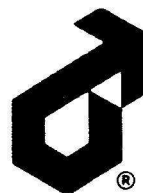


BEAR[®]

TELALINER III

**Models: 560, 570, 580
590, 591, 592
593, 595, 596
597, 598**

Operating Instructions



APPLIED POWER[®]
INC

INTRODUCTION

Bear Telaliner III Alignment System caster/camber sensor design maintains consistently reliable readings through its advanced electronics. It allows for centering the steering wheel perfectly, compensates for setback accurately, adjusts front toe precisely and performs wheel alignment profitably.

The Operating Instructions are written with your time and safety in mind, in a step-by-step procedure from component identification and preliminary set-up, through each alignment measurement and total system calibration with fully illustrated, detailed instructions. Become familiar with the system and these operating instructions before regular use of the Telaliner III to maximize its many features and to eliminate wasted time.

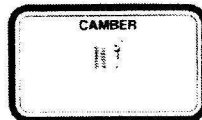
MODEL	DESCRIPTION
560	Telaliner III — Electronic Projector
570	Telaliner III — Mechanical Instrument Group
580	Telaliner III — Meter-at-the-Wheel Instrument Group
590	Telaliner III — Single Console Instrumentation
591	Telaliner III — Single w/Swivel Stand
592	Telaliner III — Single w/Overhead Mount Kit
593	Telaliner III — Single w/Wall Mount Kit & Merchandiser
595	Telaliner III — Dual Console Instrumentation
596	Telaliner III — Dual w/Swivel Stands
597	Telaliner III — Dual w/Overhead Mount Kit
598	Telaliner III — Dual w/Wall Mount Kits & Merchandiser

COMPONENT IDENTIFICATION



BEAR

Electronic Wheel Alignment



CAMBER



TOE



CASTER



TRACKING

Eliminates Steering Wheel Pull
Saves Tires And Gas

Ask Us How

METER
CONSOLE

LEFT
WHEEL UNIT

TOE HEAD

COUNTER
WEIGHT

SLAVE
CONSOLE

RIGHT
WHEEL UNIT

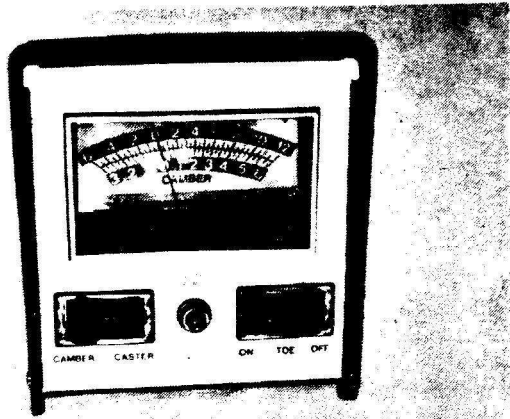
TOE HEAD

LEVELING
BUBBLE

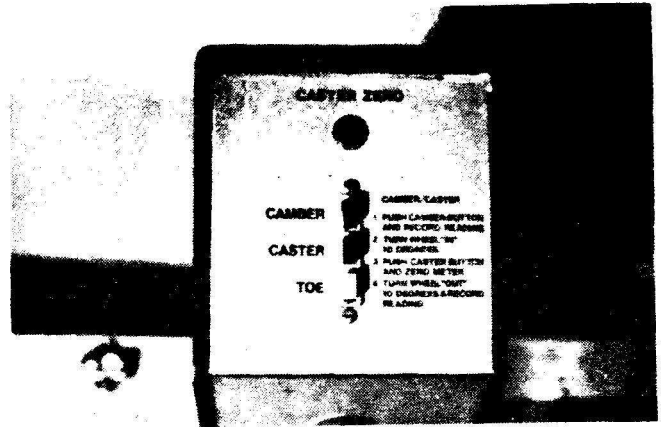
LEVELING
BUBBLE

COMPONENT IDENTIFICATION

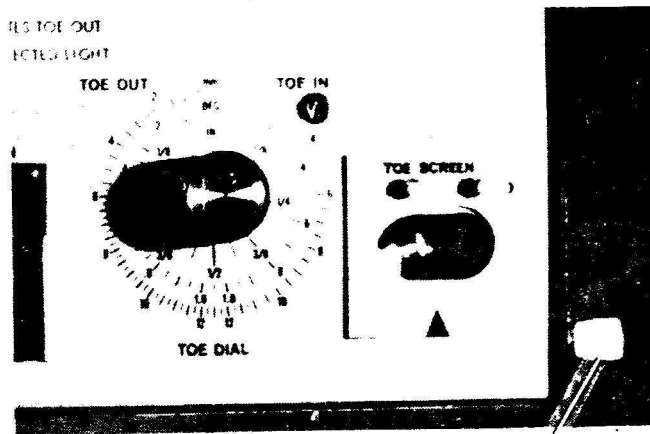
580 HEAD UNIT ASSEMBLY



590 HEAD UNIT ASSEMBLY

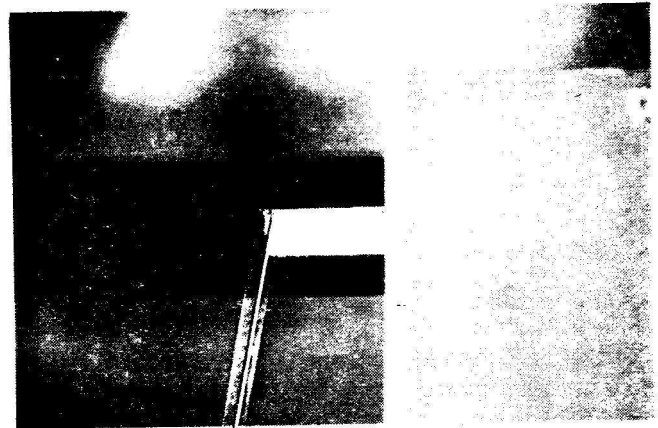


LEFT TOE HEAD



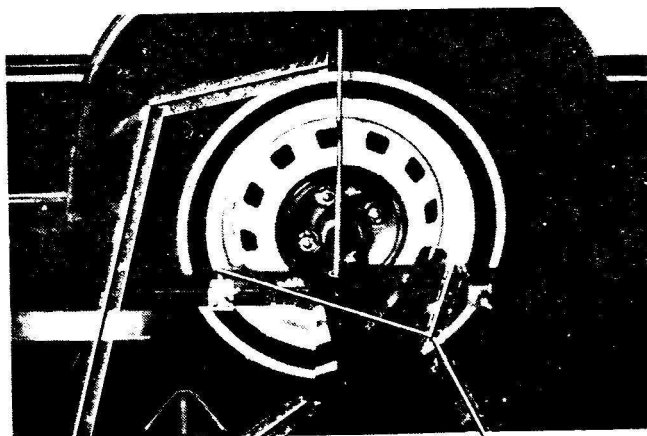
FOCUS LEVER

RIGHT TOE HEAD



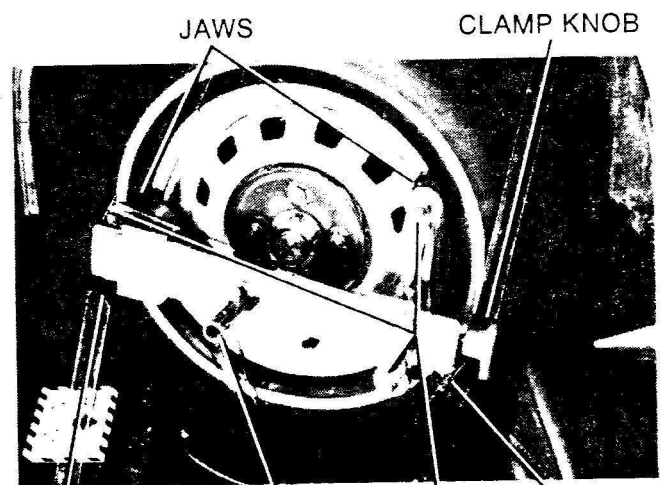
SET-BACK SCALE

TRACKING MIRROR



HANGER MIRROR POINTERS

WHEEL CLAMPS



ONE-LEG SIDE OF CLAMP

FOR YOUR SAFETY

FOR YOUR SAFETY, OBSERVE THESE PRECAUTIONS TO PREVENT PERSONAL INJURY.

ON MODELS 560, 570 and 580, DO NOT ATTACH NEGATIVE WIRES TO BATTERY, ATTACH TO FRAME LAST TO AVOID EXPLOSION.

WHEN PLUGGING METER CONSOLE INTO ELECTRICAL OUTLET, AVOID WET FLOORS TO PREVENT ELECTRICAL SHOCK.

FOR ALIGNMENT, PLACE VEHICLE IN PARK AND BLOCK REAR WHEELS. (IF MANUAL TRANSMISSION, PLACE IN GEAR AND BLOCK REAR WHEELS.)

WHEN JACKING VEHICLE, SUPPORT VEHICLE WITH CAR STANDS OR EQUIVALENT BLOCKING.

PRELIMINARY SET-UP

MODELS: 590, 591, 592, 593, 595, 596, 597, 598

Plug meter console into 110 V outlet. Attach cables from left and right wheel units to the correct connections located at the back of the meter console. *NOTE: Make sure left wheel unit cable is to left connection and right wheel unit cable is to right connection.*

For Models 595, 596, 597 and 598, attach cable from slave console to slave console connection at the back of the meter console.

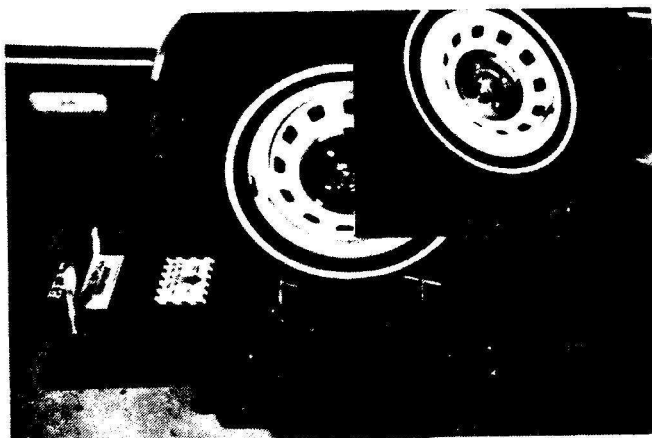
MODELS: 560, 570, 580

Hook-up wires from both wheel units: attach red leads to positive battery terminal first, then attach black leads to a good ground on engine block. *NOTE: To avoid running down battery, do not leave toe lights shining for an extended period of time.*

On model 580, if wires are hooked-up with reverse battery polarity, toe lights will shine but camber/caster meter will not read.

On models 560 and 570, camber and caster instructions do not apply.

NOTE: For wheel alignment, brake pedal depressor and steering wheel holder are required.



ALIGNMENT PROCEDURE

SET-UP AND INSPECTION

1. Make sure pins are installed in turning radius plates.
2. Drive vehicle onto alignment rack. Front wheel spindles must be on the center of turning radius plates. Rear wheels must be blocked.

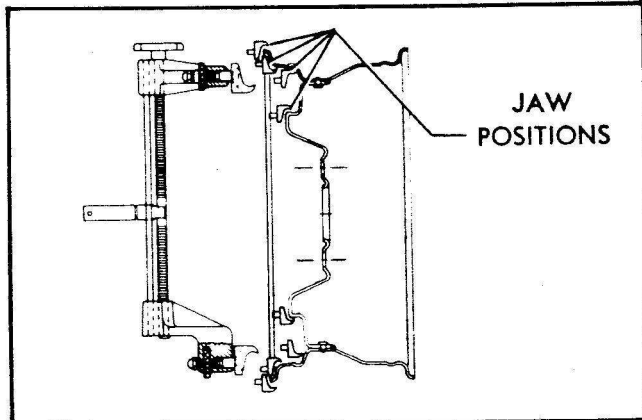
See TOTAL WHEEL SERVICE HANDBOOK (order No. 620-85583) available from Bear for complete inspection procedures.

Inspect vehicle for:

1. Correct tire pressure — will affect camber and caster.
2. Correct front suspension height — will affect camber, caster and toe.
3. Worn or loose steering and suspension parts — will affect all alignment angles.
4. If front end damage is suspected, turn to Turning Radius procedure, page 13.

Installation of wheel clamps:

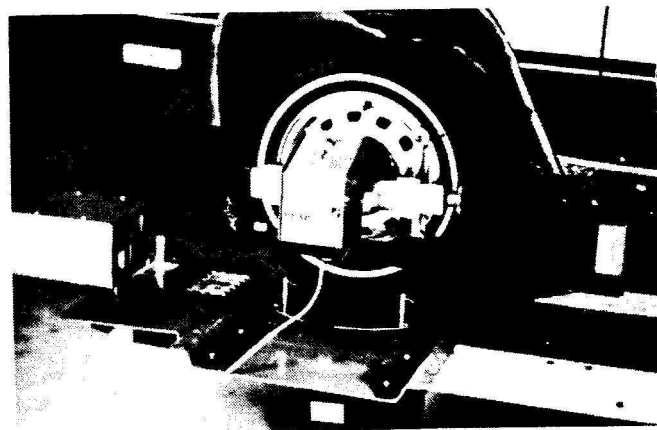
1. Place vehicle in park and block rear wheels. (If manual transmission, place in gear and block rear wheels.)
2. Remove wheel covers if necessary and install the self-centering wheel clamps to front wheels.
3. Tighten wheel clamps securely with clamp knob.
4. Pull on wheel clamp to make sure it is on tight.



ELIMINATING WHEEL RUNOUT

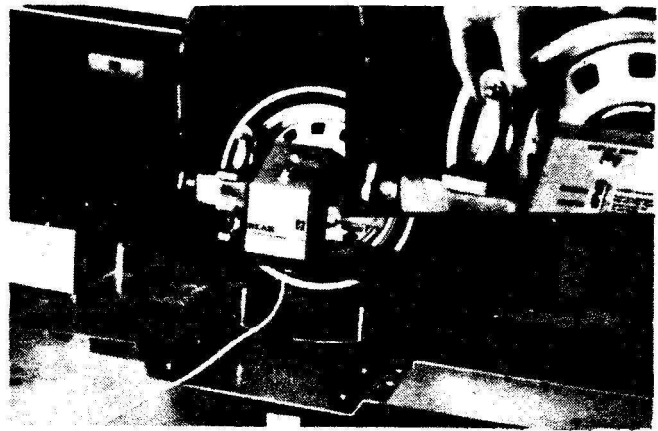
NOTE: It is necessary to eliminate wheel runout before checking alignment.

1. Install wheel units onto clamp spindles.
2. Using an air jack on jacking beam, raise front of vehicle off radius plates.
3. Support vehicle with car stands or equivalent blocking.
4. Turn wheel so wheel clamp support beam is level from left to right, and clamp knob is toward rear of vehicle.

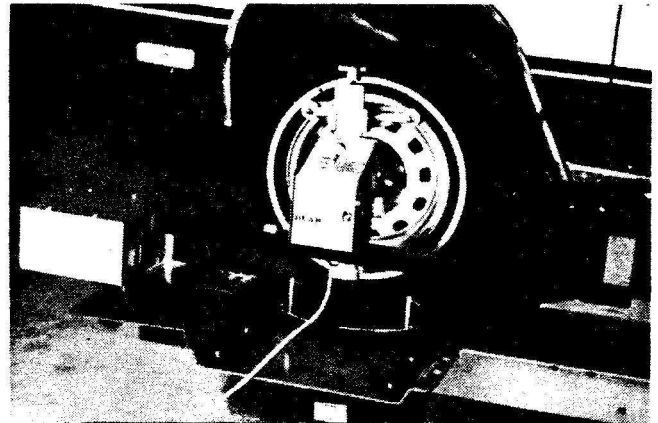


5. Push caster button.
6. Push Automatic Zero Button to zero caster scale.
7. Turn wheel so clamp knob is toward front of vehicle.
8. Note caster scale reading.
9. Adjust either of the compensation knobs on the two-leg side of wheel clamp toward 0 until caster scale reads one-half scale reading in step 8. (Split reading in half).

EXAMPLE: If scale reads 1 degree positive caster, adjust compensation knobs on two-leg side of wheel clamp until scale reads $\frac{1}{2}$ degree positive caster.



10. Turn wheel so clamp knob is toward top.
11. Push Automatic Zero Button to zero caster scale.



12. Turn wheel so clamp knob is toward bottom.
13. Note caster scale reading.

NOTE: Caster scale reading at step 8 can be different than caster scale reading at step 13.

14. Adjust compensation knob on the one-leg side of wheel clamp until caster scale reads one-half scale reading in step 13. (Split reading in half.)

EXAMPLE: If scale reads 1 degree positive caster, adjust compensation knob on one-leg side of wheel clamp until scale reads $\frac{1}{2}$ degree positive caster.



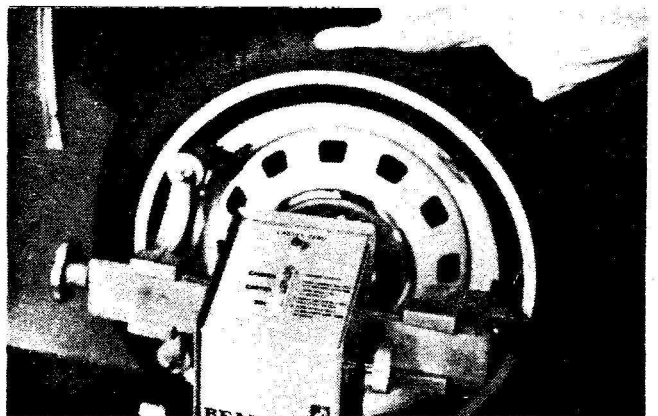
15. Press camber button.
16. While rotating wheel completely around, check if camber scale needle moves more than a total of $\frac{1}{8}$ degree. If needle moves a total of $\frac{1}{8}$ degree or less, then wheel runout has been eliminated from one wheel.

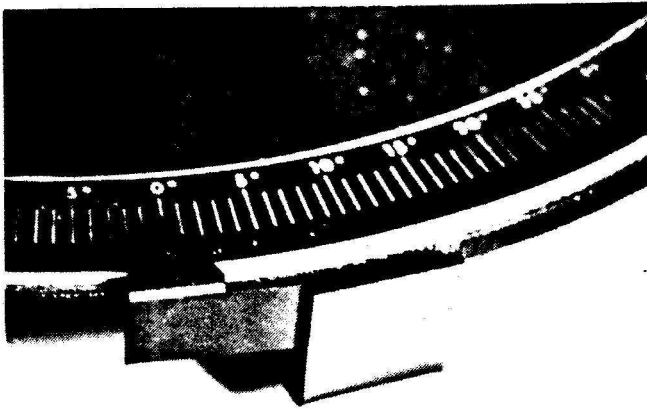
NOTE: If needle moves more than a total of $\frac{1}{8}$ degree, repeat steps 4 through 16. For correct alignment of vehicle, wheel runout MUST BE a total of $\frac{1}{8}$ degree or less.

17. Do steps 4 through 16 on other wheel.

NOTE: For opposite wheel, wheel runout MUST BE a total of $\frac{1}{8}$ degree or less, for correct alignment of vehicle.

18. Lower front wheels to turning radius plates.
Both rim clamps should be in same position.





CAMBER/CASTER

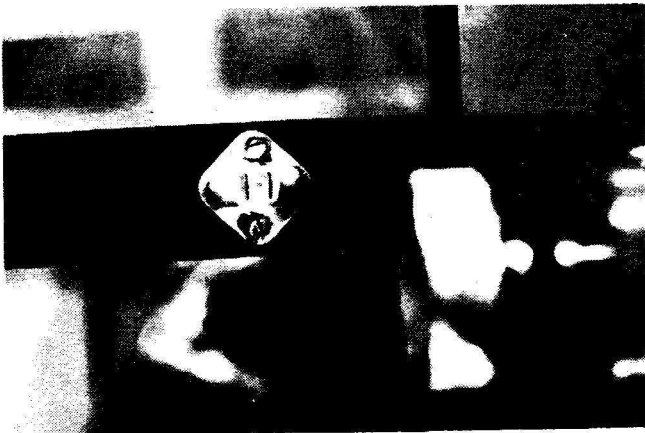
Set-Up

Before checking camber, caster and turning radius readings, the front wheels of the vehicle should be in straight ahead position, with the turning radius gauge pointers on zero.

NOTE: To save time and steps, the camber and caster will be checked on left wheel before going on to the right wheel.



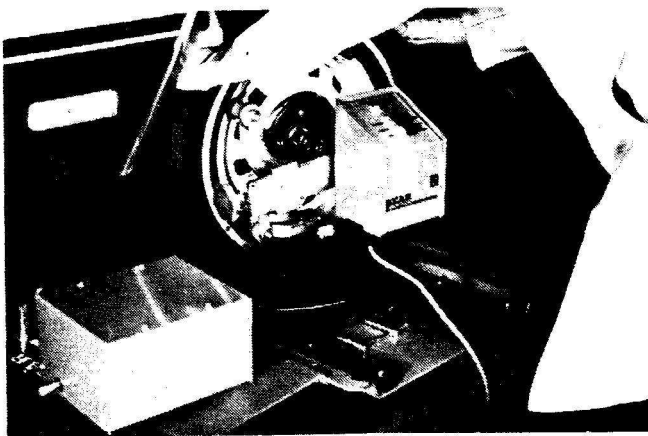
1. Install brake pedal depressor to lock wheels.
2. Remove turning radius pins from both sides of vehicle.
3. Bounce vehicle up and down to bring suspension height back to road condition.



Left Side Camber

1. Level wheel unit with leveling bubble, and lock into position on spindle with lock knob to prevent pivot.
2. Push camber button on left wheel unit. Wheels must be straight ahead.
3. Write down camber scale reading for left wheel on TOTAL WHEEL SERVICE inspection sheet.

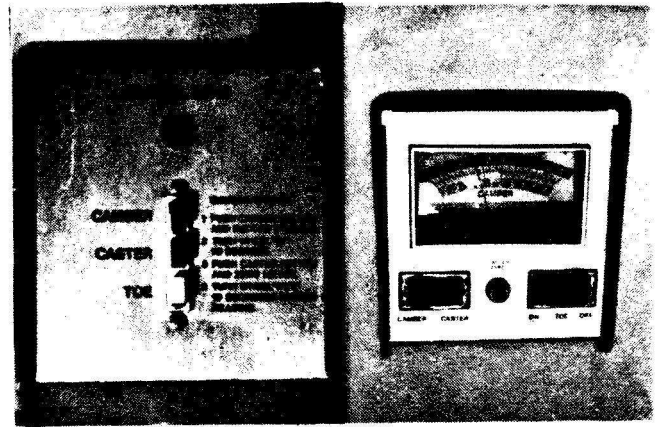
NOTE: Camber scale divided in 1/4 degree graduations.



Left Side Caster

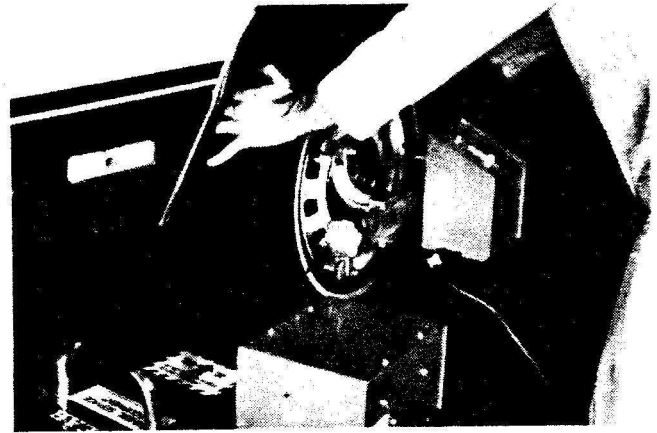
1. Push front of the left wheel IN, until turning radius gauge scale reads 10 degrees.

2. Push caster button on left wheel unit.
3. Press Automatic Zero Button to zero caster scale.



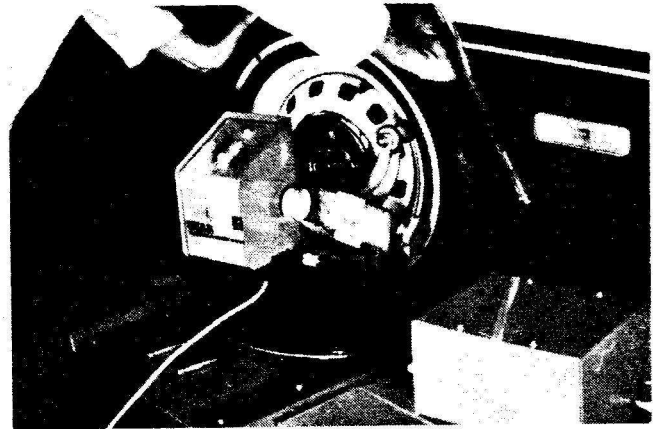
4. Pull front of left wheel OUT, until turning radius gauge scale reads 10 degrees.
5. Write down caster scale reading for left wheel on TOTAL WHEEL SERVICE inspection sheet.

NOTE: Caster scale is divided in 1/2 degree graduations.

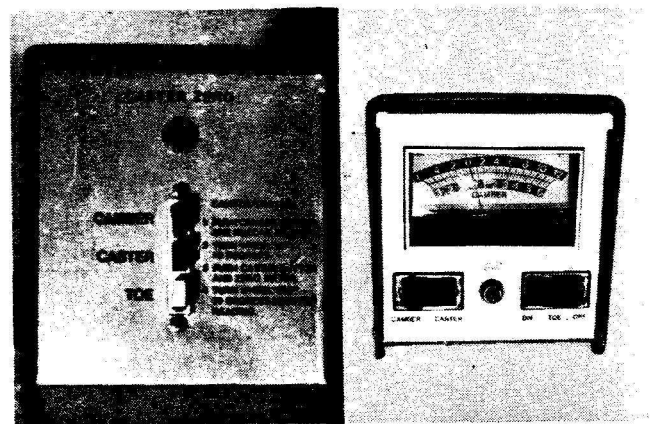


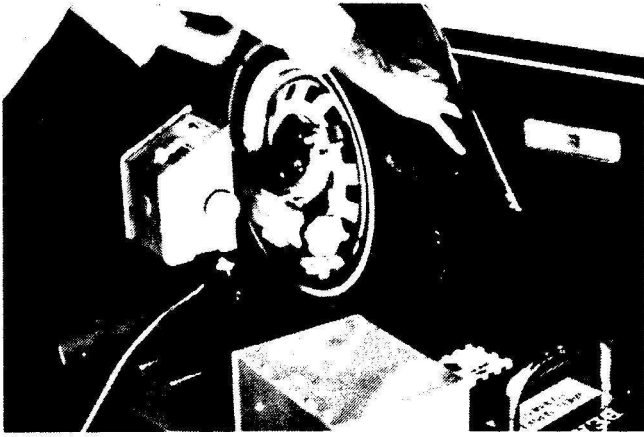
Right Side Caster

1. Push front of right wheel IN, until turning radius gauge scale reads 10 degrees.

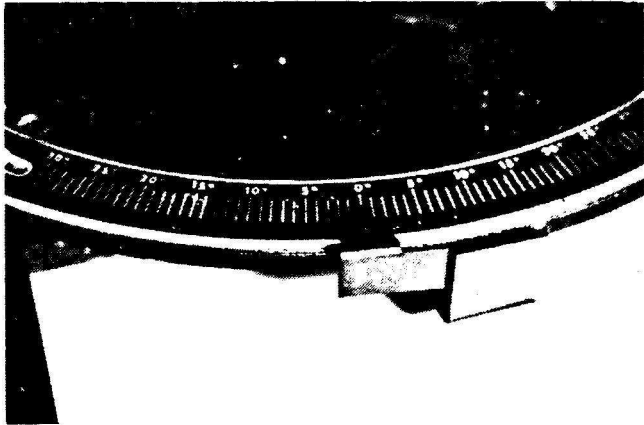


2. Push right wheel caster button.
3. Press Automatic Zero Button on right side to zero caster scale.





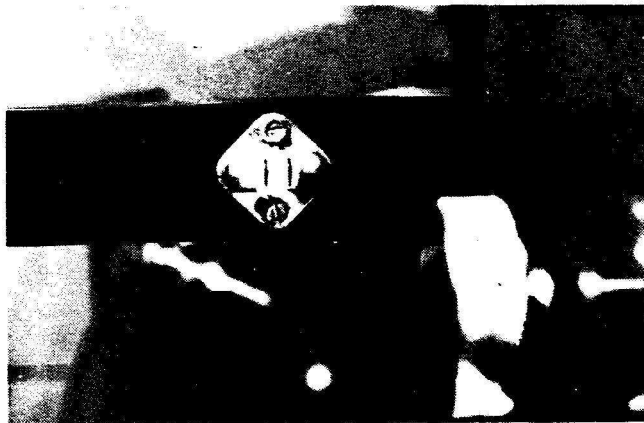
4. Pull front of right wheel OUT, until turning radius gauge scale reads 10 degrees.
5. Write down caster scale reading for right wheel on TOTAL WHEEL SERVICE inspection sheet.



Right Side Camber

1. Return wheels to straight ahead position, so turning radius gauge scale reads 0 degrees.
2. Press camber button.
3. Write down camber scale reading for right wheel on TOTAL WHEEL SERVICE inspection sheet.

NOTE: Check scale readings against vehicle manufacturer's specifications and make any necessary camber/caster adjustments. For correction procedures, see Bear TOTAL WHEEL SERVICE HANDBOOK.



TOE AND TRACK

WARNING: MAKE SURE VEHICLE IS IN PARK AND REAR WHEELS ARE BLOCKED. (IF MANUAL TRANSMISSION, PLACE IN GEAR AND BLOCK REAR WHEELS.)

1. Center steering wheel in straight ahead position.

NOTE: If vehicle is equipped with power steering, start engine and center steering wheel exactly.

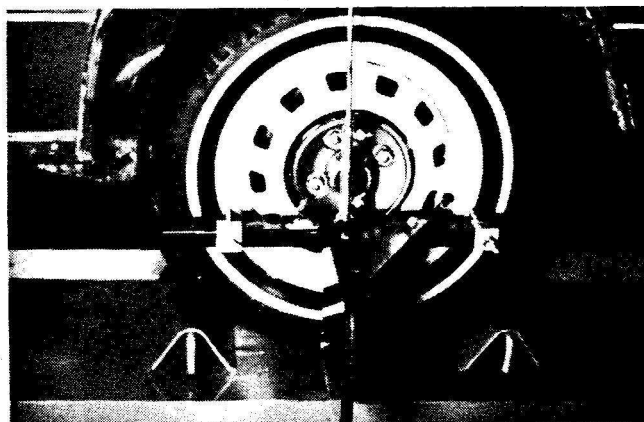
2. Install a Bear steering wheel holder.

NOTE: Stop engine, if started.

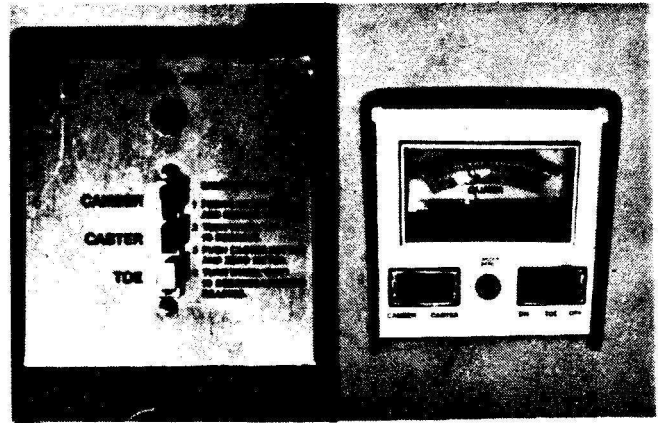
3. Make sure wheel units are level. Re-level if required.

4. Install tracking mirror on left rear wheel with pointers on rim of wheel.

NOTE: Make sure tracking mirror is level.

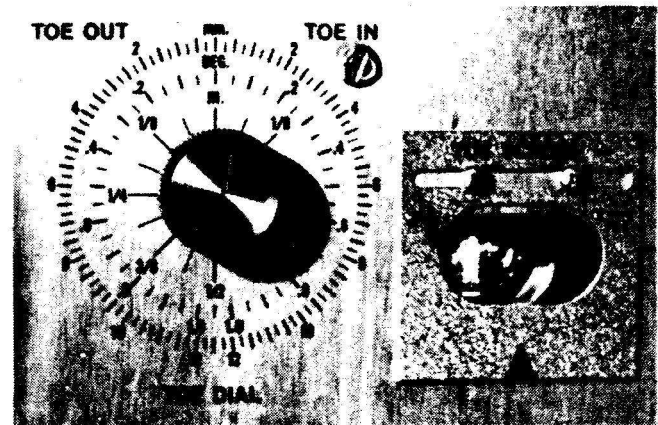


5. Push toe button on wheel unit so projected lines shine. (On Model 580, push both toe buttons.)

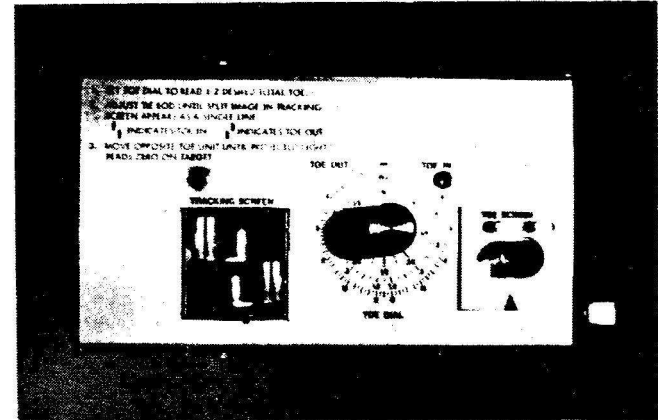


6. On left toe head, turn toe dial to read one-half desired total toe.

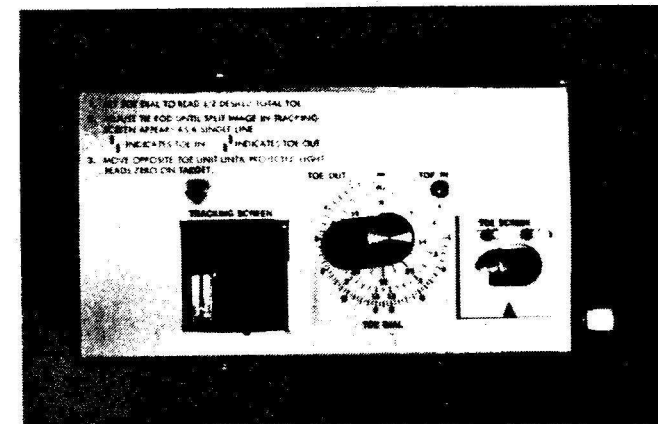
EXAMPLE: If total toe setting is to be $\frac{1}{16}$ inch, turn to $\frac{1}{32}$ inch.

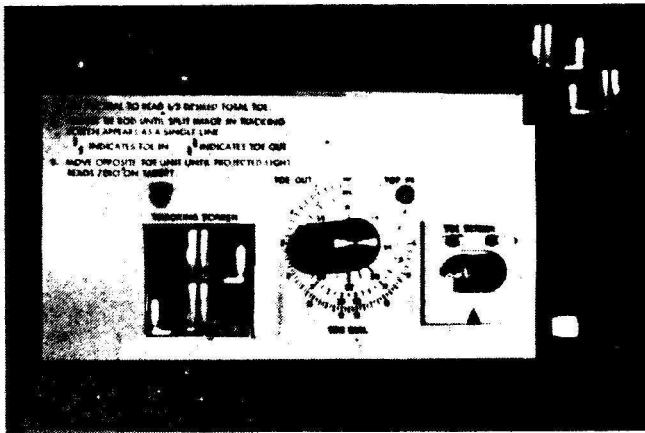


7. While under vehicle, look through tracking screen to see two yellow frames. In the center of each frame is a black line.

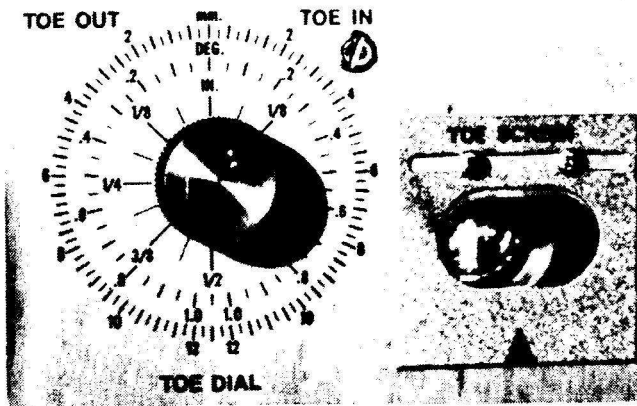


NOTE: When one or both black lines are not visible, severe tracking problems may be present.

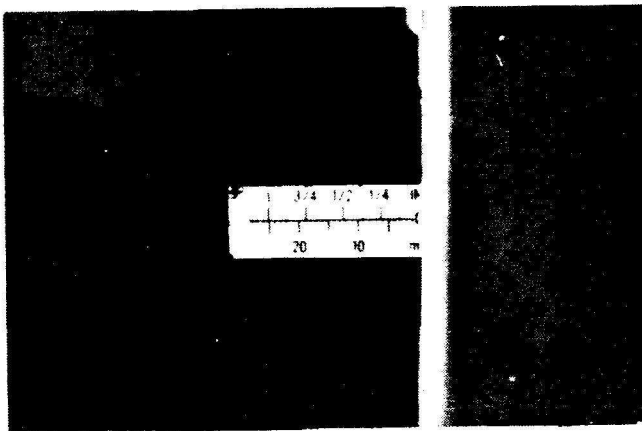




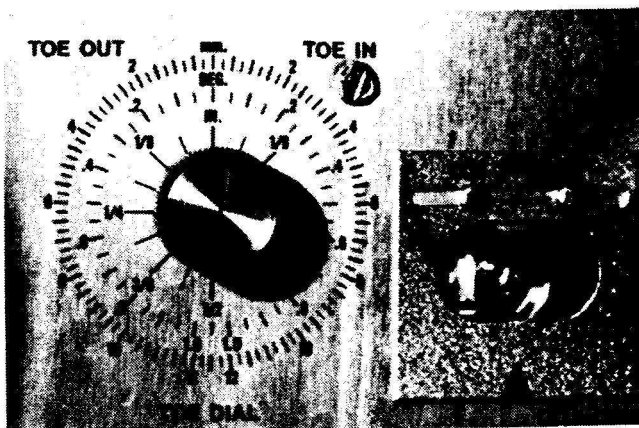
8. While looking through tracking screen if two yellow frames are seen, adjust left tie rod until top yellow frame is directly above bottom yellow frame and the black lines are one continuous black line.



9. While facing right toe head, focus projected line with lever on left toe head.
10. Check that projected line from left toe head is directly on arrow of right toe head.
11. If not, slide right toe head on bar until projected line is directly on arrow.



NOTE: Set-back can now be read with scale on right wheel unit.



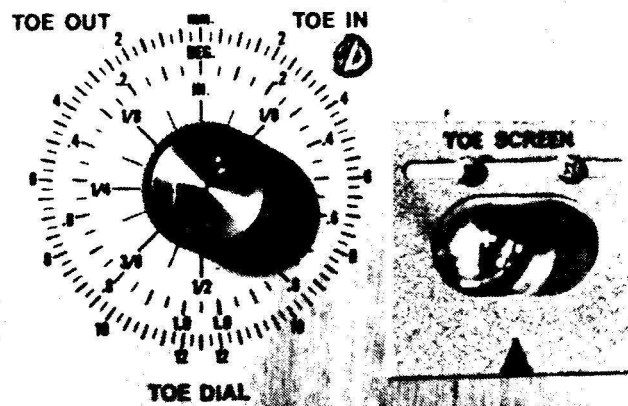
12. On right toe head, turn toe dial to read one-half desired total toe.

EXAMPLE: If total toe setting is to be $\frac{1}{16}$ inch, turn to $\frac{1}{32}$ inch.

13. While facing left toe head, focus projected line with lever on right toe head.

NOTE: If vehicle is aligned, projected line from right toe head will be directly on left arrow.

14. When projected line from right toe head is NOT directly on left arrow, adjust right tie-rod until projected line is on arrow.



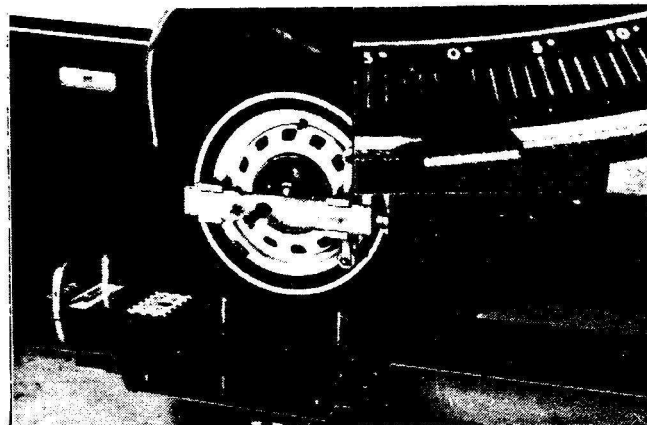
TURNING RADIUS

NOTE: Remove wheel units.

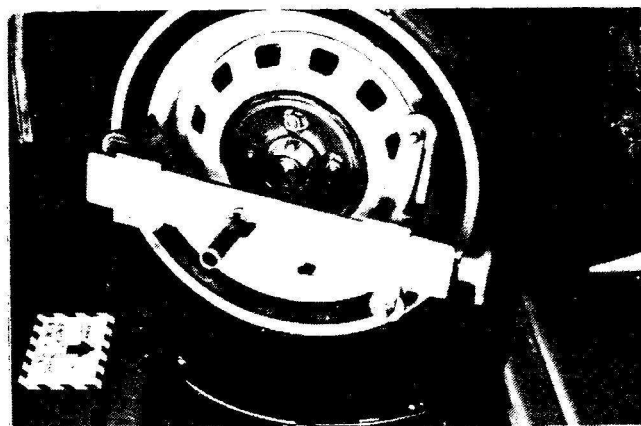
To read RIGHT SIDE turning radius:

1. Make sure front wheels are to straight ahead position, so turning radius gauge reads 0 degrees.

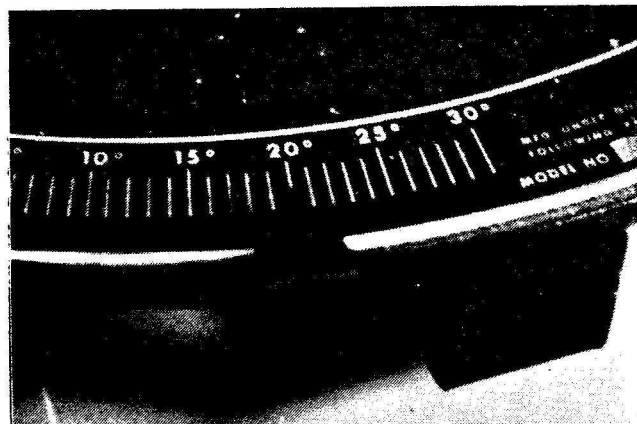
NOTE: Brake pedal depressor must hold brake firmly to lock wheels.

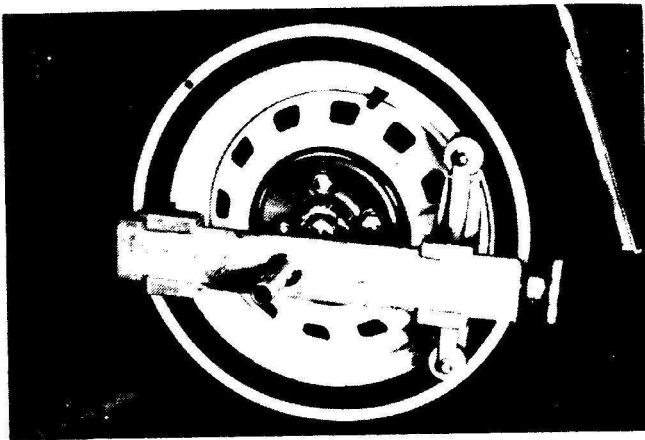


2. Push front of left wheel IN, until turning radius gauge scale reads 20 degrees.



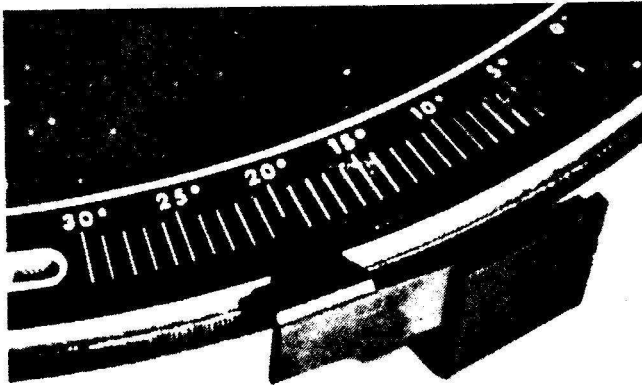
3. On opposite turning radius gauge scale, write down reading of right turning radius angle on work sheet.
4. Check manufacturer's specifications.



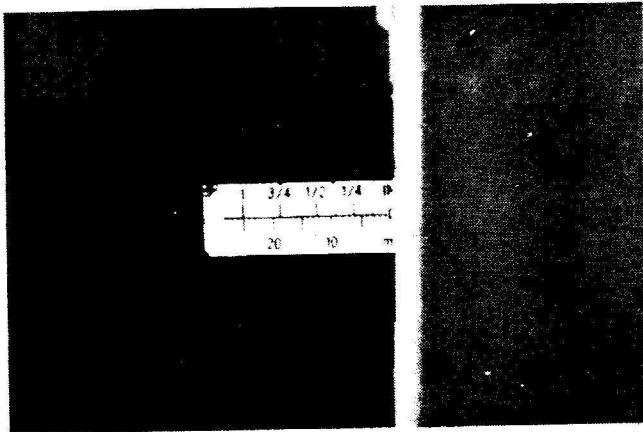


To read LEFT SIDE turning radius:

1. Push front of right wheel IN, until turning radius gauge scale reads 20 degrees.



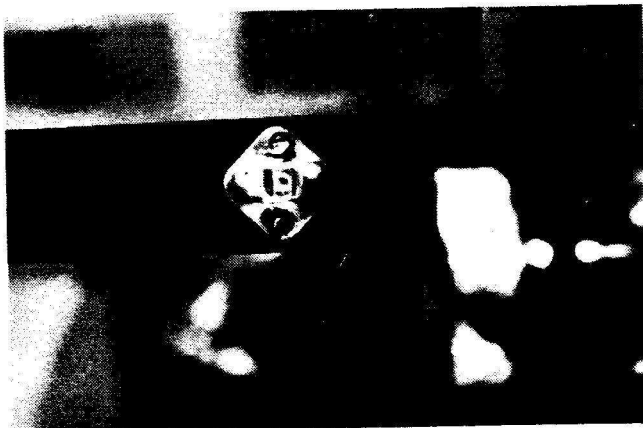
2. On opposite turning radius gauge scale, write down reading of left turning radius angle.
3. Check manufacturer's specifications and replace parts, if needed.
4. For correction procedures, see Bear TOTAL WHEEL SERVICE HANDBOOK.



FRONT WHEEL TOE WITHOUT REAR REFERENCE

NOTE: Position right toe head at zero on set-back scale.

WARNING: MAKE SURE VEHICLE IS IN PARK AND REAR WHEELS ARE BLOCKED. (IF MANUAL TRANSMISSION, PLACE IN GEAR AND BLOCK WHEELS.)



1. Center steering wheel in straight ahead position.

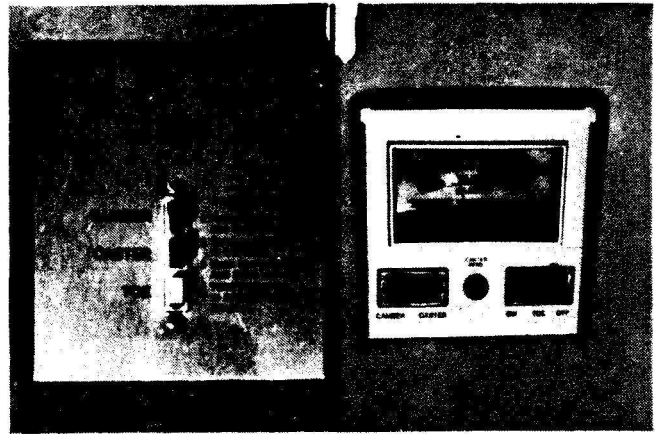
NOTE: If vehicle is equipped with power steering, start engine and center steering wheel exactly.

2. Install a Bear steering wheel holder.

NOTE: Stop engine, if started.

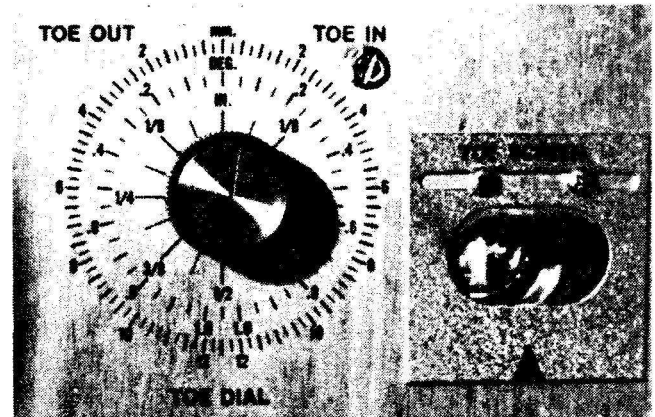
3. Make sure wheel units are level. Re-level if required.

4. Push toe button on wheel unit so projected lines shine. (On Model 580, push both toe buttons.)

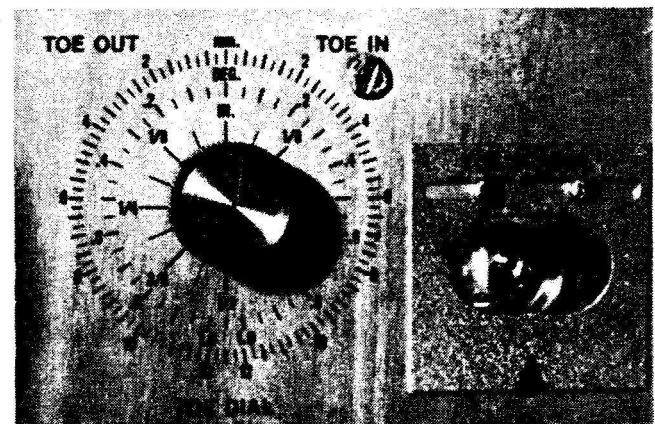


5. On both toe heads, turn toe dial to read one-half desired total toe.

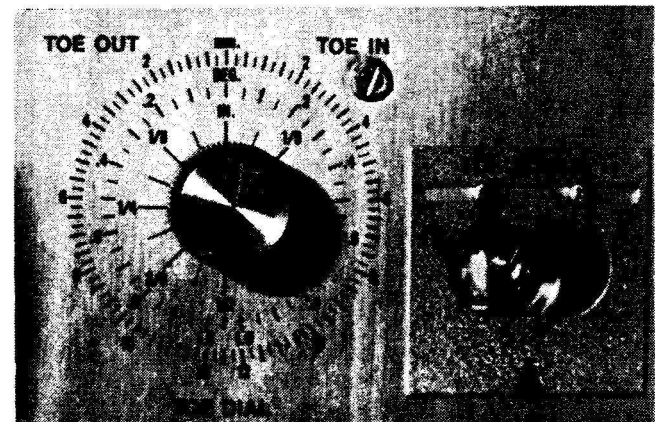
EXAMPLE: If total toe setting is to be $\frac{1}{16}$ inch, turn toe dial on right toe head to $\frac{1}{32}$ inch and turn toe dial on left toe head to $\frac{1}{32}$ inch.



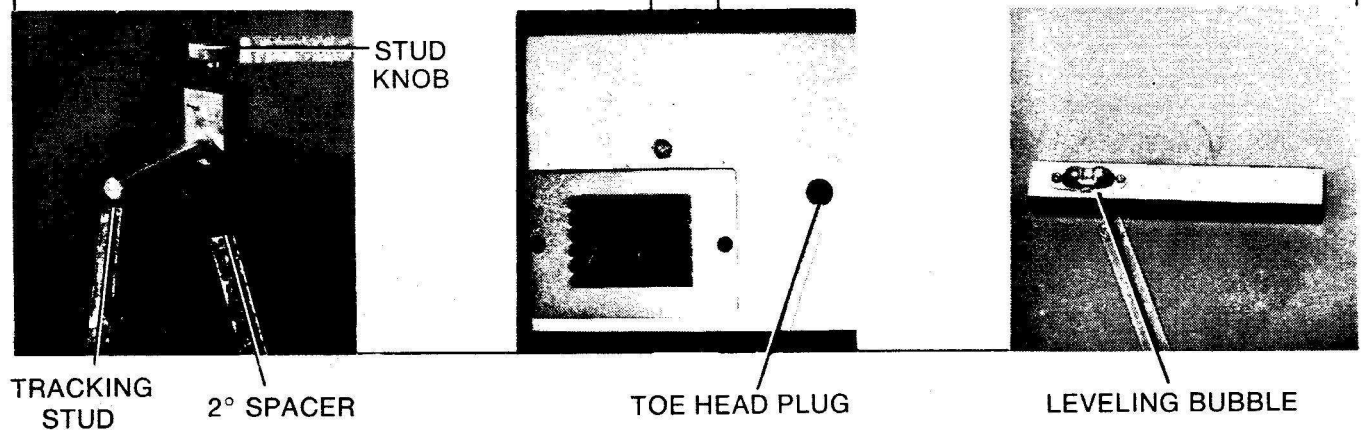
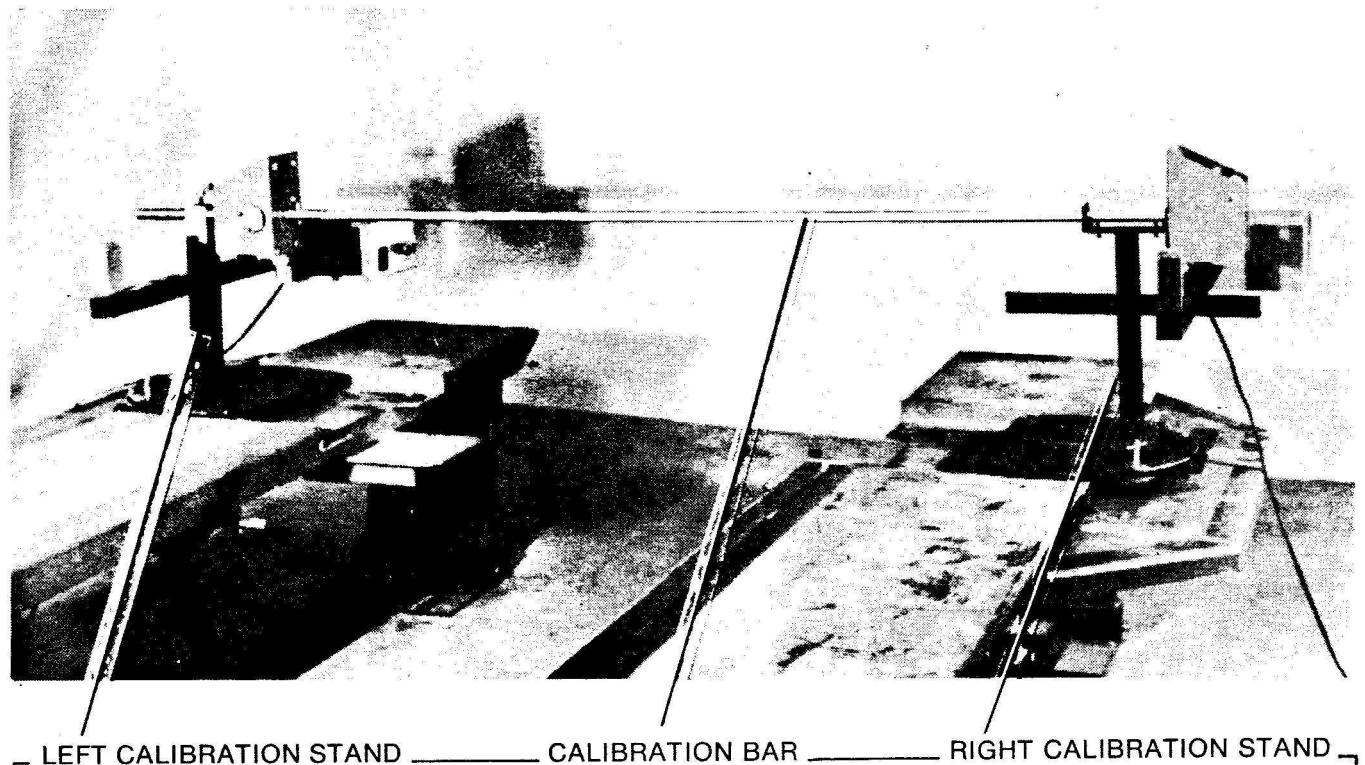
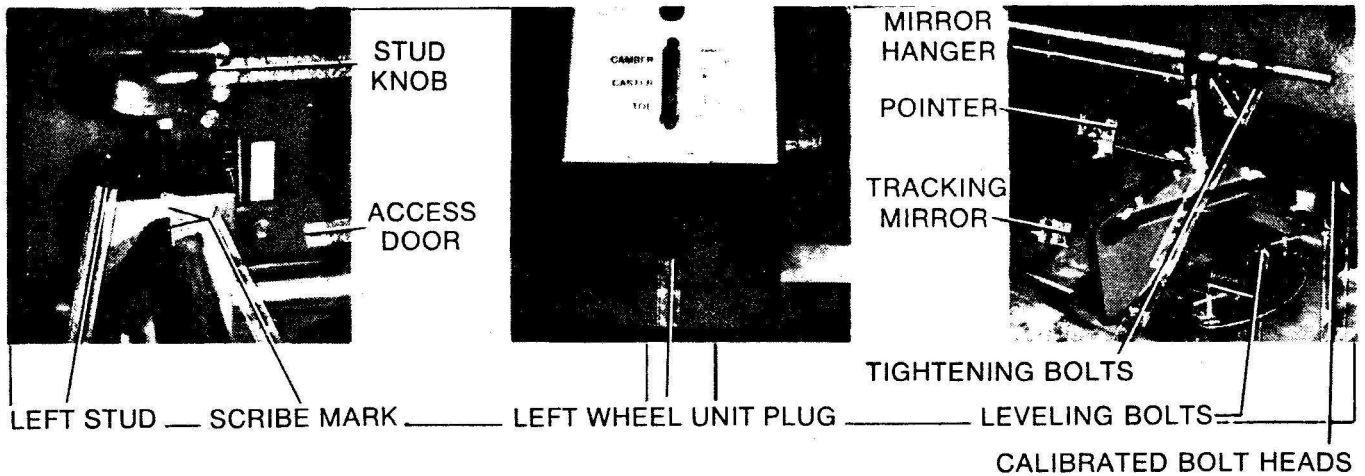
6. Focus projected line with lever on left toe head.
7. If projected line is NOT directly on right toe head arrow, adjust left tie rod.



8. Focus projected line on left arrow with lever on right toe head.
9. If projected line is not directly on left toe head arrow, adjust right tie rod.
10. Front wheel toe is completed.



CALIBRATION COMPONENT IDENTIFICATION

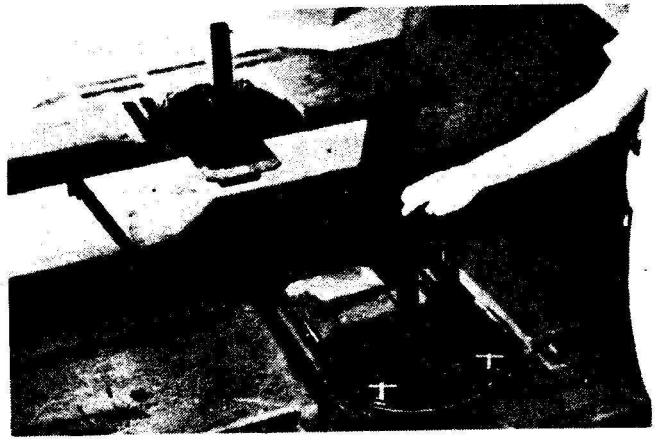


CALIBRATION PROCEDURE

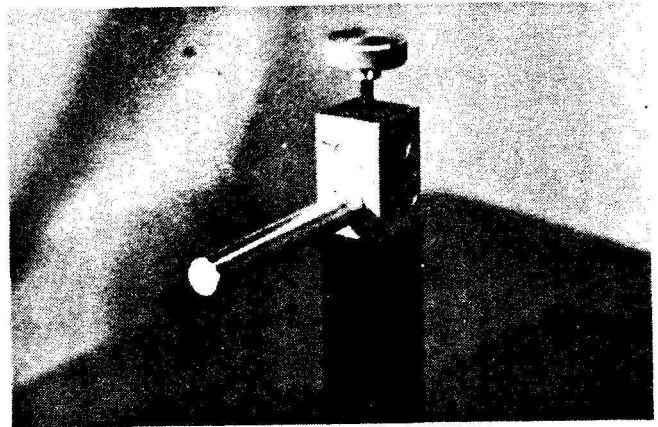
SET-UP

NOTE: Position right toe head at zero on set-back scale.

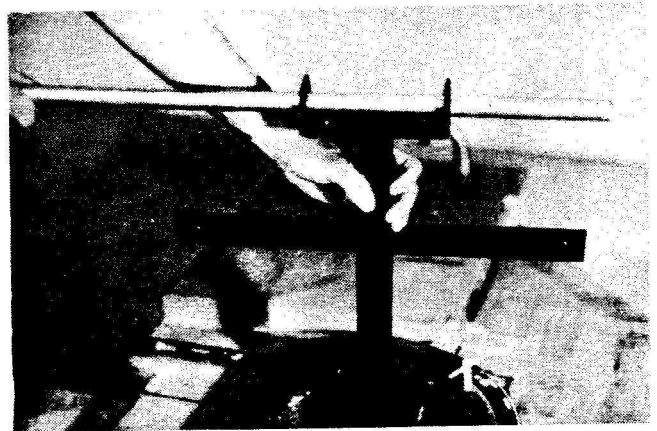
1. Place stands on turning radius plates. (Left stand on left plate. Right stand on right plate.)



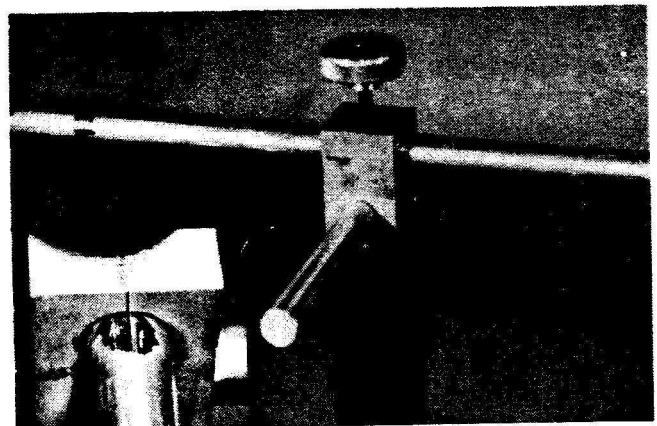
2. Remove stud knob from left stand.
3. Remove tracking stud and 2 degree spacer.
4. Place 2 degree spacer on top of left calibration stand and insert tracking stud facing rear of rack.



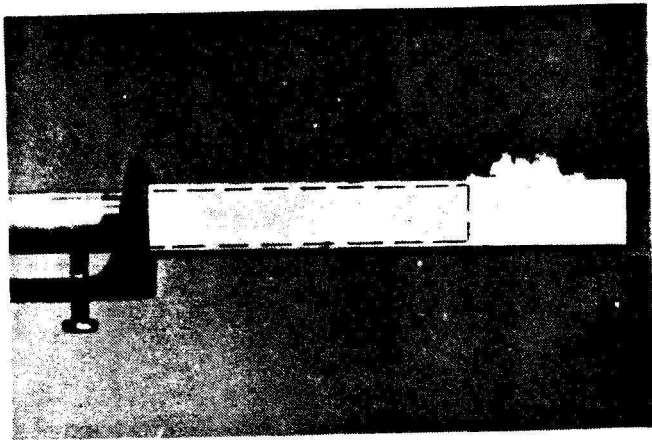
5. Insert bar through right stand with the heads of tracking mirror bolts facing rear of rack.



6. Insert bar into left calibration stand.
7. Make certain that scribe mark on bar is in line with scribe mark on tracking stud.

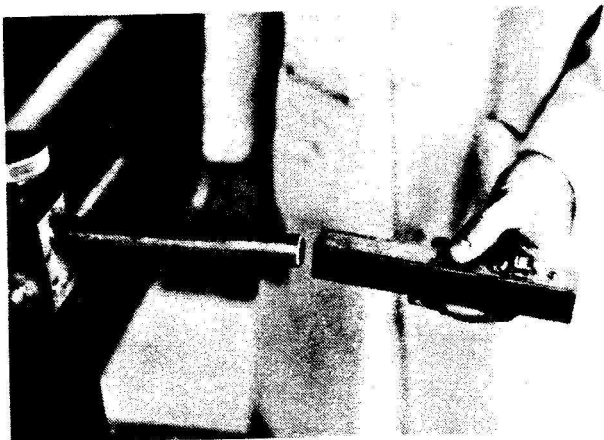


NOTE: Do not tighten tracking stud knob at this time.

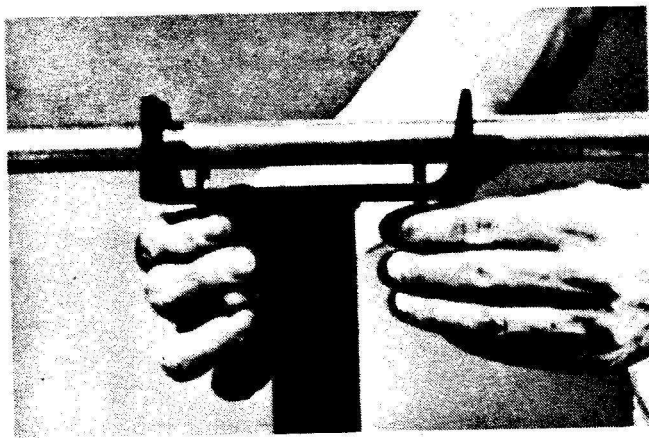


8. On right stand, slide level/locator over calibration bar.

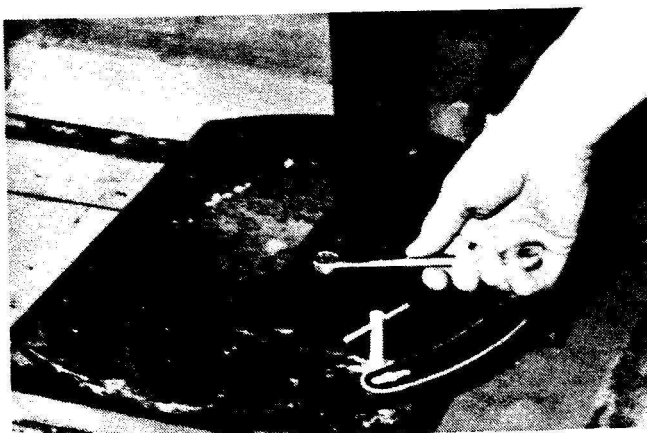
NOTE: While inner-stop of level/locator contacts calibration bar, the other end of level/locator must contact tracking stud.



9 Securely tighten tracking stud knob.

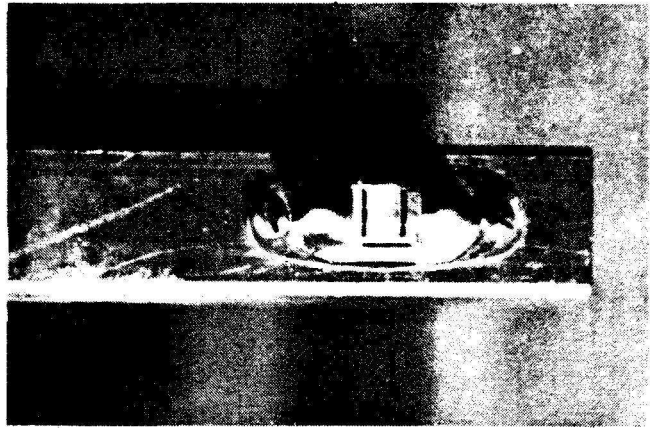


10 Tighten bolts to secure calibration bar onto right stand.



11 Adjust leveling bolts until bar is level. Check vial on level/locator.

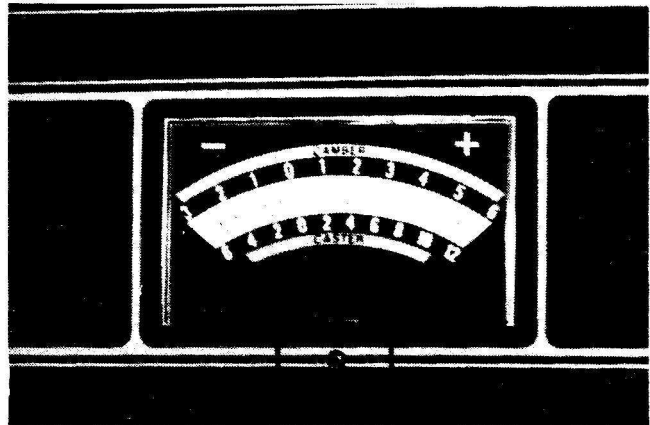
- 12 With level/locator on left side, check if calibration bar is level. If necessary, adjust leveling bolts on right side until left side is exactly level.



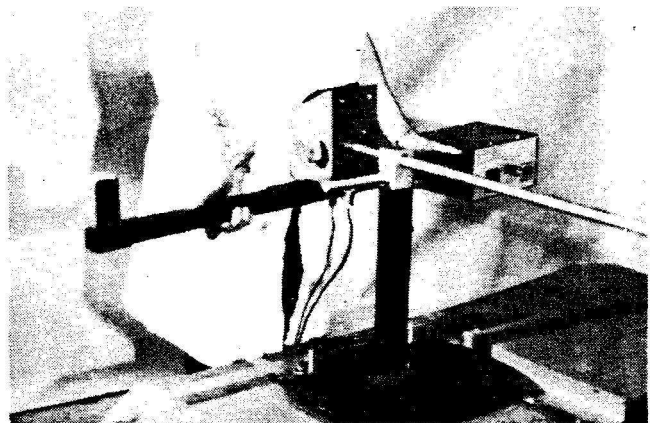
CAMBER/CASTER CALIBRATION

Left Unit

1. Check that all meters read "0" when units are off. If not, adjust mechanical "0".



2. Hook up units and make sure they have at least fifteen minutes of warm-up time before calibration.
3. Install left wheel unit onto left side of calibration bar.

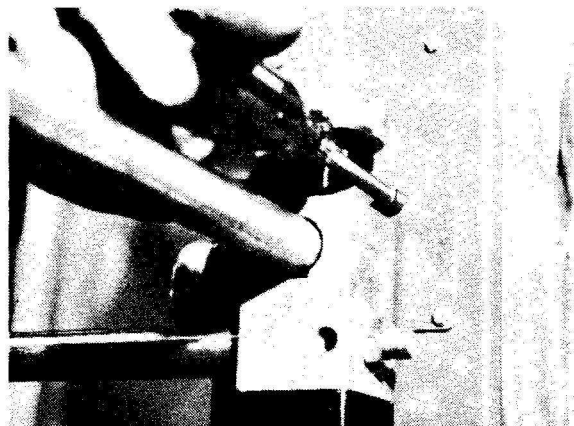


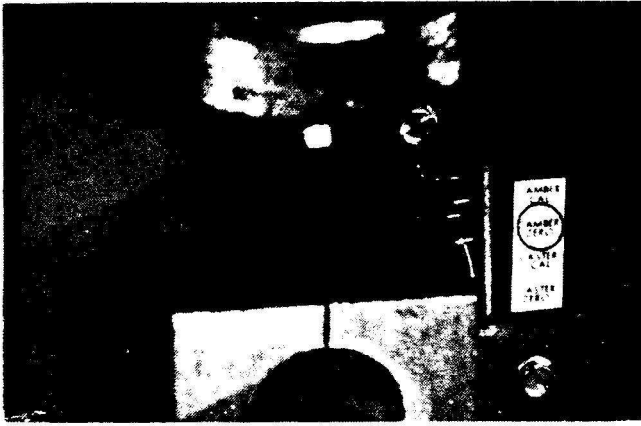
4. Open access door to wheel unit.

NOTE: Refer to decal in wheel unit for correct potentiometer.

CAUTION: DO NOT ADJUST SEALED POTENTIOMETER.

Sealed potentiometer
Camber Gain potentiometer
Camber Zero potentiometer
Caster Gain potentiometer
Caster Zero potentiometer

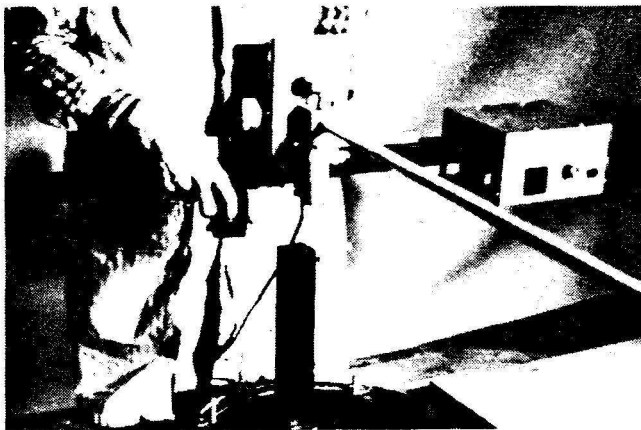




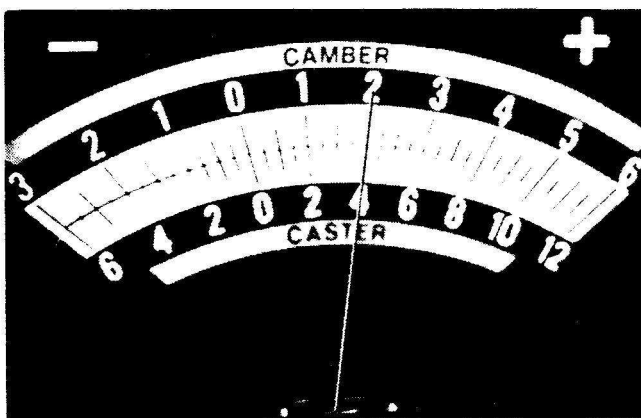
5. Press Camber button.
6. Adjust Camber Zero potentiometer to read zero on camber scale.



7. Press Caster button.
8. Press Automatic Zero button.
9. Adjust Caster Zero potentiometer to read zero.

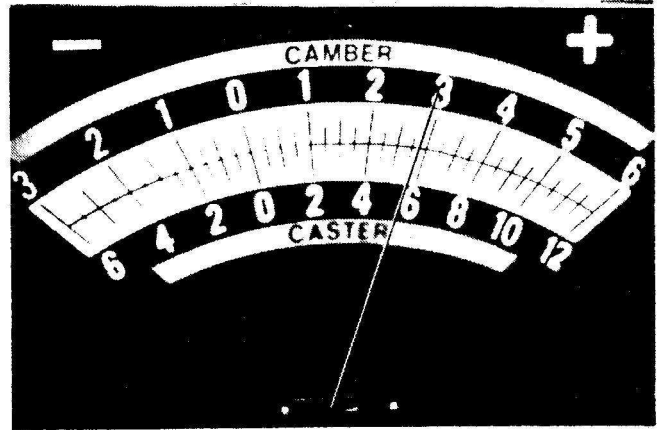


10. Remove 2 degree spacer and replace tracking stud in stand.



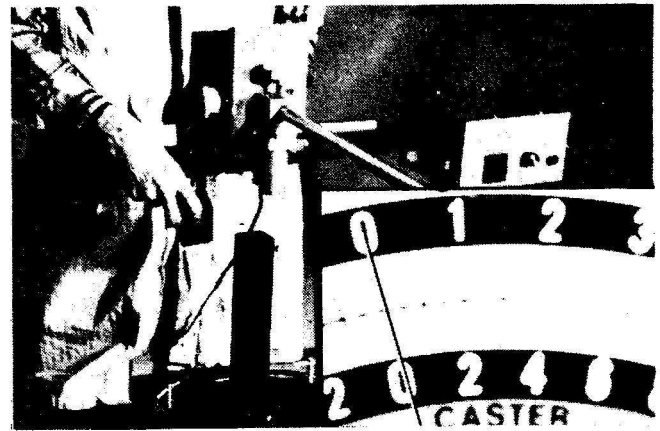
11. Press Camber button.
12. Adjust Camber Gain potentiometer to read 2 degrees positive.

13. Press Caster button.
14. Adjust Caster Gain potentiometer to read $5\frac{3}{4}$ degrees positive.

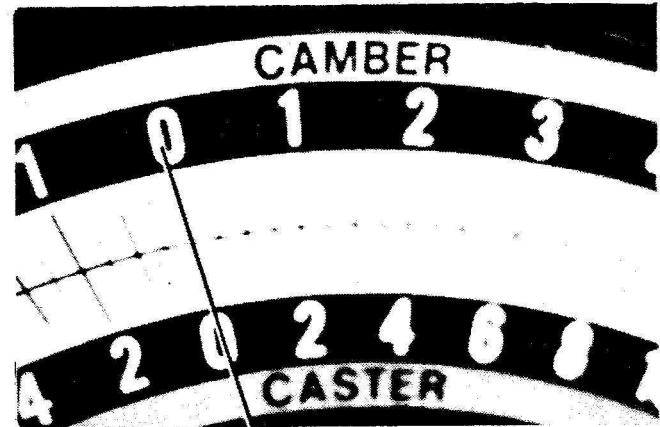


Left Unit Final Check

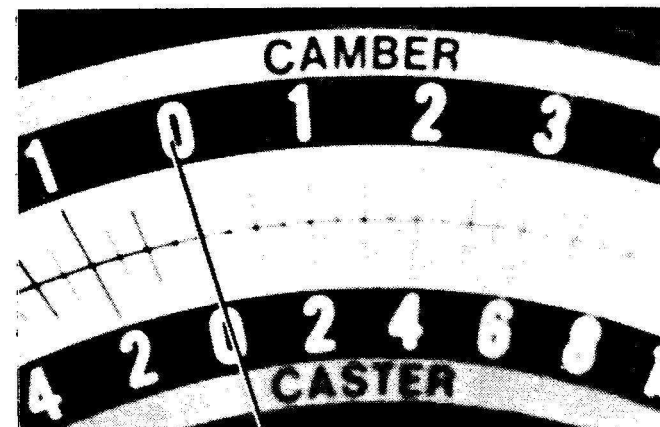
1. Reinstall 2 degree spacer.
2. Press Camber button and check that needle reads "0."

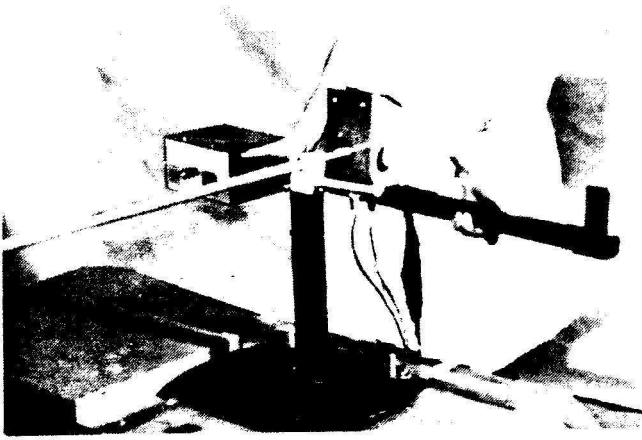


3. Press Caster button.
4. Press Automatic Zero button.
5. Check that needle reads "0."



6. Press toe button and check that needle reads "0."
7. If meter does not zero for steps 2, 5, and 6 of final check, repeat camber/caster calibration for left wheel unit.





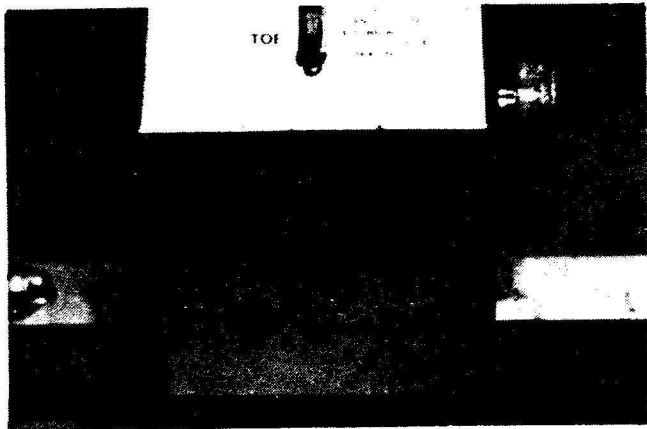
Right Unit

1. Install right wheel unit onto left side of calibration bar.

NOTE: On right wheel unit, follow steps 4 through 14, as described for left unit calibration.

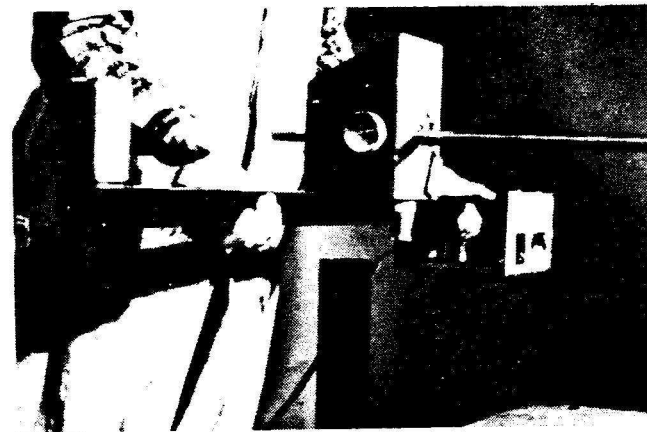
Right Unit Final Check

NOTE: On right wheel unit, follow steps 1 through 6, as described for Left Unit Final Check. If meter does not zero for steps 2, 5, and 6 of final check, repeat camber/caster calibration for right wheel unit. Remove right wheel unit after passing final check.

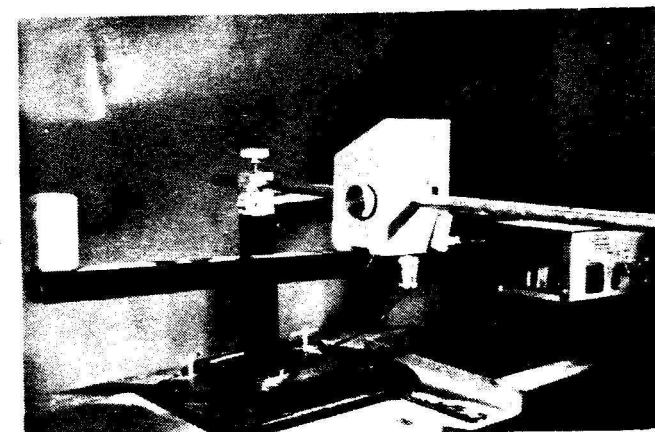


TOE CALIBRATION

1. Remove plug from left wheel unit.

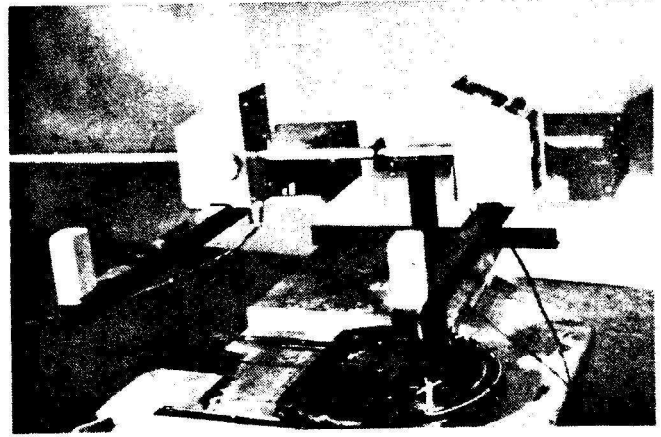


2. Remove calibration bar from tracking stud.
3. Slide left wheel unit onto calibration bar.

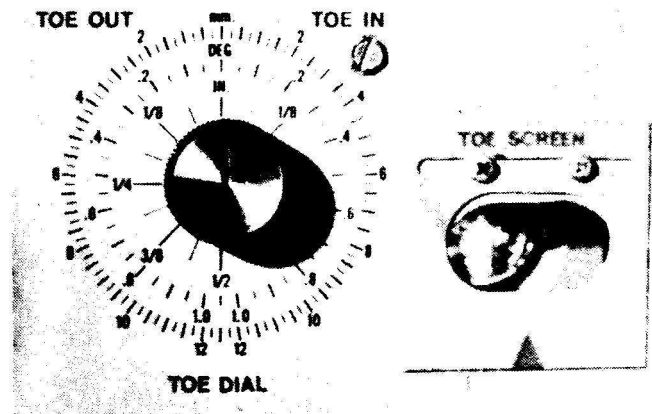


4. Replace calibration bar in tracking stud.
5. Replace tracking stud with 2 degree spacer into left stand.
6. Securely tighten tracking stud knob, making certain scribe marks are aligned.

7. Install right wheel unit onto right side of calibration bar.
8. Slide left wheel unit until about 18" from right wheel unit.



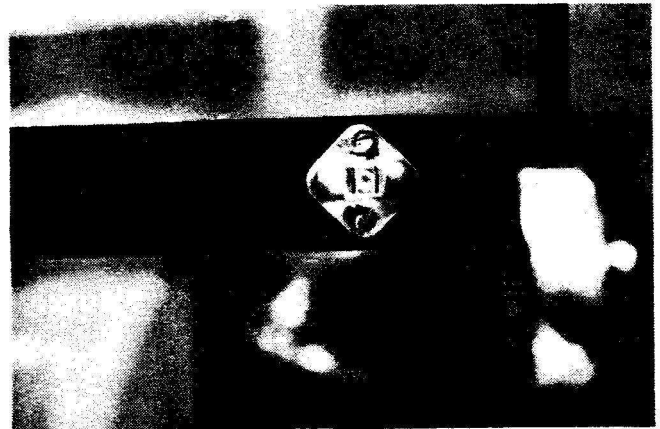
9. Set Toe dials to zero on both right and left toe heads.
10. Slide right toe head to read "0" on set-back scale.



11. Level both wheel units.

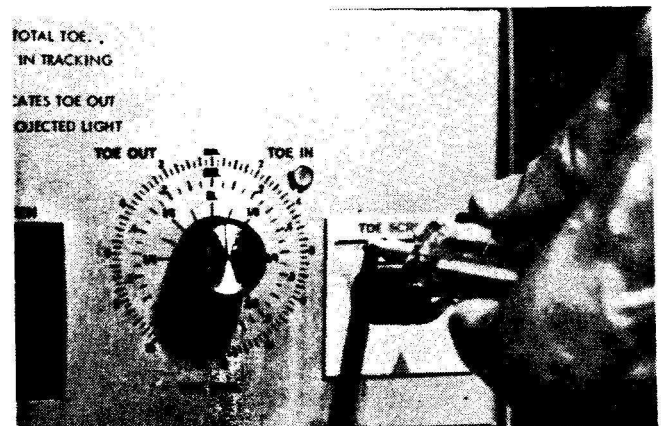
CAUTION: FOR TOE CALIBRATION, WHEEL UNITS MUST REMAIN LEVEL.

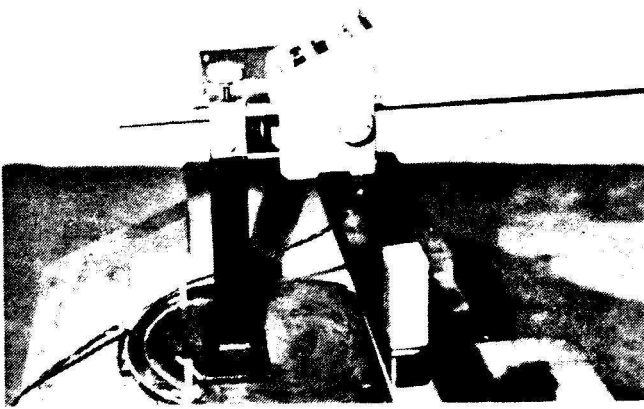
12. Lock wheel units onto calibration bar.
13. Set focus to minimum focal distance on both wheel units.



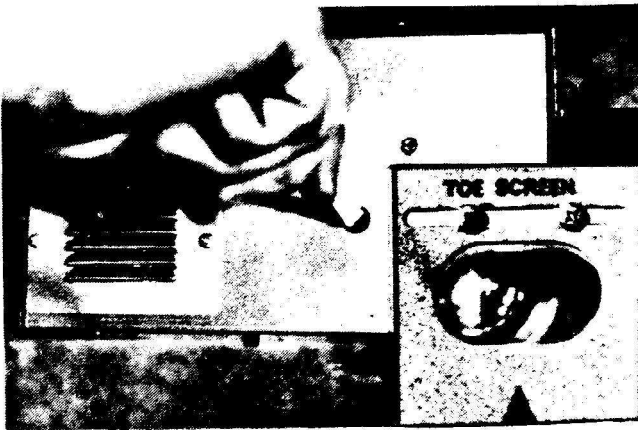
14. Adjust toe screen on both toe heads so projected line is on target.

NOTE: Make certain units are level.





15. Loosen knob and slide left wheel unit back to 2" from left calibration stand.
16. Level wheel unit and tighten knob.
17. Focus right and left projected lines.
18. Remove toe head plugs.



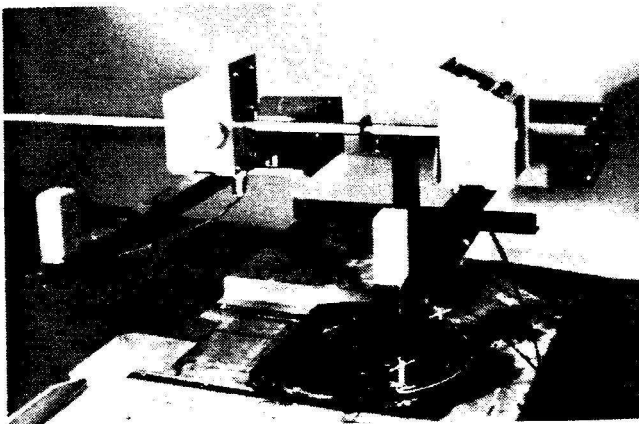
19. Left Unit: With flat blade screwdriver through access hole in rear of toe head, adjust projected line to center on right target.

NOTE: On some units use an allen wrench to adjust projected line.



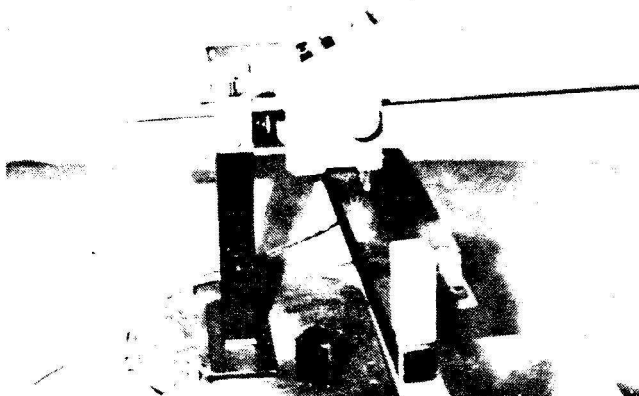
20. Right Unit: With flat blade screwdriver through access hole in rear of toe head, adjust projected line to center of left target.

NOTE: On some units use an allen wrench to adjust projected line.



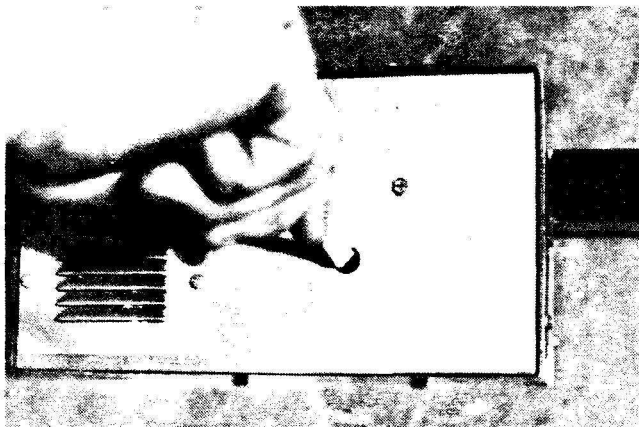
21. Loosen knob and slide left wheel unit about 18" from right wheel unit.
22. Level left wheel unit and tighten knob.
23. Reset focus to minimum focal distance on both wheel units.
24. If necessary, reposition tracking screen to center projected line on target.

25. Loosen knob and slide left wheel unit to within 2" of left calibration stand.
26. Level left wheel unit and tighten knob.
27. Focus right and left projected lines.



28. If projected line is NOT centered on right target: With flat blade screwdriver through access hole in rear of toe head, adjust projected line to center on right target.

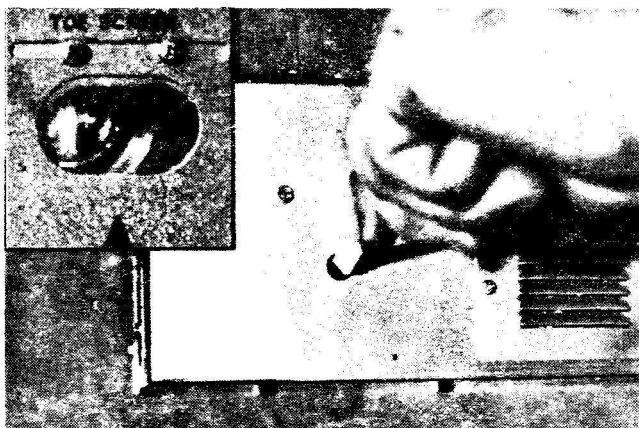
NOTE: On some units use an allen wrench to adjust projected line.



29. If projected line is NOT centered on left target: With flat blade screwdriver through access hole in rear of toe head, adjust projected line to center on left target.

NOTE: On some units use an allen wrench to adjust projected line.

30. If projected lines do NOT meet center of targets, repeat steps 20 through 31.

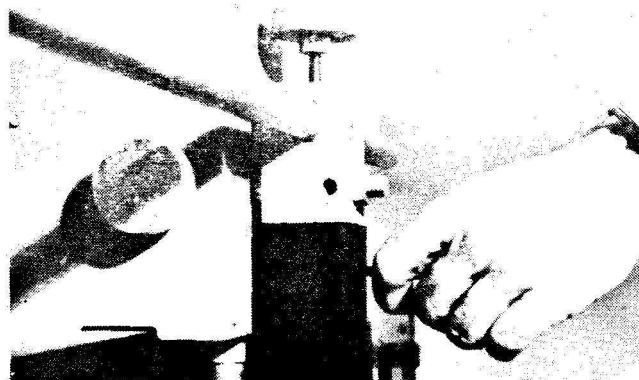


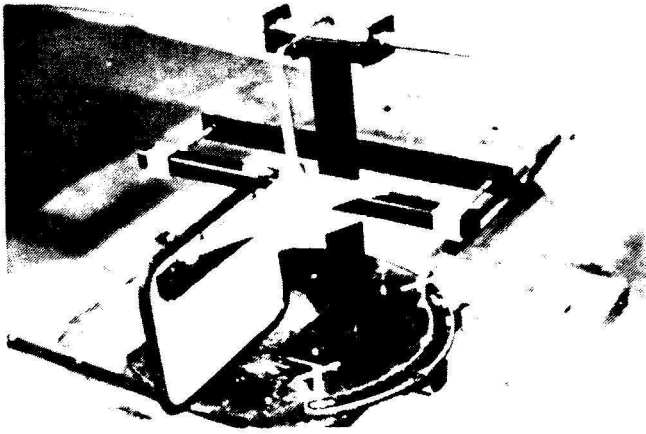
TRACKING

1. Place left wheel unit on tracking stud.

NOTE: 2" spacer is not to be used.

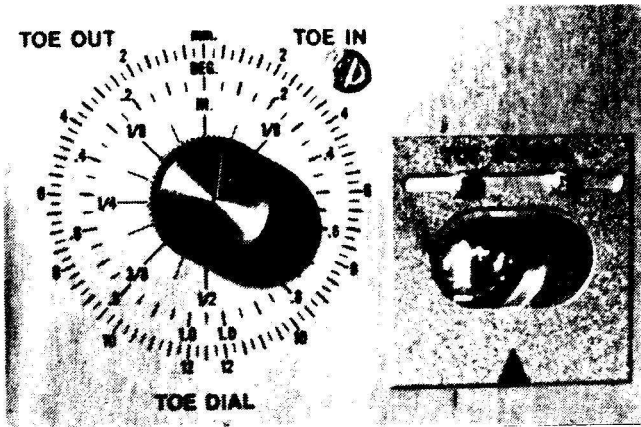
2. Securely tighten wing nut on left calibration stand.



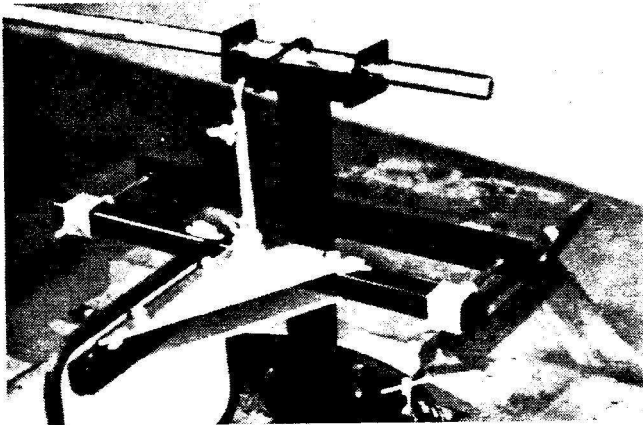


3. Hang tracking mirror with calibration hook onto right stand so mirror faces left toe head.

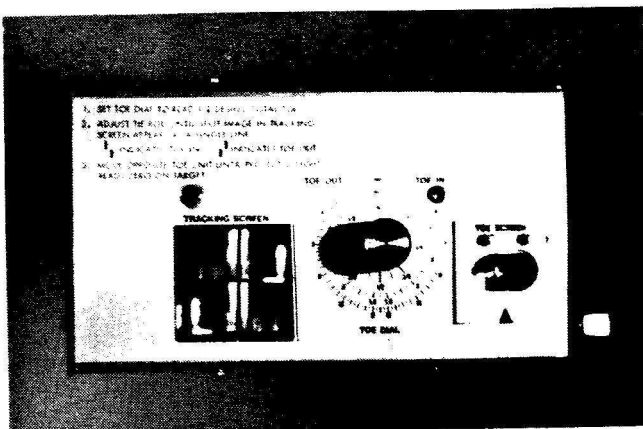
NOTE: Make sure pointers are located on calibrated bolt heads.



4. Set toe dial on zero.



5. Loosen mirror bolts and adjust mirror until split image is aligned.



6. Tighten mirror bolts when split image is aligned.

7. Tracking is calibrated.

MAINTENANCE

WARNING: MAKE SURE UNIT IS UNPLUGGED BEFORE DISASSEMBLING.

PROJECTOE LAMP REPLACEMENT

Remove back cover of toe head and take out old bulb, making sure not to bend lamp holding bracket. Replace new lamp, making sure not to bend lamp holding bracket. After new lamp is in position, adjust focus lever all the way in both directions, making sure projected lines do not wander. If projected lines wander, bend lamp holding bracket and repeat focus lever test. When projected lines no longer wander, replace toe head cover and tighten screws.

WARNING: LAMP IS EXTREMELY HOT WHEN LIT.

TRACKING LAMP REPLACEMENT

Remove toe head cover and old lamp. Insert new lamp into socket and replace toe head cover.

METER CONSOLE LAMP REPLACEMENT

Remove toe head cover and replace necessary lamps. Replace cover and tighten screws.

MODEL 580 METER LAMP REPLACEMENT

Remove cover of head unit. Snap out lamp board from back of meter and disconnect lamp board leads from head unit terminals. Snap in new lamp board and connect leads to terminals. Replace cover and tighten screws.

CLEANING TOE LENSES:

Use narrow camel hair brush. Do not wipe with a rag.

CLEANING TRACKING MIRRORS:

Use glass cleaner on a clean rag.

CLEANING METER FACES:

Only use an anti-static cleaner.

CLEANING CABLES:

Use clean rag with warm soap and water. **Do NOT allow water to enter connector end.**

RIM CLAMP AND SPINDLE:

Lubricate with light oil to prevent corrosion.

CALIBRATION FIXTURE:

Lubricate calibration bar and tracking studs with light oil when fixture is stored to protect from corrosion.