BRITISH LEYLAND

SERVICE DIVISION

DEALER TRAINING

AID # S1033

SUBJECT: WHEEL ALIGNMENT

MODEL: ALL MODELS

AUSTIN JAGUAR MG ROVER LAND ROVER TRIUMPH

P R E F A C E

The information contained in this booklet is provided as an easy reference guide for technicians. More detailed information is available in the appropriate Workshop Manual.

© Copyright British Leyland Motors Inc. - 1976

FAMILIARIZATION

Before we can discuss the aligning of any vehicle, we must first be familiar with the angles involved. Basically we are dealing with the measuring of four angles, three of which are normally adjustable:

1. Caster
2. Camber
3. Toe
4. Toe Out On Turns (Nonadjustable)

Wheel alignment is simply the accurate measurement of these angles and the necessary adjustment to revert them to manufacturers' tolerances. There are four basic steps to alignment:

1. Diagnosis
2. Measuring of Angles
3. Correction of Angles
4. Road Test

When we talk alignment, we must be accurate. Many of your adjustments must be within a $1/4^{o}$ or a 1/16 of an inch. Therefore, we need the simplest, most accurate form of alignment.

Most front end equipment on the market today is both simple and accurate. Thorough familiarization with your equipment is a must if you expect to do a worthwhile job. Many manufacturers are willing to provide trained personnel in order to instruct the technician in the use of such equipment.

After the equipment is familiar to you, you can put it to use. Talk to your customer about his problem and, if possible, road test the vehicle. These steps, along with a visual examination of all parts (to check for excess wear), will give you a good knowledge of the car's condition.

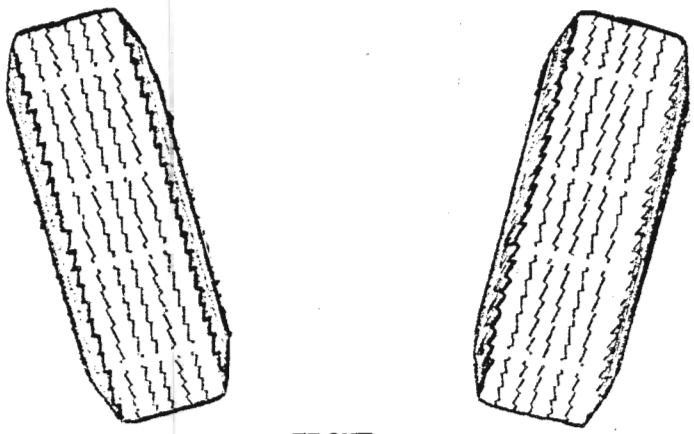
VEHICLE HEIGHT

NOTE: Before the setting of any angle, the vehicle height should be inspected and adjusted if necessary.

CHECKING ANGLES-CAMBER

The first angle to be checked is camber. Camber is the term used to describe the inward or outward tilt of the wheels. Positive camber exists when the top of the wheel is tilted outwards. Excessive positive camber causes tire wear on the outer edges. Excessive positive camber on one side will cause the wheels to pull to that side.

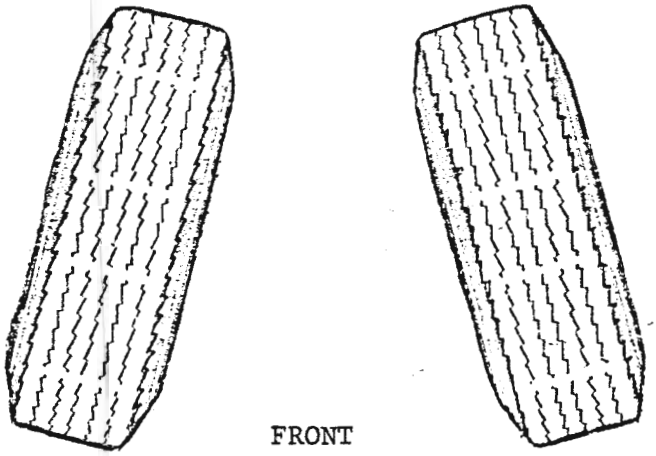
POSITIVE CAMBER



FRONT

Negative camber is when the top of the wheels are tilted inward. Negative camber causes tire wear on the inside of the tire tread.

NEGATIVE CAMBER

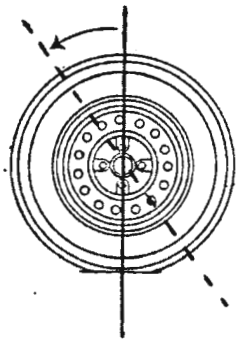


FRONT

CASTER

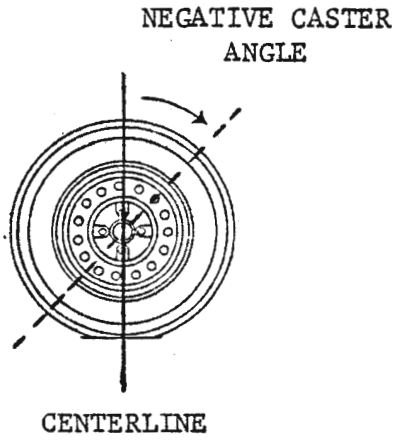
Caster is the term used to describe the leaning, either forward or backward, of the ball joint or king pin centerline. With the top line leaning towards the rear, this is positive caster.

POSITIVE CASTER ANGLE



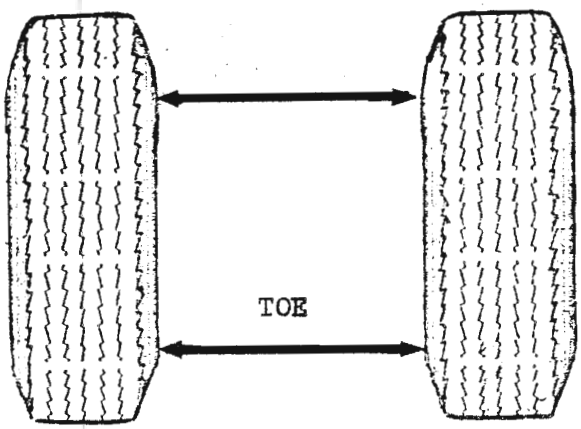
CENTERLINE

If the ball joint or king pin centerline is leaning forward at the top, then this is known as negative caster.



TOE MEASUREMENTS

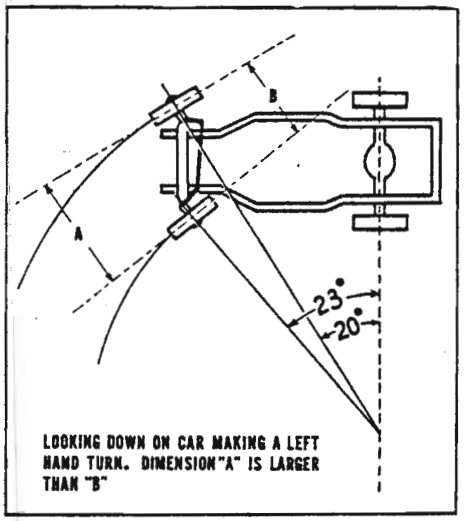
Toe (Toe In) means the wheels are slightly closer in the front than in the back when the vehicle is stationary. Incorrect toe is the greatest cause of tire wear. The toe readings should be taken only after your caster and camber have been checked and, if necessary, corrected.



TOP

TOE OUT ON TURNS

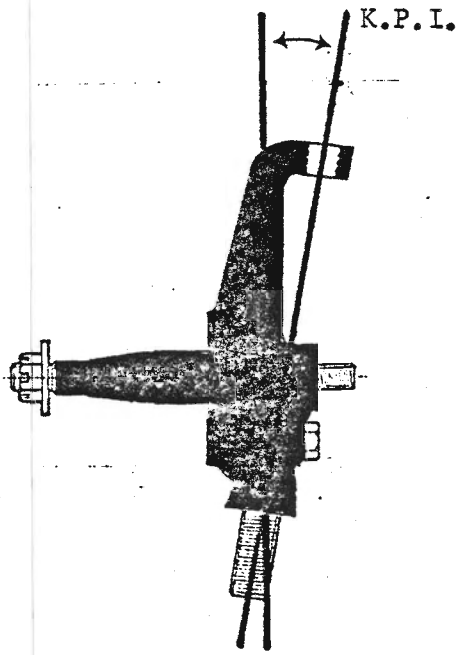
Toe out on turns is a nonadjustable angle which should be checked if the front end is suspected of being damaged. When a front end is set to correct specification and is in good working condition, toe out on turns can be assumed to be satisfactory. When making a turn (as illustrated), the inside wheel must turn at a tighter angle than that of the outside wheel.



LOOKING DOWN ON CAR MAKING A LEFT HAND TURN. DIMENSION "A" IS LARGER THAN "B"

KING PIN INCLINATION (K.P.I.)

This is the amount of deviation from straight up and down (measured right to left) that the king pin or ball joint centerline is inclined (not normally adjustable).



TIRES

Once a vehicle alignment has been carried out completely, then tire condition and balance must be checked. If it is deemed necessary to question the tire condition, refer to manufacturers' recommendations for pressures, load ratings and balance procedures.

VEHICLE DIAGNOSIS CHART

ANGLE	PRIMARY PURPOSE	EFFECT IF WRONG
Camber	Vehicle stability Center load on tread	Vehicle wanders or leads to one side. Tread wears on side.
Caster	Vehicle stability	Vehicle wanders. Leads to one side. Steering effort & stability.
Toe	Keep front wheels parallel when moving	'Feather Edge' tire wear. Vehicle lead.
Toe Out	Minimize tire scrub on turns	Increased tire squeal and wheel fight on turns.

VEHICLE SPECIFICATIONS

NOTE: 1. N/A INDICATES ANGLE MAY BE GIVEN, BUT IS NOT ADJUSTABLE.

2. ALL SPECIFICATIONS FOR VEHICLES AT KERB WEIGHT.

JAGUAR	MODEL	FRONT	REAR
CASTER	'L' Models	2 1/4° ± 1/4° Pos.	N/A
	XJS & 'C'	3 1/2° ± 1/4° Pos.	N/A
CAMBER	All	1/2° ± 1/4° Pos.	3/4° ± 1/4° Neg.
TOE	All	1/16" to 1/8" Toe In	Parallel ± 1/32"

TR7	FRONT	REAR
CASTER	3 1/2° Pos. ± 1° N/A	N/A
CAMBER	1/4° Neg. ± 1° N/A	N/A
TOE	0 to .062" Toe In	N/A
K.P.I.	11 1/4° ± 1° N/A	

TR6	FRONT	REAR
CASTER	2 3/4° ± 1/2° N/A	N/A
CAMBER	1/4° Pos. ± 1°	1° Neg. ± 1/2° N/A
TOE	0 to 1/16" Toe In	0 to 1/16" Toe In
K.P.I.	9 1/4° ± 3/4° N/A	

SPITFIRE	FRONT	REAR
CASTER	4° ± 1° N/A	N/A
CAMBER	3° Pos. ± 1°	1° Neg. ± 1° N/A
TOE	1/16" to 1/8" Toe In	1/32" to 3/32" Toe Out
K.P.I.	5 3/4° ± 1° N/A	

MGB	FRONT	REAR
CASTER	5° to 7 1/4° N/A	N/A
CAMBER	1 1/4° Pos. to 1/4° Neg. N/A	N/A
TOE	1/16" to 3/32" Toe In	N/A
K.P.I.	7 1/4° to 9° N/A	

MIDGET	FRONT	REAR
CASTOR	3° N/A	N/A
CAMBER	3/4° N/A	N/A
TOE	0 to 1/8"	N/A
K.P.I.	6° 45' N/A	

MARINA	FRONT	REAR
CASTER	2° Pos. N/A	N/A
CAMBER	0° 50' N/A	N/A
TOE	0 to 1/16" Toe In	N/A
K.P.I.	7 1/2° Pos. ± 1° N/A	