



**SPARTAN MOTORS USA, INC.**

1541 Reynolds Rd. Charlotte, MI 48813 | P: 517.543.6400

[SPARTANMOTORS.COM](http://SPARTANMOTORS.COM)

December 20, 2019

Mr. James Owens  
Administrator  
National Highway Traffic Safety Administration  
West Building  
1200 New Jersey Avenue SE  
Washington, DC 20590

RE: 19V-790 Petition for Inconsequentiality

Dear Owens:

On, or near, December 2, 2019 the enclosed was mailed to the National Highway Traffic Safety Administration. However, it was later returned to Spartan due to missing building wing identification. It has subsequently made its way back to my desk today.

This has created what would appear to be a delay in our submission however, it was submitted on time. I've not had this problem with my two previous submissions.

Please accept this petition and show that it was submitted in time based on the submission of our non-compliance information report.

Best Regards,

**Wesley D. Chestnut**

Manager, Product Safety and Compliance

**OFFICE** 517.543.6400 **EXT** 3275

**CELL** 517.231.0712

**EMAIL** [Wes.Chestnut@spartanmotors.com](mailto:Wes.Chestnut@spartanmotors.com)

**WEB** [www.spartanmotors.com](http://www.spartanmotors.com)



**SPARTAN MOTORS USA, INC.**

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December 2, 2019

National Highway Traffic Safety Administration  
1200 New Jersey Avenue SE  
Washington, DC 20590  
Attn: Administrator

RE: 19V-790 Petition for Inconsequentiality

Dear Administrator:

Spartan Motors USA, Inc., (Spartan) for its Emergency Response business unit, submits this Petition for Determination of Inconsequential Noncompliance ("Petition") pursuant to the National Traffic and Motor Vehicle Safety Act ("Safety Act"), 49 U.S.C. §30118(d) and 49 C.F.R. Part 556, for an exemption from the notice and remedy requirements of 49 U.S.C. §30118(c) and 49 CFR Part 577, on the grounds that the noncompliance to which this petition relates is inconsequential to motor vehicle safety. Under the Emergency Vehicle business unit, Spartan is a manufacturer of chassis cabs that are to be completed as emergency vehicles (e.g. fire apparatus) and single state emergency vehicles.

**Introduction**

On October 28, 2019, Spartan determined that non-compliance to FMVSS 121, Air Brake Systems. More specifically, Spartan determined that up to 100% of approximately 3583 emergency response chassis cabs may not fully meet the requirements S5.1.2.1 of FMVSS 121, which requires the combined volume of all service reservoirs and supply reservoirs to be at least 12 times the combined volume of all service brake chambers.

On November 4, 2019, Spartan submitted notification regarding the non-compliance to the Recall Management Division of the National Highway Traffic Safety Administration as required by 49 C.F.R. Part 573, Defect and Noncompliance Responsibility and Reports. A copy of Spartan's Part 573 Noncompliance Report is attached. Between September 23, 2019 and October 4, 2019, Spartan conducted calculations and reviewed actual brake chamber capacities of the affected chassis cabs in an effort to determine, and confirm, the aforementioned non-compliance existed. Once the condition was confirmed, chassis cabs were corrected by replacing adding an additional reservoir of 200 cu. In. capacity.

## **Discussion**

Under the Safety Act, each Federal motor vehicle safety standard promulgated by NHTSA must be “practicable, meet the need for motor vehicle safety, and be stated in objective terms.” 49 U.S.C. §30111(a). The Safety Act defines “motor vehicle safety” as follows:

“Motor vehicle safety” means the performance of a motor vehicle or motor vehicle equipment in a way that protects the public against unreasonable risk of accidents occurring because of the design, construction or performance of a motor vehicle, and against unreasonable risk of death or injury in an accident, and includes nonoperational safety of a motor vehicle.

49 U.S.C. §30102(a)(8) (emphasis added).

The Safety Act exempts manufacturers from the Safety Act’s notice and remedy requirements when the Secretary of Transportation determines that a defect or noncompliance is inconsequential as it relates to motor vehicle safety. See 49 U.S.C. §30118(d). Section 30118(d) demonstrates Congress’s acknowledgement that there are cases where a manufacturer has failed to comply with a safety standard, yet the impact on motor vehicle safety is so slight that an exemption from the notice and remedy requirements of the Safety Act is justified. The Agency has stated that the relevant consideration in evaluating an inconsequentiality petition is “whether an occupant who is affected by the noncompliance is likely to be exposed to a significantly greater risk than an occupant in a compliant vehicle.” 69 Fed. Reg. 19897, 1990 (April 14, 2004) (emphasis added). Guided by this principle, Spartan believes that an exemption is warranted in this case.

Section 5.1.2.1 of FMVSS 121, requires the combined volume of all service reservoirs and supply reservoirs to be at least 12 times the combined volume of all service brake chambers. There are 3227 chassis cabs affected by this condition are equipped with T-30 brake chambers on the steer axle, T-30 brake chambers on the drive axle. In using the values in Table V of FMVSS 121, the cumulative air capacity of these brake chambers would be 356 cu. in. Multiplying by 12, the needed air reservoir capacity would be 4272 cu. in. To better illustrate the issue, refer to the Table 1 below.

Brake Chamber Size	FMVSS 121 Cu. In. (Table V)	Number of Chambers	Total Cu. In.
T-30	89	4	356

Total Chamber Cu. In.	356
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Required Air Reservoir Capacity (using 12X multiplier) Cu. In.	4272
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Spartan Actual Reservoir Capacity (Cu. In.)	4152
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Additional Capacity Needed (Cu. In.)	120
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Percent of Variance	2.8%
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Table 1

There are 356 chassis cabs affected by this condition are equipped with T-30 brake chambers on the steer axle, T-30 brake chambers on the drive axle, and T-30 brake chambers on the tandem axle. In using the values in Table V of FMVSS 121, the cumulative air capacity of these brake chambers would be 534 cu. in. Multiplying by 12, the needed air reservoir capacity would be 6408 cu. in. To better illustrate the issue, refer to the Table 2 below.

Brake Chamber Size	FMVSS 121 Cu. In. (Table V)	Number of Chambers	Total Cu. In.
T-30	89	6	534

Total Chamber Cu. In.	534
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Required Air Reservoir Capacity (using 12X multiplier) Cu. In.	6408
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Spartan Actual Reservoir Capacity (Cu. In.)	6236
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Additional Capacity Needed (Cu. In.)	172
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Percent	2.7%
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Table 2

## **Air Compressor Cut-In Pressure**

In Section 5.1.1 of FMVSS 121, the vehicle is to be equipped with an air compressor of sufficient capacity to increase air pressure in the supply and service reservoirs from 85 psi to 100 psi when the engine is operating at the vehicle manufacturer's maximum recommended r.p.m. within a time, in seconds, determined by the quotient  $((\text{Actual reservoir capacity} \times 25) / \text{Required reservoir capacity})$ . In using this equation, vehicles subject to the condition represented in the Table 1, the air pressure would be required to go from 85 psi to 100 psi within 24.14 seconds.  $((4152 \times 25) / 4272)$  Using the same equation and the required air reservoir capacity of 4272 cu. in., the air pressure would need to increase from 85 psi to 100 psi within 25 seconds. Vehicles subject to the condition that has resulted in the non-compliance to S5.1.2.1 could increase air pressure from 85 psi to 100 psi in less than 6 seconds, well within the requirement of 24.14 seconds. Further, vehicles subject to this condition have a cut in pressure set at, or greater than, the minimum requirement of 100 psi.

The impact of having 2.7% to 2.8% less air reservoir capacity than required, the difference in the cut in pressure requirement of only 1 second would appear to have an adverse consequence of a slight increase in air compressor cycling. However, this would be dependent on application of the service brakes.

## **Emergency Vehicle Duty Cycle**

The vocational duty cycle of a fire apparatus requires the emergency vehicle to respond to emergency situations that are predominantly short distances away, notwithstanding trips to a dealer or service provider. The number of times will vary between fire departments however, the duty cycle for a fire apparatus is intermittent when compared to an over the road vehicle.

While the braking applications in these short distances may be frequent, the air compressor would be able to maintain adequate air pressure in the air reservoir system. With the minimal, lowered capacity, with the slightly less than a one second difference in filling the air reservoir system, the slightly lower than required capacity would likely not be noticeable to the driver.

## **Vocational Requirements**

The National Fire Protection Association (NFPA) promulgates a vocational standard that defines requirements specific to the vocational aspect of the emergency vehicle. Within NFPA 1901 Standard for Automotive Fire Apparatus (NFPA 1901), emergency vehicles subject to the requirements of the standard are required to be equipped with a quick build up section in the air reservoir system so that if the vehicle has a completely discharged air system, the apparatus would be able to be moved within 60 seconds. For those emergency vehicles that cannot be equipped with the quick build up section, they are required to be equipped with an on-board automatic electric compressor or shoreline hook up.

Additionally, NFPA 1901 requires all vehicles that have a Gross Vehicle Weight Rating (GVWR) greater than 36,000 pounds be equipped with an auxiliary braking system. This may be, depending on the option of the purchaser, a transmission retarder, an inline retarder, or exhaust restriction device. All but 16 vehicles subject to this non-compliance have a GVWR of more than 36,000 pounds.

## **Air System Warning**

The completed emergency vehicles subject to this condition are equipped with two air gauges that monitor the air system pressure in both System 1 and System 2. In addition to the air gauges, there are both a warning light and audible alarm to alert the driver of a low air condition.

## **Conclusion**

The actual air reservoir capacity in the affected emergency response chassis cabs and emergency vehicles may be between 2.7% and 2.8% less than the calculated required amount as indicated in the table above. However, due to the duty cycle of an emergency vehicle, the vocational requirements and the air compressor cycling that is well within the required time using the equation from FMVSS 121, Spartan believes the non-compliance is inconsequential to motor vehicle safety. The less than required capacity does not appear to impact vehicle braking

performance. (e.g. stopping distance, brake application and release timing) The completed vehicles are equipped with dual air gauges, a visual and audible warning system to alert the driver to a loss of air in the air brake system. Given the aforementioned, Spartan requests that it be exempt from the notice and remedy provisions of the Safety Act.

Please contact me directly with any questions or would like additional information.

Best Regards,

A handwritten signature in black ink, appearing to read "Wesley D. Chestnut", enclosed in a thin black rectangular border.

**Wesley D. Chestnut**

Manager, Product Safety and Compliance

**OFFICE** 517.543.6400 **EXT** 3275

**CELL** 517.231.0712

**EMAIL** [Wes.Chestnut@spartanmotors.com](mailto:Wes.Chestnut@spartanmotors.com)

**WEB** [www.spartanmotors.com](http://www.spartanmotors.com)

# Part 573 Safety Recall Report

# 19V-790

**Manufacturer Name :** Shyft Group

**Submission Date :** NOV 11, 2019

**NHTSA Recall No. :** 19V-790

**Manufacturer Recall No. :** 19019



## Manufacturer Information :

**Manufacturer Name :** Shyft Group

**Address :** 1541 Reynolds Road  
Charlotte MI 48813

**Company phone :** 517-543-6400

## Population :

**Number of potentially involved :** 3,583

**Estimated percentage with defect :** 100 %

## Vehicle Information :

**Vehicle 1 :** 2005-2020 Spartan Emergency Respons Diamond, Gladiator, MetroStar

**Vehicle Type :** BUSES, MEDIUM & HEAVY VEHICLES

**Body Style :** OTHER

**Power Train :** DIESEL

**Descriptive Information :** Vehicles affected by this non-compliance are equipped with drum front brakes and drum rear brakes and an 1 air reservoir (0993-MM5) at 2068 cubic inches

**Production Dates :** OCT 18, 2004 - OCT 01, 2019

**VIN Range 1 : Begin :**

NR

**End :** NR

Not sequential

## Description of Noncompliance :

**Description of the Noncompliance :** Vehicles affected by this non-compliance fail to meet the 12x air reservoir

volume as required by S5.1.2.1 of FMVSS 121 - Air Brake Systems

**FMVSS 1 :** 121 - Air brake systems

**FMVSS 2 :** NR

**Description of the Safety Risk :** Spartan intends to submit its petition for inconsequentiality

**Description of the Cause :** Pending

**Identification of Any Warning that can Occur :** Spartan intends to submit its petition for inconsequentiality

## Involved Components :

Component Name 1 : NR

Component Description : NR

Component Part Number : NR

## Supplier Identification :

### Component Manufacturer

Name : NR

Address : NR

NR

Country : NR

## Chronology :

During a project review on 9/16/2019, a request to verify air volumes had been calculate for a certain vehicle configuration similar to that subject to this recall. As a result of this request, on 9/23/2019, Spartan Engineering began to verify calculations on other similar configurations (drum front brakes and rear drum brakes). Engineers consulted with Product Compliance and identified a potential non-compliance might exist in vehicles equipped with the aforementioned brake chambers and the air reservoir mentioned in the descriptive criteria. On 10/4/2019 the final criteria to determine an affected potential population was determined and on 10/18/2019, a potential population was identified. Engineering and Product Compliance confirmed the potential population and on 10/25/2019 a stop ship was issued. On 10/28/2019, Spartan determined a non-compliance could exist in the final population of vehicles.

## Description of Remedy :

Description of Remedy Program : Spartan intends to submit its petition for inconsequentiality

How Remedy Component Differs from Recalled Component : Vehicles remedied will be equipped with an additional air reservoir which cumulatively provides the required volume.

Identify How/When Recall Condition was Corrected in Production : An additional reservoir was added to units on, and after, 10/21/2019.

## Recall Schedule :

Description of Recall Schedule : NR

Planned Dealer Notification Date : NOV 05, 2019 - NOV 06, 2019

Planned Owner Notification Date : NR - NR

\* NR - Not Reported

# Part 573 Safety Recall Report

# 19V-790

**Manufacturer Name :** Shyft Group  
**Submission Date :** NOV 04, 2019  
**NHTSA Recall No. :** 19V-790  
**Manufacturer Recall No. :** 19019

**Manufacturer Information :**

**Manufacturer Name :** Shyft Group  
**Address :** 1541 Reynolds Road  
 Charlotte MI 48813  
**Company phone :** 517-543-6400

**Population :**

**Number of potentially involved :** 3,583  
**Estimated percentage with defect :** 100 %

**Vehicle Information :**

**Vehicle 1 :** 2005-2020 Spartan Emergency Respons Diamond, Gladiator, MetroStar  
**Vehicle Type :** BUSES, MEDIUM & HEAVY VEHICLES  
**Body Style :** OTHER  
**Power Train :** DIESEL  
**Descriptive Information :** Vehicles affected by this non-compliance are equipped with drum front brakes and drum rear brakes and an 1 air reservoir (0993-MM5) at 2068 cubic inches  
**Production Dates :** OCT 18, 2004 - OCT 01, 2019  
**VIN Range 1 : Begin :** NR **End :** NR  Not sequential

**Description of Noncompliance :**

**Description of the Noncompliance :** Vehicles affected by this non-compliance fail to meet the 12x air reservoir volume as required by S5.1.2.1 of FMVSS 121 - Air Brake Systems  
**FMVSS 1 :** 121 - Air brake systems  
**FMVSS 2 :** NR  
**Description of the Safety Risk :** Spartan intends to submit its petition for inconsequentiality  
**Description of the Cause :** Pending  
**Identification of Any Warning that can Occur :** Spartan intends to submit its petition for inconsequentiality

**Involved Components :**

Component Name 1 : NR

Component Description : NR

Component Part Number : NR

## Supplier Identification :

### Component Manufacturer

Name : NR

Address : NR

NR

Country : NR

## Chronology :

will be provided by COB 11/5

## Description of Remedy :

Description of Remedy Program : Spartan intends to submit its petition for inconsequentiality

How Remedy Component Differs from Recalled Component : Vehicles remedied will be equipped with an additional air reservoir which cumulatively provides the required volume.

Identify How/When Recall Condition was Corrected in Production : An additional reservoir was added to units on, and after, 10/21/2019.

## Recall Schedule :

Description of Recall Schedule : NR

Planned Dealer Notification Date : NOV 05, 2019 - NOV 06, 2019

Planned Owner Notification Date : NR - NR

\* NR - Not Reported