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IMPLEMENTATION OF A SCHEDULED REPAIR SYSTEM FOR YUTONG BUSES TO IMPROVE BUS PERFORMANCE

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Abstract: In This article studies the current frequency of Yutong buses entering the 2nd TS. The distances of breakdowns in the power supply system are determined, and the increase in the coefficient of uninterrupted operation and efficiency of buses when they are included in the 2nd TS is presented. This article examines the current frequency of Yutong buses entering 2-day maintenance. The break-in distances for the power supply system were determined, and an increase in the break-even coefficient and efficiency of buses was shown when they were scheduled in conjunction with the 2nd maintenance.

Keywords: maintenance, maintenance, routine repair, scheduled repair, failure, malfunction, unit, system, operation, generator, cooling system, standard deviation, coefficient of variation.

Introduction.

Maintenance and repair technology is the key link in troubleshooting vehicle failures. The most important task is to maintain vehicles in working condition, identify the causes of changes in their technical condition, and study methods for troubleshooting and eliminating malfunctions. To achieve this, it is necessary to apply the patterns of changes in the vehicle's technical condition, develop methods for maintaining its serviceability based on the requirements specified in the technical documentation, and perform maintenance and repair work in a timely manner. The implementation of organizational and technical measures in this field is carried out based on the achievements of science and technology in road transport.

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In particular, to increase the efficiency of Yutong buses, it is important to organize timely maintenance and routine repairs, as well as high-quality performance in accordance with the requirements. In order to reduce damage and malfunctions during operation, it is advisable to combine some routine maintenance work with maintenance work, i.e., to carry out routine maintenance work according to a plan. This is because the buses are returning from the road for the following routine repairs: the generator; the clutch; the cooling system, etc. To obtain data on these units and systems, it is necessary to conduct observations during operation. According to the observation results, the frequency of Yutong buses entering the 2nd TMS is as follows (thousand km): 108.60; 130.50; 132.10; 136.30; 151.30; 125.90; 118.00; 129.70; 120.50; 143.50; 143.80; 151.90; 111.40; 118.40; 115.50; 105.70; 124.20; 129.60; 132.70; 113.60

The mean value of these periods (1), the standard deviation (2), and the coefficient of variation (3) are determined by formulas:

$$\bar{x}=\frac{\sum_{i=1}^{N} x_i}{N} \qquad (1)$$

where x_i is the frequency with which the i-th bus enters the 2nd maintenance station, thousand km;

N is the number of buses under supervision.

$$\sigma=\sqrt{\frac{\sum_{i=1}^{N}(x_i-\bar{x})^2}{N-1}}, \qquad (2)$$

$$V=\frac{\sigma}{\bar{x}} \qquad (3)$$

In order to reduce breakdowns and malfunctions occurring between the 2nd maintenance of buses, it is advisable to apply a scheduled repair system. To prevent frequent breakdowns and malfunctions of the units during scheduled maintenance, it is necessary to carry out routine maintenance work simultaneously with maintenance work No. 2. The failure distances (thousand km) between the 2nd and 3rd maintenance stations along the generator belt are as follows: 105.70; 108.60; 111.40; 113.60; 115.50; 118.00; 118.40; 120.50; 124.20; 125.90; 129.60; 129.70; 130.50; 132.10; 132.70; 136.30; 143.50; 143.80; 151.30; 151.90;

Table 1 Test Results

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Intervals			Frequency	Frequency	Distribution density probability, 1/thousand km	Distortion function	Probability of failure-free operation
№	Start time	End	m(L)	p(L)	f(L)	F(L)	R(L)
1	105,70	114,94	4	0,2000	0,0216	0,2000	0,8000
2	114,94	124,18	4	0,2000	0,0216	0,4000	0,6000
3	124,18	133,42	7	0,3500	0,0379	0,7500	0,2500
4	133,42	142,66	1	0,0500	0,0054	0,8000	0,2000
5	142,66	151,90	4	0,2000	0,0216	1,0000	0,0000
			20	1,0000			

Table 1 presents the reliability characteristic indicators for these distances based on test results: probability of failure density, probability of failure, and probability of failure-free operation.

According to the calculation results, the average resource is L_2 = 127.41 thousand km; the standard deviation is σ_2 = 12.82 thousand km; and the coefficient of variation is V = 0.10. Based on the coefficient of variation for determining theoretical values, the value of the Kolmogorov criterion is L=0.48. The probability of the Kolmogorov criterion is P (L) =0.964.

The theoretical values of the reliability characteristic indicators are presented in Table 2.

Intervals			Distribution density probability, 1/thousand km	Distortion function	Probability of failure-free operation	Difference of distortion functions
№	Start time	Oxiri	fт(L)	Fт(L)	Rт(L)	D(L)
1	105,70	114,94	0,0128	0,1182	0,8818	0,0818
2	114,94	124,18	0,0258	0,3566	0,64335	0,0434
3	124,18	133,42	0,0310	0,6427	0,357319	0,1073
4	133,42	142,66	0,0221	0,8467	0,153301	0,0467
5	142,66	151,90	0,0094	0,9332	0,066772	0,0668

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Theoretical values according to the law of normal:

Conclusion.

The results of the study on organizing the use of a scheduled repair system to increase the serviceability of Yutong buses in the article provide the following important conclusions: the frequency of service entry for the Yutong buses along the 2-ts fault and generator belt averages L_ (2-TX) = 127.41 thousand km, the standard deviation σ_ (2-TX) = 12.82 thousand km; the coefficient of variation is V = 0.10. According to the results of the analysis, to prevent breakdowns during the operation of buses, it is advisable to carry out routine repairs in conjunction with scheduled technical maintenance. This method helps to extend the service life of buses, reduce operating costs and increase the efficiency of passenger transportation.

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