

Transmitted by the expert from Germany



Bundesministerium
für Verkehr und
digitale Infrastruktur

Informal document **GRB-66-12**
(66th GRB, 4-6 September 2017,
agenda item 10)

Problems with Noise-Emissions of L-Cat.-Vehicles / NORESS and possible Solutions

NORESS: Non Original Replacement Exhaust Silencer System

Contents:

1. Present Situation

2. Problems

3. Solutions

Present Situation (1)

Most L-Cat.-Vehicles fulfil old noise-requirem. (78/1015 – 97/24/EC Chap. 9)

These Vehicles can use old approved NORESS (78/1015 – 97/24/EC Chap. 9)

Since 2017 new L-Cat.-Vehicles have to fulfil UN-R41.04 including ASEP

ASEP-Compliance is established via Manufacturer Declaration.

Measurement between $V_{AA'} \geq 20$ and max. $V_{BB'} \leq 80$ km/h (2nd, 3rd, 4th gear)

Contents:

1. Present Situation

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Problems (1)

Complaints about noise annoyance based in 100% on

- Reckless Driving Behavior,
- Technical Changes (Manipulations),
- UN-/EU-Approvals of too loud vehicles / NORESS or
- Utilization of “Grey areas” of EU-/UN-Reg. by Manufacturers

As a result, more and more demands for:

- requirements for stricter limits (e.g. EURO 5) and
- in the meantime, the ICE's own right to exist is critically discussed !

In the long term manufacturer and user get in trouble about this!

Problems (1)

1. Reckless Driving Behavior

(Starting/Driving at highest engine RPM, extreme acceleration, non-compliant speed)

Responsible:

Driver (Fines in Germany: for exorbitant speed up to 1520,- € + driving ban).

Note: Negative image falls on driver and possibly to L-vehicle-category!

Result: Request for more controls and higher penalties !

Problems (2)



2. Technical Changes (Manipulations)

(Use of Racing-Silencers, Dismantled dB-Eaters,

Use of Additional control units, illegal flap systems/-steering etc.)

Responsible: Registered Keeper / Driver (Fines in Germany: 270,- / 180,-€);

Multiple offenders: Psychological Test is possible (but seldom about this in Germany)

Note: Negative Image falls on Manufacturer and L-vehicle-category !

Result: Request for higher penalties and lower limits (e.g. EURO 5) !

Sufferer: Vehicle Manufacturer and in total every L-Cat.-driver



Problems (3)

3. UN-/EU-Approvals of too loud

original vehicles / NORESS

(Manufacturer's ASEP-Declaration is not OK,
Deviation Vehicle/NORESS to Approval, etc.)

2	9	-	P.2/P.4	132	/	12250	T	295
2040				19		735		
1120				G		200		
-		13	-		Q	000.66		
-		F.1	401		F.2	401		
152		7.2	249		7.3	-		
152		8.2	249		8.3	-		
105		U.2	6125		U.3	78		
-		0.2	-	S.1	2	-		
120/70ZR17 (58W)								
190/55ZR17 (75W)								
-								
-								
11 -								
e11*2002/24*0749*02								
12.07.2010			17	-	16	-		
-								

Test	dB(A) LH	dB(A) RH
3. Gear	91,2	93,0
2. Gear	93,8	94,1



These Approvals create pressure on development of the "quiet manufacturers"

Responsible: Manufacturer (Output of Market surveillance activities on foreign approvals is quite small. CoP works, but makes approval authority unattractive).

Note: Negative Image falls on Manufacturer and vehicle-category!

Result: Request for lower limits (e.g. EURO 5) !

Sufferer: Each Vehicle/NORESS Manufacturer



Problems (4)

4. Utilization of “Grey areas”

of UN-/EU-Regulation by Manufacturers

(Racing-Mode, Extremely loud outside ASEP (Range/Gears),
And/or aggressive flap steering, Use of dB-Eater, etc.)

Responsible: Manufacturer / Driver

(e.g. Use of Racing Modes: DE-Fines: - / 20,-€);

Multiple offenders: Psychological Test is possible (but seldom about this in Germany)

Note: Negative Image of these loud L-Cat.-Vehicles/NORESS falls on

Manufacturer, L-Cat.-Drivers and complete vehicle-category!

Result: Request for **lower limits** (e.g. EURO 5); may be first registration **ban** of **ICE** !

Sufferer: Each Vehicle- / NORESS-Manufacturer

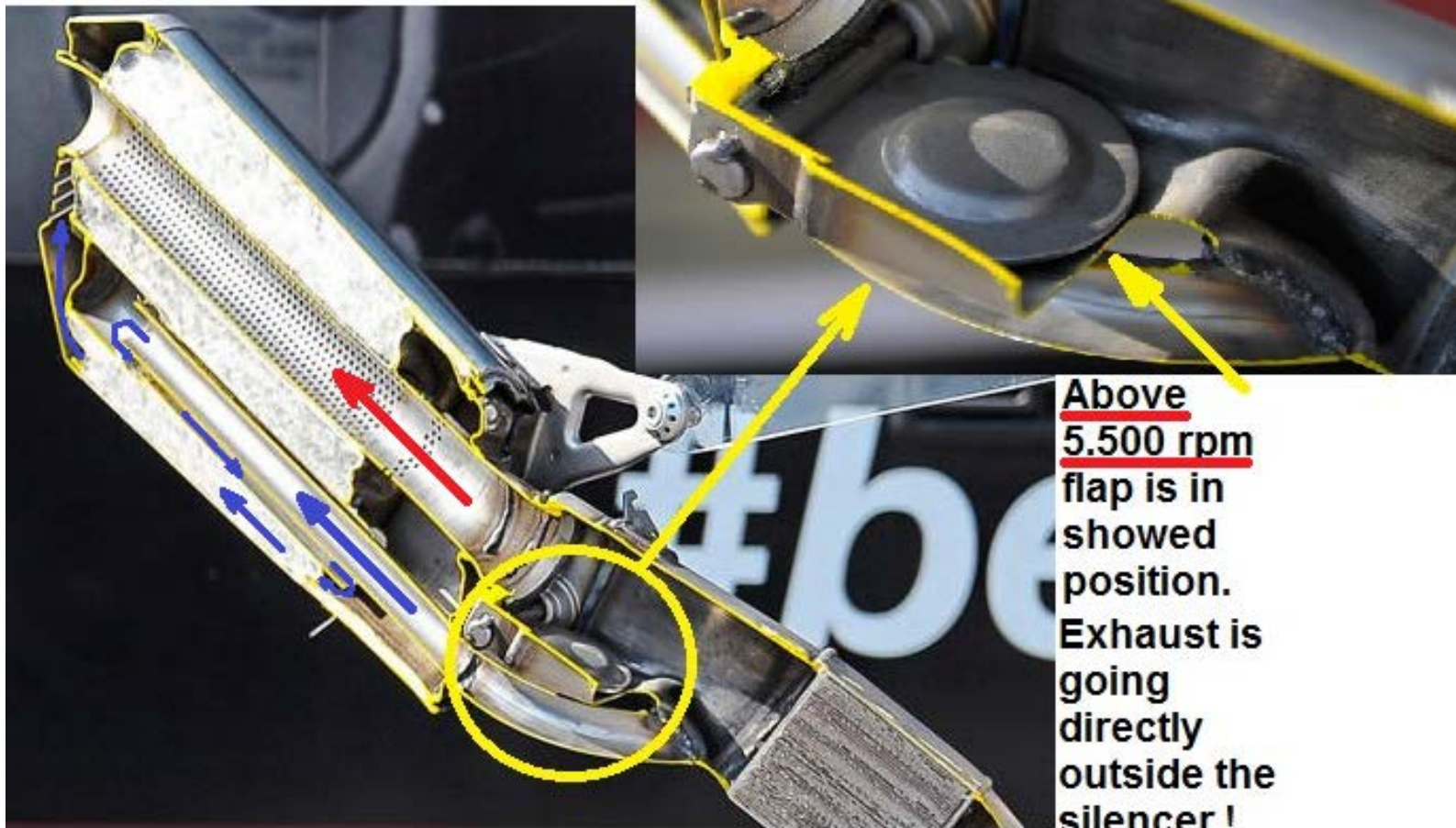
Modifications of 2016/1824 & UN-R41.04 corrected “Grey Areas” only minimally

Why ?



Problems (4): Vehicle OEM-Silencer and NORESS

Up to 5.500 rpm the flap is in upright position. Exhaust gas is going via the silencer (lower tube) outside. (EURO 4)



Above 5.500 rpm flap is in showed position. Exhaust is going directly outside the silencer !

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Solutions (1 and 2)

Problem 1 Reckless driving behavior

Solution to 1:

Can not be solved by GRB and its UN-Regulations.

Problem 2. Manipulations

(Racing-SD, dB-Eater, additional illegal controllers of silencers with variable geometries and illegal modifications etc.)

Solution to 2:

Insert additional requirements:

- **Anti-tampering (mechanical and electronical about flap steering)**
- **Mandatory Database for each type-approved vehicle/NORESS for better enforcement and PTI**
- Prohibition of use 78/1015/EEC – 97/24/EC-approvals with flap-systems/dB-Killers
- At a Minimum: No chance to extent 78/1015/EEC – 97/24/EC-approvals with flap-systems or dB-Killers also for older bikes.

Solution (3)

Problem 3. UN-/EU-approvals of loud vehicles or NORESS

(Manufacturer's ASEP-declaration is not OK; Deviations between sold products and type approval vehicle/NORESS etc.)

Solution: ASEP have to be **part of type approval test** and these tests have to be done mandatory **by Technical Service (TS):**

- 1. complete** tests of ASEP **by TS** or
2. verification of a **minimum number of points by TS**, which have to be measured by the **manufacturer completely before type approval tests** or
- 3. mandatory measurement by TS** (complete or verification of min. number of points) **only for silencer systems with variable geometries**, etc.

Solution: Market surveillance:

Fixed minimum number on tests of L-cat.-vehicles/NORESS in respect of noise.

Solution (4)

Problem 4

Utilisation of grey areas of UN-/ EU-Reg. by vehicle-/NORESS-manufact.

(Racing-Mode, Extremely loud outside ASEP (Range/Gears), Use of dB-Eater etc.)

Solution: Extension of the existing ASEP-Range (speed/gears) via the aim:

The ASEP-Range/-Gears has to cover more or less the “legal, usual road use”.

Definition “legal, usual road use”:

- Vehicle speed between minimum 5 and maximum 100 or 120 km/h and
- engine speed between $n_{AA', \min}$ of $1.5 * n_{idle}$ and a $n_{BB', \max} < 80 \% S$
- For each gear of L-Cat.-vehicles inside a.m. borders.

Or better:

Modify ASEP in the way of Real-Driving-Noise (like RDE) from cruising, over partial throttle to wot-acceleration inside a.m. borders (speed and rpm) !

Better Definition of “cycle beating” and “defeat-devices” and their prohibition.

Solution (4)

Problem 4: Utilisation of grey areas of UN-R 92 about NORESS

(Aim: to ban flap-system-silencers for vehicles which have conventional OEM-silencers)

Modification UN-R 92 Paragraph 6.3.4 ASEP (working-Doc. ECE/TRANS/WP.29/GRB/2016/5)

The requirements of paragraph 6.3. of the 04 series of amendments to Regulation No. 41 shall also be fulfilled for the NORESS, if it is designed to be used on vehicles that are type approved according to the 04 series of amendments to Regulation No. 41 and are subject to the requirements of paragraph 6.3. of the 04 series of amendments to Regulation No. 41.

If the NORESS has different modes or variable geometries it has to fulfill the ASEP requirements of paragraph 6.3. of the 04 series of amendments to Regulation No. 41 also, if it is designed to be used on vehicles that are not type approved according to the 04 series of amendments to Regulation No. 41. The test of ASEP has to be done in comparison to the original exhaust silencer (back-to-back-test). During these tests the sound-pressure level of the NORESS for each test condition can have in its maximum the same sound-pressure level as the measurement of the vehicle equipped with the original exhaust silencer.

Solution (4)

If tests are to be performed for **NORESS without multiple, manually or electronically adjustable, rider selectable operating modes or without variable geometries**, the vehicle as described in paragraph 3.3. (c) shall be used.

If tests are to be performed for NORESS with multiple, manually or electronically adjustable, rider selectable operating modes or with variable geometries, each vehicle type of the range of approval application has to be tested.

The ASEP tests have to be performed by the Technical Service. The test results of these measurements and all relevant data of these tests have to be shown inside the test report of the Technical Service.

The Type Approval Authority may require any relevant test to verify the compliance of the NORESS to these requirements.

The manufacturer shall provide **in addition to the test report of the Technical Service** a statement in conformity with annex 4 of this Regulation, that the NORESS or components to be approved comply with the additional sound emission provision requirements of paragraph 6.3 of the 04 series of amendments to Regulation No. 41 **for type approval procedure and production.**

Conclusion

If we do not solve all described noise problems of L-Cat.-vehicles and if we reduce again only the sound level limits (EURO 5) there will be no big changes inside real traffic !

**Existing Situation:
QUITE
inside papers and during type approval
and
LOUD
on the streets, because of Manipulation, Loop-holes, Grey-Areas !**

**Petition:
Reduce sound level limits in a moderate way and take a bigger focus on Manipulation, Loop-holes, Grey-Areas and enforcement in near future!**

Thanks for your attention!