

Chapter 25

Control of Motion

25.1 Throttle

- Identify the throttle and its direction of travel.
- Understand that the throttle controls *steam admission*, not speed directly.
- Practice smooth, progressive opening — never snap it open.
- Recognize that the throttle is the primary control for starting, modulating, and stopping motion.

25.2 Governor

- Understand that the governor limits maximum engine speed.
- Note that the governor does *not* start the engine — it only trims speed once running.
- Observe how the governor responds to load changes.
- Learn that the governor cannot prevent overspeed if the throttle is opened too far.

25.3 Dead Centres

- Define front dead centre and back dead centre.
- Learn why the engine cannot start when the crank is on dead centre.
- Practice identifying dead centre by crank position.
- Understand how to “rock” the engine off dead centre using the clutch or bar.

25.4 Cylinder Drains

- Locate the cylinder drain cocks and their handles.
- Learn why drains must be opened before starting:
 - to clear condensate
 - to prevent water hammer
- Keep drains open until the engine is turning freely and dry steam appears.
- Use drains when stopping and when maneuvering at low speed.

25.5 Predicting Motion

- Predict which way the engine will move before opening the throttle.
- Review crank position, valve gear setting, and direction of rotation.
- Understand that the engine may move unexpectedly if the throttle is cracked too quickly.
- Practice visualizing the first quarter-turn of motion.

25.6 Clutch

- Identify the clutch lever and its travel.
- Understand that the clutch connects the crankshaft to the traction gearing.
- Ensure the clutch is fully engaged before applying power.
- Know when to disengage:
 - maneuvering
 - stopping
 - rocking off dead centre
- Avoid slipping the clutch except when absolutely necessary.

25.7 Hooking Up (Valve Gear Adjustment)

- Understand the purpose of hooking up:
 - reduced steam consumption
 - finer control at speed
- Identify the reach rod or quadrant lever and its direction of travel.
- Hook up only when the engine is running smoothly.
- Recognize that hooking up changes valve events and affects starting torque.

25.8 Stopping Procedure

- Close the throttle smoothly — never snap it shut.
- Open cylinder drains as the engine slows to clear condensate.
- Disengage the clutch once the engine is nearly stopped.
- Avoid leaving the crank on dead centre if a restart is expected.
- Secure the engine:
 - throttle closed
 - drains open
 - clutch disengaged
 - wheels chocked if on grade