

**OPERATING CONDITION AND PROBABLE CAUSE**

<b>Problem</b>	<b>Corrective Action</b>
<b>I. <u>Clutch Slippage</u></b>	
1. Insufficient clutch pedal free play	1. Adjust release bearing position, then adjust linkage if necessary
2. Linkage blocked from complete return	2. Remove blockage
3. Linkage needs lubrication	3. Lubricate linkage
4. Release bearing locknut loose	4. Adjust release bearing length and tighten locknut
5. Worn clutch disc facings	5. Replace clutch disc
6. Worn or damaged flywheel	6. Resurface or replace flywheel
7. Worn or damaged clutch pressure plate	7. Replace pressure plate and cover assembly
8. Grease or oil contamination on facings	8. Clean facings and repair cause of contamination. If contaminant cannot be removed, replace clutch disc
9. New clutch installation needs break-in	9. Perform clutch break-in procedure
<b>II. <u>Clutch Drag/Hard Shifting</u></b>	
1. Linkage blocked from full travel	1. Remove blockage
2. Linkage incorrectly adjusted	2. Adjust clutch linkage
3. Linkage worn/damaged	3. Replace faulty linkage components
4. Clutch damaged <ul style="list-style-type: none"> <li>– damaged clutch disc hub splines</li> <li>– bent clutch disc</li> <li>– bent drive straps</li> <li>– broken/warped pressure plate</li> </ul>	4. Replace damaged component
5. Contamination/grease in release bearing bore	5. Clean release bearing bore and transmission input shaft
6. Excessive side loading on release bearing	6. Eliminate source of excessive side loading (usage of improper release bearing grease, worn/damaged cross shaft bushings, worn/damaged cross shaft, worn/damaged or bent release yoke tips, worn/damaged or uneven release bearing yoke contact wear pads, excessive release bearing travel during disengagement, worn/damaged pilot bearing, excessive flywheel runout, excessive engine to transmission misalignment, etc.)

## OPERATING CONDITION AND PROBABLE CAUSE

Problem	Corrective Action
<b>II. Clutch Drag/Hard Shifting - Continued</b>	
7. Failed pilot bearing	7. Replace pilot bearing and input shaft if damaged
8. Transmission input shaft splines worn/damaged	8. Replace input shaft
9. Tight or contaminated clutch disc splines	9. Clean clutch disc and input shaft splines or replace clutch disc as necessary
10. Flywheel housing to clutch housing excessive misalignment	10. Replace faulty housing
11. Grease or oil contamination on facings	11. Clean facings and repair cause of contamination. If contaminant cannot be removed, replace clutch disc
12. Excessive free play due to fine dust packing inside the clutch	12. Remove and clean or replace the clutch. Block all dust entry points. In extremely dusty applications, leave one hole in the bottom of the clutch housing and apply a regulated compressed air line at the top of the housing to give a slightly positive air pressure inside the clutch housing.
<b>III. High Pedal Effort</b>	
1. Clutch/linkage incorrectly adjusted	1. Adjust clutch/linkage
2. Linkage needs lubrication	2. Perform lubrication maintenance
3. Linkage worn or damaged	3. Replace faulty linkage components
4. Linkage contacting air/electrical/fuel/etc. lines	4. Reroute obstructing lines
5. Clutch disc worn too thin	5. Replace clutch disc
<b>IV. Abrupt Engagement</b>	
1. Linkage needs lubrication	1. Perform lubrication maintenance
2. Linkage worn/damaged	2. Replace faulty linkage components
3. Grease or oil contamination on facings	3. Clean facings and repair cause of contamination. If contaminant cannot be removed, replace clutch disc
4. Clutch/linkage needs adjustment	4. Adjust release bearing length and adjust clutch linkage
<b>V. Frequent Adjustments</b>	
1. Release bearing locknut insufficiently/incorrectly tightened	1. Carefully adjust release bearing length per procedures
2. Insufficient free play gap	2. Adjust release bearing length then adjust clutch linkage

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<b>Problem</b>	<b>Corrective Action</b>
<b>V. <u>Frequent Adjustments</u> - Continued</b>	
3. Excessive clutch slippage	3. See Heading I. Clutch Slippage
4. Clutch wearing excessively	4. Review vehicle application. Review driver practices. See section on clutch life page 2-3
5. Clutch gaining free play due to fine dust packing inside the clutch	5. Remove and clean or replace the clutch. Block all dust entry points. See Heading II. Point no. 12
<b>VI. <u>Clutch Noise</u></b>	
1. Linkage needs adjustment	1. Adjust clutch linkage
2. Linkage needs lubrication	2. Perform lubrication maintenance
3. Linkage contacting cab or frame	3. Determine cause (misinstallation, misadjustment, wear, etc.) and correct
4. Clutch brake rattle	4. Replace with different style of clutch brake
5. Pilot bearing worn or damaged	5. Replace pilot bearing and input shaft if damaged
6. Release bearing bore incorrect size (2-inches instead of 1 3/4-inches, etc.)	6. Replace release bearing with correct size
7. Clutch incorrectly installed	7. Remove clutch and reinstall correctly
8. Clutch disc damper worn or damaged	8. Replace clutch disc
9. Idle rattle (incorrectly specified clutch disc damper)	9. Replace clutch disc with correct specification design
10. Release bearing worn or damaged or grease contaminated	10. Clean and re-grease or replace release bearing
<b>VII. <u>Clutch Vibration</u></b>	
1. Excessive driveline torsional activity (poorly phased drive shaft u-joints, incorrect driveline angles, incorrect air ride height adjustment, excessive driveshaft imbalance, incomplete ignition, etc.)	1. Find and correct cause of excessive driveline torsional activity
2. Clutch incorrectly installed	2. Remove clutch and reinstall correctly
3. Pilot bearing worn or damaged	3. Replace pilot bearing and input shaft if damaged
4. Transmission input shaft/splines/pilot bearing worn or damaged	4. Replace worn and damaged components

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<b>VII. <u>Clutch Vibration</u> - Continued</b>	
5. Clutch disc facings damaged	5. Replace clutch disc
6. Flywheel housing to clutch housing excessive misalignment	6. Replace faulty housing
7. Clutch out of balance	7. Replace clutch
8. Release bearing worn or damaged or grease contaminated	8. Clean and re-grease or replace release bearing
<b>VIII. <u>Low Pedal Effort</u></b>	
1. Linkage incorrectly adjusted	1. Adjust clutch linkage
2. Clutch incorrectly installed	2. Remove clutch and reinstall correctly
3. Clutch mounting capscrews loose/broken	3. Remove broken capscrew ends and replace broken or damaged capscrews, retighten all to specifications
4. Release bearing worn/damaged	4. Replace release bearing