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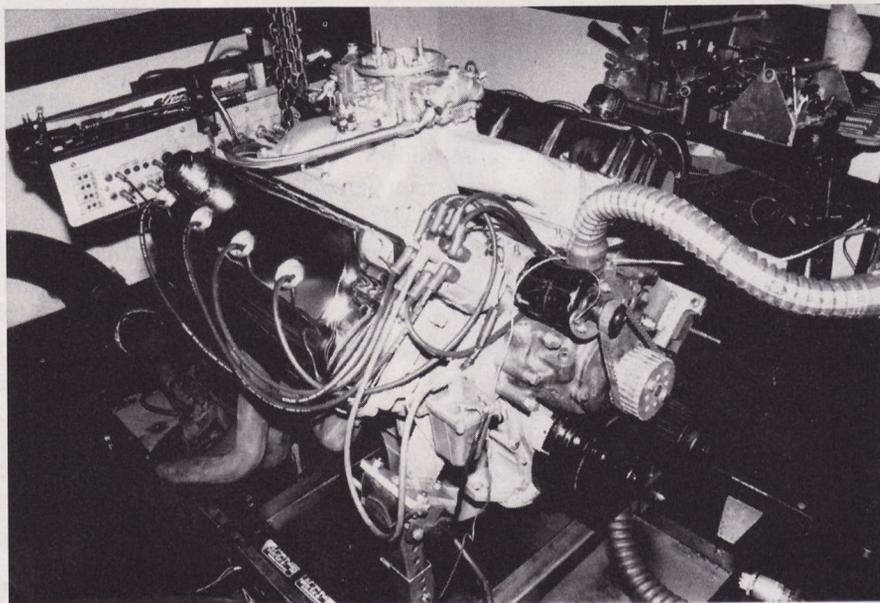
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Arruzza HP499

THERE BE A LOT OF ORANGES IN THIS HERE CRATE! By Greg Rager

**Street Sweeper:
The HP499 Hemi
“Street” package
engine from
Arruzza High
Performance
offers potency,
manners, and
durability.**



Visit any fast food “cuisine-in-a-bag” restaurant and you’ll find a myriad of choices available to suit your palate. Hamburger, cheeseburger, chicken or fish. French-fries, curly fries, steak fries, cheese fries or hash browns. Cola, lemon-lime, root beer or orange. Diet, regular or cherry-flavored – or perhaps a milkshake – chocolate, vanilla or strawberry. It’s your choice, and you can order any or all of the above in any combination that strikes your fancy. You can have it your way, and chances are, whatever mixture of sandwich, potato and beverage you choose, it will all taste just fine together.

The same cannot be said for building an engine, where the wrong combination of ingredients can leave a very bad taste in your mouth. Choosing the right combination of ingredients for a performance engine is something best left to the

experts. And that’s especially true when you’re laying out the long-green for a brand new Hemi crate engine for your streetcar.

John Arruzza High Performance knows Hemi’s. Thanks in no small part to their reputation for building killer combinations that make lots of power and enjoy a long life doing it, they’ve been called upon to build Mopar Elephant Motors for the likes of “King” Richard Petty and Bud Moore (former NASCAR driver), among others. (Arruzza High Performance also offers a complete machine shop and a full parts line). In the case of our killer “HP499”, Arruzza consulted with famed Mopar racer Herb McCandless to develop a big-inch Hemi that runs a mild hydraulic camshaft (a stout solid lifter bumpstick is optional), single four-barrel induction system, and a 10:1 compression ratio (higher op-

tional compression ratios are available). The goal from the beginning was to utilize all the best parts available to come up with a low-maintenance, fully-streetable package that would be happy on 93 octane pump gas. With dyno numbers of 575 horsepower at 5700 rpm and 572 lbs./ft. of torque at 4800 rpm, it would appear the plan was successful.

Building Blocks

The foundation for any engine is the cylinder block, and the choice here was a no-brainer. Mopar Performance’s Hemi Mega Block was first fully deburred then bored and honed to 4.3750. Why not 4.500, which the block will easily take? Because Arruzza and McCandless were thinking of the end user and prefer to leave four .030 overbores remaining in the block for any future rebuilds. Thicker bores also mean more stability and will

provide a few extra horsepower now. The extra .125 bore size would equal a mere 29 cubic inches, so the long-term trade-off is more than worth it. Down the road, when a rebuild may be needed, the fresh block will be well seasoned and the reduced wall thickness from an overbore will be less of an issue.

Each Mopar block gets the full treatment. BHJ torque plates are bolted in place the day prior to final honing to allow the block to settle and be properly squared. A light align hone of the main bearing bores ensures the Mopar 4.150 stroker crank, with full-radius fillets, will spin freely. Fitted to the polished crank are Manley Sportmaster connecting rods, Wiseco forged pistons with .990-inch pins, double Spiral Lox, and Childs and Albert 5/64 Dura-Moly,

file-to-fit rings. Maximum pin oiling is a high priority during the final machining and assembly processes.

The lower end is enclosed within a Moroso eight-quart oil pan with an MP windage tray and a Moroso 1/2-inch pickup. An MP high-volume/high-pressure oil pump keeps the connecting rod and fully grooved main bearings supplied with the slippery stuff.

Head Games

The new aluminum Hemi heads from Indy Cylinder Heads offer so many new-and-improved features, it's almost mind-boggling: 1.) They feature raised intake ports for improved flow – yet any Hemi intake manifold will fit. 2.) Cast-in rocker stands offer the flexibility to raise or lower the rocker shafts to utilize any length valve. 3.) Valve spring

cup are built right into the head. 4.) Valvecover rails are raised to prevent valve spring interference with the covers. 5.) Built-in spark plug tube seals ensure there will be no oil leakage into the cylinders during plug changes. 6.) More precise oil control metering is provided to the rocker gear. 7.) An excellent clamping hardware kit provides improved support and stability for the rocker shafts. 8.) A choice of raised or stock location exhaust ports is available. 9.) A separate valley pan/cover is used to keep hot oil away from the intake manifold for cooler intake charge temperatures. To compliment its heads, Indy has developed the awesome “Spider” single-plane, single four-barrel intake manifold, available with either standard or Dominator flanges.

Note: *Indy Cylinder Heads' Hemi heads with raised exhaust ports will almost certainly cause header clearance problems on strictly street applications. Know what you need and what will work before ordering. Stock ports present no problems.*

Single-coil valve springs have no place in a Hemi, so Arruzza and McCandless chose Comp Cams #924 double coil springs with a damper. Comp Cams also supplied the 10-degree Super Locks and retainers, the camshaft itself and the Hi-intensity hydraulic lifters. Manley stainless steel valves and Teflon valve seals are used. Norris stainless steel roller rocker arms in custom 1.6/1.6 ratio weigh 1,200 grams less than stock Hemi rockers – That's Three Pounds!!! A JP Performance billet timing set and Fel-Pro head gaskets round out the top end.

The Bottom Line

What is it about the Arruzza HP499 Hemi that makes it so attractive? The HP499 will rev quickly due to the lightweight rods, pistons, and .990 pins. The HP499 has lightweight valve gear components for quick revs and long life. The HP499 has its reciprocating mass fully electronically balanced on a Heinz machine. The HP499 features a .125-inch thick cylinder wall for added strength and to allow for future rebuild boring. The HP499 is run-in on Arruzza's test stand prior to shipping to ensure there will be no surprises. The HP499 receives an oil change and cylinder head retorquing after run-in to allow for immediate use upon delivery. The HP499 sells for just \$14,995. Power and durability are the name of the game – the Arruzza HP499 delivers on both.

THE RECIPE

Block:	MP Hemi Mega Block #P5249345
Crankshaft:	MP 4.150 Stroker #P5249208
Connecting Rods:	Manley Sportmaster w/.990 pins
Pistons:	Wiseco Forged w/double Spiral Lox
Rings:	Childs & Albert 5/64 Dura-Moly
Camshaft:	Comp Cams .534 Hydraulic (Optional) MP .572 Mechanical
Lifters:	Comp Cams Pro-Magnum Hydraulic
Valve Springs:	Comp Cams #924
Locks/Retainers:	Comp Cams 10-degree Super Locks
Pushrods:	Smith Brothers Chrome Moly
Head Gaskets:	Fel-Pro #1039
Bearings:	MP or Clevite 77 Wide-Groove Mains
Timing Set:	JP Performance Billet Multiple-Keyway, Double Roller
Spark Plugs:	Autolite #64
Oil Pump:	MP High-Volume #P4286590
Damper:	MP #P3830183
Rear Main Seal:	MP #P4529732
Crank Bolt Pkg:	MP #P5249562
Oil Pan:	Moroso 8-Quart w/1/2-inch pickup
Windage Tray:	MP #P4120998
Cylinder Heads:	Indy Cylinder Heads
Valves:	Manley Extreme-Duty Stainless Steel
Rocker Shafts:	MP #P5249631
Rocker Adjusters:	MP #P4120636
Rocker Arms:	Norris Lightweight Stainless Steel 1.6/1.6 Ratio (Arruzza Exclusive)
Rocker Spacers:	MP #P3690896
Intake Gaskets:	MP #P4120086
Head Bolts:	MP #P4529978 (set)
Intake Manifold:	Indy Cylinder Head "Spider" 1-4bbl 2x4 Street Hemi or Mopar M1 optional
Valley Pan:	Indy Cylinder Head
Crank Key:	MP #P5249822

CLEARANCE SPECIFICATIONS

Thrust:	.0035
Rod Side Clearance:	.0145
Main Bearing Clearance:	.0027
Rod Bearing Clearance:	.0023
Piston-to-Wall Clearance:	.0055
Installed Spring Height:	1.8750
Ring Gaps:	.016 (top), .013 (middle)
Compression Ratio:	9.98:1

CAMSHAFT SPECIFICATIONS

Gross Valve Lift:	.0534 Intake/.517 Exhaust
Duration:	292/292 @ .006 Tappet Lift 244/244 @ .050 Tappet Lift
Camshaft Centerline:	108-degrees

Optional Camshaft Choices

Camshaft selection (hydraulic or mechanical) is unlimited and can be tailored to the buyer's wishes. John Arruzza's personal choice for a mechanical camshaft upgrade is the Mopar Performance #P4529344. A spring upgrade is included with this camshaft choice. Specs for the cam are as follows:

Duration: 296/296
 Overlap: 92-degrees
 Design Lift: .572/.557
 Centerline: 104-degrees/102 degrees installed

The Numbers Game

All dyno testing was performed at Barnett Performance in Atlanta, GA (404-522-1320) on their SuperFlow SF-901 Dynamometer. Glen Barnett was the dyno operator.

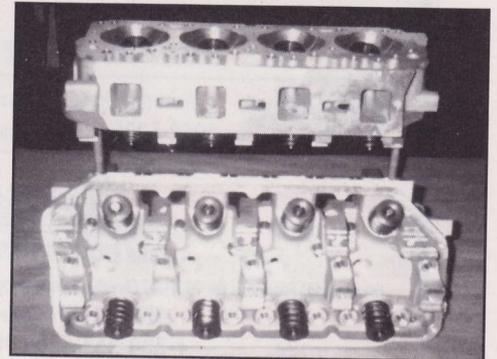
Prior to the first dyno pull the initial timing was set and the float levels were checked on the out-of-the-box 950 CFM Holley 4150 Pro Series double-pumper carburetor. Aside from the spacers mentioned elsewhere, no other changes, or "dyno tuning" tricks were performed in an attempt to extract better performance num-

bers. The below numbers are real and represent an accurate accounting of the horsepower and torque numbers your Arruzza HP499 will produce, right out of the box.

RPM	Torque	HP
3600	506.6	347.3
3700	510.5	359.6
3800	516.5	373.7
3900	536.2	398.2
4000	535.4	407.8
4100	547.1	427.1
4200	552.1	441.5
4300	560.2	458.7
4400	558.8	468.1
4500	561.6	481.2
4600	572.4	501.3
4700	569.8	509.9
4800	572.0	522.8
4900	566.5	528.5
5000	561.4	534.5
5100	562.7	546.4
5200	556.5	551.0
5300	555.3	560.4
5400	548.7	564.2
5500	541.0	566.5
5600	538.7	574.4
5700	530.5	575.8
5800	514.4	568.1



2. The oiling system is pure simplicity in its execution. A baffled 8-quart pan and 1/2-inch pickup from Moroso, a high-volume/high-pressure pump and windage tray from Mopar Performance, and a Fram HP1 filter is all there is to it.



3. Indy Cylinder Heads' aluminum Hemi heads feature cast-in rocker stands and raised intake ports. Optional combinations abound with the Indy heads, but built-in spring cups and spark plug seals are standard.



4. Working in concert with the Indy heads are Comp Cams springs, Smith Bros. Pushrods, 1.6:1 Norris stainless steel rocker arms (an Arruzza exclusive), MP grooved shafts, and Manley Extreme-Duty stainless steel valves.



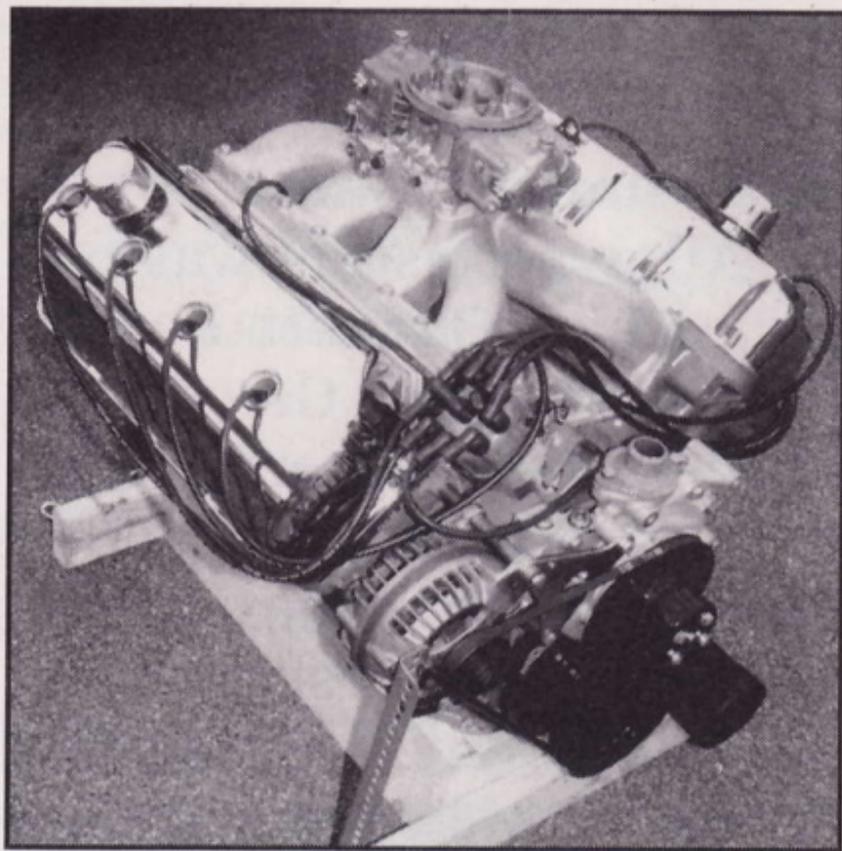
5. The difference between the Indy Cylinder Heads Spider single-plane and the Mopar Performance M1 dual plane is obvious. Arruzza will supply an HP499 with your choice of any Hemi manifold.



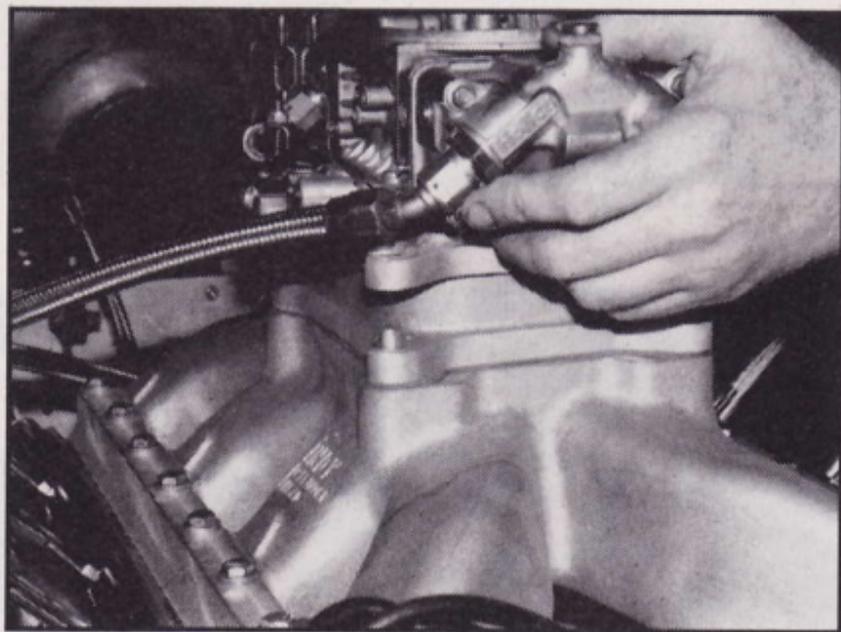
1. Wiseco 10:1 forged pistons utilize double Spiral Lox, and .990 pins. The rods are Manley Sportsmaster units. Maximum pin oiling is a priority in the Arruzza HP499.



6. *Fitted with a JP Performance billet, multiple-keyway, double-roller timing chain and gear-set, the HP499 short block is now ready for the heads and valve gear.*



7. *Minus the carb, distributor, water pump, alternator, and pulleys, this is the way your fully-assembled, test-run Arruzza HP499 will arrive on your doorstep.*



8. *Installation of this simple 2-inch carb spacer was good for 9.9 horsepower and 4.9 lbs. ft. of torque on the Superflow SF-901 dyno, with no other changes.*

Source

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