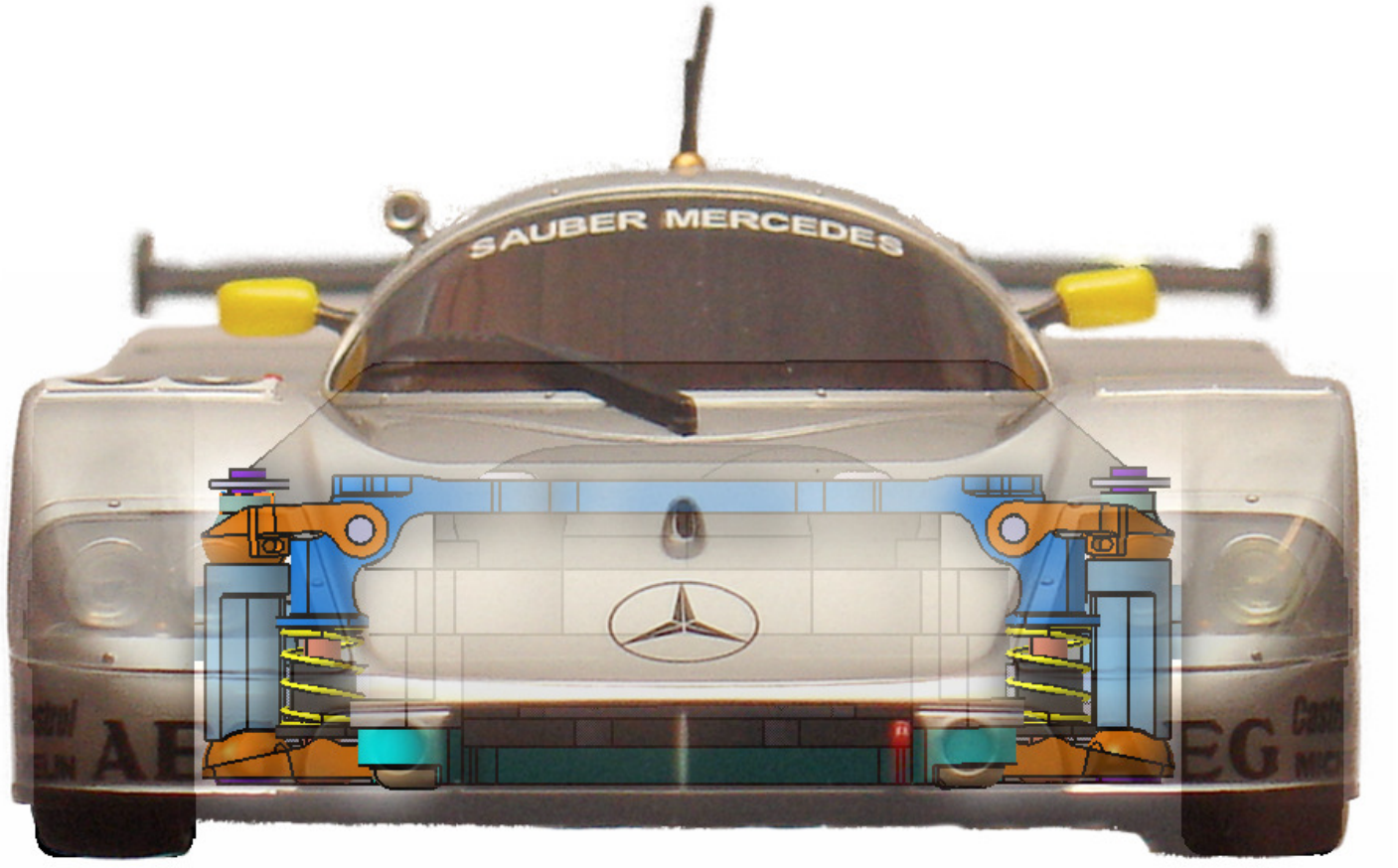
PN Racing
High Performance Option Parts



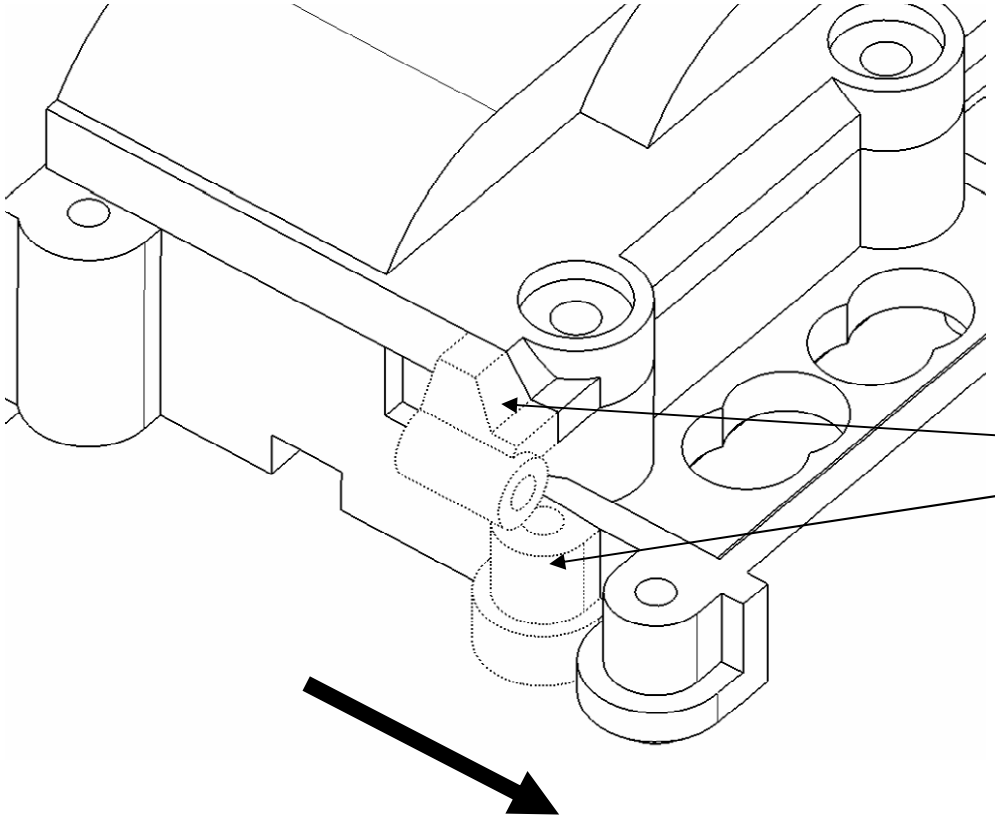
MR-03 V3 Front A-Arm Suspension Instructions

Rev. - 151210

MR-03 A-Arm Front Suspension

- Unequal length A-Arm suspension for MR-03 chassis.
  - Modeled after full scale performance car suspension for realism.
  - Double A-Arm suspension gives good control of suspension geometry and roll center during travel.
  - Camber change with suspension compression during cornering keeps wheels near vertical for maximum tire contact with road. Allows for precise cornering and maximum road holding.
- Direct suspension swap
  - Same width as stock. (MR02 width)
  - Ride height remains the same as stock.
  - .5mm wider front steering geometry for less offset and faster steering. Overall width still remain the same to fit Auto Scale bodies.
- No bump steer throughout suspension travel.
- Suspension movement use ball joints instead of sliding knuckle. Eliminates stiction associated with sliding pin especially with high offset wheels.
  - Low stiction results in consistent cornering.
- Machined aluminum ball socket instead of snap fit. Joints will not pop out even during hard collision.
- Adjustable camber from 0-3° degrees with 1.3°/mm of camber gain.
- Adjustable caster from 0-1.8° degrees
- 4 position adjustable upper A-Arm pivot
  - Changes camber gain, static camber and roll center
  - Quick adjustment with set screw
- Includes 3 tie-rods: 0° , +.5° and +1°
- Quick down stop adjustment with turn of a nut
- Benefits of the sophisticated suspension system are precise cornering and maximum road holding which adds to mini-z driving pleasure

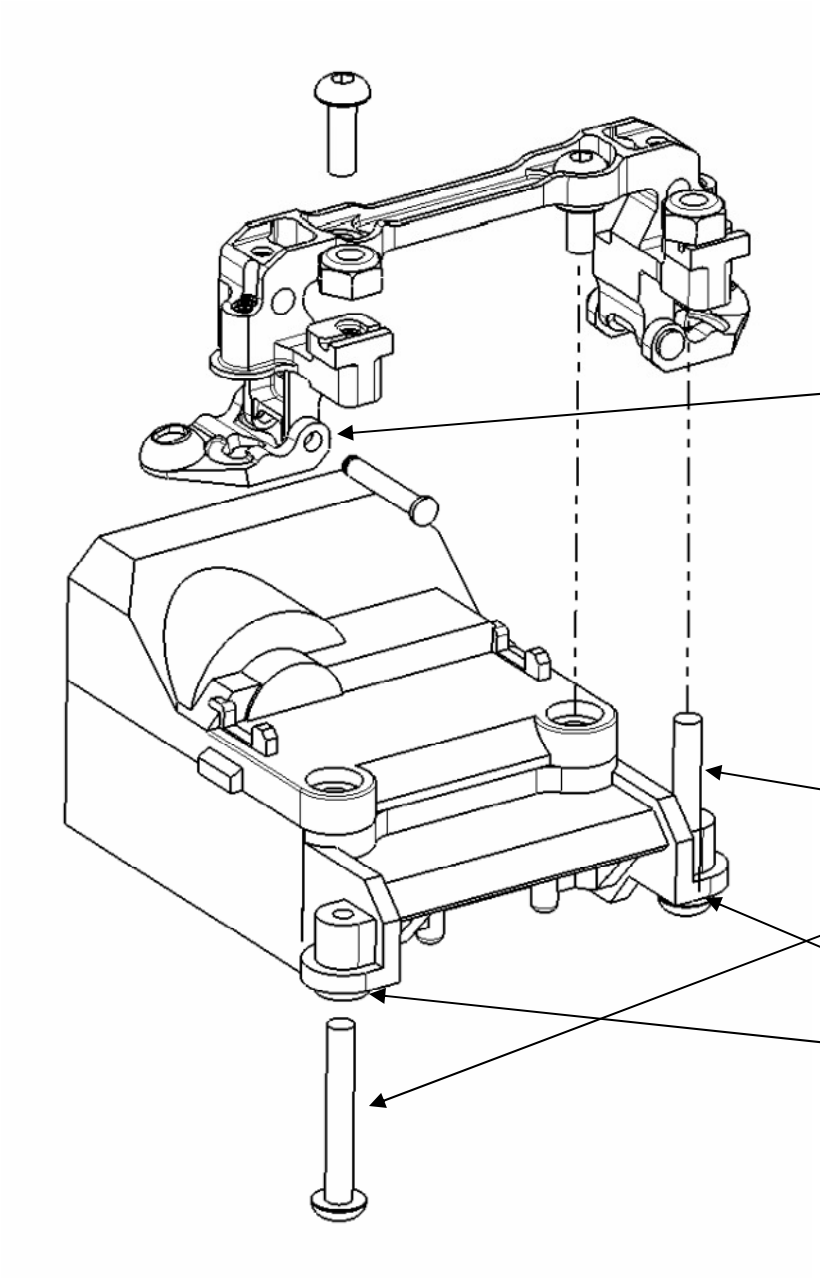
Chassis Preparation



Cut off original upper A-Arm mount and lower screw boss from chassis.

Front

Suspension Bracket Install



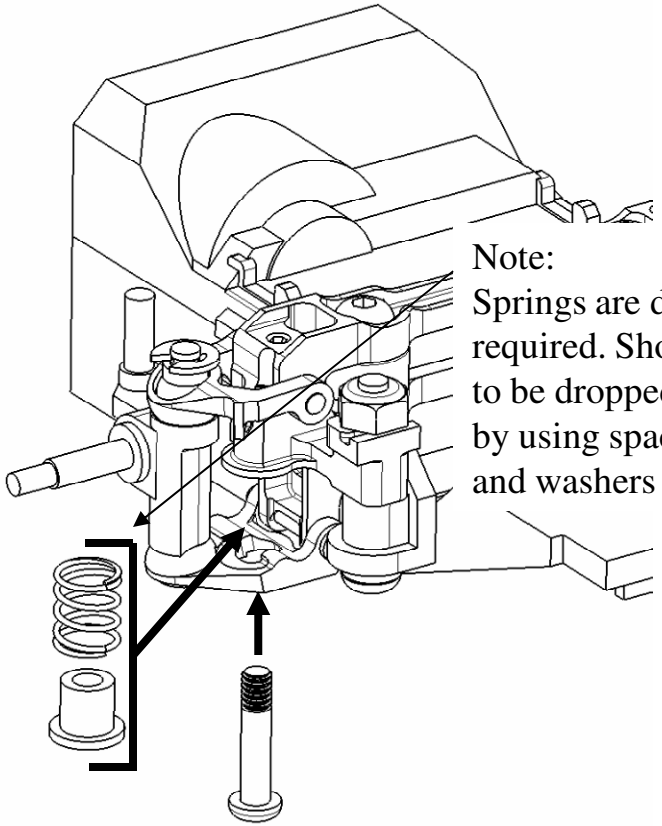
Note:
2 lengths of lower A-arms are available. Standard length 0 deg A-arms and longer A-arms to add 1 deg to camber. Additional camber adjustment is available with upper A-arm eccentric pin.

Install lower A-arm prior to installation of suspension bracket. A-arm pin is captured by chassis once bracket is installed.

Start thread engagement of forward screws on bracket by hand prior to seating of bracket on chassis. Tighten all 4 mounting screws evenly to seat bracket on chassis.

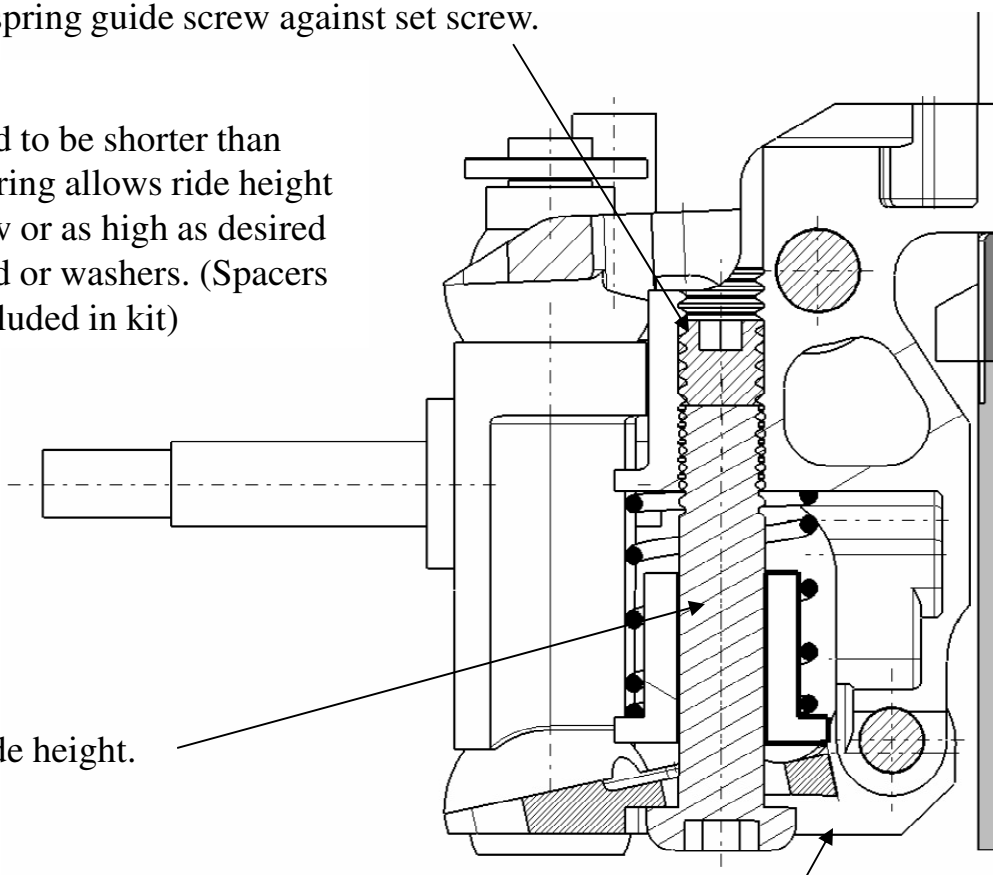
Drill two 2mm thru holes. Use the existing blind hole as a guide.

Spring Install



After setting ride height with spring guide screw, rotate set screw until it just contacts spring guide screw. While holding set screw in position, tighten spring guide screw against set screw.

Note:
Springs are designed to be shorter than required. Shorter spring allows ride height to be dropped as low or as high as desired by using spacers and or washers. (Spacers and washers not included in kit)

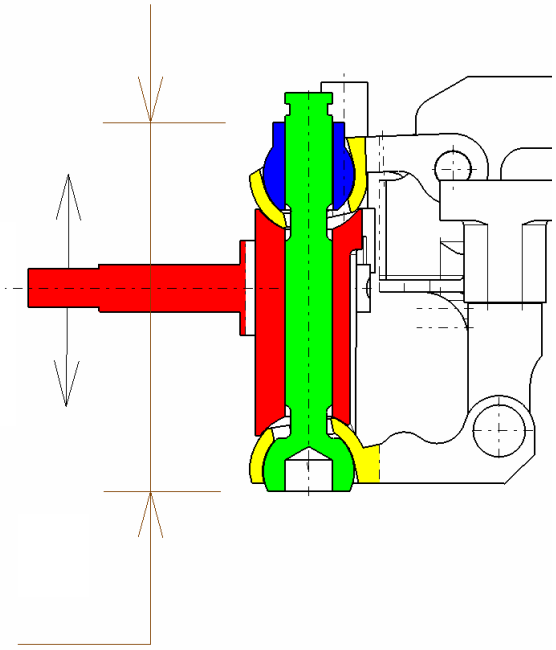


Adjust spring guide to set ride height.

When bottom of A-arm is horizontal with ground, suspension is at stock ride height. Each additional ¼ turn of spring guide screw drops ride height by .2mm, or 1 washer equivalent of suspension drop.

Knuckle Installation

Cycle suspension several times with knuckle at different steering angles until smooth

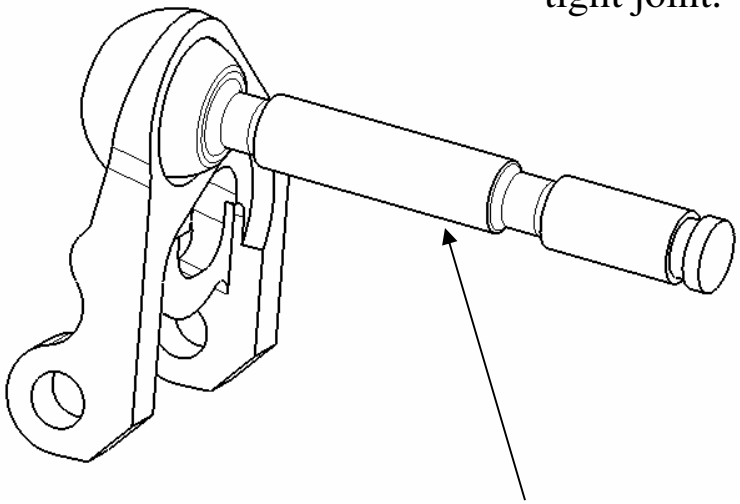


Hold ball and king pin together with slight pressure

Note:
Due to close manufacturing tolerance for minimum free play, some balls may be tight on suspension arms. It may be necessary to lap fit the joints. Apply “Mothers Mag & Aluminum Polish” or equivalent metal polish to ball. Hold king pin and ball together, and operate suspension several times until suspension is free. Wash polish off afterward. Even with free moving suspension, lap fitting the joint will result in very smooth action.

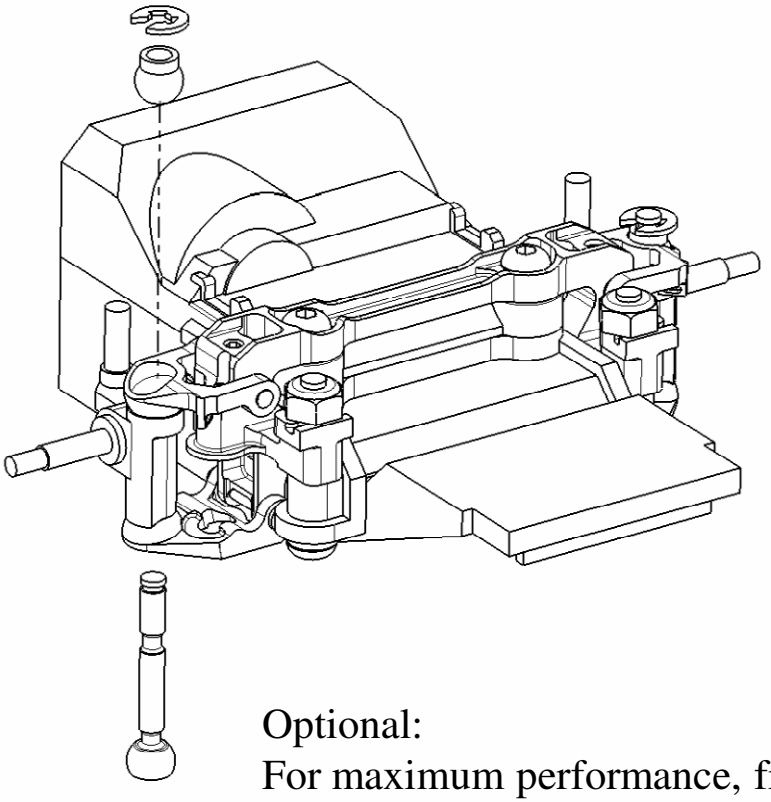
Knuckle Installation

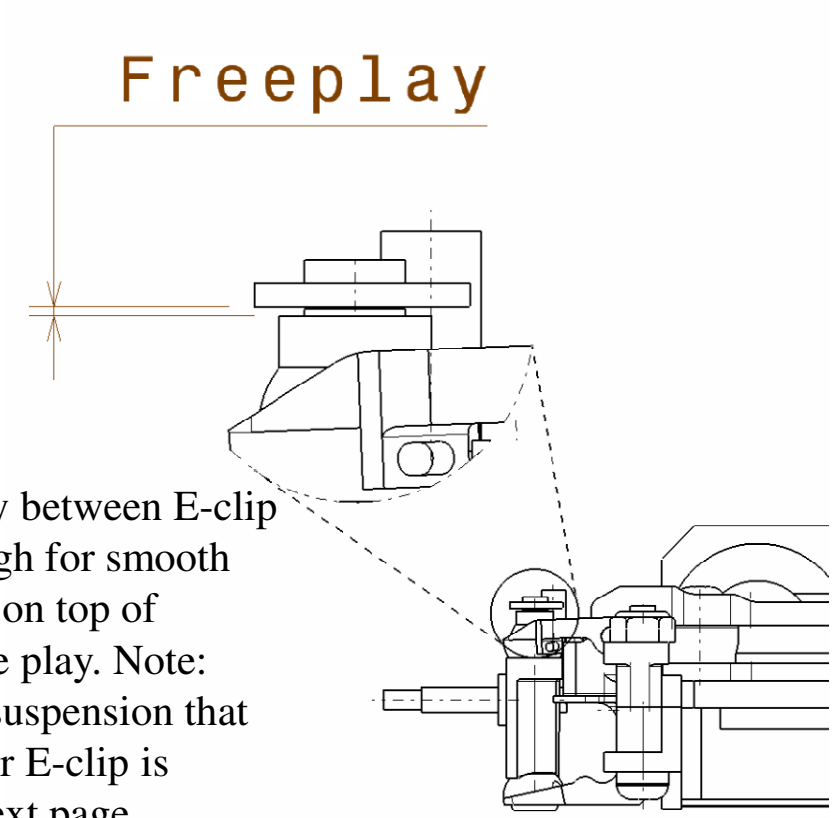
Ball Lap Fit
In the case where a ball is particularly tight, it may be necessary to insert the king pin in a drill chuck, apply polish to ball, and polish the suspension arm with a drill. Just a few seconds of polish should free up a tight joint.



Insert in drill chuck

Knuckle Installation



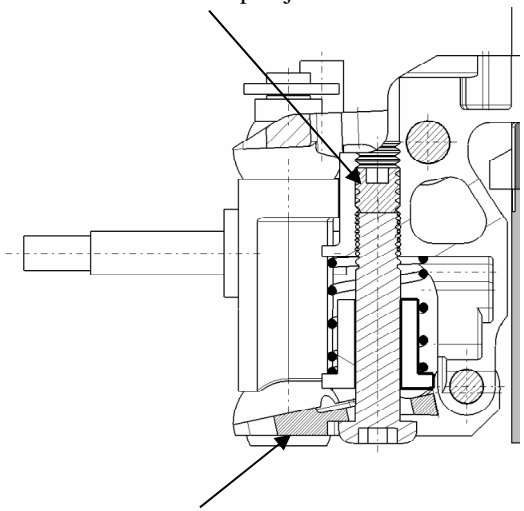


Optional:
For maximum performance, free play between E-clip and knuckle ball should be just enough for smooth suspension travel. Shim or sand stub on top of suspension ball to obtain optimal free play. Note: Install E-clip before sanding ball. A suspension that appears tight may not be so tight after E-clip is installed. Also see polishing in the next page.

Suspension Adjustment

Droop Adjustment

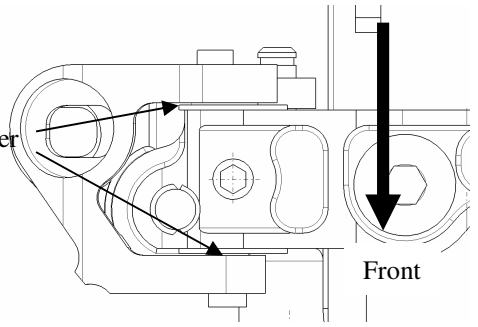
Tighten set screw after droop adjustment



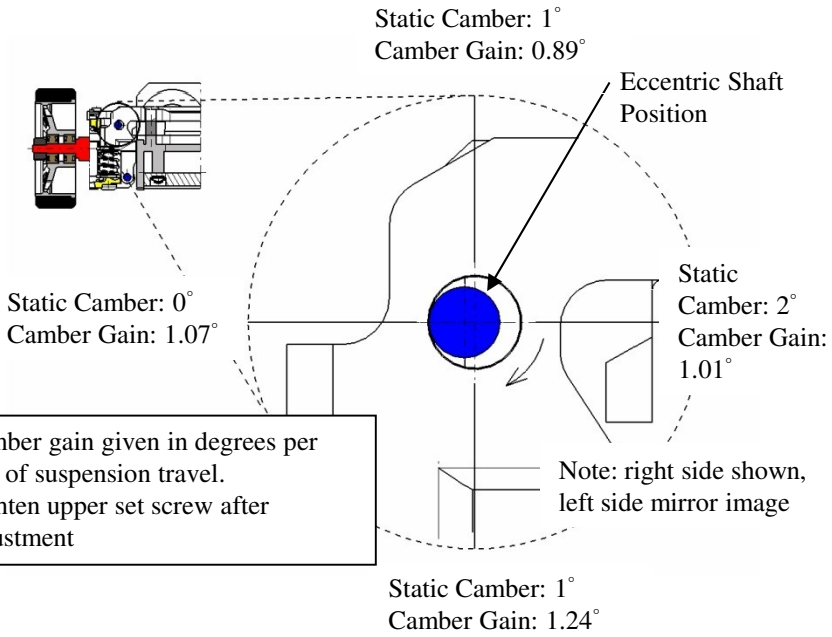
When bottom of A-Arm is horizontal with ground, suspension is at stock ride height. Each additional ¼ turn of spring guide screw drops ride height by .2mm, or 1 washer equivalent of suspension drop.

Caster Adjustment

Two washers in front = 0 ˚ caster
Washer on both sides = . 9 ˚ caster
Two washer in rear = 1.8 ˚ caster



Camber Gain and Camber Adjustment



Camber gain given in degrees per mm of suspension travel.
Tighten upper set screw after adjustment

Tie Rod Adjustment

Due to wide track feature of the A-Arm suspension, wider tie-rods are necessary to compensate for geometry. Included are 0° , +.5° and +1° toe out tie rods.
If a stock MR03 tie rod is used, a +3.5° toe out will be equivalent to 0° on the A-Arm suspension.

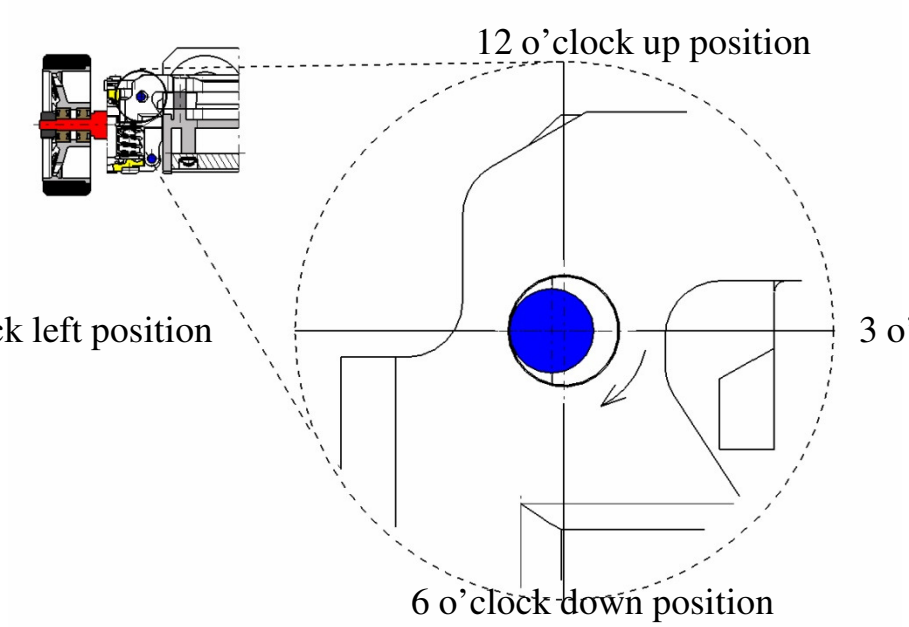
Tie Rod Recommendation

0 Degree Lower A-Arm Installed

Eccentric Shaft Position	Recommended Tie Rod Toe Out (Degrees)
0 deg (9 o'clock left position)	3.5
1 deg (12 o'clock up position)	2
2 deg (3 o'clock right position)	0
1 deg (6 o'clock right position)	2

1 Degree Lower A-Arm Installed

Eccentric Position	Recommended Tie Rod Toe Out (Degrees)
0 deg (9 o'clock left position)	3.5
2 deg (12 o'clock up position)	1.5
3 deg (3 o'clock right position)	0
2 deg (6 o'clock right position)	1.5



Note: right side shown, left side mirror image