



FORD PERFORMANCE

M-6049-Z304DA7

Model Fits 302/351 Windsor engines

"Z-HEAD" ALUMINUM - ASSEMBLED 63CC WITH 7MM VALVE

NO PART OF THIS DOCUMENT MAY BE REPRODUCED WITHOUT PRIOR AGREEMENT AND WRITTEN PERMISSION OF FORD PERFORMANCE PARTS © Ford Motor Company 2020

PRIOR TO INSTALLATION READ THESE INSTRUCTION COMPETELY
For questions, Call the FORD PERFORMANCE Techline 1-800-367-3788

Please visit <https://www.performanceparts.ford.com> for warranty information

OVERVIEW:

This instruction sheet contains important information regarding dimensions and specifications of the M-6049-Z304DA7 cylinder heads. These cylinder heads have different valve centerlines and are set up for larger than stock valves, therefore piston to valve clearance must be checked. This check includes both radial and depth clearance checks. Radial clearance .060" minimum, depth on intake .080" and .120" on exhaust. These heads use stud mounted rocker arms, rocker arm to valve cover clearance must also be checked. These heads require .150" offset intake rocker arms. Check intake manifold port alignment, not all intake manifolds will fit due to the size and location of the intake ports. These instructions should be reviewed by all engine builders, due to minor changes that could impact the engine assembly process.

CONTENTS/BILL OF MATERIALS:

| PART # | DESCRIPTION | QUANTITY |
|--------------|----------------------|----------|
| PAC-L8081 | 7MM VALVE KEEPER SET | 8 |
| PAC-R310 | VALVE RETAINER | 8 |
| M-6505-D3047 | EXHAUST VALVE | 4 |
| M-6507-D3047 | INTAKE VALVE | 4 |
| M-6566-Z304D | PUSHROD GUIDE PLATE | 4 |
| DRP154 | ROCKER ARM STUD | 8 |
| 4705F-1 | SPRING SEAT | 8 |
| PAC-1219X | VALVE SPRINGS | 8 |
| VS-7433 | VALVE STEM SEAL | 8 |

FEATURES AND SPECIFICATIONS:

| | |
|-----------------------------|------------------------------------|
| Head material | A356 aluminum |
| Intake port location | Raised .100" from stock |
| Intake port volume | 204 cc |
| Intake valve part number | M-6507-D3047 |
| Intake valve head diameter | 2.020" |
| Intake valve length | 5.340" |
| Intake valve material | Stainless steel |
| Intake guide material | Manganese-bronze |
| Intake valve stem diameter | 7mm |
| Intake valve seat material | Ductile iron |
| Exhaust port location | Raised, may require custom headers |
| Exhaust port volume | 64 cc |
| Exhaust valve part number | M-6505-D3047 |
| Exhaust valve head diameter | 1.600" |
| Exhaust valve length | 5.364" |
| Exhaust valve material | Stainless steel |
| Exhaust guide material | Manganese-bronze |
| Exhaust valve stem diameter | 7mm |
| Exhaust valve seat material | Ductile iron |
| Combustion chamber volume | 64 cc |

Ford Factory Shop Manual purchase options www.motorcraftservice.com



FORD PERFORMANCE

M-6049-Z304DA7

Model Fits 302/351 Windsor engines

"Z-HEAD" ALUMINUM - ASSEMBLED 63CC WITH 7MM VALVE

NO PART OF THIS DOCUMENT MAY BE REPRODUCED WITHOUT PRIOR AGREEMENT AND WRITTEN PERMISSION OF FORD PERFORMANCE PARTS © Ford Motor Company 2020

| | |
|-------------------------------|------------------------|
| Valve spring locator | 4705F-1 |
| Valve springs | PAC-1219X |
| Valve spring installed height | 1.800" |
| Valve spring closed pressure | 145# (+/- 7) @ 1.800" |
| Valve spring open pressure | 349# (+/- 20) @ 1.200" |
| Retainer | PAC-R310 |
| Valve lock | PAC-L8081 |
| Valve lock angle | 10 deg. |
| Valve stem seal | VS-7433 |
| Valve guide clearance intake | .0012-.0022" |
| Valve guide clearance exhaust | .0016-.0026" |
| Weight | Approximately 31# |

TYPICAL AIR FLOW

| Lift (in) | Intake Flow (SCFM) | Exhaust Flow (SCFM) |
|--------------|-----------------------|------------------------|
| .050 | 31.1 | 26.4 |
| .100 | 64.6 | 55.8 |
| .150 | 103.0 | 84.6 |
| .200 | 135.5 | 113.3 |
| .250 | 167.0 | 146.8 |
| .300 | 199.0 | 171.6 |
| .350 | 227.2 | 190.2 |
| .400 | 245.2 | 200.4 |
| .450 | 259.8 | 207.2 |
| .500 | 271.9 | 212.8 |
| .550 | 277.3 | 218.1 |

RECOMMENDED PARTS

| | |
|---------------------------|--|
| Intake valve part number | M-6507-D3047 |
| Exhaust valve part number | M-6505-D3047 |
| Intake gasket | M-9439-A50 |
| Exhaust gasket | Fel-Pro 1487 |
| Head gaskets | M-6051-CP331, M-6051-S331, M-6051-R351 |
| Rocker arms | Crower 72813-8 (Exhaust) Crower 72813X1-8 (Intake) |
| Valve covers | M-6582-LE302BK |
| Engine block | M-6010-BOSS302, M-6010-B302BB, M-6010-BOSS35195, M-6010-BOSS35192, M-6010-BOSS351BB, M-6010-B35192BB |
| Pushrod guide plates | M-6566-Z304D |
| Timing chain set | M-6268-A302 |
| Spark plugs | AGSP32C |
| Valve cover gasket | Fel-Pro VS13264T |

RECOMMENDED TORQUE VALUES

| | |
|------------------|---|
| Head bolt | 1/2-13 UNC Head bolt torque is 100 lb*ft, torque in steps 35/65/100 lb*ft |
| Intake manifold | 18 lb*ft |
| Exhaust manifold | 35 lb*ft |
| Valve cover | 8-10 lb*ft |
| Rocker studs | 65 lb*ft |
| Spark plugs | 10-12 lb*ft |

Ford Factory Shop Manual purchase options www.motorcraftservice.com