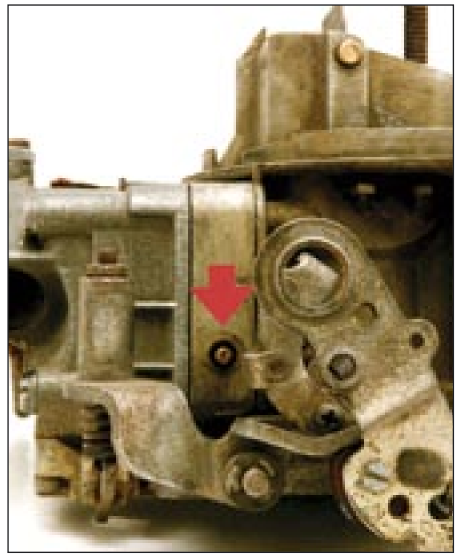
Chapter 1

Which carburetor?

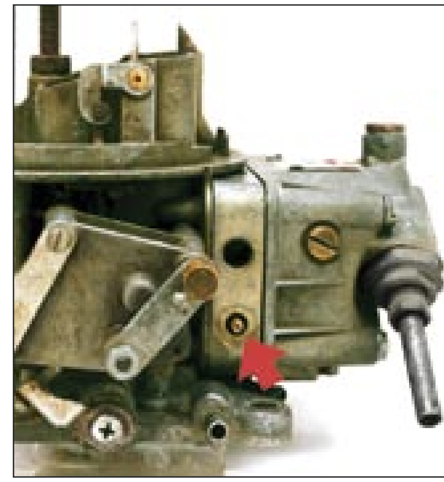
The carburetors detailed in this chapter are the best Holley carburetors to buy, new or secondhand, and to use in most performance applications. This is by virtue of the fact that they come as standard with all of the right components. They can be tuned with a minimum of fuss, and this is more than can be said for many other engine specific Holley derivatives which can be more trouble than they are worth when used in different applications than those for which they were intended. The latter is no reflection on Holley, which makes carburetors for many applications, and the catalogs clearly state which carburetors are Universal Performance ones and which are for high-performance applications. The recommendation is to get the right model of the carburetor for your application in the first place and work from there. Doing this will save time and money and, almost certainly, you'll end up with a better result. For example, if your application is one

Four barrel Holley carburetors and aftermarket inlet manifolds, as seen on this 351ci Cleveland engine fitted into an early 1970s Australian Falcon, are still very popular for racing purposes. They are comparatively simple, easy to maintain, and deliver excellent torque and power for a very reasonable price.

Engine idle speed adjustment screw (arrowed at 'A') on a two barrel carburetor.



Left-hand venturi idle mixture adjustment screw (arrowed) for 2300 carburetors and the primary venturis of 4150 and 4160 carburetors.



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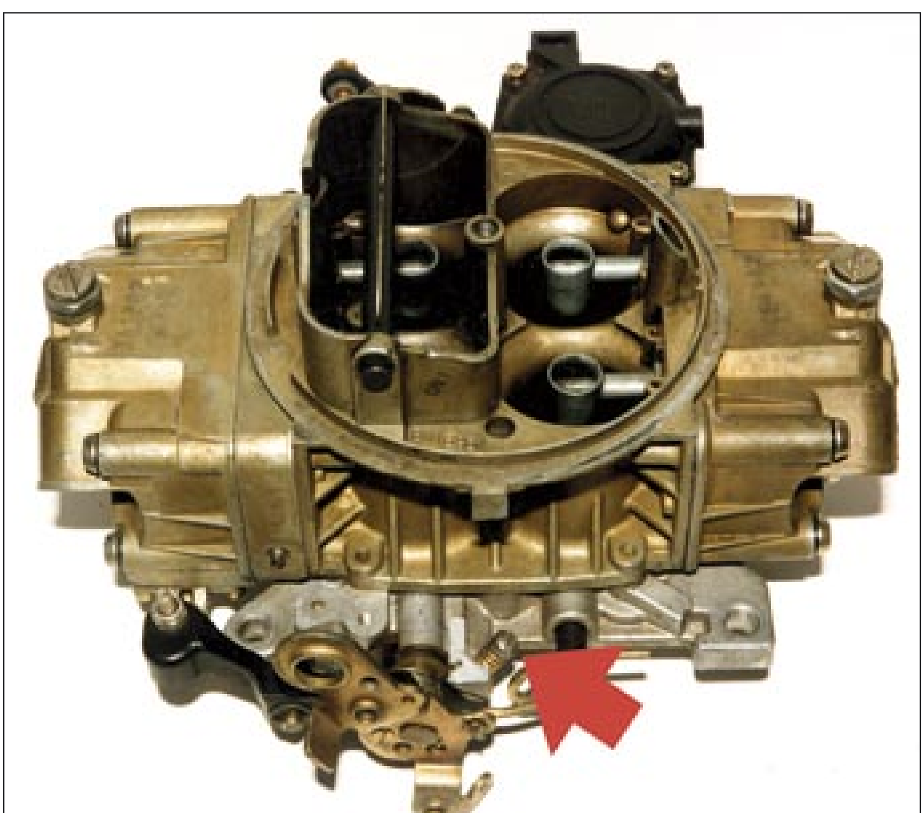


Engine idle speed adjusting screw (arrowed at 'A') on a four barrel carburetor.

shut, the air for idling purposes going through a small factory-drilled hole in each primary butterfly. It's a good idea, and it works.

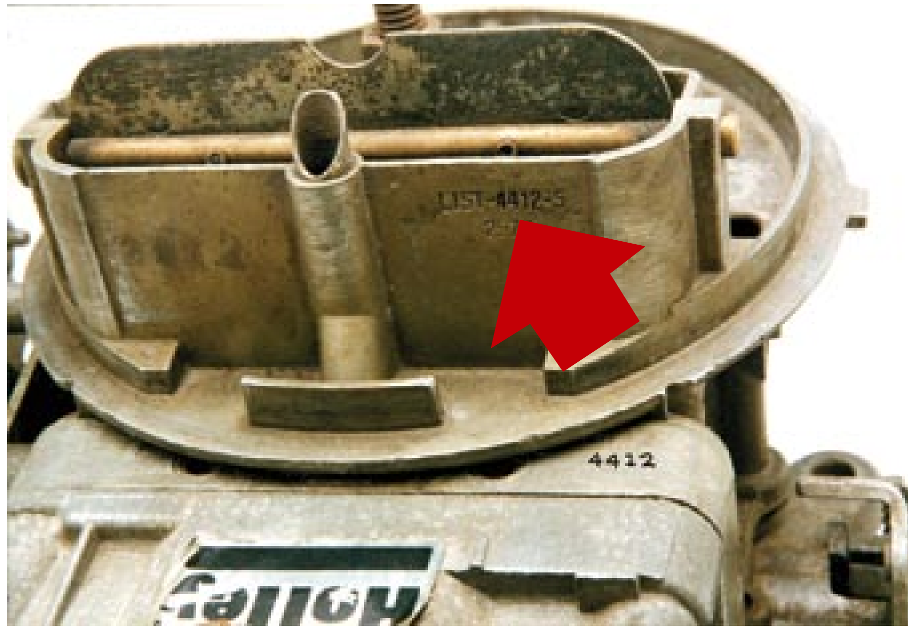
The requirement for **all** four barrel carburetors is to have the primary butterflies being near to fully shut off and flowing about 50% of the air required for idling purposes, and the secondary barrels also flowing about 50% of the air required for idling purposes. This means having near to equal amounts of throttle or butterfly opening of the primary and secondary butterflies. It doesn't have to be exact but it has to be near to this requirement.

To adjust the secondary butterflies correctly the primary and secondary adjustment screws are wound out until they are not touching the linkage contact points, which means that the butterflies are in firm contact with the throttle bores. The primary and the secondary butterfly adjustment screws are in turn wound in until they touch the linkage arm contact points and then wound in a further 1/2 turn each. Next the carburetor is fitted to the there are millions of Holley carburetors out there, all with numbers stamped on their individual components which are near meaningless unless you work for Holley and have direct access to their vast product information database.

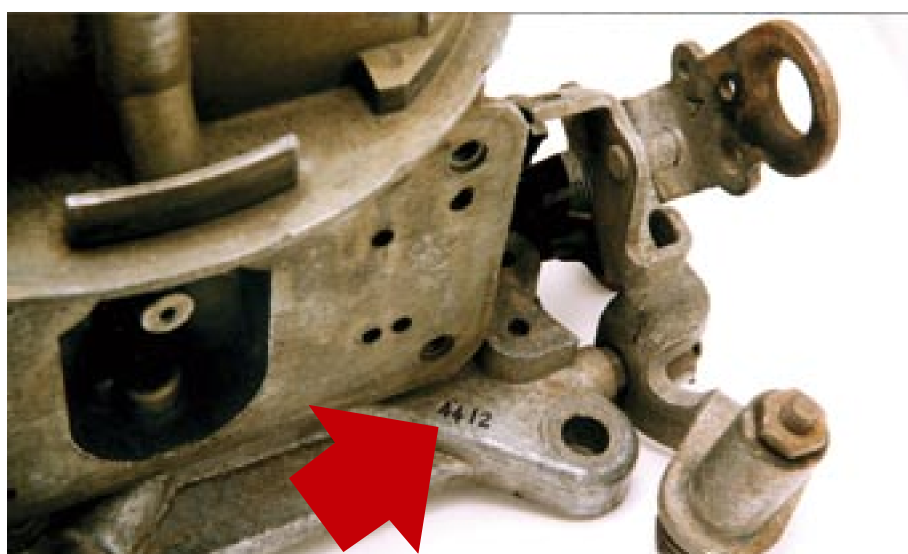
Holley offers technical help via e-mail <help@support.holley.com> which can be used by anyone to ask direct technical questions. When you send an e-mail initially you get an automated response irrespective of where you are in the world. The reply will usually follow within one, perhaps two, working days which is very reasonable. The technical staff are helpful and the identification information about any particular carburetor absolutely accurate.

The List Number as stamped on the carburetor body (choke tower usually) is the key to identifying a carburetor as the (original) specification can be derived from it. If you give the List Number to Holley, the technical staff can identify the carburetor, irrespective of when it was made.

When you make an enquiry to Holley Technical Services by e-mailing a List Number and asking for the metering block identification numbers, they draw the relevant 'build of material' (BOM) sheet to get precise information for you. Holley has well over 100 filing cabinets containing thousands of BOM sheets. All of the numbers stamped on the other components of a carburetor will be listed on the BOM sheet (that's the numbers on the throttle body and shaft assembly, the primary metering block and the secondary metering block, for example). These other parts might have the List Number stamped on them as well as individual part numbers. This inconsistent numbering can be confusing when some carburetors quite clearly have the List Number stamped on the body of the carburetor, the primary metering block, the secondary metering block and the throttle body and shaft assembly, while other carburetors do not.



The two barrel Holley carburetor List Number is found on the choke tower. Relevant numbers on this particular carb are 'LIST-4412-S' with '4412' being significant numbers making this particular carburetor a 500CFM one. The numbers 2572 underneath are not relevant to the identification of the carburetor, just the top line after the word 'LIST.'



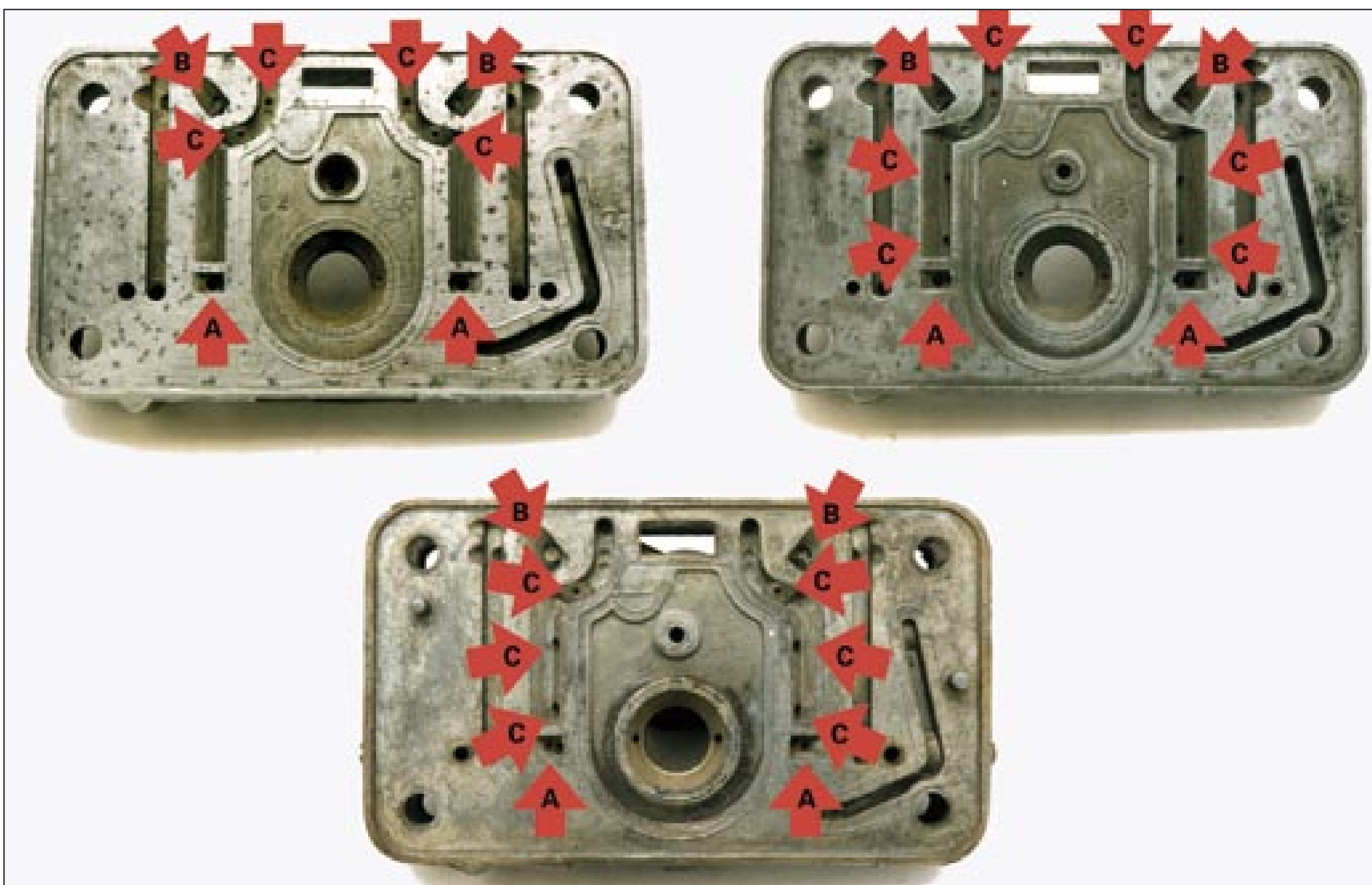
The throttle body and shaft assembly of this two barrel carburetor has the numbers '4412' stamped on the top right-hand side, adjacent to where the metering block and the fuel bowl fit. This unit is from a 500-CFM two barrel carburetor.

When individual Holley components are made they're stamped with letter/number combinations or just numbers to aid positive identification.

Letter and numbers are stamped on the top edge of metering blocks. The significant characters on this example, 'L18502', are the List Numbers of the carburetor, making it easy to identify. The fact that the metering block has idle adjustment screws, the hole drilled and threaded to take a power valve and holes drilled in it for the accelerator pump circuit means that this is a primary metering block.

other by the List Numbers stamped on them.

There are some quite subtle differences between the various models of primary metering block besides the PVCR hole sizes. There are various other drillings in the metering blocks for the idling circuitry as well as air bleed holes for the main jet well. A particular set of these variable factors constitute the correct calibration of a particular metering block for a particular CFM carburetor. This is why, if the power valve channel restriction hole size at some stage proves to be too large for an engine application, fitting an aftermarket kit with changeable jets



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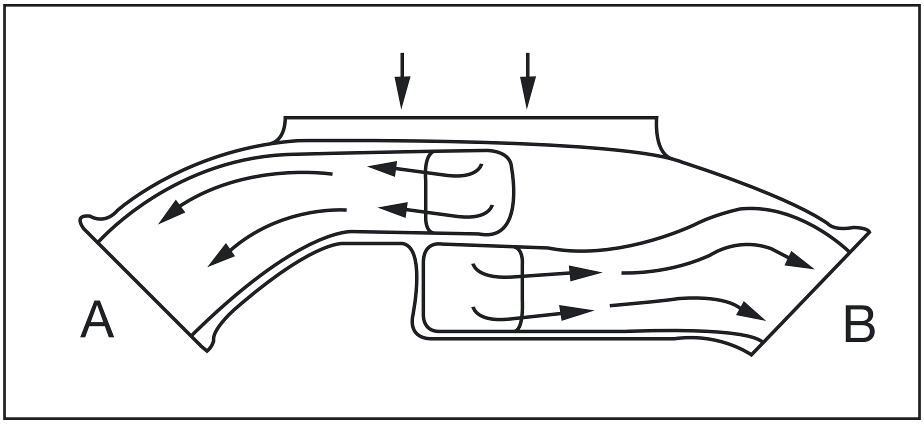
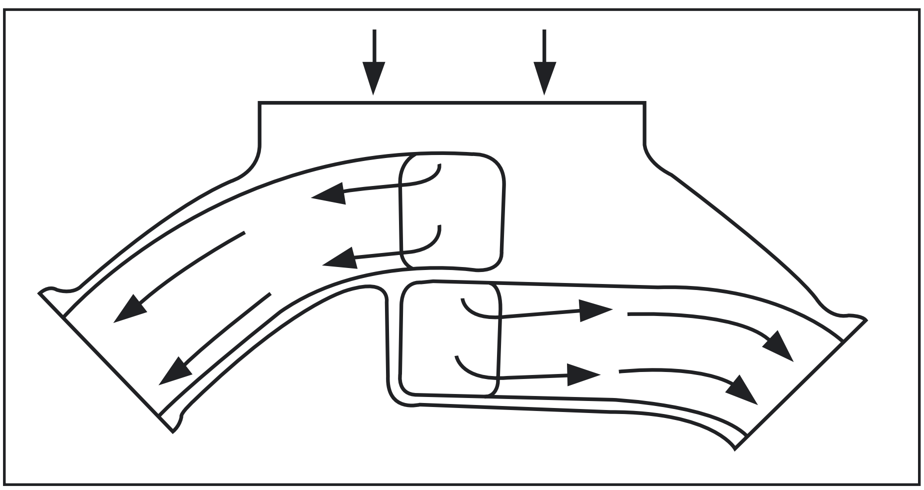
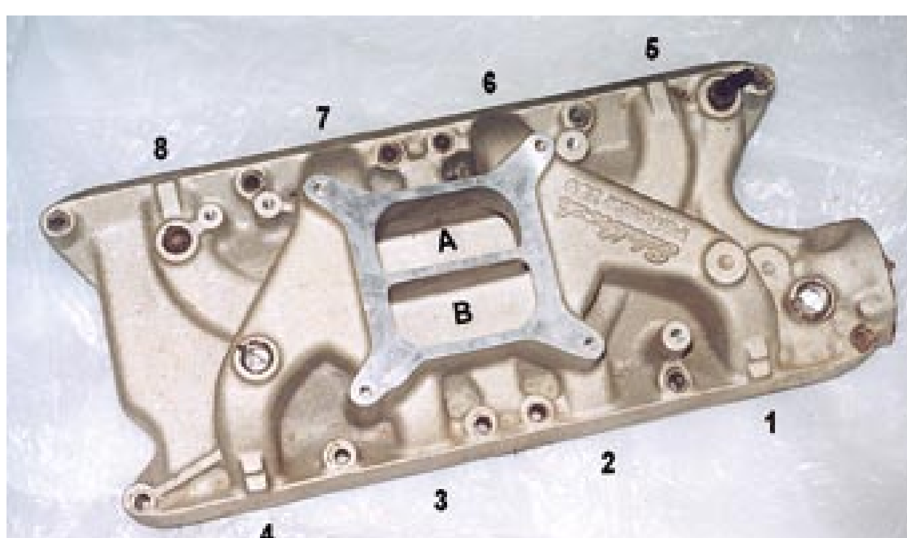
holes at A are for the idle circuitry. Those at B are the main jet discharge passageways in the metering block which take the air/fuel mixture to the main discharge nozzles in the venturis. The small holes indicated at C are air bleed holes into the main well.



The bottom tier of inlet manifold runners at 'B' are not angled down into the cylinder head ports, unlike the inlet manifold runners at 'A'.



A 180 degree/dual plane 'high rise' type inlet manifold has both tiers of 'runners' angling down into the inlet ports of the cylinder heads, although the top tier is more acutely angled than the bottom.



This aftermarket 180 degree/dual plane aluminium inlet manifold follows the original equipment manifold configuration quite closely, but it is 'high rise' whereas the original equipment cast iron one wasn't. Significantly, with these inlet manifolds, the carburetor barrels feeding into the manifold at A feed cylinders 2, 3, 5 and 8, while the carburetor barrels feeding into the manifold at B feed cylinders 1, 4, 6 and 7.

the inlet manifold, carburetor and air cleaner can be accommodated under the hood (bonnet). Within limits, the higher the manifold the better. Many modern specialist 360 degree/single plane racing inlet manifold runners are in line with the inlet ports making the carburetor sit very high.

'High rise' 180 degree/dual plane inlet manifolds allow much better routing, shaping and sizing of the manifold runners than most stock-type 180 degree manifolds, which are usually designed with engine compactness in mind. A 'high rise' manifold will usually improve engine acceleration characteristics, though brake horsepower may not be significantly affected.

While many inlet manifolds might look the same at a glance, in actual fact they are not. What fits often limits the choice but if height restrictions are not a consideration the choice of configuration can make a huge difference to the application. As a general rule, 180 degree/dual plane inlet manifolds are best for all 'low rpm' applications (off idle to 5500-6500 rpm) while the 360 degree/single plane inlet manifolds