# Motorcraft 2100 Jeep AMC

# See instructions at the end- click here.

# **CARBURETOR-MODEL 2100**

The Model 2100 carburetor is a two venturi carburetor which incorporates two lightweight aluminum assemblies, the air horn and the main body.

The air horn assembly serves as the main body cover and also contains the choke assembly and fuel bowl vents.

The throttle shaft assembly and all units of the fuel metering systems are contained in the main body assembly. The automatic choke assembly and the dashpot are attached to the main body (Fig. 1).

The carburetor is identified by a Code and build date which is stamped on the code tag. Each carburetor build month is coded alphabetically beginning with the letter "A" in January and ending with the letter "M" in December. However, the letter "I" is not used. The tag is attached to the carburetor and must remain with the carburetor to assure proper identification (Fig. 2).

#### CARBURETOR SYSTEMS

The Model 2100 carburetor utilizes four basic fuel metering systems,- The



FIGURE 1 — Carburetor Assembly

Idle (Low Speed) System, provides a fuel-air mixture for idle and low speed performance, the Main Metering (High Speed) System, provides an economical mixture for normal cruising speeds,the Pump System, provides additional fuel during low speed acceleration,and the Power Enrichment System, provides a very rich mixture when high power output is needed.

In addition to these four basic metering systems, the carburetor con-

tains a Float (Fuel Inlet) and Choke system.

#### Float (Fuel Inlet) System

Fuel under pressure enters the fuel bowl through the fuel inlet fitting in the main body.

The "Viton" tipped fuel inlet needle is controlled by the float and lever assembly which is hinged on a float shaft. A wire retainer is hooked over



FIGURE 2 - Code Tag Identification

grooves on opposite ends of the float shaft and into a groove behind the fuel inlet needle seat. The retainer holds the float shaft firmly in the fuel bowl guides and also centers the float assembly in the fuel bowl.

An integral retaining clip is hooked over the end of the float lever and attached to the fuel inlet needle. This assures reaction of **the** fuel inlet needle during downward movement of the float (Fig. 3).

The float system maintains a specified fuel level in the bowl, enabling the basic fuel metering systems to de-

Fuel

liver the proper mixture to the engine. The amount of fuel entering the bowl is regulated by the distance the fuel inlet needle is raised off its seat. The float drops as the fuel level drops and raises the fuel inlet needle off its seat. This permits additional fuel to enter the bowl past the fuel inlet needle. When the fuel reaches a preset level, the fuel inlet needle is lowered to a position where only enough fuel is admitted to replace that being used.

#### Idle (Low Speed) System

Fuel for idle and low speed operation flows from the fuel bowl through the main jets into the main wells. From the main wells, the fuel is metered as it passes through-calibrated restrictions at the lower end of the idle tubes. After flowing through the idle tubes, the fuel enters diagonal passages above the tubes. The fuel is metered again as it flows downward through restrictions at the lower end of the diagonal passages and then enters the idle passages in the main body (Fig. 4).

Air enters the idle system through air



FIGURE 3 - Float System

bleeds which are located in the main body directly below the booster venturi. The air bleeds serve as anti-siphon vents during off-idle and high speed operation, and when the engine is stopped.

The fuel-air mixture moves down the idle passages past the idle transfer slots which serve as additional air bleeds during curb idle operation. The fuel-air mixture then moves past the idle mixture adjusting screw tips which control the amount of discharge. From the adjusting screw ports, the fuelair mixture moves through short horizontal passages and is discharged below the throttle valves.

At speeds slightly above idle, the idle transfer slots begin discharging the fuel-air mixture as the throttle valves expose them to manifold vacuum. As the throttle valves continue opening and engine speed increases, the air flow through the carburetor increases proportionately. This increased air flow creates a vacuum in the venturi and the main metering system begins discharging a fuel-air mixture. The discharge from the idle system tapers off as the main metering system begins discharging.

#### Main Metering (High Speed) System

As engine speed increases, the air velocity through the booster venturi creates a vacuum (low pressure area). Fuel begins to flow through the main metering system due to the high pressure in the fuel bowl and low pressure at the main discharge ports, fuel flows from the fuel bowl, through the main jets, and into the main wells. The fuel then moves up the main well tubes where it is mixed with air. The air, supplied through the main air bleeds, mixes with the fuel through small holes in the sides of the main well tubes. The main air bleeds meter an increasing amount of air, whenever venturi vacuum increases, to maintain the proper fuel-air ratio. The mixture of fuel and air, being lighter than raw fuel, responds quickly to changes in venturi vacuum. It also atomizes more readily than raw fuel.

The fuel-air mixture moves from **the** main well tubes to the discharge ports and is discharged into the booster venturi (Fig. **5)**.



FIGURE 5 - Main Metering System

Anti-siphon air bleeds, located near the top of the main well tubes, prevent siphoning of fuel from the main well when decelerating.

#### Pump System

When the throttle valves are opened quickly, the air flow through the carbu-

retor responds almost immediately. However, since the flowing fuel is heavier than air, there is a brief lag in time before the fuel flow can gain speed enough to maintain the proper fuel-air ratio. During this lag, the pump system supplies the required fuel, until the proper fuel-air ratio can be maintained by the other metering systems (Fig. 6).

When the throttle valves are closed, the diaphragm return spring exerts force against the diaphragm and pushes it against the cover. Fuel is drawn through the inlet, past the Elastomer valve and into the pump chamber. A discharge check ball and weight prevents air from being drawn into the pump chamber.

When the throttle valves *are* opened, the diaphragm rod is pushed inward, forcing fuel from the pump chamber into the discharge passages. The Elastomer valve seals the inlet hole during pump operation preventing fuel from returning to the fuel bowl. Fuel under pressure unseats the discharge check ball and weight and is forced through the pump discharge screw. The fuel is then sprayed into the main venturi through discharge ports.

An air bleed is provided in the pump chamber to prevent vapor accumulation and pressure build-up.

#### Power Enrichment System

During heavy load conditions or high speed operation, the fuel-air ratio must be increased for higher engine output. The power enrichment system supplies extra fuel during this period and is controlled by intake manifold vacuum (Fig. 7).

Manifold vacuum is applied to the power valve diaphragm from an opening in the base of the main body, through a passage in the main body and power valve chamber to the power valve diaphragm. During idle and normal driving conditions, manifold vacuum is high enough to overcome the power valve spring tension and hold the valve closed. When higher engine output is required, the increased load on the engine results in decreased manifold vacuum. The power valve spring opens the power valve when manifold vacuum drops below a predetermined value. Fuel flows from the fuel bowl through the power valve and into passages leading to the main wells. At the main wells, this fuel is added to the fuel in the main metering system to enrichen the mixture.

As engine load requirements decrease, manifold vacuum increases and overcomes the tension of the power valve spring, closing the power valve.



👉 Vacuum

FIGURE 7 - Power Enrichment System

#### **Choke System**

The choke valve, located in the air horn assembly, provides a high vacuum above as well as below the throttle valves, when closed. During cranking, vacuum above the throttle valves causes fuel to flow from the main metering and idle systems. This provides the richer *fuel-air mixture* required for cold engine starting. The choke shaft is connected by linkage to a thermostatic coil.

The thermostatic coil winds up when cold and unwinds when warm.

The position of the choke valve is controlled by the action of a two-stage vacuum modulator exerting force against the tension of the thermostatic *coil (Fig. 8).* 

When the engine is cold, tension of

the thermostatic coil holds the choke valve closed. When the engine is started, manifold vacuum is channeled through an opening at the base of the carburetor through a passage to the bottom side of the modulator diaphragm assembly, moving the diaphragm downward against the stop screw.

At the same time, the modulator arm contacts a tang on the choke shaft. The downward movement of the diaphragm assembly compresses the piston spring and exerts a pulling force on the modulator arm, causing the choke valve to open *slightly; This* first stage of the vacuum modulator is known as "initial choke valve clearance."

As the engine begins to warm up, heated air from the exhaust cross-over is routed through a heat tube to the choke housing. A thermostatic by-pass valve, which is integral with the choke heat tube, helps prevent premature choke valve opening during the early part of the warm-up period. The valve regulates the temperature of the hot air flow to the choke housing by allowing outside unheated air to enter the heat tube. A thermostatic disc is incorporated in the valve which is calibrated to close the valve at  $75^{\circ}F$ .

The heated air entering the choke housing causes the thermostatic coil to begin unwinding and decreases the closing force exerted against the choke valve. The second stage of the vacuum modulator takes place at this time. The tension of the compressed piston spring causes the modulator arm to push against the tang on the choke shaft and further increases the choke valve opening.

As the engine continues to warm up, the heated air rises in temperature. The coil gradually loses its tension and *allows the* choke valve to open. The heated air is exhausted into the intake manifold.

When the engine reaches operating temperature, the thermostatic coil continues unwinding and exerts pressure against the choke linkage, forcing the choke valve fully open. A continual flow of warm air passes through the choke housing. The thermostatic coil remains heated and the choke valve remains fully open until the engine is stopped and allowed to cool.

#### FUEL-CARBURETION



FIGURE 8 - Choke System

During the warm-up period, a fast idle must be provided to prevent engine stalling. The fast idle cam, actuated by the choke rod, contacts the fast idle speed adjustment screw and increases engine speed in proportion to the choke valve opening. When the choke valve reaches the fully open position, the fast idle cam rotates free of the fast idle speed adjusting screw, allowing the throttle lever to return to curb idle.

If the engine is accelerated during the warm-up period, the resulting drop in manifold vacuum allows the thermostatic coil to momentarily close the choke valve. This provides a richer mixture to prevent engine stalling,

Should the engine become flooded during the starting period, the unloader tang on the fast idle lever contacts the fast idle cam when the accelerator is fully depressed. The choke valve is partially opened by attaching linkage and permits unloading of a flooded engine.

#### DISASSEMBLY

The following procedure applies to complete overhaul, with the carburetor removed from the engine.

A complete disassembly is not necessary when performing adjustments. In most cases, service adjustments of individual systems may be completed without removing the carburetor from the engine (Refer to "SERVICE AD-JUSTMENT PROCEDURES").

A complete carburetor overhaul includes disassembly, thorough cleaning, inspection and replacement of all gaskets and worn or damaged parts. Refer to Figure 17 for parts identification.

NOTE: If using an overhaul kit, replace all parts included in kit.

Remove the heat shield retaining screws, and separate the shield from the choke assembly.

Remove the choke lever screw and lever.

Remove the air cleaner stud, air horn retaining screws and the carburetor code tag. Separate the air horn assembly and gasket from the main body (Fig. 9).



FIGURE 9 — Separating Air Horn Assembly

Inspect the choke shaft and valve for damage or excessive wear. Remove the choke shaft and/or valve only if replacement is necessary.

If replacement is required, file the

upset ends of the retaining screws flush with the shaft prior to removing. Mark the valve prior to removing for proper location when installing.

Remove the choke modulator retaining screws and raise the diaphragm assembly, disconnect piston rod from keyed slot of modulator arm. Remove diaphragm return spring (Fig. 10).



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#### FIGURE 10 - Choke Modulator Assembly

Remove the fast idle cam retainer (Fig. 11).



FIGURE 11 — Removing Fast Idle Cam Retainer

Remove the choke cover retaining screws and retaining clamp. Separate the choke cover and gasket from the choke housing.

Remove the choke housing assembly retaining screws and separate the housing, gasket, fast idle cam and attaching linkage from the main body. Remove the fast idle cam rod upper retainer and disconnect the fast idle cam and rod from the fast idle cam lever.

Remove the choke thermostat lever

#### **FUEL-CARBURETION**

retaining screw, lever and washer. Slide the thermostatic choke shaft and lever assembly and fast idle cam lever out of the choke housing.

Pry the float shaft retainer from the groove in the fuel inlet needle seat with a screwdriver (Fig. 12).



Float Lever

FIGURE 12 — Removal or Installation — Float Assembly

Remove the float, float shaft, float shaft retainer, fuel inlet needle and clip from the bowl.

Remove the fuel inlet needle seat and gasket with Needle Seat Remover and Installer J-10184 (Fig. 13).

Remove the main metering jets with Main Metering Jet Wrench J-10174-01 (Fig. 13).



FIGURE 13 - Interior View - Fuel Bowl

Remove the accelerator pump discharge screw, air distribution plate, nozzle bar and booster venturi assembly and gasket (Fig. 14). Invert the main body and allow the accelerator pump discharge weight and ball to fall into hand.

Remove the dashpot or throttle stop solenoid assembly.

Disconnect the accelerator pump operating rod from the throttle lever by pressing the retainer ends together and pushing the rod away from the retainer. Align the pump rod with the



FIGURE 14 — Removing Nozzle Bar and Booster Venturi Assembly

key slot of the accelerator pump lever and pull up to remove.

Remove the accelerator pump cover retaining screws with a 1/4" wrench. Separate the accelerator pump cover, diaphragm assembly and return spring from the main body (Fig. 15).





FIGURE 15 — Removing Accelerator Pump Assembly

Remove the Elastomer valve (pump inlet check valve) by grasping it firmly and pulling it straight out. The valve tip normally breaks off during removal. Be sure to remove this portion from the fuel bowl. The Elastomer valve must be replaced whenever it has been removed from the carburetor.

Remove the idle limiter caps from the idle mixture screws by installing a sheet metal screw in the center of each cap and turning clockwise.

Remove the idle mixture screws and springs.

Invert the main body and remove the power valve cover and gasket. Remove valve with Power Valve Socket Tool J-10175 (Fig. 16).

It is not necessary to remove the throttle valves for normal carburetor overhaul. However, if they are damaged or if the throttle shaft is worn or bent, they must be replaced. Lightly scribe the valves along one side of the throttle shaft and mark each valve and its matching bore with a letter or number for proper location when installing. Remove the throttle valve



FIGURE 16 — Removing or Installing Power Valve

screws, throttle valves and throttle shaft from the main body.

CAUTION: To prevent scoring the throttle shaft bearing surfaces, do not remove throttle shaft before filing burrs on both sides of the throttle shaft at the retaining screw hole.

#### CLEANING AND INSPECTION

Clean all carburetor parts except the float assembly and all parts consisting of rubber, paper composition or synthetic materials in an immersible type cleaning solvent. Follow the particular solvent manufacturer's instructions.

After the parts have been cleaned, visually inspect the castings for cracks, nicks, water damage, and deposits of dirt or carbon.

Clean out all passages with compressed air. Check all passage plugs to make sure they do not leak.

CAUTION: Carburetor jets and passages should never be cleaned with a drill, wire, or other sharp object. This method may distort jets and passages and unfavorably affect carburetor performance and calibration.

Inspect the float for damage or wear. The choke valve and throttle valves must be discarded if edges are nicked or if the protective plating has been damaged exposing the bare metal to corrosion.

Carefully examine the choke shaft and throttle shaft for binding or nicks. Inspect all linkages for bends or

worn surfaces indicating undesirable contact with another part.

Replace distorted, broken, or corroded springs.

Check the choke housing for corrosion.

Evidence of exhaust deposits in the choke housing indicates a defective choke heat tube in the exhaust crossover passage of the intake manifold.

Inspect the idle mixture adjusting screws for nicks, excessive wear, or other damage.

#### ASSEMBLY

Install the throttle shaft assembly in the main body, if removed. Install the throttle valves and screws in their proper locations, but do not tighten the screws at this time. Turn the curb idle adjusting screw out far enough (count the turns) to allow the throttle valves to close completely. Invert the main body and hold it up to light. Open and close the throttle valves a few times to position them in the bores. Tap the valves lightly with a screwdriver handle to seat them properly. Little or no light should show between the throttle valves and throttle bores when seated properly. Hold the valves tightly closed and tighten the retaining screws. Support the throttle shaft on a block of wood, to prevent bending of the shaft, and stake the throttle valve screws. Turn the curb idle adjusting screw back in the same number of turns as it was turned out.

If the fast idle lever was removed, place the lever on the throttle shaft, and install the retaining washer and nut.

Lubricate the tip of a new Elastomer valve with light grease and insert the tip into the chamfered center hole of the accelerator pump chamber. From inside the fuel bowl, pull the valve tip with a needle nosed pliers until the retaining shoulder seats in the hole. Cut off the tip forward of the retaining shoulder and remove this portion from the fuel bowl.

Insert the accelerator pump return spring into the pump chamber opening, with the larger diameter facing the main body. Place the accelerator pump diaphragm in the pump cover, with the diaphragm rod facing the pump lever, and place the cover and diaphragm into position on the main body. Install the cover retaining screws and tighten evenly.

Insert the keyed end of the accelera-

tor pump operating rod into the inboard hole (marked "A") of the pump lever. Hold the pump rod retainer over the specified over-travel lever hole and insert the pump rod through the retainer and over-travel lever. Release the retainer ends to secure the pump rod.

Install the dashpof or throttle stop solenoid assembly and tighten the retaining screw securely.

Invert the main body. Position the power valve and gasket on the main body and tighten the valve with Power Valve Socket Tool J-10175 (Fig. 16). Place the power valve cover and gasket into position over the power valve. The cover must be installed with the idle limiter stops toward the main body. Install the retaining screws and tighten evenly and securely.

Install the idle mixture screws and springs. Turn the screws in by hand until they seat lightly, then, turn the screws back out 2 turns to provide an initial setting. Final idle mixture adjustment must be made with the engine running as outlined under "ENGINE IDLE SETTING PROCEDURES."

CAUTION: Do not turn the mixture screws in too tightly against the seats. This would damage the screws and result in an erratic idle condition.

Install the main metering jets with Main Metering Jet Wrench J-10174-01 (Fig. 13).

Install the fuel inlet needle seat and gasket with Needle Seat Remover and Installer Tool J-10184 (Fig. 13).

Insert the float shaft into the float lever and position the float shaft retainer in the grooves of the float shaft.

Install the retaining clip on the fuel inlet needle and place in position on the float lever.

Insert the float assembly into the fuel bowl. Position the float shaft in its guides and press the float shaft retainer into the needle seat groove with a screwdriver (Fig. 12). Check the (dry) float setting, refer to "SERVICE AD-JUSTMENT PROCEDURES."

Drop the accelerator discharge ball into its passage in the main body. Position the discharge weight on top of the discharge ball.

Install the booster venturi and gasket in the main body. Position the air distribution plate on the booster venturi and install the accelerator pump discharge screw. Tighten the screw securely.

Position the fast idle cam lever on the thermostatic choke shaft and lever assembly with the adjusting screw resting against the tang on the thermostatic choke shaft lever. Insert this entire assembly into the rear of the choke housing with the fast idle cam lever to the right side of the choke housing.

Insert the choke thermostat lever into the choke housing and position the lever on the thermostatic choke short, Install the retaining screw and washer and tighten securely.

Install the upper end of the fast idle cam rod into the fast idle cam lever and fasten with the retainer.

Place the choke housing gasket on the choke housing vacuum flange. Position the choke housing on the main body and at the same time, install the fast idle cam on its shaft on the main body. Install and tighten the choke housing retaining screws. Install the fast idle cam retainer. Install the choke cover gasket, choke cover, retainer clamp and retaining screws. Do not tighten screws until "Initial Choke Valve Clearance Adjustment" has been performed.

If removed, slide the choke shaft up the air horn and install choke valve using new retaining screws. Check for proper alignment and free operation. Tighten retaining screws securely and stake by upsetting the threaded ends with a punch. Support shaft while staking to avoid bending.

Position the air horn gasket on the main body with the straight edge of the gasket located on the throttle lever side of the main body.

Position the air horn assembly on the main body while inserting the choke rod through the opening. Be sure the choke rod seal is in place on the main body to assure free movement of the choke rod. Install the air horn retaining screws and air cleaner stud. Install the choke lever and retaining screw.

Install the modulator diaphragm return spring in the recess of the air horn. Position the modulator cover over the diaphragm assembly and engage the piston rod with the keyed slot of the modulator arm. Place the diaphragm and cover over the return spring and install the retaining screws (Fig. 10).



- 53. Choke Shield
- 54. Choke Shield Retaining Screw (2)
- 55. Piston Passage Plug

- FISION Fassage Flug
  Heat Passage Plug
  Choke Cover Retaining Clamp
  Choke Cover Retaining Screw (3)
- 59. Choke Cover
- 60. Choke Cover Gasket
- 61. Thermostat Lever Retaining Screw
- 62. Thermostat Lever
- 63. Choke Housing Retaining Screw (3)
- 64. Choke Housing

- 65. Choke Shaft Bushing 66. Fast Idle Cam Lever
- 67. Fast Idle Cam Lever Adjusting Screw
- 68. Thermostatic Choke Shaft
- 69. Fast Idle Speed Adjusting Screw
- 70. Fast Idle Lever
- 71. Fast Idle Cam
- 72. Choke Housing Gasket
- 73. Pump Discharge Check Ball
- 74. Pump Discharge Weight
- 75. Booster Venturi Gasket
- 76. Booster Venturi Assembly

- 77. Air Distribution Plate 78. Pump Discharge Screw
- 79. Retainer
- 80. Choke Rod
- 81. Choke Lever Retaining Screw
- 82. Choke Lever
- 83. Choke Rod Seal
- 84. Stop Screw
- 85. Modulator Return Spring
- 86. Modulator Diaphragm Assembly
- 87. Modulator Cover 88. Modulator Retaining Screw (3)
- FIGURE 17 Parts Identification Model 2100 Carburetor

#### SERVICE ADJUSTMENT PROCEDURES

#### Dry Float Adjustment

With the air horn assembly and gasket removed, raise the float by pressing down on the float tab until the fuel inlet needle is lightly seated. Using a "T" scale, measure the distance from the fuel bowl machined surface to the flat surface of either corner of the float, at the free end. Refer to "CARBURETOR SPECIFICA-TIONS" for the correct setting. Bend float tab to adjust and hold fuel inlet needle off its seat while adjusting, to prevent damage to the "Viton" tipped needle (Fig. 18).



FIGURE 18 - Dry Float Adjustment

#### Wet Float Adjustment

With air horn assembly and gasket temporarily in place, start the engine and let it idle for at least three minutes to stabilize the fuel level in the bowl. After the engine has idled long enough to stabilize the fuel level, remove the air horn assembly and gasket to obtain access to the float assembly.

While the engine is idling, use a "T" scale to measure the distance from the fuel bowl machined surface to the surface of the fuel. When measuring, the "T" scale must be held at least 1/4" away from any vertical surface of the bowl to assure an accurate reading (Fig. 19).



FIGURE 19 - Wet Float Adjustment

If adjustment is required, stop the engine to avoid possible fire due to fuel spray when the float is moved. Bend the float tab upward to raise the fuel level and downward to lower it. Always be sure to hold the fuel inlet needle off its seat while bending the float tab. Refer to "CARBURETOR SPECIFICATIONS" for the correct fuel level setting. Each time an adjustment is required to raise or lower the fuel level, the air horn assembly and gasket must be temporarily positioned over the main body and the engine must be started and allowed to idle for at least three minutes to stabilize the fuel level.

After completion of float adjustments, position the air horn assembly and gasket on main body. Install retaining screws and carburetor code tag. Tighten screws evenly and securely. Install air cleaner stud and tighten to specified torque. Refer to 'TORQUE CHART." Install choke lever and retaining screw.

# Initial Choke Valve Clearance Adjustment

Loosen the choke cover retaining screws to allow movement of the cover. Rotate the choke cover 1/4 furn counterclockwise (rich) from index and tighten the retaining screws. Disconnect the choke heat inlet tube. Align the fast idle speed adjusting screw with the second step (Index) of the fast idle cam.

Start the engine without moving the accelerator linkage. Turn the fast idle cam lever adjusting screw out (counterclockwise) 3 full turns. Measure the clearance between the lower edge of the choke valve and the air horn wall.

Refer to "CARBURETOR SPECIFICA-TIONS" for the correct setting. Adjust by grasping the modulator arm securely with a pair of pliers at point "A" and twisting the arm at point "B" with a second pair of pliers. Twist toward the front of the carburetor to increase clearance and toward the rear of the carburetor to decrease clearance (Fig. 20).



FIGURE 20 - Initial Choke Valve Clearance Adjustment

CAUTION: Use extreme care while twisting the modulator arm to avoid damaging the nylon piston rod of the modulator assembly.

After completing the adjustment, stop the engine and connect the choke heat tube. Turn the fast idle cam lever adjusting screw in (clockwise) 3 full turns. Do not reset the choke cover until the fast idle cam linkage adjustment has been performed.

# Fast Idle Cam Linkage Adjustment

Push down on the fast idle cam lever until the fast idle speed adjusting screw is in contact with the second step (index) and against the shoulder of the high step. Measure the clearance between the lower edge of the choke valve and the air horn wall (Fig. 21). Refer to "CARBURETOR SPECIFICA-TIONS" for the correct setting. Adjust by turning the fast idle cam lever screw. Loosen the choke cover retaining screws and adjust the choke as outlined under "Automatic Choke Ad-

#### Unloader Adjustment

clamp and retaining screws.

With the throttle held fully open, apply pressure on the choke valve toward the closed position and measure the clearance between the lower

justment." Install the choke shield

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#### FIGURE 21 - Fast Idle Cam Linkage Adjustment

edge of the choke valve and the air horn wall (Fig. 22).



FIGURE 22 - Unloader Adjustment

Refer to "CARBURETOR SPECIFICA-TIONS" for the correct setting. Adjust by bending the tang on the fast idle speed lever, which is located on the throttle shaft.

NOTE: Final unloader adjustment mutt always be done on the vehicle. The throttle should be. fully opened by depressing the accelerator pedal to the floor. This is to assure that full throttle is obtained.

#### Automatic Choke Adjustment

The automatic choke setting is made by loosening the choke cover retaining screws and rotating the cover in the desired direction as indicated by an arrow on the face of the cover. Refer to "CARBURETOR SPECIFICATIONS" for the correct setting. The specified setting will be satisfactory for most driving conditions. However, in the event that stumbles or stalls occur on acceleration during the engine warmup period, the choke setting may be "tailored" richer or leaner to meet individual engine requirements. Never set the choke more than two graduations in either direction of the specified settina.

#### Accelerator Pump Rod Position

The accelerator pump operating rod must be installed in the correct holes of the accelerator pump lever and the throttle over-travel lever to assure proper pump travel. Refer to "CARBURETOR SPECIFICATIONS" for the correct pump rod location. If a shorter or longer pump stroke is required to correct acceleration stumble, additional holes are provided in the throttle over-travel lever. The shortest stroke is obtained with the pump rod positioned in the No. 1 hole (Fig. 23).

# Idle Speed and Mixture Adjustment

Refer to "ENGINE IDLE SETTING PROCEDURES."

#### Dashpot Adjustment

With the throttle set at curb idle position, fully depress the dashpot stem and measure the clearance between the stem and the throttle lever (Fig. 24).

Refer to "CARBURETOR SPECIFICA-TIONS" for the correct setting. Adjust



FIGURE 23 — Accelerator Pump Rod Position



FIGURE 24 - Dashpot Adjustment

by loosening the lock nut and turning the dashpot.

#### Fast Idle Speed Adjustment

Set the fast idle speed with the engine at operating temperature and the fast idle speed adjusting screw against the index mark (second step) of the fast idle cam. Refer to "CAR-BURETOR SPECIFICATIONS" for **the** correct RPM setting. Adjust by turning the fast idle speed adjusting screw.

#### MODEL 2100 (2V) CARBURETOR SPECIFICATIONS

APPLICATION	304-360 CID	304 CID	360 CID
CODE	2DM2	2DA2	2RA2
CALIBRATIONS		- 1. S. S. S	
Throttle Bore Size	-	19/14"	
Main Venturi Size	4	15/04"	
Vents Inside	-		

#### (Model 2100 (2V) Carburetor Specifications — Continued)

Fuel Inlet Diameter Low Speed Jet (Tube) Idle Passage Restriction Idle Air Bleed Main Jet High Speed Bleed Power Valve Timing Accelerator Pump Jet Vacuum Spark Port

Spark Port Location

Choke Heat By-Pass (Top of Heat Passage) Choke Heat Inlet Restriction (At Choke Cover Gasket Surface) Choke Vacuum Restriction (Horizontal Vacuum Passage)

#### SERVICE ADJUSTMENTS

Float Level (Dry) Float Level (Wet) Initial Choke Valve Clearance Fast Idle Cam Linkage Unloader Automatic Choke Accelerator Pump Rod Position

Dashpot Fast Idle Speed Idle Speed

The engine and all related systems must be in proper operating condition prior to performing carburetor idle speed and mixture adjustments. The idle speed and mixture adjustments must be made with the engine at operating temperature and air cleaner in place.

Plastic idle limiter caps *are* installed over the idle mixture screw(s) on all carburetors. The limiters are designed to regulate the adjustment range of the idle mixture screw(s), thereby, effectively controlling the exhaust emission level at idle speeds to comply with Federal Standards for emission control.

The limiter caps are never to be damaged in any way to gain an adjustment beyond the normal range of the limiter. In isolated cases, when idle quality is unsatisfactory after performing a normal adjustment, refer to "Corrective Procedures to Improve

2DM2	2DA2 	2RA2
No. 57 (.043") Drill	— No. 70 (.028") Drill — No. 62 (.038") Drill	No. 62 (.038") Drill
No. 48F	No. 38 (.101") Drill	No. 47F
	-No. 55 (.052") Drill	
No. 66 ( 020/0 D-11	- Opens @ 6"-7" Hg	N. 70% 100 4% D-18
NO. 00 (.032 ) DRII	No. 73" (.024") Drill	NO. 73" (.024") Drill
	(Slotted Horizontal)	
.288"/.293"	.305"/.310"	.305"/.310"
(Above Closed Throttle)	(Above Closed Throttle)	(Above Closed Throttle)
	- No. 33 (.114") Drill	
	- No. 48 (.076") Drill	
	— No. 43 (.089") Drill —	
"/64" (.140") Gouge	.130" Gauge	.130" Gauge
.130" Gauge	.120" Gauge	,120" Gauge
	200") Gauge - Minimum (	Clearance
1 Notch Rich	2 Notches Rich	2 Notches Rich
Inboar	d Hole - "A" Pasition (Pun	np Lever)
1." ( 110") Gauge	No. 3 Hole (Throttle Lever	r)
les terro i onoge	1600 PDM (Second Stop) -	
Polarte #E	NONE IN ESETTING DOC	

#### ENGINE IDLE SETTING PROCEDURES

#### Idle Quality."

Proper idle speed and mixture adjustments can be made by following a standard tachometer procedure, in which the idle mixture is adjusted to obtain a "lean best idle" setting. An optional combustion analyzer procedure, in which the idle mixture is adjusted to obtain a specified air-fuel ratio, may also be used. When following either the standard or optional procedure, adjustments must be made in the exact detailed sequence outlined to obtain "lean best idle" settings and satisfactory idle quality.

Set park brake firmly. Do not accelerate engine.

# Tachometer Procedure (Standard)

To compensate for fuel and temperature variations while performing the idle mixture adjustment:

(a) Do not idle engine over 3 min-

utes at a time,

- (b) If the idle mixture adjustment is not completed within 3 minutes, run engine at 2000 RPM for 1 minute.
- (c) Recheck the idle mixture adjustment at the specified RPM and adjust as required. If the idle mixture adjustment is not completed within 3 minutes, repeat Step (b).

IMPORTANT: The tachometer **used** should have an expanded scale of 400 to 800 or 0 to 1000 RPM. The Instrument should be periodically inspected and calibrated to allow not more than 2% error.

Start engine and allow to warm up to operating temperature.

If equipped with "Air Injection," stop engine and disconnect by-pass valve air inlet hose.

Adjust idle speed to specified RPM

6 Cylinder with manual trans-

sion - 650-700 RPM

- 6 Cylinder with automatic transmission - 600 RPM in "DRIVE" range
- V-8 with manual transmission 700-750 RPM
- V-8 with automatic transmission 650 RPM in "DRIVE" range

NOTE: 360 CID (2V) with automatic transmission — Adjust idle speed fay turning the throttle stop solenoid.

Adjust idle mixture as follows:

Starting from the full rich stop(s). turn mixture screw(s) clockwise (leaner) until a loss of engine RPM is indicated, then, turn mixscrew(s) counterclockwise ture (richer) until the highest RPM reading is obtained at the "lean best idle" setting. On carburetors incorporating two mixture screws, turn both screws equally unless the engine demands otherwise. If the idle speed changed more than 30 RPM during the mixture adjustment, reset to the specified RPM and repeat the adjustment. Adjust final curb idle speed. Connect by-pass valve air inlet hose, if removed.

# Combustion Analyzer Procedure (Optional)

To compensate for fuel and temperature variations while performing the idle mixture adjustment:

- (a) Do not idle engine over 3 minutes at a time.
- (b) If the idle mixture adjustment is not completed within 3 minutes, run engine at 2000 RPM for 1 minute.
- (c) Recheck the idle mixture adjustment at the specified RPM and adjust as required. If the idle mixture adjustment is not completed within 3 minutes, repeat Step (b).

IMPORTANT-. The combustion analyzer to be used must be periodically inspected and calibrated to assure accurate readings.

Connect the combustion analyzer by precisely following the instructions of the particular manufacturer.

Start engine and allow sufficient warm-up time for the engine and analyzer to stabilize.

Recalibrate the combustion analyzer before proceeding to adjust the carburetor.

Insert probe of the analyzer at least 18 inches into the tail pipe.

The exhaust system and the test equipment must be free of leaks to prevent erroneous readings.

- Adjust idle speed to specified RPM. 6 Cylinder with manual transsion - 650-700 RPM
  - 6 Cylinder with automatic transmission - 600 RPM in "DRIVE" range
  - V-8 with manual transmission 700-750 RPM
  - V-8 with automatic transmission 650 RPM in "DRIVE" range

NOTE: 360 CID (2V) with automatic transmission — Adjust idle speed by turning the throttle stop solenoid.

Adjust idle mixture as follows:

Observe the air-fuel ratio reading on the gasoline scale of the analyzer. Turn mixture screw(s) counterclockwise (richer) until a definite increase in richness is indicated (richer than specified air-fuel ratio). Turn mixture screw(s) to the full rich stop(s) and observe the reading for a definite increase in richness.

Most automatic combustion analyzers will not operate effectively beyond an air-fuel ratio of approximately 14.8:1. As the air-fuel ratio increases beyond this point, the amount of carbon dioxide in the exhaust gas decreases while the amount of oxygen increases. Most analyzers are not designed to measure large quantities of oxygen. Consequently, the meter will give an erroneous indication of a slightly rich mixture while an excessively lean mixture may actually exist.

To check for this condition when performing an idle air-fuel ratio test, partially restrict the carburetor air cleaner opening by covering with hand or shop rags and observe the meter.

Allow several seconds for the meter to react. If the meter pointer moves toward the rich side of the scale, the meter indication is correct. If the meter pointer deflects toward the lean side of the meter first and then moves toward the rich side, it is due to an excessively lean air-fuel mixture.

All engines except V-8 with

manual transmission — 14.0 (±.2):1

V-8 with manual transmission (Air Injection) — 13.5:1 (bypass valve air inlet hose disconnected)

NOTE: If unable to obtain the specified air-fuel ratio at the full rich stop(s), the limiter cap(s) may be removed and the idle speed and mixture adjusted as outlined under "Corrective Procedures to Improve Idle Quality."

> Turn mixture screw(s) clockwise (leaner) 1/16 turn, at a time, until the specified air-fuel ratio is obtained. Allow ten seconds for the meter to stabilize after each adjustment. If the idle speed changed more than 30 RPM during the mixture adjustment, reset to the specified RPM and repeat the adjustment until the specified air-fuel ratio is obtained. If rough idle is experienced, the mixture screw(s) may be adjusted independently providing the specified air-fuel ratio is maintained.

#### Corrective Procedures to Improve Idle Quality

#### Tachometer Procedure

Remove the idle limiter cap(s) by installing a sheet metal screw in the center of the cap and turning clockwise. Discard the cap(s). Adjust idle speed to 50 RPM less than the specified RPM.

> Turn mixture screw(s) counterclockwise (richer) until a loss of engine RPM is indicated. Turn mixture screw(s) clockwise (leaner) until the highest engine RPM is obtained, then, continue turning clockwise until the engine RPM starts to decrease. Turn the mixture screws counterclockwise (richer) until good idle quality is obtained at the leanest possible setting. On carburetors incorporating two mixture screws, turn both screws equally unless the engine demands otherwise. If the idle speed changed more than 30 RPM during the mixture adjustment, reset to the specified RPM and repeat the adjustment. Adjust final curb idle speed:

6 Cylinder with manual trans-

#### FUEL-CARBURETION

sion - 650-700 RPM

- 6 Cylinder with automatic transmission - 600 RPM in "DRIVE" range
- V-8 with manual transmission 700-750 RPM
- V-8 with automatic transmission 650 RPM in "DRIVE" range

NOTE.- 360 CID (2V) with automatic transmission — Adjust idle speed fay turning the throttle stop solenoid.

Install new (blue) service idle limiter cap(s) over the idle mixture screw(s) with the ear(s) positioned against the full rich stop(s). Be careful not to disturb the idle mixture setting while installing the cap(s). Press the cap(s) firmly and squarely into place.

#### Combustion Analyzer Procedure

Remove the idle limiter cap(s) by installing a sheet metal screw in the center of the cap and turning clockwise. Discard the cap(s). Adjust idle speed to 50 RPM less than the specified RPM.

Adjust idle mixture as follows:

Turn mixture screw(s) counterclockwise (richer) until a definite increase in richness is indicated on the meter (richer than specified air-fuel ratio). Turn mixture screw(s) clockwise (leaner) 1/16 turn, at a time, until the specified air-fuel ratio is obtained. Allow ten seconds for the meter to stabilize after each adjustment. If the idle speed changed more than 30 RPM during the mixture adjustment, reset to the specified RPM and repeat the adjustment until the specified air-fuel ratio is obtained. Adjust final curb idle speed:

- 6 Cylinder with manual transsion - 650-700 RPM
- 6 Cylinder with automatic trans-
- mission 600 RPM in "DRIVE" range
- V-8 with manual transmission 700-750 RPM
- V-8 with automatic transmission 650 RPM in "DRIVE" range

NOTE: 360 CID (2V) with automatic transmission — Adjust idle speed by turning the throttle stop solenoid.

Install new (blue) service idle limiter cap(s! over the idle mixture screw(s) with the ear(s) positioned against the full rich sfop(s). Be careful not to disturb the idle mixture setting while installing the cap(s). Press the cap(s) firmly and squarely into place.

# EXHAUST MANIFOLD HEAT VALVE

#### 232-258 CID Engine

A thermostatically controlled heat valve is provided in the exhaust manifold to direct exhaust heat to the floor of the intake manifold for rapid fuel vaporization during engine warm-up.

The manifold heat valve must operate freely. The valve is closed when the counterweight is in the extreme counterclockwise position and open in the extreme clockwise position, when viewed from the counterweight end (Figs. 1 and 2).





FIGURE 2 - Heat Valve -Closed Position

The manifold heat valve should be checked and lubricated at least every 6,000 miles. The heat valve must operate freely. Lubricate the valve shaft with Heat Valve Lubricant, Part Number 8991632.

#### 304-360 CID Engine

A thermostatically controlled heat valve, at the outlet of the right bank exhaust manifold, controls the amount

of exhaust heat directed to the intake manifold for rapid fuel vaporization during engine warm-up.

Heat is directed to a crossover passage in the intake manifold, through the heat riser passage in the floor of the manifold, and then discharged into the left bank exhaust manifold.

The heat valve is closed when the counterweight is in the extreme downward position and open when the counterweight is in the extreme upward position, as viewed from the top of the engine.

The manifold heat valve should be checked and lubricated at least every 6,000 miles. The heat valve must operate freely. Lubricate the valve shaft with Heat Valve Lubricant, Part Number 8991632.

#### Manifold Heat Valve Replacement

#### 232-258 CID Engine

Separate the intake and exhaust manifolds.

Remove the manifold heat valve assembly by cutting the heat valve shaft on both sides of the valve. Lift the valve from the manifold and drive out the remaining shaft sections and bushings.

Install new bushings using the heat valve shaft as a guide pin and the counterweight as a driver. Carefully ream out the new bushings with a 5/16" drill bit to remove any burrs.

Position the new valve as shown in Figure 1 and install the shaft and counterweight assembly. Rotate the counterweight until the spring stop contacts the bottom of the manifold boss. Align the hole in the valve with the screw threads in the shaft and install the retaining screw. DO NOT TIGHTEN.

Place the valve in the "closed" position and install the tension spring with the hook end up and pointing away from the manifold. Hook the spring under the support pin as shown in Figure 2.

Operate the heat valve several times to allow the shaft to center. Hold the shaft in this position, move the valve as far as possible from the counterweight and tighten the retaining screw.

Check for freedom of movement and proper operation.

#### FUEL-CARBURETION

To replace the manifold heat valve,

disconnect and lower the exhaust pipe(s). Replace the manifold heat valve and gaskets. The gaskets for the exhaust pipe(s) should be replaced only when damaged. Connect and tighten the exhaust pipe(s).

#### TORQUE CHART

Torque in	n Foot Pounds
Air Cleaner Stud (2100 Carb.)	7-10
Air Pump Mounting Bolts	18-22
Air Injection Tubes	35-40
Fuel Pump Bolt - Six Cyl	15-17
- V-8.	

Torque in Foot	Pounds	
Carburetor Hold-Down Nuts	.12-15	
Exhaust Manifold Bolts - V-8	<u>.</u> 30-35	
Exhaust Pipe to Manifold Nuts.	20-25	
Intake and Exhaust Manifold Bolts and Nuts - 6 Cyl		
Intake Manifold Bolts - V-8	40-45	



J-10184 Needle Seat Remover and Installer



J-10174-01 Main Jet Remover and Installer



J-10175 Power Valve Socket



J-1137 Bending Tool



J-10185 Needle Seat Remover

J-10175 Universal Carburetor Gauge Kit

Carburetor Tools

### Parts:

Which carburetor and what to look for?

By my opinion, the version you see at this file and pictures is the best and simplest, there where a good reasons why AMC chose to use this. The best fit will be a carburetor with 1.08 venturi, some will argue that the 1.21 venturi will work fine and will produce more power, all I can say is that I tried one and it wasn't as good as the 1.08. The engine felt better at high RPM on the expense of the low end, which is not what you need in off road truck.

### Carburetors CFM rating:

1bbl YF Carter = 187-220 CFM 2bbl BBD Carter = 275 to 280 CFM. (some documentation says 193 CFM)

2bbl Progressive 32/36 DGEV Weber = 300 CFM 2bbl Progressive 34 DGEC Weber = 300 CFM 2bbl Synchronous 38 DEGS Weber = 400 CFM

2bbl Synchronous Motorcraft 2100

0.98 = 190	CFM
1.01 = 240	CFM
1.02 = 245	CFM
1.08 = 287	CFM
1.14 = 300	CFM
1.21 = 351	CFM
1.23 = 356	CFM
1.33 = 424	CFM

You can look for those at the junk yard by the following application:

With single stage power valve	With dual stage power valve	
E-100 ECONOLINE	GRAN TORINO	
E-300 ECONOLINE	MAVERICK	
F-100 PICKUP	MUSTANG	
All with 302 CID, all 1974.	TORINO	
	MERCURY COMET	
	MERCURY MONTEGO	
	All with 302 CID 1973-1974	
If you can't find a used one you can buy these at your local parts stores or Summit:		
Holley parts No:		
645118 or 645065	645340 (ford) or 645175 or 645174 (Jeep)	
Champion parts No		
6356	6260A(Ford) or 9111 or 9110 (for Jeep/AMC)	

In the linked parts file below you'll find that some parts are marked, those are the parts you'll need for this specific version, including the flange gasket.

Carburetor Adapter- *TRD-2086 Summit* Carburetor Adapter- *Mr. Gasket 1937 Parts America Jets and power valve* (file) *Swap supply* (on line Store)

# Rebuilding instructions

Note the fuel path and proper installation. This will help troubleshooting acceleration problems.













At the left, used but in good shape diaphragm.

The right diaphragm need to be replaced



Note the spring, wider side facing the carb main body **Buster Venturi** 



The big bolt holding the buster venturi (center at the left pic) with the ball and weight is part of the acc pump 65

## Jetting

Jets# 46-47 at see level. Jetting is varying by several factors:

- Altitude.
- Engine modifications.
- Carb passage drill.

Usually #47 will work best, check your spark plugs after a hard driving, stop the Jeep without idling and check the SP appearance by <u>this guide.</u>

Unless you have a stroker #47 will do fine. #48 for modified engine.

If you're traveling at high altitude (3000 ft above see level) you should downsize the jets to #45.

The carb passage drill is the reason way I can't recommend on one size that will fit most, you should have both #46 and #47 and see what work best for you.

## Power valve

Power valve single stage - 8.5 or 9.5 Power valve dual stage - 9-4.5 or 9-3.5 \*If you don't know what power valve in there you should replace it with a new one.\*





Dual stage PV and gasket Single stage and gasket





- Incorrect, too low, rating PV can cause a lean condition, eventually burning the head valves.
- There are two type of PV, standard and high flow. For this application the standard flow will do fine.



When professional shops rebuilding a carburetor, they use a vacuum sealant to seal the power valve and power valve cover. It's recommended to do the same.

The vacuum fitting sealant is used at refrigerators and air conditioning units.

This is what I'm using; it has the right heat range and solvent durability.

- Make sure the power valve and PV cover are closed properly.
- Do not try to disassemble the PV itself, it's fixed on precise calibration.

If you installed the jets and PV as in the above spec and you are sure there are no vacuum leaks but still running rich, than you should test the PV. the old mechanics way is the easy and effective way, take off the PV and use your leaps and tongue... if it's hold than it's fine.





**Air filter**- The air cleaner base is 5 1/8, you will need a new, 9 inch, assembly that fit. But, the open element is not as efficient as the stock air filter assembly since they drew hot air from the engine compartment which is lean in oxygen. You should try and modify the stock air filter to fit this carb, Air filter rod-make sure you hold it down with a nut to the carb air horn, it's serving as one of the bolts that hold the air horn to the base.

**Throttle return springs-** A throttle return spring bracket should be install at the opposite side to the throttle cable, the way it shows at the pic below. This way, the forces on the throttle shat are minimized, preventing grinding and eventually vacuum leak.

**Flange gasket**- A flange gasket must be installed, it purpose beside sealing, is to reduce the heat transferred to the carb bowl and base. Without this the fuel will get too hot.



Apply machine oil on all the shafts and other moving parts of the carburetor before installation. Whether it's a remanufactured or from the bone yard.

# Installation:



This illustration applying to a carburetor with all the ports, some referring to these as "smog carb" in contrast to the non smog. If you want your engine to perform at it best get one of these.

Since this carburetor fuel enrichment system is working using vacuum you need to make sure your engine will produce the max vacuum possible:

- Replace all the vacuum hoses with new ones.
- Get a new PCV valve and PCV grommets if needed.

**Vacuum leaks-** there shouldn't be any if you used a good, new flange gasket, capped all the unused ports and installed new hoses. Spray carburetor cleaner on the carb base when idling and see if there is any RPM change.

### What goes where:



### Installation order:



- Use the thin gasket from the Carter between the adapter and the manifold.
- There is no need to use RTV/silicone.
- Use Allen head bolts to hold the adapter to the manifolds.
- Gently close the bolts that hold the carb to the adapter. After a day or two, when the flange gasket settle down close it further more.

## Throttle adapter:



Drill one hole of the two for the throttle adapter, install it and measure the right location for the second hole.

Always use two return springs incase one will fail/fall.

When you fab this, your main concern is that you do not restrict the throttle movement. If this is the case, you wouldn't be able to idle low enough. Make sure you see some play here:



## Idle tuning

If you're not familiar with carb tuning you should use a vacuum gauge. Tuning by ear is tricky and requires some experience.

First, make sure there are no ports left open.

- 1. With the engine off.
- 2. Close both screws all the way in.
- 3. Open both 3 full turn.
- 4. Start the engine and let it warm up for 10 min, driving.
- 5. Set the idle speed to 680rpm.
- 6. When the choke is off start closing the idle screws 1/4 turn at a time. One after the other.
- 7. Allow 5 sec after each 1/4 turn until it take affect.
- 8. When you hear a change at idle back it up by 1/4-1/8 turn.
- 9. Both screws should be opened the same.

If you are using a vacuum gauge:

- 1. Same as 1-5 above and connect the gauge to the PCV port using a T. Note the reading.
- 2. Close both screws 1/4 at a time one screw after the other and look for a change at the reading.
- 3. Allow 5 sec after each 1/4 turn until it take affect.
- 4. When you notice a drop in the reading reverse the last change until you get the highest reading again.
- 5. Both screws should be opened the same.
- If the idle has changed more then 20rpm set it back to 680rpm and adjust the idle mixture again.
- You shouldn't idle more than 15 min. if it happened rev the engine to 2000rpm for 1 min.

Accelerator pump: Usually the  $2^{nd}$  from the top will work best.



Usually, when on the outside hole, less fuel, will work better.



## Choke adjustment:

### <u>Choke file</u>

You can use the electric choke from the Carter but you need to inverse the inside coil.

After the engine warmed up close the screw until the choke plate is vertical.



Fast idle should be set with warm engine to 1000 rpm. Apply some grease on the fast idle cam steps.



## *Float adjustment:* Measure from the top to the yellow square. 1/2 inch 1.1cm



Questions?

\*\*\*DISCLAIMER - Please note that this writeup reflects my experiences only and anyone using it for reference or as a guide, etc. does so at their own risk.\*\*\*