



Vol 98 No 2

TECHNICAL SERVICE BULLETIN - Passenger

ARTICLE **1/98**

Circulate to	Service Manager	Parts Manager	Foreman	Receptionist	Technicians		

TITLE - **DOOR LOCKS CYCLING / OPERATING INCORRECTLY**

MODELS - EF/EL Falcon, NF/NL Fairmont and DF/DL LTD

PRÉCIS - Vehicles exhibiting door lock actuator concerns (eg. cycling) can be repaired by following this TSB.

This Technical Service Bulletin (TSB) outlines a repair strategy designed to eliminate door lock cycling concerns with the range of vehicles listed above.

 **All published copies of TSB 31/96 must be destroyed as this TSB supersedes all previous copies.**

Actuator History

Below is a summary of the changes to the part number printed on the door lock actuator cases (These part numbers must not be used when ordering parts as they are only listed below to aid in actuator identification) :

Phase 1 : Actuators fitted with mechanical brakes.
Production fitted to vehicles from JOB 1 EF (August 1994) to 31st March 1997
Number on Actuator Case : 87BG 220 A20 BB / AB (Front Door / Rear Door)
EB 220 A20 B (Tailgate Actuator)

Phase 2 : Actuators fitted with limited brakes ("no brake" actuators).
Production fitted to vehicles between 1st April 1997 to 12th December 1997
Number on Actuator Case : * 87BG 220 A20 B1B / A1B (Front Door / Rear Door)
* 87BG 220 A20 B1B (Tailgate Actuator)

Phase 3 : Actuators fitted with revised motors for slower running.
Production fitted to vehicles from 15th December 1997
Number on Actuator Case : 96DA 220 A20 BA/AA (Front Door / Rear Door)
96DA 220 A20 BA (Tailgate Actuator)

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FORD CUSTOMER SERVICE DIVISION

Service Action

Door lock cycling concerns can be split into two failure modes (**A or B**), evaluate the cycling concerns and proceed to the TSB section as indicated :

- If all door lock actuators cycle through the lock/unlock positions simultaneously and in sequence, then refer to the service instructions within **Section A** on this Page.
- If the vehicle exhibits out of sequence lock/unlock of individual door actuators then refer to the service instructions on Page 10, **Section B** of this TSB.

Section A : Vehicles Displaying Simultaneous Door Lock Cycling

Vehicles displaying simultaneous door lock cycling can be split into two build date groups :

Group 1 : All effected models built from 1 April 1997 to 12 December 1997. Vehicles built with <i>Phase 2</i> Actuators (Limited Brake)
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Group 2 : All effected models built from August 1994 to 31 March 1997. Vehicles built with <i>Phase 1</i> Actuators (Mechanical Brake Fitted)
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Identify the build group from which the vehicle originates, then proceed to the appropriate page of this TSB :

Repair procedures for Group 1 vehicles begin on Page 3 of this TSB. Repair procedures for Group 2 vehicles begin on Page 4 of this TSB.
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 ***General service information regarding both Group 1 and Group 2 vehicles is listed on Page 9 of this TSB.***

 ***Note : Should actuator concerns remain after following this TSB then the Ford Dealer Technical Service Hotline should be immediately contacted for further assistance.***


Repair Procedure : Group 1 (Vehicles Built from 1st April 1997 to 12th December 1997)

Actuator operating speed has been identified as contributing to door lock cycling within this group of vehicles. To eliminate this concern actuators with revised electric motors have been released (*Phase 3* actuators). *Phase 3* actuators are currently available from Ford Customer Service Division (NPD). To ensure all **Group 1** vehicles exhibiting door lock cycling are repaired, the following procedure should be carried out :

1. Order the appropriate *Phase 3* actuators.


**FOR SEDANS ORDER A KIT OF FOUR ACTUATORS
FOR WAGONS ORDER A KIT OF FOUR ACTUATORS PLUS ONE TAILGATE ACTUATOR**

2. Remove all of the *Phase 2* actuators from the vehicle (Note : 4 actuators per sedan and 5 actuators per wagon).

 ***Note that each door actuator is fixed with rivets, it is imperative that replacement actuators are fixed with the same type of fastener (See "Recommended Parts" below). Wagon tailgate actuators are fixed with screw/nuts and do not require riveting.***

3. Fit new (*Phase 3*) actuators into the vehicle. Note these actuators can be identified by referring to the table on Page 9.

 ***Important Note: Phase 3 actuators are NOT COMPATIBLE with Phase 2 actuators and MUST NOT be mixed within vehicles.***

 ***At the end of the retention period actuators removed from vehicles must be destroyed unless recalled by the Company (Refer to Warranty and Policy procedures, Section 5, Sub Section 24.4).***

4. **Test the vehicle for door lock cycling.** This can best be achieved by holding the engine at 2000 rpm and pressing the dash mounted unlock button approximately once per second for 10 seconds. For vehicles not fitted with an unlock button (eg. LPG equipped vehicles) test the system by manually moving the driver door lockrod through the lock/unlock positions approximately once per second for 10 seconds. If the cycling concern has not been resolved then continue to Page 4 of this TSB and proceed to carry out the door latch actuator distance check procedure (As per Group 2 Repair Procedure). If the cycling concern has been eliminated then return the vehicle to service.

Recommended Parts

Phase 3 Actuator Kit (contains 4 actuators) - 96BG 220A20 KIT

Phase 3 Wagon Tailgate Actuator - EB 220A20C

Actuator mounting rivets - V 388797 S100 (8 required per sedan/wagon)

Warranty Status

Reimbursable within the provisions of the Warranty and Policy Manual.

Warranty Claim

In box "X" of warranty claim enter 9801 to reference this TSB.

If entered as Special Adjustment Bulletin then "SB38" must be entered into box "X".

Causal Part Number

Use the correct causal part number of the part replaced.

Operation Number/Standard Repair Time

12999X Fit Phase 3 Actuator Kit to sedan and test vehicle - 2.2 hrs


12999X Fit Phase 3 Actuator Kit to wagon and test vehicle - 2.7 hrs

Repair Procedure : Group 2 (Vehicles Built From August 1994 to 31st March 1997)

Before beginning **Group 2** vehicle service procedures, the vehicle warranty history/owner records should be checked. Attempt to identify whether any actuator work has been previously carried out on the vehicle. Should this be confirmed then replace all actuators fitted to the vehicle with *Phase 3* units. Proceed to Page 9 and carry out the Actuator Test Procedure.


If the vehicle has no history of actuator repairs then technicians should proceed with the door latch actuator distance checks outlined below. Should technicians identify individually faulty actuators (eg. slow moving or unusual operating noises from individual actuators) then a single *Phase 3* actuator can be added to the vehicle (ie. *Phase 3* and *Phase 1* actuators can be mixed within vehicles - refer Page 9, General Service Information : Group 2 Vehicles). If individual actuators can not be identified as faulty then proceed with the Actuator Latch Distance Checks outlined below.

Actuator Latch Distance Check (Front doors only)

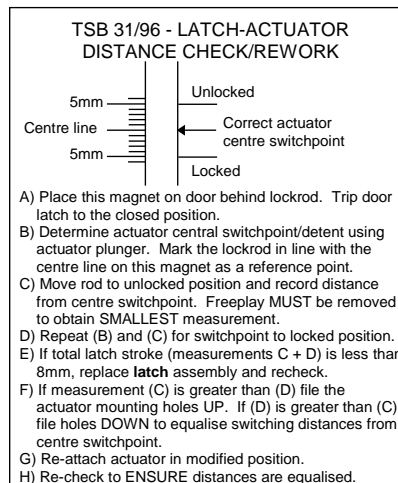
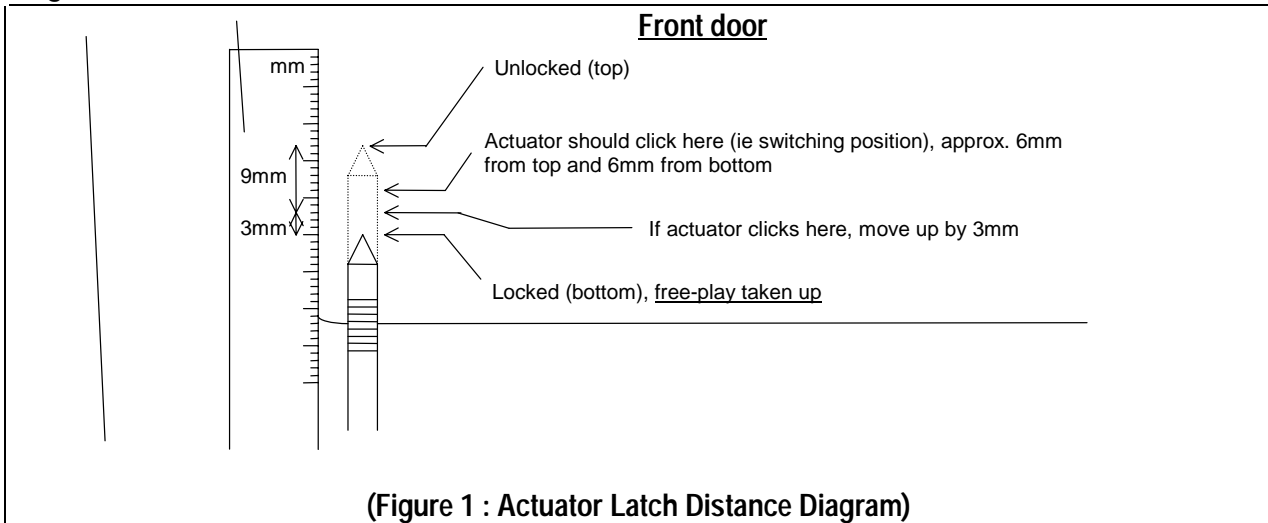
 ***Both front doors should be checked unless the vehicle has been fitted with only a driver's side snibber button in production. In this situation it is only necessary to check the driver's side front door. When assessing a vehicle for door lock cycling (due to a latch actuator distance error) measure both the stroke of the door lock assembly and the position of the actuator switching with relation to the stroke.***

To do this, the following procedure should be followed :

- a) With the vehicle door open, manually trip the door latch to the door closed position.
- b) Remove the door trim and place the actuator in the unlocked position (snibber rod up).
- c) Disconnect the actuator wires from the door loom connector.
- d) The switching position of the actuator now needs to be located. To do this, move the plunger down slowly until you can hear and/or feel the actuator plunger contacts 'click'. (It is easier to find the switching position if you hold the rubber seal on the actuator to move the plunger, rather than holding the snibber rod.)
- e) Place a "fridge" magnet as distributed by Ford, Service Engineering March 1997 (Figure 2) or alternatively, use a ruler beside the lock rod and take a reference point on the rod.
- f) Using the fridge magnet or ruler beside the button rod, measure the distance from this switching point to the bottom (locked) position (Figure 1).

 ***After moving the rod down to the locked position, always move it back up slightly to take up any free-play before taking the measurement. All measurements should be the SMALLEST value obtainable after taking up free-play.***

- g) Repeat steps d) and then e) for the switch point to top/unlocked position. Remembering again to take the smallest reading possible by removing free-play. The switching point can still be located by moving the rod from the top down (you can hear the actuator plunger contacts "click").
- h) If the total latch stroke (locked plus unlocked measurements) is less than **8mm** and has excessive free-play (greater than 3mm in both the locked and unlocked positions), replace the door latch. If latch is stiff in operation, lubricate or replace latch as necessary.
- i) The switch point to locked and unlocked distances must be equal, and both must be greater than **4mm**. If the distances are outside these tolerances it will be necessary to perform the rework as detailed on page 6 of this TSB.
- j) Do not replace all door covers and trim before reading the Actuator Test Procedure on Page 9 of this TSB.

**(Figure 2 - Fridge Magnet)****Recommended Parts**

96BG 220A20KIT - (Kit of FOUR Phase 3 Actuators)

EB 220A20C - (Phase 3 Wagon Tailgate Actuator)

96DA 220 A20BA - (Single Phase 3 Front Door Actuator)

96DA 220A20AA - (Single Phase 3 Rear Door Actuator)

V388797 S100 - (Actuator Mounting Rivet - 2 Required per Door)

Causal Part Number

FT ** Condition Code 07 where "**" denotes door (use where actuator mounting holes require rework)

Operation Number/Standard Repair Time

23942B	Remove and Replace Single Trim Panel -	0.5 hours
23942BT	Remove and Replace Both Trim Panels -	0.8 hours
12999X	Fit <i>Phase 3</i> Actuator Kit to Sedan and Test vehicle -	2.2 hours
12999X	Fit <i>Phase 3</i> Actuator Kit to Wagon and Test vehicle -	2.7 hours
21842A	Fit Individual <i>Phase 3</i> Actuators -	0.7 hours
	(Add 0.5 hours for each additional Actuator replaced)	
21812A	Replace Single Front Door Latch (Do not use with 23942B) -	0.8 hours
21812AT	Replace Both Front Door Latches (Do not use with 23942BT) -	1.1 hours

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Latch Actuator Distance Rework (Front doors only)

If the switching point to the locked and unlocked distances are not equal it will be necessary to perform the following rework :

- a) Remove the actuator and mounting bracket from the door, (punch and drill rivets).
- b) File out both mounting holes to allow the actuator to be moved up/down by the amount required to equalise the switch point to top and switch point to bottom distances, (refer Figure 1, Page 5). The mid point should be approximately 6mm travel from either end. For example if the switch point to bottom distance is 3mm and switch point to top distance is 9mm then file UP by approx 3mm. If switch point to top distance is 2mm and switch point to bottom distance is 10mm then file DOWN by approx 4mm.
- c) Re-attach the actuator to the filed door mount holes using the specified rivets (See Parts List - Page 3 of this TSB), ensure they are secured as far up or down as required.
- d) Re-perform Latch Actuator Distance Check as outlined on page 4 (Paragraphs (d) to (i)).**
- e) Release the door latch by operating the interior handle before closing the door.
- f) Do not replace all door covers and trim before reading the Actuator Test procedure on Page 9 of this TSB.

Causal Part Number

FT ** Condition Code 07 where "**" denotes door (use where actuator mounting holes require rework)

or

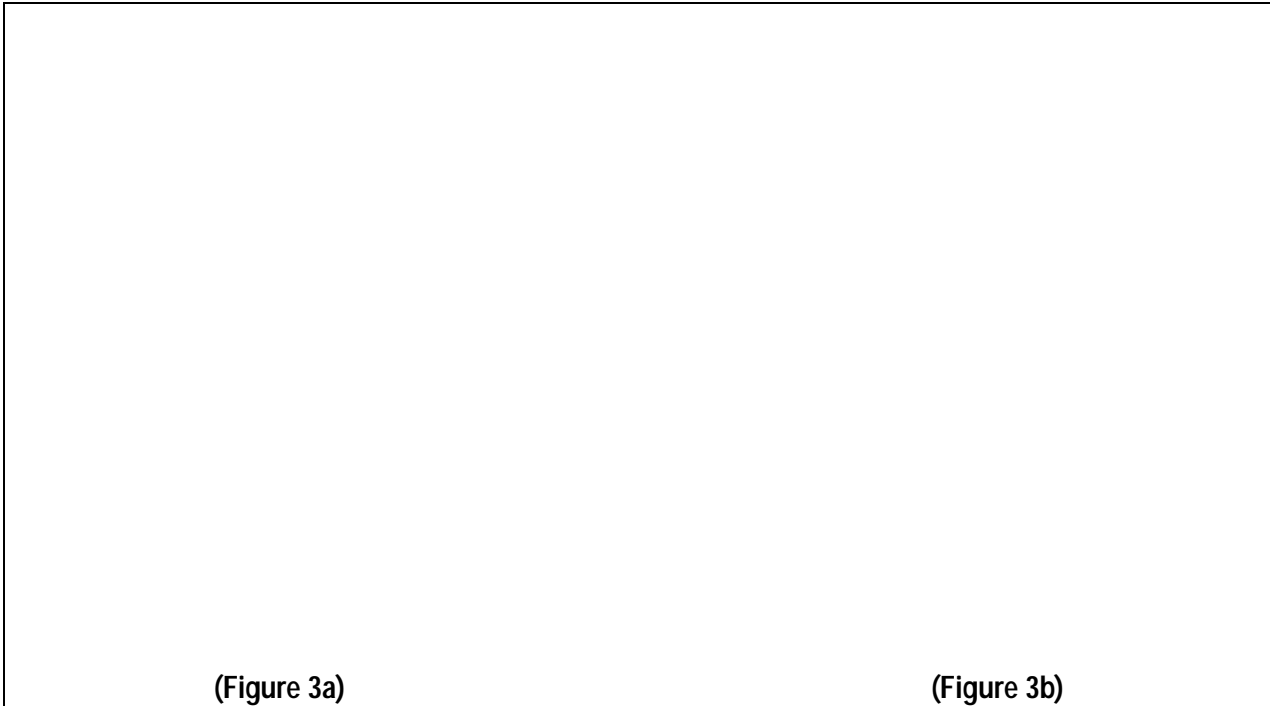
Part number of door latch if replacement is required.

Operation Number/Standard Repair Time

23942B6T Actuator Adjustment and Recheck - 0.3 hours per Actuator

Latch deformation rework (Left front doors only, build date prior June 1st, 1996)

The door latch may deform due to the window runner rubber stopper applying pressure to the latch backplate, refer to Figure 3a.



Vehicles exhibiting door latch deformation will require the following procedure carried out :

- a) Obtain access to window runner mounting bracket.
- b) Remove window runner mounting bracket bolt.
- c) Widen the hole, with either a file or drill, by 2mm in a forward direction as shown in Figure 3b.

 ***Note that all filings or swarf must be removed from the door cavity.***

- d) Re-install the mounting bolt making sure that the bolt is as far forward as possible.
- e) If the LHF rod is restricted in movement when attempting to lock, then the latch assembly should be replaced.
- f) Ensure window operation has not been compromised and operates correctly.
- g) Do not replace all door covers and trim before reading the Actuator Test procedure on Page 9 of this TSB.

Parts Information

EC F21813 A - Door Latch Assembly Front LHS

Causal Part Number

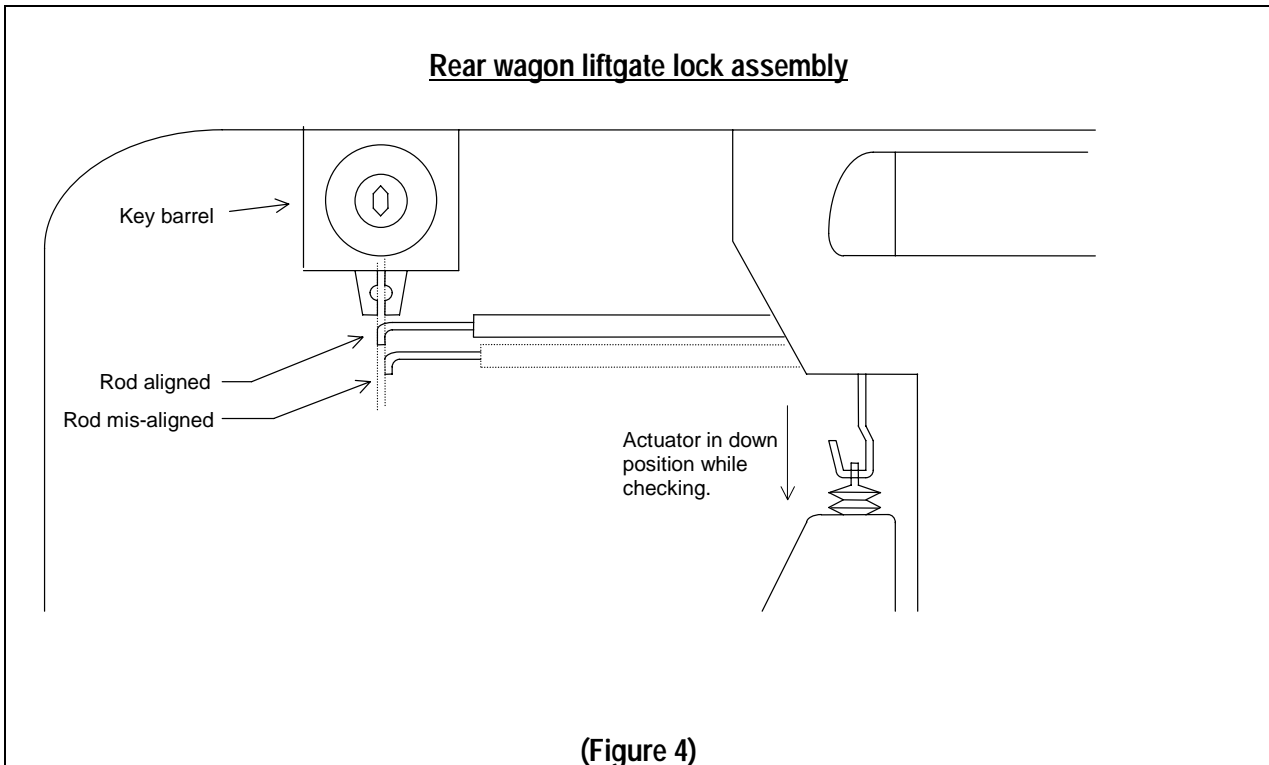
EC F21813 A

Operation Number/Standard Repair Time

23201A	Regulator Assembly Adjust -	0.4 hours
21812A	Latch Front Door R&R -	0.8 hours (includes R&R of trim panel)

Rear Liftgate Dimensional Error Check (WAGONS only, built before 1st August 1996)

- a) Remove rear liftgate inner trim lining.
- b) Remove license plate and outer plastic license plate cavity (1 outer and 4 inner bolts).
- c) Remove black plastic cover from latch-actuator assembly.
- d) Disconnect lockrod from plastic key barrel retaining clip.
- e) Position the loose lockrod under the retaining clip. In the unlocked (and also locked) position, the lockrod should fit into the retaining clip without having to pull the rod beyond the free-play (Refer Fig 4).



- f) If the lockrod is mis-aligned as above use pliers to bend the end of lockrod so it's aligned with the barrel clip in both locked and unlocked states.
- g) Reconnect lockrod and check for correct operation of door locks both manually, with the liftgate key and also remote keypad.
- h) Do not replace all door covers and trim before reading the Actuator Test procedure on Page 9 of this TSB.

Causal Part Number

EABN21970A

Operation Number/Standard Repair Time

43200B Latch liftgate adjust - 0.3 hours

Actuator Test Procedure

After completing the door latch distance checks as outlined on Pages 4 to 8 of this TSB test the vehicle for door lock cycling. This can best be achieved by holding the engine speed at a constant 2000 rpm and pressing the dash mounted unlock button approximately once per second for 10 seconds, cycling should not occur. For vehicles not fitted with an unlock button (eg. LPG equipped vehicles) test the system by manually moving the driver door lockrod through the lock/unlock positions approximately once per second for 10 seconds.

If the door lock cycling concern has not been resolved then proceed to fit *Phase 3* door lock actuators to the vehicle as described on Pages 3 and 4 of this TSB.

Should the door lock cycling concern have been resolved by the door latch distance checks outlined on Pages 4 to 8 of this TSB refit the door trims and return the vehicle to service.


General Service Information : Group 1 (All Vehicles Built from 1st April 1997 to 12th December 1997)

- Should a single actuator require replacement (eg. due to vehicle crash damage) and the vehicle has not had all of the original actuators replaced with *Phase 3* actuators then all of the actuators fitted to the vehicle must be replaced.

 ***Note that Phase 3 actuators are NOT COMPATIBLE with Phase 2 actuators and MUST NOT be mixed within vehicles.***

General Service Information : Group 2 (All Vehicles Built Between August 1994 and 31st March 1997)

- Should a single actuator require replacement (eg. due to vehicle crash damage) then replace with a *Phase 3* unit. Note that for Group 2 vehicles that have not previously exhibited cycling concerns it is not necessary to replace all *Phase 1* actuators with *Phase 3* actuators (ie. *Phase 3* and *Phase 1* actuators can be mixed within vehicles)

 ***Note that actuator concerns/questions can be directed to the Ford Dealer Technical Service Hotline for further assistance.***

Parts Information

Phase 3 Actuator Kit (contains 4 actuators) -	96BG 220A20 KIT
Individual Phase 3 Wagon Tailgate Actuator -	EB 220A20C
Individual Phase 3 Front Door Actuator -	96DA 220A20 BA
Individual Phase 3 Rear Door Actuator -	96DA 220A20 AA
Actuator mounting rivets -	V 388797 S100 (8 required per sedan/wagon)

 ***Note that Phase 3 actuators are identifiable by one of the following four markings :***

- 1. A silver sticker displaying "A10804184" placed on the actuator casing.***
- 2. A laser etching displaying "A10804184" placed on the actuator casing.***
- 3. Part number stamped on body of actuator #'s 96DA 220A20 BA & AA***
- 4. Green coloured casing (future production after release of this TSB date)***


Section B : Vehicles Displaying Locking/Unlocking Concerns (Individual Actuators Only)

Individual actuator locking/unlocking concerns include the following types of cases :


- Single actuators continuously cycling.
- Single actuators always reverting to the same state.
- Actuators not functioning.

These types of concerns can typically be traced back to the following types of problems :

- Incorrect latch distance adjustment.
- Incorrectly assembled snibber button.
- Damaged actuator wiring/body looms.
- Internal actuator mechanical/electrical failure (eg. actuator motor failure).

 ***Note : A feature of the vehicle is that the Smartlock system will automatically lock all vehicle doors if entry to the vehicle is not detected within 2 minutes of the door locks being unlocked and while using the remote keypad. This condition may be mistaken for a door lock cycling concern by some vehicle owners.***

Technicians are encouraged to carefully diagnose door locking concerns to ensure vehicles are repaired both permanently and efficiently without the fitment of unnecessary parts. Conditions such as those listed above have been encountered in service and should not be ignored in favour of actuator replacement.

 ***Note that should actuator concerns remain after following this TSB then the Ford Dealer Technical Service Hotline should be immediately contacted for further assistance.***

End.