



Cylinder Heads Built for Racers...By Racers



2010 Catalog and Technical Guide





For Every Racing & Street Performance Application

Our mission is to manufacture the highest quality, best performing cylinder heads while providing customer service beyond expectations and valuing every employee as our most important asset.



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Note: Unless specified, no product in this catalog is legal for sale or use on pollution controlled motor vehicles in the United States.



A Company Built On Performance

For over thirty years Airflow Research has been defining technological leadership in cylinder head manufacturing and flow dynamics. This complete commitment to performance has enabled Airflow Research products to find themselves on the fastest race cars and the most powerful street machines in the country. As every engine builder will attest to, the secret to increasing horsepower and performance lies in the cylinder head, and Airflow Research's cylinder heads outflow and out horsepower everything in their league.



CNC Ported Chevy Head

- **Early Years - Innovation (1970-1980)**

Airflow Research early years were defined by their high-powered porting of cylinder heads, innovative porting techniques such as fast burning chambers, D-shaped big block Chevy exhaust ports, Hurricane chambers, and their CNC ported heads. In 1979, AFR pioneered CNC porting with their then revolutionary tape fed CNC machine. Airflow Research quickly established itself as a premiere supplier to the fastest race teams in the country. Names like Bill Jenkins' Grumpies Toy, Bob Glidden's Fords and Chryslers, Warren Johnson, and Frank Iacono were getting their power from AFR.

- **AFR's Technological Revolution (1980-1990)**

Airflow Research became a key consultant to General Motors, designing cast iron and aluminum heads for the still-popular phase 3, 4, 5, and 6 Bowtie Small Block Chevy. AFR designed the big block D port aluminum pro-stock racing head, at that time the state-of-the-art. AFR had also branched out into NASCAR, porting heads for top drivers like Darrel Waltrip, Cale Yarborough, Richard Childress, Junior Johnson, Richard Petty, AJ Foyt, Harry Gant, and Neil Bonnet, to name a few. Airflow Research's pioneering use of wet-flow technology was allowing AFR cylinder heads to obtain unequalled flow and power.



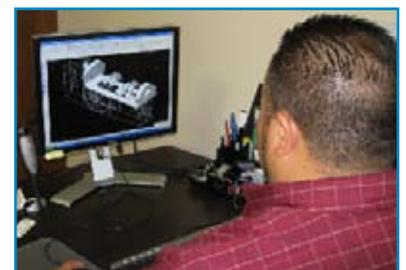
One of Twelve Haas 5 Axis CNC Porting Machines

- **Total Manufacturing (1990-Present)**

Airflow Research advanced to full production of cylinder heads in the early 90's by incorporating advanced high density Cast Billet technology into their southern California facility. Now able to maintain full control of design and porting technology, AFR combined their 30 years of high performance racing experience into making heads available to a much broader customer base. For the first time, racers were able to obtain full 5-axis CNC ported racing heads at an affordable price. In the mid-90's, Airflow Research was the first to offer heads for the popular Gen-2 Small Block Chevy LT-1 and LT-4 engine programs. The first to receive a CARB EO number for emission legal street heads. AFR also introduced the patented "Hydra Rev" to eliminate Hydraulic Roller valve float. In 2004 AFR was the first to introduce the popular Gen-2 LS1 aftermarket cylinder head.

- **Into The Future**

Airflow Research's design, engineering, and manufacturing technology never rests. A leader today, Airflow Research is investing in the horsepower of tomorrow with new manufacturing technology, complex dyno testing, and proprietary flow testing methods. And to assure a long standing tradition to performance, we're bringing up a new generation of racer's and engineers to meet the demands of tomorrow's engine builders.

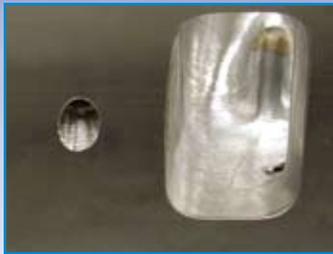


CAD/CAM Computer Engineered Designs



What Makes AFR Special

While Airflow Research has a great history of success in racing, it has been their ability to bring sophisticated porting technology to their wide assortment of cylinder heads that makes them truly special. Airflow Research pioneered the tooling and machinery necessary for true 5-axis CNC port machining, which allows total flow consistency from head to head once the optimal port design has been established. No other manufacturer incorporates this complete machining technology into their heads.



CNC Ported Ford Intake

• Research & Development

Cylinder head technology starts with research. That includes hundreds of hours designing and hand porting intake and exhaust ports to experiment and compare flow and horsepower characteristics. Airflow Research has tested thousands of cylinder heads over the years, for every application from top fuel dragsters to Saturday night street rods. Understanding the application and performance requirements is where AFR starts its design criteria.

• Dyno & Flow Testing

To accurately evaluate port designs, AFR spends thousands of hours on engine dynos and flow rates are all compared to determine the optimal port design for specific applications. Testing does not stop in the lab; real life testing is also required, and AFR has spent more than their share of time at drag strips and circle tracks to carefully measure performance results.



Superflow 600 Flow Bench



1 of 3 Mazak Twin Pallet CNC Machines

• Specialized Manufacturing

Air Flow Research uses the latest in metrology technology to bring you the finest cylinder heads available today. During the manufacturing process, cylinder head castings are mounted in the machining centers and then searched for and located using optical work coordinate probing systems. This insures the most accurate location possible to begin the machining process. This eliminates the "stacked tolerance/human error" from the equation when loading and unloading cylinder heads at each work station.

• Quality Control

AFR uses state of the art metrology such as Browne & Sharp's Coordinate Measuring Machine (CMM). First and last articles are checked on all new set ups and breakdowns to ensure quality. We also use air gages to hold tight tolerances on all boring and honing operations, measuring down to tenths. Additionally, we practice in process lean principles throughout the facility to create a culture of each employee being responsible for the quality and visual appearance of his/her work, not just passing their work to the next department with little or no accountability. As well, we inspect all components we receive from vendors to complete the quality control loop.

Lastly, there is complete documentation with SPA reports on all inspection processes.



One of two Newen CNC Controlled Valve and Seat Machine

• Competition Proven

Airflow Research consistently out-flows and out-powers the competition! And that's not just us talking – check out our website and read what the magazines have to say about AFR heads. Our flow rates surpass the competition – not just at maximum lift but especially at the critical .400"-.600" valve lift curve where so much of valve time is spent. What that means is more power from your engine at the track or on the streets. That's AFR power!





AFR High Performance Cylinder Heads



Street Cylinder Heads

AFR offers a complete selection of street cylinder heads for Small Block Chevy and Small Block Ford engines. Whatever your application, emissions legal, street/strip trophy machine, or off-road stump puller, AFR has the perfect cylinder head for your ride. Street Heads are shipped completely assembled and are ready to bolt on without further modifications.

Race Ready Cylinder Heads

AFR Race Ready Cylinder heads offer outstanding performance on the track at a reasonable cost. Typically, Race Ready Heads give you 100% CNC ported exhaust ports, combustion chambers and intake ports with coarser machine levels than the competition package to provide terrific flow characteristics for big power gains. Of course, Race Ready Heads come complete and ready to run with AFR's proven components for maximum reliability.



Competition Package Cylinder Heads

AFR Competition Package Cylinder heads provide the next step up in power production for just a few extra dollars. In the Competition Heads, intake ports, exhaust ports, and cylinder heads are all 100% CNC ported with finer machine levels and improved port shape details over the race ready for flow characteristics that can give the power you need to win. Competition Package Heads come complete and ready to run with AFR's proven components for maximum power and reliability.



Bare Cylinder Heads

AFR offers all cylinder heads "bare", without porting or components, for the qualified racer or engine builder who wants to do their own heads. Bare heads are fully machined and finished with valve seats and guides. For flow information on bare heads, please contact the AFR Technical Support Department.



Racing Components

AFR offers more than high performance cylinder heads. Our line includes intake manifolds, valve train components, valve covers, gasket kits, and our exclusive Hydra Rev hydraulic roller cam rev kits. Our tech experts match components to bring out the highest level of performance for your engine.