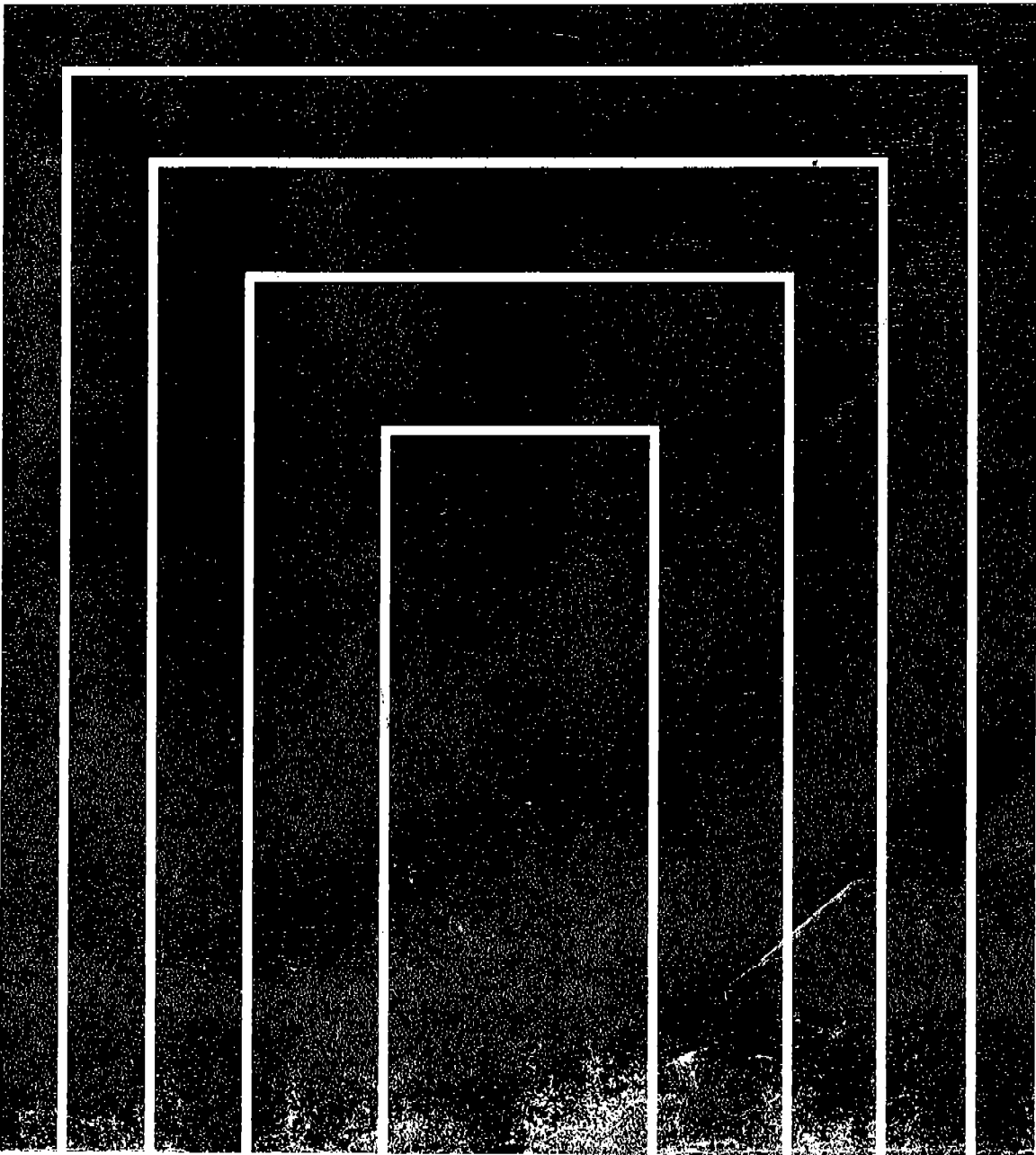


TOYOTA

4A-GE ENGINE

REPAIR MANUAL

FEB., 1997



MT 2001


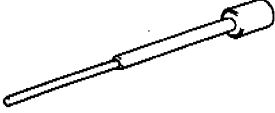

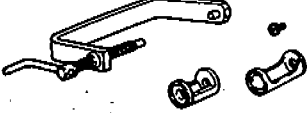
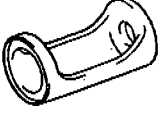








PREPARATION

| | |
|---------------------------------|-------|
| ENGINE MECHANICAL | PP-1 |
| ELECTRONIC FUEL INJECTION | PP-4 |
| COOLING | PP-6 |
| LUBRICATION | PP-7 |
| IGNITION | PP-9 |
| STARTING | PP-10 |
| CHARGING | PP-11 |



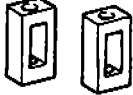



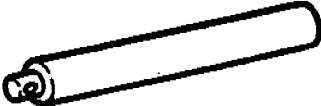
ENGINE MECHANICAL

SST (SPECIAL SERVICE TOOLS)

EG04V-30

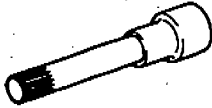
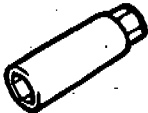



| | | | |
|---|---------------|--|-------------------------------------|
|  | 09201-10000 | Valve Guide Bushing Remover & Replacer Set | |
|  | (09201-01050) | Valve Guide Bushing Remover & Replacer 5 | |
|  | 09201-41020 | Valve Stem Oil Seal Replacer | |
|  | 09202-70020 | Valve Spring Compressor | |
|  | (09202-00020) | Attachment | |
|  | 09213-54015 | Crankshaft Pulley Holding Tool | |
|  | 09223-15030 | Oil Seal & Bearing Replacer | Crankshaft rear oil seal |
|  | 09223-46011 | Crankshaft Front Oil Seal Replacer | Camshaft oil seal |
|  | 09228-06501 | Oil Filter Wrench | |
|  | 09330-00021 | Companion Flange Holding Tool | Crankshaft pulley |
|  | 09636-20010 | Upper Ball Joint Dust Cover Replacer | |
|  | 09816-30010 | Oil Pressure Switch Socket | Oil pressure switch Knock sensor |
|  | 09843-18020 | Diagnosis Check Wire | |

PREPARATION — ENGINE MECHANICAL

| | | |
|---|-------------------------------|---|
|  | 09950-50010 Puller C Set | |
|  | (09951-05010) Hanger 150 | Crankshaft pulley |
|  | (09952-05010) Slide Arm | Crankshaft pulley |
|  | (09953-05020) Center Bolt 150 | Crankshaft pulley |
|  | (09954-05030) Claw No.3 | Crankshaft pulley |
|  | 09950-70010 Handle Set | |
|  | (09951-07150) Handle 150 | Valve guide bushing Crankshaft rear oil seal |

RECOMMENDED TOOLS

EG0AZ-2H

| | | |
|---|-------------------------------------|--|
|  | 09043-50100 Bi-hexagon Wrench 10 mm | |
|  | 09045-38162 Spark Plug Wrench | |
|  | 09200-00010 Engine Adjust Kit | |
|  | 09258-00030 Hose Plug Set | Plug for the vacuum hose, fuel hose etc. |
|  | 09904-00010 Expander Set | |

EG000-2J

EQUIPMENT

| | |
|-------------------|--|
| Caliper gauge | |
| CO/HC meter | |
| Compression gauge | |

PREPARATION - ENGINE MECHANICAL

| | |
|-------------------------|--|
| Connecting rod aligner | |
| Cylinder gauge | |
| Dial indicator | |
| Dye penetrant | |
| Heater | |
| Magnetic finger | |
| Micrometer | |
| Piston ring compressor | |
| Piston ring expander | |
| Platigauge | |
| Precision straight edge | |
| Soft brush | |
| Spring tester | |
| Steel square | |
| Thermometer | |
| Timing light | |
| Torque wrench | |
| Valve seat cutter | |
| Vernier calipers | |

EQ001-02









SSM (SERVICE SPECIAL MATERIALS)

| | | |
|-------------|---|---|
| 08826-00080 | Seal Packing Black or equivalent (FIPG) | Camshaft bearing cap Cylinder head cover |
| 08833-00070 | Adhesive 1324, THREE BOND 1324 or equivalent | Spark plug tube |
| 08833-00080 | Adhesive 1344, THREE BOND 1344, LOCTITE 242 or equivalent | Timing belt idler pulley |

ELECTRONIC FUEL INJECTION




SST (SPECIAL SERVICE TOOLS)

E900F-32

| | | |
|---|--|---------------------|
|  | 09268-41046 Injection Measuring Tool Set | |
|  | (90405-09015) No.1 Union | |
|  | (95336-08070) Hose | |
|  | 09268-45012 EFI Fuel Pressure Gauge | |
|  | 09631-22020 Power Steering Hose Nut 14 x 17 mm Wrench Set | Fuel line flare nut |
|  | 09816-30010 Oil Pressure Switch Socket | Knock sensor |
|  | 09842-30070 Wiring "F" EFI Inspection | |
|  | 09843-18020 Diagnosis Check Wire | |

RECOMMENDED TOOLS

E900G-29

| | | |
|---|---------------------------------------|--------------------------------------|
|  | 09082-00040 TOYOTA Electrical Tester. | |
|  | 09200-00010 Engine Adjust Kit . | |
|  | 09258-00030 Hose Plug Set . | Plug for vacuum hose, fuel hose etc. |

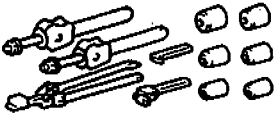





EQUIPMENT

| | |
|---------------------|---------------|
| Carburetor balancer | Throttle body |
| Graduated cylinder | Injector |
| Hexagon wrench | |
| Sound scope | Injector |
| Tachometer | |
| Torque wrench | |
| Vacuum gauge | |

COOLING


SST (SPECIAL SERVICE TOOLS)

EG12S-0Y

| | | |
|---|---|--|
|  | 09230-01010 Radiator Service Tool Set | |
|  | 09236-00101 Water Pump Overhaul Tool Set | |
|  | (09236-15010) Bearing Stay | |
|  | (09237-00010) Water Pump Bearing Remover & Replacer | |
|  | (09237-00020) Bearing Stay | |
|  | (09237-00040) Shaft "A" | |

RECOMMENDED TOOLS

EG12V-0U

| | | |
|---|---------------------------------------|--|
|  | 09082-00040 TOYOTA Electrical Tester. | |
|---|---------------------------------------|--|

EQUIPMENT

EG12W-14

| | |
|---------------------|--------------------------|
| Heater | Water temperature switch |
| Radiator cap tester | |
| Thermometer | Water temperature switch |
| Torque wrench | |

COOLANT

EG12X-10

| Item | Capacity | Classification |
|----------------|---------------------------------------|----------------------|
| Engine coolant | 6.0 liters (6.3 US qts, 5.3 Imp. qts) | Ethylene-glycol base |

SSM (SPECIAL SERVICE MATERIALS)




EG18X-08

| | |
|---|-----------------|
| 08826-00100 Seal Packing 1282B, THREE BOND 1282B or equivalent (FIPG) | Water pump seal |
|---|-----------------|

LUBRICATION



SST (SPECIAL SERVICE TOOLS)

EG14J-1A

| | | |
|---|--|--|
|  | 09032-00100 Oil Pan Seal Cutter | |
|  | 09228-06501 Oil Filter Wrench | |
|  | 09816-30010 Oil Pressure Switch Socket | |

RECOMMENDED TOOLS

EG14K-14

| | | |
|---|-------------------------------|--|
|  | 09200-00010 Engine Adjust Kit | |
|  | 09905-00013 Snap Ring Pliers | |

EQUIPMENT

EG14M-15

| | |
|-------------------------|--|
| Oil pressure gauge | |
| Precision straight edge | |
| Torque wrench | |

LUBRICANT

EG14N-27

| Item | Capacity | Classification |
|-----------------------|---------------------------------------|--|
| Engine oil | | |
| Dry fill | 3.5 liters (3.7 US qts, 3.1 Imp. qts) | API grade SG or SH, multigrade engine oil or ILSAC multigrade engine oil |
| Drain and refill | | |
| w/ Oil filter change | 3.0 liters (3.2 US qts, 2.6 Imp. qts) | |
| w/o Oil filter change | 2.8 liters (3.0 US qts, 2.5 Imp. qts) | |

SSM (SPECIAL SERVICE MATERIALS)

EG147-18

| | |
|---|---------------------|
| 08826-00080 Seal Packing Black or equivalent (FIG) | Oil pan |
| 08833-00080 Adhesive 1344, THREE BOND 1344, LOCTITE 242 or equivalent | Oil pressure switch |

IGNITION TEST (SPECIAL SERVICE TOOLS)

10010-0F



09240-00020 Wire Gauge Set

Air gap

RECOMMENDED TOOLS

10010-0W



09082-00040 TOYOTA Electrical Tester.



09200-00010 Engine Adjust Kit .

EQUIPMENT



1001E-0P

| | |
|------------------------------------|------------|
| megger insulation resistance meter | Spark plug |
| spark plug cleaner | |

STARTING



SST (SPECIAL SERVICE TOOLS)

ST005-1M

| | | |
|---|---|----------------|
|  | 09221-25026 Piston Pin Remover & Replacer | |
|  | (09221-00090) Guide "C" | Center bearing |

RECOMMENDED TOOLS

ST007-10

| | | |
|---|---------------------------------------|--|
|  | 09082-00040 TOYOTA Electrical Tester. | |
|  | 09904-00010 Expander Set. | |



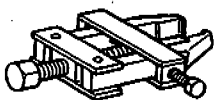


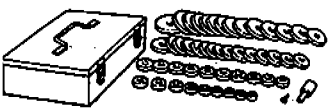


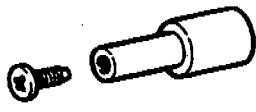
EQUIPMENT

ST001-12

| | |
|------------------|----------------------|
| Caliper gauge | Center bearing |
| Dial indicator | Commutator |
| Micrometer | Planet carrier shaft |
| Pull scale | Brush spring |
| Sandpaper | Commutator |
| Torque wrench | |
| V-block | Commutator |
| Vernier calipers | Commutator; Brush |


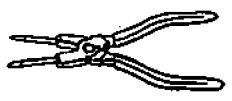
CHARGING EQUIPMENT (SPECIAL SERVICE TOOLS)

CH200-1P

| | | | |
|---|---------------|---|--------------------------|
|  | 09285-76010 | Injection Pump Camshaft Bearing Cone Replacer | Rotor rear bearing cover |
|  | 09286-46011 | Injection Pump Spine Shaft Puller | Rectifier end frame |
|  | 09820-00021 | Alternator Rear Bearing Puller | |
|  | 09820-00030 | Alternator Rear Bearing Replacer | Rotor rear bearing |
|  | 09820-63010 | Alternator Pulley Set Nut Wrench Set | |
|  | 09950-60010 | Replacer Set | Rotor front bearing |
|  | (09951-00260) | Replacer 26 | |
|  | (09951-00500) | Replacer 50 | |
|  | (09952-06010) | Adapter | |

CH200-1S

RECOMMENDED TOOLS

| | | | |
|--|-------------|---------------------------|--|
|  | 09082-00040 | TOYOTA Electrical Tester. | |
|  | 09905-00013 | Snap Ring Pliers . | |

EQUIPMENT

| | |
|--------------------------------|--------------------------|
| Battery specific gravity gauge | |
| Belt tension gauge | |
| Torque wrench | |
| Vernier calipers | Rotor (Slip ring), Brush |