



RACING

PERFORMANCE PARTS



In October 1901 Henry Ford defeated Alexander Winton, the most accomplished automobile builder/racer of the era, in a 10-lap race at the Detroit Driving Club in Grosse Pointe, Michigan. The acclaim from that race, the only one Henry Ford ever drove, brought him one giant step closer to achieving his dream: to manufacture a vehicle that was strong, dependable, lightweight, and inexpensive. He founded the Ford Motor Company two years later — in June, 1903 — spawning a series of advancements in automotive design, mass production, and marketing that made the automobile a mainstream consumer product.

Ford Racing Performance Group continues the history of racing and winning with the M-6007-347NST sealed circle track engine. It features the power, consistency, and durability to propel your Ford to the winners circle. Whether you've got one race or an entire season take a step towards your dream of winning with the M-6007-347NST.

M-6007-347NST Sealed Racing Engine Specifications and Owner's Manual



M-6007-347NST Sealed Crate Engine INSTRUCTION SHEET

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Please contact the Techline for the most current instruction information (800) FORD788

!!! PLEASE READ THE FOLLOWING INSTRUCTIONS CAREFULLY PRIOR TO INSTALLATION !!!

INSTALLATION INSTRUCTIONS:

These instructions consist of (4) Sections:

1. Technical Specifications M-6007-347NST Sealed Crate Engine
2. Lubrication Priming Procedure
3. Bill of Materials Sealed Crate Engine
4. Torque Specifications
5. Noted Features M-6007-347NST

1. Technical Specifications M-6007-347NST Sealed Crate Engine

Crate Engine Part Number	M-6007-347NST
Engine Type	302 Based Small Block
Displacement (cubic inches)	347
Block M-6010-R302ASA	
(will be superseded by M-6010-BOSS302 Date TBD)	Cast Iron; 4 Bolt Main (center 3)
Bore	4.030
Stroke	3.400
Crankshaft (M-6303-C340)	Forged Steel (Flywheel bolts require sealer)/0 balance
Vibration Damper (M-6316-C351)	Detachable weight removed for 0 balance
Connecting Rod (2-1CR5400-927)	Forged Steel (5.400 Center to Center .927 Pin)
Piston (SBF090030F06)	Forged Aluminum
Camshaft (M-6250-F303)	Hydraulic Roller
Cam Timing	Position "2 A" (multi index crank sprocket)
Int./Ex. Lobe Centerlines	107° Int. Centerline/121° Ex. Centerline
Camshaft Duration	226° @ .050" lift (int. and ex.)
Camshaft Lift	.512" (int. and ex.)
Cylinder Head (M-6049-Z304DA)	Aluminum
Chamber Volume	63cc
Valve Diameter Int./Ex.	2.020" Int./1.600 Ex.
Compression Ratio	10:1
Rocker Arm (M-6564-F351)	Aluminum Roller
Recommended Timing	34°BTDC Total 4000 rpm
Maximum Rated rpm	6100 rpm
Oil Pan	7 Quart plus filter/cooler
Oil Filter	M-6731-FL1A
Oil Pressure	60-70 psi @ 240° F/ 4000 rpm
Recommended Oil	15w-50 Mobil 1 (Non-synthetic oil recommended for break-in)
Max Oil Temperature	280° F
Coolant Temperature	195° F Thermostat
Spark Plugs	Champion C61Y
Firing Order	1-3-7-2-6-5-4-8
Fuel Pressure (@ carburetor)	6-7 psi

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Recommended Parts Not Included

M-12259-M302	Universal Spark Plug Wire Set
or	
M-12259-M301	Pre-fit black Spark Plug Wire Set
M-6375-D302	0-Balance Flywheel (may require M-6397-A302 metric bolt kit dependent on clutch)
M-4216-A210	Flywheel Bolts (note threads have required sealer pre-applied)
M-6880-C50	Remote Rotating Oil Filler Adapter (if needed)

Standard Operating Specifications

Main Bearing Clearance	.0020" -.0025"
Rod Bearing Clearance	.0020" -.0025"
Crankshaft End Float	.005"-.007"
Wrist Pin to Rod Clearance	.0010"-.0012"
Wrist Pin to Piston Clearance	.0010"-.0012"
Piston to Deck Distance	.010" Below Deck
Piston to Bore Clearance	(follow Piston mfg. recommendations)
Valve Spring Installed Height	1.800" (130#)
Intake Valve to Guide Clearance	.0014"-.0016"
Exhaust Valve to Guide Clearance	.0018"-.0022"
Valve Lash	0 Lash plus ¼ turn Pre-load

2. Engine Oil Priming

Initial priming should be done before installing the engine into the vehicle. Transmission should not be installed. If there are any oiling system problems it is easier to fix them with the engine out of the car. The engine should be primed once more after installation before starting the engine. This is very important if hooking up a remote filter and/or oil cooler.

DO NOT PRIME BY CRANKING ENGINE!

Check oil level after priming engine and before starting.

1. Check engine oil level (see dipstick calibration).
2. Rotate crankshaft to cylinder #1 firing.
3. Mark position of distributor to block. If installing a distributor for the first time, position the vacuum canister toward the front of the engine.
4. Remove distributor cap.
5. Mark position of rotor to distributor.
6. Remove distributor hold down.
7. Remove distributor.
8. Remove valve covers.
9. Install mechanical oil pressure gauge.
10. Use appropriate priming tool or:
 - a. 1/4" deep well socket for 302
 - b. 5/16" deep well socket for 351 and 460
11. Rotate priming tool counter clockwise using a 1/2" electric drill.
12. Observe oil pressure on mechanical gauge.

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13. Continue to prime until oil is visible in the rocker arms. This may require rotating the crankshaft to obtain oil flow through all the rocker arms.
14. Check for external leaks.
15. Remove priming tool.
16. Re-install valve covers.
17. Rotate the crankshaft to cylinder #1 firing.
18. Install distributor and align **both** rotor to distributor housing **and** distributor housing to intake manifold marks.
Note: if distributor does not drop into place, gradually rotate oil pump drive with socket until it does. **Do not** force distributor into position.
19. After installing the engine into the vehicle and just before starting it, prime the engine again using the above procedure. Valve covers do not have to be removed on 2nd prime if **not** hooking up an oil cooler or remote filter. If a remote filter or oil cooler **has** been installed, remove the valve covers and verify oil flow to the rocker arms. Prime for 1 minute after reaching oil pressure.

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3. Bill of Materials

Assembly Part Number **# M-6007-347NST**
 Description Bill of Materials Sealed Crate Engine
 Date of Revision 06-Mar-07

COMPONENT PART #	COMPONENT DESCRIPTION	SOURCE
6100SB PICKUP	OIL SCREEN/pick-up with pan	Champ Pans
CP6100LT	OIL PAN	Champ Pans
JR 131	DIPSTICK & TUBE	Champ Pans
P13264R	RUBBER V/C GASKET	Fel Pro
388192-S	TIMING COVER DOWEL	Ford Dealer Sales
388813-S	BALANCER BOLT	Ford Dealer Sales
C61Y	SPARK PLUG	Champion
C3AZ-6287-B302	ECCENTRIC	Ford Dealer Sales
D8TZ-7600-A	PILOT BRG	Ford Dealer Sales
DOOZ-8597-B	BY-PASS HOSE	Ford Dealer Sales
E6DZ-6700-A	FRONT COVER SEAL	Ford Dealer Sales
E7AZ-6A674-A	PAN RAIL (L)	Ford Dealer Sales
E7AZ-6A674-B	PAN RAIL (R)	Ford Dealer Sales
EAD-6397-B	TRANS DOWEL	Ford Dealer Sales
F67Z-6378-AA	CRANK DAMPER WASHER	Ford Dealer Sales
EOAZ-6626-B	OIL PUMP PICK-UP GASKET	Ford Dealer Sales
F1SZ-6701-A	REAR MAIN SEAL	Ford Dealer Sales
F1TZ-6023-A	TIMING POINTER	Ford Dealer Sales
F1AZ-6890-B	OIL FILTER INSERT	Ford Dealer Sales
F3SZ-6278-A	CAM GEAR WASHER	Ford Dealer Sales
F3TZ-6020-A	FRONT COVER GASKET	Ford Dealer Sales
F5TZ-6710-CB	OIL PAN GASKET	Ford Dealer Sales
F87Z-8255-CA	THERMOSTAT HOUSING GASKET	Ford Dealer Sales
FOZZ-8592-B	WATER OUTLET	Ford Dealer Sales
XR3Z-8575-BA	THERMOSTAT	Ford Dealer Sales
42910-S	CAM PLATE BOLTS	Ford Dealer Sales
F3ZZ-6A008A	HEAD DOWELS	Ford Dealer Sales
Not Serviced	MAIN BOLT/STUD (for oil pump pickup)	Ford Dealer Sales
M-6014-Z304	HEAD STUD KIT	Ford Racing
M-6731-FL1A	OIL FILTER	Ford Racing
M-12270-A302	DIST. CLAMP	Ford Racing
M-12390-K	DISTRIBUTOR GEAR	Ford Racing
M-6010-R302ASA will be superseded by M-6010-BOSS302 Date TBD	R302ASA BLOCK/BOSS302 BLOCK	Ford Racing

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M-6049-Z304DA	CYLINDER HEAD	Ford Racing
M-6051-CP331	CYLINDER HEAD GASKET	Ford Racing
M-6059-D351	FRONT COVER	Ford Racing
M-6250-F303	ROLLER CAMSHAFT	Ford Racing
M-6253-A50	ROLLER CAM CONVERSION KIT	Ford Racing
M-6268-A302	TIMING SET	Ford Racing
M-6303-C340	FORGED CRANKSHAFT	Ford Racing
M-6316-C351	CRANK DAMPER	Ford Racing
M-6500-R302	HYDRAULIC ROLLER LIFTERS	Ford Racing
M-6564-F351	ROCKER ARMS	Ford Racing
M-6582-E302P	VALVE COVERS	Ford Racing
M-6600-D2	OIL PUMP	Ford Racing
M-6605-A302	OIL PUMP SHAFT	Ford Racing
M-8501-F351	WATER PUMP	Ford Racing
M-9424-D302	INTAKE MANIFOLD	Ford Racing
M-9439-A50	INTAKE MANIFOLD GASKET	Ford Racing
M-6261-J351	CAM BEARINGS	Ford Racing
SBF090030F06	FORGED PISTON	Mahle
CB-634H	ROD BEARING	Michigan 77
MS 590 H	MAIN BEARING	Michigan 77
8582	DISTRIBUTOR	MSD
2-1CR5400-927	CONNECTING ROD	SCAT Enterprises
7187	BREATHER CAP	Specialty Products Co.
T650805	PUSHRODS	Trend
PK-131	CRANK KEY	

Note: Cylinder Head Part # M-6049-Z304DA is an assembly consisting of the following:

COMPONENT PART #	COMPONENT DESCRIPTION	SOURCE
334-7203	ROCKER ARM STUD	ARP
M-6516-BH	VALVE SPRING	Ford Racing
M-6536-BH	VALVE SPRING LOCATOR	Ford Racing
M-6518-BH	VALVE KEEPERS	Ford Racing
M-6514-BH	VALVE SPRING RETAINER	Ford Racing
M-6505-B304	EXHAUST VALVE	Ford Racing
M-6507-A304	INTAKE VALVE	Ford Racing
M-6571-B221	VALVE SEAL	Ford Racing
M-6049-Z304D	BARE CYLINDER HEAD	Ford Racing
M-6566-Z304D	PUSHROD GUIDE PLATE	Ford Racing

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Note: Piston Part #SBF090030F06 consists of the following parts:

COMPONENT PART #	COMPONENT DESCRIPTION	SOURCE
4035MS-15	RING SET	MAHLE
6436901	ROUND WIRE LOCK	MAHLE
6457808	PISTON PIN	MAHLE

4. Torque Specifications

Application	Torque (lb*ft unless otherwise noted)	Recommended Lubricant
Main studs into block ½ inch	3-5	Loctite 242
Main nuts ½ inch	95-105	Engine oil
Main splayed bolts 3/8 inch	35-45	Engine oil
Rod bolts	50	ARP Moly rod bolt lube
Head studs into block	3-5	Loctite 242
Head nuts	95-105	Engine oil
Rocker studs	60-65	Loctite PFT
Intake manifold bolts	18-20	Loctite 242
Flywheel bolts	75-80	Loctite 242 or dry-seal
Vibration damper bolt	90	Engine oil
Oil pump to block	28-35	Loctite 242
Oil pickup tube to main stud	28-35	Loctite 242
Cam bolt	40-45	Loctite 242
Cam retainer plate bolt	9-12	Loctite 242
Tappet guide retainer	9-12	Loctite 242
Oil pickup tube to oil pump	12-18	Loctite 242

5. Noted Features for M-6007-347NST

Based on track results and dynamometer testing the following updated features are incorporated into the M-6007-347NST.

Block - Part # M-6010-R302ASA/M-6010-BOSS302 includes 4 bolt main caps located on the center three bulkheads. This is a siamese bore block with drilled coolant passages. This block requires cam bearings part # M-6261-J351.

Distributor Gear - Part # M-12390-K is a polymer material gear.

Cylinder Heads – Part # M-6049-Z304DA has revised intake rocker stud location to improve valve train geometry. This rocker stud revision requires the use of rocker arms M-6564-F351 and pushrod guide plates M-6566-Z304D. The assembly comes with an updated valve spring # M-6516-BH, valve spring locator #M-6536-BH, valve spring retainer #M-6514-BH, and valve locks #M-6518-BH. This head has additional water hole drillings for improved coolant flow.

Crankshaft Vibration Damper – Part #M-6316-C351 has an SFI approved rating. The 28 oz. offset weight is removed to achieve neutral balance.

Pistons – Part # SBF090030F06 (available through Mahle distributors) increased wrist pin diameter, and revised ring pack.

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