

MOT failures

The main defect items presenters miss, which DVSA don't!
(And what you can do about this)

Guidance document

The Driver and Vehicle Standards Agency (DVSA) are responsible for carrying out vehicle annual tests (MOT). Although HGV MOT fail rates have continued to drop year on year, the top failure items tend to remain the same.

Logistics UK has been analysing the detail behind these failures, to identify the main causes. This guidance document highlights the common failure items and provides ideas on how to ensure those preparing vehicles for MOT don't miss the defects DVSA will identify.

HGV

		Year	
		2022-23	2021-22
1	Aim of headlamps	2.28%	3.34%
2	Lamps	2.15%	3.33%
3	Brake systems and components	1.71%	3.80%
4	Service brake performance	1.27%	1.86%
5	Steering	1.13%	2.43%
6	Suspension	0.99%	2.59%
7	Condition of tyres	0.79%	5.27%

Trailer

		Year	
		2022-23	2021-22
1	Service brake performance	3.20%	4.36%
2	Parking brake performance	2.17%	3.12%
3	Brake systems and components	1.32%	2.65%
4	Lamps	1.21%	1.91%
5	Suspension	0.82%	1.95%
6	Rear markings and reflectors	0.47%	0.77%
7	Spray suppression, wings etc	0.45%	1.06%
8	Condition of tyres	0.43%	2.15%

Introduction

DVSA Vehicle Assessors (VA) carry out the vehicle inspections utilising the HGV Inspection Manual to provide details of what items get inspected and the reasons for rejection. Defects not meeting the minimum standard are categorised into one of three categories depending on their severity:

- Minor – deficiencies having no significant effect on the safety of the vehicle/trailer or impact on the environment and other minor non-compliances.
- Major – deficiencies that may prejudice the safety of the vehicle/ trailer, have an impact on the environment, put other road users at risk or other more significant non-compliances.
- Dangerous – deficiencies constituting a direct and immediate risk to road safety or having an impact on the environment.

Note: The MOT inspection is the minimum acceptable standard of roadworthiness and doesn't allow for further deterioration in service as a normal preventative maintenance inspection should.

Our analysis used DVSA data for the top failure items 2022-23 and defect description data 2023-24 (up to and including 15 November 2023).

Each defect category is listed and analysed to identify the main causes with prevention guidance.

Service brake performance (vehicle – No 4, trailer – No 1)

For 'service brake performance', the main defect for trailers (76%) is failing to achieve the overall percentage brake performance.

The main defect for vehicles (53%) is significant brake imbalance (failing to achieve 50% of the brake effort of the other wheel across an axle). DVSA categorise this as a 'Dangerous' defect and could result in prohibition action and possible follow-up action.



Fig 1: Roller brake tester

The other main 'service brake performance' defect is for major imbalance (failing to achieve 70% of the brake effort of the other wheel across an axle). For vehicles this accounts for 28% of all 'service brake performance' defects, and for trailers it's 15%.

Guidance

We recommend a full roller brake performance test be undertaken on an approved and calibrated machine as part of your preparation. As a minimum this should be undertaken in the same condition (laden where necessary) as that to which it will be MOT tested. The operation should be undertaken in the same manner as that of the MOT (vehicle aligned, full air pressure and operation performed slowly), with the results being fully analysed.

Applying the brakes quickly, to obtain a lock-out, offers false assurance that the brake is operating satisfactorily. In fact, that action doesn't allow the brake effort to build between the tyre and brake test roller, resulting in failure to obtain the highest possible brake effort reading, and is therefore not representative of the brake's maximum performance during MOT test conditions.

Particular interest should be given to low figure lock-outs, or high percentage imbalances across an axle, as this may indicate a potential brake problem. Logistics UK's Brake Test guidance document provides more information on how to read and understand brake test reports – go to:



<https://logistics.org.uk/compliance-and-advice?mot=10>

Headlamp aim (vehicle – No 1)

86% of all failures for headlamp aim are due to a headlamp beam being too high or low.

Guidance

Always check the vehicle's headlamps in the same condition as it will be presented for MOT. For example, if it is to be loaded for test, check it in its loaded state. Ensure the suspension has settled – this may require some dynamic braking events. Ensure staff are competent with operating the testing equipment and are able



Fig 2: Headlamp

to interpret the image displayed to establish whether the beam passes or fails.

Parking brake performance (trailer – No 2)

89% of failures in this area are for failing to achieve the overall percentage brake performance.

Guidance

As that for Service Brake Performance (see above).

Lamps (vehicle – No 2, trailer – No 4)

79% of all vehicle lamp failures, and 83% of all trailer lamp failures are due to an obligatory lamp missing or inoperative.



Fig 3: Outline marker lamp

Further analysis by Logistics UK identified that most lamps that tend to be overlooked are outline marker lamps – those that are fitted upwards of the eye line. Additionally, preparers may not be clear of the dates of obligatory lamps, so fail to check their fitment.

Guidance

End outline marker lamps: Are required to be fitted to:

- Vehicles first used from 1 April 1991.
- Trailers manufactured from 1 October 1990.

and which in both cases are more than 2.1m wide.

Rear fog lamps: Must be fitted to vehicles first used, and trailers manufactured from 1 April 1980.

Reversing lamps: Are required for motor vehicles first registered from 1 September 2009.

Front fog lamps: Are required for vehicles first registered from 1 March 2018.

Side marker lamps: Must be fitted to:

- Vehicles with an overall length exceeding 6m first used from 1 April 1991.
- Trailers with an overall length exceeding 6m manufactured from 1 October 1990.
- Trailers with an overall length exceeding 9.15m manufactured before 1 October 1990.

Two or more marker lamps must be fitted at each side to ensure that the following is complied with:

Maximum distance of the foremost marker lamp from the front of the vehicle or trailer, including any drawbar	4m
Maximum distance of the rearmost marker lamp from the rear of the vehicle or trailer	1m
Maximum distance between the light emitting surface of adjacent marker lamps	3m or if this is not practicable 4m

Vehicles first used before 1 April 1996 are exempt from the need to fit side marker lamps if they are fitted with all of the lighting and light signalling devices listed in items 1.5.7 to 1.5.20 of Annex 1 of Community Directive 76/756/EEC as amended.

Braking systems and components (vehicle – No 3, trailer – No 3)

The main failure defects are related to ‘brake actuators, master/wheel cylinders, valves and servos’. With 31% of all vehicle, and 19% of all trailer defects, being ‘leaking air or fluid, cracked, excessively damaged or corroded’.

Damaged or deformed flexible hoses, or excessively corroded brake pipes, account for 16% of all vehicles, and 12% of all trailer, braking system and component defects. With 11% of vehicles and 19% of trailer braking system defects being for air leakage at those components.



Fig 4: Kinked brake pipe



Fig 5: Damaged brake hose

Additionally, 19% of trailer braking system and component defects are due to an ineffective, insecure or missing locking device on a brake rod/linkage/slack adjuster, etc!

Guidance

Air/Fluid leaks: Always check the whole braking system and hoses under full pressure, using an assistant where necessary. In day-to-day use drivers rarely use their brakes under full pressure. So unless this is carried out before the MOT, then it is likely that any weakness in the system will only be found at MOT – where DVSA place the system under full pressure.

Condition of components: Moving components should be assessed in operation (repeating operation as necessary) to ensure they are both secure and operating correctly. Components need to be reasonably clean, so a meaningful evaluation can be made of their condition. Never take anything for granted and where replacement components are found, check that they have been fitted correctly and completely – missing split pins and/or loose locking/retaining nuts are not uncommon.

Steering (vehicle – No 5)

29% of all these steering defects are related to ball joint covers missing, insecure, excessively damaged or severely deteriorated. 11% are for steering components, wheels or tyres fouling any part of the vehicle and 8% are for a retaining or locking device ineffective, not fitted, or insecure.

Guidance

Condition of components: As with the guidance above, components need to be reasonably clean for a meaningful evaluation to be made of their condition.



Fig 6: Missing split pin

Components fouling: If possible, check for fouling over the whole steering range, with the vehicle in the condition it will be presented for test.

Locking devices: Check for the presence of these and their security. Where replacement components are found, check that they have been fitted correctly and completely.

Using a tapping hammer: DVSA staff use these as an effective tool to check the security of components and their fixings. If you don't currently use one as part of your inspection routine, then you may wish to consider this as an effective option.

Suspension (vehicle – No 6, trailer – No 5)

There are a variety of defects noted in this area, for vehicle the main ones are:

- 13% for deteriorated rubber or bonded bushes.
- 13% for insecure suspension components.
- 9% for fractured leaf springs.
- 8% for damaged, worn or distorted components.
- 8% for air leaks.



Fig 7: Broken spring

And for trailers the main items are air suspension, valves, pipes and bellows:

- 23% for components displaced, deflated, kinked and/or damaged.
- 12% for being insecure.
- 10% are for shock absorber being insecure and/or damaged.

Guidance

Condition of components: As with the previous guidance, components need to be reasonably clean for a meaningful evaluation to be made of their condition.

Condition of tyres (vehicle – No 7, trailer – No 8)

36% of tyre MOT failures on vehicles (40% for trailers) are due to having exposed ply or cords. A further 31% of tyre MOT failures on vehicles (45% for trailers) are due to cuts in a tyre deep enough to reach the ply or cords.

Surprisingly, 14% of tyre MOT failures on vehicles were due to the tyre fitted on a front steered axle being over 10 years old.

Guidance

Condition of tyres: You need to check the whole 360° of a tyre for cuts and/or exposed ply or cords – which may necessitate rotating the tyres or moving the vehicle forward/backwards. Both the tread area and both side walls of each tyre should be examined and where a cut (exceeding 25mm or 10% of the section width) is seen, then further investigation should be made to ensure that the cut does not reach the ply or cords.

Note: care should be taken to avoid injury, sharp implements should not be used.

Age of tyres: You should try to identify the age marking of all tyres and note this on records. No tyre over the age of 10 years can be fitted to the front steered axle of a HGV. See fig 9.



Fig 8: Tyre wall damage

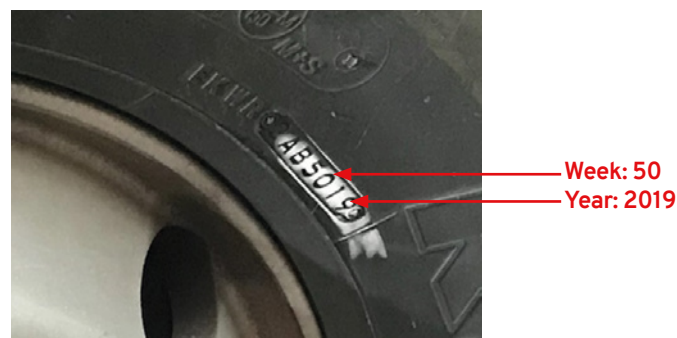


Fig 9: Tyre date markings

Markers and reflectors (trailer – No 6)

88% of all failure items in this category are for reflectors either missing, incorrectly positioned, or showing the wrong colour.

Guidance

Reflectors:

- Every motor vehicle and trailer requires two red reflectors facing to the rear.
- Trailers manufactured from 1 October 1990 require two white reflectors facing to the front.

Front Reflectors (trailers only): The maximum height from the ground is 900mm, if this is impractical it can be 1500mm. White front reflectors must be fitted to the front of each section of a combination trailer.



Fig 10: Rear reflector

Rear Reflectors: The maximum height from the ground is 900mm, though there are some exceptions:

- If 900mm is impractical it can be 1,500mm.
- For vehicles used before 1 April 1986 and trailers manufactured before 1 October 1985 the maximum height is 1,525mm.

Triangular shaped reflectors can only be fitted to trailers, these are not acceptable on motor vehicles.

Side reflectors: Are required to be fitted to:

- Motor vehicles first used before 1 April 1986 with an overall length of more than 8m first used from 1 April 1986 with an overall length of more than 6m.
- Trailers with an overall length of more than 5m excluding any drawbar.

Spray suppression (trailer – No 7)

47% of failures in this category are due to the spray suppression being clogged with mud or debris. A further 23% due to the spray suppression dimensional requirements not being complied with.

Guidance

Spray suppression is required on the following:

Motor Vehicle	Trailers
a Exceeding 12 tonnes design maximum authorised mass (MAM), and first used from 1 April 1986.	a Exceeding 3.5 tonnes design MAM and manufactured from 1 May 1985.
	b Exceeding 16 tonnes design MAM with two or more axles, whenever manufactured.



Fig 11: Spray suppression

Cleanliness: For spray suppression to perform adequately it must be maintained in a reasonably clean state. Ensure that the cleaning of a vehicle for inspection includes the spray suppression. To do this effectively, this will usually require the use of a high-pressure jet washer.

Dimensional requirements: Although there are particular dimensional requirements for different types of spray suppression (see the HGV Inspection Manual for full details), there are a few general rules:

- **Height of the flap from the road** – 200mm, this can be increased to 300mm in some circumstances.
- **Width of coverage** – for vehicles/trailers first used from 1 April 2000 it must cover the whole width of the tyre/s. For vehicles/trailers first used before 1 April 2000, it only needs to cover the tyre/s tread breadth.
- **Fitment between wheels** – for multi-axle arrangements, if the distance between the tyres is greater than 250mm (this can be up to 290mm in some circumstances), then additional spray suppression flaps will need to be fitted between those tyres.