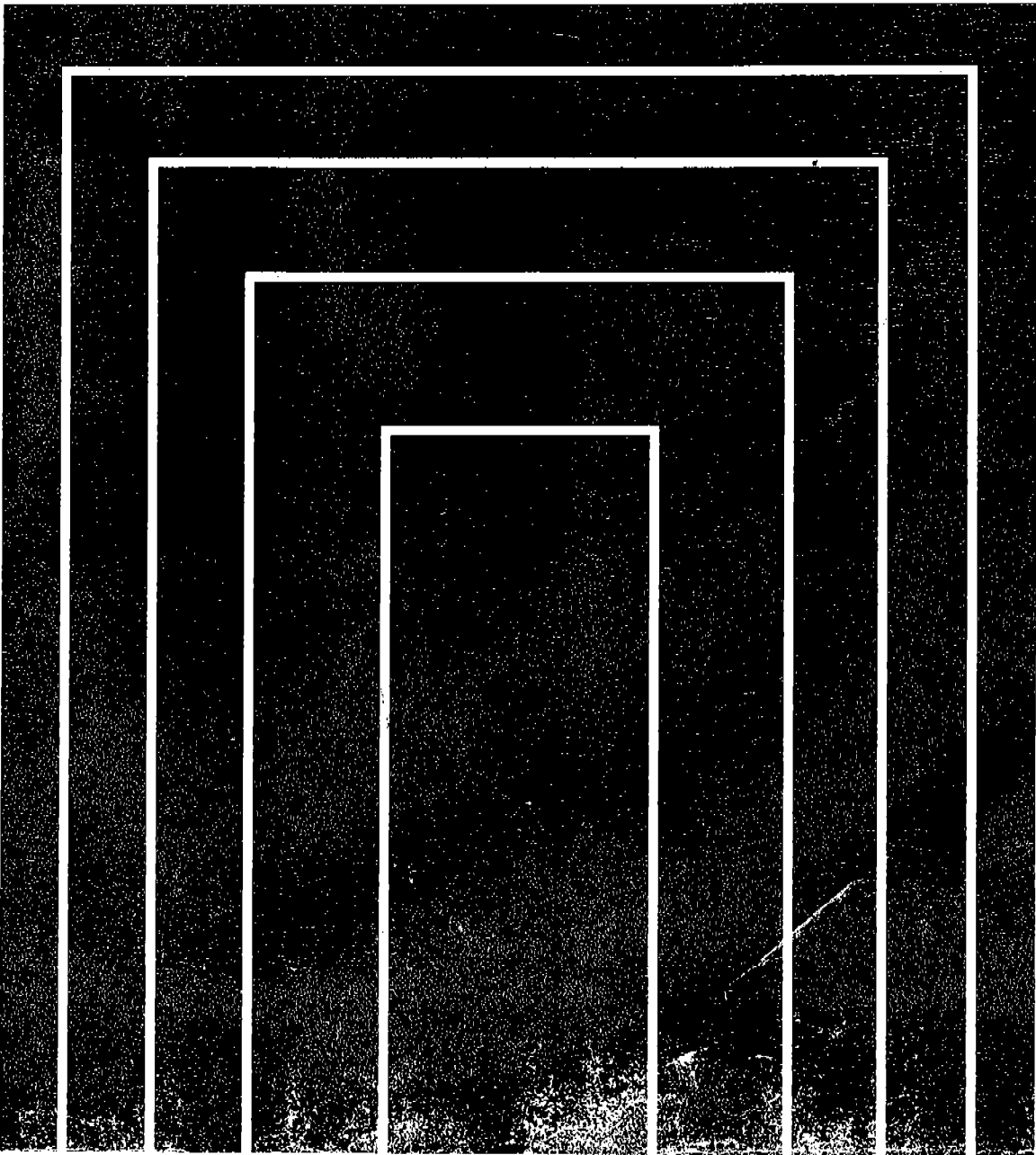


TOYOTA

4A-GE ENGINE

REPAIR MANUAL

FEB., 1997




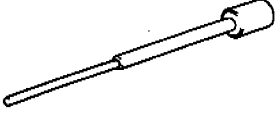
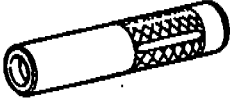
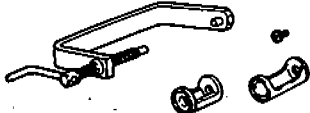
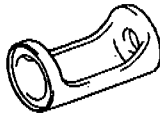





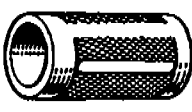


PREPARATION

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

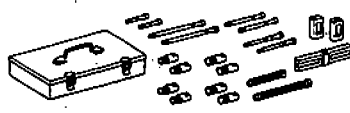
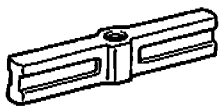
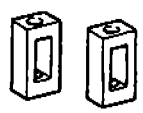
ENGINE MECHANICAL

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	

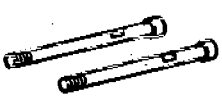
PREPARATION - ENGINE MECHANICAL

	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

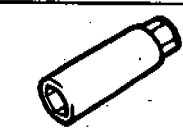
Valve guide bushing
Crankshaft rear oil seal

COMMENDED TOOLS

EG0AZ-2H



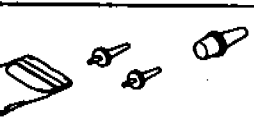
09043-50100 Bi-hexagon Wrench 10 mm .



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 .

EG020-ZU

EQUIPMENT

Pressure gauge	
Manometer	
Compression gauge	

RECOMMENDED TOOLS

EQUIPMENT

Caliper
CO/HC meter
Compressor

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

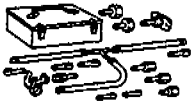



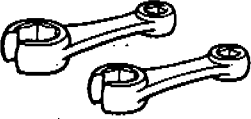



SSM (SERVICE SPECIAL MATERIALS)

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



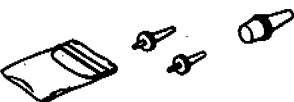
SST (SPECIAL SERVICE TOOLS)

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	

E900G-29

RECOMMENDED TOOLS

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

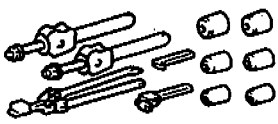





EQUIPMENT

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.	
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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
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LUBRICATION


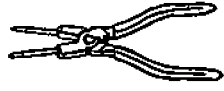
SST (SPECIAL SERVICE TOOLS)

EG14J-1A

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

RECOMMENDED TOOLS

EG14K-1A

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

EQUIPMENT

EG14L-15

Oil pressure gauge	
Precision straight edge	
Torque wrench	

LUBRICANT

EG14C-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.	



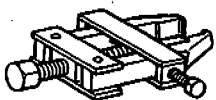


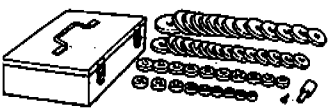


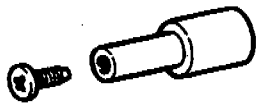
EQUIPMENT

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


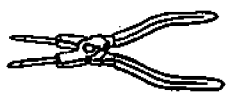
CHARGING EQUIPMENT (SPECIAL SERVICE TOOLS)

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