

Ford Mustang Second Generation (1974-1978) Workshop Manual

Complete Technical Guide

1. Introduction to Mustang II

- Historical context (oil crisis design constraints)
 - Model variants: Hardtop, Hatchback, Ghia, Cobra II, King Cobra
 - Production changes by year (1974 base vs 1978 final edition)
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2. Vehicle Identification & Decoding

- **VIN Breakdown (17-digit):**
 - Example: *1FABU12A123456789*
 - 1F = Ford Motor Company, USA
 - A = Mustang line
 - B = Body type (A=Hardtop, B=Hatchback)
 - U = Engine code (U=2.8L V6, S=2.3L I4, F=302 V8)
 - 12 = Assembly plant code
 - **Warranty Tag Decoding:**
 - Body: *65A* = Hatchback
 - Color: *2T* = Bright Yellow
 - Trim: *BA* = Black Vinyl
 - Date: *06B* = February 6th production
 - **Engine Stamp Locations:**
 - 2.3L: Right side of block near fuel pump
 - 302 V8: Front of block below head
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3. Engine Systems

A. 2.3L OHC Lima Inline-4

- **Valve Adjustment:**
 - Cold setting: 0.013-0.015" (intake), 0.023-0.025" (exhaust)
 - Shim-and-bucket system (Ford tool T74P-6500-A)
- **Timing Belt Replacement:**
 - Remove crankshaft damper (85-105 ft-lbs torque)

- Align marks: Cam sprocket notch at 12 o'clock
- Tensioner spring force: 4.4-6.6 lbs
- **Carburetor Rebuild (Holley 5200):**
 - Float level: 15/32" (dry measurement)
 - Idle mixture: 1.5 turns out from seated

B. 302 Windsor V8 (1975-1978)

- **Camshaft Replacement:**
 - Bearing journal diameters: 2.000-2.0015"
 - Break-in procedure: 2,000 RPM for 20 minutes
 - **DuraSpark II Ignition:**
 - Module test: 0.4-0.9Ω (stator winding)
 - Pickup coil air gap: 0.008-0.016"
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4. Transmission & Drivetrain

A. Toyota T-4 Manual Transmission

- **Shift Rod Adjustment:**
 - Neutral position
 - 5/16" clearance between shift lever and housing
- **Synchro Service:**
 - 1st gear brass synchro thickness: 0.118" minimum

B. C3 Automatic Transmission

- **Band Adjustments:**
 - Low/reverse band: 10 ft-lbs + 3.5 turns
 - Intermediate band: 10 ft-lbs + 2.5 turns
 - **Governor Service:**
 - Clean with solvent (no abrasives)
 - Weights must move freely
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5. Suspension & Steering

A. Front MacPherson Strut Rebuild

1. Remove strut assembly (150 ft-lbs spindle nut)
2. Spring rate verification: 450 lb/in (V8: 500 lb/in)
3. Upper bearing preload: 18-22 in-lbs

B. Rear Leaf Spring Service

- Center pin replacement (Grade 8 bolt required)
- Shackle angle: 45° ±5° under load

C. Steering Gearbox

- Worm bearing preload: 4-6 in-lbs
 - Sector shaft lash: 0.003-0.005"
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6. Brake Systems

A. Disc Brake Service

- Caliper slide pin torque: 22-26 ft-lbs
- Rotor runout limit: 0.003"

B. Parking Brake Adjustment

1. Raise rear wheels
 2. Adjust star wheel until slight drag
 3. Verify 7-9 clicks at lever
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7. Electrical Systems

A. Charging System

- **Alternator Test (1976+):**
 - Load test: 13.5-14.8V at 2,000 RPM
 - Diode trio resistance: 0.3-0.9Ω

B. Fusible Links

- Main link (red 14ga): 30A capacity
 - Replace with Ford P/N D2AZ-14526-A
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8. Body & Corrosion Repair

A. Rust Treatment

- **Common Areas:**
 - Strut towers (apply 3M 08307 seam sealer)
 - Trunk floor (0.8mm galvanized steel patch)
- **Paint Code Reference:**

- 9F = Medium Yellow
- 6L = Bright Red

B. T-Top Maintenance (King Cobra)

- Drain tube cleaning (5/16" OD tubing)
 - Seal replacement (CRL T-174 kit)
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9. Performance Upgrades

A. 302 V8 Modifications

- Camshaft selection: <0.450" lift (stock valve spring limit)
- Exhaust header install (Hooker 6911HKR)

B. Handling Improvements

- Sway bar upgrade: 1.125" front (stock: 0.875")
 - Polyurethane bushings (Energy Suspension 4.3154G)
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10. Troubleshooting Matrix

Symptom	Component Test	Tool Required
Oil Pressure Low	Bypass valve stuck open	0-80 PSI gauge
Hard Shifting	Clutch cable stretch	5/16" adjuster wrench
Overheating	Fan clutch failure	IR thermometer

11. Torque Specifications

Component	Torque Value	Thread Locker
Cylinder Head Bolts	65-72 ft-lbs	None
Flywheel Bolts	75-85 ft-lbs	Loctite 262
Wheel Lug Nuts	85-105 ft-lbs	None

12. Fluid Specifications

System	Capacity	OEM Recommendation
Cooling	9.5 qt	Ford VC-7-B (50/50 mix)
Manual Trans	3.5 pt	Motorcraft XL-2
Differential	2.6 pt	SAE 80W-90 GL-5

13. Special Tools List

- Valve spring compressor (OTC 4576)
 - Crankshaft balancer puller (OTC 6667)
 - U-joint service kit (OTC 7249)
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14. Safety & Compliance

- Asbestos warning (brake components)
 - EPA guidelines for fuel system service
 - California emissions exceptions
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15. Appendices

- **A1:** Metric/SAE conversion chart
 - **A2:** Wiring color codes (1974-1978)
 - **A3:** Factory service bulletin index
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16. Advanced Engine Repairs

2.3L Lima I4 Overhaul

Piston Ring Gap Specification:

Cylinder	Top Ring	Second Ring	Oil Rail
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1-4	0.010-0.020	0.015-0.025"	0.015-0.045
	"		"

Camshaft Bearing Clearance:

- Journal Diameter: 1.868-1.869"
- Bearing ID: 1.871-1.872"
- Oil Clearance: 0.0015-0.0030"

Critical Tools:

- Ford Rotunda 014-00006 (Timing belt tension gauge)
- Lisle 15000 (Valve spring compressor)

17. Transmission Deep Dive

C3 Automatic Rebuild

Clutch Pack Clearances:

Pack	Friction Plates	Steel Plates	Clearance
Direct	4	4	0.040-0.080 "
Forward	3	3	0.025-0.055 "

Valve Body Test:

1. Apply 30 PSI air to cooler line port
2. Verify servo piston movement within 0.5 sec

18. Fuel System Special Procedures

Tank Replacement (1974-1976)

1. Drain fuel (14.5-gallon capacity)
2. Disconnect filler neck clamp (3/8" hose)
3. Remove 6 body-mounted straps (9/16" bolts)
4. Insentorque savers (Dorman 904-303)

Vapor Lock Prevention:

- Install phenolic carb spacer (1" height max)
 - Wrap fuel lines with DEI 010408 heat shield
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19. Climate Control System

A/C R12 to R134a Conversion

1. Flush system with AC-Renew II
2. Replace receiver-drier (Four Seasons 33455)
3. Charge: 80% of original R12 quantity
4. Oil: PAG 46 (5 oz total capacity)

Heater Core Replacement:

- Dash removal time: 3.8 hrs (certified tech)
 - Evaporator drain tube check: 5/16" ID clear tubing
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20. Exhaust System

Catalytic Converter Service

- 1975-1978 Federal models only
- Backpressure test: <1.5 PSI at 2,500 RPM
- Replacement: Walker 52264 (2.25" inlet/outlet)

Header Installation Tips:

- Use Stage 8 locking fasteners (M10x1.5)
 - Re-torque after 3 heat cycles (35 ft-lbs)
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21. Wiring Harness Repair

Connector Types:

- 56-series (Fuel pump)
- 80-series (DuraSpark module)

Splice Protocol:

1. Strip 3/8" insulation
2. Apply 3M 3851 adhesive-lined heat shrink
3. Seal with Tesa 51036 tape

Ground Points:

- Battery to body: G100 (RH shock tower)
 - Engine to frame: G201 (Bellhousing bolt)
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22. Trim & Molding Restoration

Cobra II Decal Application:

1. Surface prep: 3M 08984 cleaner
2. Positioning: 2" from wheel arch
3. Squeegee angle: 45° with firm pressure

Opera Window Sealant:

- 3M 08611 Urethane (1/4" bead)
 - Cure time: 72 hrs before washing
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23. Factory Recall Compliance

Critical Campaigns:

1. **74C06:** Fuel filler neck corrosion
 - Repair: Install plastic shield (F1ZZ-9C065-A)
 2. **77B12:** Seatback latch failure
 - Replacement kit: D7ZZ-6361348-B
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24. Diagnostic Flowcharts

No-Start Condition:

1. Verify fuel (pump relay click)
2. Check spark (HEI test light method)
3. Test compression (120 PSI minimum)
4. Inspect timing belt alignment

Vibration at Speed:

1. Tire balance (static/dynamic)
 2. U-joint inspection (0.010" play max)
 3. Driveshaft runout (0.030" limit)
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25. Metric Conversion Data

SAE	Metric	Use Case
9/16"	14mm	Suspension bolts
1/2"	13mm	Engine accessories
3/4"	19mm	Axle nuts

26. Lubrication Guide

Chassis Points (Every 12k mi):

- King pins: NLGI #2 lithium (4 pumps)
- U-joints: Ford C1AZ-19578-B grease

Door Hinges:

- White lithium spray (3M 08946)
 - Cycle 5x after application
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27. Shop Safety Protocol

Asbestos Handling:

1. Wet components before removal
2. Use NIOSH-approved respirator
3. Dispose in sealed OSHA-compliant bags

Spill Control:

- Oil: Tarball TL-718 absorbent
 - Gasoline: Chemtron 2C8 neutralizer
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28. Factory Recommended Tools

Tool	Ford Part #	Modern Equivalent
Strut Spring Compressor	T81P-5310-A	OTC 7045B
Crankshaft Locking Tool	T74P-6300-A	Lisle 39500

29. Technical Service Bulletins

TSB 77-12-09:

- **Issue:** Cold start hesitation
- **Fix:** Replace thermactor spacer gasket

TSB 78-04-15:

- **Issue:** Speedometer fluctuation
 - **Fix:** Reprogram cable drive gear
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30. Restoration Case Study

1976 Cobra II Resurrection:

1. **Disassembly:** 85 hrs (tag all fasteners)
2. **Metalwork:** 40% floor pan replacement
3. **Paint:** Basecoat/clearcoat (3-stage)
4. **Reassembly:** 250 hrs (using factory AIM)