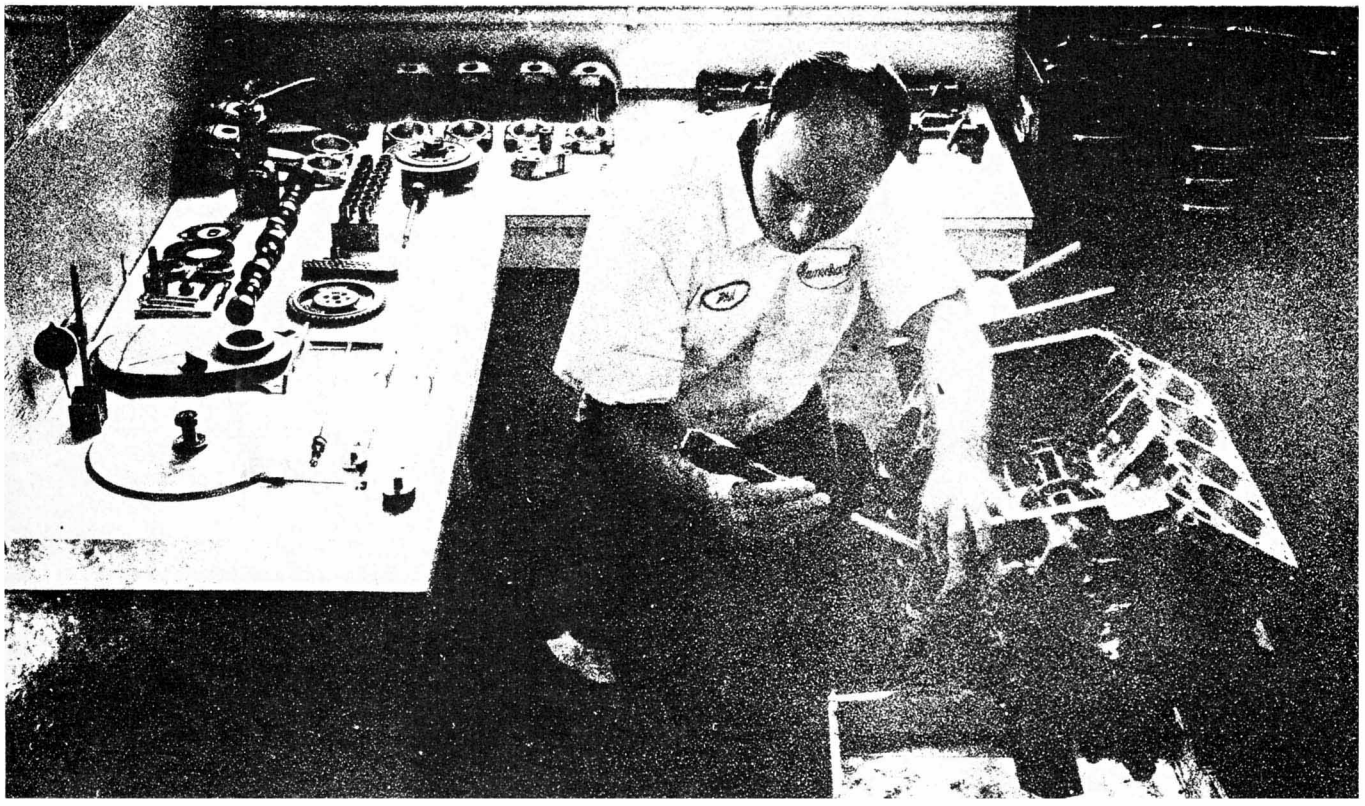
HEMI WHAMMY



Ramcharger's the name, thunder's the game. Yes, we're talking about that gang of earth-shakers out of Detroit who build some of the most muscular MoPars in captivity. But there's a switch this time. Dan Knapp and his band of horsepower henchmen are packaging and selling ponies instead of building it solely for their own use. They've gone into the racing engine business (Ramchargers Racing Engines) and can put you next to the proper parts, or put together a complete race motor to suit your needs. Just because the Rams' reputation is based on Fueler and Funny front runners, don't mistake them for a pack of nitro-sniffers, because, conversely, due to the popularity of the street and stocker scene, it's the unblown carbureted MoPars that comprise about 80% of their business.

Now that we've established the credentials of our source, what of the subject? As you may have guessed, thanks to the title, we're going to examine the Dodge-Plymouth 426 Street Hemi, but from a different point of view. Recently, NHRA inaugurated a new class in the stocker ranks; with a pounds/power factor of 7.50 to 7.99, the new bracket is dubbed A/S or A/SA, depending upon the transmission employed. In effect it creates a place for the Street Hemi's to race, where previously there was no class in Stock Eliminator to accommodate them. Although the Hemi has repeatedly been analyzed from a Super Stock standpoint, this time we're going to look at it as a Stocker, and, with that all-important budget outlook in mind.

Assuming you bring the Ramchargers your used Street Hemi engine, they begin by disassembling it, hot tanking the block, and then inspecting it for cracks. A penetrant dye, Spot-Check, is used to examine any suspicious areas for cracks. The "Rams" prefer to avoid using cylinder blocks which have cast iron main caps, which can be identified after initial hot tanking because the block and main caps will be the same color. These blocks are most common in the late 1966 applications, and if you happen to have one, either exchange it or replace the caps with pearlitic iron (semi steel) main caps and have it align bored. A dial bore indicator should be used to check the block's cylinder bores and size, and alignment of the main bores. All head and main bolt holes should be rethreaded with a bottoming tap to assure that all bolts seat correctly. When surfacing the decks, it is advisable to use a machine which aligns itself off the main bore, such as a Lempco grinder, as it makes the decks parallel to the crank centerline.

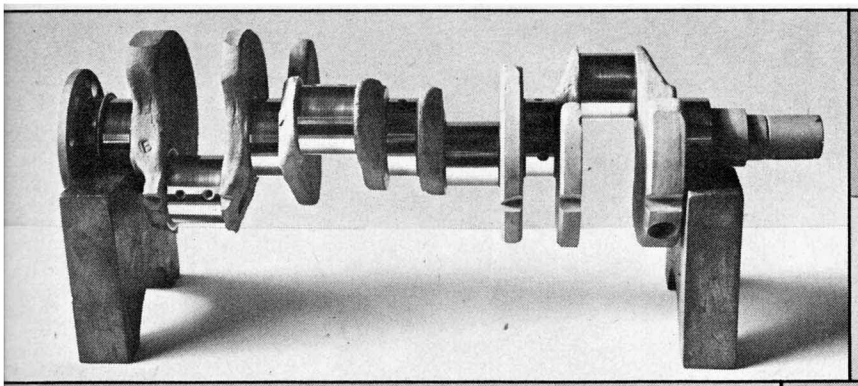
The next step involves fitting the pis-

Text and Photos by Terry Cook

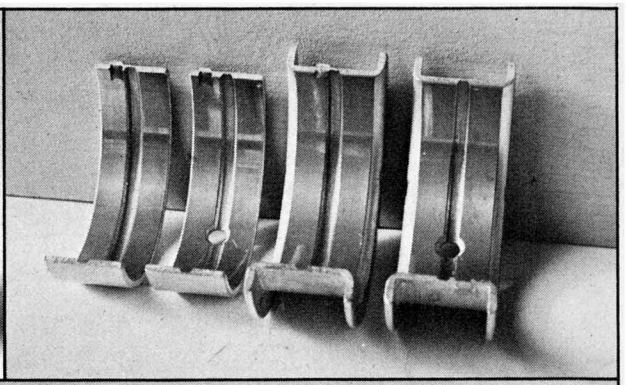
tons to the block. The Ramchargers prefer to use TRW's 12½:1 compression pistons that have had about ¼" cut off the top to yield the stock compression ratio. Exactly how much cutting of the domes is required can be determined by a trial and error process, with the dome volume checking procedure serving as a yardstick. Essentially, this is accomplished by placing the piston in the cylinder at TDC, lowering it exactly one inch into the bore, and then sealing the piston to wall clearance with grease. Then by cc'ing with a conventional graduated burette to find the existing volume, you can determine if the dome volume is correct or if more cutting is required. If you have the proper dome volume, with the standard bore size piston you should have 144.1 cc's of fluid in the cylinder. If you are using a .005 overbore piston, the correct volume of fluid is 144.7 cc's, and if employing .020 overbore pistons, the desired volume is 146.4 cc's.

The aforementioned piston/pin/ring and pin lock assembly (package number 2836110) can be obtained through either Ramcharger Racing Engines or Chrysler's Product Planning department in Detroit. The TRW's are relatively inexpensive, are light in weight, are of ex-

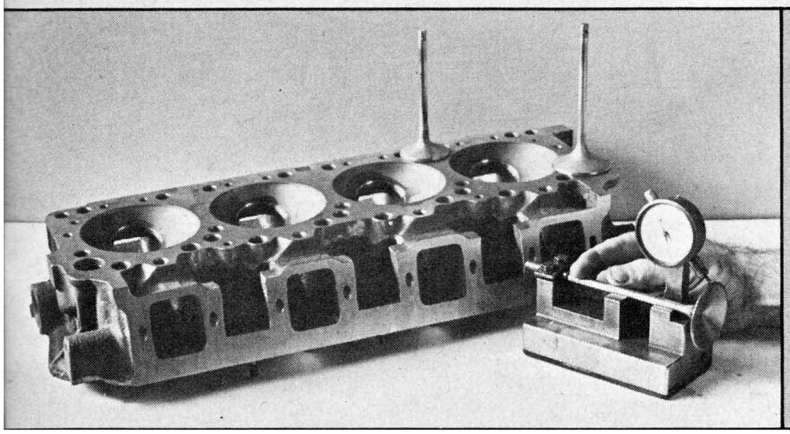
CC scrutinizes the Street Hemi from a stocker standpoint, with the Ramcharger Racing Engines staff serving as investigators behind the high-powered microscope.



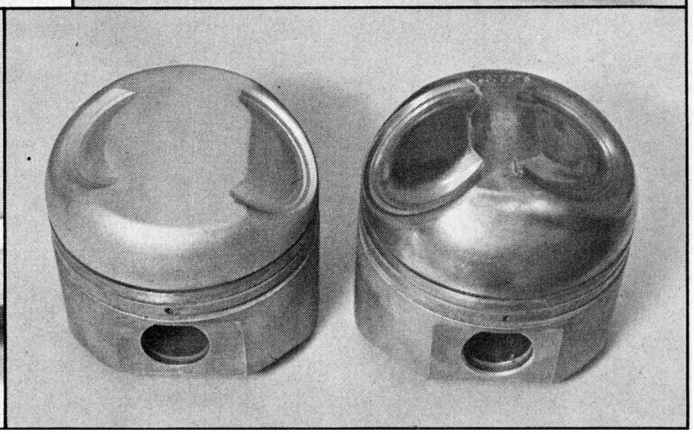
Use the Tuff-trided crankshaft, which is light in color, rather than the flame-hardened crank, which can be identified by its blotchy color. Don't grind the crank undersize for clearance.



The 360-degree grooved main bearings on the right are made specially for the Ramchargers, for increased oiling. Rod bearings are also grooved, but are stock Chrysler, part number 2836184.



Intake and exhaust valves are submitted to several inspection processes on this fixture. Dial indicator verifies that the heads are concentric and that the valve stems are not bent.



Pistons are relatively inexpensive, high quality 12½:1 TRW's that have had the tops milled off to yield 11½:1 compression. These pistons are light in weight and come with Dykes rings.

ceptionally high quality, and offer Dykes top compression rings. The Rams like to gap these top rings at .017-.018", and recommend deburring the rings so they do not stick in the piston's ring grooves. The stock TRW second and oil rings are satisfactory and can be used in the stocker application. The ideal piston to wall clearance to aim for its .0075", and the suggested method for achieving this spec is to hone the cylinders about .003, miking the pistons to determine the exact amount of honing necessary for each hole. The Ramchargers prefer to stay with the stock bore size because of the optimum end gap which can be easily obtained with this combination. It is conceivable that if your block has over 10,000 street miles in its past history, you may be forced to resort to an oversized piston in order to achieve the proper piston to wall clearance.

The final preparation of the block includes complete deburring (stay away from the cylinder bores), complete wire-brush cleaning of all oil passages, and a second hot tanking. Remember when hot tanking: do not remove the cam bearings unless they appear to be excessively worn, but do make a point to knock out the rear cam plug and freeze-out plugs. Use the spray-type tank, as opposed to the emersion type, and when hot tanking is complete, use Lestoil liquid detergent (this is not a commercial) with hot water to thoroughly clean the block.

The Ramchargers suggest using only Tuff-trided cranks (which are uniformly light grey in color) as opposed to the flame-hardened crankshafts (which are blotchy in color). Do not under any circumstances attempt to grind the crank undersize in an effort to obtain the proper clearances, as this will remove the Tuff-tride surface hardening. Deburr the crank and chamfer all oil holes no more than 1/16". Check the crank for straightness, as it must be within .001". If the crank is bent, either exchange it or have a top-notch crank shop straighten it, a touchy but possible accomplishment with Tuff-trided cranks. Assuming the crankshaft passes magnafluxing, use #400 and then #600 sandpaper to achieve a super finish on the journals. Main bearings are made to special order for the Ramchargers, but are available to anyone; the 360-degree grooved shells have .0015 to .0025" clearance. Rod bearings are Chrysler part number 2836184, are babbit bearings, and are available to anyone through Chrysler's Product Planning department, or the Ram's Taylor, Michigan, shop.

Assuming you desire to utilize the connecting rods that originally came with your engine, begin by having them magnafluxed, along with the nuts and rod bolts. When you've got eight rods that pass, have them fully shot-peened to stress relieve and strengthen them. The big end of the rod should be rebuilt. The small end, which comes stock with bushings for floating pins, should be honed. In addition, the rod should be checked for center to center length, straightened, and completely deburred. Incidentally, the Rams offer rod rebuilding as a service to anyone on an exchange basis. Piston to pin clearance should be between .0007" and .001", using the stock TRW pins. Use Tru-Arcs to retain the floating pins, and check to see that the amount of wrist pin side clearance (lock to pin) is between .005" and .007". Down below, the rod side clearance should not exceed .015", otherwise the engine just may

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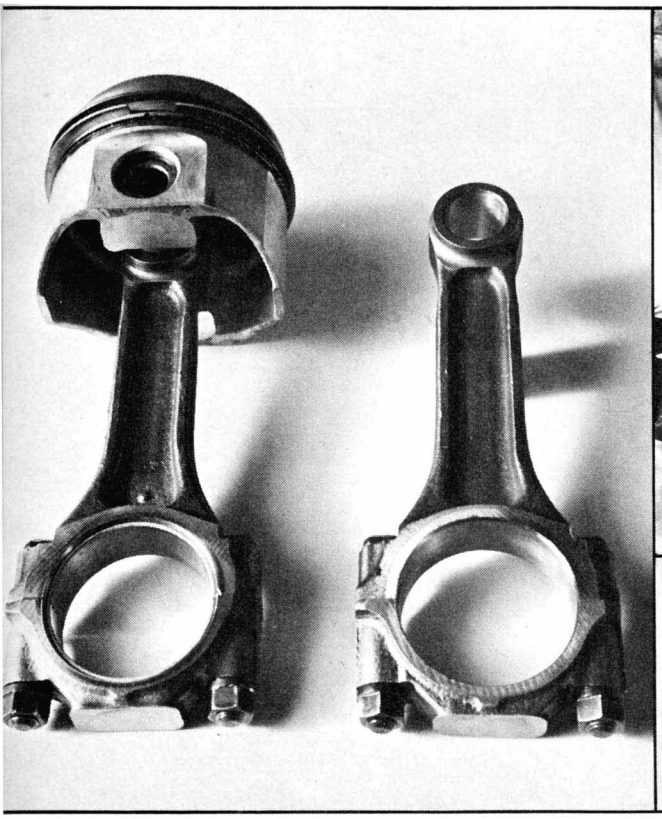
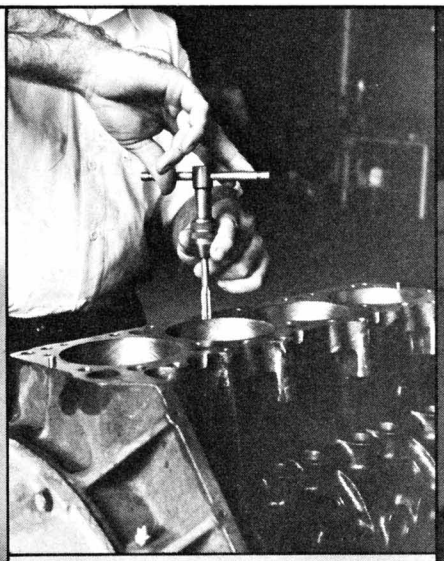
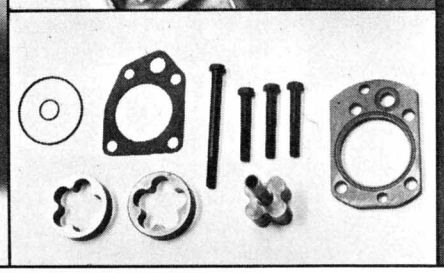
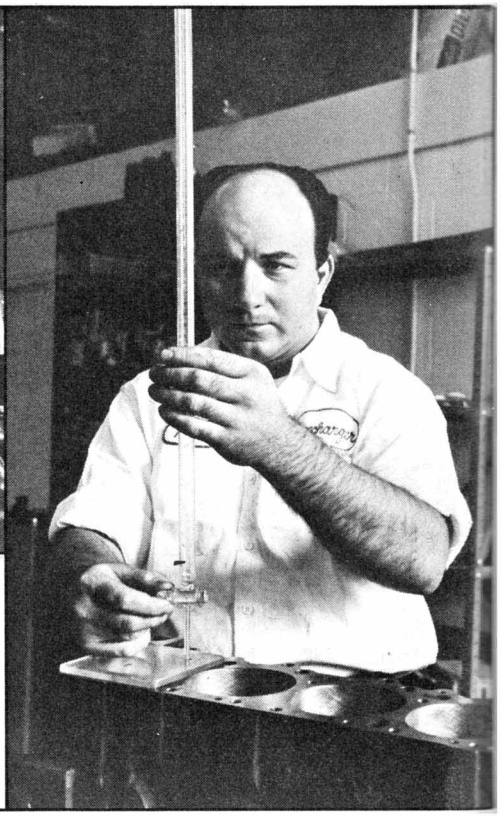
HEMI WHAMMY /continued









LEFT — The rods, as well as rod bolts and nuts, should be magnafluxed and, if they pass, the rods should be shot-peened to stress relieve and strengthen them. Check center to center.

CENTER TOP — It is recommended procedure to rethread all the main and head bolt holes with a bottoming tap, as the bolts might otherwise bottom out, giving false torque readings.

CENTER BOTTOM — Ramcharger Racing Engines offers a special oil pump kit which includes inner and outer rotors, an aluminum adapter plate, relief spring, and needed gaskets.

RIGHT — Ramcharger Phil Goulet uses graduated burette in a checking procedure to determine proper piston dome volume. Trial and error process must be used to arrive at final spec.

turn out to be a super oil burner.

For economy reasons, the Ramchargers recommend the single oil pickup from a 1963-'64 Wedge Super Stock Stage II or III Dodge or Plymouth, which should reach to within ¼" of the bottom of the deepened pan. It is suggested that this pickup be used in conjunction with the Ramchargers' own oil pump kit (this *is* a commercial), which includes inner and outer rotors, an aluminum adapter plate, a special oil pump kit (this *is* a commercial), the necessary bolts, gaskets, oil rings, etc. For lubricant, R.R.E. suggests a good 30-weight racing oil with no additives of any kind.

Because of the previous lack of a Stock class for the Street Hemi, none of the aftermarket cam grinders (to the Ramchargers' knowledge) has developed a "plus area" or "cheater" regrind for this engine. As a result, the only usable cam at present is the stocker. The Ramchargers feel that a new stock roller timing chain is a good idea, and that the stock front cover and timing gears are satisfactory. Stock pushrods should be employed, but beware of "light" pushrods, as they are far too weak and will flex severely.

Initial preparation of the cylinder head involves deburring and using a chisel to remove the casting flash or baked-on core sand (in new heads) from the ports. Do not under any circumstances use a grinder in the ports. The heads should be cc'd, with the chambers worked to a minimum volume of 168 cc's. Remember never to sink the valves; but, rather, try swapping them around to arrive at equal volumes. Cut .0041" from the head surface for each cc of volume you wish to remove. Follow the standard Chrysler book for valve seats, shooting for .060" width intakes and .090" exhausts. Be careful when grinding the seats, so that when you lap the valves, actual contact is in the center of the seat. Total runout on the valve and seat combined should not exceed .001".

Use stock valves and springs, shimming the tension to the appropriate NHRA spec:

1968 spring
"closed".....131 pounds at 1.83"
"open".....280 pounds at 1.37"
1967 outer spring
"closed".....113 pounds at 1.83"
"open".....189 pounds at 1.40"
1967 inner spring
"closed"..... 53 pounds at 1.635"
"open"..... 96 pounds at 1.175"
1966 outer spring
"closed".....114 pounds at 1.83"
"open".....189 pounds at 1.40"
1966 inner spring
"closed"..... 53 pounds at 1.635"
"open"..... 96 pounds at 1.175"

Completing the head paraphernalia, use the stock retainers, but do not employ valve stem oil seals. The Ramchargers recommend Milodon spark plug tube seals to prevent oil from getting into the combustion chamber when you are changing plugs. And speaking of plugs, Champion's N64Y's are a good place to start. The Rams like to use either the Chrysler transistor ignition kit (#2875012) and distributor (#2444851) or a Mallory Double Life distributor. Limit the total advance of either to 35 degrees, and rework the ignition to obtain full advance at 1000 rpm.

Essentially, that's it. Assuming you have all the correct stock street hemi equipment to start with (the correct main caps, etc.), excluding headers, oil pan, and clutch, the guys at Ramcharger Racing Engines in Taylor, Michigan will put you into a winning A/S or A/SA Street Hemi engine for under $1000, for all parts and labor (including carburetor and ignition work). Understand that this is a wide-open class, and that the front runners will be those guys who get hep to the preparation and put the "Hemi whammy" on those big Chevrolets.