



**O1 Category Trailer - up to 750kg**

**O2 Category Trailer - 750kg to 3500kg**

*(mass on the axles)*

**Trailer Type Approval Seminar**



## Agenda

- **Type Approval Process**
- **Type Approval Subjects**
- **Conformity of Production**
- **Support & Information services**
- **Application & Initial Contacts**



# ECWVTA Revised Framework Directive

EC Whole Vehicle Type Approval is being extended to cover all new road vehicles and trailers

Timetable for the enforcement

	New Types	Existing Types
<b>Incomplete / Complete</b>	<b>29 October 2010</b>	<b>29 October 2012</b>
Completed	29 October 2011	29 October 2013
Special Purpose	29 October 2012	29 October 2014

**NO APPROVAL NO SALE**



## ECWVTA Revised Framework Directive New or Existing Types..???

**Existing Type** – The specific type of trailer is currently  
*Manufactured in the UK*  
*Exported to a EU country*

**New Types** – A new design or trailer type  
*Manufactured in the UK*  
*Exported to a EU country*

Exporting a trailer type to an EU country for the first time means ECWVTA is mandatory as of 29<sup>th</sup> October 2010



## Which Type Approval route?

As a Manufacturer, there are three options of approval available:

- **IVA** (Individual Vehicle Approval) -  
UK / Issuing member state only. Inspection of each vehicle, no limit on numbers, **NO CoP**
- **NSSTA** (National Small Series Type Approval) -  
**UK only** / Issuing member state only. A limit of 500 trailers belonging to one Type per year. There are however 'eased' technical requirements
- **ECWVTA** (EC Whole Vehicle Type Approval) -  
Full technical & administrative requirements





## ECWVTA & NSSTA in a Nutshell

### **Type Approval authorises a manufacturer to:**

- Produce vehicles, systems and components to a proven specification and;
- Self-certify these as compliant with relevant legislation

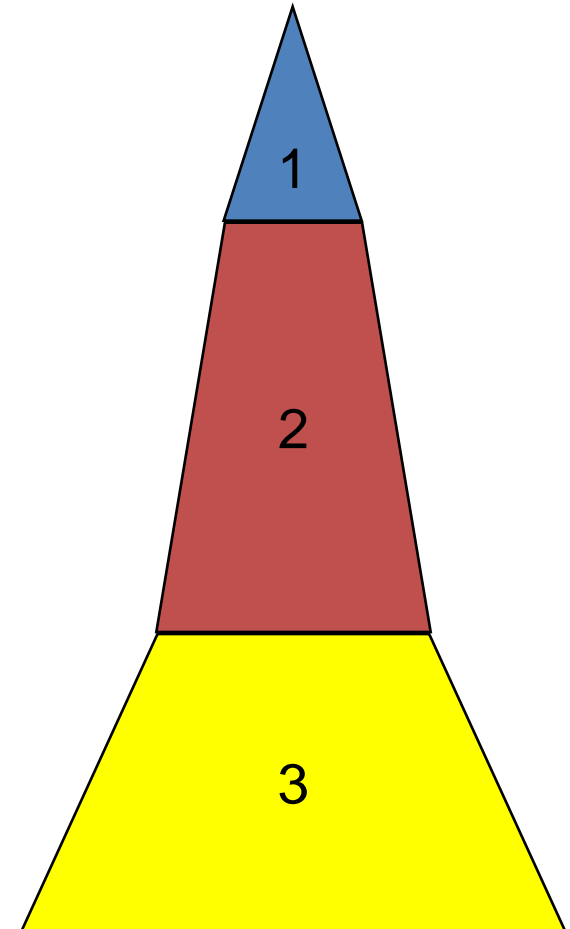
### **Two fundamental requirements:**

- Meeting the technical and administrative requirements and capturing the design
- Ensuring that subsequent production is manufactured in conformance with the approved design

# Type Approval Hierarchy

For NSSTA and ECWVTA there are three key steps to follow:

1. **Whole Vehicle Type Approval**
2. **Trailer System Approvals Or Test Reports**  
Brakes, Glass, Tyres, Lighting etc.
3. **Conformity of Production, Research & Development, etc.**





# Your Product Range and ECWVTA

For NSSTA and ECWVTA your trailer range will be divided up using the following criteria. It is worth remembering that each Type needs its own Certificate of Approval.

**Type –**

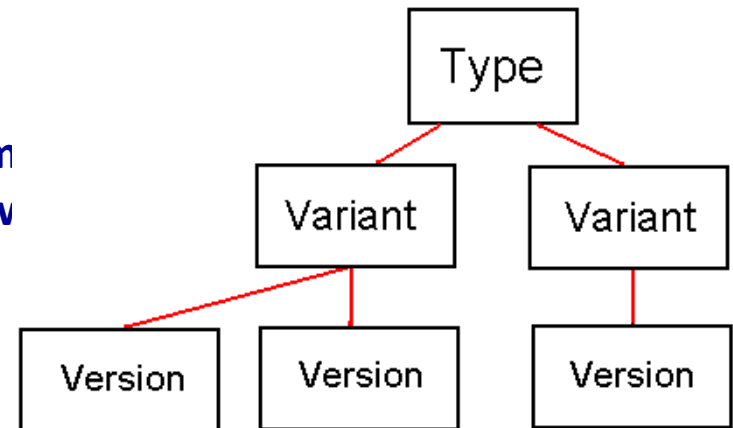
- Manufacturer
- Category
- Chassis (fundamental differences)
- Number of Axles

**Variant –**

- Body Style
- Stage of Completion
- Type of Braking System (Unbraked, inertia, pov)

**Version –**

- Max Laden Mass
- Suspension
- Drawbar Design
- Combination of Options





# Technical Requirements

For ECWVTA and NSSTA the technical requirements cover the following:

- Rear Protection Device
- Registration Plate Space
- Steering Effort
- Braking
- Radio Interference
- Statutory Plates
- Installation of Lighting
- Heating Systems
- Spray Suppression
- Safety Glazing
- Tyres
- Masses and Dimensions
- Couplings
- Transport of Dangerous Goods





## Applicable Regulations

	<u>UNECE Regulation</u>	<u>EU Regulation</u>
Rear Protection Device	58.02	
Registration Plate Space		1003/2010
Steering Effort	79.01	
Braking	13.11	
Radio Interference	10.03	
Statutory Plates		19/2011
Installation of Lighting	48.05	
Heating Systems	122.00	
Spray Suppression		109/2011
Safety Glazing	43.00	
Tyres		458/2011
Masses and Dimensions		1230/2012
Couplings	55.01	
Transport of Dangerous Goods	105.04	



# Type Approval Application Document

2007/46 Whole Vehicle Information Document

## Annex 1 – Complete List

Test Reports for each subject

1 Whole Vehicle Certificate

1 Detailed Information  
document

## Annex 3 – Accompany List

Test Reports or Certificates for  
each subject

1 Whole Vehicle Certificate

>1 Systems Certificates

Multiple Information  
Documents



# Whole Vehicle Approval Hierarchy

Three fundamental whole-vehicle Type Approval categories are available under both ECWVTA and NSSTA

## 1. Complete vehicle approval

- covers **single-stage manufacture** of a fully finished product

## 2. Incomplete vehicle approvals

- controls the specification of a partially assembled vehicle
- multiple approvals sometimes required
- can reduce Type Approval requirements for the final stage manufacturer

## 3. Completed vehicle approval

- final assembly of a multi-stage vehicle as a fully finished product



# Technical Requirements

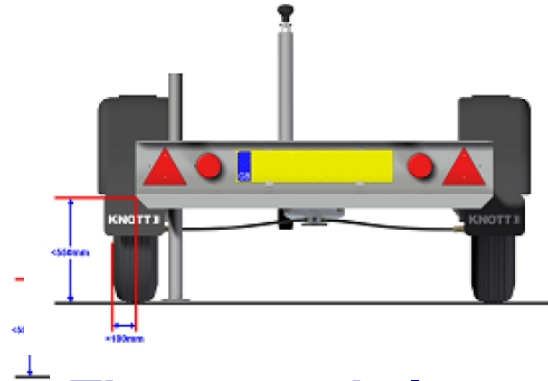
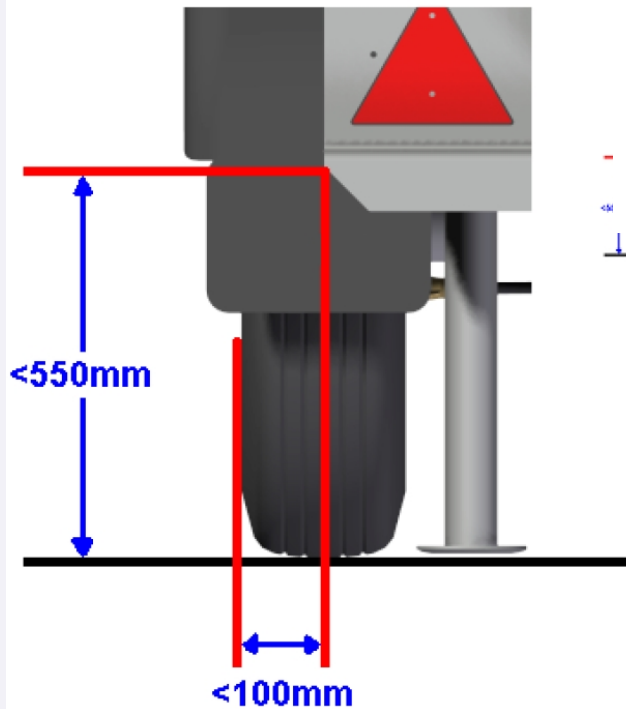
The following information is to be used only as a guide.

It should not be used as a substitute to the legislation.

**Note:** *The following tests are non destructive and VCA always endeavour to look after products. However during the loading of ballast and brake testing, small marks may be unavoidable. We also test the break away cable which is destructive.*

## Fuel Tanks & Rear Protection Devices

“Tank” means the tank(s) designed to contain liquid fuel, used primarily for the propulsion of the vehicle.



This requirement must be satisfied <math><45\text{ cm}</math> from the rear of the vehicle.

The ground clearance of the rear of the unladen vehicle, <math><55\text{cm}</math> over a width not shorter than the rear axle by <math>>10\text{ cm}</math> on either side

If wheels protrude more than half their width from bodywork, measurements taken from inside edge of tyres.

## Rear Registration Plate Space

The space for mounting shall comprise of a flat or virtually flat rectangular surface with the following minimum dimensions:

520mm x 120mm

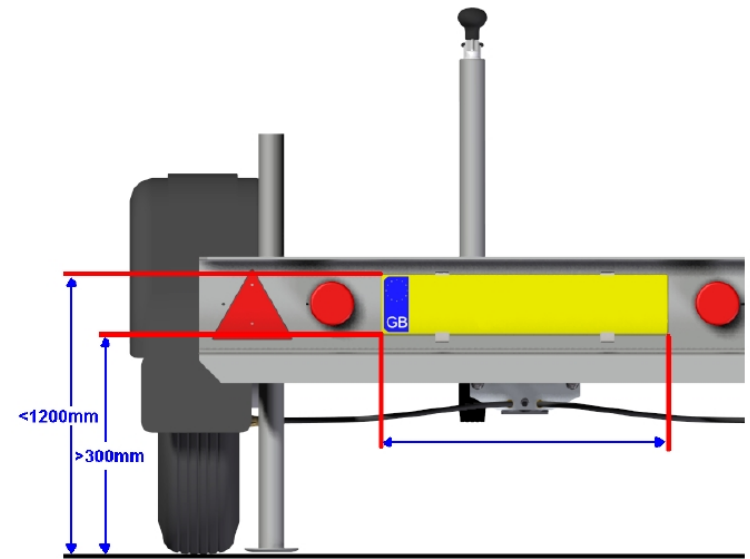
or

340mm x 240mm

- Position of the plate horizontally (Centre or Left)
- Position of the plate vertically
- Angle of the plate
- Geometrical visibility

### Common Problem

- Lights too close so they intrude on the outward visibility angle.
- Part of the trailer intrudes on the visibility angle





# Steering Effort

**This Directive applies to the steering equipment of all vehicles in categories O.**

***“Steering equipment” means all the equipment the purpose of which is to determine the direction of movement of the vehicle***

**Steered Axles have an effect on Braking, in Regulation-13 braking operated by an Overrun Device is not permitted.**

**As of 2014 Directive 71/320/EEC is repealed, leaving Regulation 13 only.**



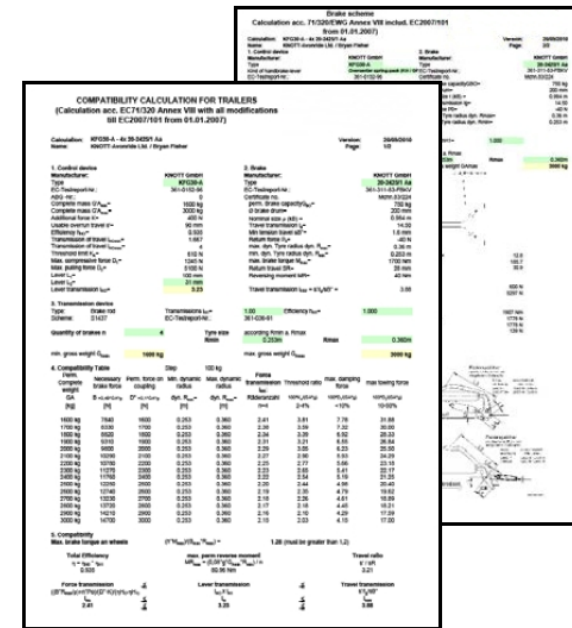


# Braking

*The following information is based on a trailer fitted with an approved Overrun device and a brake test report*

There are 4 parts to this test

1. Check the compatibility between the overrun device and brake
2. Inspect vehicle for requirements and ensure components are fitted correctly
- 3a. Carry out an 18% Hill Hold on the park brake
- 3b. Test the trailer in the VCA Workshop for brake and auto-reverse performance
4. General behaviour test while towing





# Braking

## Common Problems

- Poor brake performance on the Hill Hold test
  - Trailers delivered without the brakes adjusted
  - Trailers delivered without the brakes bedded
- No locknuts fitted on the brake rods
- Handbrake lever travel restricted
- Brake Compatibility not provided or checked
- Not enough articulation in compensator or compensator pivot points not inline.



# Radio Interference

Most trailers are only fitted with a simple lighting circuit.

However Caravans etc will have electrical components such as:

- Fridges
- Combi-Boilers
- Televisions

These components are generally all approved as a separate unit or turned off via a relay when the trailer is connected to a towing vehicle.

Some Complex LED lights also require EMC approval

# Statutory Plates

## 1 – Manufacturer’s Statutory Plate

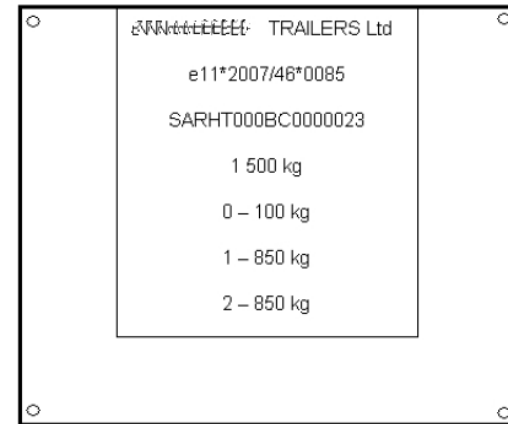
Layout

Character Size (*Min height 4mm*)

17 Digit VIN Construction

GVW / Coupling Mass/ Axle Mass

Location



## 2 – VIN Number Chassis Stamping

Character Size (*Min height 7mm*)

Unique to a particular Vehicle

Location (*Right hand side of vehicle*)



# Statutory Plates

*WMI Number*

*World Manufacturer Identifier*

## VIN Construction

The VIN shall consist of three sections:

1. the world manufacturer identifier (**WMI**)
2. the vehicle descriptor section (**VDS**)
3. the vehicle indicator section (**VIS**)

**WMI** – Assigned to the vehicle manufacturer

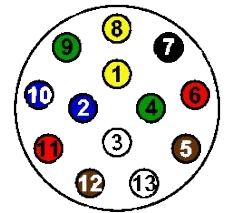
**VDS** – 6 characters, to indicate the characteristics of the vehicle

**VIS** – 8 characters, the last four shall consist of digits only.

The VIN shall provide clear identification of a particular vehicle.

# Installation of Lighting

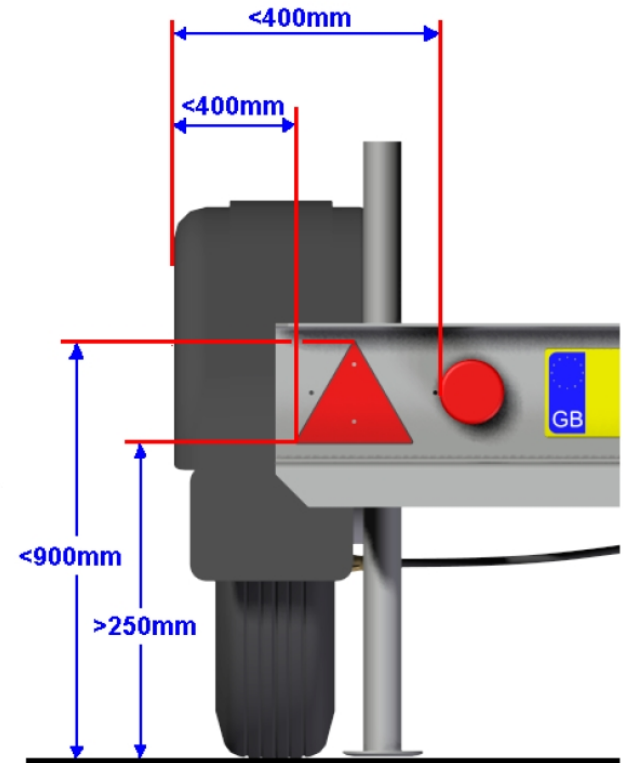
A change in the industry is occurring as the fitment of reverse lights means moving away from 7-pin connectors to 13-pin.



# Installation of Lighting

## Specific Problems

- No front position lamps or reflectors
- Front position lamps too far inboard
- No side marker lamps or reflectors
- No reverse lamps (7-pin connector)
- Protective bars over the lamps
- Lamps and reflectors installed at an angle
- Number plate lamps fitted too far apart to illuminate number plate
- Number plate lamps not fitted in accordance with approval



# Installation of Lighting

Example of a specific problem and how to avoid it:



**Refer to lamp approval for fitting information**





# Heating Systems

**This Directive applies to all trailers in category O where a heating system is fitted.**

***“Heating system” means any type of device which is designed to increase the temperature of the interior of a vehicle, including any load area.***

# Spray Suppression Systems

2010/19/EU enforced on 9 April 2011 – Meaning Spray Suppression is mandatory for O1 and O2 category trailers.

However they are exempt from having to fit a spray suppression device

## Requirements

Mudguard

Valances

Rain Flaps

~~Air/Water Separator (matting)~~





# Safety Glazing

All glazing bears the EEC component type approval mark and any additional symbol

For special purpose trailers the glazing just needs to be approved

This can be useful where manufacturers require low volumes of a specific design

**Case by case**

# Tyre Installation



**Installation**

**Make / Model**

**Size Fitted**

**Load Capacity**

**Speed Rating**

**E-Mark**

**Sound E-Mark (>10" diam.)**

You will NOT be restricted to a particular Make and Model of Tyre only the Key Information underlined (Annex 3)



# Masses and Dimensions

## Trailer Dimensions

- Length
- Width
- Height

## Trailer Mass

- Mass in running order on each axle and the coupling
- Maximum laden mass on each axle and the coupling
- Technically permissible maximum mass on each axle and the coupling



# Masses and Dimensions

Can be straight forward or cause issues

Dimensional there have been no issues

Axle and nose weights can pose a problem

## Key Issues

- Nose load too high
- Axle weight distribution laden
  - Uneven distribution – 1 Axle overloaded
- Chassis angle when measuring

# Couplings

- 1. Coupling Heads & Eyes** – Pre Approved Part  
*(Check D & S values + Installation)*
- 2. Overrun Device** – Pre Approved Part  
*(Check D & S values + Installation)*
- 3. Drawbar** – Pre Approved, Requires Approval or Exempt





## Drawbars

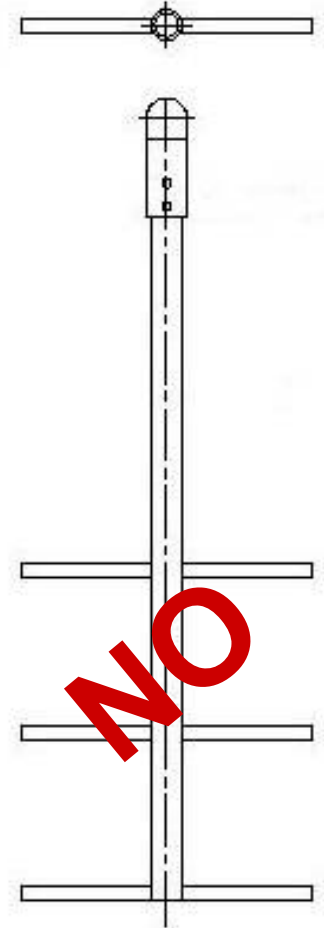
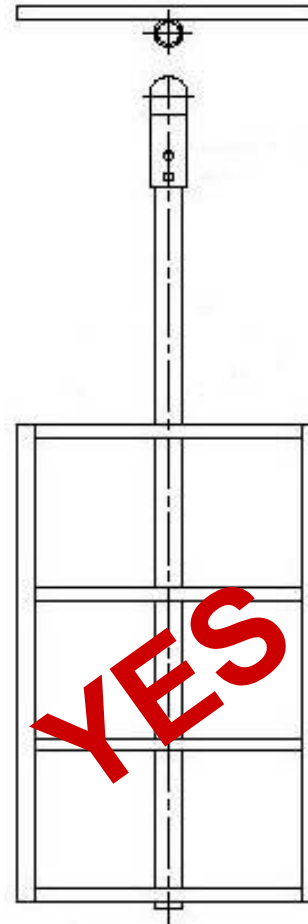
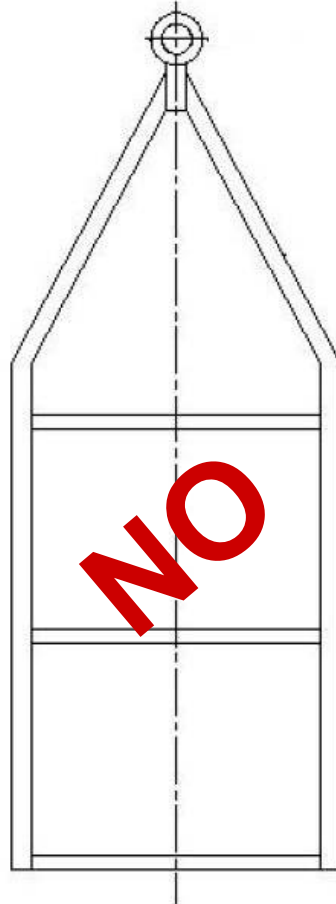
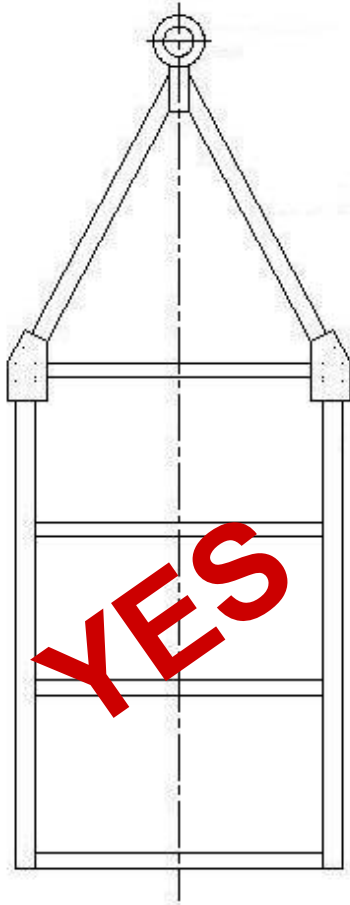
Drawbars need to be approved if they are a separate technical unit.

The widely held view that bolt-on drawbars are separate technical units and drawbars welded to the main frame are not **is incorrect**

The method of attachment is disregarded when determining if the drawbar is a separate technical unit



# What is classed as a Drawbar and requires approval?





# Couplings

If a trailer is deemed to have a drawbar comprising a separate technical unit, there are 3 options available:

- 1. Buy and fit an Approved Drawbar**
- 2. Calculation using ISO7641-1**  
*(simple design only, Steel only)*
- 3. Physical test of 2,000,000 cycles**  
(Reg 55)

*Regardless of Drawbar classification, we would like to see all trailers be put through one of the options above*

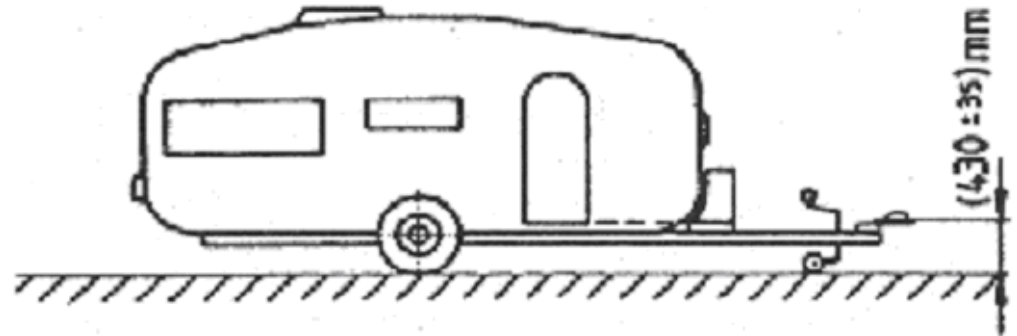
# Couplings

All three components installed correctly and approved if required.

## The final check

Height requirement for a **50mm ball** when trailer is **laden** to its maximum weight

*430mm ± 35mm*





# Transportation of Dangerous Goods

**This Directive shall apply to any vehicle, whether complete (e.g. one stage built trailers), incomplete (e.g. trailer chassis), or completed trailers intended for the transport of dangerous goods by road.**

## **Dangerous Goods**



# A Plan of Action

## 1. Work out what to do

Understand the legislation

Plan what needs to be done

## 2. Get things right & ready

Develop compliant designs

Prepare approval documents

## 3. Make it so!

Get tests & reports done

Get final approval



# Support & Information Sources

- VCA website - [www.dft.gov.uk/vca](http://www.dft.gov.uk/vca)
- Address: VCA Midlands Centre  
Watling Street  
Nuneaton  
Warwickshire  
CV10 0UA
- Telephone: 0247 632 8421

**O1 Category Trailer - up to 750kg**

**O2 Category Trailer - 750kg to 3500kg**

*(mass on the axles)*

## Conformity of Production





# Change?

Change before you have to.

**Jack Welch**

Change brings opportunity.

**Nido Qubein**

If there is no struggle, there is no progress.

**Frederick Douglass**

Change is such hard work.

**Billy Crystal**







# Agenda

- **Glossary**
- **What is CoP?**
  - **What does it affect?**
- **Should I be worried?**
- **What do I need to do?**
  - **The quality elements**
  - **Control Plans**
- **The audit**
- **Support and Information Services**



# What is CoP?

- The ability to produce a series of products which conform to the specification and performance requirements of a relevant directive.
- Simplified; is the 10th, 100th 1000th the same as the one type approved?

# CoP – What does it affect?





# CoP – What does it affect?

CoP is only concerned with those aspects of a vehicle that are type approved

- Examples, change to the loading conditions
  - May affect; Brakes, Tyres, Masses and Dimensions.....
  - Change to the colour of a vehicle may affect, err nothing
  - If you add another subject, you need to consider the CoP implications



# What does CoP affect

- Rear Protection Device
- Registration Plate Space
- ~~Steering Effort~~
- Braking
- ~~Radio Interference~~
- Statutory Plates
- Installation of Lighting
- ~~Heating Systems~~
- Spray Suppression
- ~~Safety Glazing~~
- Tyres
- Masses and Dimensions
- Couplings
- ~~Transport of Dangerous Goods~~

But what if I make.....



# CoP – What does it affect?

- Multi stage builds
  - Second stage not responsible for base vehicle, only the components or systems added by the second stage
  - Close tie's required
    - Base builder may change something that could affect 2nd stage approval, without this tie up 2nd stage approval may become invalid.
    - Example, change of load rating on tyres



# Should I be worried?

**Good news:**



**Bad news:**

**Documenting it.....**

# What do I need to do?

- A Quality System



# What do I need to do?

The quality system:

- Formal quality system  
ISO9001/TS16949 + Control plans  
*However, formal quality system not mandatory, therefore:*
- Quality documentation (manual) +  
Detailed control plans + On-site  
assessment

# Quality Documentation

- Informal Quality System
- Quality Manual or documents used to ensure product consistency should contain, but not be limited to at least the following:
  - Approved suppliers
    - How does the company select and monitor suppliers?
  - Incoming goods
    - How does the company ensure supplied goods conform?

# Quality Documentation

- Non-conforming goods
  - How does the company ensure that goods purchased or manufactured that do not conform are not used for production?
- Staff training
  - How does the company ensure staff are properly trained? How is this recorded?
- Calibration
  - How does the company ensure that all relevant equipment is calibrated?

# Quality Documentation

## – Change Control

- Important one this one. How does the company ensure that any changes to the design or performance of the product which might affect the validity of the approval is notified to the authority?

## – Final inspection

- How does the company ensure that the final product conforms?

This is a minimum list, quality documentation should be sufficient for the product and have continual improvement in mind

# What do I need to do?

- Control Plans



# Control Plans

- What is a control plan?
  - A control plan is a documented description of the procedures, checks and activities necessary to verify that the production unit continues to conform to the type approval requirements with regard to specification, marking and performance



# Control Plans (continued)

- Control plan layout
  - There is no mandatory layout, you choose what suits your needs best
  - Electronic or paper copies acceptable
  - The control plan should become part of your quality system, the results generated will be inspected during any surveillance audit

# Control Plans. Trailers

Subject	Legislation		CoP Requirements		
	DIR	REG	Insp Type	Freq	Control Doc
Lighting Installation		48	1	1/ Year	<b>IVXX4</b>
			2	1/mth	IVXX7
			4	100%	
<b>Key</b>					
Inspection Type 1			Vehicle Test (Reg/Dir)		
Inspection Type 2			Visual/Dimensional Verification		
Inspection Type 3			Record details in log		
Inspection Type 4			Functional Check		
Inspection Type 5			Supplier CoP		



# Control Documents

Control Description Sheet – IVXX4				
Lighting Installation				
Procedure	Description	Inspection Type	Responsibility	Record
BBB1	Rear light position	2	Quality dept	CoP record
	Number plate position	2	Quality dept	CoP record
	Side outline markers	2	Quality dept	Cop Record
	Functional Check	2	Inspection	Build log

# Procedure

## Procedure BBB1- Lighting Installation

Rear light Position	Measure rear light position in accordance with R48. Check visibility angles
Number plate position	Measure number plate position in accordance with R48. Check visibility angles
Side outline markers	Measure number plate position in accordance with R48. Check visibility angles
Visual check	Check lighting for functionality and damage
???????	?????????????

# Control Plans. Trailer

Subject	Legislation		CoP Requirements		
	DIR	REG	Insp Type	Freq	Control Doc
Rear Underrun		58	1	1/ Year	IVXX3
			5	-	N/A
			4	100%	
<b>Key</b>					
Inspection Type 1			Vehicle Test (Reg/Dir)		
Inspection Type 2			Visual/Dimensional Verification		
Inspection Type 3			Record details in log		
Inspection Type 4			Functional Check		
Inspection Type 5			Supplier CoP		

# What's a good control plan

- Clear and unambiguous
- Suitable for the subject
- In a format that suits the manufacture and is acceptable to the VCA
- Demonstrates compliance
- Flexible

# What's a poor control plan

- Disjointed
- B.O.M (Bill of material is not a control plan)
- Rigid
- Insufficient information
  - Test/measurement description
  - Method of recording
  - Frequency
  - Responsibility



# Typical Audit Schedule

- Opening Meeting – Outline of Audit
- Quality/procedure manual review
- Overview of CoP system/ Control plans
- Site visit. Production line work instructions /equipment / end of line testing
- Document control. EC legislation / drawings / obsolete documents

# Typical Audit Schedule

- Records. Test reports / calibration / suppliers
- Change control. Design / development / documentation
- Purchase. Supplier selection / supplier monitoring
- Calibration. In-house/external/ process/traceability

# Typical Audit Schedule

- Control of N/C goods.  
Supplier/production. Quarantine area
- Product storage. Stock rotation/storage
- Review / Questions
- Audit summary
- Close





# Audit result:

- CoP Clearance granted
- CoP Clearance pending – non-conformances to be addressed
- Clearance granted for 1-3 years depending on risk rating and evidence of conformity.

# And Finally (nearly)

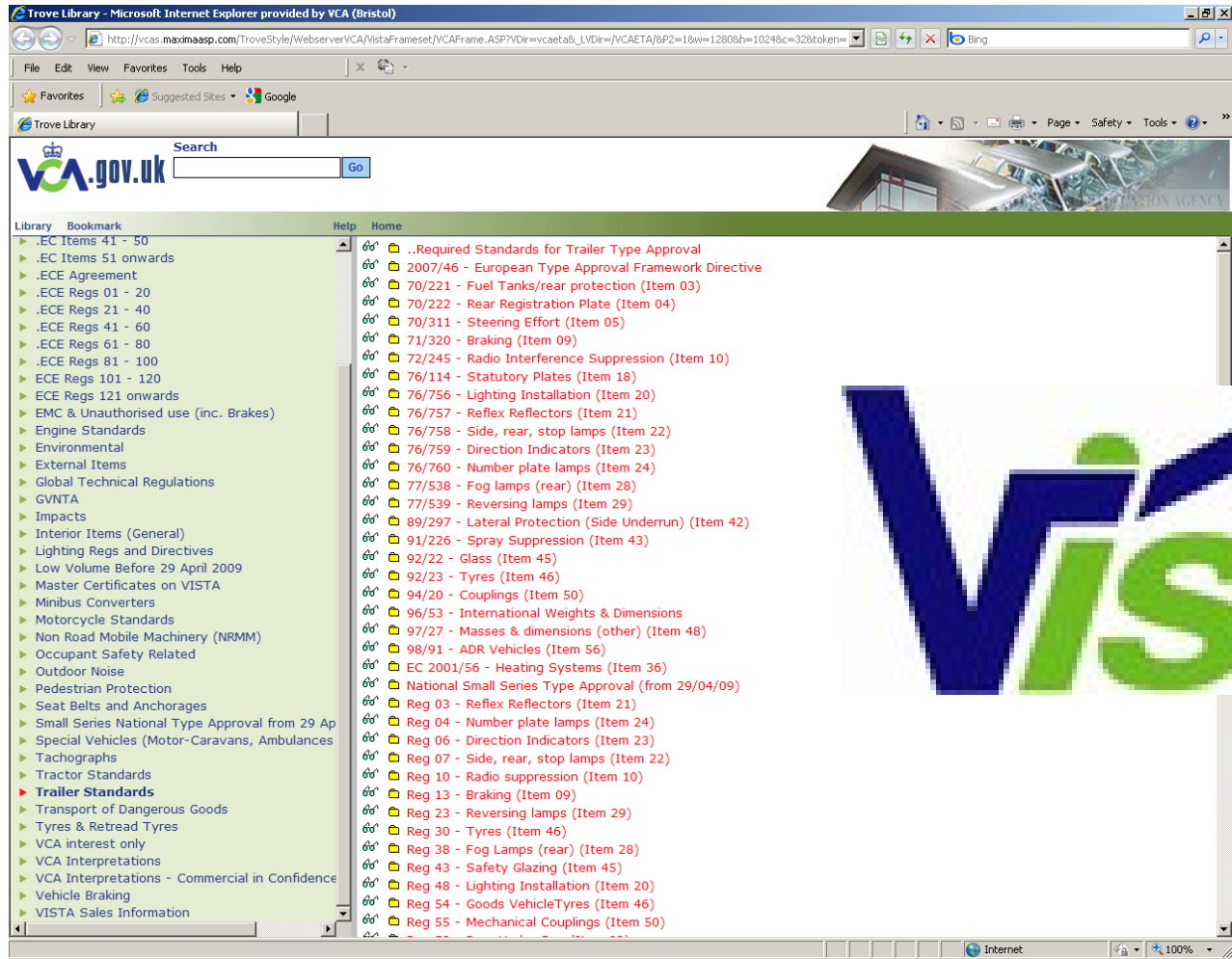
- Look at VCA as your partner.
  - VCA has over 25 years experience in dealing with type approval and CoP around the world
  - Experience in every sector (car, bus, truck, trailer, motorcycle, agricultural)
  - We can help you interpret legislation (we are linked to policy makers in London and Europe)
  - Advise on quality documentation
  - Advise on control plans
  - Help you through the process in the most efficient and cost effective way
  - Your success is our success

## Tools available:

- [www.dft.gov.uk/vca](http://www.dft.gov.uk/vca)
  - Conformity of Production guidance
  - Legislation information notices
  - Type Approval information

# Tools available:

- VISTA – legislation database



- Costs?
- Audit: £800-1600 (1-2 days)
- Paperwork clearance: £250