



WORKSHEET 3-3 ***Rear-Drive Transmission—Output Shaft Disassembly***

Vehicle:	Year/Prod. Date:	Engine	Transmission:
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Worksheet Objectives

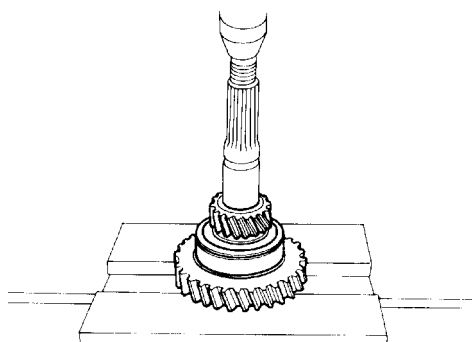
With this worksheet, you will follow the disassembly of output shaft on a rear-drive transmission using the required special tools, make measurements where appropriate, retrieve and apply the needed service information, retrieve and interpret service specification information from the repair manual.

Tools and Equipment

- Vehicle Repair Manual
- Hand Tool Set
- V-Blocks
- Dial Indicator and Stand
- Micrometer, 0-1 in.
- Feeler Gauge Set
- Hydraulic Press
- Bearing Separators (Output Flange Remover)
- Bearing Replacer Set SST (P/N 09316-60011)

Section 1: Output Shaft Disassembly

(This portion of the worksheet is optional – consult your instructor)



1. Measure gear radial clearance using a dial indicator for 1st, 2nd, and 3rd gear:

1st Gear Measurement: _____ Specification: _____

2nd Gear Measurement: _____ Specification: _____

3rd Gear Measurement: _____ Specification: _____

2. If the radial clearance is greater than the maximum, how is it repaired?

3. Use a hydraulic press to remove 5th gear, center bearing, thrust washer and 1st gear assembly.
4. What component prevents the thrust washer from rotating on the shaft?

5. Use a hydraulic press to remove the reverse gear assembly and 2nd gear assembly.
6. Use a hydraulic press to remove the hub sleeve assembly and 3rd gear assembly.
7. Record the measurements of the output shaft:

Flange Thickness:	_____	Specification:	_____
1st Gear Journal:	_____	Specification:	_____
2nd Gear Journal:	_____	Specification:	_____
3rd Gear Journal:	_____	Specification:	_____
Output Shaft Runout:	_____	Specification:	_____

Section 2: Inspect Synchronizer Ring

1. The synchronizer assembly engages the speed gear and the output shaft during shifting of the transmission. Since the output shaft and speed gear turn at different speeds, the synchronizer assembly brings them to the same speed so the synchronizer sleeve can engage the gear. While the clutch is disengaged the synchronizer sleeve forces the synchronizer ring to engage the gear cone and bring the two to the same speed.
2. Check the braking effect of the synchronizing ring by placing it over the gear cone. While applying pressure toward the cone, turn the ring and it should lock.
3. Using a feeler gauge, measure the clearance between the synchronizer ring and the gear:

1st Gear Measurement:	_____	Specification:	_____
2nd Gear Measurement:	_____	Specification:	_____
3rd Gear Measurement:	_____	Specification:	_____
4th Gear Measurement:	_____	Specification:	_____

4. What is the most likely symptom of a synchronizer ring to gear clearance that is below specification?

5. Inspect the synchronizer sleeve splines and the speed gear spline teeth.

6. What unique shape does the spline tooth have when viewed from the top?

7. How does the spline tooth design prevent the synchronizer sleeve from disengaging from the speed gear?

Instructor's Initials: _____



Notes

Rear-Drive Transmission— Output Shaft Disassembly

Name: _____ Date: _____

Review this sheet as you are doing the Rear-Drive Transmission—Output Shaft Disassembly worksheet. Check each category after viewing the instructor's presentation and completing the worksheet. Ask the instructor if you have questions regarding the topics provided below. Additional space is provided under Topic for you to list any other concerns that you would like your instructor to address. The comments section is provided for your personal comments, information, questions, etc.

I have questions

I know I can

Topic

Comment

Measure gear radial clearance using a dial indicator.			
Placement of the bearing separators over the press ways.			
Measure the 5th gear journal diameter and compare to specifications.			
Measure the synchronizer ring to gear clearance using a feeler gauge.			
Describe the symptoms of a worn synchronizer ring.			
Describe the spline tooth design that prevents the synchronizer sleeve from popping out of mesh with the speed gear.			



Notes