

## MOPAR TRANS AM

### THE ALMOST COMPLETE HISTORY OF THE CHALLENGER T/A & AAR 'CUDA

By Tom Quadrini

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The AAR Cuda and the Challenger T/A production models were the result of involvement by Chrysler in the Sports Car Club of America (SCCA) Trans Am auto racing series. From a small start in 1966 through the wild 1970 season, the SCCA Trans Am racing series included every American auto manufacturer and famous drivers such as Mark Donahue, A. J. Foyt, Dan Gurney, Parnelli Jones, Richard Petty, Swede Savage and Cale Yarborough.

The E-body Challenger and Barracuda were not two new cars designed from scratch. The Dodge Challenger was the prototype car derived from the B body platform and the Plymouth Barracuda was based on everything that came from the development of the Challenger. On December 2, 1969 when Chrysler released product planning information on the AAR 'Cuda, the "Cuda Trans Am package" was a viable cost effective package with all of the wild expensive marketing/engineering ideas removed. In this product planning letter, the AAR 'Cuda was outlined as it was manufactured in 1970, except for some items that will be discussed now.

Initial plans for the exhaust system dictated a low restriction side exiting dual exhaust system with straight through chambered type mufflers. Due to engineering, cost assembly line issues, along with EPA noise regulations compromised the concept. That is why the stock tips have a deflector in them to get the side exit exhaust to pass drive by noise level certification. The mufflers long thought to be restrictive really do flow ell for an OEM unit. Wheels for the AAR were to be 15 x 7 black painted steel wheels with hubcaps and chrome trim rings. The fiberglass hoods were to have four hood pins and a prop bar so the front of the hood could be lifted without removal of the hood. Ornamentation for the AAR hood was to be "AAR 'Cuda" decals appearing on each side of the hood in the form of Dan Gurney's All American Racers crest in red, white and blue. Black hockey stick stripes were to be used on the rear quarter panels with the red, white and blue AAR decal in place of the engine call out. Dealer installed options were to be quick ratio manual steering, rear wheel disc brakes, and two front hoodpin locks. As we know these ideas did not make it to the production models.

A total of 2800 AAR 'Cudas and 2500 Challenger T/As were to be built to comply with SCCA Trans Am homologation rules. The rule at the time was a minimum of 2500 cars or 1/250<sup>th</sup> of the 1969 production series total, whichever number was greater were to be produced for sale to the general public. The accepted production numbers are 2724 AAR 'Cudas and 2399 Challenger T/As were actually built. Base price for the AAR 'Cuda was \$3966 and the Challenger T/A was \$3818. These cars were introduced to the sport compact pony car market in March of 1970

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The AAR 'Cuda and Challenger T/A were different from any other high performance vehicles built by Chrysler simply by the fact they looked fast sitting still and handled curves just as well as being fast in a straight line. The styling of these cars was unlike any of the other E-bodies, as both cars featured a textured black, functional fresh air fiberglass hood, ducktail rear spoiler, megaphone style side exiting exhaust, Goodyear Polyglass GT bias-ply, raised white letter tires in staggered sizes-the 1<sup>st</sup> and only Mopar muscle car to do so, distinctive stripes and textured black paint on the fender/door tops for the AAR 'Cuda only. Many people said the cars had performance and looks unmatched in the pony car- sport compact market. Since the production AAR 'Cuda had a direct affiliation with the builder of the Trans Am race car 'Cuda-Dan Gurney's All American Racers, the car was called the AAR 'Cuda. The Trans Am race car Challengers did not have any major affiliation to be identified with, so a name was needed for the production Trans Am Challengers. Since Pontiac had already spoken for the name Trans Am, the Challenger "T/A" name was created, complete with T/A stripes, 340 six pack fender decals and "Challenger T/A" in reflective lettering on the rear spoiler. You could not order an AAR 'Cudas and Challenger T/As to suit ones personal taste. Chrysler informed each eligible dealer of the number of cars each was to be allotted and asked them to select the additional options they wanted. Since a car dealer pays interest on his inventory, the lower the retail value of the car, the less overhead the car is. Consequently, most AARs and T/As were not heavily optioned. As in the case of the Daytona & Superbirds, many cars remained in dealer inventories for extended periods and the dealers would have to sell the cars cheap to get them off the lot.

Due to heavy financial losses in both the racing program and in production costs, the AAR and T/ A models were dropped almost as quickly as they were introduced. Not enough cars could ever be sold in order to break even on the cost of research and engineering the project, let alone make the hassles on the assembly line worthwhile. Production line stories indicate shaker hoods on other E-bodies caused many a confusing moment on the line, but the T/A cars caused massive confusion as well as poor fit and finish on many parts, since the configuration of a T/A cars were different than a standard E-body. Other stories indicate that several cars were partially constructed before the line realized that it was a T/A car being built. This may have caused some cars to be missing some of their distinct T/A features but none have been actually verified. Note the AAR 'Cuda reviewed by Car and Driver magazine had the radio antenna mounted on the right front fender instead of the right rear quarter panel as this car was more than likely a pre-production prototype or pilot car if you will. No AAR has ever been identified as being a pilot car.

To help alleviate the confusion in the service department caused by the Trans Am cars once they were in the dealer's hands, technical service bulletins were issued to supplement the 1970 service manuals. On May 20, 1970, technical service bulletin D70-25-2 for the Challenger T/A was issued to supplement the 1970 Dart/Challenger service manual, P/N 81-270-0260, authorized by R.H. Line, Manager - Service Dodge Division. On June 12, 1970, technical service bulletin 70-25-8 for the AAR 'Cuda was issued to supplement the 1970

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Plymouth service manual, P/N 81-570-0450, authorized by J.W. Farley, Manager - Service Chrysler Plymouth Division.

In these bulletins, the peculiarities of these models were outlined giving the miscellaneous specifications and service information. Special part numbers for the Trans Am were to be supplied by the Chrysler parts division and included some of the following parts: rear radio antenna, windshield washer special parts, heavy duty front suspension including sway bar, disc brake shoes and linings, cooling special parts, special electric parts (distributor, spark plugs, headlamps and wiring harness), engine and accessories, exhaust system, fuel system including carburetors, heavy duty rear suspension including sway bar, fast ratio steering, transmissions, and all special body parts (hoods, stripes, fenders, grilles, spoilers).

The sales code for the Trans Am special group was A53. The following will outline the special features of the AAR 'Cuda and the Challenger T/A:

**E55 (Engine):** W-1 340, referred to as the T/A 340 or the 340 Six Pack Dodge version engine or the 340 Six Barrel Plymouth version. With a true output of 325 hp they were conservatively rated at 290 hp for insurance and NHRA factoring. The E55 engines were specifically modified as follows: stress relieved, high nickel content block with filled oil pan rails, as well additional material added in the main bearing web area to allow for the addition of four bolt main caps. Note: All W1-340-T/A engine blocks came from the factory with two bolt main caps. Cylinder heads (F08) commonly referred to as T/A heads were regular J casting heads that had the pushrod holes drilled offset from the ports which would allow the ports to be highly modified without breaking thru the pushrod holes. The rocker arms were un-bushed ductile adjustable similar in style of the 426 Hemi and look the same as W2 rockers, however the offset is different. The rocker arm shafts used additional banana shaped lube spreader grooves the same as used on W2 heads. The intake manifold was an Edelbrock aluminum six pack manifold painted the engine color mopar orange. Three Holly 2300 series carburetors were used with vacuum operated secondaries. The center carb was the only carb with a metering block and accelerator pump while the two outboard carbs were used for idling and opened when they were called for. A large oval shaped air cleaner that sealed to the hood rested over the top of all three carbs.

**Exhaust:** (N44 Dual transverse flow mufflers (the inlet and outlet were on the same end), located forward of the rear axle with side exiting chrome tipped exhaust pipes. Straps wrapping around the circumference and hangers were used to secure the mufflers completing the system. The cars were shipped with the exhaust tips in the trunk and installed by the dealer as they would not easily clear the transport trucks while being loaded and unloaded. High flow cast iron exhaust manifolds completed the system. These are the same exhaust manifolds used on 68-70 340 motors. PN2863545 (left) and 2863552 (right) commonly but often mistakenly referred to as T/A exhaust manifolds. The AAR 'Cuda and Challenger T/A were the only cars produced with a black painted exhaust

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system which was done to hide the weird configuration engineered to give side exiting exhaust. All other cars were produced with unpainted exhaust systems.

**Transmission:** Hurst pistol grip, close ratio four-speed (D21) was standard with the 727 torqueflite (D32) being optional with either floor shift or column shift.

**Rear Axle:**  $8\frac{3}{4}$  sure-grip (D91) with 3.55:1 (D56) standard, 3.91:1 (D57) optional. The Dana 60 was not available. While the information from Chrysler states that the rear axle ratios were to be either 3:55 or 3:91 information gathered over 1000 AAR's & T/A's by 1984 indicates that many cars left the factory with 3.23 gears.

**Suspension:** (S13) Heavy duty shocks (S25), larger .95" diameter front sway bar (S31), .75" diameter rear sway bar (also found in 71-74 E-bodies), .92" torsion bars (same as Hemi cars), special rear springs with a rate of 150 lbs/inch with increased arch-camber if you will-to give better tire and exhaust clearance.

**Brakes:** Standard 11-inch power disc front with semi-metallic linings, 11-inch drum rear. No optional brake system available.

**Steering:** 24:1 manual steering standard. Options available were (S74) fast ratio 12:1 T/A power steering or 16:1 standard power steering (S77). Note on T/A S74 fast ratio steering: In the rush to get the cars to production engineering was forced to overlook the geometry problems created by length of the fast ratio pitman arm.

**Tires:** (U01) Goodyear raised white letter Polyglass GTs, E60 x 15 front, G60 x 15 rear. (This was the first car from Detroit to have different sized front and rear tires).

**Wheels:** 15 x 7 silver rallye wheels (W21) standard on AAR's, optional on T/A. 15 x 7 black painted steel wheels with cap and ring were standard on the T/A. Weight saving collapsible spare (W34) was a required option, F78 x 14 BF Goodrich.

**Hood:** Black, fiberglass fresh air hood (N94) with hood pins (J45) was standard. No other hood was used. Factory literature states the T/A hood was optional on the Challenger and that the steel R/T power bulge was standard with the T/A hood to be introduced at a later date. This plan never materialized. T/A hoods did appear on other Challenger R/Ts due to production shortage of the shaker hoods; however they were in extremely limited numbers. The hood springs are slightly different being smaller with less tension.

**Grille:** Black grilles were standard on both T/A's and AAR's, however, textured argent gray as well as unfinished bright grilles were also used on T/A's.

**Mirrors:** Inside day/night (G41), and painted drivers side, remote controlled racing mirror (G34) was standard. Painted manual passenger side mirror (G36) was optional.

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**Spoilers:** Black, ABS plastic rear ducktail spoilers (J82) were standard, wing spoilers were never available. Front spoilers (J78) were optional, shipped in the trunk and dealer installed. Many variations exist in the mounting positions of these front spoilers on AAR 'Cuda's due to this.

**Interior:** Interior options were the same as the R/T and 'Cuda. Interior colors: Black, White, Green, Blue, Burnt Orange and Red, as well as cloth hounds tooth seats. All radio options, light package options available. All antennas' mounted on the right rear quarter, (first and last time on any Chrysler Product) (N94), rallye dash (A62) was optional.

**Stripes:** (V6H) Black side stripes standard on all cars even with black paint (23 T/As and even fewer AARs produced black with black stripes), 340 six pack fender decals on Challenger only.

**Paint:** All acrylic enamel colors available, same as R/T and 'Cuda. Organasol black (Ditzler code DDL9355) was used on all hoods, taillight panels, fender tops.

**Sheet Metal:** AAR 'Cudas and Challenger T/As came with what is known as 15 inch fenders. The only difference between 14" and 15" fenders is the lip at the top of the wheel well is rolled in. All other sheet metal is the same as the standard E-body.

**Misc. Available Options:** Rear window louvers (A67), vinyl roof limited to black (V1X), power windows, rear defogger, wheel lip moldings (M26)

**Options Not Available:** Air conditioning (H51), heavy duty drum brakes (B11), rear spoiler-wing type (J81), luggage rack (M91), road wheels (W23), trailer tow package (A35), three-speed manual transmission (D13), basic group (A04), shaker hood (N96), extra heavy duty suspension (S15), delete tape stripe (V68), vinyl side protection molding (V50), cruise control (N88). Note: There is a yellow challenger T/A claiming to be the only one produced with factory air. This is not true. No T/A or AAR came with factory air. The A/C in this car is done to almost look factory but it is an owner installed to look factory A/C system.

**Performance: Figures published in July 1970 Car and Driver:** 14.3 seconds at 99.5 mph in the  $\frac{1}{4}$  mile 0-60 in 5.8 seconds 0-100 in 14.4 seconds Estimated top speed of 128 mph Braking from 80 mph to zero in 220 feet Curb weight of 3585 lbs.

**Performance: Figures published in June 1970 Sports Car Graphic magazine:** 14.4 seconds at 98.4 mph in the  $\frac{1}{4}$  mile 0-60 in 6.0 seconds 0-100 in 14.7 seconds Estimated top speed of 137 mph Braking from 60 mph to zero in 140 feet Curb weight of 3745 lbs. Other information showed the AAR to produce .75 g's right and .76 g's left on the skid pad. Realize that for 1970 technology cars this car handled well.

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**Identification:** AAR 'Cudas and Challenger are rare due to low production figures and being produced over 30 yrs ago making it lucrative to create a replica from parts. The VIN number for AARs and T/A's is found several places on the car making it extremely difficult, if not impossible, to "create" a Trans Am Chrysler. The VIN for an AAR 'Cuda will be BS23JOBxxxxxx and a Challenger T/A will be JH23JOBxxxxxx, the last six spaces represent the sequence number of the car. The fifth digit "J" represents the engine code for 340 Six Pack. The sequence # of the car appears on the cowl and inside the radiator core support preceded by the letters BO. The full VIN number is stamped on the raised pad on the right side of the transmission. The letters "OB" followed by the sequence number of the car will be stamped on the flat pad just above the oil pan on the right side of the engine. On a completely original car, all sequence numbers must match. Due to the passage of time and several owners, many cars are found to have had motor transplants and the original motor may be gone, but a T/A motor still resides in the engine compartment. Every T/A motor is easily identified. On the left side of the engine about two inches below the block deck or head gasket surface, a seven digit casting number 3577130 followed by TA 340 should be found. Under the hood on the drivers side of the car attached to the top of the inner fender should be two ID plates. One should have stamped on it the VIN number and all build codes, and the other plate should have the words "Trans Am" stamped in the middle of it. The purpose of the second plates is to identify the car as having the A53 Trans Am package. In addition to all this, the production broadcast sheet can be found under the rear seat cushion or on top of the cardboard glove box liner. The broadcast sheet is a computer feed code listing all options and equipment on the car as it was originally produced.

With the increased popularity of Mopar muscle cars that has occurred over the last few years, the once forgotten Chrysler Trans Am cars are getting the attention they deserve. Looking back to late 1969 when Chrysler decided to compete factory backed cars in SCCA Trans Am auto racing; you still see the lasting effects today of the efforts made. Cars that are fast and handle equally as well are popular still and engineered even better today. AAR 'Cudas and Challenger T/As may have been limited in production but there are a large number left to remind us of time where true performance and handling were first successfully packaged into an American muscle car.

Car magazines that reviewed the AAR 'Cuda were Car Life, July 1970; Hot Rod, June 1970; Popular Hot Rodding, July 1970, and Road Test, June 1970. Car magazines that reviewed the Challenger T/A were Car Craft, April 1970 and May 1978; Car Exchange, March 1982; High Performance Cars, June 1970, August 1970, October 1970 and November 1980; Rod and Custom, October 1970; Science and Mechanics, September 1970; Super Stock, April 1970 and July 1970.