DIESEL ENGINE
C223 TURBO MODEL

WORKSHOP MANUAL

SUPPLEMENT

ISUZU MOTORS LIMITED

ISUZU

WORKSHOP MANUAL

DIESEL ENGINE

C223 TURBO MODEL SUPPLEMENT

FOREWORD

This manual describes the different points on the engine components of the C223 TURBO model to the C223.

The components not dealt with in this manual, refer to the C223 WORKSHOP MANUAL (C223-WE-141).

This manual includes special notes, important points, service data, precautions, etc. that are needed for the maintenance, adjustments, service, removal and installation of components of the models titled.

All information, illustrations and specificatioins contained in this manual are based on the latest product information available at the time of publication.

The right is reserved to make changes at any time without notice.

Arrangement of the material is shown by the table of contents on the right-hand side of this page. Black spot on the first page of each section can be seen on the edge of the book below section title. A more detailed table of contents precedes each section.

This manual applies to the 1984 year and later models.

SECTION INDEX

SECTION 1

GENERAL INFORMATION

INDEX

CONTENTS PAGE

GENERAL REPAIR INSTRUCTIONS

1. For assurance of safety, park the vehicle on level ground and brace the front or rear wheels when lifting the vehicle.
2. Raise the vehicle with a jack set against the axle or frame and perform service operation after supporting the vehicle on chassis stands.
3. Before performing service operation, disconnect grounding cable from the battery to reduce the chance of cable damage and burning due to short-circuiting.
4. Use a cover on body, seats and floor to protect them against damage and contamination.
5. Brake fluid and anti-freeze solution must be handled with reasonable care as they can cause paint damage.
6. The use of proper tools and special tools where specified, is important to efficient and reliable service operation.
7. Use genuine Isuzu parts.
8. Used cotter pins, gaskets, O-rings, oil seals, lock washers and self lock nuts should be discarded and new ones should be prepared for installation as normal function of the parts can not be maintained if these parts are reused.
9. To facilitate proper and smooth reassembly operation, keep disassembled parts neatly in groups.
   Keeping fixing bolts and nuts separate is very important as they vary in hardness and design depending on position of installation.

10. Clean the parts before inspection or reassembly. Also clean oil ports, etc. using compressed air to make certain they are free from restrictions.
11. Lubricate rotating and sliding faces of the parts with oil or grease before installation.
12. When necessary, use a sealer on gaskets to prevent leakage.
13. Carefully observe all specifications for bolt and nut torques.
14. When service operation is completed, make a final check to be sure service has been done properly.
15. For assurance of safety, always release air pressure solely from the air tanks before disconnecting pipes, hoses or other parts from any unit under air pressure.

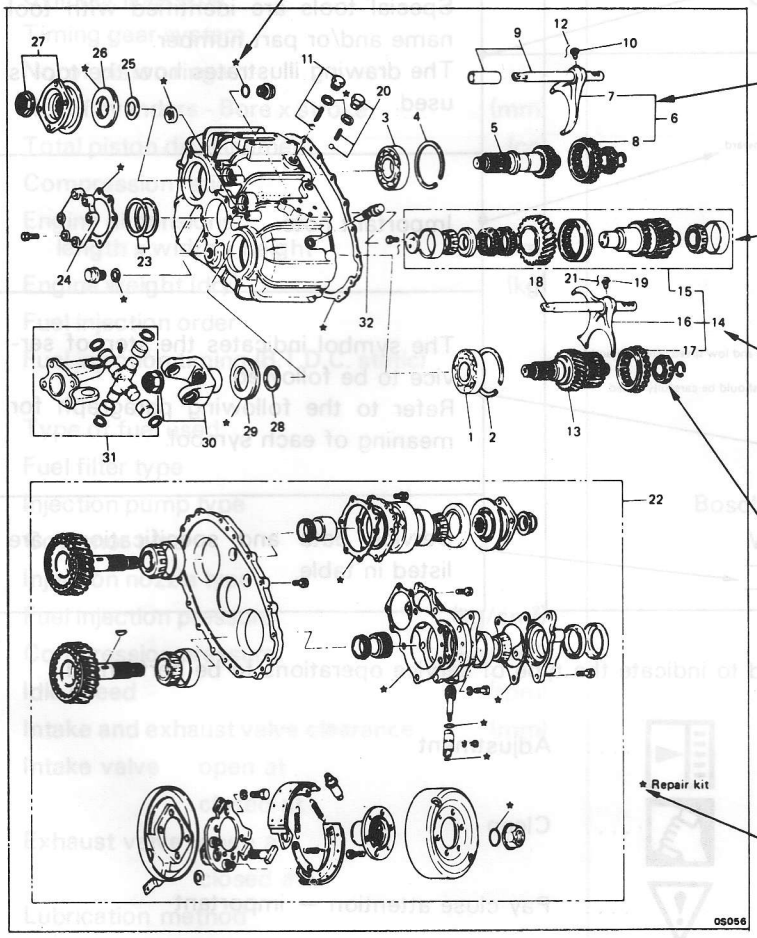
HOW TO USE THIS MANUAL

1. Find the type of unit or equipment to be serviced by referring to the "Application chart" or "Identification of unit or equipment" included in this section.
2. Find the applicable section by refering to the index.
3. This manual includes "General information" section in which service data, maintenance items and specifications with torques are included.
4. Each section includes removal and installation, disassembly, inspection and repair and reassembly. When the same service operation applies to more than one units or equipments, notice is inserted stating, "Refer to manual for other units or equipments".
5. In removal and installation section, description of self-explanatory items such as removal of individual parts from unit to be removed, is omitted and important operation such as adjustments, torque specifications, etc. are dealt with mainly.
6. The service standard is indicated in terms of "Standard" and "Limit".
   The "standard" means the assembly standard and standard range within which the parts are considered serviceable. "Limit" indicates the limit value (Correction or replacement is necessary when measurement is beyond this limit.)
7. In this manual, the components and parts are printed in singular form.

8. Each service operation section begins with disassembled view of unit or equipment which is useful to find components, service procedure, availability and content of repair kits, etc.

MAJOR COMPONENT

This illustration is based on the 6 x 6 and 4 x 4 models.
The steps of service operation designated as No. 3 – 12 are applicable to all models excluding 6 x 4.



Reassembly steps

- ▲1. Input shaft bearing
- 2. Input shaft snapring
- ▲3. Front output shaft bearing
- 4. Front output shaft snapring
- 5. Front output shaft
- 6. Shift fork and sleeve
- 7. Front drive shift fork
- ▲8. Front output shaft sleeve
- ▲9. Front drive shift rod and collar
- ▲10. Front drive shift fork lock bolt
- 11. Front drive shift rod detent ball, spring and seat
- ▲12. Front drive shift fork lock wire
- ▲13. Input shaft
- 14. Shift fork, idle shaft and sleeve
- 15. Idle shaft assembly
- 16. High and low shift fork
- ▲17. Input shaft sleeve
- ▲18. High and low shift rod
- ▲19. High and low shift fork lock bolt
- 20. High and low shift rod detent ball, spring and seat
- ▲21. High and low shift fork lock wire
- ▲22. Rear cover assembly
- ▲23. Idle shaft shim
- 24. Idle shaft cover
- 25. Front output shaft distance piece
- 26. Front output shaft oil seal
- ▲27. Front output shaft flange and nut
- 28. Input shaft distance piece
- 29. Input shaft oil seal
- ▲30. Input shaft yoke and nut
- ▲31. Input shaft universal joint
- ▲32. Breather

"Note" indicating models applicable.

★ parts contained in repair kit.

Parts to be removed or installed as a unit.

All units or parts within frame are to be considered as "major component". Each unit or part within frame is to be considered as "minor component".

The number represents sequence of service operation.

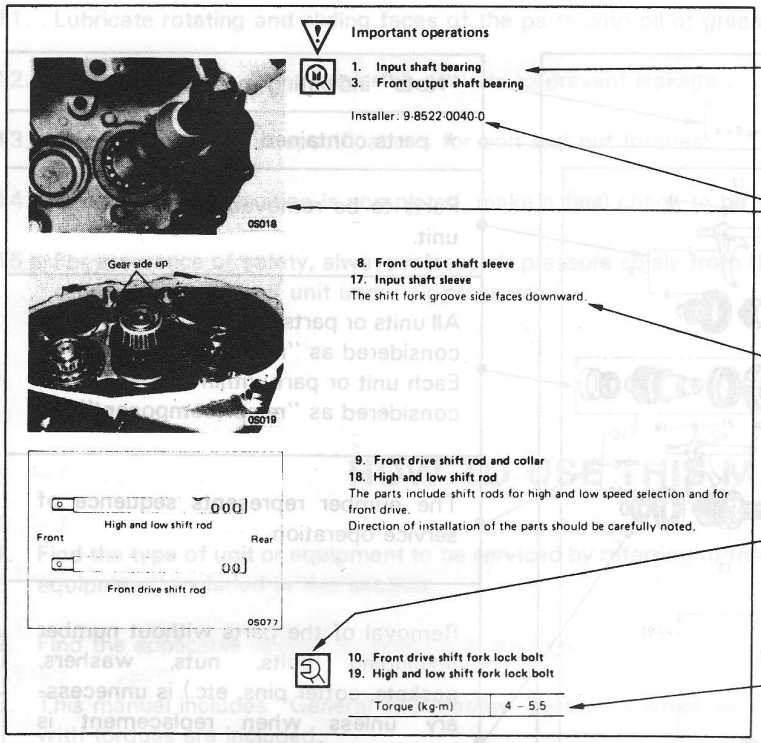
Removal of the parts without number (excluding bolts, nuts, washers, gaskets, cotter pins, etc.) is unnecessary unless when replacement is needed.
Where parts replacement requires specific note, instructions are given in "Inspection and repair"

★ indicates repair kit availability.

Name of parts listed in sequence of service operation.

▲ indicates important operation.
Details of service operation are described in the paragraph "Important operations".

9. The section following illustration(s) deals with important service steps marked with "▲"
This section also includes "notes", "use of special tools", "service data", etc.



Item shown in the illustration and marked with "▲"

Special tools are identified with tool name and/or part number.
The drawing illustrates how the tool is used.

Important note.

The symbol indicates the step of service to be followed.
Refer to the following paragraph for meaning of each symbol.

Service data and specifications are listed in table.

10. In this manual, the following symbols are used to indicate the type of service operations to be performed.

 .... Remove

 .... Install

 .... Disassemble

 .... Reassemble

 .... Align the marks

 .... Correct direction

 .... Inspect

 .... Take measurement

 .... Adjustment

 .... Clean

 .... Pay close attention — important

 .... Tighten to specified torque

 .... Use special tool(s) (Isuzu's tool(s))

 .... Use special tool(s) (parts manufacturer's tool(s))

 .... Lubricate with oil

 .... Lubricate with grease

11. The special tools with part number preceded by the alphabet "J" are manufactured by Kent-Moore Corporation. These tools are also available at local outlet of Kent-Moore Corporation throughout the world.

MAIN DATA AND SPECIFICATIONS

Items \ Engine model			C223T
Engine type			Water-cooled, 4-cycle in-line, overhead valve type
Combustion chamber type			Swirl chamber type
Cylinder liner type			Combined with cylinder block (Liner less)
Timing gear system			Gear drive/Belt drive
No. of piston rings			Compression ring 2, oil ring 1
No. of cylinders - Bore x stroke		(mm)	4 - 88 x 92
Total piston displacement		(cc)	2238
Compression ratio			21 : 1
Engine dimensions : length x width x height		(mm)	Approx. 741 x 546 x 716
Engine weight (dry)		(kg)	Approx. 220
Fuel injection order			1-3-4-2
Fuel injection timing (B.T.D.C. static)			6° (for gear drive) 10° (for belt drive)
Type of fuel used			High-speed diesel fuel (SAE No. 2)
Fuel filter type			Cartridge type
Injection pump type			Bosch distributor VE type with boost compensator
Governor type			Mechanical variable speed (half all speed)
Injection nozzle type			Throttle type
Fuel injection pressure		(kg/cm^2)	135
Compression pressure		(kg/cm^2)	31 (at 200 rpm)
Idle speed		(rpm)	725 – 775
Intake and exhaust valve clearance		(mm)	(in cold) 0.4
Intake valve	open at		11° (B.T.D.C.)
	closed at		49° (A.B.D.C.)
Exhaust valve	open at		51° (B.B.D.C.)
	closed at		9° (A.T.D.C.)
Lubrication method			Pressurized circulation
Oil pump type			Gear type
Oil filter type			Paper element, partial-flow type
Piston cooling method			With oiling jets
Lubricating oil capacity		(liters)	6.5
Oil cooler type			Water-cooled
Cooling method			Pressurized circulation
Cooling water capacity		(liters)	9.0
Water pump type			Impeller type
Thermostat type			Wax pellet type (with jiggle valve)
Air cleaner type			Paper element type
Battery type - voltage		(V)	NS70 — 12
Generator	Voltage — capacity	(V-A)	12 — 40
Starter	Voltage — output	(V-KW)	12 — 2.0

Items \ Engine model	C223T
Turbocharger type	TB0209
turbine type	Radial, inward-flow
compressor type	Radial, outward-flow
Maximum speed (rpm)	140,000
Maximum air delivery (kg/min.)	6.60
Maximum pressure ratio	1.85
Wastgate control caribation (mmHg)	690 ± 20
Boost pressure (mmHg)	280 or more at 4,000 engine rpm

TORQUE SPECIFICATIONS

STANDARD BOLTS

The torque values given in the following table should be applied where a particular torque is not specified.

(kg-m)

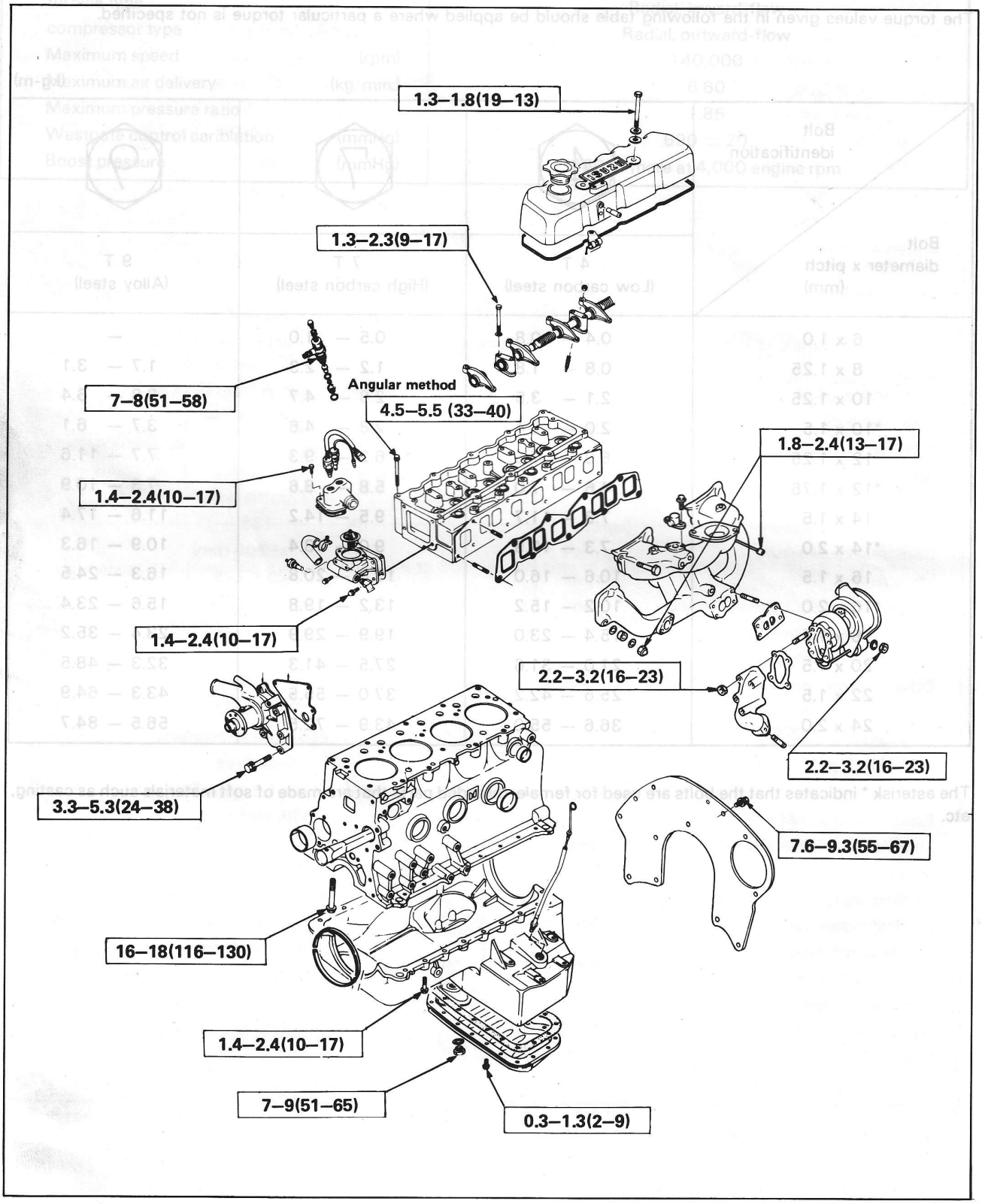
Bolt identification / Bolt diameter x pitch (mm)			
	4 T (Low carbon steel)	7 T (High carbon steel)	9 T (Alloy steel)
6 x 1.0	0.4 — 0.8	0.5 — 1.0	—
8 x 1.25	0.8 — 1.8	1.2 — 2.3	1.7 — 3.1
10 x 1.25	2.1 — 3.5	2.8 — 4.7	3.8 — 6.4
*10 x 1.5	2.0 — 3.4	2.8 — 4.6	3.7 — 6.1
12 x 1.25	5.0 — 7.5	6.2 — 9.3	7.7 — 11.6
*12 x 1.75	4.6 — 7.0	5.8 — 8.6	7.3 — 10.9
14 x 1.5	7.8 — 11.7	9.5 — 14.2	11.6 — 17.4
*14 x 2.0	7.3 — 10.9	9.0 — 13.4	10.9 — 16.3
16 x 1.5	10.6 — 16.0	13.8 — 20.8	16.3 — 24.5
*16 x 2.0	10.2 — 15.2	13.2 — 19.8	15.6 — 23.4
18 x 1.5	15.4 — 23.0	19.9 — 29.9	23.4 — 35.2
20 x 1.5	21.0 — 31.6	27.5 — 41.3	32.3 — 48.5
22 x 1.5	25.6 — 42.2	37.0 — 55.5	43.3 — 64.9
24 x 2.0	36.6 — 55.0	43.9 — 72.5	56.5 — 84.7

The asterisk * indicates that the bolts are used for female-threaded parts that are made of soft materials such as casting, etc.

MAJOR PARTS FIXING BOLTS

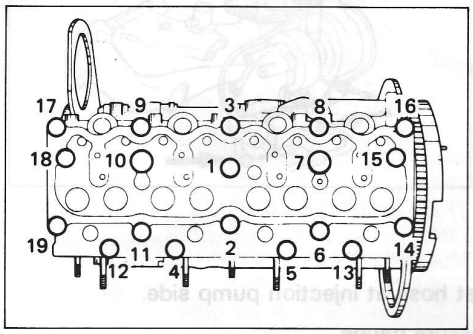
Cylinder head and injection pump

(kg-m)



SERVICING

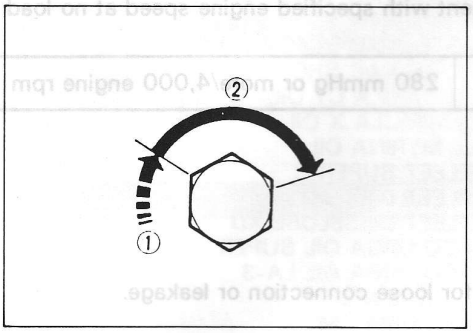
CYLINDER HEAD



Tighten the cylinder head bolts in sequence as shown in the figure.

Torque

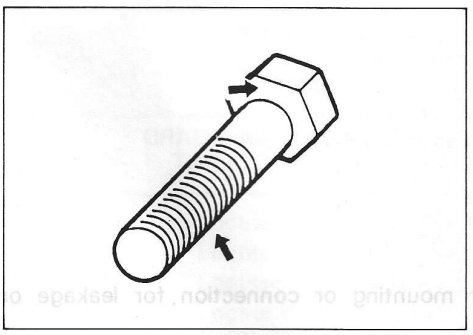
	kg-m(ft.lbs.)
① 1st step (snug torque)	4.5 — 5.5 (33 — 40)



Tighten the cylinder head bolts to the specified angle in sequence above.

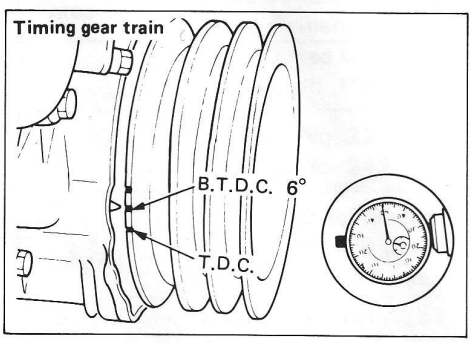
Angle

	degree
② 2nd step	120 — 150



Apply bisulfide molybdenum grease to thread and contact surface when using used bolt. (See the illustration).

INJECTION TIMING

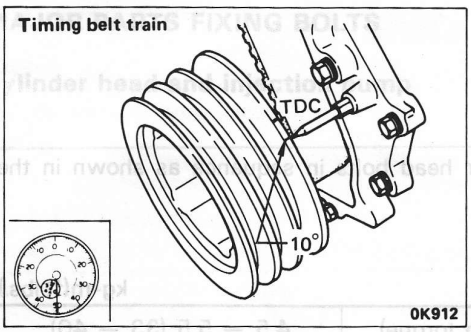


Turn the crankshaft in normal direction of rotation, and take the reading of the dial indicator when the timing mark on the crankshaft pulley is in alignment with the pointer.

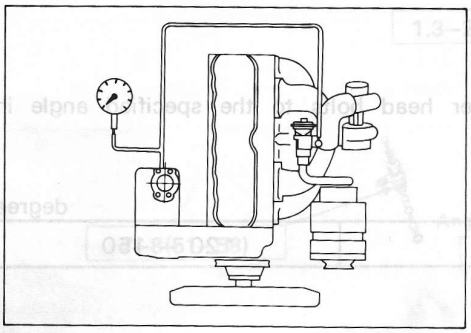
(mm)

Standard reading	0.5

Timing	6° (for gear drive)
	10° (for belt drive)

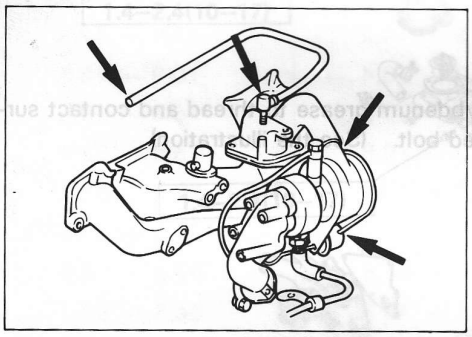


TURBOCHARGER

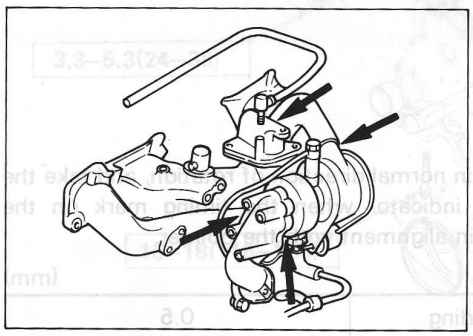


1. Disconnect boost hose at injection pump side.
2. Install boost pressure gauge.
3. Take measurement with specified engine speed at no load.

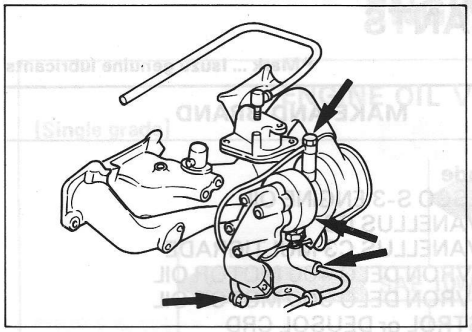
Boost pressure	280 mmHg or more/4,000 engine rpm



Check boost hoses for loose connection or leakage.



Check turbocharger mounting or connection for leakage or loose.



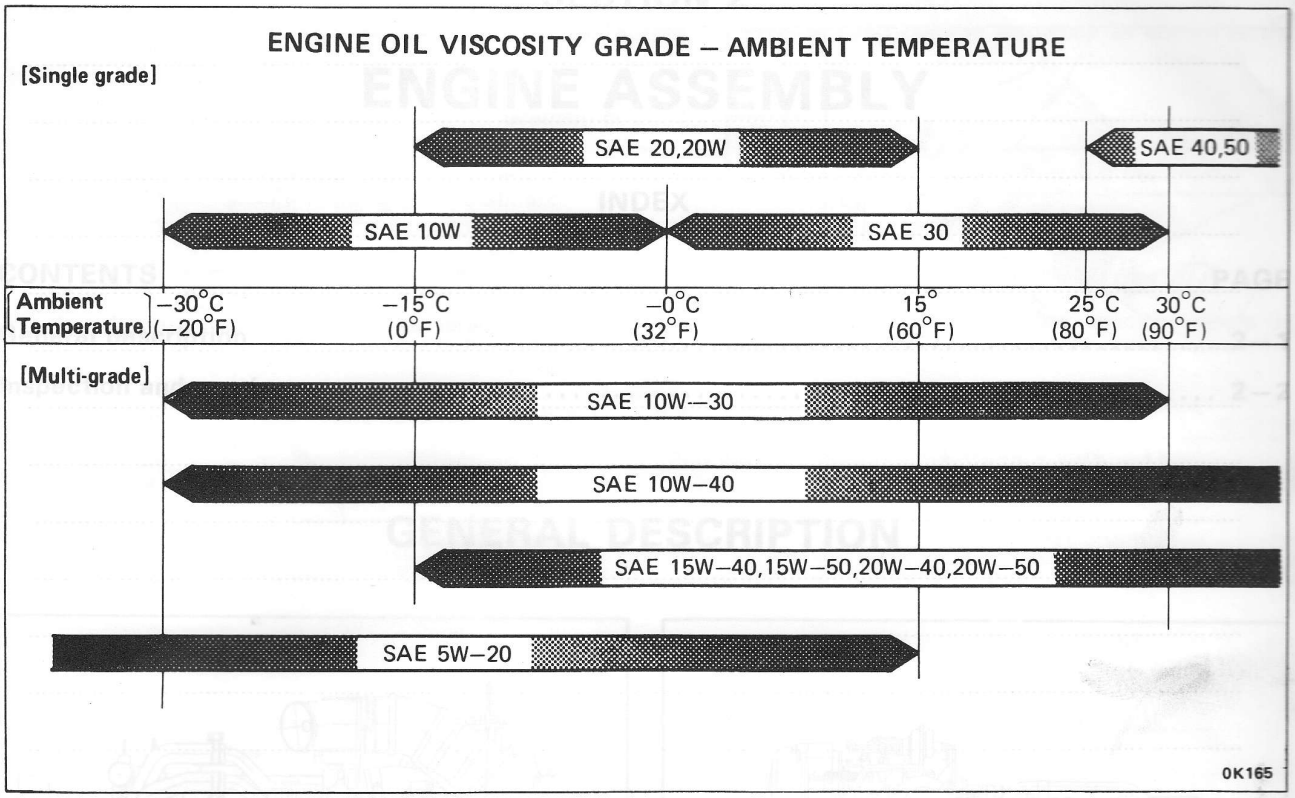
Check oil line for leakage restriction or damage.

RECOMMENDED LUBRICANTS

*Mark ... Isuzu genuine lubricants

LUBRICANT	TYPE OF LUBRICANT	MAKE AND BRAND
Engine	Diesel engine oil CD grade	**CD grade** * BESCO S-3 ENGINE OIL BP VANELLUS C3 BP VANELLUS C3 MULTIGRADE CHEVRON DELO 400 MOTOR OIL CHEVRON DELO 300 MOTOR OIL CASTROL or DEUSOL CRD CASTROL or DEUSOL CRF CASTROL or DEUSOL RX SUPER CALTEX RPM DELO 400 OIL CALTEX RPM DELO 300 OIL ESSOLUBE D-3 ENI AGIP F.1 DIESEL SIGMA MOBIL DELVAC 1200 SERIES MOBIL DELVAC 1300 SERIES MOBIL DELVAC SUPER MOBIL DELVAC SHC SHELL RIMULA CT OIL SHELL RIMULA X OIL SHELL MYRINA OIL SUNFLEET SUPER C SUNFLEET DIESELUBE SUNFLEET DIESELUBE XD TEXACO URSA OIL SUPER TEXACO URSA OIL LA-3 TOTAL RUBIA S TOTAL RUBIA TM UNION GUARDOL MOTOR OIL
Engine cooling system	Permanent type anti-freeze solution	* ISUZU ANTI-FREEZE PT BP ANTIFROST CALTEX AF COOLANT CASTROL ANTI-FREEZE CHEVRON ATLAS PERMA-GUARD ANTI-FREEZE AND COOLANT ENI AGIP F.1 ANTI-FREEZE ESSO RAD MOBIL PERMAZONE SHELLZONE SHELL GLYCOSHELL PLUS SHELLSAFE TEXACO ANTI-FREEZE COOLANT TEXACO STARTEX ANTI-FREEZE COOLANT TOTAL ANTIGEL UNION YEAR AROUND ANTI-FREEZE AND COOLANT

ENGINE OIL VISCOSITY CHART



ADHESIVE FOR REPAIR

MAKE	ISUZU Genuine parts or Recommended	Brand name or Number	Remarks
Loctite	Loctite 242 (Loctite Nutlock) Loctite 262 (Loctite Studlock) Loctite 290 (Loctie A.A.) Loctite Primer N	TL-242 TL-262 TL-290 Locquic primer grade N	
Three Bond	Belco Bond No. 4 Belco Bond No. 5 Belco Bond 201 Three Cement Super Three Cement Sealock No. 1000	TB-1104 TB-1105 TB-1102 TB-1521-B TB-1741 TB-2302	
Seal End	Seal End No. 22S Seal End No. 242	*TB-1102 (Three Bond) *TB-1104 (Three Bond)	* mark means that the product is equivalent to Three Bond make or Loctite make.
Diabond	DB Bond Black Sealer DB Bond Yellow Sealer DB Bond Clean Sealer	*TB-1521C (Three Bond) *TB-1521 (Three Bond) —	
Herme Seal	▲Herme Seal No. 123T	*Three Bond 200 (Three Bond)	
Shinetsu Kagaku	▲KE41RTV	*Super Three Bond No. 20 (Three Bond) *Silicone Form-A-Gasket No. 6 (Loctite)	

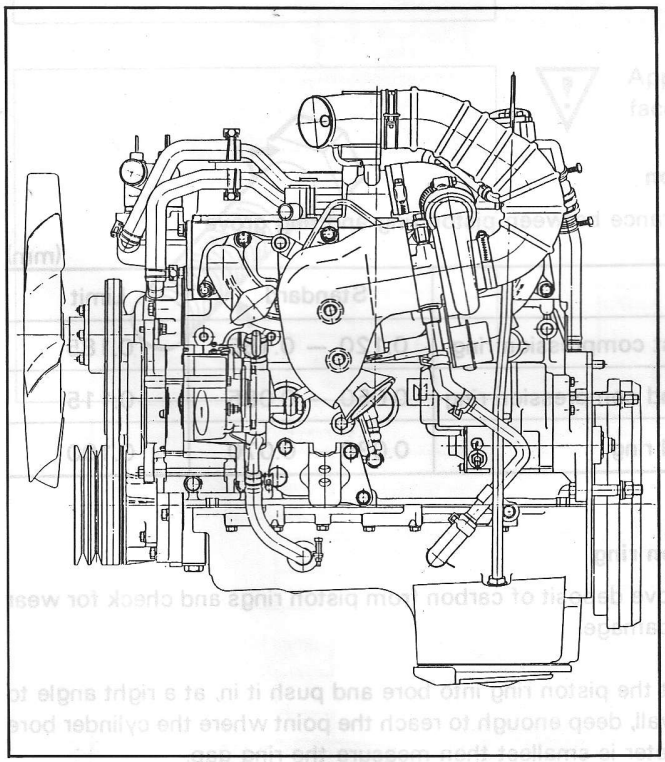
SECTION 2

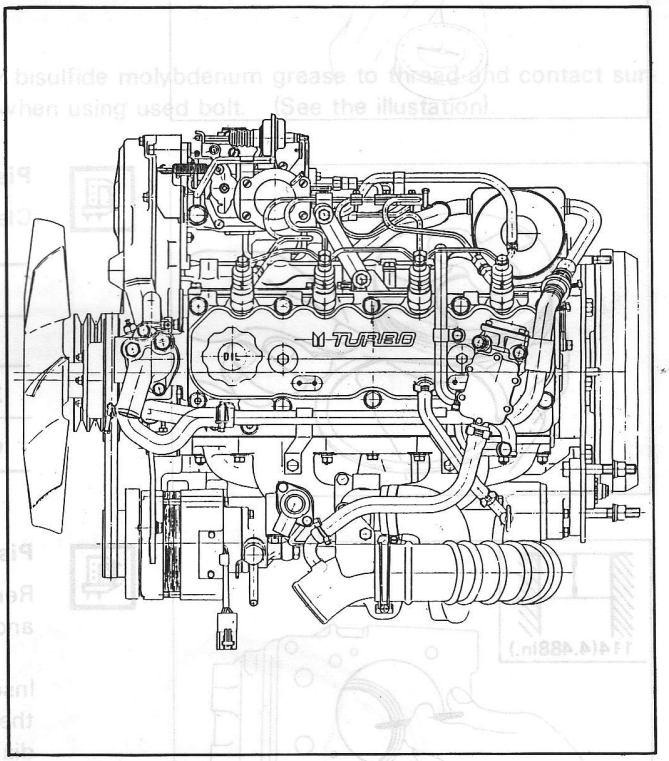
ENGINE ASSEMBLY

INDEX

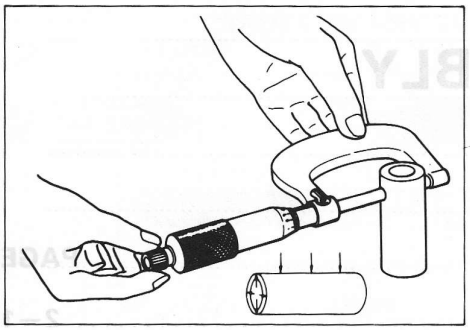
CONTENTS **PAGE**

GENERAL DESCRIPTION





INSPECTION AND REPAIR



Piston pin

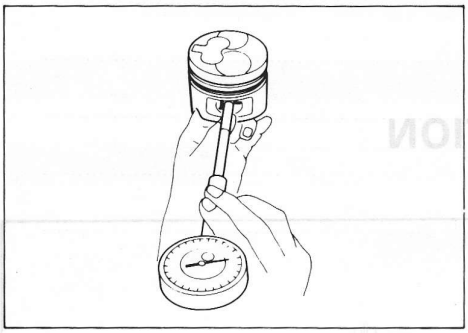
Visually inspect for damage, wear or other abnormal conditions.

Outside diameter

(mm)

Standard	Limit
29.0	28.97

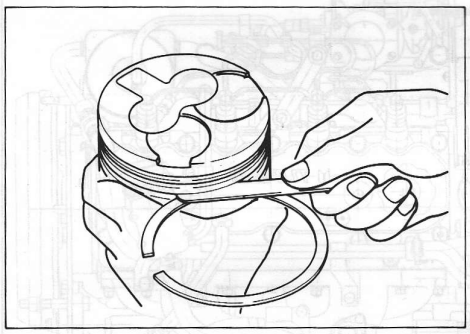
Measure the diameter at several points around the circumference.



Fitting interference between piston pin and piston pin hole.

(mm)

Standard	0.002 — 0.012

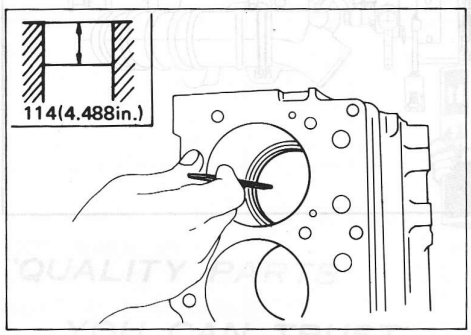


Piston

Clearance between piston ring and ring grove

(mm)

	Standard	Limit
1st compression ring	0.120 — 0.155	0.185
2nd compression ring	0.050 — 0.085	0.115
Oil ring	0.030 — 0.070	0.100



Piston ring

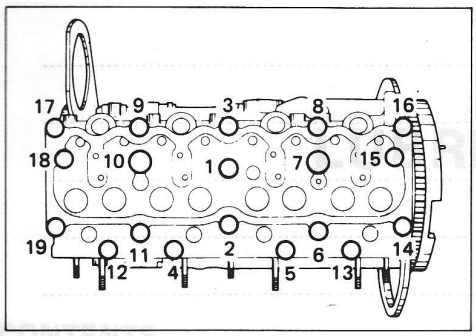
Remove deposit of carbon from piston rings and check for wear and damage.

Insert the piston ring into bore and push it in, at a right angle to the wall, deep enough to reach the point where the cylinder bore diameter is smallest then measure the ring gap.

Piston ring gap:

(mm)

1st, 2nd compression	0.2 — 0.4
Oil	0.2 — 0.4

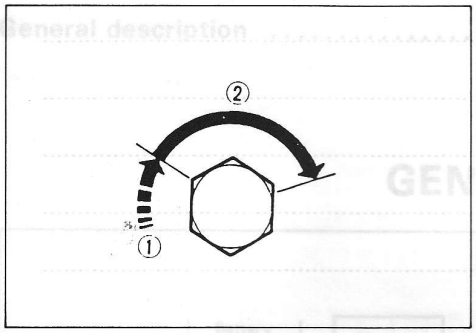


16. Cylinder head assembly

Tighten the cylinder head bolts in sequence as shown in the figure.

Torque

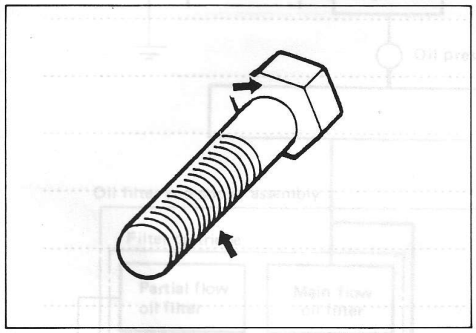
	kg-m(ft.lbs.)
① 1st step (snug torque)	4.5 — 5.5 (33 — 40)



Tighten the cylinder head bolts to the specified angle in sequence above.

Angle

	degree
② 2nd step	120 — 150



Apply bisulfide molybdenum grease to thread and contact surface when using used bolt. (See the illustation).

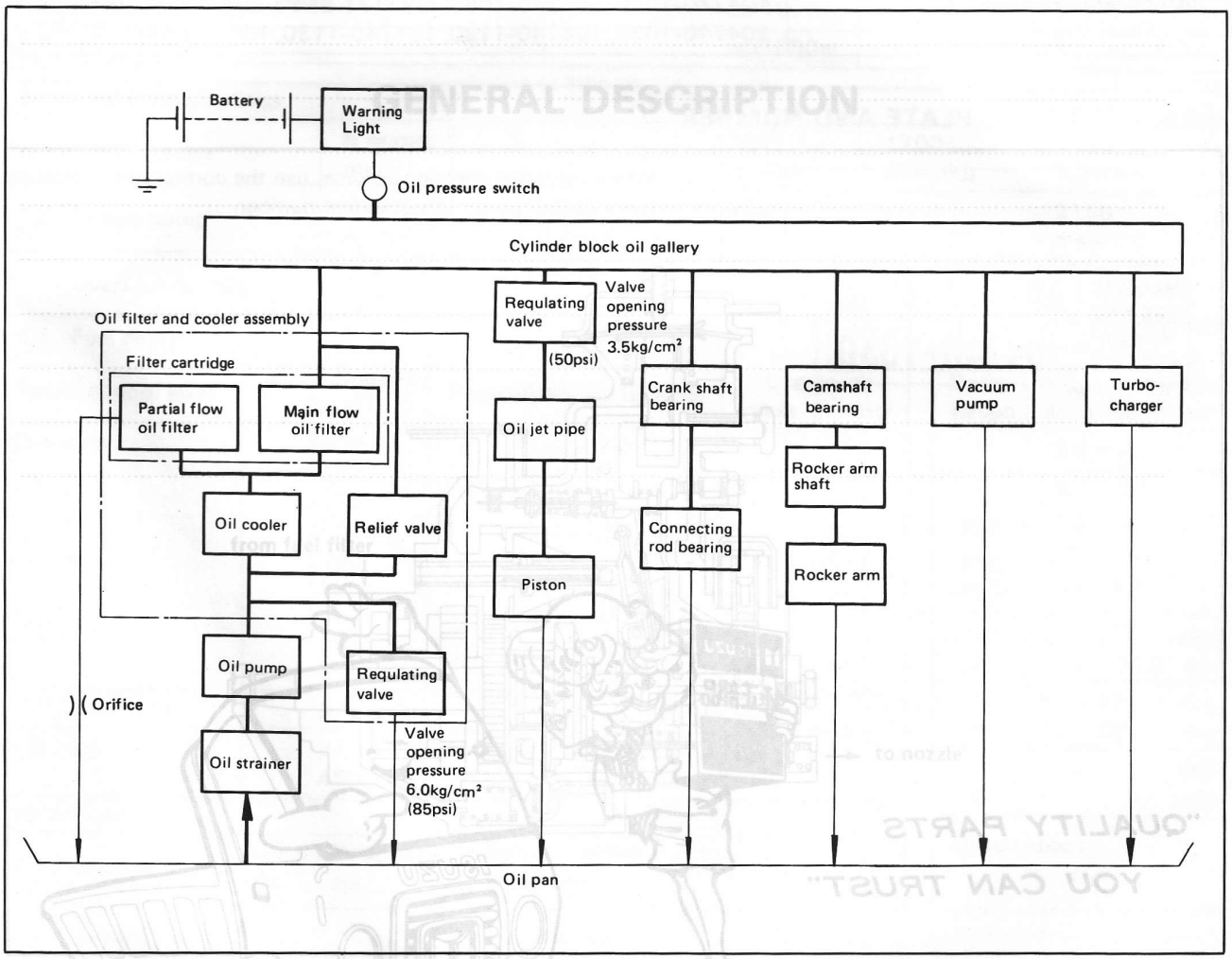
SECTION 3

LUBRICATING SYSTEM

INDEX

CONTENTS **PAGE**

GENERAL DESCRIPTION



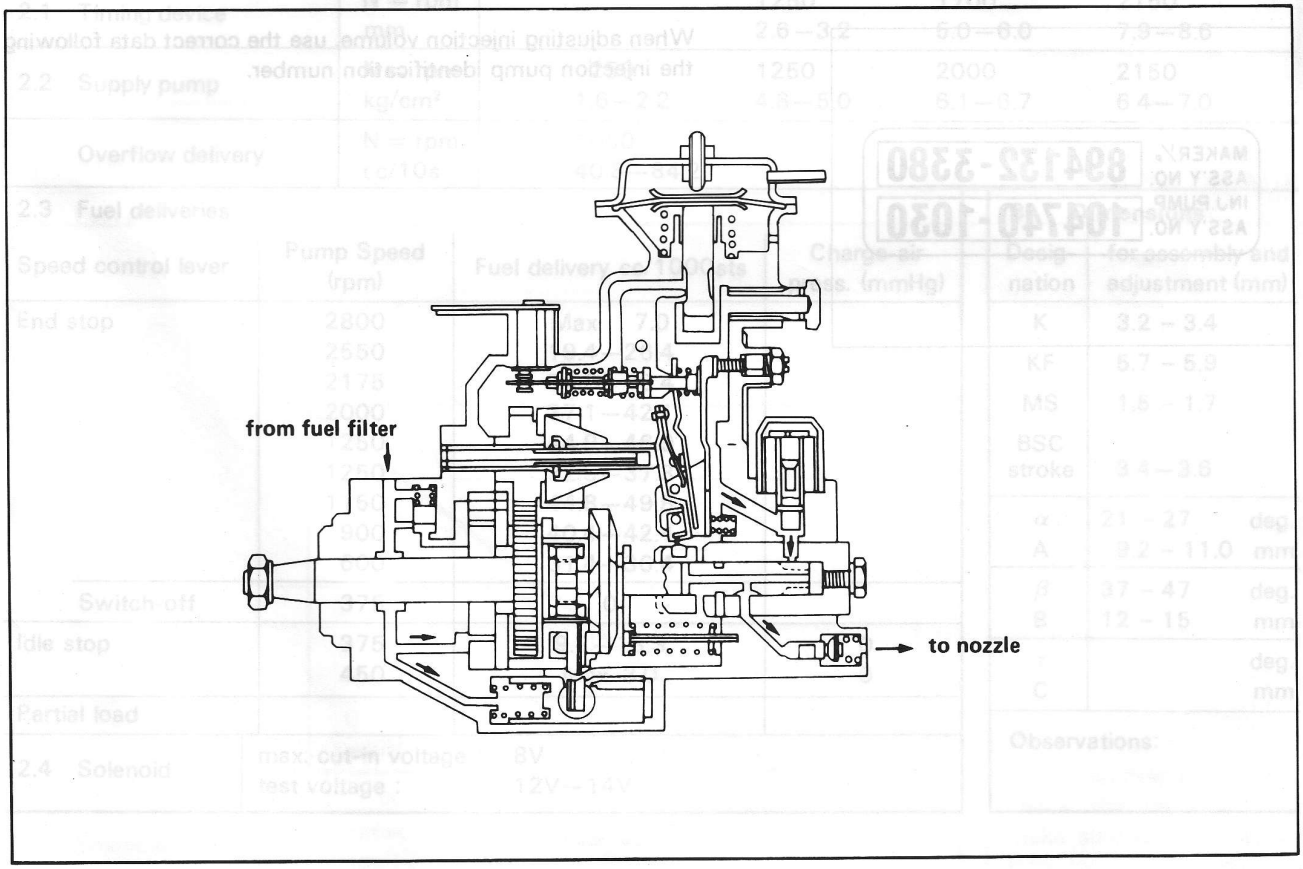
SECTION 5

FUEL SYSTEM

INDEX

CONTENTS **PAGE**

GENERAL DESCRIPTION



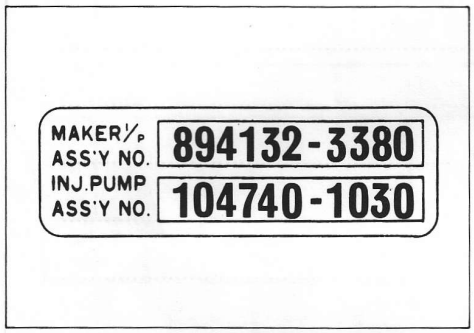
INJECTION PUMP DATA

INJECTION VOLUME ADJUSTMENT

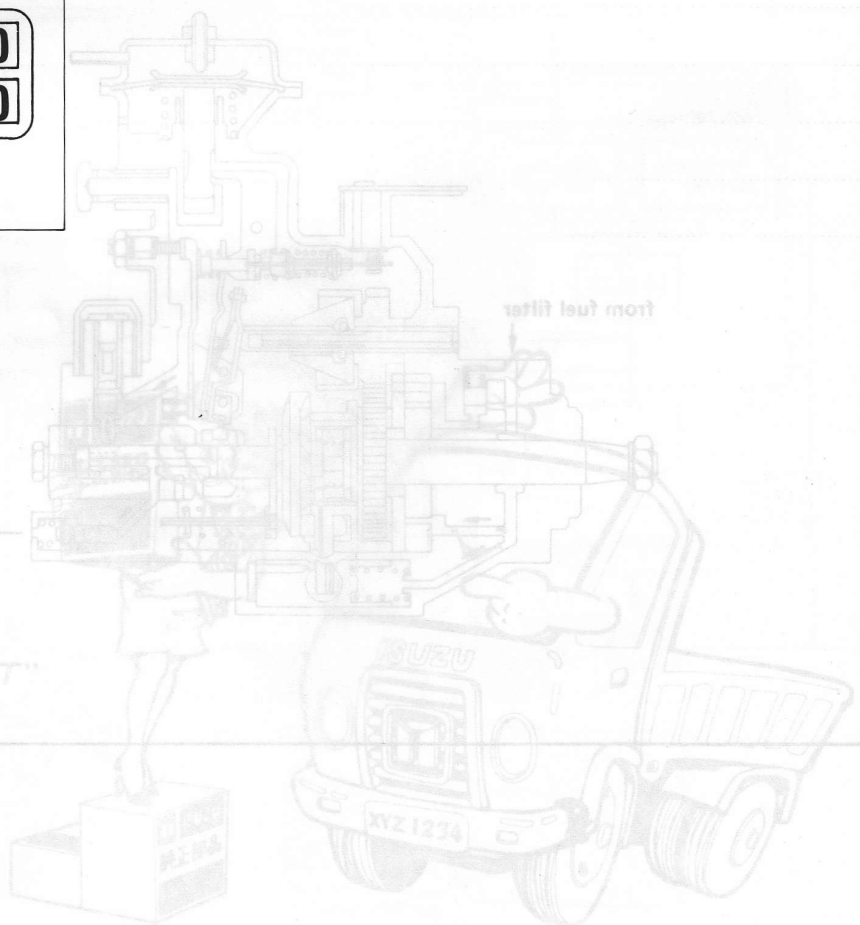
TEST CONDITIONS

Injection nozzle	D.K.K.C. P.No.105780-0000 Bosch type No.DN12SD12T
Injection nozzle holder	D.K.K.C. P.No.105780-2080 Bosch type No.EF8511/9A
Injection starting pressure	150kg/cm^2
Injection line	Inner dia. 2mm x Outer dia. 6mm — Length 840mm
Transfer pump pressure	0.2kg/cm^2
Test diesel fuel	ISO standard test oil (ISO 4113) SAE standard test oil (SAE 967.d)
Testing oil temperature	45 — 50°C
Identification number	104740-1030, 104740-1050, (894171-8510, 894171-8520) 104740-1020, 104740-1120, 104740-1130, 104740-1140

IDENTIFICATIONS PLATE AND NUMBER



When adjusting injection volume, use the correct data following the injection pump identification number.



INJECTION VOLUME AND GOVERNOR PERFORMANCE DIAGRAM

Identification number : 104740-1030, 104740-1510, (894171-8510, 894171-8520)

Test diesel fuel : SAE standard test diesel fuel SAE J967d (or ISO 4113)

1. Settings		Pump Speed (rpm)	Settings		Charge-air press (mmHg)	Difference in delivery (cc)
1.1	Timing device travel	1250	2.7—3.1	mm	0	
1.2	Supply pump pressure	1250	4.6—5.0	kg/cm²	0	
1.3	Full load delivery without charge-air pressure			cc/1000st		
	Full-load deliver with charge-air pressure	1250	45.4—46.5	cc/1000st	590—610	4.0
1.4	Idle speed regulation	375	9.3—13.3	cc/1000st	0	2.0
1.5	Start	100	Min. 60	cc/1000st	0	
1.6	Full-load speed regulation	2550	19.9—25.9	cc/1000st	590—610	7.0
1.7	Load Timer Adjustment			cc/1000st		
1.8				cc/1000st		

2. Test Specifications					
2.1 Timing device	N = rpm		1250	1700	2150
	mm		2.6—3.2	5.0—6.0	7.9—8.6
2.2 Supply pump	N = rpm	250	1250	2000	2150
	kg/cm²	1.6—2.2	4.6—5.0	6.1—6.7	6.4—7.0
Overflow delivery	N = rpm	1000			
	cc/10s	40.8—84.2			

2.3 Fuel deliveries

Speed control lever	Pump Speed (rpm)	Fuel delivery cc/1000sts	Charge-air press. (mmHg)
End stop	2800	Max. 7.0	
	2550	19.4—26.4	
	2175	34.8—40.4	
	2000	37.1—42.1	
	1250	44.9—46.9	
	1250	32.3—37.3	
	1150	44.8—49.8	
	900	40.4—42.4	
	600	31.4—36.4	
Switch-off	375	0	
Idle stop	375	9.3—13.3	0
	450	Max. 3.0	0
Partial load			

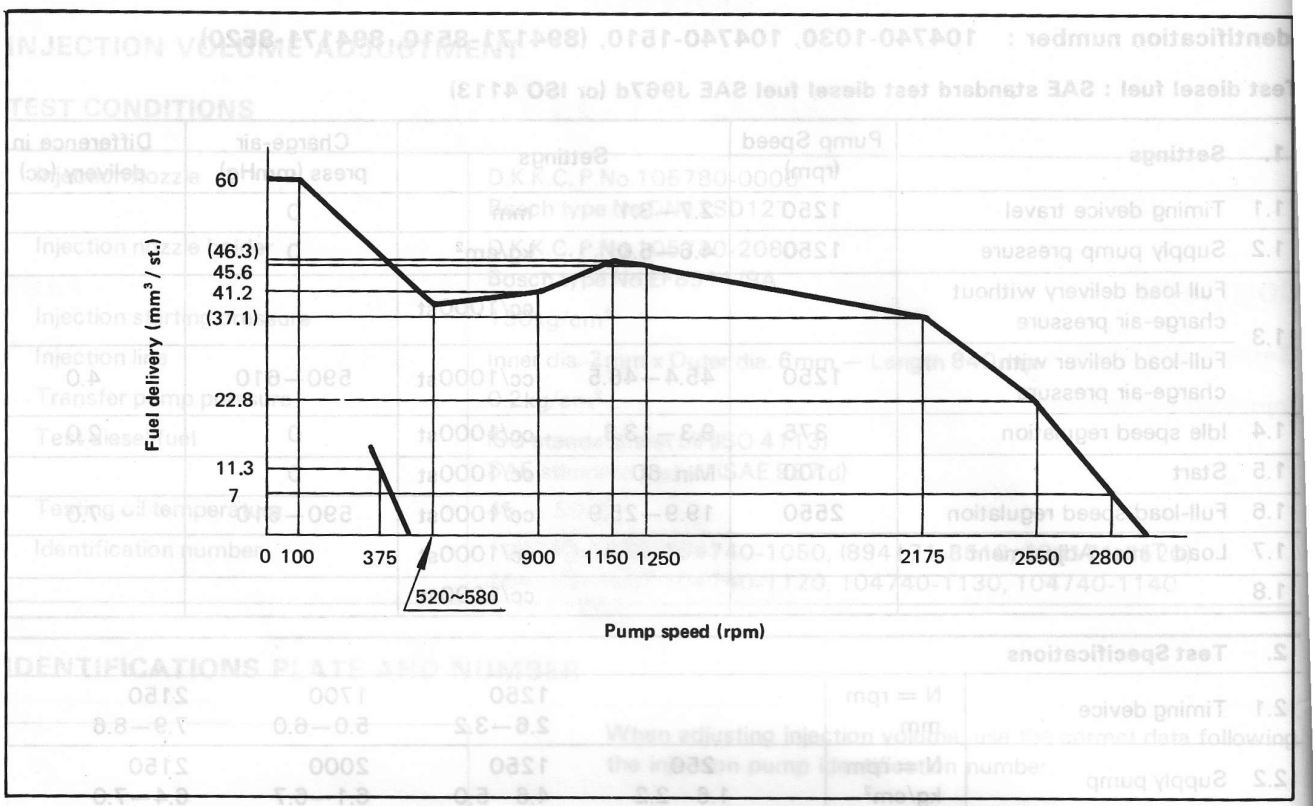
2.4 Solenoid — max. cut-in voltage : 8V; test voltage : 12V—14V

3. Dimensions

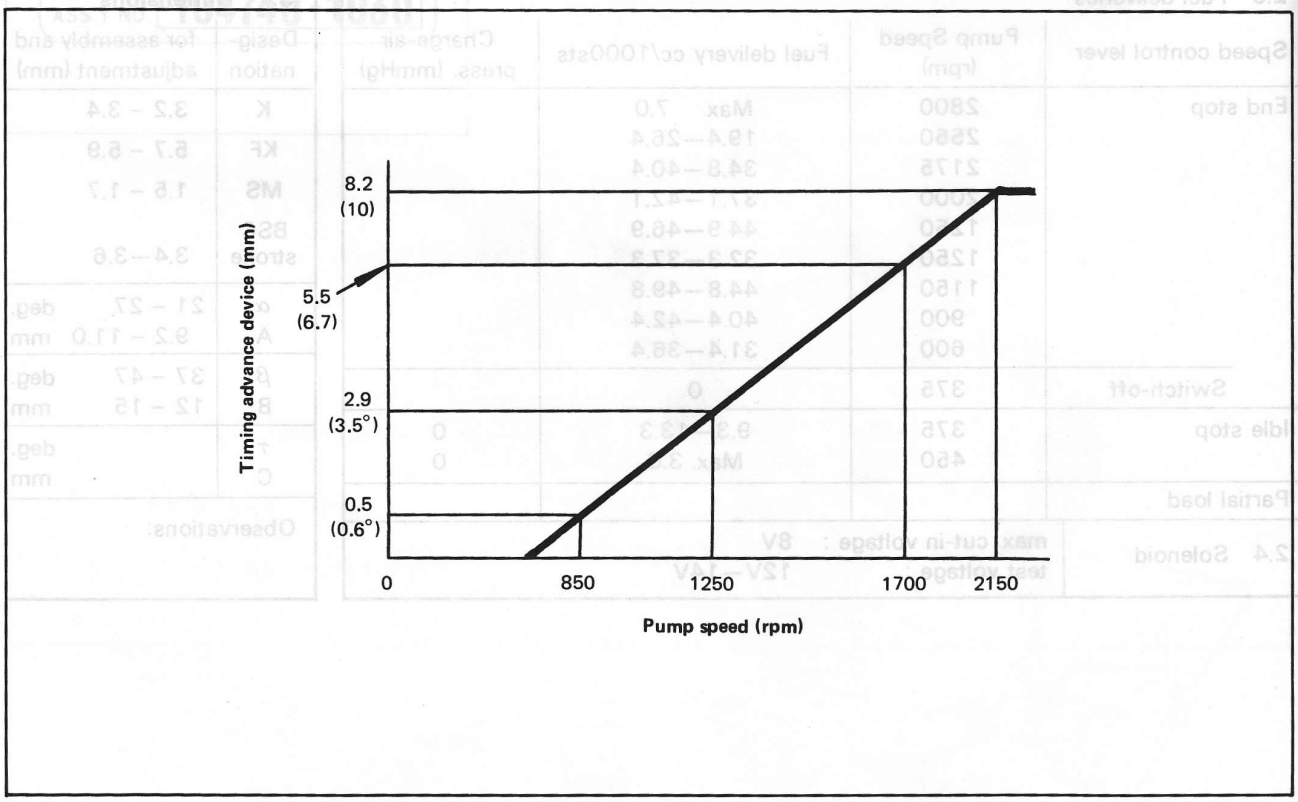
Desig-nation	for assembly and adjustment (mm)
K	3.2 – 3.4
KF	5.7 – 5.9
MS	1.5 – 1.7
BSC stroke	3.4—3.6
α	21 – 27 deg.
A	9.2 – 11.0 mm
β	37 – 47 deg.
B	12 – 15 mm
τ	deg.
C	mm

Observations:

GOVERNOR PERFORMANCE DIAGRAM



TIMING DEVICE DIAGRAM



INJECTION VOLUME AND GOVERNOR PERFORMANCE DIAGRAM

Identification number : 104740-1021, 104740-1120, 104740-1130, 104740-1140

Test diesel fuel : SAE standard test diesel fuel SAE J967d (or ISO 4113)

1. Settings		Pump Speed (rpm)	Settings		Charge-air press (mmHg)	Difference in delivery (cc)
1.1	Timing device travel	1250	3.5—3.9	mm	0	
1.2	Supply pump pressure	1250	4.6—5.0	kg/cm²	0	
1.3	Full load delivery without charge-air pressure			cc/1000st		
	Full-load deliver with charge-air pressure	1250	47.8—48.8	cc/1000st	590—610	4.0
1.4	Idle speed regulation	375	9.3—13.3	cc/1000st	0	2.0
1.5	Start	100	Min. 60	cc/1000st	0	
1.6	Full-load speed regulation	2550	19.9—25.9	cc/1000st	590—610	7.0
1.7	CSD Adjustment	500—700	Cancel speed	cc/1000st		
1.8				cc/1000st		

2. Test Specifications					
2.1	Timing device	N = rpm	1250	1700	2150
		mm	3.4—4.0	5.8—6.8	8.7—9.4
2.2	Supply pump	N = rpm	250	1250	2000
		kg/cm²	1.6—2.2	4.6—5.0	6.1—6.7
	Overflow delivery	N = rpm	1000		
		cc/10s	40.8—84.2		

2.3 Fuel deliveries

Speed control lever	Pump Speed (rpm)	Fuel delivery cc/1000sts	Charge-air press. (mmHg)
End stop	2800	Max. 7.0	
	2550	19.4—26.4	
	2175	36.7—41.7	
	2000	38.4—43.4	
	1250	47.3—49.3	
	1250	34.1—39.1	
	1150	46.5—51.5	
	900	42.7—44.7	
	600	34.1—39.1	
Switch-off	375	0	
Idle stop	375	9.3—13.3	0
	450	Max. 3.0	0
CSD Adjustment	0	2.3—2.7mm	
	500—700	Cancel speed	
Partial load			

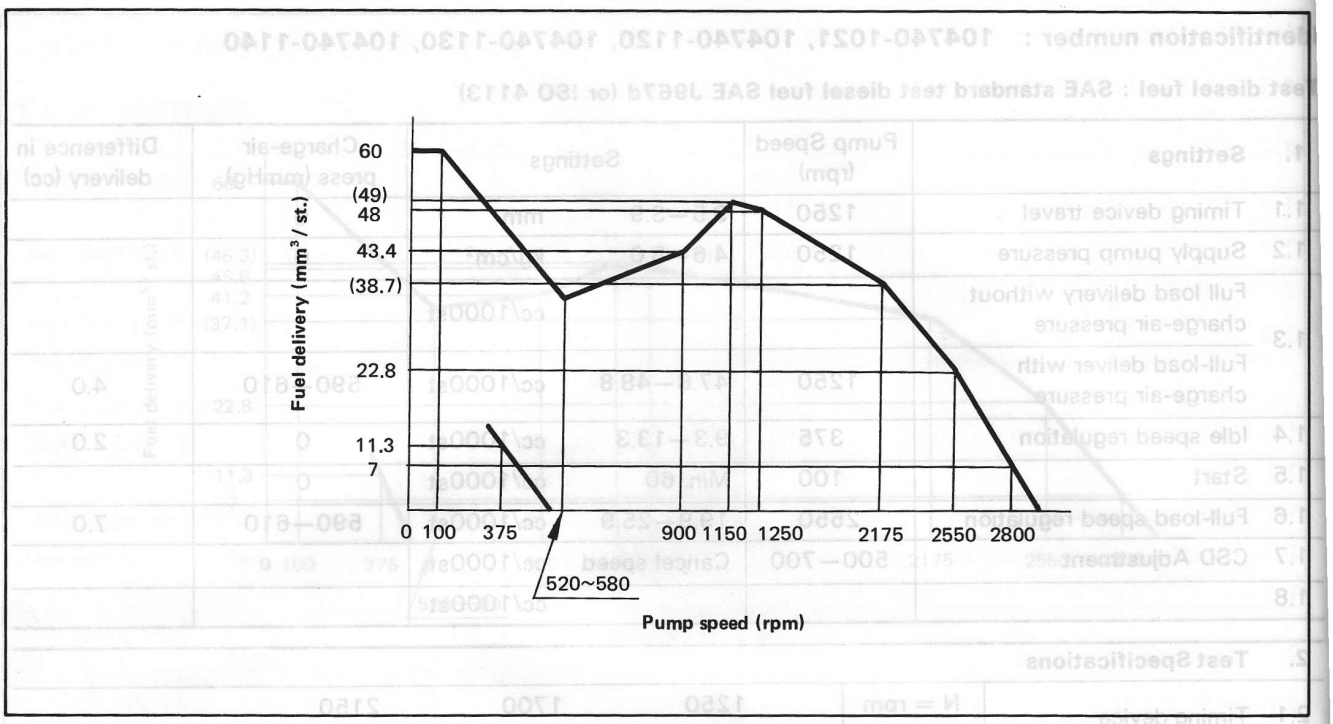
2.4 Solenoid		
	max. cut-in voltage :	8V
	test voltage :	12V—14V

Test Oil : SAE J967d or ISO 4113

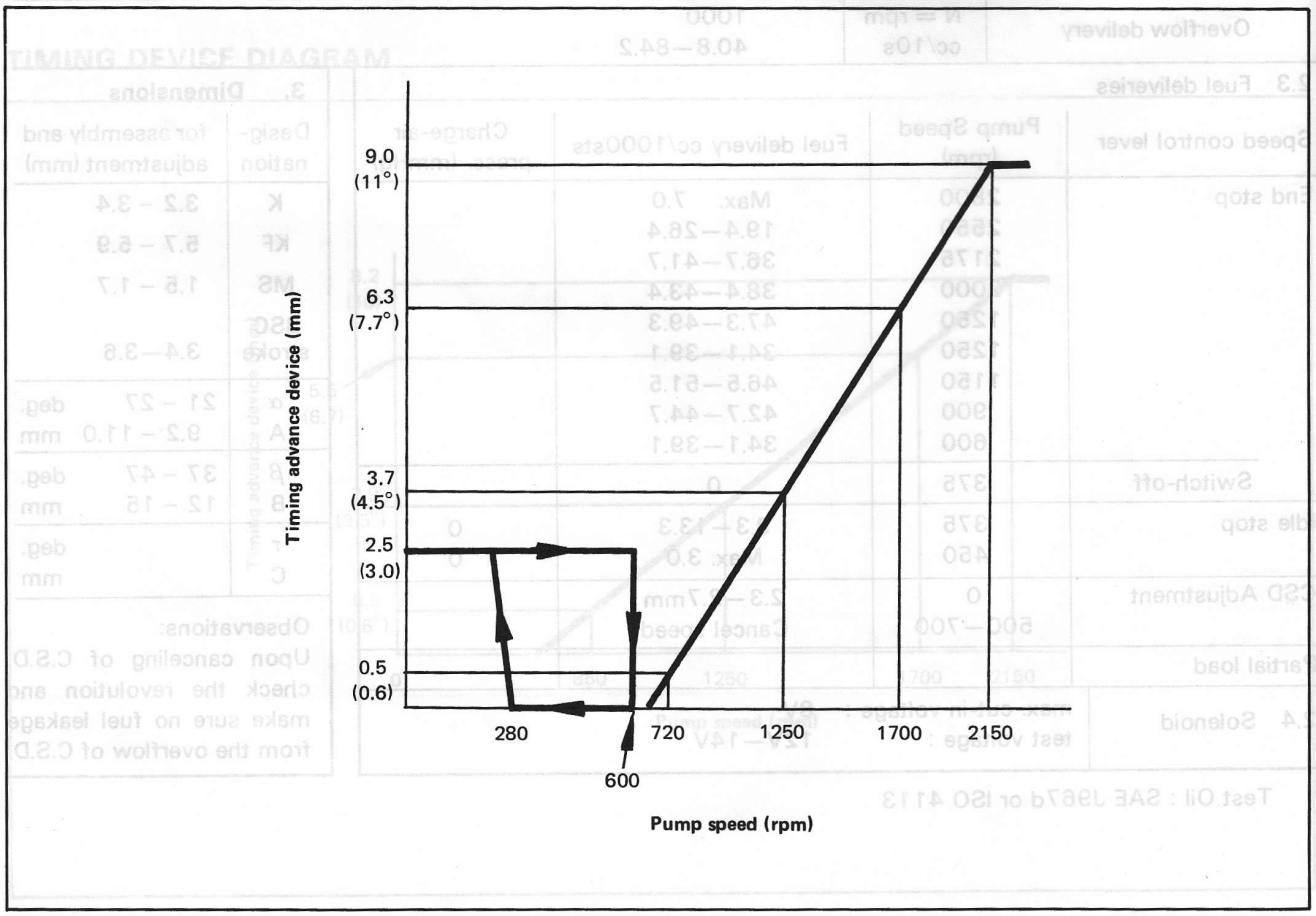
3. Dimensions		
Desig-nation	for assembly and adjustment (mm)	
K	3.2 – 3.4	
KF	5.7 – 5.9	
MS	1.5 – 1.7	
BSC stroke	3.4—3.6	
α	21 – 27	deg.
A	9.2 – 11.0	mm
β	37 – 47	deg.
B	12 – 15	mm
τ		deg.
C		mm

Observations:
Upon canceling of C.S.D. check the revolution and make sure no fuel leakage from the overflow of C.S.D.

GOVERNOR PERFORMANCE DIAGRAM



TIMING DEVICE DIAGRAM

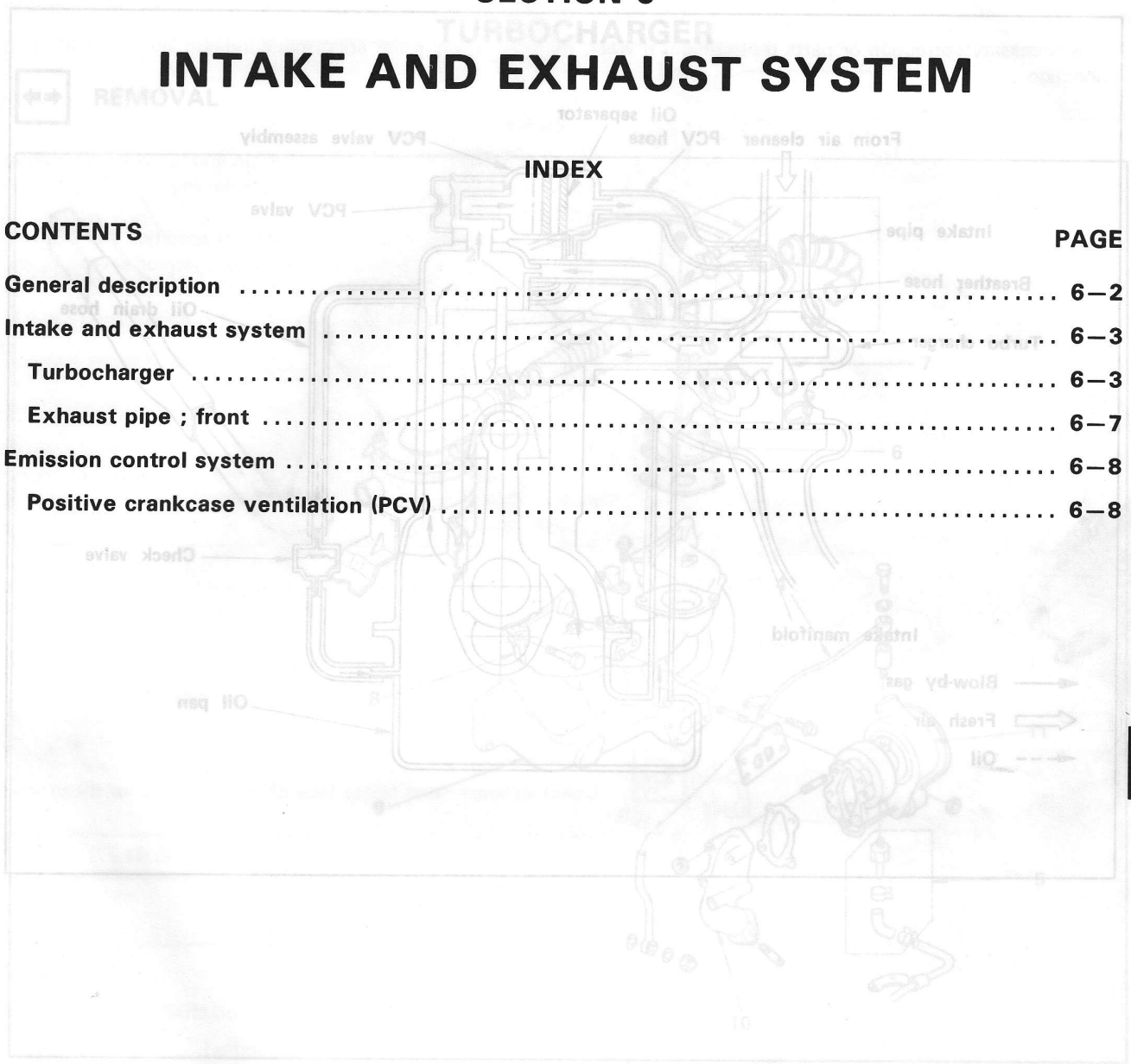


SECTION 6

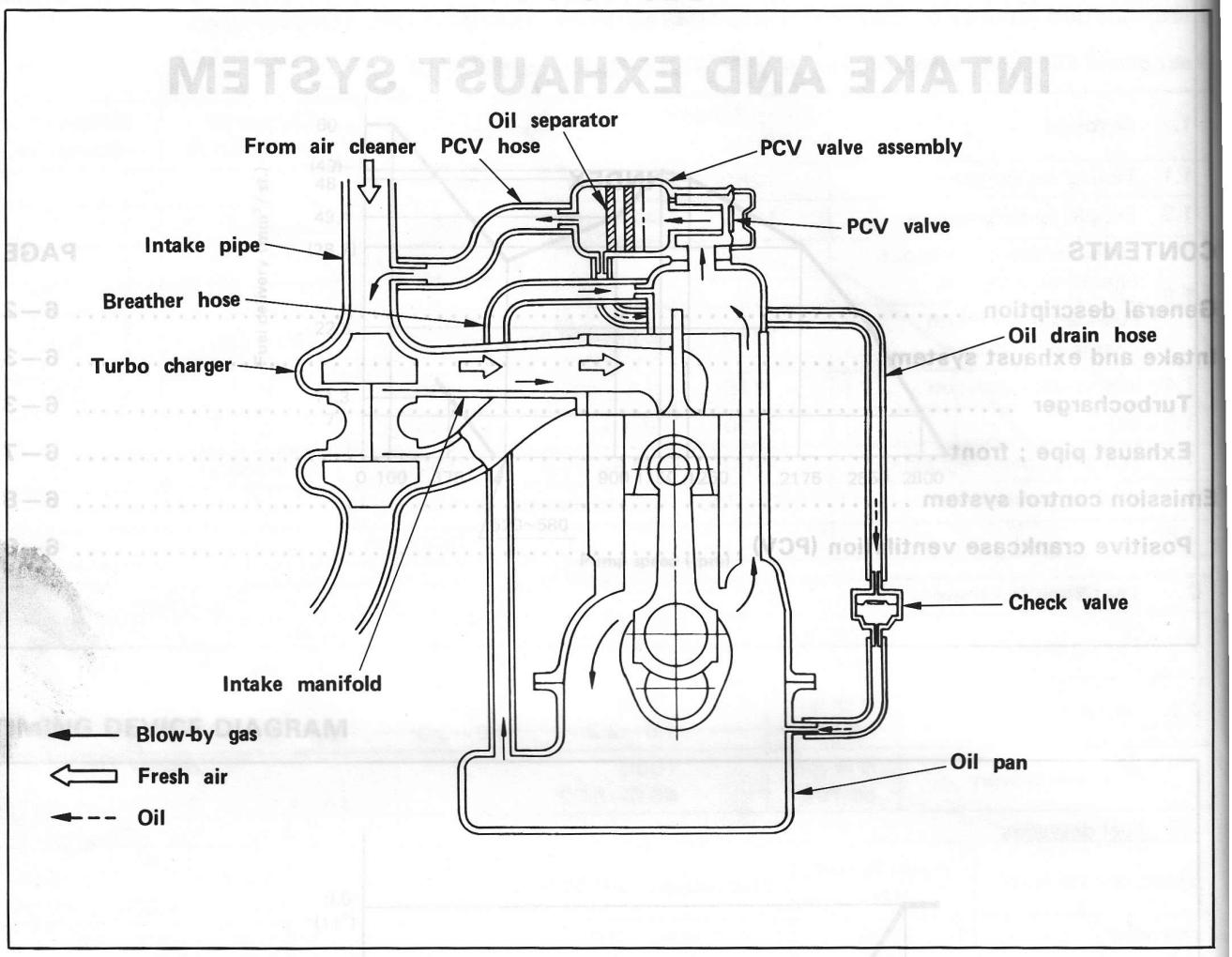
INTAKE AND EXHAUST SYSTEM

INDEX

CONTENTS



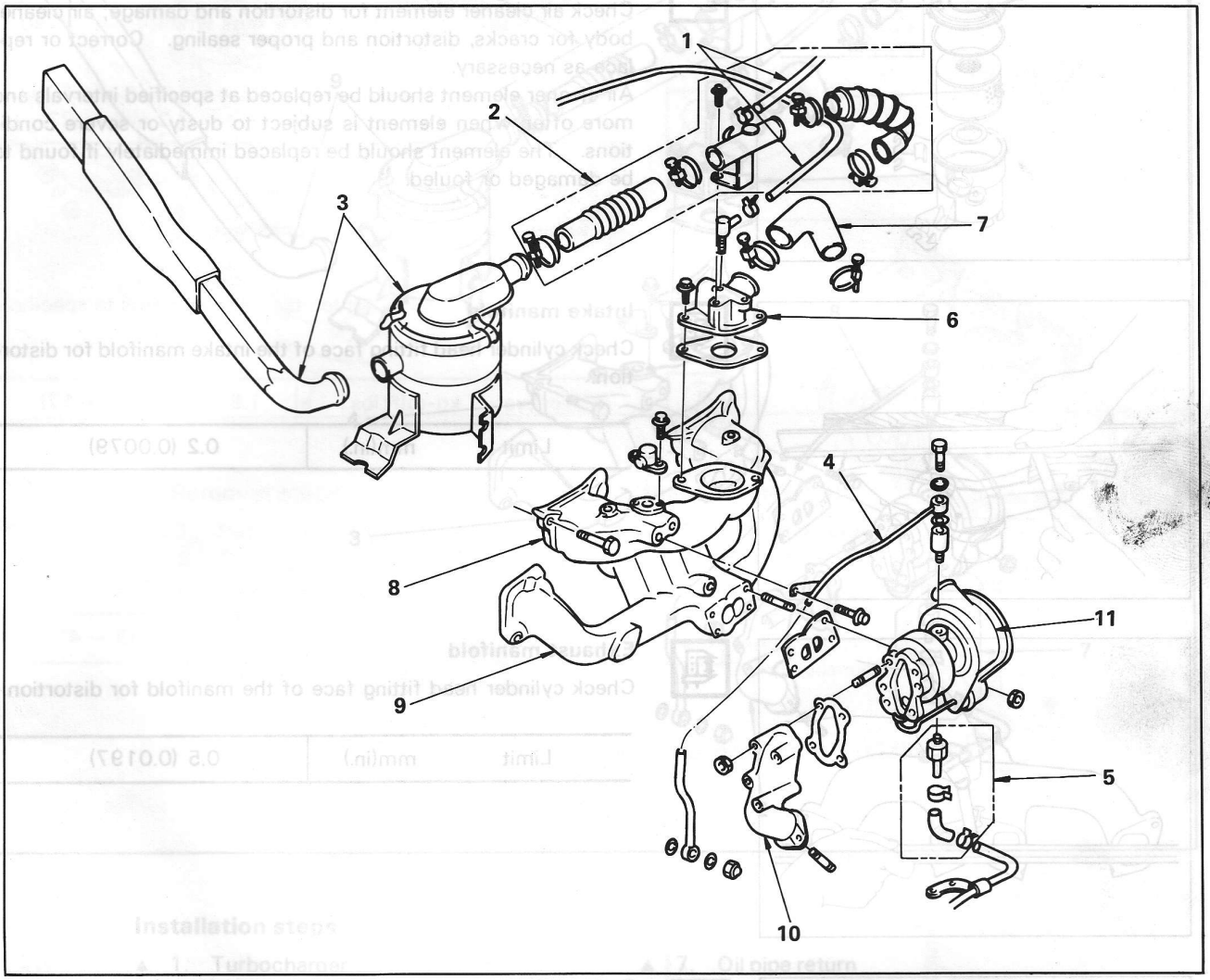
GENERAL DESCRIPTION



INTAKE AND EXHAUST SYSTEM

TURBOCHARGER

REMOVAL

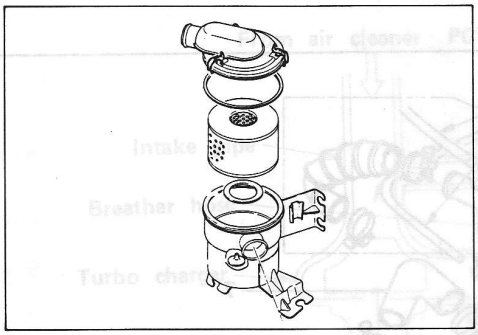


Removal steps

1. Rubber hoses
2. Connecting hose and inlet pipe asm.
3. Air cleaner and air duct
4. Oil pipe ; delivery
5. Oil pipe ; return
6. Inlet pipe
7. Connecting hose
8. Intake manifold
9. Exhaust manifold and turbocharger asm.
10. Exhaust pipe
11. Turbocharger

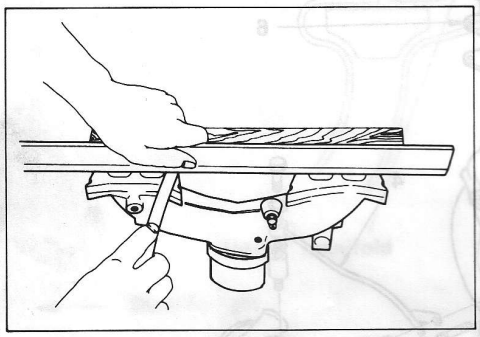
INSPECTION AND REPAIR

Make necessary correction or parts replacement if wear, damage or any other abnormal condition are found through inspection.



Air cleaner

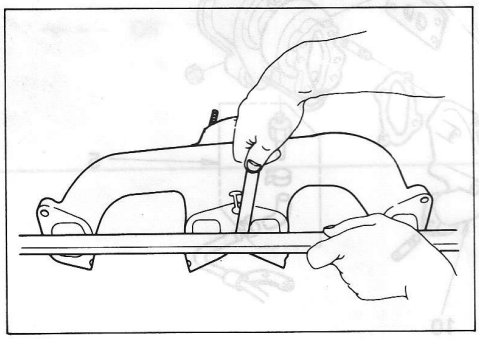
Check air cleaner element for distortion and damage; air cleaner body for cracks, distortion and proper sealing. Correct or replace as necessary.
Air cleaner element should be replaced at specified intervals and more often when element is subject to dusty or severe conditions. The element should be replaced immediately if found to be damaged or fouled.



Intake manifold

Check cylinder head fitting face of the intake manifold for distortion.

Limit	mm(in.)	0.2 (0.0079)



Exhaust manifold

Check cylinder head fitting face of the manifold for distortion.

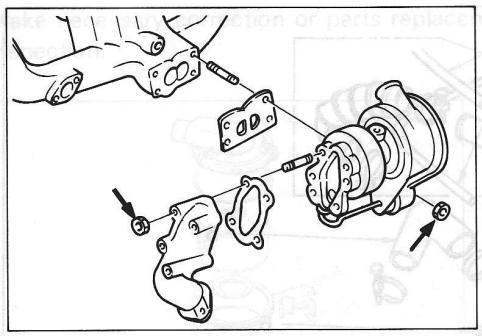
Limit	mm(in.)	0.5 (0.0197)

Check items;
- Oil leakage
- Bearing stick
- Wheel interference
- Shaft axial play
- Shaft radial play

Turbocharger

Refer to the manual of the manufacture for inspection details.

Important operation

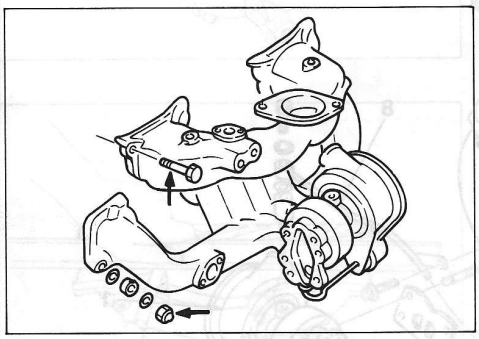


1. Turbochager

2. Exhaust pipe

Install the turbocharger to the exhaust manifold and the exhaust pipe to the turbocharger.
Discard the used nuts and use new nuts whenever removed.
Tighten the nuts to specification.

Torque kg-m(ft.lbs.)	2.2 — 3.2 (16 — 23)

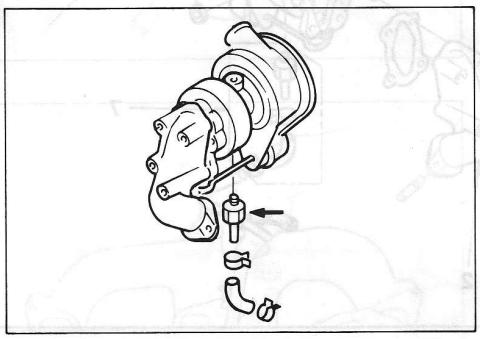


3. Exhaust manifold and turbocharger

4. Intake manifold

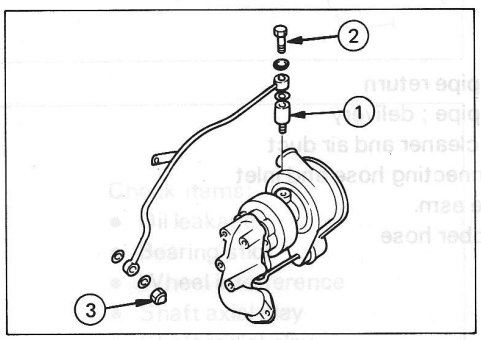
Install the manifolds and tighten the bolts and nuts to specification.

Torque kg-m(ft.lbs.)	1.8 — 2.4 (13 — 17)



7. Oil pipe ; return

Torque kg-m(ft.lbs.)	4.5 — 5.5 (33 — 40)



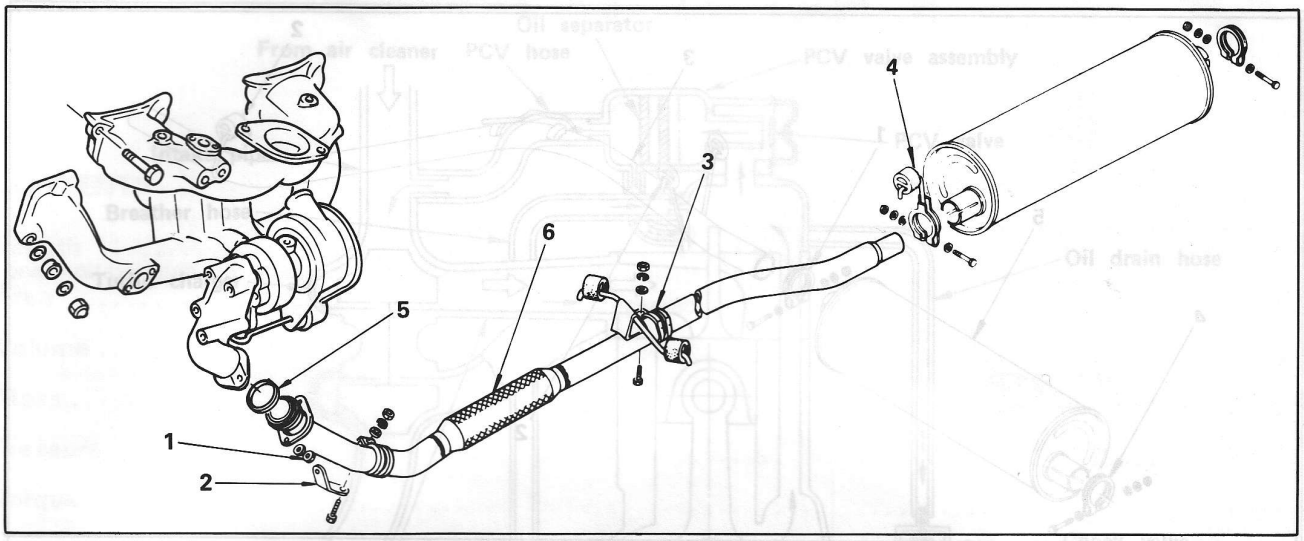
8. Oil pipe ; delivery

Torque

	kg-m(ft.lbs.)
① Adaptor	1.6 — 2.4 (12 — 17)
② Oil pipe	0.8 — 1.6 (6 — 12)
③ Cap nut	0.8 — 1.6 (6 — 12)

EXHAUST PIPE ; FRONT

REMOVAL AND INSTALLATION



Removal steps

1. Nut ; lock exhaust pipe to pipe
2. Clamp ; engine side
3. Clamp ; hanger
4. Clamp ; silencer
5. Gasket
6. Pipe assembly ; front

Installation steps

1. Pipe assembly ; front
▲ 2. Gasket
3. Nut ; lock exhaust pipe to pipe
4. Clamp ; hanger
5. Clamp ; engine side
6. Clamp ; silencer

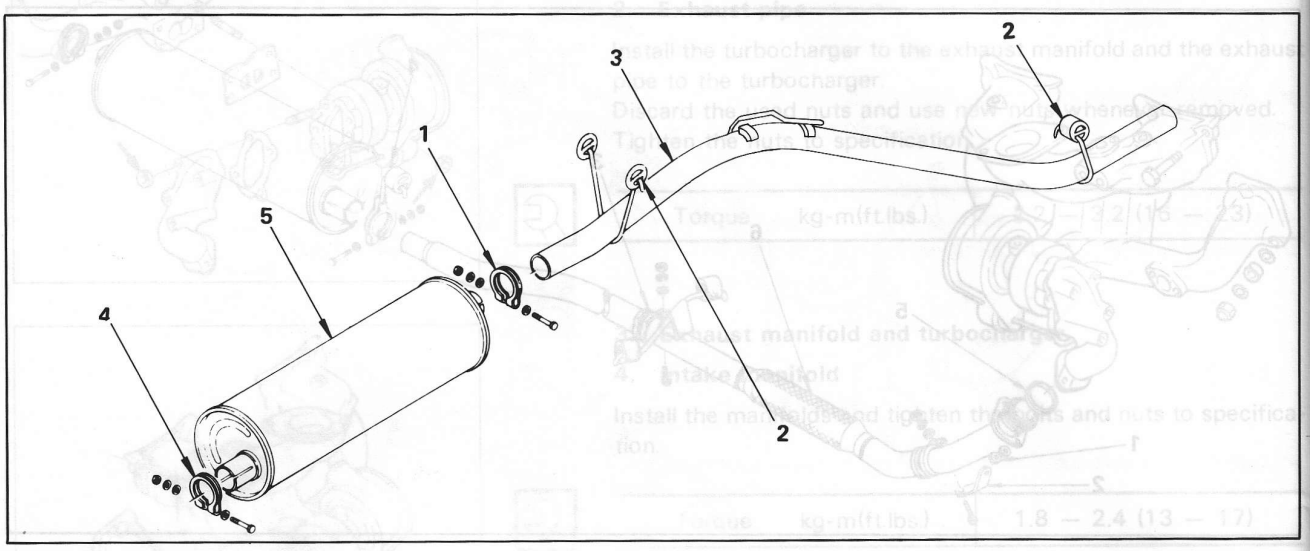
Important operation — Installation

2. Gasket

Use a new gasket when installing the exhaust pipe ; front

EXHAUST SILENSER AND PIPE ; REAR

REMOVAL AND INSTALLATION



Removal steps

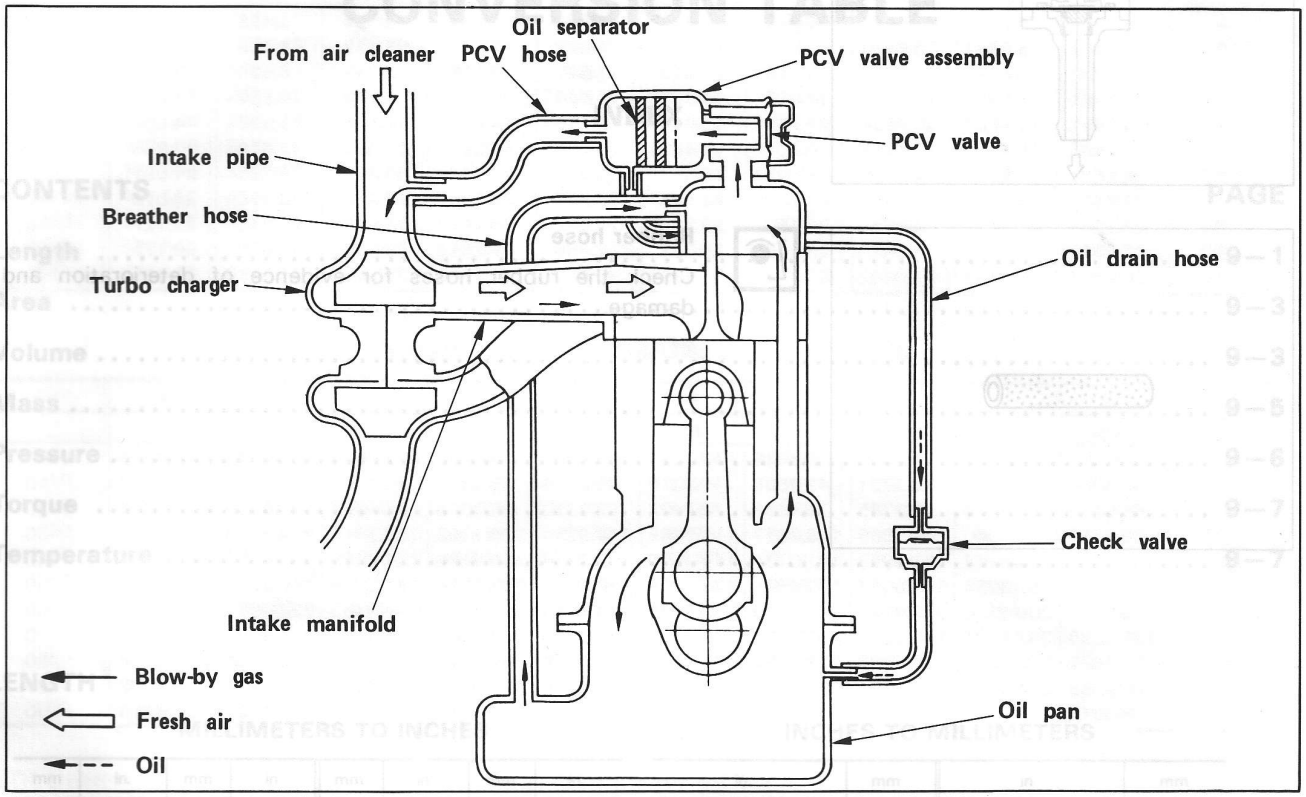
1. Clamp ; silencer ; rear
2. Hanger
3. Pipe assembly ; rear
4. Clamp ; silencer ; front
5. Silencer

Installation steps

To install, follow the removal procedures in reverse order.

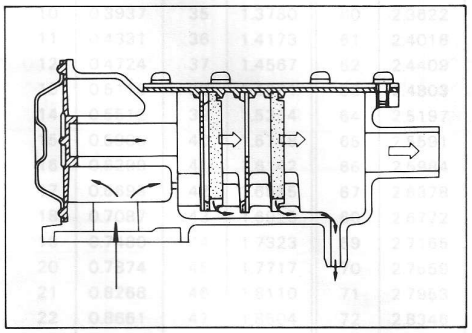
EMISSION CONTROL SYSTEM

POSITIVE CRANKCASE VENTILATION (PCV)



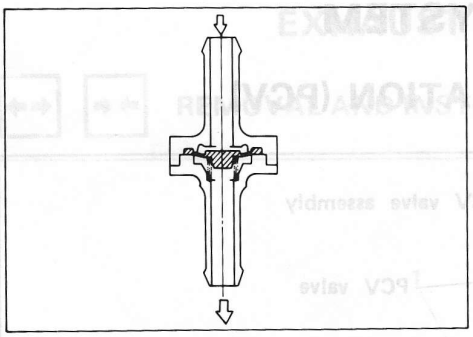
INSPECTION AND REPAIR

Make necessary correction or parts replacement if wear, damage or any other abnormal conditions are found through inspection.



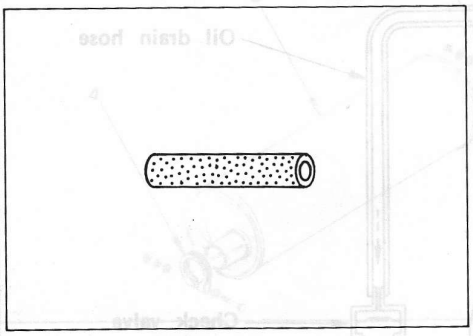
PCV valve assembly

Check the diaphragm valve for damage, and adhesion to seating surface, and the oil separator element for wear if any abnormal condition are found, replace the PCV valve assembly.



Check valve

Check the check valve function. If air flows in the wrong direction or if valve is plugged, replace the check valve.



Rubber hose

Check the rubber hoses for evidence of deterioration and damage.

C223T-WE-441

You are requested to order this manual using the manual number shown above.

This manual is applicable for vehicles in all countries except USA and Canada.

Issued by

ISUZU MOTORS LIMITED

OVERSEAS SERVICE DEPARTMENT

Tokyo, Japan

First edition Jun., 1984 44-02K-4