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SECTION 3 POWER TRAIN SYSTEM

GROUP 1 STRUCTURE AND OPERATION

1. DRIVE UNIT

1) STRUCTURE



B153PT01

- 1 Case
- 2 Case
- 3 Case
- 4 Air breather
- 5 Plug
- 6 Plug
- 7 Drive support
- 8 O-ring
- 9 Bolt

- 10 Spring washer
- 11 Bolt
- 12 Spring washer
- 13 Dowel pin
- 14 Magnetic plug
- 15 Bolt
- 16 Differential case
- 17 Gear 4

- 18 Drive shaft
- 19 Washer
- 20 Side gear
- 21 Pinion gear shaft
- 22 Pinion gear
- 23 Pin spring
- 24 Bolt
- 25 Ball bearing



- 26 Ball bearing
- 27 Gear 1
- 28 Ball bearing
- 29 Gear 3
- 30 T/roller bearing
- 31 Ball bearing
- 32 Gear 2
- 33 T/roller bearing
- 34 Distance piece

- 35 Liner
- 36 Lock nut
- 37 Drum brake
- 38 Oil seal
- 39 Retainer
- 40 Bearing
- 41 Hub wheel
- 42 Hub bolt
- 43 Lock nut

44 Lock washer

B153PT02

- 45 Oil seal
- 46 Hub bolt
- 47 Wheel brake-LH
- 48 Wheel brake-RH
- 49 Bolt
- 50 Washer
- 51 Bolt

2. SPECIFICATION

Ite	m	Unit	Specification
Max input torque		kgf∙m	24
Max input rpm		rpm	3500
	G2 : G1	-	43 : 24(1.792 : 1)
Coor ratio	G3 : G2	-	49 : 22(2.227 : 1)
Gear railo	G4 : G3	-	50 : 13(3.846 : 1)
	Total	-	15.348
Quantity of oil		l	5.3

GROUP 2 TROUBLESHOOTING

Problem	Cause	Remedy
1. Continuous metallic groan		
1) During acceleration	 Worn out gears. 	- Adjust back-lash or replace
	\cdot Pinion and bevel gear meshed too	gears.
	deeply.	
2) During travelling at	\cdot Lack of gear oil.	
uniform speed	\cdot Worn out gears.	- Refill
	\cdot Loose or worn out bearing.	- Replace
	· Loose bevel gear wheel	- Adjust preload or replace.
		- Replace bolts and washers.
3) When turning corners.	\cdot Worn out differential gear or thrust	Tighten new bolts and washer.
	washer.	- Replace
2. Continuous knocking sound		
1) During travelling at	\cdot Chipped gear teeth.	- Replace
uniform speed	\cdot Foreign matter in axle case.	- Clean
	\cdot Worn out spline of drive shaft.	- Replace
3. Oil leakage		
1) Differential housing	· Oil level too high	- Lower oil level
housing leaks.	· Broken oil seal	- Replace
2) Axle case leaks	 Mounting bolts for housing loose. 	- Retighten
	· Damaged packing case cracked.	- Replace
	\cdot Worn out hub grease seal.	- Replace
3) Hub, leaks	• Worn out oil seal.	- Replace
	Worn out bearing or eccentric rotation	- Replace
	due to damage.	
4. Power is not transmitted		
1) Drive shaft, gear	Broken or slipped out drive shaft.	- Repair or replace
	\cdot Gear teeth stripped or worn out.	- Replace
	\cdot broken differential case parts.	- Replace

GROUP 3 DISASSEMBLY AND ASSEMBLY

1. DRIVE UNIT

1) DISASSEMBLY

(1) Drive unit assembly.



B153DAD001

(2) Remove the drain plug and drain gear oil.



(3) Pull out the drive shaft with universal puller.



B153DAD003

(4) Remove the outer nut by straightening the locking part of the outer nut.When loosening the nut, use special tool and do not use improper method to loosen this nut.



B153DAD004

B153DAD005

(5) Remove the inner nut by straightening the locking part of the inner nut.When loosening the nut, use special tool and do not use improper method to loosen this nut.

(6) Separate the brake hub assembly.



(7) Pull out the tapered roller bearing.



(8) Remove the brake bolts.



B153DAD008

(9) Separate the brake from drive axle.



B153DAD009

(10) Separate the drive support (righthand) from drive axle.



(11) Separate the T/M case from drive axle.



(12) Pull out the differential case assembly.



B153DAD012

(13) Remove T/M case bolts.



(14) Separate the T/M case.







(16) Pull out the gear.



B153DAD016

(17) Pull out the bearing with universal puller.



B153DAD017

(18) Remove the locking nut.



(19) Pull out the distance piece.



(20) Separate the gear from differential case with rubber mallet.



B153DAD020



B153DAD021

(22) Remove the tapered roller bearing, if needed.



(23) Remove the bearing cup.

(21) Pull out the gear.



(24) Remove the opposite bearing cup.



B153DAD024

2) HUB DRUM

(1) Remove the bolts.





B153DAD026



B153DAD027

(3) Replace a worn wheel bolts.

(2) Separate drum and wheel hub.

(4) Hub will come off together with brake drum. Tapered roller bearing will come out with the hub. Replace oil seal, O-ring and retainer.



B153DAD028

(5) Separate tapered roller bearing and retainer.



B153DAD029

(6) Remove the opposite bearing cup.



3) DIFFERENTIAL ASSEMBLY

(1) Remove the gear from differential case and bolt.



B153DAD031

(2) Extract the spring pin.

(3) Pull out the pinion gear shaft.



B153DAD032



B153DAD033

(4) Separate the pinion gear (2pcs) from differential assembly.



(5) Pull out the side gear from differential.



B153DAD035

(6) Extract the side gear washer.



B153DAD036

(7) Put disassembled parts in order (by groups) and be careful not to lose bulk parts such as bolts, washers and snap ring etc.



B153DAD037

2. ASSEMBLY

1) DIFFERENTIAL SUB ASSEMBLY

(1) Install the washer (2 pcs) to the case assembly, putting the grease.



B153DAA001

(2) Install the side gear (2 pcs) to the case assembly.



(3) Install the pinion gear (2 pcs) to the case assembly.

(4) After adjusting the hole of spring.



B153DAA003



B153DAA004

3-15

(5) Insert the spring pin to shaft.



B153DAA005

(6) Install the gear to case assembly.



B153DAA006

(7) After putting loctite #277, secure them by tightening the bolts to specified torque.
Tightening torque : 10.9~15.1 kgf · m (79~109 lbf · ft)



B153DAA007

(8) Install the ball bearing (2 pcs) to case assembly.



2) HUB DRUM SUB ASSEMBLY

(1) Press the bearing cup.



B153DAA009

(2) Press the opposite bearing cup.



B153DAA010

(3) Install the tapered roller bearing to the wheel hub.



B153DAA011

(4) After putting the TB #1102, install the oil seal retainer to the wheel.



(5) After putting the TB #1102, install the oil seal to the wheel hub.



B153DAA013

(6) Fill a wheel hub center about 50~70% full with grease.



B153DAA014

(7) Install the brake drum and the wheel hub.



(8) After putting loctite #277, secure them by tightening the bolts to specific torque. · Tightening torque : 15.6~21.4 kgf · m (112.8~155 lbf · ft)



3) DRIVE AXLE ASSEMBLY

(1) Press the taper roller bearing to a gear.



B153DAA017

(2) Press the bearing cup.

(3) Install the gear to case.



B153DAA018



B153DAA019

(4) Insert the gauge for a gap measurement to a gear.



(5) Install gauge to case.



B153DAA021

(6) Measure a gap between the case and gauge.



B153DAA022

(7) Press the bearing cup.



B153DAA023

(8) Insert the distance piece (the same thickness and number as those removed during disassembly).



(9) Install the nut \cdot Tightening torque : 18~22 kgf \cdot m (130~159 lbf · ft)



B153DAA025

- (10) Measure the tightening torque of taper roller bearing.
 - \cdot Pre-load Torque : 0.04~0.06 kgf \cdot m (0.3~0.43 lbf · ft)



B153DAA026

(11) Secure it with nut tightening to specified torque, lock the nut.



B153DAA027

(12) Install the ball bearing to the gear.



(13) Install the ball bearing on the opposite side.



B153DAA029

(14) Install the ball bearing to the gear.



B153DAA030

(15) Install the differential subassembly to the case.



B153DAA031

(16) Confirm a attachment condition of the ball bearing.



(17) Put the liquid gasket (TB #1215) on both side of packing for the case.



B153DAA033

(18) Install the case assembly to the case.



B153DAA034

(19) Install the bolts after putting the loctite #227.

 \cdot Tightening torque : 0.9~13.3 kgf \cdot m (6.5~96.2 lbf \cdot ft)



(20) Insert the dowel pin to the case.



(21) Install the gear to the case.



B153DAA037

(22) Install the gear to the case.



B153DAA038

(23) Put the liquid gasket (TB #1215) on both side of packing for the case.

B153DAA039

(24) Install the case fitting into the dowel pin.





B153DAA041



B153DAA042

(25) Install the bolts after putting the loctite. \cdot Tightening torque : 11~15 kgf \cdot m (79~108 lbf \cdot ft)

(26) Install the bolts after putting the loctite (#277).

 \cdot Tightening torque : 11~15 kgf \cdot m (79~108 lbf \cdot ft)





B153DAA043

(28) After putting the grease, install the O-ring to the drive support.



(29) Install the drive support to the case tube.



B153DAA045

B153DAA046

(31) After putting the loctite #277, install the bolt and plane washer.

(30) Install the righthand and lefthand brake

respectively.



(32) Install the hub drum sub.



(33) Insert the taper roller bearing to the hub drum.

(34) Install the adjust nut on both sides. \cdot Tightening torque : 3~5 kgf \cdot m

(21.7~36 lbf · ft)



B153DAA049



B153DAA050

(35) Measure the pre-load torque of taper roller bearing.



B153DAA051

(36) If it satisfy the preload, secure the lock washer to nut groove.



(37) Install the outer nut.



B153DAA053

(38) Bend the lock washer to outer side.



B153DAA054

(39) Put the liquid gasket (TB #1215)



(40) Install the shaft to distinguish between the two shaft. (Righthand : long, lefthand : short)



(41) Install the drain plug. • Put loctite #572



B153DAA057

(42) Fill in the gear oil (SAE 85W/140) until flat part of check plug.After putting the loctite #572, install the check plug.



B153DAA058

(43) After putting the loctite #572, install the air breather (PT1/2).

