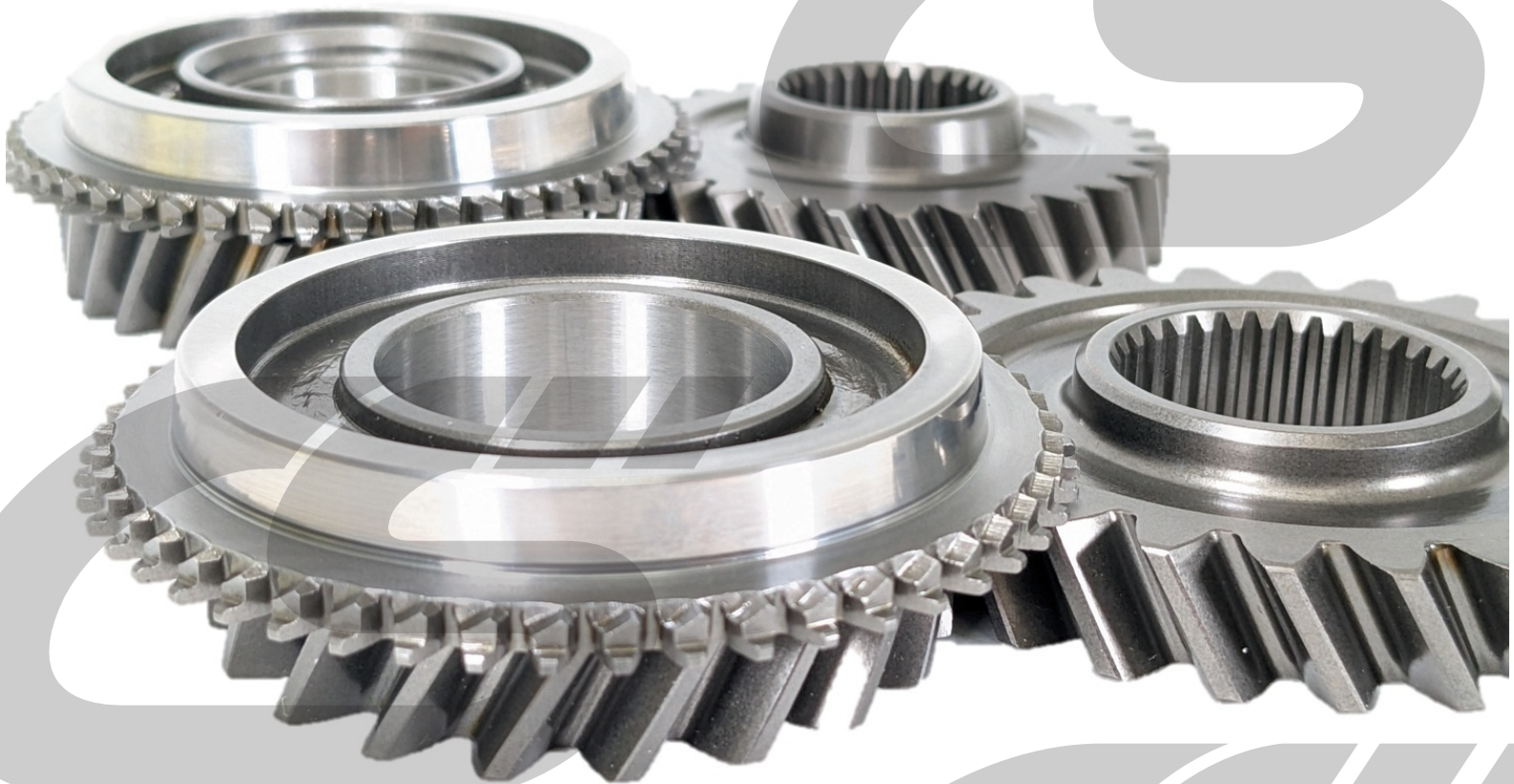


CorkSport Performance

AXM-6-420 Upgraded Gears

Upgraded 3rd and 4th gears for 2014-2018 Mazda3, 6, CX3 Manual Transmission

Written By: Quintin Gunn



INTRODUCTION

The provided instructions are intended to supplement instructions in the OEM service manual.


It is highly recommended that installation is performed by professionals with the correct equipment.

Step 1 — Getting Started



- First and foremost; THANK YOU for becoming a part of the CorkSport Family. We hope to bring you the highest level of Parts, Customer Service, & Support

 This installation guide assumes the transmission is already removed from the vehicle and is ready to be disassembled

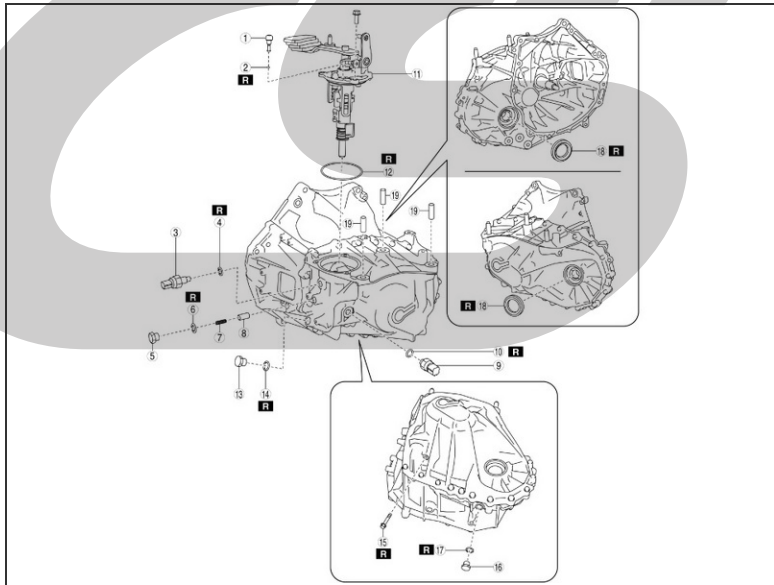
 Professional installation and equipment is required

Step 2 — Pre-Disassembly Notes



- Clean the outside of the transmission as best as possible to prevent ingress of dirt/debris
 - Perform disassembly in as dust-free an environment as possible
 - Clean each disassembled part as you go and set out to dry
 - ⓘ Clean using a degreaser
 - ⓘ Clean oil holes and passages with compressed air
- ⚠ Wear eye protection to prevent serious injury**
- Verify condition of each component as you disassemble. Replace parts if necessary

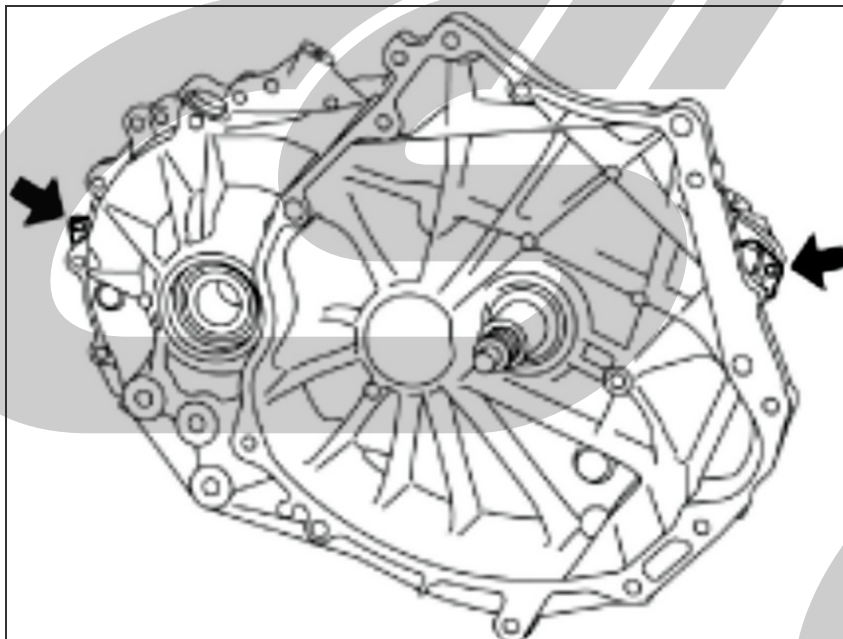
Step 3 — Remove Auxiliary Components from the Transmission



Remove Auxillary Components	
1	Breather
2	O-Ring
3	Neutral Switch
4	Gasket
5	Plug
6	Gasket
7	Spring
8	Detent Ball Pin
9	Reverse light switch
10	Gasket
11	Shift Control Module
12	O-Ring
13	Oil Level Plug
14	Gasket
15	Reverse Gear Shaft Anchor Bolt
16	Drain Plug
17	Gasket
18	Oil Seal
19	Stud Bolt

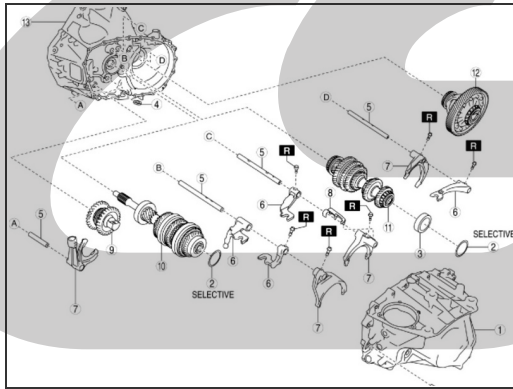
- Remove the outside components of the transmission in the order shown

Step 4 — Open the Transmission

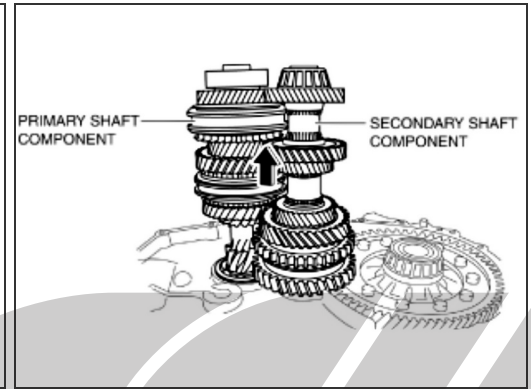


- Remove the Bolts surrounding the transmission that hold the two halves together
- With a soft blow hammer, tap the locations shown in the figure to loosen the silicone connection

Step 5 — Remove the Interior Components

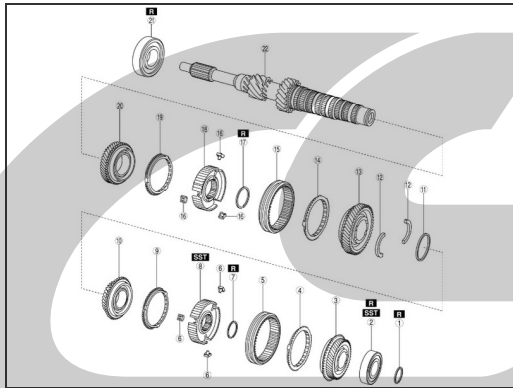


Remove Interior Components	
1	Open the Transmission
2	Shim
3	Bearing outer race
4	Magnet
5	Shift Rod
6	Shift Rod End
7	Shift Fork
8	Oil Path
9	Reverse Idler Gear
10	Primary Shaft
11	Secondary Shaft

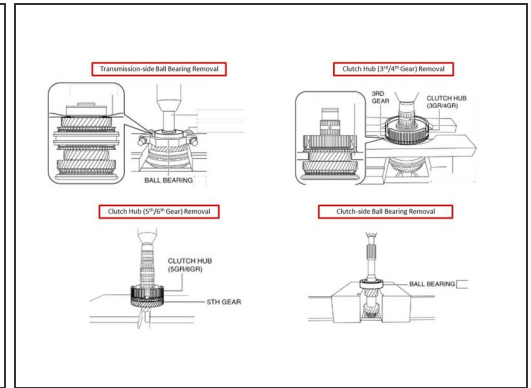


- Remove the interior components in the order shown in the figure and chart
- ⓘ Remove the Primary and Secondary Shafts and their components as a single unit
- ⓘ It is not necessary to remove the Differential

Step 6 — Primary Shaft Disassembly

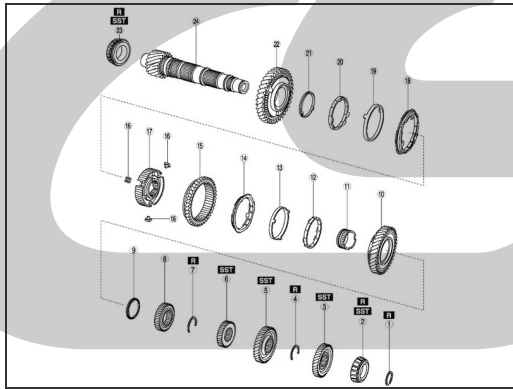


Primary Shaft Disassembly	
1	Clip
2	Ball Bearing - Transmission side
3	4th Gear
4	Syncro Ring
5	Clutch Hub Sleeve
6	Syncro Key
7	Clip
8	Clutch Hub (3rd/4th Gear)
9	Syncro Ring
10	3rd Gear

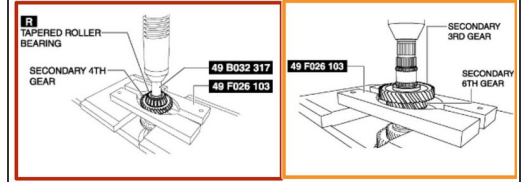


- Disassemble the Primary Shaft in the order shown in the figures
- When removing components on the Primary Shaft, position the shaft in a Hydraulic Press as shown in the 3rd diagram

Step 7 — Secondary Shaft Disassembly



Secondary Shaft Disassembly	
1	Clip
2	Tapered Roller Bearing - Transmission Side
3	Secondary 4th Gear
4	Clip
5	Secondary 3rd Gear
6	Secondary 6th Gear



- Disassemble the Secondary Shaft in the order shown in the figures
- Remove the Tapered Roller Bearing and Secondary 4th Gear at the same time using a press as shown in the diagram
- Remove the Secondary 3rd and 6th Gears using a press as shown in the diagram
- ⓘ After removing the Secondary 6th Gear, it is okay to leave the remaining components on the Secondary Shaft

Step 8 — Pre-Reassembly Notes



- Verify each part is clean and dried before reassembly
- Apply a sufficient amount of Gear Oil to moving parts and sliding surfaces
 - ⓘ SAE 75W-80 is recommended
- Replace each Gasket, Spring, and Pin with a new part
- Remove all existing traces of Silicone Sealant

Step 9 — Secondary Shaft Reassembly



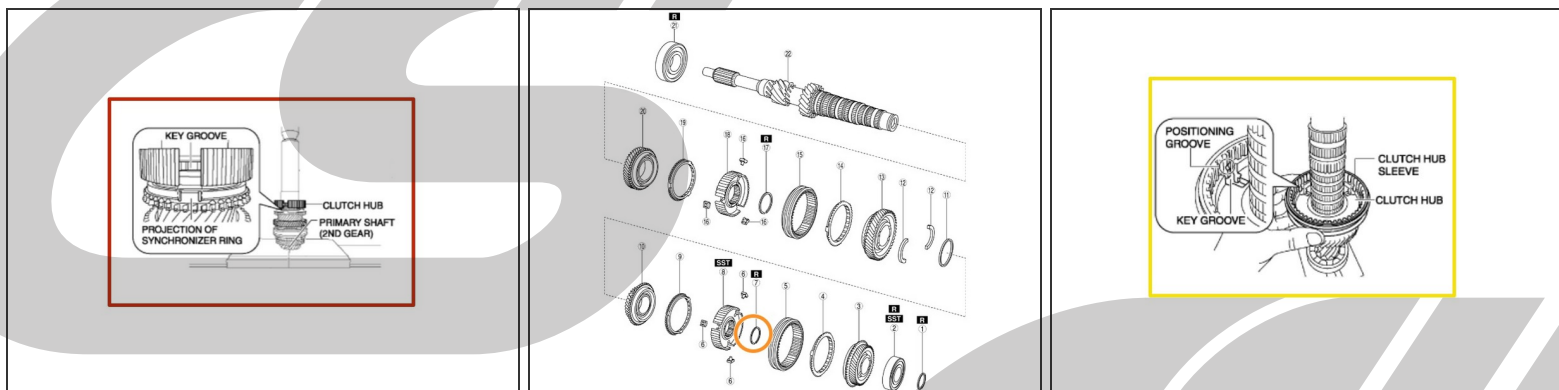
- Reassemble the Secondary Shaft in the reverse order of disassembly, using the CorkSport Secondary 3rd and 4th Gears
 - Position the OEM Secondary 6th gear and CorkSport Secondary 3rd Gear as shown in the diagram, then assemble using a Hydraulic Press
 - Position the CorkSport Secondary 4th Gear as shown, then assemble using a Hydraulic Press
- ⓘ Ensure teeth direction are as shown in the diagrams

Step 10 — Primary Shaft Reassembly - Part 1



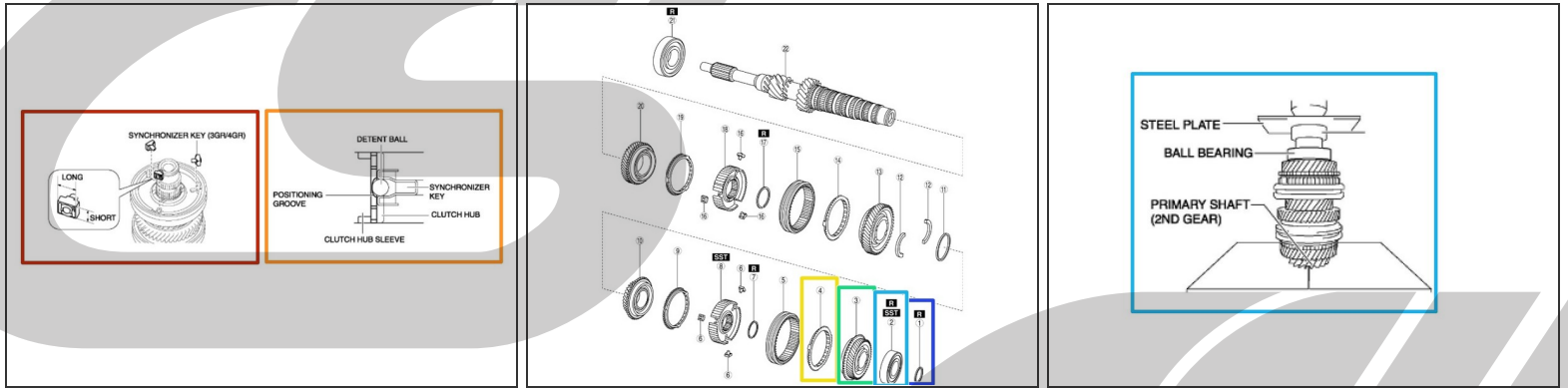
- Reassemble the Primary Shaft in the reverse order of disassembly, using the CorkSport Primary 3rd and 4th Gears
- After Installing the CorkSport Primary 3rd Gear, install the Syncro Ring (9) as shown in the diagram
- Align the projection of the Syncro ring with the positioning groove of the clutch hub key
- ⓘ Refer to the diagram found in Step 6 for reference

Step 11 — Primary Shaft Reassembly - Part 2



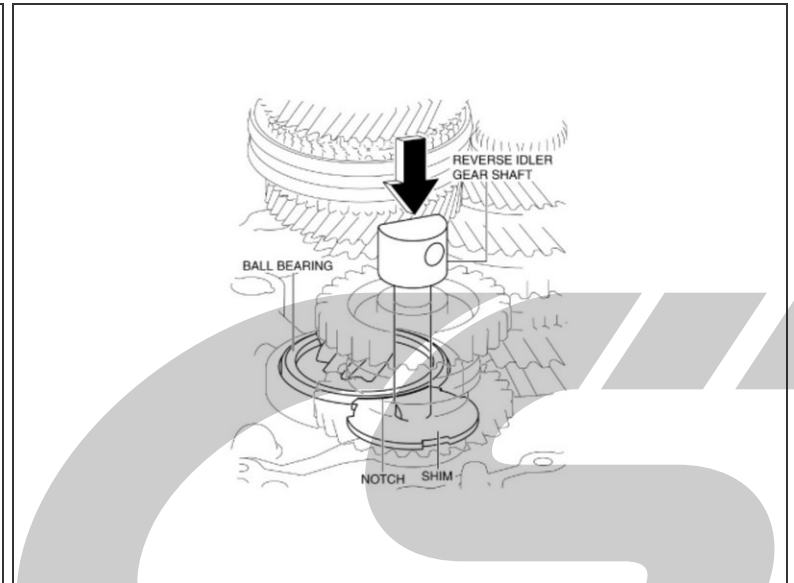
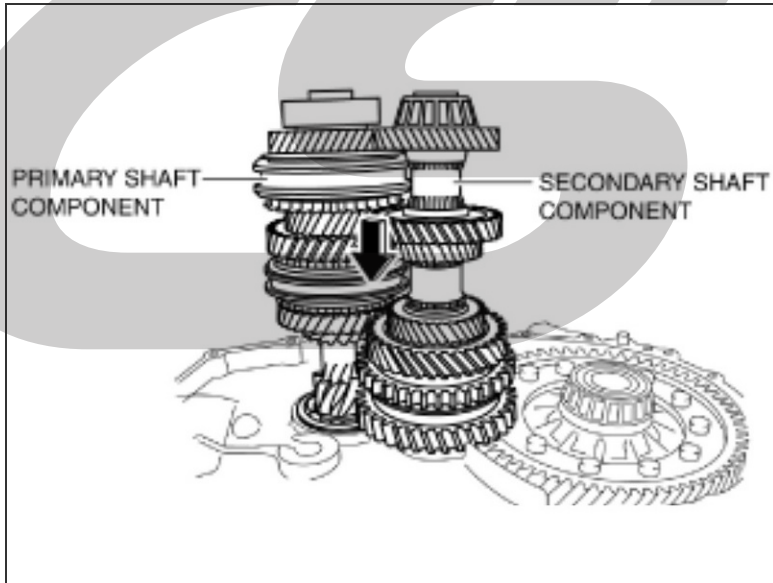
- Assemble the Clutch Hub (3rd/4th Gear) as shown
- Place the Primary Shaft as shown
- Align the projection of the Syncro ring with the Key Groove of the Clutch Hub
- Assemble the clutch hub using a Hydraulic Press
- Reinstall Clip (7)
- Reinstall the Clutch Hub Sleeve as shown
 - Align the positioning groove of the Clutch Hub Sleeve to align with the center of the Key Groove of the Clutch Hub
 - Assemble the Clutch Hub Sleeve

Step 12 — Primary Shaft Reassembly - Part 3



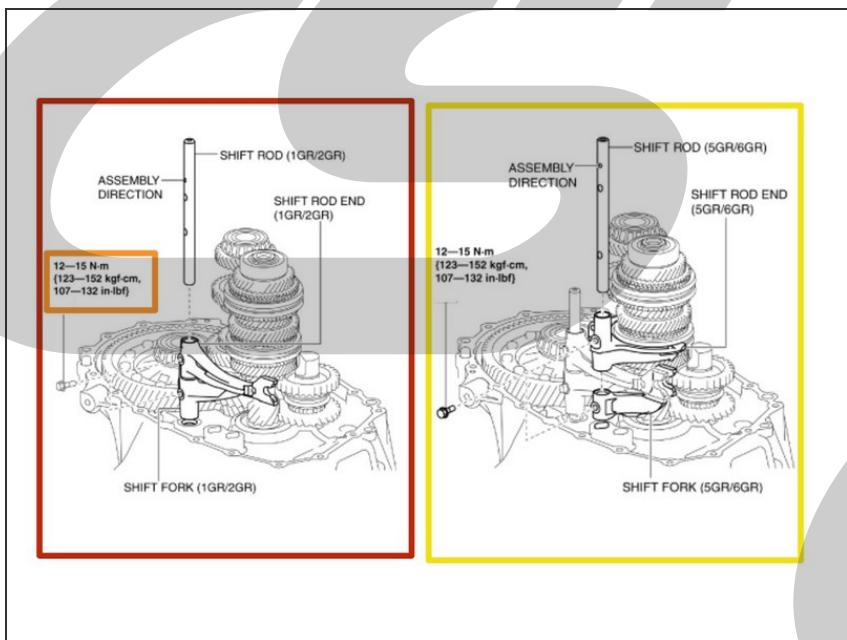
- Reinstall the Syncro Keys as shown
 - Align the direction of the syncro keys as shown in the diagram
 - After the Syncro key is assembled, ensure the detent ball of the key is engaged with the positioning groove of the clutch hub sleeve
- Reinstall Syncro Ring (4)
 - ⓘ Refer to diagram in Step 8 for reassembly
- Install the CorkSport Primary 4th Gear
- Reinstall the Ball Bearing (2) by assembling the Primary Shaft, new ball bearing, and steel plate in a Hydraulic Press as shown
- Reinstall Clip (1)

Step 13 — Reassemble the Transmission - Part 1



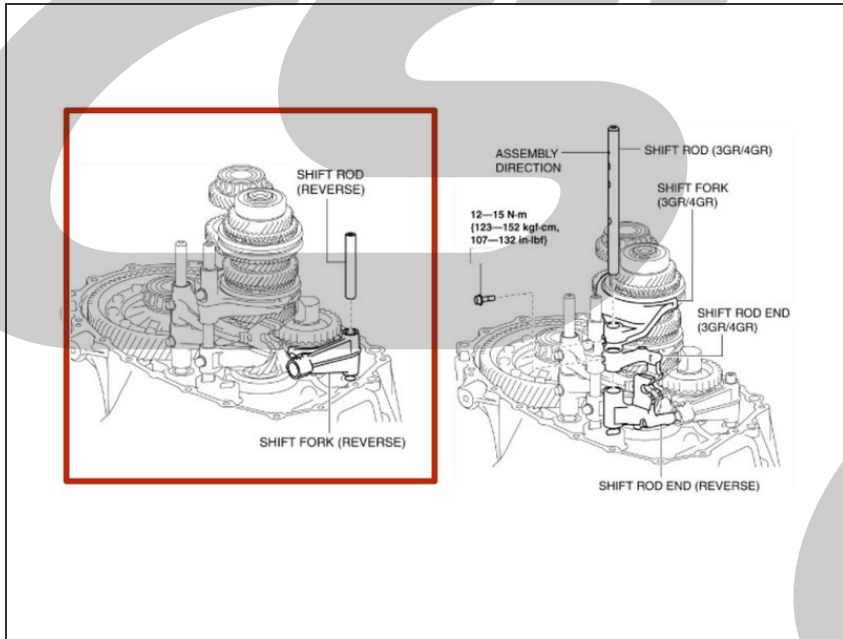
- Reassemble the Interior Components of the transmission in the Reverse order of disassembly
- Assemble the Secondary and Primary Shafts into the transmission as a single unit
- ① Shake the parts and ensure all gear teeth are aligned and contacting. Check each part individually
- Reinstall the Reverse Idler Gear by:
 - Pull the Reverse Idler Gear Shaft and position it in the location shown
 - Engage the gears while aligning the shim notch with the Ball Bearing of the Primary Shaft
 - Push the Reverse Idler Gear Shaft and assemble the Reverse Idler Gear

Step 14 — Reassemble the Transmission - Part 2



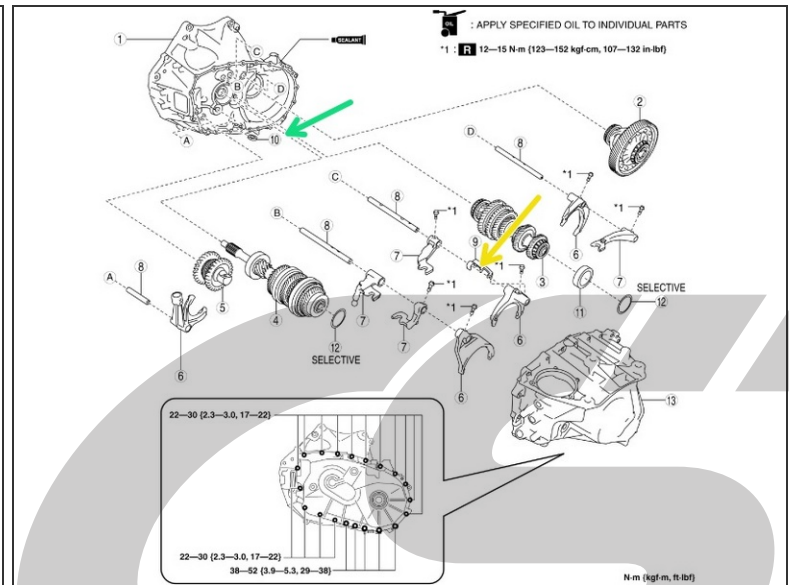
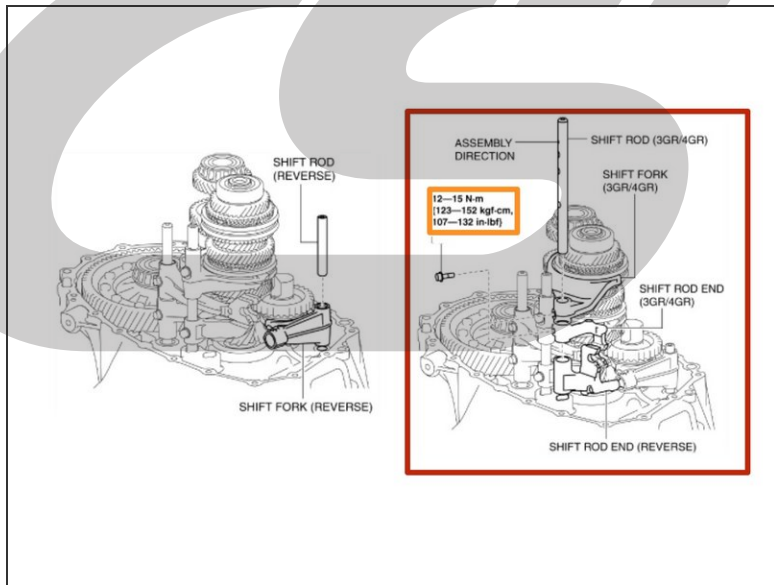
- Assemble the 1st/2nd Gear Shifter assembly by:
 - Assemble the Shift fork to the clutch hub sleeve
 - ⓘ Verify the assembly direction of the Shift rod as shown in the diagram
 - Insert the shift rod through the assembly hole in the shift rod end and shift fork
 - Insert the shift rod into the Transmission housing
 - Tighten the assembly bolts to the specified torque setting
- Repeat the above steps for the 5th/6th Gear Shifter assembly

Step 15 — Reassemble the Transmission - Part 3



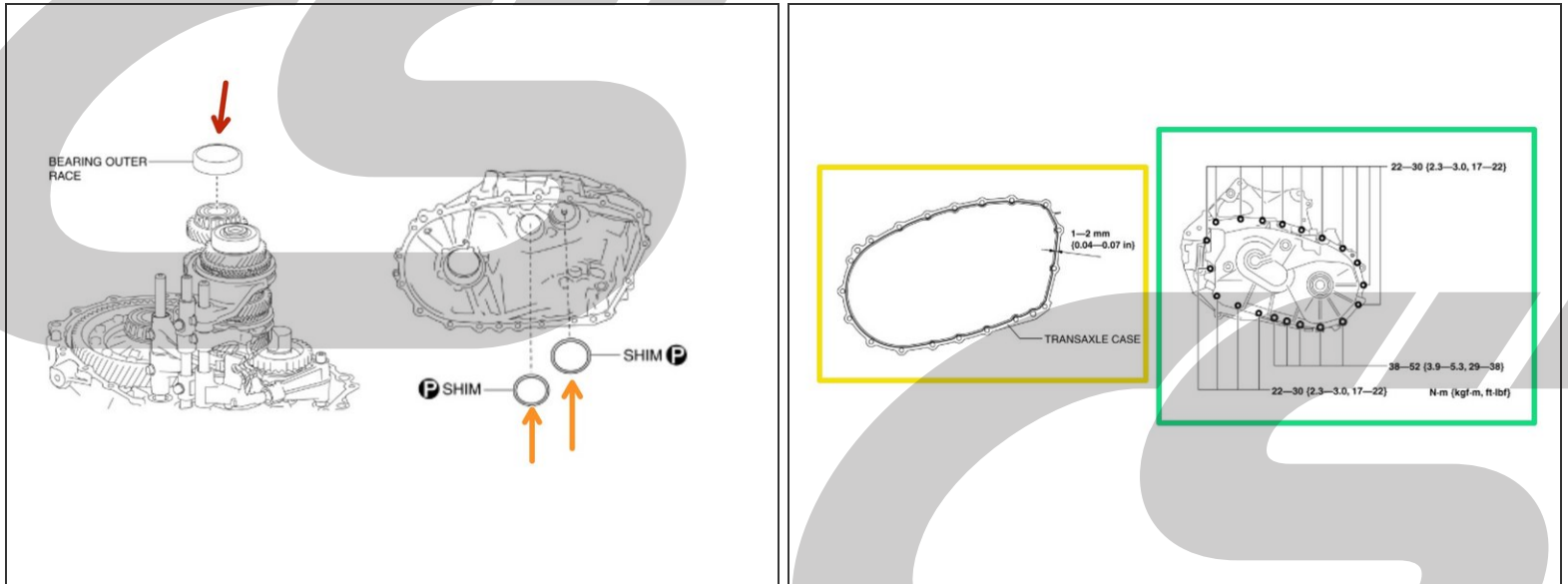
- Assemble the Reverse Shift Rod and Shift Rod by:
 - Attach the shift fork to the Clutch Hub Sleeve
 - Insert the Reverse Shift Rod

Step 16 — Reassemble the Transmission - Part 4



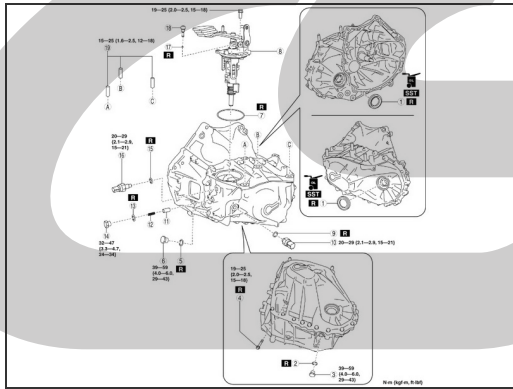
- Assemble the 3rd/4th Gear Shifter assembly by:
 - Assemble the shift fork to the Clutch Hub Sleeve
 - ⓘ Verify the direction of the Shift Rod is as shown in the diagram
 - Align the assembly holes of the Shift Fork, 3rd/4th Gear Shift Rod End, and Reverse Shift Rod End
 - Pass the 3rd/4th Gear Shift Rod through the aligned holes and into the Transmission Housing
 - Tighten the Assembly Bolts to the specified torque setting
 - Reinstall the Oil Path
 - Reinstall the Magnet

Step 17 — Reassemble the Transmission - Part 5

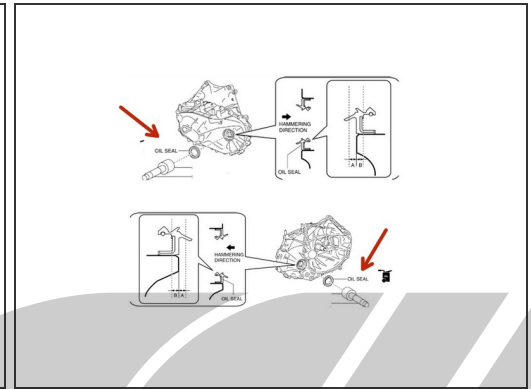


- Assemble the Bearing outer race with the Secondary Shaft as shown in the diagram
- Place the shims as shown
- Apply silicone sealant to the edge of the Casing as shown
- Close the Transmission Casing and tighten each bolt to the Torque setting specified, before the silicone sealant begins to harden
- ⓘ Wait at least 30mins before adding oil

Step 18 — Reassemble the Exterior Transmission Components



Exterior Component Reassembly	
1	Oil Seal
2	Gasket
3	Drain Plug
4	Reverse Gear Shaft Anchor Bolt
5	Gasket
6	Oil Level Plug
7	O-Ring
8	Shift Control Module
9	Gasket
10	Reverse Light Switch
11	Detent Ball Pin
12	Spring
13	Gasket
14	Plug
15	Gasket
16	Neutral Switch
17	O-Ring
18	Breather
19	Stud Bolt



- Assemble the Parts around the Transmission in the order of the figure and table shown
- ⓘ Tighten each component to the Torque specification shown, if applicable
- Install a new Oil Seal on the input and output shafts
 - ⓘ A = 0.3mm (0.01in)
 - ⓘ B = 0.3mm (0.01in)

Step 19 — Installation Complete



- This completes your installation of the CorkSport Performance Mazda3 Upgraded 3rd and 4th Gears!
- Reinstall the Reassembled transmission into the vehicle and test its function

