

TECHNICAL MANUAL

**OPERATOR'S, ORGANIZATIONAL AND DIRECT SUPPORT
MAINTENANCE MANUAL
(INCLUDING REPAIR PARTS AND SPECIAL TOOLS LIST)**

TRUCK, FIRE FIGHTING, 4x4,

MODEL 1350 PKP/200 AFFF

NSN 4210-00- 4845729

ANSUL FIRE PROTECTION

HEADQUARTERS, DEPARTMENT OF THE ARMY

29 DECEMBER 1986

CTS-2311 SERVICE MANUAL
S-SERIES
1978 -1979 -1980

VOLUME 1

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AXLE-FRONT



AXLE-FRONT
FRONT AXLE ALIGNMENT SPECIFICATIONS
1978-1979-1980

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Introduction

Outlined herein are Front Alignment Specifications pertaining to "Caster" "Camber" "Toe-In" and "King Pin Inclination".

Check alignment at regular intervals and particularly after front suspension has been subjected to extremely heavy service or severe impact loads. Before checking and adjusting alignment, components such as wheel bearings, tie rods, steering gear, shock absorbers and tire inflation should be inspected and corrected where necessary.

The caster, camber and toe-in settings are for unladen (no payload) vehicles.

King pin inclination is not required for any of the front end alignment checking machines as a means of obtaining caster or camber. A check of king pin inclination can be used as an indicator of damaged king pins, knuckles or spindles.

Caster Measurement and Correction

Caster specifications are based on unladen (no payload) vehicles. If the frame is not level when alignment checks are made., this must be considered in determining whether the caster setting is correct.

With the vehicle on a smooth, level surface, frame angle should be measured with a bubble protractor placed on the frame rail. The degree of tilt from the level frame position is the angle that must be used in determining a correct caster setting. Positive frame angle is defined as forward tilt (front end down) and negative angle as tilt to rear (front end high).

The measured frame angle should be added or subtracted, as required from the specified caster setting, to obtain the caster that should actually be measured on vehicle.

1. Positive frame angle should be subtracted from specified setting.
2. Negative frame angle should be added to specified setting.

As an example, if the specified, caster setting is a positive 1 deg. and it is found that the vehicle has a positive one degree frame angle, then the measured caster should be 0 deg. \pm 1/2 deg. caster angle when the chassis is operating under load.

Possible causes of incorrect caster are sagging springs, bent or twisted axle, or unequally tightened spring U-bolts. In most cases a twisted axle would be the cause if caster varies more than the specified 1/2 deg. between left and right side.

If caster must be corrected, taper shims can be used as required between the springs and axle. Spring U-bolts should be tightened evenly and to specified torque after the addition or removal of shims. Be sure spring center bolt drops into I-beam pilot. Also, when tightening U-bolt nuts, be sure at least one full thread of U-bolt is visible when nut is tightened to specified torque. If not visible, use longer U-bolt.

IMPORTANT

When U-Bolts are replaced, the new must be grade 5 minimum incorporating rolled threads.

U-bolt nuts are to be flanged head type or those having a nylon insert locking feature.

Checking and Correcting Front Wheel Toe-In

No change should be made in toe-in until the other factors of front wheel alignment are known to be within specifications. Incorrect toe-in results in excessive tire wear caused by side slippage. When attempting to determine the cause of excessive wear, first check camber, caster and king pin inclination in the order named. (King pin inclination is a reference and not adjustable in the field.)

Turn the front wheels to the exact straight-ahead position. When setting toe-in adjustment, the front suspension must be neutralized; that is, all component parts must be in the same relative position when making the adjustment as they will be in a normal static unladen position. To neutralize the suspension, the vehicle must be rolled forward 12 to 15 feet. By rolling the vehicle forward, all tolerances in the front suspension are taken up and the suspension is then in normal static unladen position. Neutralizing the front suspension is extremely important, as after the vehicle has been jacked up in order to scribe the tires, the front wheels will not return to the normal static unladen position due to the tires gripping the floor surface when the vehicle is lowered.

IMPORTANT

The toe-in specifications listed are designed to yield a "0" degree toe-in condition in normal operations with payload.

SPECIAL INSTRUCTIONS

Before attempting front alignment procedures observe the following:

- A. Caster angles are for an unladen (no payload) vehicle. If frame is not level, the frame angle must be added to - front high - or subtracted from - front low - the caster angle to obtain true caster reading.
- B. Caster angle difference between left and right wheel not to exceed 0 deg. 30 minutes.
- C. Toe-In dimension may be measured from center of tread, or from inside of tire.
- D. Tolerance unless otherwise noted:
 - 1. Caster - plus or minus 0 deg. 30 minutes except Scout II & Cargostar which is plus or minus 1 deg. 0 min.
 - 2. Toe-In plus or minus 1/16 inch.
 - 3. Camber - plus or minus 0 deg. 30 minutes.
- E. After the axle model "P/S" = Power Steering
"M/S" = Manual Steering