



Craftsman  
MARINE

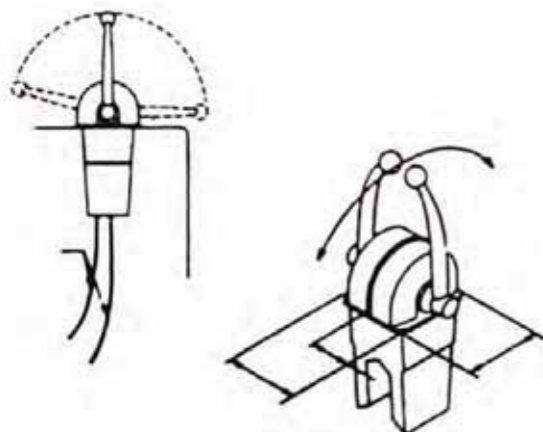
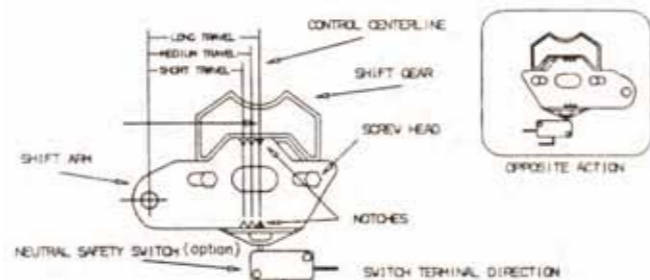


FIG. 1 CONTROL BOX CLEARANCES



TOTAL SHIFT CABLE TRAVEL (AT THE CONTROL)

SHORTEST = 2.70 Inches (68.5mm)  
MEDIUM = 2.96 Inches (75.12mm)  
LONGEST = 3.22 Inches (81.72mm)

FIG. 2 SHIFT CABLE TRAVEL SETTING

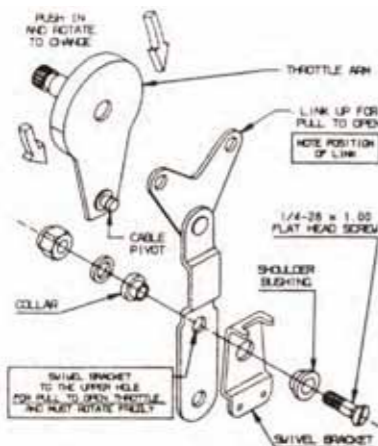


FIG. 3 "PULL TO OPEN" SETTING

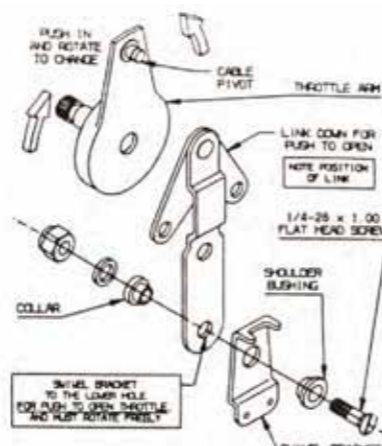


FIG. 4 "PUSH TO OPEN" SETTING

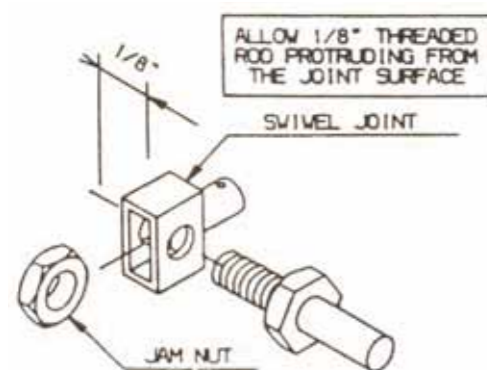


FIG. 5 SHIFT CABLE SWIVEL CONNECTION

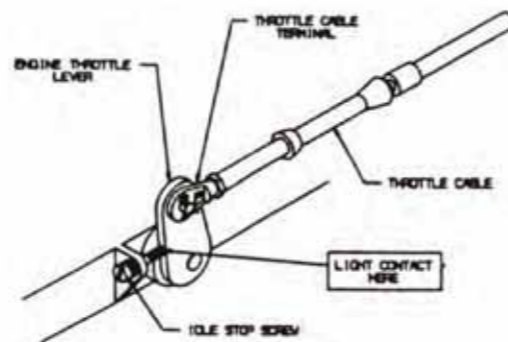


FIG. 6 ENGINE THROTTLE CONNECTION

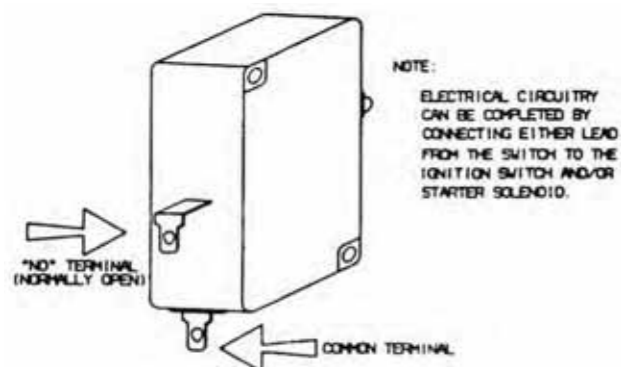


FIG. 7 NEUTRAL SAFETY SWITCH (OPTION)



FIG. 10 NEUTRAL WARM-UP



# VECTRA

MANUAL

Single engine control VECTRA and Dual engine control VECTRA allows throttle and shift operations for either Single or Twin Engines in Inboard / Outboard / Inboard-Outboard configuration. These levers also have a feature to allow the control of the throttle while the gear is in neutral position. (Usually this operation is used for Engine Warm up).

Craftsman Marine push-pull cables can be used directly on the Lever.

## 1) INSTALLATION PREREQUISITES

### 1.1) Before you install a Control Lever: (Ref. Fig. 1)

- Define the mounting location depending upon the space required for installation (refer templates in Fig. 9 for Double Control Lever and Fig. 10 for Single Control Lever)
- Once the mounting location is defined, ensure that the Handle movements for extreme throttle positions are not restricted.
- Ensure that the Cable routing allows long bending radius.

### 1.2) Before you install the Control Cables:

- Ensure that no bending radius is less than 200mm while routing a cable.
- Use of cable hangers or routing through segments of conduit for long straight runs is recommended.
- Do not use fittings which may compress or damage the cable casing.
- For installing Control Cable on a Boat with outboard engine, add 4 feet length to the original length measured while routing.

## 2) INSTALLING CONTROL CABLES:

### 2.1) Choosing mode of operation:

Using Table-A, determine the correct operating mode of throttle and shift cable for your engine.

ENGINE	SHIFT CABLE ACTION	THROTTLE CABLE ACTION
Honda, Suzuki, Tohatsu, Mercruiser, Johnson, Evinrude, Omc, Volvo Inboard/Outboard	"PULL" TO GO FORWARD	"PUSH" TO OPEN THROTTLE
Yamaha 90 H.P. & Higher, Yamaha 70 H.P. & Below, Yamaha Inboard/Outboard		
Mercury 18, 25 HP & Outboards and Mariner Outboards		
Inboards (Diesel, Gas)	MOST TRANSMISSIONS "PULL" TO GO FORWARD	MOST THROTTLES "PULL" TO OPEN

**Table-A: Cross-reference of throttle and shift cable action with Engine type.**

### 2.2) Installing a shift cable

- Referring Table-A, verify whether the shift cable action is Push or Pull.
- Depending upon the shift cable action, reverse the Shift Arm and Neutral Safety Switch Mounting if required.
- Insert the Jam Nut in BLACK Plastic Swivel Joint (Ref. Fig. 5) and Screw it on Cable Rod end completely.
- Using Cotter Pin, fasten the Swivel Joint on Shift Arm (Select the desired Travel Length, Refer instruction "2.3")
- In order to restrict cable dislocation, fasten the cable on lever body using clamp.

### 2.3) Selecting a shift cable travel length (Ref. Fig. 2)

The Engine Control Lever allows following travel lengths for a shift cable:

1.	Short	68 mm
2.	Medium	75 mm (Recommended Travel Length)
3.	Long	82 mm

## 2.4) Installing a throttle cable

### 2.4.1) Control Lever End

- Referring Table-A, verify whether the throttle cable action is Push or Pull.
- Dismantle the Handle and Side Cover from the Control Lever.
- Depending on the requirement of throttle cable action, check the settings for Throttle Arm, Link Assembly arrangement and Swivel Bracket Position (Ref. Fig. 3 and 4) (For reversing the cable action settings, refer to the instruction "2.4.2")
- Screw the RED Plastic Eye terminal on Throttle Cable.
- Using Circlip, affix this eye terminal on pivot on Throttle arm.
- In order to restrict cable dislocation, fasten the cable on swivel bracket using clamp.

### 2.4.2) Settings for reversing the cable action (Push to Pull / Pull to Push) (Ref. Fig. 3 and 4)

- Remove the swivel bracket from the link assembly.
- Dismantle the link assembly carefully from Shift Gear without disturbing any other spares of the Lever.
- Press and rotate the throttle arm to around 180 degrees until it is locked again. (Ensure the handle is removed)
- Rearrange and screw the link assembly as in the diagram.
- Verify whether the swivel bracket rotates freely.

### 2.4.3) Engine End

- While installing the Control System, make sure that the engine is in neutral position.
  - Throttle Cable must be in light contact with idle stop screw (Ref. Fig. 6)
- NOTE: Disconnect the throttle cable before rigging the engine idle. Failure of this precaution may damage cable and/or engine.*

### 2.4.4) Engine Warm-Up

- Pull the Handle Lever Hub in the direction marked in Fig. 8
- Rotate the Handle (clockwise/counterclockwise) for throttling. Accelerate the throttle to the desired level.
- Engage the handle back to neutral. The spring will automatically adjust the neutral position of Handle.

## 3) NEUTRAL SAFETY SWITCH (OPTIONAL)

The neutral safety switch prevents the engine start while the gear engaged. (Ref. Fig. 7)

- Set the control lever to the neutral detent.
- Check the neutral safety switch for continuity.

### 3.1) Continuity Test (Ref. Fig. 7)

An electric circuit of lamp and battery connected in series can be used for this test:

- Connect one end of this circuit to COMMON terminal and the other to NO (Normally Open) terminal of the switch. As the circuit is completed, the test lamp must glow.
- Now disengage the handle from neutral position. The test lamp will be switched off as the circuit remains incomplete.

### 3.2) Connecting the Neutral Safety Switch with the engine:

- Connect one terminal of the neutral safety switch to the ignition switch (start lead) and the other to starter solenoid.
- Terminals and Insulators provided with this product are to be used in order to avoid short-circuits.

