

# Throttle & Choke Control Installation & Adjustment Guide

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# Safety Precautions

To insure safe operations please read the following statements and understand their meaning. Also refer to your equipment owner's manual for other important safety information. This manual contains safety precautions which are explained below. Please read carefully.

## **WARNING**

Warning is used to indicate the presence of a hazard that *can* cause severe personal injury, death, or substantial property damage if the warning is ignored.

## **CAUTION**

Caution is used to indicate the presence of a hazard that *will* or *can* cause *minor* personal injury or property damage if the warning is ignored.

## **NOTE**

Note is used to notify people of installation, operation, or maintenance information that is important but not hazard-related.

## **For Your Safety!**

*These precautions should be followed at all times. Failure to follow these precautions could result in injury to yourself and others.*

 <b>WARNING</b>

<b>Carbon Monoxide can cause severe nausea, fainting or death.</b>  Do not operate engine in closed or confined area.

### **Lethal Exhaust Gases!**

*Engine exhaust gases contain poisonous carbon monoxide. Carbon monoxide is odorless, colorless, and can cause death if inhaled. Avoid inhaling exhaust fumes, and never run the engine in a closed building or confined area.*

 <b>WARNING</b>

<b>Accidental Starts can cause severe injury or death.</b>  Disconnect and ground spark plug lead before servicing.

### **Accidental Starts!**

**Disabling engine. Accidental starting can cause severe injury or death.** Before working on the engine or equipment, disable the engine as follows: 1) Disconnect the spark plug lead(s). 2) Remove battery cables (remove negative (-) lead first). Reconnect negative (-) lead last when reconnecting battery.

 <b>WARNING</b>

<b>Explosive Gas can cause fires and severe acid burns.</b>  Charge battery only in a well ventilated area. Keep sources of ignition away.

### **Explosive Gas!**

*Batteries produce explosive hydrogen gas while being charged. To prevent a fire or explosion, charge batteries only in well ventilated areas. Keep sparks, open flames, and other sources of ignition away from the battery at all times. Keep batteries out of the reach of children. Remove all jewelry when servicing batteries.*

*Before disconnecting the negative (-) ground cable, make sure all switches are OFF. If ON, a spark will occur at the ground cable terminal which could cause an explosion if hydrogen gas or gasoline vapors are present.*

 <b>CAUTION</b>

<b>Electrical Shock can cause injury.</b>  Do not touch wires while engine is running.

### **Electrical Shock!**

*Never touch electrical wires or components while the engine is running. They can be sources of electrical shock.*

 <b>WARNING</b>

<b>Hot Parts can cause severe burns.</b> Do not touch engine while operating or just after stopping.

### Hot Parts!

*Engine components can get extremely hot from operation. To prevent severe burns, do not touch these areas while the engine is running—or immediately after it is turned off. Never operate the engine with heat shields or guards removed.*

 <b>WARNING</b>

<b>Rotating Parts can cause severe injury.</b> Stay away while engine is in operation.

### Rotating Parts!

*Keep hands, feet, hair, and clothing away from all moving parts to prevent injury. Never operate the engine with covers, shrouds, or guards removed.*

 <b>WARNING</b>

<b>Explosive Fuel can cause fires and severe burns.</b> Stop engine before filling fuel tank.

### Explosive Fuel!

*Gasoline is extremely flammable and its vapors can explode if ignited. Store gasoline only in approved containers, in well ventilated, unoccupied buildings, away from sparks or flames. Do not fill the fuel tank while the engine is hot or running, since spilled fuel could ignite if it comes in contact with hot parts or sparks from ignition. Do not start the engine near spilled fuel. Never use gasoline as a cleaning agent.*

## Magnum Twin Cylinder Horizontal Shaft Engines

### How to Install Dual Controls And Make Adjustments

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### Tools Needed

1/4" wrench, or nut driver

3/8" - 7/16" wrench, or ratchet and socket

Blade type screwdriver

Torque wrench is required

Tachometer

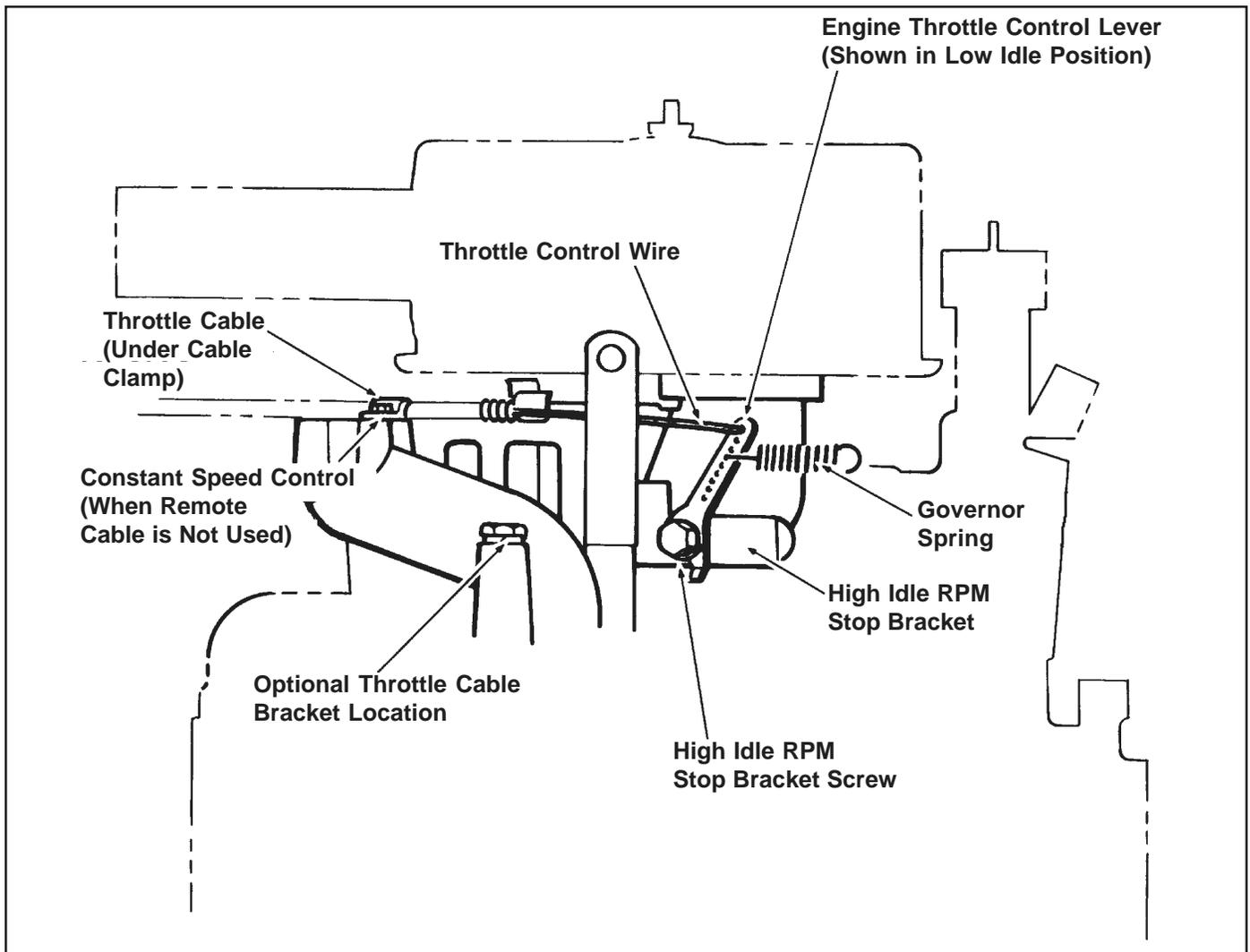


Figure 1. Magnum Twin Horizontal Throttle Control.

**A. Throttle Control** (Does not apply to customer supplied control plate.)

1. **Engines with the square air cleaner assembly-** Remove the two wing nuts (top of air cleaner cover), the cover, and the two rubber seals, and then lift the element and dish out.

Disconnect the breather hose from the air cleaner base by pushing downward.

Remove the air cleaner base 3/8" hex. head. retaining screw, air cleaner base, and oval air tube.

Leave the air cleaner base gasket on the carburetor air cleaner elbow.

2. **Engines with dome style air cleaner start with #3.**
3. Loosen the throttle control cable clamp located on top of the intake manifold, or on the intake manifold bracket, located to the right on one of the manifold mounting bolts.
4. Position the application throttle control in the **fast** throttle position. Then move the throttle control back 3/16" (4.75 mm). Insert the control cable bowden wire in the proper hole of the engine control lever, which is located on the side of the carburetor air intake elbow.

# Magnum Twin Horizontal

5. Grasp the control cable and place it under the cable clamp. Pull until the cable is taut, then tighten the clamp screw. **NOTE:** The engine control lever should be against the high idle RPM stop bracket.
6. Move the application throttle control to the **slow** position, then to **fast**. Check the engine control to assure it stops against the high idle RPM stop bracket.

**NOTE:** When the application throttle control lever is in the **slow** position the engine governor spring must be free of tension or pushing pressure. A non-free spring can affect the RPM.

**NOTE:** Do not move the governor spring to other holes without approval.

## B. Choke Control (See Figure 2)

1. Loosen the cable clamp screw on the bottom front side of the intake manifold for a forward pull choke, or on the air intake elbow for a reverse pull.
2. Place the choke control cable under the intake manifold from the front of engine (front pull choke). Insert the cable bowden wire into the choke control (front or reverse pull). Then place choke cable under the cable clamp.

3. Position the choke control so it bottoms, then pull it back approximately 1/16" (1.5 mm). Make sure that the carburetor choke is fully opened before tightening cable clamp.
4. Reassemble all air cleaner components and the crankcase breather tube.

## C. Starting the Engine

1. Position the application throttle control to mid/full throttle.
2. Place the choke control into the **on** position.
3. Turn the key switch or push the start button. Release as soon as the engine starts.
4. Push the choke control inward. If the engine hesitates, pull the choke control out until the engine regains its momentum, then push the choke control in again. Repeat as required.
5. Set the throttle control to the desired RPM.

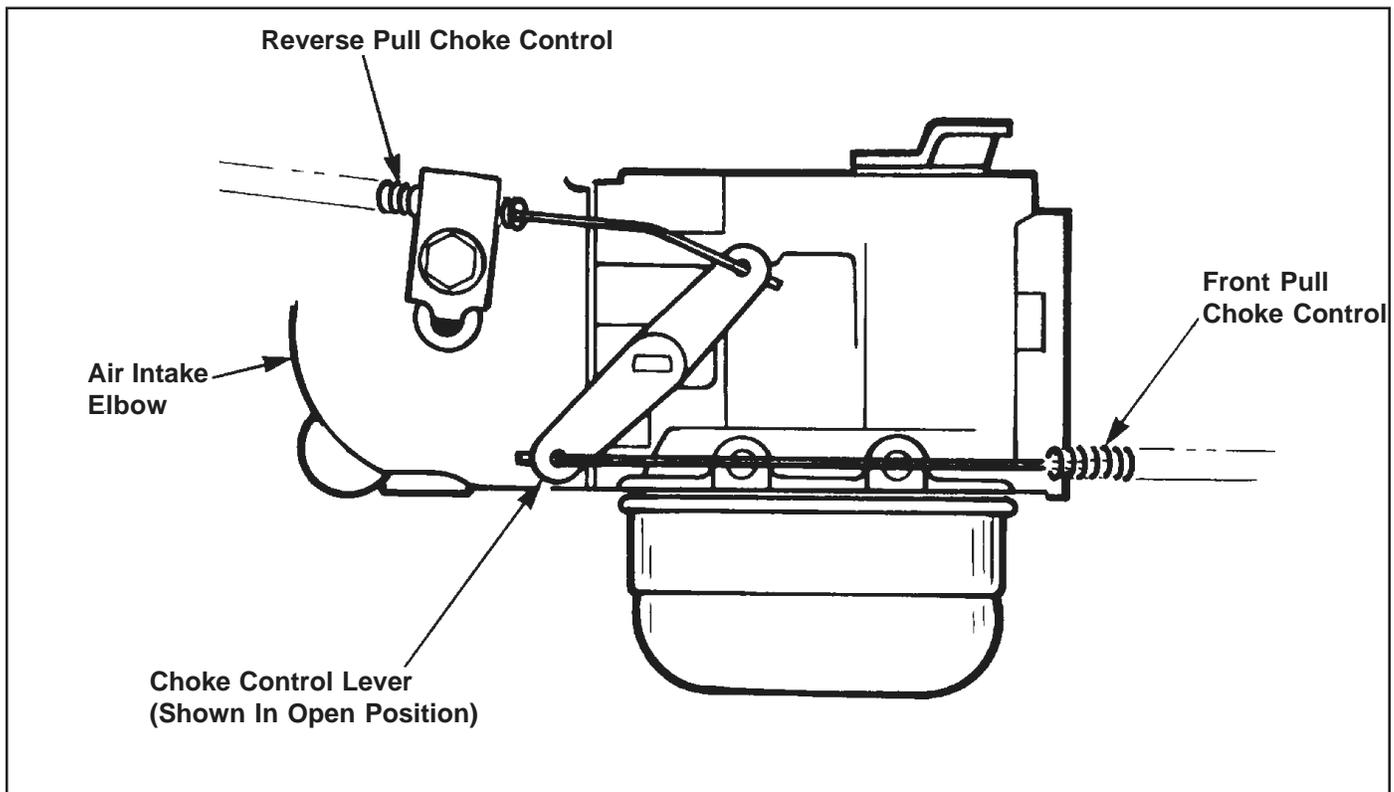


Figure 2. Magnum Twin Horizontal Choke Control.

## D. Changing the High Idle RPM

### To Increase the High Idle RPM

1. With the engine running, loosen the throttle cable clamp screw enough to slide the cable.
2. Loosen the engine high idle stop bracket screw 1/2 to 3/4 turn. (See Figure 1 on page 4.)
3. Position the application throttle control to **fast** then back it off approximately 3/16" (4.75 mm).
4. Pull the throttle control cable until the required RPM is obtained. (NOTE: Tap the high RPM stop bracket to the left if it does not move when the cable is pulled.) Tighten both high RPM stop screw and the cable clamp screw.
5. Move the application throttle control to **slow**, then to **fast**. Check the RPM with a tachometer.

### To Decrease the High Idle RPM

Refer to the above steps 1, 2, and 3.

4. Push the throttle control cable until the required high idle RPM is obtained.
5. Tighten the cable clamp screw.
6. Slide or tap the high idle stop to the right until it is against the engine control lever. Torque the high RPM stop bracket screw to **70 in. lbs.**
7. Move the application throttle lever to **slow**, then to **fast**. Check the RPM with a tachometer.

## E. Changing the Constant RPM Control Engine

1. With the engine running, loosen two nuts on the RPM adjusting rod location on top of the intake manifold. The rod is connected to the governor spring (not shown on Figure 1).

2. To increase the RPM: Hold the adjusting rod and turn one nut inward until the required RPM is obtained.
  - a. Turn the second nut against the first nut. Use two wrenches to lock the nuts together. Check the RPM.
3. To decrease the RPM: Turn the two nuts outward until the required RPM is obtained. Refer to Step 2a for a final adjustment.

## F. Setting the Low Idle RPM

1. The low idle RPM can be increased or decreased by turning the low idle stop screw (located near the top of the carburetor and below the throttle lever with the link attached) inward to increase, or outward to decrease.

## G. Carburetor Fuel Mixture

(Fixed & adjustable jet carburetors)

1. The fuel mixture should not require adjustment unless the RPM has significantly changed and the engine has been running for more than five minutes.

## H. Shutting the Engine Down

1. Position the application throttle lever in the **slow** position when not required to run engine out of fuel. Allow the engine to come to low idle.
2. Turn the key switch off, or push and hold the stop button until the engine stops.
3. When required to run the engine out of fuel, leave the throttle control in the **fast** position and run until the engine stops.
4. Turn the key switch off.
5. A constant speed unit is normally controlled through a low idle pull-down device which is automatically activated when the load is removed. Before stopping remove load, let engine decelerate, then turn key or switch to off position.

## Magnum Twin Cylinder Vertical Shaft Engines

### How to Install Dual Controls and Make Adjustments

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### Tools Needed

1/4" wrench or nut driver

5/6" - 3/8" wrench, ratchet and socket, or nut driver

Blade type screwdriver

Tachometer

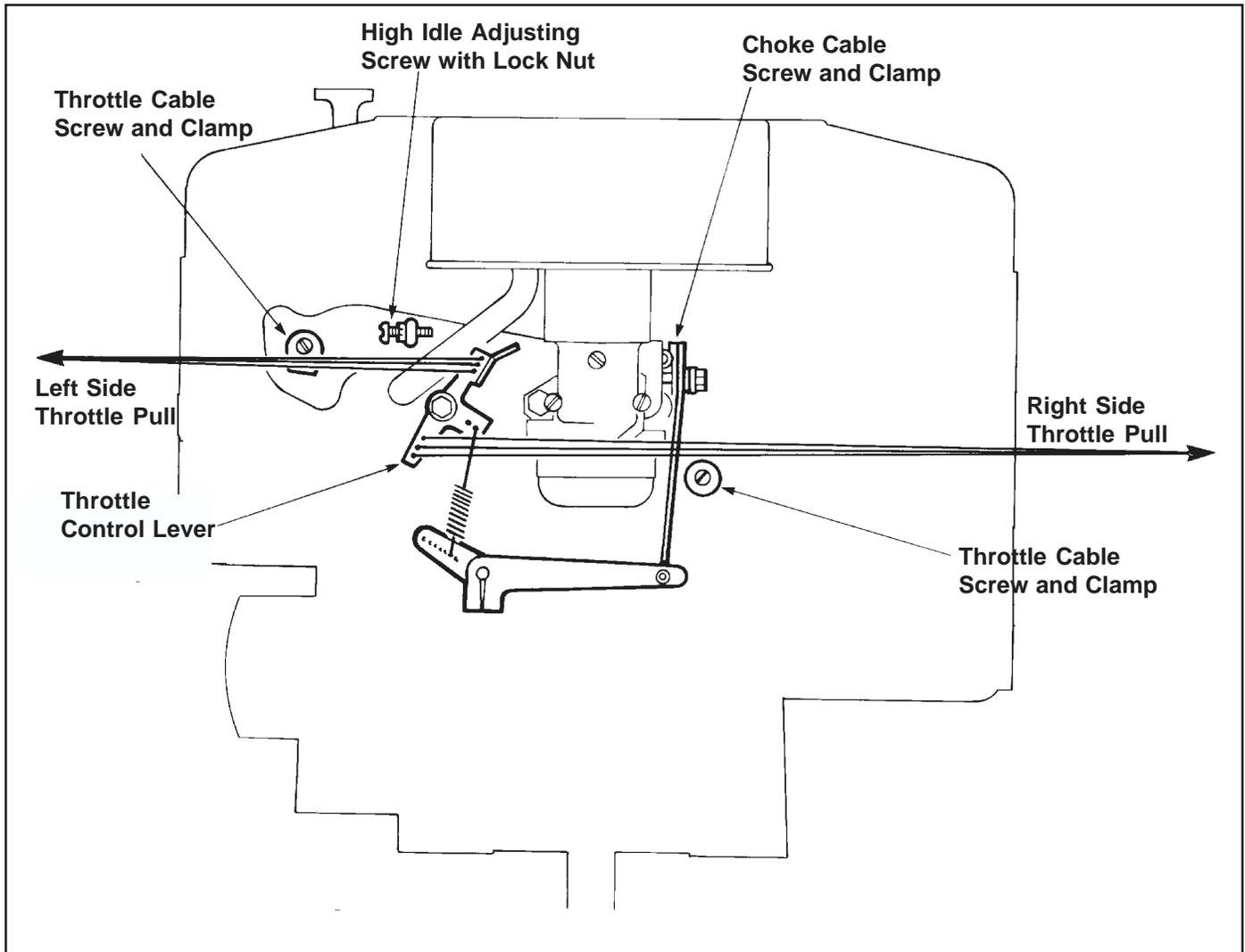


Figure 1. Magnum Twin Vertical Throttle and Choke Controls.

#### A. Throttle Control

1. Loosen the throttle control (right side or left side pull cable clamp screw.
2. Position the application throttle control in the **fast** position, then move the throttle control back  $3/16$ " (4.75 mm). Insert the control cable bowden wire into the proper hole or swivel clamp in the engine control lever which is located on the left side of the intake manifold for a left side pull. For a right side pull, loosen the control cable clamp screw located on the right side of the intake manifold.
3. Position the control cable under the cable clamp and grasp the cable pull until it is taut then tighten the cable clamp screw.
4. Move the application throttle control to the **slow** position then to the **fast** position. Check the engine control lever to assure it stops against the high idle adjusting screw.

NOTE: The engine throttle control should be against the high idle adjusting screw.

#### B. Choke Control (See Figure 1)

1. Loosen the choke control cable clamp screw on the air cleaner intake elbow.
2. Insert the choke cable bowden wire into the choke lever on the carburetor, then place the cable under the cable clamp.
3. Push the application choke control in until it bottoms.
4. Grasp the cable near the cable clamp on the engine, push lightly until the application choke control moves approximately  $1/16$ " (1.5 mm) from its bottomed position, hold the cable and tighten the clamp screw.

# Magnum Twin Vertical

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5. Check choke function by pulling the choke control outward until it stops.

NOTE: Make sure that the carburetor choke control does not stop against the choke cable, because it will prevent full choking and engine starting.

6. Push the choke control in until it bottoms, release it. The choke control should move outward slightly upon release which means it is properly set.

## C. Starting the Engine

1. Position the application throttle control to mid or **fast** throttle.
2. Place the choke control into the **on** position.
3. Turn key switch or push start button, release as soon as the engine starts.
4. Push the choke control inward. If the engine hesitates, pull the choke control out until the engine regains its momentum, then push the choke control in again.) Repeat as required.
5. Set the throttle control to the desired RPM.

## D. Changing the High Idle RPM

1. Loosen the high idle adjusting screw lock nut located on the intake manifold left side.
2. Loosen the throttle control cable clamp screw to allow the cable slide.
3. With the engine running, move the application throttle control to **fast** then back it off 3/16" (4.75 mm).
4. Grasp the cable near the engine cable clamp, pull until the engine throttle lever stops against the high idle adjusting screw.

5. To increase the high idle RPM, turn the stop screw outward while pulling on the cable until the desired RPM is obtained.

6. Tighten the high idle screw lock nut and the cable clamp screw.

7. To decrease the high idle RPM, follow steps 1, 2, 3, and 4 then turn the screw inward, until the desired RPM is obtained. Proceed to step 6.

8. To check the RPM change, move the application throttle lever to **slow**, then to **fast**. Check the RPM with a tachometer.

## E. Setting the Low Idle RPM

1. Position the application throttle control in the low/slow position.
2. The low idle RPM can be increased/decreased by turning the low idle stop screw (located near the top center of the carburetor) inward to increase, outward to decrease.

## F. Carburetor Fuel Mixture

1. The fuel mixture should not require adjustment unless the RPM has significantly changed, and the engine has been running for more than five minutes.

## G. Shutting the Engine Down

1. Position the application throttle lever in the **slow** position when not required to run the engine out of fuel. When required to run the engine out of fuel, leave the throttle in the **fast** position until the engine stops.
2. Turn the key switch off, or push and hold the stop button in until the engine stops.

Command CV & CH Single Cylinder Models

Control Installation Instructions

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Tools Needed

- 8 and 10 mm wrench, ratchet and socket, or nut driver
- Blade type screwdriver
- Tachometer
- Torque wrench as required

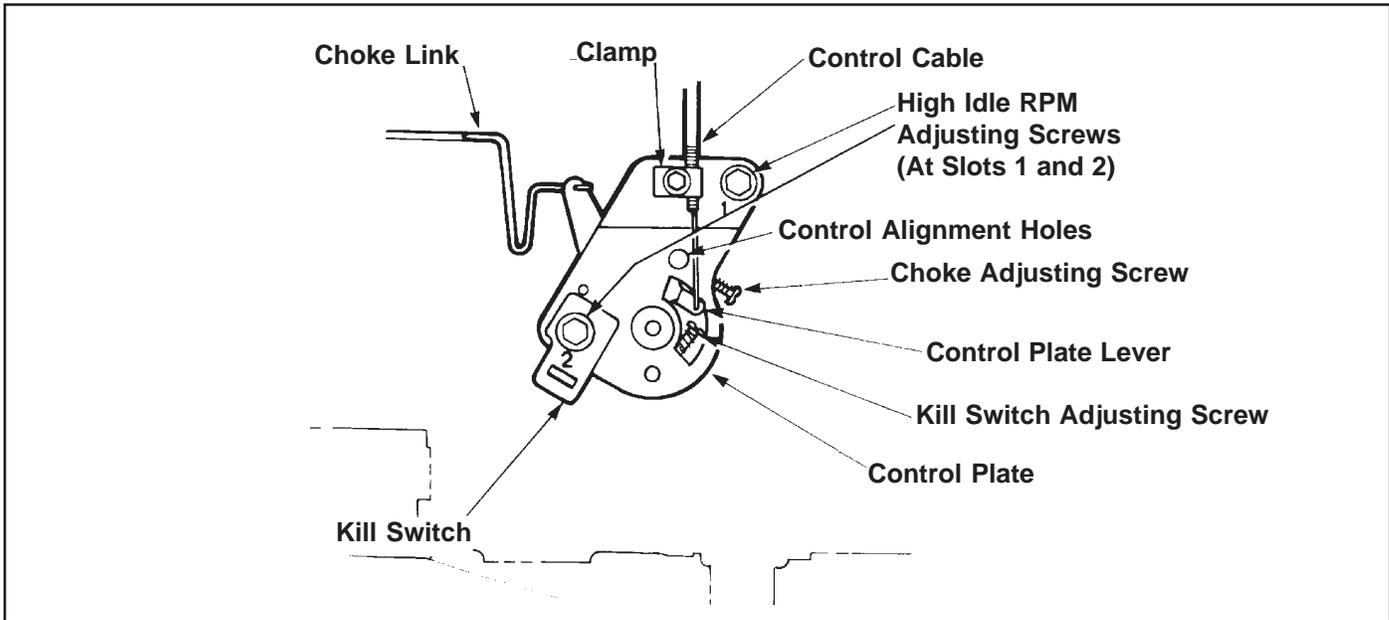


Figure 1. Single Cable Control.

## A. How To Install the Single Throttle and Choke Control Cable (See Figure 1)

1. Loosen cable clamp screw on engine control plate.
2. Position application throttle control lever in the **fast** throttle position. (Single control cable) Insert the cable bowden wire into the engine control plate lever.
3. Position the cable under the control plate cable clamp.
4. Pull cable upward until the control plate lever alignment hole is in line with the control plate hole.
5. Tighten control cable clamp screw.
6. Move throttle lever to **slow** position, then back to full throttle **fast**.

NOTE: When moving the throttle lever to the **fast** throttle position, the choke link should not move. If the choke link moves, turn the choke lever adjusting screw counterclockwise (outward) until the link does not move.

7. Move the throttle lever to the choke position. Check if the choke has closed fully by placing your finger behind (right side) the link loop, and apply pressure toward the carburetor. The link should not move, which means that the controls are properly set.

## B. Engines Equipped With An Optional Kill Switch - Single Control (See Figure 1)

1. Position application throttle control in the stop position. If the engine continues to run, turn the kill switch adjustment screw inward until the engine stops. Then turn the screw an additional 1/2 - 3/4 turn to assure it will function properly.

## C. Starting The Engine With Single Control Cable

1. Place the throttle/choke control into the choke position.
2. Start the engine.
3. As soon as the engine starts, move the throttle/choke control to **fast** position or desired RPM.
4. If the engine stops, repeat steps 1, 2, and 3.

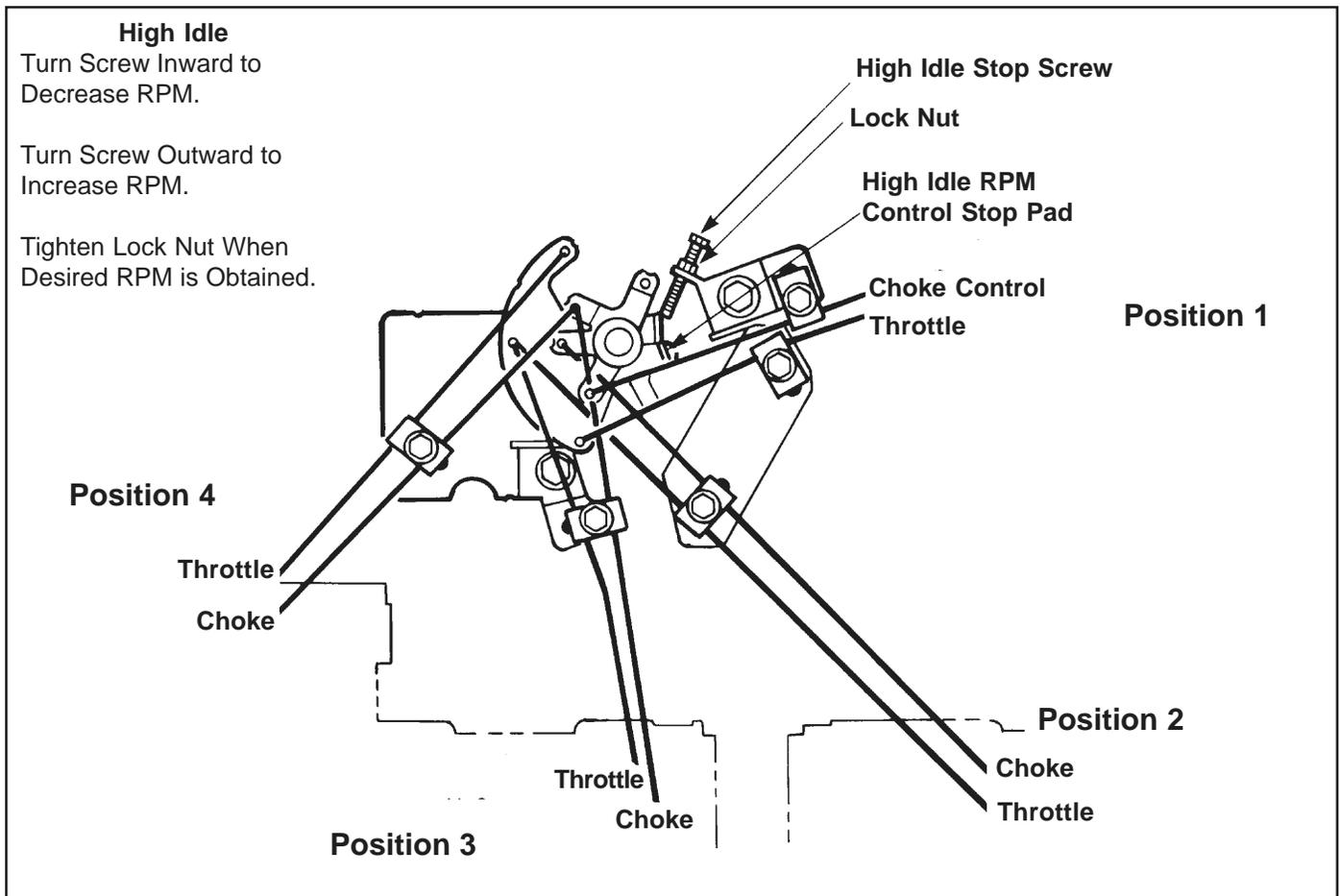


Figure 2. Dual Cable Control (4 Positions Shown).

## D. How To Install Dual Control Cables

(See Figure 2)

### Throttle Control

1. Loosen the 2 cable clamp screws on the engine control plate.
2. Position the application throttle control in the **fast** throttle position. Then move the throttle lever back 3/16" (4.75 mm). Insert the cable bowden wire into the throttle control lever on the control plate.
3. Position the throttle cable under the cable clamp.
4. Pull on the throttle cable until it stops. Hold it and tighten the cable clamp screw.
5. Move application throttle lever to the slow position, then to **fast** throttle. Check the engine control to assure it stops against the stop screw, which means it is properly set.

6. On the CH engine the control lever should stop against the control slot stop.

### Choke Control

1. Insert the choke cable bowden wire into the engine choke control lever on the control plate.
2. Position the choke cable under the cable clamp.
3. Push the choke control in the application panel until it bottoms, then pull it back approximately 1/16" (1.5 mm ).
4. Push on the choke cable above the clamp on the engine control plate until the choke lever stops. Then tighten the cable clamp screw.
5. Pull the choke control until it stops. Check to assure the choke link cannot be moved toward the carburetor by applying finger pressure on the link loop behind the engine control plate. If the choke link moves, adjust by following steps 3 and 4.

# Command Single Cylinder

6. Push the choke control in until it bottoms. The choke control link should be free so the engine does not run on partial choke.

## E. Starting an Engine Equipped With Dual Control Cables

1. Position throttle control in mid to **fast** throttle.
2. Place the choke control into the **on** position.
3. Start engine, push choke control in as soon as the engine starts.

NOTE: Should the engine slow down as though it will stop, pull the choke control to regain RPM, push the choke in as before and set the throttle to your desired RPM.

## F. Changing the High Idle RPM on a CV Engine with Single Control (See Figure 1 on page 12)

1. Loosen the two control plate screws (plate holes are slotted). Set the application throttle control to **fast**, move the engine control plate up to increase and down to decrease the RPM.
2. Tighten the two control panel screws when the required RPM is obtained.

## G. Changing the High Idle RPM on a CH Engine with Variable RPM Control (See Figure 3)

1. Follow F, steps 1 and 2, except move the control plate to the left to decrease or to the right to increase the RPM.

NOTE: The choke control on the CH engine should be installed as in "How to install dual control cables - Choke Control" instructions.

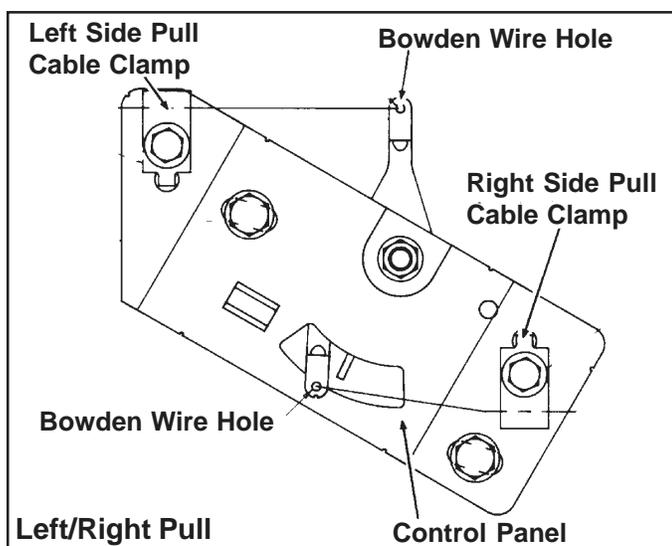


Figure 3. Variable RPM Control.

## G. Changing the High Idle RPM on a CH Engine with Constant RPM Control (See Figure 4)

1. Loosen the two (2 sets of slotted holes) control plate mounting screws and slide the plate to the left to decrease, or to the right to increase the RPM.

NOTE: If the specific RPM cannot be obtained, remove the two control plate mounting screws and move the plate to the second set of holes and position the plate to obtain the RPM.

2. Tighten the two screws upon obtaining the required RPM.

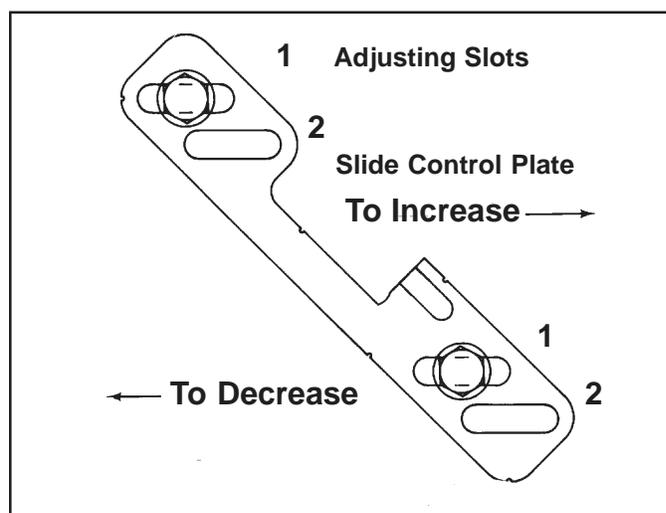


Figure 4. CH Constant RPM Control.

## H. Changing The High Idle RPM On a CV Engine With Dual Controls (Increase or decrease RPM). (See Figure 2 on page 13)

1. Loosen the high idle stop screw (top side of control plate) retaining nut.
2. Start the engine, move the application throttle lever to **fast**, loosen the throttle cable clamp screw on the engine control plate.
3. **To increase the RPM:** Turn high idle stop screw outward (counterclockwise) and pull on the throttle control cable until the desired RPM is obtained.
4. Tighten the throttle cable clamp screw and the high idle stop screw retaining nut.
5. To assure that the RPM has been obtained, move the throttle lever to **slow** then back to **fast**, then check the RPM with a tachometer.

## Command Single Cylinder

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6. **To decrease the RPM:** Follow steps 1 and 2. Then slide the throttle cable in the direction to decrease the RPM (check with a tachometer) until the desired RPM is obtained. Tighten the cable clamp screw.
7. Turn the high idle stop screw inward (clockwise) until it stops against the throttle control lever. Then tighten the stop screw retaining nut.
8. Recheck high idle RPM to assure the required RPM has been obtained.

### I. Setting The Low Idle RPM

1. Move the application control to slow position.
2. Using a tachometer, check the RPM. Then, using a screwdriver, turn the low idle stop screw (located at the top of the carburetor) inward (clockwise) to increase the RPM and outward (counterclockwise) to lower the RPM.

### J. Fuel Mixture

The fuel mixture should not require changing unless the RPM has been significantly changed and the engine has been running for more than five minutes.

## Command Twin Cylinder

### Control Installation Instructions

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### Tools Needed

7 and 8 mm wrench, ratchet and socket, or nut driver

Blade type screwdriver

Tachometer

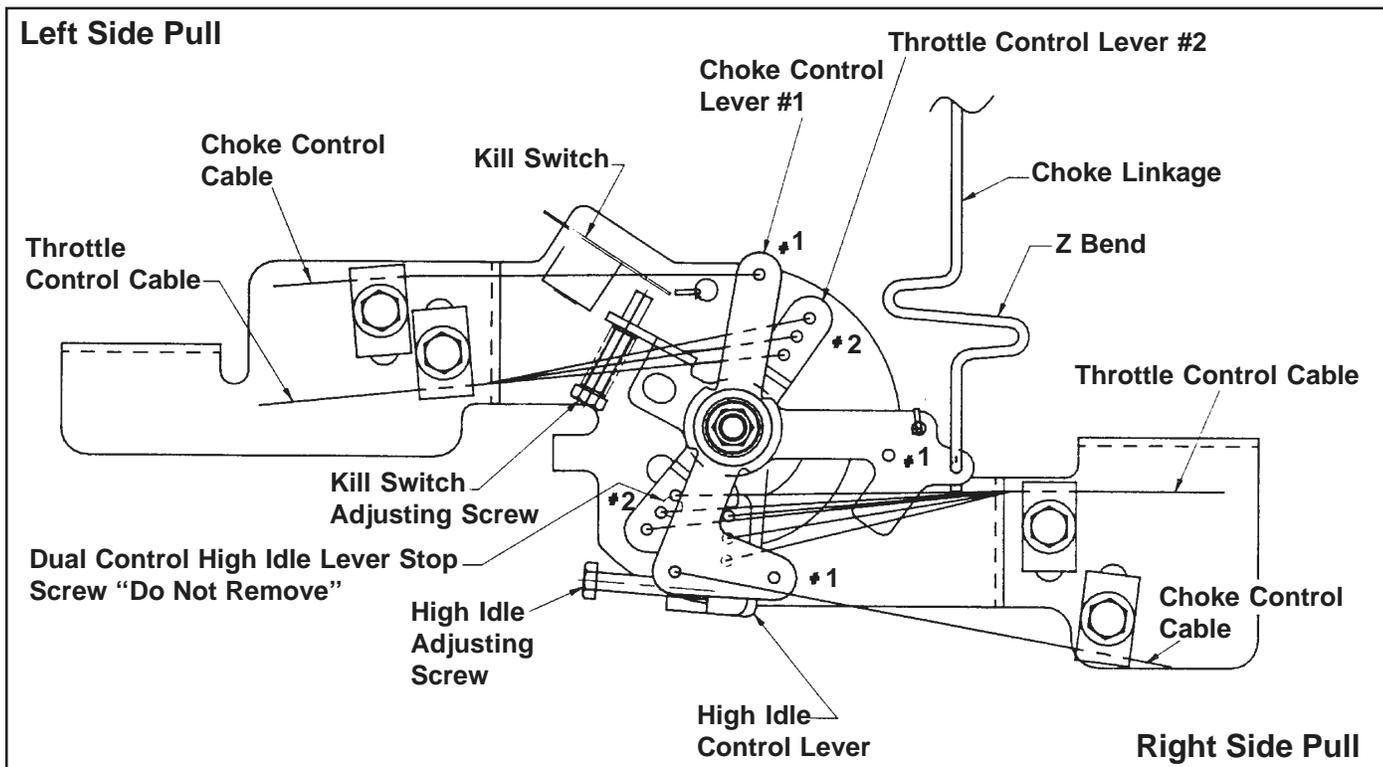


Figure 1. Command Twin Cylinder Cable Control.

## A. How To Install Throttle and Choke Control Cables

The throttle and choke controls can be routed to accommodate right or left side pull. Refer to Figure 1.

NOTE: The figure shows four cable clamps, however, each engine has two. Relocate the clamps to accommodate the cable routing.

### Throttle Control

1. Move the application throttle control to the fast position (maximum travel) then move it back 3/16" (4.75 mm).
2. Loosen the cable clamp screw so the cable can be placed under the clamp without removal.
3. Insert the cable bowden wire into one of the engines throttle control lever holes, then place the cable under the cable clamp.

4. Pull lightly on the throttle cable until it stops. Then hold it, and tighten the cable clamp screw.
5. Move application throttle control lever to the **slow** position then back to **fast**, or until it stops. Check that the engine throttle control lever is against the dual control high idle stop screw.
6. If the throttle control lever is not against the screw repeat step 1, then loosen the cable clamp screw, and repeat steps 4 and 5.

### Choke Control

1. Push the choke control in the application to its lowest position. Then move it back approximately 3/16" (4.75 mm).
2. Loosen the choke control cable clamp on the engine control.
3. Insert the cable bowden wire into one of the engine choke control lever holes then place the cable under the cable clamp.

4. Push lightly on the cable (engine end) to make sure the choke is open and the choke control is 3/16" (4.75 mm) from its lowest position.
5. Tighten the choke control cable clamp.
6. Pull on the choke control control to make the engine choke close all the way.
7. Push the application choke control to its bottom or lowest position. NOTE: There should be a narrow gap as stated in step 4 which indicates a fully opened choke.
5. If engine begins to hesitate or lose RPM as though it will stop, pull the choke back out momentarily until engine regains running speed. If engine stops, repeat the above steps. Move choke to off position as the engine warms up.
6. Run engine at desired RPM speed.
7. Run the engine out of fuel if required, move the throttle control to the **slow** position before stopping the engine.

### B. Starting The Engine

1. Pull choke control out or until it stops.
2. Move the application throttle control to mid-travel.
3. Turn ignition key or start button to **start** position until the engine starts, then return the key or button to the **run** position. Do not turn the ignition key or push the start button when the engine is running. Damage to the starter will result.
4. Upon engine starting, push the choke to the **off** position.

### C. Changing The High Idle RPM Speed

(See Figure 1 or Figure 2)

1. With the engine running, move the throttle control to **fast**. Use a tachometer to check the RPM speed.
2. Loosen the lock nut on high idle adjusting screw. Turn screw outward to decrease, or inward to increase RPM speed. Check RPM with a tachometer.
3. When the desired RPM speed is obtained, retighten the lock nut.

NOTE: Upon establishing the high idle RPM speed, check for a gap between the high idle control and the choke control. The gap may be greater, **but no less** than .02" (.5 mm).

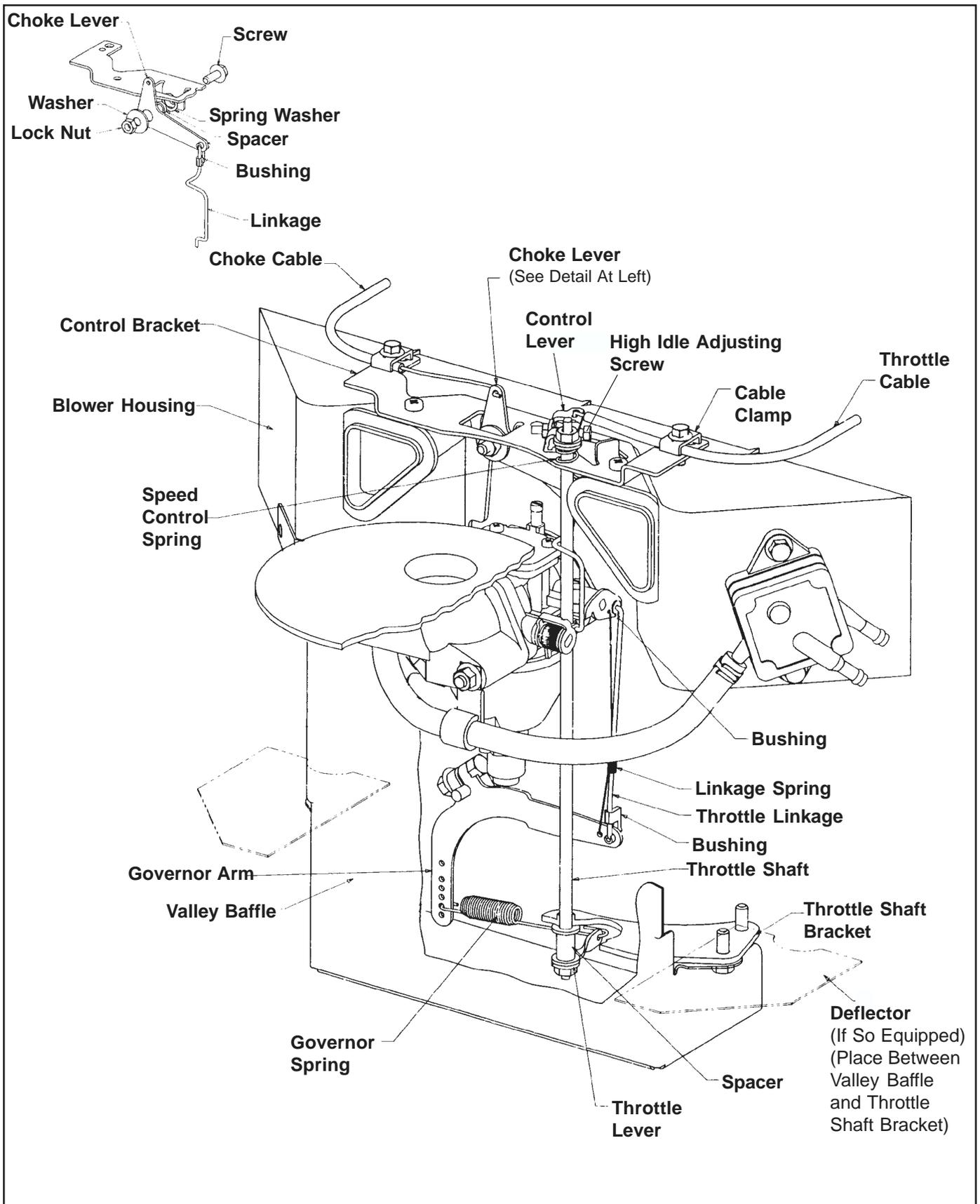


Figure 2. Command Twin Cylinder Commercial Mower Cable Control.

## OHC Twin Cylinder

### Control Installation Instructions

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### Tools Needed

1/4" wrench, or nut driver

7 and 8 mm wrench, ratchet and socket, or nut driver

Blade type screwdriver

Tachometer

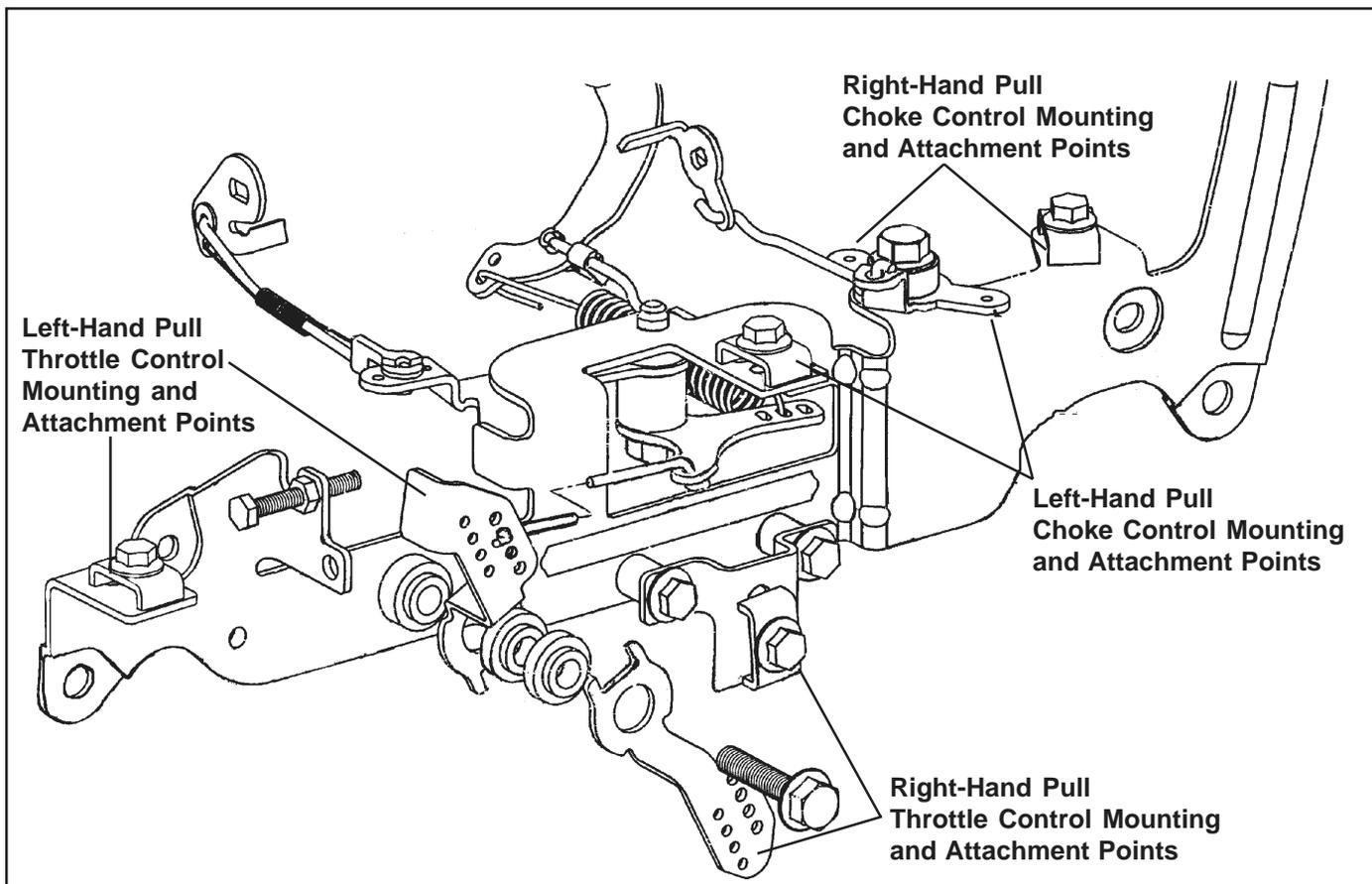


Figure 1. OHC Twin Horizontal Throttle and Choke Controls.

**A. How To Install Throttle and Choke Control Cables**

Mounting locations exist that both the throttle (depending on lever configuration used) and choke control may be connected to accommodate either right or left side pull. See Figure 1.

**Throttle Control**

The three basic lever styles used, determining the direction of pull, are illustrated in Figures 2, 3, and 4.

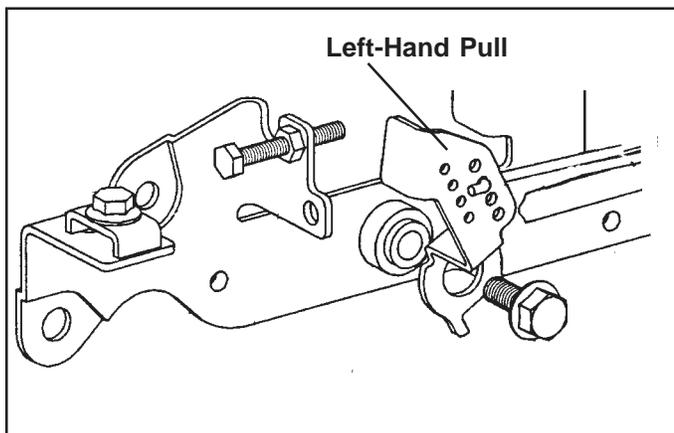


Figure 2. Half Lever, Left-Hand Pull.

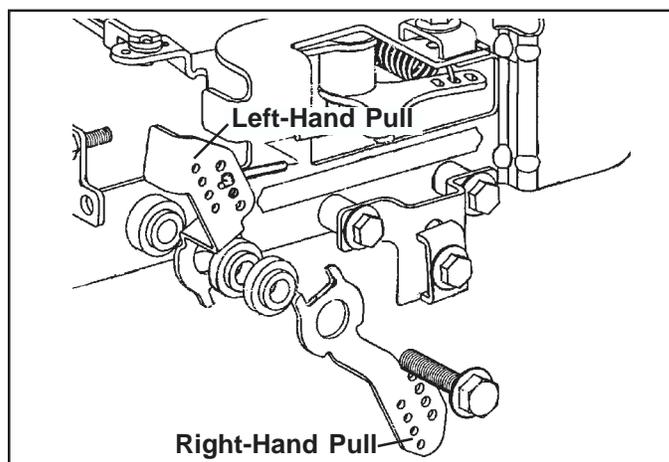


Figure 3. Assembled Lever, Left or Right-Hand Pull.

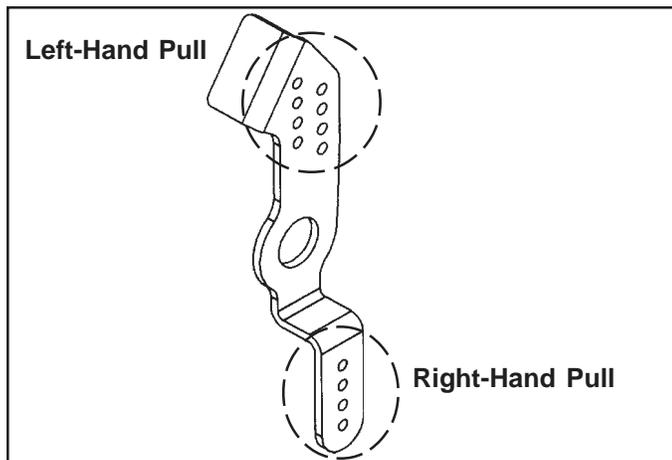


Figure 4. One-Piece Lever, Left or Right-Hand Pull.

## Left-Hand Pull

Each of the three lever styles may be used. Pulling occurs off the **upper** section of lever (above pivot).

1. Connect the “Z” end of throttle cable into the appropriate hole in **upper** section of control lever. Standard location is the second hole from the top on left side closest to the cable mounting.
2. Position cable with clamp, mounted on left side of main bracket.
3. Move throttle control lever to **fast** position. Slide cable into clamp until upper section of lever contacts the limit screw, and tighten clamp securely.
4. Check throttle operation.

## Right-Hand Pull

Control lever configuration used must be as shown in Figure 3 or 4. Pulling occurs off the **lower** section of lever. The bowden clamp bracket is also required and must be mounted in the center location of main bracket, pointing down, if not already installed.

1. Connect the “Z” end of throttle cable into the appropriate hole in **lower** section of control lever. Standard location is the second hole from the bottom (right-hand side if there are two rows).
2. Position cable within clamp and move throttle control lever to the **fast** position.
3. Slide cable into clamp until upper section of lever contacts the limit screw, and tighten clamp securely.

## Choke Control

The choke control cable may be attached to the choke pivot lever and mounted to the main bracket in one of two locations for either right or left-hand side pull. See Figure 1.

## Right-Hand Pull

1. Connect the “Z” end of choke cable through hole in inner arm of choke pivot lever.
2. Position cable within clamp located on upper right side of the main bracket.
3. Push choke control in completely and hold manually. Slide cable through clamp and tighten when choke linkage from carburetor reaches the end of its forward travel. The choke plate should be fully **open** in this position. Pull control knob out, choke plate should be **closed** completely. Check operation and readjust the cable clamp if necessary.

## Left-Hand Pull

1. Connect the “Z” end of choke cable through hole in outer arm of choke pivot lever.
2. Position cable within mounting clamp at upper center location of the main control bracket.
3. Push choke control in and hold manually. Carefully reposition cable and tighten clamp securely when choke pivot lever arm reaches the end of its right-hand travel. The choke plate should be fully **open** in this position. Pull the control knob out, choke plate should be **closed** completely. Check operation and readjust the cable in clamp if necessary.

## B. Starting the Engine

1. Pull choke control outward until it stops.
2. Move the application throttle control to middle range.
3. Turn ignition key to start position until the engine starts. Release as soon as the engine starts. Do not turn the ignition key to the start position when engine is running, as starter and/or flywheel damage will result.
4. Push the choke in gradually as the engine warms up. If the engine hesitates, pull the choke out until momentum is regained, then push in again. For a warm engine, push choke in immediately upon start-up.

5. If engine stalls, pull choke out and repeat steps 1 through 4.
6. Set the throttle control and run engine at desired RPM speed.

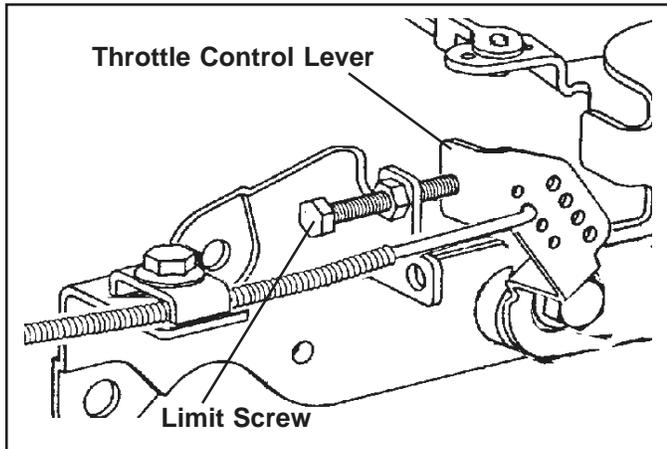


Figure 5.

### C. Changing The High Idle RPM Speed

(See Figure 5)

1. With the engine running, move the throttle control lever to **fast** position. Use a tachometer to check the RPM speed.
2. Loosen the lock nut on high idle limit screw and turn screw to adjust RPM (clockwise to decrease RPM, counterclockwise to increase RPM). Recheck speed with a tachometer.
3. When the desired RPM speed is obtained, tighten the adjusting screw lock nut.

NOTE: Check that control lever stop section contacts limit screw in the **fast** position. If necessary, loosen the clamp and reposition cable as required, then tighten clamp securely.

### D. Changing The Low Idle Speed

1. Start the engine and run at half throttle for 5 to 10 minutes to warm up. The engine must be warm before making final settings. Check that the throttle and choke plates can fully open.

NOTE: The carburetor has a self-relieving choke. Choke plate and shaft assembly are spring loaded. Check to make sure plate moves freely and is not binding (affecting fuel delivery).

2. Move the application control to the **slow** position.
3. Using a tachometer, check the RPM. Then using a screwdriver, turn the low idle speed adjusting screw **in** or **out** obtain a low idle speed of **1200 RPM (+75 RPM)**. See Figure 6. Check the speed again using a tachometer.

NOTE: The actual low idle speed depends on the application. Refer to the equipment manufacturer's recommendations. The low idle speed for basic engines is **1200 RPM (+75 RPM)**.

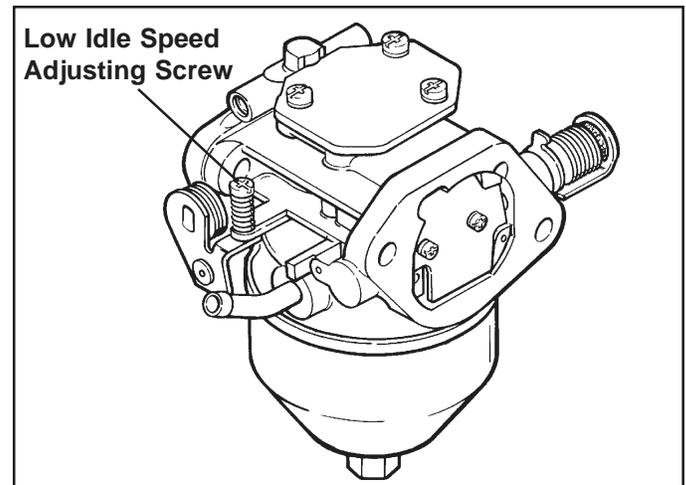


Figure 6.

### E. Fuel Mixture Setting

Fuel mixture settings are set at the factory and are not adjustable.

### F. Shutting The Engine Down

1. Disengage all PTO driven attachments if possible.
- 2a. Move throttle control to the shutdown position located midway between **slow** and **fast**. Allow the engine to run a minimum of 15 seconds; then stop by turning off ignition switch.
- b. If required, run the engine out of fuel and return switch to off position.

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