

**42 038 – ML – 11 . 2001**

**CONTRÔLE DES ESSIEUX, TRAINS ET PONTS AVANT**

**INSPECTION OF FRONT AXLES, FRONT DRIVE AXLES  
AND FRONT AXLE UNITS**

**CONTROL DE LOS EJES, TRENES Y PUENTES DELANTEROS**

**KONTROLLE DER ACHSEN, FAHRWERKE UND  
VORDERANTRIEBSACHSEN**

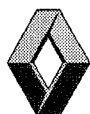
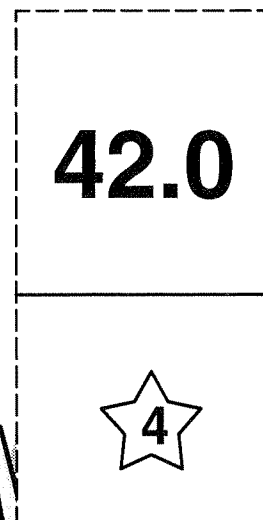
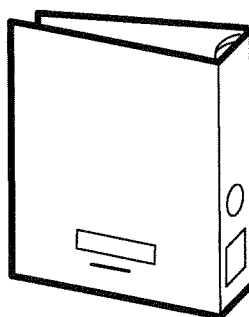
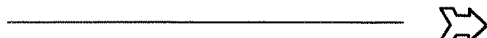
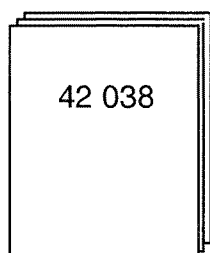
**CONTROLO ASSALI, AVANTRENI E PONTI ANTERIORI**

**CONTROLO DOS EIXOS, TRENS E DIFERENCIAIS DIANTEIROS**

**CONTROLE VAN VOORASSEN, DUBBLE VOORASSEN EN  
AANGEDREVEN VOORASSEN**

**KONTROL AF AKSLER, FORTØJ OG FORBRO**

**ПРОВЕРКА ПЕРЕДНИХ ОСЕЙ, ПЕРЕДАТОЧНЫХ МЕХАНИЗМОВ И  
МОСТОВ**



**RENAULT**

50 21 002 963

<p>ESSIEUX PONTS AVANT</p> <p>FRONT AXLES FRONT DRIVE AXLES</p> <p>EJES PUENTES DELANTEROS</p> <p>ACHSEN VORDERANTRIEBSACHSEN</p> <p>ASSALI PONTI ANTERIORI</p> <p>EIXOS DIFERENCIAIS DIANTEROS</p> <p>VOORASSEN AANGEDREVEN VOORASSEN</p> <p>AKSLER FORBRO</p> <p>ОСИ ПЕРЕДНИЕ МОСТЫ</p>	<p>VÉHICULES</p> <p>VEHICLES</p> <p>VEHICULOS</p> <p>FAHRZEUGE</p> <p>VEICOLI</p> <p>VEÍCULOS</p> <p>WAGENS</p> <p>KØRETØJ</p> <p>АВТОМОБИЛИ</p>
<p>CONTRÔLE DES ESSIEUX, TRAINS ET PONTS AVANT</p> <p>INSPECTION OF FRONT AXLES, FRONT DRIVE AXLES AND FRONT AXLE UNITS</p> <p>CONTROL DE LOS EJES, TRENES Y PUENTES DELAN- TEROS</p> <p>KONTROLLE DER ACHSEN, FAHRWERKE UND VORDERANTRIEBSACHSEN</p> <p>CONTROLO ASSALI, AVAN- TRENI E PONTI ANTERIORI</p> <p>CONTROLO DOS EIXOS, TRENES E DIFERENCIAIS DIAN- TEIROS</p> <p>CONTROLE VAN VOORASSEN, DUBBLE VOORASSEN EN AANGEDREVEN VOORASSEN</p> <p>KONTROL AF AKSLER, FOR TØJ OG FORBRO</p> <p>ПРОВЕРКА ПЕРЕДНИХ ОСЕИ, ПЕРЕДАТОЧНЫХ МЕХАНИЗМОВ И МОСТОВ</p>	<p>TOUTES GAMMES (1993 ► ...)</p> <p>ALL RANGES (1993 ► ...)</p> <p>TODAS LAS GAMAS (1993 ► ...)</p> <p>ALLE BAUREIHEN (1993 ► ...)</p> <p>TUTTE LE GAMME (1993 ► ...)</p> <p>TODAS AS GAMAS (1993 ► ...)</p> <p>ALLE STERIES (1993 ► ...)</p> <p>ALLE SERIER (1993 ► ...)</p> <p>ВСЕХ СЕРИЙ (1993 ► ...)</p>

CONTRÔLE – INSPECTION – CONTROL – KONTROLLE  
 CONTROLO – CONTROLE – KONTROL – ПРОВЕРКА

A2  
/  
A19

VALEURS – VALUES – VALORES – WERTE – VALORI  
 VALOR – WAARDEN – VÆRDIER – ЗНАЧЕНИЯ



**B**

B1



**G**

B10



B2



**G**

B12



B3



B14



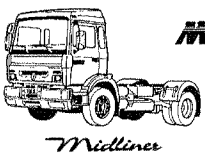
**S**

B4



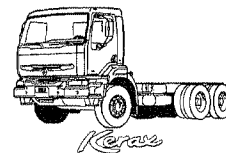
**R**

B20



**M**

B6

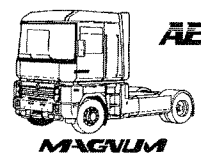


B22



**C**

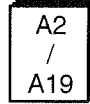
B8



**AE**

B26

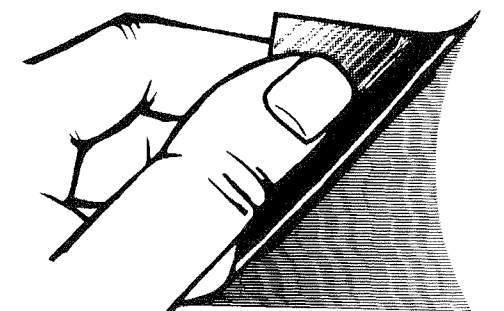
**CONTRÔLE – INSPECTION – CONTROL – KONTROLLE  
CONTROLO – CONTROLE – KONTROL – ПРОВЕРКА**



**VALEURS – VALUES – VALORES – WERTE – VALORI  
VALOR – WAARDEN – VÆRDIER – ЗНАЧЕНИЯ**



CONTRÔLE – INSPECTION – CONTROL – KONTROLLE  
CONTROLO – CONTROLE – KONTROL – ΠΡΟΒΕΡΚΑ



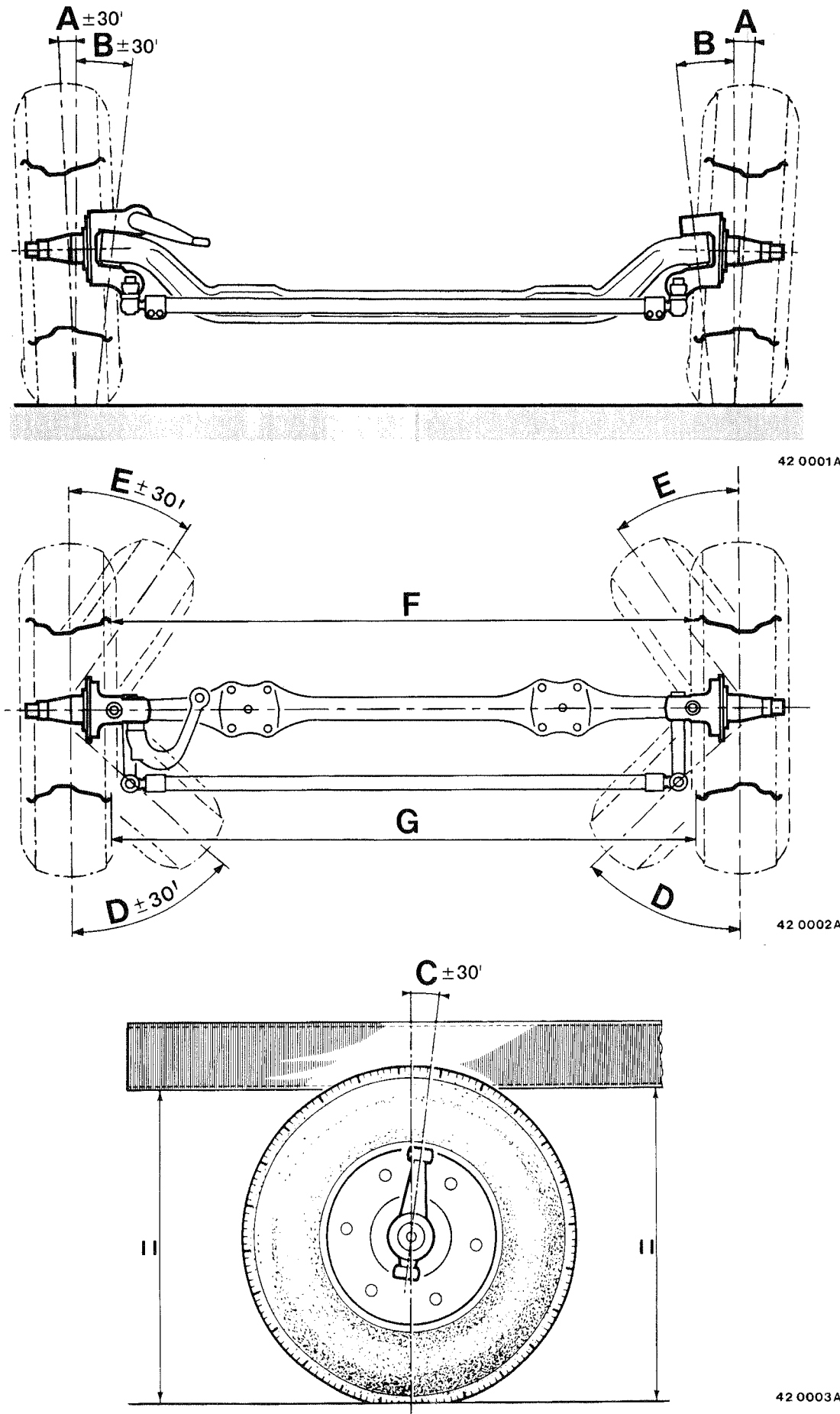


Fig. 1

A = Angle de carrossage  
 B = Angle d'inclinaison de pivots  
 C = Angle de chasse  
 E / D = Angle de braquage

Parallélisme (valeur exprimée en mm/m (Tolérances  $\pm 0,9$  mm/m)) :

Pincement = + =  $G > F$

Ouverture = - =  $G < F$

#### Vérifications préliminaires

Avant toute intervention, procéder à certaines vérifications :

- Etat et pression des pneumatiques.
- Etat et hauteur de la suspension.
- Efficacité des amortisseurs.
- Jeux des roulements des moyeux, des pivots et des articulations du train avant.

Roues avant alignées, contrôler le parallélisme.

Vérifier que la direction est au point milieu. Pour les directions assistées s'assurer, au point milieu, de l'absence de pression hydraulique.

Effectuer un essai du véhicule si ces dernières vérifications ont exigé un réglage. Si nécessaire procéder au contrôle des angles de l'essieu.

#### Conditions de contrôle :

- Véhicule à vide et en ordre de marche.
- Cabine en position route (pour les véhicules à cabine basculante).
- Véhicule sur une aire plane, roues de l'essieu directeur sur plateaux pivotants.
- Véhicule équipé d'un essieu relevable, l'essieu doit être abaissé.
- Appareil à projection lumineuse.

#### Réglage des butées mécaniques de braquage

Parallélisme réglé, visser à fond les butées de braquage.

Tourner la direction à droite jusqu'à obtenir l'angle de braquage désiré.

Dévisser les butées concernées jusqu'au contact. Serrer les contre-écrous (selon montage).

Tourner la direction à gauche et régler de la même façon les autres butées.

Vérifier que les pneumatiques ne viennent pas en contact avec des éléments mécaniques du châssis.

#### IMPORTANT

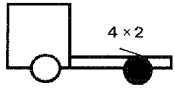
Boîtier de direction avec butées hydrauliques à réglage automatique : ne pas manœuvrer le boîtier de direction lorsque celui-ci n'est pas limité en débattement mécaniquement (risque de dérèglement des butées hydrauliques).

Réglage des butées de limitation hydraulique de braquage (à effectuer après le réglage des butées mécaniques de braquage), (voir MR 41 623).

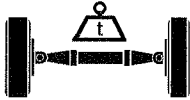
#### IMPORTANT

Tourner lentement la direction lorsque les roues de l'essieu sont sur plateaux pivotants ou levées.

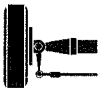
## SIGNES CONVENTIONNELS



Silhouette (s)



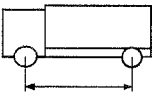
Charge en tonne sur l'avant du véhicule pour effectuer la mesure



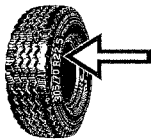
Type d'essieux (position de la plaque d'identification)



Type de pont avant (position de la plaque d'identification)



Empattement du véhicule



Type de pneumatique

∧ ... Inférieur à ...

∨ ... Supérieur à ...

∩ ... Inférieur ou égal à ...

**Fig. 1**

**A** = Camber angle

**B** = Swivel pin inclination angle

**C** = Castor angle

**E / D** = Steering angle

**Wheel alignment (value expressed in mm/m (Tolerances  $\pm 0.9$  mm/m)):**

Toe-in = + =  $G > F$

Toe-out = - =  $G < F$

**Preliminary checks**

Before carrying out any work, proceed with the following checks :

- Condition and pressure of tyres.
- Condition and height of suspension.
- Efficiency of shock absorbers.
- Play of front axle wheel hub bearings, swivel pins and joints.

With the front wheels aligned, check the wheel alignment.

Check that the steering is in the "mid-point" position. For power-assisted steering systems, make sure there is no hydraulic pressure when the steering is in the "mid-point" position.

Carry out a road test after making adjustments found to be necessary during the above checks. If necessary, check the axle geometry angles.

**Checking conditions :**

- **Vehicle unladen and in running order.**
- Cab in "road" position (for vehicles with tilt cab).
- Vehicle on flat ground, steering axle wheels on pivoting plates.
- Vehicle equipped with lift-up axle: the axle must be lowered.
- Luminous projector.

**To adjust mechanical steering lock stops**

With the front wheels aligned, screw the steering lock stops fully home.

Turn the steering wheel to the right until the required steering lock angle is obtained.

Unscrew the steering lock stops until contact is made with the axle stop shoulder. Tighten the locknuts (depending on the assembly).

Turn the steering wheel to the left and adjust the other lock stops in the same way.

Check that the tyres do not enter into contact with chassis mechanical elements.

**IMPORTANT**

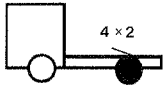
*Steering box with automatic adjustment hydraulic stops: Do not manoeuvre the steering box when its mechanical deflection is not limited (risk of maladjustment of hydraulic stops).*

**Adjusting the hydraulic lockover limitation stops (To be carried out after adjusting the mechanical lock stops).****IMPORTANT**

*Turn the steering wheel slowly when the axle wheels are on pivoting plates or are lifted.*



## CONVENTIONAL SYMBOLS



Axle spread



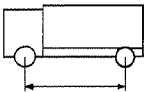
Load in tonne on front of vehicle for making the measurement



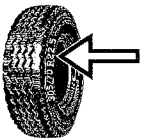
Type of axle



Type of drive axle



Vehicle wheelbase



Tyre size in inches

∧ ... Smaller than ...

∨ ... Greater than ...

≧ ... Less than or equal to ...

Fig. 1

A = Angulo de inclinación de la rueda  
 B = Angulo de inclinación de los pivotes  
 C = Angulo de avance del pivote  
 E / D = Angulo de giro

**Paralelismo (valor expresado en mm/m (Tolerancia:  $\pm 0,9$  mm/m)) :**

Convergencia = + =  $G > F$

Abertura = - =  $G < F$

### Verificaciones preliminares

Antes de proceder a cualquier operación, se deben efectuar varias verificaciones :

- Estado y presión de los neumáticos.
- Estado y altura de la suspensión.
- Eficacia de los amortiguadores.
- Juego de los rodamientos de los cubos, pivotes y articulaciones del tren delantero.

Con las ruedas delanteras alineadas, controlar el paralelismo.

Verificar que la dirección se encuentre en el punto medio. Si el vehículo posee una dirección asistida, verificar, en el punto medio, que no haya presión hidráulica.

Hacer una prueba del vehículo si se ha efectuado algún ajuste tras estas últimas verificaciones. Si es necesario, controlar los ángulos del eje.

### Condiciones de control :

- **Condiciones de control :**
- Vehículo vacío y en condiciones de funcionamiento.
- Cabina en posición carretera (en vehículos con cabina volcable).
- Vehículo sobre una superficie plana, con las ruedas del eje director sobre plataformas giratorias.
- Si el vehículo está provisto de un eje elevable, el eje debe estar en posición baja.
- Proyector luminoso.

### Ajuste de los topes de giro mecánicos

Paralelismo ajustado, atornillar a fondo los topes de giro.

Hacer girar la dirección a la derecha hasta lograr el ángulo de giro deseado.

Desenroscar los topes correspondientes hasta que haya contacto. Apretar las contratueras (según el montaje).

Hacer girar la dirección a la izquierda y regular del mismo modo los otros topes.

Verificar que los neumáticos no entren en contacto con elementos mecánicos del chasis.

#### **IMPORTANTE**

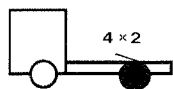
*Caja de dirección con topes hidráulicos de ajuste automático: no se debe maniobrar la caja de dirección si no tiene un límite de oscilación mecánica (se corre el riesgo de desajustar los topes hidráulicos)*

### Ajuste de los topes de limitación hidráulica de giro (a efectuar después del ajuste de los topes mecánicos de giro).

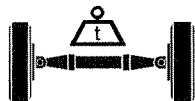
#### **IMPORTANTE**

*Hacer girar lentamente la dirección si las ruedas del eje están elevadas o colocadas sobre plataformas giratorias.*

## SIGNOS CONVENCIONALES



Configuraciones



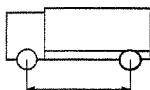
Carga en toneladas en la parte delantera del vehículo para efectuar la medición



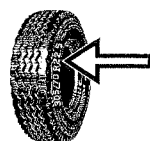
Tipo de ejes



Tipo de puente delantero



Distancia entre ejes del vehículo



Dimensión del neumático en pulgadas

∧ ... Inferior a ...

∨ ... Superior a ...

∕∧ ... Inferior o igual a ...

**Abb. 1**

**A** = Radsturzwinkel  
**B** = Spreizungswinkel  
**C** = Nachlaufwinkel  
**E / D** = Einschlagwinkel

**Radeinstellung (Wertangaben in mm Toleranz  $\pm 0,9$  mm) :**

Vorspur = + =  $G > F$   
 Nachspur = - =  $G < F$

**Voruntersuchung**

Vor jedem Eingriff folgende Prüfungen durchführen :

- Zustand der Bereifung sowie Reifendruck.
- Zustand und Höhe der Federung.
- Leistungsfähigkeit der Schwingungsdämpfer.
- Spiel der Radnabenlager, der Achsschenkel und der Anlenkungsteile der Vorderachse.

Bei gerade stehenden Rädern die Radstellung prüfen.

Die Lenkung muß genau in der Mitte stehen. Bei den Hydrolenkungen darf in der Mittelstellung kein Öl Druck zu verspüren sein.

Einen Fahrversuch durchführen, wenn diese Prüfungen eine Einstellung erforderten. Erforderlichenfalls die Einstellung der Winkel an der Achse prüfen.

**Kontrollbedingungen :**

- **Leeres und fahrbereites Fahrzeug.**
- Fahrerhaus in Fahrtstellung (bei Fahrzeugen mit Kippfahrerhaus).
- Fahrzeug auf eine ebene Fläche stellen, die Räder der Lenkachse müssen dabei auf Drehscheiben stehen.
- Bei Fahrzeugen mit Liftachse, muß letztere herabgesenkt sein.
- Lichtprojektor.

**Einstellung der mechanischen Lenkanschläge**

Nach Einstellung der Radspur, die Lenkanschläge fest anziehen.

Das Lenkrad nach rechts drehen, um den gewünschten Einschlagwinkel zu erhalten.

Die entsprechenden Lenkanschläge bis zur Berührung heraus schrauben. Die Gegenmutter festziehen (je nach Ausstattung).

Das Lenkrad nach links drehen und in der gleichen Weise die anderen Anschläge einstellen.

Darauf achten, daß die Reifen nicht mit mechanischen Teilen des Fahrgestells in Berührung kommen.

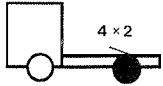
**WICHTIG**

*Lenkgetriebe mit automatisch einstellbaren hydraulischen Lenkanschlägen : das Lenkgetriebe nicht betätigen, wenn dieses nicht mechanisch einschlagbegrenzt ist (Verstellungsfahrer der hydraulischen Lenkanschläge).*

**Einstellung der hydraulischen Einschlagbegrenzungen (nach Einstellung der mechanischen Einschlagbegrenzungen durchzuführen).****WICHTIG**

*Das Lenkrad langsam drehen, dabei die Räder der Lenkachse anheben oder auf die Drehscheibe stellen.*

## STANDARDSYMBOLLE



Silhouette (n)



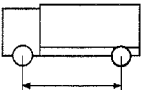
Vorderachslast in Tonnen für die Einstellung durchzuführen



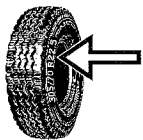
Achstypen



Angetriebener Vorderachstyp



Fahrzeugradstand



Reifenmasse in Inch (Zoll)

∧ ... kleiner als ...

∨ ... größer als ...

∩ ... kleiner als oder gleich ...

Fig. 1

**A** = Angolo di carrozzatura

**B** = Angolo di inclinazione dei perni

**C** = Angolo di incidenza

**E / D** = Angolo di sterzata

**Parallelismo (valore espresso in mm/m (Tolleranze  $\pm 0,9$  mm/m)):**

Convergenza = **G** > **F**

apertura = **G** < **F**

### Controlli preliminari

Prima di qualsiasi intervento, bisogna eseguire alcuni controlli :

- Condizioni e pressione dei pneumatici.
- Condizioni e altezza della sospensione.
- Efficienza degli ammortizzatori.
- Gioco dei cuscinetti dei mozzi, dei perni e delle articolazioni dell'avantreno.

Controllare il parallelismo con ruote anteriori allineate.

Controllare che lo sterzo di trovi in posizione mediana. Per i servosterzi, controllare l'assenza di pressione idraulica nel punto mediano.

Se è stato necessario procedere a delle regolazioni durante questi ultimi controlli, eseguire una prova del veicolo.

Se occorre, eseguire il controllo degli angoli dell'assale.

### Sistema di controllo :

- **Veicolo vuoto e in ordine di marcia.**
- Cabina in posizione strada (per i veicoli con cabina ribaltabile).
- Veicolo su superficie piana e ruote dell'assale sterzante su dischi girevoli.
- Veicolo dotato di assale rialzabile: l'assale deve essere abbassato.
- Apparecchio con fascio luminoso.

### Regolazione delle battute di sterzata meccaniche

Con parallelismo regolato, avvitare a fondo le battute di sterzata.

Girare lo sterzo a destra fino ad ottenere l'angolo di sterzata richiesto.

Svitare le battute interessate fino al contatto. Serrare i controdadi (secondo il montaggio).

Girare lo sterzo a sinistra e regolare allo stesso modo le altre battute.

Controllare che i pneumatici non tocchino i componenti meccanici del telaio.

#### **IMPORTANTE**

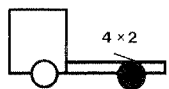
*Scatola dello sterzo con battute idrauliche a regolazione automatica: non azionare la scatola dello sterzo se la corsa non è limitata meccanicamente (rischio di sregolare le battute idrauliche).*

### Regolazione delle battute di limitazione idraulica di sterzata (da eseguire dopo la regolazione delle battute meccaniche di sterzata).

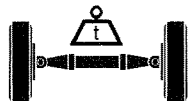
#### **IMPORTANTE**

*Ruotare lentamente lo sterzo con ruote dell'assale su dischi girevoli o sollevate.*

## SIMBOLOGIA



Sagoma/e



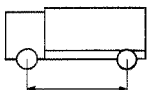
Carico in tonnellate sulla parte anteriore del veicolo per eseguire la misura



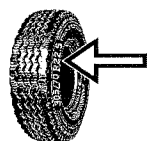
Tipo di assale



Tipo di ponte anteriore



Passo del veicolo



Dimensioni del pneumatico in pollici

∧ ... Minore di ...

∨ ... Maggiore di ...

∕ ... Inferiore o uguale a ...

**Fig. 1**

**A** = Ângulo de sopé

**B** = Ângulo de inclinação dos cavilhões

**C** = Ângulo de avanço

**E / D** = Ângulo de viragem

**Paralelismo (valor expresso em mm/m (Tolerâncias:  $\pm 0,9$  mm/m)):**

Convergência = **G** > **F**

Divergência = **G** < **F**

**Verificações preliminares**

Antes de qualquer intervenção, efectuar certas verificações:

- Estado e pressão dos pneus.
- Estado e altura da suspensão.
- Eficiência dos amortecedores.
- Folgas dos rolamentos dos cubos, dos cavilhões e das articulações do eixo dianteiro.

Com as rodas a direito, controlar o paralelismo.

Verificar se a direcção está no ponto médio. Para as direcções assistidas certificar-se, no ponto médio, da ausência de pressão hidráulica.

Efectuar um ensaio do veículo se estas verificações exigiram uma afinação. Se necessário, efectuar um controlo dos ângulos do eixo.

**Condições de controlo:**

- **Veículo vazio e em ordem de marcha.**
- Cabina na posição estrada (para os veículos com cabina basculante).
- Veículo numa área plana, rodas do eixo director sobre pratos giratórios.
- Veículo equipado com eixo levantável, o eixo deve ser baixado.
- Aparelho de projecção luminosa.

**Regulação dos batentes de limitação mecânicos de viragem**

com o paralelismo regulado, enroscar a fundo os batentes de viragem.

Girar a direcção para a direita até obter o ângulo de viragem pretendido.

Desenroscar os batentes concernidos até ao contacto. Apertar as contra-porcas (consoante a montagem).

Girar a direcção para a esquerda e regular da mesma forma os outros batentes.

Verificar se os pneus não ficam em contacto com os elementos mecânicos do chassis.

**IMPORTANTE**

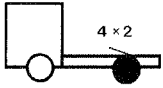
*Caixa de direcção com batentes hidráulicos de regulação automática: não manobrar a caixa de direcção quando esta não estiver limitada mecanicamente em oscilação (risco de desregulação dos batentes hidráulicos).*

**Regulação dos batentes de limitação hidráulica de viragem das rodas (deve ser efectuada depois da regulação dos batentes mecânicos de viragem das rodas).****IMPORTANTE**

*Girar lentamente a direcção quando as rodas do eixo estiverem sobre pratos giratórios ou levantadas.*



## SINAIS CONVENCIONAIS



Silhueta (s)



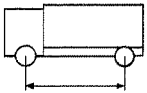
Carga em toneladas à frente do veículo para efectuar a medição



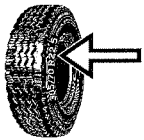
Tipo de eixos



Tipo de ponte dianteira



Distância entre eixos do veículo



Dimensão do pneu em polegadas

∧ ... Inferior a ...

∨ ... Superior a ...

∩ ... Inferior ou igual a ...

Fig. 1

A = Camber

B = K.P.I.

C = Caster

E / D = Wieluitslag

**Wieluitlijning (waarde in mm/m (Toleranties  $\pm 0,9$  mm/m)) :**

Toespoor = **G > F**

Uitspoor = **G < F**

#### **Voorafgaande controles**

Voordat aan de onderdelen wordt gewerkt, moeten de onderstaande controles worden uitgevoerd:

- Staat van de banden en hun spanning.
- Staat en hoogte van de vering.
- Werking van de schokdempers.
- Speling in de lagers van de wielnaven, de fusees en de draaipunten van de voorwielophanging.

Zet de wielen in de rechthoekstand en controleer de uitlijning.

Controleer of het stuurhuis in de middenstand staat. Bij stuurbevestiging moet worden gecontroleerd of er in de middenstand geen bevestiging aanwezig is.

Voer een test uit bij de wagens als deze laatste controles een afstelling vereisten. Voer zonnig een controle uit van de wielen fuseeophoeken.

#### **Voorwaarden voor de controle:**

- **Lege, rijklare wagen.**
- Cabine in de rijstand (bij wagens met kantelcabine).
- Zet de wagen op een recht en horizontaal vlak met de sturende wielen op draaiplateaus.
- Wagens met een sleepas: de as moet op de grond staan.
- Gebruik optische uitlijnapparatuur.

#### **Afstelling van de mechanische aanslagen voor de wieluitslag :**

Stel eerst zonnig de wieluitlijning af en draai vervolgens de aanslagbouten volledig in.

Verdraai het stuurwiel naar rechts om de gewenste wieluitslag te verkrijgen.

Verdraai de bouten tot deze tegen de aanslagen aankomen. Draai de borgmoeren vast (indien aanwezig).

Verdraai de wielen naar links en voer dezelfde werkzaamheden uit.

Controleer of de banden niet tegen mechanische delen van de carrosserie aankomen.

#### **BELANGRIJK**

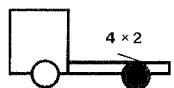
*Het stuurhuis heeft hydraulische aanslagen met automatische afstelling: verdraai het stuurhuis niet als de mechanische aanslagen voor de suuruitslag niet zijn aangebracht (de hydraulische afstellingen kunnen hierdoor worden verstoord).*

**Afstelling van de hydraulische aanslag voor de wieluitslag (moet worden uitgevoerd nadat de mechanische aanslagen zijn afgesteld).**

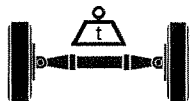
#### **BELANGRIJK**

*Verdraai de stuurinrichting langzaam als de wielen van de as op draaiplateaus staan of van de grond zijn.*

## ALGEMENE SYMBOLEN



Model(len)



Belading in ton op de voorzijde van de wagen om te kunnen meten



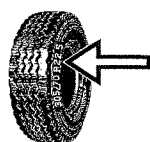
Type as



Type aangedreven vooras



Wielbasis van de wagen



Bandmaat in inches

∧ ... kleiner dan ...

∨ ... groter dan ...

≧ ... minder dan of gelijk aan ...

Fig. 1

A = Cambervinkel

B = Styreboltens hældningsvinkel

C = Castervinkel

E / D = Drejningsvinkel

**Sporing (værdi i mm/m (Tolerancer:  $\pm 0,9$  mm/m)) :**

Spidsning =  $G > F$

spredning =  $G < F$

**Forudgående kontrol**

Inden ethvert indgreb kontrolleres følgende :

- Dækkenes tilstand og dæktryk.
- Affjedringens tilstand og højde.
- Støddæmpernes effektivitet.
- Slør i navlejer, forhjulsspindler og drejelige led i fortøjet.

Med forhjulene i lige line kontrolleres sporingen.

Det ses efter, at styretøjet er i midpunktet. For styretøjer med servo kontrolleres, at der i midtpunkt ikke er noget hydrauliktryk.

Der foretages afprøvning af køretøjet, hvis sidstnævnte kontrolarbejder har medført justering. Om nødvendigt kontrolleres akslens vikler.

**Kontrolbetingelser :**

- Vognen skal være tom og køreklar.
- Førerhuset skal være i kørestilling (ved vogne med tipbare førehuse).
- Vognen skal være parkeret på en plan flade med styreakslens hjul på drejeskiver
- Ved vogne med løftbar aksel skal denne være sænket.
- Der anvendes lysprojektionsapparat.

**Justering af mekaniske udsvingsstop :**

Efter indstilling af sporingen skrues udsvingsstoppene helt i bund.

Styretøjet drejes til højre til den ønskede drejningsvinkel.

De pågældende udsvingsstop løsnes, til de er i kontakt. Kontramøtrikkerne spændes til (afhængig af montering).

Styretøjet drejes til venstre, og de øvrige stop indstilles tilsvarende.

Det kontrolleres, at dækkene ikke kommer i berøring med chassis'ets mekaniske dele.

**VIGTIGT**

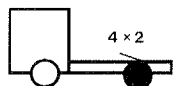
*Ved styrehuse med automatisk regulerede hydrauliske udsvingsstop må styrehuset ikke manøvreres, når det ikke har mekanisk styringsbegrænsning (risiko for at ændre de hydrauliske udsvingsstops justering).*

**Indstilling af stop for hydraulisk begrænsning af drejning (Foretages efter justering af de mekaniske styringsstop).**

**VIGTIGT**

*Styretøjet skal drejes langsomt, når akslens hjul er på drejeskiver eller hævet.*

## SYMBOLER



Profil



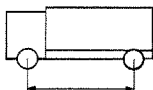
Belastning i tons på køretøjets forende ved målingens udførelse



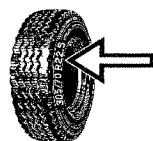
Akseltype



Drivakseltype



Køretøjets akselafstand



Dækdimension i tommer

∧ ... Mindre end ...

∨ ... Større end ...

∕= ... Mindre end eller lig med ...

**Пис 1**

**A** = Угол развала колёс

**B** = Угол наклона шкворней

**C** = Угол продольного наклона шкворня

**E / D** = Угол поворота колёс

**Параллельность (значение, указанное в мм/м (Допуск ( 0,9 мм/м)) :**

Схождение = **G > F**

Открытие = **G < F**

**Предварительный контроль**

До начала работ провести следующие проверки :

- Состояние шин и давление в них.
- Состояние подвески и её высоту.
- Состояние амортизаторов.
- Подшипники ступиц, шкворней и шарнирных соединений передней оси.

Выравнивать передние колёса, проверить параллельность.

Убедиться, что руль находится в среднем положении. Для рулевого управления с гидроусилителем убедиться в отсутствии гидравлического давления при среднем положении руля.

Если результаты проверки потребовали выполнения регулировок, необходимо провести испытания автомобиля.

**Условия проведения проверки :**

- **Автомобиль без груза и в положении запуска.**
- Кабина в положении езды (для автомобилей с опрокидывающейся кабиной).
- Автомобиль паркован на ровной плоскости так, чтобы колеса ведущей оси стояли на поворотных технических платформах.
- На автомобилях с подъёмной осью кабина должна быть опущена.
- Использование осветительного прожектора.

**Регулировка механических ограничителей поворота колёс :**

После регулировки параллельности, закрепить до отказа ограничители поворота колёс.

Повернуть руль вправо до получения желаемого угла поворота колёс.

Отвинтить ограничители до контакта. Затянуть контрящие гайки (соответственно сборке).

Повернуть руль влево и отрегулировать по аналогии остальные ограничители.

Убедиться, что шины не соприкасаются с механическими элементами шасси.

**ЭТО ВАЖНО !**

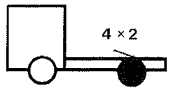
*Картер рулевого механизма оборудован саморегулируемыми гидравлическими ограничителями : не маневрировать рычаг рулевого управления если не установлено механическое ограничение по углу отклонения (во избежание расстройки гидравлических ограничителей).*

**Регулировка саморегулируемых гидравлических ограничителей поворота (Выполняется вслед за регулировкой механических ограничителей поворота).**

**ЭТО ВАЖНО !**

*Когда колеса оси стоят на поворотных технических платформах или если они подняты, рулевой механизм поворачивать медленно.*

## УСЛОВНЫЕ ОБОЗНАЧЕНИЯ



Силуэт (силуэты)



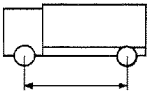
Нагрузка (в тоннах) передней стороны автомобиля, для выполнения замеров



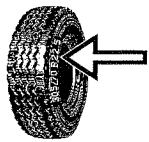
Тип осей



Тип переднего моста



Расстояние между осями колес

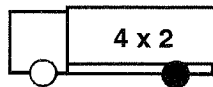
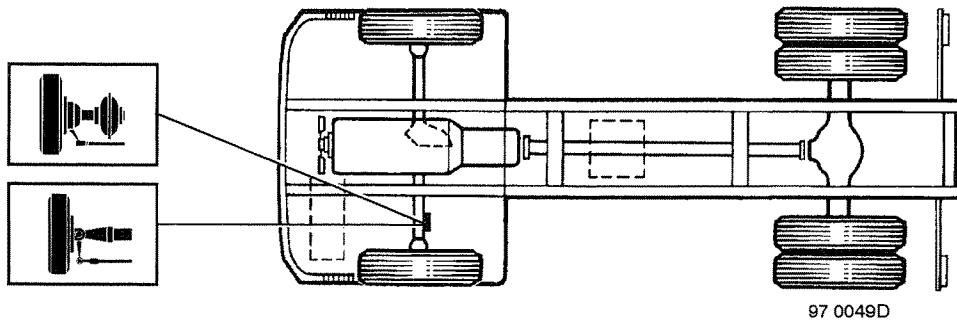




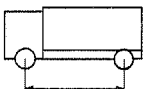
Размер пневматической шины (в дюймах)

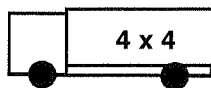
∧ ... Меньше ...



∨ ... Больше ...

∕∕ ... Меньше или равно ...

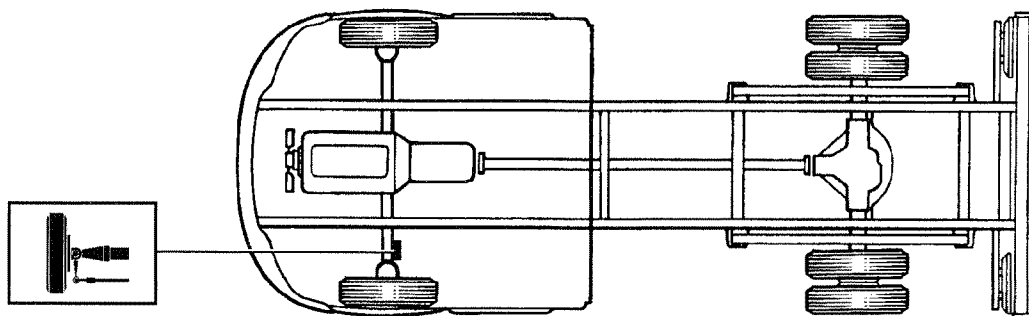


			A	B	C		D	E	G > F
					Gemmer 65	TRW TAS 30 Bendix C 111 3..			
B 80	369.05	2 700	1° 30'	7°	2° 45'	6° 10'	38° 30'	30°	2,5
B 110	369.02	3 200					43°	32°	
B 120		3 840 4 400							

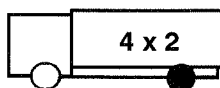



		A	B	C	D	G < F
B 110	Hurt 202 569.10	1°	8°	5°	40°	0

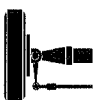
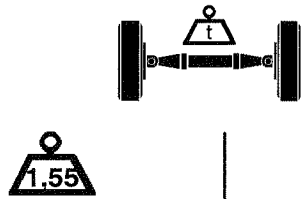


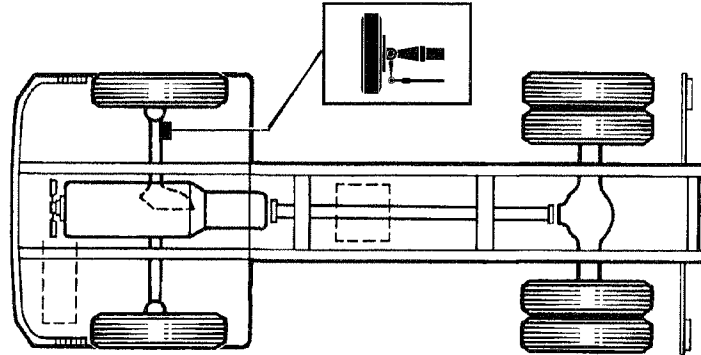


42 0118A



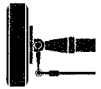
	A	B	C	D	E
E 22 AB	1°	6° 20'	6° 45'	52°	40°













		
E 22 AB	- 2,2	- 2,7

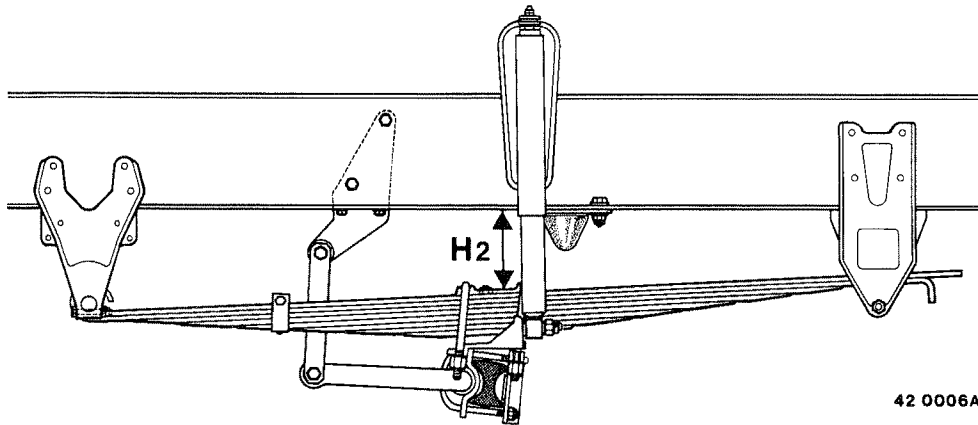
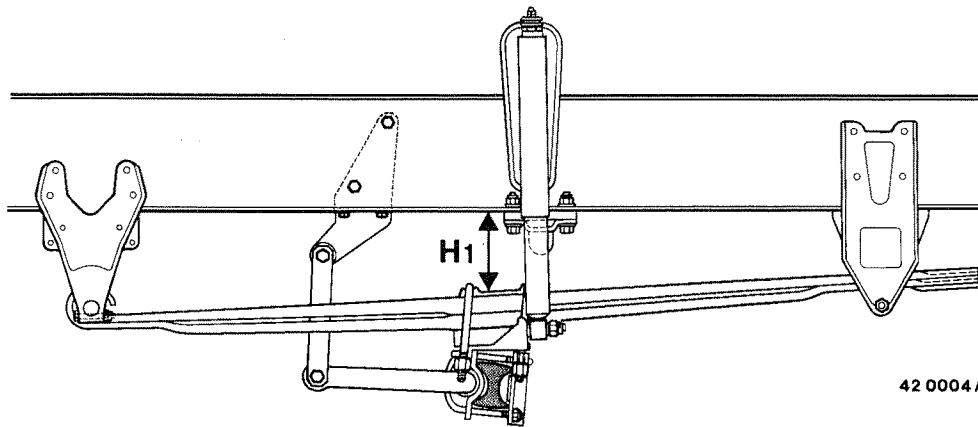
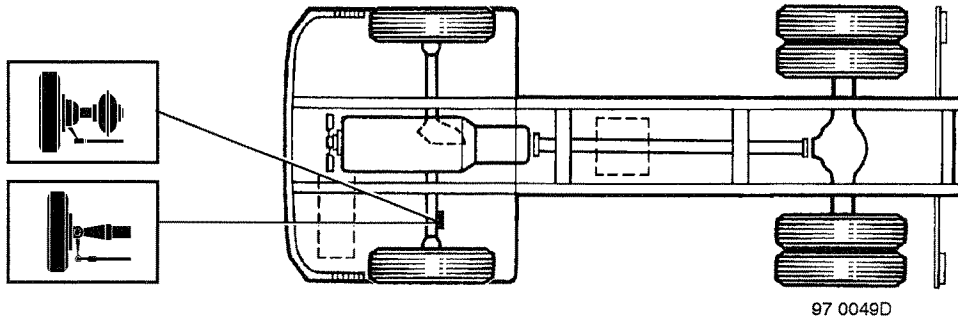
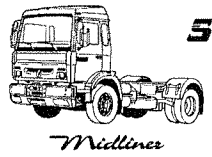


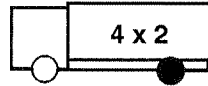
97 0049F



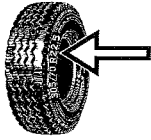


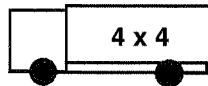
	A	B	C	D	E
E 42 BC	1°	6° 45'	4° 30'	50°	35°
E 46 AB					
E 62 AD					



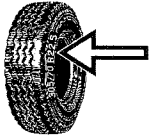
										
										
E 42 BC	+ 1,2	+ 0,6	0	- 0,5	- 1,1	- 1,7	- 2,3	- 2,8		
E 46 AB	+ 2,5	+ 1,8	+ 0,5	- 1,2	- 0,20	- 0,9	- 1,6	- 2,3		
E 62 AD	- 4,3	- 3,9	- 3,5	- 3,1	- 2,7	- 2,3	- 1,9	- 1,5	- 0,7	- 0,3

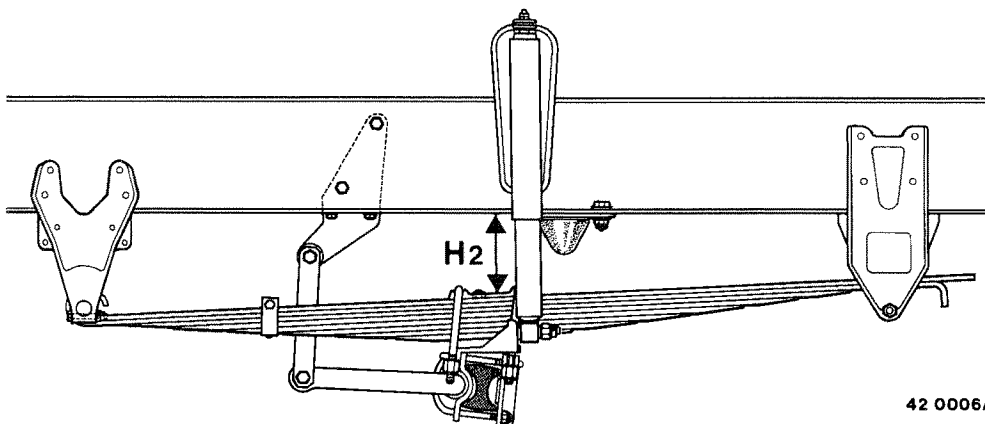
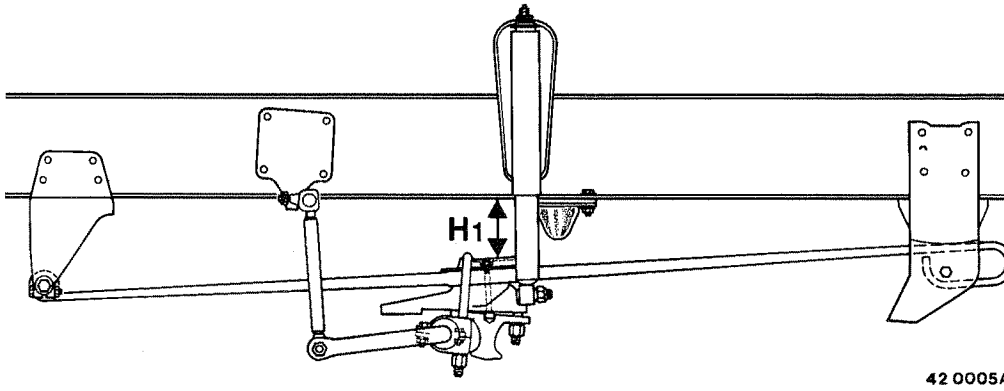
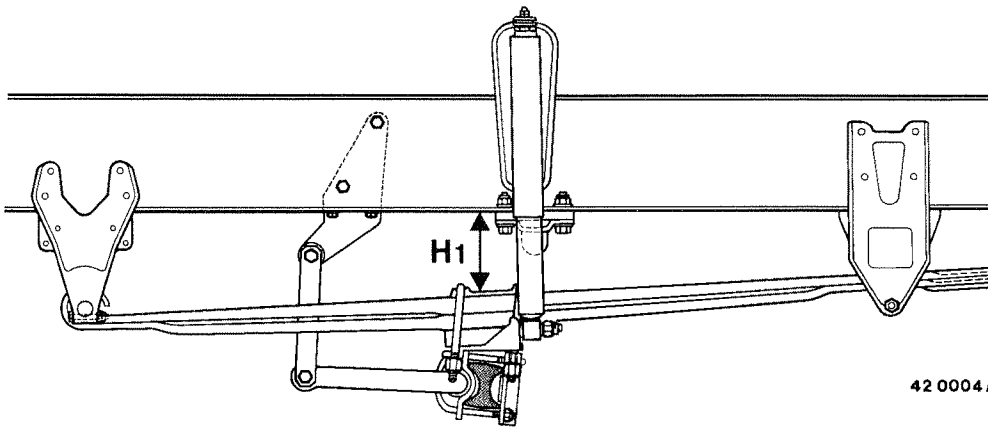
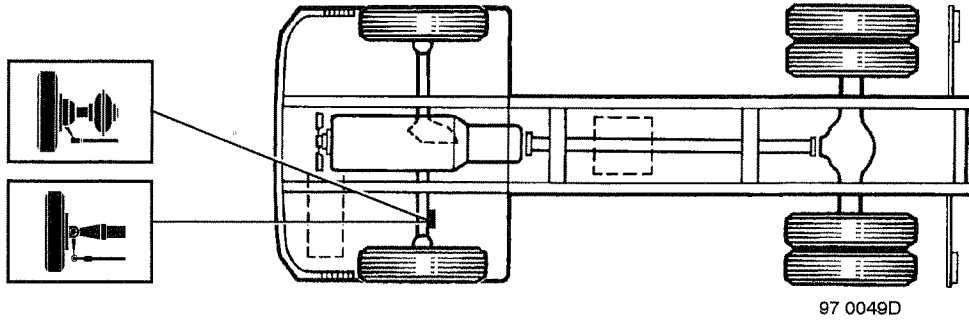


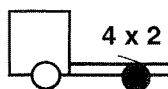



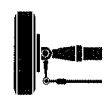
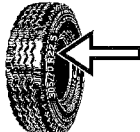
 <b>S</b> <i>Millina</i>		H1	H2	A	B	C	D	E		G > F
S 120 S 135 S 140 S 150 S 160	E 402	148		0° 45'	6° 45'	2° 30'	48°	33° 30'	R.16	1,2 → 3,7
S 180 S 200 S 210	E 401	165	182	1° 30'	6°	3°	44°	33° 20'	R.17,5 R.19,5	1,1 → 3,4 1 → 3

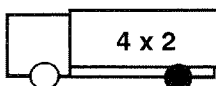



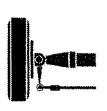
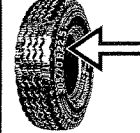
 <b>S</b> <i>Millina</i>		H2	A	B	C	D	E		G < F
S 170	3 MRDIF	164	2°	7°	2° 40'	29°	23°	R.20 R.22,5	0 → 3,9 0 → 3,5

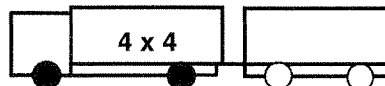
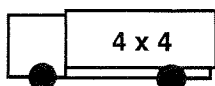




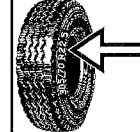


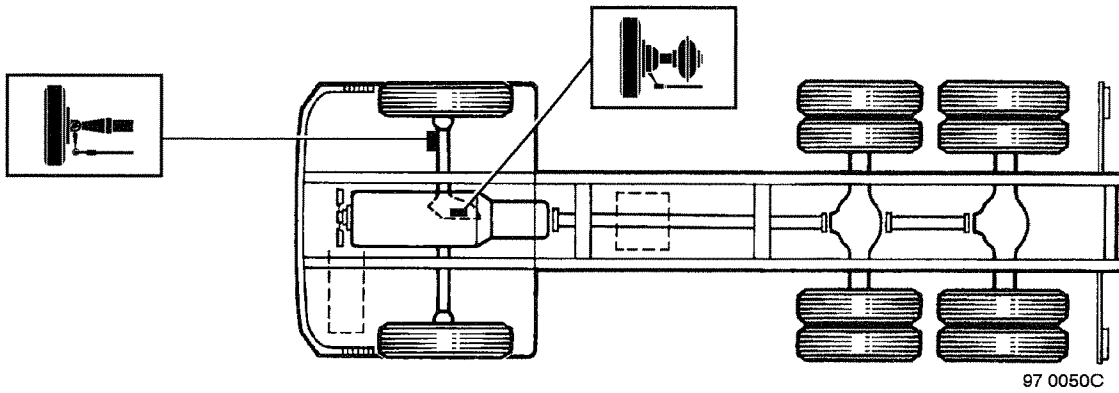
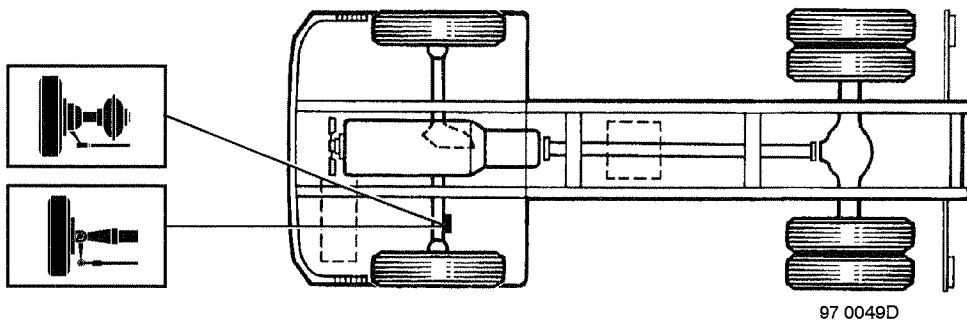
		H1	H2	A	B	C	D	E		G > F
M 160 M 200 M 230	E 400 AA E 400 AB	151		0° 45'	6° 45'	2° 30'	50°	35°	R.19,5 R.20 R.22,5	1 → 3 0,9 → 2,6

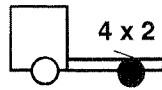



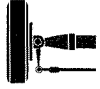
		H1	H2	A	B	C	D	E		G > F
M 120 M 140 M 150 M 160 M 180 M 200 M 210 M 230	E 400 AA E 400 AB E 400 AC	151		0° 45'	6° 45'	4° 30'	50°	35°	R.19,5 R.20 R.22,5	1 → 3 0,9 → 2,6
M 160 M 180 M 200 M 210 M 230 M 250	E5 A 221	165	182	1°			42°	34°		
M 120	E 401 AB			1° 30'		44°	33° 20'			
M 180 M 200	E 408	151		0°	3°	50°	32°			

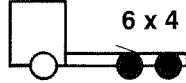



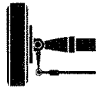
		H1	H2	A	B	C	D	E		G < F
M 150 9.5/11.5 M 180 9.5/11.5 M 180 13/15	3 MRDIF	170	164	2°	7°	2° 45'	29°	25°	R.20	0 → 5,9
M 210 10 M 210 112/14/16	33411 SFW 3414 SFW	191						5° 05'		



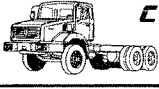



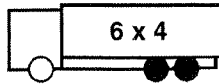
		A	B	C	D	E	G > F
C 340 ti	E 6 A 4 C	1° 45'	6° 45'	3° 30'	45°	35°	0,9 → 2,6
CLM 320 CLM 340 CLM 385	E 6 A 511 E 6 A 811	1°			41°	33°	


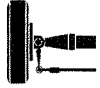


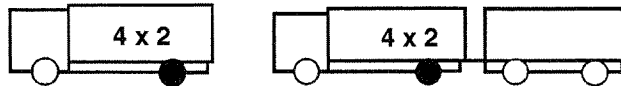
		A	B	C	D	E	G > F
CLM 320 CLM 340 CLM 385	E 6 A 511 E 6 B 811	1°	6° 45'	3° 30'	41°	33°	0,9 → 2,6


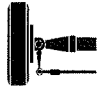


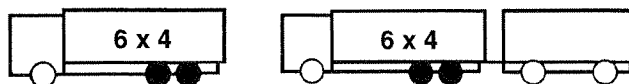
		A	B	C	D	E	G < F
CLM 320 CBH 320 CBH 385	PA 721	2°	7°	1° 30'	39°	31° 40'	0 → 5,2


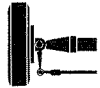


		A	B	C	D	E	G > F
CBH 320	E 6 A 811	1°	6° 45'	3° 30'	41°	33°	0,9 → 2,6
CBH 385	E 6 B 811						

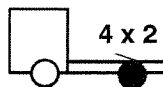
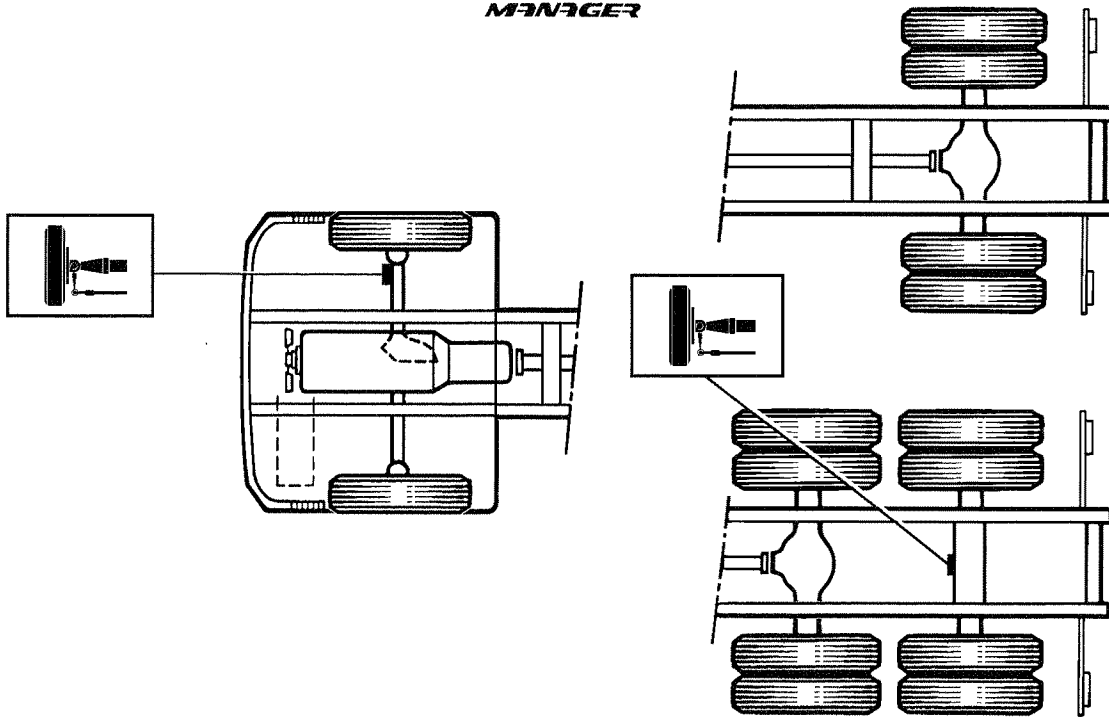


		A	B	C	D	E	G > F
CLR 230	E 6 711	1°	6° 45'	3°	45°	37°	0,9 → 2,6
CLM 320 CLM 340 CLM 385	E 6 A 4 C E 6 A 711					33°	





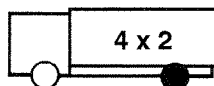
		A	B	C	D	E	G > F
C 300	E 6 A 4 C E 6 A 711	1°	6° 45'	3° 30'	45°	37° 33°	0,9 → 2,6





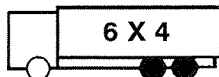



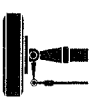
42 0121A

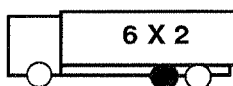
		A	B	C	D	E	G > F
G 270 G 280 G 300 G 330 G 340 ti	E 5 A 4 C E 5 B 4 C	1°	6° 45'	3°	40°	34°	0,9 → 2,6





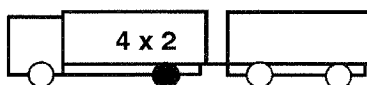
		A	B	C	D	E	G > F
G 210	E 5 B 4 C	1°	6° 45'	3°	40°	34°	0,9 → 2,6
G 230 ti	E 5 B 4 D				45°	35°	
G 220 BOM	E 5 A 821				40°	34°	
	E 5 B 4 C				40°	34°	
G 260 BOM	E 6 B 4 D				45°	35°	
G 230 SP	E 5 A 4 C				40°		





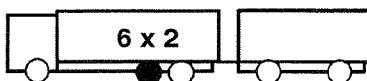
		A	B	C	D	E	G > F
G 300	E 5 A 821	1°	6° 45'	3°	40°	34°	0,9 → 2,6
	E 6 B 7 B				45°	37°	
	E 6 B 4 D					35°	





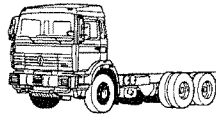
		A	B	C	D	E	G > F
G 300 G 330	E 6 B 4 D	1°	6° 45'	3°	45°	35°	0,9 → 2,6



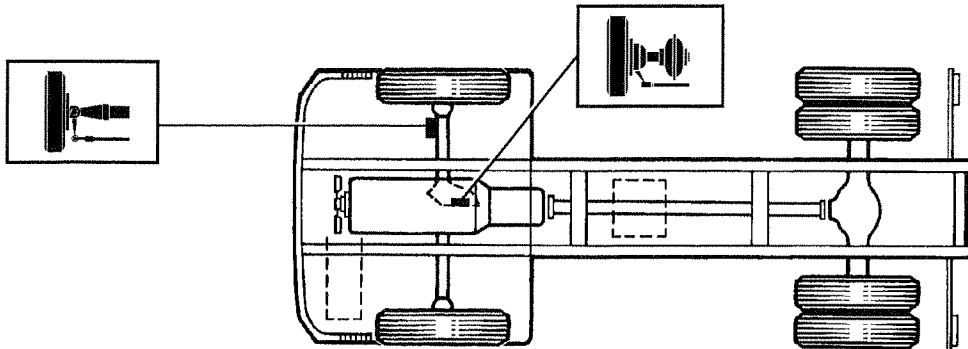
		A	B	C	D	E	G > F
G 230 ti	E 6 B 4 D	1°	6° 45'	3°	45°	35°	0,9 → 2,6
G 270 G 280	E 6 B 4 C				40°	34°	
G 300 G 330 G 340 ti	E 6 B 4 D E 5 A 821				36°	37°	



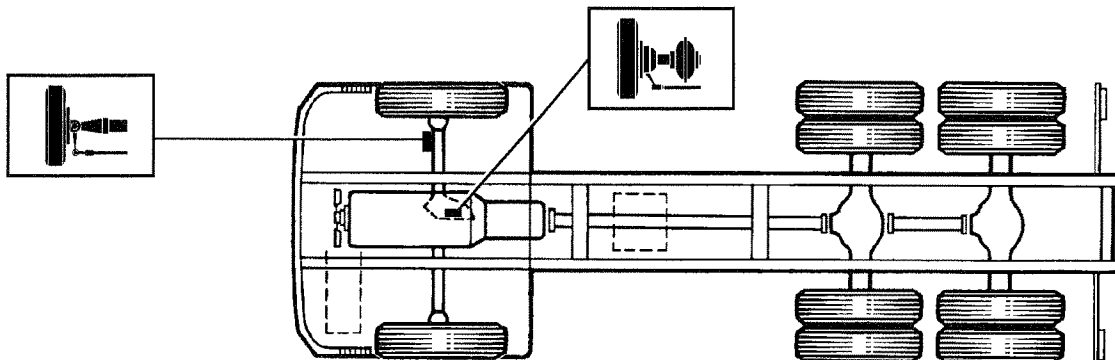
		A	B	C	D	E	G > F
G 270 G 280 G 300 G 330 G 340 ti	E 6 B 4 D	1°	6° 45'	3°	45°	35°	0,9 → 2,6



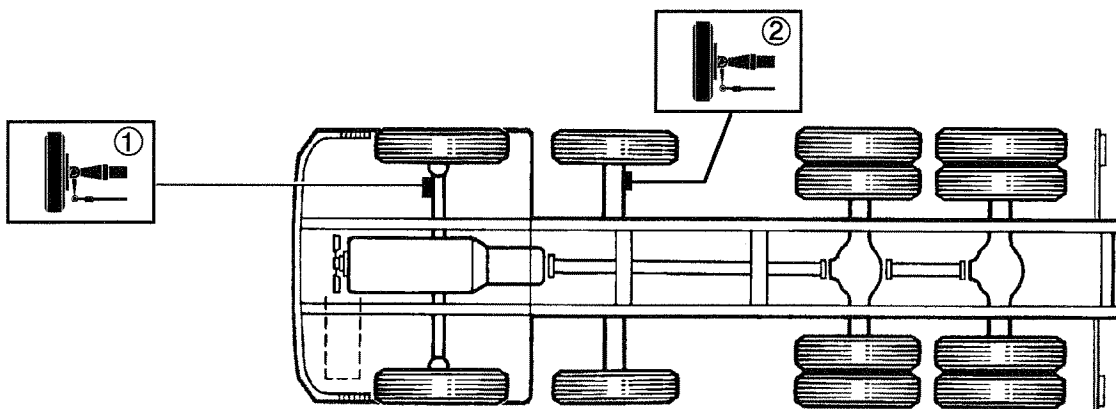
MAXTER



97 0049E





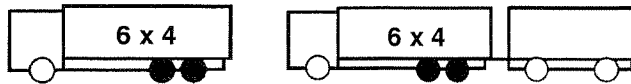
97 0050C





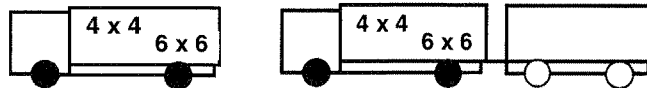
97 0051B





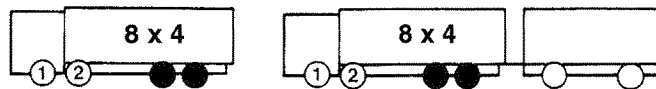
		A	B	C	D	E	G > F
G 230 ti	E 6 B 4 D	1°	6° 45'	3°	45°	37°	0,9 → 2,6
G 270	E 5 A 821				36°	30°	
G 300	E 6 B 4 D				45°	37°	





		A	B	C	D	E	G > F
G 270 G 300 G 340 ti	E 83 KL	1°	6° 45'	3°	45°	38°	0,9 → 2,6



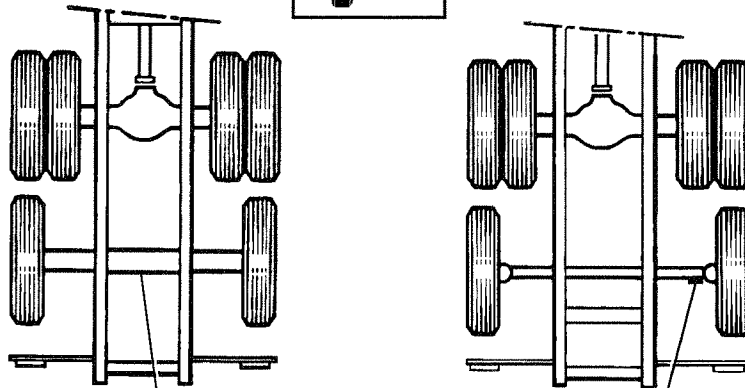
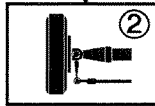
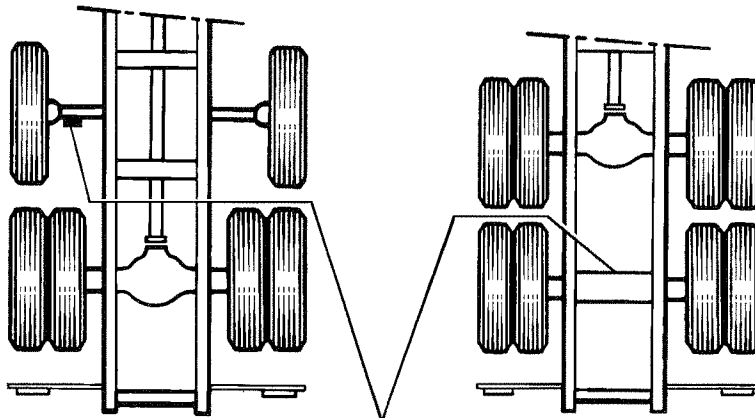
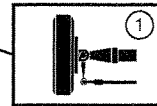
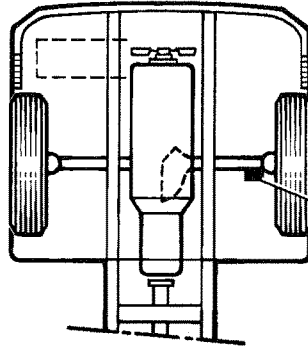
		A	B	C	D	E	G < F
G 300 G 340 ti	PA 721 PA 945	2°	8°	2° 11'	42°	32° 35'	0 ± 1



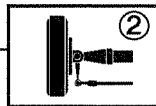
		A	B	C		D		E		G > F
				①	②	①	②	①	②	
G 300 G 340 ti	E 83 KL	0° 15'	7° 45'	3° 11'	2° 29'	44° 4'	37°	29° 33'	33° 21'	0,9 → 2,6

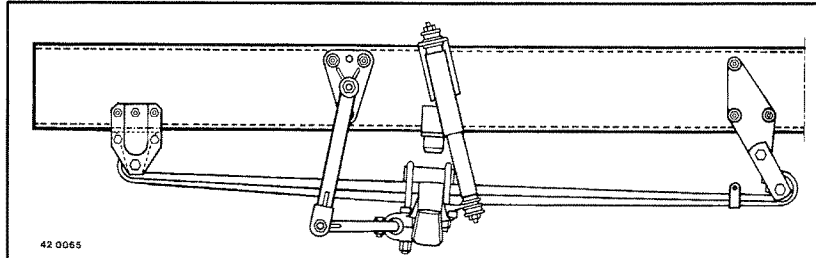


Premium

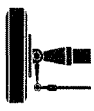


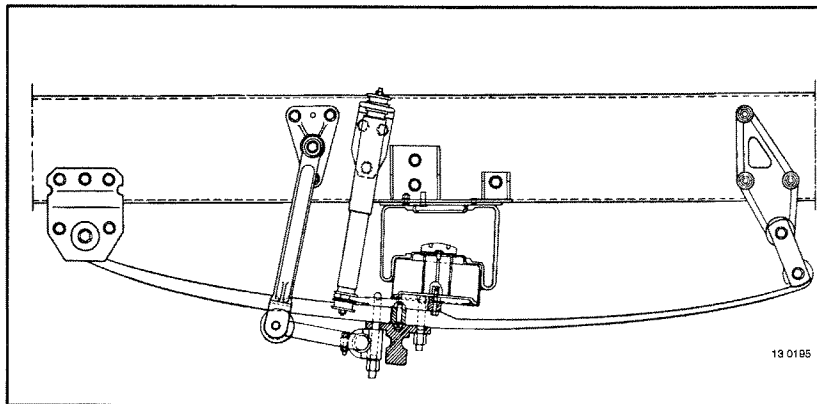
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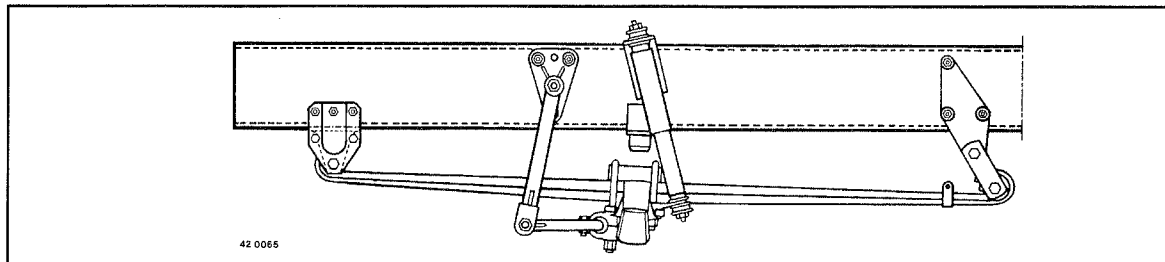
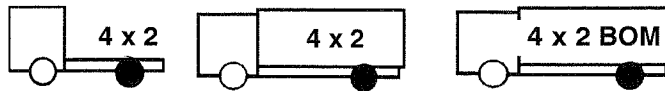
42 0065

	A	B	C	D	E
E 82 CN E 86 LR	1°	6° 45'	3° 42'	50°	36° 48'
E 82 JN					40° 47'

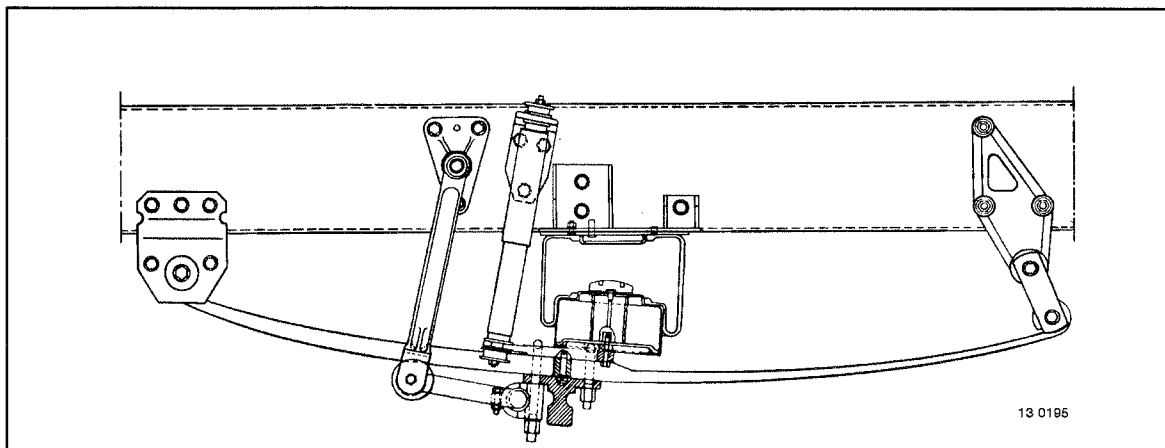


13 0185

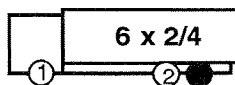
	A	B	C	D	E
E 81 NO E 81 NS	1°	6° 45'	4°	50°	36°48'
E 81 EO					40°47'
E 81 B				18°	15°



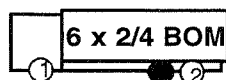
≤ 4700 mm	E 82 CN	+ 0,5	+ 0,2	0	- 0,3	- 0,6	- 0,9	
> 4700 mm	E 82 JN	+ 1,6	+ 1,2	+ 0,8	+ 0,4	0	- 0,5	- 0,9
	E 86 LR	+ 0,4	+ 0,2	0	- 0,2	- 0,5	- 0,7	



≤ 4700 mm	E 81 NO E 81 NQ	- 2,8	- 2,5	- 2,1	- 1,8	- 1,5	- 1,2	- 0,9
> 4700 mm	E 81 EO			- 2,2				

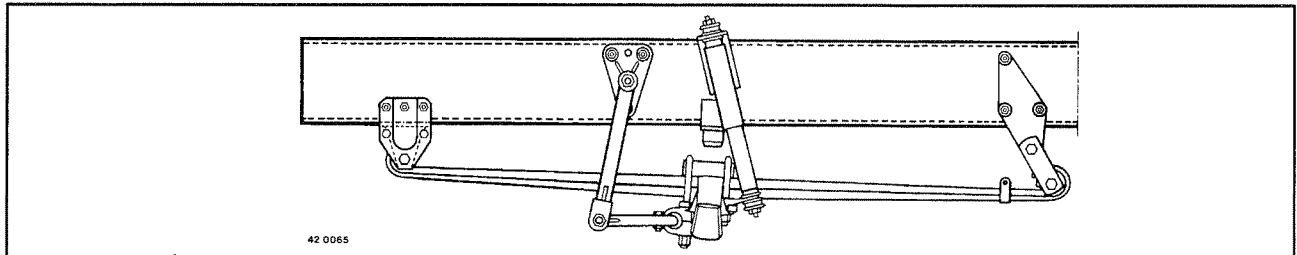
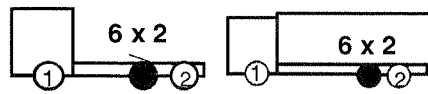


		4	4,5	5	5,5	6	6,5	7
①	E 82 JN	+ 1,6	+ 1,2	+ 0,8	+ 0,4	0	- 0,5	- 0,9
②	E 81 NS	- 2,8	- 2,5	- 2,1	- 1,8	- 1,5	- 1,2	

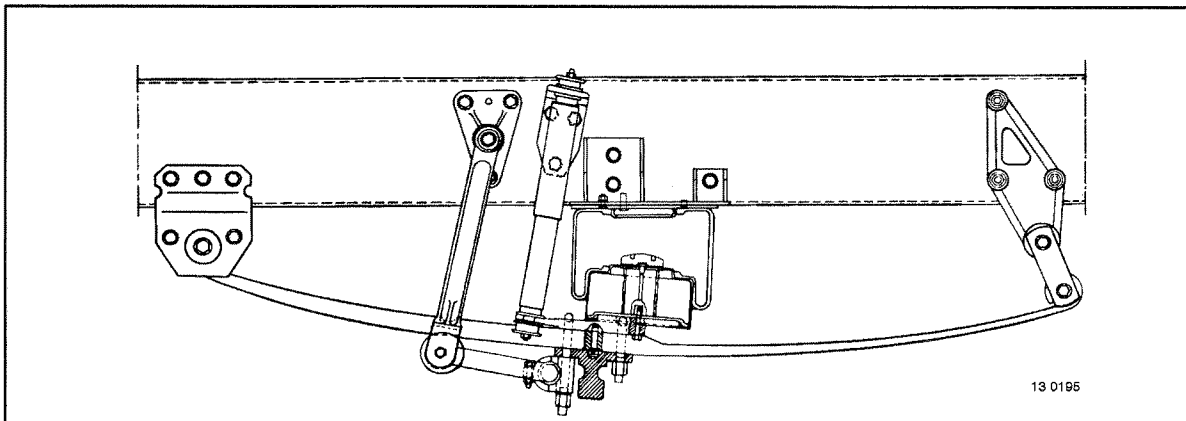


		1,6	4	4,5	5	5,5	6	6,5	7
①	E 82 JN		+ 1,6	+ 1,2	+ 0,8	+ 0,4	0	- 0,5	- 0,9
②	E 81 B	- 5	- 2,5	- 2	- 1,5	- 1	0	+ 0,2	



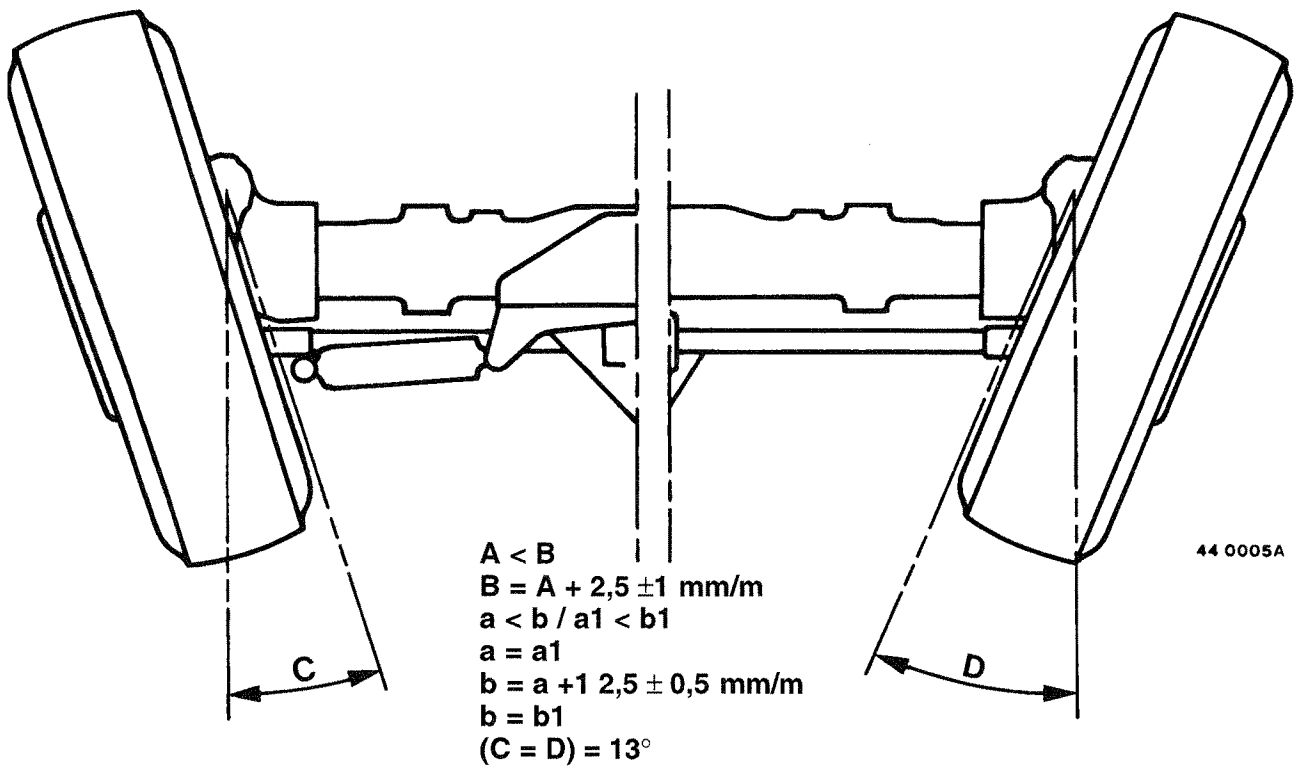
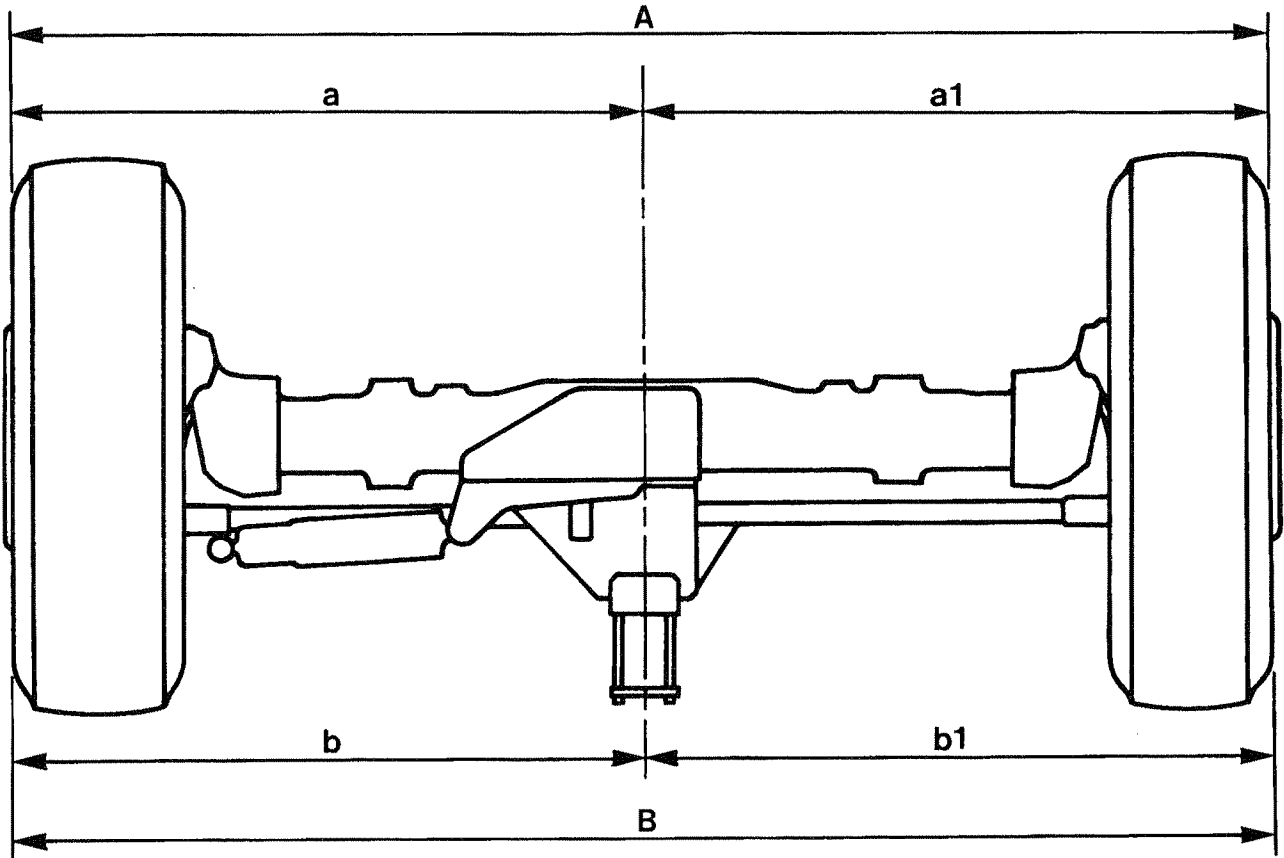


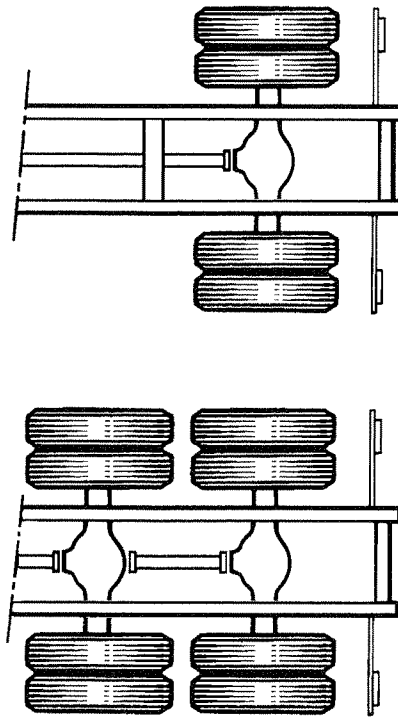
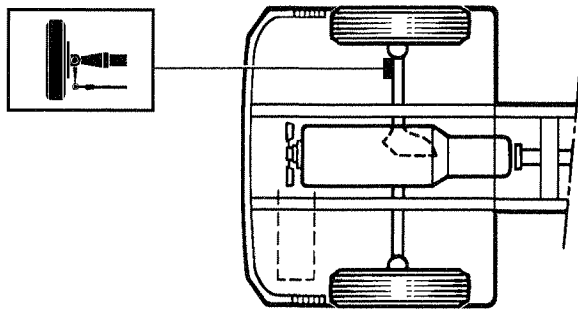
①	E 82 JN	+ 1,6	+ 1,2	+ 0,8	+ 0,4	0	- 0,5	- 0,9	
②	AUSTERAS	+ 1,2	+ 1,05	+ 0,85	+ 0,7	+ 0,5	+ 0,35	+ 0,2	0



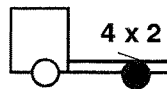
①	E 81 NO E 81 EO	- 2,8	- 2,5	- 2,1	- 1,8	- 1,5	- 1,2	- 0,9



## AUSTERAS

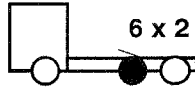



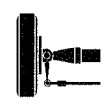


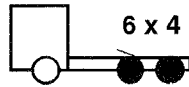
42 0119A


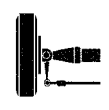


		A	B	C	D	E	G > F
R 340 R 385 R 420	E 84 AG E 84 GG	1°	7° 45'	4°	47° 40'	32° 15'	0,9 → 2,6
	E 85 CM				39°	36° 30'	
	E 6 A 211 E 6 A 311 E 6 A 32 E 6 A 33		6°		39°	29°	


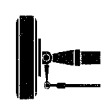


 <b>R</b> <b>MAJOR</b>		A	B	C	D	E	G > F
R 385	E 6 A 311 E 6 A 32	1°	6° 45'	4°	39°	29°	0,9 → 2,6


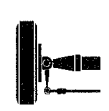


 <b>R</b> <b>MAJOR</b>		A	B	C	D	E	
R 340 ti	E 85 CM	1°	7° 45'	4°	39°	36° 30'	0,9 → 2,6
R 340 ti/td	E 6 A 211		6° 45'			29°	


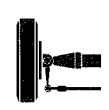


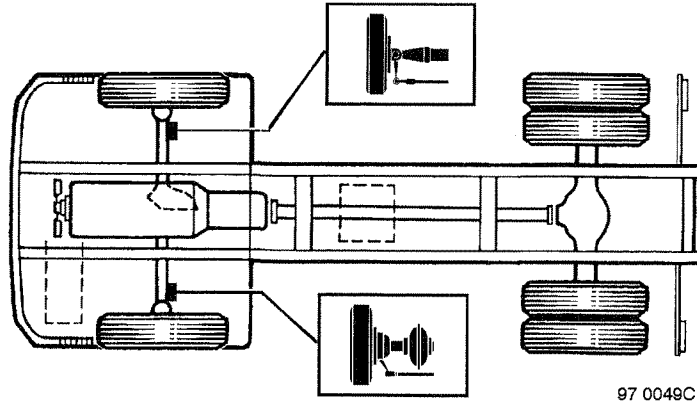
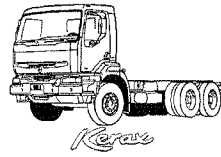
 <b>R</b> <b>MAJOR</b>		A	B	C	D	E	G > F
R 340 R 385	E 84 EG E 85 AG E 85 CM E 85 JM	1°	7° 45'	4°	39°	36° 30'	0,9 → 2,6



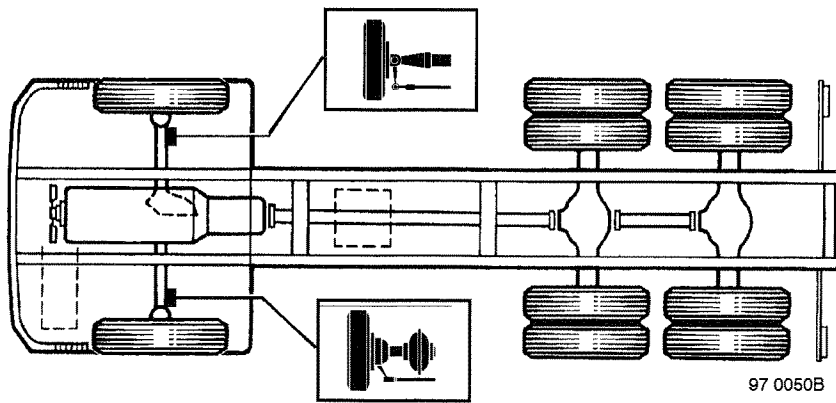
 <b>R</b> <b>MAJOR</b>		A	B	C	D	E	G > F
R 385	E 85 CM E 85 JM E 6 A 211	1°	7° 45'	4°	47° 30'	32° 15'	0,9 → 2,6
			6° 45'		39°	29°	



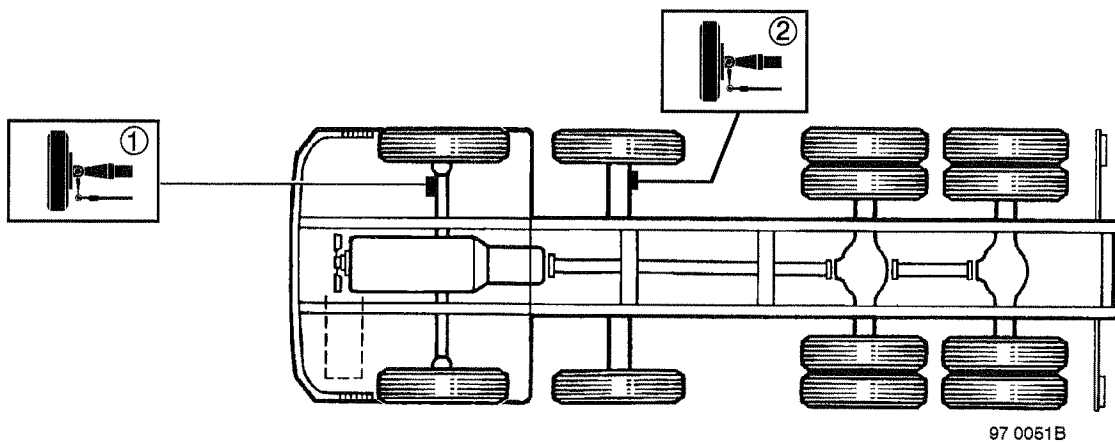
 <b>R</b> <b>MAJOR</b>		A	B	C	D	E	G > F
R 385 ti	① E 85 JH	0° 15'	7° 30'	3° 15'	38° 27'	33° 15'	0,9 → 2,6
	② E 85 JH				29° 5'	26° 15'	



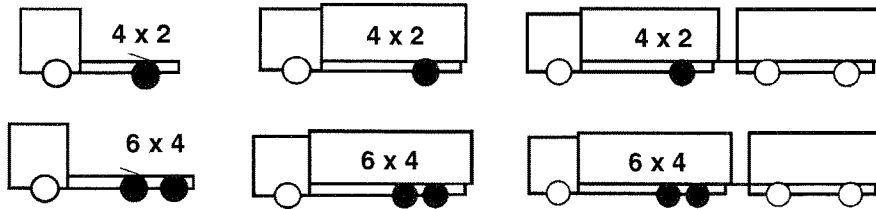
97 0049C



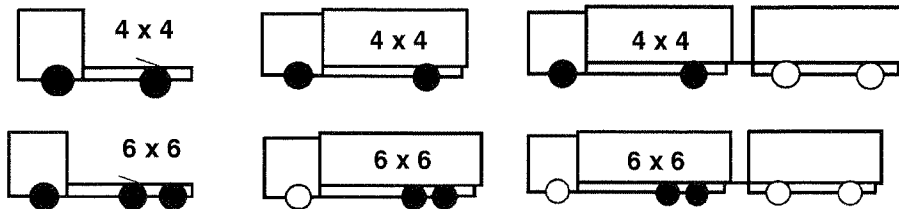
97 0050B



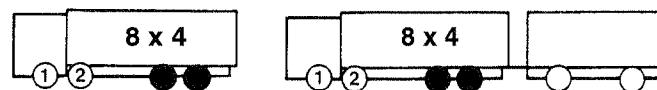
97 0051B



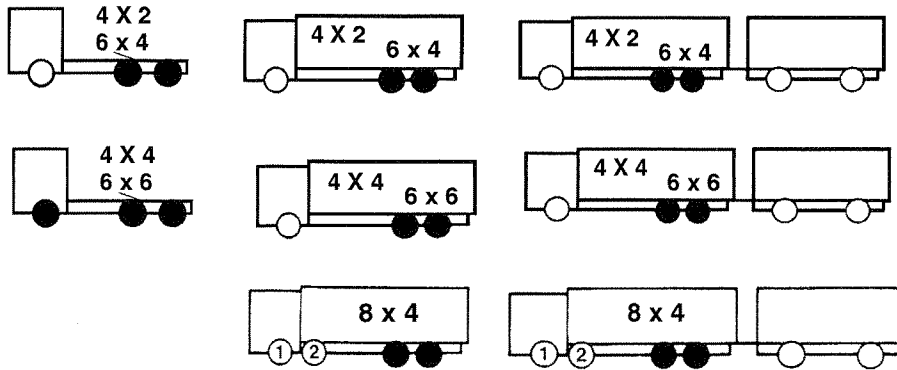
	<b>A</b>	<b>B</b>	<b>C</b>	<b>D</b>	<b>E</b>
E 83 KL	1°	6° 45'	3° 20'	41°	37° 3'



	<b>A</b>	<b>B</b>	<b>C</b>	<b>E</b>
PA 941 PA 945	2°	8°	3°	42°



	<b>A</b>	<b>B</b>	<b>C</b>	<b>D</b>	<b>E</b>
① E 83 KL	1°	6° 45'	3° 30'	41°	35°
② E 83 ML			3°	31°	28°
② E 83 OM					



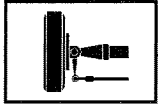
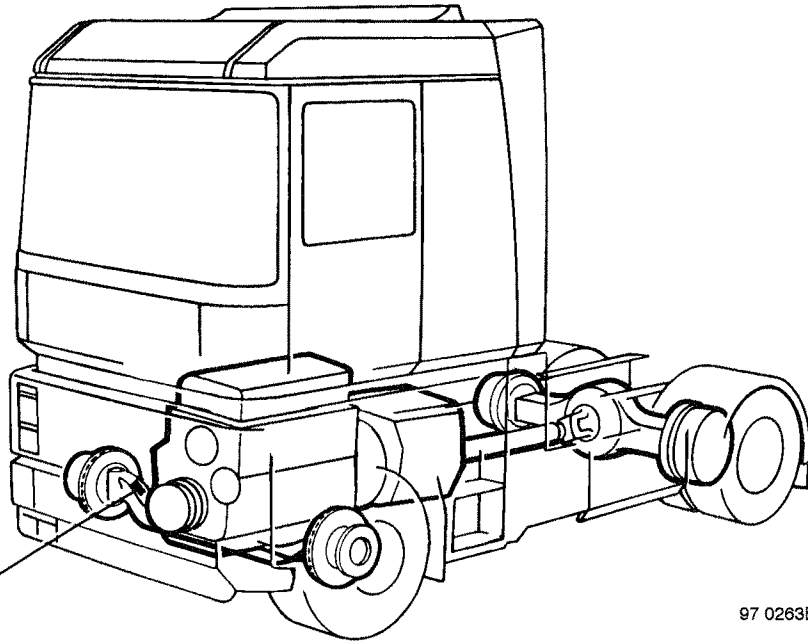
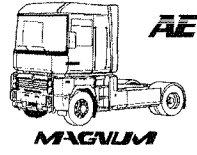
	4	4,5	5	5,5	6,5	6	7	7,5	8	
E 83 ML E 83 KL E 83 OM	+ 0,1	- 2,35	- 2,5	- 2,6	- 2,9	- 3,2	- 3,5	- 3,8	- 4	



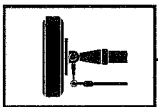
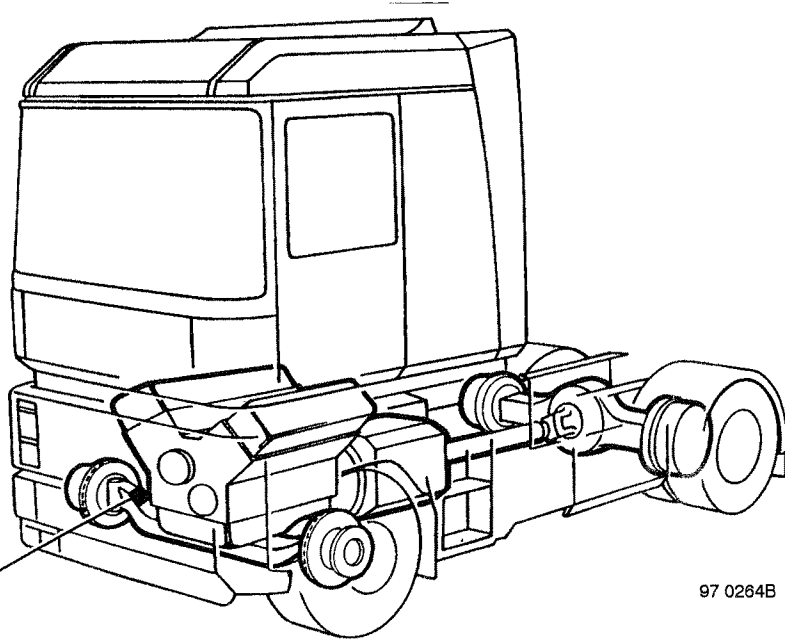
	8								
PA 941 PA 945	0								





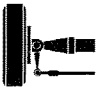


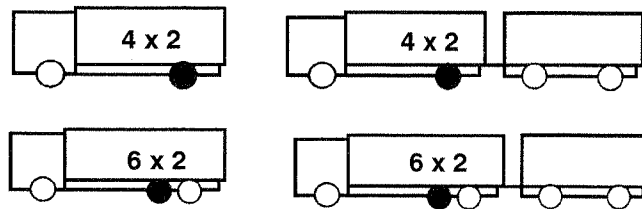
97 0263B

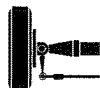


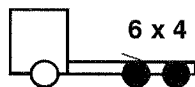
97 0264B




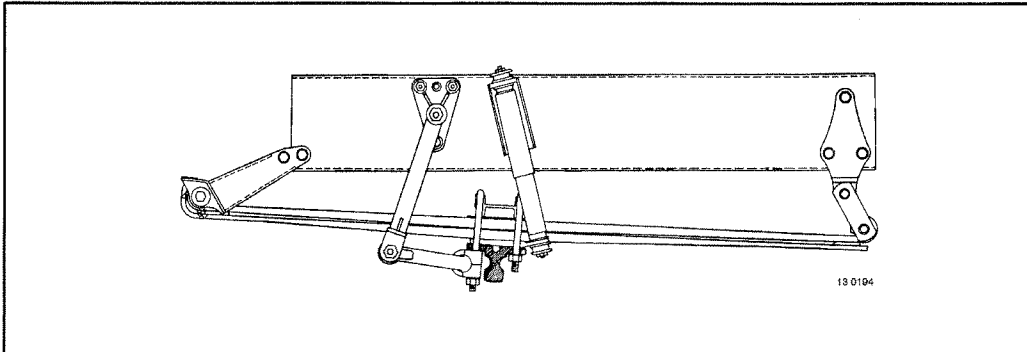
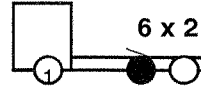
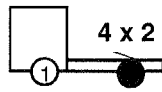
	A	B	C	D	E
E 81 AC					
E 81 AP	1°	6° 45'	3°	50°	31° 41'



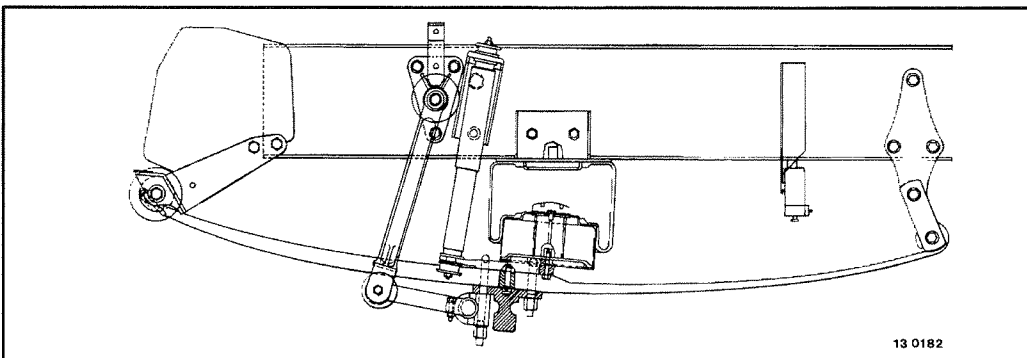
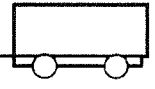
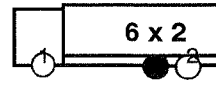
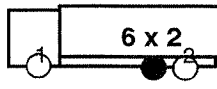
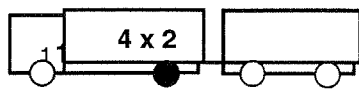
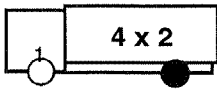
	A	B	C	D	E
E 81 EC					
E 81 EP	1°	6° 45'	3°	50°	40° 47'



	A	B	C	D	E
E 81 AC					40° 47'
E 81 EC	1°	6° 45'	3°	50°	31° 41'

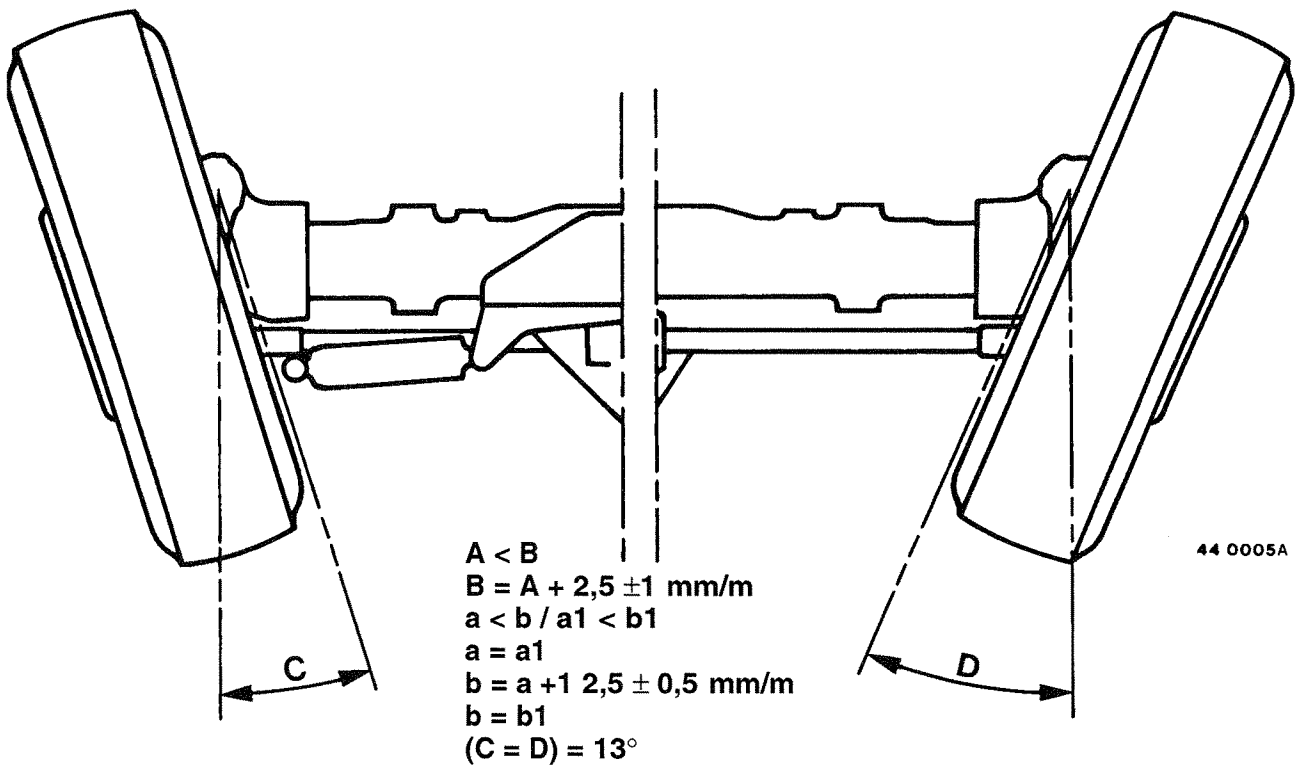
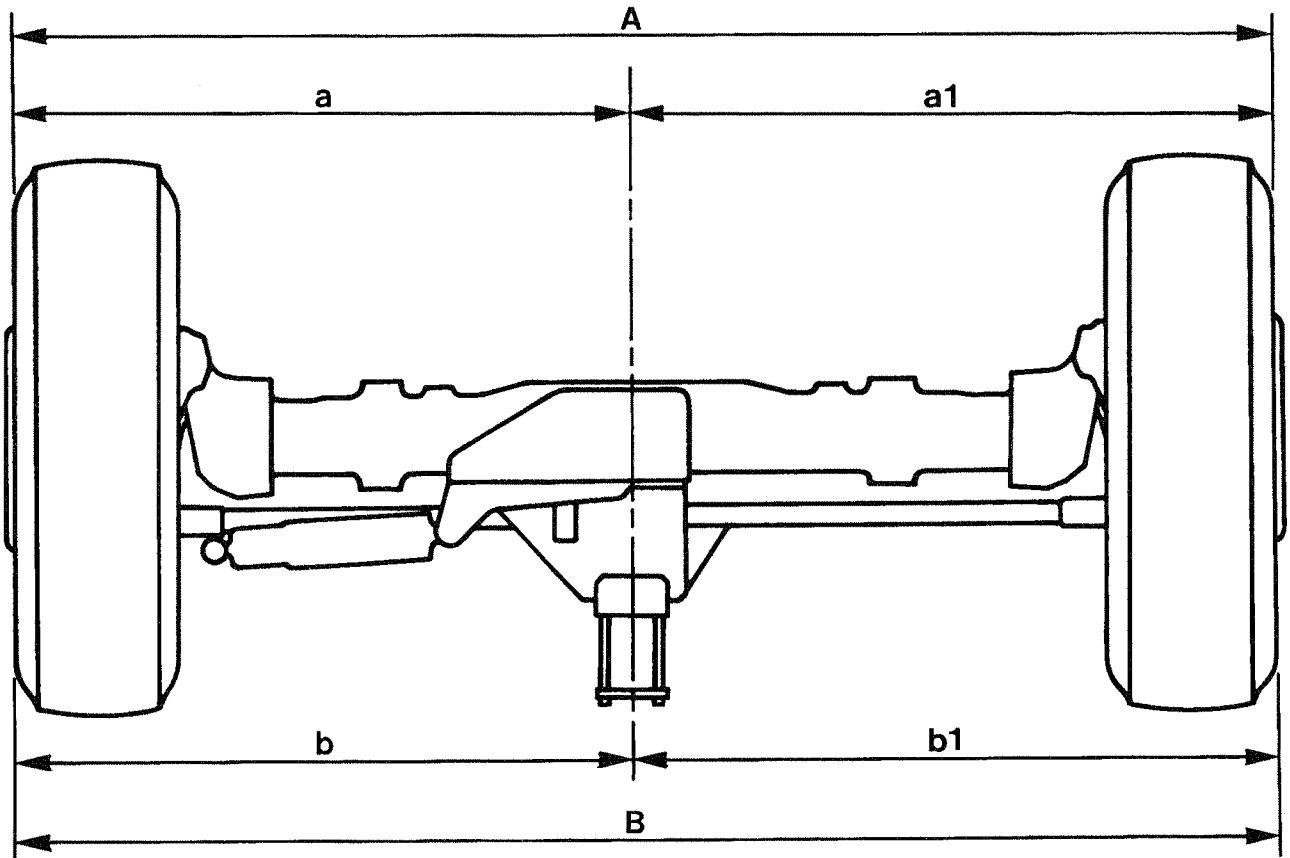


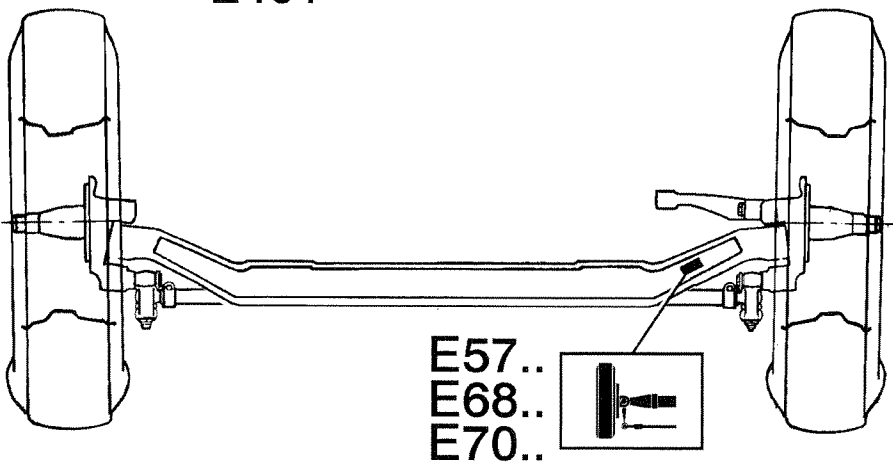
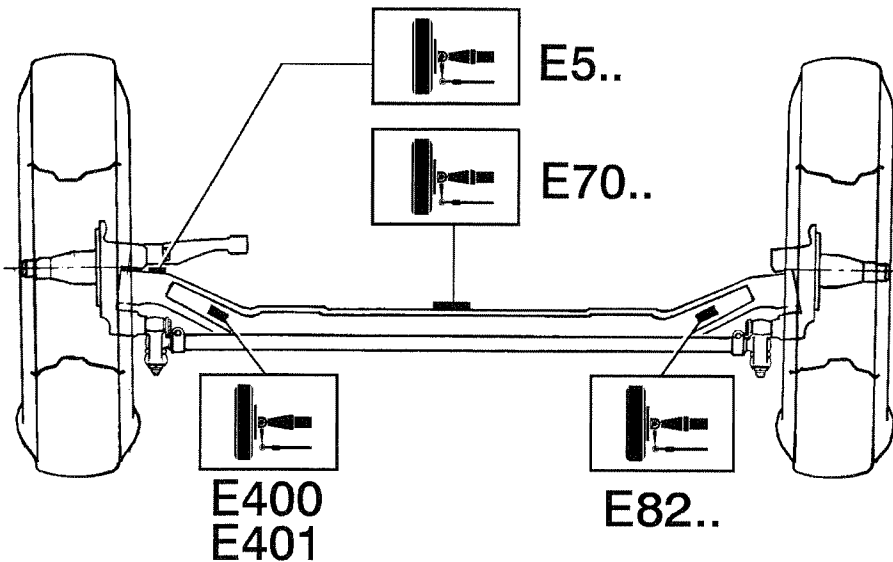
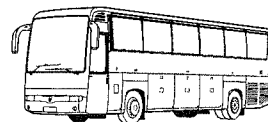
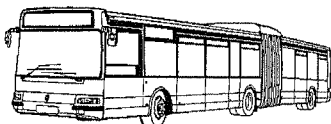
<b>①</b> E 81 AC	+ 0,2	0	- 0,2	- 0,4	- 0,66	- 0,9	
E 81 EC	- 2,9	- 2,5	- 2,2	- 1,9	- 1,5	- 1,2	- 0,9



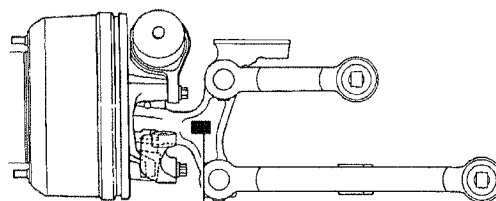
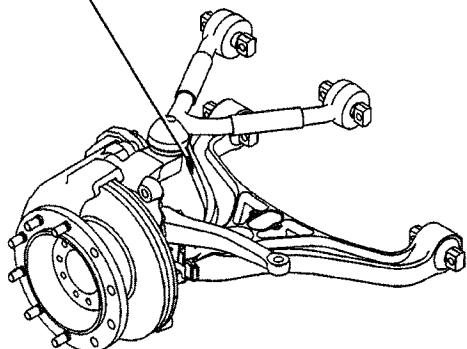
<b>①</b> E 81 AP	+ 0,2	0	- 0,2	- 0,4	- 0,66	- 0,9	
E 81 EP	- 2,9	- 2,5	- 2,2	- 1,9	- 1,5	- 1,2	- 0,9
<b>②</b> AUSTERAS	+ 1	+ 0,9	+ 0,7	+ 0,5	+ 0,35	+ 0,15	0

## AUSTERAS



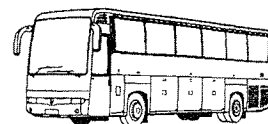


 **KAROSA-LIAZ**  
**RI65R**  
**RI75R**

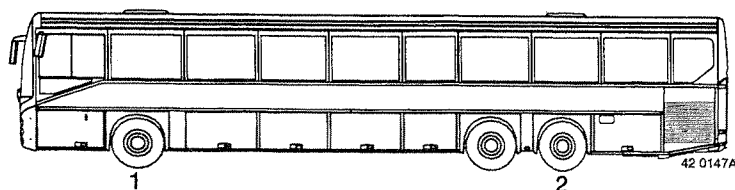


 **RI6A**  
**RI6B**

42 0120B



		A	B	C	D	E	F = G
PS 150	E 401	1° 30'	6°	3°	44°	33° 30'	0 ± 1 mm
PP 180	E 400	0° 45'	6° 45'	6°	46°	31°	
FR1 ILIADÉ ARES 12m	RI 65 R	0° 45'	7° 45'	1° 30'	50°	41°	
	RI 75 R	1°	7° 50'	1° 30'	54°	43°	
TRACER	E 70 XD	1°	6° 45'	1° 30'		43°	
S 45 RX S 53 R/RX S 105 R/RX S 105 RA	E 57	1° 15'	8° 45'	4°	46°	38°	
PR 10 S	E 5 AX 21		6°	0°	50°	37°	
R 312	E 68 AX	0° 45'	9°	4°	50°	42°	
PR 100 PR 100.2	RI 6 A		7°	3°	50°	38° 30'	
PR 180	RI 6 B	0° 45'	7°	3°	41°	33° 30'	
PR 100.3	RI 6 B	0° 45'	7°	3°	45° 30'	35° 30'	
PR 112	RI 6 B	0° 45'	7°	3°	45° 30'		
PR 118	RI 6 B	0° 45'	7°	3°	43° 30'		
AGORA 12m AGORA LINE CIVIS CRISTALIS	E 70 XH	1°	6° 45'	2° 30'	53° 30'	42°	0 ± 1,5 mm
AGORA 18m	E 70 XH	1°	6° 45'	2° 30'	39°	33°	
MRC	E 5 A 221	1°	6° 45'	6°	42°	34°	0 ± 1
	E 82 CN						F > G 1,8 ± 0,5 mm
AXER RECREO	KAROSA	0° 33'	8° 27'	2° 15'	48°	40°	0 ± 1 mm
	LIAZ						



		A	B	C	D		E		F = G
ARES 15m	RI 75R	1°	7° 50'	1° 30'	1	2	1	2	0 ± 1mm
					54°	16°	43°	13°	