6 The inspection requirement of fuel system for CNG vehicle

6.1 The CNG of vehicle fuel system's container, fuel-charging nozzle, safety valve of natural gas, shutoff valve and pressure regulator has requests that the function and specification as below:

6.1.1 For CNG container: material, volume, empty weight, operation/test pressure, name of manufacturer, container series No, date of initial inspection, tread spec/dimension of container opening. The working pressure of compressed natural gas container shall be greater than 200 kgf/cm$^2$.

6.1.2 For CNG fuel-charging nozzle (includes the non-return device): structural diagram, structural diagram of non-return device, installing location and theory of activation, structural diagram of protection cap and the activating method regarding initiating-proof of engine. The CNG charging nozzle shall conform to the ANSI/AGA NGV1 spec, its working pressure shall be greater than200 kgf/cm2.

6.1.3 For CNG safety valve: structural diagram, activating method and activating pressure/temperature. The working pressure of gas safety valve shall be greater than 200 kgf/cm2.

6.1.4 For CNG shutoff valve: structural diagram, activating method and activating pressure/temperature. The working pressure of gas shutoff valve shall be greater than 200 kgf/cm2.

6.1.5 For CNG pressure regulator: structural diagram, activating method, heating method, stages of pressure reduction and outlet pressure. The operating pressure of pressure regulator shall be greater than 200 kgf/cm2.

6.2 The gastight testing of the CNG of vehicle fuel system's each parts have not to leak.

6.2.1 The gastight testing of gastight chamber can use carbon dioxide testing or vapor gauge testing.

6.2.2 Except natural gas fuel system that other parts could testing by inspection fluid、liquid leak hunting device or pressure gauge.

6.3 The CNG of vehicles fuel system's install stipulation

6.3.1 The CNG containers and accessories, fixed device and install stipulation:

6.3.1.1 Compressed natural gas containers shall be brand that it is doesn't wipe easier or remark following items:

6.3.1.1.1 The containers manufacturer's name or sign.

6.3.1.1.2 The container batch number or serial number.

6.3.1.1.3 The containers first testing or qualified date of regular testing.

6.3.1.1.4 Compressed natural gas or CNG.

6.3.1.1.5 The container's testing of endurable pressure or the highest filling pressure.

6.3.1.1.6 The inner capacity of container（The unit is liter）.

6.3.1.1.7 The mass of container（Means empty weight，The unit is kilogram）.

6.3.1.1.8 「The container of vehicle use only」typeface.

6.3.1.2 The place where near the fuel-charging nozzle that it is doesn't wipe easier or remark following items:

6.3.1.2.1 The category of filling fuel（Means Compressed natural gas or CNG ）.

6.3.1.2.2 The working pressure of compressed natural gas system.

6.3.1.2.3 The total capacity of container（The unit is liter）.

6.3.1.2.4 The next time testing date of container.

6.3.1.3 The container and its accessories, fixed device shall install within overall length、overall width and overall height and higher than the lowest distance form ground and it shouldn't install in cabin. Who changed compressed natural gas as fuel, the container and its accessories must not install on the car roof.

6.3.1.4 The container and its accessories shall apart form the rear of vehicle （include bumper）over 30 cm, apart from body over 20 cm nd apart form exhaust pipe, silencer and other heat source over 10 cm, if it has proper heat insulation, it can apart form over 4 cm, the accessories of container shall apart form exhaust port over 30 cm.

6.3.1.5 If the accessories of container installed in luggage compartment, it shall install gastight facilities and compartment, the installed place have to good ventilation.

6.3.1.6 The accessories of container shall apart form the electric terminal and electric switch over 20 cm. If the accessories of container installed in sealed chamber, it shall install exchange port near the installed place so can discharge the natural gas out of the car, The exchange port shall not influence the electric terminal and electric switch when it is discharge natural

gas。The interior line of the car body have to wrap and fixed。The container and its accessories, pipe and other relevant fuel system's component should not install under the battery.

6.3.1.7 The container has the cap and doesn't exposure to the sunlight. If the container and its accessories have the cap, it shouldn't have a pool of water phenomenon.

6.3.1.8 The container shall install discharged pressure devices（means safety switch）, when pressure or temperature unusual to provide container discharge pressure, the natural gas by discharged to out of body shall be use metal pipe and the safety place where distant from the heat source.

6.3.1.9 The container and its accessories shall fix tight, the fixed place shall be install protector for protect against external objects or relevant component of vehicle to collide with each other cause damaged.

6.3.1.10 The container shall install manual switch devices. On the container or near the container shall install Excess Flow Shut-off Valve.

6.3.1.11 The container and its accessories' installed place shall be easy for maintained or repaired by worker.

6.3.2 Shutoff valve、contrary halt valve and pressure adjuster installed stipulation:

6.3.2.1 Shutoff valve, contrary halt valve and pressure adjuster shall be apart form the rear of vehicle over 30 cm and apart from body over 20 cm.

6.3.2.2 From container to engine shall be install shutoff valve, if the engine is stop running, power switch or it doesn't use natural gas fuel，shutoff valve shall automatically cut off provide fuel. Near the filled air union shall install convenient manual 1/4 shutoff valve and the direction of manipulation that it is obvious indication.

6.3.2.3 The pressure adjuster shouldn't directly use engine's exhaust for heating.

6.3.3 The pipe installed stipulation:

6.3.3.1 The pipe shall install within overall length, overall width and overall height and higher than the lowest distance form ground. The pipe shall apart from exhaust pipe or silencer over 10 cm, if it has proper heat insulation, it can apart form over 4 cm and it shall be apart form exhaust port over 30 cm. The pipe shall apart from the electric terminal and electric switch

over 20 cm..

6.3.3.2 The pipe installed in luggage compartment，it shall be install gastight facilities and compartment，the installed place have to good ventilation. If the pipe installed in sealed chamber, it shall be install exchange port near the installed place so can discharge the natural gas out of the car, The exchange port shall not influence the electric terminal and electric switch when it is discharge natural gas. The interior line of the car body have to wrap and fixed.

6.3.3.3 The bend place of pipe that the bend radius should large than twice times of outer diameter。The pipe shall use metal materials immobile clip fixed，between the two immobile points the distance shouldn't exceed 100 centimeters.

6.3.3.4 The support utensil of pipe or the metal of immobile clip shouldn't directly contact with pipe, The pipe that through metal of car body shall be protective and shouldn't contact with metal.

6.3.4 The filled air union installed stipulation:

6.3.4.1 The filled air union shouldn't install on the direction of exhaust port and it shall be apart form exhaust port over 30 cm.

6.3.4.2 The filled air union shall apart form the electric terminal and electric switch over 20 cm.

6.3.4.3 The filled air union shouldn't install in the passenger chamber and the port of the filled air union shouldn't face cabin.

6.3.4.4 The filled air union shall install protective cap or embolism. When the protective cap or embolism of the filled air union is started, the engine of vehicle shouldn't work.

6.4 The fixed device of container intensity:

6.4.1 The applicant shall bring the calculated information of the fixed device of container intensity.

6.4.2 The container uses supported frame according to 2.5 times of dangerous cross-section of supported frame to calculate, the factor of safety of dangerous cross-section intensity shall over than 1.6 times.

6.4.3 The fixed devices of container shall install over two metal fixed belts and have to install or take apart container but it can't use cable to fixed.

6.4.4 The metal belts and other support can't directly contact with container, between fixed and container shall install elastic spacer with doesn't hydrous.

6.5 Others:

6.5.1 The static electricity of buckle shall be install in the proper place of vehicle when filling the natural gas fuel for vehicle, it must conduct the static electricity of vehicle to grounding.

6.5.2 The port of vehicle pipe shall install extinguishable devices and avoid spark when vehicle is exhaust.

6.5.3 Near the filled air union shall install manometer to show compressed natural gas' pressure of container。Nearby the dashboard of the cab shall install devices to show the stock of compressed natural gas and devices shouldn't cause the natural gas leak to the cab.

6.5.4 The front of pressure adjuster shall install the natural gas filter.