Automatic Multi-plate Clutch Control in Two Wheeler Bike

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Abstract—In this study, a multi-plate clutch operating mechanism was designed and applied on an auto clutch featured bike to make the tension free driving. In the present automatic clutch controlling system uses rotary clutch which gives low power transmitting efficiency, which result low mileage. In this system there is no any clutch lever is required for operating clutch. This type of automatic clutch control system is suitable for any two wheeler bike (which have multi-plate clutch).

Keywords—Automatic clutch control system, Centrifugal clutch, Multi-plate clutch, Mileage

I. INTRODUCTION

Clutch is a device used in transmission system of motor vehicle to engage and disengage the power from engine to the gearbox. Thus the clutch is located in between engine and transmission (gear box) when the clutch is engage, the power flows from the engine to the rear wheel through the transition system and the vehicle moves when the clutch is disengaged, the power is not transmitted to the rear wheels and the vehicle stop while the engine is still running.

The multi-plate clutch is extension of single plate type clutch plate type where the number of frictional and the metal plates are increased. The increase in the number of friction surface obviously increases capacity of the clutch to transmit torque, the size remaining fixed. Alternatively the overall diameter of the clutch is reduced for the same torque transmission as a single plate clutch [2].

The present automatic clutch system uses centrifugal clutch. We are designing such system in which multi-plate clutch to be control. The engagement of multi-plate is takes place at acceleration and the disengagement is takes place at de-acceleration. The clutch cable is inversely connected to the accelerator with the help of lever mechanism. Function of lever mechanism to reduce actuating force of clutch. Initial 15mm accelerator displacement of the accelerator is used for clutch actuation.

In this system two cables are connected to accelerator. One cable is connected to carburetor and another connected to lever mechanism. Another end of lever mechanism is connected to multi-plate clutch. The helical spring used in lever mechanism to hold multi-plate clutch in disengage when the when acceleration is zero.

A. Accelerator Cable

The accelerator cable is used to control the clutch. It has one input and two output, input is connected to the accelerating lever. The output are connected to carboration and lever mechanism.

In general accelerating cable used in bike (Hero honda) one input and one output, we replacing that with above accelerating cable

B. Lever Mechanism
In centrifugal clutch as we give accelerate accelerating lever at that time clutch get engage. And at reacceleration it gets disengage. Same operations are to be performed in multi-plate clutch. We are used lever mechanism. The function is to reduce the clutch actuating force. In lever mechanism helical tension spring is used to hold the clutch in disengage position.

C. Clutch control system

When acceleration is zero at that condition multi-plate clutch is disengage. When we accelerate accelerating lever then the cable wire extracted lever mechanism. Output cable wire of lever mechanism get released clutch cable which result in engagement of clutch.

II. CONCLUSIONS

With help automatic clutch control, driver has no need apply clutch to change gear as well as to apply the brake. With this system we can drive tension free. As in centrifugal clutch friction and slipping in between the driving and driven part there is loss of power. It involves slipping therefore it not desirable in high torque requirements or in case where there is heavy load. so this can be eliminated with automatic multi plate controlling system.

REFERENCES

