AAMVA

American Association of
Motor Vehicle Administrators

Best Practices for the Regulation of Three-Wheel Vehicles

October 2013

VEHICLE STANDING COMMITTEE
THREE-WHEEL VEHICLE WORKING GROUP

Cover photo credits: SRK Pilot Poppy © Arcimoto; BPR's 2014 Can-Am Spyder RS Roadster © BRP

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Executive Summary

Three-wheel vehicles have existed since the earliest days of the motor vehicle. They include varied configurations, including the trike, reverse trike, sidecar motorcycle, and what the Three-Wheel Vehicle Working Group (3WVWG) has defined as the "autocycle," which operates much like a passenger vehicle. These vehicles can vary drastically in price, performance, and design. Manufacturers' desire to create fuel-efficient vehicles and to cater to people who want to ride a motorcycle but don't want the worry of the instability of a two-wheel motorcycle have led to a proliferation of three-wheel vehicles on the market.

Jurisdictions are faced with complex and evolving issues regulating the operation and registration of three-wheel vehicles. As a result, the AAMVA formed the 3WVWG and tasked it with the development of best practices and recommendations for regulating or restricting on-highway operation and registration of three-wheel vehicles. The group focused on creating guidelines that adequately identify the different vehicles in production today but that are broad enough to accommodate emerging vehicle technology.

Most three-wheel vehicles clearly meet the definition of a motorcycle in United States code 49 CFR 571.3(b) and should be regulated as motorcycles. However, two-wheel motorcycles and three-wheel vehicles operate very differently. This document provides guidelines to help jurisdictions determine the type of knowledge and skills testing required for the operation of each type of three-wheel vehicle and the type of driving privilege the operator should obtain. It also offers recommendations for identifying the different types of three-wheel vehicles for registration and crash reporting purposes, which will also help law enforcement easily determine which laws to enforce for the different types of three-wheel vehicles.

Many jurisdictions allow operators of two-wheel motorcycles (tested or trained on a two-wheel motorcycle) to operate any motorcycle yet restrict three-wheel motorcycle operators (tested or trained on a three-wheel motorcycle) to only operating three-wheel motorcycles. The 3WVWG recognizes that this practice needs to change and addresses it in the recommended best practices.

Some information about three-wheel motorcycles was determined to be outside the scope of this project, including motive power, weight, safety and inspection concerns, helmet use, safety belt use, and enclosures.

The National Highway Traffic Safety Administration (NHTSA) has identified issues with vehicles such as autocycles. Autocycles may have bodies that surround the operator, and their overall appearance is similar to that of passenger cars. Passenger cars have to meet crash tests and provide an established level of safety to occupants. Autocycles do not have to meet these standards because they are motorcycles and must meet the safety standards established for motorcycles. The public may not be aware of these differences and may have a false sense of safety when choosing a vehicle.

It is our understanding that the NHTSA is reviewing the safety standards and definitions of certain three-wheel vehicles. If new rules are established, jurisdictions will need to adjust their definitions and procedures as appropriate.

The purpose of this guide is to aid jurisdictions in adhering to a consistent method of defining and identifying three-wheel vehicles. This can be accomplished by implementing the best practices developed by the 3WVWG to regulate on-highway operation and registration of three-wheel vehicles.

AAMVA strongly encourages jurisdictions to use these best practices to promote uniformity. This will facilitate the movement of these vehicles from one jurisdiction to another. These best practices have the capability to grow, change, and evolve as new three-wheel vehicle types continue to be introduced.

Section One Definitions and Acronyms

For purposes of these best practices, the following definitions and acronyms shall be used:

AAMVA	American Association of Motor Vehicle Administrators
Autocycle	A three-wheel motorcycle that has a steering wheel and seating that does not require the operator to straddle or sit astride it
Instruction permit	A permit issued for the purpose of learning to operate a motor vehicle; it may also be called a learner's permit
Motorcycle	A motor vehicle with motive power having a seat or saddle for the use of the rider and designed to travel on not more than three wheels in contact with the ground. 49 CFR 571.3(b)
Motor vehicle	A vehicle driven or drawn by mechanical power and manufactured primarily for use on public streets, roads, and highways but does not include a vehicle operated only on a rail line (49 CFR 30102).
NHTSA	National Highway Traffic Safety Administration
Registration	Documentary proof of authority to operate a motor vehicle on a public road or the process of issuing such proof

Section Two Distinguishing Three-Wheel Motorcycles from Autocycles

In recent years, there has been an increase in new motorcycle designs. Some of the new designs are challenging the existing rules and procedures for dealing with motorcycles. Some of the newly designed motorcycles have three wheels, a steering wheel, and full or partial enclosures and do not have typical motorcycle controls. Because these motorcycles are so different, a new term is needed to identify them; autocycle is the new term to refer to these motorcycles.

Three-wheel motorcycles and autocycles are types of motorcycles, but each requires different driver skills for operation. The key aspect that separates these vehicles is how similar or different they are from traditional motorcycles with two wheels. Three-wheel motorcycles share some characteristics with traditional motorcycles, but autocycles are fundamentally different.

The characteristics that distinguish these vehicles are based on the operation and handling of the vehicles. To verify that operators have the necessary skills to safely operate each type of vehicle, specific testing is required.

Key Three-Wheel Motorcycle Characteristics

- Handlebars
- Straddle or sit astride

Key Autocycle Characteristics

- Steering wheel
- Operator sits in a seat

The mass of a three-wheel motorcycle is beneath the operator and therefore has a direct connection to the way the vehicle handles. This is a break-point between three-wheel vehicles and autocycles because the mass of an autocycle is spread out either above or at the same height as the operator. Autocycle operators are within the vehicle they are operating and do not have to worry about their location on the vehicle or positioning themselves when cornering or stopping.

Autocycles share more characteristics with passenger cars; the operator remains in a seated position at all times, and the vehicle has a steering wheel. Autocycles may have side-by-side seating that places a passenger next to the driver. Operating an autocycle may require braking and acceleration mechanics similar to a passenger car.

Three-wheel motorcycles also have some minor characteristics that separate them from autocycles. In general, three-wheel motorcycles have less mass, and the driver has more of an influence on the stability of the vehicle. Some three-wheel motorcycles can be quite large, and the driver does not have much influence on the balance, but handlebars are typically used to operate the vehicle.

The differences between these types of vehicles mean they should have different operator licensing requirements. A regular passenger car license should be required to operate an autocycle, and the operator of three-wheel motorcycle should continue to have a motorcycle endorsement or license.

With autocycles being a new type of vehicle, detailed information on their safety record is needed. A way to

uniquely register autocycles is needed to allow specific safety statistics on autocycles to be collected. This provides a method of identifying unique issues and concerns with autocycles. It also provides law enforcement with a method of identifying these vehicles and determining the required operator license and endorsement.

The following pictures show examples of three-wheel motorcycles and autocycles. The pictures illustrate the different characteristics between these vehicles.

Examples of Three-Wheel Motorcycles

Examples of Autocycles

Section Three Best Practices for Registration of Three-Wheel Motorcycles and Autocycles

As of the publishing of this document, NHSTA defines and regulates three-wheel vehicles as motorcycles. However, in the United States, licensing requirements may vary from state to state. With the continuing evolution of three-wheel vehicles and concerns related to wheel configuration, handling characteristics, body styles, and operator licensing, it is recommended that jurisdictions register three-wheel vehicles in a manner that distinguishes between three-wheel motorcycles and autocycles.

Each jurisdiction should follow established registration and title procedures but should incorporate the following methods to differentiate three-wheel motorcycles from autocycles.

Registration of Three-Wheel Motorcycles

- Use 3W for the body style. *(Consider using 2W for body style for new registrations of two-wheel motorcycles to clarify vehicle type.)*
- Plate size should be the standard seven (7) inches in horizontal length and four (4) inches in vertical height.

Registration of Autocycles

- Use AU for the body style.
- Plate size should be the standard seven (7) inches in horizontal length and four (4) inches in vertical height.
- Create a distinguishing plate alpha/numeric configuration or use a distinguishing feature on the plate to indicate the vehicle is registered as an autocycle.

Section Four Best Practices for Driver License Requirements for the Operation of Three-Wheel Motorcycles and Autocycles

The skills needed to operate a two-wheel motorcycle are very different than those needed to operate a three-wheel motorcycle. The obvious difference is that two-wheel motorcycles require more balancing than three-wheel motorcycles; however, depending on the style of the three-wheel motorcycles, more balance may be needed than initially expected.

A critical difference between the two is the way they are maneuvered through turns and curves. An operator of a two-wheel motorcycle must use a technique called counter steering. To turn, a motorcycle must lean. To lean, the operator must press forward on the handgrip that is to the inside of the turn. To turn right, the operator must press forward on the right handgrip. The pressure on the handgrip causes the motorcycle to lean in the direction of the turn. The operator should look the direction he or she wants to go while keeping the shoulders square. In contrast, operators of three-wheel motorcycles, while still using a handle bar, must steer toward the turn.

Because these motorcycles require such different skill sets to operate, the training offered and testing required need to be different. States that operate motorcycle safety training programs are encouraged to provide both two-wheel motorcycle and three-wheel motorcycle training.

Autocycles operate completely differently than either two- or three-wheel motorcycles. Most autocycles operate more like passenger vehicles than motorcycles. They have a steering wheel and may have bucket seating. Acceleration and breaking are typically achieved using only foot pedals as opposed to the foot and hand controls of a motorcycle.

Driving Privilege for the Operation of Motorcycles

- A supplement to the Motorcycle Operators Manual (MOM) has been developed for three-wheel motorcycles and is currently being piloted. After the supplement is published, it will be available to assist jurisdictions with three-wheel vehicle test development.
- Different knowledge and skills tests specifically designed for two-wheel motorcycles and for three-wheel motorcycles are recommended.
- Motorcycle instruction or learner's permits should be specifically restricted based on the type of motorcycle knowledge test taken (two or three wheel).
- Motorcycle endorsements or licenses should be specifically restricted to the type of motorcycle for which the operator was tested.
  - If the operator has a driving privilege to operate a three-wheel motorcycle and wants to operate a two-wheel motorcycle, then the jurisdiction should test the operator's knowledge and skills specifically for two-wheel motorcycle operation.
  - If the operator has a driving privilege to operate a two-wheel motorcycle and wants to operate a three-wheel motorcycle, then the jurisdiction should test the operator's knowledge and skills specifically for three-wheel motorcycle operation.

– After an operator has been tested on both two- and three-wheel motorcycles, a jurisdiction should issue an unrestricted motorcycle endorsement or license.

– Jurisdictions should grandfather current license holders who have motorcycle driving privileges to operate both two- and three-wheel motorcycles.

Driving Privilege for the Operation of Autocycles

- Allow operation with a standard automobile license.
- Prohibit skills testing in autocycles.

Section Five Conclusion

By adopting these best practices, jurisdictions, motor vehicle agencies, and law enforcement will be in a better position to distinguish and define two-wheel motorcycles, three-wheel motorcycles, and autocycles. These best practices promote consistency and improvement in licensing and registration programs. It will also ensure the operator has the proper knowledge and skills to operate the various types of vehicles. The adoption of these best practices will:

- Ensure vehicles are registered in a consistent manner.
- Improve vehicle identification.
- Increase accuracy in data collection, crash research, and analysis.
- Enable jurisdictions to take steps to ensure effective testing methods and proper licensing of operators.
- Assist in establishing consistent licensing standards for operators of three-wheel vehicles and for the examiners providing testing.
- Enhance highway safety to ensure a safe blend of these vehicles with current traffic conditions.
- Ensure the operator has the appropriate knowledge and skills to operate different vehicle types discussed in this document.

Appendix A Three-Wheel Vehicle Working Group Charter

I. NAME

The name of the working group shall be the Three Wheel Vehicles Working Group, hereafter called the Working Group.

II. PURPOSE AND ANTICIPATED DELIVERABLES

The Working Group shall:

- identify the range of three wheel vehicle types that require further review;
- develop strategies and best practices to assist member jurisdictions in dealing with three wheel vehicles, existing and emerging, in a uniform and consistent manner; and
- deliver best practices and recommendations for regulating or restricting on-highway operation and registration of three wheel vehicles.

III. BACKGROUND

The Working Group was formed in 2010 to review the proliferation of and problems associated with a variety of three wheel vehicles that motor vehicle administrators and law enforcement officers encounter.

IV. MEMBERSHIP

The Working Group shall be comprised of a chair, appointed by the Chair of the Vehicle Standing Committee. In addition, the Working Group will include members from Canada and the United States selected by the Chair of the Vehicle Standing Committee and representing the following AAMVA disciplines: Vehicle Registration and Title; Drivers License and Control; Law Enforcement; and Vehicle Safety and Inspection. Members from other AAMVA disciplines may be added as necessary.

The membership of the Working Group will not exceed 12 members.

Each Working Group member term shall be for two complete fiscal years—a complete fiscal year is from October 1 through September 30. Members may serve additional terms without reappointment until replaced by the Chair of the Vehicle Standing Committee.

V. MEETING PROCEDURES

The Working Group will meet every two months or at the call of the working group chair, either by teleconference or in person when necessary.

Costs associated with conference calls and/or travel will be charged against the budget approved by the AAMVA Steering Committee for the Working Group.

Coordination of each Working Group meeting shall be the responsibility of the AAMVA staff liaison assigned to the working group, who shall provide notice to members prior to each meeting and maintain and publish minutes of each meeting.

The presence of two-thirds of the members, either in person or by teleconference, shall constitute a quorum. A majority vote of the members present shall constitute an official action of the Working Group.

VI. MEMBER RESPONSIBILITIES

All Working Group members are expected to actively participate in the Working Group's activities and meetings on a regular basis.

A member who is unable to participate on a regular basis may be required by the Chair of the Vehicle Standing Committee to resign from the Working Group.

Members are to represent the interests of the AAMVA Vehicle Community.

VII. BUDGET ESTIMATE

The estimated annual cost for this project is $16,000 per scheduled face-to-face meeting. The number of meetings and budget will be approved annually by the AAMVA Steering Committee.

VIII. CHARTER AMENDMENTS

All proposed amendments to the Charter shall be circulated to all Working Group members by the AAMVA staff liaison, and if approved by a majority of the Working Group, forwarded to the Steering Committee for final approval.

IX. WORKING GROUP TERMINATION

The working group will be dissolved by September 30, 2013 unless tasked with additional responsibilities by the AAMVA Chair of the Board or extended by the AAMVA Steering Committee.

Appendix B Three-Wheel Vehicle Working Group Roster

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