

European Tractor Pulling Committee



Farm Stock

Rulebook

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ETPC Farm Stock Rules

Introduction

The Farm Stock Committee of the European Tractor Pulling Committee (ETPC) made this rulebook as a guide for you. We hope it will help you to make RPM limited pulling easy and fair for you as we strive to standardize pulling rules and make Truck and Tractor Pulling a safe and fair sport for all involved.

Whenever you need more information, please contact the ETPC representative of your national organization. All individual inquiries from pullers, promoters etc. must go through the respective national boards, which, if needed, will pass them on to the ETPC.

Neither the ETPC Board, nor the Tech and Safety Board, nor the Farm Stock Committee, nor any of their members can be made responsible for any damage or loss of technical or other kind, or for any kind of human injury that may be caused by the Truck and Tractor Pulling sport.

RPM limited classes

The ETPC recognizes four levels of RPM limited classes in Tractor Pulling:

Level 1

Farm classes (Chapter 1):

Tractors are not allowed to be modified in any way for the use in the Tractor Pulling. Only modifications for safety are allowed, or mandatory.

Level 2

Sport classes (Chapter 2):

Tractors are allowed to be modified for the use in the Tractor Pulling sport. The second limitation after the limit of 2700 rpm is a maximum air inlet of 68 mm.

Level 3

Super Sport classes / Farm Stock (Chapter 3):

Tractors are allowed to be modified for the use in the Tractor Pulling sport. The basic limits in these classes are a combination of a maximum rpm and engine size.

Level 4

Unlimited Farm Stock class (Chapter 4):

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Tractors are allowed to be modified for the use in the Tractor Pulling sport. The basic limits are: maximum weight: 4500 kg, max. rpm: 3200, maximum engine size: 7,374 liters / 450 cu.

General competition rules:

For the general competition rules refer to the ETPC Main Rule Book

Chapter 1 - Level 1 - Farm Classes

Definition

Farm classes are intended for tractors “just out of the field”, so it is not allowed to make any technical changes to the tractor except for safety reasons. Tractors should be divided in different categories based on weight and horse power. The ETPC has experience in two ways of controlling the horse power limit. Testing the amount of horsepower after the pull with a dynamometer and setting a limit on the size of the air intake by an air restrictor.

It is not the intention of the ETPC to sanction international events with the Farm Classes, however, promoters can of course offer international competition.

The ETPC recommends following limits

3,5 ton - 100 hp - 30 mm Air Restrictor

4,5 ton - 125 hp - 34 mm Air Restrictor

5,5 ton - 150 hp - 37 mm Air Restrictor

6,5 ton - 175 hp - 40 mm Air Restrictor

7,5 ton - 200 hp - 43 mm Air Restrictor

9,5 ton - 275 hp - 50 mm Air Restrictor

11,5 ton - 350 hp - 57 mm Air Restrictor

(Air Restrictor sizes according to tests performed by BKTV)

General Rules, apply to all tractors

1. All official weights include driver, vehicle with oil, water, fuel and safety equipment, ready to compete. All drivers must weigh in with the pulling vehicle when it is officially weighed. No vehicles will be allowed past weight-bridge that exceed class weight. No adding fuel or weights unless reweighed. Weighing out is at the discretion of the track officials.
2. The tractor must be an original farm stock tractor without any changes.
3. It is allowed to use a non OEM turbocharger.
4. The complete original 3-point hitch and p.t.o. must be present.
5. If the ETPC or national organization doubts the legality of any entry, the contestant in question must verify that 150 units of the tractor in question have been manufactured (notarized statement from the manufacturer), furnish parts numbers, and prove to the board's satisfaction that the tractor is legal.
6. The tractor must have been assembled by the manufacturer or national dealer in the way the contestant wants to participate. If there are any doubts, the contestant in question must prove the tractor is legal.
7. The only legal fuel is diesel. Oxygen carriers and combustion accelerators are illegal. Diesel fuel is defined by the ETPC as a pure hydrocarbon. The ETPC will evaluate diesel fuel using the dielectric constant value. That value shall be determined by the ETPC-approved fuel check meter only. The fuel check meter shall use cyclohexane to establish the zero reference point for determine all diesel fuel dielectric constant values. Diesel fuel to be used in ETPC sanctioned events shall have a dielectric value of no greater than 4.9, nor a value of no less than 2.0. The use of additives containing oxygen, such as nitro methane, propylene oxide, dioxide, MTBE, alcohol or nitrous oxide, are strictly prohibited. These additives, and others of the oxygen-bearing family, will significantly change the dielectric constant value of any diesel fuel. Diesel fuel with dielectric constant values that fall outside the ETPC-standards will not be allowed for use in ETPC competition. It is prohibited other fluids, fuels or gasses to add, inject or spray in or on any part of the tractor. Water injection is not allowed. The ETPC keeps the right to

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decide that the fuel that has to be used for the competition will be supplied through the ETPC.

Safety

1. The RPM is allowed to a maximum of 30% over the standard RPM to a maximum of 2700 rpm.
2. The tractor must be fitted with an national (e.g. CE or GS) approved roll over protection, a safety cab or ETPC roll bar (see Level 2).
3. Advertising boards are allowed, if they do not extend outside the tractor and providing they do not influence the visibility of the driver. Advertising boards are not allowed to be movable, boards turn able within the wheels excluded.

Tires

1. Tractors are only allowed to drive with rubber tires; chains or similar are not allowed. Tires are not allowed to be cut. Puller tires are not allowed.
2. The size of the tires is free of choice with a maximum height of 2200 mm. The use of dual tires is allowed.
3. The total width of the tractor is maximum 3000 mm.
4. Dual tires need, besides the normal connection, an extra provision to provide the wheel to break loose.

Stabilizer bars

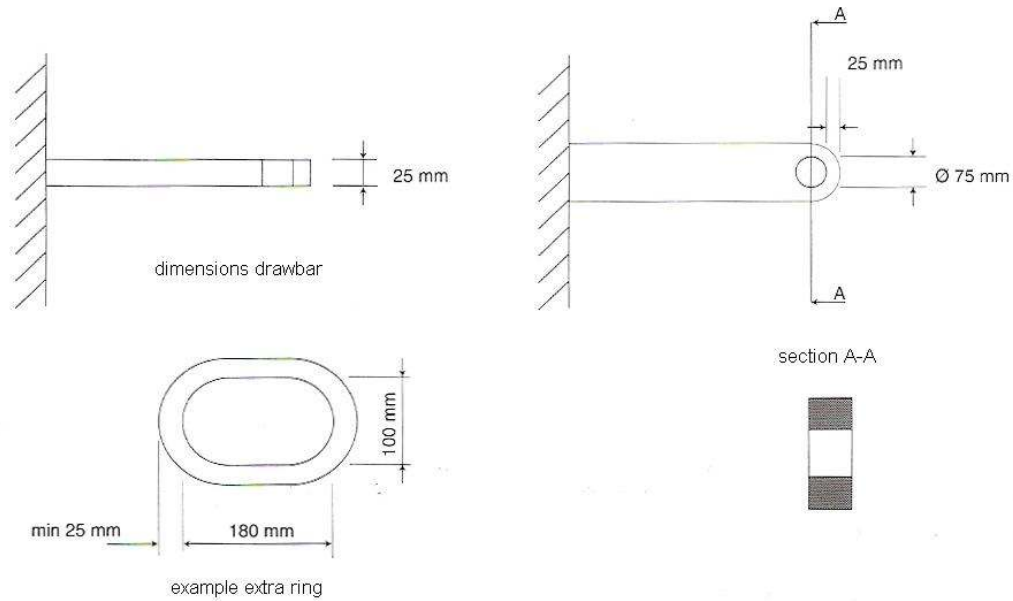
1. Stabilizers bars are mandatory for all tractors, except for four wheel drive tractors in the classes 7500, 9500 and 11500 kg that have all movable weights in front of the front axle.
2. It is allowed to use the original 3-point hitch if this is blocked in a solid way and quick locks are secured.
3. The draw bar and draw bar assembly must not in any way be attached to the stabilizer bar assembly.
4. The stabilizer bar system must be able to support the weight of the vehicle including ballast weights in the heaviest class it competes in.
5. It is allowed to have a connection between both stabilizers, but it must not touch the sled chain.

Drawbars

1. Draw bars shall be constructed so that in the event of draw bar breakage, the draw bar supports do not pull from a top link or brace above the center line of the rear axle of the vehicle.
2. Draw bars must be rigid in all directions
3. Draw bars must be parallel to the ground with a tolerance of +/- 10 degrees.
4. Maximum draw bar height is 500 mm above the ground.
5. Draw bars on tractors with front axle suspension must be measured in the lowest position of the front axle.
6. The draw bar must not be shorter than 450 mm, measured from the center of the rear axle.
7. The draw bar must be equipped with a hitching device with a minimum 75 mm round hole.
8. A swing hook is allowed, if it has a minimum 75 mm round hole. It is allowed to use an extra ring that meets the specs according illustration below. The fixed part of the draw bar is considered when measuring length and height of the draw bar.
9. The area of 150 mm wide and 300 mm high above the draw bar must be free of all

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- obstructions (including weights, stabilizer bars) for easy hooking and unhooking.
10. All tractors are required to have a tow-hitch on the front of the vehicle.



Weights

1. No weights may extend rearwards beyond rear tires.
2. No weights may cause any danger or trouble the contestant.
3. All weights must be securely fastened. The use of movable weights or movable weight carriers is not permitted.
4. Weights or a weights carrier may not extend more than 850 mm in front of the grill, tow hitch not included. In the classes 7500, 9500 and 11500 kg this is 1100 mm.
5. All vehicles must be able to pass the weight bridge in a normal way, without weights touching the weight bridge.

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Chapter 2 - Level 2 - Sport Classes

Definition

Sport classes are RPM limited classes where modifications to increase the horsepower are allowed. These tractors utilize an air restrictor **when running with intercooler. When running without air restrictor, they must not use an intercooler (3500kg and heavier).**

General Rules, apply to all tractors

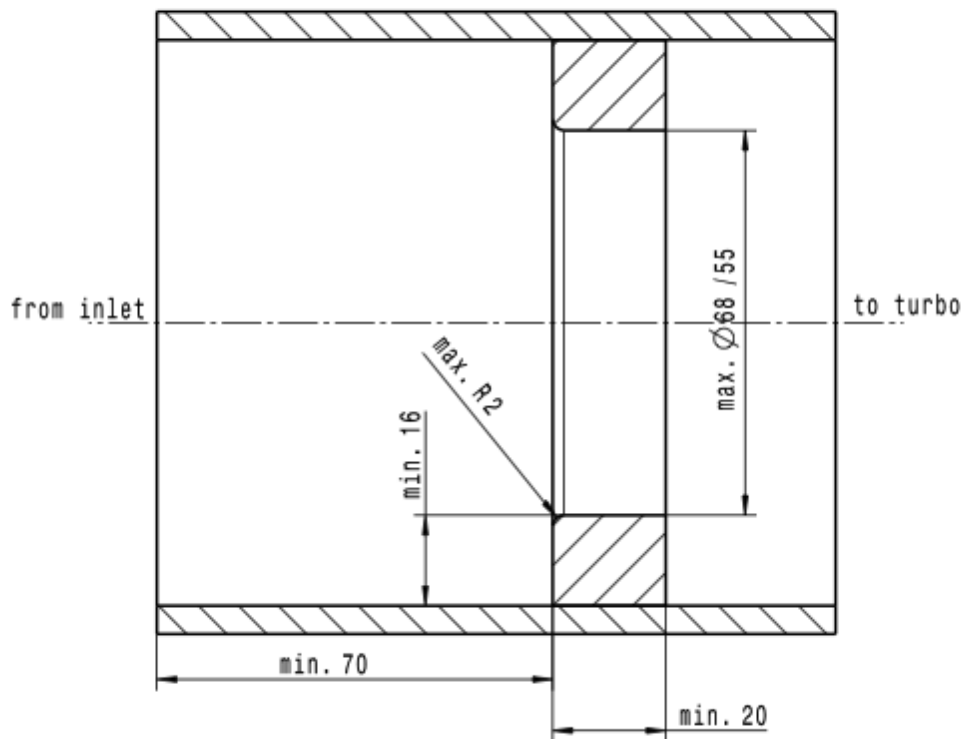
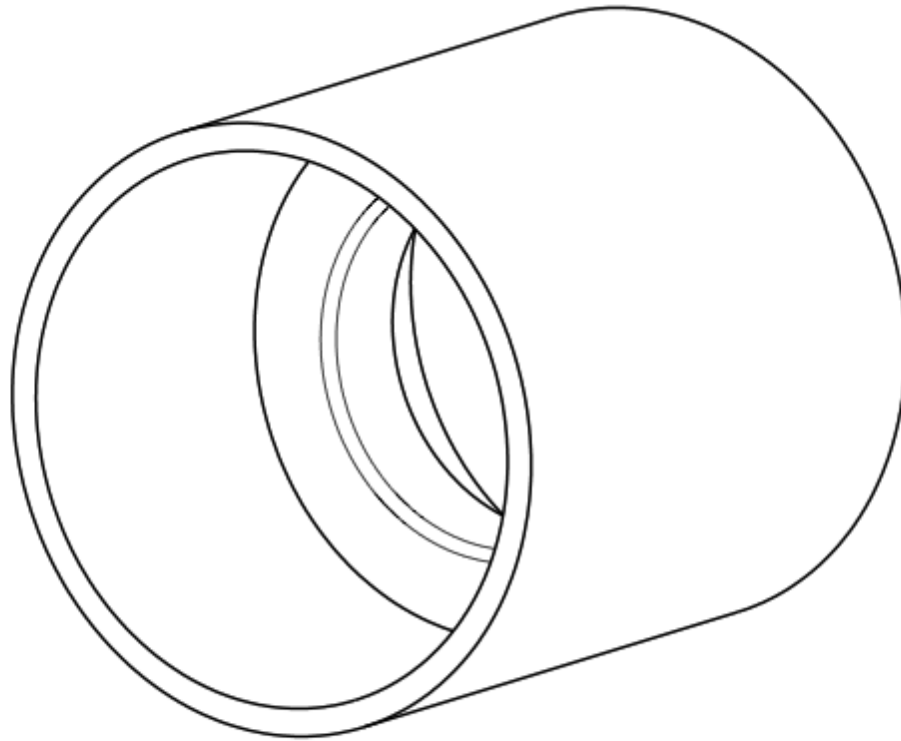
1. The basis of the tractor must come from a front wheel steered standard tractor. The combination of engine, bell housing, transmission and rear end must have been sold at least 150 times. The tractor must maintain its original factory appearance. There must not be a visible part in the drive line that is of another brand. (For example, you must not mix a JD back end with an IH engine).
2. The motor with cylinder head must externally be original from the manufacturer. These must have the original dimensions and must have been used in a front wheel steered agricultural tractor.
3. It is allowed to change the cylinder head, providing the change was made on the original motor block in production. Length, width and height must remain the original measurements. It must also be possible to fit the inlet and exhaust manifolds in the same position as the original. It is not allowed to add extra inlet and outlets.
4. Injection pump and camshaft have to be driven the original way. Different flanges, extensions or turning round of the injection pump are allowed.
5. The use of another sump is allowed, providing it is not part of the carrying structure in frame less tractors. It must be possible to replace the original sump on the motor block in its original position.
6. A girdle under the motor block is allowed, and falls under the same rules as the sump.
7. The use of another rocker cover is allowed. It must be possible to replace the original rocker cover on the cylinder head in its original position.
8. It is allowed to update to an older or newer style of hood and panel work.
9. Overhead camshafts are only allowed if the engine came with it from the factory.
10. The use of a spacer between the motor block and bell housing is allowed, with a maximum width of 35mm (e.g to put in a multiple disk clutch). The spacer must have the same bolt pattern as the engine and bell housing.
11. The drive line, made up of motor, bell housing, gearbox and rear axle, must hold without external strengthening. Connecting plates, flanges or welded-on parts are not allowed. If the engine and bell housing do not form one unit in the original tractor, the tractor must have a self carrying frame (according to the rules in Level 3).
12. The mounting of maximum one (1) turbocharger, consisting of inlet and exhaust, is allowed.
13. The conversion from four-stroke to two-stroke is not allowed.
14. The only legal fuel is diesel. Oxygen carriers and combustion accelerators are illegal. Diesel fuel is defined by the ETPC as a pure hydrocarbon. The ETPC will evaluate diesel fuel using the dielectric constant value. That value shall be determined by the ETPC-approved fuel check meter only. The fuel check meter shall use cyclohexane to establish the zero reference point for determine all diesel fuel dielectric constant values. Diesel fuel to be used in ETPC sanctioned events shall have a dielectric value of no greater than 4.9, nor a value of no less than 2.0. The use of additives containing oxygen, such as nitro methane, propylene oxide, dioxide, MTBE, alcohol or nitrous oxide, are strictly prohibited. These additives, and others of the oxygen-bearing family, will significantly change the dielectric constant value of any diesel fuel. Diesel fuel with

dielectric constant values that fall outside the ETPC-standards will not be allowed for use in ETPC competition. It is prohibited other fluids, fuels or gasses to add, inject or spray in or on any part of the tractor. Water injection is not allowed. De ETPC keeps the right to decide that the fuel that has to be used for the competition will be supplied through the ETPC. Water injection is not allowed.

15. The maximum wheel base in 2500kg class is limited to 2600mm. In all other classes 2900mm.
16. The maximum length measured from the middle of the rear wheel of the tractor in 2500kg class is 3500mm. In all other classes 4000mm. The towing hitch, with maximum length 150mm, is not measured in the maximum length. This can stand forward of the tractor.
17. Advertising boards are allowed, providing they do not influence the visibility of the driver. They may not extend over the sides.
18. **European John Deere heads are allowed to machine the inlet manifold housing off, to the line of the valve cover.**
19. If the ETPC or national organization doubts the legality of any entry, or upon protest by another contestant in that class, contestant in question must verify that 150 units of the tractor in question have been manufactured (notarized statement from the manufacturer), furnish parts numbers, and prove to the Board's satisfaction that the tractor is legal.

Performance rules Sport Class

1. The fitting of an intercooler is allowed in all classes except the 2500kg class.
2. Electronically controlled injection systems are allowed.
3. The tractors of the 2500kg must have a turbo inlet of max 55mm, or an air restrictor tube with a max inner diameter of 55mm or max 57mm outer diameter, with 20mm measurable distance, mounted in front of the turbo and all air going to the turbo must be going through the tube.
4. The tractors of the 3500kg and heavier classes must have a turbo inlet of max 68mm, or an air restrictor tube with a max inner diameter of 68mm or max 70mm outer diameter, with 20mm measurable distance, mounted in front of the turbo and all air going to the turbo must be going through the tube.
5. **In the 3500kg Level 2 Sports class, within 70mm in front of the 68mm zone it's not allowed to have any tubes, venturis or funnels smaller than 100mm diameter. The area before the 68mm may be open (e.g. a flat plate, 20mm thick). The area behind the 20mm long tube (to turbo) is free of choice. Refer to the following drawing. The Air Shut off may be placed directly in front of the restrictor, but must not have any ventury or funnel style design.**



- 6.
7. Engine revolutions are limited to 2700 rpm.
8. It is possible to run with up to 3200 rpm, if the tractor has a frame, clutch/clutch protection and cable around the engine according to the Level 3 rules.
9. Weight classes are

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- 2500 kg
- 3500 kg
- 4500 kg
- 5500 kg
- 6500 kg

Note: Additional pump or engine displacement limits in the sports classes are a concern of the ETPC member countries. In national competitions those rules have to be followed by foreign competitors. International ETPC competitions (EuroChallenge) however will not have other pump rules than stated above, nor will the size of the engine be taken into consideration.

The air restrictor is considered the “equalizing” factor.

Safety rules

1. All tractors must have an rpm measuring point. This consists of a reflective sticker of size 30mm x 30mm. It must be on an easily accessible point on the front of the engine. It must be possible to measure the RPM within three minutes; otherwise the competitor will be disqualified. Measuring will take place with a non-contact tachometer.
2. If the on board rpm measuring devices of the national associations is used, it is recommended to use two signals per revolution for good measurement. A single signal per revolution is not considered accurate enough to base decisions upon.
3. Only mechanical activated clutches permitted. No electronic, pneumatic or hydraulic device that effects the clutch system allowed. Hydraulic engagement allowed. Other clutch systems are only allowed, if the original tractor was fitted with them.
4. The driver must wear good work clothes (tight cotton) on the whole body and closed shoes (no sandals).
5. All turbochargers must be completely shrouded (360 degrees)m except for inlet- and exhaust pipes with steel 2 mm or thicker. The shielding must ensure that no wheels or other parts of the turbo can come out in case of a turbo explosion.
6. The shielding must be mounted as close as possible to the turbo, at min. four (4) points
7. Hood construction or grille cannot be part of the shielding.
8. Open bottom (max. 90 degrees) of the shielding is allowed under the following conditions:
 - a. Must have a closed hood construction
 - b. Turbo shielding must extend at least 50 mm below the bottom of the turbo.
9. Exhaust-pipe thickness must be min. 1.5 mm from turbo to vertical part of exhaust-pipe and securely mounted to the turbocharger outlet flange.
10. Turbocharged engines must have two M10 grade 8.8 bolts through exhaust pipe(s) in vertical portion of exhaust pipe(s). Bolts are allowed to be welded through pipe(s). Head of bolts must remain for inspection. Bolts to be installed 90 degrees to each other, within max. 25 mm of each other. All pulling vehicles with an exhaust-pipe over 95 mm diameter must have an extra cross in the exhaust-pipe, rotated 45 degrees from the first cross. Both crosses must be as close to each other as possible.
11. All exhaust pipes must discharge vertically. Height to be a minimum of 305 mm above the bend in the pipe which discharges vertically measured from the top of pipe to the bottom of bend (see: illustration 2-12). All pipes must be securely attached. Vertical is defined as being within 10 degrees, in any direction of being in plumb. Rain caps may not be used.

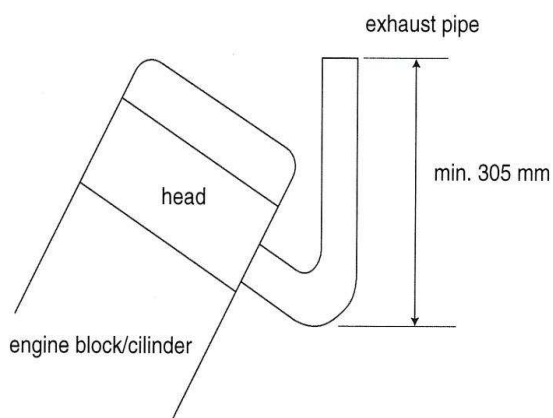


illustration 2-12: measurements exhaust pipes

12. No megaphone pipes are allowed. Venturi type headers are acceptable.
13. Safety belt, dead-man throttle and kill switch are mandatory.
14. A safety belt (minimum lap belt) must be fastened before the start.
15. All dead-man throttles working in a forwards-rearwards direction shall be closed in the rearmost position. Must be positive, two way, mechanical linkage. All foot throttles must have a toe strap. No hydraulic throttle linkage allowed.
16. All engines must have a visible return-to-idle spring on fuel injection pump lever.
17. The tractor must be fitted with an approved roll over protection: A factory ROP, a safety cab, an ETPC ROP or ETPC – roll cage.
18. If an ETPC - roll cage is fitted, fireproof clothing, helmet, min. four-point harness, firewall between the engine compartment and driver, and ETPC chassis support (help frame) are obligatory. The specific information can be found in the rules of level 3.
19. The ETPC roll bar must be made from a minimum of 80mm x 80mm x 8mm box section made from standard S355 J (ST 52-3) material. It must be welded onto two fixing plates of minimum thickness 30mm. Both plates must be fastened to the tractor with 4 x M20 grade 8.8 bolts on the left and right trumpet housings. For lighter solutions see following list:

Weight of tractor	Dimensions	Fixing plates	Bolts
up to 2500kg	60 x 60 x 4mm	15mm	M16 8.8
up to 3500kg	70 x 70 x 4mm	15mm	M16 8.8
up to 4500kg	80 x 80 x 4.5mm	20mm	M16 8.8
up to 6000kg	80 x 80 x	30mm	M20

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	6.3mm		8.8
over 6000kg	80 x 80 x 8mm	30mm	M20 8.8

- The both diagonal parts must be minimum 700mm long and the joint with the vertical bar must be above the rear tires.
- The top of the bar must be no higher than 1.71m above the ground (fixing plates).
- Self build roll bars not build to this design must be calculated and the calculation must be signed by an engineer / technician, and be given to the technical commissar before the first start of the vehicle. The technical commissar then decides on the reliability of the self built roll bar.
- See examples and pictures appendix 1
- See example for foldable roll bar appendix 2

7. Government-approved full-face helmets are recommended. Helmets must be worn with chin strap fastened when pulling.

Engine protection

1. Engine protection is required on all vehicles, by means of a side panel on both sides of the engine. The side panel must cover the total length and height of the motor block and be fastened securely in four places. It must be made from aluminum or steel sheet minimum thickness 2mm. The side shields must be one piece – no sandwiches. The protection for all in-line engines is from the engine hood until 50mm under the bottom point of the crankshaft journals. The fastening of the side panels must be strong enough to hold them in position in the event of an explosion. The side panels on all V-engines must be from the top edge of the cylinder head or top-dead-center of the piston until 50mm under the bottom point of the crankshaft journals. The side panel is not allowed to be fixed to the motor block. Fastening to the engine mount, cylinder head, traverses or chassis is allowed.
2. All engine fans must be shrouded 360 degrees, with steel 2 mm or thicker, electric fans excluded.
3. All inter coolers located outside of normal the engine shielding must be shielded with steel 2 mm thick or greater.

Kill switch

1. All kill switches must be mounted independent of drawbar and or stabilizer bars.
2. All pulling vehicles must have an automatic ignition kill switch and / or air shut-off, in working order at all times. The kill switch device must also work in a situation where the electric circuit of the vehicle is interrupted. Every kill switch must generally work according to the fail safe principle. This means no situation whatsoever may cause the kill switch to go out of function. Track Officials and/or Tech Inspectors have the option of checking the kill switches as many times as they feel adequate at any event. The switch must be checked with the engine running.
3. The kill switch on all tractors must be located in the rear center of the vehicle (maximum of 150 mm off center in any direction), 1200 mm above the point of hook.
4. The kill switch must activate the air shut-off. A cable may be used for this purpose, but the flap must have a spring-loaded closing mechanism. A system to be deemed acceptable must at least prevent the building of boost. A hole with a maximum diameter

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of 25 mm in the flap is allowed. It is recommended that a gasket/seal arrangement is used to shut off the air flow more effectively. All diesel engines must be equipped with an emergency shut down air shut off at the air intake, which can be utilized from the driver's seat. On tractors with an electric kill switch system, the solenoids holding the flap up must have a positive (+) connection through the kill switch. The use of solenoids or electric motors that need voltage in order to activate the flap is not allowed. Also, systems that need air pressure to activate the kill switch are not permitted.

5. The break-away kill switches must have a 50mm diameter ring attached. The cable from the sled will be attached to this ring. The kill switch ring or cable 'ring' must be secured with a nylon tie wrap (1/8 inch). The tie wrap must be broken for a re-pull. ETPC and affiliated organizations will supply the tie wraps for uniformity.
6. If a vehicle has a kill switch or shut off in legal position and during the pull the kill switch is pulled and the nylon strap is broken and the presiding official inspects and finds the switch capable of operating properly under normal conditions, the vehicle will be allowed to re-pull immediately, or drop six positions. The decision to drop must be made before vehicle leaves the track. It is the puller's responsibility to see whether the kill switch is working.
7. The force which is necessary to pull the kill switch must not be more than 10 kilo.
8. All tractors must have a fuel shut off valve control within easy reach of the driver (a fuel shut-off valve on the diesel pump will do).
9. A tractor must be equipped with an emergency shutdown air shut-off at the air-intake, which can be utilized from the driver's seat.
10. On-board batteries must be securely fastened and properly covered to prevent any sparks. Especially, any possibility of them getting into contact with the kill switch cable from the sled must be avoided.

Stabilizer Bars

1. Stabilizer bars are required. The drawbar and drawbar assembly must not be attached to the stabilizer bar assembly in any way.
2. The stabilizer bars must be a minimum of 200mm behind the rear tires and are allowed to be a maximum of 250mm above the ground. The contact patch must be a minimum of 150cm², with a minimum width of 100mm. (See also dimensions in sketch attached).

Note: For all classes: The stabilizer bar system must be able to support the weight of the vehicle in the heaviest class pulled. Jacking up the pads, so tractor is completely off the ground will be a good test.

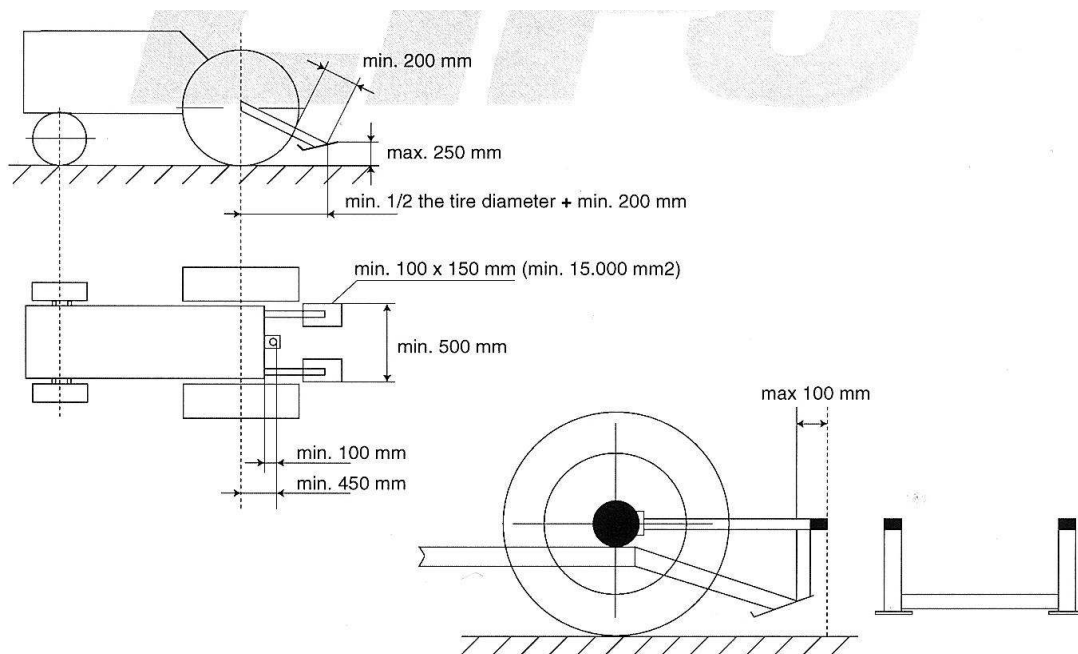


illustration 2-15: measurements stabilizer bars, bumper and hitch big tractors

Seats and fenders

1. All tractors must have a stable and tightly fastened driver's seat with a back rest. All folding seats must be fastened securely during a pull.
2. All tractors must have a shield between the driver and the tires consisting of a solid barrier between driver and any part of the rear tires, which is able to sufficiently support the weight of the driver. It must be fitted with a fender construction, stable enough to take the weight of the driver.

Tires

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1. Tractors are only allowed to drive with rubber tires; chains or similar are not allowed. All tires are allowed to be cut. Dual tires are not allowed.
2. The total width of the tractor is maximum 3000mm. This will be measured at the axle height.
3. The maximum allowed tire width is 30.5" inch, or 800mm. The maximum diameter of wheel rims is 32" inch. If the width of the tires is less than or equal to 710mm, a wheel rim diameter of 42" inch is allowed. The manufacturer's markings on the tires state the tire dimensions. Puller tires are allowed

Tow-hitch

All vehicles are required to have a tow-hitch on the front of their vehicle. The tow-hitch can extend a maximum of 150 mm ahead of the furthest front portion of the vehicle (hitch will not be counted in length when measuring the vehicle). The tow-hitch must have a 75 mm diameter hole, preferably positioned horizontally and be strong enough for pushing or pulling the vehicle at its heaviest weight.

Draw bar

1. The pulling link to the sledge is a draw bar with a 37mm thick hitch, with a round opening of minimum 75mm
2. Draw bars must be constructed, so that in the event of a drawbar breakage the drawbar supports do not pull from a top link or brace above the centre line of the rear axle of the vehicle.
3. A draw bar which can be made shorter than legal length (from centre of rear axle: 45cm) is not acceptable.
4. Draw bars must be rigid in all directions.
5. Draw bars must be parallel to the ground with a tolerance of +/- 10 degrees.
6. No portion of the vehicle may interfere with the sled, chain or hook during a pull or while being hooked or unhooked.
7. In the area of 150 mm wide and 300 mm high above the draw bar, must be free from all obstructions (including weights, stabilizer bars) for easy hooking and unhooking.
8. Draw bar and stabilizer bars must not be connected to each other.
9. The draw bar distance from center of rear axle must not change during pull.

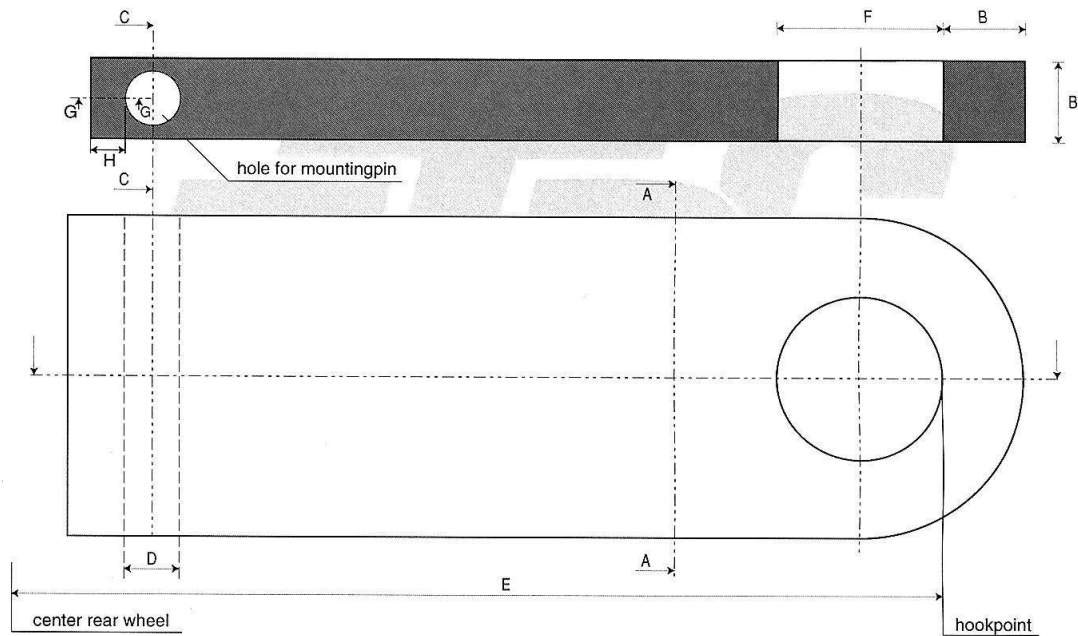
Note: The ETPC highly recommends competing vehicles not to be tied down to a transport vehicle through or on the draw bar in any way.

The ETPC highly recommends a draw bar to the following specification:

Draw bars must meet the following (illustration 2-1):

1. A drawbar must be equipped with a hitching device, thickness 37 mm, and must have a minimum 75 mm round hole.
2. Drawbars to be a minimum of 1900 mm² total material (steel) at any point. This includes the area of the mounting pin with the pin removed.
3. The mounting pin must be made of steel with a thickness of 25 mm.
4. The vertical cross section A-A of the drawbar must be a minimum of 1900 mm², and the horizontal cross section G-G must be a minimum of 1000 mm² with a minimum of 10 mm of cross sectional thickness between the front of drawbar and the pinhole (H).

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Profile A-A (surface)	≥ 1900 square mm
Measure B	= 37 mm
Profile C-C (surface)	≥ 1900 square mm
Diameter mountingpin D	≥ 25 mm
Length drawbar E	≥ 450 mm
Hole hitching device F	= 75 mm
Profile G-G minimum surface	≥ 1000 square mm
Measure H	≥ 10 mm

illustration 2-1: measurements drawbar big tractors and two wheel drives

Weights

1. No weights may extend rearwards beyond the rear tires
2. All weights must be securely fastened.
3. Any ballast lost while hooked to the sled and under the green flag within 100m will be a cause for disqualification (internal breakage excepted).
4. The use of movable weights or movable weight carriers is not permitted.
5. No weights allowed higher than 300 mm above the center line of the rear axle.
6. Weights are not allowed to make contact to the ground, even if fastened.
7. The competitor must be able to cross the weighbridge without contacting the weighbridge with his weights.

Legality

1. If the ETPC or national organization doubts the legality of any entry, or upon protest by another contestant in that class, contestant in question must verify that 150 units of the tractor in question have been manufactured (notarized statement from the manufacturer), furnish parts numbers, and prove to the board's satisfaction that the tractor is legal.
2. Engine manufacturer must fit the hood
3. The combination of engine, bellhousing/transmission and rear-end must have been manufactured in that combination (but not necessarily with that brand of hood).

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Chapter 3 - Level 3 - Super Sport / Farm Stock Classes

Definition

Sport and Supersport/Farm Stock classes are RPM limited classes, where modifications to increase the horsepower are allowed.

A Level 2 tractor set up for 3200 rpm safety equipment (frame, certified clutch, flywheel, clutch protection + cable around the motor), may run in the next lighter level 3 class, using the level 2 restrictor (Example: Compete in/at 3600kg Level 3 with a 4500kg Level 2 restrictor).

Brakes

1. All competing vehicles must be equipped with working rear brakes.

Tow-hitch

1. All vehicles are required to have a tow-hitch on the front of their vehicle. The tow-hitch can extend a maximum of 150 mm ahead of the furthest front portion of the vehicle (hitch will not be counted in length when measuring the vehicle). The tow-hitch must have a 75 mm diameter hole, preferably positioned horizontally, and be strong enough for pushing or pulling the vehicle at its heaviest weight.

Drawbars

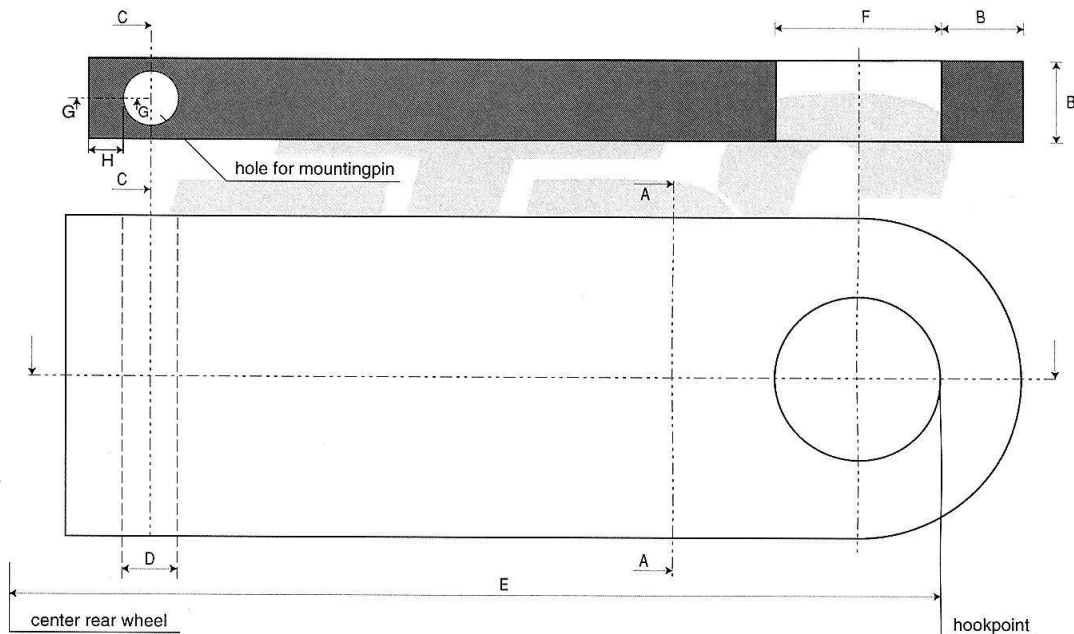
1. The pulling link to the sledge is from a draw bar with a 37mm thick hitch, with a round opening of minimum 75mm
2. Draw bars shall be constructed, so that in the event of a drawbar breakage the drawbar supports do not pull from a top link or brace above the centerline of the rear axle of the vehicle.
3. A drawbar which can be made shorter than legal length (from centre of rear axle: 45cm) is not acceptable.
4. Drawbars must be rigid in all directions.
5. Drawbars must be parallel to the ground with a tolerance +/- 10 degrees. The front axle suspension must be totally lowered, if this is possible from the manufacturer.
6. Drawbars and hitching devices must be made out of solid steel with a minimum of 520 N/mm² tensile strength in all weight classes. No welding on drawbars.
7. No portion of the vehicle may interfere with sled, chain or hook, during a pull or while being hooked or unhooked.
8. In a area of 150 mm wide and 300 mm high, immediately above the draw bar, must be free from all obstructions (including weights, stabilizer bars) for easy hooking and unhooking.
9. Draw bar and stabilizer bars must not be connected to each other.
10. The drawbar distance from center of rear axle cannot change during pull.

Note: The ETPC highly recommends that competing vehicle should not be tied up down to a tow vehicle through or on the drawbar in any way.

Draw bars must meet the following (illustration 2-1):

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1. A drawbar must be equipped with a hitching device, thickness 37 mm, and must have a minimum 75 mm round hole.
2. Drawbars to be a minimum of 1900 mm² total material (steel) at any point. This includes the area of the mounting pin with the pin removed.
3. The mounting pin must be made of steel with a thickness of 25 mm.
4. The vertical cross section A-A of the drawbar must be a minimum of 1900 mm², and the horizontal cross section G-G must be a minimum of 1000 mm² with a minimum of 10 mm of cross sectional thickness between the front of drawbar and the pinhole (H).



Profile A-A (surface)	≥ 1900 square mm
Measure B	= 37 mm
Profile C-C (surface)	≥ 1900 square mm
Diameter mountingpin D	≥ 25 mm
Length drawbar E	≥ 450 mm
Hole hitching device F	= 75 mm
Profile G-G minimum surface	≥ 1000 square mm
Measure H	≥ 10 mm

illustration 2-1: measurements drawbar big tractors and two wheel drives

Clutches, flywheels, automatics and protection

1. Only mechanically activated clutches are permitted. Hydraulic engagement is allowed.
2. Clutches and flywheels must meet the ETPC specifications for Pro Stocks (see ETPC rulebook or appendix 3).
- 3a. Engines limited up to 2.700 rpm must have either:

1. A one piece steel tube, 10mm thick around the clutch inside the bellhousing
2. An ETPC approved shatter blanked (See ETPC rulebook or appendix 3 and 4)
3. An ETPC approved bell housing (See ETPC rulebook or appendix 3 and 4)

3b. Engines limited up to 3.200 rpm must have either:

1. An ETPC approved shatter blanked (See ETPC rulebook or appendix 3 and 4)
2. An ETPC approved bell housing (See ETPC rulebook or appendix 3 and 4)

Shatter blankets

1. Shatter blankets must be on the inside of the tie bars or one piece frame and the tie bars must be fastened forward of the rear of the engine block. However, in some occasions there is no space for the blanket inside the tie bar or the one piece frame, in that case a written approval from ETPC or affiliated organization must be available to Tech Inspectors.

Chassis

It shall consist of the following:

1. The stock engine block or OEM engine block that will operate with the stock crankshaft for that model without any alterations for chassis mounting.
2. Engine block must remain in original location as located by manufacturer.
3. All engines must be secured and held rigid to OEM chassis. Engine cannot move independent or rear end/transmission housing.
4. The stock transmission housing or manufacturer's replacement and the stock final drive housing or manufacturer's replacement. Planetaries are considered part of final drive and are not removable.
5. The OEM engine block cannot be modified externally, except for normal repair or for mounting of fuel injection equipment.
6. Internal webbing and water jacket must remain intact with provisions to rebore engine block.
7. Any alterations to the chassis shell must have the written approval of the ETPC and the national Tech and Safety Board (TSB), before the tractor in question will be considered legal.
8. The chassis and frame must remain stock from the rear of the engine block to the rear of the tractor.
9. The only vehicles that are considered legal in supersport / farmstock classes are those that are available as farm tractors with front wheel steering.
10. The clutch housing, transmission case, rear end housing and axle housing must be OEM, with no aluminum replacements.
11. The use of a spacer between engine block is allowed with a maximum additional thickness of 35 mm. An aluminum spacer-plate cannot be part of the clutch protection.
12. There must not be a visible part in the drive line that is of another brand.
13. The drive line, made up of motor, bell housing, gearbox and rear axle, must hold without external strengthening. Connecting plates, flanges or welded-on parts are not allowed, except if engine and bell housing do not form one unit in the original tractor. In that case the tractor must have a self carrying frame (refer to point Frame/sheetmetal below).
14. Advertising boards are allowed, providing they do not influence the visibility of the driver. They may not extent over the sides.

Frame/sheetmetal

1. Tractor must have hood and grill in place as intended by the manufacturer.
2. Sheetmetal can be up/down graded to present/past manufacturer by approval of ETPC and national TSB.
3. Sheetmetal to be stock length and in stock location.
4. Tractor must retain stock appearance.
5. The distance from center of the rear axle to that part of the hood that is farthest forward must be the same length as that model of the upgraded sheetmetal.
6. Wheelbase rule will apply according to the original chassis, not to the model of the upgraded sheetmetal.
7. Maximum of 2900 mm wheelbase unless originally produced with longer wheelbase, in which case stock length must remain. Maximum length of 4000 mm from center of rear wheel to forward most portion including weights and weight racks.
8. The total width of the tractor is maximum 3000mm. This will be measured at axle height.
9. supersport / farmstock chassis rules A: 1-8 above will apply according to the original chassis, not to the model of the upgraded sheetmetal.

Frame options

1. Tractor must have either
 - a. Safety tie bars made out of steel mounted to rear axle housing with at least four (4) axle housing bolts and extending forward of flywheel area and fastened to side of engine block or main frame with at least three (3) 14 mm steel bolts grade 8.8 (See illustration 4-1)

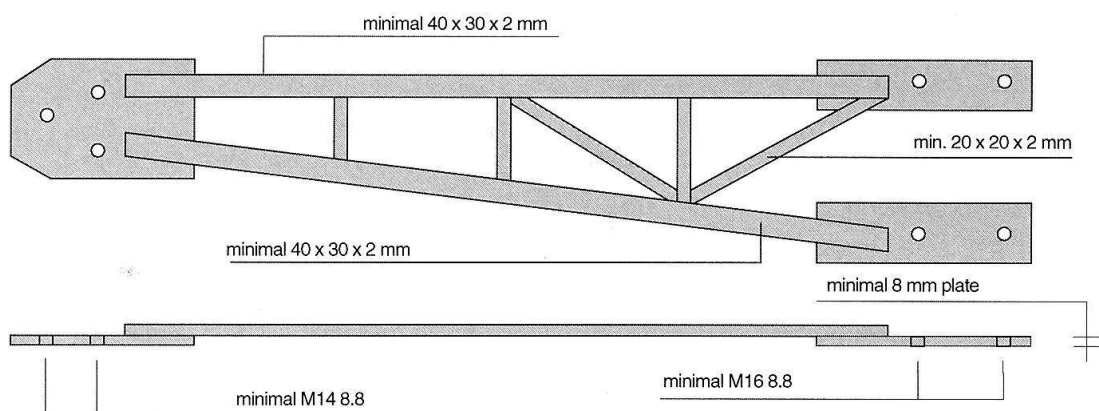


illustration 4-1: safety-frame construction pro stock

or

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- b. a one piece frame extending from front of tractor to rear axle housing mounting bolts.
- or
- c. a divisible frame under the following conditions:
- The steel split-frame construction must extend from front of tractor to rear axle housing mounting bolts.
 - The two pieces have to fit in one other (sliding in construction) in the area where the tractor can be split (clutch area).
 - The two pieces of the frame must be made of tubes or u-shaped steel with a thickness of at least 3 mm.
 - If the frame is made of u-shaped steel It must have a u-shaped connection bar inside min. 500 mm length. (250 mm in the rear part and 250 mm in the front part of the u-shaped split frame).
 - If the frame is made out of tubes it must have inner tubes min. 500 mm length. (250 mm in the rear part and 250 mm in the front part of the tube-frame).
 - Rear part of the frame has to be mounted to rear-axle housing with at least four (4) axle-housing bolts and extending forward of flywheel area and fastened to side of engine block or motor-plate with at least three (3) 14 mm bolts min. grade 8.8.
 - Two parts of frame must be locked together with at least two (2) fasteners of 8 mm steel.
 - Two piece frame must be of sufficient strength to support weight of tractor with the bolts used to split the tractor removed.
2. Tie bars or frame must be of sufficient strength to support weight of tractor with the bolts used to split the tractor removed.

Limits

1. 3,6 ton:
 - a. engine size max. 7.000 cm³, max. 6 cylinders with turbo charger, rpm: max. 2700.
 - b. engine size max. 6.063 cm³, with turbo charger, rpm: max. 3200.
 - c. Maximum two valves per cylinder allowed.
2. 4,5 ton:
 - a. engine size max. 9.000 cm³, max. 8 cylinders with turbo charger, rpm: max. 2700.
 - a. engine size max. 8.364 cm³, with turbo charger, rpm: max. 3200.
 - b. Maximum two valves per cylinder allowed.

Engines

1. Supersport / farmstock are limited to one (1) pressure stage with turbo chargers. No mechanical blowers / superchargers.
2. Engine head must be OEM agricultural type for that brand engine.
3. Supersport under 2700 rpm may have one (1) fuel injection pump of any size, only one (1) pump element per cylinder allowed. If using OEM (available of parts counter) 12 cylinder fuel injection pump two (2) pump-elements per cylinder allowed. **Note: no pump limits after 01-01-2014.**
4. Farm Stock tractors under the 3200 rpm limit must use a P Pump with a max of 13mm Plungers and a max of one plunger per cylinder. **Note: no pump limits after 01-01-2014.**
5. Diesel fuel only. Water injection is not allowed. Inter cooler allowed. Use of gasohol and/or alcohol is prohibited.
6. No overhead camshafts allowed.
7. Conversion from 4-stroke into 2 stroke principle is not allowed.
8. **No deck plate when the engine is downsized. Otherwise a deck plate is allowed.** The maximum distance between the center line of the crankshaft and the top of the engine

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- block, including deck plate and gasket material is 410mm.
9. One piece engine main cap bearings allowed. One piece main cap not considered a girdle.
 10. Injection pump and camshaft have to be driven the original way. Different flanges, extensions or turning the injection pump around are allowed.
 11. The use of another sump is allowed, providing it is not part of the carrying structure in frame-less tractors. It must be possible to replace the original sump on the motor block in its original position.
 12. A girdle under the motor block is allowed, and falls under the same rules as the sump.
 13. The use of another rocker cover is allowed. It must be possible to replace the original rocker cover on the cylinder head in its original position.
 14. The competitor needs to drill two holes of (3.5 mm) into two bolts (next to each other) of the sump. These holes can be used to seal the engine.
 15. European John Deere heads are allowed to machine the inlet manifold housing off, to the line of the valve cover.

Engine shielding

1. A deflection shield is required on both sides of all engines. Shield must extend the complete length of block casting and be securely fastened. Is to be made of aluminum or steel, minimum thickness 2 mm. Shields must be solid. Motor mounts, filters, steering rods, etc. cannot serve as part of shield. Solid frame rails with no holes can serve as part or all of shield, providing it covers required areas of block casting. It is recommended that a quick release fastener be used (winged Dzus typ or cotter pin type hoop pins). Use of bolts with nuts, screw locks are discouraged. (reason: ease of access in case of emergency-fire, run off, etc.
2. Shielding on all tractors with in line engines must be from sheet metal (hood) to 50 mm below bottom center of crankshaft throw, and be securely fastened. They may be louvered, but no expanded metal. Fastening of hood and side shielding must be strong enough to keep them in place in case of an explosion.
3. Starter motors, fuel filters, oil filters and fuel injection pumps may not be used as shielding. Shielding may cover or pass behind starter or fuel pump.
4. Shielding on all V or Y type engines must extend from base of head or the uppermost point of piston, travel to 50 mm below bottom of crankshaft throw, and be securely fastened.
5. Side shields must be mounted independently of the engine block. Motor mount, block saver plate and header mounting, or chassis mounting is acceptable.
6. All engines equipped with a harmonic balancer, balancer shall be solid steel, to be of the following minimum mechanical properties:
 - Tensile strength: 500 N/mm²
 - Yield strength: 280 N/mm²
 Shrouded 360 degrees with 10 mm steel to be no more than 25 mm away in any direction of rotation and to be securely fastened. Harmonic balancers shall be connected with a steel bolt, grade 8.8, on the crankshaft. Instead of the above, a high performance harmonic balancer may be used.

All sorts of balancers must have a steel shield or restraint to prevent the balancer from being thrown out of the tractor.
7. All engine fans must be shrouded 360 degrees, with steel 2 mm or thicker, electric fans excluded.
8. All other rotating motor parts must be shielded with 2 mm steel.
9. All turbocharged engines must have one steel cable totally surrounding the engine block and head. This cable must be placed between first and second cylinder (from front of tractor) through exhaust-port area.
 - a. Cable must be 10 mm thickness (8 mm with certificate from manufacturer: min. 600

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- kg force).
- b. Cable ends must be connected together with D-lock.
- c. Cable must have approximately 100 of slack.
- d. Diesel engines with single-type cylinder heads need a steel bar with a minimum thickness of 12 mm, this steel bar must extend from first to last cylinder head and be connected to each of them.

Engine throttles

1. All pulling vehicles must be equipped with a dead man's throttle. All throttles working in a forwards-rearwards direction shall be closed in the rearmost position. Must be positive, two way, mechanical linkage. All foot throttles must have a toe strap. No hydraulic throttle linkage allowed.
2. All engines will have a visible return-to-idle spring on fuel injection pump lever.
3. No computers allowed that control any mechanical operation of the competing vehicle. RPM-limiters are exempt of this rule. No automated or computer controlled or operated traction control devices.
4. Computer controlled electronic fuel management allowed.

Exhaust systems

1. All exhaust pipes must discharge vertically. Height to be a minimum of 305 mm above the bend in the pipe which discharges vertically measured from the top of pipe to the bottom of bend (see illustration 2-12). All pipes must be securely attached. Vertical is defined as being within 10 degrees, in any direction of being in plumb. Rain caps may not be used. No megaphone pipes are allowed. Venturi type headers are acceptable.

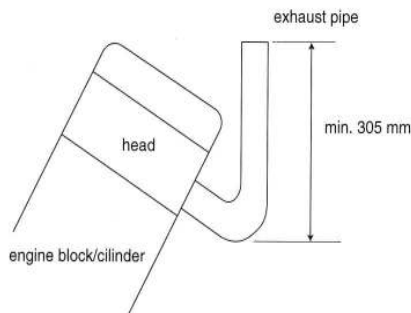


illustration 2-12: measurements exhaust pipes

2. Turbocharged engines must have two M10 grade 8.8 bolts through exhaust pipe(s) in vertical portion of exhaust pipe(s). Bolts are allowed to be welded through pipe(s). Head of bolts must remain for inspection. Bolts to be installed 90 degrees to each other, within max. 25 mm of each other. All pulling vehicles with an exhaust-pipe over 95 mm diameter must have extra cross in exhaust-pipe, rotated 45 degrees from the first cross. Both crosses closest possible to each other.
3. Turbocharged diesel engines must have an additional cross as close as possible to the turbo.
 - Cross must be made from 2 M12 bolts 8.8 or better.
 - Bolts to be installed 90 degrees to each other, within max. 20 mm. of each other.

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- in case of a multiple turbo tractor only the last turbo(s) must have the additional cross.
 - in case the cross must be placed farther away from the turbo, wall-thickness of exhaustpipe between turbo and cross must be min. 4mm.
4. All diesel engined vehicles competing at indoor pulls must be equipped with demountable (for clearing purpose) exhaust extension which will discharge all exhaust horizontally rearwards at a point vertically above the hitching device, at a height of 3.000 mm from the ground to center of extension pipe. Maximum diameter of extension is 200 mm. Rear end of extension must protrude rearwards a minimum of 610 mm from rear brace holding extension. All diesel smoke pipes used at indoor pulls must be 150 mm higher in the rear than in the front. The exhaust extension and the pin must meet the specifications given in the drawing.
 5. All exhaust systems used during indoor pulls must be secured. Excessive leakage or exhaust systems that collapse and do not fall off are cause for disqualification, unless caused by smoke collector on the sled.
The pin on the end of the extension must have a hole for a safety pin.

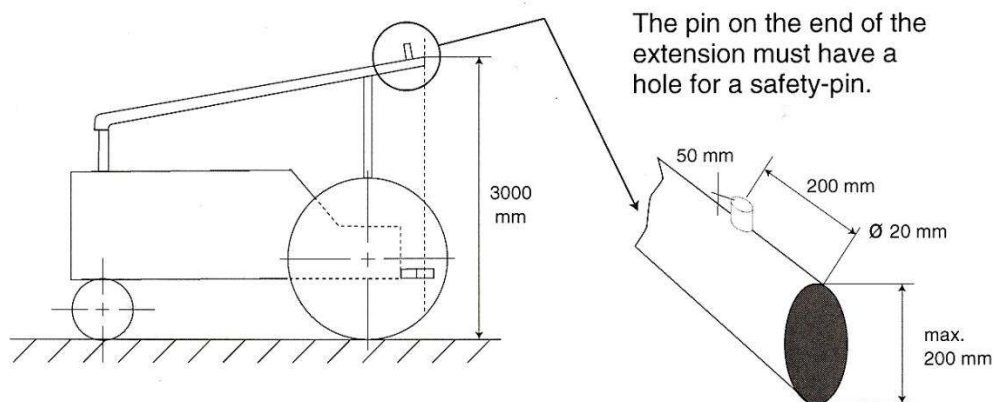


illustration 2-13: measurements exhaust extention at indoor pulls

Fuel and fuel containers

1. The only legal fuel is diesel. Oxygen carriers and combustion accelerators are illegal. Diesel fuel is defined by the ETPC as a pure hydrocarbon. The ETPC will evaluate diesel fuel using the dielectric constant value. That value shall be determined by the ETPC-approved fuel check meter only. The fuel check meter shall use cyclohexane to establish the zero reference point for determine all diesel fuel dielectric constant values. Diesel fuel to be used in ETPC sanctioned events shall have a dielectric value of no greater than 4.9, nor a value of no less than 2.0. The use of additives containing oxygen, such as nitro methane, propylene oxide, dioxide, MTBE, alcohol or nitrous oxide, are strictly prohibited. These additives, and others of the oxygen-bearing family, will significantly change the dielectric constant value of any diesel fuel. Diesel fuel with dielectric constant values that fall outside the ETPC-standards will not be allowed for use in ETPC competition. It is prohibited other fluids, fuels or gasses to add, inject or spray in or on any part of the tractor. Water injection is not allowed. De ETPC keeps the right to decide that the fuel that has to be used for the competition will be supplied thought the ETPC.

2. ETPC officials or officials from affiliated organizations can check fuel at any time during any event.
3. No fuel tanks, fuel pressure gauges, fuel pumps and/or fuel lines allowed in the driver's compartment. If the fuel tank is located behind the driver, a fire barrier is highly recommended from front to rear of compartment beneath the driver's seat between fuel line and driver. Minimum width of the fire barrier equal to width of driver's seat.

Kill switches

1. All kill switches must be mounted independent of drawbar and or stabilizer bars.
2. All pulling vehicles must have an automatic ignition kill switch and / or air shut-off, in working order at all times. The kill switch device must also work in a situation where the electric circuit of the vehicle is interrupted. Every kill switch must generally work according to the Fail Safe principle, that is, no situation whatsoever may cause the kill switch go out of function. Track Officials and/or Tech Inspectors have the option of checking kill switches as many times as they see adequate at any event. Switch must be checked with engine running or with Buzz Box only if supplied by puller.
3. The kill switch on all tractors must be located in the rear center of the vehicle (maximum of 150 mm off center in any direction) 1200 mm above the point of hook.
4. The kill switch must activate the air shut-off. A cable may be used for this purpose, but the flap must have a spring-loaded closing mechanism. A system to be deemed acceptable must at least prevent building of boost. A hole with a maximum diameter of 25 mm in the flap is allowed. It is recommended that a gasket/seal arrangement be used to shut-off the air flow more effectively. All diesel engines must be equipped with an emergency shut-down air shut-off at the air intake that can be utilized from the driver's seat. On tractors with an electric kill switch system, the solenoids that hold the flap up must have positive (+) connection through the kill switch. Use of solenoids or electric motors that need voltage in order to activate the flap is not allowed. Also, systems that need air pressure to activate the kill which are not permitted.
5. The break-away kill switches must have attached to them a minimum of 50 mm diameter ring. The cable from the sled will be attached to this ring. Kill switch ring or cable 'ring' must be secured with a nylon tie wrap (1/8 inch). The tie wrap must be broken for a re-pull. ETPC and affiliated organizations will supply the tie wraps for uniformity.
6. If a vehicle has a kill switch or shut off in legal position, and during the pull the kill switch is pulled and the nylon strap is broken and the presiding official inspects and finds the switch capable of operating properly under normal conditions, the vehicle will be allowed to re-pull immediately, or drop six positions. The decision to drop must be made before vehicle leaves the track. It is the puller responsibility to see that the kill switch is working.
7. The force which is necessary to pull the kill switch must be not more than 10 kilo.
8. All tractors must have a fuel shut off valve control within easy reach of driver (a fuel shut-off valve on the diesel pump will do). A tractor must be equipped with an emergency shutdown air shut-off at the air-intake, which can be utilized from the driver's seat.
9. On-board batteries must be securely fastened and properly covered to prevent any sparks. Especially, any possibility of them getting into contact with the kill switch cable from the sled must be avoided.

Safety

1. If Track Officials and/or Tech Inspectors feels a vehicle is unsafe, they have the right not to allow the vehicle to pull.
2. All pulling vehicles must be equipped with a minimum of one 1.5 fire extinguisher (yearly checked with certificate) fully charged, in working condition, and within easy reach of the driver.
3. Government-approved full-face helmets are mandatory. All drivers in all classes must

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- wear helmets with chin strap fastened when pulling.
4. The use of a fire suit (including gloves, socks, head socks, leather shoes) is mandatory for all drivers in all classes. Fire suits must meet the following requirements:
 - A minimum of one layer fire suit of Nomex 3 or equivalent.
 - Nomex or equivalent fabric underwear is highly recommended with the use of any fire suit.
 - The maximum age of a Nomex fire suit is six (6) years, of other suits two (2) years, in cases of doubt it is the competitor's duty to prove the age of the suit
 - Suits must have the possibility to tie collar, sleeves and legs. If leather boots are used fire socks are not mandatory.
 5. Officials can ban any vehicle at any event from competition if they believe the vehicle has a potential safety problem.
 6. The ETPC recommends the use of Tech Inspection stickers on all tractors, the best location is on the left front portion of the tractor.
 7. Drivers must be seated on the vehicle when his/her tractor is being started and running and must have complete control of the vehicle at all times Anytime an engine is being started or running, steering wheel must be installed and securely attached to steering-shaft.
 8. A reverse safety light system is required on all pulling vehicles. A white light, minimum 50 mm in diameter, must be mounted directly above or below the safety kill switch at the rear of the vehicle. A white light, minimum 50 mm in diameter, in the drivers compartment must be operated by the same system. Both lights are to be activated by the gearshift lever in such way that it will be lit only when the vehicle is in reverse.
 9. All pulling vehicles must have a neutral gear. They must be equipped with a starter interrupter switch on the gearshift, which will allow starter engagement only in neutral gearshift position.
 10. The use of a safety belt with a fast draw latch for fast release is highly recommended in all classes without Roll Over Protection (ROP). In all classes with ROP the use of a 4-point seatbelt-assembly is mandatory. The seatbelt-assembly must be attached to the roll cage.
 11. Helpers must wear clothing with long sleeves on the track.
 12. All tractors must have an rpm measuring point. This consists of a reflective sticker of size 30mm x 30mm. It must be on an easily accessible point on the front of the engine. It must be possible to measure the RPM within three minutes; otherwise the competitor will be disqualified. Measuring will take place with a non-contact tachometer.
 13. If the on board rpm measuring devices of the national associations is used, it is recommended to use two signals per revolution for good measurement. A single signal per revolution is not considered accurate enough to base decisions upon.

Firewall/deflection shield

1. Steel deflection shield between driver and engine from hood to top of torque tubes or transmission or clutch housing from side shield to side shield, minimum 2 mm thick. This also serves as a flash fire shield.

Starting chemicals

1. All ether bottles (or starting aids) must be placed outside of engine compartment.

Onboard fire control systems

1. Supersport / farmstock tractors that require tools for removal of side shields must be equipped with an onboard fire control system. Onboard system nozzles must be in engine compartment.

2. Supersport / farmstock tractors utilizing onboard fire extinguishing system must place one nozzle on each side of engine, inside the engine compartment. Not to be attached to the sheetmetal.

Seats and fenders

1. All tractors must have a strong and rigid seat; all tip seats must be securely fastened while pulling. All seats must have side rails that are a minimum of 100 mm above the edges of the seat, must extend a minimum of one-half the distance from the back of the seat to the front edge. If fenders are 150 mm or greater above the seat, and are 150 mm or less the seat, no seat side rails are required.
2. All tractors must have a shield between the driver and the tire, to consist of a solid barrier between driver and any part of the rear tires to be able to sufficiently support weight of driver.

Stabilizer bars

1. Stabilizer bars are required. The drawbar and drawbar assembly will not in any way be attached to the stabilizer bar assembly.
2. The stabilizer bars must be a minimum of 200mm behind the rear tires, and are allowed to be maximum 250mm above the ground. The contact patch must be a minimum of 150cm², with minimum width 100mm. (See illustration 2-15).

Note: For all classes: The stabilizer bar system must be able to support the weight of the vehicle in the heaviest class pulled. Jacking up the pads, so tractor is completely off the ground will be a good test

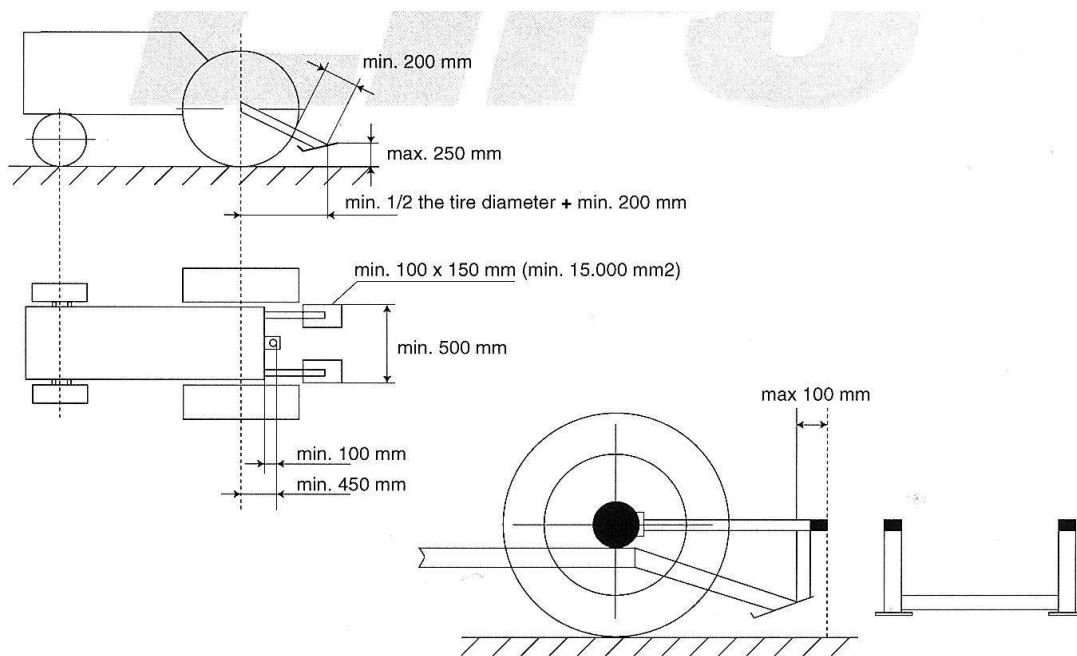


illustration 2-15: measurements stabilizer bars, bumper and hitch big tractors

Roll Over protection

1. A roll over protection cage is mandatory in all classes. For details see: Appendix 5 or Chapter 14 of the ETPC rule book.

Turbocharger

1. All turbochargers must be completely shrouded (360 degrees) except for inlet- and exhaust pipes with steel 2 mm or thicker. The shielding must ensure that no wheels or other parts of the turbo can come out in case of a turbo explosion.
 - The shielding must be mounted as close as possible to the turbo, at min. four (4) points
 - Hood construction or grille cannot be part of the shielding.
 - Open bottom (max. 90 degrees) of the shielding is allowed under the following conditions:
 - Must have a closed hood construction.
 - Turbo shielding must extend at least 50 mm below the bottom of the turbo.
 - Exhaust-pipe thickness must be min. 1.5 mm from turbo to vertical part of exhaust-pipe and securely mounted to the turbocharger outlet flange.
2. All intercoolers located outside of normal the engine shielding must be shielded with steel 2 mm thick or thicker.
3. On all pulling vehicles the tubing on the pressure side of a turbocharger to the intake must be under the hood, shield or be bolted or strapped securely.
4. The ETPC recommends the use of a burst panel on charged engines.
5. Titanium turbo-wheels are not allowed in all classes.

Tires

1. Tractors are only allowed to drive with rubber tires; chains or similar are not allowed. All tires are allowed to be cut. Dual tires are not allowed.
2. The total width of the tractor is maximum 3000mm. This will be measured at the axle height.
3. The maximum allowed tire width is 30.5" inch, or 800mm. The maximum diameter of wheel rims is 32" inch. If the width of the tires is less than or equal to 710mm, a wheel rim diameter of 42" inch is allowed. The manufacturer's markings on the tires state the tire dimensions.
4. Puller tires are allowed.

Weights

1. No weights may extend rearwards beyond rear tires.
2. All weights must be securely fastened.
3. Any ballast lost while hooked to the sled and under the green flag will be cause for disqualification (internal breakage excepted).
4. The use of movable weights or movable weight carrier is not permitted.

Legality

1. If the ETPC or national organization doubts the legality of any entry, or upon protest by another contestant in that class, contestant in question must verify that 150 units of the tractor in question have been manufactured (notarized statement from the manufacturer), furnish parts numbers, and prove to the Board's satisfaction that the tractor is legal.
4. Engine manufacturer must fit the hood.
5. The combination of engine, bellhousing/transmission and rear-end must have been manufactured in that combination (but not necessarily with that brand of hood).

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Chapter 4 - Level 4 - Unlimited Farm Stock Class

Definition

The Unlimited Farm Stock class is an RPM limited class, where modifications to increase the horsepower are allowed.

Brakes

2. All competing vehicles must be equipped with working rear brakes.

Tow-hitch

2. All vehicles are required to have a tow-hitch on the front of their vehicle. The tow-hitch can extend a maximum of 150 mm ahead of the furthest front portion of the vehicle (hitch will not be counted in length when measuring the vehicle). The tow-hitch must have a 75 mm diameter hole, preferably positioned horizontally, and be strong enough for pushing or pulling the vehicle at its heaviest weight.

Drawbars

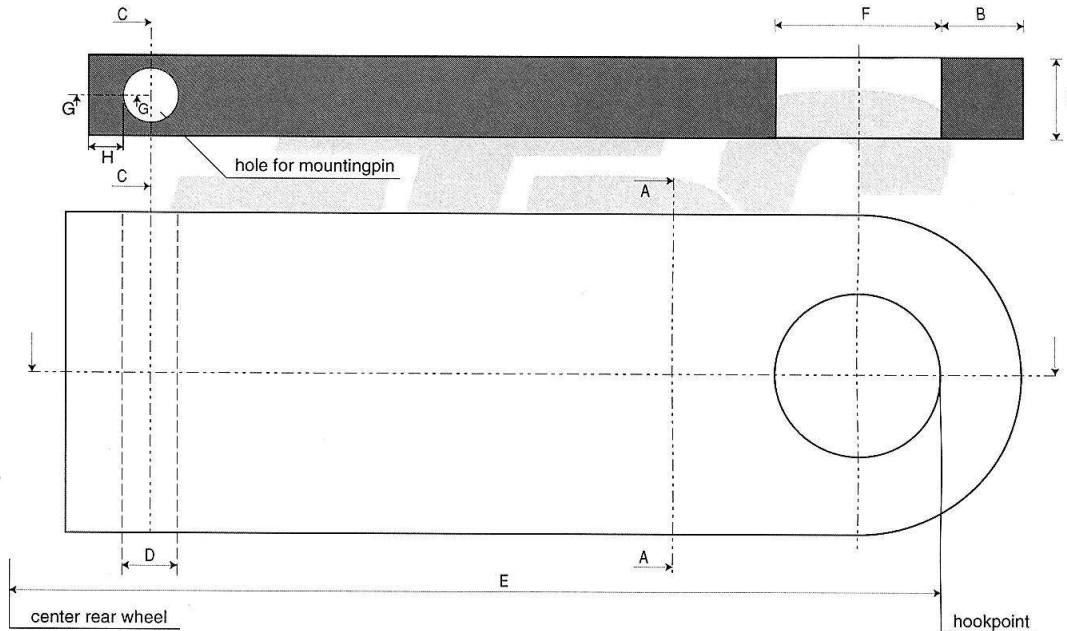
11. The pulling link to the sledge is from a draw bar with a 37mm thick hitch, with a round opening of minimum 75mm
12. Draw bars shall be constructed, so that in the event of a drawbar breakage the drawbar supports do not pull from a top link or brace above the centerline of the rear axle of the vehicle.
13. A drawbar which can be made shorter than legal length (from centre of rear axle: 45cm) is not acceptable.
14. Drawbars must be rigid in all directions.
15. Drawbars must be parallel to the ground with a tolerance +/- 10 degrees. The front axle suspension must be totally lowered, if this is possible from the manufacturer.
16. Drawbars and hitching devices must be made out of solid steel with a minimum of 520 N/mm² tensile strength in all weight classes. No welding on drawbars.
17. No portion of the vehicle may interfere with sled, chain or hook, during a pull or while being hooked or unhooked.
18. In a area of 150 mm wide and 300 mm high, immediately above the draw bar, must be free from all obstructions (including weights, stabilizer bars) for easy hooking and unhooking.
19. Draw bar and stabilizer bars must not be connected to each other.
20. The drawbar distance from center of rear axle cannot change during pull.

Note: The ETPC highly recommends that competing vehicle should not be tied up down to a tow vehicle through or on the drawbar in any way.

Draw bars must meet the following:

5. A drawbar must be equipped with a hitching device, thickness 37 mm, and must have a minimum 75 mm round hole.
6. Drawbars to be a minimum of 1900 mm² total material (steel) at any point. This includes the area of the mounting pin with the pin removed.
7. The mounting pin must be made of steel with a thickness of 25 mm.

8. The vertical cross section A-A of the drawbar must be a minimum of 1900 mm², and the horizontal cross section G-G must be a minimum of 1000 mm² with a minimum of 10 mm of cross sectional thickness between the front of drawbar and the pinhole (H).



Profile A-A (surface)	≥ 1900 square mm
Measure B	= 37 mm
Profile C-C (surface)	≥ 1900 square mm
Diameter mountingpin D	≥ 25 mm
Length drawbar E	≥ 450 mm
Hole hitching device F	= 75 mm
Profile G-G minimum surface	≥ 1000 square mm
Measure H	≥ 10 mm

illustration 2-1: measurements drawbar big tractors and two wheel drives

Clutches, flywheels, automatics and protection

3. Only mechanically activated clutches are permitted. Hydraulic engagement is allowed.
4. Clutches, flywheels and protection must meet the ETPC specifications for Pro Stocks (see ETPC rulebook or appendix 3).

Shatter blankets

3. Shatter blankets must be on the inside of the tie bars or one piece frame and the tie bars must be fastened forward of the rear of the engine block. However, in some occasions there is no space for the blanket inside the tie bar or the one piece frame, in that case a written approval from ETPC or affiliated organization must be available to Tech Inspectors.

Chassis

It shall consist of the following:

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15. The stock engine block or OEM engine block that will operate with the stock crankshaft for that model without any alterations for chassis mounting.
16. Engine block must remain in original location as located by manufacturer.
17. All engines must be secured and held rigid to OEM chassis. Engine cannot move independent or rear end/transmission housing.
18. The stock transmission housing or manufacturer's replacement and the stock final drive housing or manufacturer's replacement. Planetaries are considered part of final drive and are not removable.
19. The OEM engine block cannot be modified externally, except for normal repair or for mounting of fuel injection equipment.
20. Internal webbing and water jacket must remain intact with provisions to rebore engine block.
21. Any alterations to the chassis shell must have the written approval of the ETPC and the national Tech and Safety Board (TSB), before the tractor in question will be considered legal.
22. The chassis and frame must remain stock from the rear of the engine block to the rear of the tractor.
23. The only vehicles that are considered legal in unlimited Farm Stock classes are those that are available as farm tractors with front wheel steering.
24. The clutch housing, transmission case, rear end housing and axle housing must be OEM, with no aluminum replacements.
25. The use of a spacer between engine block is allowed with a maximum additional thickness of 35 mm. An aluminum spacer-plate cannot be part of the clutch protection.
26. There must not be a visible part in the drive line that is of another brand.
27. The drive line, made up of motor, bell housing, gearbox and rear axle, must hold without external strengthening. Connecting plates, flanges or welded-on parts are not allowed, except if engine and bell housing do not form one unit in the original tractor. In that case the tractor must have a self carrying frame (refer to point Frame/sheetmetal below).
28. Advertising boards are allowed, providing they do not influence the visibility of the driver. They may not extent over the sides.

Frame/sheetmetal

10. Tractor must have hood and grill in place as intended by the manufacturer.
11. Sheetmetal can be up/down graded to present/past manufacturer by approval of ETPC and national TSB.
12. Sheetmetal to be stock length and in stock location.
13. Tractor must retain stock appearance.
14. The distance from center of the rear axle to that part of the hood that is farthest forward must be the same length as that model of the upgraded sheetmetal.
15. Wheelbase rule will apply according to the original chassis, not to the model of the upgraded sheetmetal.
16. Maximum of 2900 mm wheelbase unless originally produced with longer wheelbase, in which case stock length must remain. Maximum length of 4000 mm from center of rear wheel to forward most portion including weights and weight racks.
17. The total width of the tractor is maximum 3000mm. This will be measured at axle height.
18. supersport / farmstock chassis rules A: 1-8 above will apply according to the original chassis, not to the model of the upgraded sheetmetal.

Frame options

2. Tractor must have either
 - d. Safety tie bars made out of steel mounted to rear axle housing with at least four (4) axle housing bolts and extending forward of flywheel area and fastened to side of

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engine block or main frame with at least three (3) 14 mm steel bolts grade 8.8 (See illustration 4-1)

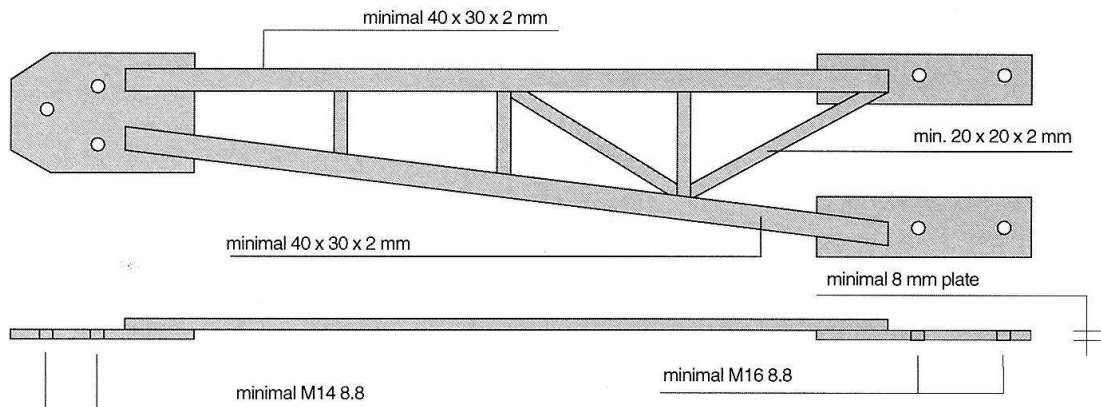


illustration 4-1: safety-frame construction pro stock

or

e. a one piece frame extending from front of tractor to rear axle housing mounting bolts.

or

f. a divisible frame under the following conditions:

- The steel split-frame construction must extend from front of tractor to rear axle housing mounting bolts.
 - The two pieces have to fit in one other (sliding in construction) in the area where the tractor can be split (clutch area).
 - The two pieces of the frame must be made of tubes or u-shaped steel with a thickness of at least 3 mm.
 - If the frame is made of u-shaped steel It must have a u-shaped connection bar inside min. 500 mm length. (250 mm in the rear part and 250 mm in the front part of the u-shaped split frame).
 - If the frame is made out of tubes it must have inner tubes min. 500 mm length. (250 mm in the rear part and 250 mm in the front part of the tube-frame).
 - Rear part of the frame has to be mounted to rear-axle housing with at least four (4) axle-housing bolts and extending forward of flywheel area and fastened to side of engine block or motor-plate with at least three (3) 14 mm bolts min. grade 8.8.
 - Two parts of frame must be locked together with at least two (2) fasteners of 8 mm steel.
 - Two piece frame must be of sufficient strength to support weight of tractor with the bolts used to split the tractor removed.
4. Tie bars or frame must be of sufficient strength to support weight of tractor with the bolts used to split the tractor removed.

Limits

3. 4.5 ton:

- a. engine size max. 7.347 cm³, with turbo charger, rpm: max. 3200.
- b. Maximum four valves per cylinder allowed.

Engines

16. The mounting of maximum one (1) turbocharger, consisting of inlet and exhaust, is

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- allowed. No mechanical blowers / superchargers.
17. Engine head must be OEM agricultural type for that brand engine. It is allowed to change the cylinder head, providing the change was made on the original motor block in production. Length, width and height must remain the original measurements. It must also be possible to fit the inlet and exhaust manifolds in the same position as the original. It is not allowed to add extra inlet and outlets.
 18. Unlimited Farm Stock tractors may have one (1) fuel injection pump of any size, only one (1) pump element per cylinder allowed. If using OEM (Available on partscounter) 12 cylinder fuel injection pump two (2) pump elements per cylinder allowed.
 19. Diesel fuel only. Water injection is not allowed. Inter cooler allowed. Use of gasohol and/or alcohol is prohibited.
 20. No overhead camshafts allowed.
 21. Conversion from 4-stroke into 2 stroke principle is not allowed.
 22. Downsizing the engine by 2% is allowed.
 23. The use of a deck plate between the bottom of the cylinder head and the top of the engine block is only allowed if the engine is not downsized. The maximum distance between the centerline of the crankshaft and the top of the engine block, including deck plate and gasket material is 410mm.
 24. One piece engine main cap bearings allowed. One piece main cap not considered a girdle.
 25. Injection pump and camshaft have to be driven the original way. Different flanges, extensions or turning the injection pump around are allowed.
 26. The use of another sump is allowed, providing it is not part of the carrying structure in frame-less tractors. It must be possible to replace the original sump on the motor block in its original position.
 27. A girdle under the motor block is allowed, and falls under the same rules as the sump.
 28. The use of another rocker cover is allowed. It must be possible to replace the original rocker cover on the cylinder head in its original position.
 29. The competitor needs to drill two holes of (3.5 mm) into two bolts (next to each other) of the sump. These holes can be used to seal the engine.

Engine shielding

10. A deflection shield is required on both sides of all engines. Shield must extend the complete length of block casting and be securely fastened. Is to be made of aluminum or steel, minimum thickness 2 mm. Shields must be solid. Motor mounts, filters, steering rods, etc. cannot serve as part of shield. Solid frame rails with no holes can serve as part or all of shield, providing it covers required areas of block casting. It is recommended that a quick release fastener be used (winged Dzus typ or cotter pin type hoop pins). Use of bolts with nuts, screw locks are discouraged. (reason: ease of access in case of emergency-fire, run off, etc.
11. Shielding on all tractors with in line engines must be from sheet metal (hood) to 50 mm below bottom center of crankshaft throw, and be securely fastened. They may be louvered, but no expanded metal. Fastening of hood and side shielding must be strong enough to keep them in place in case of an explosion.
12. Starter motors, fuel filters, oil filters and fuel injection pumps may not be used as shielding. Shielding may cover or pass behind starter or fuel pump.
13. Shielding on all V or Y type engines must extend from base of head or the uppermost point of piston, travel to 50 mm below bottom of crankshaft throw, and be securely fastened.
14. Side shields must be mounted independently of the engine block. Motor mount, block saver plate and header mounting, or chassis mounting is acceptable.
15. All engines equipped with a harmonic balancer, balancer shall be solid steel, to be of the following minimum mechanical properties:

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- Tensile strength: 500 N/mm²
- Yield strength: 280 N/mm²

Shrouded 360 degrees with 10 mm steel to be no more than 25 mm away in any direction of rotation and to be securely fastened. Harmonic balancers shall be connected with a steel bolt, grade 8.8, on the crankshaft. Instead of the above, a high performance harmonic balancer may be used.

All sorts of balancers must have a steel shield or restraint to prevent the balancer form being thrown out of the tractor.

16. All engine fans must be shrouded 360 degrees, with steel 2 mm or thicker, electric fans excluded.
17. All other rotating motor parts must be shielded with 2 mm steel.
18. All turbocharged engines must have one steel cable totally surrounding the engine block and head. This cable must be placed between first and second cylinder (from front of tractor) trough exhaust-port area.
 - a. Cable must be 10 mm thickness (8 mm with certificate from manufacturer: min. 600 kg force).
 - b. Cable ends must be connected together with D-lock.
 - c. Cable must have approximately 100 of slack.
 - d. Diesel engines with single-type cylinder heads need a steel bar with a minimum thickness of 12 mm, this steel bar must extend from first to last cylinder head and be connected to each of them.

Engine throttles

14. All pulling vehicles must be equipped with a dead man's throttle. All throttles working in a forwards-rearwards direction shall be closed in the rearmost position. Must be positive, two way, mechanical linkage. All foot throttles must have a toe strap. No hydraulic throttle linkage allowed.
15. All engines will have a visible return-to-idle spring on fuel injection pump lever.
16. No computers allowed that control any mechanical operation of the competing vehicle. RPM-limiters are exempt of this rule. No automated or computer controlled or operated traction control devices.
17. Computer controlled electronic fuel management allowed.

Exhaust systems

6. All exhaust pipes must discharge vertically. Height to be a minimum of 305 mm above the bend in the pipe which discharges vertically measured from the top of pipe to the bottom of bend (see illustration 2-12). All pipes must be securely attached. Vertical is defined as being within 10 degrees, in any direction of being in plumb. Rain caps may not be used. No megaphone pipes are allowed. Venturi type headers are acceptable.

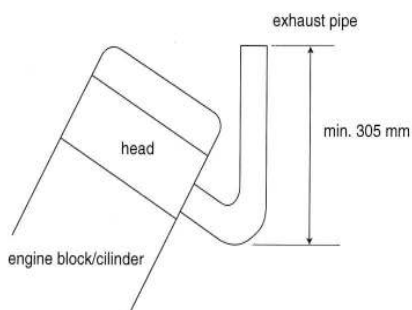


illustration 2-12: measurements exhaust pipes

7. Turbocharged engines must have two M10 grade 8.8 bolts through exhaust pipe(s) in vertical portion of exhaust pipe(s). Bolts are allowed to be welded through pipe(s). Head of bolts must remain for inspection. Bolts to be installed 90 degrees to each other, within max. 25 mm of each other. All pulling vehicles with an exhaust-pipe over 95 mm diameter must have extra cross in exhaust-pipe, rotated 45 degrees from the first cross. Both crosses closest possible to each other.
8. Turbocharged diesel engines must have an additional cross as close as possible to the turbo.
 - Cross must be made from 2 M12 bolts 8.8 or better.
 - Bolts to be installed 90 degrees to each other, within max. 20 mm. of each other.
 - in case of a multiple turbo tractor only the last turbo(s) must have the additional cross.
 - in case the cross must be placed farther away from the turbo, wall-thickness of exhaustpipe between turbo and cross must be min. 4mm.
9. All diesel engined vehicles competing at indoor pulls must be equipped with demountable (for clearing purpose) exhaust extension which will discharge all exhaust horizontally rearwards at a point vertically above the hitching device, at a height of 3.000 mm from the ground to center of extension pipe. Maximum diameter of extension is 200 mm. Rear end of extension must protrude rear-wards a minimum of 610 mm from rear brace holding extension. All diesel smoke pipes used at indoor pulls must be 150 mm higher in the rear than in the front. The exhaust extension and the pin must meet the specifications given in the drawing.
10. All exhaust systems used during indoor pulls must be secured. Excessive leakage or exhaust systems that collapse and do not fall off are cause for disqualification, unless caused by smoke collector on the sled.
The pin on the end of the extension must have a hole for a safety pin.

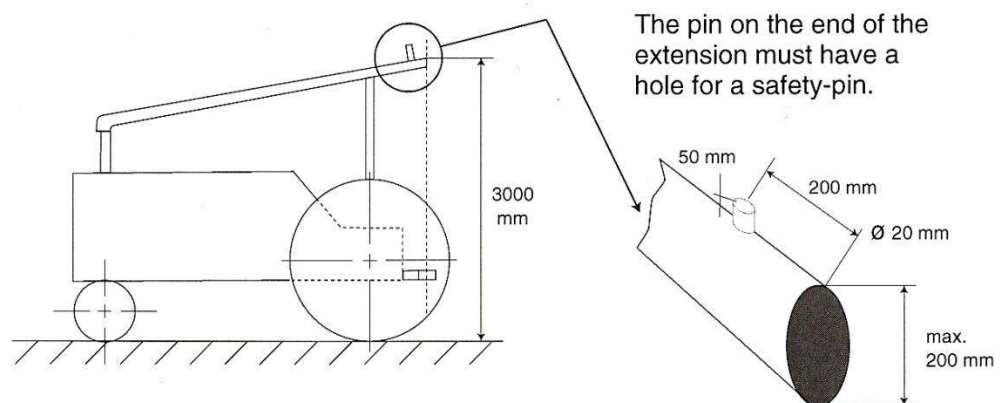


illustration 2-13: measurements exhaust extension at indoor pulls

Fuel and fuel containers

4. The only legal fuel is diesel. Oxygen carriers and combustion accelerators are illegal. Diesel fuel is defined by the ETPC as a pure hydrocarbon. The ETPC will evaluate diesel fuel using the dielectric constant value. That value shall be determined by the ETPC-approved fuel check meter only. The fuel check meter shall use cyclohexane to

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establish the zero reference point for determine all diesel fuel dielectric constant values. Diesel fuel to be used in ETPC sanctioned events shall have a dielectric value of no greater than 4.9, nor a value of no less than 2.0. The use of additives containing oxygen, such as nitro methane, propylene oxide, dioxide, MTBE, alcohol or nitrous oxide, are strictly prohibited. These additives, and others of the oxygen-bearing family, will significantly change the dielectric constant value of any diesel fuel. Diesel fuel with dielectric constant values that fall outside the ETPC-standards will not be allowed for use in ETPC competition. It is prohibited other fluids, fuels or gasses to add, inject or spray in or on any part of the tractor. Water injection is not allowed. De ETPC keeps the right to decide that the fuel that has to be used for the competition will be supplied thought the ETPC.

5. ETPC officials or officials form affiliated organizations can check fuel at any time during any event.
6. No fuel tanks, fuel pressure gauges, fuel pumps and/or fuel lines allowed in the driver's compartment. If the fuel tank is located behind the driver, a fire barrier is highly recommended from front to rear of compartment beneath the driver's seat between fuel line and driver. Minimum width of the fire barrier equal to width of driver's seat.

Kill switches

10. All kill switches must be mounted independent of drawbar and or stabilizer bars.
11. All pulling vehicles must have an automatic ignition kill switch and / or air shut-off, in working order at all times. The kill switch device must also work in a situation where the electric circuit of the vehicle is interrupted. Every kill switch must generally work according to the Fail Safe principle, that is, no situation whatsoever may cause the kill switch go out of function. Track Officials and/or Tech Inspectors have the option of checking kill switches as many times as they fee adequate at any event. Switch must be checked with engine running or with Buzz Box only if supplied by puller.
12. The kill switch on all tractors must be located in the rear center of the vehicle (maximum of 150 mm off center in any direction) 1200 mm above the point of hook.
13. The kill switch must activate the air shut-off. A cable may be used for this purpose, but the flap must have a spring-loaded closing mechanism. A system to be deemed acceptable must at least prevent building of boost. A hole with a maximum diameter of 25 mm in the flap is allowed. It is recommended that a gasket/seal arrangement be used to shut-off the air flow more effectively. All diesel engines must be equipped with an emergency shut-down air shut-off at the air intake that can be utilized from the driver's seat. On tractors with an electric kill switch system, the solenoids that hold the flap up must have positive (+) connection through the kill switch. Use of solenoids or electric motors that need voltage in order to activate the flap is not allowed. Also, systems that need air pressure to activate the kill which are not permitted.
14. The break-away kill switches must have attached to them a minimum of 50 mm diameter ring. The cable from the sled will be attached to this ring. Kill switch ring or cable 'ring' must be secured with a nylon tie wrap (1/8 inch). The tie wrap must be broken for a re-pull. ETPC and affiliated organizations will supply the tie wraps for uniformity.
15. If a vehicle has a kill switch or shut off in legal position, and during the pull the kill switch is pulled and the nylon strap is broken and the presiding official inspects and finds the switch capable of operating properly under normal conditions, the vehicle will be allowed to re-pull immediately, or drop six positions. The decision to drop must be made before vehicle leaves the track. It is the puller responsibility to see that the kill switch is working.
16. The force which is necessary to pull the kill switch must be not more than 10 kilo.
17. All tractors must have a fuel shut off valve control within easy reach of driver (a fuel shut-off valve on the diesel pump will do). A tractors must be equipped with an emergency shutdown air shut-off at the air-intake, which can be utilized from the driver's seat.
18. On-board batteries must be securely fastened and properly covered to prevent any

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sparks. Especially, any possibility of them getting into contact with the kill switch cable from the sled must be avoided.

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Safety

1. If Track Officials and/or Tech Inspectors feels a vehicle is unsafe, they have the right not to allow the vehicle to pull.
2. All pulling vehicles must be equipped with a minimum of one 1.5 fire extinguisher (yearly checked with certificate) fully charged, in working condition, and within easy reach of the driver.
3. Government-approved full-face helmets are mandatory. All drivers in all classes must wear helmets with chin strap fastened when pulling.
4. The use of a fire suit (including gloves, socks, head socks, leather shoes) is mandatory for all drivers in all classes. Fire suits must meet the following requirements:
 - A minimum of one layer fire suit of Nomex 3 or equivalent.
 - Nomex or equivalent fabric underwear is highly recommended with the use of any fire suit.
 - The maximum age of a Nomex fire suit is six (6) years, of other suits two (2) years, in cases of doubt it is the competitor's duty to prove the age of the suit
 - Suits must have the possibility to tie collar, sleeves and legs. If leather boots are used fire socks are not mandatory.
18. Officials can ban any vehicle at any event from competition if they believe the vehicle has a potential safety problem.
19. The ETPC recommends the use of Tech Inspection stickers on all tractors, the best location is on the left front portion of the tractor.
20. Drivers must be seated on the vehicle when his/her tractor is being started and running and must have complete control of the vehicle at all times Anytime an engine is being started or running, steering wheel must be installed and securely attached to steering-shaft.
21. A reverse safety light system is required on all pulling vehicles. A white light, minimum 50 mm in diameter, must be mounted directly above or below the safety kill switch at the rear of the vehicle. A white light, minimum 50 mm in diameter, in the drivers compartment must be operated by the same system. Both lights are to be activated by the gearshift lever in such way that it will be lit only when the vehicle is in reverse.
22. All pulling vehicles must have a neutral gear. They must be equipped with a starter interrupter switch on the gearshift, which will allow starter engagement only in neutral gearshift position.
23. The use of a safety belt with a fast draw latch for fast release is highly recommended in all classes without Roll Over Protection (ROP). In all classes with ROP the use of a 4-point seatbelt-assembly is mandatory. The seatbelt-assembly must be attached to the roll cage.
24. Helpers must wear clothing with long sleeves on the track.
25. All tractors must have an rpm measuring point. This consists of a reflective sticker of size 30mm x 30mm. It must be on an easily accessible point on the front of the engine. It must be possible to measure the RPM within three minutes; otherwise the competitor will be disqualified. Measuring will take place with a non-contact tachometer.
26. If the on board rpm measuring devices of the national associations is used, it is recommended to use two signals per revolution for good measurement. A single signal per revolution is not considered accurate enough to base decisions upon.

Firewall/deflection shield

2. Steel deflection shield between driver and engine from hood to top of torque tubes or transmission or clutch housing from side shield to side shield, minimum 2 mm thick. This also serves as a flash fire shield.

Starting chemicals

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- All ether bottles (or starting aids) must be placed outside of engine compartment.

Onboard fire control systems

- Unlimited Farm Stock tractors that require tools for removal of side shields must be equipped with an onboard fire control system. Onboard system nozzles must be in engine compartment.
- Unlimited Farm Stock tractors utilizing onboard fire extinguishing system must place one nozzle on each side of engine, inside the engine compartment. Not to be attached to the sheetmetal.

Seats and fenders

- All tractors must have a strong and rigid seat; all tip seats must be securely fastened while pulling. All seats must have side rails that are a minimum of 100 mm above the edges of the seat, must extend a minimum of one-half the distance from the back of the seat to the front edge. If fenders are 150 mm or greater above the seat, and are 150 mm or less the seat, no seat side rails are required.
- All tractors must have a shield between the driver and the tire, to consist of a solid barrier between driver and any part of the rear tires to be able to sufficiently support weight of driver.

Stabilizer bars

- Stabilizer bars are required. The drawbar and drawbar assembly will not in any way be attached to the stabilizer bar assembly.
- The stabilizer bars must be a minimum of 200mm behind the rear tires, and are allowed to be maximum 250mm above the ground. The contact patch must be a minimum of 150cm², with minimum width 100mm. (See illustration 2-15).

Note: For all classes: The stabilizer bar system must be able to support the weight of the vehicle in the heaviest class pulled. Jacking up the pads, so tractor is completely off the ground will be a good test

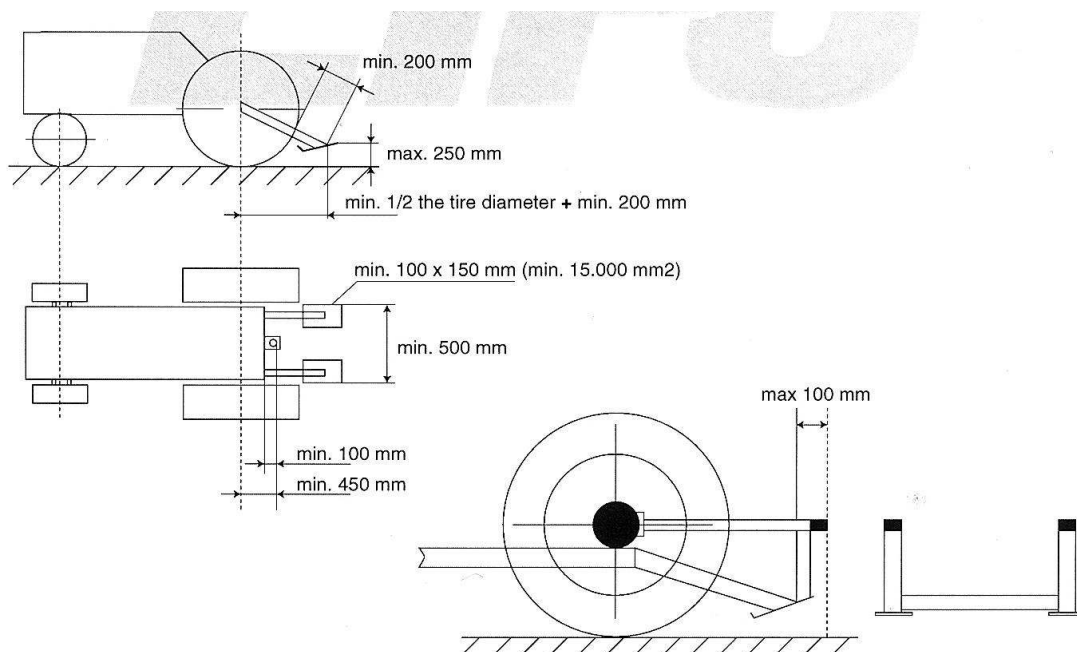


illustration 2-15: measurements stabilizer bars, bumper and hitch big tractors

Roll Over protection

2. A roll over protection cage is mandatory in all classes. For details see: Appendix 5 or Chapter 14 of the ETPC rule book.

Turbocharger

6. All turbochargers must be completely shrouded (360 degrees) except for inlet- and exhaust pipes with steel 2 mm or thicker. The shielding must ensure that no wheels or other parts of the turbo can come out in case of a turbo explosion.
 - The shielding must be mounted as close as possible to the turbo, at min. four (4) points
 - Hood construction or grille cannot be part of the shielding.
 - Open bottom (max. 90 degrees) of the shielding is allowed under the following conditions:
 - Must have a closed hood construction.
 - Turbo shielding must extend at least 50 mm below the bottom of the turbo.
 - Exhaust-pipe thickness must be min. 1.5 mm from turbo to vertical part of exhaust-pipe and securely mounted to the turbocharger outlet flange.
7. All intercoolers located outside of normal the engine shielding must be shielded with steel 2 mm thick or thicker.
8. On all pulling vehicles the tubing on the pressure side of a turbocharger to the intake must be under the hood, shield or be bolted or strapped securely.
9. The ETPC recommends the use of a burst panel on charged engines.
10. Titanium turbo-wheels are not allowed in all classes.

Tires

5. Tractors are only allowed to drive with rubber tires; chains or similar are not allowed. All tires are allowed to be cut. Dual tires are not allowed.
6. The total width of the tractor is maximum 3000mm. This will be measured at the axle height.
7. Maximum rim size 38 inches.
8. Maximum tire size with 38" rim: 20.8-38, 580/70R38, or 650/650R38; with 34" rim: 23.1-34 or 620/75R34; and with 32" rim: 24.5-32 or 650/75R32.
9. Puller tires allowed.

Weights

5. No weights may extend rearwards beyond rear tires.
6. All weights must be securely fastened.

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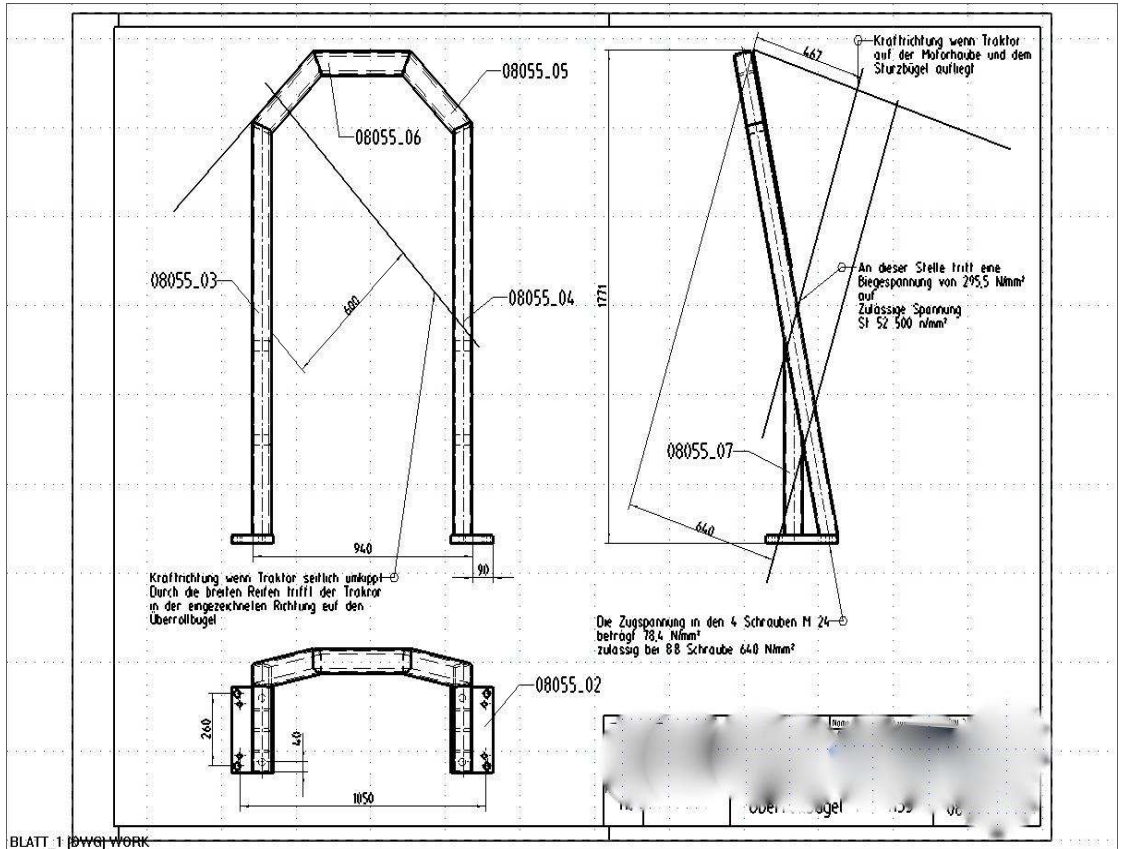
7. Any ballast lost while hooked to the sled and under the green flag will be cause for disqualification (internal breakage excepted).
8. The use of movable weights or movable weight carrier is not permitted.

Legality

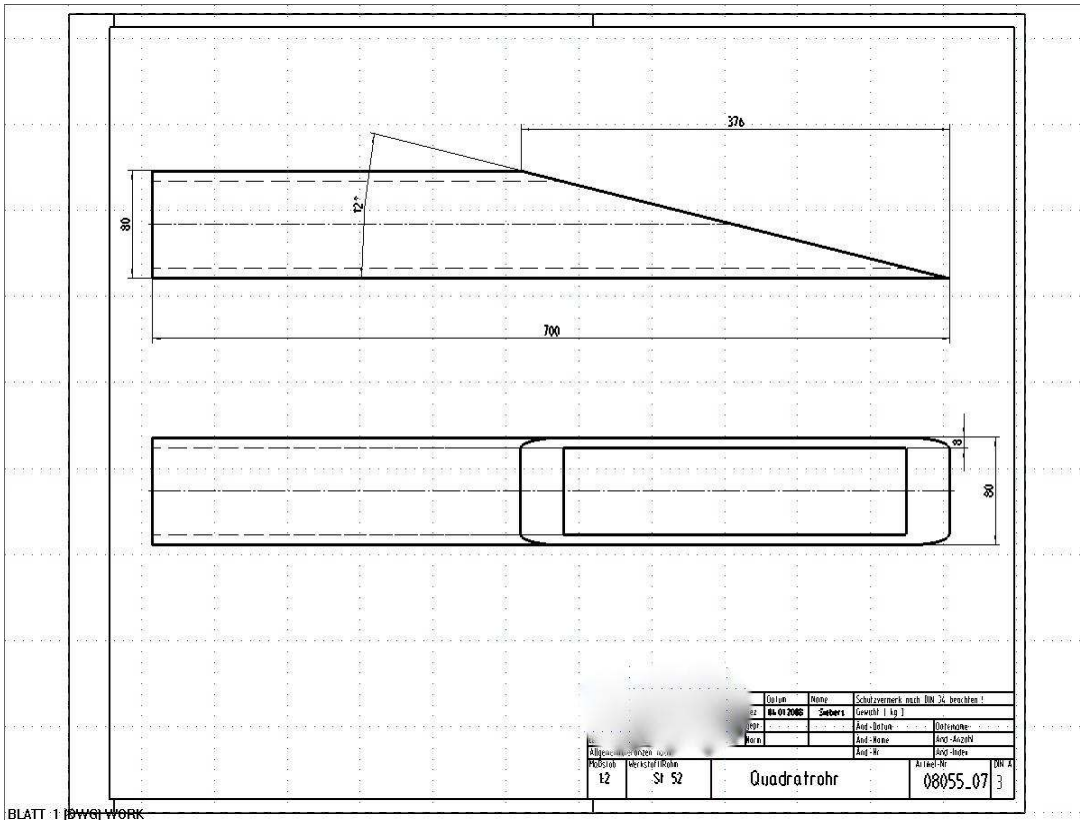
1. If the ETPC or national organization doubts the legality of any entry, or upon protest by another contestant in that class, contestant in question must verify that 150 units of the tractor in question have been manufactured (notarized statement from the manufacturer), furnish parts numbers, and prove to the Board's satisfaction that the tractor is legal.
2. Engine manufacturer must fit the hood.
3. The combination of engine, bellhousing/transmission and rear-end must have been manufactured in that combination (but not necessarily with that brand of hood).

Appendix 1: Examples and pictures roll bars

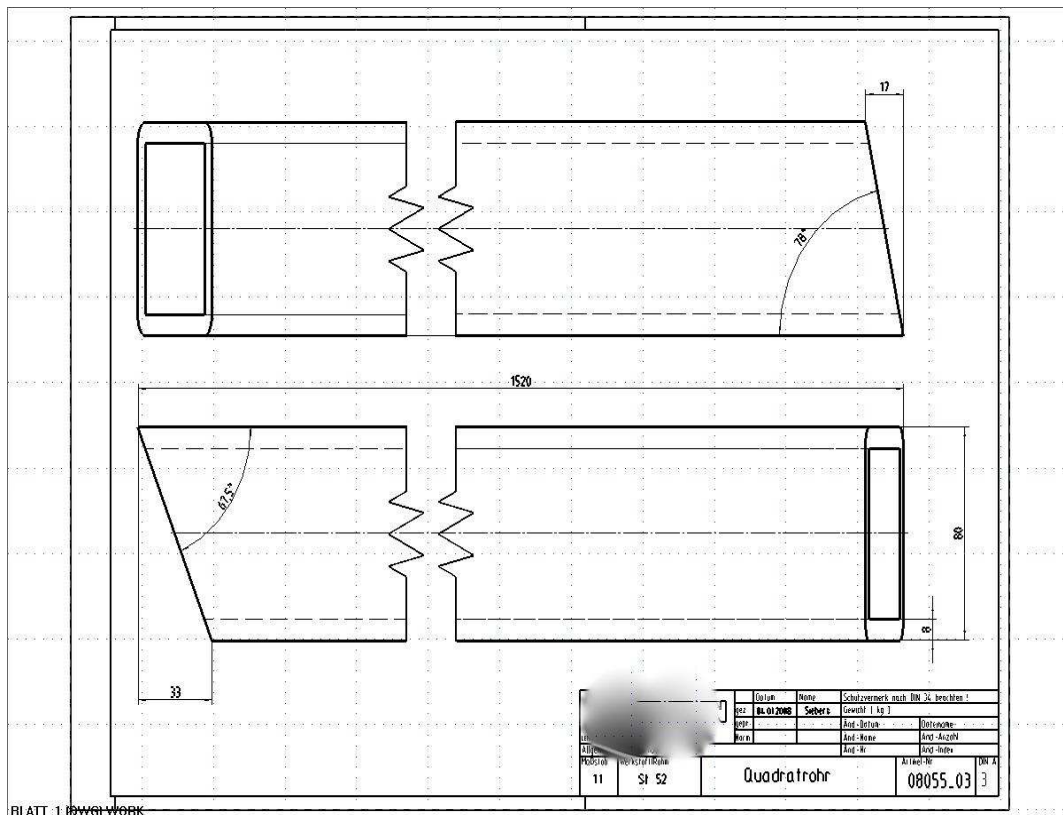
Option 1:



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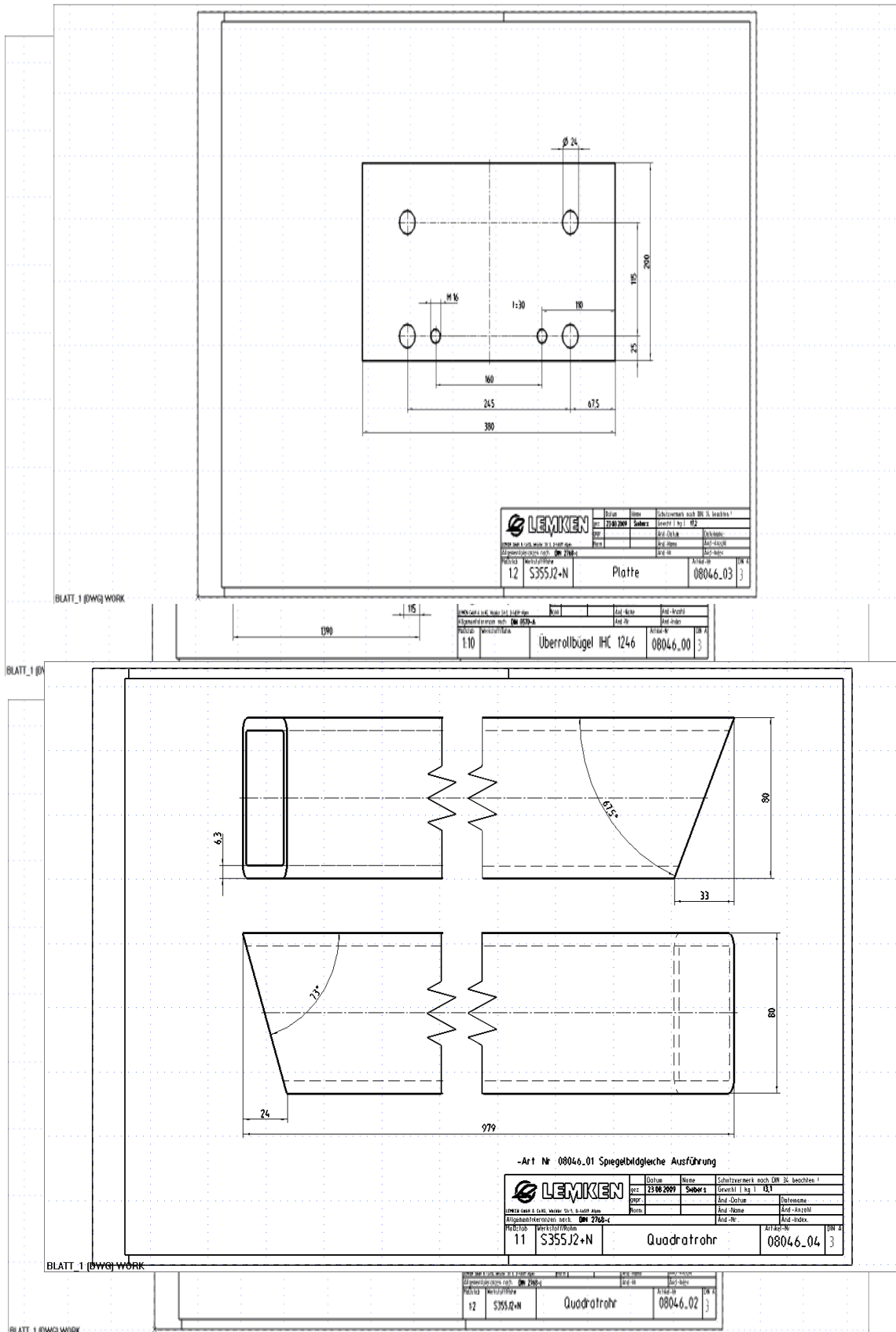
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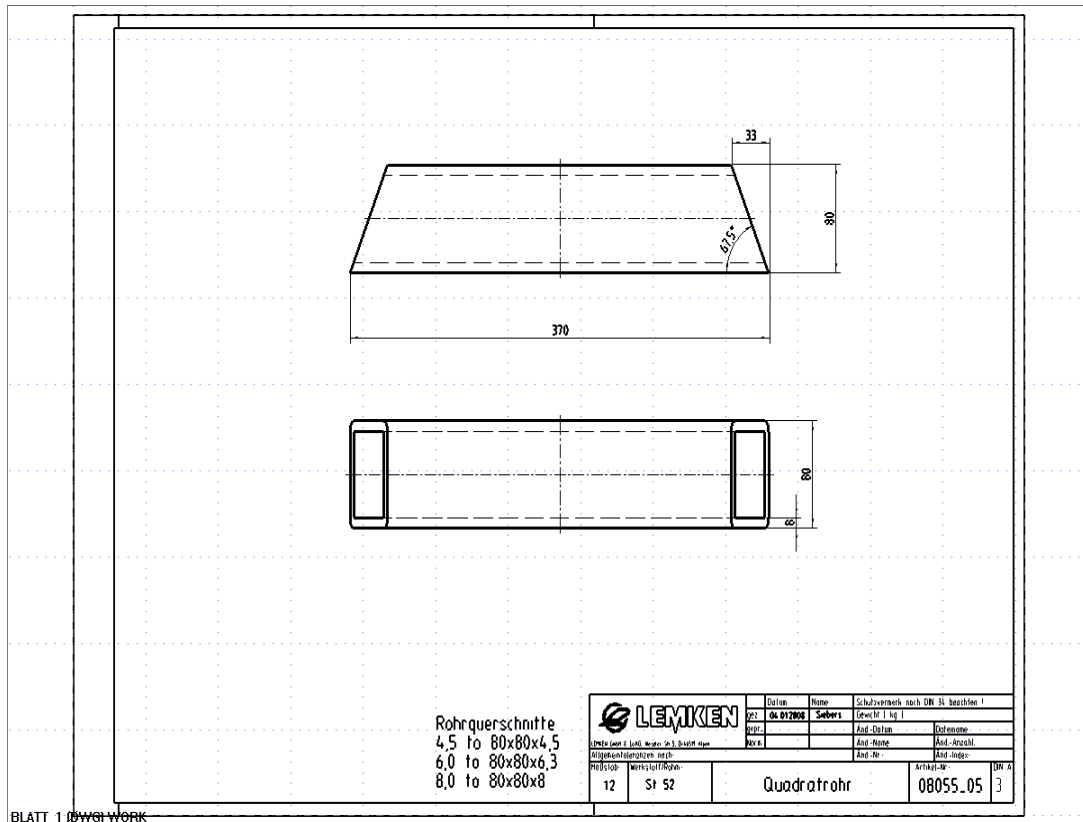


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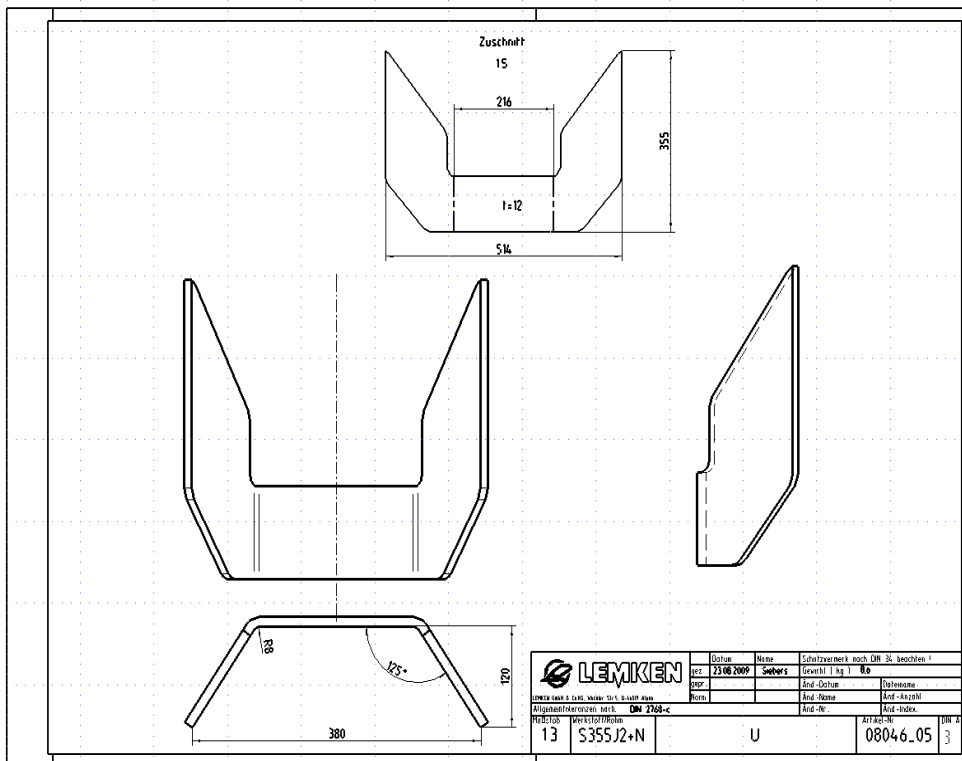
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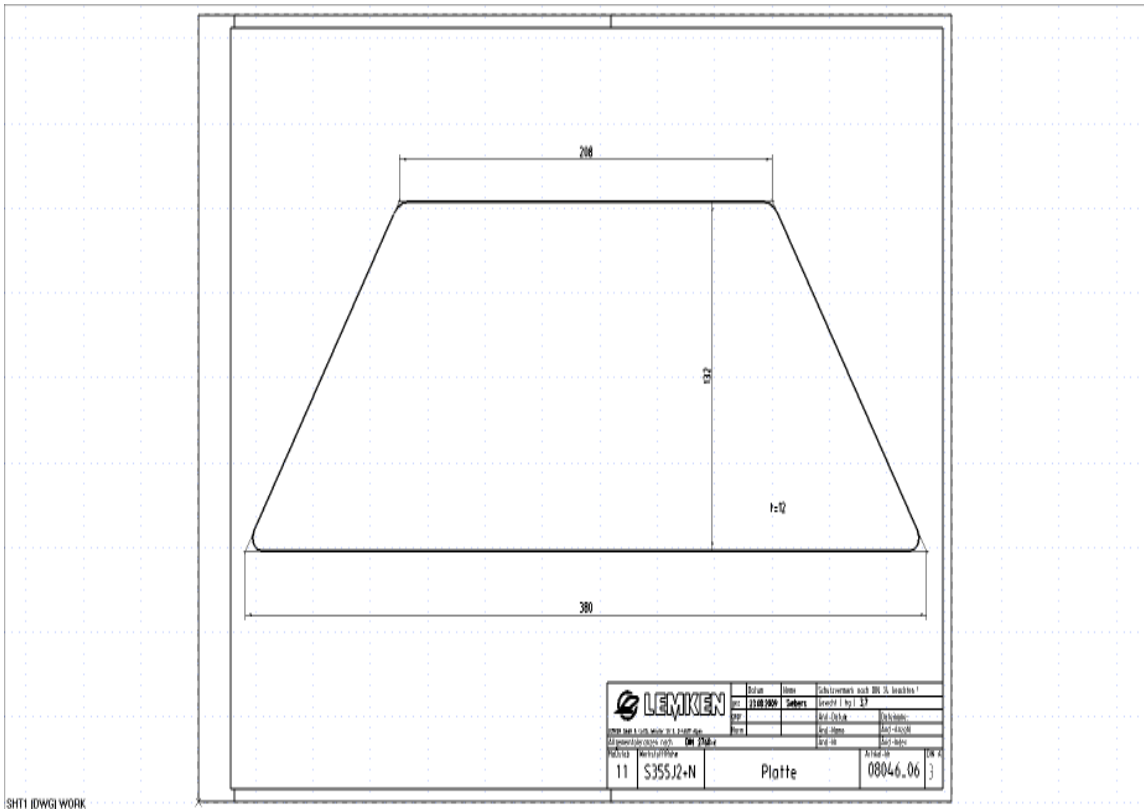


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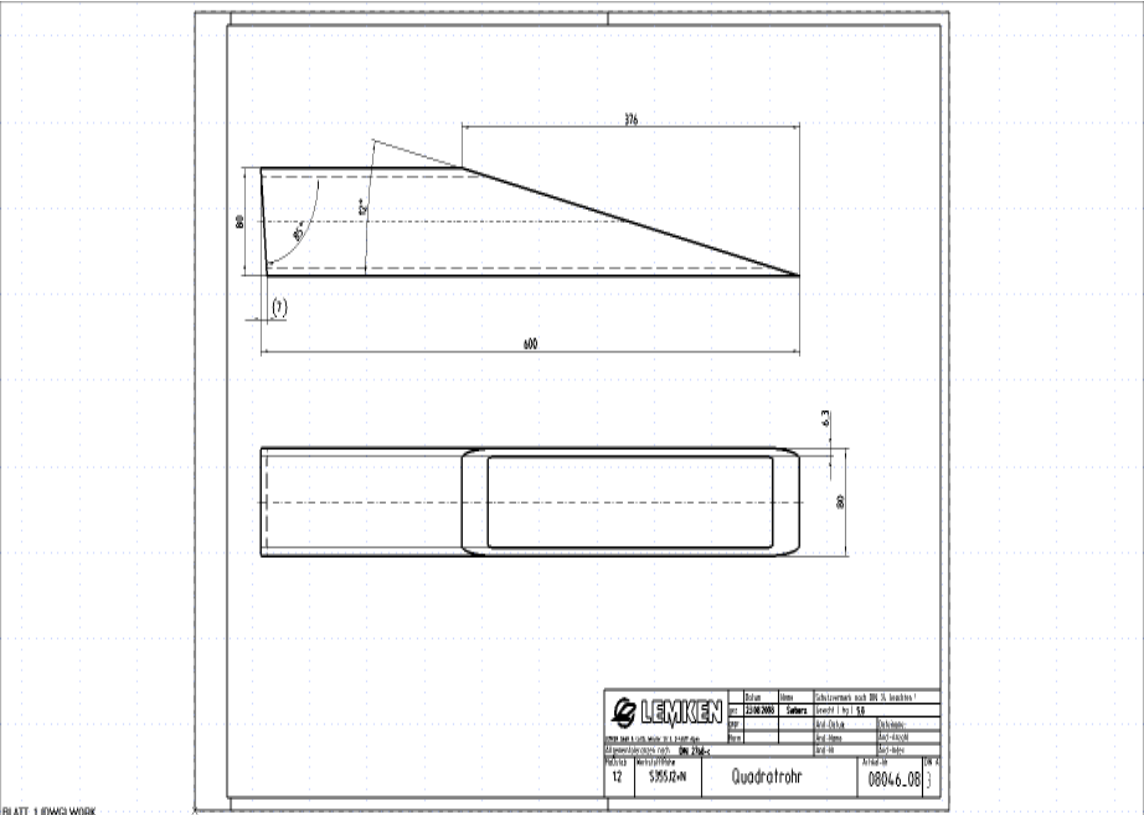


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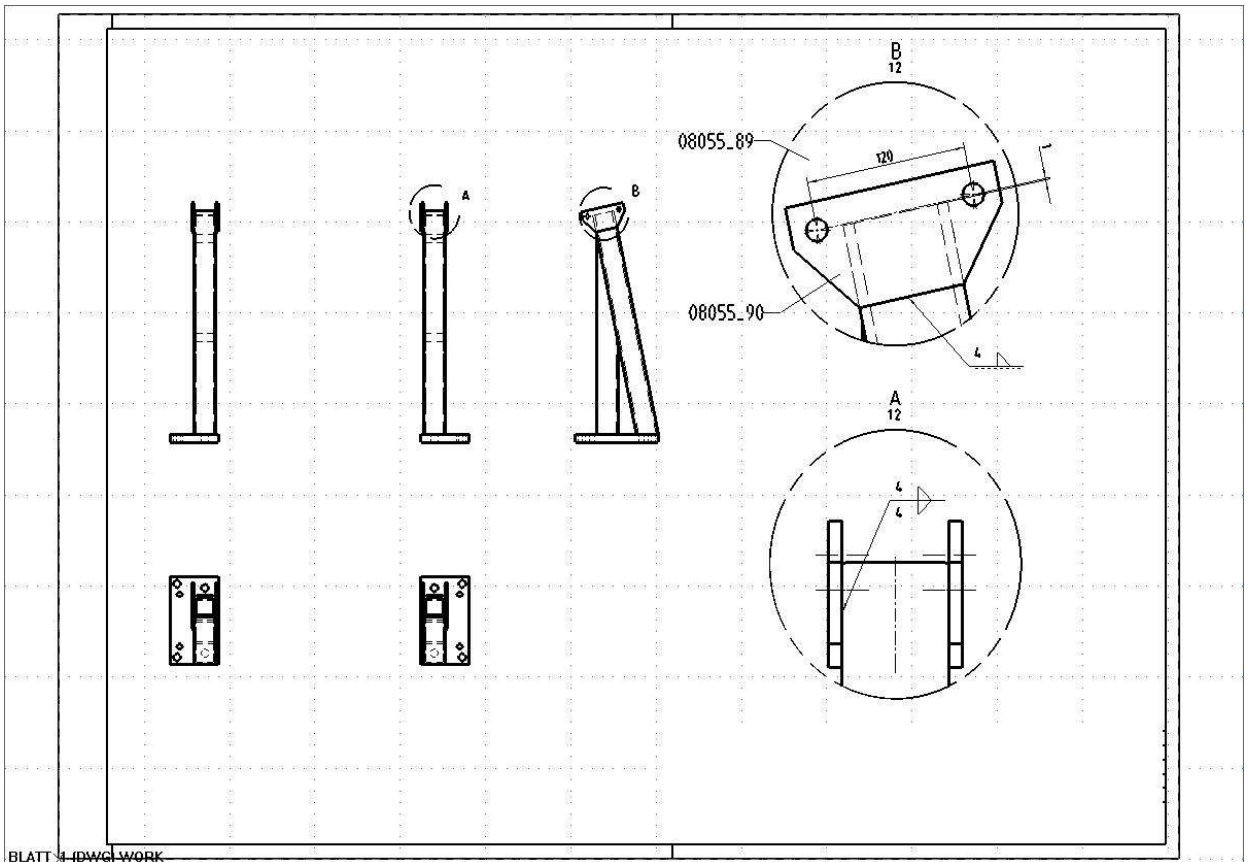
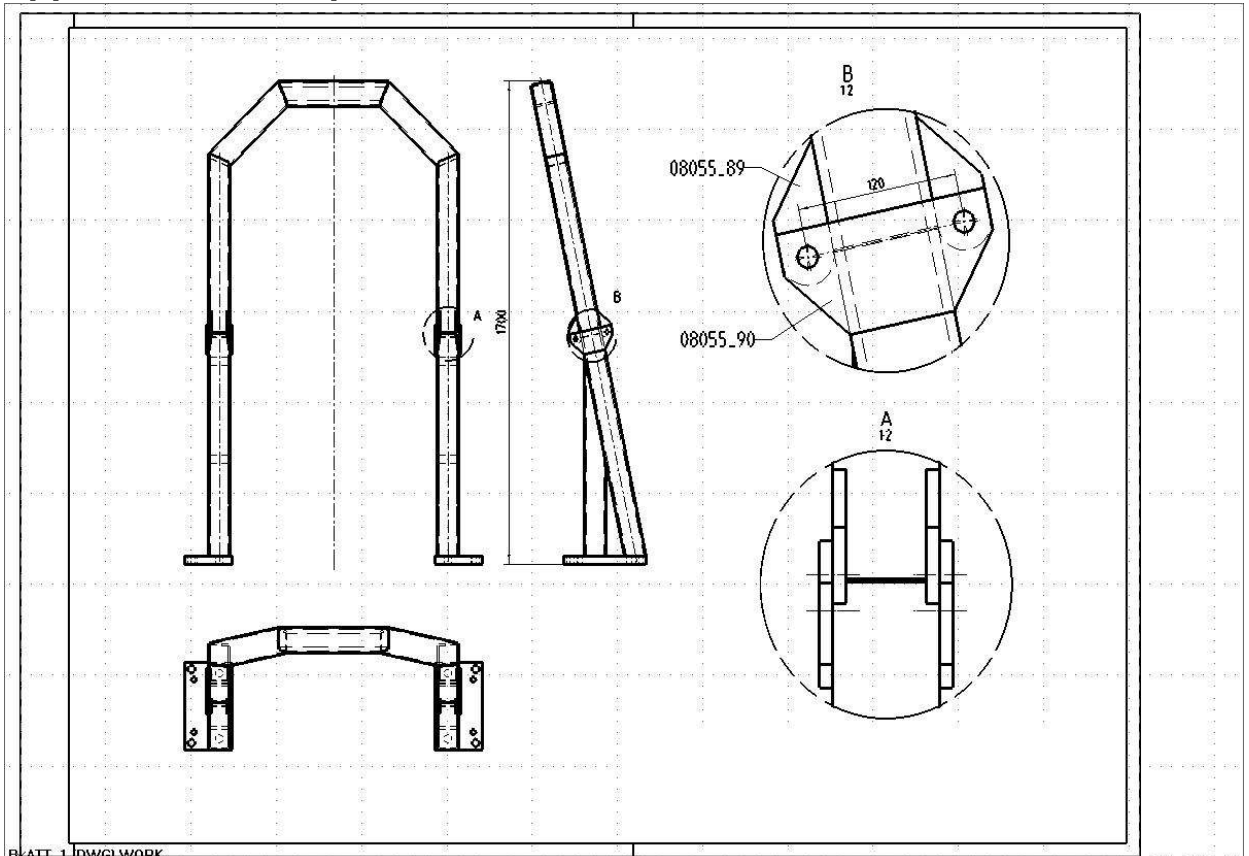
BLATT_1 @DWG WORK



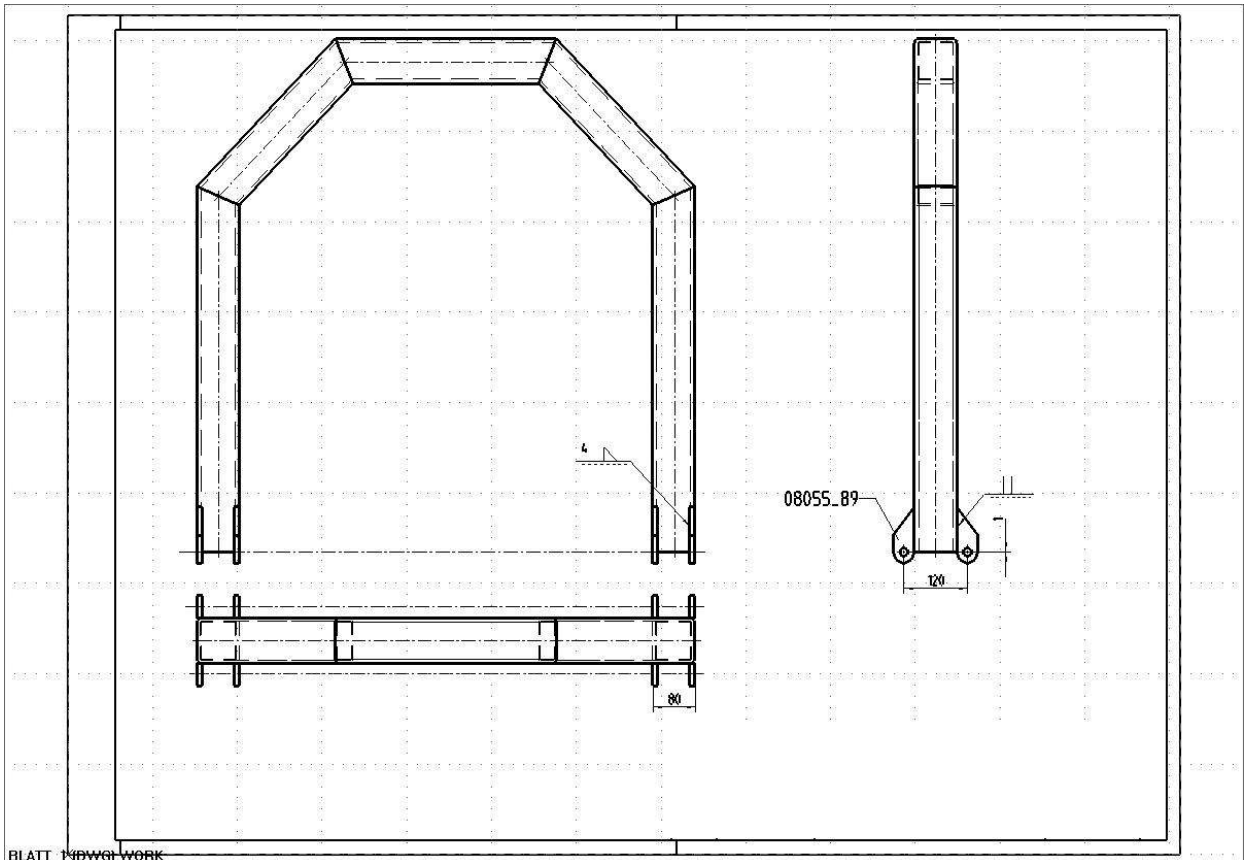
BLATT_1 @DWG WORK

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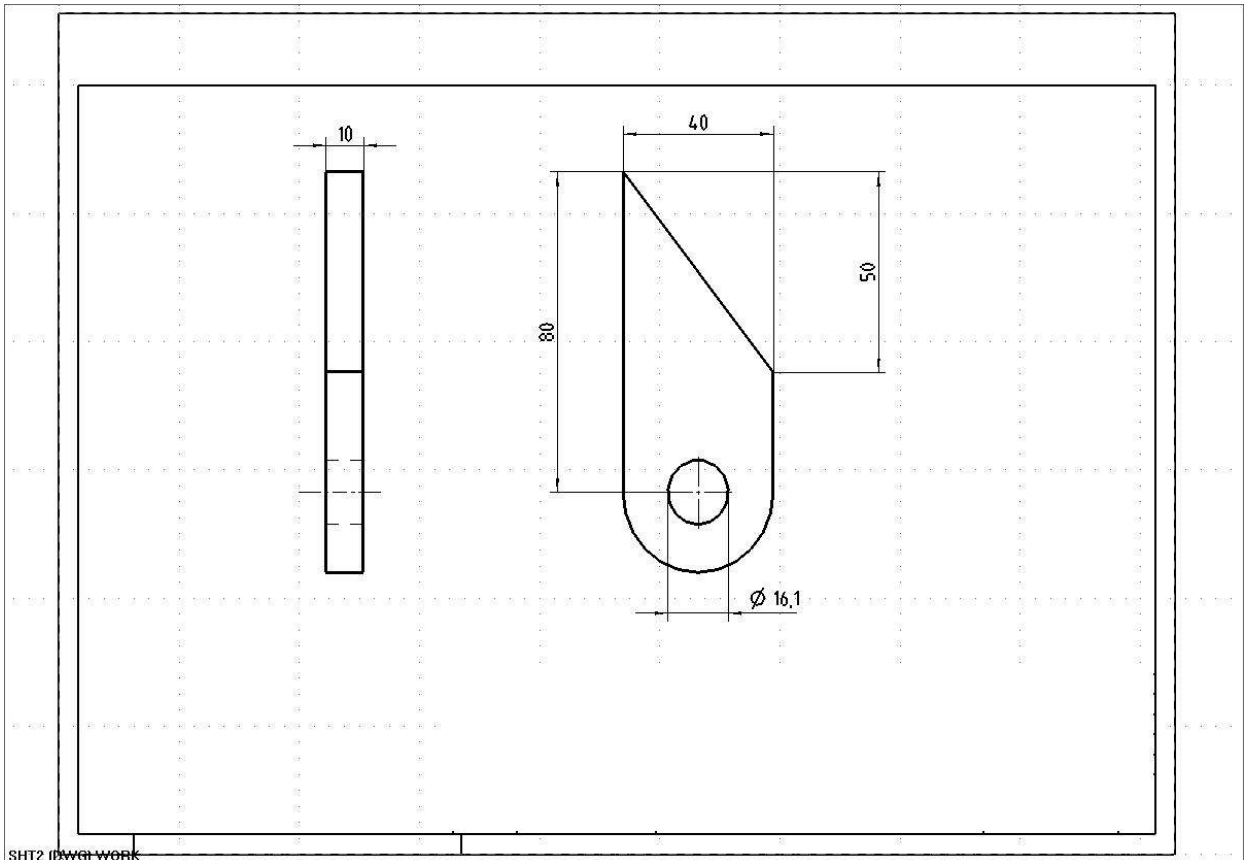
Appendix 2: Example of foldable roll bar



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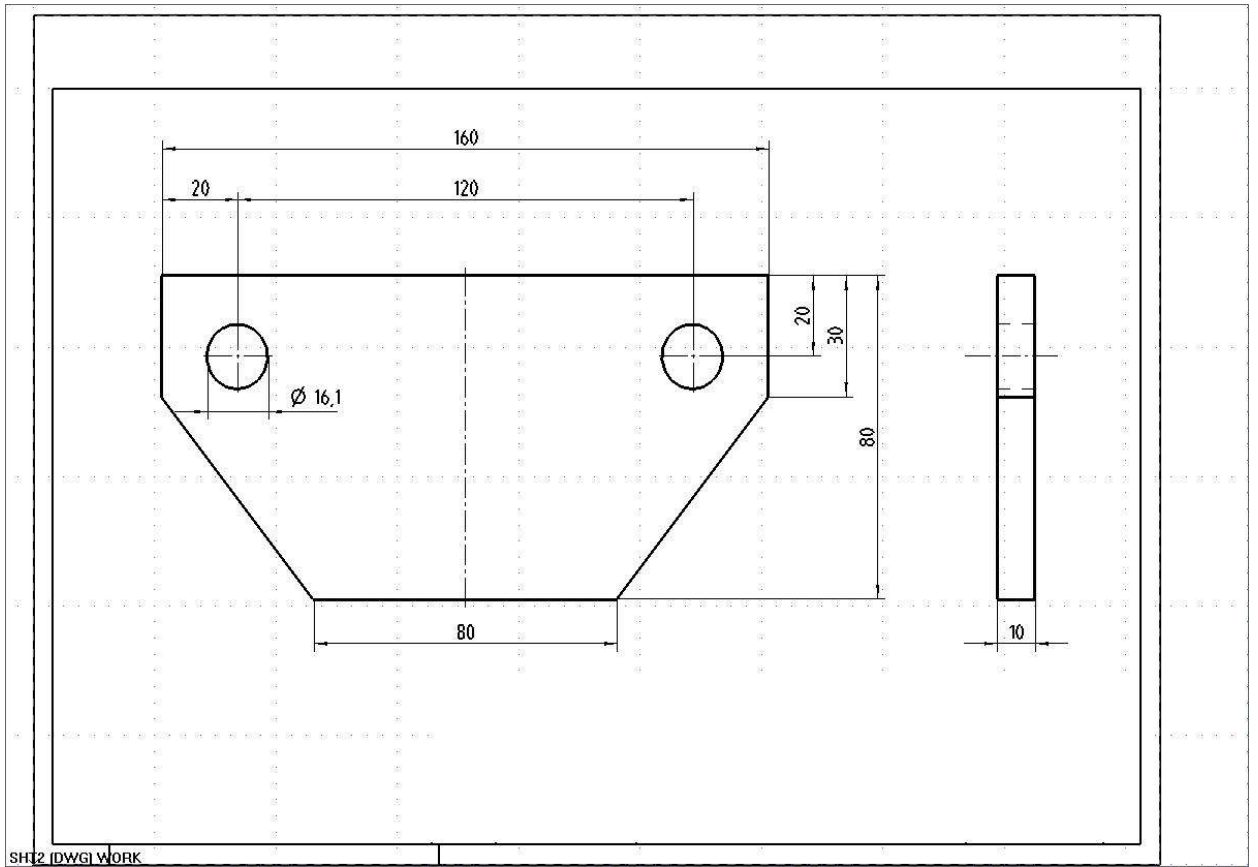


BLATT 1 (DWG) WORK



SHT2 (DWG) WORK

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SH12 IDWGI WORK

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Appendix 3 (ETPC main rulebook, Chapter 2.D):

Clutches, flywheels, automatics and protection

1. The use of torque converters or automatic shifts will be permitted.
2. All automatic transmissions must be 360 degrees covered with a steel plate 3 mm thick. The steel cover around the torque converter must be covering the total width of the converter and must be at least 10 mm thick, or an ETPC approved blanket must be used. Plate or blanket is to extend from rear of engine block to front of tailhousing. Blanket must be fastened forward securely with two straps on each side, one fastening point above crankshaft centerline, and the other below crankshaft centerline. Blanket must have 150 mm of overlap. Straps must be 50 mm wide with no more than 25 mm spacing between each strap.

The maximum age of a shatter blanket is five (5) years if not limited to a shorter period by manufacturer. In cases of doubt, it is the competitor's responsibility to prove the age of the blanket.

3. All pulling vehicles using an automatic transmission must be equipped with a positive reverse-gear lockout.

4. All pulling vehicles using a flywheel and/or clutch assembly are required to use an ETPC approved item, producer must be on the manufacturers list of the ETPC Safety Program (see chapter 13 A).

Only mechanical activated clutches permitted. No electronic, pneumatic or hydraulic device that effects the clutch system allowed. Hydraulic engagement allowed.

The ETPC will allow homemade flywheel and clutch parts under the following criteria:

All non-ETPC Safety Program flywheel and/or clutch assemblies must fulfill the following minimum specifications:

All parts must be made of steel plate or billet steel.

POSITIVELY NO GRAY CAST IRON.

Flywheel, pressure plate and pressure plate cover are allowed out of aluminum only wrought (billet) aluminum is adequate for pulling applications if mechanical properties are acceptable.

- A. Minimum mechanical properties (steel and aluminum):

- Tensile strength 500 N/mm²
- Yield strength 280 N/mm²

- B. Maximum peripheral speed (rotating speed on the outer diameter of flywheel/clutch component) is 200 m/sec. Is 125 percent of maximum working speed (safety for overspeed).

This means that maximum rotating speeds (working speed, by 1:1 engine/clutch rpm) are:

- components max. 250 mm (10") diam. = 12000 RPM
- components max. 280 mm (11") diam. = 10500 RPM
- components max. 305 mm (12") diam. = 10000 RPM
- components max. 318 mm (12,5") diam. = 9500 RPM
- components max. 330 mm (13") diam. = 9000 RPM
- components max. 355 mm (14") diam. = 8500 RPM
- components max. 380 mm (15") diam. = 8000 RPM
- components max. 405 mm (16") diam. = 7500 RPM

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components max. 430 mm (17") diam. = 7000 RPM
components max. 455 mm (18") diam. = 6500 RPM
components max. 480 mm (19") diam. = 6000 RPM
components max. 505 mm (20") diam. = 5500 RPM

- C. All cap-screws and bolts used in the clutch assembly and to connect flywheel to crankshaft must meet class 10.9 (grade 8) or higher. No weldings and/or chemical milling allowed on any home made parts.
- D. Drawings with measurements of all home made major components (flywheel, friction discs, floater plates, pressure plates and pressure plate cover) must always be with the pulling vehicle and be shown upon tech. inspectors request.
A copy of all drawings and the manufacturer report must be send to and stored by the national Tech and Safety board.

Manufacturer report shall include:

- name of all components used, with specification of used material and the mechanical properties (max. yield strength, tensile strength etc.)
- material specification(s) with 3.1 .b certificate, signed by producer.
- all components must have on paper (and stamped in by producer): identification number, producer name and date of produce.
- name of pulling vehicle and type of engine(s).
- max. rotating speed of flywheel/clutch assembly allowed by producer.
- Manufacturer's name (and contact name); address; telephone and fax numbers; e-mail address; name and signature of responsible supervisor; signing date and place; any other appropriate information.

If point A,B, C and D above are fulfilled and according the rules national T&S board in cooperation with ETPC T&S board may give permission to use named flywheel/clutch components.

After written permission, components can be used in ETPC-pulling events.

5. All super stock and pro stock tractors are required to have an ETPC approved shatter blanket 430 mm wide and long enough to wrap around the bell-housing with at least 150 mm overlap; secured with six 50 mm wide nylon web straps with a steel D-ring on one end and sewn the length of the blanket (except for overlap area) and long enough to pass through D-ring and be tied in a saddle clinch; and with four 50 mm nylon web retaining straps each at the front and back of the blanket or an ETPC approved bell housing bolted to a steel engine plate, mm. 5 mm thick, inside the original clutch housing.
6. Super stocks and pro stocks facto-made out of components can also use an ETPC approved bell-housing bolted to a steel-engine-plate, mm. 5 mm thick, instead of a blanket, in this application the use of a complete frame underneath the tractor is mandatory.
Note: For ETPC approved items see Chapter 13 ETPC rulebook or appendix 6.
7. Straps to be separately fastened forward and to the rear of clutch/flywheel assembly
All straps must be securely fastened and the blanket must be secured against the rear face of the block.
8. Fixes and/or changes, in whatever form, to shatter blankets may only be done by the manufacturer of the blanket.
9. The flywheel, clutch and pressure plate(s) on all vehicles in all classes must be yearly inspected and approved by a board member of the affiliated organisations of the ETPC before first pull in current season. Approved components will be marked with a stamp and are subject to inspection at all times. Clutch inspection forms and

photos including certificates of passed X-ray/ultrasonic/Magnaflux test of weldings in homemade bellhousings, certificates of conformity and age of shatter blankets, age documents of fire suits, cross section drawings of turbines, certificates of cables around engine block (for 6+8 mm cables) and current season's tech inspection forms have to stay with the pulling vehicle and be shown upon Tech Inspector's request.

10. All modified tractors, two wheel drive trucks and trucks are required to have a complete closed flywheel/clutch protection made of steel with the following minimum specifications A, B or C:
 - A. An ETPC approved factory-made bellhousing:

Note: For ETPC approved items see Chapter 13 ETPC rulebook or appendix 6..
 - A1. The inspection/maintenance hole in the protection shall not extend further forwards at its top edge than flush with the cross-shaft hole. The length of the inspection hole shall be no more than 215 mm and it must not be more than 100 mm wide (measured in a straight line), and the hole shall be smoothly and fully radiused to produce an oval shape (see illustration 2-7).

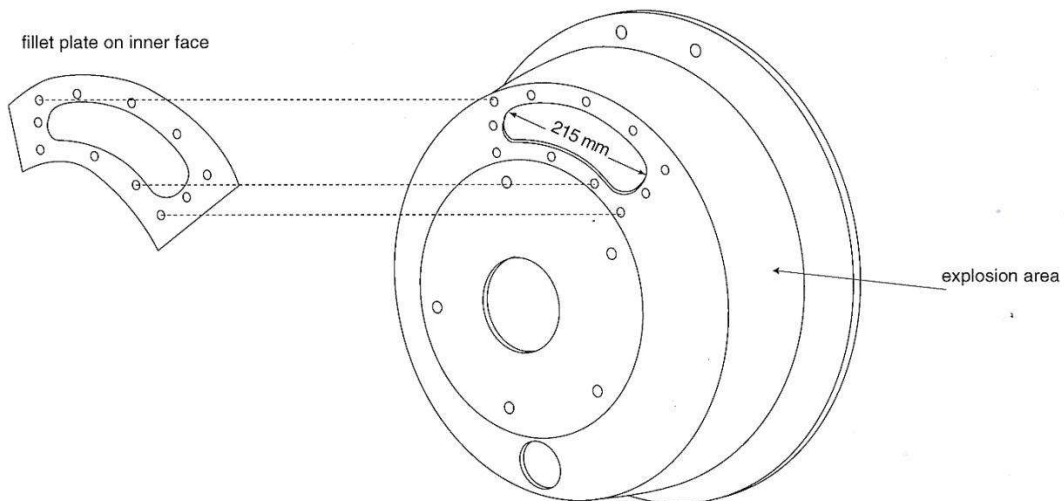
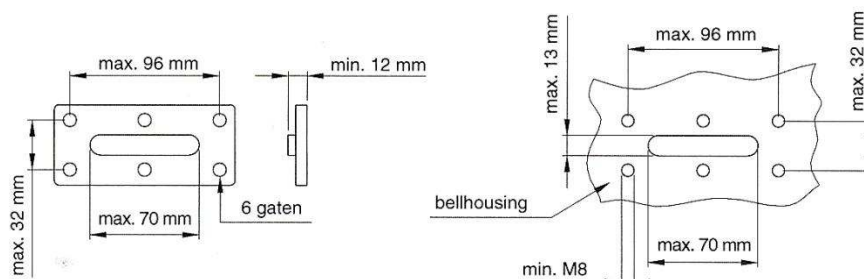


Illustration 2-7: bellhousing with inspection/maintenance hole



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Illustration 2-8: measurements bellhousing-adjustment slot and cover

- A2. There shall be twelve (12) M8 grade 8.8 or better cap screws securing the cover the bellhousing.
The cover must have a plate or fillet that flush inside of the housing. The cover and fillet must be steel. The fillet must be flush to the inside.
- A3. The bellhousing must be flush on the inside surface.
- A4. Titanium bellhousings permitted by the NTPA are acceptable.
- A5. ETPC approved bellhousings with stand adjustment slot are acceptable (see illustration 2-8).
- A6. Fixes and/or changes, in whatever form, to bellhousings may only be done by approval of manufacturer. No weldings on factory-made bellhousings.

- B. A homemade one-piece protection (minimum of 10 mm thick steel) is allowed on the following conditions:
 - B1. It must be tested using X-ray, Magnaflux or ultrasonic method.
Test certificates of the weldings must be available to prove their appropriate quality, otherwise an ETPC approved shatter blanket with a minimum width of 380 mm is required around this protection.
Magnaflux, ultrasonic or X-ray testing may be carried out by any company who can give a written certificate that the weldings are appropriate.
 - B2. Protection must be flush on the inside surface.

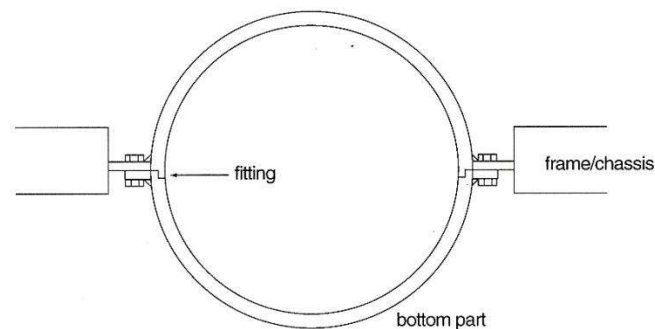


Illustration 2-9: two-piece protection

- B3. No inspection/maintenance hole or stand adjustment slot or any other opening

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- allowed.
- B4. Tube covering explosion (or rotating) area of clutch/flywheel combination must be seamless and flush on the inside.
 - B5. The ETPC recommends no grinding of the weldings.
- C. Trucks using a combination of engine, clutch and gearbox behind each other without a connecting shaft are, under the following conditions, allowed to have a two-piece protection:
- C1. No inspection holes. Material and thickness like alternative B.
 - C2. The top part of the protection must be securely fastened to the frame.
 - C3. The bottom part of the protection must be securely fastened to the top part with M12 grade 8.8 bolts with a maximum spacing of 5 cm.
 - C4. The connection must flush on the inside surface.
 - C5. Any other alterations must be approved by the ETPC board or affiliated organization board.
- 11. All bellhousings less than 10 mm thick (explosion area) must use a 4130 chrome molybdene liner minimum 2,3 mm thick.
 - 12. Liner is secured to the bellhousing by drilling and tapping a single 6 mm hole through bottom of clutch can Liner must cover rotating area of clutch/flywheel combination and must be flush on the inside surface Stand adjustment slot in the liner is acceptable when it is smaller than it is in the bellhousing.
 - 13. The ETPC recommends no openings in bellhousings.
 - 14. All automotive type engines with bellhousing and clutch will run a full block plate either a commercially available unit or minimum 5 mm steel or minimum 6 5 mm aluminum with five (5) M10 grade 8 8 bolts and nuts evenly spaced on the bottom part of the bellhousing and four (4) additional M10 grade 8.8 bolts and nuts between existing bolts on top half of bellhousing to fasten the bell- housing to block saver plate
 - 15. No chemical milling allowed except when factory-made.

Appendix 4, (ETPC main rulebook, Chapter 13):

ETPC SAFETY PROGRAMME

A. Approved manufacturers

Multiple disc clutch assemblies

Ace Mfg & Parts Co.
Applied Friction Techniques
Atlas Tractor Company
Carolina Precision Engines
Clutch Works Inc.
CMW Racing
Crower Cams & Equipment Co.
Eagle Clutches, *Finland*
East-West Engineering
Exedy America Corp.
High Performance Clutch Corp.
Hypermax Engineering Inc.
L&T parts Inc.
Mark Puwak Racing
McLeod Industries, Inc.
Mr. Gasket/Hays Clutch
Performance Industries Racing Clutches
Ram Automotive Co.
RF Enterprises
Rursch Specialty
SSG Engineering Products Inc.
Stroud Safety
Van der Waal Clutches, *Netherlands*
Titan Speed Engineering

Shatter Blankets

Belport, *Belgium*
Clifton Blankets, *UK*
Security Race Products
Stroud Safety
Holland Blankets, *Netherlands*

Turbine Blankets

Belport, *Belgium*

Bellhousings

Browell Bellhousing Inc.
Mr. Gasket/Lakewood Industries
Probell Racing
Trick Titanium Inc.

Blower Restraints - Devices

Deist Safety Equipment
Don Gerardot Racing
J & S East Valley Garage
Mike Kuhl Enterprises
Speciality Automotive Engineering Inc.
Stroud Safety
TAK Racing Enterprises
Tayor Motorsports Products

Blower Restraints – Straps

SES, *Netherlands*

High Performance Harmonic Balancers

ATI Racing Transmissions, Inc.
B.H.J. Products
C.A.T. Power Engine Parts

Cyco System Pty, Ltd

Innovators West

Precision Cam Drives Pty, Ltd

Precision Parts Pty, Ltd

TCI Automotive

Vibratech/Unit of Index Corp.

ALL SAFETY ITEMS PERMITTED BY THE NTPA ARE ACCEPTED BY THE ETPC.

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B. Age Limits for Safety Equipment

The age of blower restraints, fire suits and shatter blankets must not exceed the limits given below.

1. Blower restraints

The maximum age of blower restraints (straps) is six (6) years, if not given a shorter warranty by manufacturer.

2. Fire-suits

The maximum age of Nomex fire suits is six (6) years, for suits made of other materials two (2) years.

3. Shatter blankets

The maximum age of shatter blankets is five (5) years, if not given a shorter warranty by blanket manufacturer.

The age of safety equipment has to be documented, see chapter 2, rule 9 in this rulebook.

Appendix 5, (ETPC main rulebook, Chapter 14):

ROLL OVER PROTECTIONS

1. The Driver Roll Over Protection (ROP) has been designed in co-operation with specialists in order to protect the driver in the event of his vehicle tipping over during a tractor pulling competition.
2. The design, or the ROP built according to the given specifications, are not to be understood as an automatic guarantee, as for providing an always adequate protection for the driver during an accident with the tractor.
3. The ROP specifications must be seen as a set of minimum requirements and advisory guidelines.
4. Neither the ETPC Board, the T&S Board nor any of their members can be made responsible for consequences resulting from the application of the ROP specifications or malfunction of the safety devices in question.

A. General Considerations

1. The construction must allow an easy exit for the driver in the event of a fire etc.
2. Tractors weighing more than 4000 kg are recommended to have a tube wall thickness 0.5 mm higher, or more, than specified.
3. If team drivers or tractor constructors think that the ROP constructions specified below are not solid enough, they are free to make them stronger.
4. All NTPA certified ROP cages are permitted by the ETPC.
5. No ballast can be hung from or attached to any portion of the ROP-structure. Chassis-attachment is exempt of this rule.

B. Construction

1. Bending radius of all tubing should be as wide as possible, the minimum is two (2) times the outside diameter of the tube being bent.
2. All fastening bolts must be grade 8.8 or better, this must be clearly marked on the head of the bolt.
3. All welded joints must be welded by an experienced professional; a steel filler metal must be employed that is compatible with the base metal.
4. All weldings must be done according to generally accepted welding practices.
5. No grinding on any welding.
6. All structural material for the ROP shall be seamless mild steel (carbon mechanical) tube or normalized chrome molybdene (DIN Norm 25 CrMo 4) seamless steel tube.
7. Tubing diameters and wall thicknesses are nominal measurements.
8. The dimensional locations of the main structural hoops and secondary tubing shown in the figures are to be used as guidelines but must remain within 20% of the dimensions specified in the figures.
The maximum backward inclination of the cage is 20 degrees.

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9. Tubing size and material shown in the figures and tables are minimum requirements!

10. There shall be a minimum of 50 mm between the main hoops and the driver's helmet, both vertically and laterally, with the driver seated in normal position.
11. In order to avoid possible neck injury, the horizontal distance between the main hoops and the driver's helmet must not be over 200 mm.
12. It is recommended that the fastening construction of the ROP cage to the tractor frame is significantly stiffer than the ROP itself.
13. It is also recommended that the driver's seat should be so constructed that it provides adequate back and shoulder support during an accident. The seat should be mounted to the ROP cage, or the lower support structure with at least four (4) M8 grade 8.8 bolts. The seat back should be bolted to the rear main hoops, and the seat should include a head rest.
14. The use of a 4-point seat belt or better is mandatory. The seat belt must be attached to the roll-cage.

C. Remarks

The T&S Board will allow options 'B' or 'C' to be applied where 'A' is not technically possible (see drawings).

1. If 'A' is used, then both hoops from rear to front must be of one-piece tube.
2. If 'B' or 'C' is used, an additional tube 'S' must be added to the ROP, and the front hoops must be out of ONE piece.
3. If 'C' is used, then the both side-to-side hoops must be out of one-piece tube. In general, you should have as few weldings as possible and do them according to the drawings. Basically, no weldings are allowed on the main hoops, if you must weld a main hoop, please ask the T&S Board.

It is highly recommended to move the front hoop aft to allow quick exit in the event of fire or other mishap.

See next pages for drawings/illustrations.

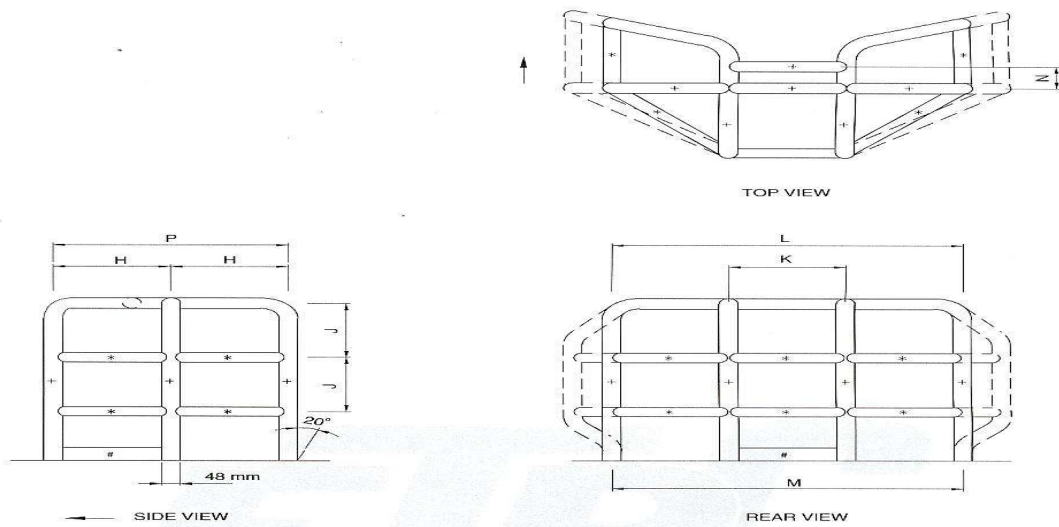


Illustration 14-1: driver roll-over protection A

DRIVER ROLL OVER PROTECTION A

	min. outside diam.	mild steel min. wall thickness	chrome molybdene min. wall thickness
tube " + "	48 mm	3,0 mm	2,5 mm
tube " * "	42 mm	3,0 mm	2,5 mm

- # = support webs of 6 mm thick and 80 mm high to be welded between vertical tubes on both sides of rear tubes and to the bottom structure.
- H = min. 200 mm
- J = 250 mm
- K = 200 mm
- L = optional, but uppershape must have 50 mm min. clearance (vertical and horizontal) and 200 mm max. clearance (horizontal) to drivers helmet; to avoid neck injury.
- M = width, dependent upon specific tractor.
- N = 100 mm (min.)
- P = 600 mm (max.)
- ← = forward driving
- = options for construction

Illustration 14-1: driver roll-over protection A

DRIVER ROLL OVER PROTECTION A

	Min. outside diam.	Mild steel Min. wall thickness	Chrome molybdene Min. wall thickness
tube " + "	48 mm	3.0 mm	2.5 mm
tube " * "	42 mm	3.0 mm	2.5 mm

- # = support webs of 6 mm thick and 80 mm high to be welded between vertical tubes on both sides of rear tubes and to the bottom structure.
- H = min. 200 mm
- J = 250 mm
- K = 200 mm
- L = optional, but upper shape must have 50 mm min. clearance (vertical and horizontal) and 200 mm max. clearance (horizontal) to drivers helmet; to avoid neck injury.
- M = width, dependent upon specific tractor.
- N = 100 mm (min.)

- P = 600 mm (max.)
- ← = forward driving
- = options for construction

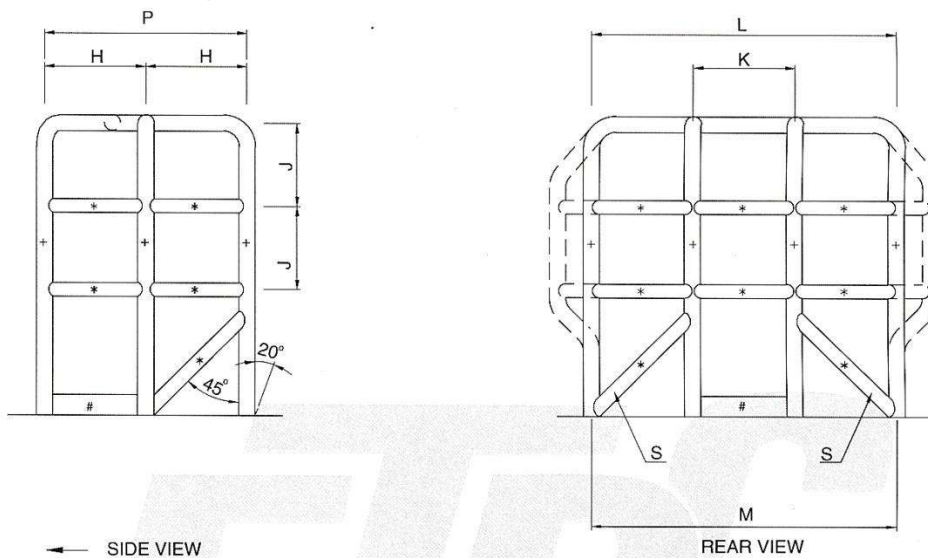
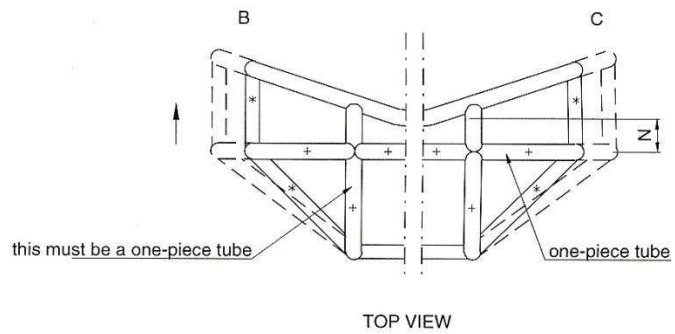


Illustration 14-2: driver roll-over protection B/C

DRIVER ROLL OVER PROTECTION option B and C

		Mild steel	Chrome molybdene
	Min. outside diam.	Min. wall thickness	Min. wall thickness
tube " + "	48 mm	3.0 mm	2.5 mm
tube " * "	42 mm	3.0 mm	2.5 mm

= support webs of 6 mm thick and 80 mm high to be welded between vertical tubes on both sides of rear tubes and to the bottom structure.

H = min. 200 mm

J = 250 mm

K = 200 mm

- L = optional, but upper shape must have 50 mm min. clearance (vertical and horizontal) and 200 mm max. clearance (horizontal) to drivers helmet; to avoid neck injury.
- M = width, dependent upon specific tractor.
- N = 100 mm (min.)
- P = 600 mm (max.)
- ← = forward driving
- = options for construction

ROP-cage mounting on tube type chassis

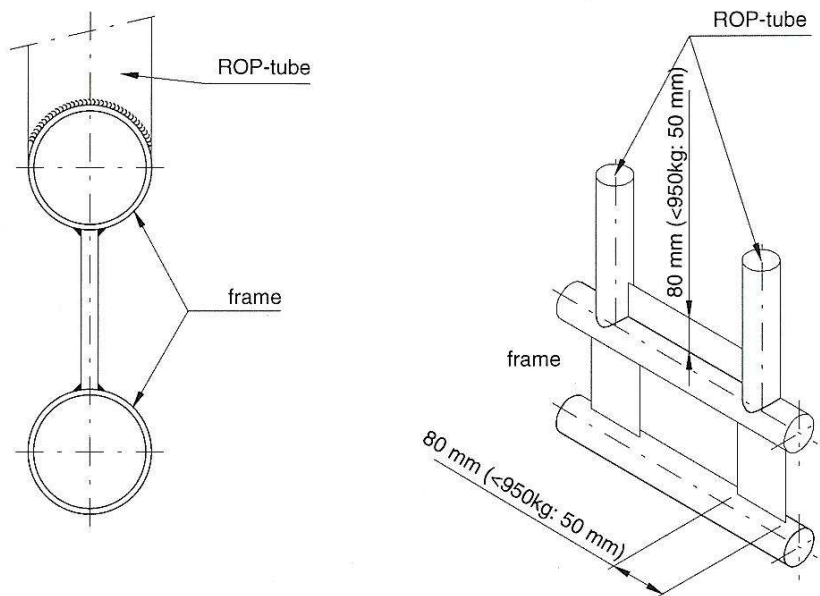


Illustration 14-4: Mounting ROP on tube type frame

Recommendations regarding mounting the ROP-cage to any tube type chassis

- Vertical ROP-cage supports can be welded directly to horizontal tube frame structure.
- Use steel supports to be installed directly between horizontal frame tube and in line with each vertical ROP-cage tube, this steel supports 80 mm x 6 mm min. (50 mm x 6 mm min. for mini's) must extend to the next horizontal frame tube directly below.
- Rear ROP-cage vertical tubes can be welded directly to a rear structure same as the side frame. This rear frame structure can be welded to the vehicle frame.
- Support webs of 80 mm x 6 mm min. (50 mm x 6 mm min. for mini's) can be welded between vertical tubes on both sides and rear tubes.

**ROP-cage
mounting to OEM
housing**

rear-end

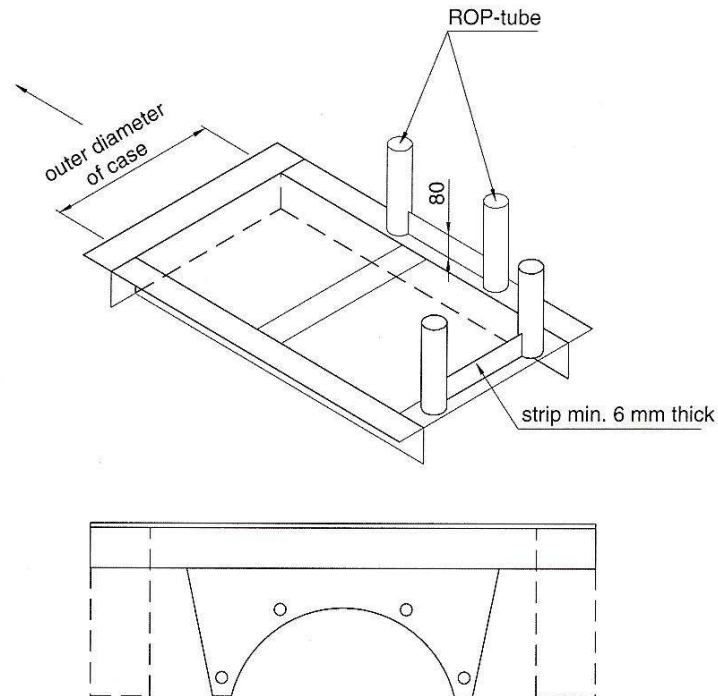


Illustration 14-5: Mounting ROP on OEM rear-end housing

Recommendations regarding mounting the ROP-cage to any stock OEM rear-end housing

- Try to create a rigid one piece assembly on tractor rear-end for maximum strength.
- Do not use material thinner than 6 mm.
- Create two 'U'-shape attachment flange's to use the side flange bolts (four (4) min. each side) to keep the assembly in place.
- Use four additional bolts (min. M12 grade 8.8) to attach the assembly to the axle housing, two before and two after the axle housing.
- Weld the assembly solid together without grinding on any welding.
- Support webs of 80 mm x 6 mm min. (50 mm x 6 mm min. for mini's) vertical from base plate must be welded between vertical tubes on both sides and rear tubes, to create a solid connection from ROP-cage to rear-end.

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ROP-cage mounting on channel type chassis

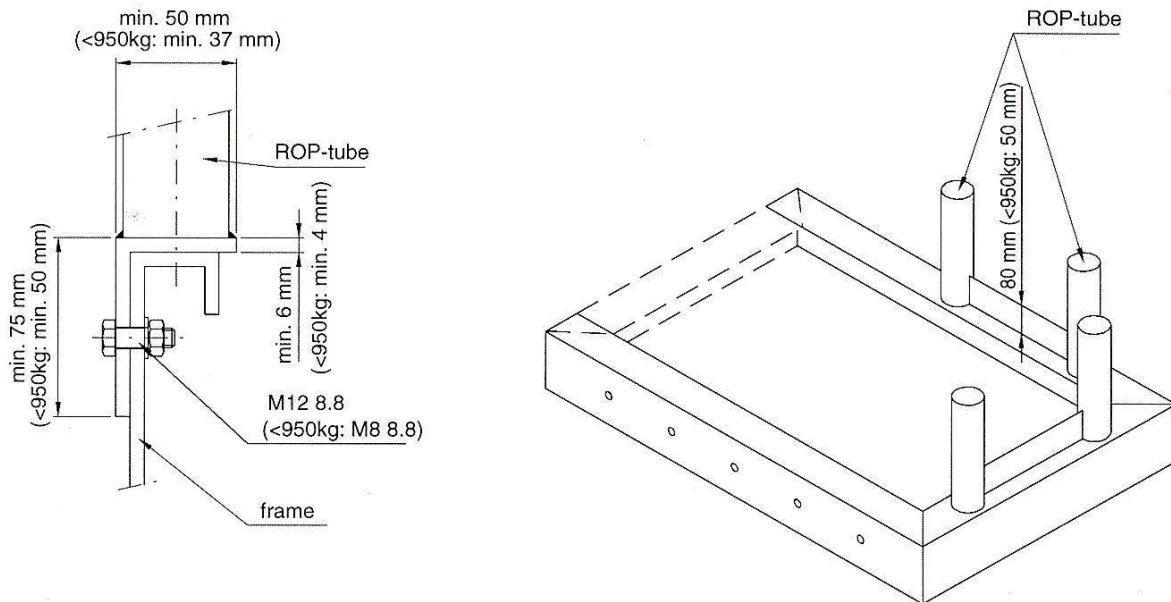


Illustration 14-6: Mounting ROP on channel type frame

Recommendations regarding mounting the ROP-cage to any channel type chassis

- Vertical ROP-cage supports can be welded to a single piece of 6 mm min. thickness steel with a 50 mm min. horizontal flange and 75 mm vertical flange (angle iron).
- Attachment flanges secured to vertical side of frame by at least five (5) M12 grade 8.8 or better bolts.
- Rear ROP-cage vertical tubes can be welded to a 6 mm min. thickness steel flange (with at least same dimensions as side flange).
- Rear mounting flange to be welded to the side flanges or vertical frame rails and must have supports directly below ROP-cage rear tubes, which can be bolted or welded to vehicle frame or rear-end.
- Support webs of 6 mm thick and 80 mm (50 mm for mini's) high to be welded between vertical tubes on both sides and rear tubes.

Removable upper portion - option with sleeves

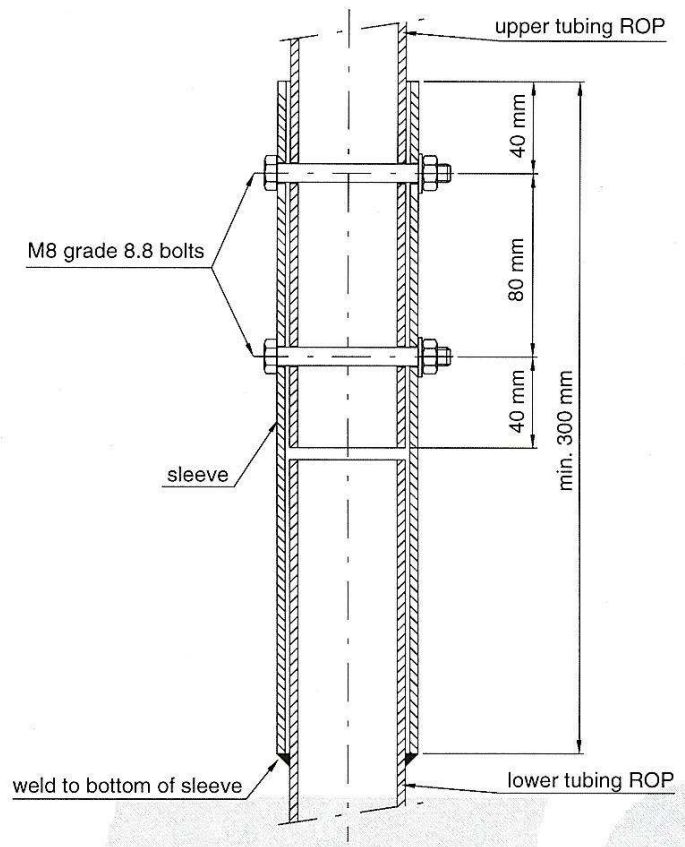


Illustration 14-7: construction removable upper portion

- Per tube two (2) holes as shown to allow M8 grade 8 8 or better bolts.
- Bolts through upper tubing, or lower tubing, for removal if desired.
- Sleeve 300 mm min. length (min. wall thickness 3 mm).
- One side of sleeve welded to tubing.
- Sleeve may be on inside or outside ROP tubing.
- An inside sleeve should be mounted with bolts as shown, two (2) bolts through each part (top and bottom) of the ROP.