



MOTORCYCLE POWERTRAINS

Outdoor Power and Recreation

POST-SECONDARY

Powertrains Part 1

Objective:

Your task is to completely disassemble, inspect, diagnose, and re-assemble the clutch on a motorcycle.

If there is something you don't understand, you may ask for clarification.

Procedure:

- 1.** Remove clutch cover and pressure plate to inspect clutch pack. **DO NOT REMOVE the clutch hub nut!**
- 2.** Inspect clutch components and determine if they are re-usable. Document all specs and measurements in the provided table. Give your diagnosis on the condition/operation of the clutch. Look at clutch questions in case you can answer some at this point.
- 3.** Reassemble the clutch following the service manual provided. Please pay special attention to the torque specs as stripping or breaking a fastener will cause a mark deduction. **DO NOT** use sealant.
- 4.** Answer all the clutch related questions.

Specifications and Measurements

Component/Inspection	Spec & Service Limit	Observations
Clutch Plate Warpage		
Thinnest Friction Disc		
Shortest Spring Length		
Cable Free-Play		
Torque Specs		
Right Crankcase Cover *Tighten to half of the recommended torque		
Clutch Spring Bolts		

Questions:

1. What type of clutch is this?

- _____

2. If the clutch pack was to be replaced, what needs to be done to the discs and plates prior to installation?

- _____

- _____

3. Where is the clutch disc with the pink mark located, and what is the installed orientation?

- _____

4. Where is clutch plate “B” with the larger inside diameter installed on re-assembly?

- _____

5. Is the clutch pressure plate indexed?

- _____

6. What most commonly would cause a clutch to slip?

- a. _____
- b. _____
- c. _____
- d. _____
- e. _____

7. What could be wrong with the clutch that would cause hard shifting?

- a. _____
- b. _____
- c. _____
- d. _____
- e. _____
- f. _____
- g. _____
- h. _____
- i. _____
- j. _____

8. If one clutch spring is out of specification, can you replace it individually?

- _____

Powertrains Part 2

Objective:

Identify and diagnose parts of the transmission.

Identify power flow and calculate gear ratio.

Procedure:

Fill in the following information and answer the all the questions using the diagram and Harley Davidson transmission.

Identify:

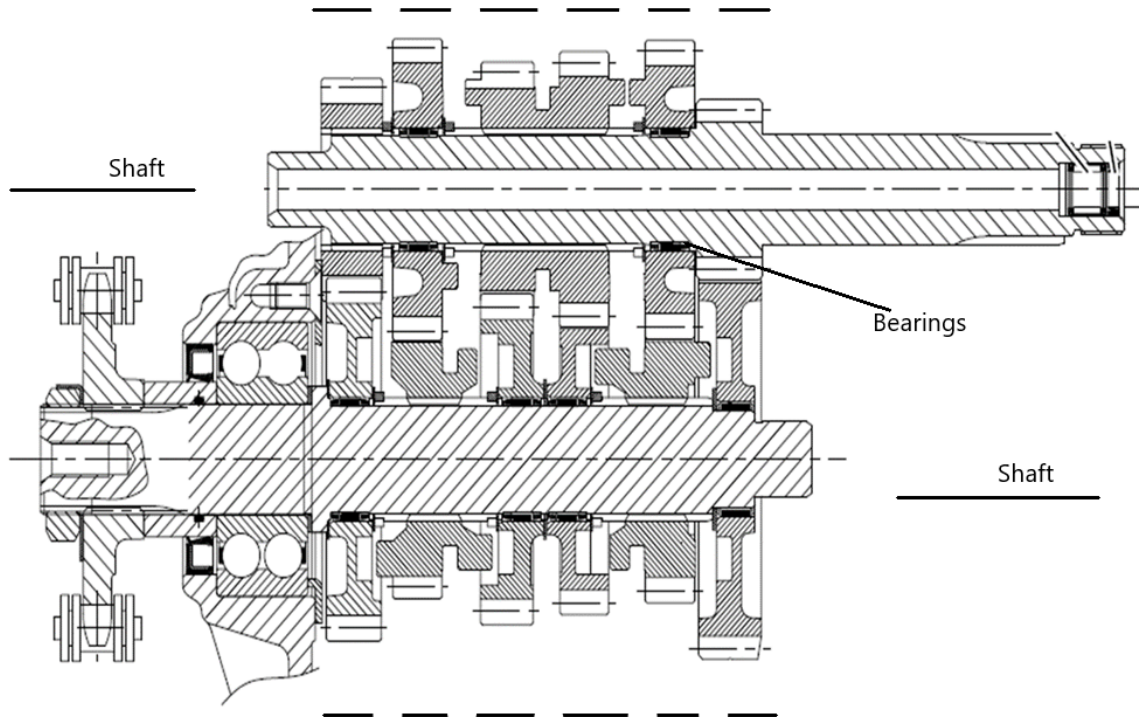
List 3 items you would inspect when determining a transmissions condition:

1. _____

2. _____

3. _____

Transmission Diagram Labelling



Label the above diagram. Indicate each shaft and gear pairing.

When labelling each gear identify which shaft location and gear pairing it is.

***Example: 1st gear on the input shaft would be labelled “I1”.**

Using the labels given to the above diagram identify all the following:

Which gears are Integral: _____

Which gears are fixed: _____

Which gears are sliding: _____

Which gears are freewheeling: _____

Action:

Step 1 - Shift the transmission into “third gear” and call the judge over to look at it.

Step 2 – Calculate the gear ratio for “first gear” and write it below.

Questions:

1. What is meant by the term “constant mesh” transmission?

2. What type of gear is present on the Harley Davidson Transmission other than straight cut?

3. Is there a shift shaft adjustment available?

4. What could cause a bent shift fork?



NUMERACY



READING



WRITING



PROBLEM SOLVING