

10.06.13

0875-2011-JF-
E2013-175744**From:****Sent:** 10 June 2013 17:08**To:** Euro-Ombudsman**Cc:****Subject:** Case Ref 0875/2011/JF**Attachments:** Motorcycle Brake Check - Chris Everitt 20130527.pdf; Motorcycle Brake Check - Rupert Paul 20130527.pdf; Recalculation of EC PRI Cost Model 20130527.xlsx

Dear Ombudsman Diamandouros,

My understanding is that my case is still undergoing analysis and that you have not yet reached your decision. I have continued to research the estimated costs of the proposed measure for the regulation of roadworthiness tests for my submissions on this matter to the Chair of the European Parliament's TRAN committee. For the sake of avoiding any potential future confusion between you and the Parliament I am forwarding my latest estimates of costs based on item 1.1.13 and 1.1.14 of the proposed test that forms an Annex to the proposed regulation, the visual inspection of brake pads, linings and surfaces for contamination by oil or grease.

The revised estimates are based on double sourced estimates of stripping a motorcycle drum brake for inspection or maintenance.

The first source is an opinion I was able to obtain from Rupert Paul, a leading motorcycle journalist in the UK and a qualified mechanic. He estimates 10 minutes for disc brake inspection and 30 minutes for a rear drum brake inspection for a professional mechanic. Rupert Paul writes for Bike magazine and also technical maintenance articles for Practical Sportsbike and Classic Bike magazines.

The second source is an illustrated extract from Charles Everitt's How to repair your motorcycle pp165-168 (ISBN 13: 978-0-7603-3137-8). In this he estimates an upper end of one hour for a home mechanic to strip one drum brake for basic maintenance tasks.

On the basis of these sources I submitted what I believe can be demonstrated to be a reasonable estimate of 40 minutes for a four disc set up on a car (10 minutes per disc) and a single front disc /rear drum configuration for a motorcycle (10 mins and 30 mins respectively). This increases the scale of the costs for the proposed test significantly to between €2.2 billion and €4.2 billion. Please note the majority of this cost relates to only one of the activities in the proposed test over and above those used in the UK MOT test, i.e. The visual inspection of brake linings pads and surfaces for contamination by oil or grease. I'd be very interested to know what the estimated time for all the additional activities would be on a line by line basis. Please also note, assuming my calculations are reasonable, that for option 3b the order of magnitude for returns to the testing industry is not far off the stated costs in the impact assessment.

These estimates do not change my substantive argument. They do however show that it is possible for professional mechanics to estimate the time taken for a task and that whilst I too, through lack of experience as a professional mechanic and a desire not to exaggerate, underestimated the effort involved a reasonable competent mechanic or vehicle inspector can, and should know how to, estimate the work involved for the activities over and above the UK MOT test used as a baseline.

In the light of this, my contention still stands, that the financial model in the Impact Assessment is insufficiently robust to enable appraisal of the proportionality measure and cannot demonstrate that the cost to the citizen has been minimised. I believe the methodology the Commission and the advising consultants have used hides significant financial impacts.

11/06/2013

I trust forwarding this to you will reduce the possibility for confusion over the scale of the understatement of costs by the European Commission that I have claimed in your process and in my recent engagement with the TRAN committee.

Kind regards

11/06/2013

Project 45

Drum Brake Maintenance

TIME: 30 seconds to 1 hour

TOOLS: Wrenches, sockets, Allen keys, torque wrench, dial caliper, rags, brake/contact cleaner, high-temperature grease, bike lift (optional)

TALENT: 1

COST: \$

PARTS: Brake shoes, brake shoe springs (if not included with shoes)

TIP: To keep from breathing hazardous materials, don't blow off the brake panel with compressed air

BENEFIT: Predictable rear brake performance

Drum brakes require a little regular maintenance that should take you all of 30 seconds every month or so. From the pedal's resting position, press it down with your hand and measure the distance the pedal is depressed until you feel the shoes contact the drum. If the measurement is greater than the factory spec, loosen the nut at the drum end of the brake rod. In many cases, you won't even need a wrench to do this. Simply pull the cam lever (the lever attached to both the drum brake assembly — or brake panel — and the brake rod) against the spring holding it into position against the adjuster. Since the adjuster usually has a machined hole to match the clevis pin in the lever, you'll be able to make changes in half-turn increments. Once the free play is back to spec, you're done.

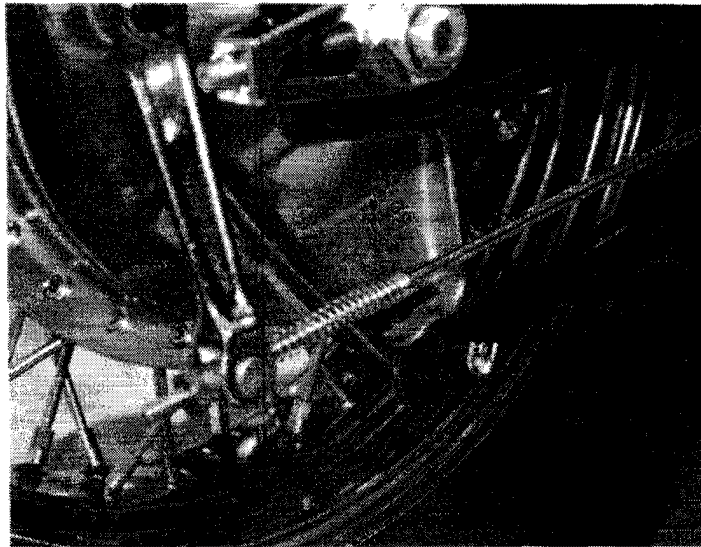
Check the wear indicator when you take up the free play. Manufacturers build these indicators into the outer edge of the brake panel. Replace the shoes when they're about 50 percent used up to be sure that maximum braking is available. (Pads/shoes can't dissipate heat properly when they get too thin, and they will not function properly.)

Every two years or 10,000 miles, disassemble the brake panel and lube the moving parts. Clean out the

built-up brake dust, too, and give the assembly a close visual inspection.

To change the shoes, loosen the chain adjusters' locknuts to provide enough chain slack to remove the wheel. Then give each of the adjusters three full turns of slack and retighten the locknuts to maintain their adjustment relative to each other. (Once you get the wheel back on the bike, you'll just tighten the adjusters those three turns for a properly adjusted chain.) If you have shaft drive, check your factory service manual for rear wheel removal tips. Different bikes have different requirements. For example, the Yamaha V-Star 650 requires that you pull the shaft itself free with the rear wheel.

Remove the bolt connecting the torque arm to the drum brake assembly and the nut from the end of the brake rod. Now, loosen the axle nut and spin it off the axle. Jack up the bike so that the wheel is about an inch off the ground. While holding the wheel in position (use your foot to take the strain off the axle as you slide it free), remove the axle. Now, push the wheel forward to create some slack in the chain. Remove the chain from the sprocket and hang it on the swingarm. You may need to jack the bike up farther to help the wheel clear the fender. Disassemble everything according to the photos and captions.



Don't forget to remove the dust from the brake drum. Many people are unaware that the rear wheel area is a very dirty place. These dirt particles can get into the drum brake shoe and cause the brake pads to wear. You can clean and prime the drum with the urge to blow it out with air. Those particles can cause a lot of stuff. Instead, clean the drum with a brush. Clean the dust away without using a brush. Worry that it'll absorb the dust in the right place; you're probably anyway. If you decide to remove the drum, take care not to get the wheel bearings.



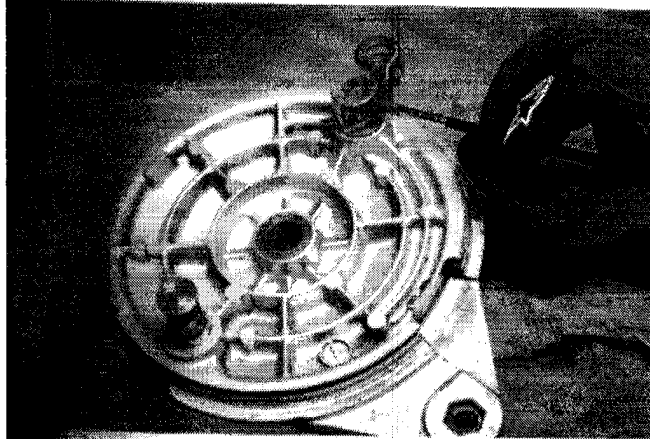
With the brake shoe removed, you won't scratch it, measure the pads with a dial caliper to ensure within specification. It's important most brake shoe thickness is 20 percent of the shoe's original thickness is less than 2 mm. (The Vulcan 500 factory manual, for example, specifies a minimum of 2 mm.) You should also check the drum itself with your dial caliper.



Turn the brake pads over and mark the brake cam with a pin, drawing a line from the cam to the shaft to the other side of the cam. Unscrew the pin and remove it. Now, slide the cam back into the wear indicator hole. Check its associated hole in the brake shoe. If you notice any wear, consult the service manual for the correct parts. Make sure the parts are still within specification.



Grasp the brake shoes with a clean rag and lift them free of the assembly. The shoes will fold toward the center of the panel as they pivot around the anchor pin and the camshaft. Be careful, as the springs holding the shoes against the pin and cam are fairly strong. Set the shoes aside and wipe the panel clean of any crud. Protect your hands from the shoe material and the shoes from grease by gripping the two parts with a clean rag as you rotate them free of the retaining pin and cam.



Once everything is clean, lube the camshaft and the mounting hole in the brake panel with high-temperature grease. Slide the shaft into the panel and rotate it until the flats on the cam are pointing toward the center of the panel. Place the indicator on the shaft with its pointer at the right end of the useable range marker on the panel. Line up the Sharpie marks on the shaft and the lever and remount the lever. Tighten the bolt to spec. Apply high-temperature grease to the contact surfaces of the anchor pin and the cam. Add a little bit of grease to the brake shoes' spring-mounting holes.

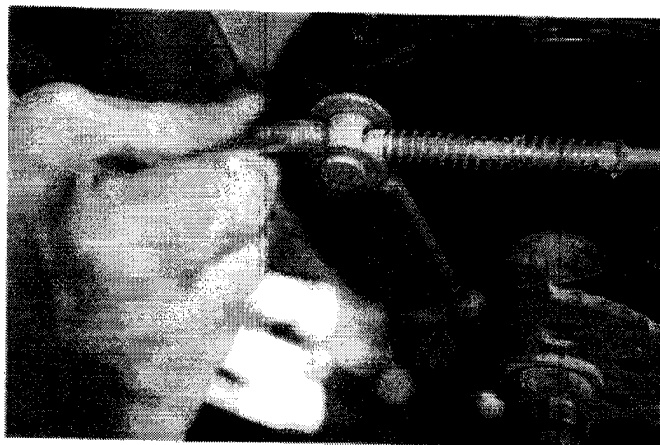


Before replacing the brake panel, rotate the cam lever to make sure that everything works. Check that the wear indicator is pointing at the beginning of its range (or where it was pointing prior to disassembly if you just cleaned and lubed the unit). If not, remove the cam lever and adjust the indicator. When you're ready to put the wheel back in the swingarm, begin by cleaning and greasing the axle. Carefully slide the wheel into the swingarm and lift it up into the forward position you used to remove the chain. Take the chain from the swingarm and put it back on the sprocket. Pull the wheel backward until the hole in the hub lines up with the hole in the swingarm. Slide the axle into the hub for enough to support the wheel.

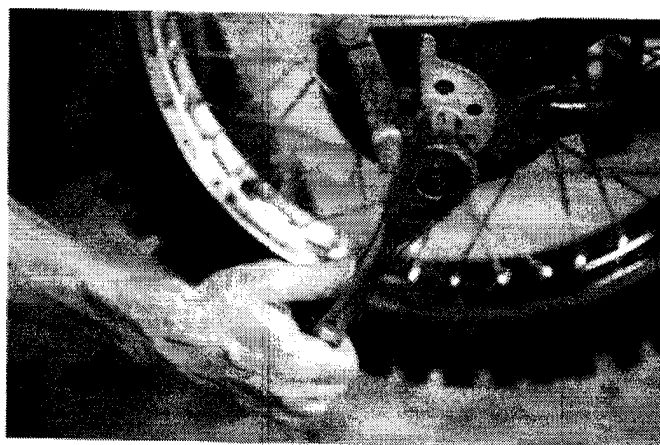
From the opposite side of the bike, where you can see through the swingarm to the hub. Lift the wheel until the hole lines up with the swingarm. Tap through using your hand or a dead-blow hammer.



Snug down the axle nut, but don't
the chain adjusters can't move
the wheel is all the way forward.
adjusters by giving the rear adjuster
of whacks with your open hand.
Reset the chain adjusters the
loosened them. If you have a
chain in awhile, now is a good



Verify that the marks on the
match up on both sides. Give a
light application of grease to the
lever, and slide the brake
the adjuster into roughly the
the rod that it was in prior to
Loosely (finger tight) attach
the brake drum assembly.
down the axle nut, spin the
the rear brake by pressing
pedal. With the brake set
down the bolt securing the



Now, torque the axle to
that the chain adjusters are
their locknuts are tight. Verify
in place and the wheel
brake pedal free play is

Time to make chain and wheel alignment checks

By Rupert Paul, TEC Diploma Motorcycle Engineering, C&G Motorcycle Mechanics.

NB on a poorly maintained bike with seized spindles, etc, these times can double or quadruple



Wheel alignment check 10 minutes

Usually done using aluminium box section or (as here) a laser alignment tool.

Drum brake lining check 30 minutes

To inspect whether drum linings have oil or grease on them, you have to remove the wheel. I don't have pictures but typically it involves:

- secure bike on hydraulic bench
- remove number plate (on some bikes)
- remove rear wheel nuts
- remove torque arm nuts
- remove brake actuator
- remove spindle, slide wheel forward
- left chain off sprocket
- withdraw wheel
- pull brake assembly out of hub
- inspect linings, clean. Regrease actuator arm if needed
- repeat the above procedure in reverse
- check chain tension, adjust if necessary

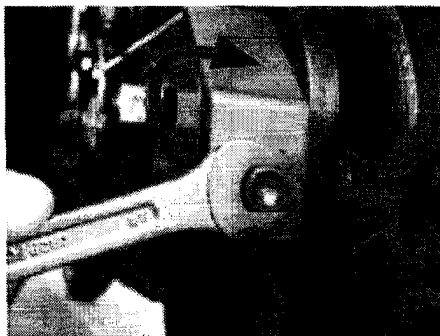
Disc brake pad check

10-30 minutes per disc

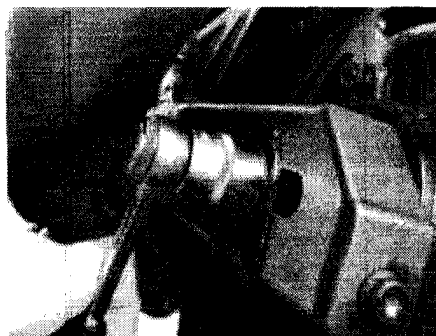
To inspect whether a pad has oil or grease on it typically involves:

- secure bike on hydraulic bench
- remove pad covers from calipers
- remove caliper pins (often they are seized)
- on some bikes, remove the calipers
- push back caliper pistons (time taken varies with bike condition)
- withdraw pads and inspect
- ideally, clean the caliper and pads, and relube pistons, as well as backs and sides of pads (takes an extra 30 minutes)
- reassemble

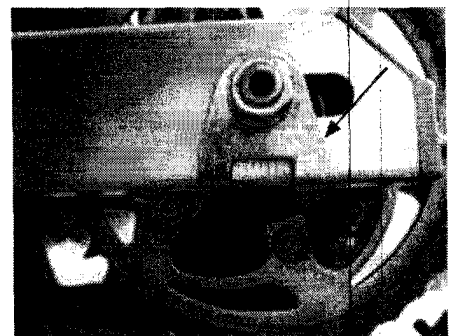
Chain adjustment 5 minutes



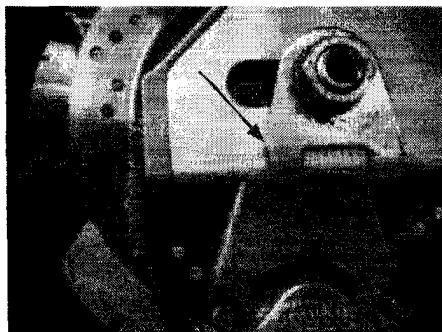
Turning the chain adjusters pulls the wheel backwards in the swing arm, tightening the chain. However, that won't happen until you...



...remove the clamping force by loosening the wheel nut. Older bikes have an arm from the brake to the swing arm/frame. Loosen its two nuts too



To keep the back wheel pointing straight ahead, turn the adjusters by the same amount each side. This is 1.5 gradations on the left...



And the same on the right. Adjustment done, retighten the spindle and (if your bike has one) brake torque arm. Recheck the tension!

Staff Cost Understatements in
EC Impact Assessment Cost Model

Option	3a	3b	3c
IA Stated Staff Cost (€million)	94,7	268,8	278,8
Staff Cost at MOT 60 mins (€million)	203,4	622,0	632,0
Staff Cost including additional checks e.g. visual inspection of brake pad (€million)	2.331,7	4.503,8	4.523,4
Staff Cost Understatement (€million)	2.237,0	4.235,0	4.244,6
Understatement factor	24,6	16,8	16,2
Industry Return on Sales %	5,3%		
Estimated profit available to Industry assuming staff costs reflected in price to vehicle owner (€million)	123,6	238,7	239,7
Estimated hidden profit to Testing Industry from failure to state costs of additional checks (€million)	118,6	224,5	225,0

Source: DEKRA Annual Report 2
(Finance) page 18 para 4
Assume DEKRA Return on Sales
of testing industry

From:
Sent: 30 April 2013 16:00
To: Euro-Ombudsman
Cc:
Subject: Case Ref 0875/2011/JF
Attachments: Recalculation of EC PRI Cost Model 20130429.xlsx

Dear Ombudsman Diamandouros,

Following a conversation with [redacted] last week I have decided to forward a recent estimation I have been able to make as to the scale of the understatement of costs attributable to the increase in test standard on existing tests on passenger cars in the financial model in the Impact Assessment, SWD(2012) 206-final, accompanying the Proposed Regulation of Periodic Roadworthiness Inspections COM(2012) 380 final. I have submitted this updated estimate to the chair of the TRAN committee in the European Parliament. I apologise for the late submission of these details. It took me some time to determine how to calculate a reasonable estimate of the potential understatement of costs based on data available to the European Commission.

In the summary sheet within the attached workbook you will find that costs are potentially understated, based on the labour effort assumptions used and policy option, by sums in the order of €1.1 billion to €2.3 billion, an understatement of a factor of between 6 and 13 for options 3a through 3c. I fully accept that these are indicative values only. I have not calculated the corresponding benefits side of the analysis. I contend that the order of magnitude of understatement is such that makes it impossible to make any meaningful appraisal of proportionality. For myself, I was surprised by the scale of the number at the upper end of the analysis. I half expected the upper bound to be around a factor of 10 understatement given the probable number of passenger cars to be tested.

My estimates do not account for the future expected rise in the passenger car fleet requiring testing, nor any the effect of any additional checks required on the cost assumptions for the tests of commercial vehicles. I acknowledge that some countries' inspection regimes will not be contracted out so profit may not be accrued to testing organisations.

I have also calculated the returns, profit, to the Roadworthiness Testing Industry using the Return on Sales (RoS) from DEKRA's 2011 annual financial report, p18 para 4, as indicative of the industry norm. It is clear that the range for RoS calculated represents a significant gain for major industry players.

To put this in perspective I will take Spain as an example:

- Table 1 in the impact assessment states that Spain has a medium level inspection (higher than EU minimum but not very high)
- Para 1.160 p42 in the impact assessment study SWD(2012) 206 final 2 (attached as Annex 14 to the Impact Assessment) states that DEKRA regard the Spanish test as very effective
- Footnote 50 p41 in the impact assessment study states that Portugal and Spain have old vehicle stocks

In this time of austerity in Spain when citizens are struggling the impact of the proposed legislation, in lifting the EU test standard to the "very high" standard test, will be to transfer significant amounts of money from the citizens' pockets, most frequently from less well off citizens with older vehicles, to the testing industry. The costs associated with that lift in standards on the existing fleet and consequent transfer of money has apparently not been explicitly stated, as far as I can determine, in the financial model that is purported to enable the appraisal of proportionality of the draft legislative act in changing what industry experts

acknowledge to be a very effective test. I note that this is against an analysis in table A3.33 on page 144 of the impact assessment study that shows 75% of Organisations and Public Bodies do not support the introduction of the highest standard of test and prefer other options yet the European Commission seems to propose the highest standard of test. Higher standards of tests will perhaps result in more test failures and the citizen will perhaps incur otherwise disproportionate repair costs as a consequence of test failure.

Kind regards

Staff Cost Understatements in
EC Impact Assessment Cost Model

Option	3a	3b	3c
IA Stated Staff Cost (€million)	94,7	268,8	278,8
Staff Cost at MOT 60 mins (€million)	203,4	622,0	632,0
Staff Cost including additional checks e.g. visual inspection of brake pad (€million)	1.267,5	1.826,6	2.577,7
Staff Cost Understatement (€million)	1.172,8	1.557,8	2.298,9
Understatement factor	13,4	6,8	9,2

Source: DEKRA Annual Re
(Finance) page 18 para 4
Assume DEKRA Return on
of testing industry

Industry Return on Sales %	5,3%		
Estimated profit available to Industry assuming staff costs reflected in price to vehicle owner (€million)	67,2	96,8	136,6
Estimated hidden profit to Testing Industry from failure to state costs of additional checks (€million)	62,2	82,6	121,8

Assumptions

Vehicle Life (Years)	17	Source: Impact Assessment Study page 59 footnote 8
Inspections in vehicle life	7,5	Source: Impact Assessment
Number of Vehicles	238.762.000	Source: European Commission - Transport in Figures Chapter 2.6 - Stock of Cars 2010
Inspector Employment Cost:	€ 50.000	Source: Impact Assessment Study p51 para 1.282
Inspector Working Days	220	Source: Impact Assessment - Annex 13 para 5. p91

Cost Calculation - Additional Checks

	Low 15 mins	Mid 20 mins	High 25 mins
Time for extra checks (min)	15	20	25
Hours	0,25	0,33	0,42
No Vehicles	238.762.000	238.762.000	238.762.000
No inspections	7,5	7,5	7,5
No Vehicle Inspections	1.790.715.000	1.790.715.000	1.790.715.000
No VI per Year	105.336.176	105.336.176	105.336.176
No Hours	0,25	0,33	0,42
Inspection Effort Hrs (000)	26.334.044	35.112.059	43.890.074
Insp Effort Man Years	14.963	19.950	24.938
Inspector Cost	€ 50.000	€ 50.000	€ 50.000
Total Cost	€ 748.126.253,34	€ 997.501.671,12	€ 1.246.877.088,90

Total Cost (Million)	€ 748,1	€ 997,5	€ 1.246,9
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For Options 2c and 3c

Vehicle Life (Years)

17 Source: Impact Assessment Study page 59 footnote 8

Inspections in vehicle life

13 Source: Impact Assessment

Number of Vehicles

238.762.000 Source: European Commission

- Transport in Figures Chapter 2.6

- Stock of Cars 2010

Inspector Employment Cost:

€ 50.000 Source: Impact Assessment Study p51 para 1.282

Inspector Working Days

220 Source: Impact Assessment - Annex 13 para 5. p91

Cost Calculation - Additional Checks

	Low 15 mins	Mid 20 mins	High 25 mins
Time for extra checks (min)	15	20	25
Hours	0,25	0,33	0,42
No Vehicles	238.762.000	238.762.000	238.762.000
No inspections	13	13	13
No Vehicle Inspections	3.103.906.000	3.103.906.000	3.103.906.000
No VI per Year	182.582.706	182.582.706	182.582.706
No Hours	0,25	0,33	0,42
Inspection Effort Hrs (000)	45.645.676	60.860.902	76.076.127
Insp Effort Man Years	25.935	34.580	43.225
Inspector Cost	€ 50.000	€ 50.000	€ 50.000
Total Cost	€ 1.296.752.172,46	€ 1.729.002.896,61	€ 2.161.253.620,77

Calculation of Cost factors		
Input (1,2,3) to select 15, 20, 25 mins for added checks	2	
Additional PRI Inspection 25 mins		
Cost Factor to apply to staff costs	1	
Working minutes = 220 days * 8hrs = 60	105600	
Tests possible based on 220 working days	4224	
Additional PRI Inspection 60 mins (MOT Evidence Base)		
Commission's MOT reported time (mins)	25	
DFT MOT reported time (mins)	60	
add failure rate retests at 30% @ 7.2 mins	62,2	
Cost factor to apply to staff costs = 60/25	2,5	
Tests possible based on 220 working days	1699	
Additional PRI Inspection allowing for MOT plus visual inspections		
Allow x minutes for extra visual inspections	20	
Commission's MOT reported time	25	
Time to conduct visual inspections of brake surfaces etc	20	
Percentage of MOT failures attributable to brakes	14% Low = 10	High 17
DFT MOT reported time plus estimated additional inspection time x mins (visual reinspection of pads still requires x mins)	85	Avg used 14
Cost factor to apply to staff costs	3,4	
Tests possible based on 220 working days	1243	
	Options 2c,3c	
	1729,0	
Cost of additional checks on vehicles currently subject to test (€mill)	997,5	1729,0

Option 2a Costs calculations		
Commission		
1 Equipment	39,2	
PRI Staff Costs	73,1	
RSI Staff Costs	21,6	
4 Total Staff	94,7	
5 Vehicle classes to be inspected 70+80=150	150	
6 Testing frequency	125	
7 Supervision of testing centres	42,6	
8 Data exchange	8	
Total cost estimate	459,5	
MOT Standard Test		
1 Equipment	39,2	
PRI Staff Costs	181,8	
RSI Staff Costs	21,6	
4 Total Staff	203,4	
5 Vehicle classes to be inspected 70+80=150	150	
6 Testing frequency	125	
7 Supervision of testing centres	42,6	
8 Data exchange	8	
Total cost estimate	568,2	Variance to EC

108,7

Option 2b Costs calculations		
Commission		
1 Equipment 39.2 + 37.8+2.08	79,08	
PRI Staff Costs (2a+164.5)	237,6	
RSI Staff Costs (2a+4.1+5.5)	31,2	
4 Total Staff	268,8	
5 Vehicle classes to be inspected 150 + 123.5	273,5	
6 Testing frequency 125 + 2,520 + 36	2681	
7 Supervision of testing centres	42,6	
8 Data exchange	8	
Total cost estimate	3352,98	
MOT Standard Test		
1 Equipment	79,08	
PRI Staff Costs	590,8	
RSI Staff Costs (2a+4.1+5.5)	31,2	
4 Total Staff	622,0	
5 Vehicle classes to be inspected 150 + 123.5	273,5	
6 Testing frequency 125 + 2,520 + 36	2681	
7 Supervision of testing centres	42,6	
8 Data exchange	8	
Total cost estimate	3706,1	Variance to E

353,2

Option 2c Costs calculations		
Commission		
1 Equipment 79.08+2.6		
PRI Staff Costs (2b)		
RSI Staff Costs (2b+ 1.2 + 8.8)		
4 Total Staff		
5 Vehicle classes to be inspected 2		
6 Testing frequency 2,681+5,860		
7 Supervision of testing centres		
8 Data exchange		
Total cost estimate		
MOT Standard Test		
1 Equipment 79.08+2.6		
PRI Staff Costs (2b)		
RSI Staff Costs (2b+ 1.2 + 8.8)		
4 Total Staff		
5 Vehicle classes to be inspected 2		
6 Testing frequency 2,681+5,860		
7 Supervision of testing centres		
8 Data exchange		
Total cost estimate		

MOT Standard Test + Additional Visual Brake inspections etc				MOT Standard Test + Additional Visual Brake inspections				MOT Standard Test + Additional Visual Brake li			
MOT Standard Test				MOT Standard Test				MOT Standard Test			
1 Equipment	39,2			1 Equipment	79,08			1 Equipment 79,08+2.6			
PRI Staff Costs	248,4			PRI Staff Costs	807,5			PRI Staff Costs (2b)			
RSI Staff Costs	21,6			RSI Staff Costs (2a+4.1+5.5)	31,2			RSI Staff Costs (2b+ 1.2 + 8.8)			
Staff cost of additional checks on Passenger Cars	997,5			Staff cost of additional checks on Passenger Cars	997,5			Staff cost of additional checks on Cars			
4 Total Staff	1.267,5	Factor Underst	13,4	4 Total Staff	1.836,2	Factor Underst	6,8	4 Total Staff			
5 Vehicle classes to be inspected 70+80=150	150			5 Vehicle classes to be inspected 150 + 123.5	273,5			5 Vehicle classes to be inspected 1			
6 Testing frequency	125			6 Testing frequency 125 + 2,520 + 36	2681			6 Testing frequency 125 + 2,520 +			
7 Supervision of testing centres	42,6			7 Supervision of testing centres	42,6			7 Supervision of testing centres			
8 Data exchange	8			8 Data exchange	8			8 Data exchange			
Total cost estimate	1632,3	Variance to EC	1172,8	Total cost estimate	4920,3	Variance to E	1567,4	Total cost estimate			
Option 3a Costs calculations				Option 3b Costs calculations				Option 3c Costs calculations			
Commission				Commission				Commission			
1 Equipment	39,2			1 Equipment 39.2 + 37.8+2.08	79,08			1 Equipment (2b+2.6)			
PRI Staff Costs	73,1			PRI Staff Costs (2a+164.5)	237,6			PRI Staff Costs (2b)			
RSI Staff Costs	21,6			RSI Staff Costs (2a+4.1+5.5)	31,2			RSI Staff Costs (2b+ 1.2 + 8.8)			
4 Total Staff	94,7			4 Total Staff	268,8			4 Total Staff			
5 Vehicle classes to be inspected 70+80=150	150			5 Vehicle classes to be inspected 70+80=150	273,5			5 Vehicle classes to be inspected 2			
6 Testing frequency	125			6 Testing frequency 125 + 2,520 + 36	2681			6 Testing frequency 2,681+5,860			
7 Supervision of testing centres	42,6			7 Supervision of testing centres	42,6			7 Supervision of testing centres			
8 Data exchange	8			8 Data exchange	8			8 Data exchange			
Total PO2 cost estimate	459,5			Total cost estimate	3353,0			Total cost estimate			
PO1 cost	0,2			PO1 cost	0,2			PO1 cost			
PO3 Total cost estimate	459,7			PO3 Total cost estimate	3353,2			PO3 Total cost estimate			
MOT Standard Test				MOT Standard Test				MOT Standard Test			
1 Equipment	39,2			1 Equipment	79,08			1 Equipment 79,08+2.6			
PRI Staff Costs	181,8			PRI Staff Costs	590,8			PRI Staff Costs (2b)			
RSI Staff Costs	21,6			RSI Staff Costs (2a+4.1+5.5)	21,6			RSI Staff Costs (2b+ 1.2 + 8.8)			
4 Total Staff	203,4			4 Total Staff	612,4			4 Total Staff			
5 Vehicle classes to be inspected 70+80=150	150			5 Vehicle classes to be inspected 150 + 123.5	273,5			5 Vehicle classes to be inspected 2			
6 Testing frequency	125			6 Testing frequency 125 + 2,520 + 36	2681			6 Testing frequency 2,681+5,860			
7 Supervision of testing centres	42,6			7 Supervision of testing centres	42,6			7 Supervision of testing centres			
8 Data exchange	8			8 Data exchange	8			8 Data exchange			
Total PO2 cost estimate	568,2	Variance to EC	108,7	Total cost estimate	3696,5	Variance to E	343,6	Total cost estimate			
PO1 cost	0,2			PO1 cost	0,2			PO1 cost			
PO3 Total cost estimate	568,4			PO3 Total cost estimate	3696,7			PO3 Total cost estimate			
MOT Standard Test + Additional Visual Brake inspections				MOT Standard Test + Additional Visual Brake inspections				MOT Standard Test + Additional Visual Brake li			
MOT Standard Test				MOT Standard Test				MOT Standard Test			
1 Equipment	39,2			1 Equipment	79,08			1 Equipment 79,08+2.6			
PRI Staff Costs	248,4			PRI Staff Costs	807,5			PRI Staff Costs (2b)			
RSI Staff Costs	21,6			RSI Staff Costs	21,6			RSI Staff Costs (2b+ 1.2 + 8.8)			
Staff cost of additional checks on Passenger Cars	997,5			Cost of additional checks on Passenger Cars	997,5			Cost of additional checks on Pass			
4 Total Staff	1267,5	Factor Underst	13,4	4 Total Staff	1.826,6	Factor Underst	6,7	4 Total Staff			
5 Vehicle classes to be inspected 70+80=150	150			5 Vehicle classes to be inspected 150 + 123.5	273,5			5 Vehicle classes to be inspected 1			
6 Testing frequency	125			6 Testing frequency 125 + 2,520 + 36	2.681,0			6 Testing frequency 2,681+5,860			
7 Supervision of testing centres	42,6			7 Supervision of testing centres	42,6			7 Supervision of testing centres			
8 Data exchange	8			8 Data exchange	8			8 Data exchange			
Total PO2 cost estimate	1632,3	Variance to EC	1172,8	Total cost estimate	4.910,7	Variance to E	1557,8	Total cost estimate			
PO1 cost	0,2			PO1 cost	0,2			PO1 cost			
PO3 Total cost estimate	1632,5	Understated	3,6	PO3 Total cost estimate	4.910,9	Understated	1,5	PO3 Total cost estimate			

Valid data values for time option to select

1
2
3