TECHNICAL SERVICE BULLETIN No. 24/2008 30.12.2008

Heavy Commercial vehicles

Distribution:	Service Manager	Body Shop Manager	Parts Manager	Foremen	Receptionists	Technicians
	✓		✓	✓	✓	✓

Topic : Ford Cargo – Brake Lining Replacements

Version : All Ford Cargo vehicles

Summary : Brake linings on Ford Cargo trucks should be replaced according to the instructions in the bulletin.

Special Tools and Equipment **Part No**

Pneumatic or air driven steel rivet press should be used. Press mechanism doesn't have special specifications, but the important is, mechanism should have pneumatic or air-driven system that meets the necessary safety requirements.
End points of the mechanism should be adjustable up to the rivet heights.

Mechanical press, in which the applicable force varies according to the operators, should not be used during operation.

Labor Code **Labor Description** **Labor Time**

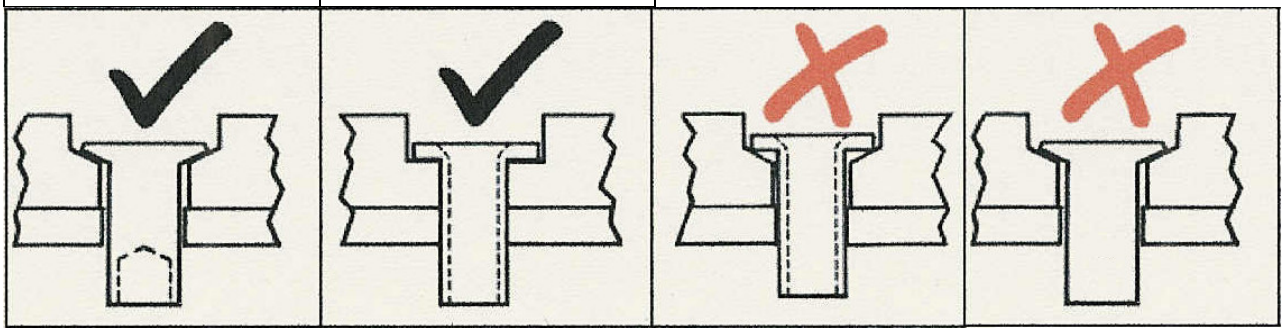
Faulty Part **Repair Code** **Customer Concern Code:**
2022 30 H15

Necessary parts

Refer to parts catalogue for brake system parts required. You can find the lining and assembly part numbers released in spare parts system below.

Brake Type	Vehicle Type	Lining	Shoe	Pop rivet	Shoe w/lining
394 mm	All vehicles built before October 15th, 2007 + 240ps vehicles built today	6C46-2022-AA	EF 163	6C46-2N142-BA	7C46-2018-A2A
410 mm	All 6x4 vehicles + all 300 PS and higher power output vehicles built after October 15th, 2007	8C46-2C452-B2A	6C46-2021-AA	6C46-2N142-AA	7C46-2018-B2A

Rivet for 394mm lining 6C46-2N142-BA	Rivet for 410mm lining 6C46-2N142-AA		



Warnings:

I) Brake lining wear should be checked by service personnel using the inspection holes in all periodical maintenances. Customers should be recommended to replace the brake linings, if the linings are worn out or about to be worn out. For the customers who doesn't accept the replacement, note the following explanation on the repair order card and get the signature of the customer on the card : "brake linings in axle x are found to be worn out and we recommended our customer to replace them, but our customer did not approve the brake lining to be replaced ."

II) Aluminium rivet applications that may be seen on the field are completely uncontrolled procedures.

a. Only approved is steel rivet usage in brake linings. Approved linings are designed according to the steel rivet (number of rivets, counter bores etc).

b. Aluminium rivets and steel rivets are completely different with respect to the materials and form. Steel rivets used in 394 mm linings have cone heads, and the end part is conically drain casted. Steel rivets used in 410 mm linings are hollow and cone headed. Both rivets are flushed on the shoe face after staking. Aluminium rivet is flushed on the shoe in an uncontrollable way, and rivet inflates on the whole body of rivet, not on the end part. This causes a lateral force on the riveted lining holes. Thus, it can cause fractures or flakes on the lining.

c. Aluminium rivet acts differently than the shoe material in the heated brake system because of its material. Lining can move on the shoe in hot operating conditions. This also causes uneven wear on the lining.

d. A burr or a sharp corner that remains on the shoe hole seat, during the removal of the lining from the shoe, can cause the aluminum rivet to shear off / break.

You should explain these to the customer who does not want the steel rivet to be used, and tell him that aluminium rivet will have a negative influence on the safety and lining service life. Remember that the aluminium rivet is not an approved product in any brake lining standard.

III) Lining part numbers should be the same for each axle. Part numbers correlate to the specifications of the lining, so part with a different number can act differently during braking. This will cause performance down and constitute a danger to driving safety.

IV) Do not direct the customer to aftermarket for lining stake operations; encourage him to have the service applications in authorised workshops. Remember that directing brake maintenance to aftermarket may cause the wheel maintenance to be directed to the aftermarket.

V) Before the brake staking operation, service technician must wear protective eyewear, gloves, and mask according to the employment safety rules.

VI) Usage described below can cause uneven wear on linings and have a negative effect on the service life of brake linings.

a. Over loading the vehicle,
b. Wrong brake usages,
c. Uneven loading,
d. Bodywork errors,
e. Unbalanced wheels or worn tyres,
f. Unmaintained wheels, unadjusted brake system
g. Wrong tyre choice,
h. Worn drum surface,
i. Wrong application of lining staking.

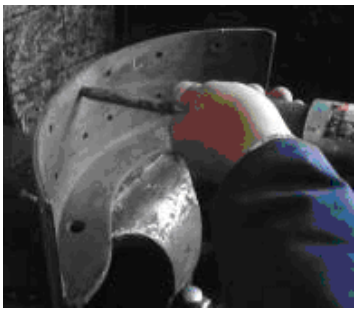
Service Action

1. Perform checks and operations in brake lining replacement according to **Brake Maintenance Manual** in Workshop Manual.

2) Linings are washed in some workshops, to eliminate lining dust from working environment before removing the lining from the shoe.

Caution: Washed linings must be removed from water and should be dry. This water can cause corrosion in the long term. Prefer using lining cleaner than using water.

3) Rivet heads are broke off with a side cutter, and taken down with a hammer drill in some workshops.



Caution:

Ensure that the shoes are not harmed, whichever method you use during the removal of rivets. We recommend to wear the rivet head with a drill or side cutter and then to take the rivet off with a drill. Never damage the shoe or hole seat.

Use new shoes if the holes became oval and deformed. A rivet hole diameter can be 0.6 mm greater than the rivet diameter (DIN 7513).

Remove any burrs occurred on the shoe, especially on the holes during the removal of the rivet.

These burrs can cause rivet damages and clearance between the lining and the shoe in long term.

4) If the surface is smooth, ensure the cleanliness and dryness before staking a new lining,

5) Check the lining seating surface on the shoe. If there is any unevenness, replace the shoe.

Checking method:

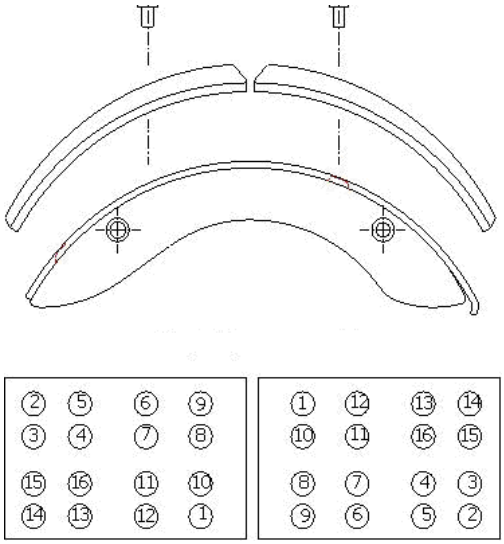
Linings to be staked should be placed on the shoe surface to ensure full contact as shown on the picture. You should have the linings contact shoe surface from the down part by turning the shoe over before the lining contact. If the lining does not have a proper contact to the shoe in the upper section (as shown in the picture), do not use this shoe. The clearance between shoe and lining after rivet staking should be 0.25 mm maximum. An uneven shoe would cause the lining to take its own form. This will cause the lining to be cracked if the lining is made of a hard material. If the lining material is soft, lining will take the form of shoe, and cause uneven pressing on the drum.

6) Stake the lining to the shoes with pneumatic or air-driven press.

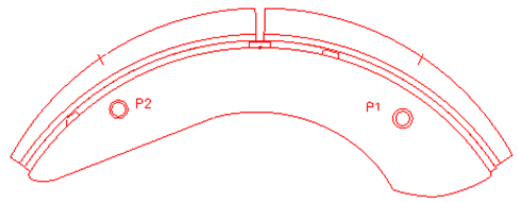
Caution:

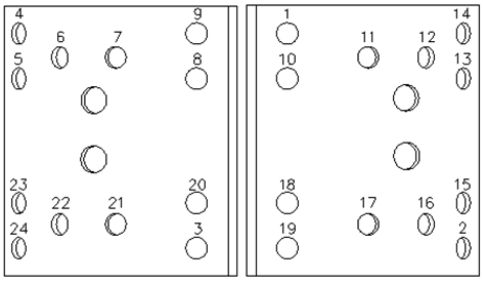
Rivet press pressure should be checked periodically. Check if the press has axial play during staking.

7) Stake the rivets according to the order indicated in the right.



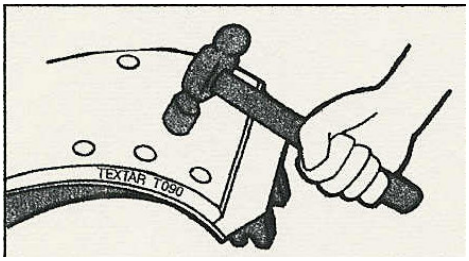
Brake lining for 394mm drum



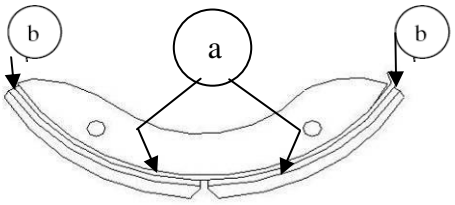


Brake lining for 410mm drum

8) Noise check: Gently tap the shoe with the lining staked with a hammer, and make sure that the lining is fully seated on the shoe listening to the noise.

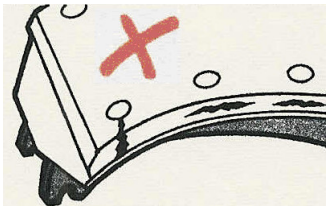


9) Clearances between the lining and shoe should be checked with a feeler gauge peripherally.

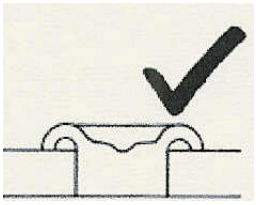


	a	b
max. clearance	0.15mm	0.25mm

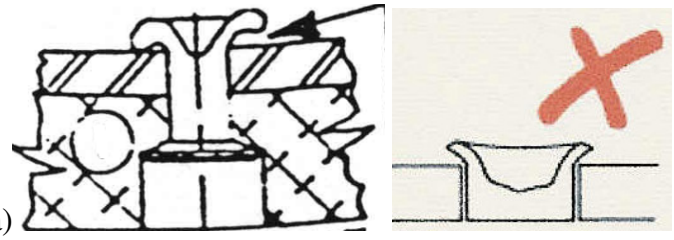
10) Visually inspect for flakes on the lining edges, upper surface and around the rivet hole.



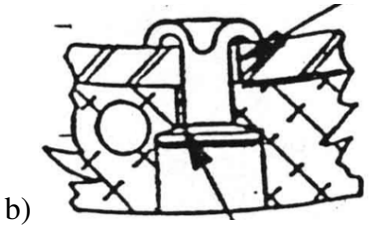
11) check the rivet form. You can see wrong applications in the pictures on the right.



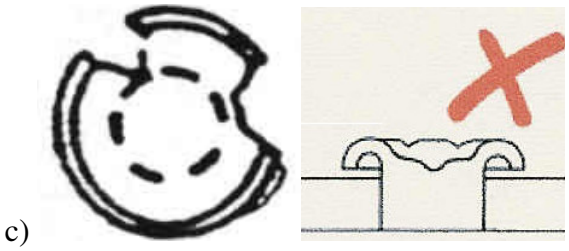
a) There should be no unevenness on the staked rivet on the shoe side.



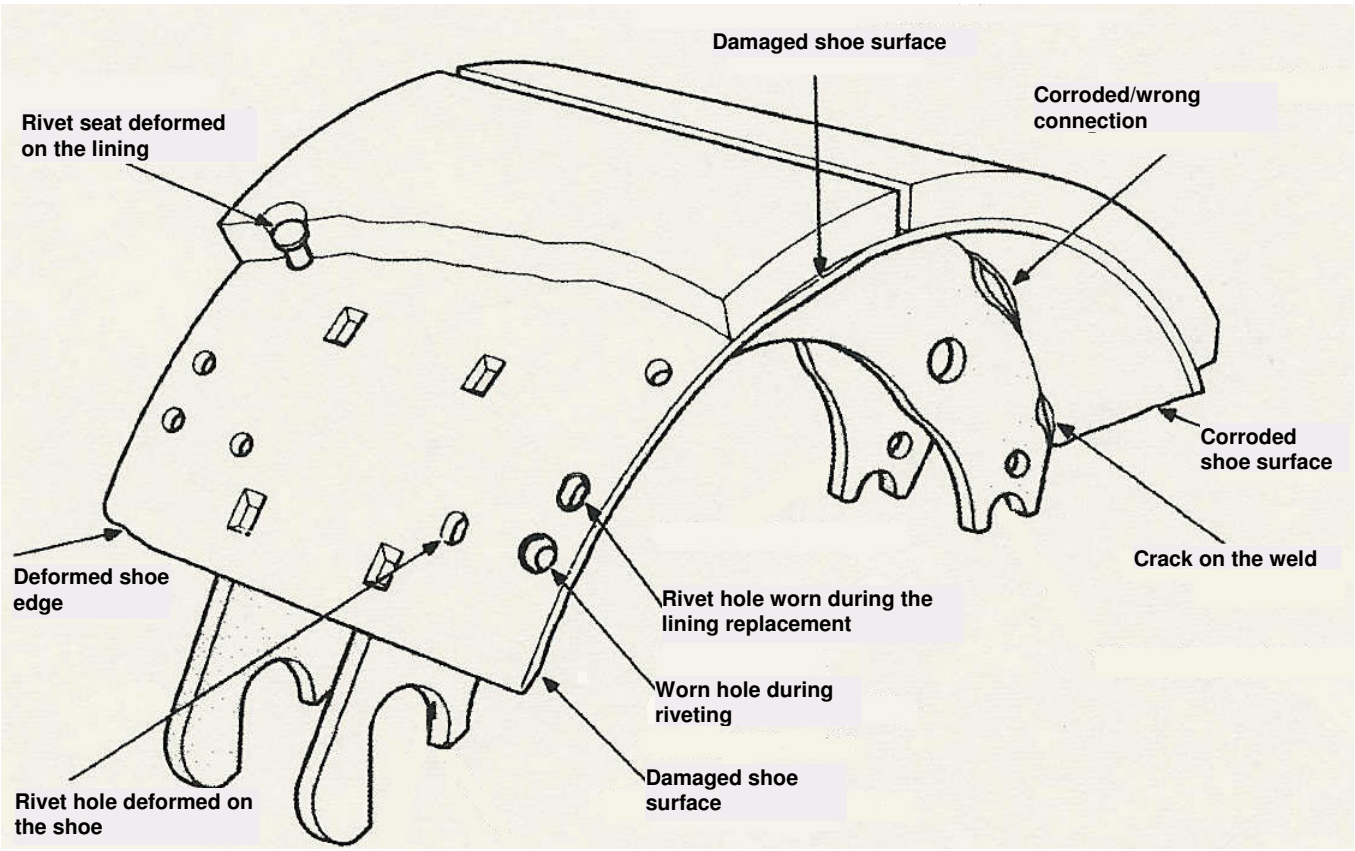
b) Check if the rivet is seated on the counter bore and any offset staking of the lining. You can check for errors by inspecting from the rivet hole side over the lining.



c) There should be no cracks on the staked rivet.



Most common problems;



Regards,

Heavy Commercial vehicles
Service Engineering