

REAR AXLE (WITH ISO TYPE WHEEL)

AX03-001

REAR AXLE AX03-2

DATA AND SPECIFICATIONS..... AX03-2

DESCRIPTION AX03-2

TROUBLESHOOTING..... AX03-4

SPECIAL TOOL..... AX03-5

COMPONENT LOCATOR AX03-6

OVERHAUL AX03-12

INSPECTION AND REPAIR AX03-16

REAR AXLE

DATA AND SPECIFICATIONS

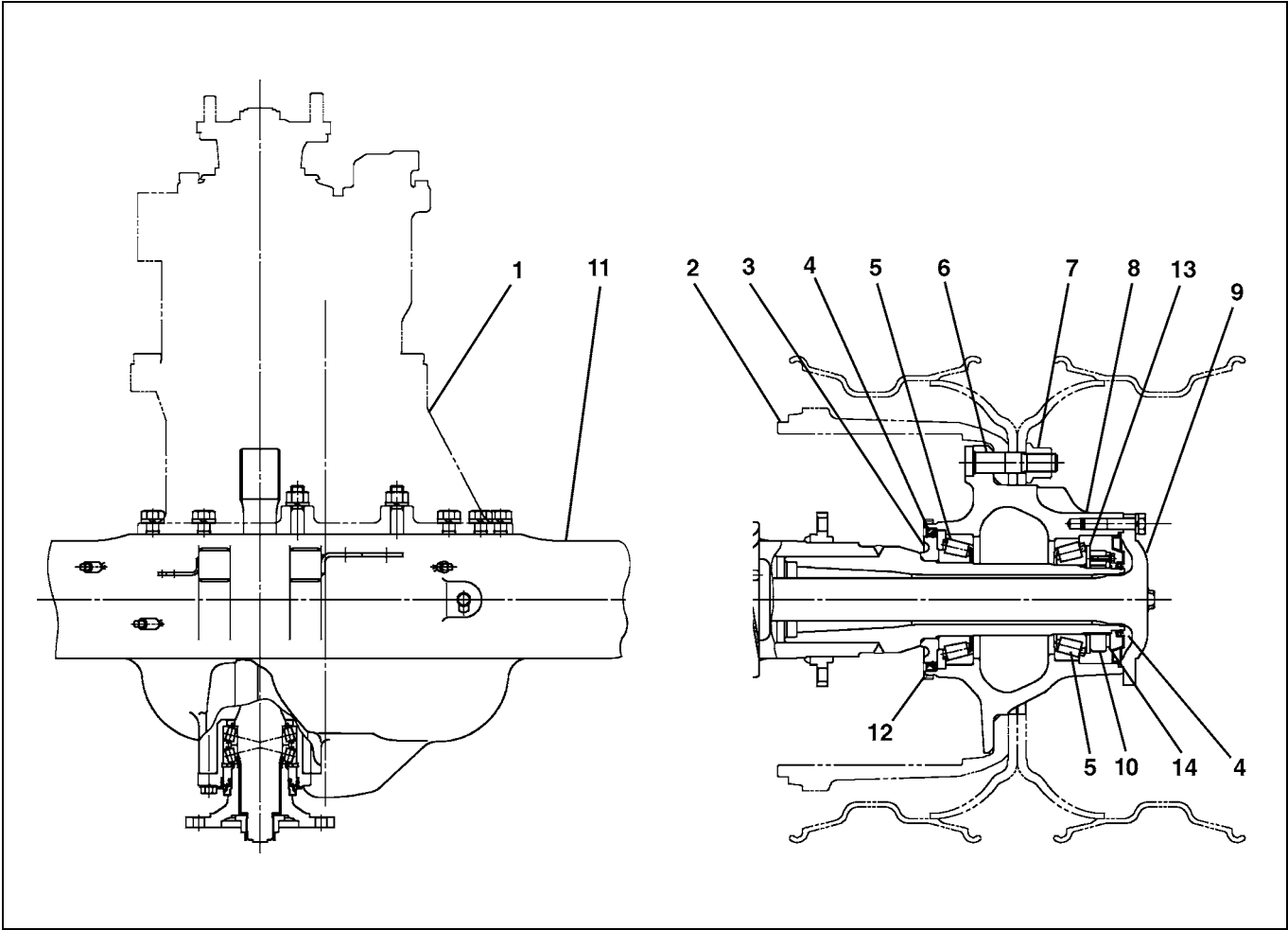
EN0861903I200001

Type	Full-floating axle shaft
Housing	Banjo type, with extension tubes welded on both ends
Type of drive	Torque rod drive or hotchkiss drive

DESCRIPTION

EN0861903C100001

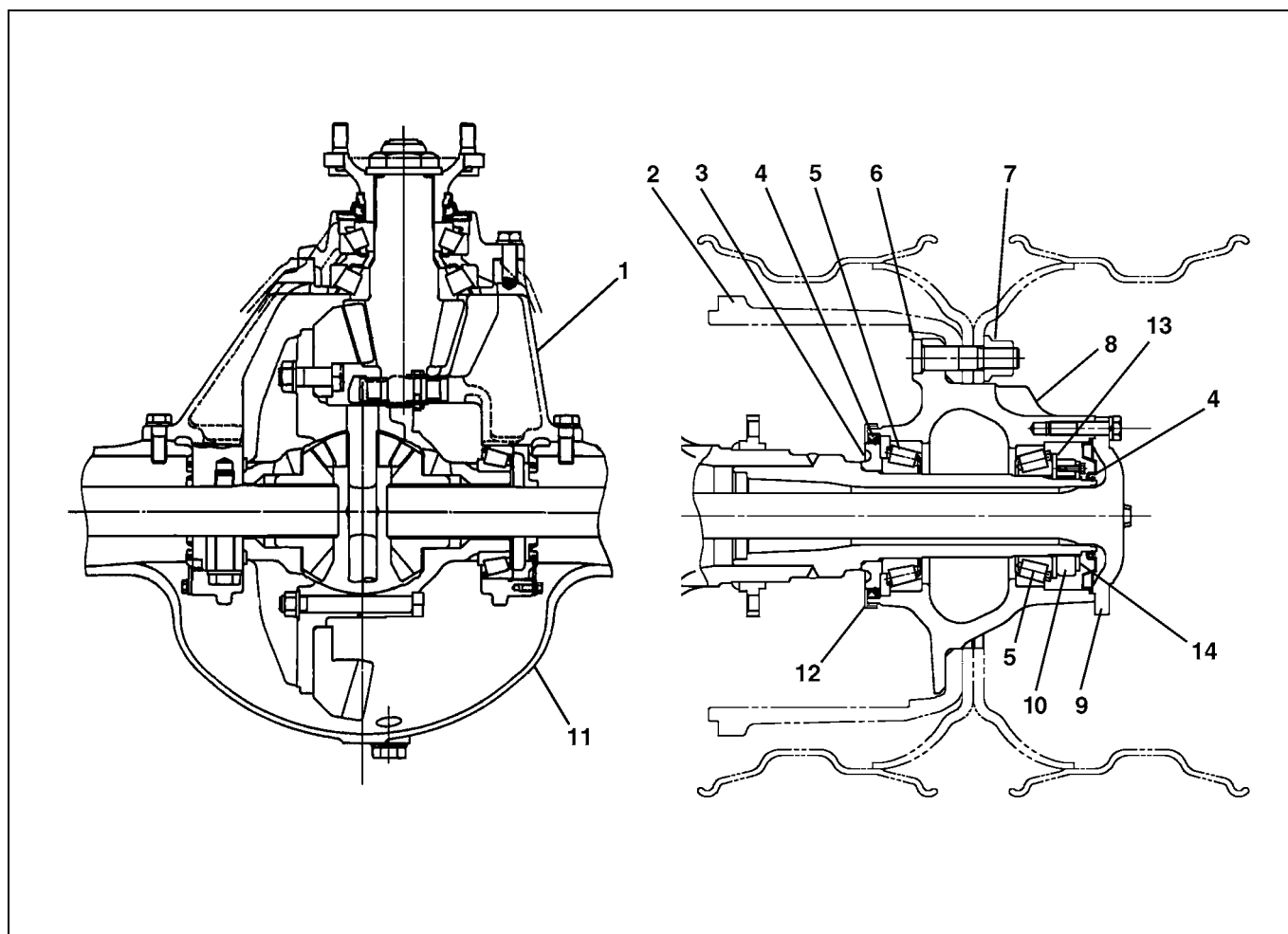
DIFFERENTIAL GEAR SERIES: THD17/THD18



SHTS086190300001

1	Differential carrier assembly	8	Wheel hub
2	Brake drum	9	Axle shaft
3	Oil seal collar	10	Lock nut
4	Oil seal	11	Axle housing
5	Wheel hub bearing	12	ABS sensor ring (If so equipped)
6	Hub bolt	13	Lock washer
7	Wheel nut	14	Lock plate

DIFFERENTIAL GEAR SERIES: SH17/SH18/SH19



SHTS086190300002

1	Differential carrier assembly	8	Wheel hub
2	Brake drum	9	Axle shaft
3	Oil seal collar	10	Lock nut
4	Oil seal	11	Axle housing
5	Wheel hub bearing	12	ABS sensor ring (If so equipped)
6	Hub bolt	13	Lock washer
7	Wheel nut	14	Lock plate

TROUBLESHOOTING

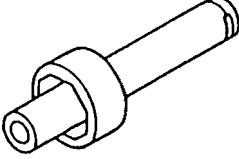
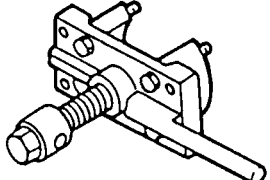
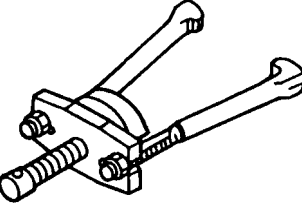
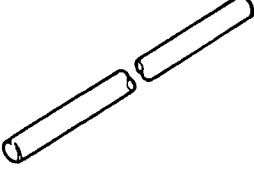
EN0861903F300001

Symptom	Possible cause	Remedy/Prevention
Abnormal noise (Bearing system)	Worn or damaged pinion bearings	Replace bearings.
	Worn or damaged differential side bearings	Replace bearings.
	Loose pinion bearings	Adjust bearing preload.
	Loose differential side bearings	Adjust bearing preload.
Abnormal noise (Gear system)	Inadequate backlash on ring gear and pinion gear	Adjust backlash.
	Worn thrust washers	Replace.
	Worn differential spider	Replace.
	Worn or damaged ring gear and pinion	Replace.
	Worn or damaged differential side gears and pinions	Replace.
	Loose ring gear tightening bolts	Tighten bolts.
	Inadequate tooth contact of ring gear and pinion gear	Replace or adjust tooth contact.
	Worn pinion spline	Replace.
Abnormal noise (Rear axle system)	Worn rear axle shaft spline	Replace.
	Worn hub bearings	Replace.
	Loose hub bearings	Adjust bearing preload.
	Loose differential case tightening bolts	Tighten bolts.
Abnormal noise (Oil system, etc.)	Insufficient oil	Add oil; check for leakage.
	Poor oil quality	Change oil.
	Abnormal noise of propeller shaft	Refer to chapter PROPELLER SHAFT.

SPECIAL TOOL

EN0861903K100001

Prior to starting a rear axle overhaul, it is necessary to have these special tools.

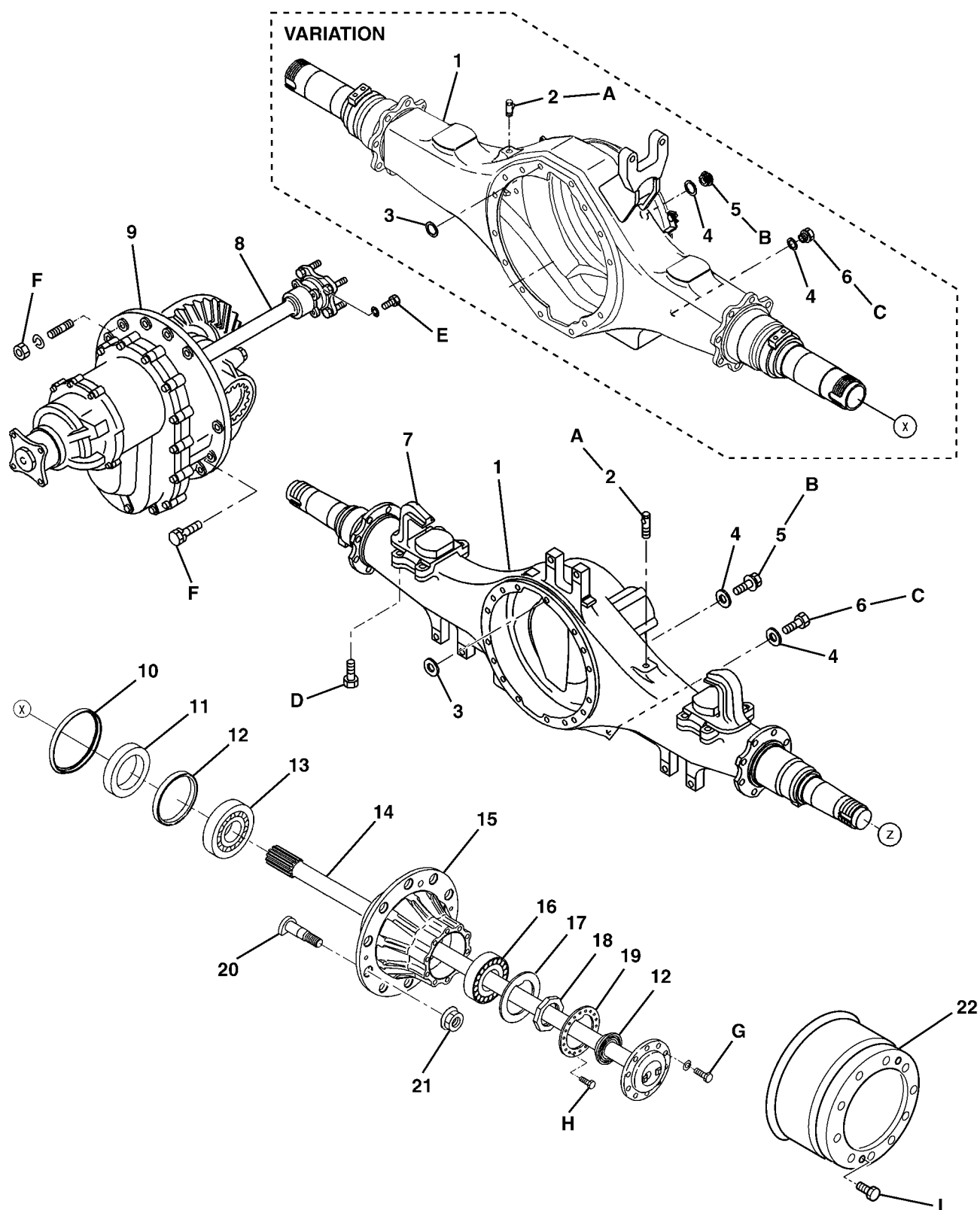
Illustration	Part number	Tool name	Remarks
	09603-1360	SOCKET WRENCH	
	09650-1790	WHEEL HUB PULLER	
	09650-1310	HUB BEARING PULLER	
	09849-1601 09849-2001	HANDLE	

COMPONENT LOCATOR

EN0861903D100001

DIFFERENTIAL GEAR SERIES: THD17/THD18

(REPRESENTATIVE TYPE)



SHTS086190300007

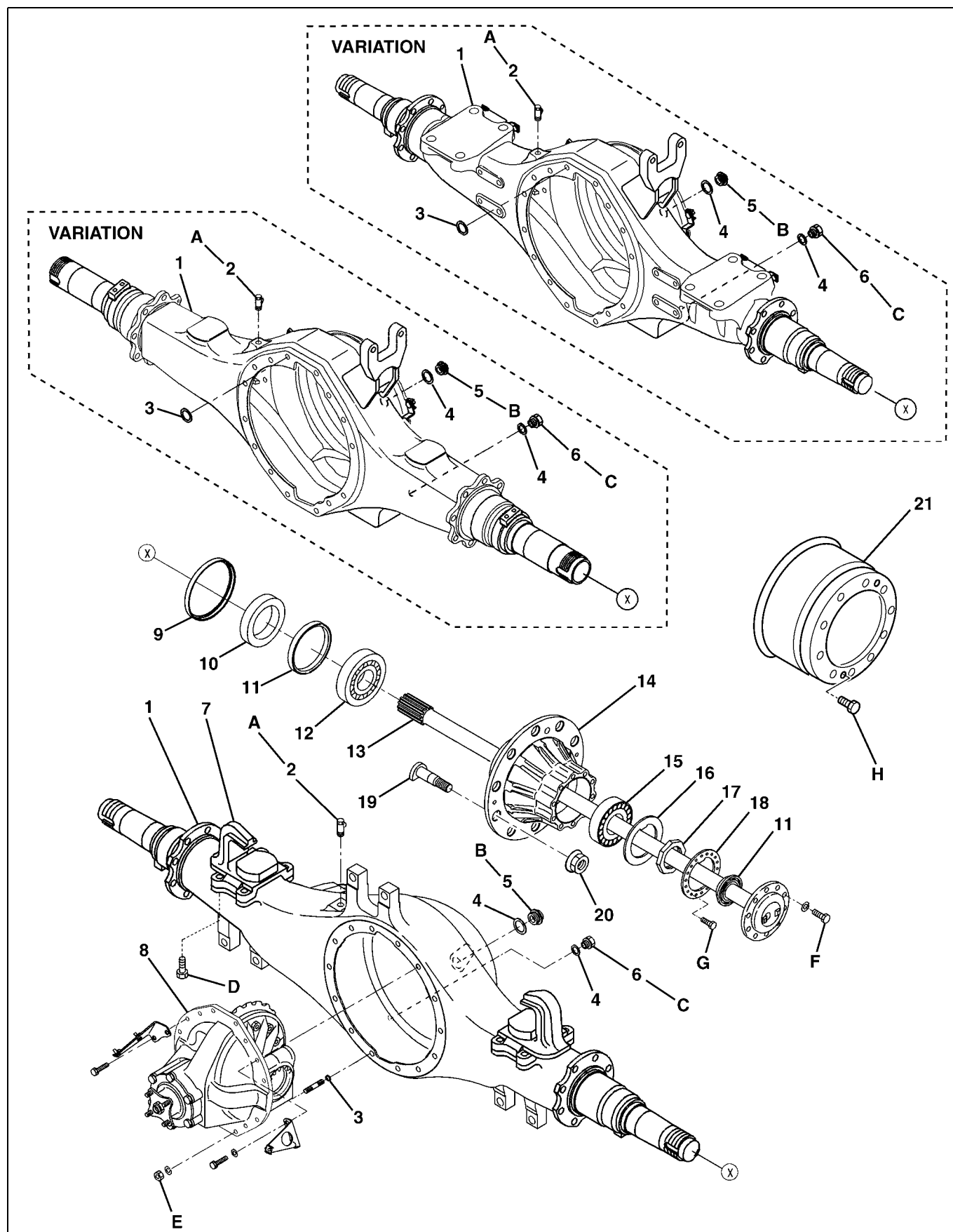
1	Axle housing assembly	12	Oil seal
2	Air breather	13	Inner wheel hub bearing
3	O-ring	14	Axle shaft
4	Gasket	15	Wheel hub
5	Oil filler plug	16	Outer wheel hub bearing
6	Oil drain plug	17	Lock washer
7	Spring bracket	18	Lock nut
8	Through shaft assembly	19	Lock plate
9	Differential carrier assembly	20	Hub bolt
10	ABS sensor ring (If so equipped)	21	Wheel nut
11	Oil seal guide	22	Brake drum

Tightening torque

Unit: N·m {kgf·cm, lbf·ft}

A	9.8-19.6 {100-200, 7.3-14.4}	F	167-213 {1,700-2,200, 123-159}
B	78.4-117.6 {800-1,200, 58-86}	G	148-192 {1,500-2,000, 109-144}
C	39.2-68.6 {400-700, 29-50}	H	8.33-10.79 {85-110, 6.2-8.0}
D	236-324 {2,400-3,300, 175-238}	I	20.5-39.5 {210-400, 16-29}
E	64-84 {650-850, 47-63}		

DIFFERENTIAL GEAR SERIES: SH17/SH18/SH19



SHTS086190300008

1	Axle housing assembly	12	Inner wheel hub bearing
2	Air breather	13	Axle shaft
3	O-ring	14	Wheel hub
4	Gasket	15	Outer wheel hub bearing
5	Oil filler plug	16	Lock washer
6	Oil drain plug	17	Lock nut
7	Spring bracket	18	Lock plate
8	Differential carrier assembly	19	Hub bolt
9	ABS sensor ring (If so equipped)	20	Wheel nut
10	Oil seal guide	21	Brake drum
11	Oil seal		

Tightening torque

Unit: N·m {kgf·cm, lbf·ft}

A	9.8-19.6 {100-200, 7.3-14.4}	E	167-213 {1,700-2,200, 123-159}
B	78.4-117.6 {800-1,200, 58-86}	F	148-192 {1,500-2,000, 109-144}
C	39.2-68.6 {400-700, 29-50}	G	8.33-10.79 {85-110, 6.2-8.0}
D	236-324 {2,400-3,300, 175-238}	H	20.5-39.5 {210-400, 16-29}

1	Dead axel tube	9	Lock nut
2	Oil seal guide	10	Lock plate
3	Expansion plug	11	Gasket
4	Oil seal	12	Wheel hub cover
5	Inner wheel hub bearing	13	Hub bolt
6	Wheel hub	14	Wheel nut
7	Outer wheel hub bearing	15	Brake drum
8	Lock washer		

Tightening torque

Unit: N·m {kgf·cm, lbf·ft}

A	8.33-10.79 {85-110, 6.2-8.0}	C	20.5-39.5 {210-400, 16-29}
B	10.7-146.6 {1,100-1,500, 81-110}		

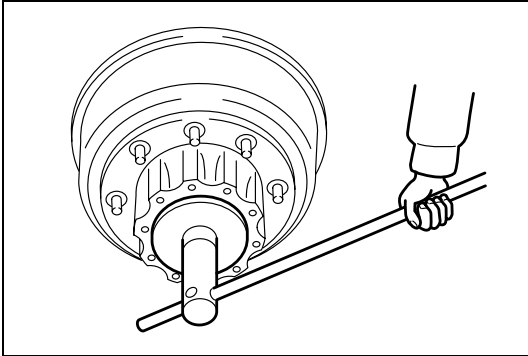
OVERHAUL

EN0861903H200001

IMPORTANT POINTS - DISASSEMBLY

1. REMOVAL OF THE WHEELS

- (1) Refer to chapter WHEEL & TIRE.



SHTS086190300010

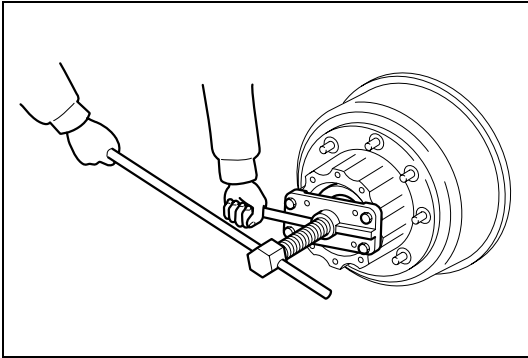
2. REMOVAL OF THE WHEEL HUB BEARING LOCK NUT

SST:

Socket Wrench (09603-1360)

Handle (09849-1601)

Handle (09849-2001)



SHTS086190300011

3. REMOVAL OF THE WHEEL HUB ASSEMBLY AND THE OUTER WHEEL HUB BEARING

SST:

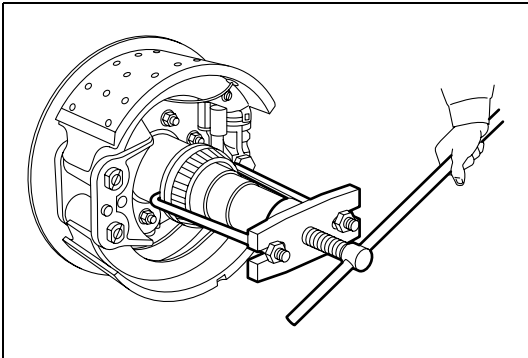
Wheel Hub Puller (09650-1790)

Handle (09849-1601)

Handle (09849-2001)

NOTICE

The wheel hub assembly is heavy, therefore be careful when handling it.



SHTS086190300012

4. REMOVAL OF THE INNER WHEEL HUB BEARING TOGETHER WITH OIL SEAL COLLAR

SST:

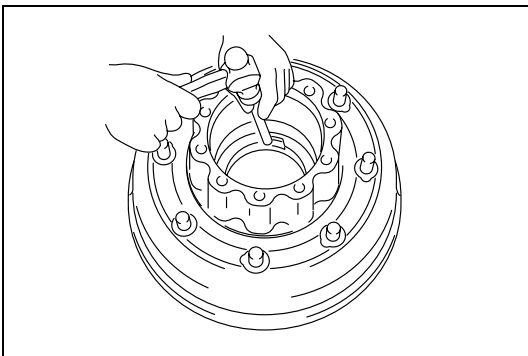
Hub Bearing Puller (09650-1310)

Handle (09849-1601)

Handle (09849-2001)

5. REMOVAL OF THE WHEEL BRAKE

- (1) Refer to chapter SERVICE BRAKE.

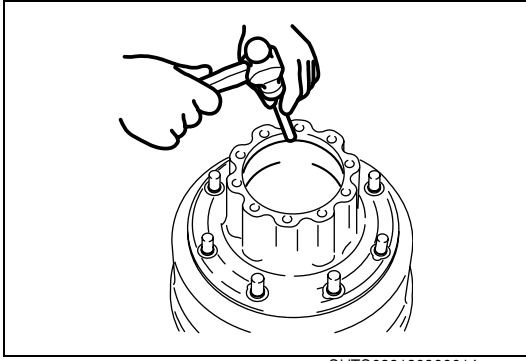


SHTS086190300013

IMPORTANT POINTS - ASSEMBLY

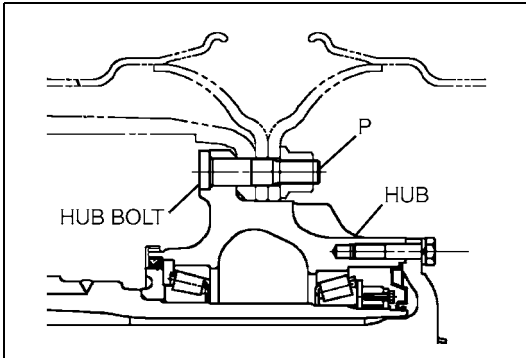
1. REPLACEMENT OF THE WHEEL HUB BEARING RACE

- (1) Remove the outer race of bearing by striking the race lightly and evenly through the 4 access holes in the wheel hub, using a tapping rod.



SHTS086190300014

- (2) Using a tapping rod and a hammer or a press, install the outer race.



SHTS086190300015

2. SEPARATION OF THE BRAKE DRUM

- (1) Loosen the drum set screws, separate the brake drum and wheel hub.

NOTICE

- If the drum does not easily come out, screw the set screws into the drum removing hole.
- Brake drum is heavy, therefore be careful when handling it.

3. REPLACEMENT OF THE HUB BOLTS

- (1) Remove the hub bolts from the wheel hub.
- (2) Install the new hub bolts.

NOTICE

The left and right hub bolts differ, so install them according to the chart below.

	Marks at "P"	Color
RIGHT	R	Gold
LEFT	L	Silver

4. ASSEMBLING OF THE BRAKE DRUM

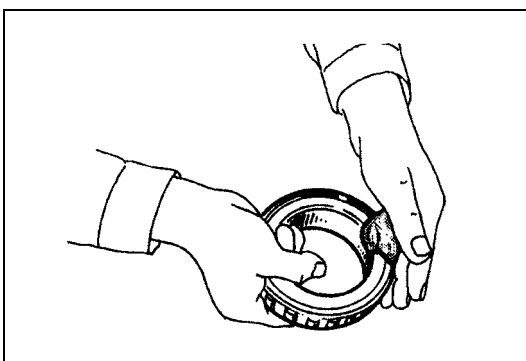
- (1) Assemble the brake drum and the wheel hub, and tighten the drum set screw.

5. GREASING

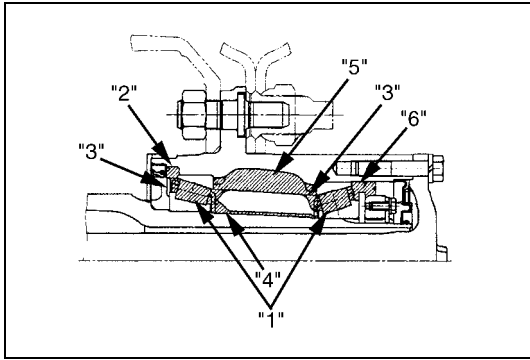
- (1) Pack sufficient amount of wheel hub bearing grease between the bearing rollers.

NOTICE

"1": Fill the grease to spaces among the inner race, rollers and retainer to the extent that there is not any vacancy remained.



SHTS086190300016

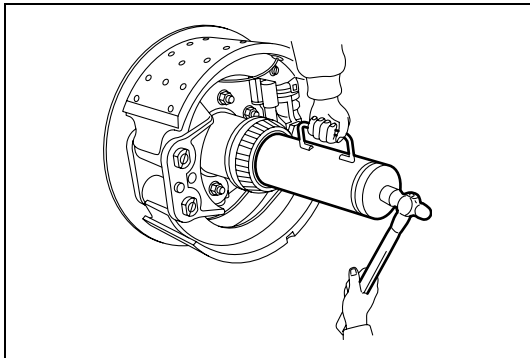


SHTS086190300017

- (2) Apply bearing grease to wheel hub.

NOTICE

- "2": Fill the grease between the oil seal and inner bearing, and at this time some grease may flow out to the oil seal.
- "3": The grease has to ooze out to the extent that the retainer is buried.
- "4": After pressing in the inner race of the inner bearing, apply the grease to the end of race circumferentially with the width of 15 mm {0.591 in}.
- "5": When filling the grease to this space, do it up to the line which connects between the small diameter sides edges of 2 bearings.
- "6": Fill the grease up the half depth of the lock nut.



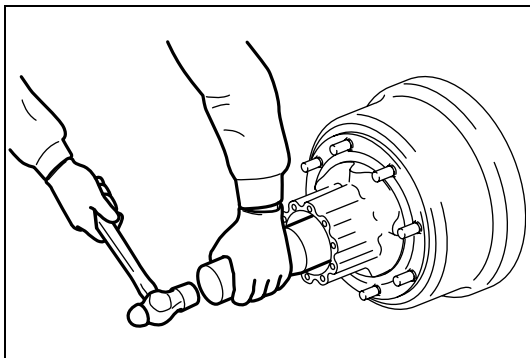
SHTS086190300018

6. INSTALLATION OF THE OIL SEAL, THE WHEEL HUB BEARINGS AND WHEEL HUB ASSEMBLY

- (1) Install the oil seal and the inner wheel hub bearing.

NOTICE

- If the guide is warmed up with hot water, it can easily be installed.

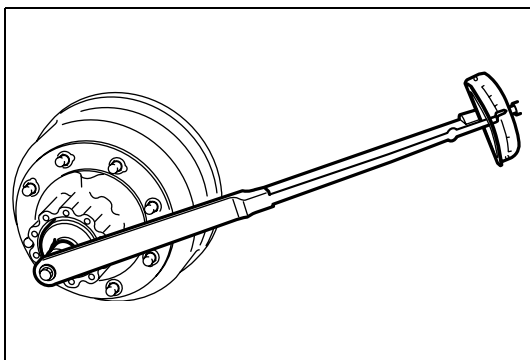


SHTS086190300019

- (2) Install the wheel hub assembly and the outer wheel hub bearing.

NOTICE

- Using a tool as shown simplifies installation.
- The wheel hub assembly is heavy, therefore be careful when handling it.



SHTS086190300020

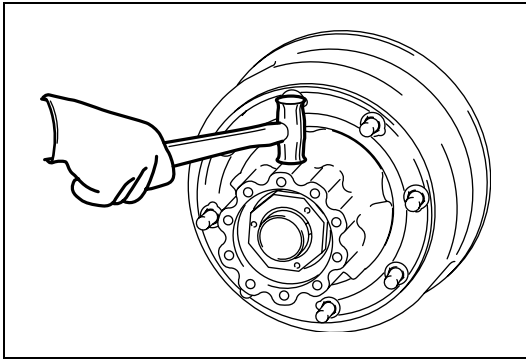
7. ADJUSTMENT OF THE WHEEL HUB BEARING PRELOAD

- (1) Tighten the wheel hub bearing lock nut with the specified torque then loosen the nut by 1/3 - 1/4 turn.

SST: Socket Wrench (09603-1360)

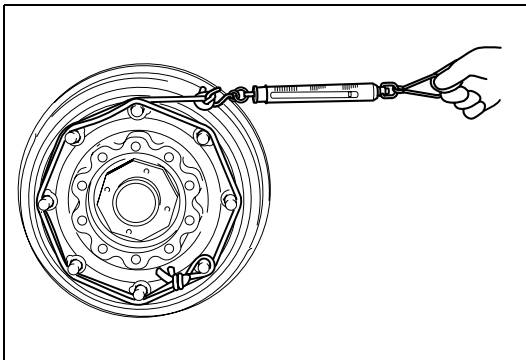
Tightening Torque:

588-1,176 N·m {6,000-12,000 kgf·cm, 434-867 lbf·ft}



SHTS086190300021

- (2) Strike the wheel hub with a copper hammer to properly seat the wheel hub.

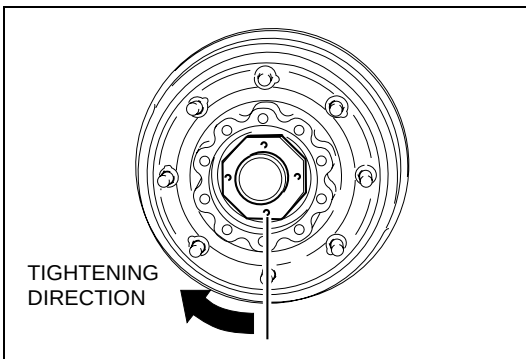


SHTS086190300022

- (3) Measure the wheel bearing preload. If it exceeds or it is less than the standard value shown below, adjust the preload with the lock nut.

Assembly standard:

Turning Torque N·m {kgf·cm, lbf·ft}	3.9-7.9 {40-80, 2.9-5.8}
Spring balancer reading N {kgf, lbf}	23.3-47.1 {2.4-4.8, 5.3-10.5}



SHTS086190300023

8. INSTALLATION OF THE LOCK PLATE

- (1) Install the lock plate to the lock nut.

NOTICE

- If the holes of the plate are not aligned with screw holes of the nut, turn over the plate.
- If alignment is still unattainable, turn the lock nut further within the limits of wheel hub bearing preload.

9. INSTALLATION OF THE WHEELS

- (1) Refer to chapter WHEEL & TIRE.

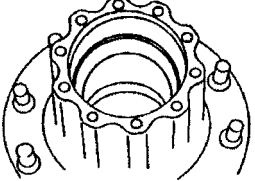
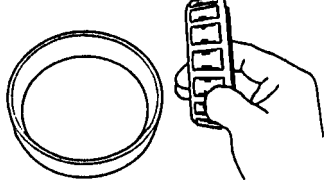
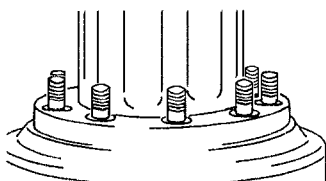
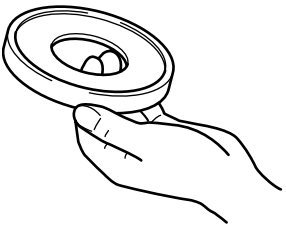
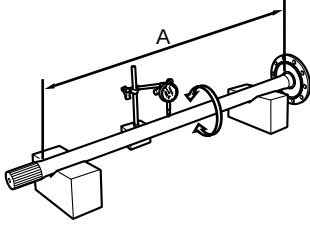
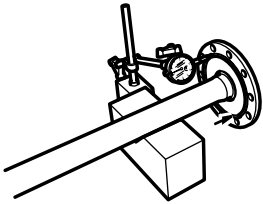
10. THE BRAKE SHOE CLEARANCE AND THE BRAKE CHAMBER ROD STROKE ADJUSTMENT

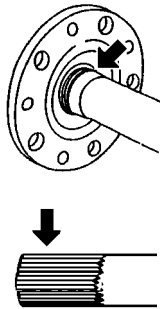
- (1) On completion of the wheel hub and related parts reassembly, conduct the followings.
- Adjust the brake shoe clearance according to the section WHEEL BRAKE in the chapter SERVICE BRAKE.

INSPECTION AND REPAIR

EN0861903H300001

Unit: mm {in.}

Inspection item	Standard	Limit	Remedy	Inspection procedure
Wheel hub bearing race: Burns, pitting and cracks	—	—	Replace, if necessary.	Visual check 
Wheel hub bearings: Burns and pitting	—	—	Replace, if necessary.	Visual check 
Hub bolt: Wear and damage	—	—	Replace, if necessary.	Visual check 
Oil seal guide: Wear and damage	—	—	Replace, if necessary.	Visual check 
Axel shaft: Bend (Measure the bend at 2 or 3 points of the range "A".)	0.8 {0.0314} or less	—	Replace.	Measure 
Axel shaft flange: Bend	0.3 {0.0118} or less	—	Replace.	Measure 

Inspection item	Standard	Limit	Remedy	Inspection procedure
Axle shaft flange and spline: Wear and damage	—	—	Replace, if necessary.	Use the magnetic flaw detector or color checking instrument. 
Axle tube: Wear and damage	—	—	Replace, if necessary.	Visual check 