

**2016 MTRA**  
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**Use of the MTRA name and/or  
likeness is prohibited without  
the expressed written consent  
of the Monster Truck Racing  
Association**

**Nomenclature**  
***(Abbreviations & acronyms)***

CDL:	Commercial Drivers License
Competitor:	Driver
D.O.M.:	Drawn Over Mandrel
Kill Switch:	Switch that shuts off the engine
Mfg:	Manufacturer
MTRA:	Monster Truck Racing Association
MTRAE:	Monster Truck Racing Association Europe
Participant:	Owner/driver, crewmember
R-T:	Ride truck
Race:	A contest between one or more vehicles
RII:	Remote Ignition Interrupt
SFI:	Safety Foundation, Inc.
SPEC:	Specification

**EU (European Union) Nomenclature**

AFFF:	Aqueous Film Forming Foam
CDS:	Cold Drawn Steel (same as DOM in the US)
Kg:	Kilogram
KPH:	Kilometers per hour
£:	EU pounds
M:	Meters
Mm:	Millimeter

# INDEX

	<b>PAGE</b>
<i>Introduction</i>	<u>4</u>
<i>Drug Statement</i>	<u>4</u>

## **Section A                      Competition Trucks**

<i>Drivers License</i>	<u>5</u>
<i>Driver &amp; Crew</i>	<u>6-7</u>
<i>Remote Ignition Interrupter</i>	<u>8-9</u>
<i>Vehicle</i> <i>Figure 11</i>	<u>10-12</u>
<i>Drivers Compartment</i>	<u>14-17</u>
<i>Seatbelt mounting</i> <i>Figure 1</i>	<u>14-16</u>
<i>Rollcage</i>	<u>18-19</u>
<i>Rollcage X Brace</i> <i>Figure 2</i>	<u>18</u>
<i>Rollcage Tube Repair</i> <i>Figure 3</i>	<u>18</u>
<i>Rollcage Side views</i> <i>Figure 4/5</i>	<u>19</u>
<i>Engine</i>	<u>20-21</u>
<i>Throttle Toe Strap</i> <i>Figure 6</i>	<u>20</u>
<i>Transmission</i>	<u>22-23</u>
<i>Mech. Clutch Vehicles</i>	<u>23</u>
<i>Bellhousing</i> <i>Figure 7</i>	<u>23</u>
<i>Driveline</i>	<u>24-28</u>
<i>Drive shaft Loops</i> <i>Figure 8</i>	<u>25-26</u>
<i>Loop Gussets</i> <i>Figure 9</i>	<u>26</u>
<i>Slip-yoke</i> <i>Figure 10</i>	<u>27</u>
<i>Brakes</i>	<u>28</u>
<i>Rule Violations</i>	<u>29</u>

## **Section B                      MT Ride Trucks**

<i>Introduction</i>	<u>30</u>
<i>MTRA Drivers License   Driver Min. Requirements</i>	<u>30-31</u>
<i>Driver &amp; Crew</i>	<u>31</u>
<i>Ride Truck Driving Rules</i>	<u>32</u>
<i>Vehicles - Drivers Compartment</i>	<u>33-34</u>
<i>OEM Rollcage</i> <i>Figure 2B</i>	<u>35</u>
<i>Rollcage</i>	<u>35-36</u>
<i>Fiberglass Body Rollcage</i> <i>Figure 3B</i>	<u>35</u>
<i>Fiberglass Body Rollcage</i> <i>Figure 4B</i>	<u>36</u>
<i>Engine - Transmission</i>	<u>37</u>
<i>Driveline - Brakes</i>	<u>38-39</u>
<i>Rule Violations</i>	<u>40</u>

## **Section C                      Miscellaneous**

<i>Protest Procedures</i>	<u>41</u>
<i>Useful information</i>	<u>42</u>
<i>Vehicle/Driver Specifications Reference check list</i>	<u>43-44</u>
<i>Rule revision and suggestion list</i>	<u>45</u>
<i>Quick Reference inspection check list</i>	<u>46-47</u>
<i>Bolt grade spec. – Blower overdrive legal sizes</i>	<u>48</u>
<i>Blower overdrive legal sizes</i>	<u>49</u>

## **INTRODUCTION**

The purpose of the Monster Truck Racing Association is to provide consistent safety for competitors and spectators. MTRA makes no expressed or implied warranties of safety from publication of or compliance with these rules and regulations. They are intended as a guideline for the conduct of the sport and are in no way a guarantee against injury or death to participants or spectators.

Perfect adherence and application of the rules published by MTRA will not assure that all vehicles will perform all safety applications. The individual fabricator and driver have the ultimate control of how the Monster Truck is constructed and operated.

Using MTRA rules does not imply that all safety measures are included. MTRA or its representatives assume no liability whatsoever.

Any vehicle type or component not included in these rules or any deviation from these rules will be subject to director's written approval.

It is the responsibility of the participant(s) to familiarize his/herself with all MTRA rules.

## **DRUG STATEMENT**

The Monster Truck Racing Association (MTRA) strives to create and maintain a healthy environment for all people involved in monster truck related events.

A healthy environment is one in which the use of alcohol and/or drugs does not interfere with the safety and performance of MTRA members. Drugs include all illegal drugs and any and all prescription and/or over-the-counter medications that can affect a person's ability to operate machinery.

These uses place the lives and well being of monster truck participants, event staff and spectators at risk of accidents, injuries, and even death.

It is the duty of all members of the MTRA to take responsibility for preventing the dangerous use of alcohol and/or other drugs from adversely affecting the monster truck community.

# **Section A**

## **Competition Trucks**

### **MTRA® DRIVER LICENSE**

All MTRA drivers must have a valid **MTRA Drivers License**. This license must be checked prior to each event.

A **Class “A” driver license** is required when driving in a Certified Points or Purse Race Series and a **Class “B”** for all other types of performances.

Driver member will submit the normal MTRA dues and a copy of their current CDL or CDL equivalent physical when applying for their yearly **MTRA Driver License** or Drivers License **renewal**.

### **CLASS “A” DRIVERS LICENSE**

Class “B” Drivers must execute 10 performances, in a MTRA Certified Vehicle, witnessed by at least one MTRA Class “A” driver at each performance. The final application must have at least 3 different Class “A” Driver signatures, (you cannot have one driver sign all 10 performances). The MTRA Board of Directors will then evaluate the application and decide whether to issue the license or to require more tests. As a Class “A” driver it will be your duty to watch Class “B” drivers and evaluate their driving. It would be a good idea to give constructive criticism.

### **CLASS “B” DRIVERS LICENSE**

New drivers will have to perform a prescribed driving test, in an MTRA Certified Vehicle, with 3 MTRA Class “A” Drivers present. The driving test will consist of an in cab familiarity test, vehicle parking, stopping and turning demonstration, and then driving over cars several times at different speeds. The Class “A” Drivers must endorse this performance. The application must then be sent to the MTRA Board of Directors for their approval or disapproval.

## **DRIVER & CREW**

1. A current CDL or **CDL equivalent [Europe HGV medical required] physical** is required and a copy must accompany each year's application for an MTRA Driver License renewal. Current physical means a physical at least every (2) two years.
2. All MTRA drivers will be subjected to a **random Drug testing**. If their name is picked, they will be informed and will be given 48 hours to comply with the drug test at one of the 2500 test stations across the country. An independent agency will randomly pick driver names. Non-compliance will be considered an admission of guilt and their MTRA Drivers License and Membership will be canceled. Drivers can be called for drug testing more than once a year.
3. Approved **helmets are mandatory**. All competitors must use an (new spec.) SFI 31.1 full or open face helmet or (old spec.) **SFI 31.2A (Snell SA)** rated full-face helmet or **SFI 31.1A (Snell SA)** rated open-face helmet. (**SA** = Special Application Nomex lining Competition Helmet), **SA2000 SNELL** rated helmet are also legal. **SFI 41.2, SFI 41.1** or **SNELL M**, motorcycle helmets are **not** allowed. MTRA recommends helmet restraints. (Straps from underarms to sides of helmet.) Full-face helmets are highly recommended. Helmets must be sent back to the manufacturer for re-inspecting after being dropped or hitting any hard object.

*(In 2005 the new SFI helmet specs are combining open and closed face helmets to 31.1 for Flame Resistant Motorsports Helmets and 41.1 for Motorsports Helmets (non-flame resistant). The new spec will also have a year of the current specs and it will change every 5 years. New helmet must be a SFI 31.1; the 41.1 will not be legal for a Monster Truck Driver.)*

4. **Eye protection** is required during performances. Goggles and helmet shields that are approved for motor sports competition are recommended Windshields are always required.
5. A Motorsport **Neck Collar** with a SFI Specification of 3.3 is required unless the driver is utilizing a SFI 38.1 approved Head & Neck Restraint System.
6. A Multi-layer **fire retardant safety suits** with a SFI rating of 3-2A/15 and shoes and gloves with a SFI rating of 3.3/5 are required at all times. No tennis shoes allowed. MTRA recommends the use of a head sock when running on Methanol (Alcohol).
7. Drivers must **operate vehicles in a safe manner** at all times. The show or race director has the right to stop and disqualify any driver not operating his or her vehicle in a safe manner.

7b) Vehicles should not drive over **5MPH** except during performances.

7c) Any time the **engine is running** a participant should be in the drivers' seat with complete control of the vehicle.

8. All contestants and the pit crew must be clean, neat and **professionally attired** when appearing before the public.

9. Drivers must be **at least 18 years old**.
10. No one is allowed in the **performance area** during an event, except track officials and a minimum number of crewmembers.
11. Before an MTRA member can perform, the **exhibition area must be cleared** of all spectators and participants.
12. Drivers must, at minimum, **have a seatbelt on** at all times the **vehicle is moving** with 66" tires.
13. The **driver has the final decision** on whether he or she can perform the race or exhibition in a safe manner. MTRA will back the driver 100% if he or she cannot fulfill his or her contractual agreement because of a safety reason.
14. Consumption of **intoxicating agents or drugs** before or during an event by a driver or his or her pit crew will be grounds for disqualification of driver. If the driver is found violating this rule he or she is subject to suspension from MTRA.

## **REMOTE IGNITION INTERRUPT (RII)**

**MTRA initiated and then required the use of RII's on all Monster Trucks to enhance the safety of Spectators and Participants.**

RII's, (Remote Ignition Interrupter), must be tested by a qualified operator prior to the car crush or exhibition. This makes sure the driver has his receiver on and switched to the correct channel. This also gives the RII operator a chance to depress the button on the transmitter and see how easy it is to stop the vehicle. The Monster Truck will not run if the (RII) is not on. The RII is required first to protect the spectators, second to protect the participants, and third to protect the driver.

15. **RII receivers and transmitters** are required on all Monster Trucks. ("RII" denotes Remote Ignition Interrupt)
16. RII's must be setup so the **engine will not operate** unless the RII is on.
17. **MTRA members cannot participate** in an event unless all vehicles involved, within the Monster Truck portion of the performance or race, are equipped with RII's in working order.
18. **RII's must be tested** before the event and each round of a race, or performance.
19. **Anytime a vehicle moves** above idle speed, a qualified operator must control the RII transmitter. This includes testing; show introductions, race return-lane time, parade laps, etc.
20. **RII's must always** be switched to the **Right channel**. Only when performing or racing in the Left lane can the switch be set to the Left channel. After racing or performing in the left lane the RII must be switched back to the RIGHT channel. If you have a Center RII channel, it can only be used when a promoters RII transmitter is not present and your RII transmitter is used.
21. MTRA recommends **one person for each RII**; this means one qualified RII operator controlling each vehicle.
22. Anyone **altering or bypassing** the RII receiver will be suspended. Resetting of RII after being stopped, before the RII operator or official gives you permission to start, is the same as bypassing and is subject to suspension.
23. The **RII Light** must be on or above the dash and visible to the track official in front of the vehicle. It must be an Auto Meter Pro Light or an equivalent light, approved by MTRA Board, with a red lens. When applicable a second light will be a lane indicator, right is red and left is yellow. The new Audiax RII comes with both Pro Lights. The lights must be, (two feet apart minimum), mounted at least one foot to each side of the center of the windshield.
24. Receiver **antennas** must be vertically mounted.



**Note for RII operators:** Sometimes it is prudent for the RII operator **not** to stop (kill) a vehicle when it is in an awkward situation and let the driver try to power out of that bad situation. **This can only be done when spectators and participants are not in danger.**

**MTRA® RII Legal Radios**

**RII Radios LLC. (609) 625-3481**

**Audiax Radios (216) 392-6800**

**Motorsport Communications (866) 966-8672**

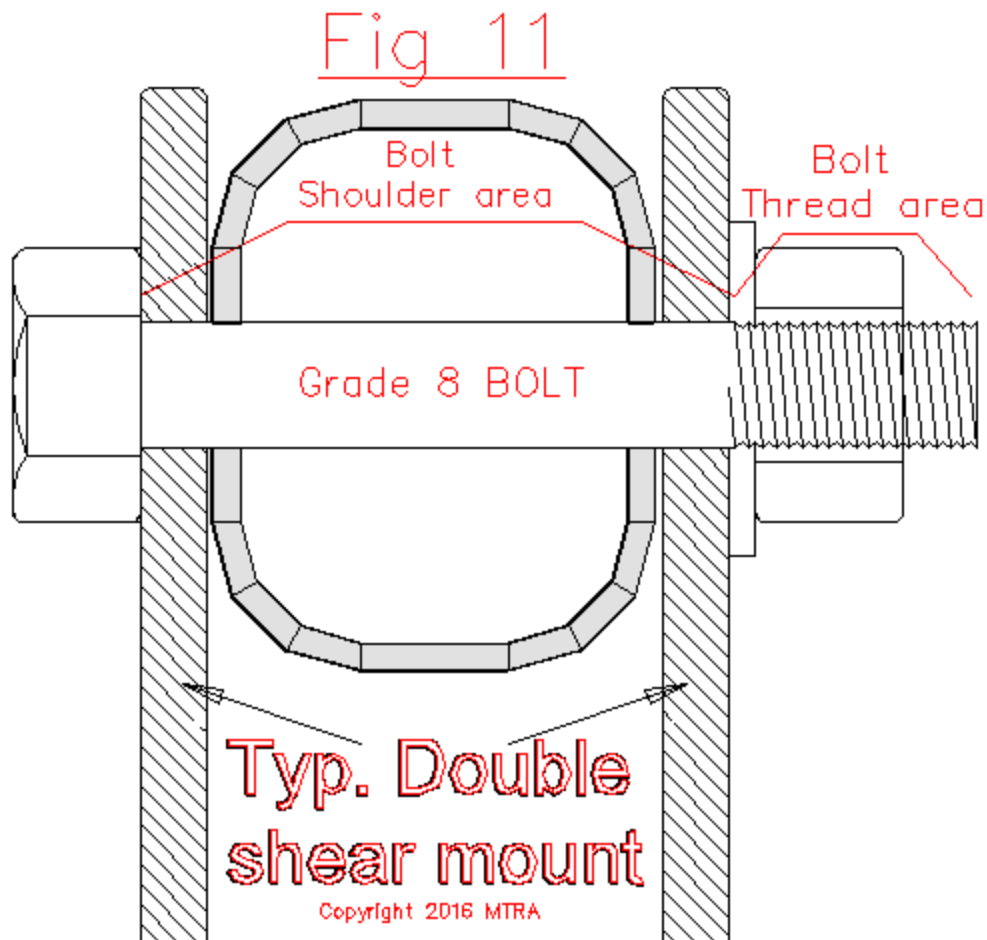
**[Europe only accepts]**

**L. A. Supertrux Ltd. +44 1327 705456**

## **VEHICLES**

25. **Vehicle Certification** is required before February 15th [Europe 31<sup>st</sup> March] of each calendar year. Vehicle Certification will begin approximately 3 months prior to each calendar year. Membership dues must be paid before Vehicle Certification decals and Drivers Licenses will be issued. Inspectors cannot certify their own vehicles. Vehicles must be re-inspected after sale.
26. Vehicles must be **re-inspected** by a MTRA Inspector after a major crash or rollover.
27. The **current Certification Inspection** sheet must be displayed in the vehicle at all times. The sheet will be visible for all MTRA members and the tech officials. A plastic sheath is recommended for protection against weather.
28. A **kill switch** must be mounted in the center rear of the vehicle. Maximum 6' [2m] high at rear most part of vehicle, (near bumper). Switch must pull to turn off, with a 2" [50mm] diameter, (.125) 1/8" [3.2mm] minimum wire ring, painted florescent red or orange. Switch must kill engine, the same as the in-cab kill switch rule #38.
29. All vehicles must be equipped with a commercially made **back-up alarm**, mounted at the rear most part of the frame. This alarm must be activated anytime vehicle is in reverse. The shift gear lever must mechanically activate the alarm. The alarm sound must face rearward.
30. All vehicles must be equipped with a **Bright Light** mounted on the rear of the frame. This light must illuminate anytime vehicle is placed in reverse and must be activated automatically by the gear shift lever.
31. **Dry or gel type batteries** are **mandatory**. Batteries must be secured and covered with a non-conductive material. Material to be rubber, plastic or Lexan only.
32. An external **crossover relief valve** is required on all vehicles equipped with orbital steering. Unit may bolt directly to orbital valve or be remotely mounted.
33. **Tires** must be 66x43x25 or 66x44x25 (size as marked on tire), unless agreed to by all participants.
34. Monster Truck **minimum weight** is 9000 pounds [4883kg]. Weight includes driver, fuel, water, & oil.
35. **Shock Absorbers**
  - a.) **Shock Absorbers** must be mounted securely to chassis and axle/links with minimum 5/8" Grade 8 shouldered bolts placed in double sheer configuration (see fig. 11).
  - b.) All pressurized **Shock Accumulators** (reservoirs) must be mounted securely in a position which avoids contact with tires.
  - c.) Threaded **End Caps** must utilize 1/2" SAE fine thread.

- d.) Remote mounted **accumulators** must be fastened with metal or aluminum clamps, no tape or wire ties permitted. 2 piece single bolt clamps must be mounted a minimum of 3" below the pressurized accumulator cap.
36. All **onboard fuel** (including primer) must be in an anti-spill tank/fuel cell located in an open area inside the main frame rails of the chassis and secured with a minimum of two (2) 1/8" x 1" steel or aluminum straps, or via the manufacturer's recommended mounting points. All fuel lines must be approved steel-braided or high-pressure reinforced rubber. Vent line anti-spill valves are required (Vented Caps Not Allowed). Grounding of fuel cap during fueling is recommended to reduce chance of static discharge. MTRA recommends careful consideration for protection of both top and bottom of fuel cell in the event of component failure or rollover.
37. **4-Link Bars** must be constructed of minimum 2.5" (lower links) and 2.25" (upper links) diameter .250" wall DOM tubing and utilize minimum 1" Spherical Rod Ends with 76,200 lbs. load rating (Aurora AM-16, FK KMX-16, or equivalent) with 1" Grade 8 shouldered bolts mounted in double shear configuration (see fig. 11).



38. A **tow bar mount** is required on the front and rear of all vehicles. A 2x2" [50 x 50mm] square receiver (trailer hitch type), is recommended.
39. All vehicles must be equipped with **Wheel Restraint System** at each corner. Minimum specifications for these systems are as follows::

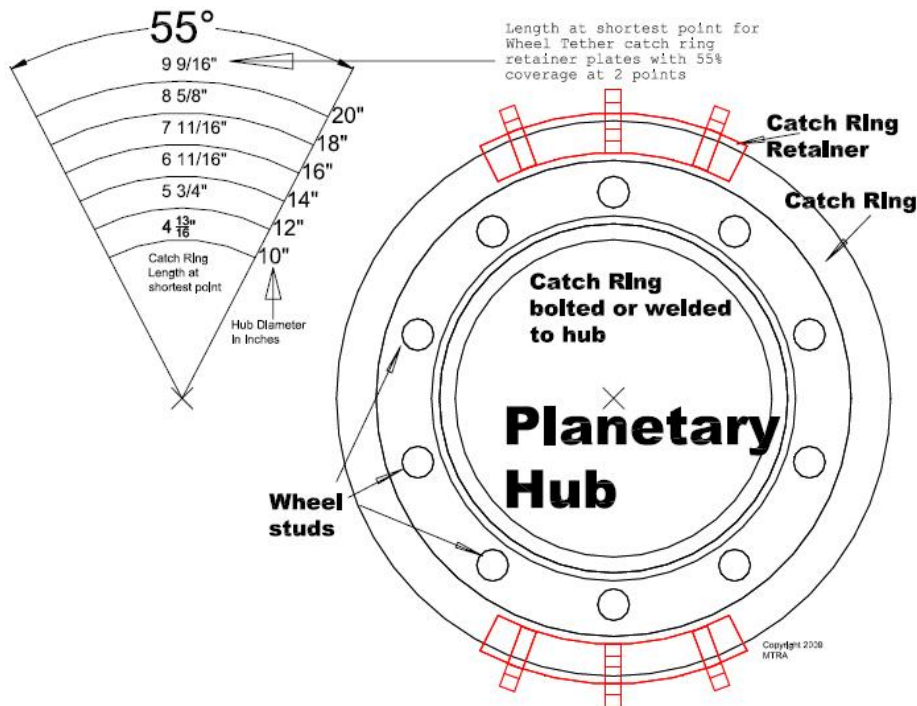
#### **Cable Tether Type**

- 3/8" Mounting Plates bolted to both top and bottom steering pin caps
- Dual 3/8" Cables in opposing choker configuration (attached top & bottom)
- 5/8" Clevis on each cable attachment
- 3/8" Rotor bolted (3/8" Grade 8 bolts minimum – all bolt holes on hub must be used - 8 bolt minimum) or welded (360 degrees) to hub

#### **Fixed Disk Type**

- 3/8" Rotor plate bolted (3/8" Grade 8 bolts minimum – all bolt holes on hub must be used – 8 bolt minimum) or welded (360 degrees) to hub
- Minimum Two capture points 180 degrees on center with minimum 55 degrees of coverage around perimeter.

#### **WHEEL TETHER CATCH RING SIZES FOR DIFFERENT HUB DIAMETERS**



## **IMPORTANT NOTES**

**Do not refuel while battery is charging.**

**No smoking while refueling. A fire extinguisher must be within easy reach.**

## **DRIVER'S COMPARTMENT**

40. All vehicles must have an **In-Cab Kill Switch**, within easy reach of the driver that shuts off power to all electric fuel pumps, other powered accessories and ignition system (all battery power) with the exception of electrically operated brake systems. Driver must be able to activate it with his or her eyes closed in his or her seat-belted driving position. It must be a push/pull type with push to turn off.
41. All vehicles must have an approved SFI 17.1 **Onboard Fire Suppression System** [Europe AFFF is mandatory] with a minimum of six (6) properly placed nozzles. A minimum five (5) lb. [2.25kg] tank can only have two (2) nozzles with three (3) outlet ports each; a 10 lb. [4.5kg] or larger tank can have two (2) or more nozzles with three (3) outlet ports. The system must be tested each year. (The lines must be blown out with a liquid similar to WD40 and the activating cable tested and lubricated.) The bottle pressure gauge and weight must meet Manufacture Specs. (A proper onboard fire system will inhibit the fire while the driver clears the vehicle.) If the content is Halon, keep the outlet spray away from the drivers face as it could inhibit oxygen supply. Driver must be able to activate the system with his or her eyes closed in his or her seat-belted position. An onboard fire suppression system is not required on stock production cabs with sealed Firewalls.
42. Vehicles must have a minimum size 2-1/2 lb. [1.125kg] Halon or ABC type [Europe AFFF] **Fire Extinguisher** with a working gauge and an attached current inspection certificate, (retail extinguishers have date stamped on unit) (2 year limit). The extinguisher must also be securely mounted with a suitable quick release bracket within the driver's reach.

43. **Firewall & Windshield.**

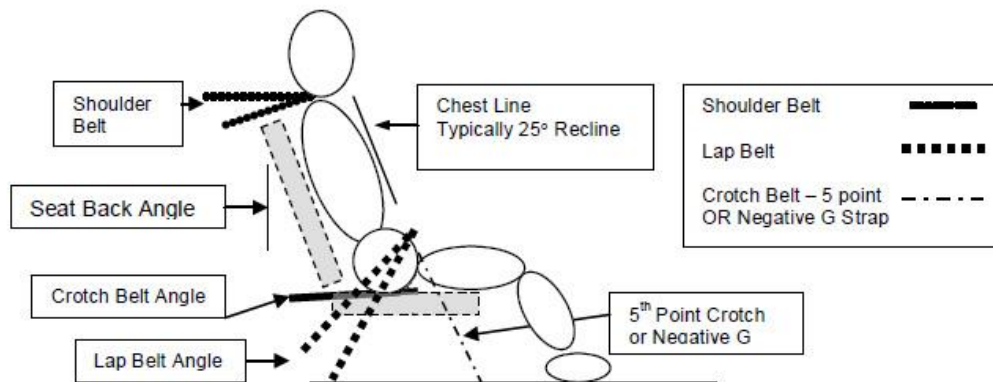
- a) The **driver's compartment** must be protected against engine compartment flash fires. Firewall material must be a minimum (.063) 1/16" [1.5mm] Steel or Aluminum, (.125) 1/8" [3.2mm] Polycarbonate/Lexan, or Fiberglass. Plexiglas cannot be used. Floor protection is always required.
  - i) **Front engine firewall:** A firewall is required in front of the driver. Firewalls must go from the floor to the roof and from the body skin on one side to the body skin on the other side. A rear Lexan window is not required.
  - ii) **Rear engine firewall:** A firewall is required behind the driver. The firewall must go from the floor to the ceiling. A rear Lexan window is required.
  - iii) **Mid engine firewall:** (Under the cab engines). A firewall is required underneath, behind, and in front of the driver. A rear Lexan window is also required.
- b) **Windshields** are required on all vehicles at all times. Windshields can be a minimum of (.125) 1/8" [3.2mm] Polycarbonate/Lexan. It is recommended that smoked Polycarbonate/Lexan windshields be used to reduce glare. Glass windshields are permitted on steel bodied vehicles but drivers must wear eye protection.

44. Drivers must be protected from **Tire Debris**. There will be no exposed areas that would allow the front tires to throw objects at driver or allow objects to bounce and hit driver. Material must be a minimum (.125) 1/8" [3.2mm] Steel or Aluminum (.250) 1/4" [6.4mm] Polycarbonate/Lexan or the Fiberglass body parts. The entire floor of the cab is also considered a tire debris area and must be protected.

45. All vehicles must have an approved **5-point harness** that meets SFI 16.1, mounted to the frame or frame outrigger. Lap belts must be 3" [75mm]. Shoulder belts may be 2" [50mm] for use with Hans type braces. Driver must wear the harness at all times (this also includes the crotch strap). It is highly recommended that shoulder harnesses be mounted at shoulder height to a maximum of 3" [75mm] above shoulders. All straps must have a manufacturer date stamp on them and they cannot be over 2 years old. Sternum straps and helmet restraints are highly recommended.

Figure # 1

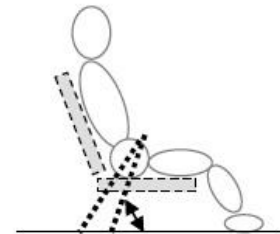
## SFI Seatbelt Installation Specifications



### LAP BELTS

Lap Belt Angle:  $-45^{\circ}$  to  $-80^{\circ}$  from the horizontal

- Belt should ride within the curvature of the pelvic bone preferably just below the iliac crest
- There should be clear passage through the seat opening without webbing being corded or binding on edges of seat openings with a direct path to the mounting point
- The webbing should not ride against any hardware such as seat mounting brackets, bolts, or tabs
- Lap belt adjusters should be clear of the seat openings. Pull-up adjusters if outside the seat opening should be a minimum of 2" below the opening when the lap belt is tightened
- Belts to the mounting point should be as short as possible mounted beside the seat and never behind the seat
- Lap belt should be allowed to pivot freely at the mounting point
- Webbing should be allowed to pull on hardware in plane (straight)



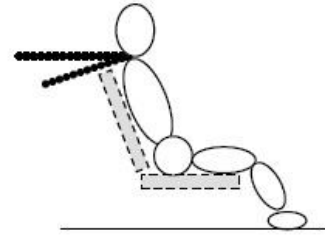
Position of the Cam Lock or Latch and Link

- Centered on the body 1 to 2 inches below the belly button when all belts are tightened

## SHOULDER BELTS

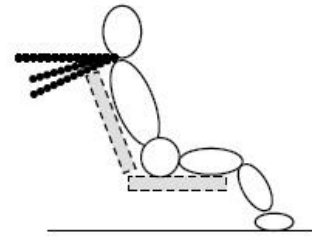
Shoulder Belt Angle: 0 to -20° (-10° optimum) from horizontal

- Clear passage of webbing from top of shoulder (or head and neck restraint) back to the harness bar or mounting point without any interference of the seat openings
- Belts should be as short as possible back to the mounting points

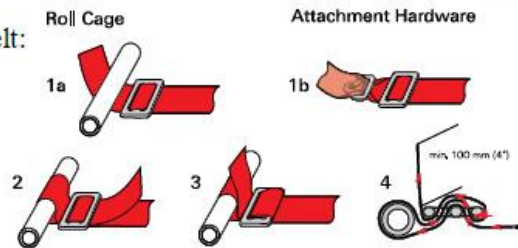


Double Shoulder Belt (Over/Under Belt):

- Upper belt (2" belt) 0 to -10° (-10° optimum)
- Body belt (3" belt) -10 to -30° (-20° optimum)
- Separation between upper and lower belt 1" to 2"
- Upper belt mounted to line up with the inside edge (closer to the neck) of the Body belt



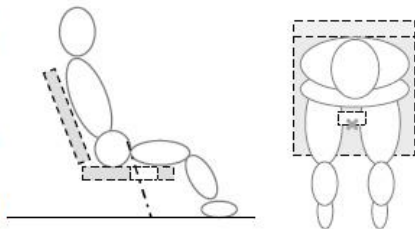
Proper Wrap of Shoulder Belt:



## CROTCH BELT – 5-POINT

Sports Car “Shell Type Seat” and aluminum seats with single crotch belt hole forward of the inside seat back from 11 to 13 inches:

- Crotch Belt Angle: Chest line to 20° through the hole
- Crotch Belt should never wrap around the front of the seat – there should be a pass through
- Crotch belt is used only to maintain position of the lap belt



45b **Ratchet strap seat belt** that meet the SFI 16.1 are legal even with 2" [50mm] lower strap.

45c A **Head & Neck Restraint System** with an SFI Specification of 38.1 is highly recommended for all drivers. Such a system is designed to decrease both neck stress and head excursion during a vehicle impact without reliance on helmet impact into structures. This system must allow freedom of movement of head, torso, arms, etc. commensurate with operation of race vehicle under all race and associated conditions. The release mechanism shall be accessible to both the user and to

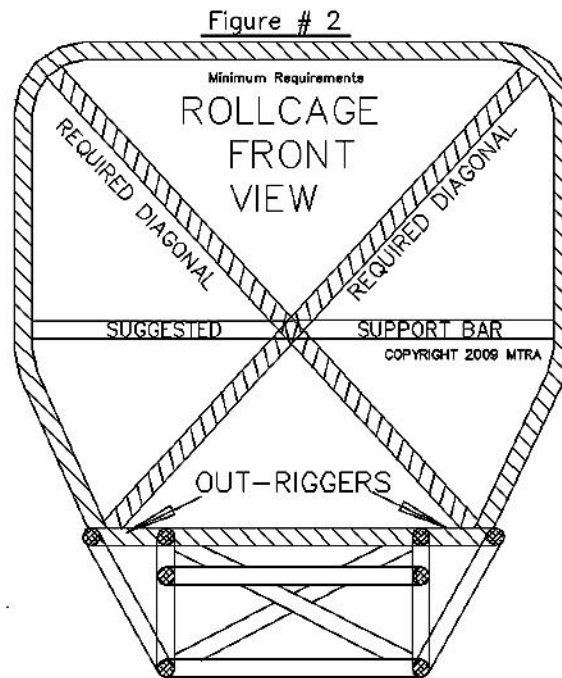


external personnel such that no additional motion is required, other than the release of the seat belts to disengage the Head & Neck Restraint System

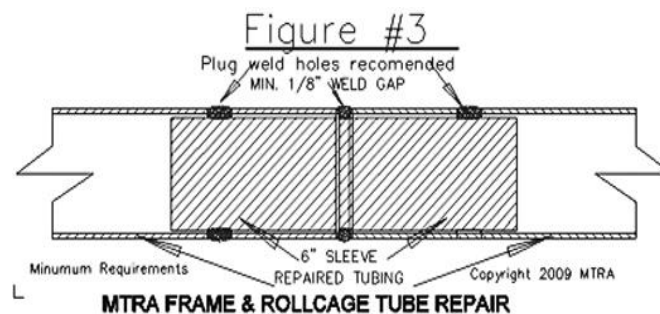
- 45d **All Seats must be securely mounted** with minimum of (4) 3/8" Grade 8 bolts to the frame or a frame outrigger. MTRA recommends the drivers' seat is in the middle on all new vehicles.
- 46. Driver compartment **windows** must be removed or down during a performance. There must be 2 exit points from the driver's compartment. Doors must be unlocked.
- 47. No fuel tanks, fuel lines, batteries, radiators or water hoses are allowed in the **Driver's Compartment**. Hydraulic steering lines that are located in the driver's compartment must be steel braided and must be shielded to deflect the oil away from the driver in the event of a line failure. Shielding material must be robust enough to deflect the oil at full pressure. Mechanical Oil Pressure gauges must use braided lines.
- 48. No Nitrous Oxide, Nitro Methane or any Oxygen Carriers or **Combustion Accelerators** allowed.
- 49. No **Loose Objects** allowed in vehicles.
- 50. There will be **No Riders** allowed in a vehicle during a performance.
- 51. All fuel-injected engines must have a **Fuel Shut-off Valve** within easy reach of driver. It must be marked with the direction to shut off. (Push or pull)
- 52. Vehicles must have operable forward and reverse gears and must be equipped with **reverse gear lockout**.
- 53. All vehicles must be equipped with a **Starter Interrupter** switch that will allow starter engagement only in the neutral position on a standard or Lenco transmission or park and neutral positions on an automatic transmission. Engines cannot start in reverse or forward gears.
- 54. All vehicles must be equipped with an approved SFI 42.1 **Quick Release Steering Wheel Disconnect**.

## **ROLLCAGE**

55. All newly constructed or reconstructed vehicles (after an accident, a major remodel job, or being setup for racing), whether steel or fiberglass must have a minimum 2" [51mm] diameter .120 [3.1mm] wall D.O.M. [CDS], **(8) eight point one-piece rollcage**. The frame below the cage must also be a minimum 2" [51mm] diameter .120 [3.1mm] wall D.O.M. tubing or equivalent. The driver must be protected in all directions. No pieced, slip together or sectioned rollcages allowed unless it is a flanged connection with minimum 4 bolts at both connecting points, for removal of engine, or other components. It is recommended that all stress points be gusseted. **(Refer to figure's #2 to 5)**

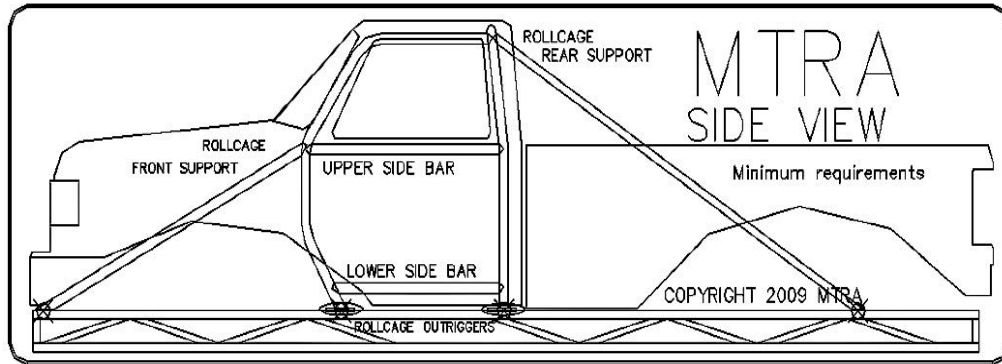


**All Rollcage and frame tubing repairs** must be sleeved with a 6" [152mm] internal sleeve.

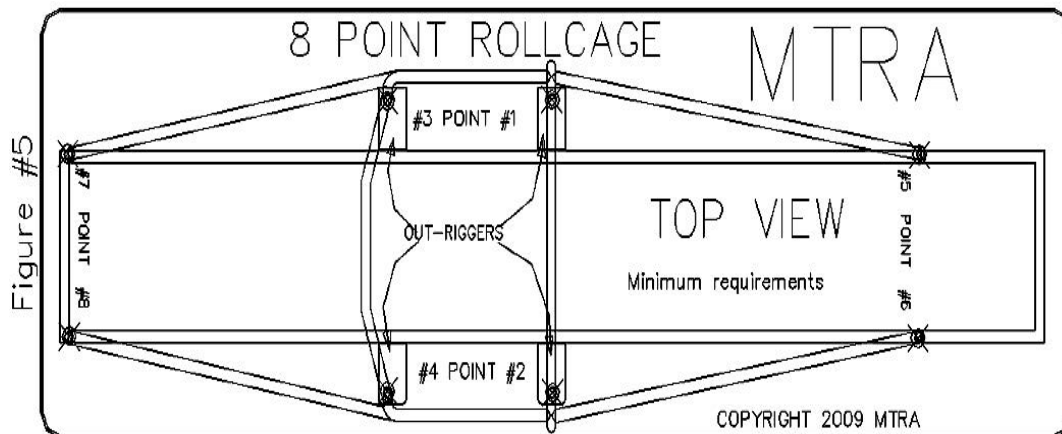


55b All vehicles are required to have an “**X**” **brace**, [Europe recommends an “A” brace behind drivers head for center seat trucks] extending from the frame to the upper rollcage behind the driver. **(Refer to figure #2)**

56. All **grand fathered steel-bodied** vehicles are permitted to run a 6-point cage. They are not allowed to race in a series or point’s race.



SUGGESTED ROLLCAGE MOUNTING POINTS



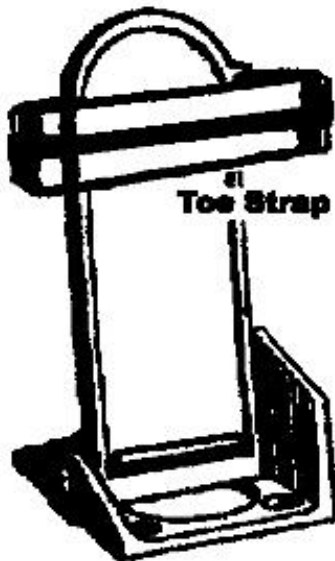
57. SFI 45.1 **fire retardant padding** is required (minimum thickness (.750) ¾” [19mm]) on roll cage tubing which is within 18” [457 mm] of driver’s helmet area above his shoulders. An exclusion is approved for the area behind the headrest on vehicles equipped with seats featuring head and shoulder restraints.

58. All vehicles lacking stock production doors (fiberglass doors) must have at least one **side bar** no more than 2” [50mm] below the window and one side bar at floor height to protect the driver from side impact. These bars must be parallel to the ground and least 2” [50mm] in diameter.

## ENGINE

- 59. All **exhaust** must discharge within a 10-degree angle of being straight up or rearward at a 45 degree down angle. Exhaust cannot discharge straight down. No rain caps. All exhaust pipes and mufflers must be securely attached.
- 60. All carburetors and fuel injection **butterfly shafts** must have dual return to idle springs. A return to idle spring must be located on both butterfly shafts or at both ends of a single shaft. They cannot be attached at the same location. The spring on the throttle pedal does not count as one spring but is recommended.
- 61. **Air cleaners** are required on all injector hats
- 62. All **throttle linkage** from cab to the engine must be cable operated and must be a positive action push pull type. Cable must not be stretched tight; it must have flex to allow for the engine-to-cab movement.
- 63. Throttle **toe straps** are required. A "Hot Foot" open loop (refer to Fig. #6) or a complete loop will suffice.

**Figure #6**



- 64. All supercharged vehicles are required to use **Aluminum Blower Studs** and **SFI 14.1 Blower Restraints**. **Blower Belt Shields** are required if fuel lines are located in an area where they could be compromised by a blower belt failure. **Maximum 8/71 blowers, 10% overdrive**, standard size 2-rotor 3-lobe type only. Rotor angle not to exceed that of standard GM 71 series. No high helix, screw type rotors or

internal modifications to increase blower size. Blower rotor maximum length 16" [406.4mm] and a 1 to 1 internal gear ratio with proper rotation.

**Note:** *ALL THE MTRA **LEGAL BLOWER OVERDRIVE** COMBINATIONS ARE LISTED IN THE BACK PAGE OF THIS BOOK.*

65. The MTRA acknowledges **Single Supercharged** and **Naturally Aspirated** engines only. Any induction system not specifically covered in this rule book must be approved by the Board of Directors prior to public performance.
66. All engines must have a **deflection shield** on both sides of the engine block. Shields must cover the engine block from the center of crank to the top of the block. The heads do not have to be covered. Shield must be securely fastened with a minimum 2 - 3/8" [9.5mm] bolts and made of aluminum or steel minimum (.250) 1/4" [6.4mm] thick. Frame rails can serve as part of the shielding. "Tube chassis trucks cannot use the tubes as part of the engine shield".
67. No engine driven fans, **electric fans** only.
68. No cast iron or **cast steel pulleys** allowed on any moving part that runs at or above the speed of the engine.
69. **Harmonic Balancers** Not Allowed
70. **Aluminum engine** blocks will be permitted.
71. Maximum **engine size** is 575 cubic inches [9.422litres].

## **TRANSMISSIONS**

72. Automatic transmissions must have a **Safety Blanket** with proper bellhousing straps and it must be 18" [457mm] wide (as measured from the bellhousing to the tail shaft), and it must meet SFI 4.1 certification. No metal shields are allowed. It must cover from rear of pan forward. (Label sewn on blanket.) Blankets must be in good condition. If blanket has been in a fire, has burnt straps or has been torn, it must be replaced. Metal shields are not allowed. Carbon Fiber shields are allowed.

Aftermarket nodular transmission **Cases** which meet SFI 4.1 and **Bellhousings** which meet SFI 30.1 certification standards do not require external safety blankets. Cases and bellhousings must feature current SFI certification labels.

Manufacturers of SFI approved cases and bellhousings:

ATI Performance Products

Bruno's Automotive Products

BTE Racing

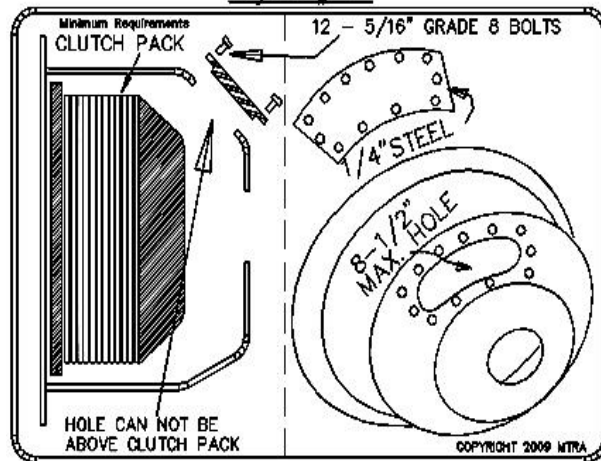
Hughes Performance

Reid Racing

TCI Automotive

73. An SFI 29.1 certified **Flex Plate** is required on all automatic transmissions. There is a 3 year limit on flex plates and then they need to be sent back for re-certification.
74. All transmission bell housings with 8" [203mm] or longer **inspection hole** opening must have a 2" [51mm] wide shield covering the exposed transmission flex plate with a max distance from the flex plate of 2" [51mm]. There must be a minimum of 2 spaced mounting tabs if the opening is under 12" [305mm] and 3 spaced mounting tabs if over 12" [305mm].

Figure # 7



## MECH. CLUTCH VEHICLES

75. **Lenco transmissions** are required to have an explosion proof blanket. Couplers must be shielded 360 degrees as per Jackshaft **rule #83**.
76. **Mechanical clutch** vehicles must have an SFI Spec. 6.3 approved explosion proof bellhousing with a current SFI label affixed to it. Any change to the original unit requires re-certification. Any Bellhousing lacking certification must be sent back to the manufacturer for certification or disposed of. Bellhousing certification is good for (2) two years.
77. The **inspection/maintenance hole**, in the bellhousing, is acceptable if made precisely to the specifications outlined in the drawings. A clutch inspection & maintenance hole may be cut on the back face of the housing. The hole may not be longer than an area covering 90 degrees (no longer than 8 1/2" [216mm]) of the housing rear surface area. No part of the rotating clutch assembly may extend under the clutch inspection & maintenance hole. **(Refer to fig. #7)**
78. **Clutch maintenance hole** MAY NOT be welded if the original hole in the housing was over 8 1/2" [216mm] in length or 3 1/2" [89mm] wide. All bellhousing holes must be flush on the inside surface when cap is installed. **(Refer to figure #7)**
79. The cover for the **inspection & maintenance hole** must be at least (.250) 1/4 [6mm] thick steel and be fastened with at least twelve (12) 5/16" [8mm] Grade-8 bolts. **(Refer to figure #7)**
80. An approved **steel plate or billet flywheel** is required. No cast iron flywheels.
81. All automotive type engines with bellhousing and clutch will run full **block saver plate** between the engine and bellhousing, either a commercially available unit, or 3/16" [6mm] steel or (.250) 1/4" [6.4mm] aluminum with 5 - 3/8" [9.5mm] Grade 5 or better bolts evenly spaced on the bottom of the bell housing.

## **DRIVELINE**

### **82. Driveshafts**

- a.) **Driveshafts** must be constructed of minimum 3.5" diameter .083" wall DOM tubing and utilize minimum of 1480 Series U-Joints.
- b.) **Billet End Yokes** are required on all Driveshafts. Billet Flange Yokes are highly recommended where available. Caution must be exercised to verify that driveshaft angles do not exceed the maximum operational u-joint angle of yokes.
- c.) **Chain Drive** transfer cases Not Allowed

### **83. Driveshaft loops** are mandatory on all vehicles.

- a.) Materials for driveline loops must meet the following minimum specifications:
  - 1.) Side rails must be made of 1" X .156" wall DOM tubing.
  - 2.) 4" diameter ring shielding the slip yoke of the driveshaft must be 4" schedule 40 steel pipe 3 ½" wide.
  - 3.) 6" diameter rings shielding the drive shaft tube must be 6" schedule 40 steel pipe 1 ½" wide.
  - 4.) Ring gussets must be made of 3/16" mild steel.
  - 5.) Slide rods must be 5/8" SAE, Grade 8 material - 12" long
  - 6.) The spherical bearing rod ends must be 5/8" female thread with a minimum radial static load capacity of 17,959 lbs.

Rod Ends which meet this minimum requirement are:

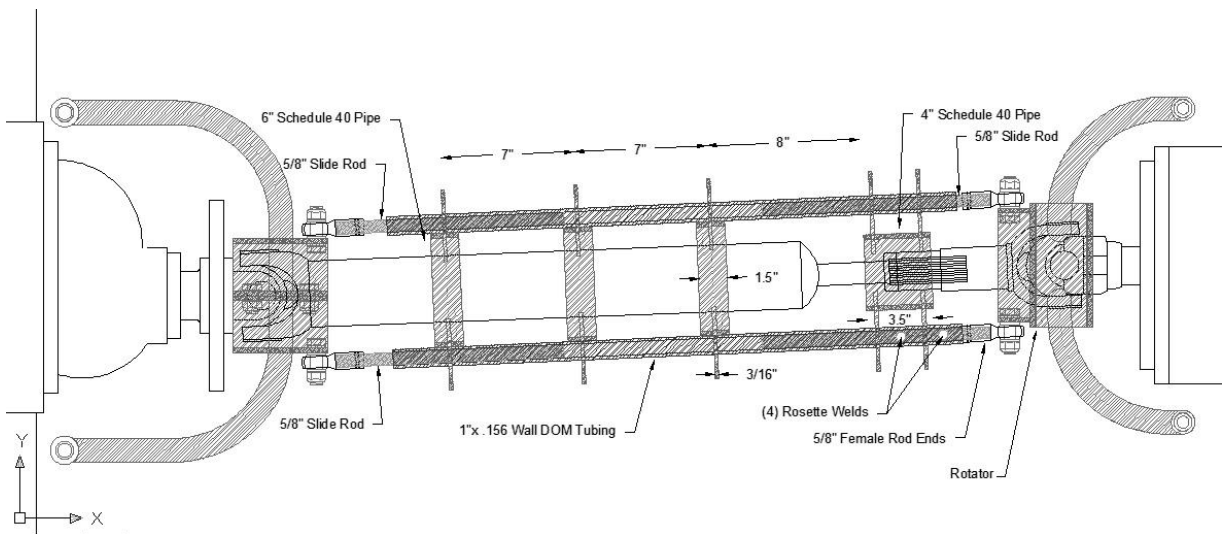
FK Rod Ends	JFX10
Rod End Supply	PFX10
QA1	HFR10T
Aurora Bearing Company	AW-10

- b.) Fabrication of driveline loops must meet the following minimum specifications:
  - 1.) The maximum distance between all driveshaft loop rings cannot be greater than 7" with a minimum of (2) loops per shaft.
  - 2.) The maximum distance between all driveshaft loop rings and the driveshaft is 2".



- 3.) Loop rings must be 360 degree and welded securely to both 1" x .156" side rails and must not float.
  - 4.) Loop 4" & 6" rings must feature gussets welded vertically to the rings, but not to the side rails.
  - 5.) At the differential, the maximum distance from the face of the last loop ring to the face of the u-joint shield must not exceed 10".
  - 6.) Driveshaft loops must incorporate (1) fixed corner which must be oriented to the chassis end and bolted to the u-joint shield utilizing a 5/8" female spherical rod end and 5/8" Grade 8 bolt.
  - 7.) The 5/8 x 12" Grade 8 threaded rod material for the fixed corner must only be welded into the 1" x .156" side rail tubing with four (4) rosette welds
  - 8.) Driveshaft loops must incorporate (3) non-fixed 5/8 x 12" Grade 8 threaded slide rods which must slide within the 1" x .156" side rail tubing and be mounted to the u-joint shields utilizing 5/8" female spherical rod ends and 5/8" Grade 8 bolts.
  - 9.) Driveshaft loops must be bolted at each end to u-joint shields one which must be fixed and one which must feature a rotator which allows for suspension articulation without binding the loops. (Ref. Rule #87)
- c.) Driveshaft loops must be painted or coated in a high visibility contrasting color.

Figure # 8



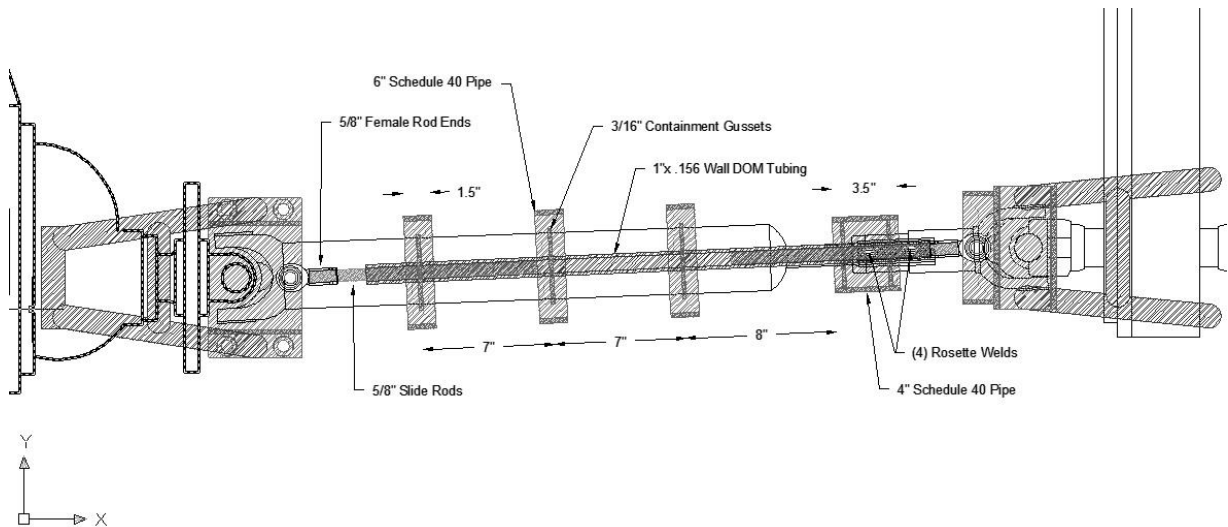
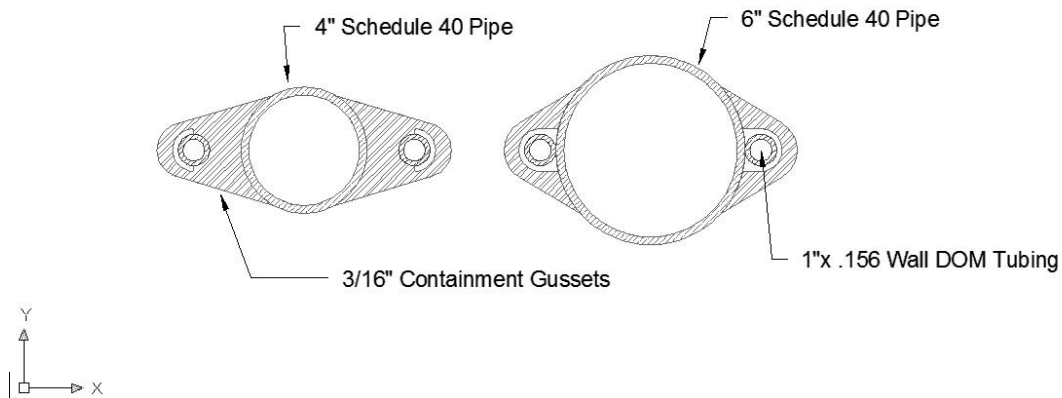


Figure # 9



84. All driveline u-joints must be enclosed within **U-Joint Shields**. These must be a minimum of 5" wide, 4" diameter schedule 40 pipe or equivalent (1/4" steel) and cover u-joints a full 360 degrees. Aluminum shields are not allowed. U-joint shields must be attached by a minimum of two tubes per side with each tube a minimum of 1" x .120, or (3) three 1" wide 1/4" steel mounting straps. U-Joints should not be visible from side, top or bottom and be completely contained within the shield.

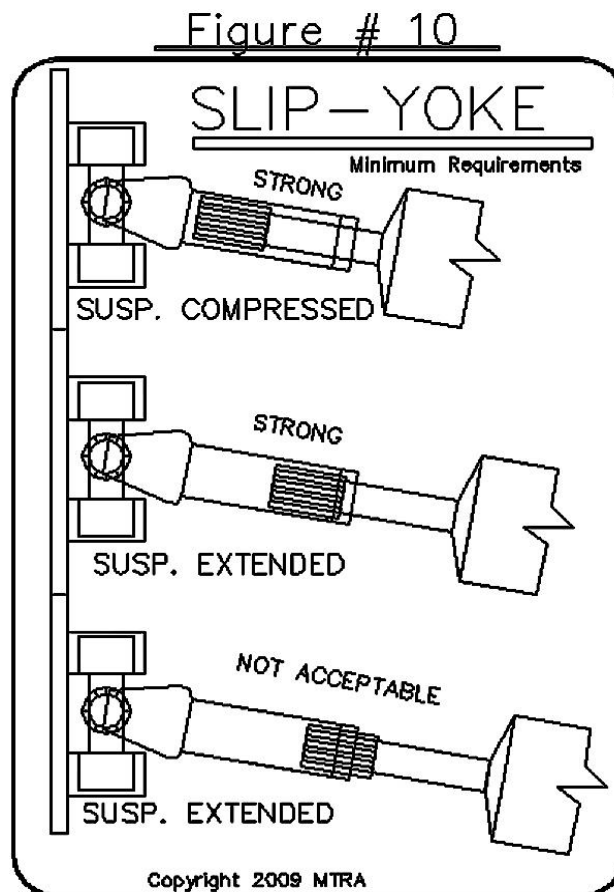
85. One U-joint Shield attached on each driveshaft loop assembly must feature a **Rotator Device** which allows for articulation of the suspension without binding the driveline loops.

The driveshaft loop rotator ring must be a minimum of 1/4" steel. It must be retained by a minimum of four 1/4" thick tabs welded to the u-joint shield. The u-joint shield must be a minimum of 5" long, 4" diameter schedule 40 pipe or equivalent (1/4" steel), covering the yoke 360 degrees. The u-joint shield must be attached by a

minimum of two tubes per side with each tube a minimum of 1" x .120 or (3) three 1" wide 1/4" steel mounting straps.

Any variations to this design must have written approval from the MTRA Board of Directors.

- 86. Maximum distance between a U-joint and U-joint shield is 2".
- 87. U-joint shields cannot be attached to driveline yokes or rotate 360 degrees.
- 88. **Jackshafts** must utilize minimum 1350 Series U-Joints or **Coupler**. Jackshafts and couplers must have 360-degree shielding covering both u-joints and shaft. Shields must be minimum 1/4" steel with maximum distance of 2" between shield and shaft/coupler. Shield may be 2 pieces bolted together.
- 89. **Intermediate Splined Shafts** and couplers (transfer case to carrier bearing) must be enclosed 360-degrees. **Intermediate Driveshafts** must utilize driveshaft loops and u-joint shields consistent with Rules #83-87 for standard driveshafts.
- 90. Driveshaft **slip yoke** must have a minimum penetration in any axle configuration, equal to half the length of the spline in the most extended position, approximately 2" [51mm].



- 91. **Non Planetary** steering axles are required to have a shield covering the axle flange or lockout hub. Minimum (.250) 1/4" [6.4mm] steel.
- 92. **Split Ring** type wheels not allowed.

## **BRAKES**

- 93. All vehicles must be equipped with foot operated **hydraulic brakes** in good working order. The brakes must be able to stop the vehicle in its own length at 10 MPH [16KPH]. If your vehicle does not have lockers, wheel brakes are recommended.
- 94. All **rubber tired** vehicles must be equipped with dual braking systems consisting of two master cylinders with one brake pedal and individual lines running to the front and rear brakes.
- 95. All **track vehicles** must be equipped with dual braking systems. You must have a foot or hand operated hydraulic brake system as a backup to the normal track lever steering and brake system.
- 96. Driveline **brake rotors** must be steel billet only. A minimum of three tabs 120 degrees apart, are required to keep the rotor from moving. Tabs are not required if rotor is mounted on the driveshaft side of the pinion. (Steel billet rotors are solid with no webbing or fins in center.) **(Refer to figure #9)**
- 97. Vehicles equipped with **driveline brakes** are required to have the front brake assembly mounted on the front differential. The rear can be mounted on the transfer case.

## **RULE VIOLATIONS**

98. If an owner, driver or member **breaks a rule**, he or she will be subject to a fine or suspension.
99. If an owner, driver or member **repeatedly breaks a rule** or rules, (3 or more times) he or she will be subject to a fine, suspension and or the loss of his or her MTRA Membership and License.
100. The **inspection sheets** are legal rule violation reports and members will be fined accordingly.
101. MTRA **finest and suspensions** will be issued by the Board of Directors after a hearing with a **75%** Director majority required for ratification. Hearings can be carried out by mail or fax.
102. **Minor rules** affect the safety of the driver only. A minimum fine of \$25.00 [£15.00] for the first time violator and \$50.00 [£30.00] for the repeat offender.
103. **Major rules** affect the safety of spectators and participants. A major rule violation is subject to a maximum fine of \$5000.00 [£2,800.00], up to a year suspension and or termination of MTRA Membership and License. The amount of the fine and/or suspension would depend on the severity of the violation and would be determined by a majority vote of the current MTRA directors.
104. **Non-safety rules** do not affect the safety of the driver, spectator or participant. A fine of \$25.00 [£15.00] for first time violators and \$75.00 [£45.00] for the repeat offender.
105. All **finest must be paid** within 45 days or MTRA Membership and License will be revoked. Written protest will be accepted only after the fines are paid. Membership and License cannot be renewed unless all fines are paid.
106. Promoter Members will be **notified** of all Major rule violations.
107. Tech Inspectors have the authority to **fail** a vehicle inspection should they deem that a feature/component or the quality of its manufacturing is not consistent with the spirit of the applicable rule.

# **Section B**

## **Ride Trucks**

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*The purpose of the Monster Truck Racing Association is to provide consistent safety for competitors and spectators. No expressed or implied warranty of safety shall result from publication of or compliance with these rules and regulations. They are intended as a guideline for the conduct of the sport and are in no way a guarantee against injury or death to participants or spectators.*

*Perfect adherence and application of the rules published by MTRA will not assure that all vehicles will perform safely in all applications. The individual fabricator and driver have the ultimate control of how the Monster Truck is constructed and operated.*

*Using MTRA rules does not imply that all safety measures are included. MTRA or its representatives assume no liability whatsoever.*

*Any vehicle component not included in these rules or any deviation from these rules will be subject to director's written approval.*

### **R-T MTRA DRIVER LICENSE**

All MTRA drivers must have a valid MTRA **Drivers License**. This license must be on your person when driving a Monster Truck.

A **Class “A” driver license** is required when driving in a Certified Points or Purse Race Series and a **Class “B”** for all other types of performances including Ride Trucks.

Driver member will submit the normal MTRA dues and a copy of their current CDL or CDL equivalent physical when applying for their yearly **MTRA Driver License** or Drivers License **renewal**.

## DRIVER MINIMUM REQUIREMENTS

### CLASS “B” DRIVERS LICENSE

New drivers will have to perform a prescribed driving test, in an MTRA Certified Vehicle, with 3 MTRA Class “A” Drivers present. The driving test will consist of an in cab familiarity test, vehicle parking, stopping and turning demonstration, and then driving over cars several times at different speeds. The Class “A” Drivers must endorse this performance. The application must then be sent to the MTRA Board of Directors for their approval or disapproval.

### R-T DRIVER & CREW

- 1.B A **current CDL or CDL** equivalent physical is required and a copy must accompany each year’s application for an MTRA Driver License renewal. Current physical means a physical at least every (2) two years.
- 2.B All MTRA drivers will be subjected to a **random Drug testing**. If their name is picked, they will be informed and will be given 48 hours to comply with the drug test at one of the 2500 test stations across the country. An independent agency will randomly pick driver names. Non-compliance will be considered an admission of guilt and their MTRA Drivers License and Membership will be canceled. Drivers can be called for drug testing more than once a year.
- 3.B Consumption of **alcoholic beverages or drugs** before or during an event by a driver or his or her pit crew will be grounds for suspension from MTRA.
- 4.B Drivers must be at least **18 years old**, or be approved by the MTRA Board and have parental or guardian written permission.
- 5.B The driver and pit crew must be **clean, neat and professionally attired**.

## **RIDE TRUCK DRIVING RULES**

- 6.B Ride Vehicles must **not** be operated **over 25 MPH** [40KPH].
- 7.B Engines must **not** be run **over 3000 RPM**. A rev limiter must be installed.
- 8.B The Driver and all Passengers must wear their **seatbelts** at all times the vehicle is moving.
- 9.B Before the Ride Truck can move, the **ride area** must be cleared of all personnel.
- 10.B Vehicle must come to a complete stop before **loading or unloading passengers**.
- 11.B When **engine is running** the driver must remain in his seat unless a manual parking brake is set and the automatic transmission is in park. Otherwise, engine must be shut off each time the driver leaves his seat.
- 12.B No Donuts (spins), no jumping (air), or other **dangerous maneuvers** allowed with passengers onboard.
- 13.B Drivers must **operate vehicles in a safe manner** at all times. The show, race director or promoter has the right to stop any driver not operating his or her vehicle in a safe manner.
- 14.B Wheel **lug nuts** must be re-torqued periodically. (Minimum once a day)
- 15.B Engines must not operate & vehicle must not move unless the **Rll receiver is on** and a qualified operator controls the transmitter.
- 16.B The **Rll must be tested** at least once a day.
- 17.B **No smoking** in vehicle.



## **R-T VEHICLES**

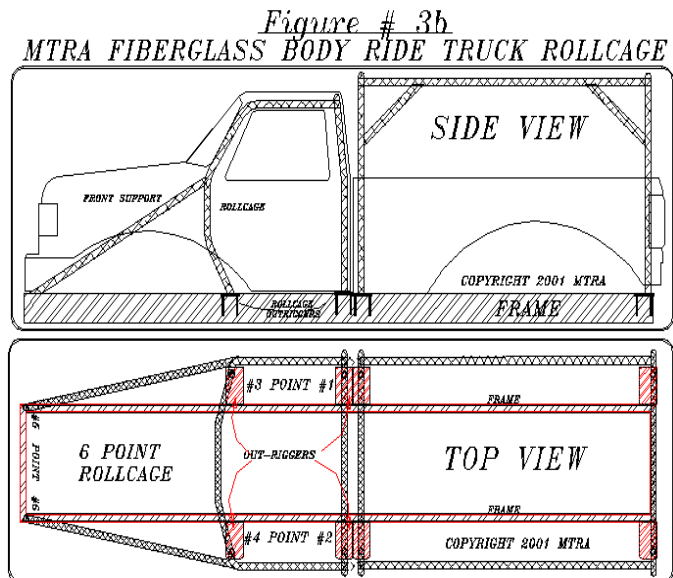
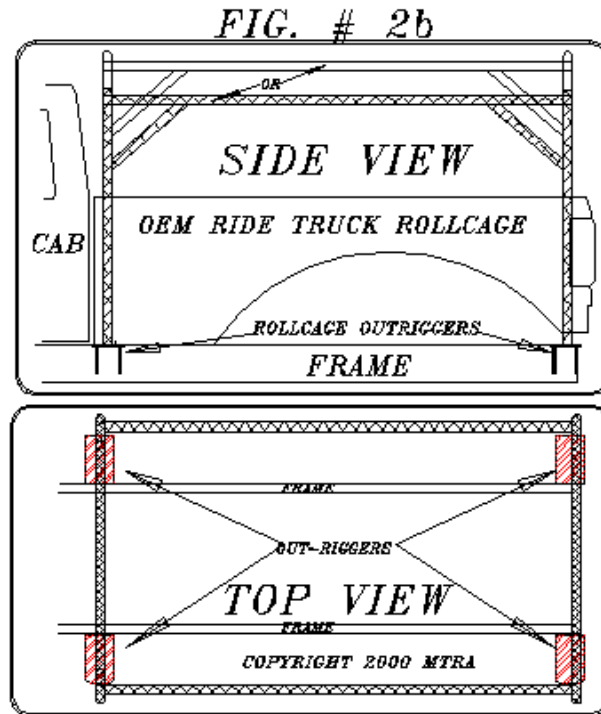
- 18.B Vehicle **Certification** is required before February 15th of each calendar year. Vehicle Certification will begin 3 months prior to each calendar year. Membership dues must be paid before Vehicle Certification decals and Drivers Licenses will be issued. Inspectors cannot certify their own vehicles.
- 19.B The current **Certification Inspection Sheet** must be displayed in the vehicle at all times. The sheet will be visible for all MTRA members and the tech officials. A plastic sheath is recommended for protection against weather.
- 20.B All vehicles must be equipped with a commercially made **back-up alarm**, mounted at the rear most part of the frame. This alarm must be activated anytime vehicle is in reverse. The shift lever must mechanically activate it. The alarm sound must face rearward.
- 21.B **Batteries** must be secured and covered with a non-conductive material. Material to be rubber, plastic or Lexan only. If under bed, (passenger area), they must be sealed batteries.
- 22.B All vehicles must be **painted** and lettered with name of vehicle.
- 23.B An external **crossover relief valve** is required on all vehicles equipped with orbital steering. Unit may bolt directly to orbital valve or be remotely mounted.
- 24.B All charged **gas shock remote cylinders** (accumulators) must be mounted securely in a position to avoid contact with tires. Caps to be threaded on tubes a minimum of 1/2" [13mm] SAE fine thread. Remote accumulators to be fastened with metal clamps, no tape or wire ties.
- 25.B All onboard **fuel** must be in an anti-spill tank, properly secured with a minimum of two (2) metal straps, (.125) 1/8" [3.2mm] by 1" [25mm] steel or aluminum, or the manufacturer's suggested mounting points. OEM vehicles with stock configured fuel tanks are legal. Grounding all fuel tank cap rings when fueling, to eliminate static charge, is recommended.
- 26.B All ride trucks must have an adequate passenger loading **ladder**.

## R-T DRIVER'S COMPARTMENT

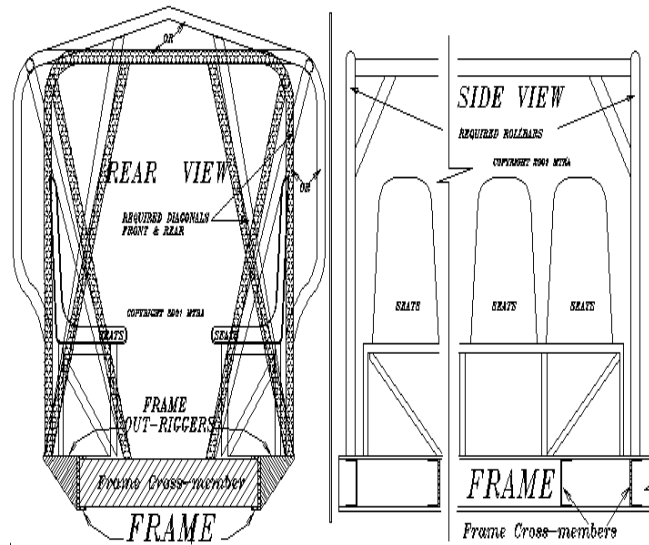
- 27.B All vehicles must have an **in-cab kill switch**, within easy reach of the driver that shuts off power to all electric fuel pumps, other powered accessories and ignition system (all battery power) with the exception of electrically operated brake systems. Driver must be able to activate it with his or her eyes closed in his or her seat-belted driving position. It must be a push/pull type with push to turn off.
- 28.B Vehicles must have a minimum size 2-1/2 lb. [1.25kg] Halon or ABC type **fire extinguisher** within the driver's reach, with a working gauge.
- 29.B All Ride Truck Seats must have approved **seatbelts**, mounted to the frame or frame outrigger.
- 30.B No fuel tanks, fuel lines, batteries, radiators or water hoses are allowed in the **driver's compartment** or in the passenger ride areas. Hydraulic steering lines that are located in the driver's compartment or passenger area must be steel braided lines and must be shielded to deflect the oil, from a line rupture, away from the driver and passengers. Shielding material must be strong enough to deflect the oil at the full pressure. A mechanical oil pressure gauge must use braided lines.
- 31.B No **Blowers** (superchargers), Nitrous Oxide, Nitro Methane or any Oxygen Carriers or **Combustion Accelerators** allowed.
- 32.B Vehicles must have operable forward and reverse gears and must be equipped with **reverse gear lockout**.
- 33.B All vehicles must be equipped with a **starter interrupter** switch that will allow starter engagement only in the neutral position on a standard transmission or park and neutral positions on an automatic transmission. Engines cannot start in reverse or forward gears.

## R-T ROLLAGE

- 34.B All **Fiberglass Cab Ride Trucks** must have a minimum 2" [51mm] diameter .120 [3.0mm] wall D.O.M., (6) six point one piece **rollcage** with a rear (X) brace behind the driver. The **(passenger area)** must have a **rollcage** mounted to the frame or frame outriggers sufficient to protect the passengers. This includes a rollbar, with an "X" brace, on each end of the passenger seating area. (Refer to figure's #2b to #4b)



*Figure # 4b*  
RIDE TRUCK ROLLAGE RECOMMENDED DESIGNS



35.B **Roll bar Padding** is required on all the rollage within 18" [457mm] of driver and passengers head areas above his shoulders. It is recommended padding be fireproof material. The new SFI 45.1 fire retardant padding, 3/4" [19mm] minimum is preferred.

## **R-T ENGINE & TRANSMISSIONS**

- 36.B All **exhaust** pipes and mufflers must be securely attached. It is suggested the exhaust discharge forward of the passenger area.
- 37.B All carburetors and fuel injection **butterfly shafts** must have dual return to idle springs. A return to idle spring must be located on both butterfly shafts or at both ends of a single shaft. They cannot be attached at the same location. The spring on the throttle pedal does not count as one spring but is also recommended, unless it is a stock, steel cab, factory configuration.
- 38.B All **throttle linkage** from cab to the engine must be cable operated and must be a positive action push pull type unless it is a stock OEM, steel cab, factory configuration. **Throttle toe straps** are required and they must be open on the brake side unless it is a stock, steel cab, factory configuration.
- 39.B **No Mechanical clutch** vehicles unless it is a stock OEM, steel cab, factory configuration.

## **R-T DRIVELINE**

- 40.B All **chain-drives** must be shrouded in all directions with a minimum of (.250) 1/4" [6mm] aluminum or steel. This shroud must restrain all internal moving parts.
- 41.B All **pieced wheels** must have the split ring to the inside when mounted on truck or must have four bolts 90 degrees apart and corresponding tabs on the wheels for attaching the ring to the wheel.

## **R-T BRAKES**

- 42.B All vehicles must be equipped with foot operated **hydraulic brakes** in good working order. The brakes must be able to stop the vehicle in its own length at 10 MPH [16KPH]. If your vehicle does not have lockers, wheel brakes are recommended.
- 43.B All rubber tired vehicles must be equipped with **dual braking systems** consisting of two master cylinders or a dual cylinder master cylinder with one brake pedal and individual lines running to the front and rear brakes.
- 44.B Driveline **brake rotors** must be steel billet only. A minimum of three tabs, 120 degrees apart, are required to keep the rotor from moving. Tabs are not required if rotor is mounted on the driveshaft side of the pinion. (Steel billet rotors are solid with no webbing or fins in center.)
- 45.B Vehicles equipped with **driveline brakes** are required to have the front brake assembly mounted on the front differential. The rear can be mounted on the transfer case.
- 46.B A manually operated **parking brake** is highly recommended.

## **R-T RULE VIOLATIONS**

- 47.B If an owner, driver or member **breaks a rule**, he or she will be subject to a fine or suspension.
- 48.B If an owner, driver or member **repeatedly breaks a rule** or rules, (3 or more times) he or she will be subject to a fine, suspension and or the loss of his or her MTRA Membership and License.
- 49.B The **inspection sheets** are legal rule violation reports and members will be fined accordingly.
- 50.B MTRA **finest and suspensions** will be issued by the Board of Directors after a hearing with a **75% Director** majority required for ratification. Hearings can be carried out by mail or fax.
- 51.B **Minor rules** affect the safety of the driver only. A minimum fine of **\$25.00** [£15.00] for the first time violator and \$50.00 [£30.00] for the repeat offender.
- 52.B **Major rules** affect the safety of spectators and participants. A major rule violation is subject to a maximum fine of **\$5000.00**, [£2,800.00] up to **one year suspension** and or termination of MTRA Membership and License. The amount or the fine and or suspension would depend on the severity of the violation and would be determined by a majority vote of the current MTRA directors.
- 53.B **Non-safety rules** do not affect the safety of the driver, spectator or participant. A fine of \$25.00 [£15.00] for first time violators and \$75.00 [£45.00] for the repeat offender.
- 54.B **All fines** must be paid within 45 days or MTRA Membership and License will be revoked. Written protest will be accepted only after the fines are paid. Membership and License cannot be renewed unless all fines are paid.
- 55.B **Promoter Members** will be **notified** of all Major rule violations.



# **Section C**

## **RECOMMENDED MTRA PROTEST**

### **PROCEDURE:**

Cubic inch tear down	\$250.00 [£140.00]
Fuel test	\$100.00 [£56.00]
Blower size	\$150.00 [£85.00]
Weight	\$50.00 [£30.00]

**MTRA will treat all protest infractions as a major rule violation and penalties will be issued accordingly.**

## **Useful Information**

### **Weights:**

Oil 1 gallon = 7.0 Lbs. 1 qt. = 1.75 [3.78 litres]  
Gas 1 gallon = 6.2 Lbs. 1 qt. = 1.55 [3.78 litres]  
Water 1 gallon = 8.4 Lbs. 1 qt. = 2.10 [3.78 litres]

### **Tubing Weights:**

2" x .120 wall D.O.M. tubing = 2.409 Lbs. per foot.  
[50mm x 3.1mm CDS = 3.49KG per Metre]  
1-1/4" .095 wall D.O.M. tubing = 1.172 Lbs. per foot.  
[31.75mm x 24.13 CDS = 1.69KG per Metre]

## **Metric and Standard Conversion**

### **Length:**

1 Kilometer = 1000 meters = 3280.83 ft. = .625 miles  
1 Meter = 100 centimeters = 39.37 in. = 1.09 yds.  
1 Centimeter = .3937 inch  
1 Mile = 1.609 kilometers = 5280 ft.  
1 Inch = 2.54 centimeters = 25.4 millimeters  
1 Yard = .91 meters

### **Mass:**

1 Cubic inch = 16.387 cubic centimeters  
1 Cubic centimeter = .061024 cubic inches  
1 Kilogram = 1,000 grams = 2.2045855 Lbs.  
1 LB = 453.6 grams ~ 1 Ounce = 28.35 grams  
Kilograms divided by 2.20 = Lbs. ~ Lbs. x 2.20 = kilos

### **Volume:**

1 Liter = 100 cubic centimeters or 61.025 cubic inches

### **Formulas:**

Circumference =  $\pi \times \text{diameter} = \pi D$   
Area of circle =  $\pi \times (\text{radius} \times \text{radius}) = \pi r^2$   
Volume of cylinder = area x height  
 $r^2 = \text{radius squared} = \text{radius} \times \text{radius}$   
 $\pi = \text{"pi"} = 3.141592 = \text{squared}$   
ci = cubic inch cc = cubic centimeter

### **Volumes:**

bore<sup>2</sup> x 12.87 deck clearance = cc of deck clearance.  
bore<sup>2</sup> x .7854 x deck clearance = ci of deck clearance.  
bore<sup>2</sup> x 12.87 x thickness of gasket = cc of head gasket.  
bore<sup>2</sup> x .7854 x thickness of gasket = ci of head gasket.

### **Displacement:**

bore x bore x stroke x .7854 x # of cyl. = Displacement

## **Vehicle/Driver Specifications Reference List**

Flywheel SFI\_\_\_\_\_ Mfg.\_\_\_\_\_ Serial #\_\_\_\_\_

Exp. Date\_\_\_\_\_

Bellhousing SFI 6.3 Mfg.\_\_\_\_\_ Serial #\_\_\_\_\_ Exp.

Date\_\_\_\_\_ (2yr max)

Flex plate SFI 29.1 Mfg.\_\_\_\_\_ Serial #\_\_\_\_\_ Exp.

Date\_\_\_\_\_

Trans Blanket SFI 4.1 Mfg.\_\_\_\_\_ Serial#\_\_\_\_\_ Exp.

Date\_\_\_\_\_

Harness SFI 16.1 Mfg.\_ \_\_\_\_\_ (2yr max) Serial# \_\_\_\_\_

Exp. Date\_\_\_\_\_

Firesuit SFI 3-2A/15 Mfg.\_\_\_\_\_

Gloves/Shoes SFI 3.3 Mfg.\_\_\_\_\_

Neck Collar SFI 3.3 Mfg.\_\_\_\_\_

Helmet SFI 31.1 or 31.2 or SA2000 Date\_\_\_\_\_

Fire Extinguisher Type\_\_\_\_\_ Date\_\_\_\_\_

Fire System Lbs.\_\_\_\_\_ Date tested\_\_\_\_\_

CDL Date\_\_\_\_\_ (2yr max)

RII Radio Mfr.\_\_\_\_\_

Certification Date\_\_\_\_\_

Vehicle Weight\_\_\_\_\_

Rollcage Size/Thickness\_\_\_\_\_

Rollcage Padding SFI 45.1 Size\_\_\_\_\_

Supercharger Size\_\_\_\_\_

% Overdrive\_\_\_\_\_ Rotor length\_\_\_\_\_

Engine Make\_\_\_\_\_ Cubic Inch\_\_\_\_\_

## **Rule Revisions**

**Page #** \_\_\_\_\_

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**Page #** \_\_\_\_\_

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**Page #** \_\_\_\_\_

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**Rule change or update suggestions**

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**Use this section to inspect your vehicle before contacting a MTRA® certified inspector.**

## **SECTION “A” EXTERNAL CHECK**

Helmet Snell SA2000/SFI 31.1 or 2 & Firesuit  
Rll Trans & Rec, Eng will not start with Rll off  
Rll lights 12” from center  
Rear kill switch, pull type, must kill battery power  
Rear back-up alarm & light  
Battery secure & covered, Dry or Gel type only  
External Crossover Relief Valve on front steering  
9,000 lbs min weight  
Shock accumulators securely mounted  
Fuel tanks anti-spill securely mounted  
Firewall & windshield required  
Seat mounted to frame or frame outriggers  
Wheel restraint system

### **Engine**

Exhaust must discharge vertical or 45 deg down  
Carb or Inject butterfly shafts dual return springs  
Throttle linkage must be push/pull type cable  
Deflection shield on both sides of engine  
Blower; max 10% overdrive, 871, 16” rotors, etc  
Elect fans only, no cast iron or cast steel pulleys  
575 Cubic inch engine maximum  
No combustion accelerators

### **Transmission & Clutch**

SFI 4.1 Trans blanket not torn or burnt or SFI 4.1 case and 30.1 bellhousing  
Approved SFI 29.1 flex plate  
Lenco blanket & 360 deg enclosure  
Approved explosion proof bellhousing, not welded, approved hole cover  
Clutch; approved steel plate or billet flywheel  
Clutch; full block-saver plate

## **BRAKES & DRIVELINE**

Driveline loops, max 7" OC, min 2 loops  
Driveshaft loops, 360 deg & round  
Jack shafts & couplers 360 deg enclosure  
Slip yoke min penetration 2" in all config  
U-Joint enclosed 360 deg, guard dist. 2"  
Chain drives, meet MTRA specifications  
Dual brake system, 2 master cyl, one brake pedal  
Steel billet rotors 3 tabs

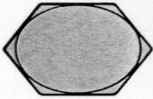


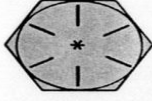
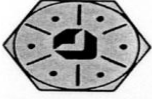
## **SECTION "B" IN-CAB**

Rll receiver antenna mounted vertical  
Current Vehicle Cert Check sheet displayed  
Commercial back-up alarm, mechanically activated  
In-cab kill switch shuts off battery, push type  
Fire retardant system, 6 nozzles  
2½ lb Halon or ABC fire extinguisher with gauge 2 yr  
Driver protected from tire debris  
5 pt harness, 3" lap belt, 2" shoulder harness, mounted to frame/outriggers 2 yr  
No fuel or fuel lines, batteries, radiators or water hoses in the driver's compartment  
In-cab fuel shutoff  
Forward/reverse gear lockout  
Starter interrupter – park/neutral start only  
Rollcage & frame repairs require 6" internal sleeve 8 point, one piece, 2"OD, .120 wall  
DOM tubing, driver "X" brace from frame to top  
Padding; ¾" SFI 45.1, by drivers head  
2 rollcage sidebars  
Throttle toe strap

## **SECTION "C" DRIVER IN-CAB**

Can the driver operate the kill switch & fire system with his eyes closed  
Test kill switch and Rll with engine running  
Foot operated Hydraulic brakes  
Max stopping distance, vehicle length at 10 mph

## STRENGTH GRADES AND IDENTIFICATION MARKINGS

STRENGTH GRADE MARKINGS					
DEFINITION	SAE GRADES 1 & 2 ASTM A-307 COMMON COMMERCIAL QUALITY	3 RADIAL LINES *SAE GRADE 5 ASTM A-449	LAWSON TUFF-TORQ®	6 RADIAL LINES *SAE GRADE 8 ASTM A-354BD	LAWSON TRU-TORQ®
MATERIAL	LOW CARBON STEEL	MEDIUM CARBON STEEL QUENCHED & TEMPERED	SELECTED MEDIUM CARBON STEEL QUENCHED & TEMPERED	MEDIUM CARBON ALLOY STEEL QUENCHED & TEMPERED	SPECIAL ANALYSIS ALLOY STEEL QUENCHED & TEMPERED



		M T R A <sup>®</sup> BLOWER OVERDRIVE COMBINATIONS																			
		LOWER PULLEY	25	26	26	25	25	26	25	26	27	26	25	26	27	26	25	26	27	26	25
47	46																				
43	42																				
44	43																				
45	44																				
46	45																				
70	69																				
64	63																				
65	64																				
66	65																				
67	66																				
68	67																				
69	68																				

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