

WHEEL ALIGNMENT SPECIFICATIONS & PROCEDURES

1991 Mazda Miata

1991 WHEEL ALIGNMENT Specifications & Procedures

B2200, B2600i, Miata, MX-6, MPV, Navajo,
Protege, RX7, 323, 626, 929

PRE-ALIGNMENT INSTRUCTIONS

NOTE: Prior to performing wheel alignment, perform preliminary visual and mechanical inspection of wheels, tires and suspension components. See ALIGNMENT THEORY/OPERATION in the WHEEL ALIGNMENT Section.

RIDING HEIGHT ADJUSTMENT

NOTE: On vehicles with electronic chassis controls, all systems should be functional before attempting ride height or wheel alignment adjustment.

Before adjusting alignment, check riding height. Riding height must be checked with vehicle on level floor and tires properly inflated. Bounce vehicle several times and allow suspension to settle.

Visually inspect vehicle for signs of abnormal height from front to rear or side to side. Check passenger and luggage compartments for extra heavy items and remove if present. If riding height is not within specification, check, repair or replace suspension components. See RIDING HEIGHT SPECIFICATIONS table.

RIDING HEIGHT SPECIFICATIONS TABLE

Application	Front		Rear	
	In. (mm)		In. (mm)	
Except MPV & Navajo 1 239 (10)	.....	.39 (10)
MPV (1)59 (15)	.....	.59 (15)
Navajo (1)78 (19)	.....	.78 (19)

(1) - Allowable difference in height from left to right side.

(2) - On Miata, allowable difference in height from front to rear is .79" (20 mm).

JACKING & HOISTING

NOTE: The JACKING & HOISTING illustrations are not intended to represent the exact structure of each vehicle's frame, underbody or body outline. They are presented only to give some point of reference.

FLOOR JACK & HOIST

1) The following illustrations indicate areas (parts) of the underbody and frame which may be used to raise and support the vehicle, using either floor jack or hoist. These points are indicated by shaded areas on the frame. See Figs. 1-4.

2) On Navajo, jack should be positioned under center front lower suspension arms or front spring supports as near to wheels as possible. For rear jacking, jack or hoist should be positioned under

rear spring mounting pads or rear axle housing. See Figs. 5 and 6.

CAUTION: DO NOT interfere with shock absorber mounting brackets or stabilizer bar mounting brackets.

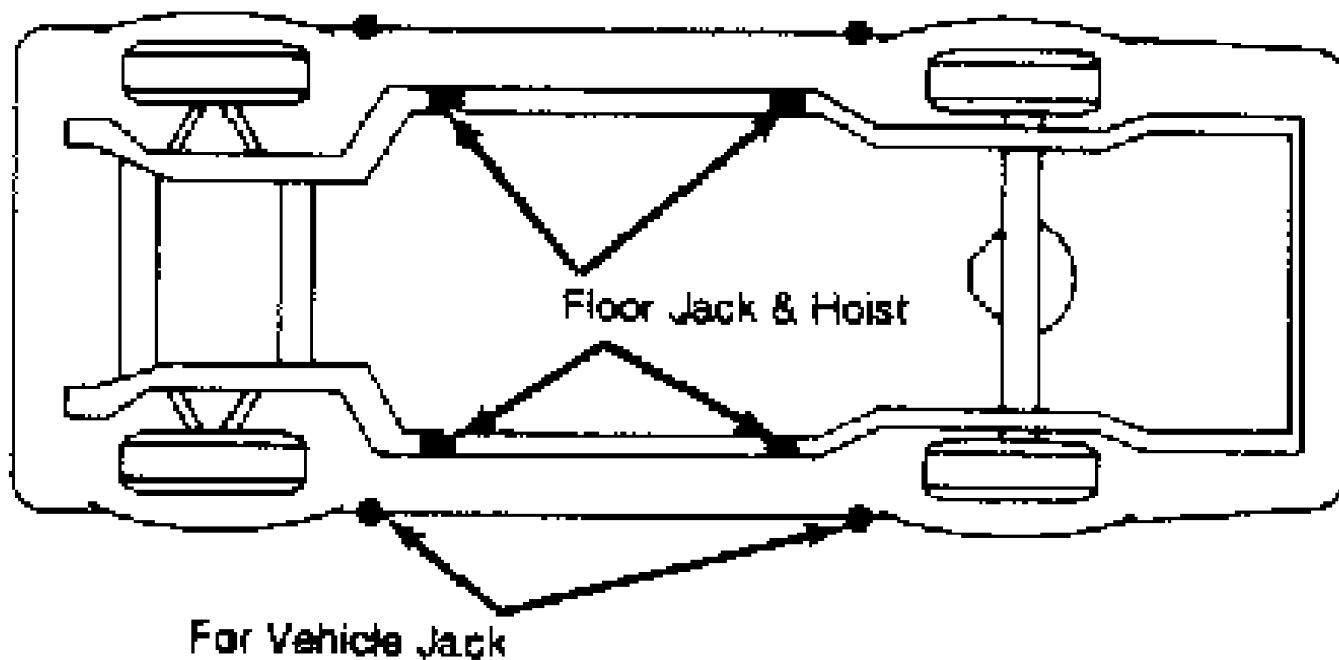
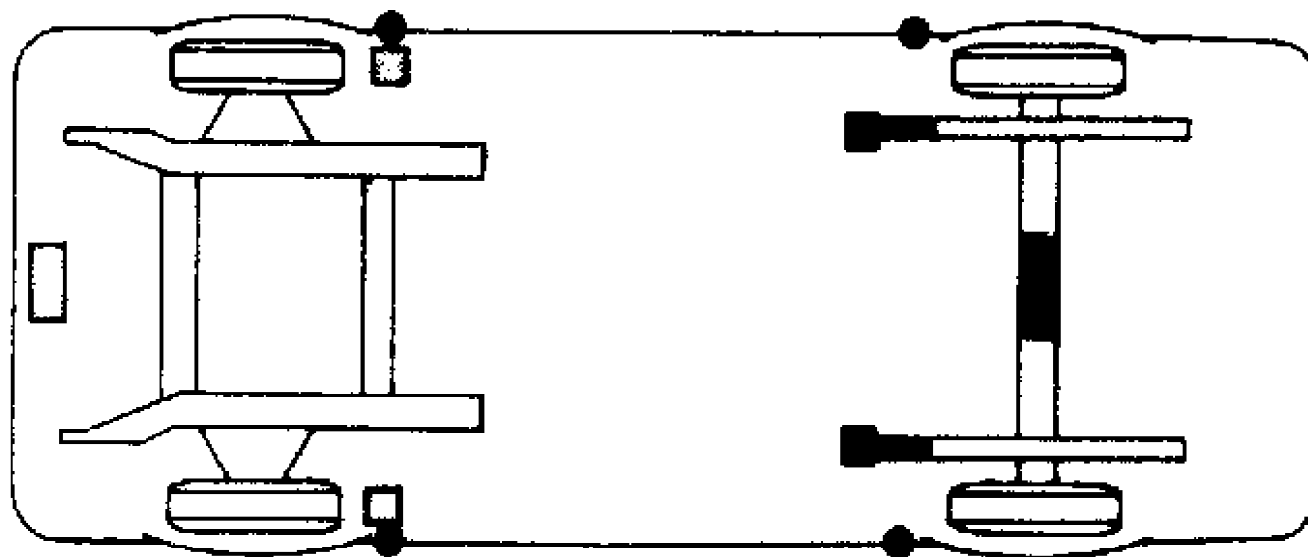
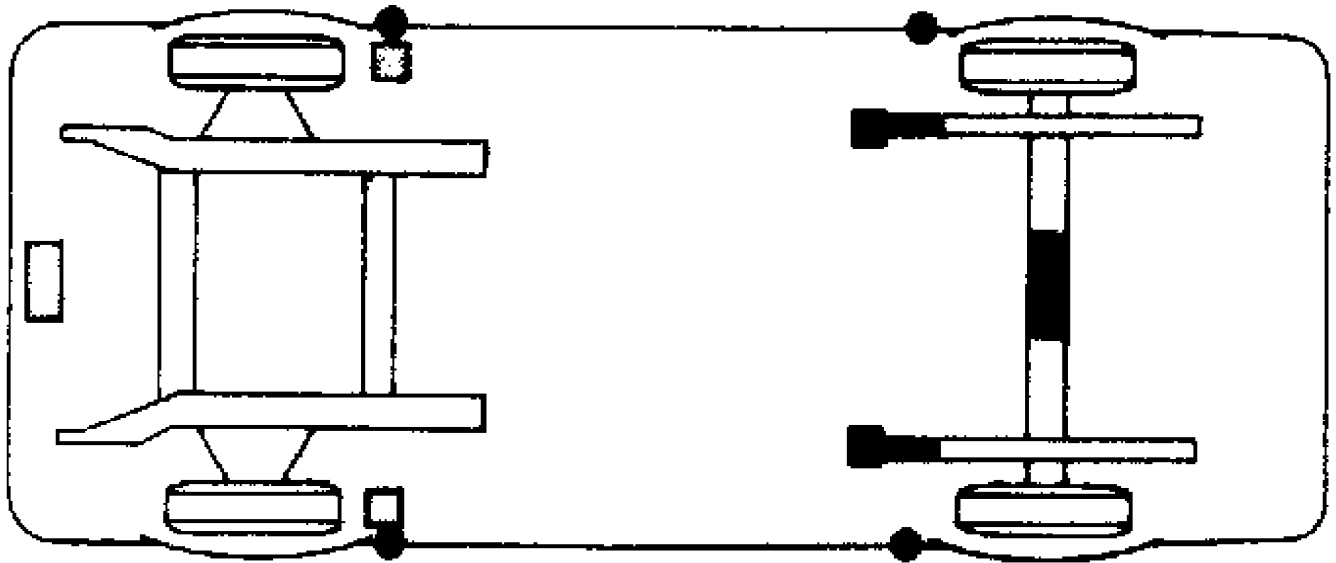


Fig. 1: Jacking & Hoisting Points (Typical)



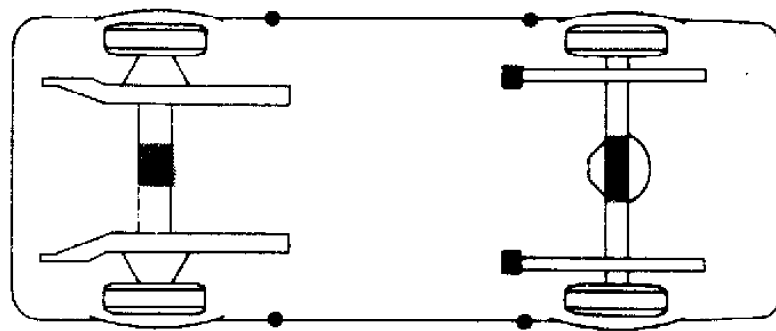
MAZDA MX-6, 323, 626 & 929

Fig. 2: Jacking & Hoisting Points (MX-6, 323, 626 & 929)



MAZDA MX-6, 323, 626 & 929

Fig. 3: Jacking & Hoisting Points (B2200 & B2600i Typical)



MAZDA RX7

Fig. 4: Jacking & Hoisting Points (RX7 Shown; MPV Typical)

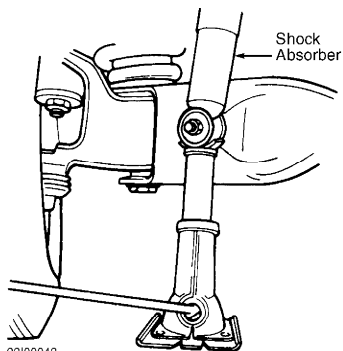
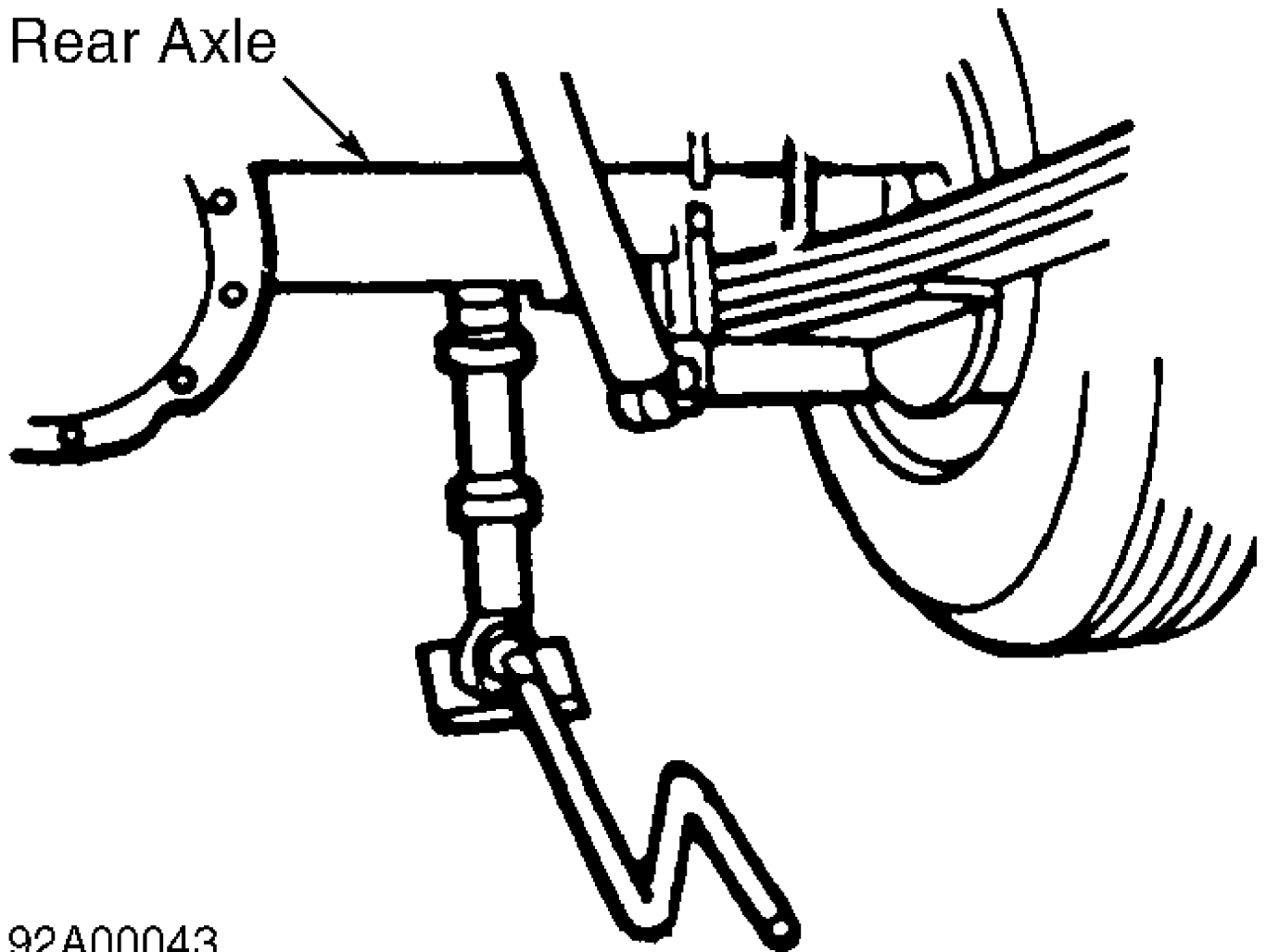


Fig. 5: Front Axle Jacking Points (Navajo)

Rear Axle



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Fig. 6: Rear Axle Jacking Points (Navajo)

EMERGENCY JACKING

Points designated on outline of body were specifically designed to facilitate use of vehicle's own jack. Jacking points are indicated by circular dots on outline of body. See Figs. 1-6.

If floor jack or hoist is employed, exercise extreme care to avoid damaging the outer body shell. On Navajo, jack should be positioned under front axle or shock absorber as near to wheels as possible.

WHEEL ALIGNMENT PROCEDURES

CAMBER ADJUSTMENT

B2200 & B2600i

Camber is adjusted by adding or subtracting shims at upper control arm mount.

Miata

Camber is adjusted by turning front and rear adjusting cam bolt at lower control arm.

MX-6 & 626

Raise and support front of vehicle. Remove upper strut-to-body nuts. Push strut mounting block downward, and turn to desired position. Reinstall and tighten nuts. See Fig. 7.

CAMBER ADJUSTMENT TABLE (MX-6 & 626 USA Built)

Mark	Change From Standard
A	0°
B	7/16°
C	7/16°

CAMBER ADJUSTMENT TABLE (MX-6 & 626 Japan Built)

Mark	Change From Standard
A	7/16°
B	7/16°
C	0°

MPV

Raise and support front of vehicle. Remove upper strut-to-body nuts. Push strut mounting block downward, and turn to desired position. Reinstall and tighten nuts. See Fig. 7.

CAMBER ADJUSTMENT TABLE (MPV)

Mark	Change From Standard
A	0°
B	- 7/16°
C	- 7/16°

Navajo

1) Measure camber to determine if adjustment is required.

Record specifications for use in selection of camber/caster adjusters. To adjust, raise vehicle and remove front wheel assembly. Remove caliper and steering knuckle assembly.

2) Remove pinch bolt and camber/caster adjuster from axle.

See Fig. 8. Install appropriate camber/caster adjuster and rotate to desired adjustment. See Fig. 9. Install NEW adjuster snap ring. Install caliper, steering knuckle and wheel assembly. Check alignment to verify correct adjustment.

Protege & 323

Raise and support front of vehicle. Remove upper strut-to-body nuts. Push strut mounting block downward and turn to desired position. Reinstall and tighten nuts. See Fig. 10.

CAMBER ADJUSTMENT TABLE (Protege & 323)

Mark	Change From Standard
A	7/32°
B	15/32°
C	7/32°

RX7

Raise and support front of vehicle. Remove upper strut-to-body nuts. Push strut mounting block downward, and turn to desired position. Reinstall and tighten nuts. See Fig. 7.

CAMBER ADJUSTMENT TABLE (RX7)

Mark	Change From Standard
A	0°
B	1/2°
C	1/2°

929

Raise and support front of vehicle. Remove upper strut-to-body nuts. Push strut mounting block downward, and turn to desired position. Reinstall and tighten nuts. See Fig. 7.

CAMBER ADJUSTMENT TABLE (929)

	Change From Standard
A	0°
B	15/32°
C	15/32°

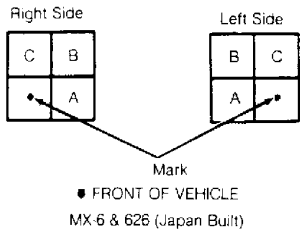
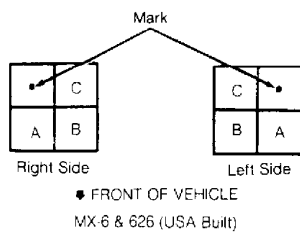
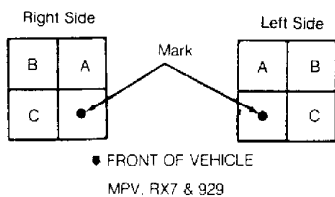


Fig. 7: Adjusting Camber & Caster (MPV, MX-6, RX7, 626 & 929)
Courtesy of Mazda Motors Corp.

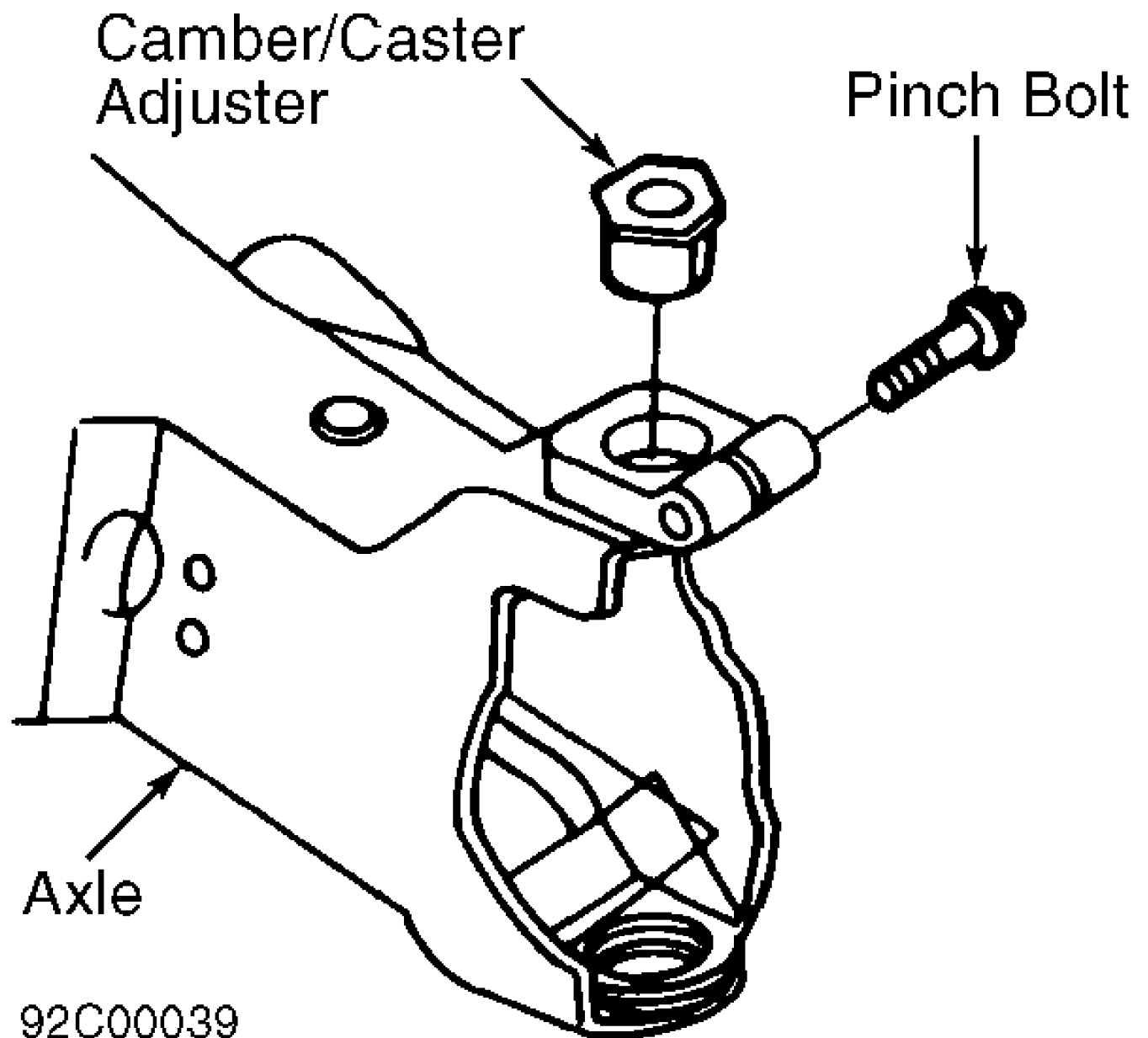
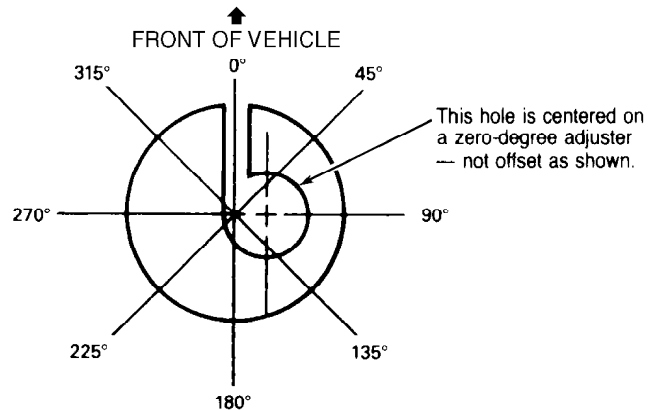


Fig. 8: Adjusting Camber & Caster (Navajo)
Courtesy of Mazda Motors Corp.

Service Adjuster Type (Degrees)	Position Slot In Axle (Degrees)	LH Axle		RH Axle	
		Camber Change (Degrees)	Caster Change (Degrees)	Camber Change (Degrees)	Caster Change (Degrees)
1/2	0	-0.5	0	+0.5	0
1	0	-1.0	0	+1.0	0
1-1/2	0	-1.5	0	+1.5	0
1/2	45	-0.25	+0.25	+0.25	+0.25
1	45	-0.75	+0.75	+0.75	+0.75
1-1/2	45	-1.00	+1.00	+1.00	+1.00
1/2	90	0	+0.5	0	+0.5
1	90	0	+1.0	0	+1.0
1-1/2	90	0	+1.5	0	+1.5
1/2	135	+0.25	+0.25	-0.25	+0.25
1	135	+0.75	+0.75	-0.75	+0.75
1-1/2	135	+1.00	+1.00	-1.00	+1.00
1/2	180	+0.5	0	-0.5	0
1	180	+1.0	0	-1.0	0
1-1/2	180	+1.5	0	-1.5	0
1/2	225	+0.25	-0.25	-0.25	-0.25
1	225	+0.75	-0.75	-0.75	-0.75
1-1/2	225	+1.00	-1.00	-1.00	-1.00
1/2	270	0	-0.5	0	-0.5
1	270	0	-1.0	0	-1.0
1-1/2	270	0	-1.5	0	-1.5
1/2	315	-0.25	-0.25	+0.25	-0.25
1	315	-0.75	-0.75	+0.75	-0.75
1-1/2	315	-1.00	-1.00	+1.00	-1.00

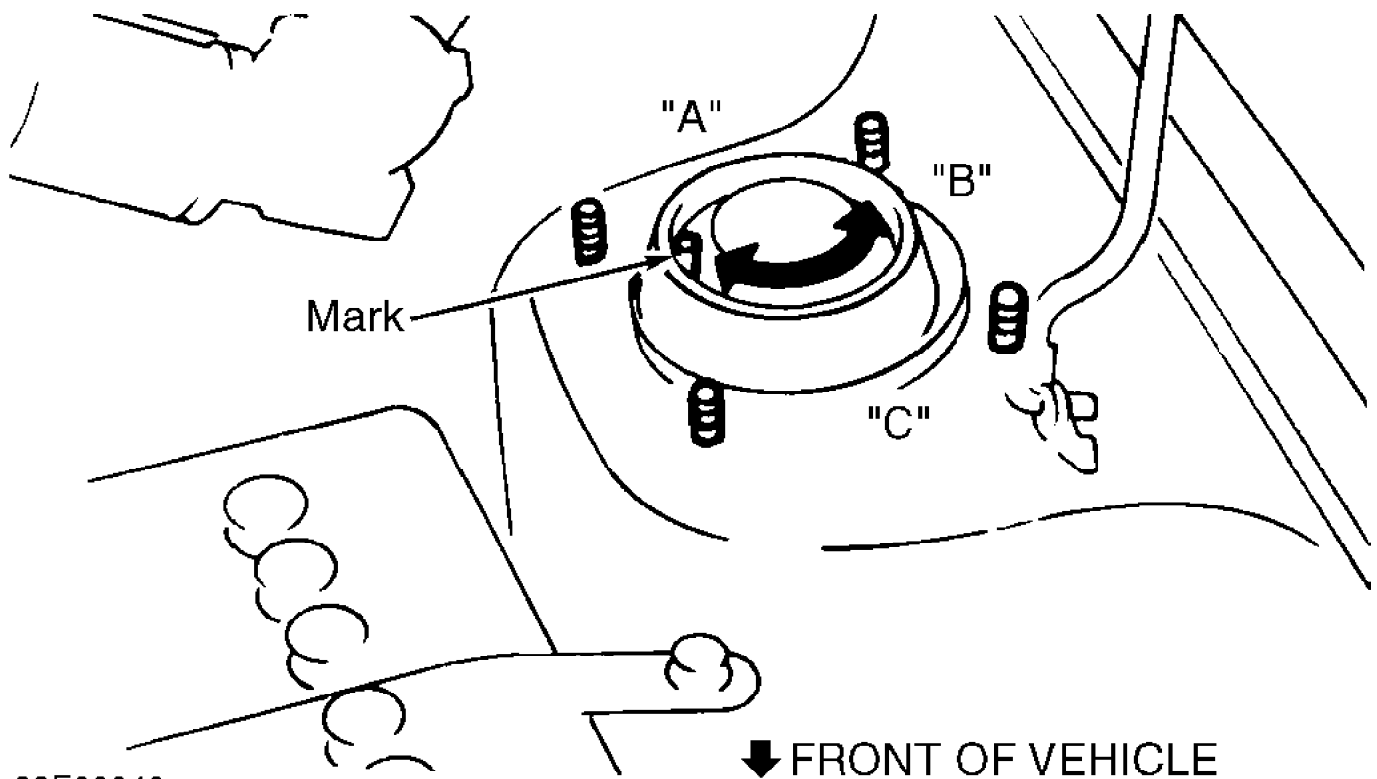
NOTE: The assembly plant sometimes builds vehicles with adjusters that are not zero-degree type to control alignment. This table shows the alignment changes that will occur if the vehicle was originally built with zero-degree adjusters. Always check to see which adjuster has been installed (and its orientation) before making changes.



TOP VIEW OF CAMBER/CASTER ADJUSTER
(POSITION SLOT IN AXLE TO OBTAIN DESIRED ALIGNMENT)

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Fig. 9: Camber/Caster Adjuster Selection Chart (Navajo)
Courtesy of Mazda Motors Corp.



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Fig. 10: Adjusting Camber & Caster (Protege & 323)
Courtesy of Mazda Motors Corp.

CASTER ADJUSTMENT

B2200 & B2600i

Caster is adjusted by adding or subtracting shims at upper control arm mount.

Miata

Caster is adjusted by turning front and/or rear adjusting cam bolt at lower control arm.

MX-6 & 626

Raise and support front of vehicle. Remove upper strut-to-body nuts. Push strut mounting block downward, and turn to desired position. Reinstall and tighten nuts. See Fig. 7.

CASTER ADJUSTMENT TABLE (MX-6 & 626 USA Built)

Mark	Change From Standard
A	- 15/32 °
B	- 15/32 °
C	0 °

CASTER ADJUSTMENT TABLE (MX-6 & 626 Japan Built)

Mark	Change From Standard
A	0 °
B	- 15/32 °

C - 15/32 °

MPV

Raise and support front of vehicle. Remove upper strut-to-body nuts. Push strut mounting block downward and turn to desired position. Reinstall and tighten nuts. See Fig. 7.

CASTER ADJUSTMENT TABLE (MPV)

Mark	Change From Standard
A	7/16 °
B	7/16 °
C	0 °

Navajo

1) Measure caster to determine if adjustment is required. Record specifications for use in selection of camber/caster adjusters. To adjust, raise vehicle and remove front wheel assembly. Remove caliper and steering knuckle assembly.

2) Remove pinch bolt and camber/caster adjuster from axle. See Fig. 8. Install appropriate camber/caster adjuster and rotate to desired adjustment. See Fig. 9. Install NEW adjuster snap ring. Install caliper, steering knuckle and wheel assembly. Check alignment to verify correct adjustment.

Protege & 323

Raise and support front of vehicle. Remove upper strut-to-body nuts. Push strut mounting block downward, and turn to desired position. Reinstall and tighten nuts. See Fig. 10.

CASTER ADJUSTMENT TABLE (Protege & 323)

Mark	Change From Standard
A	7/32 °
B	0 °
C	- 7/32 °

RX7

Raise and support front of vehicle. Remove upper strut-to-body nuts. Push strut mounting block downward and turn to desired position. Reinstall and tighten nuts. See Fig. 7.

CASTER ADJUSTMENT TABLE (RX7)

Mark	Change From Standard
A	1/2 °
B	1/2 °
C	0 °

929

Raise and support front of vehicle. Remove upper strut-to-body nuts. Push strut mounting block downward, and turn to desired position. Reinstall and tighten nuts. See Fig. 7.

CASTER ADJUSTMENT TABLE (929)

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Mark	Change From Standard
A	15/32 °
B	15/32 °
C	0 °

TOE-IN ADJUSTMENT (FRONT)

NOTE: Both left and right tie-rods have right-hand threads. To increase toe-in, turn right tie-rod toward front of vehicle, and turn left tie-rod the same amount toward rear of vehicle.

Loosen left and right tie-rod lock nuts. Turn left and right tie-rods by equal amounts.

TOE-IN ADJUSTMENT (REAR)

NOTE: Both left and right tie-rods have right-hand threads. To increase toe-in, turn right tie-rod toward front of vehicle, and turn left tie-rod the same amount toward rear of vehicle.

1) Loosen left and right adjusting lock nuts or bolts. On RX7 & 929, to increase toe-in on right side, turn adjusting cam counterclockwise. To increase toe-in on left side, turn cam clockwise. To decrease toe-in on right side, turn cam clockwise. To decrease toe-in on left side, turn adjusting cam counterclockwise.

2) On 323, MX-6 and 626, to increase toe-in on right side turn adjusting rod counterclockwise. To increase toe-in on left side turn rod clockwise. To decrease toe-in on right side turn rod clockwise. To decrease toe-in on left side turn adjusting rod counterclockwise.

3) On Miata, to increase toe-in on right side turn adjusting cam clockwise. To increase toe-in on left side turn cam counterclockwise. To decrease toe-in on right side turn cam counterclockwise. To decrease toe-in on left side turn adjusting cam clockwise.

WHEEL ALIGNMENT SPECIFICATIONS

WHEEL ALIGNMENT SPECIFICATIONS TABLE

Application	Preferred	Range
B2200 & B2600i (2WD)		
Camber (1)	3/4	1/4 To 1 1/4
Caster (1)	1 13/16	1 1/16 To 2 9/16
Toe-In (2)	1/8 (3)	0 To 1/4 (0 To 6)
Toe-In (1)	5/16	0 To 5/8
Toe-Out On Turns (1)		
Inner	35 .....	.....
Outer	33 .....	.....
Steering Axis		
Inclination (SAI) (1) ...	8 1/4 .....	.....
B2600i (4WD)		
Camber (1)	1	1/2 To 1 1/2
Caster (1)	2	1 1/4 To 2 3/4
Toe-In (2)	1/8 (3)	0 To 1/4 (0 To 6)
Toe-In (1)	5/16	0 To 5/8
Toe-Out On Turns (1)		
Inner	33 1/2 .....	.....
Outer	33 .....	.....

Steering Axis
Inclination (SAI) (1) ... 10 5/16

Miata
Camber (1)
Front 3/8 -1/8 To 7/8
Rear -3/4 -1 1/4 To -1/4
Caster (1) 4 13/16 4 1/16 To 5 9/16
Toe-In (2)
Front 1/8 (3) 0 To 1/4 (0 To 6)
Rear 1/8 (3) 0 To 1/4 (0 To 6)
Toe-In (1)
Front 1/4 0 To 1/2
Rear 1/4 0 To 1/2
Toe-Out On Turns (1)
Inner 37 3/8
Outer 32 9/16
Steering Axis
Inclination (SAI) (1) 11 5/16

MPV (2WD)
Camber (1) 3/8 -7/8 To 7/8
Caster (1) 5 1/2 4 3/4 To 6 1/2
Toe-In (2) 5/32 (4) 1/32 To 9/32
(1 To 7)
Toe-In (1) 5/16 1/16 To 9/16
Steering Axis
Inclination (SAI) (1) ... 12 15/16

MPV (4WD)
Camber (1) 3/8 -1/8 To 7/8
Caster (1) 5 7/16 4 11/16 To 6 3/16
Toe-In (2) 5/32 (4) 1/32 To 9/32
(1 To 7)
Toe-In (1) 5/16 1/16 To 9/16
Toe-Out On Turns (1)
Inner 40 3/4
Outer 31 27/32
Steering Axis
Inclination (SAI) (1) 12 15/16

MX-6 & 626
Camber (1)
Front 1/4 -1/4 To 3/4
Rear
Except 4WS -1/2 -1 To 0
4WS 0 -1/2 To 1/2
Caster (1) 1 1/4 1/2 To 2
Toe-In (2)
Front 0 (0) .. -1/8 To 1/8 (-3 To 3)
Rear 1/8 (3) 0 To 1/4 (0 To 6)
Toe-In (1)
Front 0 -1/4 To 1/4
Rear 1/4 0 To 1/2
Toe-Out On Turns (1)
Except 4WS Rear
Inner (3) 36
Outer (3) 31
4WS Rear
Inner 5
Outer 5
Steering Axis
Inclination (SAI) (1) ... 12 13/16

Navajo
Camber (1) 1/4 -3/4 To 1 1/4
Caster (1) 4 1/4 2 1/2 To 6
Toe-In (2) 0 (0) ... -1/8 To 1/8 (-3 To 3)

Toe-In (1)	0	-1/4 To 1/4
Protege & 323		
Camber (1)		
Front	-3/32	-27/32 To 21/32
Rear	-11/32	-13/32 To -13/32
Caster (1)	1 29/32	1 To 2 27/32
Toe-In (2)		
Front	3/32 (2)	-1/32 To 3/16 (-1 To 5)
Rear	3/32 (2)	-1/32 To 3/16 (-1 To 5)
Toe-In (1)		
Front	3/16	-1/16 To 3/8
Rear	3/16	-1/16 To 3/8
Toe-Out On Turns (1)		
Inner	40	
Outer	33	
Steering Axis		
Inclination (SAI) (1)	12 1/4	
RX7		
Camber (1)		
Front	5/16	-3/16 To 13/16
Rear	-3/4	-1 1/4 To -1/4
Caster (1)	4 11/16	3 15/16 To 5 7/16
Toe-In (2)		
Front	1/8 (3)	0 To 1/4 (0 To 6)
Rear	1/8 (3)	0 To 1/4 (0 To 6)
Toe-In (1)		
Front	1/4	0 To 1/2
Rear	1/4	0 To 1/2
Toe-Out On Turns (1)		
Inner	36	
Outer	32	
Steering Axis		
Inclination (SAI) (1)	13 3/4	
929		
Camber (1)		
Front	1	1/2 To 1 1/2
Rear	-1/4	-3/4 To 1/4
Caster (1)	4 1/2	3 1/2 To 5 1/4
Toe-In (2)		
Front	5/32 (4)	1/32 To 9/32 (1 To 7)
Rear	3/32 (2.5)	0 To 5/32 (0 To 4.5)
Toe-In (1)		
Front	5/16	1/16 To 9/16
Rear	3/16	0 To 5/16
Toe-Out On Turns (1)		
Inner	39	
Outer	32	
Steering Axis		
Inclination (SAI) (1)	12 11/16	

(1) - Measurement in degrees.

(2) - Measurement in inches (mm).

(3) - W/o Turbo EC-AT. Turbo EC-AT: 34° Inner, 29° Outer.

TORQUE SPECIFICATIONS

TORQUE SPECIFICATIONS TABLE

Application	Ft. Lbs. (N.m)
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B2200 & B2600i		
Tie-Rod Lock Nuts	51-58	(69-78)
Upper Control Arm Shaft (2X4)	54-69	(74-93)
Upper Control Arm Shaft (4X4)	69-86	(93-117)
Wheel Lug Nut		
Standard Wheel	65-87	(88-118)
Styled Wheel	87-108	(118-147)
Miata		
Adjusting Cam Nuts (Front)	69-83	(93-113)
Adjusting Cam Nuts (Rear)	54-70	(73-95)
Tie-Rod Lock Nuts	25-29	(34-39)
Wheel Lug Nut	65-87	(88-118)
MX-6 & 626		
Adjusting Rod Lock Nuts (Rear)	41-59	(55-80)
Tie-Rod Lock Nuts	51-72	(69-98)
Upper Strut Nuts	34-46	(46-63)
Wheel Lug Nut	65-87	(88-118)
MPV		
Tie-Rod Lock Nuts	51-58	(69-78)
Upper Strut Nuts	22-27	(29-35)
Wheel Lug Nut	65-87	(88-118)
Navajo		
Tie-Rod Lock Nuts	30-42	(40-57)
Pinch Bolt	49-65	(67-88)
Wheel Lug Nut	100	(135)
Protege & 323		
Adjusting Rod Lock Nuts (Rear)	41-47	(55-64)
Tie-Rod Lock Nuts	25-37	(34-50)
Upper Strut Nuts	22-30	(29-40)
Wheel Lug Nut	65-87	(88-118)
RX7		
Adjusting Cam Nuts (Rear)	46-70	(63-95)
Tie-Rod Lock Nuts	25-29	(34-39)
Upper Strut Nuts	22-27	(29-36)
Wheel Lug Nut	65-87	(88-118)
929		
Tie-Rod Lock Nuts	51-58	(69-78)
Upper Strut Nuts	25-33	(34-44)
Wheel Lug Nut	65-87	(88-118)
