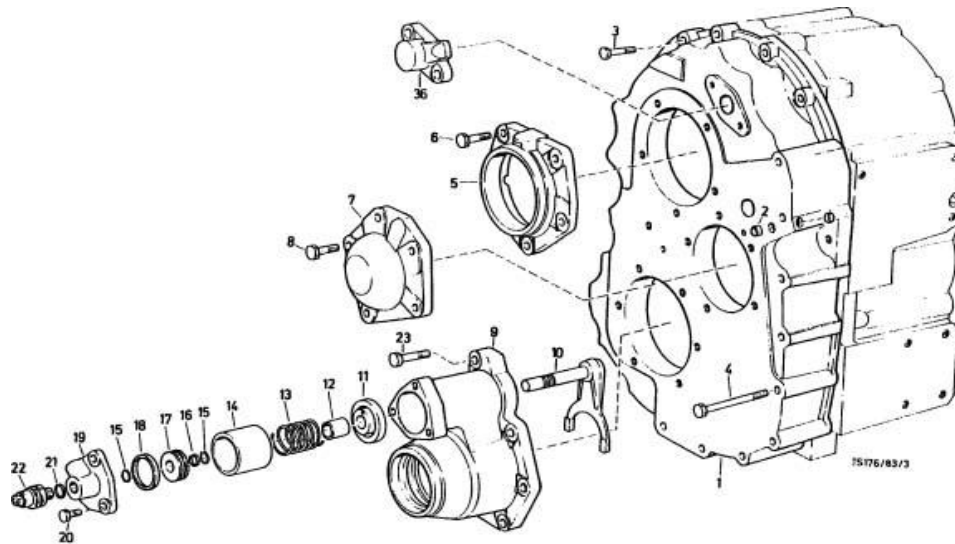




- **SECTION 4 DISASSEMBLING AND ASSEMBLING**
- **I . Disassembling**
- ① **Refer to Fig. 5-10 for disassembling of front cover section.**
- **Fig. 5-10 Disassembling diagram of front cover**





# Training Document

HOWO ZZ4257S3241V

- 1. Front cover 2. Plug 3. Bolt 4. Bolt 5. Front bearing cover of input shaft 6. Bolt 7. Front bearing cover of intermediate shaft 8. Bolt 9. Front output shaft housing 10. Shifting fork 11. Gasket 12. Shaft sleeve 13. Spring 14. Sleeve 15. Clip 16. Sealing ring 17. Piston 18. Seal ring 19. End cover 20. Bolt 21. Seal ring 22. Front driving indicator switch 23. Bolt 36. Flange

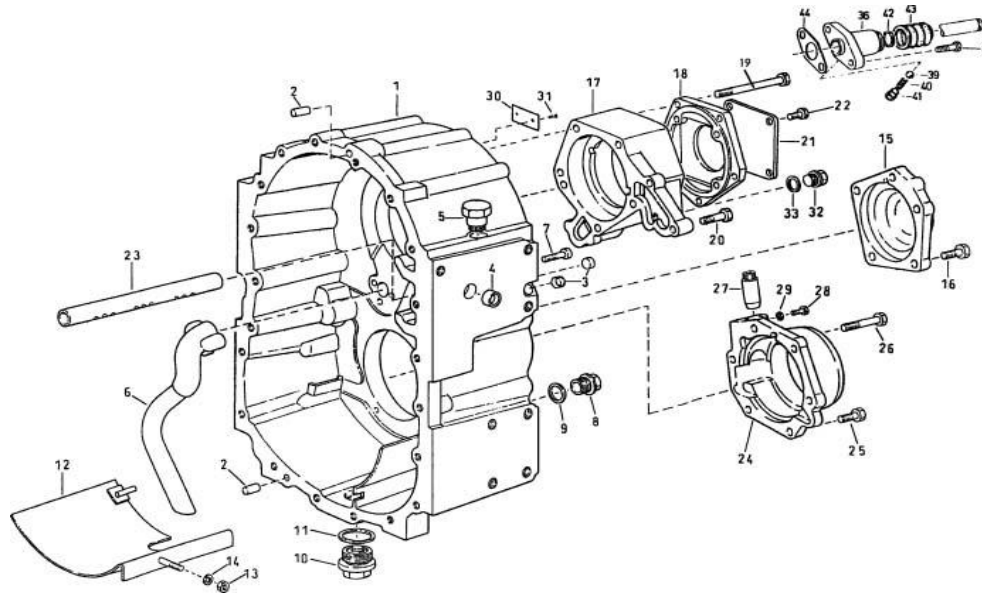




# Training Document

HOWO ZZ4257S3241V

- ② Refer to Fig. 5-11 for housing disassembling.
- Fig. 5-11 Disassembling diagram of housing





# Training Document

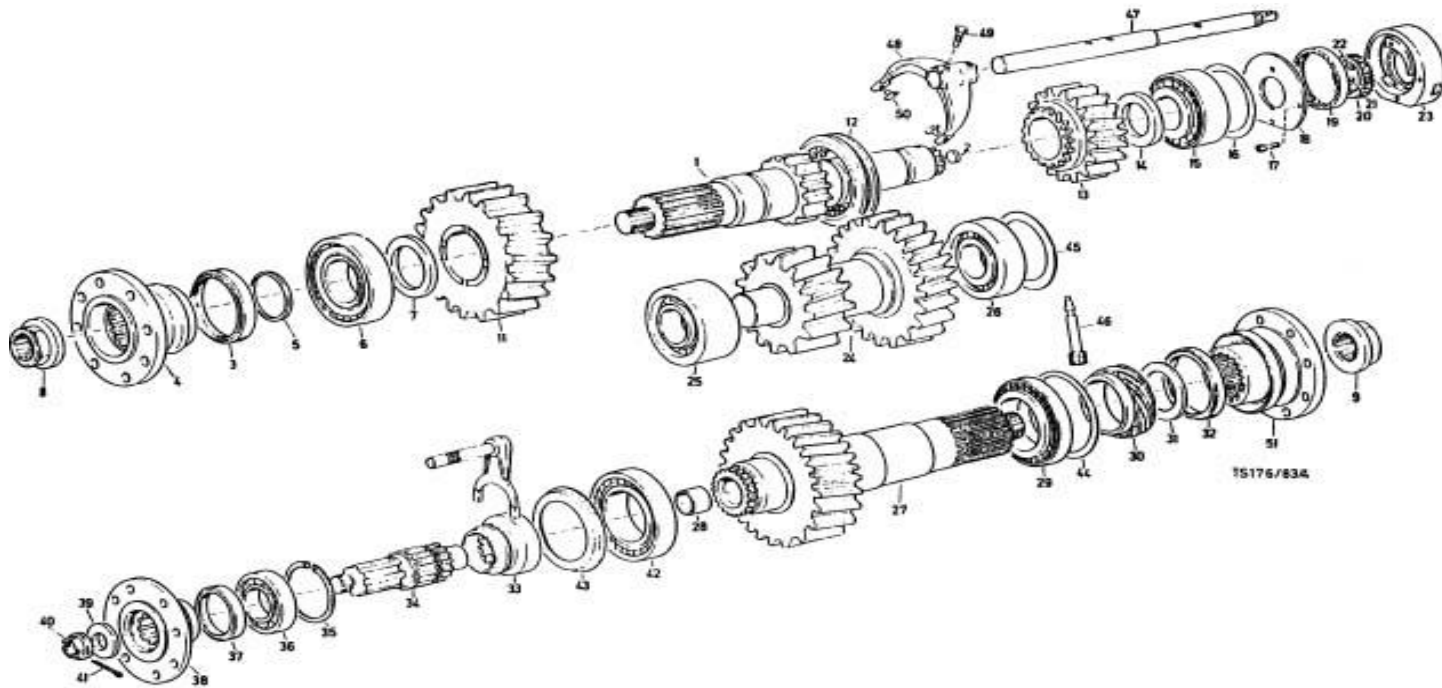
HOWO ZZ4257S3241V

- 1. Housing 2. Locating pin 3. Plug 4. Seal cover 5. Vent plug 6. Oil suck pipe, 7 Bolt, 8 Screw plug, 9 Seal ring, 10 Magnetic screw plug, 11 Seal ring, 12 Oil baffle 13. Nut 14. Washer 15. Rear cover of intermediate shaft 16. Bolt 17. Rear cover of input shaft 18. End cover 19. Bolt 20. Bolt 21. Cover plate 22. Bolt 23. Injection pipe assembly 24. Cover of rear output shaft 25. Bolt 26. Bolt 27. Driven gear shaft sleeve of speedometer 28. Bolt 29. Spring washer 30. Nameplate 31. Slotted pin 32. Screw plug 33. Seal ring 36. Flange 37. Bolt 39. Steel lock ball 40. Spring 41. Screw plug 42. Seal ring 43. Dust cover 44. Adjusting washer





- ③ Refer to Fig.5-12 for disassembling of driving gears.
- Fig. 5-12 Disassembling diagram of driving section





# Training Document

HOWO ZZ4257S3241V

- 1. Input shaft 2. Seal cover 3. Oil seal 4. Input shaft flange 5. Washer 6. Conical roller bearing 7. Spacer 8. Nut 9. nut 11. Gear 12. Mating sleeve 13. Gear 14. Spacer 15. Conical roller bearing 16. Adjusting washer 17. Bolt 18. Cover plate 19. Oil pump tooth ring 20. Oil pump gear 21. Steel ball 22. Steel ball 23. Oil pump housing 24. Intermediate shaft 25. Roller bearing 26. Roller bearing 27. Output shaft 28. Shaft sleeve 29. Conical roller bearing 30. Drive gear of speedometer 31. Spacer 32. Shaft oil seal 33. Front drive mating sleeve 34. Front driving shaft 35. Clip ring 36. Ball bearing 37. Shaft oil seal 38. Front driving flange 40. Nut 42. Conical roller bearing 43. Washer 44. Adjusting washer 45. Adjusting washer 46. Driven gear of speedometer 47. Sliding rod 48. Shifting fork 49. Locking screw 50. Sliding block 51. Rear flange of output shaft

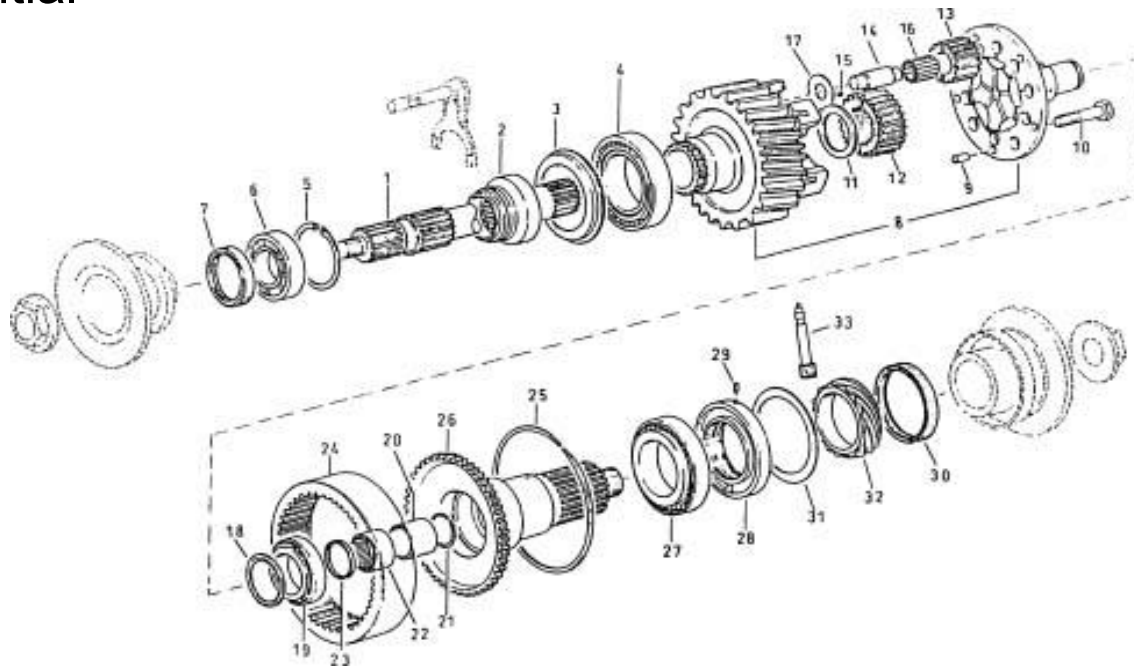




# Training Document

HOWO ZZ4257S3241V

- ④ Refer to Fig.5-13 for disassembling of output shaft assembly with interaxle differential.
- Fig.5-13 Disassembling of output shaft assembly with interaxle differential





# Training Document

HOWO ZZ4257S3241V

- 1. Front output shaft 2. Engagement sleeve of differential lock 3. Washer 4. Conical roller bearing 5. Clip 6. Ball bearing 7. Shaft oil seal 8. Planet carrier coupling 9. Location pin 10. Bolt 11. Thrust washer 12. Sun gear 13. Planetary gear 14. Planetary gear shaft 15. Steel ball 16. Needle bearing 17. Washer 18. Supporting washer 19. Conical roller bearing 20. Inner race of needle bearing 21. Clip ring 22. Needle bearing 23. Seal ring 24. Tooth ring 25. Clip ring 26. Rear output shaft 27. Conical roller bearing 28. Oil guide ring 29. Spring pin 30. Shaft oil seal 31. Adjusting washer 32. Drive gear of speedometer 33. Driven gear of speedometer







- **II. Precaution of disassembling the transfer case**
- 1. Use special tools to fix the transfer case on the workbench, refer to Fig. 5-14 and Fig 5-15.

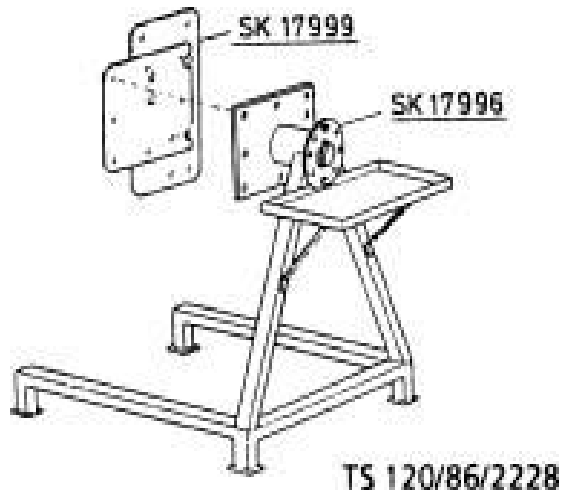


Fig. 5-14

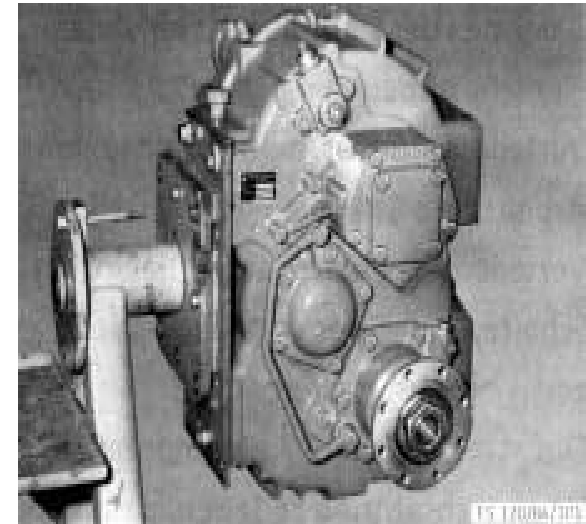


Fig. 5-15



# Training Document

HOWO ZZ4257S3241V

- 2. Double-arm puller (see Fig. 5-16) should be used to disassemble flanges (part 4 and part 38 in Fig. 5-12).



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Fig. 5-16



# Training Document

HOWO ZZ4257S3241V

- 3. Special tools should be used to disassemble the driven gear sleeve (part 27 in Fig. 5-11) of speedometer, see Fig. 5-17.



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•  
Fig. 5-17.



# Training Document

HOWO ZZ4257S3241V

- 4. When dismantling the oil pump assembly (part 17 to part 23 in Fig. 5-12), the cover plate and end plate (part 21 and part 18 in Fig. 5-11) must be removed first. Turn the input shaft (part 1 in Fig. 5-12) to see the steel ball (part 22 in Fig. 5-12), then pull out the oil pump assembly by using puller and bolt (part 1 and part 2 in Fig. 5-18).

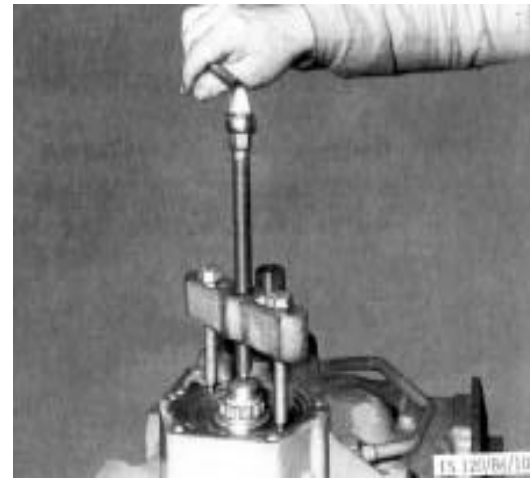


Fig. 5-18



- 5. When removing the ball bearing (part 36 in Fig. 5-12, part 6 in Fig.4-13) on the front output shaft, double-arm puller should be used to pull it out. See Fig. 5-19.



Fig. 5-19.



# Training Document

HOWO ZZ4257S3241V

- 6. When dismantling the input shaft, the double-arm puller should be used to pull out parts 13, 14 and 15 in Fig.5-12 (that is parts 1, 2 and 3 in Fig. 5-20). Use the same method to remove parts 6, 7 and 11 in Fig. 5-12.

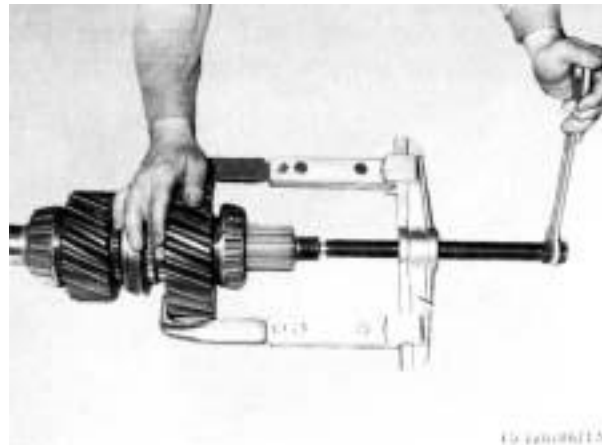


Fig. 5-20



# Training Document

HOWO ZZ4257S3241V

- 7. Refer to Fig.5-12, when removing the inner race of roller bearing 26 from intermediate shaft 24, the puller (part 2 in Fig.5-21) and special tool (part 3 in Fig. 5-21) should be used.

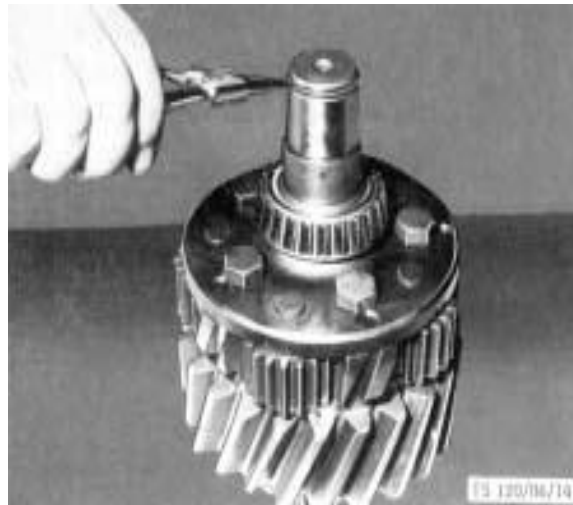


Fig. 5-21



# Training Document

HOWO ZZ4257S3241V

- 8. Refer to Fig. 5-13, when removing the inner race 20 of needle bearing from the coupling 8 of planet carrier, first slightly tap out part 20, then use the puller (part 2 in Fig. 5-22) and special tool (part 3 in Fig. 5-22).

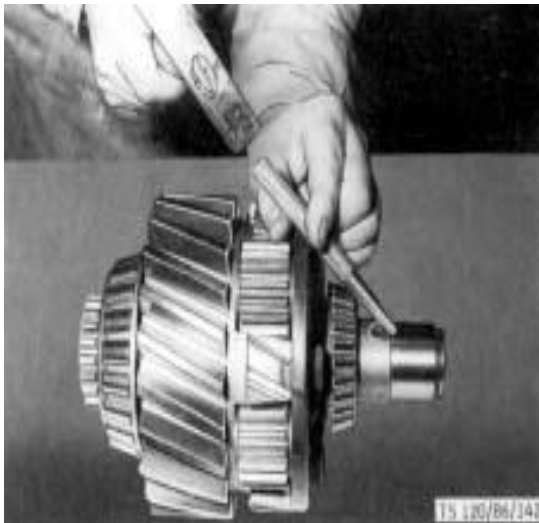


Fig. 5-22

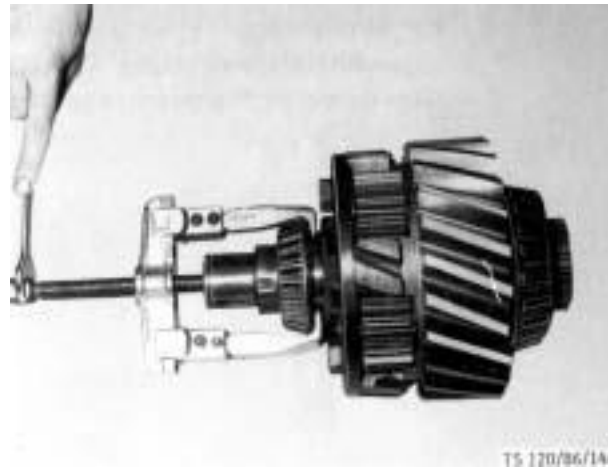




# Training Document

HOWO ZZ4257S3241V

- 9. Refer to Fig. 5-13 and Fig. 5-22, when removing the inner race of conical roller bearing 19 from the coupling 8 of planet carrier, use the puller.
- 10. Refer to Fig. 5-13. When removing the inner race of conical roller bearing 27 from the rear output shaft 26, use the puller, see Fig. 5-23.





# Training Document

HOWO ZZ4257S3241V

- 11. Refer to Fig. 5-13, when removing bolt 10, a mark should be punched on the top of bolt (the bolt is allowed to be resumed for one time). If there is already a mark, that bolt should no be used again.
- 12. Refer to Fig. 5-13, when removing the needle bearing 20 from rear output shaft, the puller (part 1 in Fig. 5-24) and the puller support (part 2 in Fig. 5-24) should be used.

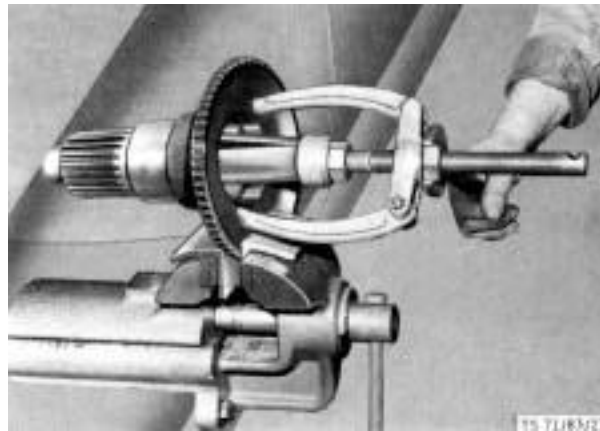


FIG. 5-24

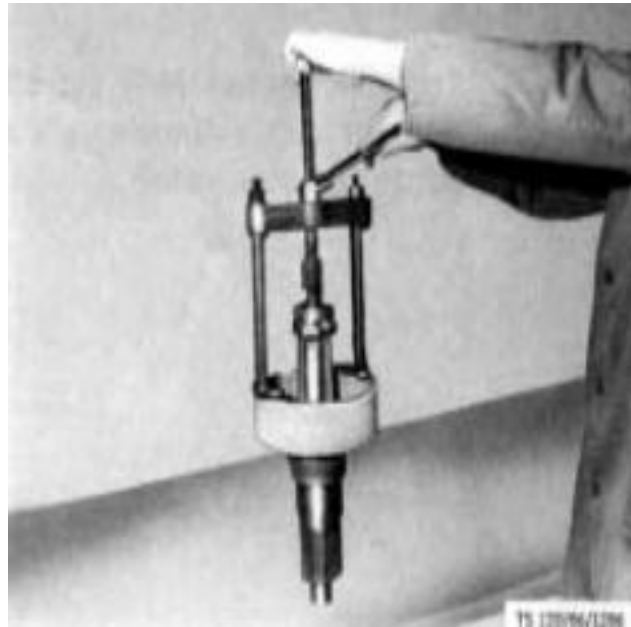




# Training Document

HOWO ZZ4257S3241V

- 13. Refer to Fig. 5-13, when removing the outer race of conical roller bearing 19 from rear output shaft 26, the puller (part 2 in Fig. 5-25) and the puller support (part 1 in Fig. 5-25) should be used.





- **2. Assembling and adjustment of transfer case**
- (1) Cleaning and inspection before assembling
- ① All parts must be cleaned thoroughly before assembling. Remove all oil stains, dust as well as all adhesive, sealing and locking agents. Ensure clearness, keep properly the cleaned parts to avoid them from being re-oilstained and redusted.
- ② Check the housing parts for cracks and deformations. Check the friction surfaces of moving parts for cracks, corrosion, rust, pulling damage and overwearing. Especially the raceway and rollers of bearing, thread of gear surface connector. All parts with above-mentioned defects should not be re-used.
- ③ Generally speaking, oil seal, seal ring and other rubber parts and sealing parts should not be re-used.



- ④ Check the transfer case housing and cover hole for scar and overwear. Measure the hole size with micrometer and internal diameter dial indicator, refer to Fig. 5-26, the size scope is

- A: 129.978~130.000
- B: 119.978~120.000
- C: 109.978~110.000
- D: 124.978~125.000

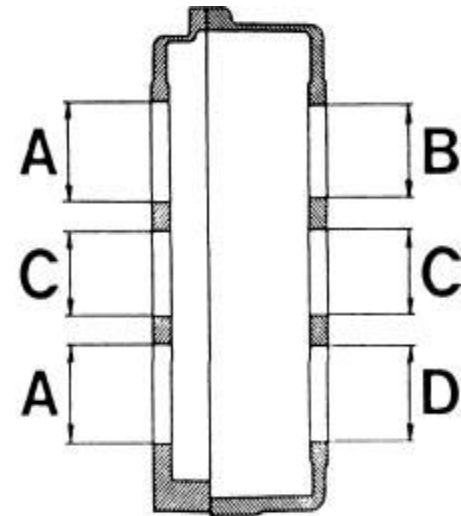


Fig.5-26

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# Training Document

HOWO ZZ4257S3241V

- (2) Precaution during assembling
- ① Before installed on the bearing journals, the inner race of various bearings must be oil-bathed to 80°C, then installed on position.
- ② All connecting bolts should be tightened according to specified torques, refer to Section III for concrete torque values. Caution: the fixing bolts of planet carrier should be tighten to 80Nm, then tightened 120°further. Refer to Section III for pre-tightening torque or axial clearance of various bearings.





# Training Document

HOWO ZZ4257S3241V

- ③ For positions where sealing compound and adhesive agent are used during repair of VG1200 transfer case, refer to Fig. 5-27. In the diagram, D is Loctite 510 plane sealing compound, K 2 is Loctite 242 thread-locking adhesive.

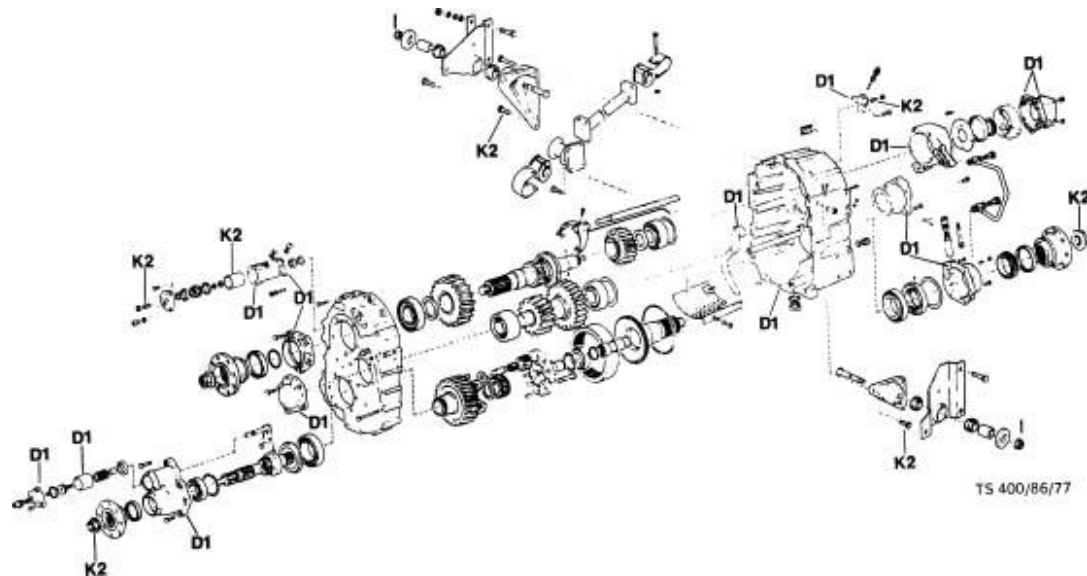


Fig. 5-27



# Training Document

HOWO ZZ4257S3241V

- ④ Adjustment of bearing pre-tightening force
- After installation of the input shaft assembly, output shaft assembly and intermediate shaft assembly and before putting them into their housings, it is necessary to adjust the pre-tightening forces of one pair of conical roller bearings at two ends of input shaft and that of one pair of conical roller bearings at two ends of output shaft, i.e., to determine the thickness of washers, its method is as follows:







# Training Document

HOWO ZZ4257S3241V

- a) Tap the outer races of conical roller bearings 6 and 42 in Fig. 5-12 into the corresponding holes of front cover. Install the front bearing cover 6 of input shaft and front output shaft housing 9 in Fig. 5-12 into corresponding positions, however do not apply the sealing compound, tighten the bolt 8 and bolt 23 to specified torques.





# Training Document

HOWO ZZ4257S3241V

- b) Refer to Fig. 5-12, install the outer races of conical roller bearings 15 and 29 into the corresponding holes of transfer case (part 1 in Fig. 5-11), install the rear cover of input shaft (part 17 in Fig.5-11) and rear input cover (part 24 in Fig. 5-11), install the bolts (parts 19, 20, 25 in Fig. 5-11) and tighten them. Install the input shaft assembly and output shaft assembly into the corresponding positions inside transfer case.





# Training Document

HOWO ZZ4257S3241V

- c) Install the housing cover onto transfer case, do not apply the sealing compound, tighten the bolt (part 3 in Fig. 5-10), turn over the workbench so as to make the housing cover face downward. Remove the rear cover of input shaft (part 17 in Fig. 5-11) and the cover of rear output shaft (part 20 in Fig. 5-11). Use a soft bar to tap the input shaft, output shaft and outer race of bearing (parts 1, 15 and 27 in Fig. 5-12), so as to ensure no installation gap.





# Training Document

HOWO ZZ4257S3241V

- d) Measure the height A1 of protrusion of bearing (part 29 in Fig.5-12) outer race from transfer case (see Fig. 5-28), and measure the depth B1 of groove (see Fig. 5-29) in which the outer race of bearing on the rear output shaft housing (part 24 in Fig. 5-11). Calculate the thickness of adjusting washers  $X1=A1-B1$ , 0.1, 0.15, 0.2, 0.4 and 1.0mm of thickness specifications for the adjusting washer can be selected.





# Training Document

HOWO ZZ4257S3241V

- d) Measure the height A1 of protrusion of bearing (part 29 in Fig.5-12) outer race from transfer case (see Fig. 5-28), and measure the depth B1 of groove (see Fig. 5-29) in which the outer race of bearing on the rear output shaft housing (part 24 in Fig. 5-11). Calculate the thickness of adjusting washers  $X1=A1-B1$ , 0.1, 0.15, 0.2, 0.4 and 1.0mm of thickness specifications for the adjusting washer can be selected.
- Use the same method to measure the total thickness X2 of adjusting washer C (part 16 in Fig. 5-12) of input shaft bearing. Install the adjusting washer 44 with total thickness of X1 and adjusting washer 16 with total thickness of X2, install the rear cover of input shaft (part 17 in Fig. 5-12) and output shaft cover (part 24 in Fig.5-12) , tighten the lock bolts 19, 20 and 5 to specified torques.





# Training Document

HOWO ZZ4257S3241V

- e) Refer to Fig. 5-30, from input end, measure the pre-tightening moment of input shaft bearing to be 0.5~1Nm, the spring balance pulling force is 13~34N. From the rear output end, measure the pre-tightening moment of bearing to be 0.5~1Nm, the spring balance pulling force is 15~30N.
- If the measured pre-tightening moment is beyond the specified scope, it can be adjusted by using adjusting washers 16 or 44.

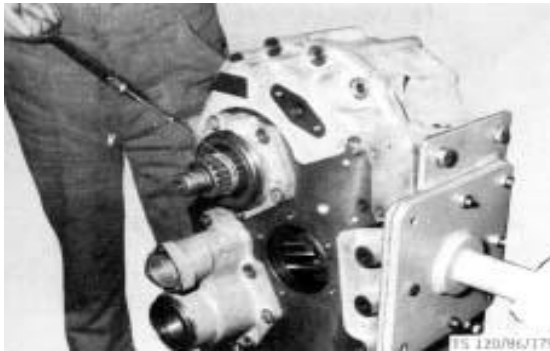


Fig. 5-30



Fig. 5-31



# Training Document

HOWO ZZ4257S3241V

- f) After the pre-tightening force of bearing is well adjusted. Remove the above-mentioned parts and assemblies, keep the set adjusting washers, restart installation one step after another.
- g) During installation of intermediate shaft, refer to the method described in this paragraph, measure the thickness X3 of adjusting washer (part 45 in Fig. 5-12), then add 0.3 - 0.5mm, the thickness specifications of washer 45 are 0.1, 0.2, and 0.5mm respectively.

