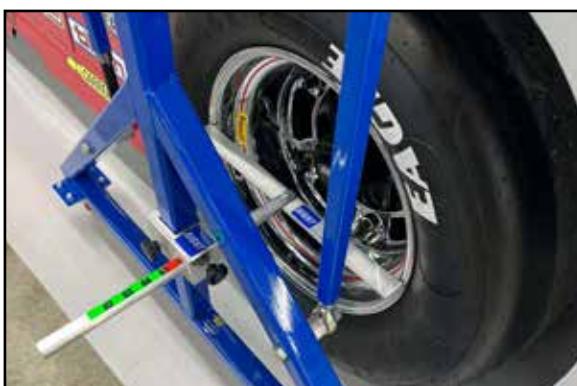
SET THE NEW BLOCK FOR THE CENTERLINE DEVICE TO 45-1/4 INCH FROM THE END OF THE REFEREE & ATTACH THE LONG CENTERLINE ANGLE TO THE BLOCK



ATTACH SMALL ANGLE SUPPORT TO CENTERLINE PART & LEFT SIDE QUARTER HEIGHT CHAIN

## STEP 2: ENSURE THE CAR IS CENTERED UNDER THE REFEREE

PICTURES ARE FOR REFERENCE ONLY AND DEMONSTRATE MEASURING CENTERLINE OFF THE RIGHT SIDE. THE CENTERLINE DEVICE CAN BE USED OFF THE LEFT OR RIGHT SIDE DEPENDING ON YOUR TRACK OR SERIES RULES. PLEASE REFER TO YOUR SPECIFIC TRACK OR SERIES TO DETERMINE HOW THEY USE IT.



LOCK THE RIGHT FRONT AT 66 INCHES



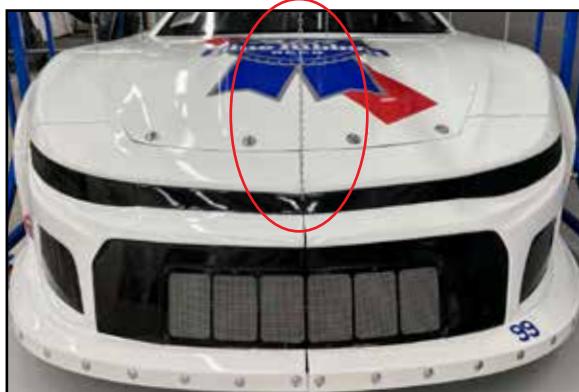
CENTER THE LEFT FRONT AS NEEDED



LOCK THE RIGHT REAR AT 66 INCHES



CENTER THE LEFT REAR AS NEEDED



THE BODY CENTERLINE CHAIN SHOULD BE ON CENTERLINE OF THE NOSE  
+/- 1" TOLERANCE FOR VARIABLES SUCH AS CAMBER,  
TREAD WIDTH, AND OTHER CONTRIBUTING FACTORS



NEXTGEN BODY REAR CENTERLINE OF BUMPER COVER IS 1 INCH TO THE RIGHT  
TRADITIONAL BODY REAR CENTERLINE IS ON THE BUMPER COVER CENTERLINE

**CASTER AND TREAD WIDTH WILL CHANGE THESE NUMBERS.**

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