



403 OLDS ENGINE BUILDING

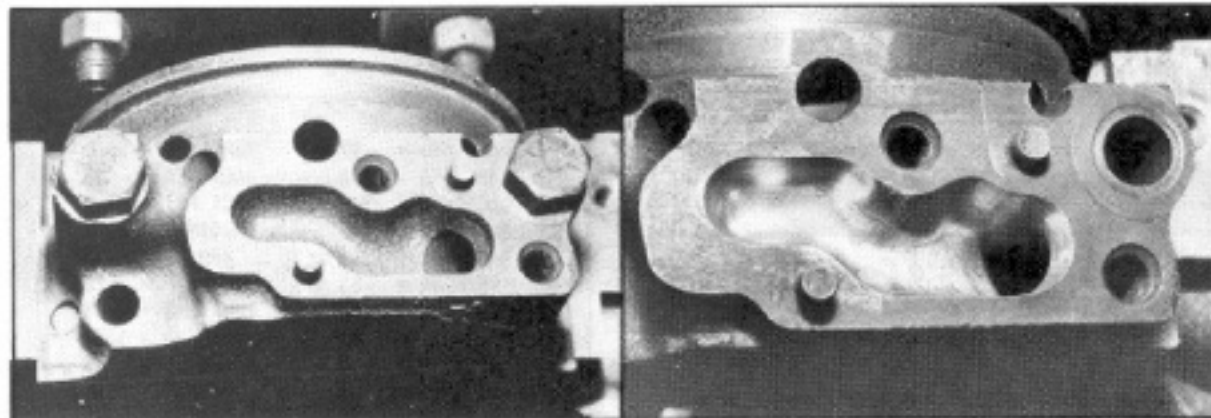
BY CAM BENTY

For years there was a basic distinction. Owners of '77-'79 Pontiac Trans Ams vastly preferred the 400-CID Pontiac engine to the replacement 403-CID Olds unit. Although they may have

carried the same 6.6 liter logo on the hood scoop, the difference in power and prestige was clear.

Well, 403-CID Olds owners rejoice, St. Joseph of the Mondellos has come to your rescue with parts for the 403 that not only amazingly boost power, but also cater to the street performance enthusiast on a budget. Amazing fellows those Mondellos.

The Olds 403-CID engine was offered in limited number in the 1977 Trans Am and increased in volume until 1979 when almost all 6.6 liter Trans

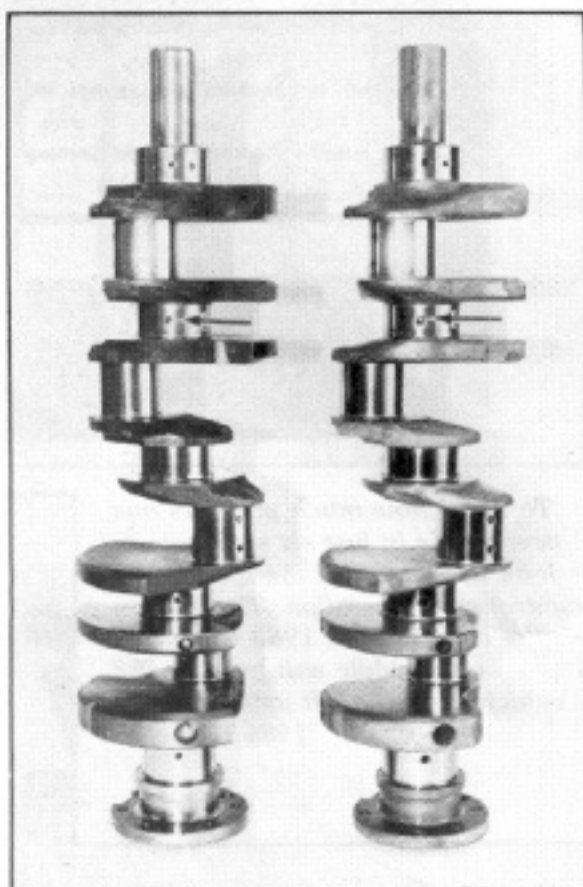


Main cap oil feed is modified by grinding out flashing, then polishing surface.

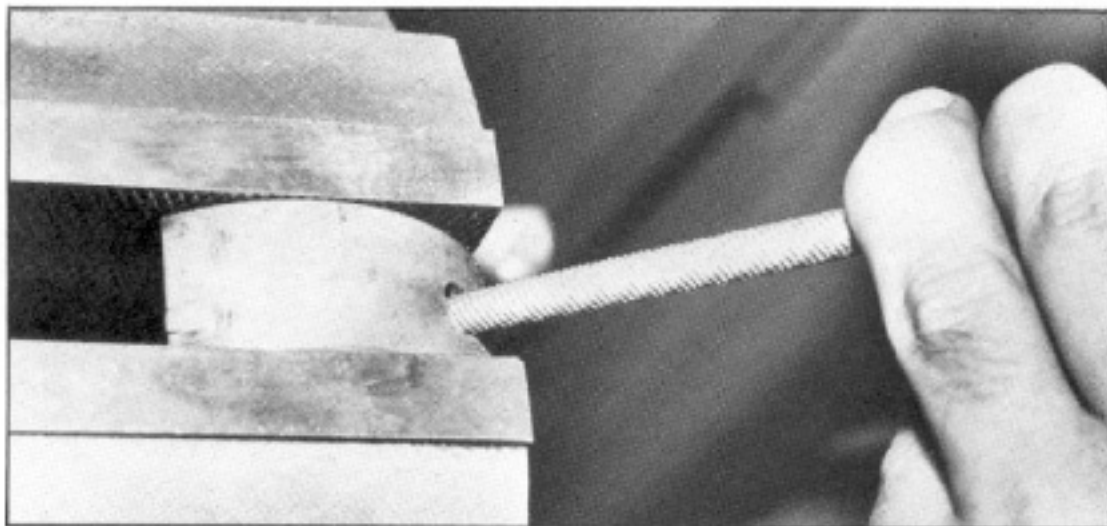
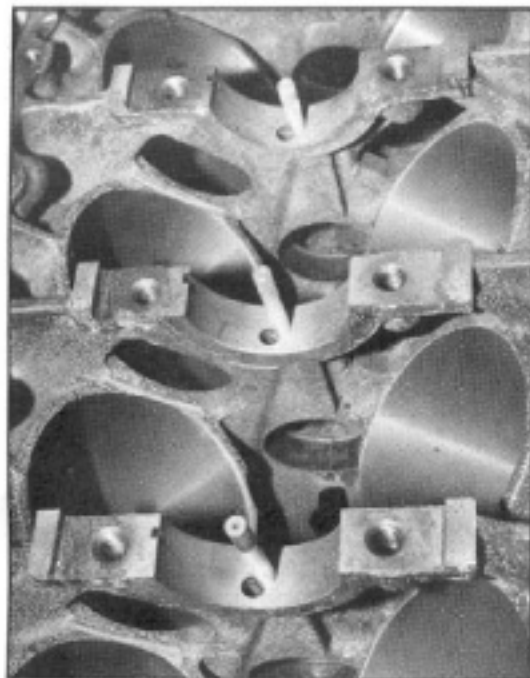
Ams used this powerplant. The Olds 403 also found a home in the Olds Cutlass model as well during this time period and even made its way into a few Buicks. If it's parts you desire, there are plenty of 403s in the salvage yard. The best blocks, for those who like a hunt, are the solid web 403s. Only 2500 of these blocks were produced and offer much better crankshaft support and are a better basis for your per-

formance engine. If you like a hunt, these are the blocks to look for.

For starters, Joe offers a complete "Blockless Engine Kit" which gives the 403 Olds builder the opportunity to start with fresh components from top to bottom. The kit offers 8.5 to 1 compression TRW forged pistons with pressed-on connecting rods, moly rings, engine bearings, crankshaft, gaskets, and engine brush cleaning kit, an assembly

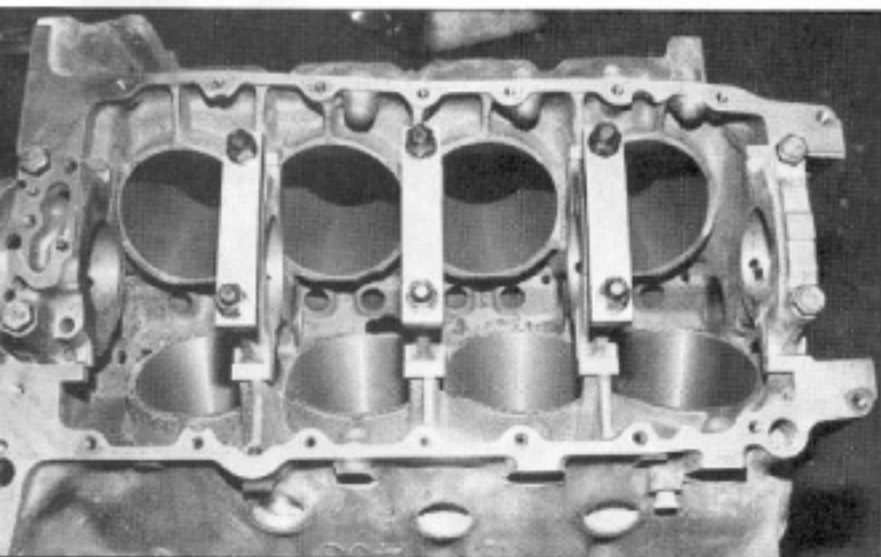


Starting with good basic components is best way to ensure long life. Joe cross-drills his crankshafts to improve oiling (note that you can see through hole on right as opposed to hole on left). All holes are then chamfered for better bearing life.

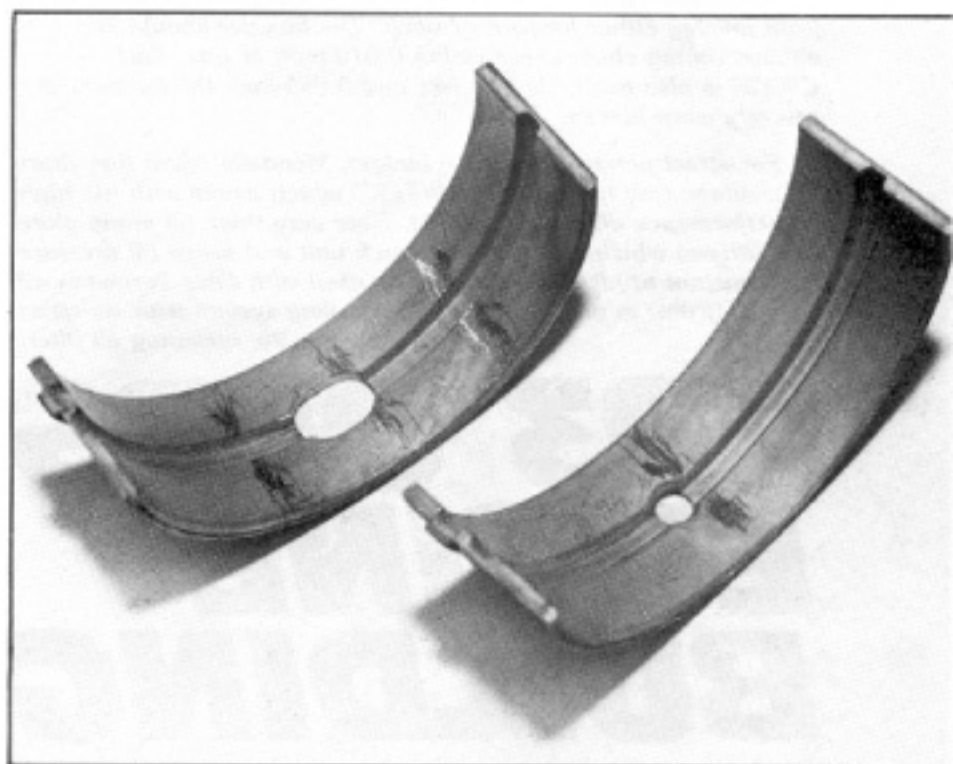


Using Mondello's oil gallery restrictors (Part Number R105), oil is kept on crankshaft where it is needed. Restrictors are driven into main saddles, two, three and four. No machining is required.

Main bearings on block side are modified by elongating hole. This, combined with oil gallery restrictors, drastically improves crankshaft oiling.



As with all Mondello kits, Joe offers this main strap kit (Part number ST940) including three straps and a full main stud kit which greatly reduces main cap flex. Two, three and four main caps must be machined flat on top to accept this kit.



OLDS CYLINDER HEAD SPOTTING

The following is a list of Olds cylinder heads and some specifications. When using early 350-CID heads prior to 1977, the head bolt holes must be drilled to 0.530-inch to accept the 1/2-inch 403-CID head bolts. When using 350 heads on a 403 engine, the block locating dowel pin holes in the head must be drilled to 5/16-inch so they will line up to fit the locating block deck dowel pins. The head gasket photo demonstrates the differences in the head. Note all combustion chamber sizes are measured with a 0.030-inch deck clearance.

Casting #	Number	Valve Size (inches)	CID	Year	CC
409-147	7	1 7/8, 1 1/2	350	'68-'70	70
411-929	8	1 7/8, 1 1/2	350	'71-'76	81
544-716	3A	1 7/8, 1 1/2	350	'77-'80	75
554-717	4A	2, 1 1/2	403	'77-'79	83

Part 1: Shortblock Preparation

403-CID OLDSMOBILE DATA

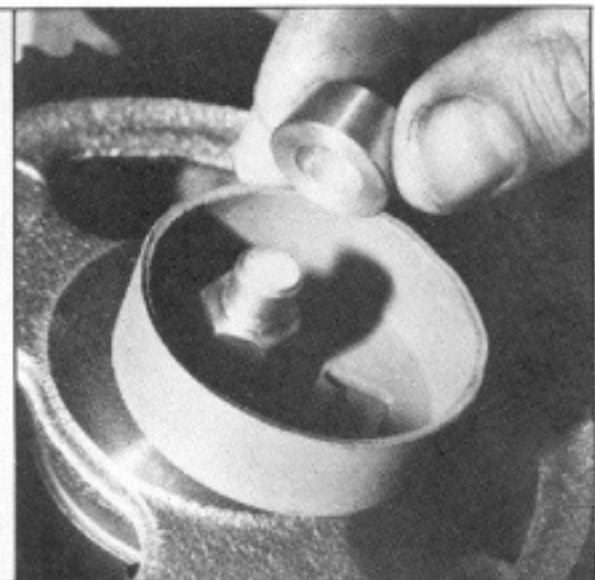
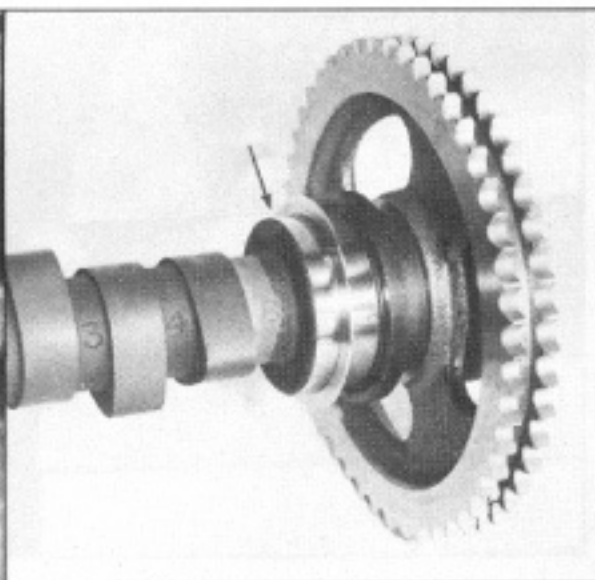
BORE:	4.351-inches
STROKE:	3.385-inches
ROD LENGTH (center to center)	6.000-inches
PUSH ROD LENGTH	8.250-inches
ROCKER ARM RATIO	1.6 to 1
PISTON COMPRESSION DISTANCE	1.609-inches
WRIST PIN DIAMETER	0.980-inches

COMPRESSION FIGURING CHART

The following is a list of compression ratios determined by the type of piston used. All ratios are figures with 0.020-inch piston down from deck surface and with 0.041-inch compression head gasket. The combination of these two items equals 15 cc. The ratio of #2230 Mondello flat top pistons is based on a 0.030-inch deck clearance.

CHAMBER VOLUME	COMPRESSION RATIO
Arias/Mondello flat top pistons	
70	10.6 to 1
75	10.2
80	9.5
Arias/Mondello domed pistons	
70	12.9 to 1
75	12.2
80	11.5
TRW Forged Replacement	
70	8.9 to 1
75	8.5
80	8.2
Speed Pro Cast Replacement	
70	8.8 to 1
75	8.4
80	8.1
Stock Olds Replacement	
70	9.1 to 1
75	8.7
80	8.3

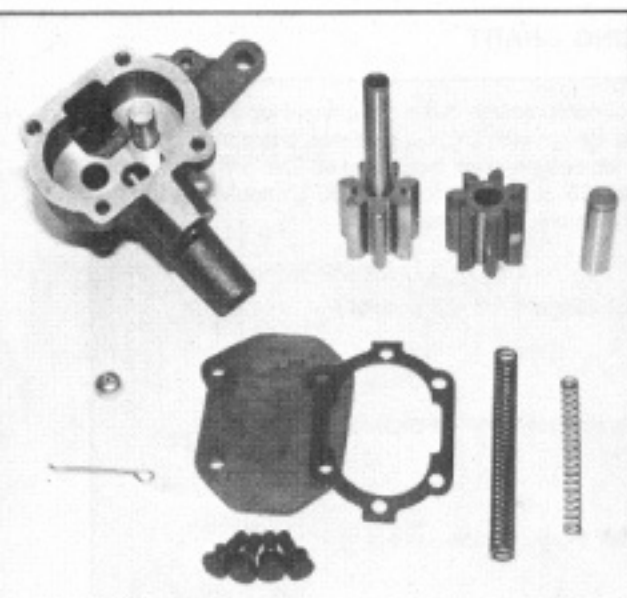
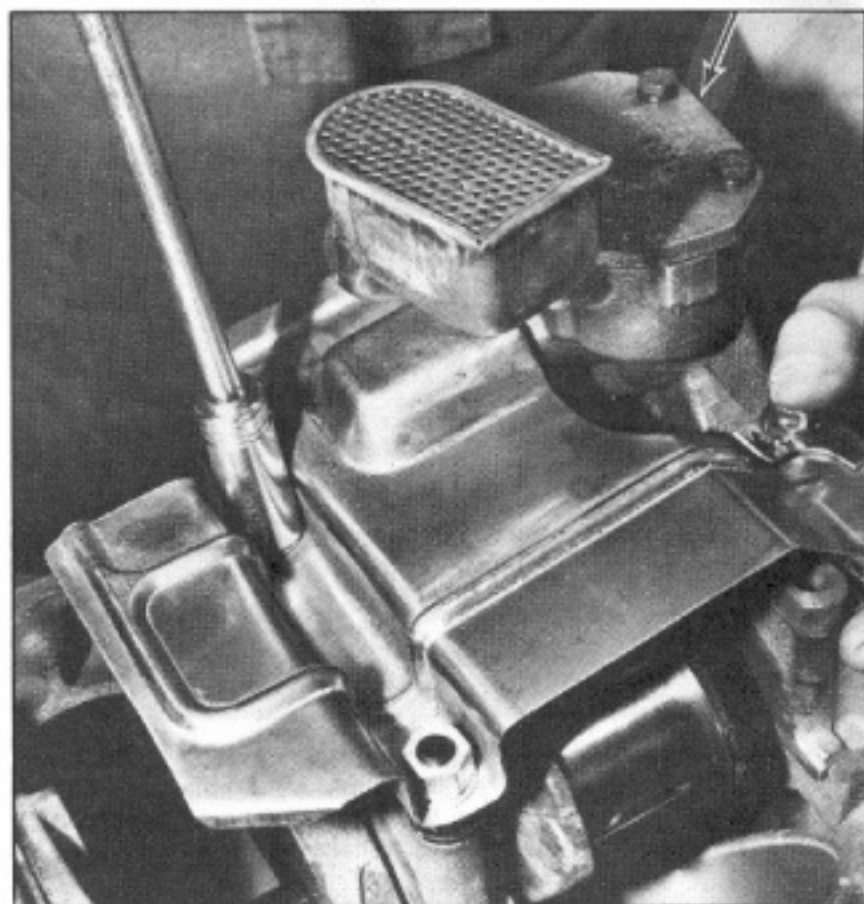
(Five cc's approximately equals 0.4 compression ratio points)



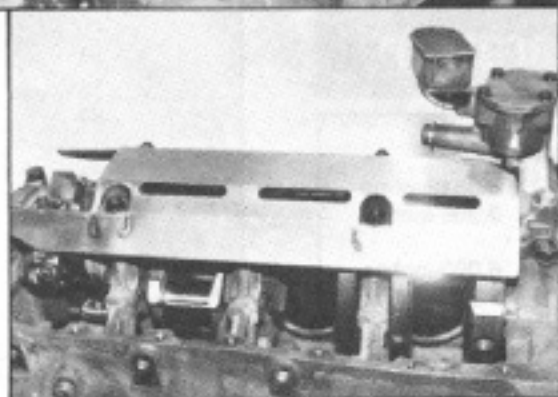
Camshafts can move forward and back in block wearing front camshaft boss. This Mondello cam spacer (Part number CS120, arrow) prevents wear and repairs worn groove in front of block. Mondello camshaft thrust bumper (part number TB740) is made of bronze and rides on timing chain cover, keeping camshaft from moving either forward or back. The bumper should fit against timing chain cover within 0.010-inch or less. Part CS-120 is also available in 0.041 and 0.085-inch thicknesses for severely worn blocks.

For street performance on a budget, Mondello offers this short windage tray (part number WT195) which works with his high performance oil pump (SP775). Note very thick oil pump plate (arrow) which replaces thin stock unit and keeps oil pressure constant at all rpm. This can be used with Olds Toronado oil pan (front) to provide an excellent oiling system with six-quart capacity, including oil filter.

403 OLDS ENGINE BUILDING



For ultra high-performance applications, Mondello offers this eight-quart oil pan (part number 0P800) which is two inches lower than stock pan. The pan uses oil pump SP785, which features a two-inch dropped 5/8-inch diameter pickup. Special full-length windage tray (CT850) should be used with windage tray stand-off studs (WS860).



kit with all sealers and lubricants, a harmonic balancer and flex plate as well as plastigauge to check the main bearing clearances (rod clearances are set by Joe). To top it off, the entire setup is balanced and ready to install for a total price of \$1500. For those interested in a little more compression via Joe's Arias/Mondello custom piston, those can be added to the package for an extra \$200.

The following charts and captions detail the important points to note when building your 403. This month our focus is the short block, both spotting the good parts and how to build for performance. Next month we'll give you the low down on the heads

**MONDELLO
PERFORMANCE
PRODUCTS, INC.**

PISTON DESCRIPTIONS

Arias/Mondello Flat Top Piston; Part Number 2230, silicon forged with two valve reliefs containing 3 cc.

Arias/Mondello Domed Piston; Part Number 2240, silicon forged. Dome displacement is 15.6 cc.

TRW Replacement Piston: Part Number L2451-F, Forged aluminum, dished top has a 0.162-inch dish and total displacement of 20.2 cc.

Speed Pro Replacement Piston: Part Number 8635P, cast iron, dished top has 0.160-inch dish and total displacement of 22.6 cc.

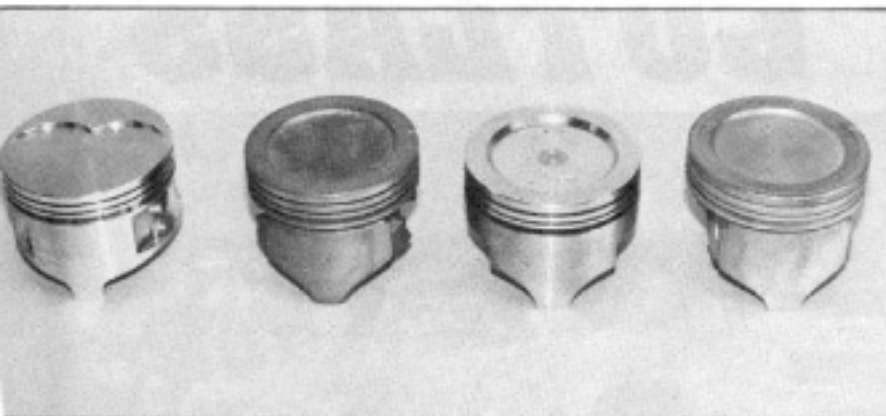
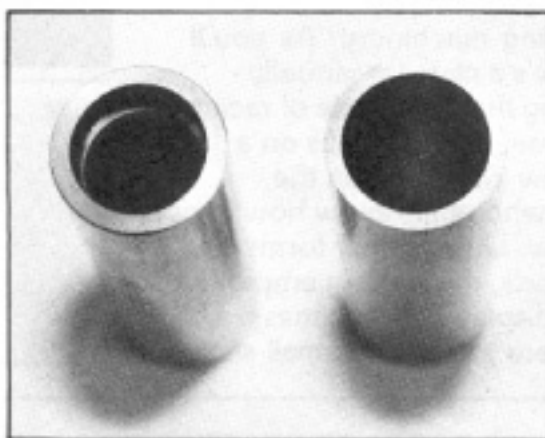
Factory Olds Replacement: Part Number 22510634, dished top has a dish of 0.130-inch with total displacement of 18 cc.



Fully prepped Mondello connecting rod (part number MR710) for the 403 features alloy steel rod bolts (RB200) and are magnafluxed, fully ground and polished and then shot peened. Note that both faces of crank end of rod have 0.012 deep notches top and bottom and 1/2-inch wide to improve oiling. Similar feature is being used on Olds four cylinder, sixteen valve, Quad Four engine to be released in 1988.

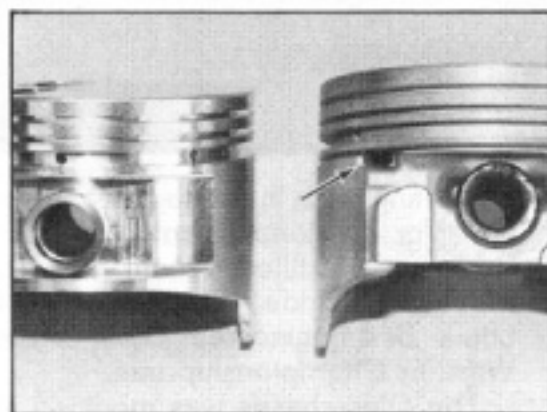
Stock wrist pin on left is 180 grams in weight, while high performance Mondello tooled steel wrist pin is ▼ 95 grams.

Piston variety (left to right) Arias/Mondello 9.5-to-1 compression silicon forged street piston; Speed Pro cast piston; TRW forged factory replacement piston; Factory Olds cast piston. ▼



Here's reason why Mondello suggests a forged piston: Arrow denotes open area where breakage starts. Factory cast piston is not high performance minded, forged unit at left is intended for this use.

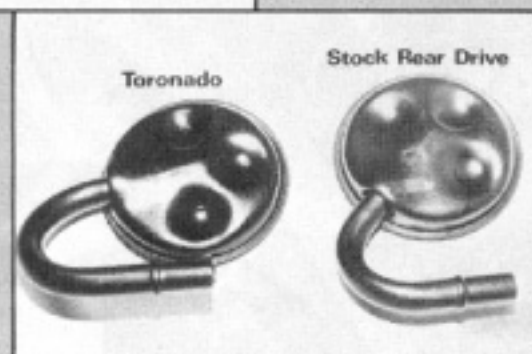
with a special primer on head porting taught by the old master himself, Joe Mondello, along with the guide to camshafts and valvetrain componentry. Stay tuned, we're about to make your 403 Olds-powered Trans Am a Pontiac beater. 🏆



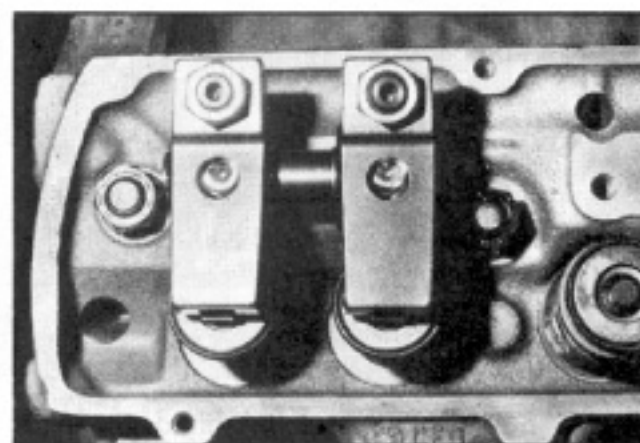
CHEAP INSURANCE

Mondello offers a oiling insurance for your engine at a very inexpensive price. For around \$100 and a little hunting on your part, you can have a system which should withstand all the street rigors you can throw its way.

Part	Part Number	Cost
Toronado oil pan	398-438	Salvage yard
Mondello windage tray	WT195	\$25
Mondello oil restrictors	R105	\$12
Mondello oil pump	SP775	\$60



Valvetrain gear is hard to come by for Oldsmobile, but Mondello makes it easy. Mondello adjustable (AR400) and non-adjustable (PR880) pushrods are available. Adjustable units have 0.374-inch adjusting range. Hard anodized rocker pivots (RP290) have extra durability and heat-treated and shot-peened, stock-type rocker arms (RA280) are offered.



Top-of-the-line roller rockers (part number 7200) feature adjustability and require no guide plates, studs or machine work to install and fit under stock type valve covers. They are the ultimate in Olds valve gear technology.