GROUP 22B

MANUAL TRANSAXLE OVERHAUL

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MANUAL TRANSAXLE OVERHAUL GENERAL INFORMATION

GENERAL INFORMATION

SECTIONAL VIEW<F5M42>

M1222000100023



- 1. REVERSE IDLER GEAR
- 2. 4TH SPEED GEAR
- 3. 3RD-4TH SPEED SYNCHRONIZER HUB
- 4. 3RD SPEED GEAR
- 5. TRANSAXLE CASE
- 6. CLUTCH HOUSING
- 7. RELEASE BEARING RETAINER
- 8. INPUT SHAFT
- 9. OUTPUT SHAFT

- 10. DIFFERENTIAL
- 11. 1ST SPEED GEAR
- 12. 1ST-2ND SPEED SYNCHRONIZER HUB
- 13. 2ND SPEED GEAR
- 14. 5TH SPEED GEAR
- 15. 5TH-REVERSE SPEED SYNCHRONIZER HUB
- 16. REVERSE GEAR

SECTIONAL VIEW<F5M51>



- 1. 4TH SPEED GEAR
- 2. 3RD-4TH SPEED SYNCHRONIZER HUB
- 3. 3RD SPEED GEAR
- 4. TRANSMISSION CASE
- 5. CLUTCH HOUSING
- 6. RELEASE BEARING RETAINER
- 7. INPUT SHAFT
- 8. OUTPUT SHAFT
- 9. DIFFERENTIAL

- 10.1ST SPEED GEAR
- 11.1ST-2ND SPEED SYNCHRONIZER HUB
- 12.2ND SPEED GEAR
- 13.5TH SPEED GEAR
- 14.5TH-REVERSE SPEED SYNCHRONIZER
 - HUB
- 15.REVERSE GEAR 16.REVERSE IDLER GEAR

SPECIAL TOOLS

M1222000600028

TOOL	TOOL NUMBER AND	SUPERSESSION	APPLICATION
	MB990935 Installer adapter	MB990935-01 OR GENERAL SERVICE TOOL	 Installation of differential case taper roller bearing outer race <f5m42></f5m42> Installation of output shaft front taper roller bearing outer race <f5m51></f5m51>
В990938	MB990938 Handle	MB990938-01	Use with Installer adapter
	MB990927 Installer adapter	MB990927-01 OR GENERAL SERVICE TOOL	Installation of sealing cap <f5m42></f5m42>
and the second s	MD998801 Bearing remover	MD998348-01 OR GENERAL SERVICE TOOL	Installation and removal of gears, bearings and sleeves
	MD998812 Installer cap	GENERAL SERVICE TOOL	Use with Installer and Installer adapter
	MD998813 Installer-100	GENERAL SERVICE TOOL	Use with Installer cap and Installer adapter
	MD998816 Installer adapter (30)	GENERAL SERVICE TOOL	Installation of input shaft front bearing

TOOL	TOOL NUMBER AND	SUPERSESSION	APPLICATION
	NAME		
	MD998825 Installer adapter (52)	GENERAL SERVICE	 Installation of 1st-2nd speed synchronizer hub, 3rd-4th speed synchronizer hub and 1st speed gear sleeve <f5m42></f5m42> Installation of 1st speed gear sleeve, 3rd-4th speed synchronizer hub, 4th speed gear sleeve, 5th speed gear and thrust plate stopper <f5m51></f5m51>
	MD998824 Installer adapter (50)	GENERAL SERVICE	 Installation of 4th speed gear sleeve and 5th speed gear <f5m42></f5m42> Installation of 1st-2nd speed synchronizer hub, 2nd speed gear sleeve and 3rd speed gear <f5m51></f5m51>
	MD998818 Installer adapter (38)	MD998818	 Installation of input shaft rear bearing, roller bearing inner race, reverse gear sleeve and output shaft rear ball bearing <f5m41></f5m41> Installation of input shaft front bearing <f5m51></f5m51>
	MD998917 Bearing remover	GENERAL SERVICE TOOL	Installation and removal of gears, bearing and sleeves
	MD998819 Installer adapter (40)	GENERAL SERVICE TOOL	 Installation of 5th-reverse speed synchronizer hub, differential case bearing, 4th speed gear and 5th speed gear sleeve <f5m42></f5m42> Installation of input shaft rear bearing and output shaft taper roller bearing <f5m51></f5m51>
	MD998814 Installer-200	MIT304180	Use with Installer cap and Installer adapter

TOOL	TOOL NUMBER AND NAME	SUPERSESSION	APPLICATION
	MD998364 Camshaft oil seal installer	MD998364-01	Installation of gear, bearing and sleeve <f5m51></f5m51>
	MD998822 Installer adapter (46)	GENERAL SERVICE TOOL	Installation of 2nd speed gear sleeve and 3rd speed gear <f5m42></f5m42>
	MD998821 Installer adapter (44)	MD998821	Installation of 4th speed gear, 5th speed gear sleeve and 5th- reverse speed synchronizer hub <f5m51></f5m51>
	MD998820 Installer adapter (42)	MIT215013	Installation of reverse gear bearing sleeve <f5m51></f5m51>
	MD999566 Claw	GENERAL SERVICE TOOL	Removal of taper roller bearing outer race
	MD998772 Valve spring compressor	GENERAL SERVICE TOOL	Removal of output shaft front roller bearing outer race <f5m42></f5m42>
	MD998346 Bearing outer race remover	MD998346-01 OR GENERAL SERVICE TOOL	Removal of output shaft front roller bearing outer race <f5m42></f5m42>
	MB990934 Installer adapter	MB990934-01 OR GENERAL SERVICE TOOL	Installation of output shaft front roller bearing outer race <f5m42></f5m42>

TOOL	TOOL NUMBER AND	SUPERSESSION	APPLICATION
	MB991445 Bushing remover and installer base	MB991445	Installation of differential case taper roller bearing outer race <f5m51></f5m51>
	MD998800 Oil seal installer	GENERAL SERVICE TOOL	Installation of differential oil seal <f5m51></f5m51>
	MB990926 Installer adapter	MB990926-01 OR GENERAL SERVICE TOOL	Installation of clutch housing input shaft oil seal <f5m42></f5m42>
	MB990928 Installer adapter	MB990928-01	Installation of input shaft oil seal <f5m51></f5m51>
	MD998325 Differential oil seal installer	MD998325-01	Installation of differential oil seal <f5m42></f5m42>

TRANSAXLE(TRANSMISSION)

DISASSEMBLY AND ASSEMBLY

M1222001000029

<F5M42>



AKX00940AB

DISASSEMBLY STEPS

- 1. ROLL STOPPER BRACKET, FRONT
- 2. ROLL STOPPER BRACKET, REAR
- 3. SHIFT CABLE BRACKET
- >>M<< 4. SELECT LEVER

Required Special Tools:

- MB990927: Installer Adapter <F5M42>
- MB990935: Installer Adapter
- MB990938: Handle

- >>L<< 5.
 - SPEEDOMETER GEAR
 BACKUP LIGHT SWITCH
 - 7. GASKET
 - 8. POPPET SPRING

DISASSEMBLY STEPS

9. GASKET



DISASSEMBLY STEPS

- 10. INTERLOCK PLATE BOLT
- 11. GASKET
- >>K<< 12. CONTROL HOUSING
- 13. NEUTRAL RETURN SPRING >>J<<
 - 14. UNDER COVER
 - 15. REVERSE IDLER GEAR SHAFT BOLT
 - 16. GASKET

DISASSEMBLY STEPS

- 17. REVERSE IDLER GEAR ASSEMBLY
- <<A>> >>|<< 18. SEALING CAP <>>
 - >>G<< 19. TRANSAXLE CASE
 - >>F<< 20. OUTER RACE
 - >>F<< 21. SPACER
 - 22. MAGNET HOLDER
 - 23. MAGNET



DISASSEMBLY STEPS

>>E<<	24.	SPRING PIN
	25.	1ST-2ND SPEED SHIFT RAIL
	26.	1ST-2ND SPEED SHIFT FORK
>>E<<	27.	SPRING PIN
>>E<<	28.	SPRING PIN
>>C<<	29	3RD-4TH SPEED SHIFT RAIL

IL FORK RK 33. FRONT BEARING RETAINER **<<F>> >>A<<** 34. INPUT SHAFT **<<F>> >>A<<** 35. OUTPUT SHAFT

>>C<<

<<D>>>

- 36. DIFFERENTIAL
 - 37. CLUTCH HOUSING

DISASSEMBLY STEPS

32. 5TH SPEED-REVERSE SHIFT

<<D>>> >>C<< 30. 3RD-4TH SPEED SHIFT FORK <<D>>>C<< 31. 5TH SPEED-REVERSE SHIFT

<<D>>>

> >>C<< 31. 5TH SPEED-REVERSE SHIFT RAIL



DISASSEMBLY STEPS

- 1. ROLL STOPPER BRACKET, FRONT
- 2. ROLL STOPPER BRACKET, REAR
- 3. SHIFT CABLE BRACKET
- >>M<< 4. SELECT LEVER

DISASSEMBLY STEPS

- >>L<< 5. SPEEDOMETER GEAR
 - 6. BACKUP LIGHT SWITCH
 - 7. GASKET
 - 8. POPPET
 - 9. GASKET



DISASSEMBLY STEPS

- 10. INTERLOCK PLATE BOLT
- 11. GASKET
- >>K<< 12. CONTROL HOUSING
 - 13. NEUTRAL RETURN SPRING
- >>J<< 14. UNDER COVER
 - 15. REVERSE IDLER GEAR SHAFT BOLT
 - 16. GASKET

DISASSEMBLY STEPS

- 17. REVERSE IDLER GEAR
- >>H<< 18. TRANSAXLE CASE
- >>F<< 19. OUTER RACE
- >>F<< 20. OUTER RACE
- >>F<< 21. SPACER
- >>F<< 22. SPACER
- >>F<< 23. SPACER



DISASSEMBLY STEPS

	>>F<<	24. SPRING PIN
		25. 1ST-2ND SPEED SHIFT RAIL
		26. 1ST-2ND SPEED SHIFT FORK
	>>E<<	27. SPRING PIN
< <c>></c>	>>E<<	28. SPRING PIN
< <e>>></e>	>>D<<	29. 3RD-4TH SPEED SHIFT RAIL
< <e>>></e>	>>D<<	30. 3RD-4TH SPEED SHIFT FORK

			DISASSEMBLY STEPS
< <e>>></e>	>>D<<	31.	5TH-REVERSE SPEED SHIFT
			RAIL
< <e>></e>	>>D<<	32.	5TH-REVERSE SPEED SHIFT
			FORK
< <g>></g>	>>B<<	33.	DIFFERENTIAL
< <g>></g>	>>B<<	34.	OUTPUT SHAFT
< <g>></g>	>>B<<	35.	INPUT SHAFT
		36.	CLUTCH HOUSING



DISASSEMBLY SERVICE POINTS

<<A>> SEALING CAP REMOVAL

- 1. Drive a screwdriver into the center of the sealing cap.
- 2. Bend the screwdriver back to remove the sealing cap.



STH-REVERSE SHIFT FORK

<> TRANSAXLE CASE REMOVAL

- 1. Remove all sixteen bolts securing the transaxle case to the clutch housing.
- 2. Use snap ring pliers to expand the indicated snap ring. The snap ring will separate from the ball bearing groove, and the output shaft assembly will fall under its own weight.

Do not use a scraper or chisel to remove the transaxle case.

3. Remove the transaxle case from the clutch housing.

<<C>> SPRING PIN REMOVAL

- 1. Shift the 5th-reverse shift fork in the direction shown in the illustration.
- 2. Using a pin punch, remove the spring pin from the shift fork and rail.

<<D>> 3RD-4TH SPEED SHIFT RAIL/3RD-4TH SPEED SHIFT FORK/5TH SPEED-REVERSE SHIFT RAIL/5TH SPEED-REVERSE SHIFT FORK REMOVAL

1. Shift the 3rd-4th speed shift fork and 5th speed-reverse shift fork in the direction shown.





- 2. Pull up on the 3rd-4th speed shift rail and 5th speed-reverse shift rail and take them out of the hole in the clutch housing.
- 3. Slide the 3rd-4th speed shift rail and 5th speed-reverse shift rail in the direction shown and remove them together with the shift forks.

<<E>> 3RD-4TH SPEED SHIFT RAIL/3RD-4TH SPEED SHIFT FORK/5TH-REVERSE SPEED SHIFT RAIL/5TH-REVERSE SPEED SHIFT FORK REMOVAL

- 1. Pull out the shift rails from the shift rail holes in the clutch housing.
- 2. Remover the shift rails together with the shift forks.



<<F>> INPUT SHAFT AND OUTPUT SHAFT REMOVAL Remove the input and output shafts together.





Remove the input and output shafts together.



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OUTPUT SHAFT DIFFERENTIAL AKX00880AB



ADJUSTMENT BEFORE ASSEMBLY

SPACER SELECTION FOR DIFFERENTIAL CASE PRE-LOAD ADJUSTMENT <F5M42>

- 1. Put solders [1.6 mm (0.063 inch) diameter, about 10 mm (0.39 inch) long] in the illustrated positions of the transaxle case.
- 2. Install the taper bearing outer race and differential assembly into the transaxle case.

NOTE: If necessary, replace the differential case and taper bearing before carrying out these adjustments.

3. Install the clutch housing and tighten the bolts to the specified torque.

Tightening torque: 44 \pm 5 N·m (33 \pm 4 ft-lb)

- 4. Remove the clutch housing, and then remove the differential assembly.
- 5. Remove the outer race and take out crushed solders.
- 6. Measure the thickness of the crushed solder with a micrometer and select a spacer that will provide the standard preload value.

Standard value:

```
0.05 - 0.11 mm (0.0020 - 0.0043 inch) preload
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SPACER SELECTION FOR ADJUSTING INPUT SHAFT END PLAY/OUTPUT SHAFT PRELOAD/DIFFERENTIAL PRELOAD <F5M51>

1. Install the input shaft, output shaft and differential as a set to the clutch housing.

NOTE: If necessary, replace the input shaft, output shaft, differential case and/or bearings before carrying out these adjustments.

Put solders [1.6 mm (0.063 inch) diameter, about 10 mm (0.39 inch) long] on the input shaft rear bearing at the positions shown in the illustration.

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- Put solders [1.6 mm (0.063 inch) diameter, about 10 mm (0.39 inch) long] on the transaxle case at the positions shown in the illustration.
- 4. Install the bearing outer races of the differential and output shaft.
- 5. Install the transaxle case and tighten the bolts to the specified torque.

Tightening torque: 44 \pm 5 N·m (33 \pm 4 ft-lb)

- 6. Remove the transaxle case.
- 7. Remove the outer races and take out the crushed solders.
- 8. Measure the thickness of the crushed solder with a micrometer and select spacers that will provide the standard end play/preload value.

Standard value:

- Input shaft end play: 0.05 0.17 mm (0.0020 0.0067 inch)
- Output shaft preload: 0.13 0.18 mm (0.0051 0.0071 inch)
- Differential preload: 0.05 0.11 mm (0.0020 0.0043 inch)

ASSEMBLY SERVICE POINTS

>>A<< OUTPUT SHAFT/INPUT SHAFT INSTALLATION

Install the input and output shafts together.



AKX00769

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OUTPUT SHAFT DIFFERENTIAL AKX00880AB

>>B<< INPUT SHAFT/OUTPUT SHAFT/DIFFERENTIAL INSTALLATION

Install the input shaft, output shaft and differential as a set.



- >>C<< 5TH SPEED-REVERSE SHIFT FORK/5TH SPEED-REVERSE SHIFT RAIL/3RD-4TH SPEED SHIFT FORK/3RD-4TH SPEED SHIFT RAIL INSTALLATION
- 1. Shift the 3rd-4th speed synchronizer sleeve and 5th speedreverse synchronizer sleeve in the direction shown.

2. Assemble the 3rd-4th speed shift rail and fork, and the 5th speed-reverse shift rail and fork.



- 3. While fitting each shift fork in the groove of synchronizer sleeve, slide the shift rails in the direction shown and install.
- 4. Insert the 3rd-4th speed shift rail and 5th speed-reverse shift rail into the rail hole in the clutch housing.

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SRD-4TH SPEED SHIFT RAIL SHIFT RAIL SHIFT RAIL

2.5 mm (0.098 in)

AKX00920AB

SHIFT FORK

C

SHIFT RAIL

SPRING PIN

>>D<< 5TH-REVERSE SPEED SHIFT FORK/5TH-REVERSE SPEED SHIFT RAIL/3RD-4TH SPEED SHIFT FORK/3RD-4TH SPEED SHIFT RAIL INSTALLATION

1. Assemble the 3rd-4th speed shift rail and fork, and 5th-reverse speed shift rail and fork.

- 2. Fit each shift fork in the groove of synchronizer sleeve and install the shift fork and rail assembly.
- 3. Insert the 3rd-4th speed shift rail and 5th speed-reverse shift rail into the rail hole in the clutch housing.

>>E<< SPRING PIN INSTALLATION

- 1. Align the pin holes in the shift rail and shift fork.
- 2. Insert the new spring pin. Push it in so that the slit and center axis of the rail are aligned.



- 1. Install the spacer selected in the section "ADJUSTMENT BEFORE ASSEMBLY."
- 2. Using special tools MB990935 and MB990938, press install the outer race into the transaxle case.



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>>G<< TRANSAXLE CASE INSTALLATION

Squeeze out the sealant uniformly, while making sure that it is not broken or excessively applied.

1. Apply a 2 mm (0.08 inch) diameter bead of sealant (Mitsubishi Genuine Part number MD997740 or equivalent) to the illustrated position of the transaxle case.

NOTE: Be sure to install the transaxle case while the sealant is wet (within 15 minutes).

- 2. Install the transaxle case and expand the snap ring.
- 3. Tighten the transaxle case mounting bolts to the specified torque.

Tightening torque: 44 \pm 5 N·m (33 \pm 4 ft-lb)

 Place the transaxle upside down and let the snap ring fit in the groove by taking advantage of the output shaft's own weight.

NOTE: After installation, keep the sealed area away from the oil for approximately one hour.

>>H<< TRANSAXLE CASE INSTALLATION

Squeeze out the sealant uniformly, while making sure that it is not broken or excessively applied.

 Apply a 2 mm (0.08 inch) diameter bead of sealant (Mitsubishi Genuine Part number MD997740 or equivalent) to the illustrated position of the transaxle case.

NOTE: Be sure to install the transaxle case while the sealant is wet (within 15 minutes).

- 2. Install the transaxle case.
- 3. Tighten the transaxle case mounting bolts to the specified torque.

Tightening torque: 44 \pm 5 N·m (33 \pm 4 ft-lb)

NOTE: After installation, keep the sealed area away from the oil for approximately one hour.

>>I<< SEALING CAP INSTALLATION

1. Using special tools MB990927 and MB990938, press install the sealing cap onto the case.



2. Evenly press the sealing cap so it is not placed at an angle.



>>J<< UNDER COVER INSTALLATION

Squeeze out the sealant uniformly, while making sure that it is not broken or excessively applied.

1. Apply a 2 mm (0.08 inch) diameter bead of sealant (Mitsubishi Genuine Part number MD997740 or equivalent) to the illustrated position of the transaxle case.

NOTE: Be sure to install the case quickly while the sealant is wet (within 15 minutes).

2. Install the under cover to the transaxle case and tighten the bolts to specified torque.

Tightening torque: $7 \pm 1 \text{ N} \cdot \text{m}$ (61 ± 9 in-lb)

NOTE: After installation, keep the sealed area away from the oil for approximately one hour.

>>K<< CONTROL HOUSING INSTALLATION

Squeeze out the sealant uniformly, while making sure that it is not broken or excessively applied.

1. Apply a 0.2 mm (0.08 inch) diameter bead of sealant (Mitsubishi Genuine Part number MD997740 or equivalent) to the illustrated position of the transaxle case.

NOTE: Be sure to install the case quickly while the sealant is wet (within 15 minutes).

2. Install the control housing to the transaxle case and tighten the bolts to specified torque.

Tightening torque: 19 \pm 3 N m (14 \pm 2 ft-lb)

NOTE: After installation, keep the sealed area away from the oil for approximately one hour.





>>L<< SPEEDOMETER GEAR INSTALLATION

- 1. Apply gear oil (Hypoid gear oil SAE 75W-90 or 75W-85W conforming to API classification GL-4) to the O-ring of the speedometer gear.
- 2. Tighten the bolt to specified torque.
 - Tightening torque: 4 \pm 1 N·m (35 \pm 9 in-lb)

CONTROL SHAFT SELECT LEVER SHOE

>>M<< SELECT LEVER INSTALLATION

- 1. Apply grease (Mitsubishi Genuine Part number 0101011 or equivalent) to the control shaft sliding portion of the select lever shoe.
- 2. Install the select lever and tighten the bolts to specified torque.

Tightening torque: 19 \pm 3 N·m (14 \pm 2 ft-lb)

INSPECTION

M1222001100026

BACKUP LIGHT SWITCH

Check for continuity between terminals.

SWITCH CONDITION	CONTINUITY
Pressed	Open
Released	Conductive



INPUT SHAFT

DISASSEMBLY AND ASSEMBLY

<F5M42>

10 APPLY GEAR OIL TO ALL MOVING 11 : PARTS BEFORE 12 INSTALLATION. 14 13 15 16 18 **1**19 2 20 6 1 N 8 3 16 **N**17 5

AKX00803AB

DISASSEMBLY STEPS

SYNCHRONIZER HUB

14. SYNCHRONIZER SPRING

16. NEEDLE ROLLER BEARING

13. SYNCHRONIZER RING

15. 3RD SPEED GEAR

17. SNAP RING

18. BALL BEAR

OIL SEAL
 INPUT SHAFT

12. 3RD-4TH SPEED

			DISASSEMBLY STEPS
	>>M<<	1.	SNAP RING
< <a>>	>>L<<	2.	BALL BEARING
< >	>>K<<	3.	THRUST PLATE STOPPER
	>>J<<	4.	THRUST PLATE
< <c>></c>	>> <<	5.	5TH SPEED GEAR
		6.	4TH SPEED GEAR
		7.	NEEDLE ROLLER BEARING
< <d>></d>	>>H<<	8.	4TH SPEED GEAR SLEEVE
	>>E<<	9.	SYNCHRONIZER RING
	>>D<<	10.	SYNCHRONIZER SPRING
	>>G<<	11.	SYNCHRONIZER SLEEVE

Required Special Tools:

- MD998801: Bearing Remover
- MD998812: Installer Cap
- MD998813: Installer-100
- MD998816: Installer Adapter (30)

• MD998818: Installer Adapter (38)

>>F<<

>>E<<

>>D<<

>>C<<

>>B<<

>>A<<

<<E>>>

- MD998824: Installer Adapter (50) <F5M42>
- MD998825: Installer Adapter (52)

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M1222001600021

<F5M51>



AKX00877AB

< <a>> <> <<c>></c>	>>M<< >>L<< >>K<< >>J<< >>I<<	1. 2. 3. 4. 5. 6. 7.	DISASSEMBLY STEPS SNAP RING BALL BEARING THRUST PLATE STOPPER THRUST PLATE 5TH SPEED GEAR 4TH SPEED GEAR NEEDLE ROLLER BEARING		>>F<< >>D<<	12. 13. 14. 15. 16. 17.	DISASSEMBLY STEPS 3RD-4TH SPEED SYNCHRONIZER HUB OUTER SYNCHRONIZER RING SYNCHRONIZER SPRING SYNCHRONIZER CONE INNER SYNCHRONIZER RING 3RD SPEED GEAR
< <d>></d>	>>H<< >>D<< >>G<<	8. 9. 10. 11.	4TH SPEED GEAR SLEEVE SYNCHRONIZER RING SYNCHRONIZER SPRING SYNCHRONIZER SLEEVE	< <e>></e>	>>C<< >>B<< >>A<<	18. 19. 20. 21. 22.	NEEDLE ROLLER BEARING SNAP RING BALL BEAR OIL SEAL INPUT SHAFT

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DISASSEMBLY SERVICE POINTS

<<A>> BALL BEARING REMOVAL

- 1. Using special tool MD998801, support the ball bearing, and then set them on the press.
- 2. Push down on the input shaft with the press and extract the ball bearing.

<> THRUST PLATE STOPPER REMOVAL

Using a screwdriver, pry up the position shown in the illustration and remove the thrust plate stopper.

AKX00823AB

<<C>>5TH SPEED GEAR REMOVAL

- 1. Using special tool MD998801, support the 5th speed gear, and then set them on the press.
- 2. Push down on the input shaft with the press and take off the 5th speed gear.

MD998801

<<D>>4TH SPEED GEAR SLEEVE REMOVAL

- 1. Using special tool MD998801, support the 3rd speed gear, and then set them on the press.
- 2. Push down on the input shaft with the press and remove the 4th speed gear sleeve.

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AKX00825AB



MD998801



MANUAL TRANSAXLE OVERHAUL INPUT SHAFT



<<E>> BALL BEARING REMOVAL

- 1. Using special tool MD998801, support the ball bearing, and then set them on the press.
- 2. Push down on the input shaft with the press and extract the ball bearing.

ASSEMBLY SERVICE POINTS

>>A<< OIL SEAL INSTALLATION

Install the oil seal into the illustrated position of the input shaft.



MD998812 MD998801 MD998817 MD998817 MD998817 MD998817 MD998817

>>B<< BALL BEARING INSTALLATION

- 1. Using special tool MD998801, support the 2nd speed gear portion of the input shaft, and then set them on the press.
- 2. Using special tools MD998812, MD998813 and MD998816, press install the bearing with the press.



>>C<< SNAP RING INSTALLATION

- 1. Install the thickest snap ring that can be fitted in the snap ring groove of input shaft.
- 2. Make sure that the ball bearing end play meets the standard value.

Standard value: 0 – 0.12 mm (0 – 0.0047 inch)

TSB R	evision		



>>D<< SYNCHRONIZER SPRING INSTALLATION

Install the synchronizer spring to the illustrated position of the synchronizer ring and outer synchronizer ring <F5M51>.



SYNĆHRONIZER SPRING

>>E<< SYNCHRONIZER RING INSTALLATION

There are 3rd speed and 4th speed synchronizer rings, if the wrong one is installed it will effect the shift feeling.

1. Ascertain whether or not there are identification notches on the synchronizer ring.

Two notches: 3rd speed synchronizer ring No notches: 4th speed synchronizer ring

2. Install the synchronizer ring so that it does not angle to the cone of the gear.

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AKX00941AB





>>F<< 3RD-4TH SPEED SYNCHRONIZER HUB INSTALLATION

- 1. Using special tool MD998801, support the 2nd speed gear portion of the input shaft, and then set them on the press.
- 2. Make sure that the synchronizer ring <F5M42> or inner synchronizer ring <F5M51> has been perfectly matched to the 3rd speed gear cone.
- 3. Check the installation direction of the 3rd-4th speed synchronizer hub, and put it on the input shaft.
- 4. Using special tools MD998812, MD998813 and MD998825, press install the 3rd-4th speed synchronizer hub with the press.
- 5. Make sure that the synchronizer ring <F5M42> or outer synchronizer ring <F5M51> can rotate freely.



>>G<< SYNCHRONIZER SLEEVE INSTALLATION

1. Check the installation direction of the synchronizer sleeve, and install it onto the 3rd-4th speed synchronizer hub.

2. Install the synchronizer sleeve so that the areas with teeth that have raised tips (three areas total) are aligned with the areas on the synchronizer hub that have deep grooves between the teeth (three areas total).



TSB Revision	



>>H<< 4TH SPEED GEAR SLEEVE INSTALLATION

- 1. Using special tool MD998801, support the 2nd speed gear portion of the input shaft, and then set them on the press.
- 2. Using special tools MD998812, MD998813, MD998824 <F5M42> and MD998825 <F5M51>, press install the 4th speed gear sleeve with the press.



>>I<< 5TH SPEED GEAR INSTALLATION

- 1. Using special tool MD998801, support the 2nd speed gear portion of the input shaft, and then set them on the press.
- 2. Using special tools MD998812, MD998813, MD998824 <F5M42> and MD998825 <F5M51>, press install the 5th speed gear in the input shaft.



>>J<< THRUST PLATE INSTALLATION

- 1. Install the thickest thrust plates that can be fitted in the groove of input shaft. Install the thrust plate so the surface stamped with the identification mark is facing up.
- 2. Make sure that the 5th speed gear end play meets the standard value.

Standard value: 0 – 0.09 mm (0 – 0.0035 inch)

TSB	Revision	
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MD998812 MD998813 MD998824 <F5M42>, MD998825 <F5M51> AKX00890AB

>>K<< THRUST PLATE STOPPER INSTALLATION Install the thrust plate stopper by pressing special tools

MD998812, MD998813, MD998824 <F5M42> and MD998825 <F5M51> by hand. Make sure that it is not tilted.



>>L<< BALL BEARING INSTALLATION

- 1. Using special tool MD998801, support the 2nd speed gear portion of the input shaft, and then set them on the press.
- 2. Using special tools MD998812 and MD998818, press install the ball bearing in the input shaft.

>>M<< SNAP RING INSTALLATION

- 1. Install the thickest snap ring that can be fitted in the groove of input shaft.
- 2. Make sure that the ball bearing end play meet the standard value.

Standard value: 0 - 0.12 mm (0 - 0.0047 inch)



INSPECTION

M1222001700028



INPUT SHAFT

- 1. Check the outside diameter of the needle bearing mounting portion for damage, abnormal wear and seizure.
- 2. Check the splines for damage and wear.
- 3. Check that the helical gear teeth surfaces are not damaged or worn.

ГSВ	Revision	

NEEDLE ROLLER BEARING

- 1. Combine the needle roller bearing with the input shaft or bearing sleeve and gear, and check that it rotates smoothly without noise or play.
- 2. Check the needle roller bearing cage for deformation.

SYNCHRONIZER RING

- 1. Check the clutch gear teeth for damage and broken.
- 2. Check internal surface for damage, wear and broken threads.

 Force the synchronizer ring toward the clutch gear and check clearance "A". If "A" is less than the limit, replace.
 Minimum limit: 0.5 mm (0.020 inch)

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AKX00933

OUTER SYNCHRONIZER RING/INNER SYNCHRONIZER RING/SYNCHRONIZER CONE

When any of the outer ring, inner ring or cone has to be replaced, replace them as a set.

1. Check to ensure that the clutch gear tooth surface and cone surface are not damaged and broken.





MANUAL TRANSAXLE OVERHAUL INPUT SHAFT



2. Install the outer ring, inner ring and cone, press them against the gear, and check clearance "A." If "A" is less than the limit, replace.

Limit: 0.5 mm (0.020 inch)

HUB AKX00767AB

SYNCHRONIZER SLEEVE AND HUB

- 1. Combine the synchronizer sleeve and hub, and check that they slide smoothly.
- 2. Check that the sleeve is free from damage at its inside splines ends.

SYNCHRONIZER SPRING

Check that the spring is not sagging, deformed or broken.

SPEED GEARS

- 1. Check that the helical and clutch gear tooth surfaces are not damaged or worn.
- 2. Check that the synchronizer cone surfaces are not roughened, damaged or worn.
- 3. Check that the gear inside diameter and front and rear surfaces are not damaged and worn.



TSB F	Revision

OUTPUT SHAFT

DISASSEMBLY AND ASSEMBLY

<F5M42>

	APPLY GE, TO ALL MC PARTS BE NSTALLAT	AR OI DVING FORE FION.	26 27 29 29	24 25	20 22 21 21 23 13	19	
N 34	55	30	30 32 31 33	8 17 17 16 🛛		- - - - - - - - - - - - - - - - 	3 2 3 4 9 8 АКХ00946АВ
< <a>> <<c>></c>	>>T<< >>R<< >>Q<<	1. 2. 3. 4.	DISASSEMBLY STEPS SNAP RING BALL BEARING REVERSE GEAR SLEEVE NEEDLE ROLLER BEARING	< <f>></f>	>><	19. 20. 21. 22.	DISASSEMBLY STEPS NEEDLE ROLLER BEARING 2ND SPEED GEAR SLEEVE INNER SYNCHRONIZER RING SYNCHRONIZER CONE
< <d>></d>	>>0<< >>N<< >>H<< >>P<<	5. 6. 7. 8. 9.	REVERSE GEAR SYNCHRONIZER RING SYNCHRONIZER SPRING SYNCHRONIZER SLEEVE 5TH SPEED-REVERSE SYNCHRONIZER HUB		>>F<< >>H<< >>G<<	23. 24. 25. 26. 27.	OUTER SYNCHRONIZER RING SYNCHRONIZER SPRING SYNCHRONIZER SLEEVE 1ST-2ND SPEED SYNCHRONIZER HUB OUTER SYNCHRONIZER RING
	>>0<< >>N<<	10. 11. 12. 13. 14.	SYNCHRONIZER RING SYNCHRONIZER SPRING 5TH SPEED GEAR NEEDLE ROLLER BEARING 5TH SPEED GEAR SLEEVE		>>F<<	28. 29. 30. 31. 32.	SYNCHRONIZER SPRING INNER SYNCHRONIZER RING SYNCHRONIZER CONE 1ST SPEED GEAR NEEDLE ROLLER BEARING
< <e>></e>	>>L<< >>K<< >>J<<	15. 16. 17. 18.	41H SPEED GEAR SNAP RING 3RD SPEED GEAR 2ND SPEED GEAR	< <h>></h>	>>D<< >>B<< >>B<<	33. 34. 35. 36.	SNAP RING ROLLER BEARING INNER RACE OUTPUT SHAFT

Required Special Tools:

- MD998364: Camshaft Oil Seal Installer <F5M51>
- MD998801: Bearing Remover
- MD998812: Installer Cap
- MD998813: Installer 100 <F5M42>
- MD998814: Installer 200
- MD998818: Installer Adapter (38) <F5M42>
- MD998819: Installer Adapter (40)

- MD998820: Installer Adapter (42) <F5M51>
- MD998821: Installer Adapter (44) <F5M51>
- MD998822: Installer Adapter (46) <F5M42>
- MD998824: Installer Adapter (50) <F5M51>
- MD998825: Installer Adapter (52) <F5M42>
- MD998917: Bearing Remover

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<F5M51>

		APPLY TO ALL PARTS NSTAL	GEAR OIL MOVING BEFORE LATION.				
							AKX00929AB
			DISASSEMBLY STEPS				DISASSEMBLY STEPS
	>>T<<	1.	SNAP RING	~~E	~~~~	19.	NEEDLE ROLLER BEARING
< >	>>S<<	2.	TAPER ROLLER BEARING	<< F >>	>> <<	20.	
<<6>>>	>>U<<	3.	KEVEKSE GEAK BEARING			∠ı. 22	SYNCHRONIZER CONF
		4	NEEDLE ROLLER BEARING			23.	OUTER SYNCHRONIZER RING
		т . 5	REVERSE GEAR		>>F<<	24.	SYNCHRONIZER SPRING
	>>0<<	6.	SYNCHRONIZER RING		>>H<<	25.	SYNCHRONIZER SLEEVE
	>>N<<	7.	SYNCHRONIZER SPRING		>>G<<	26.	1ST-2ND SPEED
	>>H<<	8.	SYNCHRONIZER SLEEVE				SYNCHRONIZER HUB
< <d>></d>	>>P<<	9.	5TH SPEED-REVERSE			27.	OUTER SYNCHRONIZER RING
			SYNCHRONIZER HUB		>>F<<	28.	
	>>0<<	10.	SYNCHRONIZER RING			29. 20	
	>>//<<	11. 12				30. 31	1ST SPEED GEAR
		⊺∠. 13	NEEDI E ROLLER REARING			32.	NEEDLE ROLLER BEARING
	>>M<<	13. 14	5TH SPEED GEAR SI FEVE	< <g>></g>	>>E<<	33.	1ST SPEED GEAR SLEEVE
	>>L<<	15.	4TH SPEED GEAR	<< >>	>>C<<	34.	TAPER ROLLER BEARING
	>>K<<	16.	SNAP RING		>>A<<	35.	OIL SEAL
< <e>>></e>	>>J<<	17.	3RD SPEED GEAR			36.	OUTPUT SHAFT
		18.	2ND SPEED GEAR				

DISASSEMBLY SERVICE POINTS

<<A>> BALL BEARING REMOVAL

- 1. Using special tool MD998917, support the ball bearing, and then set them on the press.
- 2. Push down on the output shaft with the press, and take out the ball bearing.

<> TAPER ROLLER BEARING REMOVAL

- 1. Using special tool MD998801, support the taper roller bearing, and then set them on the press.
- 2. Push down on the output shaft with the press, and take out the taper roller bearing.

<<C>> REVERSE GEAR BEARING SLEEVE REMOVAL

- 1. Using special tool MD998801, support the reverse gear, and then set them on the press.
- 2. Push down on the output shaft with the press and remove the reverse gear bearing sleeve.

MD998801

<<D>> 5TH SPEED-REVERSE SYNCHRONIZER HUB REMOVAL

- 1. Using special tool MD998801, support the 4th speed gear, and then set them on the press.
- 2. Push down on the output shaft with the press and remove the 5th speed-reverse synchronizer hub.





AKX00838AB



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TAPER ROLLER

BEARING



MD998801



<<E>>> 3RD SPEED GEAR REMOVAL

- 1. Using special tool MD998917, support the 2nd speed gear, and then set them on the press.
- 2. Push down on the output shaft with the press and remove the 3rd speed gear.

MD998917 AKX00840AB

<<F>> 2ND SPEED GEAR SLEEVE REMOVAL

- 1. Using special tool MD998917, support the 1st speed gear, and then set them on the press.
- 2. Push down on the output shaft with the press and remove the 2nd speed gear sleeve.



<<G>>> 1ST SPEED GEAR SLEEVE REMOVAL

- 1. Using special tool MD998801, support the 1st speed gear sleeve, and then set them on the press.
- 2. Push down on the output shaft with the press and remove the 1st speed gear sleeve.



TSB Revision	
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MD998801

TAPER ROLLER

AKX00893AB

BEARING

<<H>> ROLLER BEARING INNER RACE REMOVAL

- 1. Using special tool MD998917, support the roller bearing inner race, and then set them on the press.
- 2. Push down on the output shaft with the press and remove the roller bearing inner race.

<<I>> TAPER ROLLER BEARING REMOVAL

- 1. Using special tool MD998801, support the taper roller bearing, and then set them on the press.
- 2. Push down on the output shaft with the press and remove the taper roller bearing.

ASSEMBLY SERVICE POINTS

>>A<< OIL SEAL INSTALLATION

Make sure that the oil seal is pressed into the position shown in the illustration.





- 1. Using special tool MD998801, support the output shaft gear, and then set them on the press.
- 2. Using special tools MD998812 and MD998818, press install the roller bearing inner race with the press.





>>C<< TAPER ROLLER BEARING INSTALLATION

- 1. Using special tool MD998801, support the output shaft gear, and then set them on the press.
- 2. Using special tools MD998812 and MD998819, press install the taper roller bearing with the press.



>>D<< SNAP RING INSTALLATION

- 1. Install the thickest snap ring that can be fitted in the groove of output shaft.
- 2. Make sure that the roller bearing inner race end play meets the standard value.

Standard value: 0 – 0.12 mm (0 – 0.0047 inch)





>>E<<1ST SPEED GEAR SLEEVE INSTALLATION

- 1. Set the output shaft on the press support stand.
- 2. Using special tools MD998812, MD998814, MD998825 <F5M42>, MD998824 <F5M51> and MD998364 <F5M51>, press install the 1st speed gear sleeve with the press.

TSB Revision	
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>>F<< SYNCHRONIZER SPRING INSTALLATION

Install the synchronizer spring to the illustrated position of the outer synchronizer ring.









>>G<< 1ST-2ND SPEED SYNCHRONIZER HUB INSTALLATION

- 1. Set the output shaft on the press support stand.
- 2. Check that the 1st-2nd speed synchronizer hub is in the correct installation direction, and put it on the output shaft.
- 3. Using special tools MD998812, MD998814, MD998825 <F5M42>, MD998824 <F5M51> and MD998364 <F5M51>, press install the 1st-2nd speed synchronizer hub with the press.
- 4. Make sure that the outer synchronizer ring on the 1st speed gear side can rotate freely.



>>H<< SYNCHRONIZER SLEEVE INSTALLATION

1. Check that the synchronizer sleeve is in the correct direction for installation, and install it on the 1st-2nd speed synchronizer hub.

- TEETH WITH RAISED TIPS
- 2. Install the synchronizer sleeve so that the areas with teeth that have raised tips (three areas total) are aligned with the areas on the synchronizer hub that have deep grooves between the teeth (three areas total).





>>I<< 2ND SPEED GEAR SLEEVE INSTALLATION

- 1. Set the output shaft on the press support stand.
- 2. Using special tools MD998812, MD998813, MD998822 <F5M42>, MD998824 <F5M51> and MD998364 <F5M51>, press install the 2nd speed sleeve onto the output shaft.





>>J<< 3RD SPEED GEAR INSTALLATION

- 1. Check that the 2nd speed gear and the outer synchronizer ring have been properly installed. Also, make sure the claws on the synchronizer cone (four places) are correctly fitted into the holes in the 2nd speed gear (four places).
- Using special tools MD998812, MD998814, MD998822
 <F5M42>, MD998824 <F5M51> and MD998364 <F5M51>, press install the 3rd speed gear onto the output shaft.
- 3. Make sure that the 2nd speed gear and the outer synchronizer ring can rotate freely.



>>K<< SNAP RING INSTALLATION

- 1. Install the thickest snap ring that can be fitted in the groove of output shaft.
- 2. Make sure that the 3rd speed gear end play meets the standard value.

Standard value: 0 – 0.09 mm (0 – 0.0035 inch)



>>L<< 4TH SPEED GEAR INSTALLATION

- 1. Set the output shaft on the press support stand.
- 2. Using special tools MD998812, MD998813, MD998819 <F5M42>, MD998821 <F5M51> and MD998364 <F5M51>, press install the 4th speed gear onto the output shaft.



>>M<< 5TH SPEED GEAR SLEEVE INSTALLATION

Using special tools MD998812, MD998813, MD998819 <F5M42>, MD998821 <F5M51> and MD998364 <F5M51>, press install the 5th speed gear sleeve onto the output shaft.



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>>N<< SYNCHRONIZER SPRING INSTALLATION

Install the synchronizer spring to the illustrated position of the synchronizer ring.





>>O<< SYNCHRONIZER RING INSTALLATION

There is a 5th speed synchronizer ring and a reverse synchronizer ring. Be careful not to confuse the two when installing, as a mistake can effect the shift feeling.

1. Check for the presence of identification notches on the synchronizer ring.

No notches: 5th speed synchronizer ring Six notches: Reverse synchronizer ring <F5M42> Three notches: Reverse synchronizer ring <F5M51>

2. Install the synchronizer ring so that it does not incline toward the cone of the gear.

>>P<< 5TH SPEED-REVERSE SYNCHRONIZER HUB INSTALLATION

- 1. Set the output shaft on the press support stand.
- 2. Make sure that the synchronizer ring is fitted correctly on the cone of the 5th speed gear.
- 3. Check that the 5th speed-reverse synchronizer hub is oriented correctly for installation, and fit it on the output shaft.

TSB Revision	
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MANUAL TRANSAXLE OVERHAUL OUTPUT SHAFT



- Using special tools MD98812, MD998813, MD998819 <F5M42>, MD998821 <F5M51> and MD998364 <F5M51>, press install the 5th speed-reverse synchronizer hub with the press.
- 5. Make sure that the synchronizer ring on the 5th speed gear side can rotate freely.





>>Q<< REVERSE GEAR SLEEVE INSTALLATION

- 1. Make sure the synchronizer ring, reverse gear and needle roller bearing have been correctly installed.
- 2. Using special tools MD998812, MD998818 <F5M42>, MD998820 <F5M51> and MD998364 <F5M51>, press fit the reverse gear sleeve. Make sure that the reverse gear and the synchronizer ring can rotate freely during the pressing process.

MANUAL TRANSAXLE OVERHAUL OUTPUT SHAFT



>>R<< BALL BEARING INSTALLATION

- 1. Check the installation direction of the ball bearing.
- 2. Using special tools MD998812 and MD998818, press install the ball bearing.

TAPER ROLLER BEARING MD998364 AKX00903AB

>>S<< TAPER ROLLER BEARING INSTALLATION

Using special tools MD998812, MD998819 and MD998364, press install the taper roller bearing.

<F5M42>



>>T<< SNAP RING INSTALLATION

- 1. Install the thickest snap ring that can be fitted in the groove of output shaft.
- 2. Make sure that the ball bearing <F5M42> or taper roller bearing <F5M51> end play meets the standard value.

Standard value: 0 – 0.09 mm (0 – 0.0035 inch)

TSB Revision	

INSPECTION

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OUTPUT SHAFT

- 1. Check the splines for damage and wear.
- 2. Check that the helical gear teeth surfaces are not damaged or worn.

AKX00938

NEEDLE ROLLER BEARING

- 1. Combine the needle roller bearing with the bearing sleeve and gear, and check that it rotates smoothly without noise or play.
- 2. Check the needle roller bearing cage for deformation.

SYNCHRONIZER RING

- 1. Check if the clutch gear teeth are damaged or broken.
- 2. Check internal surface for damage, wear and broken threads.
- STREAM AND AKX00915
- Δ GEAR SYNCHRO-NIZER RING AKX00927AB
- 3. Force the synchronizer ring toward the clutch gear and check clearance "A". If "A" is less than the limit, replace the synchronizer ring.

Minimum limit: 0.5 mm (0.020 inch)

TSB	Revision





AKX00933

OUTER SYNCHRONIZER RING/INNER SYNCHRONIZER RING/SYNCHRONIZER CONE

When replacing, replace the outer ring, inner ring and cone as a set.

1. Check that the clutch gear tooth surfaces and cone surfaces are not damaged or broken.

2. Install the outer ring, inner ring and cone, force them toward the gear, and check clearance "A". If "A" is less than the limit, replace them as a set.

Minimum limit: 0.5 mm (0.020 inch)

SYNCHRONIZER SLEEVE AND HUB

- 1. Combine the synchronizer sleeve and hub, and check that they slide smoothly.
- 2. Check that the sleeve is free from damage at its inside splines ends.

SYNCHRONIZER SPRING

Check that the spring is not sagging, deformed or broken.









SPEED GEARS

- 1. Check that the helical and clutch gear tooth surfaces are not damaged or worn.
- 2. Check that the synchronizer cone surfaces are not roughened, damaged or worn.
- 3. Check that the gear inside diameter and front and rear surfaces are not damaged and worn.

REVERSE IDLER GEAR

DISASSEMBLY AND ASSEMBLY

M1222012500028



THRUST WAS
 STEEL BALL

1.

2.

SPEEDOMETER GEAR

DISASSEMBLY AND ASSEMBLY

M1222003400023







AKX00804AB

DISASSEMBLY STEPS

- 1. E-CLIP
- 2. SPEEDOMETER DRIVEN GEAR

- DISASSEMBLY STEPS
- 3. O-RING
- 4. SLEEVE

SELECT LEVER

DISASSEMBLY AND ASSEMBLY

M1222012800029



DISASSEMBLY STEPS

- 1. DUST COVER
- 2. NUT
- 3. SPRING WASHER
- 4. WASHER
- >>A<< 5. SELECT LEVER BUSHING

DISASSEMBLY STEPS

- 6. SELECT LEVER SHOE
- 7. SELECT LEVER
- >>A<< 8. SELECT LEVER BUSHING
- >>A<< 9. DUST COVER
 - 10. SELECT LEVER SHAFT

ASSEMBLY SERVICE POINT

>>A<< DUST COVER AND SELECT LEVER BUSHING INSTALLATION

Use the figure to make sure the dust cover and select lever bushing installation direction is correct, and the distinguished parts are correctly assembled.



CONTROL HOUSING

DISASSEMBLY AND ASSEMBLY

M1222013100023



DISASSEMBLY STEPS

>>F<< <<A>>

- 1. LOCK PIN
- **INTERLOCK PLATE** 2.
- 3. CONTROL FINGER
- 4. PIN
- 5. **RETURN SPRING**
- STOPPER PLATE 6.
- >>E<< SPRING PIN 7. >>D<<
 - 8. SPRING PIN
 - 9. STOPPER BODY
 - 10. NEUTRAL RETURN SPRING

- **DISASSEMBLY STEPS**
- 11. SPACER
- 12. CONTROL SHAFT
- >>C<< 13. AIR BREATHER
 - 14. CONTROL SHAFT BOOT
- >>B<< 15. OIL SEAL
- >>A<< 16. NEEDLE BEARING
 - 17. SPRING WASHER
 - 18. STOPPER BRACKET
 - 19. CONTROL HOUSING

MANUAL TRANSAXLE OVERHAUL CONTROL HOUSING

DISASSEMBLY SERVICE POINT

<<A>> LOCK PIN REMOVAL

Drive the lock pin out of position from the direction shown.



ASSEMBLY SERVICE POINTS

>>A<< NEEDLE BEARING INSTALLATION





>>B<< OIL SEAL INSTALLATION

Apply gear oil (Hypoid gear oil SAE 75W-90 or 75W-85W conforming to API classification GL-4) to the oil seal lip area.



>>C<< AIR BREATHER INSTALLATION

1. Apply sealant (3M[™] AAD Part Number 8001 or equivalent) to the inserting portion of air breather.



MANUAL TRANSAXLE OVERHAUL CONTROL HOUSING



2. Install the air breather so that the embossed mark is in the direction shown in the figure.



>>D<< SPRING PIN INSTALLATION

Drive in the spring pin so that the slit is in the direction shown in the figure.

>>E<< SPRING PIN INSTALLATION

Drive in the spring pin so that the slit is in the direction shown in the figure.



>>F<<LOCK PIN INSTALLATION

Drive the lock pin in from the direction shown in the figure.



TSB Re	vision	
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CLUTCH HOUSING

DISASSEMBLY AND ASSEMBLY

<F5M42>



- >>G<< 2. OIL SEAL
- >>F<< 3. OIL SEAL

Required Special Tools:

- MB990926: Installer Adapter <F5M42>
- MB990928: Installer Adapter <F5M51>
- MB990934: Installer Adapter <F5M42>
- MB990935: Installer Adapter
- MB990938: Handle
- MB991445: Bushing Remover and Installer Base <F5M51>

- 7. CLUTCH HOUSING
- MD998325: Differential Oil Seal Installer <F5M42>
- MD998346: Bearing Outer Race Remover <F5M42>
- MD998772: Valve Spring Compressor <F5M42>
- MD998800: Differential Oil Seal Installer <F5M51>
- MD999566: Claw



DISASSEMBLY STEPS

- 1. CLUTCH RELEASE BEARING
- RETAINER
- >>**G<<** 2. OIL SEAL
- >>F<< 3. OIL SEAL
- <<A>> >>E<< 4. OUTER RACE

DISASSEMBLY STEPS

- >>C<< 5. OUTER RACE
- >>**B<<** 6. **BUSHING***
- >>**A**<< 7. COVER-A
- >>**A**<< 8. COVER-B

<>

9. **CLUTCH HOUSING**

DISASSEMBLY SERVICE POINT

<<A>> OUTER RACE REMOVAL

Using special tool MD999566, remove the outer race from the clutch housing.







<> OUTER RACE REMOVAL

- 1. Set special tools MD998772 and MD998346 as indicated in the figure.
- 2. Turn the nut on special tool MD998346 to pull up on the tool and take out the outer race.



Using special tool MD999566, remove the outer race from the clutch housing.



TSB Revision	
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ASSEMBLY SERVICE POINTS

>>A<< COVER-B/COVER-A INSTALLATION

Install the covers directed as shown in the illustration.



<F5M42>

SEAM OF BUSHING AIR VENT 6

AKX00862AB

- <F5M51> SEAM OF BUSHING AIR VENT AKX00906AB



2. Be sure the bushing is fully seated as shown. It must be 1 mm (0.04 inch) below the housing surface.

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>>B<< BUSHING INSTALLATION

1. Press fit the bushing so the seam is away from the air vent.

O

MODEL NUMBER STAMPED SIDE AKX00863AB

MB990934

AKX00864AB

N

>>C<< OUTER RACE INSTALLATION

1. Check the installation direction of the outer race.

2. Using special tools MB990938 and MB990934, press fit the outer race into the clutch housing.

>>D<< OUTER RACE INSTALLATION

Using special tools MB990938 and MB990935, press fit the outer race into the clutch housing.





>>E<< OUTER RACE INSTALLATION

- 1. Check the installation direction of the outer race.
- 2. Using special tools MB990938, MB990935 <F5M42> and MB991445 <F5M51>, press fit the outer race into the clutch housing.



>>F<<OIL SEAL INSTALLATION

1. Apply gear oil (Hypoid gear oil SAE 75W-90 or 75W-85W conforming to API classification GL-4) to the oil seal lip.

Using special tool MD998325 <F5M42> or MD998800
 <F5M51>, press fit the oil seal into the clutch housing.



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MB990928

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>>G<< OIL SEAL INSTALLATION

1. Apply transmission oil (Hypoid gear oil SAE 75W-90 or 75W-85W conforming to API classification GL-4) to the oil seal lip.

2. Using special tools MB990938, MB990926 <F5M42> and MB990928 <F5M51>, press fit the oil seal into the clutch housing.

TSB Revision

AKX00909AB

TRANSMISSION CASE

DISASSEMBLY AND ASSEMBLY

<F5M42>



DISASSEMBLY STEPS

- >>C<< 1. OIL SEAL
- >>B<< **NEEDLE BEARING*** 2.
 - 3. OIL GUIDE

Required Special Tools:

• MD998325: Differential Oil Seal Installer <F5M42>

DISASSEMBLY STEPS

- SNAP RING 4.
- TRANSAXLE
- MD998800: Differential Oil Seal Installer <F5M51>

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- >>A<< 5. BUSHING*
 - 6.

<F5M51>



DISASSEMBLY STEPS

- >>C<< 1. OIL SEAL
- >>B<< 2. NEEDLE BEARING*
 - 3 OIL GUIDE
 - 4. OIL GUIDE

DISASSEMBLY STEPS (Continued)

>>A<< 5. BUSHING* 6. TRANSAXLE

NOTE: *:Refer to the needle bearing and bushing installation procedures only when replacing the transaxle case.

ASSEMBLY SERVICE POINTS

>>A<< BUSHING INSTALLATION

1. Press fit the bushing so the seam is away from the air vent.





 Be sure the bushing is fully seated as shown. It must be 3 mm (0.12 inch) below the housing surface.

>>B<< NEEDLE BEARING INSTALLATION

- 1. Check the installation direction of the needle bearing.
- 2. Press fit the needle bearing until it is flush with the case.



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>>C<<OIL SEAL INSTALLATION

1. Apply gear oil (Hypoid gear oil SAE 75W-90 or 75W-85W conforming to API classification GL-4).

2. Using special tool MD998325 <F5M42> or MD998800 <F5M51>, press fit the oil seal into the transaxle case.

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AKX00911AB

DIFFERENTIAL

DISASSEMBLY AND ASSEMBLY

M1222002500027



AKX00771AB

DISASSEMBLY STEPS

- >>D<< 1. DIFFERENTIAL DRIVE GEAR
- <<A>>
- >>C<< 2. TAPER ROLLER BEARING >>B<< 3. LOCK PIN
- >>A<< 4. PINION SHAFT
- >>A<< 5. PINION SHA

Required Special Tools:

- MD998801: Bearing Remover
- MD998812: Installer Cap
- MD998819: Installer Adapter (40)

- DISASSEMBLY STEPS
- >>**A**<< 6. WASHER
- >>A<< 7. SIDE GEAR
- >>**A**<< 8. SPACER
 - 9. DIFFERENTIAL CASE

MD998801 AKX00873AB

AKX00768

DISASSEMBLY SERVICE POINT

<<A>> TAPER ROLLER BEARING REMOVAL

- 1. Using special tool MD998801, support the taper roller bearing, and then set them on the press.
- 2. Push down on the differential case with the press and take out the bearing.

ASSEMBLY SERVICE POINTS

>>A<< SPACER/SIDE GEAR/WASHER/PINION/PINION SHAFT INSTALLATION

1. After a spacer has been mounted on the back surface of the side gear, install the side gear in the differential case.

NOTE: When a new side gear is to be installed, mount a medium thickness spacer [0.93 – 1.00 mm (0.0366 – 0.0395 inch].

- 2. Set the washer on the back of each pinion, and put both pinions simultaneously in mesh with the side gears. While rotating them, install them in position.
- 3. Insert the pinion shaft.





- 4. Measure the backlash between the side gear and pinion. Standard value: 0.025 - 0.150 mm (0.0010 - 0.0059 inch)
- 5. If the backlash is out of specification, select a spacer and remeasure the backlash.

NOTE: Adjust until the backlashes on both sides are equal.

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>>B<<LOCK PIN INSTALLATION

Install the lock pin so that it will be oriented in the direction shown.



>>C<< TAPER ROLLER BEARING INSTALLATION

Using special tools MD998812 and MD998819, press install the taper roller bearing.

>>D<< DIFFERENTIAL DRIVE GEAR INSTALLATION

1. Apply a sealant (3M[™]AAD Part Number 8730 or 8731 or equivalent) to the entire threaded portion of the bolt.





- 2. Tighten to the specified torque in the illustrated sequence.
 - Tightening torque: 132 \pm 5 N·m (98 \pm 4 ft-lb)



AKX00949AB

SPECIFICATIONS FASTENER TIGHTENING SPECIFICATIONS

M1222012100020

ITEMS	SPECIFICATIONS
Roll stopper bracket mounting bolt	69 ± 10 N·m (51 ± 7 ft-lb)
Shift cable bracket mounting bolt	19 ± 3 N·m (14 ± 2 ft-lb)
Select lever mounting bolt	19 ± 3 N·m (14 ± 2 ft-lb)
Speedometer gear mounting bolt	4 ± 1 N⋅m (35 ± 9 in-lb)
Backup light switch	32 ± 2 N·m (24 ± 1 ft-lb)
Interlock plate bolt	30 ± 3 N·m (22 ± 2 ft-lb)
Poppet spring	32 ± 2 N·m (24 ± 1 ft-lb)
Control housing mounting bolt	19 ± 3 N·m (14 ± 2 ft-lb)
Under cover mounting bolt	7 ± 1 N·m (61 ± 9 in-lb)
Reverse idler gear shaft mounting bolt	48 ± 6 N·m (35 ± 4 ft-lb)
Clutch housing-transaxle case mounting bolt	44 ± 5 N·m (33 ± 4 ft-lb)
Front bearing retainer mounting bolt <f5m42></f5m42>	19 ± 3 N·m (14 ± 2 ft-lb)
Select lever mounting nut	12 ± 1 N·m (104 ± 9 in-lb)
Stopper bracket mounting bolt	25 ± 3 N·m (19 ± 2 ft-lb)
Clutch release bearing retainer mounting bolt	9.8 ± 2 N·m (87 ± 17 in-lb)
Differential drive gear mounting bolt	132 ± 5 N·m (98 ± 4 ft-lb)

MANUAL TRANSAXLE OVERHAUL SPECIFICATIONS

GENERAL SPECIFICATIONS

ITEMS		SPECIFICATIONS			
Model		F5M42	F5M51-1-F5N2	F5M51-1-S5N	
Applicable engine		4G64	6G72		
Туре		5-speed transaxle floor	5-speed transaxle floor shift		
Gear ratio	1st	3.583	3.333	2.928	
	2nd	1.947	2.105	1.950	
	3rd	1.379	1.407		
	4th	1.030	1.031		
	5th	0.767	0.761	0.720	
	Reverse	3.363	3.416		
Final reduction ratio		3.722	3.736	4.111	
Speedometer gear ratio (driven/drive)		29/36	28/36	•	

SERVICE SPECIFICATIONS

		M1222000300027
ITEMS	STANDARD VALUE	MINIMUM LIMIT
Input shaft end play <f5m51> mm (in)</f5m51>	0.05 - 0.17 (0.020 - 0.0067)	_
Input shaft front bearing end play mm (in)	0 – 0.12 (0 – 0.0047)	-
Input shaft rear bearing end play mm (in)	0 - 0.12 (0 - 0.0047)	-
Input shaft 5th speed gear end play mm (in)	0 – 0.09 (0 – 0.0035)	_
Output shaft roller bearing inner race end play <f5m42> mm (in)</f5m42>	0 - 0.12 (0 - 0.0047)	-
Output shaft ball bearing end play <f5m42> mm (in)</f5m42>	0 – 0.09 (0 – 0.0035)	-
Output shaft preload <f5m51> mm (in)</f5m51>	0.13 – 0.18 (0.0051 – 0.0071)	-
Output shaft taper roller bearing end play <f5m51> mm (in)</f5m51>	0 – 0.09 (0 – 0.0035)	-
Output shaft 3rd speed gear end play mm (in)	0 – 0.09 (0 – 0.0035)	_
Differential pinion backlash mm (in)	0.025 - 0.150 (0.0010 - 0.0059)	-
Differential case preload mm (in)	0.05 - 0.11 (0.0020 - 0.0043)	-
Synchronizer ring back surface to gear clearance mm (in)	-	0.5 (0.020)

SEALANTS AND ADHESIVES

M122200050	0021

ITEM	SPECIFIED SEALANT
Clutch housing-transaxle case mating surface	MITSUBISHI Genuine sealant part No. MD997740 or
Control housing-transaxle case mating surface	equivalent
Under cover-transaxle case mating surface	
Air breather	3M™AAD Part No.8001 or equivalent
Differential drive gear bolt	3M™AAD Part No.8730 or 8731 or equivalent

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M1222000200075

LUBRICANTS

M1222000400024

ITEMS	SPECIFIED SEALANTS
Driveshaft oil seal lip gear oil	Hypoid gear oil SAE 75W-90 or 75W-85W conforming to
Input shaft oil seal lip gear oil	API classification GL-4
Control shaft oil seal lip gear oil	
Select lever shoe	MITSUBISHI genuine grease part No.0101011 or equivalent

SNAP RINGS, SPACERS AND THRUST PLATE FOR ADJUSTMENT

M1222012000023

Snap ring

(For adjustment of input shaft front bearing end play) <F5M42>

THICKNESS mm (in)	IDENTIFICATION SYMBOL	PART NO.	THICKNESS mm (in)	IDENTIFICATION SYMBOL	PART NO.
2.24 (0.0882) 2.31 (0.0909)	None Blue	MD706537 MD706538	2.38 (0.0937)	Brown	MD706539

Snap ring

(For adjustment of input shaft front bearing end play) <F5M51> (For adjustment of input shaft rear bearing end play) <F5M42> (For adjustment of output shaft front bearing end play) <F5M42>

THICKNESS mm (in)	IDENTIFICATION SYMBOL	PART NO.	THICKNESS mm (in)	IDENTIFICATION SYMBOL	PART NO.
1.43 (0.0563) 1.51 (0.0594)	Green (2) White (2)	MD746708 MD746709	1.59 (0.0626)	Yellow (2)	MD746710

Thrust plate <F5M42>

(For adjustment of input shaft 5th speed gear end play)

THICKNESS mm (in)	IDENTIFICATION SYMBOL	PART NO.	THICKNESS mm (in)	IDENTIFICATION SYMBOL	PART NO.
2.82 (0.1110)	0	MD748015	2.98 (0.1173)	6	MD748019
2.86 (0.1126)	2	MD748016	3.02 (0.1189)	7	MD748020
2.90 (0.1142)	3	MD748017	3.06 (0.1205)	8	MD748021
2.94 (0.1157)	5	MD748018	3.10 (0.1220)	9	MD748022

Thrust plate <F5M51>

(For adjustment of input shaft 5th speed gear end play)

THICKNESS mm (in)	IDENTIFICATION SYMBOL	PART NO.	THICKNESS mm (in)	IDENTIFICATION SYMBOL	PART NO.
3.82 (0.1504)	0	MD748465	3.98 (0.1567)	6	MD748469
3.86 (0.1520)	2	MD748466	4.02 (0.1583)	7	MD748470
3.90 (0.1535)	3	MD748467	4.06 (0.1598)	8	MD748471
3.94 (0.1551)	5	MD748468	4.10 (0.1614)	9	MD748472

Snap ring <F5M51>

(For adjustment of input shaft rear bearing end play)

THICKNESS mm (in)	IDENTIFICATION SYMBOL	PART NO.	THICKNESS mm (in)	IDENTIFICATION SYMBOL	PART NO.
1.44 (0.0567) 1.51 (0.0594)	None Blue	MD746602 MD746603	1.58 (0.0622)	Brown	MD746604
Snap ring <F5M42> (For adjustment of output shaft 3rd speed gear end play)

THICKNESS mm (in)	IDENTIFICATION SYMBOL	PART NO.	THICKNESS mm (in)	IDENTIFICATION SYMBOL	PART NO.
2.81 (0.1106)	Green	MD745799	2.97 (0.1169)	Orange	MD745803
2.85 (0.1122)	White	MD745800	3.01 (0.1185)	Red	MD745804
2.89 (0.1138)	Yellow	MD745801	3.05 (0.1201)	Pink	MD745805
2.93 (0.1154)	Black	MD745802	3.09 (0.1217)	Blue	MD745806

Snap ring <F5M51>

(For adjustment of output shaft 3rd speed gear end play)

THICKNESS mm (in)	IDENTIFICATION SYMBOL	PART NO.	THICKNESS mm (in)	IDENTIFICATION SYMBOL	PART NO.
2.81 (0.1106)	None	MD746594	2.97 (0.1169)	Green	MD746598
2.85 (0.1122)	Blue	MD746595	2.97 (0.1169)	Black	MD746599
2.89 (0.1138)	Brown	MD746596	3.05 (0.1201)	White	MD746600
2.93 (0.1154)	Yellow	MD746597	3.09 (0.1217)	Orange	MD746601

Snap ring <F5M42>

(For adjustment of output shaft rear bearing end play)

THICKNESS mm (in)	IDENTIFICATION SYMBOL	PART NO.	THICKNESS mm (in)	IDENTIFICATION SYMBOL	PART NO.
2.31 (0.0909)	Black (2)	MD747149	2.55 (0.1004)	Yellow	MD746566
2.35 (0.0925)	None	MD746561	2.59 (0.1020)	Black	MD746567
2.39 (0.0941)	Blue	MD746562	2.63 (0.1035)	Orange	MD746568
2.43 (0.0957)	Brown	MD746563	2.67 (0.1051)	Blue	MD746569
2.47 (0.0972)	Green	MD746564	2.71 (0.1067)	Brown	MD746570
2.51 (0.0988)	White	MD746565			

Snap ring <F5M51>

(For adjustment of output shaft rear bearing end play)

THICKNESS mm (in)	IDENTIFICATION SYMBOL	PART NO.	THICKNESS mm (in)	IDENTIFICATION SYMBOL	PART NO.
1.36 (0.0535)	Yellow	MD748449	1.55 (0.0610)	White	MD748452
1.40 (0.0551)	Green	MD748450	1.58 (0.0622)	Brown	MD746604
1.44 (0.0567)	None	MD746602	1.63 (0.0642)	Orange	MD748453
1.44 (0.0567)	Black	MD748451	1.63 (0.0642)	Blue	MD748454
1.51 (0.0594)	Blue	MD746603	1.68 (0.0661)		

Spacer <F5M51>

(For adjustment of input shaft end play)

THICKNESS mm (in)	IDENTIFICATION SYMBOL	PART NO.	THICKNESS mm (in)	IDENTIFICATION SYMBOL	PART NO.
1.34 (0.0528)	34	MD723600	1.61 (0.0634)	61	MD723609
1.43 (0.0563)	43	MD723603	1.70 (0.0669)	70	MD756760
1.52 (0.0598)	52	MD723606	1.79 (0.0705)	79	MD756763

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Spacer <F5M51>

(For adjustment of output shaft preload)

THICKNESS mm (in)	IDENTIFICATION SYMBOL	PART NO.	THICKNESS mm (in)	IDENTIFICATION SYMBOL	PART NO.
0.86 (0.0339)	86	MD720938	1.19 (0.0469)	L	MD710456
0.89 (0.0350)	89	MD720939	1.22 (0.0480)	G	MD700271
0.92 (0.0362)	92	MD720940	1.25 (0.0492)	М	MD710457
0.95 (0.0374)	95	MD720941	1.28 (0.0504)	N	MD710458
0.98 (0.0386)	98	MD720942	1.31 (0.0516)	E	MD706574
1.01 (0.0398)	01	MD720943	1.34 (0.0528)	0	MD710459
1.04 (0.0409)	04	MD720944	1.37 (0.0539)	Р	MD710460
1.07 (0.0421)	07	MD720945	1.40 (0.0551)	None	MD706573
1.10 (0.0433)	J	MD710454	1.43 (0.0563)	Q	MD710461
1.13 (0.0445)	D	MD700270	1.46 (0.0575)	R	MD710462
1.16 (0.0457)	К	MD710455			

Spacer

(For adjustment of differential case preload)

THICKNESS mm (in)	IDENTIFICATION SYMBOL	PART NO.	THICKNESS mm (in)	IDENTIFICATION SYMBOL	PART NO.
0.71 (0.0279)	71	MD754475	1.01 (0.0398)	01	MD720943
0.74 (0.0292)	74	MD727660	1.04 (0.0409)	04	MD720944
0.77 (0.0303)	77	MD754476	1.07 (0.0421)	07	MD720945
0.80 (0.0315)	80	MD727661	1.10 (0.0433)	J	MD710454
0.83 (0.0327)	83	MD720937	1.13 (0.0445)	D	MD700270
0.86 (0.0339)	86	MD720938	1.16 (0.0457)	К	MD710455
0.89 (0.0350)	89	MD720939	1.19 (0.0469)	L	MD710456
0.92 (0.0362)	92	MD720940	1.22 (0.0480)	G	MD700271
0.95 (0.0374)	95	MD720941	1.25 (0.0492)	M	MD710457
0.98 (0.0386)	98	MD720942			

Spacer

(For adjustment of differential case backlash)

THICKNESS mm (in)	IDENTIFICATION SYMBOL	PART NO.	THICKNESS mm (in)	IDENTIFICATION SYMBOL	PART NO.
0.72 – 0.79 (0.0283 – 0.0311)	_	MA180862	1.06 – 1.10 (0.0417 – 0.0425)	-	MR581570
0.85 – 0.90 (0.0335 – 0.0354)	_	MA180861	1.12 – 1.16 (0.0441 – 0.0457)	-	MA180876
0.94 – 0.98 (0.0370 – 0.0386)	_	MA180860	1.16 – 1.20 (0.0457 – 0.0472)	_	MR581571
1.02 – 1.06 (0.0402 – 0.0417)	_	MA180875			

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