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The concept. The last time you bought a new car, you probably couldn't get the options you wanted on the car you wanted.

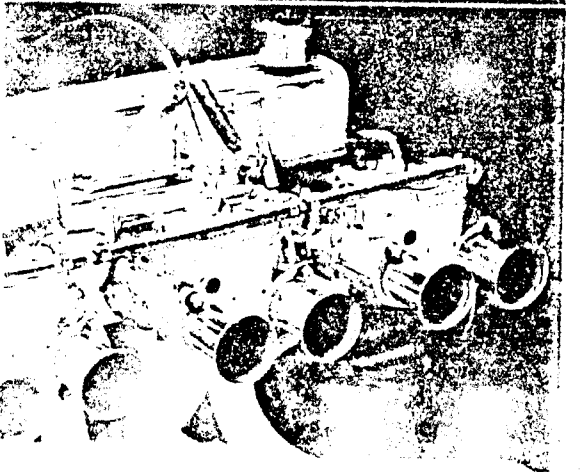
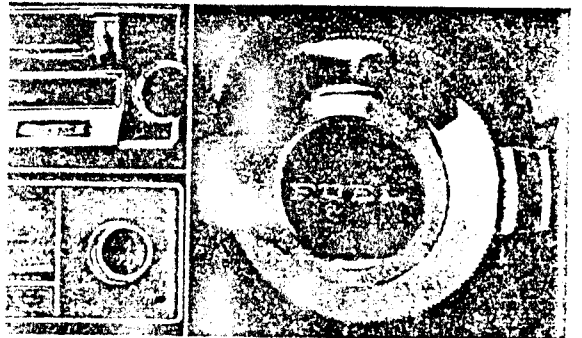
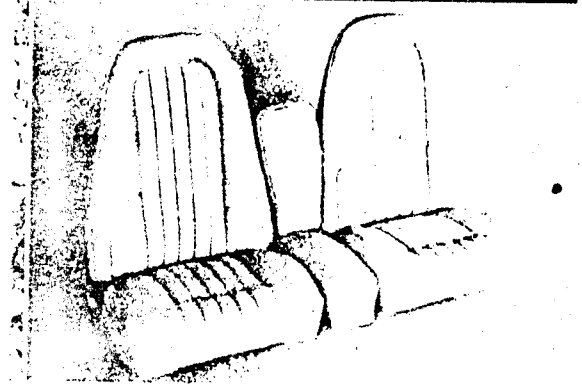
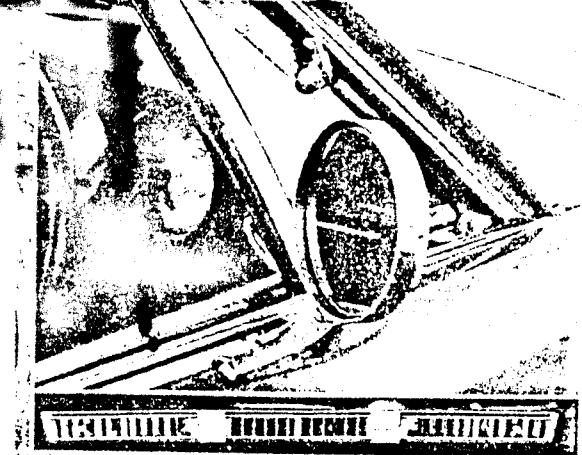
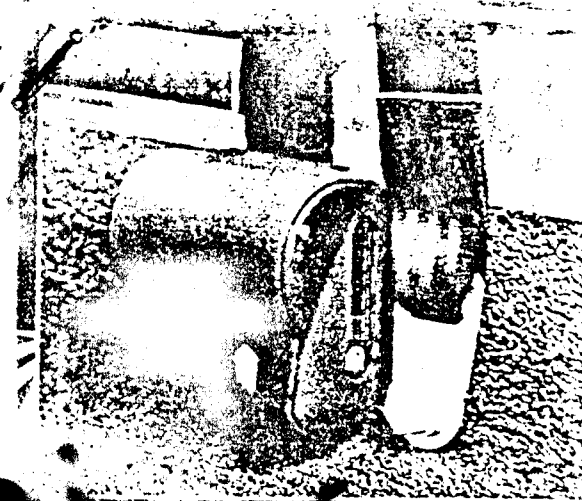
The new Charger changes all that. You can put almost any piece of equipment on any model.

Shown at left are some of our most popular options.

The chart below gives you the full list, with the availability for each Charger.

From dress-up packs to a wide range of new seats; from air conditioning to a choice of axles; it's just a matter of deciding, then doing things *your* way.

OPTIONS	CAR MODELS		
	CHARGER	CHARGER XL	CHARGER 770
COMFORT/CONVENIENCE			
Air conditioning (includes tinted glass)	O	O	O
Power steering (auto only)	O	O	O
Centre cushion armrest (not with floor shift)	O	S	
Bucket seats—Non reclining—vinyl	S		
Bucket seats—Reclining—vinyl		S	S
Bucket seats—Reclining—cloth & vinyl		O	O
Vent windows	O	O	O
13 transistor push button radio	O	O	O
Search tune radio with tape player			O
Retractor seat belts	O	O	O
Laminated wind-shield	O	O	O
DECOR/DRESS-UP			
Styled wheels 6.5" (require 185 SR x 14" or E70 HR x 14" tyres)	O	O	S
Cast alloy wheels 7" (require E70 HR x 14" tyres) std. with 340 V8	O	O	O
Convenience Pack I:—Soft grip steering wheel, glove box lock, remote controlled mirror, prismatic mirror	O		
II:—Soft grip steering wheel, glove box lock, remote mirror		O	
III:—Glove box lock, remote mirror			O
Sports Package includes:—Stripe treatment, instrument cluster, 3 spoke steering wheel, wheel covers	O	O	
Protection Package includes:—Body side vinyl filled moulding—Rear overriders	O	O	O
Wheel covers (as sports package)	O	O	
PERFORMANCE			
215 cu. in. single barrel Hemi	S		
245 cu. in. single barrel Hemi	O	S	
265 cu. in. 2 barrel Hemi	O	O	S
265 cu. in. Hemi 3 x 2 barrel Weber 6 pack (with 4 speed only)	O	O	O
318 cu. in. 2 barrel V8 (with auto only)		O	O
340 cu. in. 4 barrel V8 (with auto only)			O
Electronic ignition	O	S	S
3 speed column shift—manual	S		
3 speed floor shift—manual	O	S	
4 speed floor shift—manual (with carpets only)	O	O	S
3 speed auto—column shift	O	O	
Console auto. (carpet & bucket seats only)	O	O	O
Disc brakes	O	S	S
Power brakes	O	O	S
Sure grip differential 3.23:1 (N.A. V-8)	O	O	O
Sure grip differential 3.27:1 (H.D. Six Pack only)	O	O	O
3.23:1 Rear axle (N.A. V8) std. with 215.	O	O	S
185 SR B.S.W. tyres	O	O	S
E70 HR B.S.W. tyres (mandatory with 6 Pack)	O	O	O
6.95 x 14" W.S.W. tyres	O	O	
F78 x 14" x 4 W.S.W. tyres	O	O	
F78 x 14" x 4 B.S.W. tyres	O	O	



RACE PREPARATION OF THE VALIANT CHARGER R/T

(a) VEHICLE IDENTIFICATION

The Charger model most suited for track use is the "Track Pack" version, identified on its compliance plate by the following code VH 7-S-29 A84 E38.

(b) INTRODUCTION

This sheet is intended to be read in conjunction with that entitled "Pre-race preparation of the Charger "Track Pack"", which details items requiring routine maintenance. It covers those points to which attention should be given to get the ultimate performance from your Charger.

(c) ENGINE PREPARATION

1. Blueprinting the Basic Engine

To obtain maximum performance from a given production engine, it is necessary to first "blueprint" the engine to provide a solid foundation for subsequent modifications. "Blueprinting" is the term used to describe the process wherein every part of the engine is checked for conformity to its specified dimensions. If it is a moving part it will have a specified working clearance and this must also be checked. This is necessary because all dimensions and working clearances have a plus or minus tolerance which allows them to function properly even though the figure may not be right on the nominal. These tolerances are what make the almost fully automated production lines possible and allow high volume production. This system is more than adequate for stock passenger car engines. However, an engine that will be used for performance work requires more precision. Blueprinting provides this precision by insuring that all dimensions and working clearances and settings are brought to the point where they produce the best results, both from a performance and reliability standpoint. The worth of this procedure has been proven many times on the dynamometer with fully blueprinted engines producing significantly more horsepower than its production line counterpart.

2. Cylinder Block Preparation

The basic block should be checked and reworked in accordance with the following procedures:

- (i) Before disassembling the block the piston drop of the pistons must be checked. Piston drop is the distance from the edge face of the piston to the top or deck surface of the block. This is an important dimension since it has a direct influence on compression ratio.
- (ii) Check the main bearing housing bores for the specified diameter of 2.6925/2.6933 and alignment within .0008.
- (iii) Once the main bearing bores are known to be in alignment, the deck surfaces of the block should be checked to make sure they are parallel with the axis of the crankshaft. The distance from the centreline of the crankshaft to the deck surface of the block should be exactly the same at the front and rear. If not, the deck surfaces will have to be milled.

The compression ratio of the engine can be adjusted by machining the surface as well as the cylinder head face as a considerable

tolerance is allowed on production engines. The resulting machined surface of the deck should be on the rough side to produce a good gasket seal and prevent the gasket from moving. Specified finish is 80 to 160 microinches which is a machined surface.

- (iv) A bottoming tap should be run down all bolt holes and the head bolt holes should be chamfered slightly to prevent the top thread from pulling up when the head bolts are torqued.
- (v) Use a small, fine file to remove burrs and break all sharp edges in the main bearing bores and around the cylinder bore chamfers.
- (vi) The tappet bores may be shined with #400 paper to remove any rough spots or burrs.
- (vii) Check the tappet bore register of each tappet bore with oil gallery.
- (viii) Remove the oil gallery plugs to ensure cleanliness of the oil passages.
- (ix) Insure that all dowel pins used for aligning purposes are the proper height (not too high).
- (x) Cylinder bores should be carefully measured. Tolerance for ovality and taper is .001; however, aim for a minimum.
- (xi) The bores should not be honed unless necessary to correct piston fit or remove scratches or scuff marks.
- (xii) Honing the cylinder bores is a very critical process. The hone should be equipped with a medium stone that will produce a surface of 25 to 30 microinches. The stones should be cleaned frequently to prevent them from scratching the walls. Honing should produce a cross hatch pattern, uniform from top to bottom, having an included angle of 45° - 60° . The bores should never be honed dry; use kerosene as a cutting fluid. For further information, refer to the Valiant Service Manual.
- (xiii) Remove the water jacket core plugs and inspect for burnt-in sand between bores and around the water jacket. Pay particular attention to the water holes on the L.H. deck face for blockages. Clean out with a drill if necessary.
- (xvi) When all machine operations are complete, the block should be thoroughly washed out with solvent. Use bottle brushes of suitable size to clean out all bolt holes, oil passages, etc. Finish off with another thorough washing, using a good, common detergent and warm water. Blow or wipe dry to prevent rust. It should be pointed out that engine parts can't be too clean. The majority of early engine failures can be traced to dirt or foreign objects (metal chips, etc.) that were left in the engine when it was reassembled.
- (xv) Install cam bearing and ensure that oil holes in the bearings line up with oil holes in the block. Note that the front cam bearing oil hole does not line up completely with the block hole.

3. Crankshaft

- (i) Sound castings of 240 BHN minimum have been selected for the E36 and shot peened for improved fatigue resistance especially in the fillet area of the crank journals.
- (ii) Inspect all bearing journals for dimensions and finish. No hourglass, barrelling or taper is permissible. Any nicks or scratches should be carefully stoned out and check for the edges

of the oil holes.

- (iii) Any rework of the crankshaft should follow carefully the procedure as described in the Repco Technical Bulletin of December 1968, Vol 15; No.4. for the refinishing of nodular iron crankshafts, or the Valiant Service Manual.
- (iv) Crank alignment may be checked by installing number 1 and 7 bearing shells in the block and number 1 and 7 main caps. Torque the caps to specification and install a dial indicator on number 4 main bearing journal. Turn the crank over by hand, noting the indicator reading. The reading must not vary more than .004".
- (v) Install bearings using the Plastigauge method of checking clearances. Bearing clearance on mains and rods should be .0015 to .002.
- (vi) Before assembly make sure crankshaft including oil passages is clean.
- (vii) Check bearing crush height by torquing one side of cap with bearings installed and measuring gap which should be .002 - .004.
- (viii) Oil main bearing bolts before assembly and torque to 65 ft/lb.
- (ix) When installing the crankshaft, torque all caps to specification and then spin the crank by hand through several revolutions. It should be fairly free, requiring very little effort. Remove the caps and check bearings for any burrs. If present, they can be removed by gently scraping with a bearing knife. Make sure rope seal is properly seated as this can cause the crank to bind.

It is important to tighten the bearing caps in stages to ensure that the caps remain in alignment and do not cause the bearings to twist causing binding with the crankshaft.
- (x) Note that main bearings are tin - aluminium with a full circle oil groove and rod bearings are the trimetal type.

4. Crankshaft Assembly Balancing

- (i) The separate components of the assembly are individually balanced to a close tolerance against masters and do not require further attention as any unbalance can be corrected during the assembly balancing. The production tolerance of the clutch, flywheel and crankshaft assembly is 1.00 in/oz of unbalance which should be sufficient for most purposes. Any improvement on this should only be undertaken by an experienced reputable balancer and balancing should be as close to zero unbalance as possible.
- (ii) If the assembly is checked for balance and found out of tolerance, the cause of the unbalance can usually be traced to misalignment and eccentricity of the separate components, especially if they have been reassembled. If the crankshaft assembly is disassembled, it should be reassembled with the crankshaft vertical when installing the flywheel, clutch etc. to prevent any misalignment due to component weight. Use a proper alignment mandrel. Tool Part No. to ensure concentricity of the clutch driven plates.
- (iii) Ensure that clutch plates are correctly installed as they are not interchangeable. Also the intermediate plate must be installed such that the open end of the springs are in a clockwise direction. Note these components carefully before disassembly. Apply loctite to flywheel to crankshaft bolts and install new lock tabs. Before torquing bolts, install dowel

pin. Torque bolts to 55 ft/lb.

- (iv) When vibration damper is installed to the assembled engine apply loctite to the bore as well as the threads of the crankshaft bolt. The vibration damper is an interference fit on the nose of the crankshaft.
- (v) Note that the crankshaft sprocket is hardened steel on the E38 option and not sintered steel as with standard production engines.
- (iv) Component balance the vibration damper if it is not possible to balance with the assembly.

5. Connecting Rods

- (i) Rods should be checked for alignment and bores should be parallel.
- (ii) Use a small file to deburr rods paying particular attention to the mating surfaces and the tab groove. The sides may be polished by hand with #600 paper. Do not increase side clearance past .017 as this increases the oil demand of the engine. It will also allow too much oil on the cylinder walls which will overload the rings and allow excess oil in the combustion chambers.
- (iii) When installing bearings and rods on crankshaft, first torque them to specification, spin crank, then remove and check bearings for burrs.
- (iv) Check for bearing crush which should be .002 to .004.
- (v) Connecting rods for the E38 are shot peened before machining for improved fatigue resistance. Check rods for any surface defects.

6. Balancing Reciprocating Components

Weigh the piston and the small and large end of the connecting rod. The weight of the other reciprocating components such as rings, piston pins, bearings and retaining circlips should also be included. Weight may be adjusted by machining off on the weight pad at each end of the rod and the weight pad on the piston under the piston pin. Since this is a six cylinder engine all reciprocating masses must balance each other so select the lightest piston, small end and big end then adjust the weight of the other to suit. It is permissible on the connecting rod ends to chamfer the edges of the balance pad especially if the pad is thin. Minimum pad face to bore is .239 on the small end and .347 on the big end. Production weight tolerance on these parts is ± 2 grams, however, it should be possible to achieve $\pm \frac{1}{2}$ gram with a highly accurate set of scales. Again, unless accurate equipment is available do not attempt to correct the component weight as the production tolerances will give trouble free performance.

7. Pistons and Rings

- (i) Check ring grooves for burrs, then for proper ring side clearance.
- (ii) Check ring end gap against specification, (.010 to .020). A gap of .013" to .016" is desirable. Do not in any case, exceed a gap of .020 as this will allow too much blow-by, causing power loss and/or allowing too much oil to reach the combustion chamber which can cause detonation.
- (iii) Use a fine stone to de-burr rings and to break edges on end gaps.

- (iv) Production pistons will perform well with .0015" to .002" clearance.
- (v) It is advisable to inspect pistons for cracking by a non destructive test method such as penetrant dye check. Look for cracks in the ribs between the head and pin bore as well as the edge of the skirt. Slight cracking is permissible in the ribs.
- (vi) Check piston pin to retainer end float. A small end float of .010 to .020 is preferred. Under no circumstances exceed .029.

8. Camshaft

- (i) Inspect the camshaft sprocket for cracks and defects. Check sprocket tooth hardness (Rc 38 min).
- (ii) The three bolts securing the sprocket may be installed with loctite.
- (iii) Inspect carefully the length and peening of each individual link in the timing chain. The peening should be at least .150 wide.
- (iv) Apply engine oil or a high quality lubricant to the camshaft lobes before rotating the assembled engine.
- (v) Because of the production tolerances mentioned previously it is possible for the crankshaft to camshaft relation to vary by several degrees. It is important that this be correct to produce maximum performance. Use the following procedure to check the camshaft.

9. Finding TDC (Top Dead Centre)

- (i) Place dial indicator (minimum 2/4" travel) on top of piston. Be sure the indicator is rigidly mounted.
- (ii) Affix a 360° protractor (degree wheel) on the crank shaft with a pointer. Place the pointer as close to "0" (TDC) as you can by watching the indicator.
- (iii) Rotate the engine (in a clockwise direction when facing the front of the engine) until the dial indicator reads exactly .030" before T.D.C. Stop. Take reading from the degree wheel. Write it down. Reverse rotation (counterclockwise) of the crank and rotate until the piston comes up again and the dial indicator reads .030" exactly. Stop. Take reading from the degree wheel. This reading should be the same number of degrees away from "0" (TDC) as the first reading, only on the other side of "0". If it is not, move the pointer half the number of degrees in the direction of the minimum degree reading.

NOTE - The .030" selected above was for explanation purposes only. Any measurement of .015" or greater is acceptable.

EXAMPLE - With the degree wheel, pointer, and dial indicator in position, turn the engine over (clockwise) until .025" is read on the indicator. If you go past you must start again. Do not back up, go all the way around. Read the degree wheel. Say 2°. Reverse rotation and rotate until the indicator reads .025" again. Read the degree wheel. Say 350°. Move the pointer on the degree wheel 1° to read 351°. Repeat. At .025" the degree wheel should now read 9° and 351°. Now the pointer is reading 0° at TDC. Note: The reason for reversing direction to obtain the second reading is to take out any clearance in the con-rod bearings.

10. Timing the Camshaft

- (i) With the camshaft in place, disconnect the timing chain from the

- (ii) of the No.1 cylinder.
- (ii) Place the dial indicator on the solid rim of the hydraulic tappet with the cam at maximum lift.
- (iii) The following are the specifications for the E38 camshaft:

Intake Valve	Opens	18° B T D C
	Closes	74° A B D C
	Duration	272°
Exhaust Valve	Opens	62° B B D C
	Closes	30° A T D C
	Duration	272°
Rocker Ratio	1.7	
Lift at valve	.42	

The duration of the cam is TOTAL NUMBER of the degrees the valve is open.

EXAMPLE: Using the figures above

- 18° When the intake valve starts to open
- 180° The number of degrees between TDC and BDC (Bottom Dead Centre)
- 74° The number of degrees after BDC at which the valves close.
- 272° TOTAL - Duration

The centreline or point of maximum lift is always half ($\frac{1}{2}$) the duration. In the above case, 136° after the valve starts to open. This means that the centreline of the camshaft, or point of maximum lift, will occur at a point 136° less 18° equals 118° after TDC on your degree wheel. Think about this. It is fundamental to understanding what we do from here on.

- (iv) Turn the engine over (clockwise) until the indicator reads .025" before reaching maximum lift. Stop. Read the degree wheel, write down the number of degrees. Continue rotating the engine in the same direction (clockwise) past maximum lift until .025" is read again on the indicator. Stop. Read the degree wheel. Write it down. Add the two degree wheel reading together and divide by two. The answer is the point where the centreline is.

NOTE - The .025" was used for illustration only. Any measurement above .015" is good enough.

11. Valve and Seats

- (i) Check seat runout. Less than .0015" is recommended.
- (ii) Check valve stem clearance in guide (.001" to .003" intake and .002" to .004" exhaust). Check stems for scuffing.
- (iii) Lap in valves according to accepted practice.
- (iv) Recutting of valve seats is not recommended unless absolutely essential as a hard durable surface builds up on the seat during use which is removed by recutting.
- (v) Any distortion in the intake valve seat may be removed by lapping.
- (vi) Seat width for the intake valve is .000" and .000" for the exhaust.
- (vii) Run out of the valves for intake and exhaust valves especially under the head at the start of the stroke of exhaust valve.

parts. Note: These components are swirl polished to remove circumferential scratches and must be handled extremely carefully. In other words, don't grab a bunch in your hand such that they knock against each other or you will damage them.

- (viii) Check lapped in valves assembled with their springs for leakage by pouring gasoline into port.
- (ix) A weight matched set of valves are preferable.

12. Combustion Chamber Volume

After grinding seats, it will be necessary to measure the actual volume of the combustion chambers against the specified volume. This can be done by placing the head, chambers up, on a level surface. Valve should be in place and spark plugs should be threaded all the way in. Coat the area around the chamber being measured with light grease to provide a seal then place a piece of perspex over the chamber. The perspex should have a hole in it large enough to permit the entry of the checking fluid and the exit of air. A burette, graduated in cubic centimeters, with a capacity of at least 250 cc, makes an excellent checking vessel. Plain water, coloured with a touch of mercurochrome (to make it easier to read), or kerosene may be used as a checking fluid. Fill the chamber with fluid, making sure all air is out of the chamber and chamber is completely full, then read the volume on the burette. If the volume is too large, compression ratio will be less than specified and the volume will have to be reduced. Specified volume is 80.48 cc for 10.0:1 compression ratio. The effect of head gasket, deck height, piston dome, bore and piston chamfer must be taken into account at arriving at these figures. Because of production tolerances, the compression ratio can vary. A variation of up to - 2cc can exist between chambers. Take an average of the six chambers. If the compression ratio is low it is possible to remove up to .020" from the head face and the remainder from the block deck face. Remember that an increase in compression ratio has only a very small effect on horsepower and can lead to problems of detonation with current Australian fuels. A compression ratio of 10.0:1 has proven to be best.

- (i) After any rework of head or deck faces it is advisable to check piston to head clearance.
- (ii) Note that a stainless steel gasket bead is used on E38 engines.
- (iii) Torque cylinder head bolts to 75 ft lb.

13. Valve Springs

- (i) Surge dampers may be easily removed and installed by grasping with long nose pliers and twisting in or out.
- (ii) Check the valve spring closed and open loads. If a selection of springs are available select on the high side of the tolerance and within 3 lbs. of each other.

Valve closed	108 to 118 lbs. at 1.65 long
Valve open	208 to 228 lbs. at 1.25 long

Note: Above readings are with the surge dampers removed.

- (iii) Install valves in place without springs, but with retainers installed. Measure the distance between spring set in head and spring seat on bottom side of retainer. This distance should correspond to specified installed valve spring height.

14. Valve Rockers

Inspect valve rocker to ball stud contact pattern. This should extend in a full circle around the rocker and a minimum of .060" wide. Discard any rockers and studs which are scored or scuffed. If contact pattern is poor, the two parts may be lapped together in pairs. Check the contact of the rocker with the tip of the valve.

15. Valve Train

- (i) Inspect push rods for straightness and check weight. A weight matched set is preferable. Inspect valve retainers and weigh. A matched set in the engine is preferable.
- (ii) Check the leakdown rate of the hydraulic tappet as outlined in the service manual and ensure that it is within tolerance.
- (iii) It is preferable to use a set of lifters with a matched leak-down rate.

16. Water Pump

No changes are made to the standard water pump except to inspect for leakages and ensure the pump pulley is not cracked.

17. Oil Pump

- (i) Inspect drive gear location on shaft. The total chamfer at the end of the shaft must protrude. Do not remove gear from shaft as a maximum interference fit is essential.
- (ii) Inspect pump for cleanliness and scoring including pressure relief valve for free movement in bore.
- (iii) On reassembly ensure that there are no leakages in system.

18. Oil Pan

- (i) An anti-surge baffle is fitted to E38 engine to reduce oil surging during violent cornering, acceleration and braking. Inspect the baffle carefully for any cracking or sharp edges which could lead to the propagation of cracks around the securing tabs. Replace or repair by welding if required.
- (ii) If required, enlarge the dipstick hole in the baffle to prevent the baffle from interfering with the insertion of the dipstick
- (iii) Install new gaskets with oil pan. Nylon patch screws are reuseable many times until they loose their retaining torque.
- (iv) Install a spring steel dipstick.

19. Intake Manifold

A template is used in production to check the alignment of the aluminium manifold to the carburettors as well as the cylinder head and any misalignment is corrected by grinding.

Inspect for alignment and correct by filing out, if required, so that there is an even transition of the gas flow and there are no sharp projections into the gas passage. Check also the fitment of the gasket in the gas stream.

20. Carburettors

- (i) Ensure that the carburettors contain the correct components for the E38 configuration, i.e. main venturi 40 mm and main fuel jet 1.45 mm.
- (ii) Make sure the venturi retaining bolts are tight and wire locked.
- (iii) It is possible to adjust the stroke of the accelerator pump to 8 mm. travel which will improve track driveability and reduce fuel consumption slightly.
- (iv) Check the float level.
- (v) Do not attempt any other alteration other than idle speed and mixture.
- (vi) The carburettors have been set up specially in conjunction with S.P.A. Edoardo Weber in Italy, to achieve maximum performance and any other adjustments will destroy this fine tuning. Refer to the Six Pack Operators Manual for details of construction and tuning.

21. Distributor

Check advance curves in specification and use the contact points released for E38 option which have a higher spring tension. Part No. 3651642.

22. Running In

Race engines built by Chrysler are run in under light load on the dynamometer for 40 hours before a power check is made. The engine is then stripped for inspection, reassembled and re-run before installation in race vehicles.

An equivalent run in would be about 2,000 miles with light usage, following carefully the recommendations in the Valiant Operators Manual. For other information, refer to the Valiant Service Manual and Service Bulletins.

23. Clutch

- (i) Check cover pressing thickness in deep drawn areas near mounting holes. After use, watch for cracks at edge of 'D'
- (ii) Drive shaft rivets should be adequately headed.
- (iii) Drive steps should not show signs of buckling.
- (iv) Nicks should be dressed down at the sharp corners of the intermediate plate drive pad slots. Watch for cracking in service.

(C) CHASSIS PREPARATION

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30F. Transmission

The only modification needed for the transmission is to drill the square of the drain plugs to accept wiring in conformance with C.A.M.S. regulations.

Check the ratio of first gear by marking the tailshaft with

chalk and counting the number of engine revolutions (using the timing marks as reference) for one turn of the tailshaft. This should be 2.50.

31A. Propellor Shaft

To comply with C.A.M.S. regulations, a tailshaft safety strap must be fitted. This can be made of 1" x 1/8" steel strip drilled for and bolted to the centre floor seat belt anchorages. Allow a sag of 1" under the shaft for clearance.

31B. Rear Axle

The use of the optional 3.5 axle is recommended for all tracks other than Bathurst, where the 3.23 is superior. The oil fill plug and the bottom bolt on the rear cover must be drilled and wired together. Use only Caltex TL 3450 lubricant, and change before every meeting.

<u>Axle</u>	<u>Option Code</u>	<u>Part Number</u>
3.50:1	D56	3539376
3.23:1	D53	3650884

Inspect fillets on inner face of axle shaft flanges. Radius of outermost fillet should be 0.18" and be smooth.

Diff case screws can be loctited to reduce risk of them slackening. Ensure that there are washers under them and under the bearing cap screws. The bearing cap screws can also be loctited as added insurance.

The crown wheel screws have LH threads and use 'stud lock' grade loctite. Check them for torque retention during service, and also check diff case screw torque.

After considerable use, watch for cracks in the axle shaft both halfway along and at ends of serrations. (If the sure grip unit loses its torque capacity, then the side gear serration loads its section of shaft very severely.)

32A. Front Suspension

No special preparation other than that detailed in the "Pre-Race Preparation" sheet is necessary.

32B. Rear Suspension

It is generally recommended that the front spring eye is in the top or "oversteer" position for short circuit work and sprint races, but this is subject to driver preference.

32C. Shock Absorbers

For races demanding "standard type" shock absorbers, use original equipment (tan colour) front shock absorbers, and Armstrong Road holder rear.

Otherwise, Armstrong "7 click" adjustables are preferred. Starting point for setting is "4" front "6" rear. Stiffening front increases steady understeer but gives more initial bite and vice versa.

35A. Front Wheel Brakes

The only material recommended is Hardie-Serodo HF569, and this should be on the 0.2" thick back plates and be well slotted to avoid taper wear. Check carefully disc runout and replace any disc over 0.006" runout. Use only the thick wall "Track Pack" discs Part No. 3540425. Check alignment of the brake anchor with the disc and rectify if necessary.

entire plane of its abutments.

35B. Rear Wheel Brakes

Use only Hardie Ferodo rear liner set HFD 2059A, with materials HS2-E112. These are to be bonded and rivetted to the standard shoes.

N.B. Both front and rear brakes need slow and careful bedding in to achieve good results. An initial burnishing procedure of 100 stops at 0.5G from 60 m.p.h. is recommended for disc, drum and lining life.

35C. Master Cylinder

These cars, with the correct lining materials will have a heavy brake pedal effort. This is a compromise made necessary for long life under competition conditions and is a safety factor against front wheel locking and consequent tyre flat spotting.

36A. Wheels and Tyres

The wheels used should be crack tested after five tyres have been worn out on each. Useage should be logged by marking the individual wheel when each tyre is used. The expected life of the cast wheel is ten to twelve tyres, and they should be replaced after this amount of use.

Tyres are an individual choice, and clearance checks should be carried out before use, especially with "baggy" high profile types.

Some wheel nut torque loss may occur the first time a wheel is used. This should be rechecked after the first few laps on a new wheel.

36E. Exhaust

For open exhaust races, the following system is recommended:- Remove entire standard system from where the first small muffler bolts to the engine headers. Use two 135° 2" pipe bends to carry exhaust past the gearbox cross member, then into two 3" pipes carried straight out under the left hand sill and cut off parallel with the car's side. A slight kick up will assist in not raising dust. Support securely on a bolt through the floor pan, with coil springs above and below a plate welded across both pipes.

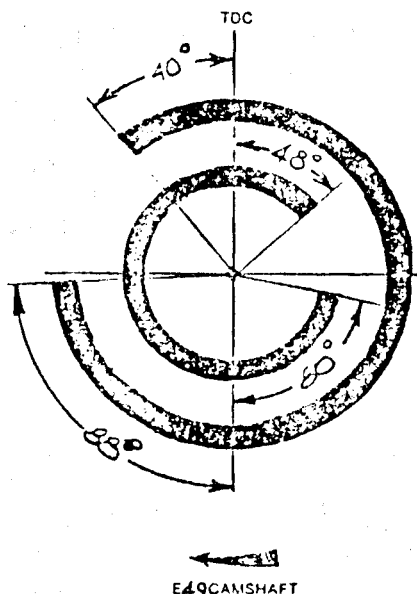
(e) CONCLUSION

These instructions are derived from many hours testing on the dynamometer and the track and should, if carried out competently, result in a performance equal to our own cars. Any further points will be advised as they become known.

CAMSHAFT

Camshafts for these engines have been designed to best suit the conditions under which these vehicles are operated. The E camshaft is designed for a balance of driveability and performance whereas the E49 camshaft produces maximum torque at a higher engine speed.

The most significant aspect of valve timing is the period during which the exhaust valve and the intake valve are both open. This overlap is 40 degrees for the E and 83 degrees for the E49. This affects the driveability of the



CAMSHAFT TIMING DIAGRAM

FIG. 3

car and the rev range for maximum torque. When the exhaust valve is open at the same time as the inlet, the piston is close to top dead centre and the incoming charge fills the small clearance volume and actually loses some of the charge through the exhaust, thus completely displacing the residual spent gas in the cylinder. However, there is a critical engine speed for any overlap under which the reverse effect occurs. That is, the incoming charge does not have the momentum to displace the gas in the cylinder and, in fact, instead of the spent gas being pumped through to the exhaust, some is actually pumped back into the inlet port. For this reason engines with high overlap have a rougher idle.

HYDRAULIC VALVE LIFTER

The adoption of the hydraulic valve lifter (Figure 4) has led to increased valve life due to the reduction in shock loading. The hydraulic tappet works on the principle that oil from the gallery enters the cam follower through a small oil bleed port during the valve closed period. A spring loaded piston in the cam follower takes up any clearance in the valve train, the oil from the gallery filling the clearance volume around the piston. In the very short time when the camshaft lifts the follower, the oil has no chance of bleeding back through the one way valve and so the force is transmitted to lift the

Intake Valve	Opens	40° BTDC
	Closes	88° ABDC
	Duration	308°
Exhaust Valve	Opens	80° BBDC
	Closes	48° ATDC
	Duration	308°
Rocker Ratio		1.7
Lift at Valve		.42
Compression Ratio		10.0:1
Compression Pressure: with engine warm, spark plugs removed, wide open throttle		
Maximum variation between cylinders		150 - 210 psi
Carburetors		25 psi
Maximum BHP and rpm		3x2 barrel Weber
Maximum Torque lb.-ft. and rpm		280 @ 5000
		318 @ 3700
Clutch		
Type		
Transmission — Manual		Pressure Plate with diaphragm spring driving Repco 9½" (238 mm) dual dry plates
Type		
Ratios		Four speed Synchromesh and reverse
		1st 2.82
		2nd 1.84
		3rd 4th 1.32
		Reverse 1.00
Tyres		
Type		
Pressures		

E70 HR

Use the same pressures quoted in the Operator's Manual for use with 185 SR 14 tyres.

Rear Axle

Ratio

3.27.

SPECIFICATIONS

Engine Option	E.
Displacement — cubic inches (cc)	265 (4340 cc)
Bore and Stroke — inches	3.94 x 3.68
Taxable Horsepower (Aust.)	36.7
Recommended Fuel	Premium
Spark Plug Size	N-9-Y Champion
Gap	.035
Firing Order	1-5-3-6-2-4
Distributor	
Centrifugal Advance	0° @ 320-480 rpm
	5° @ 630-890 rpm
	10° @ 1700-2540 rpm
	0° @ .2"-2.1"
	5° @ 2.2"-4.2"
	10° @ 4.6"-6.8"
	11.8°-14° @ 8"
Vacuum Advance (inches of mercury)	
	36° - 40°
Dwell (Fixed by control unit)	5° BTDC
Basic Timing	Timing Chain Cover
Timing Mark	
Coil Test	17/32 spark when primary current is adjusted to 1.7 amp
Ballast Resistor	.5 to .6 ohms @ nil amp (to coil)
	4.5 to 5.5 ohms @ nil amp (to E.C.U.)
Tappets	Hydraulic (Self-adjusting)
Air Cleaner	Replaceable paper element
Choke	Manual
Exhaust System	Extractors with Dual Exhaust System

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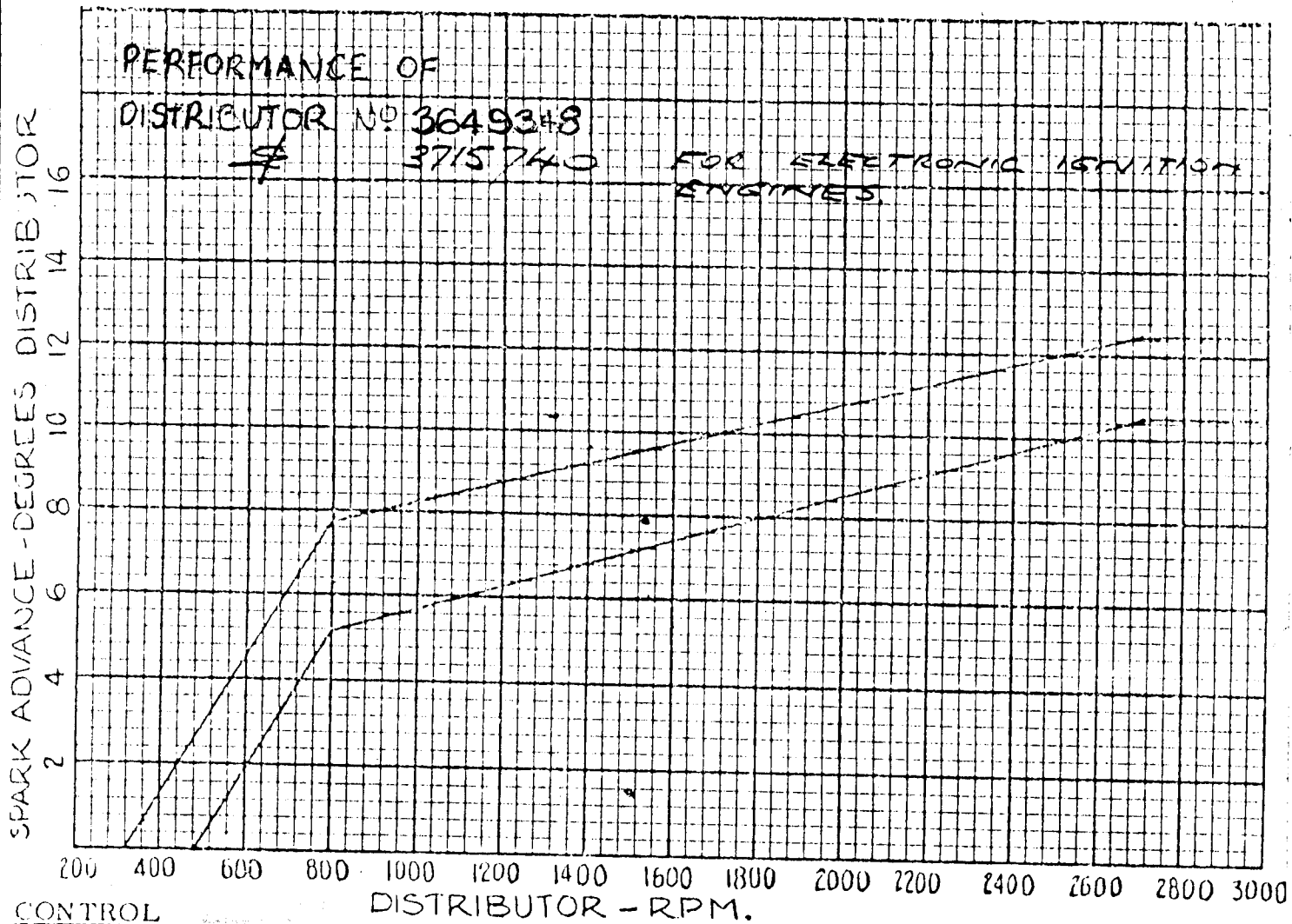
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STANDARD NO.

D/PEC

SPECIFICATION: DISTRIBUTOR GOVERNOR ADVANCE

29



1. - A Vendor shall not commence supply of material to this Specification until sample are approved by the Chrysler Australia Limited Engineering Division.
2. - The Vendor shall not change the compounding or formulation of the material without due notification being given to the Chrysler Engineering Materials Department.
3. - The material shall be purchased only from sources that appear on the Chrysler Approved Source List. This information can be obtained from Chrysler Australia Limited Purchasing Department.

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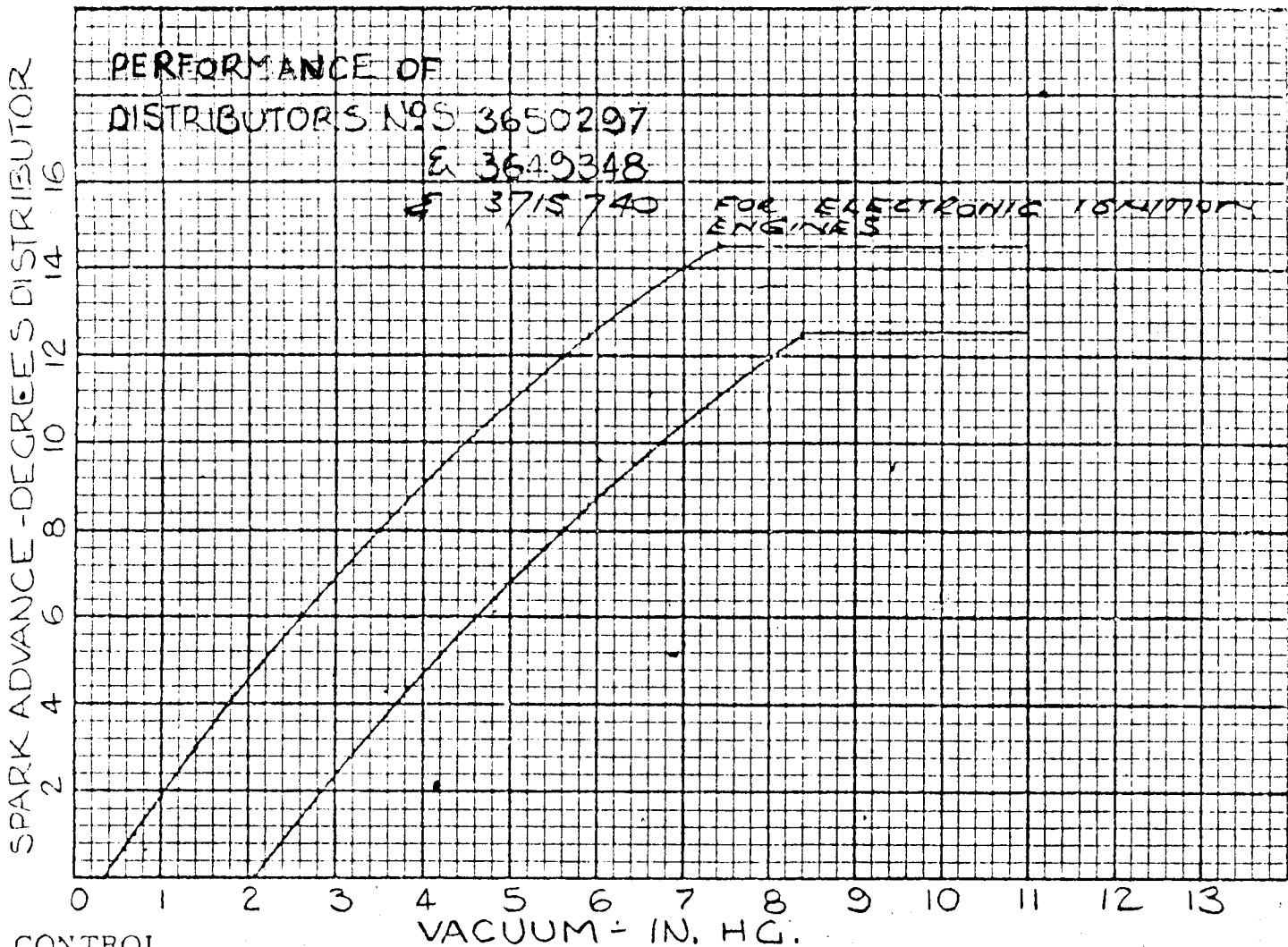
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