Engine fuel linkage adjustment with Governor/Actuator for Diesel engine

Saumyen Chakraborty (Engine) - 2024-09-27 - Hydraulic Governor/Actuator

Fuel linkage system adjustment is an important aspect in controlling engine through hydra mechanical Governor & Actuator. Different type of fuel linkage is designed for different engine manufacturer.Objective is the degree of fuel pump/injector opening should be proportional with Governor/Actuator fuel control shaft (Terminal shaft) opening.

Common type linkage is shown in the fig 1. A linkage may be solid linkage or cushion type. Solid linkage do not have shock absorbing system or linkage length adjuster thus adjustment is simple. But each part of the linkage system must be correct as per design. Most of design for large diesel engine, a relatively small intermediate link between Governor terminal shaft and main fuel link is used which is sensitive. A little increase or decrease in length, variation of centre to centre distance of link end eyelet will result instability of the Engine, erratic loading /unloading. This kind of linkage is easy to fix during commissioning of Governor/Actuator in Engine. Normally Governor terminal shaft has a missing tooth that mesh with missing groove in intermediate link.

Linkage that have adjustment feature is little difficult in adjustment during commissioning of Governor/Actuator in Engine. Typically linkage have turnbuckle type swivel joint at one end or both end that allowed adjustment of the linkage. Once the linkage is disengaged from Governor/Actuator during replacement with service Governor /Actuator, adjustment of the linkage may be necessary.

Fundamental of the linkage adjustment is to utilized full Governor travel to full fuel opening. Most of the WW Governor/Actuator have a scale on the terminal shaft for rotary output and it is easy to detect the no opening and maximum opening of the Governor output. Some engine have scale to detect fuel opening in degree or mm/inch and some do not have. Few engine manufacturer use gap gauge/block gauge to fuel pump/injector to determine correct linkage adjustment. Adjustment of the fuel linkage would be in such way that zero or no opening of Governor/Actuator output should be equal to zero or no opening of fuel rack and maximum opening of Governor/Actuator output will be equal to maximum opening of fuel rack. More refine linkage adjustment will be if a little pre advancement of Governor/Actuator output, say 1 degree approximately, to no opening of Fuel rack. Some engine design permit pre advancement of fuel rack and have to consider during linkage adjustment.