



European Tractor Pulling Committee

Tech and Safety Board

Dennes Janssens (NL) familiejanssens@ziggo.nl

Claus Zimmermann (D) mail@ariasv8.de

Ivar Lycke (DK) ivar.lycke@gmail.com

Paul Tucker (GB) paul@hintoncottage.fsnet.co.uk

Mario de Wever [B] mdewever@zeelandnet.nl

Peter de Wit (NL) etpc@hetnet.nl

Dear All,

Following a turbocharger failure the ETPC has reviewed the existing set of rules relating to turbocharger guarding and has updated them to accommodate for the larger dimensions of custom built turbochargers now being used in tractor pulling with a new set of rules for turbocharger protection. **On diesel engines**

In the new rules turbochargers are divided into 3 categories according to exhaust outlet dimensions:

- A.- turbocharger exhaust outlet up to 95 mm. diam. (2 mm. shielding)
- B.- turbocharger exhaust outlet above 95 mm and up to 112 mm. diam. (2 mm. shielding)
- C.- turbocharger exhaust outlet above 112 and up to 132 mm. diam. (3/6 mm. shielding)

A. Turbocharger with exhaust outlet up to 95 mm. diameter

- All turbochargers must be completely shrouded (360 degrees), except for inlet- and exhaust and oil supply pipes with 2mm steel.
- any openings in the guarding around inlet/exhaust/oil supply pipes can have a max. of 25 mm. clearance to the guarding.(drawing 1)
- Front (inlet)and rear (exhaust) end of guarding must be closed with 2mm steel.
- The guarding must ensure that no wheels or other parts of the turbocharger can come out in case of a turbocharger explosion.
- The guarding must be mounted as close as possible to the turbocharger, at min. four (4) points with min. M8 8.8 bolts. (connection to inlet or exhaust pipe is not seen as connection point)
- Around every bolt hole must be min. 1.5 x hole diameter of material.
- Guarding must extend until cross in exhaust.
- Hood construction or grille cannot be part of the shielding.
- For tractors with a closed hood construction (min 2mm steel or min. 3mm aluminum), an open bottom to guarding with max. 90 degrees of the radial part is allowed.
- Open bottom shielding must extend at least 50 mm. below the bottom of the turbocharger.
- (drawing 2).

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c/o Peter de Wit
The Netherlands

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If turbo protection is made out of separate parts welds must be full length or 360 degrees round.

-In case of a bolted construction there must be min. M8 8.8 bolts used, placed at maximum of 75mm. centres.

-Distance from bolt location to edge of the shielding or plate maximum 25 mm.

-Around every bolt hole must be minimum 1.5x hole diameter of material.

-Minimum overlap of material 32mm. (drawing 3)

Exhaust pipe must have a steel cross as close as possible to the turbo exhaust housing outlet, but maximum 50 mm. from turbo exhaust wheel.

-Cross to be made from min.10 mm. diam. steel pin. (compact diesel:min. 8mm.diameter)

-Pins to be installed 90 degrees to each other , as closes as possible to each other.

-If exhaust pipe has a diameter larger than 95mm there must be a third pin of 10 mm.

maximum 50 mm from cross.(pin every 60 degrees)

-If exhaust pipe has a diameter larger than 160 mm there must be a fourth pin of 10 mm diam. max. 50 mm from cross. (pin every 45 degrees)

-Maximum diameter of exhaust pipe allowed is 200mm.

-Pins must have 5mm. visible on the outside of the exhaust pipe and be welded to the pipe.

-From cross to turbo exhaust wheel there must be an axial stud minimum 12mm diameter. Welded to the cross.

-Max. distance between axial stud and turbo exhaust wheel is 2mm.

-Wall thickness of exhaust pipe from turbo to cross min 4 mm. (drawing 4)

If it is not possible to use the 10mm pins , 25x5 mm. flat steel may be used as the cross.

-This cross must also follow the above rules concerning the stud and the 5mm visible on the outside plus the welding's on the outside, and 3th. and 4th flat steel by bigger diameter pipe.

-Flat steel can only be used after written approval of the National and the ETPC T&S board.

Exhaust pipe must have 3 additional connections to the exhaust protection to prevent pipe coming loose from turbo (if clamp fails or breaks)

-Connections made from min. 25x5 flat steel inside the turbocharger guarding.

-25x5 flat steel to be connected with min. M8 8.8 bolts to guarding

-Around every bolt hole must be min. 1.5 x hole diameter material.(drawing 5)

B. Turbocharger with exhaust outlet above 95 mm and up to 112 mm diameter

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As per rules for turbochargers with exhaust outlets up to 95 mm but with the following differences:

- Cross pins to be made from **12 mm** diameter (not 10 mm)
- Axial stud to be made from **20 mm** diameter (not 12 mm)

C. Turbochargers with exhaust outlet above 112 mm and up to 132 mm diameter

As per rules for turbochargers with exhaust outlet up to 95 mm but with the following differences:

- Cross pins to be made from **12 mm** diameter (not 10 mm)
- Axial stud to be made from **20 mm** diameter (not 10 mm)

By one stage turbocharged diesel engines the following stronger shielding:

- All turbochargers must be completely shrouded (360 degrees), except for inlet, exhaust and oil supply pipes **with 3mm** steel. (radial part: pipe or rolled steel section)
- Any openings in the guarding around inlet/exhaust/oil supply pipes can have a maximum of 25 mm. clearance to the guarding.
- The turbocharger guarding must also cover the first cross in the exhaust outlet.**
- Axial: front (inlet) and rear (exhaust) end of guarding must be closed with **6mm steel**. (not 3mm)
- Guarding may be divided axially, on these separate axial parts a 6mm plate must be full welded and then bolted together with the second part with minimum M8 8.8 bolts, with maximum distance bolt to bolt of 50 mm. Minimum 5.5 mm material around bolt hole.
- Around the exhaust pipe there must be a fixed ring or plate of min. 6mm thick. The ring must be connected on the inside of the rear end of guarding.
Ring or plate must have 30 mm larger diameter than the hole in rear part of guarding, this is to prevent the exhaust and cross with axial stud is coming loose from turbocharger. (drawing 6)
- If turbocharger guarding cannot be made according specifications above, engine or chassis chassis may be part of guarding, only after written approval of the Nat. and ETPC T&S board. after written approval of the National and the ETPC T&S board.

Above turbocharger shielding must be yearly inspected and stamped. Inspection paper and photo must be filed and a copy must be with the vehicle at all times for inspection.

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On behalf of the ETPC T&S board, Peter de Wit

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