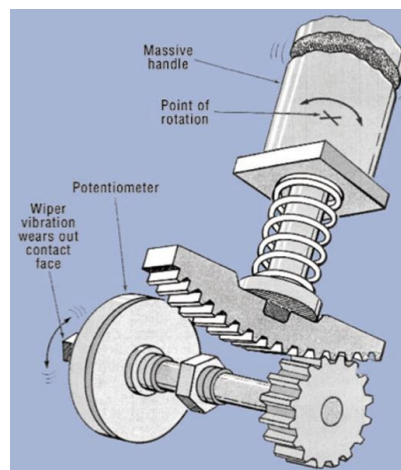


Application of Joysticks in Fluid systems (Hydraulics)

Manufacturers and operators of mobile equipment like joystick controls because they give the operator a feel for his command. The greater the displacement of joystick, the greater the response from the actuator. Some approaches to interfacing hydraulic valves with joysticks include: mechanical linkages, hydraulic pilot circuits, and electrical commands to electro hydraulic valves. All mechanical linkages may require operators to generate objectionable high actuating forces if the mechanical advantage of the assembly is not designed in. Otherwise, operator fatigue may result. And as with all mechanical arrangements, regular lubrication and adjustment for wear may be necessary. A neater arrangement uses hydraulically piloted valves and joysticks. With this setup, low-pressure fluid is routed to the **joystick**, which in turn, routes fluid to the appropriate pilot-operated hydraulic devices based on **joystick position**. The advantages of this system over a mechanical linkage arrangement are simplified installation, lower actuating force required by the operator, and less maintenance. An **joystick** uses a power supply and sends electric signals to command an electro hydraulic valve. Because thin wires are so much easier to route through a machine than mechanical cables, hoses, or tubing is joysticks greatly simplify installation and provide the freedom of remote mounting. Serial communications make this process easier. The valves can be located extremely far from the joystick.



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The **potentiometric joystick**, as shown in Figure above, uses a **rotary or linear potentiometer** to convert mechanical displacement to electrical output. The conversion from curvilinear motion of the joystick lever to potentiometer movement usually involves shafts, gimbals, gears, and torsion springs.