Table Of Contents

Entire contents © 2008 Niwot Corporation, dba Specialty Products Company®.

The design, shape, format and arrangement of this catalog constitutes a trademark of Specialty Products Company.

All rights reserved, reproduction in whole or in part without permission is prohibited. Total Wheel Alignment Sourcebook is a trademark of Niwot Corporation.

Printed in U.S.A.

TOOL ICON

When you see our "wrench" next to a part it means there is a special tool available to assist you in the installation.

APPLICATIONS

PARTS

TOOLS

ACCESSORIES

BRAKE & CV

GEAR & INDEX

How To Use

The Alignment Sourcebook™

This Sourcebook has been designed with you in mind. Each section has tabs that allow you to quickly flip to the section you need without having to look through the entire Sourcebook. But it is a good idea to review the entire Sourcebook to check out new products and solutions for all your alignment needs.

Each new product is marked with our "NEW" logo for instant identification (shown at right). These new products are on the cutting edge of alignment technology.

There are several ways to use this Sourcebook:

1. If you are looking for a specific part for a specific vehicle, check for the vehicle make and model in the Applications Section starting on page 7.
2. If you know the part number of the part you need, the numerical index starts on page 106. Look there first.
3. If you have an idea of the part name, but not the part number, then the alphabetical index on page 112 is your first stop.

At Specialty Products Company our goal is to assist you in every way to make car and truck alignment fast, accurate and profitable. We are committed to finding accurate, easily installed solutions to automotive driving and handling problems. Our products include excellent service and industry leading technical support.

THIS TOTAL WHEEL ALIGNMENT SOURCEBOOK™ WILL ASSIST YOU IN MAKING THE CORRECT RECOMMENDATIONS TO YOUR CUSTOMERS. THE SOURCEBOOK CONTAINS EVERYTHING NEEDED TO DETERMINE ESTIMATES AND RECOMMENDATIONS.

Our "NEW" logo throughout this Sourcebook highlights the latest in alignment technology.

Look for our tool icon When you see our "wrench" next to a part it means there is a special tool available to assist you in the installation of the part.

How To Sell

Proper Alignment

4 WHEEL = (FRONT AND REAR WHEELS)

THRUST = (FRONT WHEELS/in reference to rear wheels)

1. When a set of new tires are installed or suspension parts changed, discuss frequency and need for total wheel alignment. Explain unusual tire wear or handling problems.
2. To determine the type of alignment required, refer to the Application section (pages 7-37) in this Sourcebook. Also refer to this section for the correct selection of original equipment and aftermarket replacement parts available from Specialty Products.
3. Use your Sourcebook and a showroom tire to explain tire wearing and control angles.
4. Explain to the customer the benefits of 4 Wheel and Thrust Wheel Alignments:

   ✔ **Prolong Tire Life** ✔ **Help Eliminate "Pulls"**
   ✔ **Improve Handling** ✔ **Increase Fuel Mileage**
   ✔ **Minimize Premature Wear of Suspension Parts**

5. Ask for the sale. Your customer will appreciate the benefits.

THE PROPER WHEEL ALIGNMENT SAVES THE CUSTOMER MONEY AND INCREASES CUSTOMER SATISFACTION BY DOING THE JOB RIGHT THE FIRST TIME.

NOTE: ALL Front Wheel Drive passenger cars require 4 wheel alignment.

SPC Performance is your source for alignment products that meet the specific needs of lowered and performance vehicles as well as popular muscle cars, street rods and racers.

1-800-525-6505 *Call for your nearest distributor, product info or technical assistance In the USA and Canada*

www.specprod.com
www.spcalignment.com

IN-HOUSE TRAINING SCHEDULE

All classes are Mon.-Thur.
8:00 am - 5:00 pm

2008

BASIC - $250

- ✓ MARCH 3-6
- ✓ JUNE 2-5
- ✓ SEPTEMBER 8-11
- ✓ DECEMBER 1-4

ADVANCED - $350

- ✓ MARCH 17-20
- ✓ JUNE 16-19
- ✓ SEPTEMBER 22-25
- ✓ DECEMBER 15-18

2009

BASIC - $250

- ✓ MARCH 2-5
- ✓ JUNE 1-4
- ✓ AUG. 31 - SEPT. 3
- ✓ NOV. 30 - DEC. 3

ADVANCED - $350

- ✓ MARCH 16-19
- ✓ JUNE 15-18
- ✓ SEPTEMBER 14-17
- ✓ DECEMBER 14-17

Call for class availability, future schedules or information.

800-525-6505
303-772-2103

Or fax us at 303-772-1918.

You can also find new training information on the Internet at www.specprod.com or Email us at info@specprod.com.

We cover the Alignment Field from BASIC to ADVANCED. Call Your WD today to set up a FIELD CLINIC or HANDS-ON TRAINING at your preferred location.

BASIC ALIGNMENT CLASS

This 4 day Basic course is designed for the entry-level Technician with less than 1 year of hands-on alignment experience. The course consists of presentations and demonstrations with 50% classroom and 50% hands-on instruction. There will be a pre-test on the first day that enables us to focus on where you need individual attention. Tests are given each morning that allow us to track your progress. Tuition Fee: $250.00. ***This course is CASE Certified.***

- Alignment Angles and Why They are Needed on the Vehicle.
- Front and Rear Types of Suspension. How to Properly Inspect the Suspension.
- Why Total Alignment and Thrust Alignment Instead of Front Wheel Alignment.
- How to Read the Alignment Specification Book and What It Means.
- How to Properly Align Front Wheel and Rear Wheel Drive Vehicles.

ADVANCED ALIGNMENT CLASS

This ***CASE Certified*** advanced course is designed for the Technician that has been working in the trade for a period of at least 2 years. The course consists of presentations, demonstrations with 25% classroom, and 75% hands-on instruction. There will be a pre-test on the first day that enables us to focus on where you need individual attention. Tests are given each morning that allow us to track your progress. Tuition Fee: $350.00.

- Customer Communications.
- Proper Road Test Procedures.
- Troubleshooting Customer Complaints.
- Steering Axis Inclination and Included Angle.
- Proper Suspension Inspection.
- Installation of Aftermarket Products.
- Performance Vehicles (lowering).
- Explanation of alignment specifications and why you may need to alter specs. to eliminate tire wear and handling problems.
- Tips for Removing and Installing Truck Sleeves.
- Lifting trucks and SUVs.

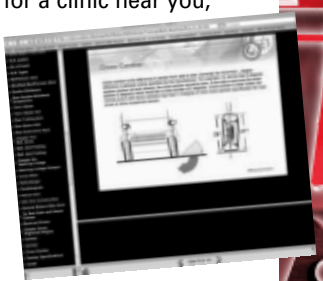
FIELD CLINICS

Our three hour Field Clinics will provide you with reliable information to enable you to diagnose and align any vehicle correctly the first time. SPC's professional ASE trainers provide specific alignment and suspension information on new model vehicles. Topics include; adjustment methods, problems associated with suspension and alignment, technical service bulletins, and service procedures. See your WD for a clinic near you, or call Specialty Products Toll-Free at 800-525-6505.

ONLINE TRAINING

If you want to stay competitive in today's high-tech automotive aftermarket Specialty Products Company now has both Basic and Advanced courses available online. This training course was developed by our ASE Master Certified technicians, who also develop our in-house CASE certified training.

You can now get comprehensive training in the changing alignment field on your schedule. Available in 4 modules, this training will take you from basic alignment angle descriptions, to vehicle specific applications that you see weekly in your shop.



Go To www.spcalignment.com

HANDS-ON TRAINING

This training is for both experienced techs along with beginning technicians and covers proper alignment procedures, knowledge of diagnostic of pull and how to align vehicles. The class can be tailored to fit your specific needs. Contact your local Warehouse Distributor for more information our call us at 800-525-6505.

TRAINING AIDS

85560 ASE TEST PREP. BOOK FOR SUSPENSION AND STEERING

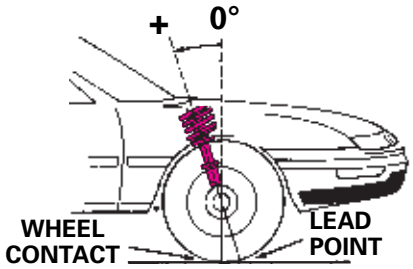
This book contains information on test taking strategies, task lists and overviews, sample test questions, ASE-style exams along with explanations to the answers. (Delmar Test A4 2nd Ed.)

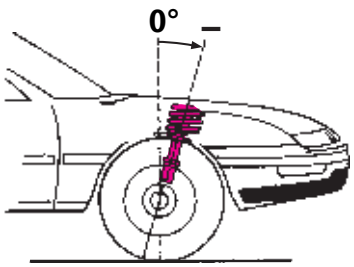
VIDEO TAPES

85515 – Rear Wheel Alignment Tape
85545 – Light Truck Alignment Tape
85510 – EZ Shim™ Instructional Tape
85530 – Selling Four Wheel Alignment

Alignment Terms

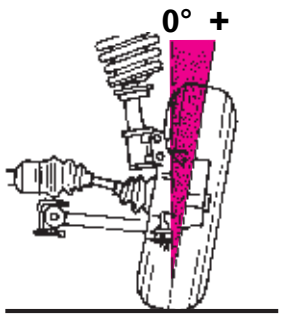
Caster

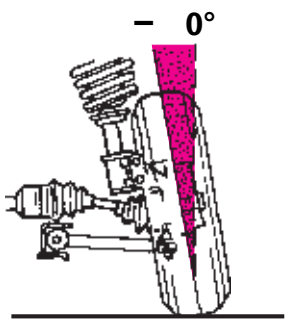




DEFINITION:	The forward or backward tilt of the upper ball joint, or top of the strut, relative to the lower ball joint.
PURPOSE:	Caster affects steering stability and steering wheel returnability.
METHODS OF CASTER ADJUSTMENT:	(1) Shims (2) Cams (3) Slotted Frame (4) Strut Rod (5) Strut Rotation (6) Cradle Movement (7) Offset Ball Joint (8) Sliding Ball Joint
0 CASTER:	The upper ball joint or top strut bearing and lower ball joint are in the same plane as viewed from the side of the vehicle.
POSITIVE CASTER:	The upper ball joint or top strut bearing is toward the rear of the vehicle in relation to the lower ball joint as viewed from the side of the vehicle.
NEGATIVE CASTER:	The upper ball joint or top strut bearing is toward the front of the vehicle in relation to the lower ball joint as viewed from the side of the vehicle.
SYMPTOMS OF NEG. CASTER:	(1) Steering wheel shows lack of "returnability" after a turn. (2) Steering is touchy at high speed (wander and weave).
Effect:	Vehicle pulls to the side with the Lowest Caster.
Example:	Left front set at 1/2° positive Caster, right front set at 1-1/2° positive Caster. This vehicle will pull to the left.

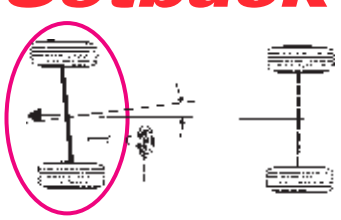
Camber





DEFINITION:	Inward or outward tilt of the top of the wheel.
PURPOSE:	Adjustment centers the vehicle's load on the tire, eliminating pull. Proper adjustment reduces camber tire wear and pulling.
METHODS OF CAMBER ADJUSTMENT:	(1) Shim (2) Cams (3) Slotted Frame (4) Strut Rotation (5) Wedges (6) Ball Joint Rotation (7) Offset Bearing Plates (8) Cam Bolts (9) Eccentrics (Offset Bushings) (10) Offset Ball Joints
0 CAMBER:	When wheel and tire assembly are in exact vertical position.
POSITIVE CAMBER:	When the top of the wheel and tire assembly is tilted out, or away from the engine.
TOO MUCH POS. CAMBER CAUSES:	(1) Wear on the outside of the tire. (2) Extra wear on the suspension parts with positive camber. (3) The vehicle will pull to the side with the **most positive** camber.
NEGATIVE CAMBER:	The top of the wheel and tire assembly is tilted in, toward the engine.
TOO MUCH NEG. CAMBER CAUSES:	(1) Wear on the inside portion of the tire. (2) Extra wear on the suspension parts with negative camber (3) The vehicle will pull to the side with the **most positive** camber.
UNEQUAL CAMBER	From side to side causes: (1) Vehicle to pull to the side with the more positive camber.
Example:	Left front set at 1° positive. Right front set at 1/2°. This vehicle may pull left.

Setback



DEFINITION:	One wheel set back further than the other.
SETBACK IS CAUSED BY:	(1) Manufacture. (Sometimes they build them this way). (2) Collision.
	Normally up to .5" Setback will cause no problems other than steering wheel misalignment when using some types of alignment equipment.

1-800-525-6505 *Call for your nearest distributor, product info or technical assistance In the USA and Canada*

www.specprod.com
www.spcalignment.com

Toe

DEFINITION: The difference between leading edges and trailing edges of the front of the wheel & tire assembly, measured at spindle height.

PURPOSE: Minimize tire wear and rolling friction.

FRONT TOE ADJUSTMENTS: (1) Tie Rod Adjusters

REAR TOE:
(1) Manufacturer's built-in adjuster (2) Cams
(3) Cam bolts (4) Slots
(4) Eccentrics (Offset Bushings) (6) Shims
(7) EZ Arms XR™

0 TOE: Distances across the front and trailing edges of the wheel and tire assemblies are equal.

TOE IN (+): Distance across the front edges of the wheel and tire assemblies is less than across the trailing edges.

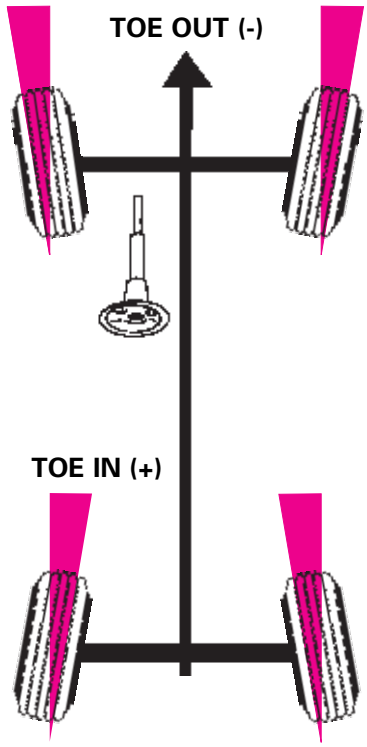
TOO MUCH TOE IN CAUSES:
(1) Rapid wear on outside edge of tire.
(a) On radial tires too much **Toe In** resembles pos. camber wear.
(b) Wear patterns are **saw-toothed** or **scuffed**.
(c) Feeling sharp edges when rubbing your hand across the tire tread, from **inside** toward **outside**, reveals excessive **Toe In**.

(2) Steering instability (**extreme**).
(a) Wander (b) Shimmy

TOE OUT (-): Distance across the front edges of the wheel and tire assemblies is wider than the trailing edges.

TOO MUCH TOE OUT CAUSES:
(1) Rapid tire wear-inside edge of tire.
(a) On radial tires too much **Toe Out** resembles neg. Camber wear.
(b) Wear pattern is s**aw-toothed** or **scuffing**.
(c) Feeling sharp edges when rubbing your hand across the tire tread, from **outside** to inside, reveals excessive **Toe Out**.

(2) Steering instability (**extreme**).
(a) Wander (b) Shimmy



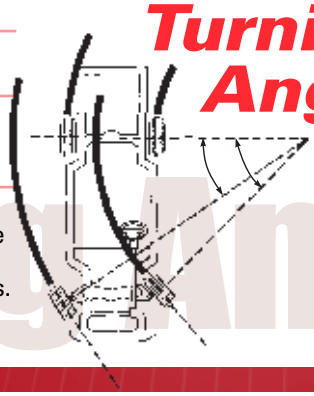
Turning Angle

DEFINITION: The relative position of the front wheels during a turn.

REFERRED TO AS:
(1) Toe out on turns
(2) Turning radius

PURPOSE:
To prevent tire side slip.
To prevent excessive tire wear.
To prevent tire squeal on turns.

DIAGNOSE FOR BENT PARTS: If readings differ more than 1-1/2° from specifications on mos vehicles, and the tires squeal when cornering, the vehicle may have a bent steering arm. Most Turning Angles are non-adjustable angles but can be corrected by replacing bent parts.

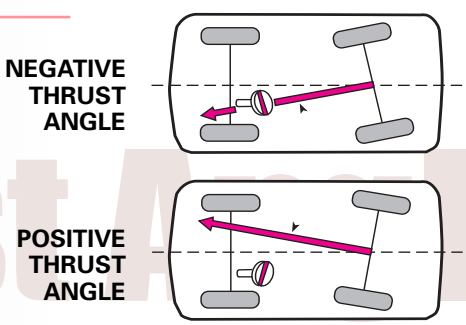


Thrust Angle

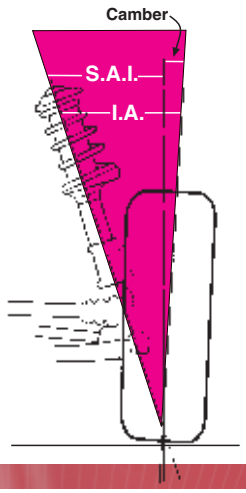
DEFINITION: The direction the rear wheels are positioned in reference to the vehicle centerline.

REAR WHEEL THRUST WILL CAUSE:
(1) Tire wear (2) Steering wheel misalignment
(3) Car pulls (4) "Dog Tracking"
(5) Crooked steering wheel

THRUST CAN BE CORRECTED BY:
(1) Adjustment of built in toe adjuster.
(2) Installing tapered shims between spindle and hub.
(3) Cams or other aftermarket adjusters.
(4) Specialty Products Thrust Plate (#63020, 63030, 63040 Kits).



S.A.I.
I.A.
Scrub Radius



DEFINITION OF S.A.I. (Steering Axis Inclination):

The angle between a true vertical line starting at the center of the tire at the road contact point and a line drawn through the center of the strut (or upper ball joint) and lower ball joint. S.A.I. is a non-adjustable angle on most vehicles. OR...
The angle formed by the intersection of a line drawn through the upper and lower suspension mounting points (as viewed from the front of the vehicle) and true vertical.
NOTE: A bent lower control arm can also change S.A.I. The strut suspension on a unibody vehicle has many variables and locating the damaged part may be difficult.

DEFINITION OF I.A. (Included Angle):

S.A.I. angle plus actual camber (positive) or minus actual camber (negative) is the included angle. When camber is positive, add it to the S.A.I. angle. If camber is negative, subtract it from the S.A.I. angle. This angle is used as a diagnostic tool to determine if structural misalignment is present or suspension parts are bent.

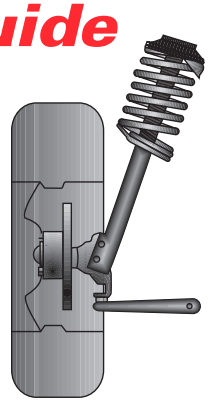
DEFINITION OF SCRUB RADIUS:

When compared at ground level, the distance between the S.A.I. line (drawn through the steering pivots) and the centerline of the tire tread is called the Scrub Radius. When this line is toward the inside of the tread, the vehicle is said to have Positive Scrub Radius. When the line is toward the outside of the tire tread, the vehicle is said to have Negative Scrub Radius.
NOTE: Negative Scrub Radius will be found on FWD MacPherson Strut vehicles.

PURPOSE:

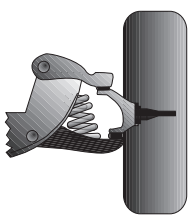
Directional Control Stability. • Steering Wheel Returnability. • Vehicle Load Placement.
S.A.I., I.A. and Camber can be used to locate areas of the strut system on unibodies which may have damaged or misaligned parts. I.A. (Included Angle) is used to determine if there is a damaged spindle or strut tube. The S.A.I. (Steering Axis Inclination) is used to determine if the unibody is misaligned.

S.A.I. Diagnostic Guide



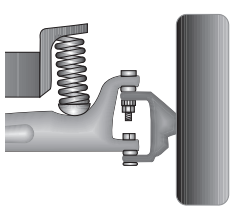
MACPHERSON STRUT SUSPENSIONS

SAI	CAMBER	INC. ANGLE	PROBABLE PROBLEM AREA
Within Spec	Less than Spec	Less than Spec	Bent Spindle Assembly and/or Bent Strut.
Within Spec	Greater than Spec	Greater than Spec	Bent Spindle Assembly and/or Bent Strut.
Less than Spec	Greater than Spec	Within Spec	Bent Control Arm, or Top of Strut Tower Pushed Outward, or Mis-Aligned Engine Cradle.
Greater than Spec	Less than Spec	Within Spec	Top of Strut Tower Pushed In, or Engine Cradle Mis-Aligned.
Less than Spec	Greater than Spec	Greater than Spec	Bent Control Arm, or Top of Strut Tower Pushed Out **PLUS** Bent Spindle Assembly and/or Bent Strut.
Less than Spec	Greater than Spec	Less than Spec	Bent Control Arm, or Top of Strut Tower Pushed Out **PLUS** Bent Spindle Assembly and/or Bent Strut.
Less than Spec	Less than Spec	Less than Spec	Bent Control Arm, or Top of Strut Tower Pushed Out **PLUS** Bent Spindle Assembly



SHORT/LONG ARM SUSPENSIONS

SAI	CAMBER	INC. ANGLE	PROBABLE PROBLEM AREA
Within Spec	Less than Spec	Less than Spec	Bent Spindle Assembly
Less than Spec	Greater than Spec	Within Spec	Bent Lower Control Arm or Bent Frame
Greater than Spec	Less than Spec	Within Spec	Bent Upper Control Arm or Bent Frame
Less than Spec	Greater than Spec	Greater than Spec	Bent Lower Control Arm, or Bent Spindle and/or Bent Strut.



FORD TWIN "I-BEAM" SUSPENSIONS

SAI	CAMBER	INC. ANGLE	PROBABLE PROBLEM AREA
Within Spec	Greater than Spec	Greater than Spec	Bent Spindle Assembly
Greater than Spec	Less than Spec	Within Spec	Bent "I" Beam
Less than Spec	Greater than Spec	Within Spec	Bent "I" Beam
Less than Spec	Greater than Spec	Greater than Spec	Bent "I" Beam & Bent Spindle Assembly