CK25/27/30/35

# BRAKE

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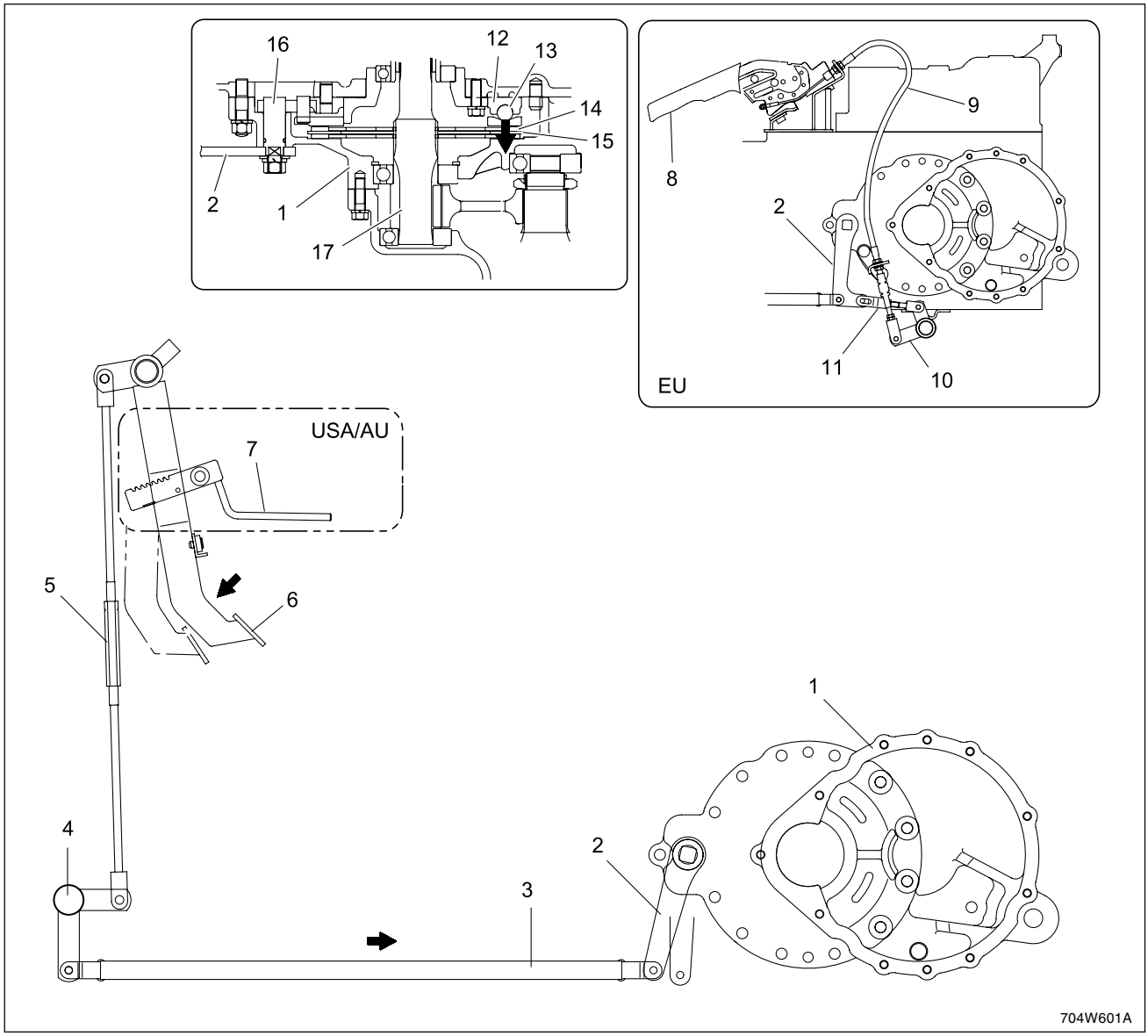
# 1. SPECIFICATIONS

| Item | | Reference Value | Allowable Limit |
|---|---|---|---|
| Brake pedal | Clearance | 25 ~ 35 mm<br>(0.98 ~ 1.38 in.) | - |
| Difference between left and right when not depressing brake pedal | Deviation | 5 mm<br>(0.197 in.) | - |
| Brake pedal and stop switch | Clearance | 0 ~ 1 mm<br>(1 ~ 0.039 in.) | - |
| Between brake lever bush and brake shaft | Clearance | 0.085 ~ 0.327 mm<br>(0.00335 ~ 0.01287 in.) | 0.3 mm<br>(0.0012 in.) |
| Brake lever bush | I.D | 20.060 ~ 20.281 mm<br>(0.78976 ~ 0.79846 in.) | |
| Brake shaft | O.D | 19.957 ~ 19.975 mm<br>(0.78559 ~ 0.78621 in.) | |
| Cam plate | Flatness | 0.3 mm<br>(0.012 in.) | 0.3 mm<br>(0.012 in.) |
| Cam plate and ball | Height | 20.09 ~ 20.10 mm<br>(0.7909 ~ 0.7913 in.) | 20.06 mm<br>(0.7898 in.) |
| Brake disc | Thickness | 4.6 ~ 4.8 mm<br>(0.181 ~ 0.189 in.) | 4.2 mm<br>(0.165 in.) |
| Plate | Thickness | 2.54 ~ 2.66 mm<br>(0.1000 ~ 0.1047 in.) | 2.10 mm<br>(0.0433 in.) |

# 2. OPERATING PRINCIPLE




(1) Brake Case
(2) Brake Cam Lever
(3) Brake Rod
(4) Brake Lever
(5) Turn Buckle
(6) Brake Pedal
(7) Parking Brake Lever
(8) Parking Brake Lever
(9) Brake Cable
(10) Brake Lever
(11) Connecting Rod
(12) Cam Plate
(13) Ball
(14) Brake Disc
(15) Brake Plate
(16) Brake Cam
(17) 10 Gear Shaft

For the left and right running brake, an independent mechanical wet disc brake is used. It is operated through brake pedal by a mechanical linkage.

It activates the parking brake when parking. If a brake pedal is locked with the parking brake lever pulled up, it keeps the brakes locked.

The brakes are a wet disc type. They are designed to be more durable and to have more braking force than the inside expandable dry brakes.

When the brake pedal is depressed, the brake cam lever (2) will be moved in the direction of the arrow by linkage, as shown in the above figure. The cam plate (12) is rotated in the direction of the arrow and raised above the ball (13). The brake disc (14) is applied with pressure. As the brake disc is pressurized by the cam plate, it grips the gear shaft (17) by the frictional force of the disc, then the brakes are applied.

# 3. TROUBLESHOOTING

| Symptom | Items | Remedy | Remark |
|---|---|---|---|
| Brake power is not constant | • Brake pedal clearance is not constant<br>• Brake disc is worn<br>• Cam plate is bent | Adjust<br>Replace<br>Replace | - |
| Brake is trailed | • Brake pedal clearance is too small<br>• Cam plate ball is worn unequally<br>• Brake pedal return spring is worn or broken<br>• Brake cam is corroded (rust) | Adjust<br>Replace<br>Replace<br>Replace | - |
| Brake power is weaken | • Brake pedal clearance is excessive<br>• Brake disc is worn<br>• Cam plate is bent<br>• Brake cam or lever is worn<br>• Transmission oil is improper. | Adjust<br>Replace<br>Replace<br>Replace<br>Change | - |

# 4. CHECK AND ADJUSTMENT

## 4.1 CLEARANCE ADJUSTMENT OF BRAKE PEDAL

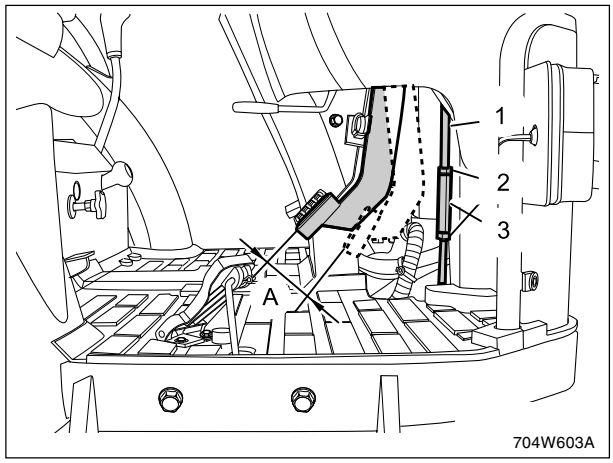
1. Disengage the brake pedal connection hook (1) and measure the clearance of left and right pedals.
2. If the clearance of the left ad right pedals exceeds the specified limit, loosen lock nut (2) and adjust clearance using a turn buckle (3).
3. After setting pedal clearance, tighten the lock nut firmly.

***IMPORTANT***

- ***Clearance of pedal should be equal on left and right.***

| Sect. | Specified |
|---|---|
| Clearance of brake pedal (A) | 20 ~ 30 mm<br>0.79 ~ 1.18 in. |

| Sect. | Specified |
|---|---|
| Gap between left and right when depressing brake pedal | Within 3 mm<br>Within 0.197 in. |

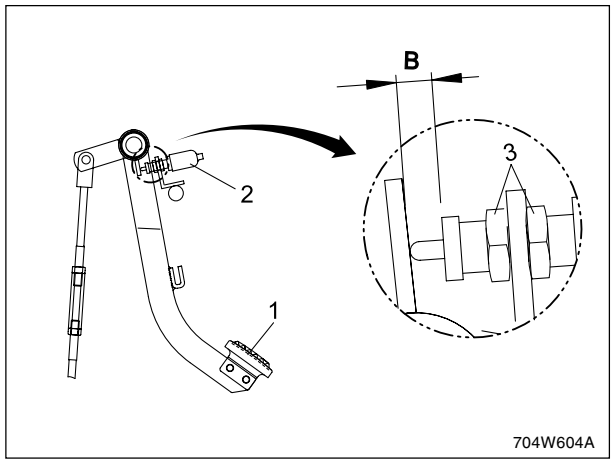



(1) Connection Hook (3) Turn Buckle
(2) Lock Nut

## 4.2 GAP ADJUSTMENT OF STOP SWITCH

1. Check the clearance between brake pedal (1) and the stop switch (2). If it exceeds in specified limit, loosen the lock nut (3) and reajust.

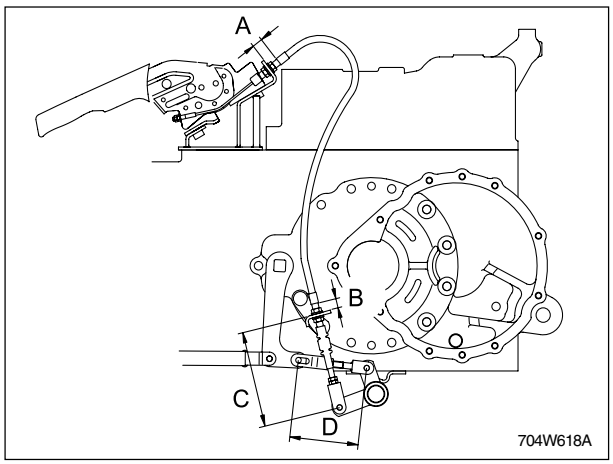
| Sect. | Specified |
|---|---|
| Clearance between brake pedal and stop switch (B) | 0 ~ 1 mm<br>0 ~ 0.039 in. |




(1) Brake Pedal (3) Lock Nut
(2) Stop Switch

## 4.3 CLEARANCE ADJUSTMENT OF HAND BRAKE (EU ONLY)

1. Please adjust the parking brake wire by following the assembling dimensions as shown.
   (A) : 16 mm (B) : 14 mm
   (C): 160 mm (D) : 106 mm
2. Please be careful not to bend the parking brake wire for assembling it.
3. Please fasten the nut securely not to be loosen the parking brake wire.




***CAUTION***

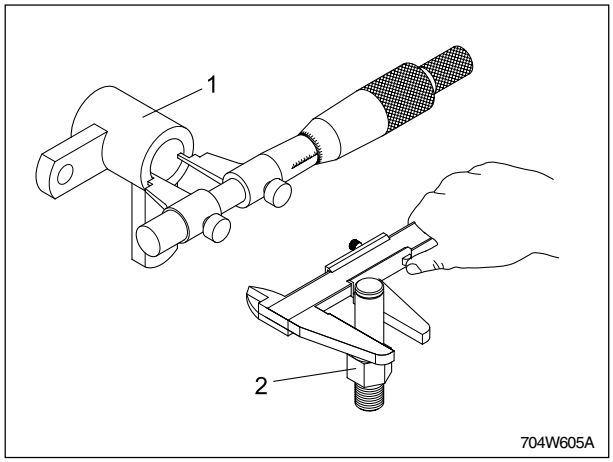
- ***The adjustment of the parking brake wire should be followed by adjusting the end play of the brake pedal.***

## 4.4 CHECKING OF BRAKE LEVER

Check the clearance between the brake lever bush and the brake shaft

1. Measure I.D. of the brake lever bush.
2. Measure O.D. of the brake shaft. Calculate the clearance.
3. Compare the clearance with the measured value. If it exceeds the allowable limit, replace the bush.

| Sect. | Specified | Allowable Limit |
|---|---|---|
| Clearance between brake lever bush an brake shaft | 0.085~0.327 mm (0.00335~0.01287 in.) | - |
| I.D. of brake lever bush | 20.060~20.281 mm (0.78976~0.79846 in.) | - |
| O.D. of brake shaft | 19.954~19.975 mm (0.78559~0.78642 in.) | - |




(1) Brake Lever Bush (2) Brake Shaft

# 5. SERVICING



## 5.1 DISASSEMBLING AND REASSEMBLING

### 5.1.1 DRAINING THE TRANSMISSION FLUID

***CAUTION***

***To avoid personal injury:***

- ***Allow the engine to cool down sufficiently, oil can be hot and can burn.***

1. To drain the used oil, remove the drain plug at the bottom of the transmission case and drain the oil completely into the oil pan.
2. After draining reinstall the drain plug.
3. Fill with the new **DAEDONG** TF65 fluid up to the upper line of the gauge.

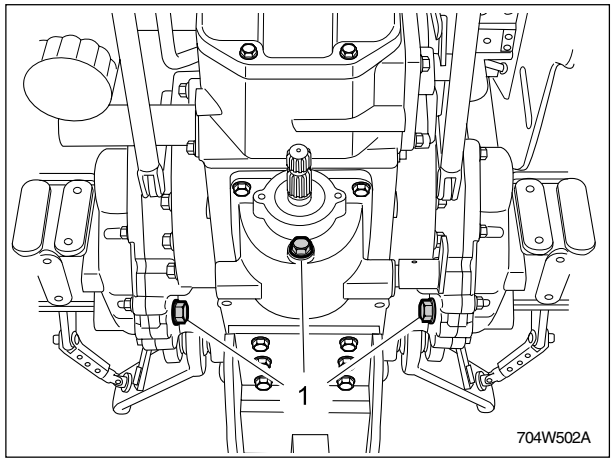
   (See "LUBRICANTS" in Maintenance Section)
4. After running the engine for a few minutes, stop it and check the oil level again; add oil to prescribed level.

| | | |
|---|---|---|
| Oil capacity | CK25/27/30/35 | 30 ℓ (7.13 U.S.gal.) |
| | CK25H/27H/30H/35H | 27 ℓ (7.93 U.S.gal.) |

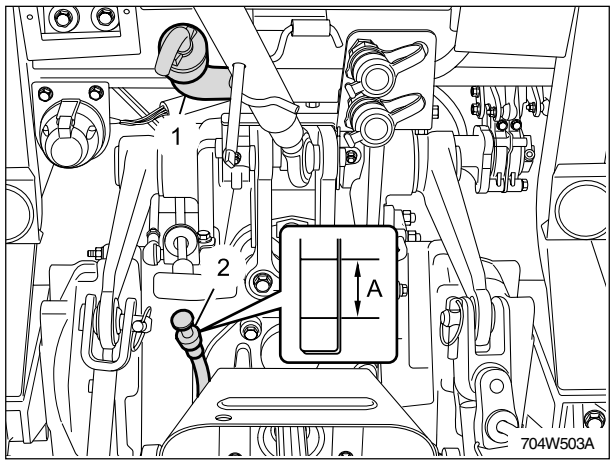
***IMPORTANT***

- ***Do not operate the tractor immediately after changing the transmission fluid.***

  ***Run the engine at medium speed for a few minutes to prevent damage to the transmission.***




(1) Drain Plugs




(1) Oil Filling Plug (2) Gauge

(A) Oil Level is Acceptable Within this Range

## 5.1.2 ROPS / REAR AXLE

1. Place the dissembling stand under the transmission case.
2. Remove the rear wheel mounting bolts, nuts and rear wheel.
3. Remove the lock pin, linch pin and rops from the rops support.
4. Remove the lower link, lift rod, stabilizer.
5. Remove the bolts and rops supports.

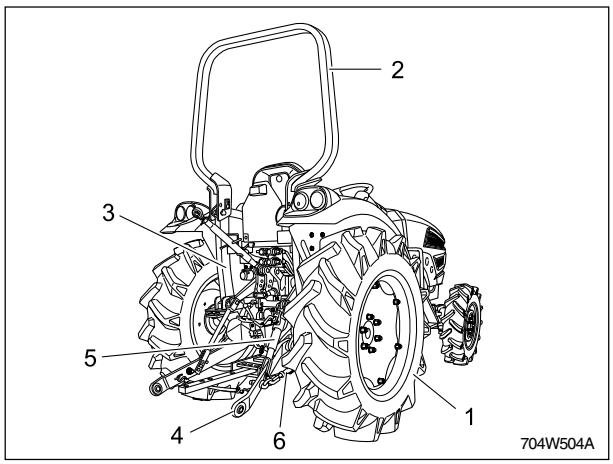
| Item | Tightening torque |
|---|---|
| Rear wheel mounting nuts | 255 ~ 304 Nm<br>26 ~ 31 kgf-m<br>5.3 ~ 6.3 lb-ft |
| Rear wheel mounting stud bolt | 29.4 Nm<br>3 kgf-m<br>0.6 lb-ft |
| Rops support mounting bolts | 137.3 Nm<br>14 kgf-m<br>2.9 lb-ft |

6. Place the dissembling stand under the rear axle case.
7. Remove the bolts and nuts.
8. Separate the rar axle case from brake case.

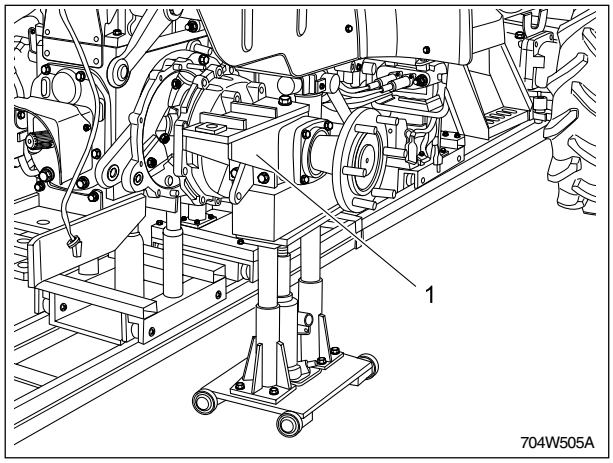
| Item | Tightening torque |
|---|---|
| Rear axle case mounting bolts and nuts | 49.0 Nm<br>5 kgf-m<br>1.0 lb-ft |

**(When reassembling)**

Check if gasket is damaged. Replace with new as needed.



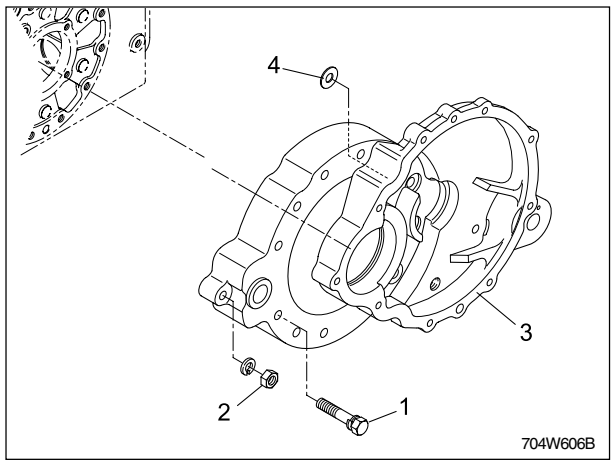

(1) Rear Wheel
(2) Rops
(3) Rops Support
(4) Lower Link
(5) Lift Rod
(6) Stabilizer




(1) Rear Axle Case

## 5.1.3 BRAKE CASE AND DISCS

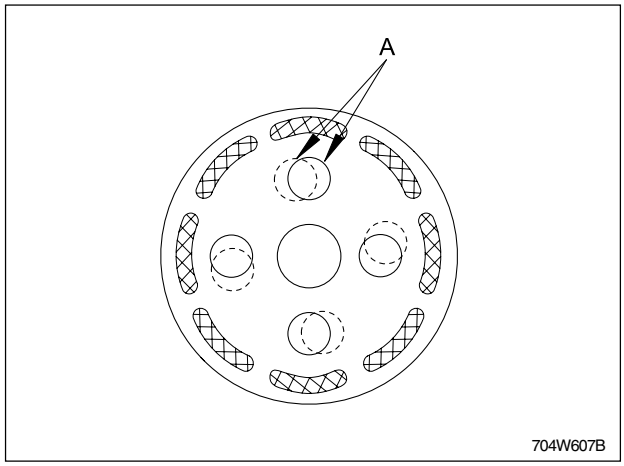
1. Loosen the bolt and nut and disconnect the brake case.

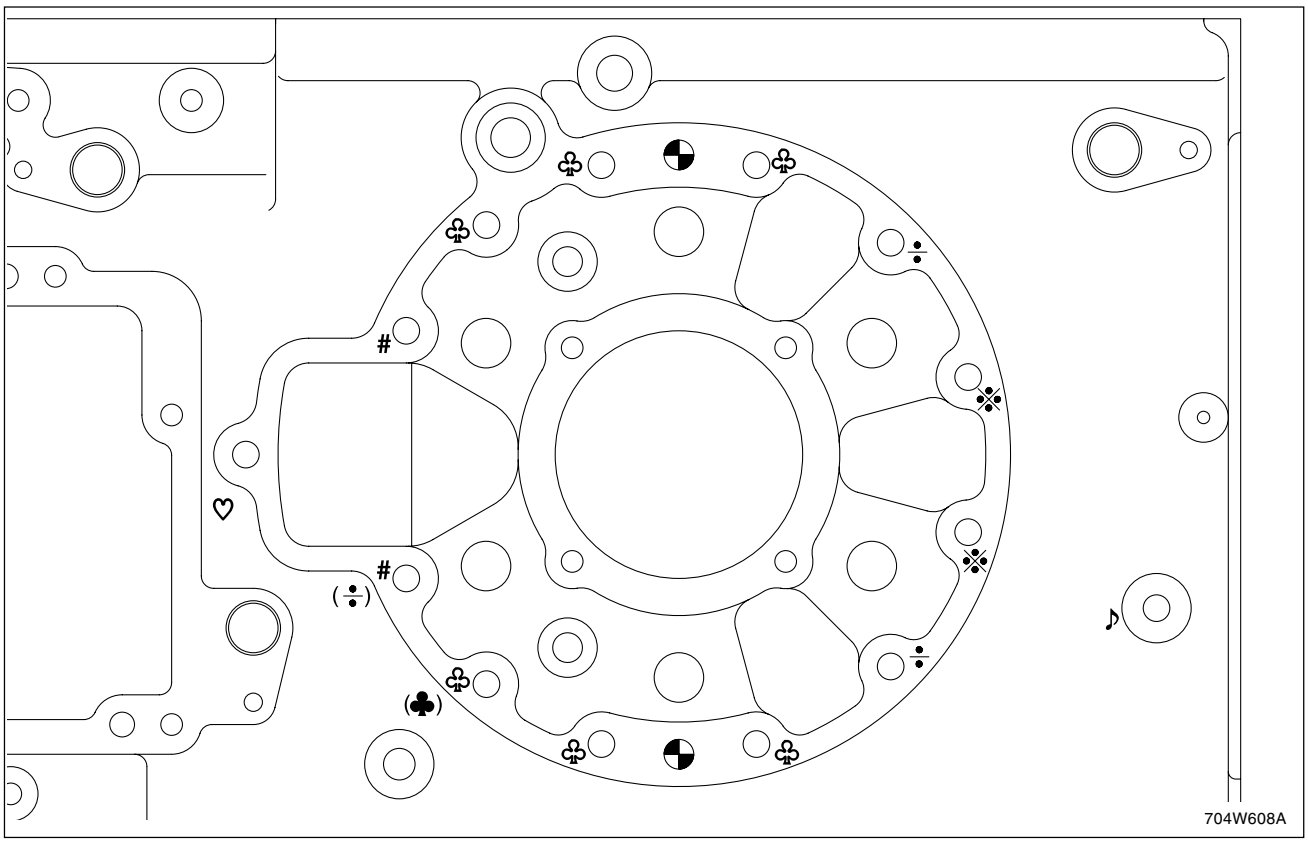



(1) Bolt
(2) Nut
(3) Brake Case
(4) Packing

**(When reassembling)**

- Align oil passage “A” of the brake discs. It should allow oil passage of at least 70%.
- Apply grease to the stell bass seats. (do not grease excessively)






( ) : Only EU

**BOLT, NUT ASSEMBLING POSITION AND TIGHTENING TORQUE**

| Applicable Model: CK25, CK25H, CK27, CK27H, CK30, CK30H, CK35, CK35H | | | | | | |
|---|---|---|---|---|---|---|
| Assembling position (mark) | Part No. | Part name | Qty | | Spec. | Tightening torque |
| | | | USA/AU | EU | | |
| ♡ | 01574-51240 | Stud. | 2 | 2 | M12 | Stud<br>29.5 ~ 49.0 Nm<br>3.0 ~ 5.0 kgf-m<br>21.7 ~ 36.1 lbf-ft<br>Bolt<br>77.5 ~ 90.2 Nm<br>7.9 ~ 9.2 kgf-m<br>57.1 ~ 66.5 lbf-ft |
| ♧ | 01173-51265 | Bolt | 12 | 11 | | |
| ÷ | 01173-51270 | Bolt | 4 | 5 | | |
| ♪ | 01574-51285 | Stud. | 2 | 2 | | |
| # | 01173-51265 | Bolt | 4 | 3 | | |
| ♣ | 01173-51270 | Bolt | - | 1 | | |
| ※ | T2185-28351 | Bolt | 4 | 4 | | |

## 5.1.4 BRAKE LEVER AND AXLE DRIVE GEAR SHAFT

### A. DISCONNECTION OF BRAKE CASE

1. Loosen the cam lever (1) and the attaching nut (2). Disconnect brake cam (3), O-ring (4) and brake cam lever.
2. Disconnect the Cam plate (5), brake disc (6) and plate (7).

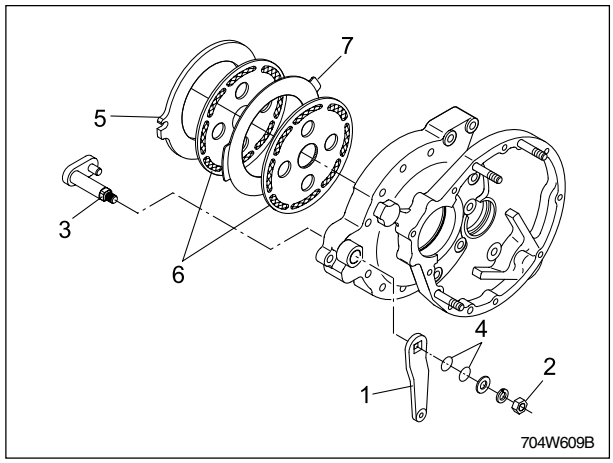
**(When reassembling)**

- Apply grease to the O-ring. Take care not to damage it.
- Seat the brake disc into assembly position, and when the plate is pressed by hand, it should not move.

***CAUTION***

- ***Make sure assembly position of left and right cam plates is correct.***

| Model | Part name | Assembly position |
|---|---|---|
| CK25, CK30 | Cam plate (left) | Left of transmission case |
| | Cam plate (right) | Right of transmission case |



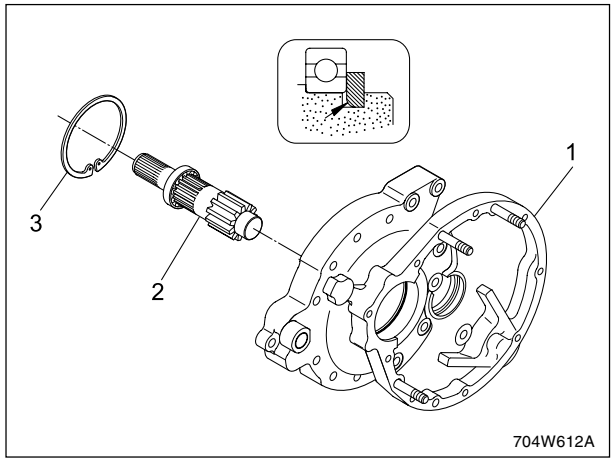

(1) Brake Cam Lever
(2) Nut
(3) Brake Cam
(4) O-ring
(5) Cam Plate
(6) Brake Disc
(7) Plate

### B. DISASSEMBLY OF GEAR SHAFT

1. Pull out the snap ring (3) from the brake case (1).
2. Pull out the gear shaft (2) with the bearing.

**(When reassembling)**

- Rounding of snap ring should be toward the bearing.

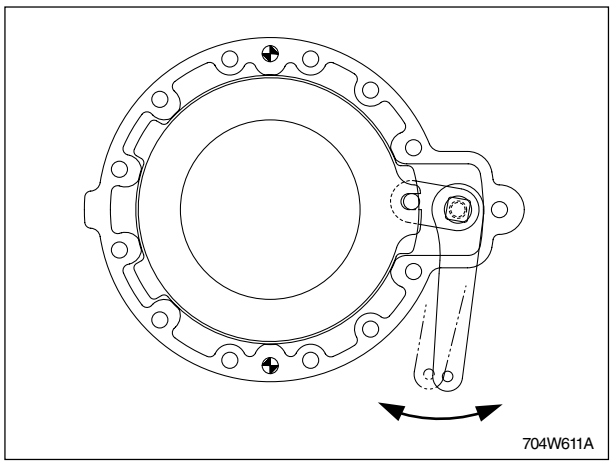



(1) Brake Case
(2) Gear Shaft
(3) Snap Ring

## 5.2 INSPECTION FOR OVERHAUL

### 5.2.1 MOVING CHECK OF BRAKE CAM LEVER

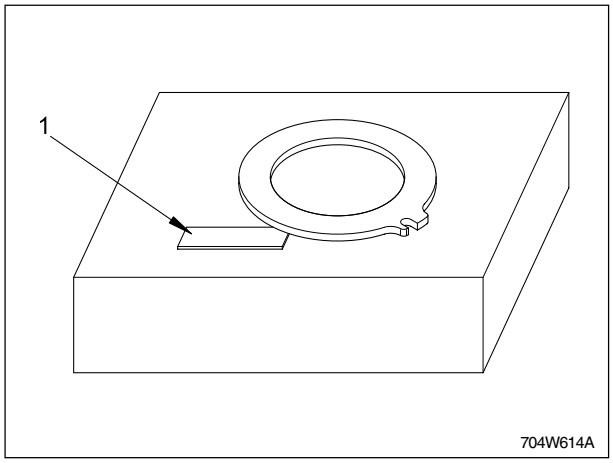
1. Move brake cam lever front to rear. Check for proper Operating.
2. If the Operating is not smooth, check the parts for excessive wear, and the correct dimensions.




### 5.2.2 WEAR CHECK OF CAM PLATE

1. Check the brake disc contact surface on the cam plate for wear. Measure the flatness using a clearance gauge.
2. If it exceeding the allowable limit, replace it.

| Sect. | Specified | Allowable limit |
|---|---|---|
| Flatness of cam plate | 0.3 mm<br>0.012 in. | 0.3 mm<br>0.012 in. |

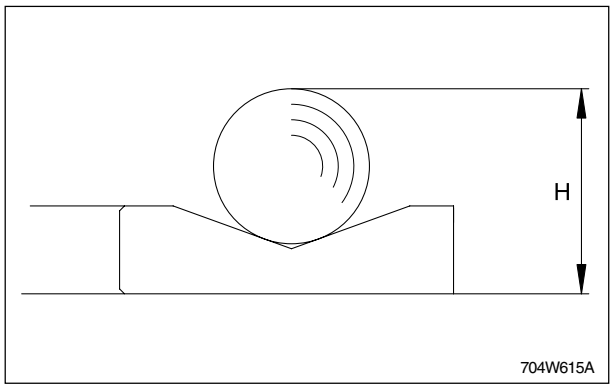



(1) Feeler Gauge

### 5.2.3 HEIGHT CHECK OF CAM PLATE AND BALL

1. Seat the ball into the cam plate and measure the height of the ball from the bottom of the cam plate.
2. If the measured value exceeds the allowable limit, replace the cam plate and ball.

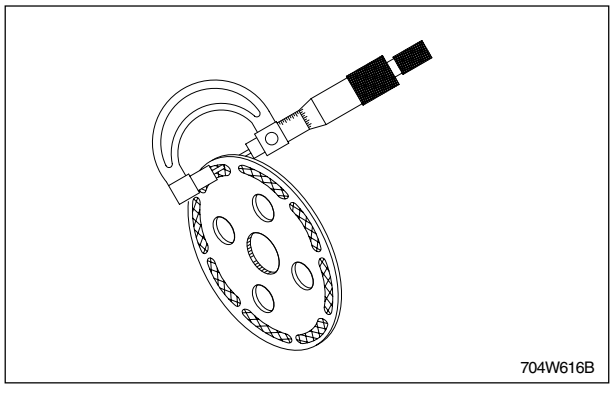
| Sect. | Specified | Allowable limit |
|---|---|---|
| Height of ball from bottom of cam plate (H) | 20.9 ~ 21.1 mm<br>0.8228 ~ 0.8307 in. | 20.5 mm<br>0.8071 in. |




### 5.2.4 WEAR CHECK OF BRAKE DISC

1. Measure the thickness of the brake disc.
2. If the measured value exceeds the allowable limit, replace it.

| Sect. | Specified | Allowable limit |
|---|---|---|
| Thickness of brake disc | 4.60 ~ 4.80 mm<br>0.181 ~ 0.189 in. | 4.2 mm<br>0.165 in. |



### 5.2.5 WEAR CHECK OF BRAKE PLATE

1. Measure the thickness of the brake plate.
2. If the measured value exceeds the allowable limit, replace it.

| Sect. | Specified | Allowable limit |
|---|---|---|
| Thickness of brake plate | 2.54 ~ 2.66 mm<br>0.1000 ~ 0.1047 in. | 2.10 mm<br>0.0827 in. |