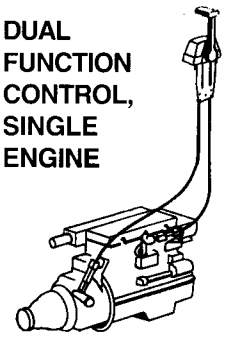
Introduction to Engine Controls

Dual-function single-lever controls:

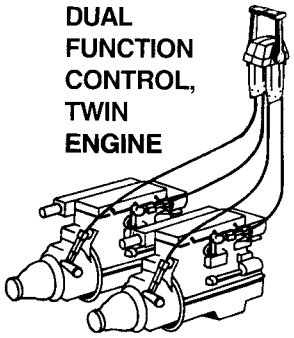
Dual-function single-lever controls operate both shift and throttle with a single lever. The control mechanism still uses two cables (one for shift and one for throttle), but movement of both cables and control of shift and throttle is achieved through just one lever.

Dual-function, single-lever controls are also available for twin engine applications. Although there are two levers on the control, there is still only one lever controlling both shift and throttle for each individual engine.

Single lever control helped make boats so much easier to handle that it has become the most popular control used today. Not only do single-lever controls have a very natural instinctive action, but shifting is very quick and they can only be shifted at low RPM which protects the engine's shift mechanism.



DUAL FUNCTION CONTROL, SINGLE ENGINE

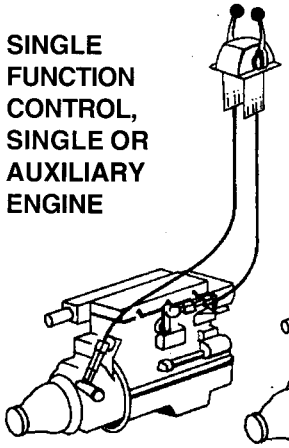


DUAL FUNCTION CONTROL, TWIN ENGINE

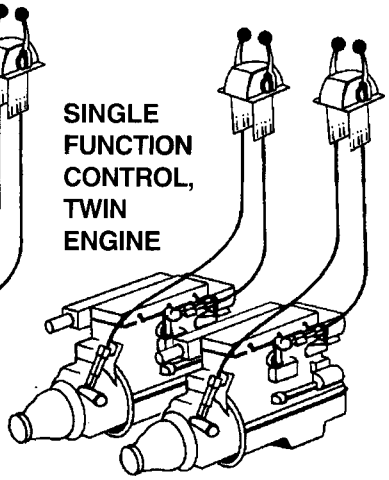
Single-function controls:

On single-function controls, one lever operates only the shift mechanism or only the throttle. The controls themselves may have one lever (which would control the shift or the throttle) or two levers (one for shift and one for throttle).

Twin engine applications will commonly utilize 2, two-lever single function controls. Both levers of one control will operate the throttles, while the levers of the second control will operate the shift mechanisms.



SINGLE FUNCTION CONTROL, SINGLE OR AUXILIARY ENGINE

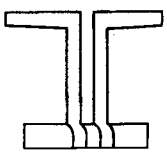


SINGLE FUNCTION CONTROL, TWIN ENGINE

Control head mounting:

A final choice in engine control styles is the type of mounting. TeleflexMorse offers controls for most applications and user preferences.

TOP MOUNT (or Binnacle Mount)



FLUSH TOP MOUNT

SIDE MOUNT

Phone: 800-225-0004 ☎ Fax: 908-486-1056
e-mail: sales@sealandpower.com

Introduction to Engine Controls

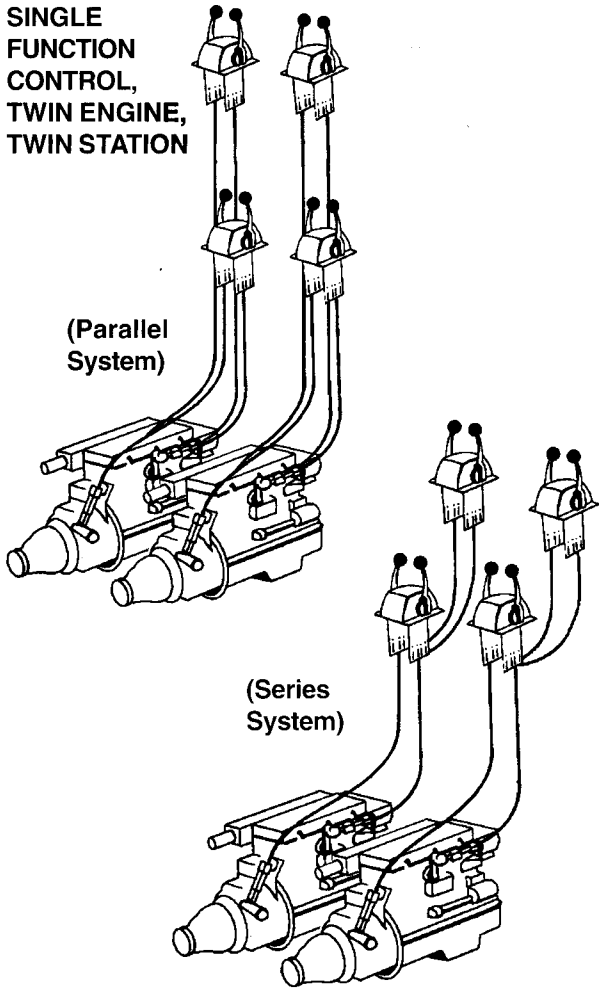
Multiple station installations:

Dual or multiple station applications almost exclusively use single-function two lever controls. **There are two basic system designs recommended for multiple stations:**

Parallel Control System: cables from each control station run all the way to the clutch and throttle at the engine. This configuration is sometimes used when cable runs are relatively short and direct.

Series Control System: cables run from controls at the upper station to the lower station controls. A second set of control cables runs from the lower station to the engine. This method is generally used for longer, more difficult cable runs.

When to utilize a parallel series system is dictated by the total degrees of bend in the cables as measured by the sum of the degrees of all bend radii. This directly affects the efficiency of cable action. The configuration that gives the control system the fewest degrees of bend is the one that should be employed.



Mechanical Advantage:

Every control has its own "mechanical advantage" factor. Mechanical advantage means that because you are using a lever to create motion at the other end of a control system (move the throttle or shift mechanism on the engine itself) it requires less effort at the control handle than it would if you were pushing directly on the engine's throttle or shift mechanism. ***Example:*** *if an engine required 15 pounds of force to move its shift lever and you use a control with a mechanical advantage of 2.77, you would divide the force by the mechanical advantage to determine how much effort must be exerted at the control lever handle to create the needed 15 pounds of force.*

$$\frac{\text{force}}{\text{mechanical advantage}} = \text{force required at control lever*}$$

$$\frac{15 \text{ lbs.}}{2.77} = 5.42 \text{ pounds of force required at control lever*}$$

Understanding a control's mechanical advantage and the amount of force to be overcome at the engine is very important when specifying the appropriate control.

** Approximate: varies by cable efficiency and routing.*