



# 2000/14/EC Outdoor Noise Directive FEM MEWP Product Group position

## 1 Introduction

Mobile elevating work platforms (MEWPs), referred to as aerial access platforms in the Directive, are used in a large number of market sectors to carry out temporary work at height. Common types are shown in Appendix 1.

MEWPs can be powered by internal combustion (IC) engine, battery, electric mains or manual effort. MEWPs with IC engines can be classed under the following types:-

- 1- IC engine powered
- 2- Either electrically or IC engine powered depending on the selection made by the operator
- 3- Electrical MEWP with an IC engine on the machine that is used for charging the battery
- 4- Dual power MEWP with battery power and IC engine for additional power and charging while the MEWP is operating

Types 1, 2 and 4 come under the Directive and it can be argued that type 3 does not because the IC engine does not power the MEWP.

IC engines on MEWPs can vary in power, commonly, from 3kW to 65kW. The power source on a MEWP powers the lift mechanism and/or the vehicle transmission.

The number of MEWPs in use is increasing as people realise the safety and productivity benefits they provide for temporary work at height over other types of equipment. However, the global recession is affecting sales which are substantially lower than previously anticipated.

## 2 Current situation

All MEWPs with IC engines are covered by Directive 2000/14/EC. They currently come under Article 13 which means they are subject to noise marking that indicates their guaranteed sound power level. Currently, under Article 13 they are self-certified by the manufacturer.

The Novemal Report recommends that MEWPs with internal combustion (IC) engines (referred to as aerial platforms in the Directive) should be moved from Article 13 to Article 12. If this is done then MEWPs with internal combustion engines will have to meet specified noise limits and, if the certification procedures of the Directive do not change, the manufacturer will have to involve a notified body before they can place a new design on the market.

Nomeval reports that there is a need to improve the test code and in Table 5.2 suggested that noise levels could be determined by combining measurements taken using the following ratios; i.e raising and lowering (70%), turning (10%) and idling (20%).

The noise limits proposed by Nomeval are:

- Engine power,  $P \leq 55\text{kW}$  101dB
  - Engine power,  $P > 55\text{kW}$   $82 + 11 \log_{10}P$
- [where  $P$  = the engine power in kW]

but the method of measuring noise is not specified.

The above proposed noise limits were determined using guaranteed sound power levels from the EC Noise Database (formulated under Article 16 of Directive 2000/14/EC). Approximately 65% of the data in this database is listed against MEWPs that had no power rating specified for them.

### 3 Environmental impact

Figure 8.1 of the Novemal report gives a decision diagram for determining whether or not MEWPs should come under Article 13 (noise marking) or Article 12 (noise limits). The route A.B.D.F.I.N has been selected by the report authors leading to a decision to move MEWPs into Article 12 and for them to be subject to noise limits.

The above route assumes that MEWPs have a medium environmental impact whereas Table 4.9 of the Novemal report shows a low environmental impact. To be consistent in the study Novemal should have determined the route as A.B.C.Q.L which means that MEWPs only require noise labelling.

FEM supports that MEWPs have a low environmental impact. An estimate from data logging equipment is that, commonly, the engine may be under maximum power for as little as 20% of the time that a MEWP is in use and this has a substantial impact on the overall noise that they generate. In addition, many MEWPs have low power engines that are used for shorter periods of time than other types, e.g. if the MEWP is a trailer mount that is towed into its work position, a dual power type or a type with an engine used only for battery charging. All MEWPs have a low environmental impact and the nature of use of these MEWPs give them a lower environmental impact than other types.

### 4 Noise levels measured on MEWPs

The current test code in Directive 2000/14/EC measures the maximum noise level produced by MEWPs and the guaranteed sound power level is calculated accordingly. The method of measuring the maximum noise level does not accurately represent the low environmental impact of MEWPs or how they are used in practice.

Table 1 gives the guaranteed sound power levels contained in the EC Noise database. The column headed Engine Power ( ) refers to guaranteed sound power levels provided but the engine power of the MEWP was not specified. As such it is not possible from this data to identify the impact on manufacturers of the proposed 101; 82 + 11logP limits proposed by Novemal.

**Table 1**  
**Guaranteed Sound Power Level – EC Database**

MEWP type	Engine power						
	( )	6 to 15	16 to 25	26 to 35	36 to 45	46 to 55	56 to 65
	Number of MEWPs in each engine power category						
	131	21	15	3	8	6	10
	Guaranteed sound power level (dBa)						
All MEWPs	80 min 108 max	98 min 106 max	98 min 111 max	105 min 107 max	102 min 107 max	111 min 111 max	112 min 113 max

Table 2 gives guaranteed sound power levels as provided by MEWP manufacturers. It shows the data in relation to different MEWP types and engine power. This data relates to a significant number, but not all, manufacturer's model ranges and engine power ratings. It can provide an indication of the effect of proposed noise limits.

**Table 2**  
**Guaranteed Sound Power Levels provided by MEWP manufacturers**

MEWP type		Engine power						
		0 to 5	6 to 15	16 to 25	26 to 35	36 to 45	46 to 55	56 to 65
		Guaranteed sound power level (dBa)						
Trailer mounted		73 min 106 max	99 min 104 max	102				
Self propelled	Scissor	102 min 103 max	108	99 min 106 max	104 min 108 max	108 min 109 max		
	Articulated boom	101 min 103 max	102	97 min 100 max	103 min 107 max	103 min 108 max	100 min 104 max	104 min 112 max
	Telescopic boom	99	79 min 81 max	78 min 82 max	99 min 104 max	102 min 107 max	100 min 104 max	100 min 113 max

## 6 Practically achievable noise limits

Engine designs are changing in order to meet lower emission levels under Directive 97/68/EC (as amended). Experience has shown that these changes tend to increase the noise emissions from engines of a similar power rating. For example, Stage III A engines fitted on MEWPs have been found to give 1dB higher noise levels than Stage II types. Consequently, any noise limits set using measurements taken from MEWPs currently in use will be more difficult to meet in the future.

If limit values are given, they should be determined carefully taking into account the existing guaranteed levels given in Table 2 and the uncertain impact of the exhaust emission directive on the noise levels from MEWPs. They should also take into account the number of MEWPs that would need to be modified to meet the proposed limits.

The proposed Novemal limits of  $101; 82 + 11\log P$  are not practical. Using the manufacturer's data it has been estimated that 62% of MEWP models would need to be modified if these limits were adopted in the Directive. Also, the guaranteed sound power level would have to be reduced by as much as 12dBa on high power MEWPs and 5dBa lower power ones. Reductions such as these are not achievable.

An alternative proposal for noise limits is given in Table 3. Estimates suggest that 11% of MEWP models would need to be modified and the guaranteed sound power level would have to be reduced, on average, by 3dBa and up to 5dBa on larger power models. These limits are much more achievable than the Novemal proposals and would give overall reductions in the maximum noise levels that MEWPs can produce.

**Table 3**  
**Alternative proposed limits**

Engine power (kW)		Proposed limit (dBa)
Minimum	Maximum	
0	25	104
26	55	108
56	Unlimited	$89 + 11 \log_{10} P$

## 7 Industry sector (task group) conclusion and position

- Aerial platforms should be referred to as mobile elevating work platforms (MEWPs). This is the common terminology used in Europe and in European standards.
- MEWPs (aerial work platforms) should be retained in Article 13.
- The Novemal proposed guaranteed sound power level limits detailed below are impracticable and inachievable and should not be adopted in the Directive:-

$P \leq 55 \text{ kW}$	104
$P > 55 \text{ kW}$	$82 + 11 \lg P$

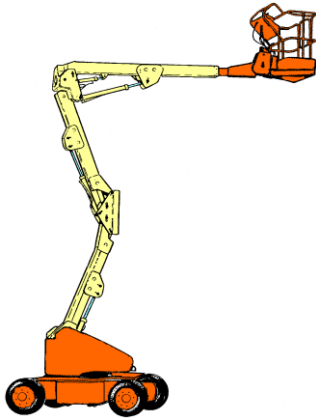
- Electrical MEWPs with an IC engine that is used only for charging the battery should not come under the Directive.
- On the basis of guaranteed sound power levels supplied by manufacturers, FEM believes that if MEWPs are moved to Article 12 the following limit values (dBa) are likely to be achievable with about 11% of MEWPs affected:-

$P \leq 25 \text{ kW}$	104
$P \leq 55 \text{ kW}$	108
$P > 55 \text{ kW}$	$89 + 11 \lg P$

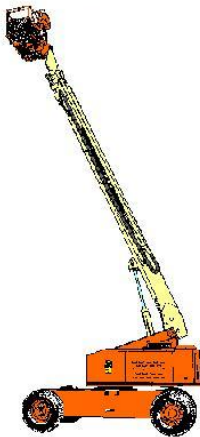
*[NOTE : manufacturers need to assess the impact of the above proposal on individual product ranges before a full assessment of its impact can be made]*

- For some time MEWP manufacturers have proved their ability to measure and record noise levels without the need for notified body involvement. Currently, MEWPs are self-certified by the manufacturer and this method of certification should be retained if they are moved to Article 12.

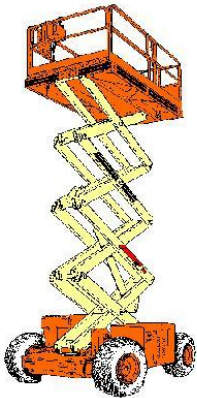
## Annex I Common Types of MEWP



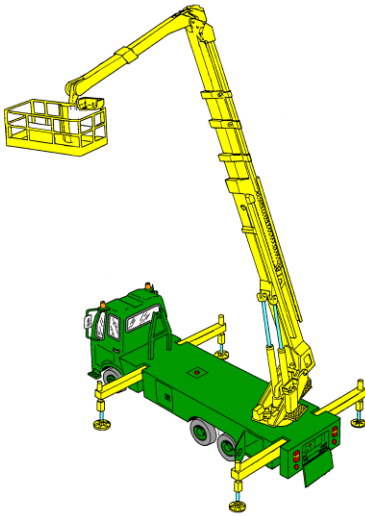
**a) Self-propelled articulated boom**



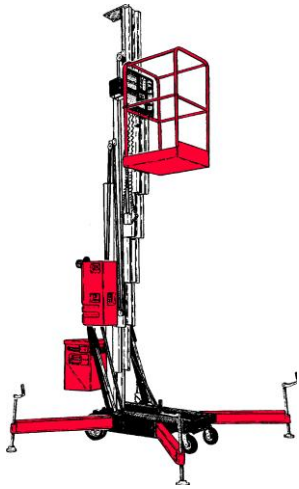
**b) Self-propelled telescopic (straight) boom**



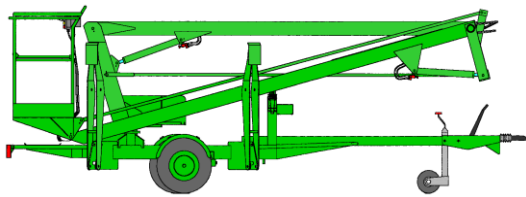
**c) Self-propelled scissor**



**d) Large vehicle mount**



**e) Vertical personnel platform**



**f) Trailer mount**