COMMISSION

COMMISSION DIRECTIVE

28 March 1983

adapting to technical progress Council Directive 78/764/EEC on the approximation of the laws of the Member States relating to the driver's seat on wheeled agricultural or forestry tractors

(83/190/EEC)

THE COMMISSION OF THE EUROPEAN COMMUNITIES,

Having regard to the Treaty establishing the European Economic Community,

Having regard to Council Directive 74/150/EEC of 4 March 1974 on the approximation of the laws of the Member States relating to the type-approval of wheeled agricultural or forestry tractors (1), as last amended by Directive 79/694/EEC (2), and by the Act of Accession of Greece, and in particular Article 11 thereof,

Having regard to Council Directive 78/764/EEC of 25 July 1978 on the approximation of the laws of the Member States relating to the driver's seat on wheeled agricultural or forestry tractors (3),

Whereas experience gained and the current state of the art now make it possible to supplement certain requirements and bring them more into line with actual test conditions; whereas it has proved necessary to amend the wording of certain items in some language versions so as to ensure alignment with the other language versions;

Whereas this first set of amendments may be followed by others concerning, initially, a procedure for the inspection of the driver's seat on tractors whose mass exceeds 5 tonnes, in particular by means of test-stand examinations and, subsequently, as soon as technical conditions so permit, the replacement of track tests by test-stand inspections and, if possible, of test personnel by mechanical devices (for example, dummies);

Whereas the measures provided for in this Directive are in accordance with the opinion of the Committee for the Adaptation to Technical Progress of the Directives on the Elimination of Technical Barriers to Trade in Agricultural or Forestry Tractors,

HAS ADOPTED THIS DIRECTIVE:

Article 1

Annexes I, II and IV to Directive 78/764/EEC are hereby amended in accordance with the Annex to this Directive.

Article 2

1. With effect from 1 October 1983, no Member State may:

— refuse to grant EEC type-approval, to issue the document referred to in the last indent of Article 10 (1) of Directive 74/150/EEC or to grant national type-approval in respect of a type of tractor, or

— prohibit the entry into service of tractors,

if the driver's seat of this type of tractor or of these tractors complies with the provisions of this Directive.

2. With effect from 1 October 1984, Member States:

— shall no longer issue the document referred to in the last indent of Article 10 (1) of Directive 74/150/EEC in respect of a type of tractor in which the driver's seat does not comply with the provisions of this Directive,

(1) OJ No L 84, 28. 3. 1974, p. 10.
(2) OJ No L 205, 13. 8. 1979, p. 17.
(3) OJ No L 255, 18. 9. 1978, p. 1.

— may refuse to grant national type-approval in respect of a type of tractor in which the driver's seat does not comply with the provisions of the present Directive.

Article 3

Member States shall bring into force the provisions necessary to comply with this Directive by 30 September 1983 at the latest. They shall forthwith inform the Commission thereof.

Article 4

This Directive is addressed to the Member States.

Done at Brussels, 28 March 1983.

For the Commission
Karl-Heinz NARJES
Member of the Commission

ANNEX

Annex I to Directive 78/764/EEC is hereby amended as follows:

Item 9 shall be replaced by the following:

'9. **Suspension travel**
"Suspension travel" means the vertical distance between the highest position and the position at a given moment of a point situated on the seat surface 200 mm in front of the seat reference point in the median longitudinal plane.'

Item 10: The English version shall remain unchanged.

Item 13 shall be deleted.

Item 14 shall become Item 13, and the following definitions shall be added:

'a_{wS} = rms value of the weighted seat vibration acceleration measured during a bench test or a standard roadway test;

a_{wB} = rms value of the weighted vibration acceleration measured at the seat attachment during a bench test;

a^*_{wB} = reference rms value of the weighted vibration acceleration measured at the seat attachment;

a^*_{wS} = corrected rms value of the weighted seat vibration acceleration measured during a bench test;

a^*_{wF} = rms value of the weighted vibration acceleration measured at the seat attachment during a standard roadway test.'

Item 15 shall become Item 14. The English version shall remain unchanged.

Item 16 shall become Item 15.

Item 17 shall become Item 16 and shall be replaced by the following:

'16. **Category A tractor**
"Category A tractor" means a tractor which can be assigned to a given vibration class by reason of similar design features.'

Items 17.1 and 17.2 shall become Items 16.1 and 16.2 respectively.

Item 18 shall be deleted, together with its sub-items.

Item 19 shall become Item 17 and shall be replaced by the following:

'17. **Category B tractor**
"Category B tractor" means a tractor which cannot be assigned to a vibration class in Category A.'

Item 20 shall become Item 18 and its sub-items shall become sub-Items 18.1, 18.2, 18.3 and 18.4.

Annex II to Directive 78/764/EEC is hereby amended as follows:

Item 1.3.1. The English version shall remain unchanged.

Item 1.6.2. In the last line '+0,1 bar' shall be replaced by '± 0,1 bar' in all language versions except the Danish.

1.7.1. The English version shall remain unchanged.

1.7.2. The English version shall remain unchaged.

Item 1.7.3 shall be replaced by the following:

'1.7.3. Determination of vertical vibration characteristics.'

After Item 1.7.3, the following new item shall be added:

'1.7.4. Determination of the damping characteristics in the resonance range.'

Item 1.8: In the English version only, the repetition of the words 'locked in a position' shall be deleted.

Item 2.1.3: The English version only shall be replaced by the following:

'2.1.3. The depth and width of the surface of seats intended for tractors in which the minimum rear-wheel track width does not exceed 1 150 mm may be reduced to not less than 300 and 400 mm respectively if the design of the tractor prevents compliance with the requirements of Items 2.1.1 and 2.1.2.'

Item 2.4.1: The English version only shall be replaced by the following:

'2.4.1. The seat must be adjustable in the longitudinal direction over a minimum distance of:

— 150 mm for tractors with a minimum rear-wheel track width of more than 1 150 mm,

— 60 mm for tractors with a minimum rear-wheel track width of 1 150 mm or less.'

Item 2.4.2: The English version only shall be replaced by the following:

'2.4.2. The seat must be adjustable in the vertical direction over a minimum distance of:

— 60 mm for tractors with a minimum rear-wheel track width of more than 1 150 mm,

— 30 mm for tractors with a minimum rear-wheel track width of 1 150 mm or less.'

Item 2.5.1 shall be replaced by the following:

'2.5.1. Determination of the suspension characteristics and the range of adjustment to the driver's mass.'

Item 2.5.1.1 shall be replaced by the following:

'2.5.1.1. The suspension characteristics are determined by a static test. The range of adjustment to the driver's mass is calculated from the suspension characteristics. These calculations are not necessary in the case of seats that cannot be manually adjusted to the driver's mass.'

Item 2.5.1.2: The second sentence shall be replaced by the following:

'The measuring error for the suspension travel shall not exceed ± 1 mm.'

Item 2.5.1.3 shall be replaced by the following:

'2.5.1.3. A complete characteristic curve representing the deflection of the suspension system must be plotted from zero load to maximum load, and back to zero. The load graduations at which the suspension travel is measured must not exceed 100 N; at least eight measurement points must be plotted at approximately equal intervals in the suspension travel. The point taken as the maximum load should be either that at which no further suspension travel can be measured, or a load of 1 500 N. After each application or removal of the load, the suspension travel must be measured 200 mm in front of the seat reference point in the median longitudinal plane of the seat surface. After application or removal of the load, the seat must be allowed to return to its at-rest position.'

Items 2.5.1.4, 2.5.1.4.1 and 2.5.1.4.2 shall be replaced the following:

'2.5.1.4. In the case of seats with a mass adjustment scale, the characteristic curves representing the deflection of the suspension system are plotted at mass adjustments for drivers having a mass of 50 and 120 kg. In the case of seats without a mass adjustment scale and with adjustment stops, measurements are taken at the lowest and the highest mass adjustment. In the case of seats without a mass adjustment scale or adjustment stops, the adjustment must be so selected that:

2.5.1.4.1. for the lower mass adjustment limit, the seat just returns to the top of the suspension travel when the load is removed, and

2.5.1.4.2. for the upper mass adjustment limit, the load of 1 500 N depresses the seat to the lowest limit of the suspension travel.'

Items 2.5.1.4.3 and 2.5.1.4.4 shall be deleted.

Item 2.5.1.5: In the Danish and French versions only, and adjective corresponding to 'full' shall be inserted to qualify the word corresponding to 'travel'.

Item 2.5.1.5: In the Danish and French versions only, an adjective corresponding to 'full' shall be inserted to qualify the word corresponding to 'travel'.

Item 2.5.1.7 shall be replaced by the following:

'2.5.1.7. To determine the limits of the adjustment range as a function of the driver's mass, the vertical forces determined in accordance with Item 2.5.1.6 for points A and B (see Appendix 2 to this Annex) must be multiplied by the scale factor 0,13 kg/N'.

Item 2.5.2 shall be replaced by the following:

'2.5.2. *Determination of lateral stability*'

Item 2.5.2.1 shall be replaced by the following:

'2.5.2.1. The seat must be set for the upper limit of the weight adjustment and connected to the test stand or to the tractor in such a way that its base plate rests on a rigid plate (test stand) not smaller than the base plate itself.'

Item 2.5.3 shall be replaced by the following:

'2.5.3. *Determination of the vertical vibration characteristics'*

Item 2.5.3.1.1 shall be replaced by the following:

'2.5.3.1.1. The test stand must simulate the vertical vibrations at the point of attachment of the driver's seat. The vibrations are generated by means of an electro-hydraulic device. The set values to be used are either those specified in Appendices 4 and 5 to Annex II for the class of tractor in question or the double-integrated acceleration signals recorded at the seat attachment of a Category B tractor moving at a speed of 12 ± 0,5 km/h on a standard roadway as defined in Item 2.5.3.2.1. To generate the vibrations, an uninterrupted double run of the set values must be used.

The transition from the end of the sequence of acceleration signals recorded on the standard roadway in the first run to the start of the second run must be smooth and jolt-free. The measurements must not be made during the first run of the set values or of the acceleration signals. More values than the 700 laid down in Appendices 4 and 5 to Annex II may be used if these values were calculated, for example, with a cubic Spline function from the original 700 values.'

Item 2.5.3.1.3 shall be replaced by the following:

'2.5.3.1.3. The test stand must have a high degree of flexural and torsional rigidity and its bearings and guides must have no more than the technically necessary clearance. If the platform is carried on an oscillating arm, the dimension R must be not less than 2 000 mm (see Appendix 6). The magnitude of the vibration ratio at frequencies between 0,5 and 5,0 Hz shall be within the range 1,00 ± 0,05, measured at intervals not exceeding 0,5 Hz. The phase shift shall not vary by more than 20° throughout the same frequency range.'

Item 2.5.3.2.1 shall be replaced by the following:

'2.5.3.2.1. The roadway consists of two parallel strips spaced according to the wheel track of the tractor. Both strips must be made of a rigid material, such as wood or concrete, and be formed either of blocks set in a base structure or of a continuous smooth surface. The longitudinal profile of each track strip is defined by the ordinates of elevation in relation to a base level; these ordinates are shown in the tables in Appendix 3. With regard to the roadway, the elevation is defined at intervals of 16 cm along each strip.

The roadway must be firmly set in the ground and the distance between the strips must deviate only slightly over its entire length; the tractor's wheels must be fully supported at all times. Where the strips are formed of blocks, these must be 6 to 8 cm thick, with a distance of 16 cm between the centres of the blocks. The length of the standard roadway shall be 100 m.

The measurements must begin as soon as the axis of the rear axle of the tractor is perpendicular to point D = 0 on the roadway, and end as soon as the axis of the front axle of the tractor is perpendicular to point D = 100 of the test roadway (see the table in Appendix 3 to this Annex).'

Item 2.5.3.2.2 shall be replaced by the following:

'2.5.3.2.2. Measurements shall be taken at a speed of 12 ± 0,5 km/h.

The prescribed speed must be maintained without the use of brakes. The vibrations must be measured on the seat and at the point where the seat is attached to the tractor, with a light and a heavy driver.

The speed of 12 km/h must be reached after a run-up track has been traversed. The surface of this run-up track must be flat and must join the standard roadway without any change in level.'

Item 2.5.3.3.1 shall be replaced by the following:

'2.5.3.3.1. Driver's mass

The tests must be carried out with two drivers: one with a total mass of 59 ± 1 kg, of which not more than 5 kg may be carried in a weighting belt around the body; the other with a mass of 98 ± 5 kg with a maximum mass of 8 kg in the weighting belt.'

Item 2.5.3.3.2 shall be replaced by the following:

'2.5.3.3.2. Position of the accelerometer

To measure the vibrations transmitted to the driver, an accelerometer is fixed on a flat plate with a diameter of 250 ± 50 mm, the central part of which must be rigid up to a diameter of 75 mm and must include a rigid device to protect the accelerometer. This plate must be placed in the middle of the seat surface between the seat and the driver and have a non-slip surface.

To measure the vibrations at the seat attachment, an accelerometer must be fixed near to this attachment at a point not more than 100 mm from the median longitudinal plane of the tractor and not outside the vertical projection of the seat surface on the tractor.'

Item 2.5.3.3.3: In the English version only, the symbol 'Hz' shall be inserted after the figure '80' to indicate the unit of measurement.

Item 2.5.3.3.5.3: In the German and Danish versions only, the symbol 'a_w' used in the I formula must be placed in brackets.

The last sentence shall read as follows:

'The inaccuracy of the entire system for measuring the rms value of the acceleration must not exceed $\pm 5\%$ of the measured value.'

Item 2.5.3.3.7.1 shall be replaced by the following:

'2.5.3.3.7.1. During each test, the weighted vibration acceleration for the whole test time must be determined with the vibration meter specified in Item 2.5.3.3.5.'

Item 2.5.3.3.7.2 shall be replaced by the following:

'2.5.3.3.7.2. The test report must give the arithmetic mean value of the rms values of the weighted seat vibration acceleration (a_{wS}) for both the light driver and the heavy driver. The test report must also give the ratio of the arithmetic mean of the rms values of the weighted vibration acceleration measured on the seat (a_{wS}) to the arithmetic mean of the rms values of the weighted vibration acceleration measured at the seat attachment (a_{wB}). This ratio shall be given to two decimal places.'

Item 2.5.3.3.7.3 shall be replaced by the following:

'2.5.3.3.7.3. The ambient temperature during the vibration test must be measured and shown in the report.'

Item 2.5.4 shall be replaced by the following:

'2.5.4. *Vibration test for tractor seats in accordance with their intended use'*

Item 2.5.4.2: In the German version only, 'Schwingungsprüfung' shall be replaced by 'Prüfung auf dem Schwingungsprüfstand'.

Item 2.5.5 shall be replaced by the following:

'2.5.5. *Procedure used for determining the weighted vibration acceleration of seats intended for Category A tractors'*

Items 2.5.5.1 and 2.5.5.2 shall be deleted.

Item 2.5.5.3 shall become Item 2.5.5.1 and read as follows:

'2.5.5.1. The test on the vibration test stand shall be carried out in accordance with Item 2.5.3.1. the value a_{wB} actually occurring at the seat attachment during measurement must be determined. In the case of deviations from the reference value:

$a^*_{wB} = 2{,}05\ m/s^2$ for Category A tractors in Class I;

$a^*_{wB} = 1{,}7\ m/s^2$ for Category A tractors in Class II.

The acceleration a_{wS} measured at the driver's seat must be corrected in accordance with the following equation:

$$a^*_{wS} = a_{wS} \frac{a^*_{wB}}{a_{wB}}\ ,$$

Item 2.5.5.4 shall become Item 2.5.5.2 and read as follows:

'2.5.5.2. For each of the two drivers referred to in Item 2.5.3.3.1, the weighted vibration acceleration must be measured at the seat over a period of 28 seconds. The measurement must begin at the set-value signal corresponding to $t = 0$ seconds and end at the set-value signal $t = 28$ seconds (see Appendices 4 and 5 to this Annex). At least two test runs must be carried out. The measured values must not deviate from the arithmetic mean by more than $\pm 5\,\%$. Each complete sequence of set points must be reproduced in a time of $28 \pm 0{,}5$ sec.'

Item 2.5.5 shall be replaced by the following:

'2.5.6. *Procedure used for determining the weighted vibration acceleration of seats intended for Category B tractors.'*

Item 2.5.6.1 shall be replaced by the following:

'2.5.6.1. In accordance with the requirements of Item 2.5.4.2, the seat vibration tests are not applicable to a class of tractors, but only to each tractor type for which the seat is intended.'

Item 2.5.6.2 shall be replaced by the following:

'2.5.6.2. The standard roadway test must be carried out in accordance with the requirements of Items 2.5.3.2 and 2.5.3.3. The vibration acceleration measured on the driver's seat (a_{wS}) need not be corrected. At least two test runs must be carried out on the standard roadway. The measured values must not deviate from the arithmetic mean by more than $\pm 10\%$.'

Item 2.5.6.3 shall be replaced by the following:

'2.5.6.3. If a bench test is conducted, it must be carried out in association with a standard roadway test pursuant to the requirements of Items 2.5.3.1 and 2.5.3.3.'

Item 2.5.6.4 shall be replaced by the following:

'2.5.6.4. The vibration test stand shall be adjusted in such a way that the rms value of the weighted vibration acceleration recorded at the seat attachment (a_{wB}) deviates by less than ± 5 % from the rms value of the weighted vibration acceleration at the seat attachment recorded on the standard roadway (a^*_{wF}).

In the event of deviations from the value (a^*_{wF}) measured at the seat attachment during the test run, the weighted vibration acceleration recorded at the driver's seat during the test on the test stand must be corrected as follows:

$$a^*_{wS} = a_{wS} \frac{a^*_{wF}}{a_{wB}}$$

Each of the tests on the test stand must be carried out twice. The measured values must not deviate from the arithmetic mean by more than ± 5%.'

After Item 2.5.6.4, the following new items shall be added:

'2.5.7. *Test for determining the damping characteristics in the resonance range*

2.5.7.1. This test is carried out on the test stand as specified in Item 2.5.3.1. However, account must be taken of the following:

2.5.7.2. Instead of the set values specified in the second paragraph of Item 2.5.3.1.1 (see Appendices 4 and 5 to this Annex), sinusoidal oscillations of ± 15 mm amplitude with a frequency of 0,5 to 2 Hz are generated. The frequency range is to be run through with a constant rate of frequency change in not less than 60 seconds or at intervals no greater than 0,05 Hz with increasing frequency, and in an identical manner with decreasing frequency. During this measurement, it is permissible to filter the signals emitted by the accelerometers through a bandpass filter with cut-off frequencies of 0,5 and 2,0 Hz.

2.5.7.3. The seat is to be loaded with a ballast of 40 kg in the first test and with a mass of 80 kg in the second test; the ballast is to be applied on the device illustrated in Figure 1 of Appendix 1, with the same line of action of the force as when determining the seat reference point.

2.5.7.4. The ratio of the rms values of the vibration acceleration on the seat surface a_{wS} to those at the seat attachment a_{wB}:

$$V = \frac{a_{wS}}{a_{wB}}$$

is to be determined in the frequency range from 0,5 to 2,0 Hz at intervals no greater than 0,05 Hz.

2.5.7.5. The ratio measured must be given in the test report to two decimal places.'

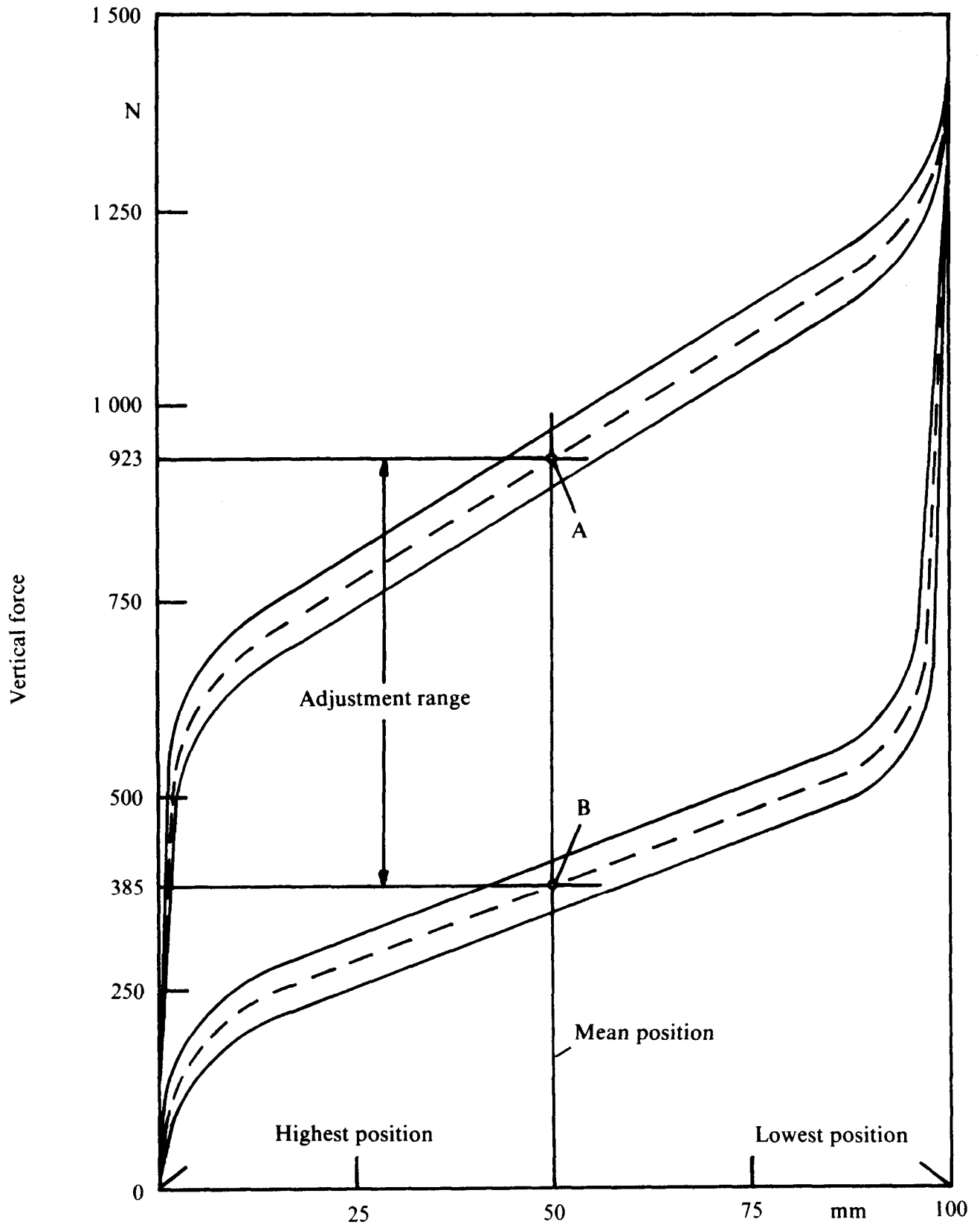
After Item 3.1.3, the following new Item 3.1.4 shall be added:

'3.1.4. The ratio referred to in Items 2.5.7.4 and 2.5.7.5 shall not exceed the value of 2.'

Appendix 2 is hereby replaced by the following:

'*Appendix 2*

Determination of the characteristic curves of the suspension system and the load adjustment range
(Item 2.5.1)



Appendix 3 is hereby amended as follows:

In the table heading, 'an arbitrary' shall be replaced by 'a'. The existing definition of D shall be replaced by the following:

'D = distance from the beginning of the standard roadway (in metres).'

Appendix 4 is hereby replaced by the following:

'Appendix 4

Set-value signals for the test-stand inspection of the driver's seat on Category A (Class I) tractors (Item 2.5.3.1.1):

PS = set point;

a = amplitude of the set-value signal (in 10^{-4} m);

t = measurement time (in seconds).

When the sequence of signals is repeated in the table for 701 points, points 700 and 0 coincide in time at an amplitude of a = 0:

PS No	a 10^{-4} m	t s
0	0 000	0
1	0 089	.
2	0 215	.
.	.	.
.	.	.
.	.	.
699	0 023	.
700	0 000	28,0'

Appendix 5 is hereby replaced by the following:

'Appendix 5

Set-value signals for the test-stand inspection of the driver's seat on Category A (Class II) tractors (Item 2.5.3.1.1):

PS = set points;

a = amplitude of the set-value signal (in 10^{-4} m);

t = measurement time (in seconds).

When the sequence of signals is repeated in the table for 701 points, points 700 and 0 coincide in time at an amplitude of a = 0:

PS No	a 10^{-4} m	t s
0	0 000	0
1	0 022	.
2	0 089	.
.	.	.
.	.	.
.	.	.
699	0 062	.
700	0 000	28,0'

The title of Appendix 6 shall be replaced by the following:

'Test stand (Item 2.5.3.1); example of construction (dimensions in mm)'

Appendices 7, 9 and 10 shall be deleted.

Appendices 8 and 11 shall become Appendices 7 and 8 respectively.

The following shall be added to Item 11 of Annex III:

'This note must be sent to the competent authorities of the other Member States if they so request.'

The English version only of Annex IV to Directive 78/764/EEC shall be amended as follows:

Item 3 shall be replaced by the following:

'3. Seats intended for tractors with a minimum rear-wheel track of not more than 1 150 mm may have the following minimum dimensions in respect of the depth and width of the seat surface:

— depth of seat surface: 300 mm;

— width of seat surface: 400 mm.

This provision is applicable only if the values specified for the depth and the width of the seat surface (i.e. 400 ± 50 mm and at least 450 mm respectively) cannot be adhered to on grounds relating to the tractor.'

Item 4: In the French version only, 'Annex I' shall be replaced by 'Annex V'.