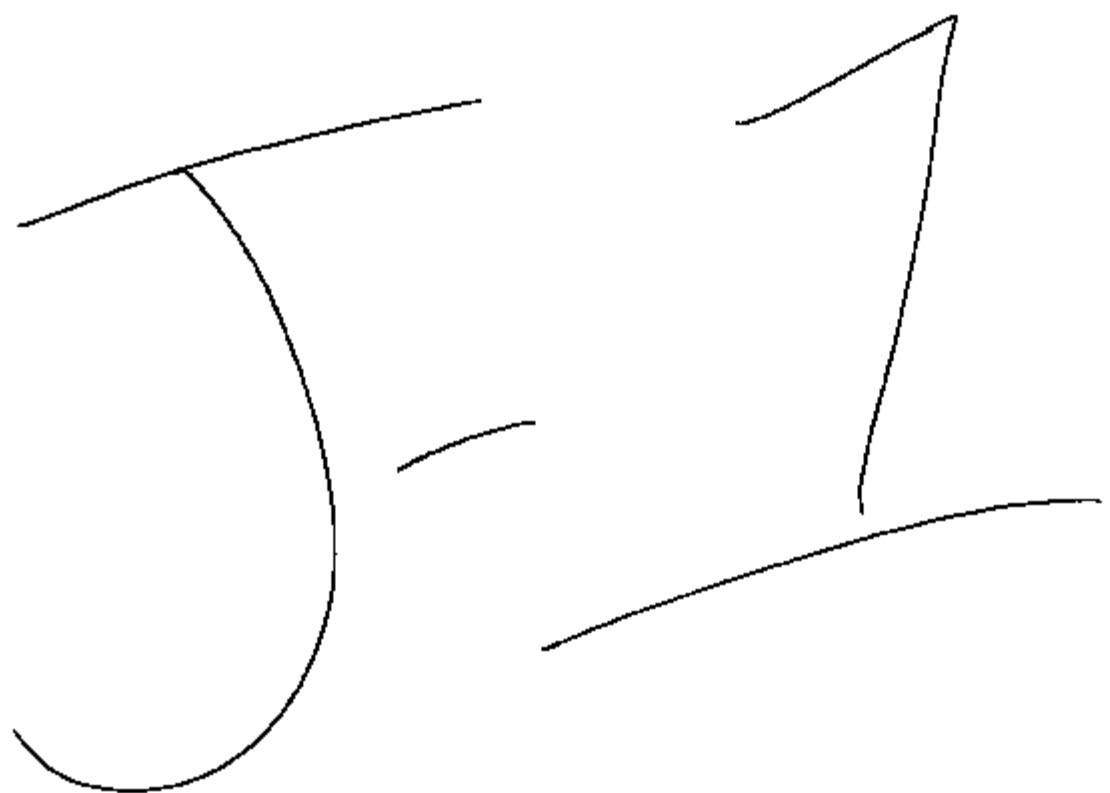


**EA02022**

**BOOK 2 OF 2**

**FORD RESPONSE TO  
ODI  
DATED 12/6/02**

**ATTACHMENT J-1 AND J-2**



## MINISTÈRE DES TRANSPORTS

Référence : N° E13\*79R00\*79R01\*0042\*00

Autres : Documentation technique

Luxembourg, le 12 mai 1998  
 19-21, Boulevard Royal  
 L-2910 Luxembourg  
 Tel. 478-1 - Téléopérateur 241817 - Télécx 1468 CNAIR LU

E13

Communication concernant le  
 Commercialisation

- Approbation
- Approuvé
- Autorisation d'homologation
- approuvé
- Autorisé
- Autorisation d'homologation
- approuvé
- Autorisation d'homologation
- approuvé
- Permis d'homologation de la production
- production d'autorisation



d'un type de véhicule ou ce qui concerne l'équipement de direction,  
 en application du règlement N° 79  
 of a vehicle type with regard to steering equipment pursuant to Regulation N° 79

N° d'homologation:  
 Approval N°:

E13\*79R00\*79R01\*0042\*00

Marque d'homologation:  
 Approval mark:

79R-01 0042

1.	Marque de fabrique ou de commerce du véhicule: Trade name or mark of the vehicle:	Ford
2.	Type de véhicule: Vehicle type:	70/311-DW-R79
	Désignation(s) commerciale(s): Commercial designation:	DFW, DFW, DAW, DNW
	Véhicule: Version:	sedan (3dr, 4dr, 5dr), wagon 5dr left or right hand drive
3.	Nom et adresse du constructeur: Manufacturer's name and address:	Ford-Werke Aktiengesellschaft, D-50715 Köln
4.	Le nom, prénom, nom et adresse de mon mandataire: If applicable, name and address of manufacturer's representative:	EUROMOTOR Norbert Gross & Company B.P. 1606 L-1016 Luxembourg

J-



5.	Description sommaire de l'équipement de direction: Brief description of the steering equipment:	
5.1	Type d'équipement de direction: Type of steering equipment:	rack and pinion steering
5.2.	Commande de direction: Steering control:	circular steering wheel
5.3	Transfert de direction: Steering transmission:	mechanical linkage
5.4	Roues directrices: Steer wheels:	2, at front axle
5.5	Source d'énergie: Energy source:	mechanical power with power assistance through oil pump
6.	Résultats des essais: Effort à la commande de direction nécessaire pour inscrire le véhicule dans un cercle de 12 m de rayon ou de 20 m de rayon dans le cas d'un défaut de fonctionnement: Results of Test: Steering effort required to achieve a turning circle of 12 metres radius or 20 metres with a fault:	
6.1	Dans des conditions normales: Under normal conditions:	left manoeuvre: 2,44 daN right manoeuvre: 3,08 daN
6.2	Après défaillance de l'équipement spécial: After failure of special equipment:	left manoeuvre: 8,71 daN right manoeuvre: 9,66 daN
7.	Véhicule présenté à l'homologation, le: Vehicle submitted for approval:	06.04.1998
8.	Autorité compétente: Competent authority:	Société Nationale de Contrôle Technique - Homologations L-5201 Schutzenacker
	Service Technique chargé des essais: Technical service service responsible for conducting approval test:	TÜV Rheinland Luxembourg GmbH Centre Commercial "Le 2000" Z.I. L-3378 Luxembourg
9.	Date du procès-verbal délivré par ce service: Date of report issued by this service:	21.04.1998
10.	Número do procès-verbal délivré par ce service: Number of test report issued by this service:	871.040299-00
11.	L'homologation est: Approval:	granted
12.	Emplacement de la marque d'homologation sur le véhicule: Position of approval mark on the vehicle:	nearby the manufacturer's plate

J.



13. **Fait à:**  
Place:

Luxembourg

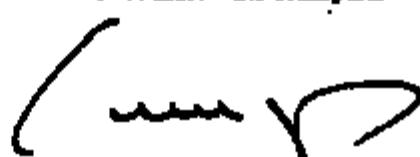
14. **Date:**  
Date:

12 mai 1998

15. **Signature:**  
Signature:

Pour le Ministre des Transports



  
Paul SCHMIT  
Commissaire du Gouvernement



16. Une liste des documents du dossier d'homologation déposés auprès des services administratifs qui ont délivré l'homologation qui figure en annexe à cette communication peut être obtenue sur demande.  
Appended to this communication is a list of documents in the approval file deposited at the administrative services having delivered the approval and which can be obtained upon request.

voir "INDEX DU DOSSIER DE RECEPTION" ci-joint  
ou "INDEX TO TYPE-APPROVAL REPORT"

Modifications faites à l'objet de la présente autorisation  
Modifications of the permit

not applicable

Note explicative et récapitulative des extensions réalisées  
Explanatory and summarizing note of additional extensions

not applicable

Il n'y a pas de document joint  
There are no documents not apply

**INDEX DU DOSSIER D'HOMOLOGATION**  
**INDEX TO TYPE-APPROVAL REPORT**



Marque (raison sociale du constructeur):  
Name (name of manufacturer): Ford

Type:  
Type: 70/311-DW-R79

Nom de l'homologation ECE:  
ECE type-approval number: E13\*79R00\*79R01\*0042\*00

1. **Précis-verbal d'essai :**  
Test report:  
- Technical report:  
- Information about vehicle type:  
STLG0209-96  
Page 1 to 3  
Appendix 1A - Page 4 & 5  
Appendix 1B - Page 6 & 7
2. **Dossier du constructeur :**  
Report of manufacturer:  
- Information document:  
- Attachment to Item 1.1.  
- Attachment to Item 6.4. & 6.6.3.  
- Attachment to Item 7.1., 7.2.3.1.,  
7.2.4. & 7.2.5.  
98AB-03601 X  
Page 1, 2, 3, 4, 5, 6  
Draw. N° HL-99AG-0-308, HL-99AG-0-303,  
HL-99AG-0-305, HL-99AG-0-309  
Attachment 1 - Page 1  
Draw. N° G98AB-106-AA - Page 1, 2  
Draw. N° G98AB-106-AA - Page 3
3. **Autres documents annexés :**  
Other documents annexed:  
not applicable
4. **Date de délivrance de l'homologation initiale :**  
Date of issue of initial type-approval:  
12.05.1996
5. **Date de la dernière délivrance de pages révisées :**  
Date of last issue of revised pages:  
not applicable
6. **Date de la dernière délivrance d'une homologation révisée :**  
Date of last extension:  
not applicable



**MINISTÈRE DES TRANSPORTS**

REFERENCE : No. n13°70/311°92/62°0042°00

ANNEXE : Documentation technique

Luxembourg, le 12 mai 1998  
 19-21, Boulevard Royal  
 L-2910 LUXEMBOURG  
 TEL. 478-1 - Télécopieur 261817 - Télex 1445 CTMATA LU



Communication concernant <sup>la</sup> [REDACTED]  
 communication concerning <sup>the</sup> [REDACTED]

- l'autorisation de la réception
- confirmation of type approval
- le refus de la réception
- denial of type approval
- la refusée de la réception
- withdrawal of type approval

d'un type de véhicule/compagnie/entité/technique/entreprise <sup>ou</sup> en vertu de la directive 70/311/CEE, telle qu'elle a été modifiée en dernier lieu par la directive 92/62/CEE.  
 of a type of a vehicle/component/enterprise/technical-unit <sup>or</sup> with regard to Directive 70/311/EEC, as last amended by Directive 92/62/EEC.

Nombréro de réception:  
 Type-approval number:

n13°70/311°92/62°0042°00

**SECTION I**  
**SECTION I**

0.	Généralités General
0.1.	Maison (faible sociale des constructeurs): Manufacturer:
0.2.	Type et description commerciale: Type and commercial description: type: 70/311-DW-879 commercial description: DBW, DFW, DAW, DNW vechicle: sedan (3dr, 4dr, 5dr), wagon 5dr left or right hand drive
0.3.	Moyens d'identification du type, si ils figurent sur le véhicule/compagnie/entité/technique/entreprise: Means of identification of type if stated on the vehicle/component/enterprise/technical-unit: not applicable
0.3.1.	Emplacement de ce marquage: Location of this marking: not applicable



6.4. Catégorie de véhicule :  
Category of vehicle : M<sub>1</sub>

6.5. Nom et adresse du constructeur du véhicule de base:  
Name and address of manufacturer:  
Ford Werke Aktiengesellschaft  
D-50725 Köln

Nom et adresse du constructeur responsable de l'assemblage de la dernière étape de construction du véhicule:  
Name and address of manufacturer responsible for the final stage of construction of the vehicle:  
Ford Werke Aktiengesellschaft  
D-50725 Köln

6.6. Adresse(s) des installations de montage:  
Address(es) of assembly plant(s):  
Ford Werke Aktiengesellschaft  
D-56740 Saarlouis  
Ford España S.A.  
E-46002 Valencia

**SECTION II**  
**SECTION II**

1. Remarques complémentaires  
(si nécessaire):  
Additional information (where applicable):  
see appendix
2. Autorité délivrante :  
Issuing authority :  
Société Nationale de Contrôle Technique-Homologations  
L-2201 Sandweiler
- Service technique responsable de  
l'homologation des voitures:  
Technical service responsible for carrying  
out the motor:  
TÜV Rheinland Luxembourg GmbH  
Centre Commercial "Le 2000" Z.I.  
L-3378 Luxembourg
3. Date du procès-verbal d'essai:  
Date of test report:  
21.04.1998
4. Numéro du procès-verbal d'essai:  
Number of test report:  
57L00209-00
5. Remarques (si ces échangent):  
Remarks (if any):  
see appendix



6. Lieu:  
Place: Luxembourg

7. Date:  
Date: 12 mai 1990

8. Signataire:  
Signer:



Pour le Ministre des Transports

*[Handwritten signature]*



Paul SCHMITT  
Conseiller du Gouvernement

9. L'index du dossier de réception déposé auprès des autorités compétentes, qui peut être obtenu sur demande, est joint.  
The index of the information package lodged with the approval authority, which may be obtained on request, is enclosed.

Voir "INDEX DU DOSSIER DE RÉCEPTION" ci-joint  
or "INDEX TO TYPE-APPROVAL REPORT"

*Appendice*  
*Appendix*

*à la fiche de réception d'un type de véhicule N°  
to EEC type-approval certificate N°*

*concernant la réception par type d'un véhicule selon la directive 70/311/CEE  
concerning the type-approval of a vehicle with regard to Directive 70/311/EEC  
concerning the delivery of vehicles by type under Directive 92/42/EEC  
as last amended by Directive 92/43/EEC*

1. Remarques complémentaires Additional information	
Type d'équipement de direction Type of steering equipment	rack and pinion steering
Commande de direction Steering control:	circular steering wheel
Transmetteur de direction: Steering transmitter:	mechanical linkage
Roues directrices: Steerable wheels:	2, at front axle
Source d'énergie: Energy source:	muscular power with power assistance through oil pump



**Performance de freinage: indication du numéro d'immatriculation accordé conformément à la directive 71/300/ECC et indication de l'état du véhicule lors des essais: en charge / à vide<sup>46</sup>.**  
 Braking performance statement of the component type-approval number granted in accordance with directive 71/300/ECC and information concerning the state of the vehicle during tests: either laden or unloaded<sup>46</sup>.

not applicable

5.

**Résumé:**

**Summary:**

valid for both right and left hand drive

(pour exemple également valable pour véhicules à conduite à gauche et conduite à droite)  
 (e.g. valid for both left-hand drive and right-hand drive vehicles).

**Modifications (hors l'effet de la présente extension)**  
**Modifications (hors extension)**

not applicable

**Note explicative et récapitulative des extensions prévues**  
**Explanatory and recapitulatory note of planned extensions**

not applicable



<sup>46</sup> Miller la mention le ville

<sup>47</sup> Dates inappropriée

<sup>48</sup> Si les moyens d'identification du type contiennent des caractères n'intervenant pas la description des types de véhicules, de composant ou d'entité technique couverte par la présente fiche de renseignements, il importe de les indiquer dans la documentation au moyen du symbole "?"

(par exemple ABC77123??).

<sup>49</sup> If the means of identification of type contains characters not relevant to describe the vehicle, component or separate technical unit type covered by this information document/type-approval certificate, such characters shall be represented in documentation by the symbol: "?" (e.g. ABC77123??).

<sup>50</sup> Telle que définie à l'annexe II A de la directive 70/156/ECC.

<sup>51</sup> As defined in annex II A to directive 70/156/ECC.

## MINISTÈRE DES TRANSPORTS

Luxembourg, le 12 mai 1996  
 19-21, Boulevard Royal  
 L-2910 LUXEMBOURG  
 Tél. 478-1 - Télécopieur 241817 - Téléc. 1445 CIVALE LU

REFERENCE : N° e13\*70/311\*92/62\*0042\*00

ANNEXE :

**INDEX DU DOSSIER DE RÉCEPTION**  
**INDEX TO TYPE-APPROVAL REPORT**



Marque (raison sociale du constructeur):  
 Name (full name of manufacturer): Ford

Type:  
 Type: 70/311-DW-E79

N° de réception CER :  
 EEC type-approval number : e13\*70/311\*92/62\*0042\*00

1.	Procès-verbal d'envoi : Fax report :  - Technical report; - Information about vehicle type:	STLOU209-00  Page 1 to 3 Appendix LA - Page 4 & 5 Appendix LB - Page 6 & 7
2.	Dossier du constructeur : Report of manufacturer :  - Information document; - Attachment to item 1.1.  - Attachment to items 6.6. & 6.6.3. - Attachment to items 7.1., 7.2.3.1., 7.2.4. & 7.2.5.	96AB-05601 X  Page 1, 2, 3, 4, 5, 6 Draw. N° HL-99AG-0-300, HL-99AG-0-301, HL-99AG-0-302, HL-99AG-0-303 Attachment 1 - Page 1  Draw. N° Q96AB-106-AA - Page 1, 2 Draw. N° Q96AB-106-AA - Page 3
3.	Autres documents annexés : Other documents annexed :  not applicable	not applicable
4.	Date de l'émission de la réception initiale : Date of issue of initial type-approval :  12.05.1996	12.05.1996
5.	Date de la dernière différence de pages révisées : Date of last issue of revised pages :  not applicable	not applicable
6.	Date de la dernière différence d'une fiche de réception révisée : Date of last revision :  not applicable	not applicable



Vehicle type : 70/311-DW-R79  
Manufacturer : Ford

## TECHNICAL REPORT

according to the Council Directive on the approximation of the laws of the Member States relating to

### Steering equipment for motor vehicles and their trailers

70/311/EEC dated: June 06, 1970

amended by

92/62/EEC dated: July 02, 1992

and  
according to ECE-Regulation

### Uniform provisions concerning the approval vehicles with regard to steering equipment

ECE-R 70 dated: December 1, 1988

amended by

Amend. 01, Suppl. 00, Conv. 02 dated: August 14, 1995

Previously granted

EC type-approval : -

ECE approval : -

#### Structure of report:

1. Tested object(s) and general test information
2. Test minutes
3. Remark concerning tested object(s)
4. Appendices
5. Statement of conformity

e13\*70/311\*92/62\*0042\*00  
E13\*79R00\*79R01\*0042\*00

Vehicle type : 70/311-DW-R79  
Manufacturer : Ford

## 1. Tested object(s) and general test information

- 1.1. Tested object(s) : see VCA Job Number 97/98 2200
- 1.2. General test information
- 1.2.1. Order issued by (if different from manufacturer) : not applicable
- 1.2.2. Test object / test vehicle received on : not applicable
- 1.2.3. Test date : 6 April 1998
- 1.2.4. Test site : Dutton/GB
- 1.2.5. Remark : The results of the test refer exclusively to the object(s) mentioned under point 1.1 of this report.

## 2. Test minutes

- 2.1. Test facilities : The test facilities / measurement equipment used were in compliance with the test requirements.
- 2.2. Test results : see VCA Job Number 97/98 2200

3. Remark concerning tested object(s): All versions of the vehicle type as stated in the information document are covered by the tested vehicle version(s) and tested object(s) respectively.

e13\*70/311\*92/62\*0042\*00  
E13\*79R00\*79R01\*0042\*00

Vehicle type : 70/311-DW-R79  
Manufacturer : Ford

#### 4. Appendices

LA Information about the vehicle type according to the communication concerning the EC type-approval.

LB Information about the vehicle type according to the communication concerning the ECE certificate.

O List of modifications : not applicable

Information document : 98AB-05601 X

#### 5. Statement of conformity

The type referred to above complies with the requirements mentioned on page 1.

The technical report comprises - including appendix(es) LA, LB - pages 1 to 7 and shall not be reproduced partially without the written approval of the testing laboratory.

21.04.1998

ku

  
Dipl.-Ing. Kurtz

e13\*70/311\*92/62\*0042\*00  
E13\*79R00\*79R01\*0042\*00

Vehicle type : 70/311-DW-R79  
Manufacturer : Ford

## Appendix I A

Information about the vehicle type according to the communication concerning the EC type-approval.

## Section I

0	General	
0.1	Make (trade name of manufacturer)	: FORD
0.2	Vehicle type	: 70/311-DW-R79
	- version(s)	: DBW, DFW, DAW, DNW sedan (3dr, 4dr, 5dr), wagon 5dr (left hand drive or right hand drive)
0.3	Means of identification of type if marked on the vehicle	: not applicable
0.3.1	Location of that marking	: not applicable
0.4	Category of the vehicle	: M1
0.5	Name and address of the manufacturer	: Ford-Werke Aktiengesellschaft D-50725 Köln
	Name and address of the manufacturer responsible for the final stage of construction	: see above
	Name and address of the manufacturer's authorized representative	: not applicable
0.8	Address of assembly plant(s)	: Ford-Werke Aktiengesellschaft 66740 Saarbrücken Germany  Ford España S.A. 46002 Valencia Spain

e13\*70/311\*92/62\*0042\*00

E13\*79R00\*79R01\*0042\*00

Vehicle type : 70/311-DW-R79  
Manufacturer : Ford

## Section II

1. Additional informations (where applicable) : see Addendum
3. Date of technical report : 21 April 1998

### Addendum to EC type-approval certificate

#### 1. Additional Information

Type of steering equipment : rack and pinion steering  
Steering control : circular steering wheel  
Steering transmission : mechanical linkage  
Steered wheels : 2, at front axle  
Energy source : muscular power with power assistance through oil pump  
Braking performance : statement of the component type-approval number granted in accordance with directive 71/320/EEC and information concerning the state of the vehicle during tests: laden/unladen  
not applicable

5. Remarks : valid for both right and left hand drive

e13\*70/311\*92/62\*0042\*00  
E13\*79R00\*79R01\*0042\*00

**Vehicle type** : 70/311-DW-R79  
**Manufacturer** : Ford

**Appendix LB**

Information about the vehicle type according to the communication concerning the ECE approval.

- 1 Trade name or mark of the vehicle : FORD
- 2 Vehicle type : 70/311-DW-R79
- 3 Name and address of the manufacturer : Ford-Werke Aktiengesellschaft  
D-50725 Köln
- 4 Name and address of the manufacturer's authorised representative : EUROMOTOR  
Norbert Gratz & Company  
Postfach 1606  
L-1016 Luxemburg
- 5 Brief description of the steering equipment
- 5.1 Type of steering equipment : rack and pinion steering
- 5.2 Steering control : circular steering wheel
- 5.3 Steering transmission : mechanical linkage
- 5.4 Steered wheels : 2, at front axle
- 5.5 Energy source : muscular power with power assistance through oil pump

e13\*70/311\*92/62\*0042\*00  
E13\*79R00\*79R01\*0042\*00

Vehicle type : 70/311-DW-R79  
Manufacturer : Ford

- 6 Results of tests. Steering effort required to achieve a turning circle of 12 metres radius or 20 metres with a fault :
- 6.1 Under normal conditions : Left manoeuvre : 2,44 daN  
Right manoeuvre : 3,08 daN
- 6.2 After failure of special equipment : Left manoeuvre : 8,78 daN  
Right manoeuvre : 9,66 daN
- 7 Vehicle submitted for approval on : 6 April 1998
- 9 Date of technical report issued by that service : 21 April 1998
- 12 Position of approval mark on vehicle : Near by the VIN-plate

e13\*70/311\*92/62\*0042\*00  
E13\*79R00\*79R01\*0042\*00

**FORD**

Issue date : 26.02.1998  
Date of revision : --  
Page 1

EC TA-No. : e13\*70/311\*92/62\*????\*00  
Information Folder No. : 98AB-05601 X  
Type : 70/311-DW-R79

## **INFORMATION FOLDER**

In accordance with Annex I of Council Directive 70/156/EEC relating to EEC-Type-approval of a vehicle type and with regard to the

**Steering effort**  
(Directive 70/311/EEC as last amended by Directive 92/62/EEC)

**ECE79**

e13\*70/311\*92/62\*0042\*00  
E13\*79R00\*79R01\*0042\*00

Société Nationale de Contrôle Technique-Française  
1, rue Léonard de Vinci (Lyon 69006)

New or modified data is marked with " @" !



E982-022-1380

**FORD**

Issue date : 26.02.1998  
Date of revision : -  
Page 2

EC TA-No. : e13\*70/311\*92/62\*????\*00  
Information Folder No. : 98AB-03601 X  
Type : 70/311-DW-R79

**Index to Information Folder**

Description	Page(s)	Drawing-No.	Issue-date	Date of revision
Cover Sheet Information Folder	1	-	26.02.98	
Index of Information Folder	2	-	26.02.98	
Information Document	3-6	-	26.02.98	
<b>Attachments to Information Document</b>				
Attachment to item 1.1.	1	HL-99AG-0-300	17.09.97	
	1	HL-99AG-0-303	17.09.97	
	1	HL-99AG-0-306	17.09.97	
	1	HL-99AG-0-309	17.09.97	
Attachment to item 6.6.	1	Attachment 1	25.02.98	
Attachment to item 6.6.3.	1	Attachment 1	25.02.98	
Attachment to item 7.1.	1-2	G98AB-106-AA	20.01.98	
	3	G98AB-106-AA	23.01.98	
Attachment to item 7.2.3.1.	1-2	G98AB-106-AA	20.01.98	
	3	G98AB-106-AA	23.01.98	
Attachment to item 7.2.4.	1-2	G98AB-106-AA	20.01.98	
	3	G98AB-106-AA	23.01.98	
Attachment to item 7.2.5.	1-2	G98AB-106-AA	20.01.98	

e13\*70/311\*92/62\*0042\*00  
E13\*79R00\*79R01\*0042\*00  
Société Nationale de Conseil Technique-Horologique  
L-3201 SANDWEILER (Luxembourg)

New or modified data is marked with "!"



# FORD

Issue date : 26.02.1992

Date of revision : —

Page 3

EC TA-No. : e13\*70/311\*92/62\*????\*00  
Information Folder No. : 98AB-05601 X  
Type : 70/311-DW-R79

## Information Document

### 0. GENERAL

0.1. Make (trade name of manufacturer):

FORD

0.2. Type and general commercial description(s):

70/311-DW-R79  
3/4/5 Door Sedan (DBW/DAW/DFW)  
3 Door Wagon (DNW)

0.3. to 0.3.1.:

N/A

0.4. Category of vehicle (c):

M1

0.5. Name and address of manufacturer:

Ford Werke Aktiengesellschaft  
50725 Köln  
Germany

0.5.a. Manufacturer's representative

Ford España S.A.  
Paseo de La Castellana 135  
28046 Madrid, Spain

Ford Motor Company Ltd.  
Brentwood (Essex), CM13 3BW  
England

0.5.b. Location of the ECE-approval-mark on the vehicle

Near by the VIN-plate

0.6. Address(es) of assembly plant(s):

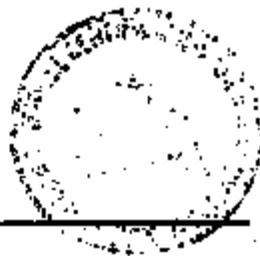
Ford-Werke Aktiengesellschaft  
60740 Saarlouis  
Germany

Ford España S.A.  
46002 Valencia  
Spain

e13\*70/311\*92/62\*0042\*00  
E13\*79R00\*79R01\*0042\*00

Société Nationale de Contrôle Technique-Homologation  
L-2920 Sandweiler, Luxembourg

New or modified data is marked with "!"



# FORD

Last date : 26.02.1998

Date of revision : --

Page 4

EC TA-No. : e13\*70/311\*92/62\*????\*00  
Information Folder No. : 96AB-05691 X  
Type : 70/311-DW-R79

1. GENERAL CONSTRUCTION CHARACTERISTICS OF THIS VEHICLE  
(All components may be used alternatively, if use is not restricted as indicated)

1.1. Photographs and/or drawings of a representative vehicle:

See attachment

1.3. Number of axles and wheels:

2 axles, 4 wheels

1.3.1. Number and position of axles with double wheels:

N/A

1.3.2. Number and position of steered axles:

1 - FRONT

1.3.3. Powered axles (number, position, interconnection):

front

1.8. Hand of drive:

Left hand drive or right hand drive

2. MASSES AND DIMENSIONS (s) (in kg and mm)  
(refer to drawing where applicable)

2.1. Wheel base(s) (fully loaded) (l):

2615mm - all variants

2.3.1. Track of each steered axis (l):

1484 to 1494mm

2.4. Range of vehicle dimensions (overall)

2.4.1. For chassis without bodywork

2.4.1.1. Length (l):

N/A

2.4.1.2. Width (k):

N/A

2.4.1.4. Front overhang (m):

N/A

2.4.1.5. Rear overhang (n):

N/A

2.4.2. For chassis with bodywork

2.4.2.1. Length (l):

4190mm 3/5 Dr; 4362mm; 4438mm Wagon.

2.4.2.2. Width (k):

1998mm with mirrors; 1732mm without mirrors

e13\*70/311\*92/62\*0042\*00  
E13\*79R00\*79R01\*0042\*00  
Société Nationale de Contrôle Technique-Hannover  
L-1201 SANDWEILER (Luxembourg)

New or modified data is marked with "®" !



# FORD

Issue date : 26.02.1998  
Date of revision : -  
Page 5

EC TA-No. : e13\*70/311\*92/62\*????\*00  
Information Folder No. : 98AB-05601 X  
Type : 70/311-DW-R79

2.4.2.4.	Front overhang (m):	242mm - all variants
2.4.2.5.	Rear overhang (n):	693mm 3/5Dr; 905mm 4Dr; 981mm Wagon.
2.8.	Technically permissible maximum laden mass stated by the manufacturer (max. and min.) (y):	1570kg to 1830kg
2.9.	Technically permissible maximum load/mass on each axle:	990kg front; 840kg rear.
6. SUSPENSION		
6.6.	Tyres and wheels	
6.6.1.	Tyre/wheel combination(s) (For tyres indicate size designation, minimum load-capacity index, minimum speed category symbol; for wheels indicate rim size(s) and off-set(s))	
6.6.1.1.	Axles	)
6.6.1.1.1.	Axle 1:	) See attachment
6.6.1.1.2.	Axle 2:	)
6.6.1.1.3.	to 6.6.1.1.4.:	N/A
6.6.3.	Tyre pressure(s) as recommended by the vehicle manufacturer [kPa]:	See attachment
7. STEERING		
7.1.	Schematic diagram of steered axle(s) showing steering geometry:	See attachment
7.2.	Transmission and control	
7.2.1.	Type of steering transmission (specify for front and rear, if applicable):	rack and pinion steering
7.2.2.	Linkage to wheels (including other than mechanical systems; specify for front and rear, if applicable):	mechanical

e13\*70/311\*92/62\*0042\*00  
E13\*79R00\*79R01\*0042\*00

Sociedad Nacional de Control Técnico-Vehicular

Avda. de la Constitución, 12 - 28041 Madrid - España

New or modified data is marked with "\*"!



# FORD

Issue date : 26.02.1994  
Date of revision : -  
Page 6

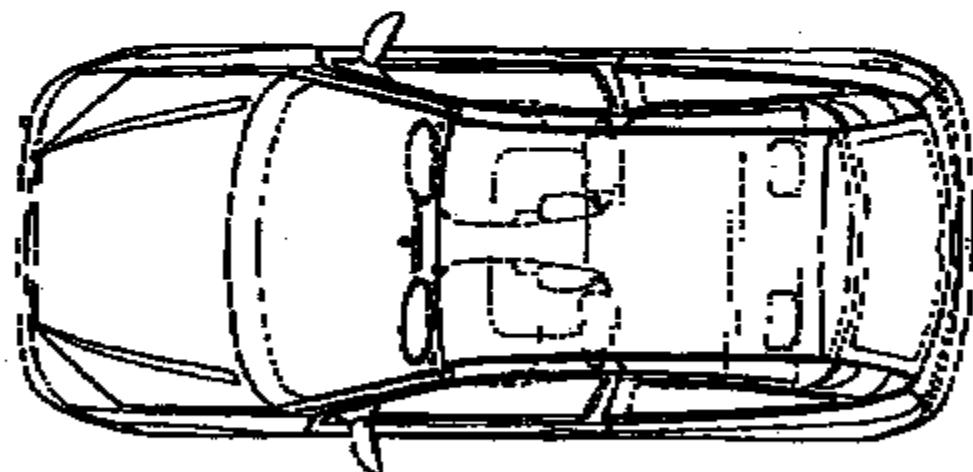
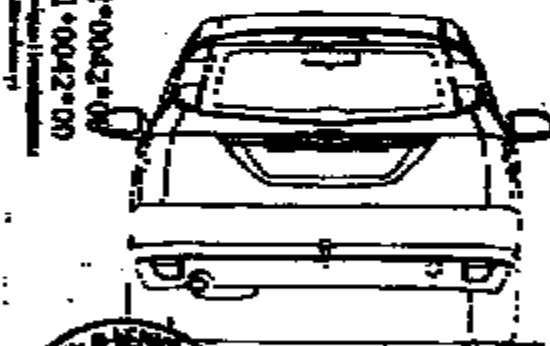
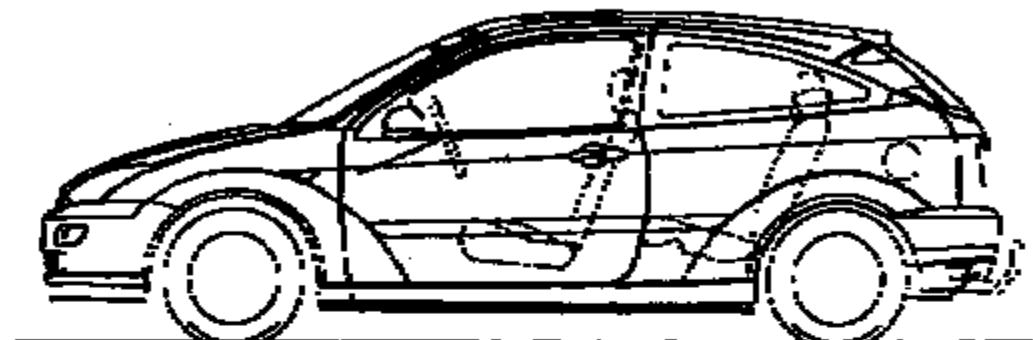
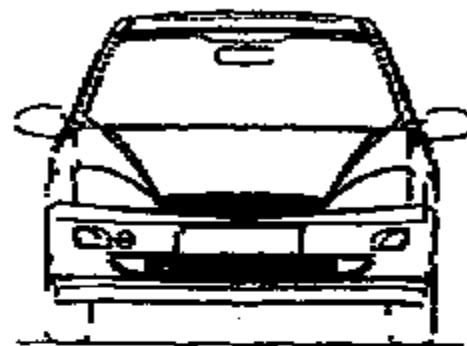
EC TA-No. : e13\*70/311\*92/62\*????\*00  
Information Folder No. : 98AB-05601 X  
Type : 70/311-DW-R79

- 7.2.3. Method of assistance, if any:  
hydraulic
- 7.2.1.1. Method and diagram of operation, make(s) and type(s):  
See attachment
- 7.2.4. Diagram of the steering equipment as a whole, showing the position on the vehicle of the various devices influencing its steering behaviour:  
See attachment
- 7.2.5. Schematic diagram(s) of the steering control(s):  
See attachment
- 7.3. Maximum steering angle of the wheels
- 7.3.1. To the right [degrees]; number of turns of the steering wheel (or equivalent data):  
20.05° Sedan; 19.81° Wagon  
No. of turns - 1.445 Ford; 1.452 TRW.
- 7.3.2. To the left [degrees]; number of turns of the steering wheel (or equivalent data):  
20.05° Sedan; 19.81° Wagon  
No. of turns - 1.445 Ford; 1.452 TRW

e13\*70/311\*92/62\*0042\*00  
E13\*79R00\*79R01\*0042\*00  
Société Nationale de Contrôle Technique-Herstelgningen  
L-7000 SANKTURM (Luxembourg)  
New or modified data is marked with "★"!



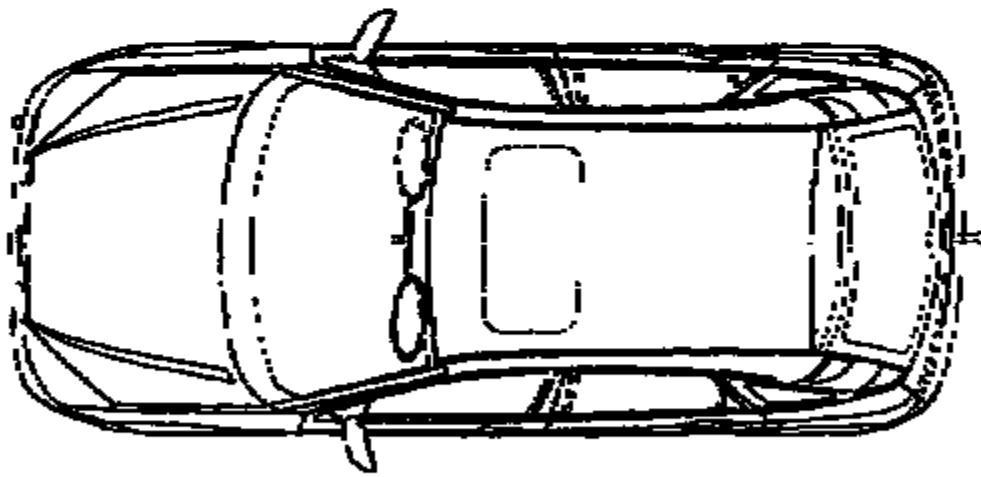
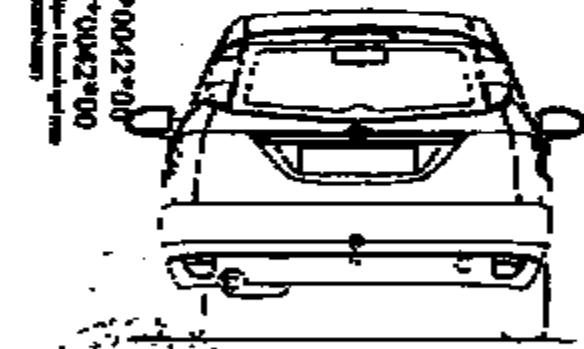
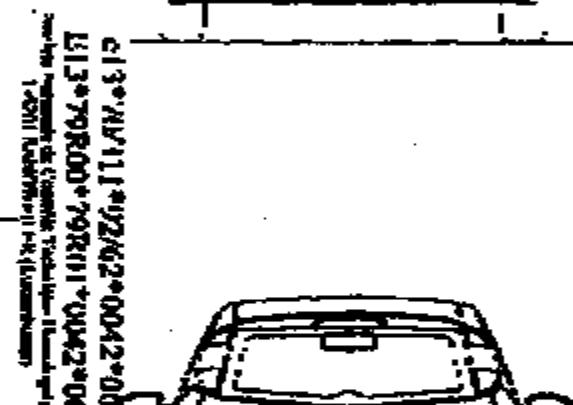
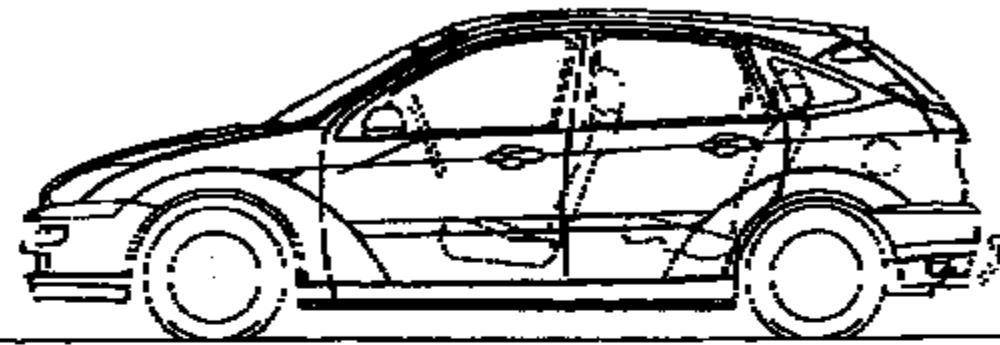
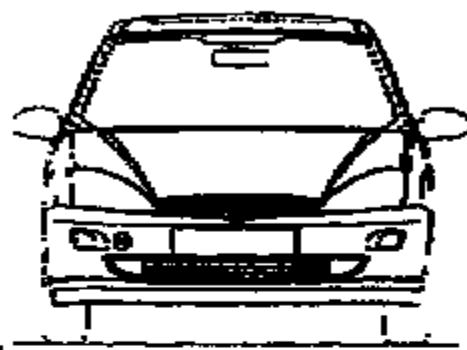
ORIGINAL



6002-522-120

SE 344 3-3006  
T-31-38  
SEARCHED INDEXED SERIALIZED FILED  
1-5940-3-3006

**ORIGINAL**

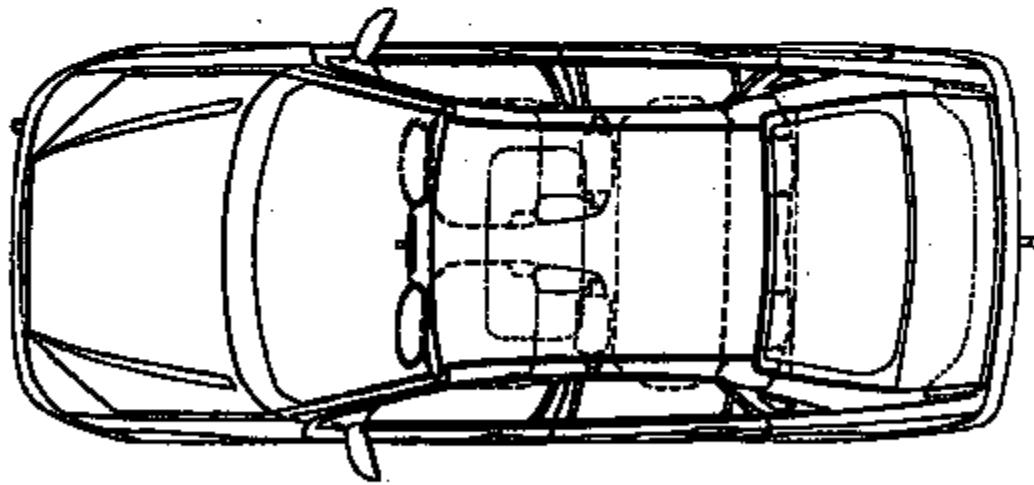
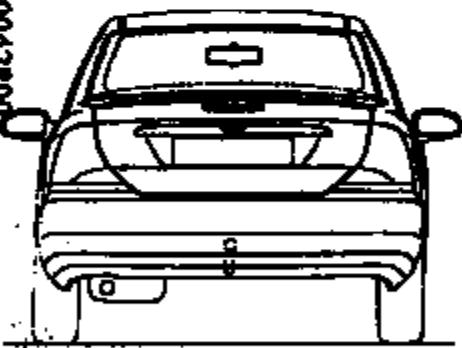
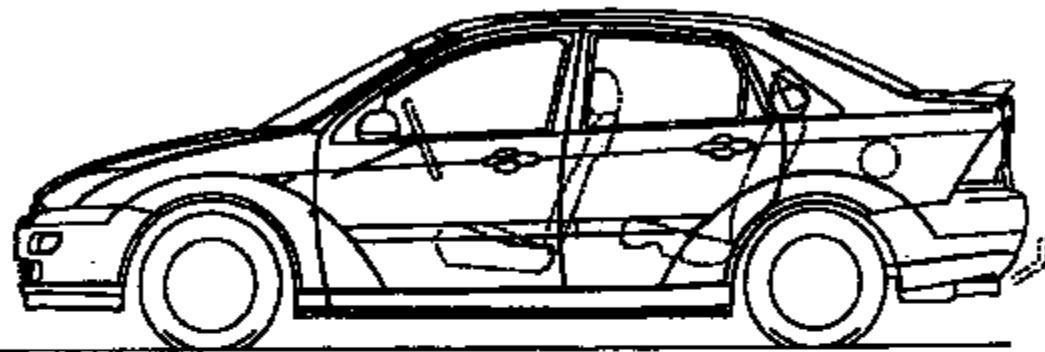


0022-022 1997

SE224 3-0002  
1997-02-24  
1997-02-24  
1997-02-24  
1997-02-24

1997-02-24 1997-02-24  
1997-02-24 1997-02-24  
1997-02-24 1997-02-24  
1997-02-24 1997-02-24

**ORIGINAL**

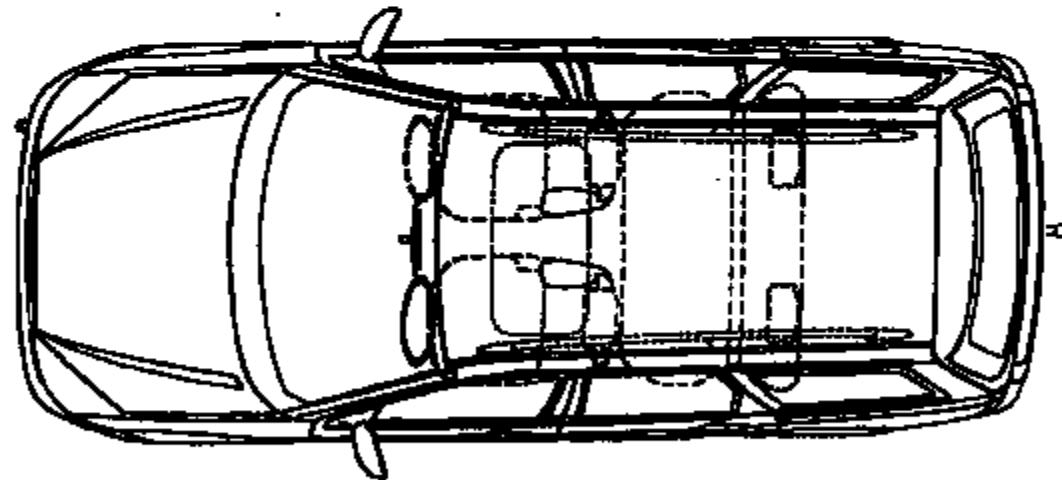
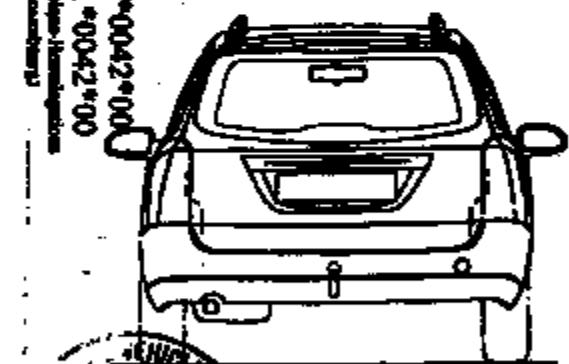
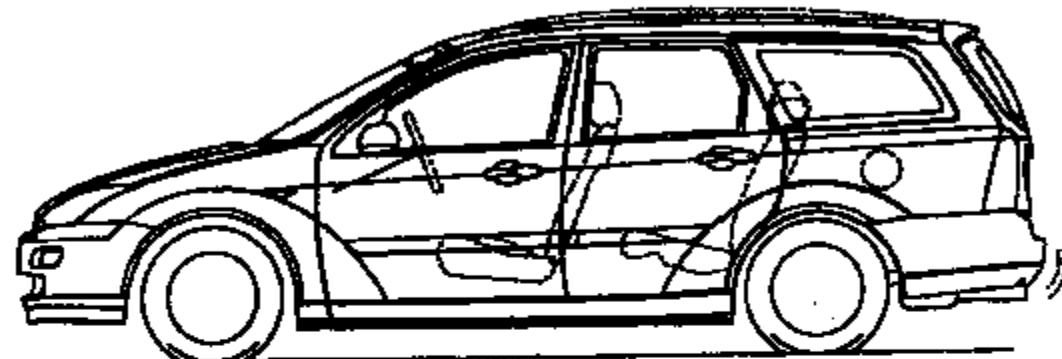


e13\*70311\*92/62\*0042\*00  
E13\*79R00\*79R01\*0042\*00  
Autel Napa LLC, Grafton, Indiana, USA  
[Signature]

ER02-622 138

	SEDAN 4-DOOR
ORIGINAL VEHICLE	TYPE:DFW
COMPATIBLE VEHICLE	CODE:AG-B-306

ORIGINAL



e13\*70311\*92262\*0042\*00  
E13\*70311\*92262\*0042\*00

SOLOMON NATIONALE DE CERTIFICATION TECHNIQUE

L'ETAT SANCTIONNE LA CONFORMITE

EN62-522 1386

	SEDAN ESTATE
	TYPE : DMV
EN62-522	1386
HJ-99AG-1-386	

*Annex 1*

C170 Monologation wheel & tyre

Tyre size	Rim	Off-Set	Rolling radii	
175/70 R14	5.5Jx14	47,5 / 43,5	292,2	
185/65 R14	6.0Jx14	47,5 / 43,5	289,3	
195/65 R15	6.5Jx15	52,5 / 47,5	288,8	
185/60 R15	6.0Jx15	52,5 / 47,5	290,5	
215/60 R15	4.0Jx15	40	282	Spare Unit

Tyre pressure: half loaden full loaden  
front rear front rear  
2.2 2.2 2.5 3.1

Spare Tyre 4.2 bar

Min speed and load index

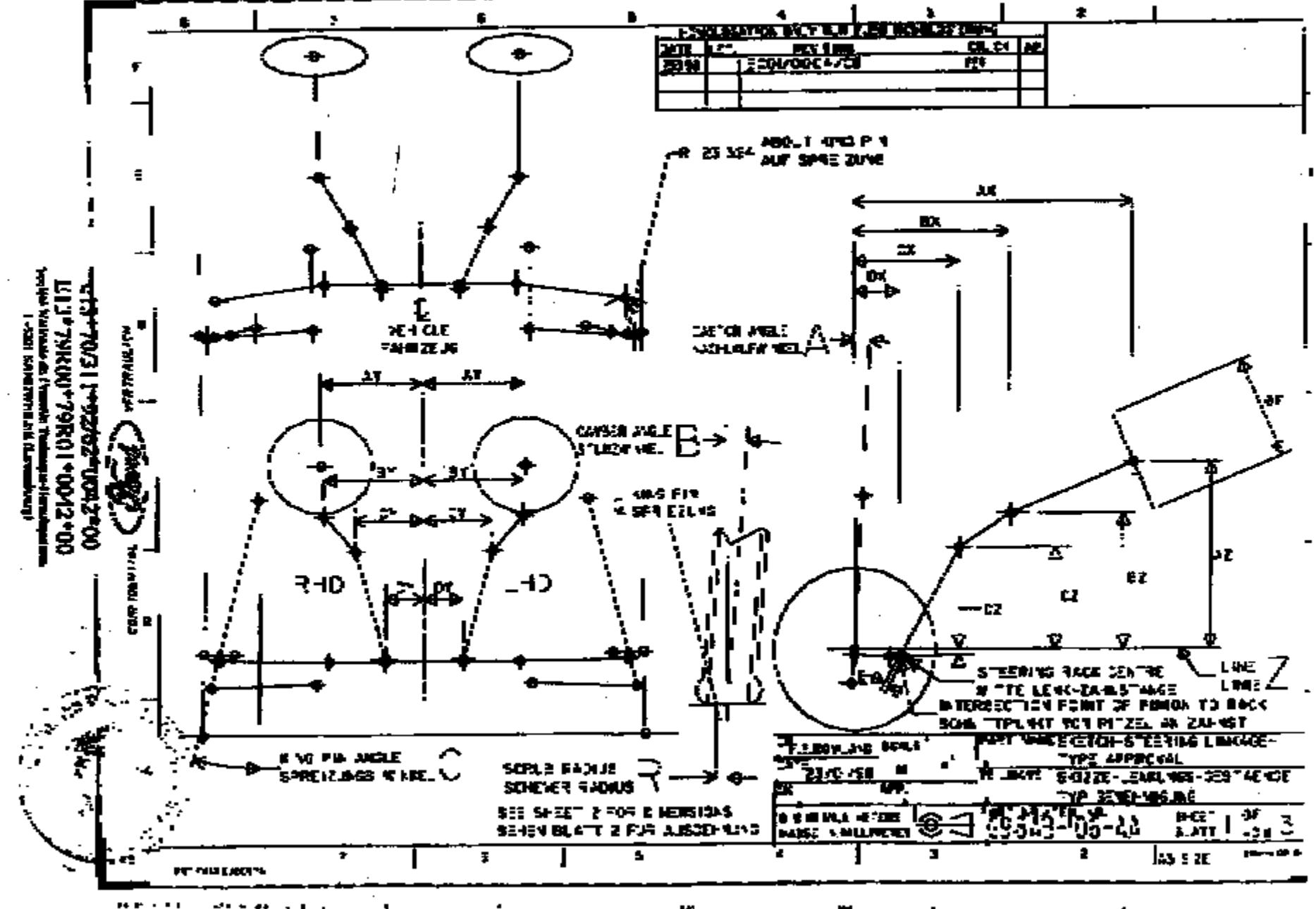
1.41	S	79
1.41	T	79
1.41	H	86
2.01	V	81

*Feb 25, 1999*

e13\*70/311\*92/62\*0042\*00  
E13\*79R00\*79R01\*0042\*00  
Societe Nationale de Controle Technique-Homologation  
L-6361 SANDWEILER (Luxembourg)



EN82-522 1400



0002-022 1401

INTERMEDIATE SHEET 10-5 FRONT SUPERSTRUCTURE		DRAFT	DATE
1	2		
100	100	100	100
100	100	100	100

**STEERING COLUMN CS-CRANE**

2 GEAR - REAR DRIVE LEFT - REAR DRIVE

AX	930,483	930,483
AV	345,063	345,063
AZ	626,140	626,140
34	325,543	325,543
35	325,563	325,563
36	434,250	434,250
37	394,433	394,433
C1	232,540	232,540
C2	234,683	234,683
C3	15,333	15,333
C4	32,000	132,000
D1	28,900	28,900
E	7,500	7,500

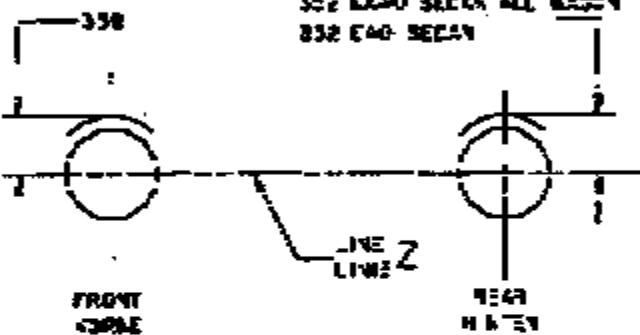
**STEERING WHEEL DIAMETER**

WHEEL	1	17
L	270	

130707000790010004200  
R  
130707000790010004200

B362-522 1453

352 RADIO SECTION ALL STATION  
352 EAR SECTION



FRONT  
REAR  
LINE Z  
358

FRONT SIDE WHEN BODY IS  
LOCATED IN RELATION TO LINE Z  
BY THE STEERING RE-SHIFT DIMENSIONS  
SHOWN ON ABCDE

WHEELS ARE SET WHEN THE CAR IS  
ALIGNED WITH THE VEHICLE LINE Z  
LINE Z IS SET ONCE ONCE AFTER WHICH  
WHEELS ARE THEN SET.

INTERMEDIATE SHEET 10-5 FRONT SUPERSTRUCTURE		DRAFT	DATE
1	2		
100	100	100	100
100	100	100	100
100	100	100	100



**MINISTÈRE DES TRANSPORTS**

Luxembourg, le 27 décembre 2001  
 19-21, Boulevard Royal  
 L-2910 Luxembourg  
 Tél. 478-1 - Télécopieur 241 817 - Télex 1445 CIVAIR LU

REFERENCE: 613\*70/311\*1999/7\*0042\*03

ANNEXE: Documentation technique

**Communication concernant:**  
**Communication concerning:**

- la réception
- type-approval
- l'extension de la réception
- extension of type approval
- le refus de la réception
- refusal of type approval
- la rejetée de la réception
- rejection of type approval

d'un type de véhicule / composant / unité technique<sup>(1)</sup> en vertu de la directive 70/311/CEE, modifiée en dernier lieu par la directive 1999/7/CE,  
 of a type of vehicle / component / separate technical-unit<sup>(1)</sup> with regard to Directive 70/311/EEC, as last amended by Directive 1999/7/EC.

**Nombré d'homologation:**  
**Approval number:** 613\*70/311\*1999/7\*0042\*03

**Motif(s) de l'extension:**  
**Reason for extension:**

- Drawings updated;
- Address of one assembly plant;
- Dimensions of the vehicle;
- Vehicle variants added;
- Tyre and wheel sizes added.

**SECTION I**  
**SECTION I**

0.1.	Marque (raison sociale du constructeur): Make (name of manufacturer):	FORD
0.2.	Type: Type:	70/311-DW-R79
	Variante(s)/Variante(s): Version(s)/Version(s):	DAL DAW, DBL, DBW, DFW, DNW, DAX, DBX, DNX
0.3.	Moyens d'identification du type, s'ils figurent sur le véhicule / composant / unité technique <sup>(1,2)</sup> : Means of identification of type, if marked on the vehicle / component / separate technical-unit:	not applicable
0.3.1.	Emplacement de ce marquage: Location of the marking:	not applicable
0.4.	Catégorie de véhicule <sup>(3)</sup> : Category of vehicle:	M <sub>1</sub>

6.5.	Nom et adresse du constructeur: Name and address of manufacturer:	Ford-Werke Aktiengesellschaft D-30725 Köln
6.7.	La cas des composants et d'unités techniques, emplacement et méthode d'apposition de la marque de réception CE: In the case of components and separate technical units, location and method of affixing of the EC approval mark:	not applicable
6.8.	Adresse(s) des ateliers: Address(es) of assembly plant(s):	Ford Werke Aktiengesellschaft D-66740 Saarlouis  Ford España S.A. E-46440 Almussafes, Valencia

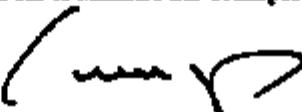
<sup>1</sup> Rester la mention inscrite  
Delete where not applicable

<sup>2</sup> Si les moyens d'identification du type comportent des caractères non pertinents pour décrire les types de véhicules, de composants ou d'unité technique visés par la présente fiche de réception, ces caractères sont remplacés par le symbole "?" dans la documentation (par exemple: ABC7?123??).

If the means of identification of type contain elements not relevant to describe the vehicle, component or separate technical unit types covered by this certificate, such characters shall be represented in the documentation by the symbol "?" (e.g. ABC7?123??).

<sup>3</sup> Suivant les définitions données à l'annexe II section A de la directive 70/156/CEE  
As defined in Annex II A to directive 70/156/EEC

**SECTION II**  
**SECTION II**

- |    |   |   |
|----|---|---|
| 1. | Renseignements complémentaires<br>(si nécessaire);<br>Additional information (where applicable):  | see addendum  |
| 2. | Autorité délivrante :<br>Issuing authority :  | Société Nationale de Certification et d'Homologation<br>Département SNCT-H<br>L-5261 Sandweiler                         |
|    | Service technique responsable de<br>de l'exécution des essais;<br>Technical service responsible for carrying out the<br>tests:  | TÜV Rheinland Luxembourg GmbH<br>Centre Commercial "Le 2000" Z.I.<br>route de Bettembourg<br>L-9378 Livange             |
| 3. | Date du procès-verbal d'essai:<br>Date of test report:  | 12.12.2001  |
| 4. | Número do protocolo verbal d'essai:<br>Number of test report:   | 17LN00306-04  |
| 5. | Remarques (je cas échéant):<br>Remarks (if any):  | see addendum  |
| 6. | Lieu:<br>Place:   | Luxembourg  |
| 7. | Date:<br>Date:  | 27 décembre 2001  |
| 8. | Signature:<br>Signature:  | Pour le Ministre des Transports<br> |
| 9. | L'index du dossier de réception dépend<br>seulement des autorités compétentes, qui peut<br>être obtenu sur demande, est joint:<br>The index to the information package lodged with the<br>approval authority, which may be obtained on request, is<br>attached. | see index to type-approval report   |

**Appendice**  
**Annex**

**à la fiche de réception d'un type de véhicule N° e13\*70/311\*1999/7\*0042\*03  
to EC type-approval certificate N° e13\*70/311\*1999/7\*0042\*03**  
**après la réception par type d'un véhicule selon la directive 70/311/CEE amendée en dernier lieu par la  
directive 1999/7/CE.**  
**concerning the type-approval of a vehicle with regard to Directive 70/311 as last amended by Directive 1999/7/EC.**

**1. Renseignements complémentaires**  
Additional information:

Type d'équipement de direction: Type of steering:	rack and pinion steering
Commande de direction: Steering control:	circular steering wheel
Transmetteur de direction: Steering wheel:	mechanical linkage
Roues directrices: Steered wheels:	2 at front axle
Source d'énergie: Energy source:	internal power with power assistance through oil pump
Efficacité de freinage: Braking performance:	not applicable
Indication du numéro de réception attribué conformément à la directive 71/320/CEE le cas échéant. Statement of the type-approval number granted in accordance with directive 71/320/EEC if applicable:	not applicable
et/ou renseignements concernant l'état du véhicule pendant les essais en charge à vide <sup>1)</sup> . and/or information concerning the state of the vehicle during tests under load.	not applicable

**2. Observations:**  
Remarks:

(par exemple également valable pour véhicules à conducteur à gauche et conducteur à droite). (e.g. valid for both left-hand and right-hand drive vehicles).	valid for left- or right-hand driven vehicles
---	---

Note explicative et réglementaire des extensions suivantes  
Explanatory and regulatory note of delivered extensions

Extension I of 18.08.2000

- Editorial changes;
- Updating directive;
- Vehicle weights;
- Vehicle dimensions;
- Steering angle and turns;
- Tyre informations;
- Vehicle drawings;
- Steering and suspension drawings;
- Versions of vehicle type added;
- Drawing of steering control.

Extension II of 02.04.2001

- Editorial changes and corrections;
- Range of technically permissible laden masses;
- Tyre dimension added;
- Commercial description deleted.

Extension III of 27.12.2001

- Drawings updated;
- Address of one assembly plant;
- Dimensions of the vehicle;
- Vehicle variants added;
- Tyre and wheel sizes added.

Differ in countries involved  
Differ where not applicable

**MINISTÈRE DES TRANSPORTS**

Luxembourg, le 27 décembre 2001  
 19-21, Boulevard Royal  
 L-2910 Luxembourg  
 Tél 475-1-Téléopérateur 241 817 - Téléc 1465 CIVAIR LU

REFERENCE: e13\*70/311\*1999/7\*0042\*03

ANNEXES: Documentation technique

**Index du dossier de réception**  
**Index to type-approval**

N° de réception: Approval number:	e13*70/311*1999/7*0042*03
Révision: Revision:	01
Marque de fabricant ou de commerce: Trade name or mark:	FORD
Type: Type:	70/311-DW-R79
1. Procès-verbal d'essai: Test report:	N° 17LN00508-04
- Technical report: - Information about vehicle type EC: - Information about vehicle type ECE: - List of modifications:	Pages 1 to 3; Appendix LA - Pages 4 & 5; Appendix LB - Page 6; Appendix C - Page 7.
2. Dossier du constructeur: Report of the manufacturer:	N° 70/311-DW-R79
- Cover sheet information folder: - Index to information folder: - Information document: - Attachments to information document: Attachment to item 1.1.:	Page 1; Page 2; Pages 3, 4, 5, 6, 7 & 8;
Attachment to items 7.1. & 7.2.4.:	Drawing N° HL-2M51-000056-001, HL-2M51-000056-004, HL-2M51-000056-007 & HL-2M51-000056-010, HL-2M5V-000056-001, HL-2M5V-000056-004.
Attachment to items 7.2.3.1. & 7.2.4.:	Drawing N° HL-2M51-040100-001, HL-2M51-040100-002, HL-2M51-040100-003, HL-2M51-040100-004; Drawing N° CXB41-123-AA-1, HL-2M51-110400-004.
3. Autres documents annexés: Other documents annexed:	not applicable
4. Date de délivrance de la réception initiale: Date of issue of initial type approval:	12.05.1998
5. Date de la dernière délivrance de pages révisées: Date of last issue of revised pages:	08.12.1998
6. Date de la dernière délivrance d'une fiche de réception révisée: Date of last updated:	27.12.2001

## MINISTÈRE DES TRANSPORTS

REFERENCE: E13\*79R00\*79R01\*0042\*03

ANNEXE2: Documentation technique

Luxembourg, le 27 décembre 2001  
 19-21, Boulevard Royal  
 L-2910 Luxembourg  
 Tél. 478-1 - Télécopieur 241817 - Téléc 1465 CTVAIR LU



Communication concernant:  
 Communication concerning:

- délivrance d'une homologation approuvée;
- l'extension d'homologation approuvée;
- la rétine d'homologation approuvée;
- la retrait d'homologation approuvée;
- l'arrêté d'arrêt de la production produisant définitivement discontinué.

d'un type de véhicules, ou ce qui concerne l'équipement de direction, en application du Règlement N° 79  
 of a vehicle type with regard to steering equipment pursuant to Regulation N° 79.

N° d'homologation:

Approval number:

E13\*79R00\*79R01\*0042\*03

Marque d'homologation:

Approval mark:



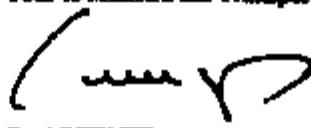
1.	Marque de fabrique ou de commerce du véhicule: Trade name or mark of vehicle:	FORD
2.	Type de véhicule: Vehicle type:	7M311-DW-R79
	Version(s): Version(s):	DAL DAW, DBL, DBW, DFW, DNW, DAX, DBX, DNX <i>left- or right-hand drive</i>
3.	Nom et adresse du constructeur: Manufacturer's name and address:	Ford-Werke Aktiengesellschaft D-50725 Köln
4.	Le nom évident nom et adresse de son mandataire: Name and address of manufacturer's representative:	not applicable
5.	Description sommaire de l'équipement de direction: Brief description of the steering equipment:	
5.1.	Type d'équipement de direction: Type of steering equipment:	rack and pinion steering
5.2.	Commande de direction: Steering control:	steering wheel

5.3.	<b>Transmission de direction:</b> Steering transmission:	mechanical linkage
5.4.	<b>Roues directrices:</b> Steered wheels:	2, at front axle
5.5.	<b>Source d'énergie:</b> Energy source:	muscular power with power assistance through oil pump
6.	<b>Résultats des essais. Effort à la commande de direction nécessaire pour inscrire le véhicule dans un cercle de 12 m de rayon ou de 20 m de rayon dans le cas d'un défaut de fonctionnement:</b> Results of tests. Steering effort required to achieve a turning circle of 12 metres or 20 metres radius with a fault	
6.1.	<b>Dans des conditions normales:</b> Under normal conditions:	turning left: 5,9 daN turning right: 6,1 daN
6.2.	<b>Après défaillance de l'équipement spécial:</b> After failure of special equipment:	turning left: 15,2 daN turning right: 15,5 daN
7.	<b>Véhicule présenté à l'homologation le:</b> Vehicle submitted for approval on:	16.11.2001
8.	<b>Autorité déléguée:</b> Assigned authority:	Société Nationale de Certification et d'Homologation Département SNCT-H L-5201 Sandweiler
	<b>Service technique chargé des tests d'homologation:</b> Technical service responsible for conducting approval tests:	TÜV Rheinland Luxembourg GmbH Centre Commercial "Le 2000" Z.I. route de Bettembourg L-3378 Livange
9.	<b>Date du procès-verbal délivré par ce service:</b> Date of report issued by that service:	12.12.2001
10.	<b>Número do protocolo verbal emitido por este serviço:</b> Number of test report issued by that service:	17LN00308-04
11.	<b>L'homologation est:</b> Approval:	extended
12.	<b>Emplacement de la marque d'homologation sur le véhicule:</b> Position of approval mark on vehicle:	nearby the VIN-plate

13. Fait à  
Place: Luxembourg

14. Date:  
Date: 27 décembre 2001

15. Signature:  
Signature: Pour le Ministre des Transports

  
Paul SCHMIT  
Commissaire du Gouvernement

16. Une liste des documents du dossier d'homologation déposé auprès des services administratifs qui ont délivré l'homologation qui figure en annexe à cette communication peut être obtenue sur demande:  
Annexed to this communication is a list of documents in the approval file deposited at the administration services having delivered the approval and which can be obtained upon request.

see "INDEX TO TYPE-APPROVAL REPORT" annexed

Modifications faisant l'objet de plusieurs extensions  
Modifications of this extension:

- Drawings updated;
- Address of one assembly plant;
- Dimensions of the vehicle;
- Vehicle variants added;
- Tyre and wheel sizes added.

Note applicable et rectifications des extensions précédentes  
Rectifications and corrections from of previous extensions

Extension I of 18.09.2000

- Editorial changes;
- Updating directive;
- Vehicle weights;
- Vehicle dimensions;
- Steering angle and turns;
- Tyre informations;
- Vehicle drawings;
- Steering and suspension drawings;
- Versions of vehicle type added;
- Drawing of steering control.

Extension II of 02.04.2001

- Editorial changes and corrections;
- Range of technically permissible laden masses;
- Tyre dimension added;
- Commercial description deleted.

Extension III of 27.12.2001

- Drawings updated;
- Address of one assembly plant;
- Dimensions of the vehicle;
- Vehicle variants added;
- Tyre and wheel sizes added.

I Rayez les mentions inutiles  
Strike out what does not apply

## MINISTÈRE DES TRANSPORTS

REFERENCE: E13\*79R00\*79R01\*0042\*03

Luxembourg, le 27 décembre 2001  
 19-21, Boulevard Royal  
 L-2910 Luxembourg  
 Tel. 478-1 ~ Télécopieur 241317 ~ Téléc 1463 CTVAIR LU

ANNEXES: Documentation technique

**Index du dossier d'homologation**  
**Index to type-approval**

<b>Numéro d'homologation:</b> Appel number:	E13*79R00*79R01*0042*03
<b>Révision:</b> Revision:	01
<b>Marque de fabricant ou de commerce:</b> Trade name or mark:	<b>FORD</b>
<b>Type:</b> Type:	70311-DW-R79
<b>1.</b> <b>Procès-verbal d'essai:</b> Test report:	N° 17LN00506-04
- Technical report: - Information about vehicle type EC: - Information about vehicle type ECB: - List of modifications:	Pages 1 to 3; Appendix LA - Pages 4 & 5; Appendix LB - Page 6; Appendix C - Page 7.
<b>2.</b> <b>Dossier du constructeur:</b> Report of the manufacturer:	N° 70311-DW-R79
- Cover sheet information folder: - Index to information folder: - Information document: - Attachments to information document: Attachment to item 1.1.:  Attachment to items 7.1. & 7.2.4.:  Attachment to items 7.2.3.1. & 7.2.5.:	Page 1; Page 2; Pages 3, 4, 5, 6, 7 & 8;  Drawing N° HL-2M51-000056-001, HL-2M51-000056-004, HL-2M51-000056-007 & HL-2M51-000056-010; HL-2M51V-000056-001, HL-2M51V-000056-004; Drawing N° HL-2M51-040100-001, HL-2M51-040100-002, HL-2M51-040100-003, HL-2M51-040100-004; Drawing N° GX0841-127-AA-3, HL-2M51-110400-004,
<b>3.</b> <b>Autres documents annexes:</b> Other documents annexed:	not applicable
<b>4.</b> <b>Date de délivrance de l'homologation initiale:</b> Initial date:	12.03.1998
<b>5.</b> <b>Date de la dernière délivrance de pages révisées:</b> Date of last issue of revised pages:	08.12.1998
<b>6.</b> <b>Date de la dernière délivrance d'une homologation révisée:</b> Date of last extension:	27.12.2001



Vehicle type : 70/311-DW-R79  
Manufacturer : Ford

## TECHNICAL REPORT

according to the Council Directive on the approximation of the laws of the Member States relating to

**Steering equipment  
for motor vehicles and their trailers**

**70/311/EEC** dated: June 06, 1970  
amended by  
**1999/7/EC** dated: January 26, 1999

and  
according to ECE-Regulation

**Uniform provisions concerning the approval vehicles with regard to steering equipment**

**ECE-R 79** dated: December 1, 1988  
amended by  
**Amend. 01, Suppl. 01, Corr. 00** dated: February 07, 1999

Previously granted

EC type-approval : e13\*70/311\*1999/7\*0042\*02

ECE approval : E13\*79R00\*79R01\*0042\*02

**Structure of report:**

1. Tested object(s) and general test information
2. Test minutes
3. Remark concerning tested object(s)
4. Appendices
5. Statement of conformity



Vehicle type : 70/311-DW-R79  
Manufacturer : Ford

**1. Tested object(s) and general test information**

1.1. **Tested object(s)** : see VCA Job Number 97/98 2200

**1.2. General test information**

1.2.1. **Order issued by** : n/a  
(If different from manufacturer)

**1.2.2. Test object / test vehicle**

received on : not applicable

1.2.3. **Test date** : 16.11.2001

1.2.4. **Test site** : Cologne

1.2.5. **Remark** : The results of the test refer exclusively to the object(s) mentioned under point 1.1 of this report.

**2. Test minutes**

2.1. **Test facilities** : The test facilities / measurement equipment used were in compliance with the test requirements.

2.2. **Test results** : see Appendix LB, 6.1 / 6.2

**3. Remark concerning tested object(s)**

: All versions of the vehicle type as stated in the information document are covered by the tested vehicle version(s) and tested object(s) respectively.



Vehicle type : 70/311-DW-R79  
Manufacturer : Ford

#### 4. Appendices

- LA Information about the vehicle type according to the communication concerning the EC type-approval.
- LB Information about the vehicle type according to the communication concerning the ECE certificate.
- O List of modifications

Information folder No. : 70/311-DW-R79

#### 5. Statement of conformity

The type referred to above complies with the requirements mentioned on page 1.

The technical report comprises - including appendices LA, LB and O - pages 1 to 7 and shall not be reproduced partially without the written approval of the testing laboratory.

12.12.2001

spr

A handwritten signature in black ink that appears to read "Sprenger".

Dipl.-Ing. Sprenger

**Vehicle type** : 70/311-DW-R79  
**Manufacturer** : Ford

**Information about the vehicle type according to the communication concerning the EC type-approval.**

**Appendix LA**

**Section I**

0 General

0.1 Make (trade name of manufacturer) : FORD

0.2 Vehicle type : 70/311-DW-R79  
- version(s) : DA1, DAW, DB1, DSW, DFW, DNW  
DAX, DBX, DNX  
sedan (3dr, 4dr, 5dr), wagon 5dr  
(left-hand drive or right-hand drive)

0.3 Means of identification of type if marked on the vehicle : not applicable

0.3.1 Location of that marking : not applicable

0.4 Category of the vehicle : M<sub>1</sub>

0.5 Name and address of the manufacturer : Ford-Werke Aktiengesellschaft  
60725 Köln  
Germany

Name and address of the manufacturer responsible for the final stage of construction : see above

Name and address of the manufacturer's authorized representative : not applicable

0.6 Address of assembly plant(s) : Ford-Werke Aktiengesellschaft  
66740 Saarlouis  
Germany  
Ford España S.A.  
46440 Almussafes, Valencia  
Spain



Vehicle type : 70/311-DW-R79  
Manufacturer : Ford

**Section II**

1. Additional Informations (where applicable) : see Addendum
3. Date of technical report : 12.12.2001

**Addendum to EC type-approval certificate**

**1. Additional Information**

- Type of steering equipment : rack and pinion steering  
Steering control : circular steering wheel  
Steering transmission : mechanical linkage  
Steered wheels : 2, at front axle  
Energy source : muscular power with power assistance through oil pump

**Braking performance**  
statement of the component  
type-approval number granted  
In accordance with directive  
71/320/EEC and information  
concerning the state of the  
vehicle during tests: *Leidenfunktoden* : not applicable

- 5. Remarks** : valid for both right- and left-hand drive

---

**Vehicle type** : 70/311-DW-R79  
**Manufacturer** : Ford

---

**Information about the vehicle type according to the communication concerning the ECE approval.**

**Appendix LB**

1	Trade name or mark of the vehicle	: FORD
2	Vehicle type	: 70/311-DW-R79
3	Name and address of the manufacturer	: Ford-Werke Aktiengesellschaft 50725 Köln Germany
4	Name and address of the manufacturer's authorised representative	: not applicable
5	Brief description of the steering equipment	
5.1	Type of steering- equipment	: rack and pinion steering
5.2	Steering control	: circular steering wheel
5.3	Steering transmission	: mechanical linkage
5.4	Steered wheels	: 2, at front axle
5.5	Energy source	: muscular power with power assistance through oil pump
6	Results of tests (Steering effort required to achieve a turning circle of 12 metres radius or 20 metres with a fault)	
6.1	Under normal conditions	: Left manoeuvre : 5,9 daN Right manoeuvre : 6,1 daN
6.2	After failure of special equipment	: Left manoeuvre : 15,2 daN Right manoeuvre : 15,5 daN
7	Vehicle submitted for approval on	: 16.11.2001
9	Date of technical report issued by that service	: 12.12.2001
12	Position of approval mark on vehicle	: Near by the VIN-plate



**Vehicle type** : 70/311-DW-R78  
**Manufacturer** : Ford

**List of modifications**

**Appendix 0**

Correction of : —

**Modification of** : Update of drawings  
Address of assembly plant of Valencia (Spain)  
Dimensions of vehicle (range):  
- length  
- front overhang  
- rear overhang

Addition of : Vehicle variants DA1 and DB1  
Tyre and wheel size:  
- 205/55R16 on 6Jx16H2 with offset 52,5;  
- 215/40R17 on 7Jx17H2 with offset 49,0

Deletion of : —

**FORD**

Issue date : 26-Feb-1998  
Date of revision : 16-Nov-2001  
Page : 1

ECE TA-No. :E13\*70/311\*1999/7\*0042\*03  
ECE TA-No. :E13\*79R00\*79R01\*0042\*03  
Information Folder No. :70/311-DW-R79

---

## **INFORMATION FOLDER**

in accordance with Annex I of Council Directive 70/156/EEC relating to EEC-Type-approval of a vehicle type and with regard to the

### **Steering effort**

(Directive 70/311/EEC as last amended by Directive 1999/7/EC  
& Regulation ECE-R 79.01)

EC TA-No. :E13\*70/311\*1999/7\*0042\*03  
ECE TA-No. :E13\*79R00\*79R01\*0042\*03  
Information Folder No. :70/311-DW-R79

**Index to Information Folder**

Description	Page(s)	Drawing- No.	Issue- date	Date of revision
Cover Sheet Information Folder	1-1	-	26-Feb-1998	16-Nov-2001
Index of Information Folder	2-2	-	26-Feb-1998	16-Nov-2001 @
Information Document	3-8	-	26-Feb-1998	16-Nov-2001 @
Attachment to item 1.1.	-	HL-2M51-000056-001	01-Feb-2001	
	-	HL-2M51-000056-004	01-Feb-2001	
	-	HL-2M51-000056-007	01-Feb-2001	
	-	HL-2M51-000056-010	01-Feb-2001	
	-	HL-2M5V-000056-001	15-Oct-2001	26-Oct-2001 @
	-	HL-2M5V-000056-004	15-Oct-2001	26-Oct-2001 @
Attachment to item 7.1.	-	HL-2M51-040100-001	14-Mar-2001	
	-	HL-2M51-040100-002	14-Mar-2001	
	-	HL-2M51-040100-003	14-Mar-2001	
	-	HL-2M51-040100-004	25-Apr-2001	@
Attachment to item 7.2.3.1.	-	HL-2M51-110400-004	29-Oct-1997	08-Nov-2001 @
Attachment to item 7.2.4.	-	HL-2M51-040100-001	14-Mar-2001	
	-	HL-2M51-040100-002	14-Mar-2001	
	-	HL-2M51-040100-003	14-Mar-2001	
	-	HL-2M51-040100-004	25-Apr-2001	@
Attachment to item 7.2.5.	-	HL-2M51-110400-004	29-Oct-1997	08-Nov-2001 @

EC TA-No. :e13\*70/311\*1999/7\*0042\*03  
ECE TA-No. :E13\*79R00\*79R01\*0042\*03  
Information Folder No. :70/311-DW-R79

---

**0. GENERAL**

- 0.1. Make (trade name of manufacturer): **FORD**
- 0.2. Type: **70/311-DW-R79**  
@  
**DA1, DAW, DAX, DB1, DBW, DEX, DFW, DNW,  
DNX**
- 0.3. Means of identification of type, if marked on the vehicle: Not applicable
- 0.3.1. Location of that marking: Not applicable
- 0.4. Category of vehicle: **M1**
- 0.5. Name and address of manufacturer:  
**Ford-Werke Aktiengesellschaft  
50725 Koeln  
Germany**
- 0.5.a. Manufacturer's representative: Not applicable
- 0.5.b. Location of the ECE-approval-mark on the vehicle: Near by VIN-plate
- 0.6. Address(es) of assembly plant(s):  
**Ford Espaa S.A.  
46440 Almussafes, Valencia  
Spain**  
**Ford Werke Aktiengesellschaft  
66740 Saarlouis  
Germany**

EC TA-No. :E13\*79311\*19997\*0042\*03  
ECE TA-No. :E13\*79R00\*79R01\*0042\*03  
Information Folder No. :79311-DW-R79

---

**1. GENERAL CONSTRUCTION CHARACTERISTICS OF THE VEHICLE**

- 1.1. Photographs and/or drawings of a representative vehicle: see attachment @
- 1.3. Number of axles and wheels:  
Axles: 2  
Wheels: 4
- 1.3.1. Number and position of axles with double wheels:  
Number: Not applicable  
Position: Not applicable
- 1.3.2. Number and position of steered axles:  
Number: 1  
Position: Axle 1
- 1.3.3. Powered axles (number, position, interconnection):  
Number: 1  
Position: Axle 1  
Interconnection: Not applicable
- 1.8. Hand of drive: Left hand drive or right hand drive

EC TA-No. :E13\*70/311\*1999/7\*0042\*03  
ECE TA-No. :E13\*79R00\*79R01\*0042\*03  
Information Folder No. :70/311-DW-R79

**2. MASSES AND DIMENSIONS (in kg and mm)**  
(Refer to drawing where applicable)

**2.1. Wheel base(s) (fully loaded):** 2615 mm

**2.3.1. Track of each steered axle:** 1484 mm to 1502 mm

**2.4. Range of vehicle dimensions (overall)**

**2.4.1. For chassis without bodywork**

**2.4.1.1. Length:** Not applicable

**2.4.1.2. Width:** Not applicable

**2.4.1.4. Front overhang:** Not applicable

**2.4.1.5. Rear overhang:** Not applicable

**2.4.2. For chassis with bodywork**

**2.4.2.1. Length:**

Body	Body Variant	Without Towbar [mm]	Attached Towbar [mm]
Estate	5-door	4454	4554
Sedan	3-door	4174	4292
	4-door	4382	4478
	5-door	4174	4292

**2.4.2.2. Width:** Estate 1702 mm  
Sedan 1702 mm

**2.4.2.4. Front overhang:**

Body	Body Variant	Front overhang [mm]
Sedan	5-door	858
	3-door	848
	4-door	858
Estate	5-door	858

EC TA-No. :E13\*78/311\*1999/7\*0042\*03  
ECE TA-No. :E13\*79R80\*79R81\*0042\*03  
Information Folder No. :78/311-DW-R79

**2.4.2.5. Rear overhang:**

Body	Body Variant	Rear overhang [mm]
Sedan	5-door	701 to 819
	3-door	701 to 819
	4-door	909 to 1005
Estate	5-door	981 to 1081

**2.8. Technically permissible maximum laden mass stated by the manufacturer (maximum and minimum for each variant):**

Body	Body Variant	Min. to Max. [kg]
Estate	5-door	1630 kg to 1810 kg
Sedan	3-door	1570 kg to 1695 kg
Sedan	4-door	1590 kg to 1725 kg
Sedan	5-door	1585 kg to 1720 kg

**2.9. Technically permissible maximum load/mass on each axle:**

Axle	Load / Mass [kg]
Axle 1	963
Axle 2	960

EC TA-No. :E13\*70/311\*1999/7\*0042\*03  
ECE TA-No. :E13\*79R00\*79R01\*0042\*03  
Information Folder No. :70/311-DW-R79

**6. SUSPENSION****6.6 Tyres and wheels**

**6.6.1.** Tyre/wheel combination(s) (For tyres indicate size designation, minimum load-capacity index, minimum speed category symbol; for wheels indicates rim size(s) and off-set(s))

**6.6.1.1. Axles****6.6.1.1.1. Axis 1:**

Tyre Size	Rim Size (inches)	Rim Offset (mm)
215/45 R17	7J x 17 H2	49,0
215/40 R17	7J x 17 H2	49,0
205/55 R16	6J x 16 H2	52,5
205/50 R16	6J x 16 H2	52,5
195/60 R15	6J x 15 H2	47,5
	6J x 15 H2	50,0
	6J x 15 H2	52,5
195/55 R15	6J x 15 H2	52,5
	6J x 15 H2	50,0
	6J x 15 H2	47,5
185/65 R14	5,5J x 14 H2	47,5
	5,5J x 14 H2	43,5

**6.6.1.1.2. Axis 2:**

see item 6.6.1.1.1.

**6.6.1.1.3. Axis 3:**

Not applicable

**6.6.1.1.4. Axis 4:**

Not applicable

**6.6.3. Tyre pressure(s) as recommended by the vehicle manufacturer:**

200 kPa to 310 kPa

EC TA-No. :E13\*79311\*19997\*0042\*03  
ECE TA-No. :E13\*79R00\*79R01\*0043\*03  
Information Folder No. :79311-DW-R79

---

**7. STEERING**

- 7.1. Schematic diagram of steered axle(s) showing steering geometry; **see attachment** ☺
- 7.2. Transmission and control
- 7.2.1. Type of steering transmission (specify for front and rear, if applicable):  
Axe 1: Rack and pinion steering  
Axe 2: Not applicable
- 7.2.2. Linkage to wheels (including other than mechanical means; specify for front and rear, if applicable); **mechanical**
- 7.2.3. Method of assistance, if any: **hydraulic**
- 7.2.3.1. Method and diagram of operation, make(s) and type(s); **see attachment** ☺
- 7.2.4. Diagram of the steering equipment as a whole, showing the position on the vehicle of the various devices influencing its steering behaviour; **see attachment** ☺
- 7.2.5. Schematic diagram(s) of the steering control(s); **see attachment** ☺
- 7.3. Maximum steering angle of the wheels
- 7.3.1. To the right [degrees]; number of turns of the steering wheel (or equivalent data); **See attachment to Item 7.2.4.**
- 7.3.2. To the left [degrees]; number of turns of the steering wheel (or equivalent data); **See attachment to Item 7.2.4.**

5982-022 1429

DB1

15-Oct-2001

26-Oct-2001

15-Oct-2001

26-Oct-2001

DA1

ER02-022 1438

HOMOLOGATION ONLY						
SD#	DATE	LET	REVISIONS	DR.	EX.	APP.
F 950115			ISSUED		HW	M25 M3
			B1 WAS 18 NM			
			Y 950115 B2 WAS 22.7NM		JNMG JHG	

TORQUE SETTINGS COLUMN TO CROSS CAR

BEAM: NUT (13 OFF) 16.8 NM B1

SCREW (1 OFF) 17.8 NM B2

STRG # 18N LOCK ASY

ENERGY ABSORBING STRAPS  
COLUMN SUPPORT BRACKET

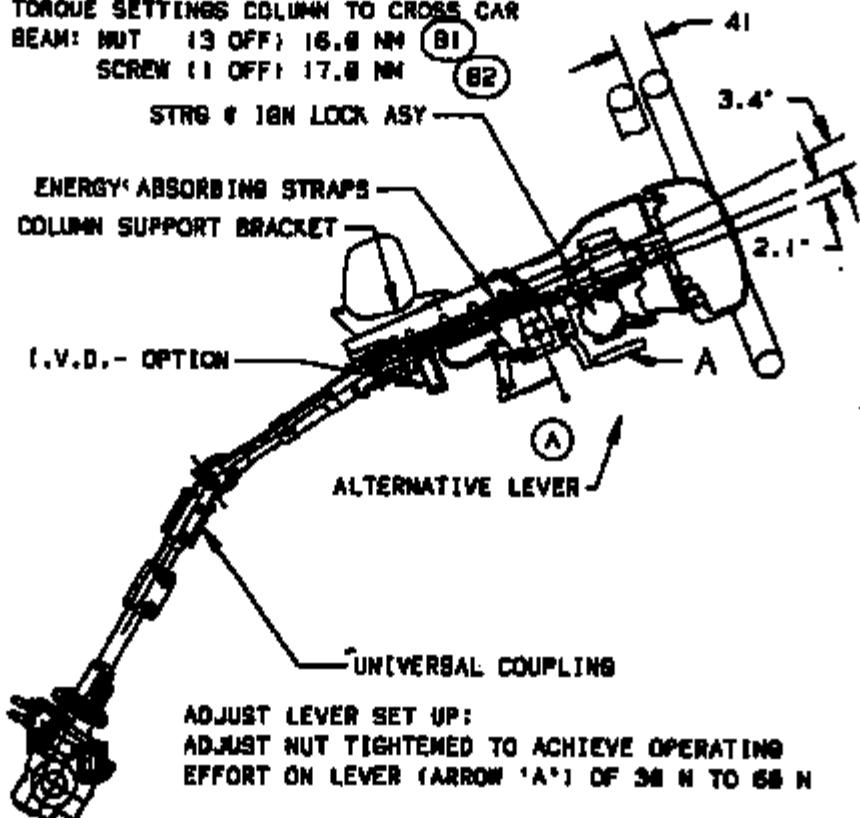
I.V.D. - OPTION

ALTERNATIVE LEVER

UNIVERSAL COUPLING

ADJUST LEVER SET UP:

ADJUST NUT TIGHTENED TO ACHIEVE OPERATING  
EFFORT ON LEVER (ARROW 'A') OF 34 N TO 55 N

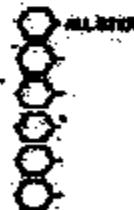


Reference D7W/D7X/DA1,DB1	Issue Date 29-Oct-1997	Title COL ASY-STNG ADJ
FORD	Release Date 08-Nov-2001	Attachment Number HL-2M51-118400-004

GENERAL INFORMATION		VEHICLE TYPE	
VEHICLE IDENTIFICATION NUMBER	JHM1M1111111111111111	VEHICLE IDENTIFICATION NUMBER	JHM1M1111111111111111
MANUFACTURER'S NAME	FORD MOTOR COMPANY	MANUFACTURER'S NAME	FORD
MANUFACTURER'S ADDRESS	DETROIT, MI 48202	MANUFACTURER'S ADDRESS	DETROIT, MI 48202
MANUFACTURE DATE	1999	MANUFACTURE DATE	1999
VEHICLE CLASS	R	VEHICLE CLASS	R
VEHICLE DESCRIPTION	Passenger car	VEHICLE DESCRIPTION	Passenger car
VEHICLE IDENTIFICATION NUMBER	JHM1M1111111111111111	VEHICLE IDENTIFICATION NUMBER	JHM1M1111111111111111

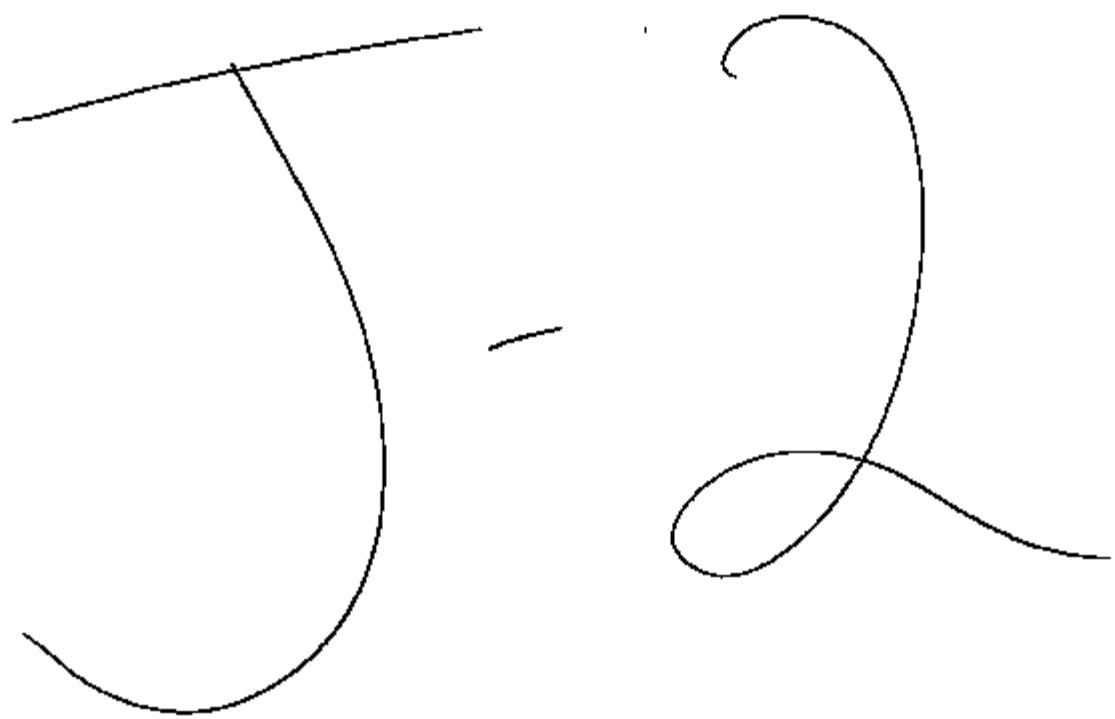
SECTION	A	GENERAL INFORMATION											
		1	2	3	4	5	6	7	8	9	10	11	12
BODY	A	○	○	○	○	○	○	○	○	○	○	○	○
CHASSIS	B	○	○	○	○	○	○	○	○	○	○	○	○
POWER TRAIN	C	○	○	○	○	○	○	○	○	○	○	○	○
WHEELS	D	○	○	○	○	○	○	○	○	○	○	○	○
TIRES	E	○	○	○	○	○	○	○	○	○	○	○	○
SEAT BELTS	F	○	○	○	○	○	○	○	○	○	○	○	○
EXHAUST	G	○	○	○	○	○	○	○	○	○	○	○	○
STEERING	H	○	○	○	○	○	○	○	○	○	○	○	○
FRONT SUSPENSION	I	○	○	○	○	○	○	○	○	○	○	○	○
REAR SUSPENSION	J	○	○	○	○	○	○	○	○	○	○	○	○
FRONT BRAKES	K	○	○	○	○	○	○	○	○	○	○	○	○
REAR BRAKES	L	○	○	○	○	○	○	○	○	○	○	○	○
FRONT TIRES	M	○	○	○	○	○	○	○	○	○	○	○	○
REAR TIRES	N	○	○	○	○	○	○	○	○	○	○	○	○
FRONT WHEELS	O	○	○	○	○	○	○	○	○	○	○	○	○
REAR WHEELS	P	○	○	○	○	○	○	○	○	○	○	○	○

GENERAL INFORMATION	
VEHICLE IDENTIFICATION NUMBER	JHM1M1111111111111111
MANUFACTURER'S NAME	FORD
MANUFACTURER'S ADDRESS	DETROIT, MI 48202
MANUFACTURE DATE	1999
VEHICLE CLASS	R
VEHICLE DESCRIPTION	Passenger car



GENERAL INFORMATION  
MAX. PERMITTED VEHICLE  
WEIGHT CLASSIFICATION  
FRONT SUSPENSION ARRANGEMENT

Type	Issue Date	Revision Date	Title	Drawing Number
DA1, DA1	FORD	10-Aug-2001	Steering and front suspension arrangement	HL-2M51448100-004





EUROPEAN PRODUCT GROUP  
TESTING ACTIVITY  
LOMMEL

Report No.: 26B047/1  
Request No.: ACA8171  
Date: 24-Sep-95

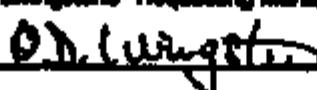
SUBJECT:

Hydraulic brake test of 2000 MY C170, all sedans without ABS  
according to appended draft Test Procedure, dated 2 April 1997.

OBJECT:

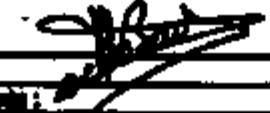
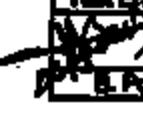
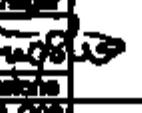
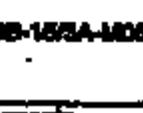
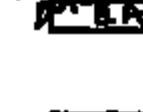
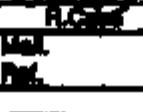
To check the brake performance of the above mentioned vehicle, when subjected to the test requirements of FMVSS 135, dated February 2, 1995 and as amended on July 24, 1995 and on August 25, 1995.

SIGNIFICANT RESULTS AND CONCLUSION:

I. The test vehicle no. 8485321 fitted with the listed brake components was subjected to the test procedure noted above, with the deviations referenced below, and shows that the requirements as laid down in the test request ACA8171 were satisfied.	
<p>Signed  B. Poels, Test Engineer. Date: 25/5/95</p>	
II. I, P. Livingston, Manager C170 Chassis Engineering, declare that I am familiar with the test procedure and am aware of the equipment used and in my judgement results above show that the 2000 MY C170, all sedans without ABS brake system complies with the requirements of the Federal Motor Vehicle Safety Standard No. 135.	
<p>Signed: P. Livingston Requesting Manager. Date:  26 Oct 95</p>	

RESULTS: See attached sheets.

PROCEDURE: The test was carried out in accordance with appended draft Test Procedure, dated 2 April 1997.

III. I, B. Poels, Test Engineer, declare, that the instrumentation used in these tests satisfies the instrumentation requirements referenced in the appended Draft Test Procedure, dated 2 April 1997.			
<p>Signed  B. Poels Test Engineer. Date: 25/5/95</p>			
Comments:			
Requesting area GB-165A-MOB	T.R. No. ACA8171	WTN C1800	Model: 2000 MY C170, all sedans without ABS
Attachments: Test request copy Draft Test Procedure			System No.: 06
Test Engineer:  B. Poels	Req. Manager:  P. Livingston	Req. Manager:  G. Grimes	Distribution:  GB-165A-MOB
Test Engineer:  B. Poels	Req. Manager:  P. Livingston	Req. Manager:  G. Grimes	Return original documents to Req. Man. on completion



EUROPEAN PRODUCT GROUP  
TESTING ACTIVITY  
LORRIES

Report No.: 8800471  
Request No.: ACA8171  
Date : 24-Sep-88

### Vehicle Specifications

#### TESTED VEHICLE

Number : 8483321  
Model : C170

#### COVERED VEHICLE

Released brake system : 8000 MY C170  
Type : SPAC 1E MAAD  
Comments for spec. : all models without ABS

#### Worst case data

Top speed (km/h) : 170  
Weights :

	Front	Rear	Total
Front	1770	674	
Rear	1650	645	

#### Front Brake Data

Caliper : Type: ITT AE FN84  
Piston diameter (mm): 64  
Equivalent dia. (mm): 64

#### Friction material

Pads: FER4104F FF  
Slots: No  
Shims: Yes  
Design friction: 0.4

#### Rims:

Solid/Wheel: Ventilated  
Outer diameter (mm): 598  
Effective radius (mm): 108  
Thickness (mm): 22  
Width: No

#### Comments

#### Rear Brake Data

Caliper : Type: LCB8 HAF DRUM  
Wheel cylinder (mm): 90.64  
Drums : Diameter (mm): 208  
Lip width (mm): 35

#### Friction material

Shoes: D8288 GG  
Design brake factor: 1.1

#### Comments

#### BRAKE ACTUATION

Master : Type: BOSCH 254 SD  
Diameter (mm): 284  
Ratio: 5  
Pedal ratio : 1.4  
Proportion valve type : PCRV 0.345 bar

#### Master cylinder

Type: CV  
Diameter (mm): 29.8  
Stroke (mm): 34  
Stroke split : Diagonal  
ABS : None

#### STEERING DATA

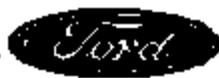
Orientation : Hand  
Type : Cable to rear wheel  
Lever ratio : 6.6

#### Pressure

Front (bar): 2.2  
Rear (bar): 2.2

#### Types

Type : Firestone Flatshark  
Size : P105/60R15  
Wheel radius (STD/STD) (mm) : 200  
Wheel covers : Fully blanked off



## Overview of results - FMVSS135 Requirements

Vmax = 170 km/h

FMVSS 135	Test desc.	Description	Requirement						Test results						Req. met?	
			Speed (km/h)	Stopping distance(s)		Start (m)			Speed (km/h)	Time		Start (m)				
				Min	Max	Min.	Avg	Max		Min	Max	Min.	Avg	Max		
GMVR	67.1	Brake	60	170.0	170.0	600	100	600	100	170.0	170.0	600	100	600	Yes	
GMVR	67.2	Wheel lock response low res	60	170.0	170.0	600	100	600	100	170.0	170.0	600	100	600	Yes	
GMVR	67.3	Wheel lock response High res	100	170.0	170.0	600	100	600	100	170.0	170.0	600	100	600	Yes	
ILVV	67.2	Wheel lock response low res	60	170.0	170.0	600	100	600	100	170.0	170.0	600	100	600	Yes	
ILVV	67.3	Wheel lock response High res	100	170.0	170.0	600	100	600	100	170.0	170.0	600	100	600	Yes	
ILVV	67.4	Steer Performance	100	170.0	170.0	600	100	600	100	170.0	170.0	600	100	600	Yes	
ILVV	67.4	Torque wheel	100	170.0	170.0	600	100	600	100	170.0	170.0	600	100	600	Yes	
GMVR	67.4	Torque wheel	100	170.0	170.0	600	100	600	100	170.0	170.0	600	100	600	Yes	
GMVR	67.5	Steer wheel - steering column	100	70.0	70.0	600	100	600	100	70.0	70.0	600	100	600	Yes	
GMVR	67.6	High speed steering	100	170.0	170.0	600	100	600	100	170.0	170.0	600	100	600	Yes	
GMVR	67.7	Steer wheel - gear	100	70.0	70.0	600	100	600	100	70.0	70.0	600	100	600	Yes	
ILVV	67.8	Steer wheel - steering column	100	70.0	70.0	600	100	600	100	70.0	70.0	600	100	600	Yes	
ILVV	67.8	High speed steering	100	170.0	170.0	600	100	600	100	170.0	170.0	600	100	600	Yes	
ILVV	67.9	Poled switch	100	170.0	170.0	600	100	600	100	170.0	170.0	600	100	600	Yes	
ILVV	67.9	Poled mounting valve	100	170.0	170.0	600	100	600	100	170.0	170.0	600	100	600	Yes	
ILVV	67.10	Poled switch failure	100	160.0	160.0	600	100	600	100	160.0	160.0	600	100	600	Yes	
GMVR	67.10	Poled switch failure	100	160.0	160.0	600	100	600	100	160.0	160.0	600	100	600	Yes	
GMVR	67.11	Poled switch	100	170.0	170.0	600	100	600	100	170.0	170.0	600	100	600	Yes	
GMVR	67.12	Pulling brake - static Hand	100	170.0	170.0	600	100	600	100	170.0	170.0	600	100	600	Yes	
GMVR	67.12	Pulling brake - static Pedal	100	170.0	170.0	600	100	600	100	170.0	170.0	600	100	600	Yes	
GMVR	67.13	Brake pedal	100	170.0	170.0	600	100	600	100	170.0	170.0	600	100	600	Yes	
GMVR	67.14	Brake performance : Step 1	100	70.0	70.0	600	100	600	100	70.0	70.0	600	100	600	Yes	
GMVR	67.14	Brake performance : Step 2	100	170.0	170.0	600	100	600	100	170.0	170.0	600	100	600	Yes	
GMVR	67.15	Brake pedal	60	170.0	170.0	600	100	600	100	170.0	170.0	600	100	600	Yes	
GMVR	67.16	Brake Pedal force	100	30.0	71.0	600	100	600	100	30.0	30.0	600	100	600	Yes	
GMVR	67.17	Brake Pedal force : Total	100	30.0	71.0	600	100	600	100	30.0	30.0	600	100	600	Yes	
GMVR	67.17	Brake response	100	170.0	170.0	600	100	600	100	170.0	170.0	600	100	600	Yes	

All requirements of FMVSS 135 were met.  not met   
NA = Not applicable.

Detailed results can be found on page 4 to page 37.  
The draft test procedure can be found in appendix A.

*CONFIDENTIAL*

EUROPEAN PRODUCT GROUP  
TESTING ACTIVITY  
LOMMEI

Report No.: 09047/2  
Request No.: ACA6171  
Date : 26-Sep-98

SUBJECT:

Hydraulic brake test of 2000 MY C170, all sedans without ABS  
according to appended draft Test Procedure, dated 2 April 1997.

OBJECT:

To check the basic performance of the above mentioned vehicle, when subjected to the test requirements of FMVSS 135, dated February 2, 1995 and as amended on July 24, 1995 and on August 22, 1996.

COMPONENT RESULTS AND CONCLUSIONS:

- I. The test vehicle no. 8A2521 fitted with the listed basic components was subjected to the test procedure noted above, with the deviations referenced below, and shows that the requirements as laid down in the test request ACA6171 were satisfied.

Signed G. Poels, Test Engineer.

Date: 15/9/98

- II. I, P. Livingstone, Manager C170 Chassis Engineering, declare that I am familiar with the test procedure and am aware of the equipment used and in my judgement results above show that the 2000 MY C170, all sedans without ABS brake system complies with the requirements of the Federal Motor Vehicle Safety Standard No. 135.

Signed: P. Livingstone Requesting Manager.

Date:

P. Livingstone 26 Oct 98

RESULTS: See attached sheet.

PROCEDURE: The test was carried out in accordance with appended draft Test Procedure, dated 2 April 1997.

- III. G. Poels, Test Engineer, declare, that the instrumentation used in these tests satisfies the instrumentation requirements referenced in the appended Draft Test Procedure, dated 2 April 1997.

Signed G. Poels Test Engineer.

Date: 15/9/98

Comments:

Requesting area GB-153A-M08	T.I.N. ACA6171	WTN C1900	Model: 2000 MY C170, all sedans without ABS
Attachments:	Test request copy Draft test procedure		System No.: 06
Test Engineer <u>G. Poels</u>	Test Manager <u>P. Livingstone</u>	Req. Manager <u>P. Livingstone</u>	Distribution: G. Grimesey GB-153A-M08
Req. Manager <u>P. Livingstone</u>	Test Engineer <u>G. Poels</u>	Req. Manager <u>P. Livingstone</u>	
		Mail Ref.	Return original documents to Req. Man. on completion
		QD-153A-002	



EUROPEAN PRODUCT GROUP  
TESTING ACTIVITY  
LÖMMEL

Report No.: 88B0472  
Request No.: ACA8171  
Date : 25-Sep-95

## Vehicle Specifications

### TESTED VEHICLE

Number : BAE921  
Model : C170

### COVERED VEHICLE

Released basic system

Spec. : 2000 MY C170  
Comments for spec. : SPEC 12 HAAD  
Comments for spec. : all sedans without ABS

### Worst case data

Top speed (km/h) : 170  
Weights

	Total (kg)	Fr. Axle (%)
Unladen	1370	51.4
Laden	1370	54.9

### Front Brake Data

#### Caliper

Type: ITT AS PN84  
Piston diameter (mm): 64  
Equivalent dia. (mm): 64

#### Disk

Solid/Vented: Vented  
Outer diameter (mm): 280  
Effective radius (mm): 108  
Thickness (mm): 22  
Shield: NO

#### Friction material

Pads: PER4164FF  
State: No  
Shims: Yes  
Design friction: 0.4

Comments

### Rear Brake Drum

#### System

Type: LC88 HAF DRUM  
Wheel cyl.diam. (mm): 20.84

#### Drum

Diameter (mm): 208  
Width (mm): 98

#### Friction material

Shoes: D8258 GG  
Design brake factor: 1.1

Comments

### TRAKE ACTUATION

#### Master

Type: BOSCH 254.80  
Diameter (mm): 254  
Ratio: 6

#### Speed ratio

Reduction valve type : 4

Reduction valve type : PCRV 0.925 bar

#### Master cylinder

Type: CV  
Diameter (mm): 29.8  
Stroke (mm): 94  
Brake split : Diagonal  
ABS : None

### Braking Brake Data

#### Operation

: Hand

: Cable to rear brakes

#### Type

: 5.5

#### Tires

#### Type

: Firestone Firehawk

#### Size

: P185/60R15

Wheel radius (ETRTO) (mm)

: 209

Wheel covers

: Fully blanked off

#### Pressure

: Front (bar): 2.2

: Rear (bar): 2.2



## Overview of results - FMVSS135 Requirements

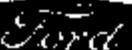
Vmax = 170 km/h

FMVSS 135	Test Description	FMVSS Requirements						Test Results				Req. met?	
		Speed (km/h)	Stopping distance(m)		Effect (%)			Speed (km/h)	Dist.	Effect (%)	Max.		
			Min.	Max.	Min.	Avg.	Max.						
GVMW 37.1	Brake	60						600	60		100	Yes	
GVMW 37.2	Wheel lock response low res.	60						1000	65		100	Yes	
GVMW 37.2	Wheel lock response High res.	100						1000	100		100	Yes	
LLVMW 37.2	Wheel lock response low res.	50						1000	50		100	Yes	
LLVMW 37.2	Wheel lock response high res.	100						1000	100		100	Yes	
LLVMW 37.3	Passenger Performance											Yes	
LLVMW 37.4	Driver wheel											Yes	
GVMW 37.4	Driver wheel											Yes	
GVMW 37.5	One Wheel lock response distance	100		70.0	65			600	100	60.0	800	Yes	
GVMW 37.6	One wheel distance	100		157.5	65			600	100	61.1	150	Yes	
GVMW 37.7	One wheel response off	100		70.0	65			600	100	60.0	100	Yes	
LLVMW 37.8	One Wheel lock response distance	100		70.0	65			600	100	61.5	100	Yes	
LLVMW 37.8	One wheel distance	100		157.5	65			600	100	60.0	100	Yes	
LLVMW 37.9	Front wheel											Yes	
LLVMW 37.9	Front wheel response off											Yes	
GVMW 37.10	Vehicle side impact	100		100.0	65			600	100	60.0	100	Yes	
GVMW 37.10	Vehicle side impact off	100		140.0	65			600	100	60.0	100	Yes	
GVMW 37.11	Vehicle side impact											Yes	
GVMW 37.11	Vehicle side impact off											Yes	
GVMW 37.12	Vehicle side - static front											Yes	
GVMW 37.13	Vehicle side	100		100.0	65			600	100	60.0	100	Yes	
GVMW 37.14	Vehicle side - Step 1	100		17.2	60.0	220.0	100%	100	74.7	600	200	Yes	
GVMW 37.14	Vehicle side - Total	100		16.0	60.0	216.0	100%	600	100	77.0	300	Yes	
GVMW 37.15	Vehicle steering	50		200.0	100%	200.0	100%	100	100	100.0	100	Yes	
GVMW 37.16	Passenger Performance	100	40.0	75.1	100%	200.0	100%	100	67.4	200	210	Yes	
GVMW 37.16	Passenger Performance - Total	500	100.0	100.0	100%	100.0	100%	500	100	100.0	100	Yes	
GVMW 37.17	Final Inspection	100	100.0	100.0	100%	100.0	100%	100	100	100.0	100	Yes	

All requirements of FMVSS 135 were met  not met

N/A = Not applicable.

Detailed results can be found on page 4 to page 37.  
The draft test procedure can be found in appendix A.



EUROPEAN PRODUCT GROUP  
TESTING ACTIVITY  
LONMEL

Report No.: 089085/1  
Request No.: ACA8173  
Date : 28-Sep-98

SUBJECT:

Hydraulic brake test of 2000MY C170, all wagons without ABS  
according to appended draft Test Procedure, dated 2 April 1997.

OBJECT:

To check the brake performance of the above mentioned vehicle, when subjected to the test requirements of FMVSS 135, dated February 2, 1996 and as amended on July 24, 1996  
and on August 28, 1996.

SIGNIFICANT RESULTS AND CONCLUSION:

- I. The test vehicle no. 0AV4253 fitted with the listed brake components was subjected to the test procedure noted above, with the deviations referenced below, and shows that the requirements as laid down in the test request ACA8173 were satisfied.

Signed B. Poole Test Engineer,

Date: 26/10/98

- II. T. P. Livingston, Manager C170 Chassis Engineering, declare that I am familiar with the test procedure and am aware of the equipment used and in my judgement results above show that the 2000MY C170, all wagons without ABS brake system complies with the requirements of the Federal Motor Vehicle Safety Standard No. 135.

Signed: T. P. Livingston Requesting Manager.

Date:

T. P. Livingston 26 Oct-98

RESULTS : See attached sheets .

PROCEDURE: The test was carried out in accordance with appended draft  
Test Procedure, dated 2 April 1997.

- III. B. Poole, Test Engineer, declare, that the instrumentation used in these tests satisfies the instrumentation requirements referenced in the appended Draft Test Procedure , dated 2 April 1997.

Signed B. Poole Test Engineer.

Date: 26/10/98

Comments :

Requesting area GB-189A-M05	T.R. No. ACA8173	WYN C1800	Model : 2000MY C170, all wagons without ABS
Attachments :	Test request copy Draft test procedure		System No.: 05
Test Engineer :  B. Poole	Test Mgr.  T. P. Livingston	Req. Manager  P. Livingston	Division :  G. Chassis GB-189A-M05
Mail: Fax:		08-189A-CDE	Return original documents to Proj. Mgr. on completion



EUROPEAN PRODUCT GROUP  
TESTING ACTIVITY  
LOMMEL

Report No.: 99B085/1  
Request No.: ACA6173  
Date : 26-Sep-99

## Vehicle Specifications

### TESTED VEHICLE

Number : 9A4253  
Model : C170

### COVERED VEHICLE

Retained brake system

Spec. : 2000 MY C170  
Comments for spec. : SPEC 11 NAAO  
Comments for spec. : all wagons without ABS

### Worst case data

Top speed (km/h) : 170  
Weights :

	Total (kg)	F. Axle (kg)
Unladen	1420	59.8
Laden	1590	62.1

### Front Brake Data

#### Caliper

Type: ITT AE PW54  
Piston diameter (mm): 54  
Equivalent dia. (mm): 94

#### Friction material

Pads: FER4154F FF  
Steel: No  
Stainless: Yes  
Design friction: 0.4

#### Disc

Solid/Vented: Vented  
Outer diameter (mm): 293  
Effective radius (mm): 108  
Thickness (mm): 22  
Shield: No

#### Comments

### Rear Brake Data Drum

#### System

Type: LC98 HALF DRUM  
Wheel cyl. diam. (mm): 30.54

#### Friction material

Shoes: D2298 GG  
Design brake factor: 1.1

#### Drum

Diameter (mm): 203  
Lin.width (mm): 35

#### Comments

### BRAKE ACTUATION

#### Brake master cylinder

Type: BOSCH 254 BD  
Diameter (mm): 554  
Ratio: 5

#### Master cylinder

Type: CV  
Diameter (mm): 23.5  
Stroke (mm): 34  
Brake split : Diagonal  
ABS : None

#### Pedal ratio

: 4

#### Reduction valve type

: PCRV 0.305 bar

### STEERING DATA

#### Operation

: Hand  
Type : Cable to rear brakes  
Lower ratio : 5.6

#### Proportioning

Front (bar): 2.2  
Rear (bar): 2.2

#### Tyres

Type : Firestone Firehawk

#### Tires

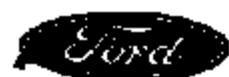
: P195/60R15

#### Roll radius (ETRTO) (mm)

: 298

#### Wheel covers

: Fully blanked off



## Overview of results - FMVSS135 Requirements

Vmax 170 km/h

FMVSS 135	Test	Description	FMVSS Requirements						Test results			Req. met?	
			Speed (km/h)	Stopping distance(m)		Effect (%)		Speed (km/h)	Dist. (m)	Effect (%)			
				Min.	Max.	Min.	Max.			Dist(m)	Avg		
GVMW	57.1	Brake	60	21.4	28.5	100	100	500	60	20.3	20.3	Yes	
GVMW	57.2	Wheel lock response low res.	65	21.4	28.5	100	100	500	65	20.3	20.3	Yes	
GVMW	57.2	Wheel lock response high res.	100	21.4	28.5	100	100	500	100	20.3	20.3	Yes	
LLVM	57.2	Wheel lock response low res.	65	21.4	28.5	100	100	1000	65	20.3	20.3	Yes	
LLVM	57.2	Wheel lock response high res.	100	21.4	28.5	100	100	1000	100	20.3	20.3	Yes	
LLVM	57.3	ABS Performance	100	21.4	28.5	100	100	1000	21.4	20.3	20.3	Yes	
LLVM	57.4	Brake pedal	100	21.4	28.5	100	100	1000	21.4	20.3	20.3	Yes	
GVMW	57.6	Run-off road	100	21.4	28.5	100	100	500	21.4	20.3	20.3	Yes	
GVMW	57.8	Dual front-axle steering distance	100	21.4	28.5	65	100	500	100	21.5	20.5	Yes	
GVMW	57.9	High speed effectiveness	100	21.4	28.5	65	100	500	100	27.3	20.3	Yes	
GVMW	57.7	Run-off road side	100	21.4	28.5	65	100	500	100	24.5	20.5	Yes	
LLVM	57.8	Dual front-axle steering distance	100	21.4	28.5	65	100	1000	40.0	20.5	20.5	Yes	
LLVM	57.9	High speed effectiveness	100	21.4	28.5	65	100	1000	40.0	20.5	20.5	Yes	
LLVM	57.6	Run-off road side	100	21.4	28.5	65	100	1000	N/A	N/A	N/A	N/A	
LLVM	57.10	Headache relief factor	100	21.4	28.5	65	100	1000	101.0	44.0	44.0	Yes	
GVMW	57.10	Headache relief factor	100	21.4	28.5	65	100	500	100	116.1	44.0	Yes	
GVMW	57.5	Run-off road	100	21.4	28.5	65	100	500	100	N/A	N/A	N/A	
GVMW	57.9	Run-off road side	100	21.4	28.5	65	100	500	100	N/A	N/A	N/A	
GVMW	57.11	Run-off road side distance	100	21.4	28.5	65	100	500	100	N/A	N/A	N/A	
GVMW	57.12	Run-off road side load	100	21.4	28.5	65	100	500	100	155.1	44.0	Yes	
GVMW	57.13	Run-off road - side load	100	21.4	28.5	65	100	500	100	N/A	N/A	N/A	
GVMW	57.14	Run-off road side	100	21.4	28.5	65	100	500	100	120.0	44.0	Yes	
GVMW	57.14	Run-off road side : Step 1	100	21.4	28.5	200.0	200.0	100	21.5	100	100	Yes	
GVMW	57.14	Run-off road side : Step 2	100	21.4	28.5	200.0	200.0	100	21.5	20.0	41.5	Yes	
GVMW	57.15	Run-off road	65	21.4	28.5	65	100	500	65	20.3	20.3	Yes	
GVMW	57.16	Emergency Performance	100	40.0	75.0	100.0	100.0	100	40.0	17.0	100	Yes	
GVMW	57.16	Emergency Performance : Total	100	40.0	75.0	100.0	100.0	100	40.0	17.0	100	Yes	
GVMW	57.17	Run inspection	100	21.4	28.5	100	100	500	100	20.3	20.3	Yes	

All requirements of FMVSS 135 were met  not met   
N/A = Not applicable.

Detailed results can be found on page 4 to page 37.  
The draft test procedure can be found in appendix A.

*Formel*

EUROPEAN PRODUCT GROUP  
TESTING ACTIVITY  
LOMMEL

Report No.: 980682  
Request No.: ACA6173  
Date: 29-Sep-98

SUBJECT:

Hydraulic brake test of 2000 MY C170, all wagons without ABS  
according to appended draft Test Procedure, dated 2 April 1997.

OBJECT:

To check the brake performance of the above mentioned vehicle, when subjected to the test requirements of FMVSS 135, dated February 2, 1995 and as amended on July 24, 1995  
and on August 20, 1995.

SIGNIFICANT RESULTS AND CONCLUSIONS:

- I. The test vehicle no. 94W4285 fitted with the listed brake components was subjected to the test procedure stated above, with the deviations referenced below, and shows that the requirements as laid down in the test request ACA6173 were satisfied.

Signed *B. Poels* Test Engineer.

Date: 29/9/98

- II. I, P. Livingstone, Manager C170 Chassis Engineering, declare that I am familiar with the test procedure and am aware of the equipment used and in my judgement results above show that the 2000 MY C170, all wagons without ABS brake system complies with the requirements of the Federal Motor Vehicle Safety Standard No. 135.

Signed: P. Livingstone Requesting Manager.

Date:

*P. Livingstone* 26 Oct 98

RESULTS: See attached sheets.

PROCEDURE: The test was carried out in accordance with appended draft Test Procedure, dated 2 April 1997.

- I, B. Poels, Test Engineer, declare, that the instrumentation used in these tests satisfies the instrumentation requirements referenced in the appended Draft Test Procedure, dated 2 April 1997.

Signed *B. Poels* Test Engineer.

Date: 29/9/98

Comments:

Requesting area GB-153A-MOS	T.I.C No. ACA6173	WTN C1900	Model : 2000 MY C170, all wagons without ABS	
Attachment(s) :	Test request copy Draft test procedure		System No.: 08	
Test location	Test RIV.	Test Manager	P.W. Manager	Distribution: G.Grimsey GB-153A-MOS
M2	1000	1000	1000	
R. Poels	A. Callesen	R. Callesen	P. Livingstone	Return original documents to Req. Mgr. on completion
		Mail Ref.	GB-153A-Q02	



EUROPEAN PRODUCT GROUP  
TESTING ACTIVITY  
LONMEL

Report No.: 888065/2  
Request No.: ACAB173  
Date: 29-Sep-98

## Vehicle Specifications

### TESTED VEHICLE

Number : 9AV4255  
Model : C170

### COVERED VEHICLE

Released brake system : 2000 MY C170  
Spec. : SPEC 11 NAO  
Comments for spec. : all wagons without ABS

#### Worst case data

Top speed (km/h) : 170

#### Weights

	Total (kg)	F7. Axle (%)
Unladen	1420	50.0
Laden	1920	52.1

### Front Brake Data

#### Caliper

Type: ITT A8 FN54  
Piston diameter (mm): 54  
Equivalent dia. (mm): 54

#### Friction material

Pads: PER4104F FF  
Slots: No  
Grooves: Yes  
Design friction: 0.4

#### Disc:

Solid/Vented: Vented  
Outer diameter (mm): 258  
Effective radius (mm): 108  
Thickness (mm): 22  
Shield: No

#### Comments

### Rear Brake Data

#### System

Type: LCBG HASF Drum  
Wheel cyl.diam.(mm): 30.84

#### Friction material

Shoes: D2000 G3  
Design brake factor: 1.1

#### Drum:

Diameter (mm): 208  
Lin.width (mm): 36

#### Comments

### Brake Actuation

#### Booster

Type: BOSCH 254 SD  
Diameter (mm): 254  
Ratio: 5

#### Master cylinder

Type: CV  
Diameter (mm): 25.8  
Stroke (mm): 34  
Stroke split: Diagonal  
ABS: None

#### Pedal ratio

: 4

Reduction valve type : PCRV 0.345 bar

### Parking brake data

#### Operation

: Hand  
: Cable to rear brakes

#### Type

: 5.5

#### Lever ratio

:

#### Tires

Type : Firestone Firehawk

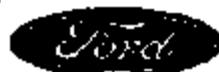
Size : P195/60R15

#### Pressure

Wheel radius (ETRTO) (mm) : 209

Wheel covers : Fully blanked off

Front (bar): 2.2  
Rear (bar): 2.2



**EUROPEAN PRODUCT GROUP  
TESTING ACTIVITY  
LUXEMBOURG**

Report No.: 98B0852  
Request No.: ACAB173  
Date: 29-Sep-98

## Overview of results - FMVSS135 Requirements

Vmax 170 km/h

FMVSS 135	Test Description	FMVSS Requirements						Test results				Req. met?	
		Speed (km/h)	Stopping distance(m)		Effect (S)		Speed (km/h)	Dist. (m)	Effect (S)				
			Min.	Max.	Min.	Avg.			Min.	Max.	Avg.		
GMWV1	87.1 Braking	60	100	110	100	100	60	100	100	100	100	Yes	
GMWV1	87.2 Wheel lock sequence low res.	65	100	110	100	100	65	100	100	100	100	Yes	
GMWV1	87.3 Wheel lock sequence high res.	100	100	110	100	100	100	100	100	100	100	Yes	
LLVMV	87.4 Wheel lock sequence low res.	65	100	110	100	100	65	100	100	100	100	Yes	
LLVMV	87.5 Wheel lock sequence high res.	100	100	110	100	100	100	100	100	100	100	Yes	
LLVMV	87.6 Wheel Performance	100	100	110	100	100	100	100	100	100	100	Yes	
LLVMV	87.7 Torque wheel	100	100	110	100	100	100	100	100	100	100	Yes	
GMWV1	87.8 Torque wheel	100	100	110	100	100	100	100	100	100	100	Yes	
GMWV1	87.9 Cold distance between distances	100	100	110	100	100	500	100	54.0	210	200	Yes	
GMWV1	87.10 High speed effectiveness	100	100	110	100	100	500	100	51.4	210	200	Yes	
GMWV1	87.11 Stop with engine off	100	100	110	100	100	500	100	51.7	200	200	Yes	
LLVMV	87.12 Cold distance between distances	100	100	110	100	100	500	100	50.0	240	240	Yes	
LLVMV	87.13 High speed effectiveness	100	100	110	100	100	500	100	50.3	220	220	Yes	
LLVMV	87.14 Pedal return	100	100	110	100	100	500	100	N/A	N/A	N/A	Yes	
LLVMV	87.15 Pedal positioning value	100	100	110	100	100	500	100	N/A	N/A	N/A	Yes	
LLVMV	87.16 Hydraulic assist return	100	100	110	100	100	500	100	50.0	200	200	Yes	
GMWV1	87.17 Hydraulic assist return	100	100	110	100	100	500	100	51.4	200	200	Yes	
GMWV1	87.18 Pedal assist	100	100	110	100	100	500	100	N/A	N/A	N/A	Yes	
GMWV1	87.19 Pedal positioning value	100	100	110	100	100	500	100	N/A	N/A	N/A	Yes	
GMWV1	87.20 Power assist assistance	100	100	110	100	100	500	100	50.0	470	470	Yes	
GMWV1	87.21 Parking brake - static Hand	100	100	110	100	100	400	100	N/A	N/A	N/A	Yes	
GMWV1	87.22 Parking brake - static Foot	100	100	110	100	100	500	100	N/A	N/A	N/A	Yes	
GMWV1	87.23 Recovery assist	100	100	110	100	100	500	100	50.0	200	200	Yes	
GMWV1	87.24 Pedal performance : Step 1	100	100	110	100	100	210	74.4	200	210	200	Yes	
GMWV1	87.25 Pedal performance : Step 2	100	100	110	100	100	500	100	74.7	400	400	Yes	
GMWV1	87.26 Brake assist	60	100	110	100	100	500	100	50.0	200	200	Yes	
GMWV1	87.27 Recovery Performance	100	200	210	100	100	210	74.5	100	200	200	Yes	
GMWV1	87.28 Recovery Performance : Total	100	100	110	100	100	200	74.5	200	200	200	Yes	
GMWV1	87.29 Pedal inspection	N/A	N/A	N/A	N/A	N/A	200	200	200	200	200	Yes	

All requirements of FMVSS 135 were met

N/A = Not applicable.

not met

Detailed results can be found on page 4 to page 37.  
The draft test procedure can be found in appendix A.

EUROPEAN PRODUCT GROUP  
TESTING ACTIVITY  
LÖWENL.

Report No.: 9900464  
Request No.: ACC 064  
Date : 30.06.1995

SUBJECT:

Hydraulic brake test of 2000MY C170 all models with ABS according to appended Test Procedure ETP:ST-46

OBJECT:

To check the brake performance of the above mentioned vehicle , when subjected to the test requirements of FMVSS 135, dated February 2, 1995 and as amended on July 24, 1995 and on August 28, 1995.

SIGNIFICANT RESULTS AND CONCLUSIONS:

1. The test vehicle no. WP59473 fitted with the listed brake components was subjected to the test procedure noted above, with the deviations referenced below, and shows that the requirements as laid down in the test request ACC 064 were satisfied.

Signed      E Curry      Test Engineer.      Date: 30/06/95  
MRA      *E. Curry*

2. I, G.Knautemann, Manager C170-C220 Chassis Engineering, declare that I am familiar with the test procedure and am aware of the equipment used and in my judgement results above show that the 2000 MY C170 with ABS brake system complies with the requirements of the Federal Motor Vehicle Safety Standard No. 135.

Signed :      G.Knautemann      Requesting Manager .      Date:

RESULTS : See attached sheets.

PROCEDURE: The test was carried out in accordance with appended Test Procedure ETP : ST-46.

3. I, E Curry (MRA), Test Engineer, declare, that the instrumentation used in these tests satisfies the instrumentation requirements referenced in the appended Test Procedure ETP: ST-46.

Signed *E Curry* Test Engineer.      Date: 30.7.95  
E Curry  
(MRA)

Comments:			
Requesting area: GB-15/SA-M005	T.R. No. ACC064	WTN C170S	Model : 2000MY C170 all models with ABS
Attachments :	Test request copy Test procedure		System No.: GB
Test Engineer	Test Mgr.	Res. Manager	Distribution:
<i>E. Curry</i> (MRA)	<i>C. Schmid</i> MRA	<i>G. Knautemann</i> Chassis Eng.	G.Grawey      GB-15/SA-M005
	Mkt.	D-MCP-24	Return original documents to Res. Mgr. on cancellation
	Ref.		

### **Vehicle Specifications**

#### **TESTED VEHICLE**

Number : WP99473  
Model : C170

#### **COVERED VEHICLE**

Released brake system : 2000MY C170  
Spec. : SPEC 12 NAO  
Comments for spec. : all models with ABS

Worst case data	
Top speed (km/h)	170 km/h
Weight	
Unladen	1370
Laden	1980
PT. Axis (kg)	61.4
Design	62.1

#### **Front Brake Data**

Caliper	Type: ITT AS PHM4 Piston diameter (mm): 64 Equivalent dia. (mm): 64	Fiction material	Pads: rubber FF State: None Sliding: Yes Design friction: 0.4
Disc:	Solid/Vented: Vented (Allegberry) Outer diameter (mm): 298      Decrement Cost: Comments Effective radius (mm): 108 Thickness (mm): 22 Rustcoat: No		

#### **Rear Brake Data Drums**

System	Type: UCBS HAWF DRUM Wheel Cylinder (mm): 20.84	Fiction material	Pads: rubber FF Design brake factor: 1.1
Drums	Diameter (mm): 298 Width(mm): 26	Comments	

#### **Brake Actuation**

Master	Type: BOSCH 254 80 Diameter (mm): 254 Ratio: 8.0	Master cylinder	Type: GV Diameter (mm): 25.5 Stroke (mm): 34
Pedal ratio	: 4	Brake split	: Diagonal
Brake master valve type	: EBD	Axes	: 4WD ITT MGS

#### **PARKING BRAKE DATA**

Operation	: Hand Control
Type	: Cable to rear brakes
Lever ratio	: 5.0

#### **TYRES**

Type	: Pirelli Firehawk	Pressure	
size	: P195/60R15	Front (bar):	2.2
Roll radius (ETRTO) (mm)	: 200	Rear (bar):	2.2
Overall diameter (mm)	: Poly mounted off		



## Overview of Results - FMVSS135 Requirements

Vmax = 179 km/h

Level	Test	Description	FMVSS Requirements						Test results				Satisfied?	
			Speed (km/h)	Stopping distance (m)		Effect (%)		Speed (km/h)	Dist. (m)		Effect (%)			
				Min.	Max.	Min.	Avg.		Min.	Max.	Min.	Avg.		
C/NVR	87.1	Brakes	60	N/A	N/A	N/A	N/A	600	200	200	N/A	N/A	Yes	
C/NVR	87.2	Wheel lock sequence low rev.												
C/NVR	87.2	Wheel lock sequence high rev.												
L/VWR	87.3	Brake bias sequence low rev.												
L/VWR	87.2	Wheel lock sequence high rev.												
L/VWR	87.3	ABS Performance												
L/VWR	87.4	Torque wheel												
C/NVR	87.4	Torque wheel												
C/NVR	87.5	Child heightener - short test distance	100	N/A	70.0	65	N/A	600	100.0	61.5	340	400	Yes	
C/NVR	87.6	High speed effectiveness	120	N/A	137.5	65	N/A	600	120.0	95.5	N/A	230	Yes	
C/NVR	87.7	Brake with engine off	100	N/A	70.0	65	N/A	600	100.0	48.8	N/A	420	Yes	
L/VWR	87.8	Child heightener - short test distance	100	N/A	70.0	65	N/A	600	100.0	60.0	N/A	230	Yes	
L/VWR	87.6	High speed effectiveness	120	N/A	137.5	65	N/A	600	120.0	95.4	N/A	210	Yes	
L/VWR	87.8	Pedal position	100	N/A	85.0	65	N/A	600	100.0	65.0	N/A	180	Yes	
L/VWR	87.9	Pedal positioning valve												
L/VWR	87.10	Brake - short failure	100	N/A	190.0	65	N/A	600	100.0	95.0	N/A	180	Yes	
T/VWR	87.10	Brake - short failure	100	N/A	190.0	65	N/A	600	100.0	101.0	N/A	220	Yes	
T/VWR	87.8	Pedal position	100	N/A	85.0	65	N/A	600	100.0	61.0	N/A	300	Yes	
T/VWR	87.9	Pedal positioning valve												
T/VWR	87.11	Brake - short failure	100	N/A	190.0	65	N/A	600	100.0	115.0	400	380	Yes	
T/VWR	87.12	Braking tests - static load		No load on 20% gradient						400	THRD on 20% gradient		105	Yes
T/VWR	87.12	Braking tests - static load		No load on 20% gradient										
T/VWR	87.13	Braking tests		120 down to 60 km/h		N/A	N/A	600	N/A	N/A	N/A	N/A	N/A	
T/VWR	87.14	No performance step 1	100	N/A	70.0	N/A	400	N/A	100.0	67.1	300	380	Yes	
T/VWR	87.14	No performance step 2	100	N/A	85.0	N/A	N/A	600	100.0	80.3	N/A	280	Yes	
T/VWR	87.15	Brake - short failure	50	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
L/VWR	87.16	Performance Step 1	100	37.7	69.4	N/A	340	N/A	100.0	64.8	400	470	Yes	
L/VWR	87.16	Performance Step 2	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Yes	
L/VWR	87.17	Performance	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Yes	

All requirements of FMVSS 135 were met

not met

N/A = Not applicable

Detailed results can be found on page 4 to page 37.

The test procedure can be found in appendix A.

EUROPEAN PRODUCT GROUP  
TESTING ACTIVITY  
LORRIES

Report No.: 998049b  
Request No.: ACC 084  
Date : 03-Jul-99

SUBJECT:

Hydraulic brake test of 2000MY C170 all models with ABS according to appended Test Procedure ETP:ST-48.

OBJECT:

To check the brake performance of the above mentioned vehicle, when subjected to the test requirements of FMVSS 135, dated February 2, 1988 and as amended on July 24, 1993 and on August 26, 1996.

SIGNIFICANT RESULTS AND CONCLUSION:

1. The test vehicle no. WPB9473 fitted with the listed brake components was subjected to the test procedure noted above, with the deviations referenced below, and shows that the requirements as laid down in the test request ACC 084 were satisfied.

Signed      E Curry      Test Engineer.      Date: 03/07/99  
MRA      *E Curry*

2. G Kneufermann, Manager C170 - Cars Chassis Engineering, declares that I am familiar with the test procedure and am aware of the equipment used and in my judgement results above show that the 2000 MY C170 with ABS brake system complies with the requirements of the Federal Motor Vehicle Safety Standard No. 135.

Signed :      G Kneufermann      Requesting Manager .      Date:

RESULTS : See attached sheets.

PROCEDURE: The test was carried out in accordance with appended Test Procedure ETP : ST-48.

3. E Curry (MRA) , Test Engineer, declares, that the instrumentation used in these tests satisfies the instrumentation requirements referenced in the appended Test Procedure ETP : ST-48.

Signed *E Curry*, Test Engineer.      Date: 6-7-99  
E Curry  
(MRA)

Comments :

Requesting MRA GB-15/3A-4808	T.R. No. ACC084	WTN C1600	Model : 2000MY C170 all models with ABS		
Attachments :	Test request copy Test procedure		System No.: GB		
Test Engineer	Test Engineer	Req. Manager	Distribution :		
<i>E Curry</i> (MRA)	<i>G. Galinsky</i>	<i>G. Galinsky</i>	G. Galinsky      GB-15/3A-4808		
			Return original documents to Req. Mgr. on completion		

## Vehicle Specifications

### TESTED VEHICLE

Number : WP59473  
Model : C170

### COVERED VEHICLE

Released brake system : 2000MY C170  
Spec. : SPEC 13 NAO  
Comments for spec. : all models with ABS

Worst case data	
Top speed (km/h)	: 170 km/h
Weights	:
Total (kg)	Fr. Axle (%)
Unladen	1378 61.4
Laden	1690 52.1

### Front Brake Data

Caliper Type: ITT AE PN54  
Piston diameter (mm): 84  
Equivalent dia. (mm): 84

Friction material  
Pad: FER-154F FF  
Sliding: None  
Shims: Yes  
Design friction: 0.4

Disc:  
Solid/Ventilated: Ventilated (Niwotec)  
Outer diameter (mm): 254 Disc wear (mm): 0.0  
Effective radius (mm): 108  
Thickness (mm): 22  
Shield: No

Comments:

### Rear Brake Data Drum

System Type: LC98 HAWK DRUM  
Wheel Cylinder (mm): 20.04

Friction material  
Pad: FER-154F FF  
Design brake factor 1.1

### Drum

Diameter (mm): 203  
Lin.width(mm): 36

Comments:

### BRAKE ACTUATION

Master  
Type: BOSCH 264 80  
Diameter (mm): 254  
Ratio: 6.0  
Pedal ratio : 4  
Proportioning valve type : EBD

Master cylinder  
Type: CV  
Diameter (mm): 23.8  
Stroke (mm): 34  
Brake split : Diagonal  
ABS : 1500 IT/s (m/s)

### PARKING BRAKE DATA

Operation : Hand Control  
Type : Cable to rear brakes  
Lower ratio : 6.5

### TYRES

Type : Firestone Firehawk  
Size : P185/60R15  
Wheel profile (ETRTO) (mm) : 205  
Wheel covers : Fully blanked off

Pressure  
Front (bar): 2.2  
Rear (bar): 2.2

## Overview of Results - FMVSS135 Requirements

Vmax = 170 km/h

FMVSS 135	Test	Description	FMVSS Requirements						Test results				Prog. req?	
			Speed (km/h)	Stopping distance(m)		Effect (%)			Speed (km/h)	Dist. (m)	Effect (%)			
				Min.	Max.	Min.	Avg.	Max.			Min.	Avg.		
GVWR 87.1	Brake		60	100	100	0	0	0	60	47	0	0	No	
GVWR 87.2	Offroad load response low rev												No	
GVWR 87.3	Offroad load response high rev												No	
LLVM 87.3	Offroad load response low rev												No	
LLVM 87.2	Offroad load response high rev												No	
LLVM 87.3	All Performance												No	
LLVM 87.4	Torque wheel												No	
GVWR 87.4	Torque wheel												No	
GVWR 87.5	Load 100% max load distance		100	100	70.0	0	0	0	100	49.4	0	0	Yes	
GVWR 87.6	Light speed offloadcurve		100	100	127.5	0	0	0	100	100.0	0	0	Yes	
GVWR 87.7	Impact with engine off		100	100	70.0	0	0	0	100	100.0	0	0	Yes	
LLVM 87.5	Load 100% max load distance		100	100	70.0	0	0	0	100	100.0	0	0	Yes	
LLVM 87.6	Light speed offloadcurve		100	100	127.5	0	0	0	100	100.0	0	0	Yes	
LLVM 87.7	Impact with engine off		100	100	70.0	0	0	0	100	100.0	0	0	Yes	
LLVM 87.8	Rated propelling force												No	
LLVM 87.10	Hydraulic circuit failure		100	100	100.0	0	0	0	100	100.0	0	0	Yes	
GVWR 87.10	Hydraulic circuit failure		100	100	100.0	0	0	0	100	100.0	0	0	Yes	
GVWR 87.8	Rated output		100	100	65.0	0	0	0	100	100.0	0	0	Yes	
GVWR 87.9	Rated propelling force												No	
GVWR 87.11	Power take-off failure		100	100	100.0	0	0	0	100	100.0	100.0	0	Yes	
GVWR 87.12	Steering system - static load					Not tested on 20% position			100	Not tested on 20% position		0	Yes	
GVWR 87.13	Steering system - static load					Not tested on 20% position			100	Not tested on 20% position		0	Yes	
GVWR 87.14	Load performance - Step 1		100	100	70.0	0	0	0	100	100.0	0	0	Yes	
GVWR 87.14	Load performance - Step 3		100	100	50.0	0	0	0	100	100.0	0	0	Yes	
GVWR 87.15	Load response		60	100	100.0	0	0	0	100	100.0	0	0	No	
GVWR 87.16	Emergency Performance - Step 1		100	100	60.0	0	0	0	100	100.0	0	0	Yes	
GVWR 87.17	Emergency Performance - Step 2		100	100	20.0	0	0	0	100	100.0	0	0	Yes	
GVWR 87.17	Load response		100	100	40.0	0	0	0	100	100.0	0	0	Yes	

All requirements of FMVSS 135 were met

not met

N/A = Not applicable

Detailed results can be found on page 4 to page 37.

The test procedure can be found in appendix A.

4

EUROPEAN PRODUCT GROUP  
TESTING ACTIVITY  
LONAMEL

Report No.: 988043/3  
Request No.: ACAB172  
Date : 28-Sep-96

SUBJECT:

Hydraulic brake test of 2000MY C170, all models with ABS  
according to appended draft Test Procedure, dated 2 April 1997.

OBJECT:

To check the brake performance of the above mentioned vehicle (fitted with Discronet coated front brake discs), when subjected to the test requirements of FMVSS 125, dated February 2, 1986 and as amended on July 24, 1995 and on August 26, 1996.

SIGNIFICANT RESULTS AND CONCLUSION:

- I. The test vehicle no. 8A83337 fitted with the listed brake components was subjected to the test procedure noted above, with the deviations referenced below, and shows that the requirements as laid down in the test request ACAB172 were satisfied.

Signed R. Poos Test Engineer.

Date: 26/10/97

- II. I, P. Livingstone, Manager C170 Chassis Engineering, declare that I am familiar with the test procedure and am aware of the equipment used and in my judgement results above show that the 2000MY C170, all models with ABS brake system complies with the requirements of the Federal Motor Vehicle Safety Standard No. 125.

Signed: P. Livingstone Requesting Manager.

Date:

P.D. Livingstone 26 Oct 98

RESULTS: See attached sheets.

PROCEDURE: The test was carried out in accordance with appended draft Test Procedure, dated 2 April 1997.

- III. I, R. Poos, Test Engineer, declare, that the instrumentation used in these tests satisfies the instrumentation requirements referenced in the appended Draft Test Procedure, dated 2 April 1997.

Signed R. Poos Test Engineer.

Date: 26/10/97

Comments:

Requesting area: GB-15/94-MOS	T.M. No. ACAB172	WTN C1900	Model : 2000MY C170, all models with ABS
Attachments:	Test request copy Draft test procedure		System No.: GB
Test Engineer: <u>R. Poos</u>	Conf. No.: <u>1000</u>	Test Monitor: <u>N. M. M. M.</u>	Distribution:
Req. Manager: <u>G. Guimsey</u>	Conf. No.: <u>1000</u>	Loc. Manager: <u>P. Livingstone</u>	G. Guimsey GB-15/94-MOS
Ref. No.: <u>1000</u>	Conf. No.: <u>1000</u>	Loc. Ref.: <u>P. Livingstone</u>	Return original documents to Req. Mgr. on completion

**EUROPEAN PRODUCT GROUP  
TESTING ACTIVITY  
LOMMEL**

Report No.: 96B043/3  
Request No.: ACA6172  
Date : 26-Sep-96

### Vehicle Specifications

#### TESTED VEHICLE

Number : 6AB3337  
Model : C170

#### COVERED VEHICLE

Retained brake system : 2000MY C170  
Spec. : SPEC 13 NAO  
Comments for spec. : all models with ABS

#### Worst case data

Top speed (km/h) : 170  
Weights

	Front (kg)	Rear (kg)	%
Unladen	1378	914	
Laden	1880	921	

#### Front Brake Data

Caliper Type: ITT AE PN854  
Piston diameter (mm): 54  
Equivalent dia. (mm): 54

#### Friction material

Pads: FEP4164F FF

Disc:  
Solid/Ventilated: Vented (Decreased cost)  
Outer diameter (mm): 258  
Effective radius (mm): 105  
Thickness (mm): 22  
Shield: No

Slots: No  
Shims: Yes  
Design friction: 0.4

#### Comments

#### Rear Brake Data (DRUM)

System Type: LC98 HASF DRUM  
Wheel cyl.diam.(mm): 20.84  
Drums Diameter (mm): 208  
Lin.width (mm): 36

#### Friction material

Shoes: D6296 G.G.

Design brake factor: 1.1

#### Comments

#### Brake Actuation

Master cylinder Type: BOSCH 254 SD  
Diameter (mm): 254  
Ratio: 5  
Pedal ratio : 4  
Proportion valve type : EBD

#### Master cylinder

Type: CV  
Diameter (mm): 25.6  
Stroke (mm): 34  
Brake split : Diagonal  
ABS : EBD ITT MC20

#### Parking Brake Data

Operation : Hand  
Type : Cable to rear brakes  
Lever ratio : 5.6

#### Tyres

Type : Firestone Firehawk  
Size : P195/60R15  
Roll radius (ETRTO) (mm) : 239  
Wheel covers : Fully blanked off

#### Pressure

Front (bar): 2.2  
Rear (bar): 2.2

## Overview of results - FMVSS135 Requirements

Vmax = 170 km/h

FMVSS 135	Test cond. desc.	Test Description	FMVSS Requirements						Test results						Resp. met?	
			Speed (km/h)	Stopping distance(s)		Effect (%)			Speed (km/h)	Dist. (m)	Effect (%)					
				Min	Max	Min.	Avg	Max.			Min.	Avg	Max.	Tested		
GVWR	57.1	Braking	60						500	80						
GVWR	57.5	Wheel lock response low res.	65						1000	95					N/A	
GVWR	57.6	Wheel lock response high res.	100						1000	100					N/A	
LLVW	57.2	Wheel lock response low res.	65						1000	85					N/A	
LLVW	57.3	Wheel lock response high res.	100						1000	100					N/A	
LLVW	57.7	ABS Performance														
LLVW	57.4	Torque wheel														
GVWR	57.4	Torque wheel														
GVWR	57.8	Cold Braking/esp shortest distance	100		70.0	65			500	100	47.7	300	280		Yes	
GVWR	57.9	High speed effectiveness	100		187.5	65			500	100	94.0	300			Yes	
GVWR	57.7	Brake with engine off	100		70.0	65			500	100	47.1	300			Yes	
LLVW	57.5	Cold Braking/esp shortest distance	100		70.0	65			500	100	44.0	400			Yes	
LLVW	57.6	High speed effectiveness	100		187.6	65			500	100	78.1	300			Yes	
LLVW	57.8	Poled switch	100		85.0	65			500	100	52.8	100			Yes	
LLVW	57.9	Poled proportioning valve	100		110.0	65			500	100	10.5	300			N/A	
LLVW	57.10	Hydraulic circuit failure	100		188.0	65			500	100	94.1	400			Yes	
GVWR	57.10	Hydraulic circuit failure	100		188.0	65			500	100	91.7	410			Yes	
GVWR	57.8	Poled switch	100		85.0	65			500	100	46.7	300			Yes	
GVWR	57.9	Poled proportioning valve	100		110.0	65			500	100	N/A	300			N/A	
GVWR	57.11	Power brake test failure	100		188.0	65			500	100	138.0	400			Yes	
GVWR	57.12	Parking brake - static Hand							400			300			Yes	
GVWR	57.12	Parking brake - static Foot							500			N/A			N/A	
IVWR	57.13	Braking cruise	100							100						
GVWR	57.14	Test performance 1 Step 1	100		75.4		280.0		100	85.4	280	200			Yes	
GVWR	57.14	Test performance static	100		88.0		500	100	57.5		410				Yes	
GVWR	57.15	Brake cooling	50													
GVWR	57.16	Recovery Performance	100	85.1	89.0		280.0		100	87.2	210	200			Yes	
GVWR	57.16	Recovery Performance ; Total													Yes	
GVWR	57.17	Test inspection													Yes	

All requirements of FMVSS 135 were met  not met   
N/A = Not applicable.

Detailed results can be found on page 4 to page 37.  
The draft test procedure can be found in appendix A.

EUROPEAN PRODUCT GROUP  
TESTING ACTIVITY  
LOMMEL

Report No.: 983043/1  
Request No.: ACA6172  
Date : 25-Sep-96

SUBJECT:

Hydraulic brake test of 2000 MY C170, all models with ABS  
according to appended draft Test Procedure, dated 2 April 1997.

OBJECT:

To check the brake performance of the above mentioned vehicle, when subjected to the test requirements of FMVSS 136, dated February 2, 1998 and as amended on July 24, 1995 and on August 28, 1995.

SIGNIFICANT RESULTS AND CONCLUSION:

- I. The test vehicle no. 2A53237 fitted with the listed brake components was subjected to the test procedure noted above, with the deviations referenced below, and shows that the requirements as laid down in the test request ACA6172 were satisfied.

Signed G. Poerw Test Engineer.

Date: 25/09/96

- II. I, P. Livingstone, Manager C170 Chassis Engineering, declare that I am familiar with the test procedure and am aware of the equipment used and in my judgement results above show that the 2000 MY C170, all models with ABS brake system complies with the requirements of the Federal Motor Vehicle Safety Standard No. 136.

Signed : P. Livingstone, Requesting Manager.

Date:

P. Livingstone 26 Oct 96

RESULTS : See attached sheets .

PROCEDURE: The test was carried out in accordance with appended draft Test Procedure, dated 2 April 1997.

- III. I, G. Poerw, Test Engineer, declare, that the instrumentation used in these tests satisfies the instrumentation requirements referenced in the appended Draft Test Procedure , dated 2 April 1997.

Signed G. Poerw Test Engineer.

Date: 25/09/96

Comments :

Requesting area GB-1584-M08	T.R. No. ACA6172	WTN C1800	Model : 2000 MY C170, all models with ABS		
Attachments :	Test request copy Draft test procedure		System No.: GB		
Test Engineer <u>G. Poerw</u>	Req. Manager <u>G. Poerw</u>	Test Manager <u>P. Livingstone</u>	Distribution :	G. Poerw	GB-1584-M08
2000 MY C170	Req. Manager <u>G. Poerw</u>	Test Manager <u>P. Livingstone</u>	Return original documents to Req. Man. on completion		

## Overview of results - FMVSS135 Requirements

Vmax : 170 km/h

Level cond.	Test Seq.	Description	FMVSS Requirements								Test results				Reqt. met?	
			Speed (km/h)	Shipping dimensions		Effort (%)		Speed (km/h)	Dist. (m)	Effort (%)						
				Min	Max	Min	Avg			Max	Min	Avg	Max			
GVWR	87.1	Shutout	50					500	50					50		
GVWR	87.2	Wheel lock sequence low rev	65					1000	65						N/A	
GVWR	87.3	Wheel lock sequence high rev	100					1000	100						N/A	
LLVW	87.4	Wheel lock sequence low rev	65					1000	65						N/A	
LLVW	87.5	Wheel lock sequence high rev	100					1000	100						N/A	
LLVW	87.6	AMG Performance														
LLVW	87.7	Torque wheel														
GVWR	87.8	Front wheel														
GVWR	87.9	Cold stiffness/low speed damping	100	70.0	65			500	100	45.1	87.5	450		Yes		
GVWR	87.10	High speed stiffness	125	187.5	65			500	100	82.0	88.0	400		Yes		
GVWR	87.11	Stiffness with engine off	100	70.0	65			500	100	44.4	400					
LLVW	87.12	Cold stiffness/low speed damping	100	70.0	65			500	100	42.7	47.5					
LLVW	87.13	High speed stiffness	125	187.5	65			500	100	70.1	455					
LLVW	87.14	Stiffness with engine off	100	70.0	65			500	100	51.8	175					
LLVW	87.15	Pedal feel/steering valve	100	110.0	65			500	100	N/A	N/A	N/A				
LLVW	87.16	Hydraulic circuit leakage	100	185.0	65			500	100	82.7	280					
GVWR	87.17	Hydraulic circuit leakage	100	148.0	65			500	100	52.3	280					
GVWR	87.18	Pedal return	100	85.0	65			500	100	48.5	280					
GVWR	87.19	Pedal return/steering valve	100	110.0	65			500	100	N/A	N/A	N/A				
GVWR	87.20	Power brakes with brakes	100	180.0	65			500	100	128.1	400					
GVWR	87.21	Parking brake - static Hand						400				300				
GVWR	87.22	Parking brake - static Foot						500				N/A				
GVWR	87.23	Steering gear noise	100						120							
GVWR	87.24	Hot performance : Step 1	100	86.5		876.0		100	91.4	320	380			Yes		
GVWR	87.25	Hot performance total	100	86.0				500	100	88.3	400			Yes		
GVWR	87.26	Brake cooling	65													
GVWR	87.27	Passenger Preference	100	38.4	31.1		876.0	100	55.0	300	310			Yes		
GVWR	87.28	Driver Preference : Total												Yes		
GVWR	87.29	Passenger												Yes		

All requirements of FMVSS 135 were met  not met   
N/A = Not applicable.

Detailed results can be found on page 4 to page 37.  
The draft test procedure can be found in appendix A.

EUROPEAN PRODUCT GROUP  
TESTING ACTIVITY  
LONMEL

Report No.: 988043/2  
Request No.: ACAB172  
Date: 26-Sep-98

SUBJECT:

Hydraulic brake test of 2000MY C170, all models with ABS  
according to appended draft Test Procedure, dated 2 April 1997.

OBJECT:

To check the brake performance of the above mentioned vehicle, when subjected to the test requirements of FMVSS 135, dated February 2, 1985 and as amended on July 24, 1995  
and on August 28, 1995.

SIGNIFICANT RESULTS AND CONCLUSIONS:

- I. The test vehicle no. 9A85537 fitted with the listed brake components was subjected to the test procedure noted above, with the deviations referenced below, and shows that the requirements as laid down in the test request ACAB172 were satisfied.

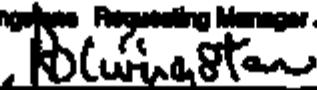
Signed  S. Poos, Test Engineer.

Date: 26/9/98

- II. T. P. Livingston, Manager C170 Chassis Engineering, declares that I am familiar with the test procedure and am aware of the equipment used and in my judgement results above show that the 2000MY C170, all models with ABS brake system complies with the requirements of the Federal Motor Vehicle Safety Standard No. 135.

Signed : P. Livingston, Requesting Manager.

Date:



26 Oct 98

RESULTS: See attached sheets.

PROCEDURE: The test was carried out in accordance with appended draft Test Procedure, dated 2 April 1997.

- III. S. Poos, Test Engineer, declare, that the instrumentation used in these tests satisfies the instrumentation requirements referenced in the appended Draft Test Procedure , dated 2 April 1997.

Signed  S. Poos, Test Engineer.

Date: 26/9/98

Comments:

Requesting area GB-150A-M00	TR. No. ACAB172	WTN C1009	Model : 2000MY C170, all models with ABS
Attachments :	Test request copy Draft test procedure		System No.: GB
Test location GB-150A-M00	Test date 25/9/98	Test engineer S. Poos	Location: G.Battery
Test time 09:00	Test duration 00:25	Test conditions No turn signal	Ref. no. GB-150A-M00
			Return original documents to Req. Mgr. on completion

**EUROPEAN PRODUCT GROUP  
TESTING ACTIVITY  
LOWVEL**

Report No.: 98B0432  
Request No.: ACA0172  
Date : 28-Sep-98

**Vehicle Specifications**

**TESTED VEHICLE**

Number : 94B3337  
Model : C170

**COVERED VEHICLE**

Park/stand brake system : 2000MY C170  
Spec. : BPEC 13 NAO  
Comments for spec. : all models with ABS

**Worst case data**

Top speed (km/h) : 170  
Weights

	Total (kg)	Front/Accel (%)
Unladen	1370	51.4
Laden	1690	52.1

**Front Brake Data**

Caliper Type: ITT AE FN84  
Piston diameter (mm): 64  
Equivalent dia. (mm): 64

**Friction material**

Pads: PEPA164F FF  
Slotted: No  
Shimmed: Yes  
Design friction: 0.4

**Disk:**

Solid/Vented: Vented  
Outer diameter (mm): 298  
Effective radius (mm): 108  
Thickness (mm): 22  
Shield: No

**Comments**

**Rear Brake Data**

System Type: LC80 HAFD DRUM  
Wheel cyl. diam.(mm): 20.84

**Friction material**

Grooves: D2208 GG  
Design brake factor: 1.1

**Drum:**

Diameter (mm): 208  
Lin.width (mm): 38

**Comments**

**Brake Actuation**

Master Type: BOSCH 254 BD  
Diameter (mm): 254  
Ratio: 6  
Pedal ratio : 4  
Reduction valve type : BBD

**Master cylinder**

Type: CV  
Diameter (mm): 29.8  
Stroke (mm): 34  
Stroke split : Diagonal  
ABR : BBD ITT MK20

**Parking Brake Data**

Operation : Hand  
Type : Cable to rear brakes  
lever ratio : 5.8

**Tyres**

Size : Firestone Firehawk  
P185/60R15  
Soff radius (ETRTO) (mm) : 298  
Wheel covers : Fully blanked off

**Pressure**

Front (bar): 2.2  
Rear (bar): 2.2

*Siemens*EUROPEAN PRODUCT GROUP  
TESTING ACTIVITY  
LONMELReport No.: 0600432  
Request No.: AOA8172  
Date: 29-Sep-98

## Overview of results - FMVSS135 Requirements

Vmax = 170 km/h

FMVSS 135	Test Description	FMVSS Requirements						Test Results						Req. met?		
		Speed km/h	Shipping dimensions		Mass (kg)			Speed km/h	Max.	Avg.	Min.	Mass (kg)				
			Min.	Max.	Min.	Avg.	Max.					Min.	Max.			
GMW1111	ST7.1 Impact	55			500	50										
GMW1111	ST7.2 Crush load requirement low rate	55			1000	50									NDA	
GMW1111	ST7.3 Crush load requirement high rate	100			1000	500									NDA	
GMW1111	ST7.4 Crush load requirement low rate	55			1000	50									NDA	
GMW1111	ST7.5 Crush load requirement high rate	100			1000	500									NDA	
GMW1111	ST7.6 Occupant protection															
GMW1111	ST7.7 Occupant protection															
GMW1111	ST7.8 Occupant protection														Yes	
GMW1111	ST7.9 Occupant protection														Yes	
GMW1111	ST7.10 Occupant protection														Yes	
GMW1111	ST7.11 Power seats test														Yes	
GMW1111	ST7.12 Power seats test														Yes	
GMW1111	ST7.13 Power seats test														Yes	
GMW1111	ST7.14 Power seats test														Yes	
GMW1111	ST7.15 Power seats test														Yes	
GMW1111	ST7.16 Power seats test														Yes	
GMW1111	ST7.17 Power seats test														Yes	
GMW1111	ST7.18 Power seats test														Yes	
GMW1111	ST7.19 Occupant Protection I Test	100	75.7	80.0	300	50	50.7	216	290						Yes	
GMW1111	ST7.20 Occupant Protection II Test	100	90.4	90.4	300	100	90.5	290	300						Yes	
GMW1111	ST7.21 Occupant Protection III Test														Yes	

All requirements of FMVSS 135 were met  not met N/A = Not applicable.  
Detailed results can be found on page 4 to page 37.  
The draft test procedure can be found in appendix A.

Page 5 of 37