

high engine speed. If a Holbay head is used with an inlet manifold from an Alpine the ports in the head must be opened out to the same size as the inlet manifold used. An unmodified Holbay head can only be used with its original type inlet manifold (twin 40 DCOE Webers). As can be seen it is possible to tune a good late pattern head to be as good or better than a "Holbay" but do not try it unless you are confident of your ability as new heads come very expensive!

There have been quite a variety of camshafts fitted to the 1592cc and 1725cc engines but we are only interested in the

The drive gear itself is fairly easy to change, it is secured to the oil pump shaft by two cross-drilled pins which have to be driven out.

The 1725cc (SV or Hunter) camshaft can in this way be fitted to earlier 1592cc engines with very good results. The "high lift" Holbay cam can be fitted to any engine but may require alterations to carb and distributor settings, especially a 1592cc engine.

New followers must always be used with a new or reconditioned camshaft. If a camshaft is taken from another engine, and its followers are in good condition, they can be transferred but **MUST** be kept in their same positions. For a standard camshaft, used followers in good condition "reconditioned" on an oil stone is a riskier but cheaper alternative. Note that follower faces are slightly domed.

To be on the safe side it is always best to buy an exchange camshaft from a reputable supplier (I can recommend "Piper" camshafts) and fit using new cam-followers. A good general road cam is the "Piper 2RG" and a good "fast" road cam is the "Piper 2RY". These are available in exchange for your own camshaft in 1592cc and 1725cc versions so avoiding the oil pump drive problems.

Although the SI to SIV engines can be very successfully tuned for road or race I have had by far, more enquiries from people wishing to fit a complete "Holbay" to their Alpine than any other form of tuning. I therefore think it would be

For road-use I don't consider it necessary to "balance" the engine as the engine will develop its power without having to push it to very high revs.

You can use the Holbay sump or a SV sump, the oil pumps are identical. The Alpine front engine mounting plate must be fitted to the Holbay block in place of the original. The Alpine bottom pulley and water pump must also be used. The Alpine (SV) oil cooler will mate up with the Holbay oil filter adapter base which is fitted with an oil temp gauge sender. This sender can drive a new gauge fitted to your dash or even simpler you can fit a small switch so that your water temp gauge can be fed from either the water temp sender or the oil temp sender. Label the switch clearly though!

You can use your original Alpine flywheel and clutch if the Holbay ones are worn but it may not last long because of the extra power of the engine. The SV clutch is only 7.5" diameter). The Holbay clutch is 8.5" diameter. Fit the Holbay flywheel and clutch cover to all Alpines with synchromesh on first gear (late SIV and all SV). All earlier non-synchro first cars have flywheels the same as the Holbay, on these cars use either flywheel, which ever is the least worn. Then either fit the original Alpine clutch cover or the Holbay clutch cover. In the case of the Holbay clutch the later smaller diameter carbon release bearing and clutch release arm from the Synchromesh-first Alpine is also necessary.

Whichever option you have chosen (apart from the standard SV clutch) you now have a 8.5" dia flywheel and a 8.5" clutch cover, all you need now is a 8.5" clutch driven plate! For all Alpines up to SV chassis B395017308 use the 8.5" dia Triumph 2000 (or Vitesse) driven plate. For SV after B395017308 use the Holbay Rapier or Hunter GLS 8.5" plate!

We now come to the cylinder head. At this point you must choose which carburetors are to be fitted. If original Alpine twin Zeniths, Strombergs or Twinchoke Solex or 28/36 Weber carbs or original manifolds are to be used, then the inlet ports must be ground out to "standard" size as mentioned earlier. If a water-heated manifold is used the head must be drilled and tapped to take the return water flow from the manifold. All of these carbs will require re-jetting on a rolling-road test bed. The Zenith Carbs (SI to SIII) will be difficult to re-jet as they are so old now. Most twin choke Solex carbs will have been replaced by twin choke 28/36 Weber or the twin Strombergs. Do remember however, that when the choke Solex is replaced by the twin choke 28/36 Weber, the inlet manifold must be ground-out to the size of the heat-insulator supplied with the Weber. The original insulator (between the carb and the manifold) for the Solex has too small an air-passage in it.

The alternative to the above carburettor is to use the twin 40 DCOE carbs from the Holbay engine. These are the best carburetors to use for power and if correctly set up are surprisingly

ALLOY HEAD ENGINES ONLY	°B.T.D.C	°A.B.D.C	°B.B.D.C	°A.T.D.C	Timing (20 Thou. Clearance)	
					Cam Lift	Valve Lift
All Alpines up to Synchromesh SIV	14	52	56	10	.260"	.350"
Synchromesh SIV and Single Carb 1725cc Hunter	19	57	61	15	.260"	.350"
SV Alpine, Twin Carb Hunter 1968-72	29	63	69	23	.298"	.405"
Sunbeam VENEZIA 1592cc 1963-64	29	63	61	31	.298"	.405"
Holbay H.120 and Hunter GLS	44	51	69	26	.320"	.435"
Single and Twin Carb Hunter 1972 to Series 7	18	52	52	18	.295"	.400"
Single and Twin Carb Hunter Series 7	24	46	58	12	.295"	.400"
Harrington "Le Mans" Factory Stage II: 1592cc	25	59	63	21	.298"	.405"
Piper 2RG (Stage I) 1592cc & 1725cc	37	75	75	37	.286"	.387"
Piper 2RY (Stage II) 1592cc & 1725cc	32	68	68	32	.315"	.430"

alloy head versions as camshafts from iron head engines are not interchangeable with alloy head camshafts. I have listed those of interest above:-

All alloy-head camshafts are interchangeable if one point is remembered. All camshafts fitted to Series IV and earlier (1592cc engines) need an oil pump drive gear with 13 teeth (13 teeth on cam, 13 teeth on oil pump drive gear). All camshafts fitted to Series V and later Hunters engines (1725cc) have 12 teeth on camshaft and drive gear. Thus if a 1725cc cam is fitted to a 1592cc engine (or vice versa) the oil pump drive gear (at the top end of the oil pump) must be fitted too. Unfortunately the complete oil pump assembly cannot be swapped as it will not fit.

worthwhile to detail what exactly is involved.

First, find a "Holbay" engine! These were only fitted to the "H120" Rapier and "GLS" Hunter. Make sure that you get the distributor, flywheel, clutch, inlet manifold and carburetors with the engine as these can be used on your Alpine. The gearbox, exhaust manifold, bottom pulley and water-pump cannot.

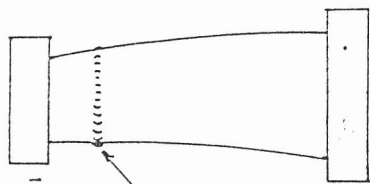
Secondly, unless the engine is in exceptional condition, strip it down and examine everything for wear. If you are lucky you will only have to de-coke the head and fit new piston rings and crankshaft shells. Hepolite "Apex" oil control rings will cope with bore wear of up to 10 thou, above this you must re-bore.

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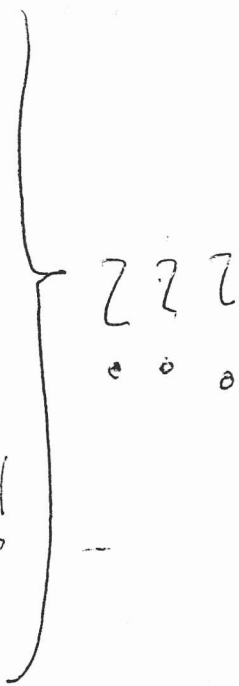
Argon Arc Weld

you have a smooth profile again. Now we can turn to the carburettor. You must remove the large air filter box and remote filter as there is no room in the Alpine engine bay to fit them. You must run them with open inlet trumpets or small "pancake" air filters with trumpets. Open trumpets will give more power but also more intake noise. I have driven over 70,000 miles with no air-cleaner and no adverse effect on the engine due to the dust, etc. If you use pancake air-filters you must remove the "castellated" spacers between the carburettor lid and float chamber cover. (Undo the brass wing-nut on top of each carb and remove the spacers underneath). You must now drill a ventilation hole in the inlet face of the carb body to allow the pressure to equalize between the float chamber and the inside of the air-filter. The size and position of the hole can be seen from the fact that there should be a matching hole already in the air-filter body. The removal of the "castellated" spacers and drilling of the hole is only necessary when using pancake air-filters or carburettors originally from a genuine "Holbay" engine. Weber carbs from other

makes of car or bought new, need no modification. Carburettors with open trumpets are not affected by the method of float chamber ventilation.

Depending on which inlet manifold you use and the individual dimensional tolerance of your particular car you may have to shorten the carburettor trumpets and auxiliary venturis so as not to foul the inner wing area. Approximately half an inch is all that is necessary in most cases. The trumpets can be cut and then "soldered" together. The auxiliary venturis can simply be cut down and the cut-end reshaped to match the original! Shortened trumpets and shortened auxiliary venturis can be bought now but in the case of the auxiliary venturis a standard length but smaller diameter "3.5" venturis should be specified instead of the extended length and standard diameter "4.5" venturis from the Holbay engine. For the reason of cost, I recommend that you simply shorten the standard Holbay items.

The Weber carbs must be flexibly mounted to the inlet manifold using spring washers and rubber 'O' rings. As a guide, you must leave approx 10 thou gap between the coils of the spring washers to



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SECTION B (ENGINE)

SAOC - THE ALPINE GUIDE

allow for flexibility. A good starting point for Jets in twin Weber 40 DCOE carbs for an Alpine is as below:-

- Auxiliary Venturis, 3.5 (standard length) or 4.5 (extended)
- Main Venturis (choke) 30 mm ✓
- Main Jet 120 120
- Emulsion Tube F16 F34
- Air Correction 175 .2
- Slow running 45F9 50F11
- Pump Jet 45
- Float level 7.5mm

NOTE: Late Holbay engines were fitted with the 3.5 small diameter short auxiliary venturis needed for the Alpine, making life easier!

Use the standard 'Holbay' distributor but I do strongly recommend that you fit electronic ignition and 'Colder' plugs, Champion N7Y instead of N9Y or for really best results "NGK BP6ES". Other worthwhile changes are:

- (a) 88 degree C thermostat
- (b) Electric cooling fan
- (c) Final setting-up on a rolling-road if the budget can stretch.

Powermax Racing Pistons. What ever you decide on, you must have the crankshaft, flywheel and pistons balanced by a machine shop. Obtain a Holbay E128 camshaft either through your Chrysler dealer or direct from Holbay themselves. This is the ultimate in Chrysler camshafts and even hairier than the normal H120 cam. Fit the cam and use new cam followers throughout. Now the only difficult bit.

A 1600cc oil pump gear won't engage the E128 cam, and a 1725cc oil pump won't fit a 1600cc engine. Don't panic, the answer is cheap and quite easy. Go to the breakers yard and get an oil pump from any 1725cc engine. The drive gear is fixed to the oil pump shaft by two steel rivets. File off the ends of the rivets and drive them out with a nail and hammer, remove the bevel drive gear. Do the same with your 1600cc pump. Fit the bevel gear off the 1725cc pump to the 1600 unit and replace the rivets. Fit this made-up pump to the engine. Obtain a Lucas 43D4 distributor and fit it to the engine with a 1725cc adaptor. If you have a cable drive rev counter you will have to fit an electronic model.

Next comes the head, you can

Are the settings for H120 engines?

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