



MAZDA

Engine Assembly 543 Chart
C1S7G-543-AC

Revision BP

EN00 E 11290169 002 020110

Issue Date: 10 January, 2002

**ENGINE ASSEMBLY PROCEDURES AND INSTRUCTIONS
CLEARANCE LIMITS AND SPECIFICATIONS**

PART NAME/TITLE		SHEET NUMBER			
A	ABSOLUTE PRESS SENSOR AIR BYPASS VALVE AIR BYPASS VALVE & SOLENOID VALVE AUDIO GROUND STRAP	90A-C 89B / 89H 89A / 89E 87F			
B	BACKLASH MEASURING METHOD BALANCER AND SELECTED SHIM TO BLOCK BALANCER AND SHIM TO BLOCK BARCODE	25F 25H 25E 5 / 111			
C	CAM SHAFT & CAM CAP CAM COVER & GASKET ASSEMBLY CAP-BLIND PLUG CHAIN-AUX OIL PUMP/SPROCKET-AUX OIL PUMP DRV CHAIN-TIMING/GUIDE-TIMING CHAIN CHT SENSOR CONROD BEARING COLOUR CODING CONROD BEARING LINERS CONROD BEARING,CAPS & BOLTS CONROD WEIGHT TOLERANCE COOLER ASY-OIL & FASTENER COVER ASY-CYL FRONT CRANKCASE VENTILATION CRANKCASE VENTILATION COVER CYLINDER HEAD & BOLTS	44 / 44C-F 60C / 61A-E / 61J 90D 46 / 46A 48 / 48E-F 63-B 21A-B 19 22 8 94 52A-B 88A-C 64 41			
D	DIPSTICK & DIPSTICK TUBE DIS COIL DIS COIL & SENSOR-WATER TEMP DOWEL ASY-CYLINDER BLOCK	97A / 97B 73A 73B 27 / 32			
E	EGR BLANKING PLATE EGR OUTLET EGR TUBE EGR VALVE ENGINE NUMBER STAMPING POSITION ENGINE WIRE HARNESS EXCESS RTV REMOVING EXHAUST MANIFOLD	67B / 87E 87C 77 / 87B 67A / 67D / 72C 31 80C / 81C / 99 / 100C / 101C / 102C-D 51 96B			
F	FLYWHEEL ASY FILTER ASY-OIL/ADAPTER/OIL PRESSURE SWITCH FUEL PUMP ASSEMBLY FUEL PUMP COVER ASSEMBLY FUEL RAIL ASSEMBLY FUEL RAIL COVER FUEL RETURN HOSE	28 93A-B 70C 69C 78A-D / 78F 84D 79C			
G	GENERAL INFOMAITION GASKET-CYLINDER HEAD	4 / 4A 34			
H	HIGH PRESSURE FUEL PIPE HIGH PRESSURE FUEL PIPE/MARKET SERVICE HOSE ASSY E/G/R COOL OUTLET HOSE&CLAMP ASSY-WATER BYPASS HOSE-EVAP HOSES-VACUUM	82C 83C 103C-E 76A-D 108 95A-B / 95D-H			
I	IABV BLANKING PLATE AND SOLENOID VALVE IDLER ASY-ACC DR BELT IGNITION COIL INSTALLATION DUAL MASS FLYWHEEL INSTALLATION FLEXPLATE(AUTO) INTAKE & EXHAUST VALVES INTAKE MANIFOLD	89-D 52E 73C / 73E 28B / 110 28A 38 85A-D			
L	LIFTING EYE FRONT & REAR	66A-B			
RESTRICTIONS		PART NAME/TITLE INDEX			
SPECIFICATION NO. C1S7G-543-AC	REV BL	RELEASE NO. EN00E11271652 000	DATE 01-11-15	MODEL 2001 2.0L-4V NON DI CD132	SHEET CONTD. 3 3A

ENGINE ASSEMBLY PROCEDURES AND INSTRUCTIONS CLEARANCE LIMITS AND SPECIFICATIONS						
PART NAME/TITLE					SHEET NUMBER	
M	MAIN BEARING & THRUST LINERS				15A	
	MAIN BEARING CLEARANCES				17	
	MAIN BEARING COLOUR CODING				18	
	MAIN BEARING LADDER BEAM & BOLTS				23A	
	MAIN BEARING UPPER				23B	
	MAIN BEARING LOWER				23C	
O	OIL FILLER CAP				104A-B	
	OIL PAN & OIL FILL QUANTITIES				30A-D / 30E	
P	PILOT BEARING				28C / 28D	
	PIPE CONNECTOR-BYPASS				14 / 14A / 14D	
	PISTON & CONROD ASSEMBLY				10	
	PISTON AND CONROD ASY				9	
	PISTON GRADE CHART				6	
	PISTON RING				7	
	PLUG-AVDEL				36	
	PLUG-CYLINDER HEAD				35	
	PLATE END				110A	
	PLUG-OIL GALLERY				12 / 12A / 13 / 105	
	PLUG-TIMING PIN HOLE				75	
	PROCEDURE-CAMCAP BOLT				45	
	PROCEDURE-CONROD BEARING LINER				20	
	PROCEDURE-CYLINDER HEAD BOLTS				42	
	PROCEDURE-MAIN BEARING LINER				16	
	PULLEY / DAMPER-CRANKSHAFT				55	
PUMP ASY-OIL & GASKET-OIL PUMP TO BLOCK				24		
R	REPLACEMENT OF SHIM SELECTION				25G	
	REAR OIL SEAL-CRANKSHAFT				26	
	RTV SEALER-CAM COVER				60 / 60A	
	RTV SEALER-CYL HEAD GASKET				33 / 34A	
	RTV SEALER-FRONT COVER				49A / 49B / 49E	
	RTV SEALER-OIL PAN				29	
S	SCREEN AND COVER ASY-OIL PUMP				25A / 25B	
	SENSOR ECT				74C-D	
	SENSOR-CAM ANGLE				58C	
	SENSOR-CAMSHAFT POSITION				58 / 58E	
	SENSOR-CRANKSHAFT POSITION				54 / 56C	
	SENSOR-KNOCK				65A-C / 92A-E	
	SOL-ENG VAR TM				44-G / 44-H	
	SOLENOID VALVE				73D / 89F / 89G	
	SPARK PLUG				62-A	
	SPARK PLUG LEADS				98A / 98B	
	SPROCKET-CAMSHAFT				47 / 47E / 47F	
	SPROCKET-CRANKSHAFT & TIMING PLATE				57	
	STUD-ENGINE MOUNT				50	
STUDS-EXHAUST MANIFOLD				40		
SUPT-INTK MANF				84C		
T	THERMOSTAT				68	
	THROTTLE BODY				91A-C	
V	VACUUM HARNESS				109	
	VALVE ASY-ENG PISTON OIL COOL				11	
	VALVE LIFTERS				43	
	VALVE SPRINGS & RETAINERS				39	
	VALVE STEM OIL SEALS				37	
W	WATER PUMP & GASKET				59	
	WATER OUTLET CONNECTOR & GASKET				71A-C	
	WATER PUMP PULLEY				107A	
	WATER PUMP PULLEY & FAN PULLEY				107B	
	WIRING ASY				99B / 100D-H / 100J-N	
RESTRICTIONS					PART NAME/TITLE INDEX	
SPECIFICATION NO. C1S7G-543-AC	REV BL	RELEASE NO. EN00E11271652 000	DATE 01-11-15	MODEL 2001 2.0L-4V NON DI CD132	SHEET 3A	CONTD. 4

**ENGINE ASSEMBLY PROCEDURES AND INSTRUCTIONS
CLEARANCE LIMITS AND SPECIFICATIONS**

HOT TEST SPECIFICATION	ALL ENGINES TO BE HOT TESTED TO SPECIFICATION S88WF-6L084-AA
OIL LEAK TEST	THERE SHALL BE NO VISIBLE OIL LEAKS UNDER STATIC AND OPERATING CONDITIONS.
TORQUE DEFINITION	ASSEMBLY TORQUE - THE TORQUE IMPARTED BY A TOOL DURING ASSEMBLY AND MEASURED AT TOOL STALL POINT. STABILIZED TORQUE - WILL BE CHECKED AFTER HOT TEST AT THE FIRST ROTARY MOVEMENT OF THE FASTENER IN THE DIRECTION TO INCREASE ITS CLAMPING LOAD.
TORQUE CHECK	THE SPECIFIED STABILIZED TORQUE MUST BE ACHIEVED AT THE BUY-OFF STAGE AND MAINTAINED WITHIN THE RANGE SPECIFIED ON ENGINE TEARDOWN
QUALITY CONTROL	A PERCENTAGE OF ENGINE MUST BE CHECKED AFTER HOT TEST FOR LEAKAGE AND ASSEMBLY TORQUE.
TORQUE TO TURN CRANKSHAFT	AT-6011-(CYLINDER ASSEMBLY) STAGE OF ASSEMBLY, TORQUE MUST NOT EXCEED TBE...Nm. REF ONLY. AT-6011-(CYLINDER ASSEMBLY) STAGE OF ASSEMBLY, BUT WITH CYLINDER HEAD FITTED LESS SPARK PLUGS AND CYLINDER HEAD BOLTS TIGHTENED TO SPECIFICATION, TORQUE TO ROTATE CRANKSHAFT MUST NOT EXCEED TBE...Nm. REF ONLY CRANKSHAFT TO BE ROTATED AT LEAST ONE COMPLETE REVOLUTION TO OBTAIN MAXIMUM READING.
RE-USE OF FASTENERS	FASTENERS WHICH CAN BE RE-USED MUST BE BROUGHT BACK TO ORIGINAL FINISH SPECIFICATION BEFORE RE-ASSEMBLY OR REPLACED BY UNUSED FASTENERS. i.e. LUBRICATED FINISHES MUST BE RE-LUBRICATED AND DRY FINISHES DEGREASED. FASTENERS WHICH HAVE STABILIZED AT A HIGHER TORQUE THAN THE MAXIMUM SPECIFIED MUST BE REPLACED, ASSOCIATED COMPONENTS MUST BE CHECKED FOR POSSIBLE DAMAGE AND IF NECESSARY BE REPAIRED OR REPLACED BEFORE RE-ASSEMBLY. BOLTS WHICH WERE PREPARED AND USED FOR THE CHECK OF ELONGATION, (CENTERING MARKS ON TOP AND BOTTOM SIDE) CAN BE REUSED, IF RE-USAGE OF THE BOLT IS GENERALLY PERMITTED.
FOREIGN MATTER SPECIFICATION	FOR THE ACCEPTABLE MAXIMUM AMOUNT OF FOREIGN MATTER REFER TO ENGINEERING SPECIFICATION S72HM-6B616-AA.
FACTORY FILL OIL SPEC	WSS-M2C914-A
HYPOID OIL SPEC	SQ-M2C9003-AA
(REF) Dimension	MANUFACTURING DEPT. SHALL DETERMINE INSPECTION PERIOD AFTER CHECKING PROCESS CAPABILITY.

RESTRICTI				PART NAME/TITLE GENERAL INFORMATION			
SPECIFICATION NO. C1S7G-543-AC	REV H	RELEASE NO. EN00E11007392000	DATE 99-09-06	MODEL 2001 2.0L-4V NON DI CD132	SHEET 4	CONTD. 4-A	

**ENGINE ASSEMBLY PROCEDURES AND INSTRUCTIONS
CLEARANCE LIMITS AND SPECIFICATIONS**

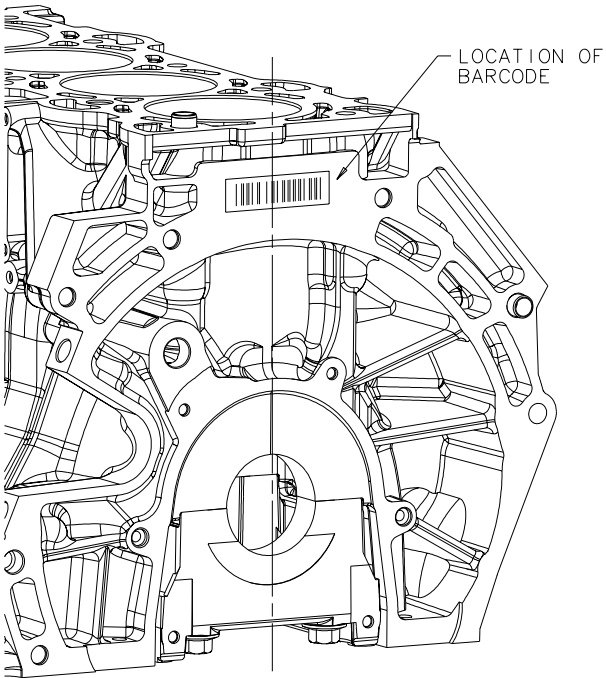
ELECTRICAL CONNECTION ALL ELECTRICAL CONNECTIONS MUST BE POSITIVELY SECURED,
[TO ENSURE GOOD CONTACT] BEFORE ENGINE SHIPMENT.

Characteristic ▽ Critical Characteristics (CC) rank is defined in Ford FAO Product Engineering Procedure FAP03-111.
 ▽A : A rank is defined in the Mazda Engineering Standards in MES-K01-002
 ▽AR : AR rank is defined in the Mazda Engineering Standards in MES-K01-002
 To meet to one of them in the case of ▽ ▽A parallel marking.

Assistant material If another material, which is not shown in each sheet, is used, negotiation with Mazda design engineering and approval from them is required.

RESTRICTIONS				PART NAME/TITLE GENERAL INFORMATION		
SPECIFICATION NO. C1S7G-543-AC	REV X	RELEASE NO. EN00E11099311000	DATE 00-10-13	MODEL 2001 2.0L-4V NON DI CD132	SHEET 4-A	CONTD. 5

ENGINE ASSEMBLY PROCEDURES AND INSTRUCTIONS
CLEARANCE LIMITS AND SPECIFICATIONS



RESTRICTIONS

PART NAME/TITLE
BARCODE

SPECIFICATION NO.	REV	RELEASE NO.	DATE	MODEL	SHEET	CONTD.
C1S7G-543-AC	AA	EN00 E 11087761 000	00-11-17	2001 2.0L-4V NON DI CD132	5	6

ENGINE ASSEMBLY PROCEDURES AND INSTRUCTIONS CLEARANCE LIMITS AND SPECIFICATIONS

INFORMATION

UNIT : mm

	MARK	CYLINDER BORE DIA.	BARE PISTON STANDARD DIA.	CLEARANCE
2.0L / 2.3L	1	$\phi 87.5$ +0.01 MAX. 0 MIN	$\phi 87.465$ +0.01 MAX. 0 MIN	0.025 ~ 0.045
	2	$\phi 87.5$ +0.02 MAX. +0.01 MORE THAN	$\phi 87.475$ +0.01 MAX. 0 MORE THAN	0.025 ~ 0.045
	3	$\phi 87.5$ +0.03 MAX. +0.02 MORE THAN	$\phi 87.485$ +0.01 MAX. 0 MORE THAN	0.025 ~ 0.045

1.8L	1	$\phi 83$ +0.01 MAX. 0 MIN	$\phi 82.965$ +0.01 MAX. 0 MIN	0.025 ~ 0.045
	2	$\phi 83$ +0.02 MAX. +0.01 MORE THAN	$\phi 82.975$ +0.01 MAX. 0 MIN	0.025 ~ 0.045
	3	$\phi 83$ +0.03 MAX. +0.02 MORE THAN	$\phi 82.985$ +0.01 MAX. 0 MIN	0.025 ~ 0.045

PISTON ADD SKIRT COATING

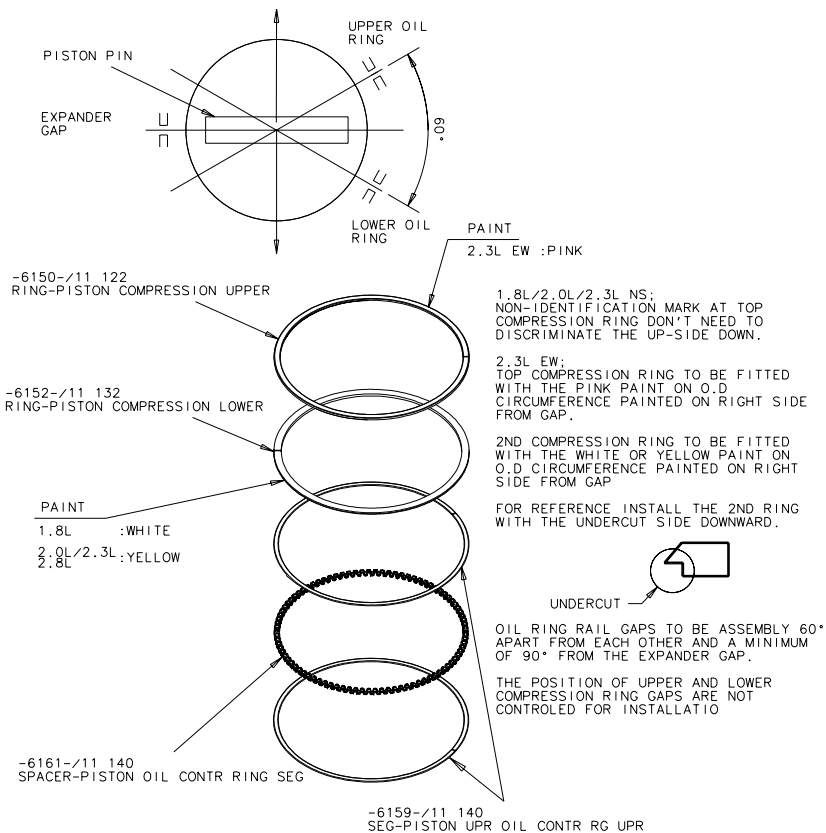
(THICKNESS 0.008 - 0.016 1.8L/2.0L/2.3L EW)
 0.008 - 0.020 2.3L NS

RESTRICTIONS				PART NAME/TITLE PISTON GRADE CHART			
SPECIFICATION NO.	REV	RELEASE NO.	DATE	MODEL	SHEET	CONTD.	
C1S7G-543-AC	BA	EN00 E 11255548 001	01-10-17	2001 2.0L-4V NON DI CD132	6	7	

ENGINE ASSEMBLY PROCEDURES AND INSTRUCTIONS CLEARANCE LIMITS AND SPECIFICATIONS

INFORMATION

NOTE: PISTON ARE RECEIVED WITH PISTON RINGS PRE-ASSEMBLED.



RESTRICTIONS					PART NAME/TITLE			
					PISTON RING			
SPECIFICATION NO.	REV	RELEASE NO.	DATE	MODEL	SHEET	CONTD.		
C1S7G-543-AC	BA	EN00 E 11255548 001	01-10-17	2001 2.0L-4V NON DI CD132	7	8		

ENGINE ASSEMBLY PROCEDURES AND INSTRUCTIONS
CLEARANCE LIMITS AND SPECIFICATIONS

	WEIGHT TOLERANCE OF ONE SET
SMALL END	2.0g MAX
BIG END	1.5g MAX

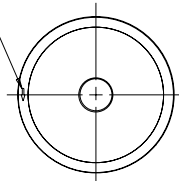
CONNECTING RODS TO BE FITTED TO PISTONS IN SETS OF ONE WEIGHT GRADE.

RESTRICTIONS				PART NAME/TITLE CONROD WEIGHT TOLERANCE				
SPECIFICATION NO.	REV	RELEASE NO.	DATE	MODEL	SHEET	CONTD.		
C1S7G-543-AC	BA	EN00 E 11255548 001	01-10-17	2001 2.0L-4V NON DI CD132	8	9		

ENGINE ASSEMBLY PROCEDURES AND INSTRUCTIONS CLEARANCE LIMITS AND SPECIFICATIONS

SKETCH SHOWS ONLY ORIENTATION
OF ASSEMBLED PARTS.

PISTON TO BE ASSEMBLED
WITH ARROW POINTING TO
FRONT OF ENGINE.

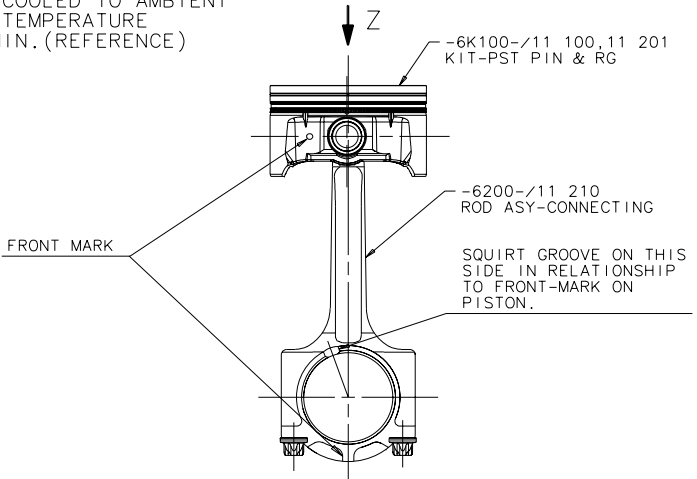
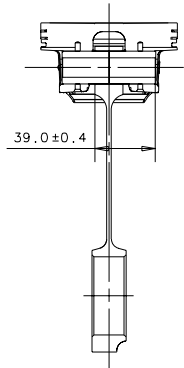


DETAIL Z

HEAT PISTON PIN END OF
CONROD TO 250-300°C MAX
IMMEDIATELY THEREAFTER
ASSEMBLE PIN TO ROD AND
PISTON AS SHOWN.

LOAD TO MOVE PIN AFTER
ASY HAS COOLED TO AMBIENT
(PLANT) TEMPERATURE
3600 N MIN. (REFERENCE)

← FRONT

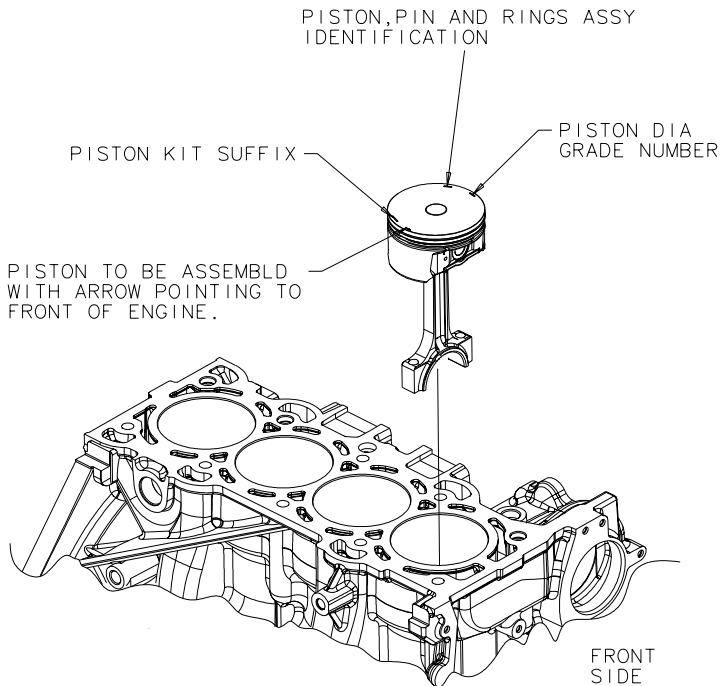


RESTRICTIONS

PART NAME/TITLE
PISTON AND CONROD ASY

SPECIFICATION NO.	REV	RELEASE NO.	DATE	MODEL	SHEET	CONTD.
C1S7G-543-AC	R	EN00 E 11069681 001	00-04-20	2001 2.0L-4V NON DI CD132	9	10

ENGINE ASSEMBLY PROCEDURES AND INSTRUCTIONS CLEARANCE LIMITS AND SPECIFICATIONS



CYLINDER BORE TO BE
LUBRICATED USING
FACTORY FILL ENGINE
OIL PRIOR TO ASSEMBLING
PISTON TO CYLINDER.

RESTRICTIONS

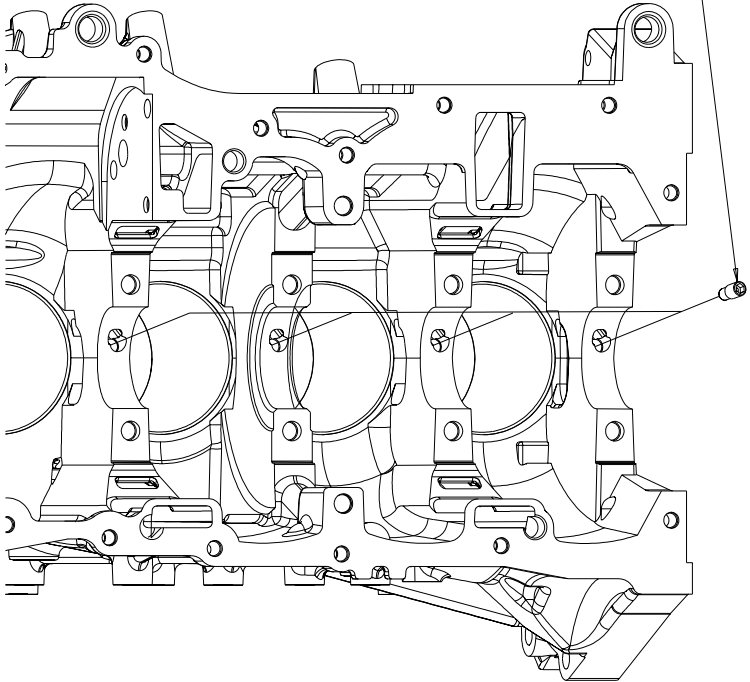
PART NAME/TITLE

PISTON & CONROD ASSEMBLY

SPECIFICATION NO.	REV	RELEASE NO.	DATE	MODEL	SHEET	CONTD.
C1S7G-543-AC	BA	EN00 E 11255548 001	01-10-17	2001 2.0L-4V NON DI CD132	10	11

ENGINE ASSEMBLY PROCEDURES AND INSTRUCTIONS
CLEARANCE LIMITS AND SPECIFICATIONS

-6K868- / 10 590
VALVE ASY-ENG PISTON OIL COOL
TORQUE 3.95±0.95 N·m
4 PLACES



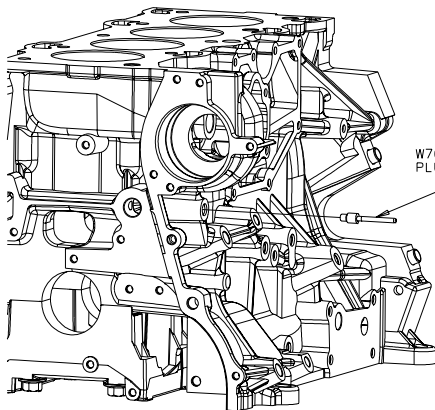
RESTRICTIONS

PART NAME/TITLE

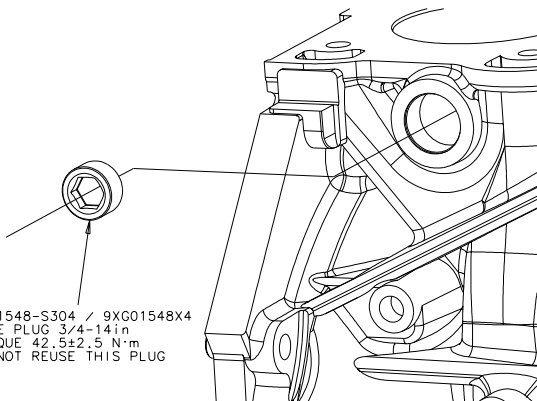
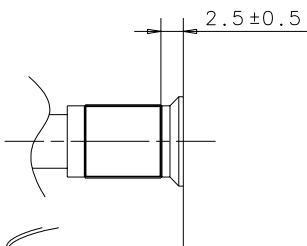
VALVE ASY-ENG PISTON OIL COOL

SPECIFICATION NO.	REV	RELEASE NO.	DATE	MODEL	SHEET	CONTD.
C1S7G-543-AC	H	EN00 E 11007392 000	99-09-06	2001 2.0L-4V NON DI CD132	11	11-D

ENGINE ASSEMBLY PROCEDURES AND INSTRUCTIONS CLEARANCE LIMITS AND SPECIFICATIONS



W702287-S300 / 9XG02287X0
PLUG AVDEL



W701548-S304 / 9XG01548X4
PIPE PLUG 3/4-14in
TORQUE 42.5±2.5 N·m
DO NOT REUSE THIS PLUG

RESTRICTIONS

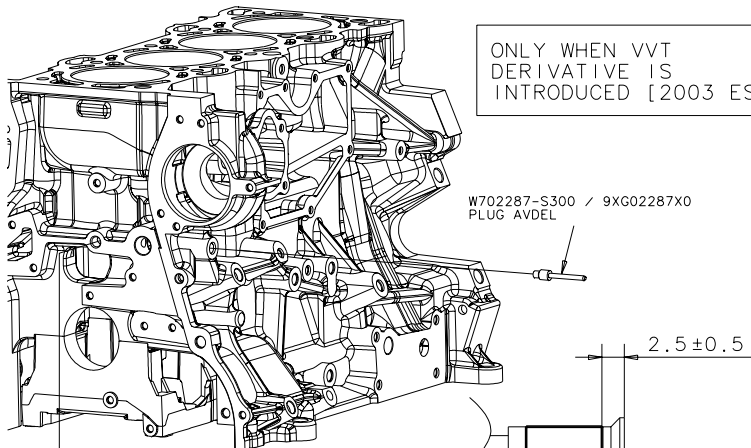
PART NAME/TITLE

PLUG-OIL GALLERY

SPECIFICATION NO.	REV	RELEASE NO.	DATE	MODEL	SHEET	CONTD.
C1S7G-543-AC	BD	EN00 E 11271059 000	01-11-02	2001 2.0L-4V NON DI CD132	12	12-A

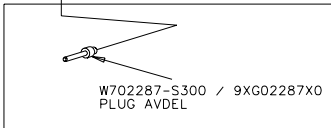
ENGINE ASSEMBLY PROCEDURES AND INSTRUCTIONS
CLEARANCE LIMITS AND SPECIFICATIONS

ONLY WHEN VVT
DERIVATIVE IS
INTRODUCED [2003 EST]



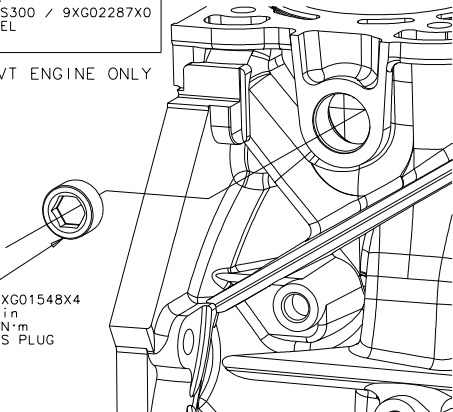
W702287-S300 / 9XG02287X0
PLUG AVDEL

2.5 ± 0.5



W702287-S300 / 9XG02287X0
PLUG AVDEL

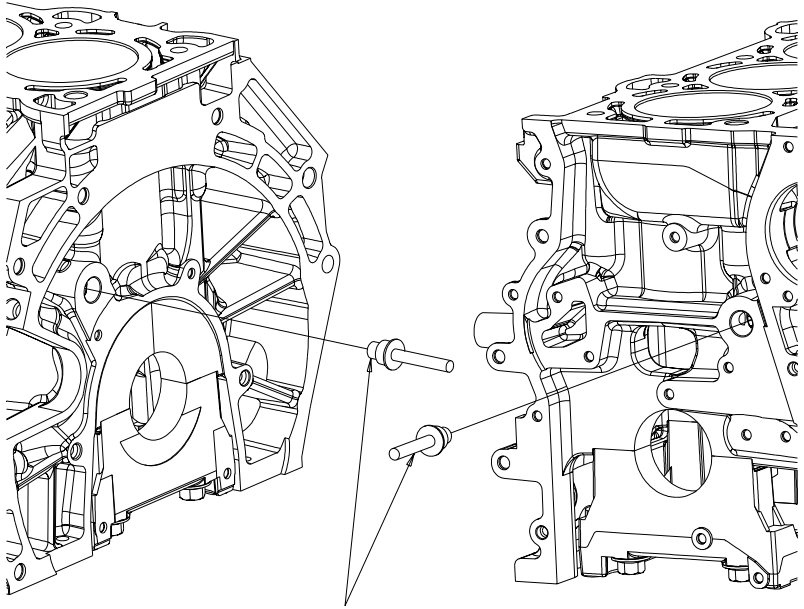
NOTE: FOR NON VVT ENGINE ONLY



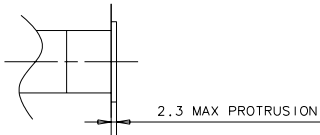
W701548-S304 / 9XG01548X4
PIPE PLUG 3/4-14in
TORQUE 42.5 ± 2.5 N·m
DO NOT REUSE THIS PLUG

RESTRICTIONS				PART NAME/TITLE			
				PLUG-OIL GALLERY			
SPECIFICATION NO.	REV	RELEASE NO.	DATE	MODEL	SHEET	CONTD.	
C1S7G-543-AC	BD	EN00 E 11271059 000	01-11-02	2001 2.0L-4V NON DI CD132	12-A	13	

ENGINE ASSEMBLY PROCEDURES AND INSTRUCTIONS
CLEARANCE LIMITS AND SPECIFICATIONS



W704456-S1300 / 9XG04456X0
PLUG AVDEL
2 PLACES



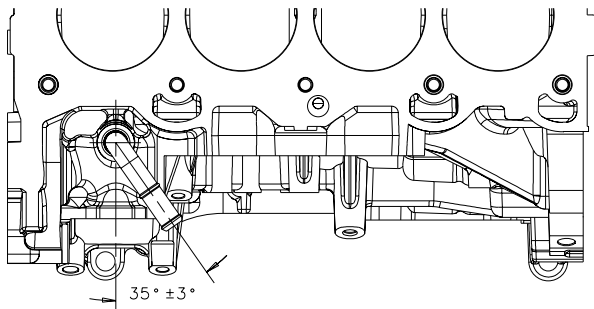
RESTRICTIONS

PART NAME/TITLE

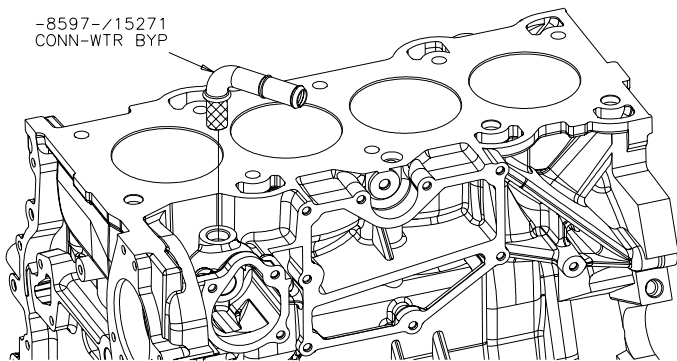
PLUGS-OIL GALLERY

SPECIFICATION NO.	REV	RELEASE NO.	DATE	MODEL	SHEET	CONTD.
C1S7G-543-AC	AS	EN00 E 11200123 000	01-07-02	2001 2.0L-4V NON DI CD132	13	14

ENGINE ASSEMBLY PROCEDURES AND INSTRUCTIONS CLEARANCE LIMITS AND SPECIFICATIONS



-8597-/15271
CONN-WTR BYP

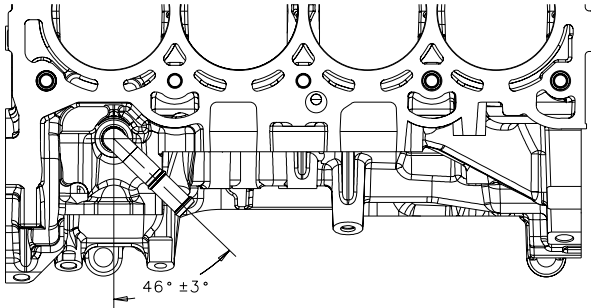


NOTES

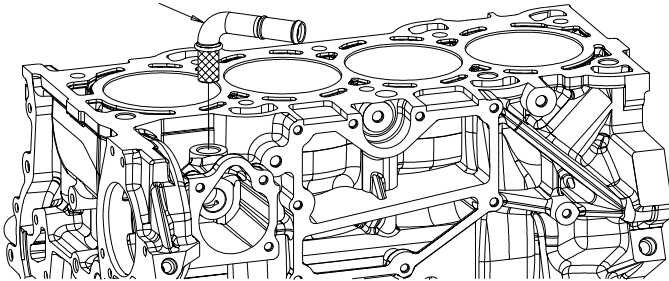
1. PRESS IN PIPE TO BLOCK FULLY UNTIL IT MEETS THE PIPE COLLAR.
2. USE THE COLLAR TO PRESS IN THE PIPE. NOT THE PIPE ITSELF.
3. SEALANT [WSK-M2G349-A7 (LOCTITE 243) OR WSS-M2G349-A13 (LOCTITE 962T) OR *THREE BOND 1386D*] TO BE APPLIED TO THE PIPE IN THE AREA HATCHD.
4. PARTS THAT HAVE BEEN DAMAGED OR HAVE SCRATCHES ON SEALING AREAS MUST NO BE ASSEMBLED.
- ~~5. (REF) BREAKAWAY TORQUE AFTER ASSEMBLY SHOULD BE GREATER THAN 2 N·m AT ROOM TEMPERATURE.~~

RESTRICTIONS					PART NAME/TITLE		
					PIPE CONNECTOR-BYPASS		
SPECIFICATION NO.	REV	RELEASE NO.	DATE	MODEL	SHEET		
C1S7G-543-AC	AY	EN00 E 11255546 001	01-09-29	2001 2.0L-4V NON DI CD132	14	14-A	

ENGINE ASSEMBLY PROCEDURES AND INSTRUCTIONS CLEARANCE LIMITS AND SPECIFICATIONS



-8597-/15271
CONN-WTR BYP



NOTES

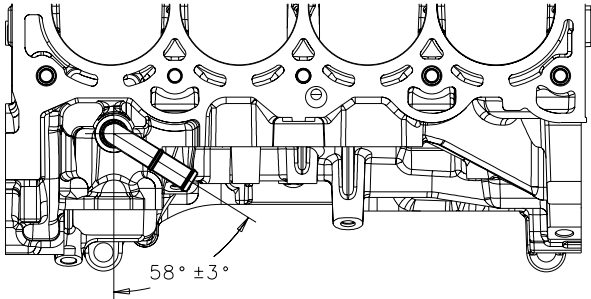
1. PRESS IN PIPE TO BLOCK FULLY UNTIL IT MEETS THE PIPE COLLAR.
2. USE THE COLLAR TO PRESS IN THE PIPE. NOT THE PIPE ITSELF.
3. SEALANT [WSK-M2G349-A7 (LOCTITE 243) OR WSS-M2G349-A13 (LOCTITE 962T) OR *THREE BOND 1386D*] TO BE APPLIED TO THE PIPE IN THE AREA HATCHD.
4. PARTS THAT HAVE BEEN DAMAGED OR HAVE SCRATCHES ON SEALING AREAS MUST NO BE ASSEMBLED.
- ~~5. (REF) BREAKAWAY TORQUE AFTER ASSEMBLY SHOULD BE GREATER THAN 2 N·m AT ROOM TEMPERATURE.~~

RESTRICTIONS

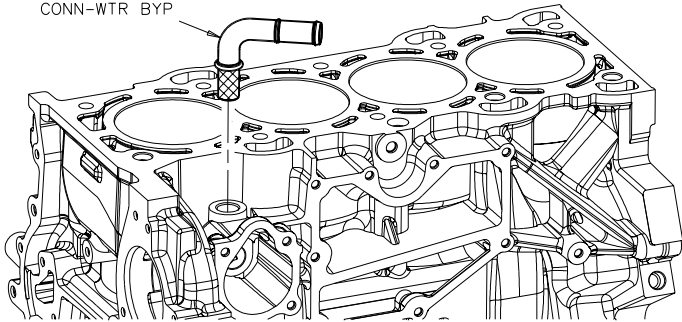
PART NAME/TITLE PIPE CONNECTOR-BYPASS

SPECIFICATION NO.	REV	RELEASE NO.	DATE	MODEL	SHEET	
C1S7G-543-AC	AY	EN00 E 11255546 001	01-09-29	2003 1.8/2.0L C1, 2004 RANGER	14-A	14-D

ENGINE ASSEMBLY PROCEDURES AND INSTRUCTIONS
CLEARANCE LIMITS AND SPECIFICATIONS



-8597-15271
CONN-WTR BYP



NOTES

1. PRESS IN PIPE TO BLOCK FULLY UNTIL IT MEETS THE PIPE COLLAR.
2. USE THE COLLAR TO PRESS IN THE PIPE. NOT THE PIPE ITSELF.
3. SEALANT [WSK-M2G349-A7 (LOCTITE 243) OR WSS-M2G349-A13 (LOCTITE 962T) OR *THREE BOND 1386D*] TO BE APPLIED TO THE PIPE IN THE AREA HATCHD.
4. PARTS THAT HAVE BEEN DAMAGED OR HAVE SCRATCHES ON SEALING AREAS MUST NO BE ASSEMBLED.
- ~~5. (REF) BREAKAWAY TORQUE AFTER ASSEMBLY SHOULD BE GREATER THAN 2 N·m AT ROOM TEMPERATURE.~~

RESTRICTIONS

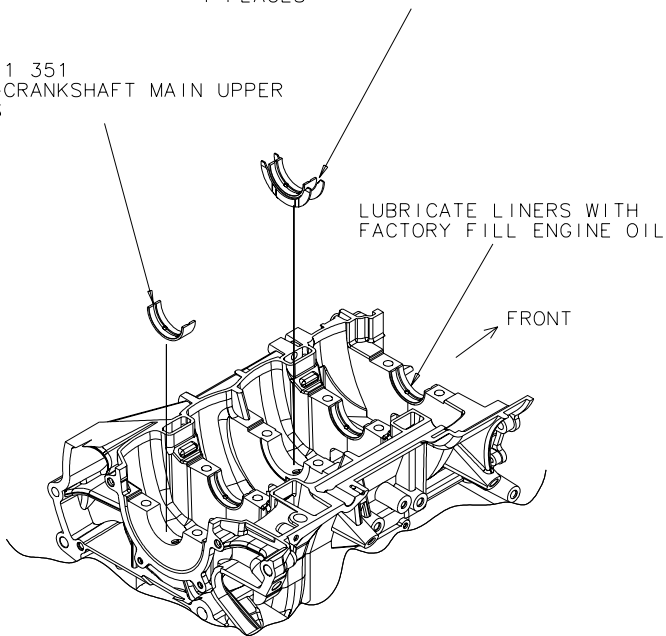
PART NAME/TITLE
PIPE CONNECTOR-BYPASS

SPECIFICATION NO.	REV	RELEASE NO.	DATE	MODEL	SHEET
C1S7G-543-AC	AU	EN00E11212646000	01-08-07	2003 2.3L-4V NON-DI	14-D 15-A

ENGINE ASSEMBLY PROCEDURES AND INSTRUCTIONS CLEARANCE LIMITS AND SPECIFICATIONS

-6337-/11 361
BEARING-CRANKSHAFT MAIN THRUST UPPER
1 PLACES

-6333-/11 351
BEARING-CRANKSHAFT MAIN UPPER
4 PLACES



NOTE: FOR MAIN BEARING SELECTION AND ASSEMBLY PROCEDURE
SEE SHEET: 16 & 17

RESTRICTIONS				PART NAME/TITLE				
				MAIN BEARING & THRUST LINERS				
SPECIFICATION NO.	REV	RELEASE NO.	DATE	MODEL	SHEET	CONTD.		
C1S7G-543-AC	W	EN00 E 11140144 000	00-10-01	2001 2.0L-4V NON DI CD132	15-A	15-D		

ENGINE ASSEMBLY PROCEDURES AND INSTRUCTIONS CLEARANCE LIMITS AND SPECIFICATIONS

SELECT UPPER LINERS FOR MAIN BEARING HOUSINGS AND ASSEMBLE, PRESSING LINERS TO DEPTH, POSITIONING LINERS IN RESPECTIVE CYLINDER BLOCK REAR MACHINING FACE. (SEE SHEET 23-B)

SELECT LOWER LINERS FOR MAIN BEARING BEAM AND ASSEMBLE TO BEAM, PRESSING LINERS TO DEPTH, POSITIONING LINERS IN RESPECTIVE BEARING BEAM REAR MACHINING FACE. (SEE SHEET 23-C)

PUT ON THRUST BEARING FOR MAIN BEARING HOUSING.

LUBRICATE BEARINGS IN CYLINDER BLOCK WITH RELEASED FACTORY FILL ENGINE OIL.

INSTALL CRANKSHAFT INTO CYLINDER BLOCK.

LUBRICATE JOURNALS ON CRANKSHAFT WITH RELEASED FACTORY FILL ENGINE OIL.

REFIT MAIN BEARING BEAM TO CYLINDER BLOCK ENSURING THAT THE BEARING BEAM IS IN THE CORRECT ORIENTATION.

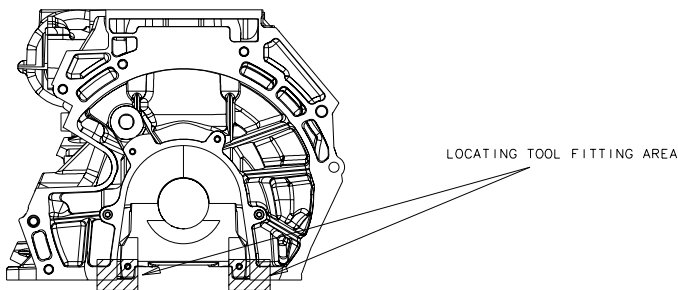
OIL "MOBIL 1409" TO BE APPLIED ON SIDE FIT SURFACE OF THE MAIN BEARING BEAM WHEN THE MAIN BEARING BEAM IS ASSEMBLED.

RUN DOWN TO TORQUE THE 10 MAIN BEARING BOLTS WHILE MAINTAINING AN AXIAL FORCE OF 500N MAX ON BEARING BEAM TOWARDS THE REAR OF THE ENGINE WITH BEARING BEAM LOCATING TOOL. (SEE SHEET 23-A)

QC CHECK : (ONCE PER WEEK).

AXIAL CLEARANCE OF CRANKSHAFT TO BE 0.335 ± 0.115 mm. (INFORMATION)

IN CASE OF REUSE THE BEARINGS, BEARING POSITION AND DIRECTION MUST BE SAME AS BEFORE REMOVAL. PART NUMBER MARKING SHOWS BEARING DIRECTION.



RESTRICTIONS				PART NAME/TITLE			
				PROCEDURE-MAIN BEARING LINER			
SPECIFICATION NO.	REV	RELEASE NO.	DATE	MODEL	SHEET	CONTD.	
C1S7G-543-AC	AJ	EN00 E 11131462 001	01-04-17	2001 2.0L-4V NON DI CD132	16	17	

ENGINE ASSEMBLY PROCEDURES AND INSTRUCTIONS CLEARANCE LIMITS AND SPECIFICATIONS

MAIN BEARING LINERS ARE GRADED AND ARE TO BE SELECTED TO GIVE A TOTAL CLEARANCE OF 0.019mm TO 0.035mm.

CLEARANCE IS CALCULATED AS :

(MAIN BEARING BORE DIA + HOUSING SWELL)

- (UPPER LINER THICKNESS + LOWER LINER THICKNESS + JOURNAL DIAMETER)
BEARING SHELL THICKNESS) - (JOURNAL DIAMETER).

HOUSING SWELL IS DETERMINED TO BE : (INFORMATION)

HOUSING DIAMETER (mm)	SWELL (μm)
X =< 57.018	21 - 28
57.019 >=< 57.021	20 - 27
57.022 >=< 57.025	19 - 26
57.026 >=< 57.028	18 - 25
57.029 >=< 57.032	17 - 25
57.033 >=< 57.036	16 - 23
57.037 >=< 57.039	15 - 22
57.040 <	14 - 21

EACH BEARING BORE IN THE CYLINDER BLOCK TO BE MEASURED IN THE MIDDLE OF THE BEARING BORE ON AXIS PARALLEL TO THE TOP DEAD CENTRE POSITION.

EACH CRANKSHAFT MAIN BEARING JOURNAL TO BE MEASURED IN THE CENTRE OF THE JOURNAL ON AN AXIS PARALLEL TO THE TOP DEAD CENTRE POSITION.

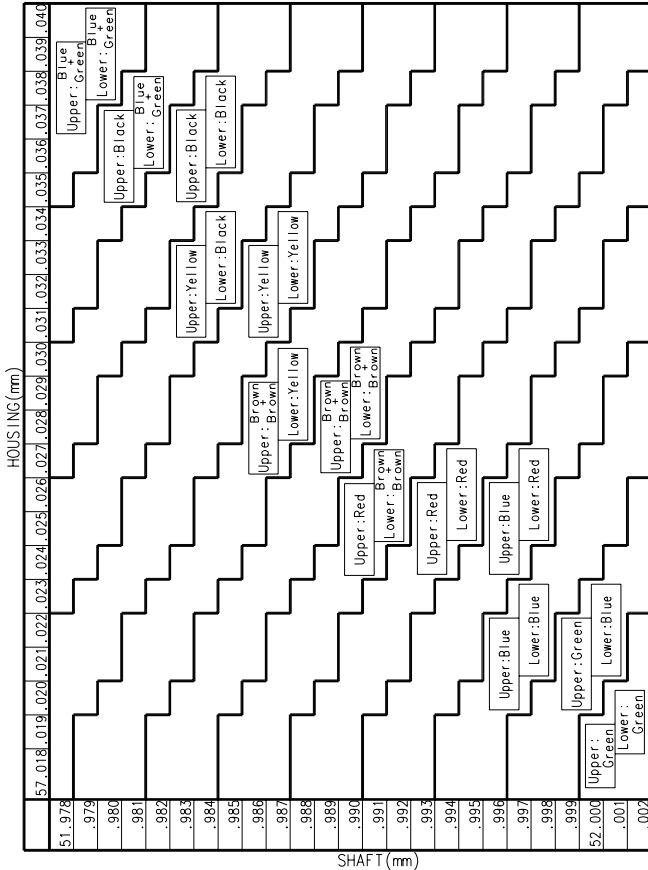
LINER THICKNESS TO BE SELECTED FROM THE GRADING TABLE.

RESTRICTIONS				PART NAME/TITLE			
				MAIN BEARING CLEARANCES			
SPECIFICATION NO.	REV	RELEASE NO.	DATE	MODEL	SHEET	CONTD.	
C1S7G-543-AC	AU	EN00 E 11212646 000	01-08-07	2001 2.0L-4V NON DI CD132	17	18	



ENGINE ASSEMBLY PROCEDURES AND INSTRUCTIONS CLEARANCE LIMITS AND SPECIFICATIONS

SELECTION OF MAIN BEARING LINERS (NORMALIZED AT 20 deg C)
FOR STANDARD CRANKSHAFTS



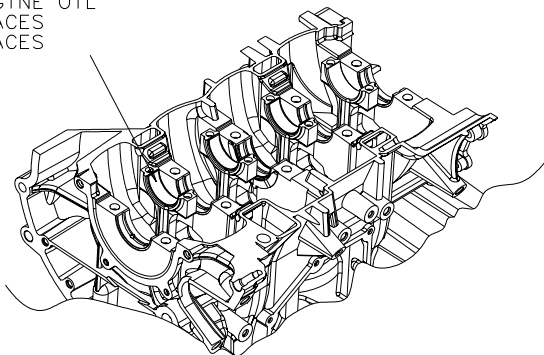
RESTRICTIONS				PART NAME/TITLE MAIN BEARING COLOUR CODING			
SPECIFICATION NO. C1S7G-543-AC	REV H	RELEASE NO. EN00 E 11007392 000	DATE 99-09-06	MODEL 2001 2.0L-4V NON DI CD132	SHEET 18	CONTD. 19	

ENGINE ASSEMBLY PROCEDURES AND INSTRUCTIONS
CLEARANCE LIMITS AND SPECIFICATIONS

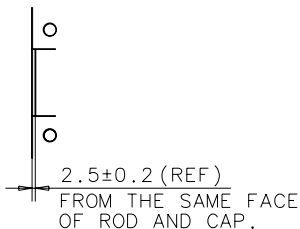
-6211-/11 225
BEARING-CONNECTING ROD
14:4 PLACES
15:5 PLACES



LUBRICATE WITH FACTORY
FILL ENGINE OIL
14:4 PLACES
15:5 PLACES



TOLERANCE OF POSITION
BETWEEN LINER AND ROD.
(ALIGNMENT)



RESTRICTIONS				PART NAME/TITLE CONROD BEARING LINERS			
SPECIFICATION NO.	REV	RELEASE NO.	DATE	MODEL	SHEET	CONTD.	
C1S7G-543-AC	H	EN00 E 11007392 000	99-09-06	2001 2.0L-4V NON DI CD132	19	20	

ENGINE ASSEMBLY PROCEDURES AND INSTRUCTIONS

CLEARANCE LIMITS AND SPECIFICATIONS

BEARING CLEARANCES

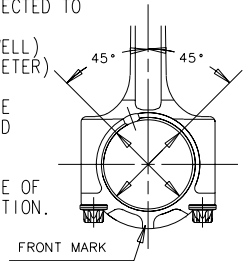
CONNECTING ROD/CRANKPIN LINERS ARE GRADED AND ARE TO BE SELECTED TO GIVE A TOTAL CLEARANCE OF 0.026mm TO 0.052mm.

CLEARANCE IS CALCULATED AS: (CONROD BIG END DIA + HOUSING SWELL)
- (UPPER LINER THICKNESS + LOWER LINER THICKNESS + PIN DIAMETER)

EACH CONROD BIG END BORE TO BE MEASURED IN THE CENTRE OF THE JOURNAL ON 45° CLOCKWISE OR ANTI-CLOCKWISE FROM THE TOP DEAD CENTRE POSITION. (SEE SKETCH)

EACH CRANKSHAFT PIN BEARING JOURNAL TO BE MEASURED IN CENTRE OF THE JOURNAL ON AN AXIS PARALLEL TO THE TOP DEAD CENTRE POSITION.

LINER THICKNESS TO BE SELECTED FROM THE GRADING TABLE.



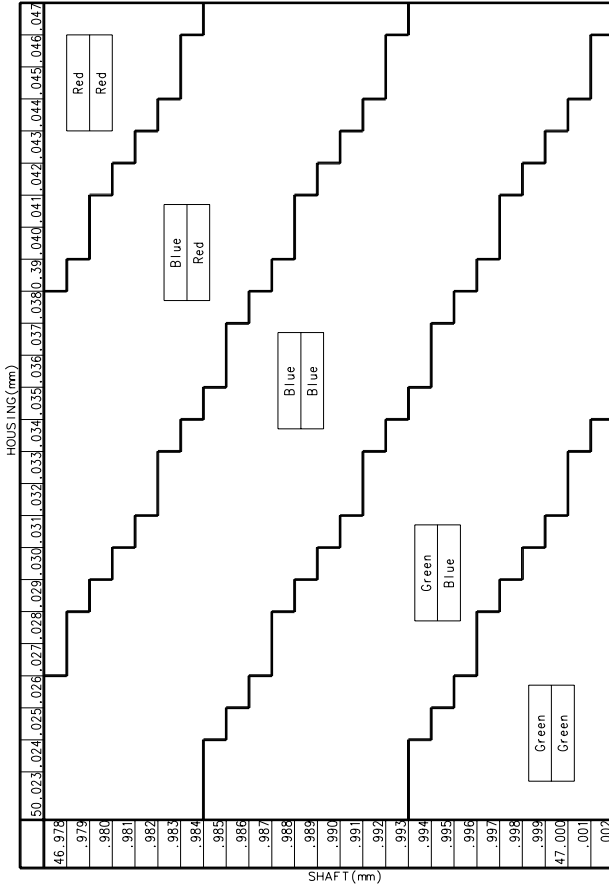
ASSEMBLY PROCEDURE PRODUCTION PROCESS

1. REMOVE CAPS FROM CONNECTING RODS
2. SELECT LINERS AND ASSEMBLE, PRESSING LINERS TO DEPTH, SEE NOTE ON SHEET 19 LINERS IN RESPECTIVE HOUSINGS.
3. LUBRICATE UPPER BEARINGS IN CONNECTING RODS WITH RELEASED FACTORY FILL ENGINE OIL.
4. LUBRICATE JOURNALS ON CRANKSHAFT WITH RELEASED FACTORY FILL ENGINE OIL.
5. FIT CAPS TO CONNECTING RODS ENSURING THAT THE CAPS ARE FITTED TO CORRECTLY MATCH THE ROD JOINT.
6. ENGAGE 8(14), 10(15) BOLTS IN THREAD.
7. OIL UNDERNEATH BOLT HEAD. (FACTORY FILL ENGINE OIL)
8. TIGHTEN BOLTS TO A SNUG TORQUE $29 \pm 3 \text{ N}\cdot\text{m}$.
9. TIGHTEN BOLTS BY $90^\circ \pm 10^\circ$.
10. DURING THE ABOVE TIGHTENING PROCEDURE, THE TWO BOLTS IN EACH CONNECTING ROD ARE TO BE RUN DOWN SIMULTANEOUSLY.
11. CONROD AXIAL CLEARANCE OF 0.14mm TO 0.36mm. (INFORMATION)
12. IN CASE OF REUSE THE BEARINGS AT SERVICE, BEARING POSITION AND DIRECTION MUST BE SAME AS BEFORE REMOVAL. PART NUMBER MARKING SHOWS BEARING DIRECTION.

RESTRICTIONS				PART NAME/TITLE			
				PROCEDURE—CONROD BEARIG LINER			
SPECIFICATION NO.	REV	RELEASE NO.	DATE	MODEL	SHEET	CONTD.	
C1S7G-543-AC	AU	EN00 E 11212646 000	01-08-07	2001 2.0L-4V NON DI CD132	20	21-A	

ENGINE ASSEMBLY PROCEDURES AND INSTRUCTIONS
CLEARANCE LIMITS AND SPECIFICATIONS

SELECTION OF CONROD BEARING LINERS (NORMALIZED AT 20 deg C)
FOR STANDARD CRANKSHAFTS (1.8L & 2.0L)



THE POSITION (UPPER OR LOWER) OF CONROD BEARINGS DO NOT CONTROL FOR INSTALLATION.

RESTRICTIONS

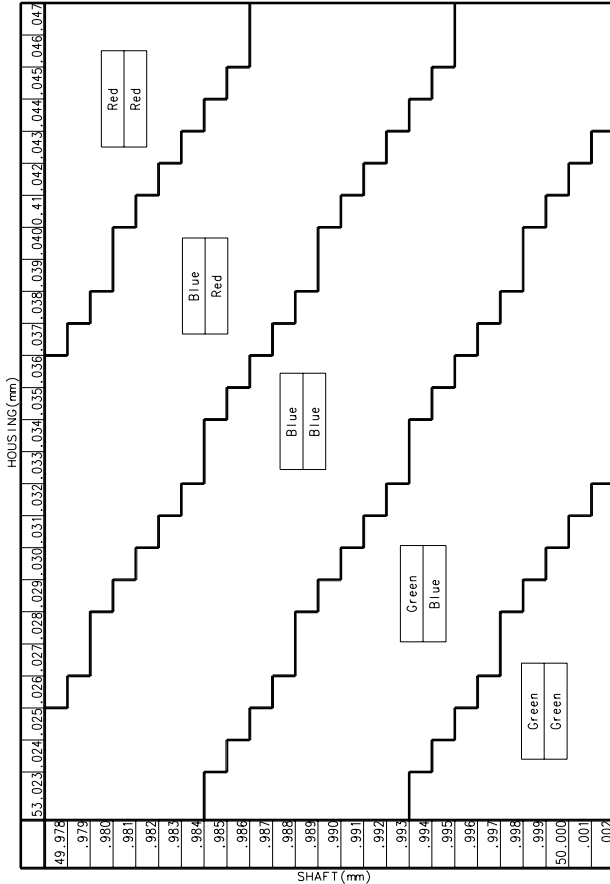
PART NAME/TITLE

CONROD BEARING COLOUR CODING

SPECIFICATION NO.	REV	RELEASE NO.	DATE	MODEL	SHEET	CONTD.
C1S7G-543-AC	H	EN00 E 11007392 000	99-09-06	2001 2.0L-4V NON DI CD132	21-A	21-B

ENGINE ASSEMBLY PROCEDURES AND INSTRUCTIONS
CLEARANCE LIMITS AND SPECIFICATIONS

SELECTION OF CONROD BEARING LINERS (NORMALIZED AT 20 deg C)
FOR STANDARD CRANKSHAFTS (2.3L)



THE POSITION (UPPER OR LOWER) OF CONROD BEARINGS DO NOT CONTROL FOR INSTALLATION.

RESTRICTIONS

PART NAME/TITLE

CONROD BEARING COLOUR CODING

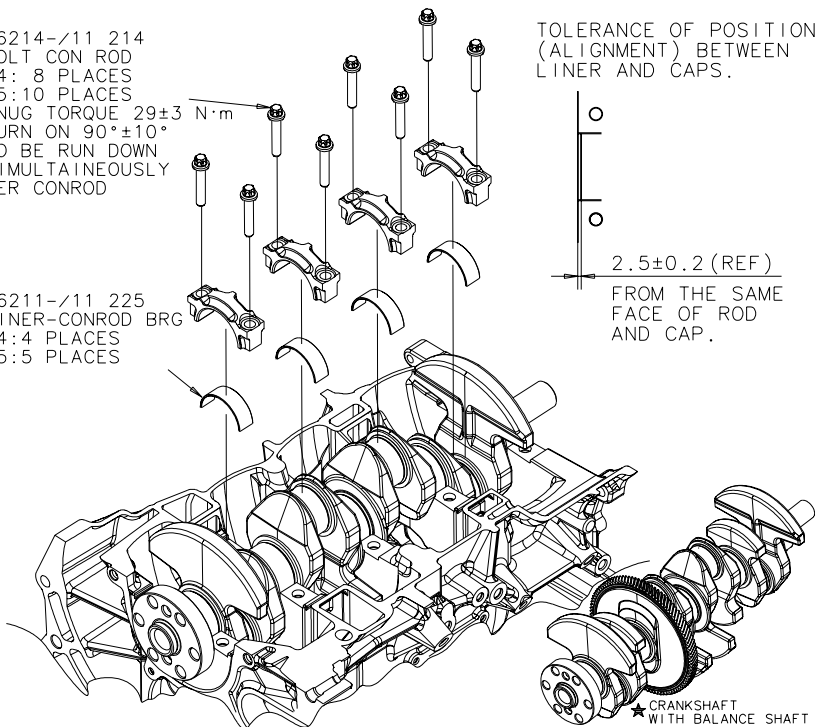
SPECIFICATION NO.	REV	RELEASE NO.	DATE	MODEL	SHEET	CONTD.
C1S7G-543-AC	H	EN00 E 11007392 000	99-09-06	2003 2.8L-4V NON DI RANGER	21-B	22

ENGINE ASSEMBLY PROCEDURES AND INSTRUCTIONS CLEARANCE LIMITS AND SPECIFICATIONS

-6214-/11 214
BOLT CON ROD
14: 8 PLACES
15: 10 PLACES
SNUG TORQUE 29 ± 3 N·m
TURN ON $90^\circ \pm 10^\circ$
TO BE RUN DOWN
SIMULTAINEOUSLY
PER CONROD

-6211-/11 225
LINER-CONROD BRG
14: 4 PLACES
15: 5 PLACES

TOLERANCE OF POSITION
(ALIGNMENT) BETWEEN
LINER AND CAPS.



2.5 ± 0.2 (REF)

FROM THE SAME
FACE OF ROD
AND CAP.

★ CRANKSHAFT
WITH BALANCE SHAFT

LUBRICATE ALL JOURNALS BEFORE FITTING BIG END LOWER BEARINGS WITH
FACTORY FILL ENGINE OIL AND BEFORE FITTING MAIN LADDER. FOR BEARING
SELECTION AND ASSEMBLY PROCEDURE SEE SHEET 21

Q.C,CHECK:
DO NOT REUSE CONROD BOLT, IN CASE BOLT LENGTH IS OVER 46 mm.(REF)

★ NO HAMMERED MARKS/FLAWS ON GEAR TEETH OF CRANKSHAFT WHICH END
UP WITH UNEXPECTED NOISE.(GEAR ACCURACY SPECIFIED ON THE DRAWING
TO BE SATISFIED BUT THE GEAR ACCURACY IS NOT REQUIRED TO BE
MEASURED IN THE ENGINE PLANT)

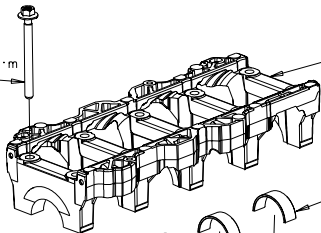
★ -IT ONLY APPLYS TO BALANCE SHAFT ENGINE.

RESTRICTIONS				PART NAME/TITLE			
				CONROD BEARING,CAPS & BOLTS			
SPECIFICATION NO.	REV	RELEASE NO.	DATE	MODEL	SHEET	CONTD.	
C1S7G-543-AC	Y	EN00 E 11145063 001	00-11-03	2001 2.0L-4V NON DI CD132	22	23-A	

ENGINE ASSEMBLY PROCEDURES AND INSTRUCTIONS CLEARANCE LIMITS AND SPECIFICATIONS

-6345-/10 352
10 PLACES
SIMULTANEOUSLY
SNUG TORQUE 45 ± 2 N·m
TURN ON $180^\circ \pm 5^\circ$

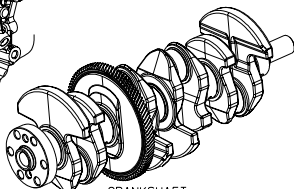
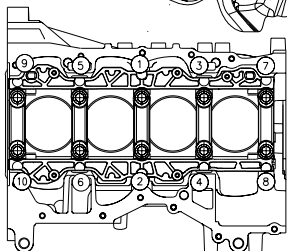
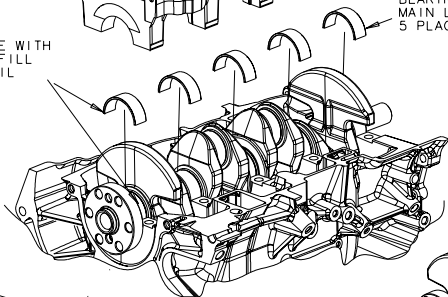
-6F098-/10 351
SUPT-ENG BLKHD BRG



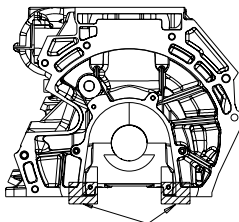
LUBRICATE WITH
FACTORY FILL
ENGINE OIL

-6A338-/11 851
BEARING-CRANKSHAFT
MAIN LOWER
5 PLACES

FOR MAIN BEARING SELECTION
AND ASSEMBLY PROCEDURE SEE
SHEET 16 & 17



★ CRANKSHAFT
WITH BALANCE SHAFT



LOCATING TOOL FITTING AREA

OIL "MOBIL 1409" TO BE
APPLIED ON SIDE FIT SURFACE
OF THE MAIN BEARING BEAM
WHEN THE MAIN BEARING CAP
IS ASSEMBLED.
BEARING BEAM AND CYLINDER
BLOCK TO BE ALIGNED
AGAINST PLANE JIG FOR
MATCHING RETAINER MATCHING
SURFACE.
POSITIONAL TOLERANCE
 ± 0.1

BEARING CAP BOLTS MAY BE
REUSED A MAXIMUM OF 3
TIMES ONLY.

WHEN THE MAIN BEARING CAP IS ASSEMBLED MANUALLY,
TO BE TIGHTENED FOLLOWING PROCEDURE.

- (1) ALL BOLT-CRANK SHAFT TO BE TIGHTENED ONLY "SNUG" TORQUE (45 ± 2 N·m) ACCORDING TO THE ORDER WHICH IS SHOWN ABOVE DRAWING.
- (2) ALL BOLT-CRANK SHAFT TO BE TIGHTENED WITH TIGHTENING ANGLE ($90 \pm 2.5 \text{ deg} \times 2 \text{ times} = 180 \pm 5 \text{ deg}$) ACCORDING TO ORDER WHICH IS SHOWN ABOVE DRAWING.

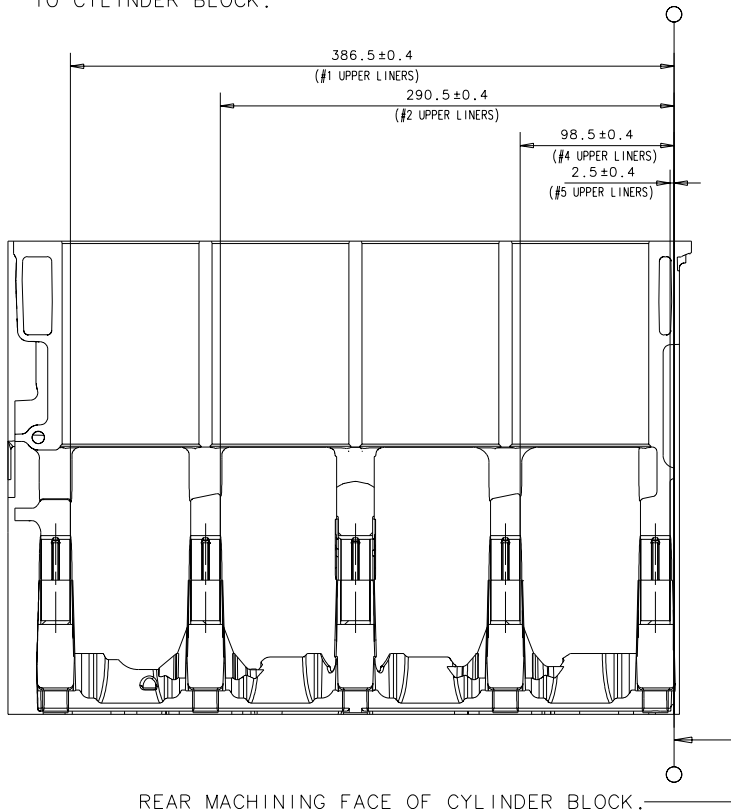
★ NO HAMMERED MARKS/FLAWS ON GEAR TEETH OF CRANKSHAFT WHICH END UP WITH UNEXPECTED NOISE. (GEAR ACCURACY SPECIFIED ON THE DRAWING TO BE SATISFIED BUT THE GEAR ACCURACY IS NOT REQUIRED TO BE MEASURED IN THE ENGINE PLANT)

★ -IT ONLY APPLYS TO BALANCE SHAFT ENGINE.

RESTRICTIONS					PART NAME/TITLE			
					MAIN BEARING LADDER BEAM & BOLTS			
SPECIFICATION NO.	REV	RELEASE NO.	DATE	MODEL	SHEET	CONTD.		
C1S7G-543-AC	BE	EN00 E 11218821 000	01-11-05	2001 2.0L-4V NON DI CD132	23-A	23-B		

ENGINE ASSEMBLY PROCEDURES AND INSTRUCTIONS
CLEARANCE LIMITS AND SPECIFICATIONS

UPPER LINERS FOR MAIN BEARING EXCEPT #3 UPPER LINERS IS POSITIONED SO THAT THE DISTANCES OF LINERS REAR EDGE FROM REAR MACHINING FACE MUST BE KEPT FOLLOWING AFTER BEARING BEAM IS ASSEMBLED TO CYLINDER BLOCK.



RESTRICTIONS

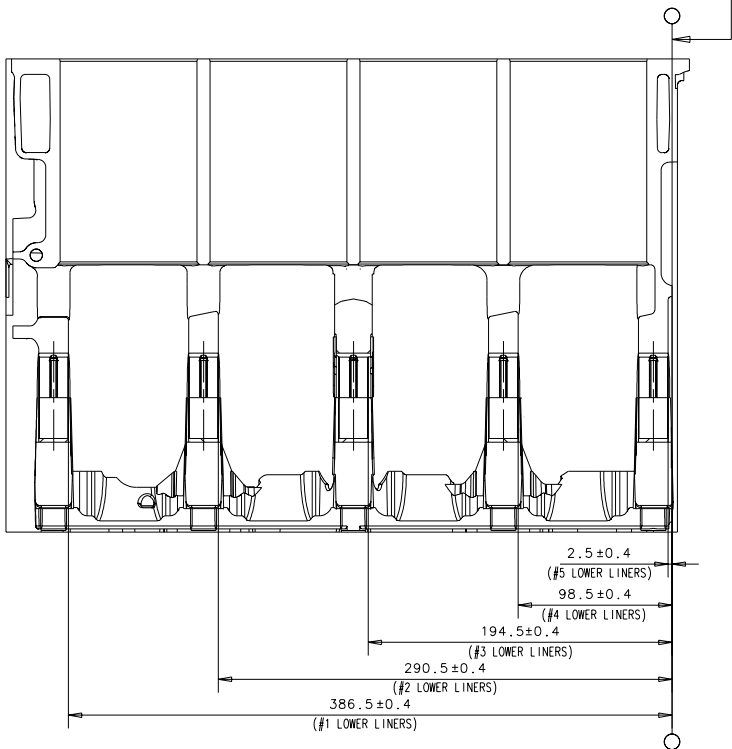
PART NAME/TITLE
MAIN BEARING UPPER

SPECIFICATION NO.	REV	RELEASE NO.	DATE	MODEL	SHEET	CONTD.
C1S7G-543-AC	AB	EN00 E 11136863 000	00-12-04	2001 2.0L-4V NON DI CD132	23-B	23-C

ENGINE ASSEMBLY PROCEDURES AND INSTRUCTIONS CLEARANCE LIMITS AND SPECIFICATIONS

LOWER LINERS FOR MAIN BEARING IS POSITIONED SO THAT THE DISTANCES OF LINERS REAR EDGE FROM REAR MACHINING FACE MUST BE KEPT FOLLOWING AFTER BEARING BEAM IS ASSEMBLED TO CYLINDER BLOCK.

REAR MACHINING FACE OF BEARING BEAM. 



RESTRICTIONS

PART NAME/TITLE

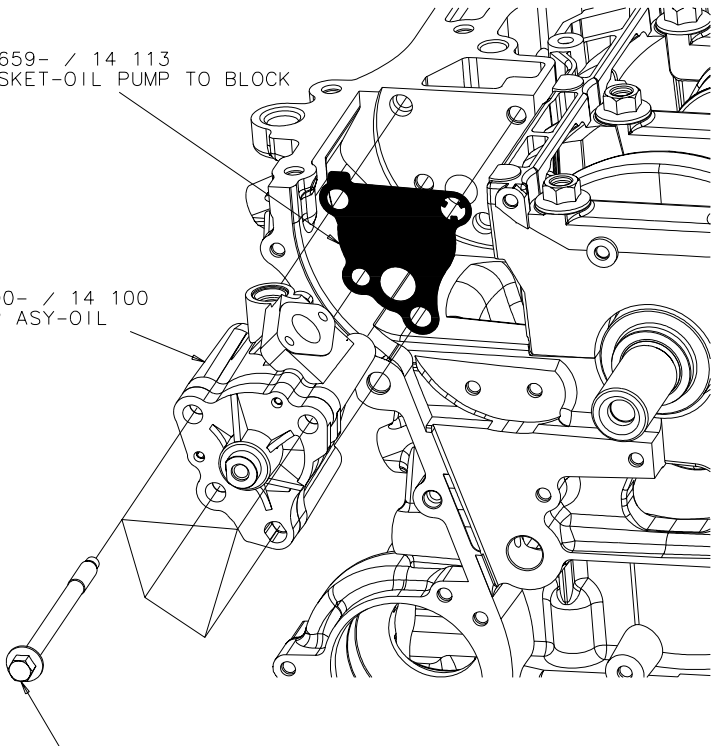
MAIN BEARING LOWER

SPECIFICATION NO.	REV	RELEASE NO.	DATE	MODEL	SHEET	CONTD.
C1S7G-543-AC	AB	EN00 E 11136863 000	00-12-04	2001 2.0L-4V NON DI CD132	23-C	23-D

ENGINE ASSEMBLY PROCEDURES AND INSTRUCTIONS
CLEARANCE LIMITS AND SPECIFICATIONS

-6659- / 14 113
GASKET-OIL PUMP TO BLOCK

-6600- / 14 100
PUMP ASY-OIL



W703647-S309 / 9XG03647X9
FASTNER M8 X 103
4PLACES

BOLT TIGHTENING PROCEDURE :

- ① TIGHTEN THE BOLTS AT SIMULTANEOUSLY OR CROSSWISE WITH THE PRE-TORQUE OF 10 ± 2 N·m
- ② TIGHTEN THE BOLTS AT SIMULTANEOUSLY OR CROSSWISE WITH THE TORQUE OF 22.5 ± 2.5 N·m

RESTRICTIONS

PART NAME/TITLE

PUMP ASY-OIL & GASKET-OIL PUMP TO BLOCK

SPECIFICATION NO.
C1S7G-543-AC

REV
K

RELEASE NO.
EN00 E 11026968 000

DATE
99-12-13

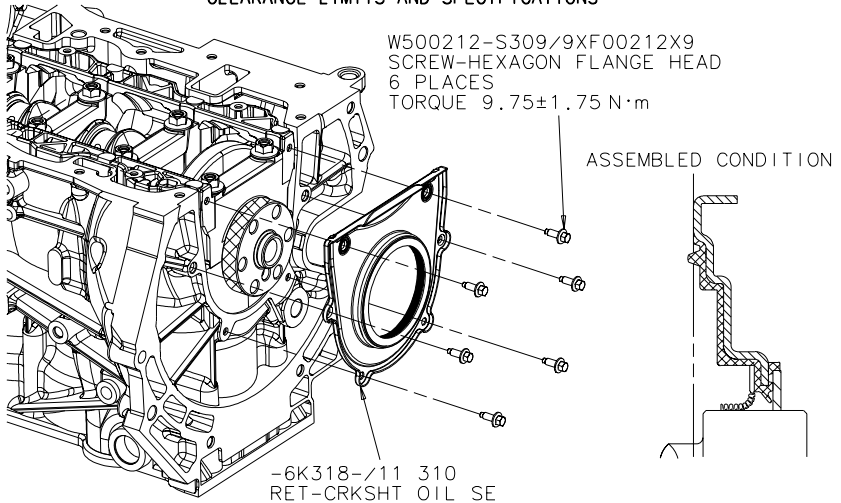
MODEL
2001 2.0L-4V NON DI CD132

SHEET
24

CONTD.
25-A

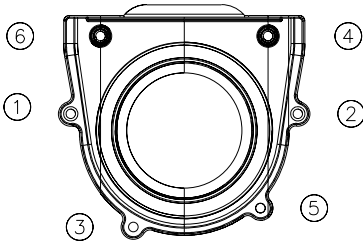
ENGINE ASSEMBLY PROCEDURES AND INSTRUCTIONS CLEARANCE LIMITS AND SPECIFICATIONS

W500212-S309/9XF00212X9
SCREW-HEXAGON FLANGE HEAD
6 PLACES
TORQUE $9.75 \pm 1.75 \text{ N}\cdot\text{m}$



FASTENING PROCEDURE

(AUTOMATIC MACHINE)



1. Snag torque: $3 \frac{3}{8} \text{ Nm}$, then
Final torque: $9.75 \pm 1.75 \text{ Nm}$
2. Tightening speed: 10rpm
3. Tightening order: Begin to tighten
① & ② then wait 0.5-1.0 second and
start to tighten ③, ④, ⑤ & ⑥.

(SINGLE SPINDLE)

ALL BOLT TO BE TIGHTENED ACCORDING
TO THE ORDER WHICH IS SHOWN IN
LEFT HAND DRAWING,
TIGHTENING ORDER ; ① - ⑥

NOTES

1. No sticking of stain, dust, etc is allowed on oil seal sliding surface (hatched area) of crank shaft.
2. Attach oil seal exactly perpendicular to crankshaft to prevent oil seal lip from peeling and cutting.
3. Oil seal lip with flaw, deformation or dent that harm its sealability shall be replaced.
4. Oil seal shall be assembled in specified direction drawing.

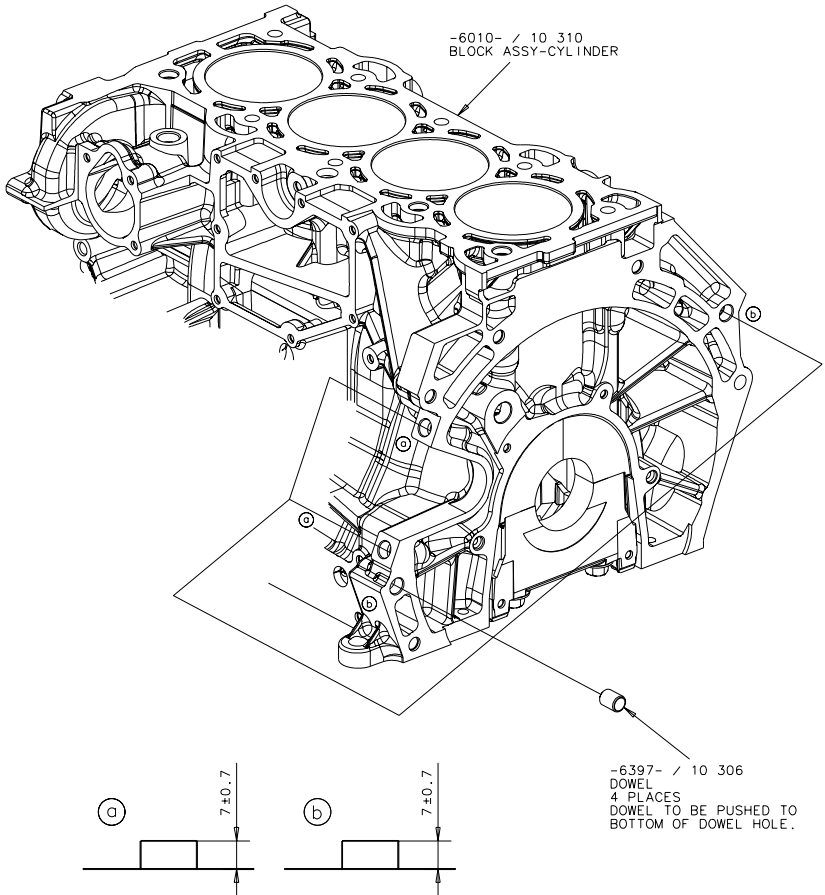
RESTRICTIONS

PART NAME/TITLE

REAR OIL SEAL - CRANKSHAFT

SPECIFICATION NO.	REV	RELEASE NO.	DATE	MODEL	SHEET	CONTD.
C1S7G-543-AC	V	EN00E11124480001	00-09-08	2001 2.0L-4V NON DI CD132	26	27

ENGINE ASSEMBLY PROCEDURES AND INSTRUCTIONS CLEARANCE LIMITS AND SPECIFICATIONS



RESTRICTIONS

PART NAME/TITLE

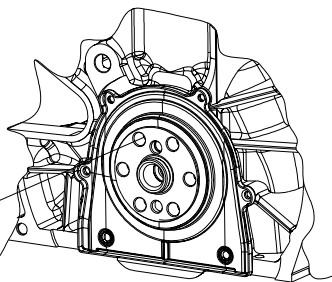
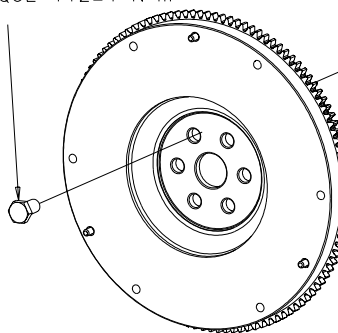
DOWEL ASY-CYLINDER BLOCK

SPECIFICATION NO.	REV	RELEASE NO.	DATE	MODEL	SHEET	CONTD.
C1S7G-543-AC	BD	EN00 E 11271059 000	01-11-02	2001 2.0L-4V NON DI CD132	27	28

ENGINE ASSEMBLY PROCEDURES AND INSTRUCTIONS
CLEARANCE LIMITS AND SPECIFICATIONS

-6379-/11 511
BOLT FLYWHEEL
6 PLACES
SIMULTANEOUSLY

▽ TORQUE 112±4 N·m



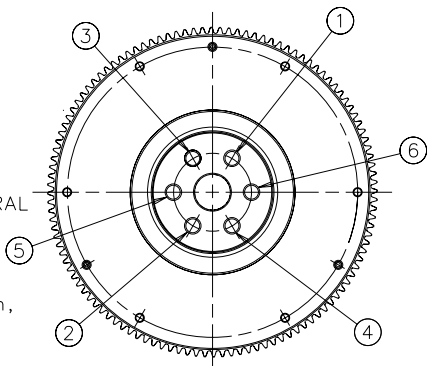
-6K390-/11 500
FLYWHEEL ASY

SINGLE SPINDLE METHOD
INSTALL AND UNIFORMLY
TIGHTEN 6 BOLTS, IN SEVERAL
PASSES, IN THE SEQUENCE
SHOWN.

TORQUE STEPS

1ST 50±4 N·m, 2ND 80±4 N·m,

▽ TORQUE 3RD 112±4 N·m



RESTRICTIONS

PART NAME/TITLE
FLYWHEEL ASY

SPECIFICATION NO.
C1S7G-543-AC

REV
P

RELEASE NO.
EN00 E 11045491 000

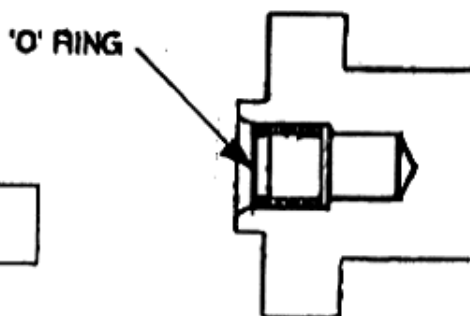
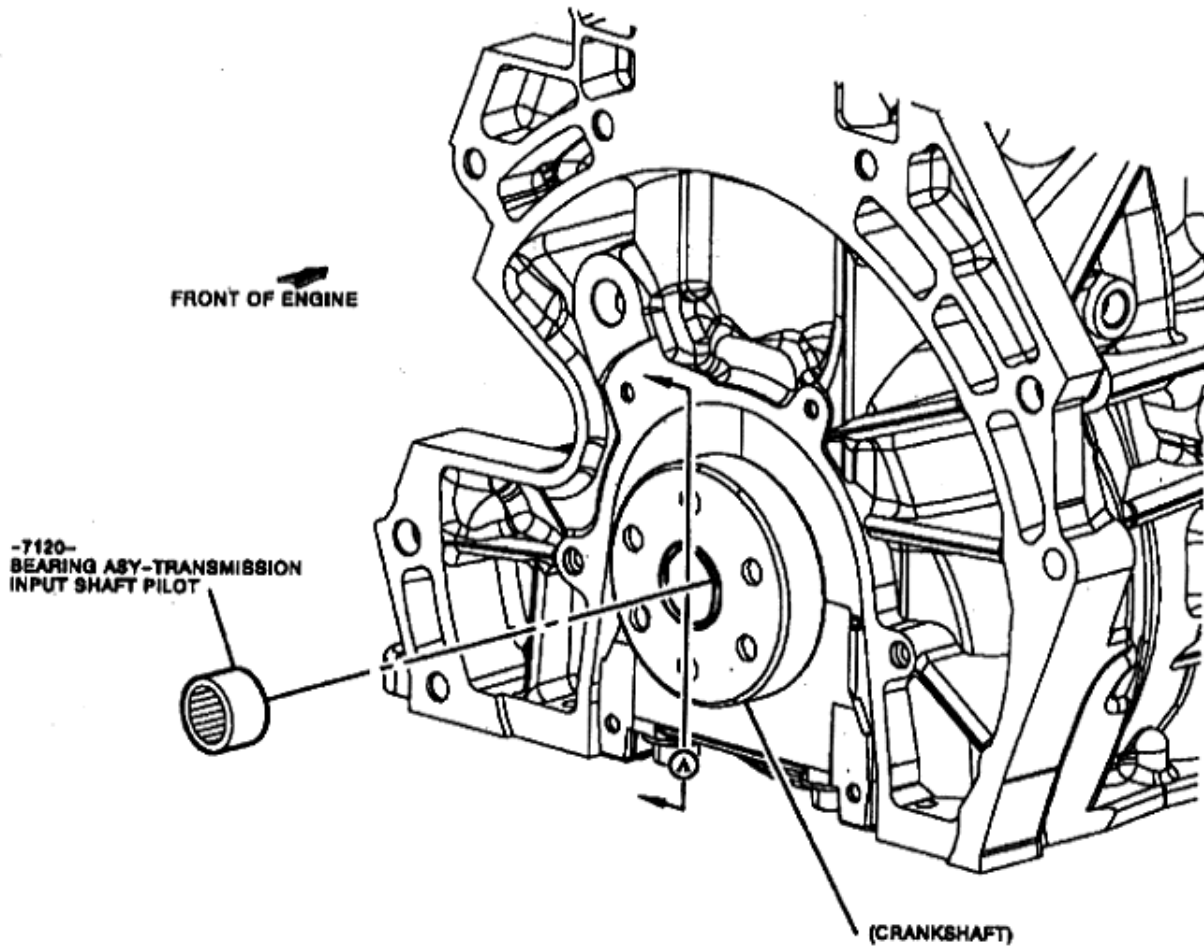
DATE
00-03-31

MODEL
2001 2.3L-4V NON DI RANGER

SHEET
28

CONTD.
28-A

**PILOT BEARING
(MANUAL TRANSMISSION)**



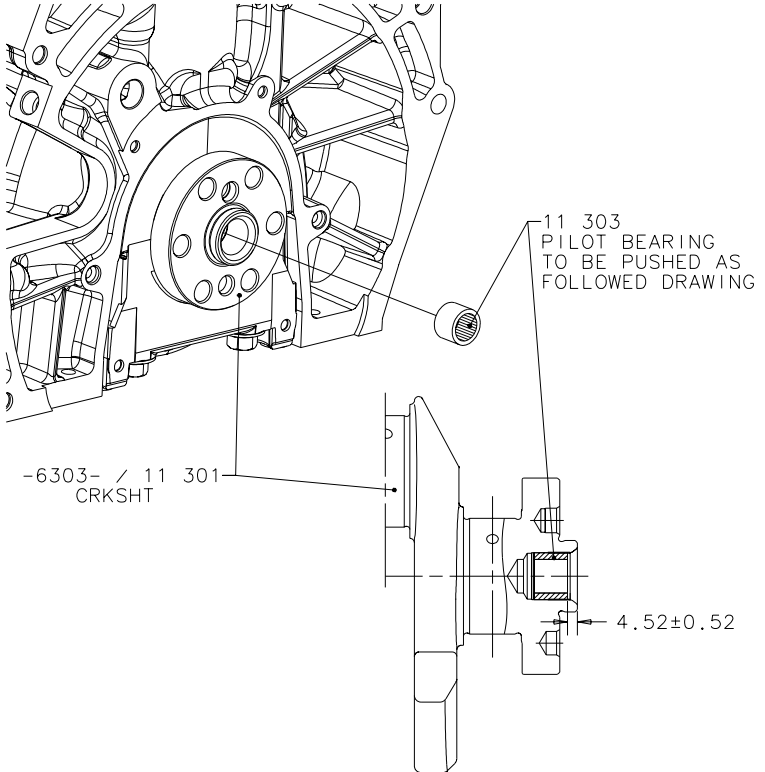
NOTE:
INSTALL BEARING WITH SEAL END TOWARD
TRANSMISSION.

SECTION A

031101

RESTRICTIONS				PART NAME/TITLE PILOT BEARING			
SPECIFICATION NO. C1S7G-543-AC	REV AN	RELEASE NO. EN00 E11208966 001	DATE 01-06-08	MODEL 2001 2.3L-4V NON DI RANGER	SHEET 28-C	CONTD. 28-D	

ENGINE ASSEMBLY PROCEDURES AND INSTRUCTIONS
CLEARANCE LIMITS AND SPECIFICATIONS



RESTRICTIONS

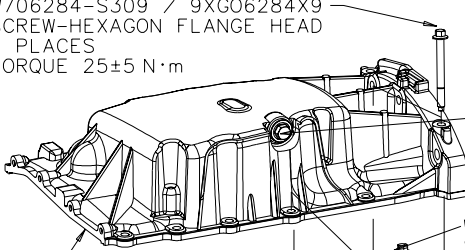
PART NAME/TITLE

PILOT BEARING

SPECIFICATION NO.	REV	RELEASE NO.	DATE	MODEL	SHEET	CONTD.
C1S7G-543-AC	AN	EN00 E 11208966 001	01-06-08	2003 2.3L-4V NON DI J56A/F/J	28-D	29

ENGINE ASSEMBLY PROCEDURES AND INSTRUCTIONS CLEARANCE LIMITS AND SPECIFICATIONS

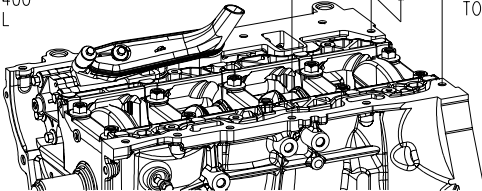
W706284-S309 / 9XG06284X9
SCREW-HEXAGON FLANGE HEAD
2 PLACES
TORQUE 25±5 N·m



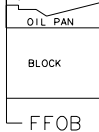
REF: ONLY
-6730- / 10 404
PLG-OIL PAN DRN
TORQUE 27.5±2.5 N·m

W500224-S309 / 9XF00224X9
SCREW-HEXAGON FLANGE HEAD
11 PLACES
TORQUE 25±5 N·m

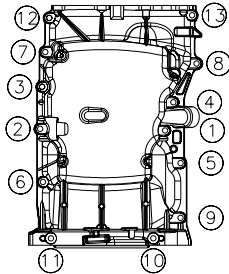
-6675-/10 400
PAN ASY-OIL



OIL PAN TO FLUSH ±0.05mm



FASTENING PROCEDURE (SINGLE SPINDLE METHOD).



OIL FILL QUANTITIES

TOTAL FACTORY OIL FILL (DRY ENGINE) = 4.6 ± 0.05 L
(WITHOUT OIL COOLER)
SERVICE FILL (INCLUDING FILTER CHANGE) = 4.3L (4.5qt)
SERVICE FILL (EXCLUDING FILTER CHANGE) = 3.9L (4.1qt)

NOTE: DIFFERENCE BETWEEN 'MIN' & 'MAX' MARKS ON OIL
LEVEL INDICATOR IS EQUIVALENT TO 0.75L (0.8qt)

NOTES

- 1.No sticking of stain, dust, etc is allowed on oil pan sealing surface of cylinder block and oil pan.
- 2.If parts have scratch on seal face of oil pan assembly, which might give negative effect on sealability, those have to be replaced with good part.

RESTRICTIONS


PART NAME/TITLE



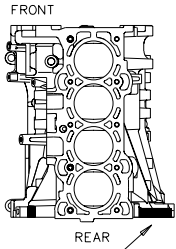
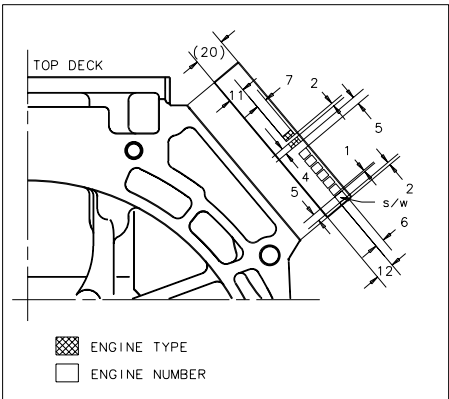



OIL PAN & OIL FILL QUANTITIES

SPECIFICATION NO.	REV	RELEASE NO.	DATE	MODEL	SHEET	CONTD.
C1S7G-543-AC	H	EN00E11007392000	99-09-06	2001 2.0L-4V NON DI CD 132	30-A	30-B

ENGINE ASSEMBLY PROCEDURES AND INSTRUCTIONS CLEARANCE LIMITS AND SPECIFICATIONS

ENGINE NUMBER STAMPING POSITION

 REGARDING THE STAMPING PROCEDURE, PLEASE REFER TO THE *STAMP CONTROL MANUAL
 : MBSMB-M750050* AND THE *NUMBERING OPERATION MANUAL
 : MBSMB-M750030*

 ENGINE TYPE MARKING	L8 TYPE (0.0018 m3) LF TYPE (0.002 m3) L3 TYPE (0.0023 m3)
 SPEC OF ENGRAVING	CONFORM TO MES W7102-1003.
LOCATION OF MARKING	<div style="display: flex; justify-content: space-around; align-items: flex-start;"> <div style="text-align: center;">  <p>FRONT</p> <p>REAR</p> </div> <div style="text-align: center;">  <p>DETAIL</p> <p>TOP DECK</p> <p>(20)</p> <p>1 2 3 4 5 6 7</p> <p>1 2 3 4 5 6 7</p> <p>s/w</p> <p>12</p> <p>  ENGINE TYPE  ENGINE NUMBER </p> </div> </div> <p>  ENGINE TYPE & NUMBER STAMPING POSITION </p>
UNIQUE TO MAZDA ONLY. ENGINE SHALL BE MARKED ENGINE TYPE & NUMBER BEFORE SHIPPING. (ONE EXAMPLE.)	

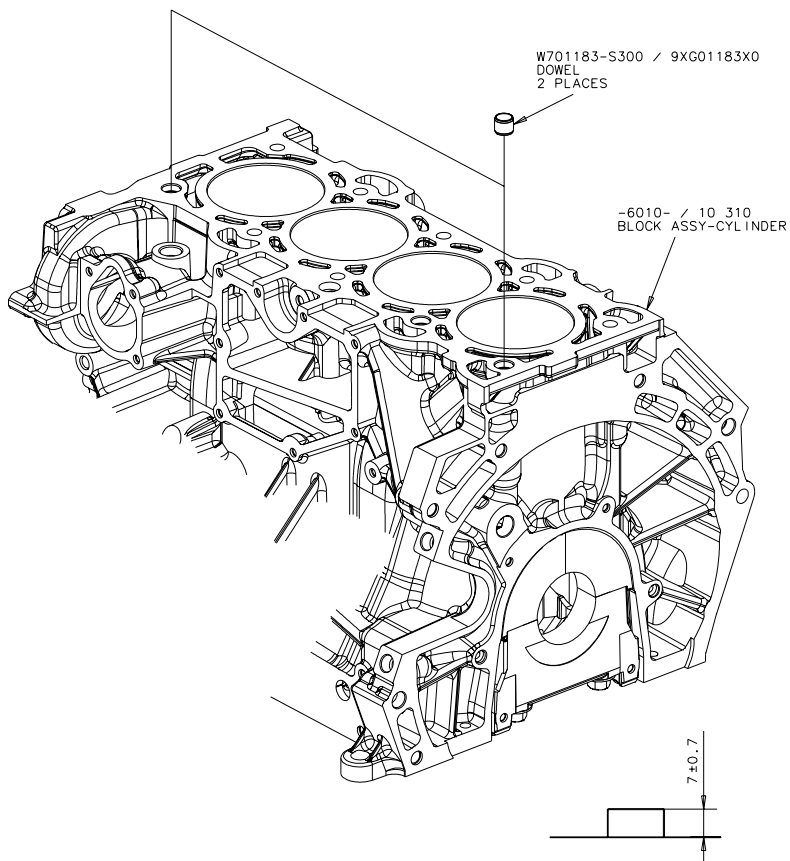


RESTRICTIONS

 PART NAME/TITLE
ENGINE NUMBER STAMPING POSITION

SPECIFICATION NO.	REV	RELEASE NO.	DATE	MODEL	SHEET	CONTD.
C1S7G-543-AC	AL	EN00 E 11204632 000	01-05-08	2001 2.0L-4V NON DI CD132	30-E	31

ENGINE ASSEMBLY PROCEDURES AND INSTRUCTIONS
CLEARANCE LIMITS AND SPECIFICATIONS



RESTRICTIONS

PART NAME/TITLE

DOWEL ASY-CYLINDER BLOCK

SPECIFICATION NO.
C1S7G-543-AC

REV
BD

RELEASE NO.
EN00 E 11271059 000

DATE
01-11-02

MODEL
2001 2.0L-4V NON DI CD132

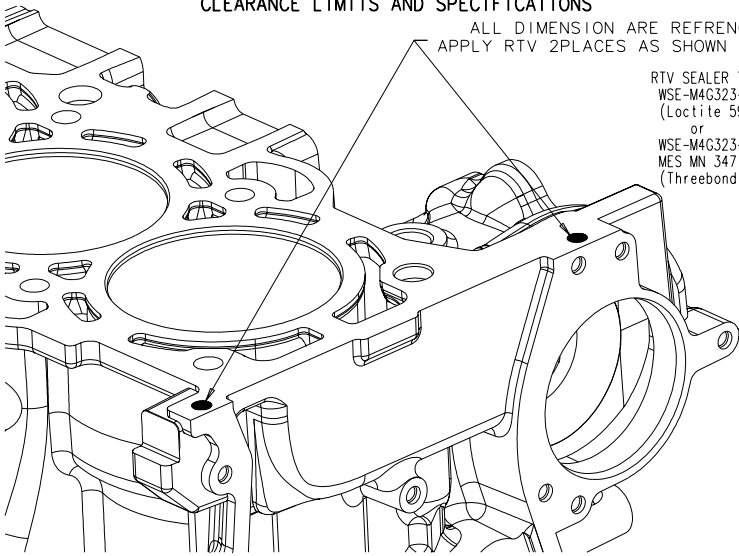
SHEET
32

CONTD.
32-D

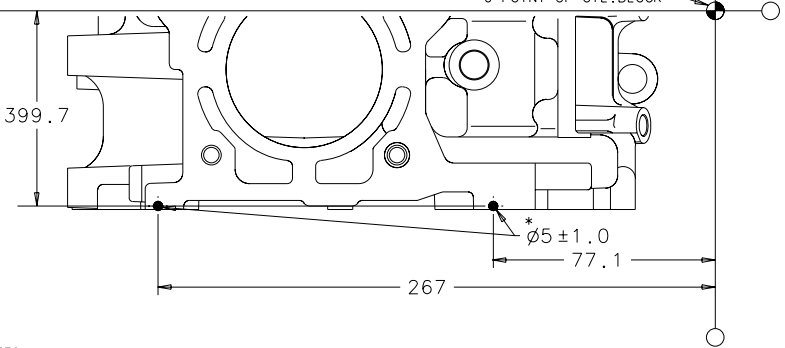
ENGINE ASSEMBLY PROCEDURES AND INSTRUCTIONS
 CLEARANCE LIMITS AND SPECIFICATIONS

ALL DIMENSION ARE REFERENCE.
 APPLY RTV 2PLACES AS SHOWN BELOW.

RTV SEALER TO SPEC:
 WSE-M4G323-A6
 (Loctite 5900)
 or
 WSE-M4G323-A8
 MES MN 347
 (Threebond TB1217D)



0 POINT OF CYL. BLOCK



NOTES

1. After applying RTV, complete assembling front cover and cylinder head within 10 min and then complete tightening all bolts within further 5 min. (within 15 min in total.)

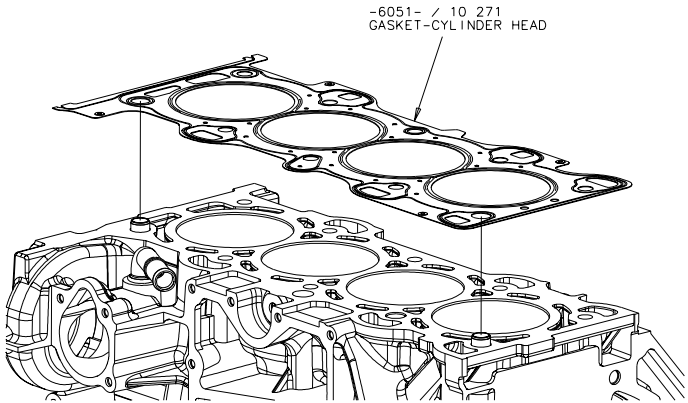
RESTRICTIONS

PART NAME/TITLE

RTV SEALER - CYL HEAD GASKET

SPECIFICATION NO.	REV	RELEASE NO.	DATE	MODEL	SHEET	CONTD.
C1S7G-543-AC	BG	EN00E11282537000	01-11-09	2001 2.0L-4V NON D1 CD132	33	34

ENGINE ASSEMBLY PROCEDURES AND INSTRUCTIONS
CLEARANCE LIMITS AND SPECIFICATIONS



-6051- / 10 271
GASKET-CYLINDER HEAD

1.8L Non-DI			○
1.8L DI		○	○
2.0L+2.3L		○	
2.4L	○	○	
2.8L	○		

CAUTION: DO NOT RE-USE GASKET

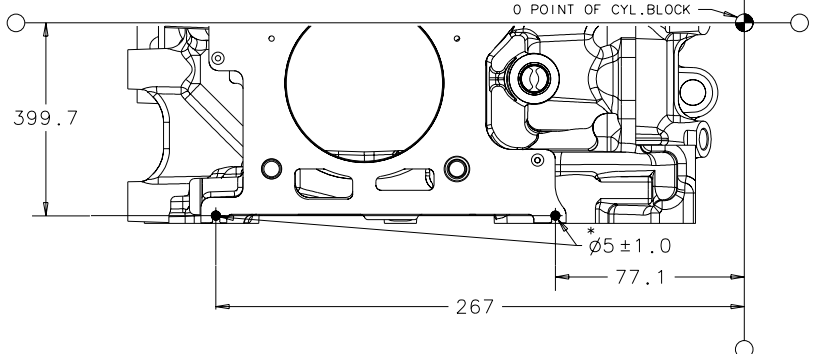
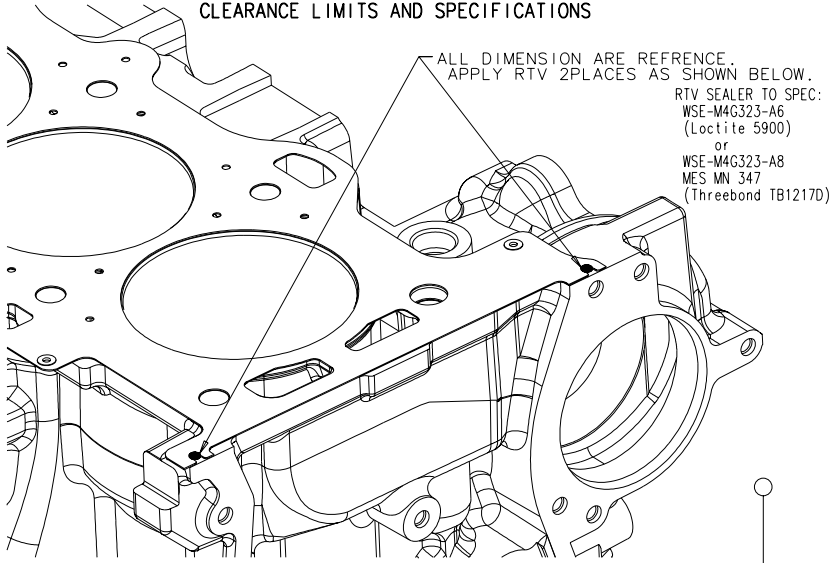
RESTRICTIONS

PART NAME/TITLE

GASKET-CYLINDER HEAD

SPECIFICATION NO.	REV	RELEASE NO.	DATE	MODEL	SHEET	CONTD.
C1S7G-543-AC	BG	EN0011282537000	01-11-09	2001 2.0L-4V NON DI CD132	34	34-A

ENGINE ASSEMBLY PROCEDURES AND INSTRUCTIONS
CLEARANCE LIMITS AND SPECIFICATIONS



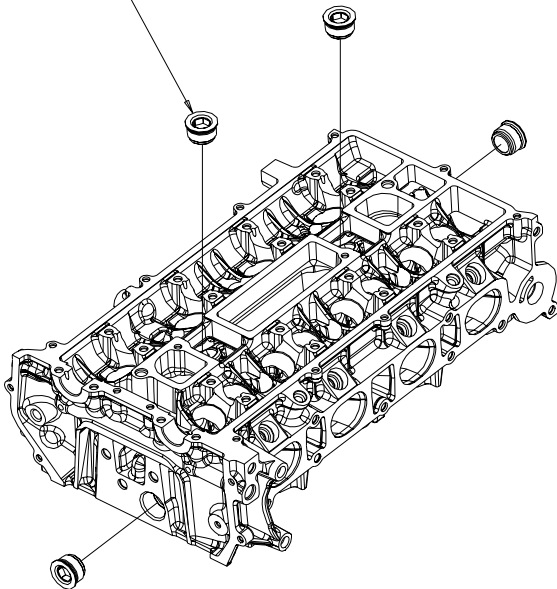
NOTES

1. After applying RTV, complete assembling front cover and cylinder head within 10 min and then complete tightening all bolts within further 5 min. (within 15 min in total.)

RESTRICTIONS				PART NAME/TITLE			
				RTV SEALER - CYL HEAD GASKET			
SPECIFICATION NO.	REV	RELEASE NO.	DATE	MODEL	SHEET	CONTD.	
C1S7G-543-AC	BG	EN00E11282537000	01-11-09	2001 2.0L-4V NON D1 CD132	34-A	35	

ENGINE ASSEMBLY PROCEDURES AND INSTRUCTIONS CLEARANCE LIMITS AND SPECIFICATIONS

-W701441- / 9XG01441X0
 PLUG INT HEX
 4 PLACES FOR ALL 14
 5 PLACES FOR 15
 TORQUE 75±5 Nm
 USING WSK-M2G349-A7
 SEALER(LOCTITE 243 OR 962T)



RESTRICTIONS

 PART NAME/TITLE
PLUG-CYLINDER HEAD

 SPECIFICATION NO.
C157G-543-AC

 REV
AP

 RELEASE NO.
EN00E11189361000

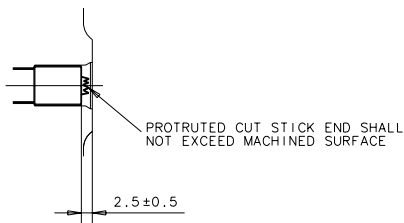
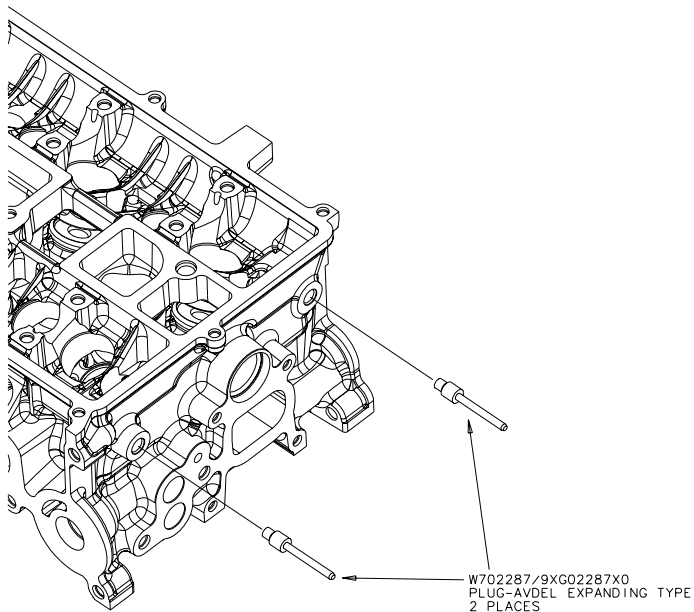
 DATE
01-06-22

 MODEL
2001 2.0L-4V NON D1 CD132

 SHEET
35

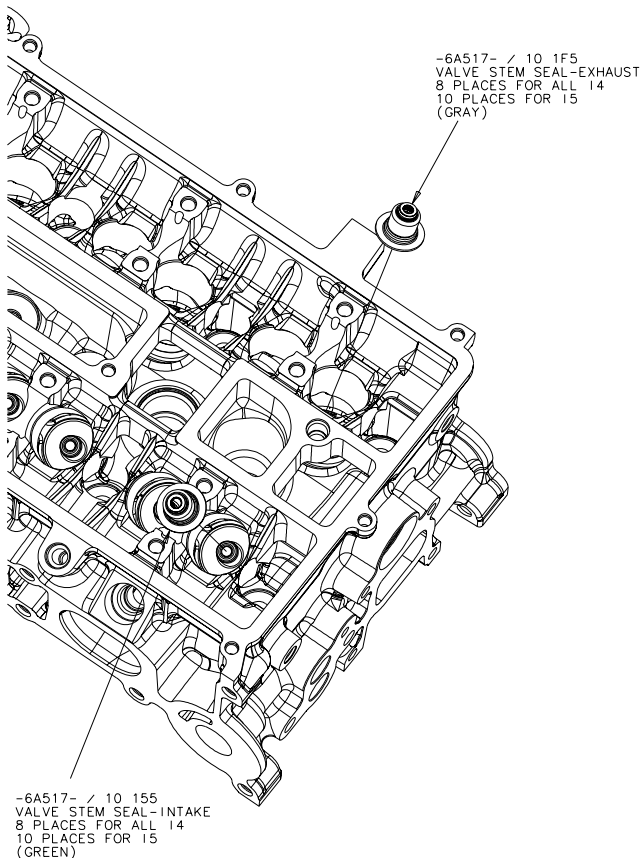
 CONTD.
36

ENGINE ASSEMBLY PROCEDURES AND INSTRUCTIONS CLEARANCE LIMITS AND SPECIFICATIONS



RESTRICTIONS				PART NAME/TITLE PLUG-AVDEL			
SPECIFICATION NO.	REV	RELEASE NO.	DATE	MODEL	SHEET	CONTD.	
C157G-543-AC	C	EN00110819645017	99-02-25	2001 2.0L-4V NON DI CD132	36	37	

ENGINE ASSEMBLY PROCEDURES AND INSTRUCTIONS CLEARANCE LIMITS AND SPECIFICATIONS



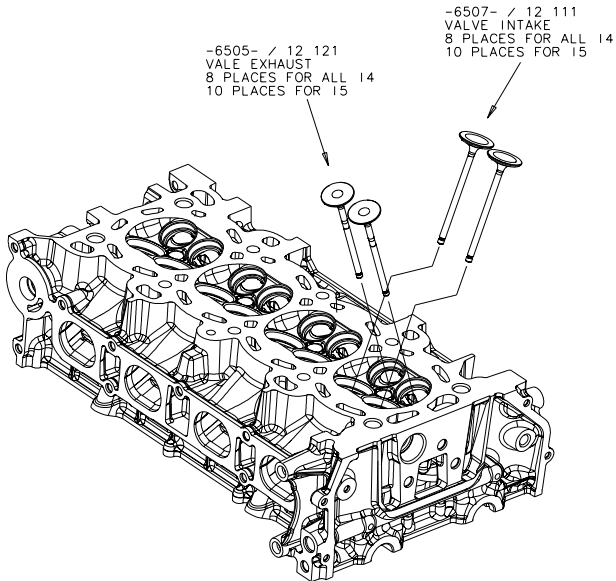
RESTRICTIONS

PART NAME/TITLE

VALVE STEM OIL SEALS

SPECIFICATION NO.	REV	RELEASE NO.	DATE	MODEL	SHEET	CONTD.
C157G-543-AC	H	EN00E11007392000	99-09-06	2001 2.0L-4V NON DI CD 132	37	38

ENGINE ASSEMBLY PROCEDURES AND INSTRUCTIONS CLEARANCE LIMITS AND SPECIFICATIONS



BEFORE ATTACHING VALVE, APPLY EQUIVALENT OF FACTORY FILL ENGINE OIL TO THE STEM 40mm MAX FROM THE STEM-END. OIL MUST BE APPLIED ON KEY GROOVE.

RESTRICTIONS				PART NAME/TITLE				
				INTAKE & EXHAUST VALVES				
SPECIFICATION NO. C1S7G-543-AC	REV H	RELEASE NO. EN00E11007392000	DATE 99-09-06	MODEL 2001 2.0L-4V NON DI CD132	SHEET 38	CONTD. 39		

ENGINE ASSEMBLY PROCEDURES AND INSTRUCTIONS

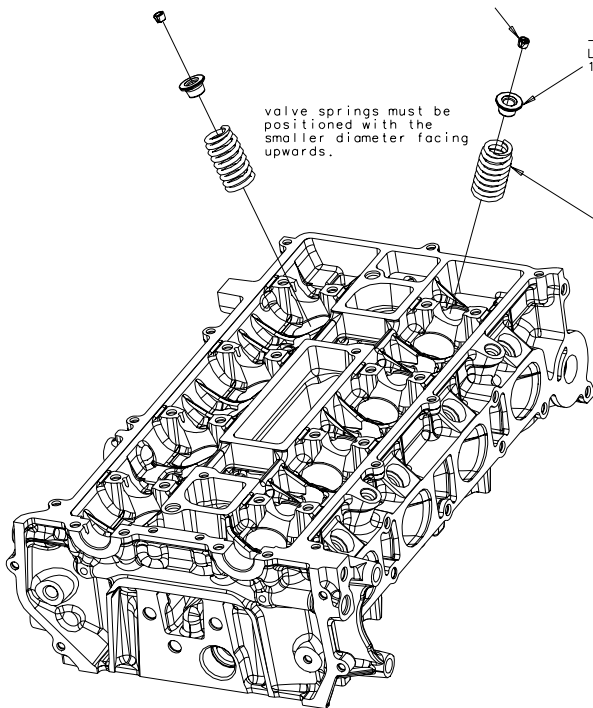
CLEARANCE LIMITS AND SPECIFICATIONS

-6518- / 12 114
LOCK VALVE SPRING RETAINER
32 PLACES

-6514- / 12 113
LOCK VALVE SPRING
16 PLACES

valve springs must be
positioned with the
smaller diameter facing
upwards.

-6513- / 12 125
VALVE SPRING
16 PLACES



AIR LEAKAGE TEST(DRY CONDITION)

AIR PRESSURE TO BE LOADED ON INTAKE AND EXHAUST PORT IN AIR-TIGHT TEST:14.7 KPa

TOLERABLE LEAKAGE FOR THE ENGINE OF CD132 AND RANGER

INTAKE PORT : WITHIN 50 cm³ [normal]/min (PER ONE PORT)

EXHAUST PORT : WITHIN 100 cm³ [normal]/min (PER ONE PORT)

TOLERABLE LEAKAGE FOR THE OTHER ENGINE

INTAKE & EXHAUST PORT : WITHIN 15 cm³ [normal]/min (PER ONE PORT)

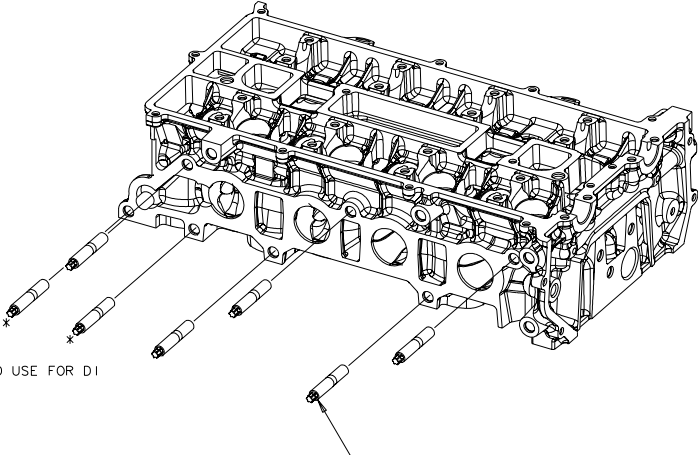
RESTRICTIONS

PART NAME/TITLE

VALVE SPRINGS & RETAINERS

SPECIFICATION NO.	REV	RELEASE NO.	DATE	MODEL	SHEET	CONTD.
C1S7G-543-AC	BC	EN00E11185527000	01-10-30	2001 2.0L-4V NON DI CD132	39	40

ENGINE ASSEMBLY PROCEDURES AND INSTRUCTIONS
CLEARANCE LIMITS AND SPECIFICATIONS



* NO USE FOR DI

-W704474- / 9XG044474
STUD M10
5 PLACES FOR DI
7 PLACES FOR OTHER I4
TORQUE 17±2 Nm

NOTE :

STUDS MAY BE ASSEMBLED ON MAIN ENGINE LINE

RESTRICTIONS

PART NAME/TITLE

STUDS-EXHAUST MANIFOLD

SPECIFICATION NO.
C1S7G-543-AC

REV
AU

RELEASE NO.
EN00E11212646000

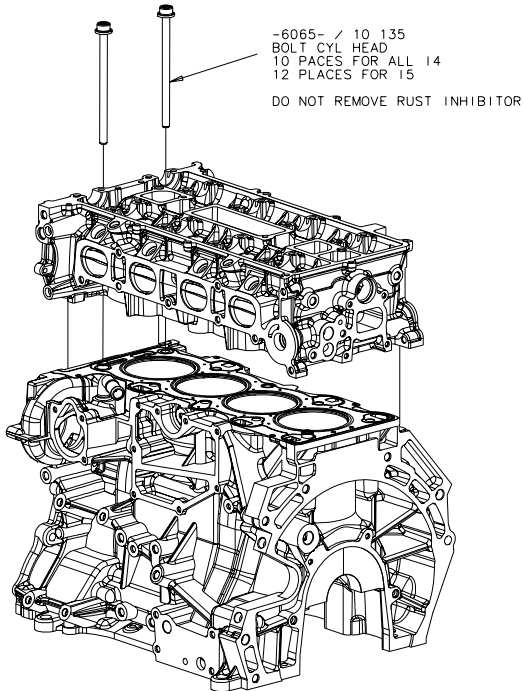
DATE
01-08-07

MODEL
2001 2.0L-4V NON DI CD132

SHEET
40

CONTD.
41

ENGINE ASSEMBLY PROCEDURES AND INSTRUCTIONS CLEARANCE LIMITS AND SPECIFICATIONS



FOR CYLINDER HEAD
BOLT ASSEMBLY PROCEDURE
SEE PROCEDURE - CYLINDER HEAD BOLTS

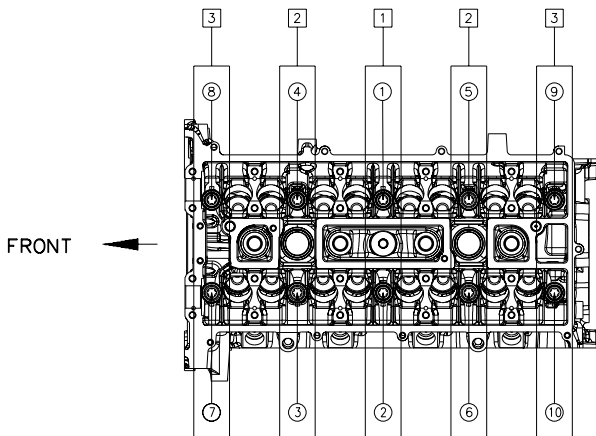
RESTRICTIONS

PART NAME/TITLE

CYLINDER HEAD & BOLTS

SPECIFICATION NO.	REV	RELEASE NO.	DATE	MODEL	SHEET	CONTD.
C1S7G-543-AC	D	EN00E10967761000	'99-04-28	2001 2.0L-4V NON D1 CD132	41	42

ENGINE ASSEMBLY PROCEDURES AND INSTRUCTIONS
CLEARANCE LIMITS AND SPECIFICATIONS



MULTI-SPINDLE METHOD.

1. RUNDOWN ALL BOLTS SIMULTANEOUSLY TO 5 Nm.
2. RUNDOWN ALL BOLTS SIMULTANEOUSLY 15±2 Nm.
3. RUNDOWN ALL BOLTS TO 45±1 Nm.
- TIGHTNING SEQUENCE AS SHOWN IN THE SKETCH ABOVE. ①~③
4. TURN ALL BOLTS SIMULTANEOUSLY 180°±4°.

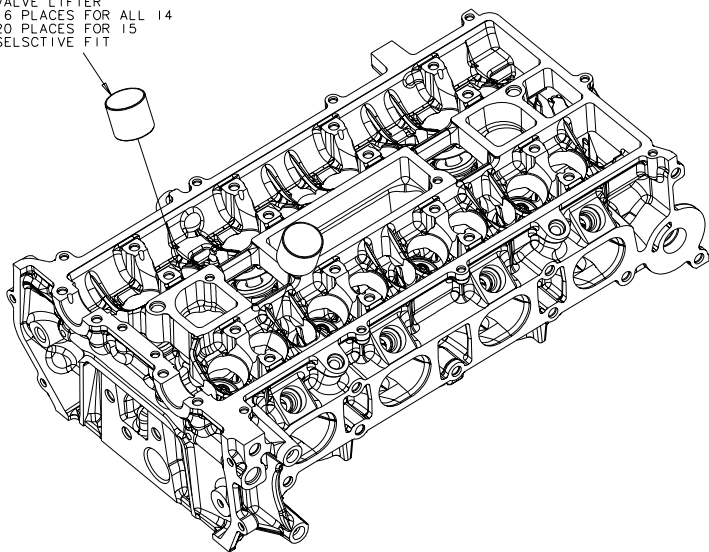
SINGLE WRENCH METHOD.

1. RUNDOWN ALL BOLTS TO 5 Nm.
2. RUNDOWN ALL BOLTS TO 15±2 Nm.
3. RUNDOWN ALL BOLTS TO 45±1 Nm.
4. TURN ALL BOLTS 90°±2°.
5. TURN ALL BOLTS 90°±2°.
- TIGHTNING SEQUENCE AS SHOWN IN THE SKETCH ABOVE. ①~⑩

RESTRICTIONS				PART NAME/TITLE PROSEDURE - CYLINDER HEAD BOLTS			
SPECIFICATION NO. C1S7G-543-AC	REV E	RELEASE NO. EN00E10986253000	DATE *99-06-30	MODEL 2001 2.0L-4V NON DI CD132	SHEET 42	CONTD. 42-D	

ENGINE ASSEMBLY PROCEDURES AND INSTRUCTIONS CLEARANCE LIMITS AND SPECIFICATIONS

-6500- / 12 551
VALVE LIFTER
16 PLACES FOR ALL 14
20 PLACES FOR 15
SELECTIVE FIT



NOTE: LUBRICATE VALVE LIFTER BORE WITH FACTORY FILL ENGINE OIL
BEFORE ASSEMBLY OF VALVE LIFTER

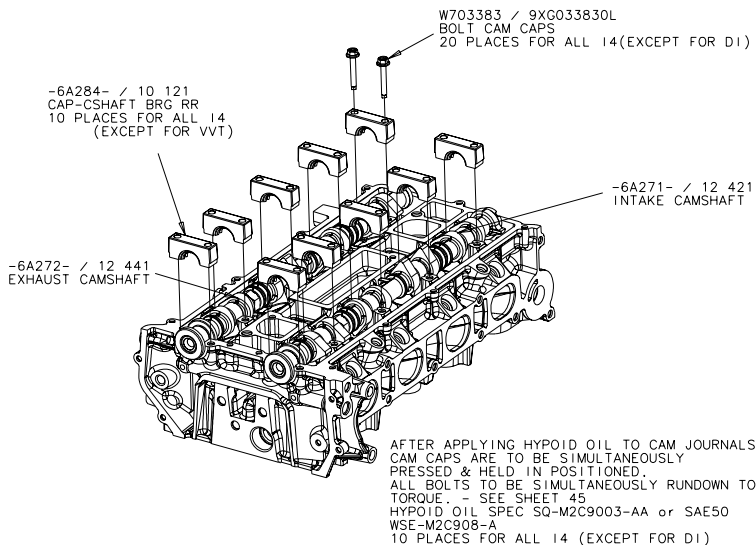
VALVE LIFTERS ARE SELECTED TO GIVE VALVE CLEARANCE OF
0.25±0.03 INTAKE
0.30±0.03 EXHAUST
(AFTER TIGHTENING HEAD BOLT)

RESTRICTIONS

 PART NAME/TITLE
VALVE LIFTERS

SPECIFICATION NO.	REV	RELEASE NO.	DATE	MODEL	SHEET	CONTD.
C1S7G-543-AC	D	EN00E10967761000	'99-04-28	2001 2.0L-4V NON D1 CD132	43	44

ENGINE ASSEMBLY PROCEDURES AND INSTRUCTIONS CLEARANCE LIMITS AND SPECIFICATIONS



ASSEMBLE THE "INTAKE CAMSHAFT" AND
"EXHAUST CAMSHAFT" WITH #1 CYLINDER COMPRESSION TOP DEAD CENTER.

CAMSHAFT THRUST CLEARANCE 0.09-0.24 (INFORMATION ONLY)

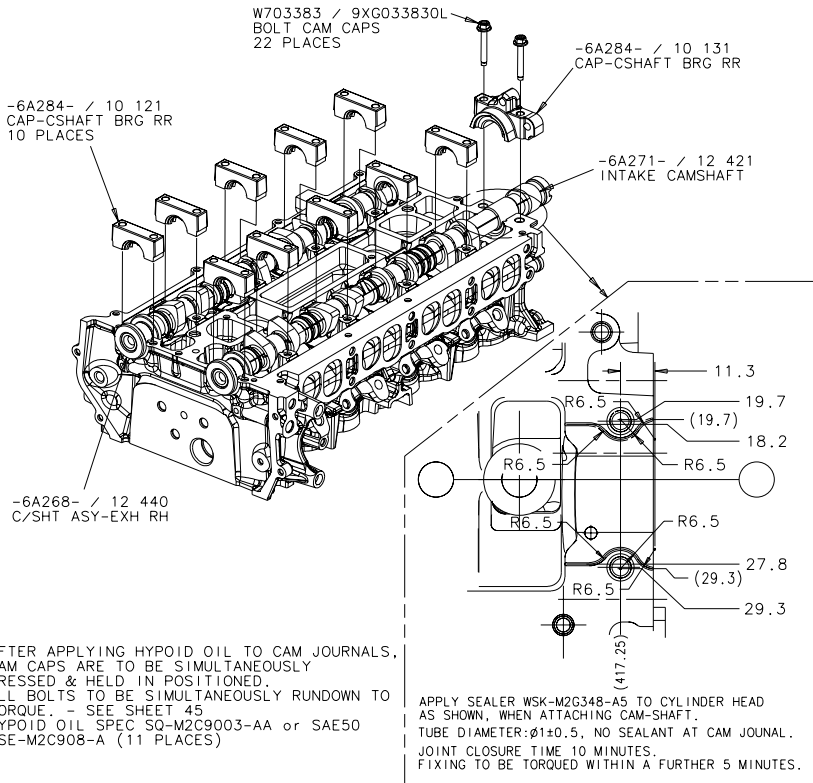
CAUTION:

SET PISTON ON #1 CYLINDER COMPRESSION TOP DEAD CENTER
TO AVOID ANY POSSIBILITY OF PISTON INTERFERING WITH VALVES.

RESTRICTIONS				PART NAME/TITLE			
				CAM SHAFT & CAM CAP			
SPECIFICATION NO.	REV	RELEASE NO.	DATE	MODEL	SHEET	CONTD.	
C1S7G-543-AC	AU	EN00E11212646000	01-08-07	2001 2.0L-4V NON D1 CD132	44	44-C	

ENGINE ASSEMBLY PROCEDURES AND INSTRUCTIONS

CLEARANCE LIMITS AND SPECIFICATIONS



ASSEMBLE THE *INTAKE CAMSHAFT* AND *EXHAUST CAMSHAFT* WITH #1 CYLINDER COMPRESSION TOP DEAD CENTER.

CAMSHAFT THRUST CLEARANCE 0.09-0.24 (INFORMATION ONLY)

CAUTION:

SET PISTON ON #1 CYLINDER COMPRESSION TOP DEAD CENTER TO AVOID ANY POSSIBILITY OF PISTON INTERFERING WITH VALVES.

RESTRICTIONS

PART NAME/TITLE

CAM SHAFT & CAM CAP

 SPECIFICATION NO.
C157G-543-AC

 REV
AU

 RELEASE NO.
EN00E11212646000

 DATE
01-08-07

 MODEL
2003,5 1.8L-4V DI CD132

 SHEET
44-C

 CONTD.
44-D

ENGINE ASSEMBLY PROCEDURES AND INSTRUCTIONS CLEARANCE LIMITS AND SPECIFICATIONS

W703383 / 9XG033830L
BOLT CAM CAPS
20 PLACES

-6A267- / 12 420
C/SHT ASY-INTK LH

(1S7G)
-6A284- / 10 121
CAP-CSHAFT BRG RR
9 PLACES FOR INTAKE VVT

(3M4G)
-6A284- / 10 140
CAP-CSHAFT BRG RR

-6A272- / 12 441
EXHAUST CAMSHAFT

AFTER APPLYING HYPLOID OIL TO CAM JOURNALS,
CAM CAPS ARE TO BE SIMULTANEOUSLY
PRESSED & HELD IN POSITIONED.
ALL BOLTS TO BE SIMULTANEOUSLY RUNDOWN TO
TORQUE. - SEE SHEET 45
HYPLOID OIL SPEC SQ-M2C9003-AA or SAE50
WSE-M2C908-A (10 PLACES)

ASSEMBLE THE *INTAKE CAMSHAFT* AND
EXHAUST CAMSHAFT WITH #1 CYLINDER COMPRESSION TOP DEAD CENTER.

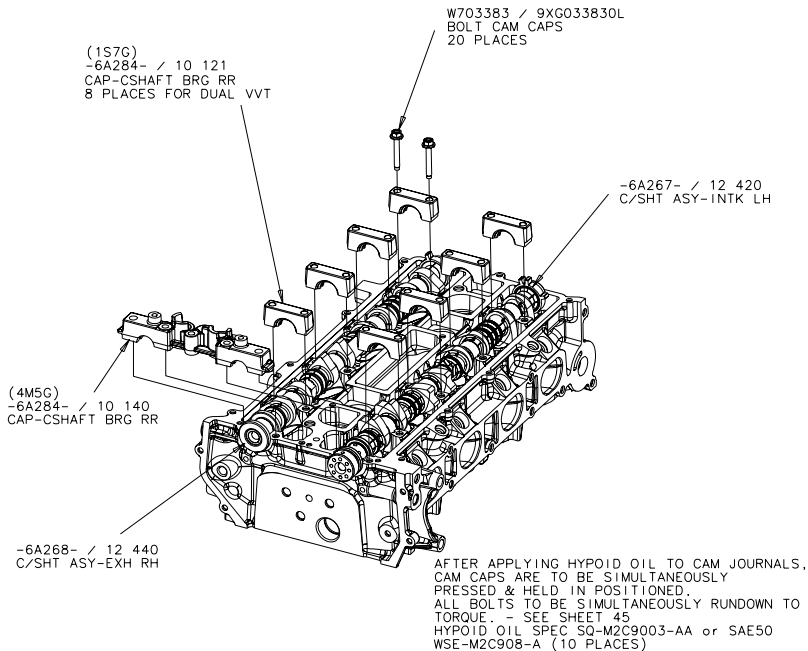
CAMSHAFT THRUST CLEARANCE 0.09-0.24 (INFORMATION ONLY)

CAUTION:

SET PISTON ON #1 CYLINDER COMPRESSION TOP DEAD CENTER
TO AVOID ANY POSSIBILITY OF PISTON INTERFERING WITH VALVES.

RESTRICTIONS				PART NAME/TITLE			
				CAM SHAFT & CAM CAP			
SPECIFICATION NO.	REV	RELEASE NO.	DATE	MODEL	SHEET	CONTD.	
C1S7G-543-AC	AU	EN00E11212646000	01-08-07	2003 2.3L 4V NON DI S-VVT	44-D	44-E	

ENGINE ASSEMBLY PROCEDURES AND INSTRUCTIONS CLEARANCE LIMITS AND SPECIFICATIONS



ASSEMBLE THE *INTAKE CAMSHAFT* AND
EXHAUST CAMSHAFT WITH #1 CYLINDER COMPRESSION TOP DEAD CENTER.

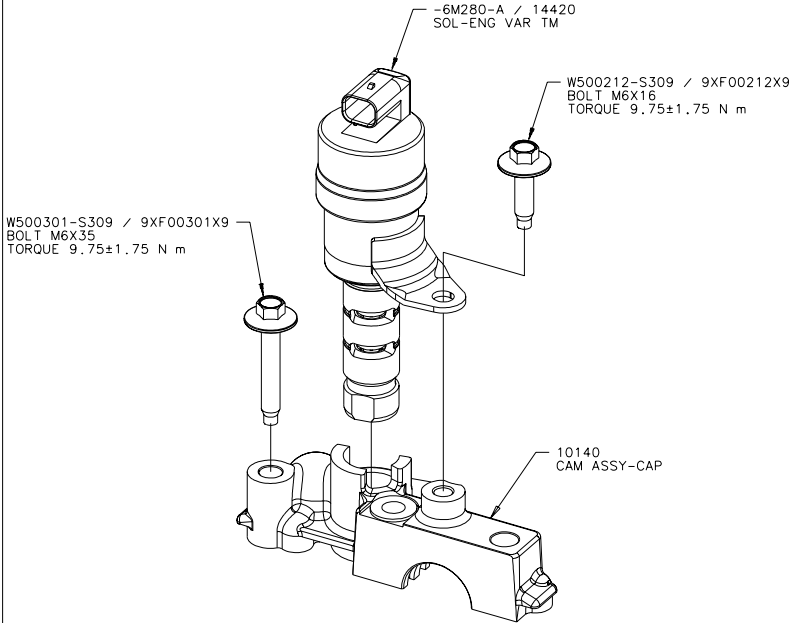
CAMSHAFT THRUST CLEARANCE 0.09-0.24 (INFORMATION ONLY)

CAUTION:

SET PISTON ON #1 CYLINDER COMPRESSION TOP DEAD CENTER
TO AVOID ANY POSSIBILITY OF PISTON INTERFERING WITH VALVES.

RESTRICTIONS				PART NAME/TITLE			
				CAM SHAFT & CAM CAP			
SPECIFICATION NO.	REV	RELEASE NO.	DATE	MODEL	SHEET	CONTD.	
C1S7G-543-AC	AU	EN00E11212646000	01-08-07	2003 2.3L-4V NON DI D-VVT	44-E	44-F	

ENGINE ASSEMBLY PROCEDURES AND INSTRUCTIONS
CLEARANCE LIMITS AND SPECIFICATIONS



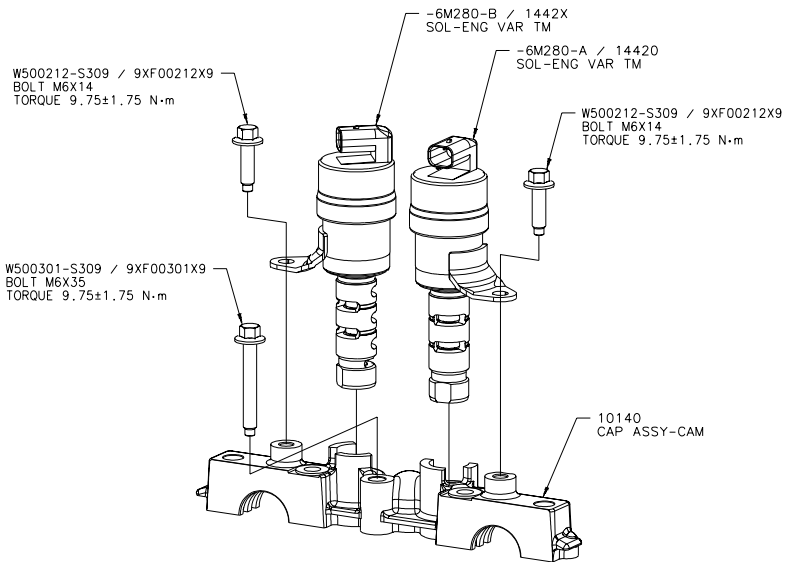
1. TIGHTEN THE "BOLT M6X35".
2. ASSEMBLE THE "SOL-ENG VAR TM".
3. TIGHTEN THE "BOLT M6X14".

RESTRICTIONS

PART NAME/TITLE
SOL-ENG VAR TM

SPECIFICATION NO.	REV	RELEASE NO.	DATE	MODEL	SHEET	CONTD.
C1S7G-543-AC	AH	EN00E11190272000	01-03-28	2003 2.3L-4V NON DI	44-G	44-H

ENGINE ASSEMBLY PROCEDURES AND INSTRUCTIONS CLEARANCE LIMITS AND SPECIFICATIONS



1. TIGHTEN THE "BOLT M6X35".
2. ASSEMBLE THE "SOL-ENG VAR TM".
3. TIGHTEN THE "BOLT M6X14".

RESTRICTIONS

PART NAME/TITLE

SOL-ENG VAR TM

SPECIFICATION NO.
C1S7G-543-AC

REV
AH

RELEASE NO.
EN00E11190272000

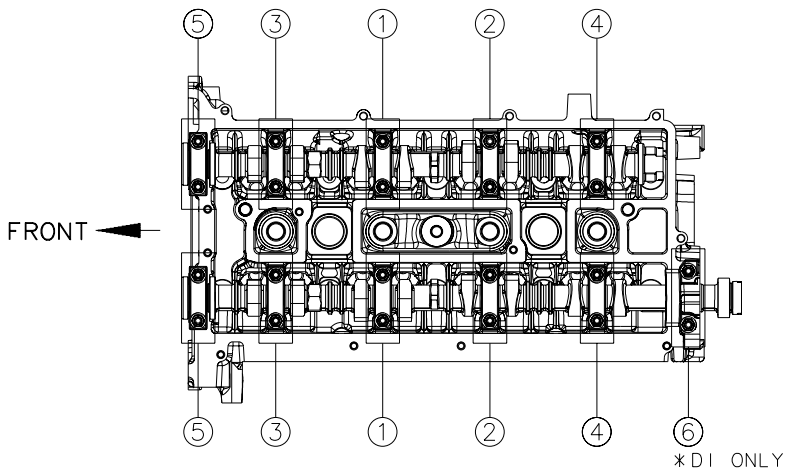
DATE
01-03-28

MODEL
2003 2.3L-4V NON DI

SHEET
44-H

CONTD.
45

ENGINE ASSEMBLY PROCEDURES AND INSTRUCTIONS CLEARANCE LIMITS AND SPECIFICATIONS



MULTI-SPINDLE METHOD.

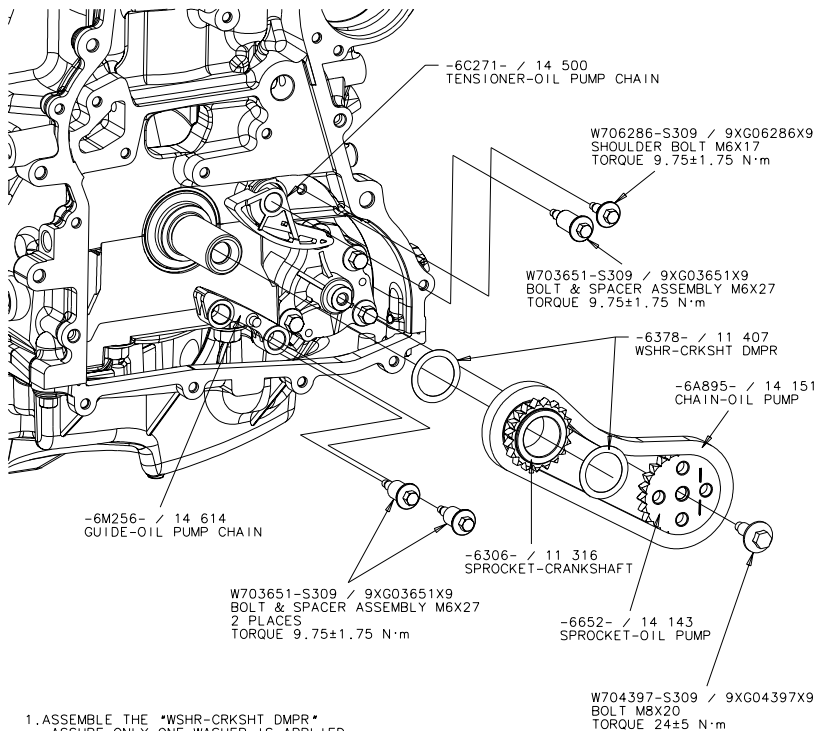
1. RUNDOWN ALL BOLTS SIMULTANEOUSLY TO 7 ± 2 Nm.
2. RUNDOWN ALL BOLTS SIMULTANEOUSLY TO 15.5 ± 1.5 Nm.

SINGLE WRENCH METHOD.

FOLLOW THE SAME RUNDOWN STEPS AS MULTI-SPINDLE METHOD,
BUT FOLLOW THE CAP SEQUENCE INDICATED IN THE SKETCH ABOVE.

RESTRICTIONS				PART NAME/TITLE			
				PROCEDURE - CAMCAP BOLT			
SPECIFICATION NO.	REV	RELEASE NO.	DATE	MODEL	SHEET	CONTD.	
C1S7G-543-AC	H	EN00E11007392000	99-09-06	2001 2.0L-4V NON DI CD132	45	45-D	

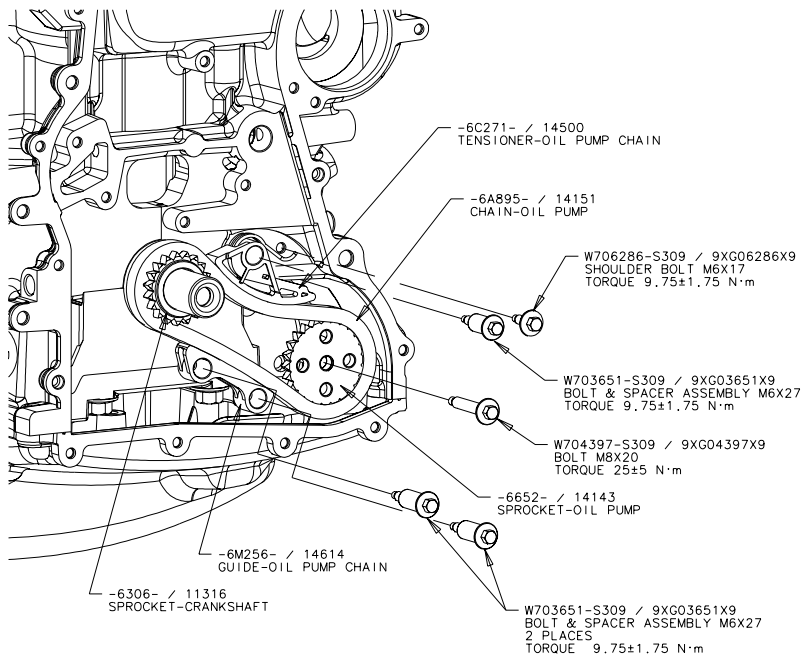
ENGINE ASSEMBLY PROCEDURES AND INSTRUCTIONS CLEARANCE LIMITS AND SPECIFICATIONS



1. ASSEMBLE THE *WSHR-CRKSHT DMPR*
-ASSURE ONLY ONE WASHER IS APPLIED.
-DO NOT USE BENDED WASHER.
-DO NOT REUSE WASHER.
-WASHER CAN BE USED IN BOTH SIDES.
2. ASSEMBLE THE *CHAIN-OIL PUMP*, *SPROCKET-CRANKSHAFT* AND *SPROCKET-OIL PUMP* AT THE SAME TIME.
3. TIGHTEN THE BOLT-OIL PUMP SPROCKET(W704397-S309)
4. ASSEMBLE THE *GUIDE-OIL PUMP CHAIN* AND TIGHTEN THE BOLT
5. TIGHTEN THE *SHOULDER BOLT M6X17*.
6. ASSEMBLE THE *TENSIONER-OIL PUMP CHAIN* AND TIGHTEN THE BOLT.
7. ASSEMBLE THE *WSHR-CRKSHT DMPR*
-ASSURE ONLY ONE WASHER IS APPLIED.
-DO NOT USE BENDED WASHER.
-DO NOT REUSE WASHER.
-WASHER CAN BE USED IN BOTH SIDES.

RESTRICTIONS				PART NAME/TITLE			
				CHAIN-AUX OIL PUMP / SPROCKET-AUX OIL PUMP DRV			
SPECIFICATION NO. C1S7G-543-AC	REV AX	RELEASE NO. EN00 E 11183682 001	DATE 01-09-27	MODEL 2001 2.0L-4V NON DI CD132	SHEET 46	CONTD. 46-A	

ENGINE ASSEMBLY PROCEDURES AND INSTRUCTIONS CLEARANCE LIMITS AND SPECIFICATIONS



1. ASSEMBLE THE "CHAIN-OIL PUMP", "SPROCKET-CRANKSHAFT" AND "SPROCKET-OIL PUMP" AT THE SAME TIME.
2. TIGHTEN THE BOLT-OIL PUMP SPROCKET(W704397-S309)
3. ASSEMBLE THE "GUIDE-OIL PUMP CHAIN" AND TIGHTEN THE BOLT
4. TIGHTEN THE "SHOULDER BOLT M6X17".
5. ASSEMBLE THE "TENSIONER-OIL PUMP CHAIN" AND TIGHTEN THE BOLT.

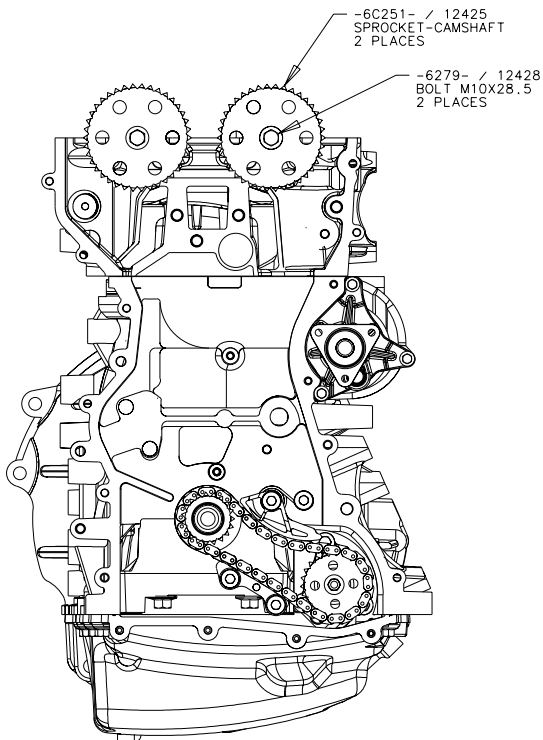
RESTRICTIONS

PART NAME/TITLE

CHAIN-AUX OIL PUMP / SPROCKET-AUX OIL PUMP DRV

SPECIFICATION NO.	REV	RELEASE NO.	DATE	MODEL	SHEET	CONTD.
C1S7G-543-AC	AX	EN00 E11183682 001	01-09-27	2003 2.3L-4V NON DI J56A/F	46-A	47

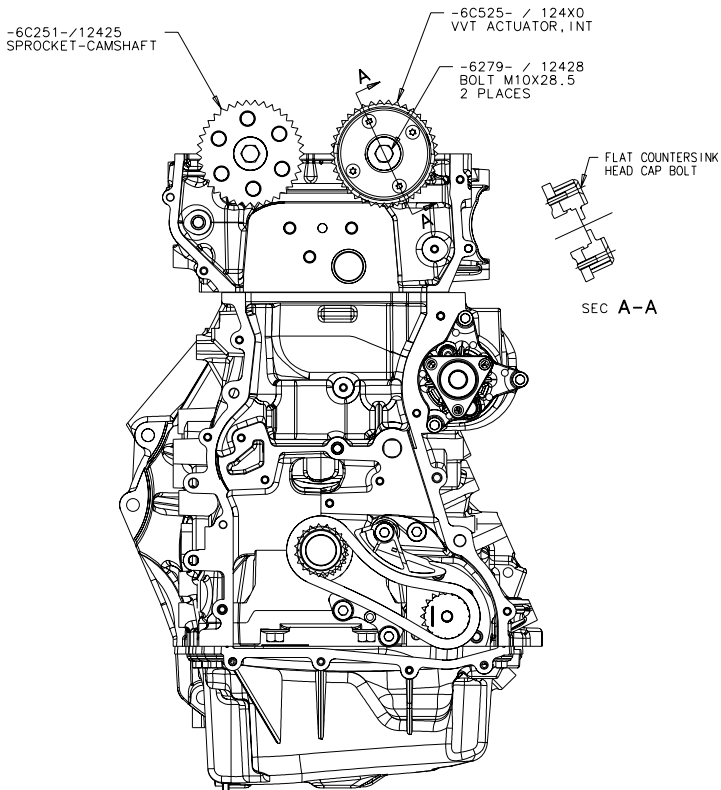
ENGINE ASSEMBLY PROCEDURES AND INSTRUCTIONS CLEARANCE LIMITS AND SPECIFICATIONS



PUT *SPROCKET-CAMSHAFT* ON THE CAMSHAFTS.
ASSEMBLE CAMSHAFT BOLT.

RESTRICTIONS				PART NAME/TITLE			
				SPROCKET-CAMSHAFT			
SPECIFICATION NO.	REV	RELEASE NO.	DATE	MODEL	SHEET	CONTD.	
C1S7G-543-AC	AW	EN00E11114191001	01-09-11	2001 2.0L-4V NON DI CD132	47	47-E	

ENGINE ASSEMBLY PROCEDURES AND INSTRUCTIONS
CLEARANCE LIMITS AND SPECIFICATIONS



PUT *SPROCKET-CAMSHAFT* AND *VVT ACTUATOR* ON THE CAMSHAFTS.
ASSEMBLE CAMSHAFT BOLT AND VVT BOLT.

RESTRICTIONS

PART NAME/TITLE
SPROCKET-CAMSHAFT

SPECIFICATION NO.
C1S7G-543-AC

REV
AW

RELEASE NO.
EN00E11114191001

DATE
01-09-11

MODEL
2003 2.3L-4V NON D1

SHEET
47-E

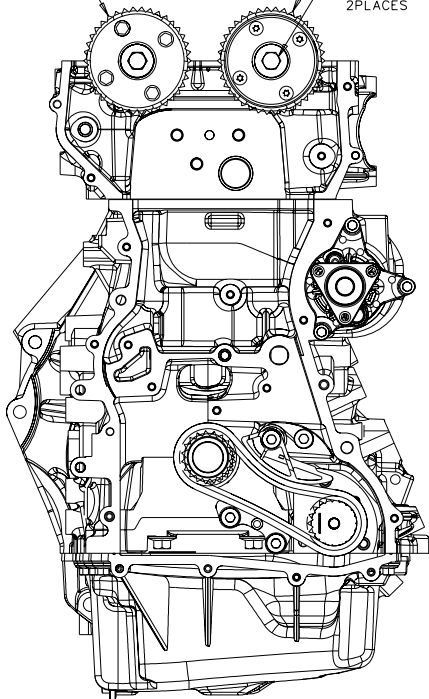
CONTD.
47-F

ENGINE ASSEMBLY PROCEDURES AND INSTRUCTIONS CLEARANCE LIMITS AND SPECIFICATIONS

-6C524- / 12350
VVT ACTUATOR, EXH

-6C525- / 124X0
VVT ACTUATOR, INT

-6279- / 12428
BOLT M10X28.5
2PLACES



PUT *SPROCKET-CAMSHAFT* AND *VVT ACTUATOR* ON THE CAMSHAFTS.
ASSEMBLE CAMSHAFT BOLT.

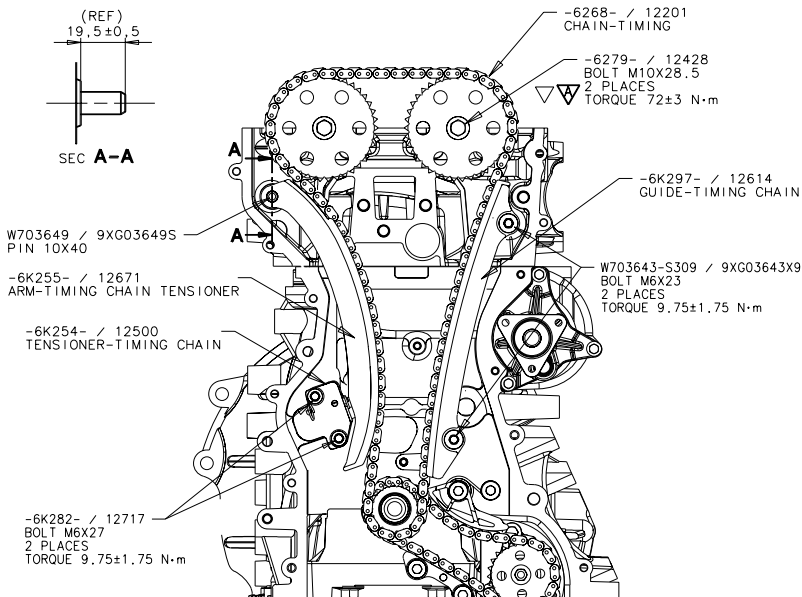
RESTRICTIONS

PART NAME/TITLE

SPROCKET-CAMSHAFT

SPECIFICATION NO.	REV	RELEASE NO.	DATE	MODEL	SHEET	CONTD.
C1S7G-543-AC	AW	EN00E11114191001	01-09-11	2003 2.3L-4V NON DI	47-F	48

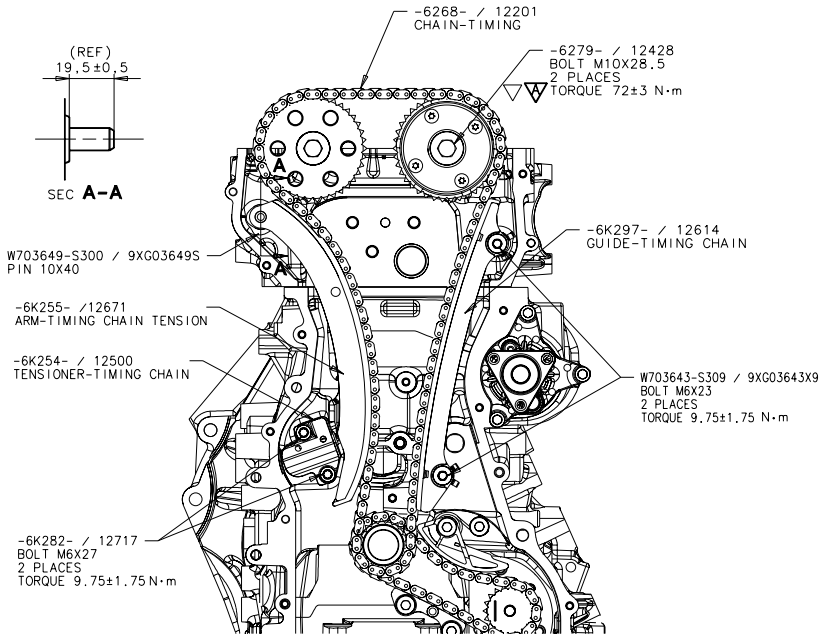
ENGINE ASSEMBLY PROCEDURES AND INSTRUCTIONS CLEARANCE LIMITS AND SPECIFICATIONS



1. ASSEMBLE THE CHAIN OVER *SPROCKET-CAMSHAFT* AND *SPROCKET-CRANKSHAFT* (NO TIMING MARK SPECIFIED).
2. ASSEMBLE THE *GUIDE-TIMING CHAIN* AND FASTEN TIGHTLY.
3. ASSEMBLE THE *ARM-TIMING CHAIN TENSIONER* IN THE PIVOT.
ASSEMBLE *TENSIONER-TIMING CHAIN* AND TIGHTEN THE BOLTS.
4. PULL THE PIN OF *TENSIONER-TIMING CHAIN*. THE CHAIN IS NOW IN TENSION.
5. ROTATE THE CAMSHAFTS BY HOLDING AT THE FLATS BETWEEN THE LOBES OF CYLINDER #1 AND CYLINDER #2 SO THAT THE SLOTS ON THE BACK END OF THE TWO CAM SHAFTS LINE UP.
6. INSERT SPECIAL TOOL IN THE BACK END SLOTS OF CAMSHAFTS TO SET THEM IN THE RIGHT POSITION.
7. HOLD THE *SPROCKET-CAMSHAFT* AND TIGHTEN THE CAM SPROCKET BOLTS.
CAUTION; DO NOT GIVE ROTATIONAL TORQUE TO THE SPECIAL TOOL THROUGH THE BACK END SLOTS OF CAMSHAFT.

RESTRICTIONS				PART NAME/TITLE			
				CHAIN-TIMING / GUIDE-TIMING CHAIN			
SPECIFICATION NO. C1S7G-543-AC	REV AX	RELEASE NO. EN00E11183682001	DATE 01-09-27	MODEL 2001 2.0L-4V NON DI CD132	SHEET 48	CONTD. 48-E	

ENGINE ASSEMBLY PROCEDURES AND INSTRUCTIONS CLEARANCE LIMITS AND SPECIFICATIONS



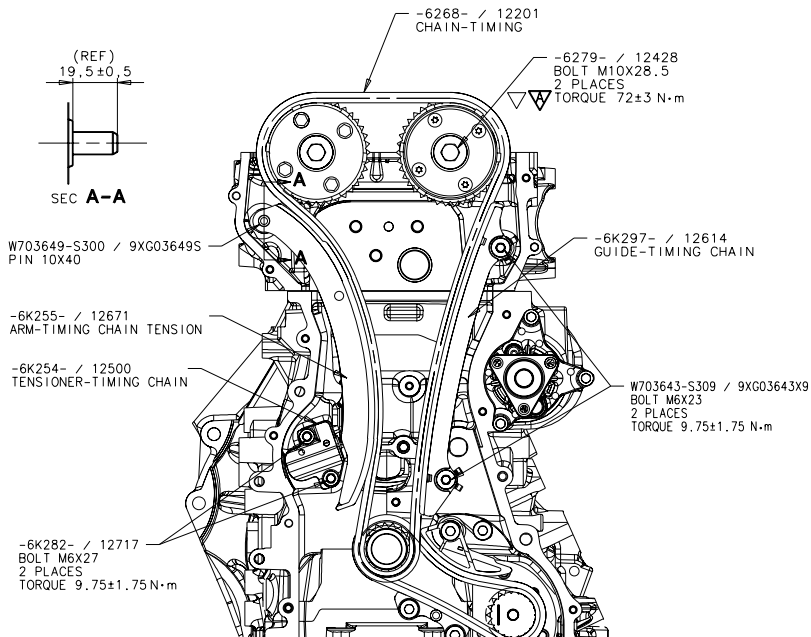
1. ASSEMBLE THE CHAIN OVER *SPROCKET-CAMSHAFT*, *VVT ACTUATOR* AND *SPROCKET-CRANKSHAFT* (NO TIMING MARK SPECIFIED).
2. ASSEMBLE THE *GUIDE-TIMING CHAIN* AND FASTEN TIGHTLY.
3. ASSEMBLE THE *ARM-TIMING CHAIN TENSIONER* IN THE PIVOT.
ASSEMBLE *TENSIONER-TIMING CHAIN* AND TIGHTEN THE BOLTS.
4. PULL THE PIN OF *TENSIONER-TIMING CHAIN*. THE CHAIN IS NOW IN TENSION.
5. ROTATE THE CAMSHAFTS BY HOLDING AT THE FLATS BETWEEN THE LOBES OF CYLINDER #1 AND CYLINDER #2 SO THAT THE SLOTS ON THE BACK END OF THE TWO CAM SHAFTS LINE UP.
6. INSERT SPECIAL TOOL IN THE BACK END SLOTS OF CAMSHAFTS TO SET THEM IN THE RIGHT POSITION.
7. HOLD THE *SPROCKET-CAMSHAFT* AND TIGHTEN THE CAM SPROCKET BOLTS.
CAUTION; DO NOT GIVE ROTATIONAL TORQUE TO THE SPECIAL TOOL THROUGH THE BACK END SLOTS OF CAMSHAFT.

RESTRICTIONS

PART NAME/TITLE
CHAIN-TIMING / GUIDE-TIMING CHAIN

SPECIFICATION NO.	REV	RELEASE NO.	DATE	MODEL	SHEET	CONTD.
C1S7G-543-AC	AX	EN00E11183682001	01-09-27	2003 2.3L-4V NON DI	48-E	48-F

ENGINE ASSEMBLY PROCEDURES AND INSTRUCTIONS CLEARANCE LIMITS AND SPECIFICATIONS

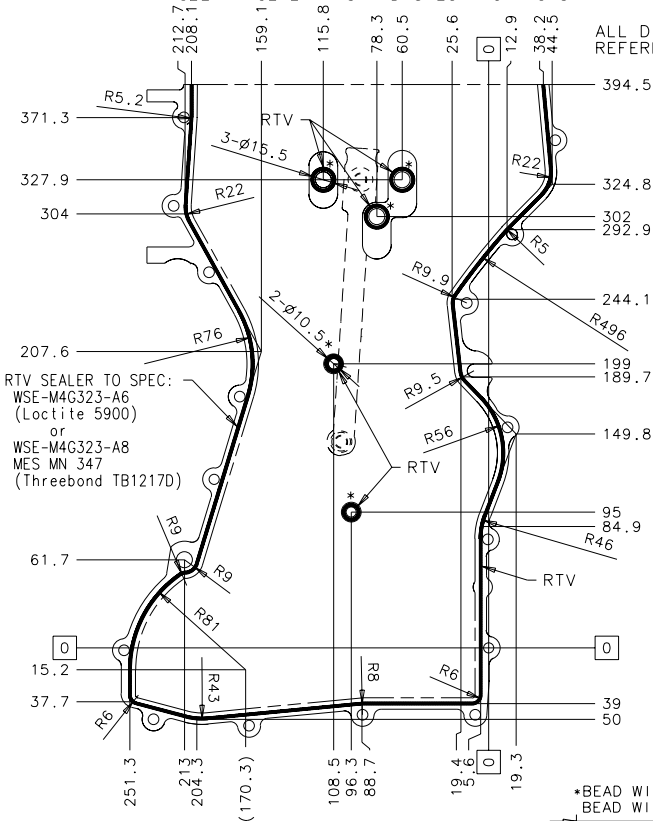


1. ASSEMBLE THE CHAIN OVER *VVT ACTUATOR INT*, *VVT ACTUATOR EXH* AND *SPROCKET-CRANKSHAFT* (NO TIMING MARK SPECIFIED).
2. ASSEMBLE THE *GUIDE-TIMING CHAIN* AND FASTEN TIGHTLY.
3. ASSEMBLE THE *ARM-TIMING CHAIN TENSIONER* IN THE PIVOT.
ASSEMBLE *TENSIONER-TIMING CHAIN* AND TIGHTEN THE BOLTS.
4. PULL THE PIN OF *TENSIONER-TIMING CHAIN*. THE CHAIN IS NOW IN TENSION.
5. ROTATE THE CAMSHAFTS BY HOLDING AT THE FLATS BETWEEN THE LOBES OF CYLINDER #1 AND CYLINDER #2 SO THAT THE SLOTS ON THE BACK END OF THE TWO CAM SHAFTS LINE UP.
6. INSERT SPECIAL TOOL IN THE BACK END SLOTS OF CAMSHAFTS TO SET THEM IN THE RIGHT POSITION.
7. HOLD THE *VVT ACTUATOR* AND TIGHTEN THE VVT SPROCKET BOLTS.
CAUTION; DO NOT GIVE ROTATIONAL TORQUE TO THE SPECIAL TOOL THROUGH THE BACK END SLOTS OF CAMSHAFT.

RESTRICTIONS				PART NAME/TITLE CHAIN-TIMING / GUIDE-TIMING CHAIN			
SPECIFICATION NO.	REV	RELEASE NO.	DATE	MODEL	SHEET	CONTD.	
C1S7G-543-AC	AX	EN00E11183682001	01-09-27	2003 2.3L-4V VVT / BS	48-F	49-A	

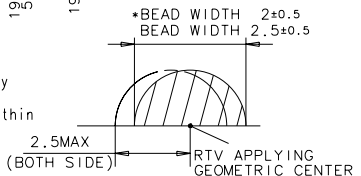
ENGINE ASSEMBLY PROCEDURES AND INSTRUCTIONS CLEARANCE LIMITS AND SPECIFICATIONS

ALL DIMENSION ARE REFERENCE.



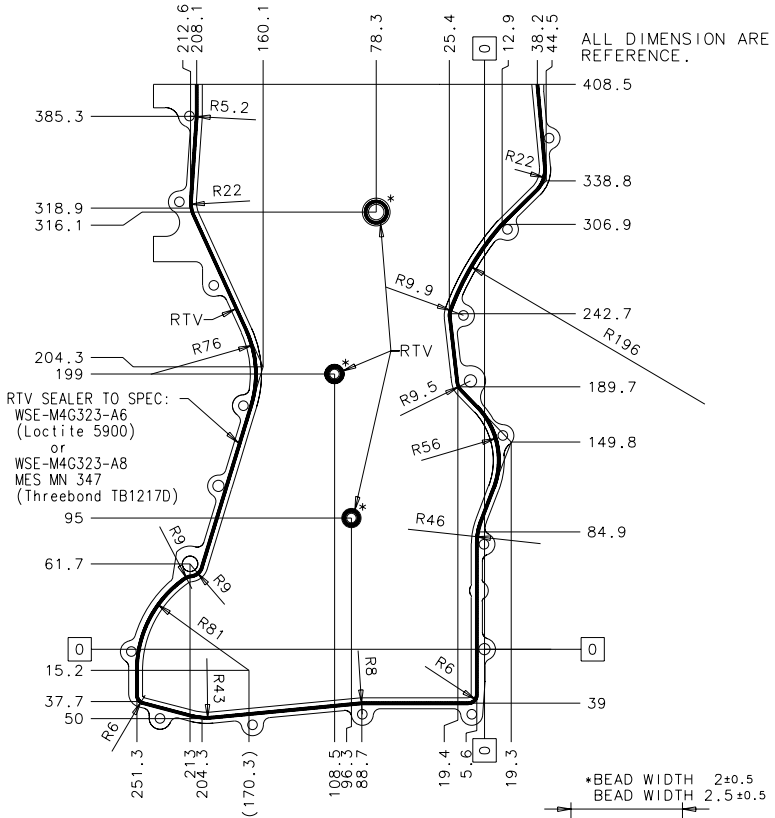
NOTES

- 1.No sticking of stain, dust, etc is allowed on RTV apply surface of cylinder block.
- 2.After applying RTV, complete assembling Front cover within 10 min, and then complete tightening all bolts within further 5 min.(within 15 min in total.)



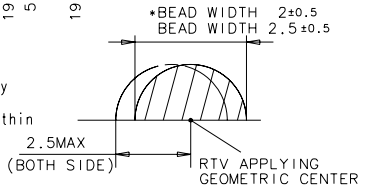
RESTRICTIONS				PART NAME/TITLE RTV SEALER-FRONT COVER			
SPECIFICATION NO. C1S7G-543-AC	REV BG	RELEASE NO. EN00E11282537000	DATE 01-11-09	MODEL 2001 2.0L-4V NON D1 CD132	SHEET 49-A	CONTD. 49-B	

ENGINE ASSEMBLY PROCEDURES AND INSTRUCTIONS CLEARANCE LIMITS AND SPECIFICATIONS



NOTES

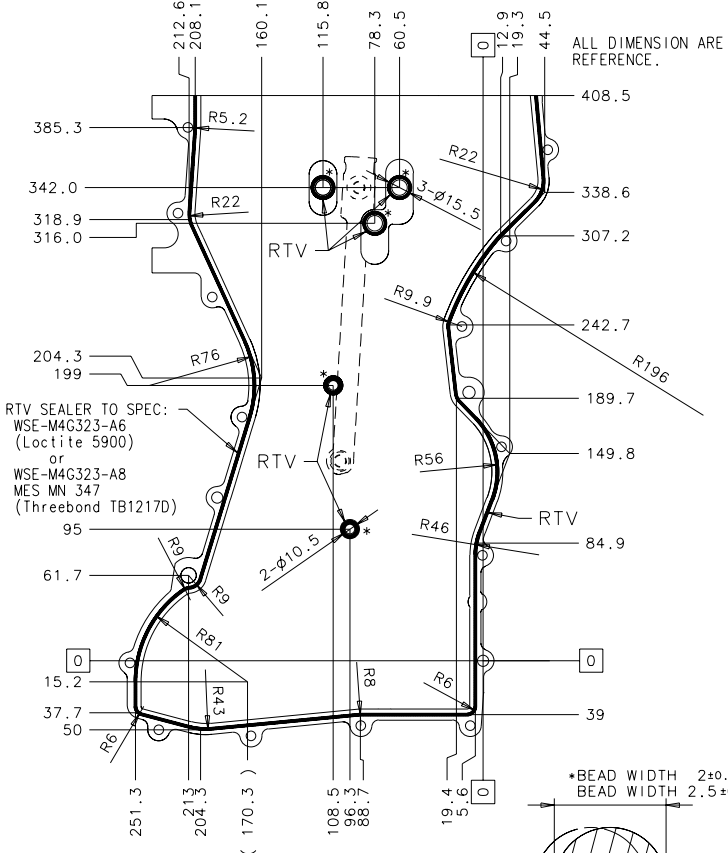
- 1.No sticking of stain, dust, etc is allowed on RTV apply surface of cylinder block.
- 2.After applying RTV, complete assembling Front cover within 10 min, and then complete tightening all bolts within further 5 min.(within 15 min in total.)



RESTRICTIONS				PART NAME/TITLE RTV SEALER-FRONT COVER				
SPECIFICATION NO. C1S7G-543-AC	REV BG	RELEASE NO. EN00E11282537000	DATE 01-11-09	MODEL 2001 2.3L-4V NON DI RANGER	SHEET 49-B	CONTD. 49-E		

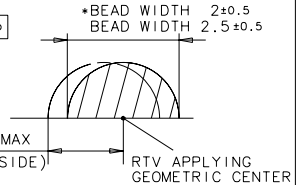
ENGINE ASSEMBLY PROCEDURES AND INSTRUCTIONS

CLEARANCE LIMITS AND SPECIFICATIONS



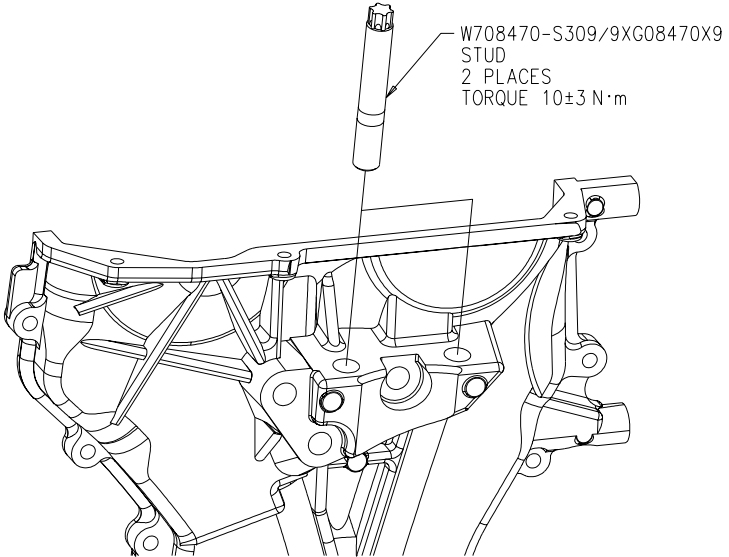
NOTES

- 1.No sticking of stain, dust, etc is allowed on RTV apply surface of cylinder block.
- 2.After applying RTV, complete assembling Front cover within 2.5MAX 10 min, and then complete tightening all bolts within further 5 min.(within 15 min in total.)



RESTRICTIONS				PART NAME/TITLE			
				RTV SEALER-FRONT COVER			
SPECIFICATION NO.	REV	RELEASE NO.	DATE	MODEL	SHEET	CONTD.	
C1S7G-543-AC	BG	EN00E11282537000	01-11-09	2002 2.3L-4V NON DI J56J	49-E	50	

ENGINE ASSEMBLY PROCEDURES AND INSTRUCTIONS
CLEARANCE LIMITS AND SPECIFICATIONS



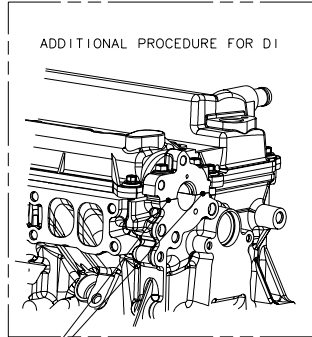
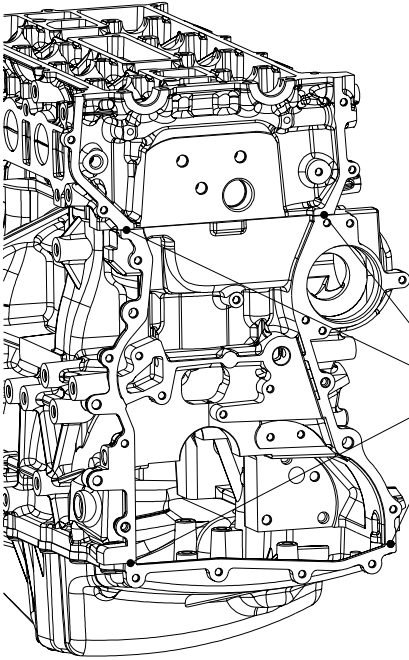
RESTRICTIONS

PART NAME/TITLE

STUD-ENGINE MOUNT

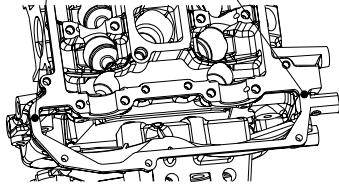
SPECIFICATION NO.	REV	RELEASE NO.	DATE	MODEL	SHEET	CONTD.
C1S7G-543-AC	BG	EN00E11282537000	01-11-09	2001 2.0L-4V NON DI CD132	50	50-A

ENGINE ASSEMBLY PROCEDURES AND INSTRUCTIONS
CLEARANCE LIMITS AND SPECIFICATIONS



ADDITIONAL PROCEDURE FOR D1

EXPOSED SURFACE :
ENSURE THAT EXCESS RTV MATERIAL
IS REMOVED FROM "T-JOINT"
PRIOR TO SEALING THE JOINT LATER
IN THE PROCESS.

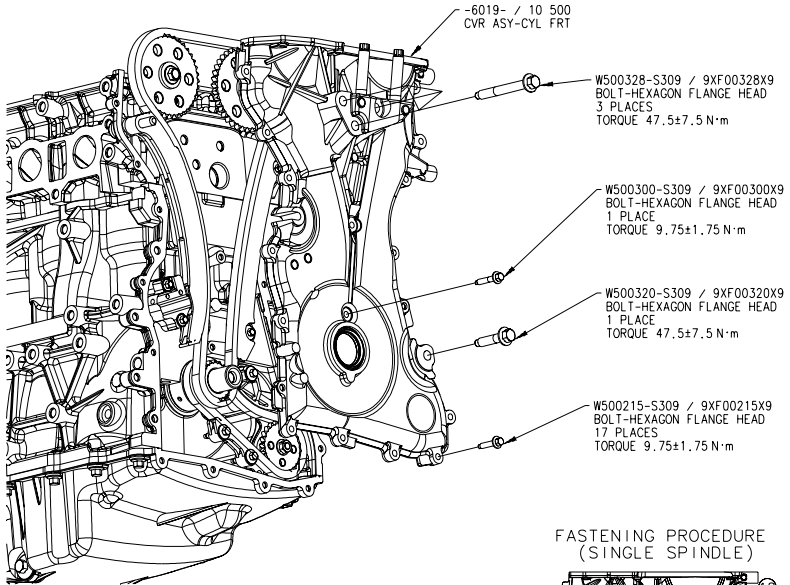


RESTRICTIONS

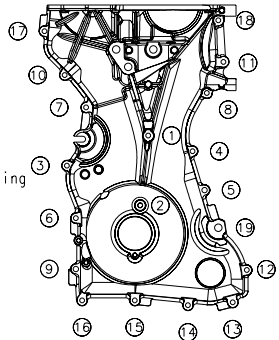
PART NAME/TITLE
EXCESS RTV REMOVING

SPECIFICATION NO.	REV	RELEASE NO.	DATE	MODEL	SHEET	CONTD.
C1S7G-543-AC	H	EN00E11007392000	99-09-06	2001 2.0L-4V NON D1 CD132	51	52-A

ENGINE ASSEMBLY PROCEDURES AND INSTRUCTIONS CLEARANCE LIMITS AND SPECIFICATIONS



FASTENING PROCEDURE (SINGLE SPINDLE)



NOTES

1. No sticking of stain, dust, etc is allowed on front cover sealing surface of cylinder block, cylinder head, front cover.
2. If parts have scratch on seal face of front cover assembly, which might give negative effect on sealability, those have to be replaced with good part.

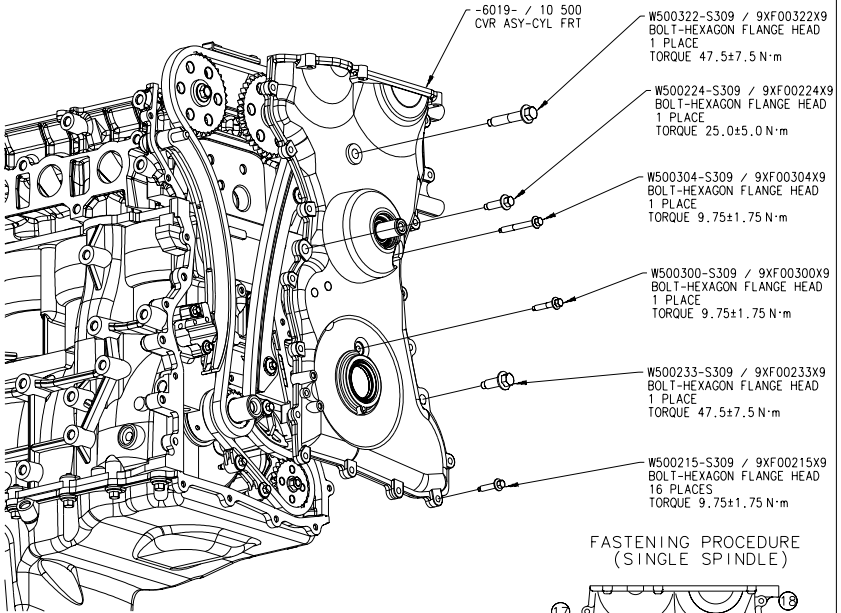
RESTRICTIONS

PART NAME/TITLE

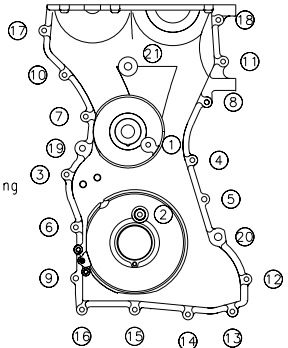
COVER ASY-CYL FRONT

SPECIFICATION NO.	REV	RELEASE NO.	DATE	MODEL	SHEET	CONTD.
C1S7G-543-AC	R	EN00E11069681001	00-04-20	2001 2.0L-4V NON DI CD132	52-A	52-B

ENGINE ASSEMBLY PROCEDURES AND INSTRUCTIONS CLEARANCE LIMITS AND SPECIFICATIONS



FASTENING PROCEDURE (SINGLE SPINDLE)



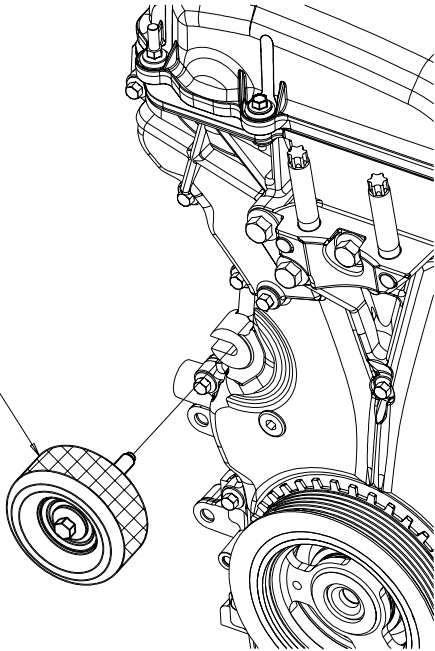
NOTES

1. No sticking of stain, dust, etc is allowed on front cover sealing surface of cylinder block, cylinder head, front cover.
2. If parts have scratch on seal face of front cover assembly, which might give negative effect on sealability, those have to be replaced with good part.

RESTRICTIONS				PART NAME/TITLE COVER ASY-CYL FRONT			
SPECIFICATION NO. C1S7G-543-AC	REV R	RELEASE NO. EN00E11069681001	DATE 00-04-20	MODEL 2001 2.3L-4V NON DI RANGER	SHEET 52-B	CONTD. 52-E	

ENGINE ASSEMBLY PROCEDURES AND INSTRUCTIONS
CLEARANCE LIMITS AND SPECIFICATIONS

-19A216- / 15 940
IDL ASY-ACC DRV BEL
TORQUE 25±5 N·m



NOTES

1. ENSURE THERE IS NOT ANY GREASE, OIL OR FOREIGN MATTER ON THE HATCHED AREA BEFORE SHIPMENT.
2. DAMAGED PULLEY MUST NOT BE ASSEMBLED.
3. THE PULLEY MUST NOT CONTACT ANY OTHER PARTS OF THE ENGINE DURING ROTATION.

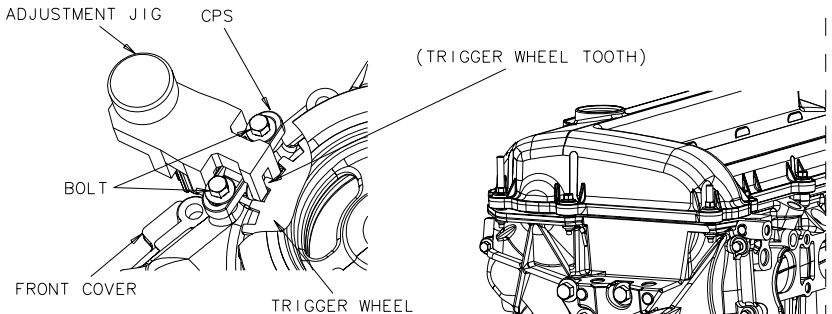
RESTRICTIONS

PART NAME/TITLE

IDLER ASY-ACC DR BELT

SPECIFICATION NO.	REV	RELEASE NO.	DATE	MODEL	SHEET	CONTD.
C1S7G-543-AC	H	EN00E11007392000	'99-09-06	2001 2.0L-4V NON DI CD132	52-E	53-A

ENGINE ASSEMBLY PROCEDURES AND INSTRUCTIONS CLEARANCE LIMITS AND SPECIFICATIONS



CPS ASSEMBLY PROCEDURE

1. SET THE CRANK ANGLE SO THAT CYL. #1 IS SET TO THE 'TDC' POSITION.
2. ASSEMBLE CPS INTO ADJUSTMENT JIG.
3. LOCATE JIG WITH CPS TOGETHER OVER TRIGGER WHEEL TOOTH. (AS IN PICTURE)
4. ASSEMBLE 2 BOLTS. (HAND START)
- KEEPING THE JIG LOCATED ON THE TOOTH.
5. RUN DOWN 2 BOLTS TO FINAL TORQUE
- KEEPING THE JIG LOCATED ON TOOTH.
6. REMOVE JIG.

W701219-S309 / 9XG01219X9
BOLT FLNG HEAD M6X16
2 PLACES
TORQUE 6.5±1 N·m

-6C315- / 18 221
SENSOR-CRANKSHAFT POSITION(CPS)

NOTE:

INSTALLATION OF CPS : ORIENTATE THE SENSOR SO THAT THE ELECTRICAL TERMINALS ARE POINTING AT THE REAR.

RESTRICTIONS

PART NAME/TITLE

SENSOR-CRANKSHAFT POSITION

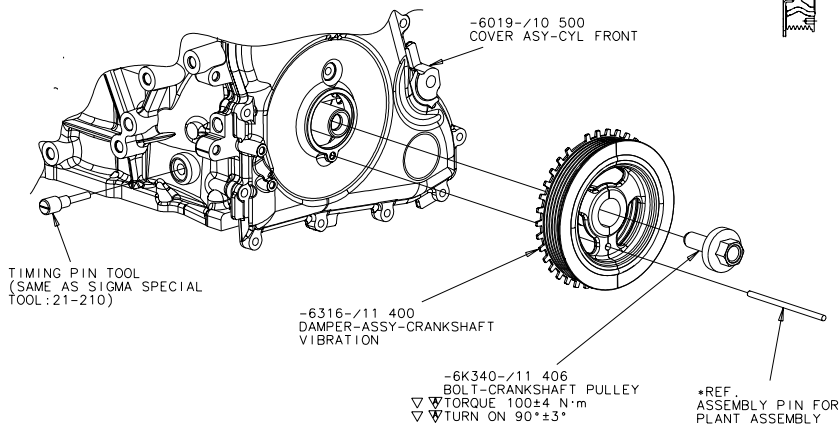
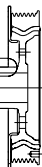
SPECIFICATION NO.	REV	RELEASE NO.	DATE	MODEL	SHEET	CONTD.
C1S7G-543-AC	H	EN00E11007392000	99-09-06	2001 2.0L-4V NON D1 CD132	54	55

ENGINE ASSEMBLY PROCEDURES AND INSTRUCTIONS CLEARANCE LIMITS AND SPECIFICATIONS

PROCEDURE

- INSERT T.D.C. PIN INTO BLOCK(TIMING PIN DETAIL;56)
- TURN CRANKSHAFT TO T.D.C:UNTIL THE CRANKSHAFT LOCATION PAD TOUCHES THE PIN.
- TURN CRANK DAMPER PULLEY UNTIL ALIGN THE TIMING HOLE BETWEEN DAMPER PULLEY AND FRONT COVER.
- INSERT ASSEMBLY PIN INTO DAMPER PULLEY LOCATION HOLE.
- INSERT SPECIAL TOOL IN THE BACK END SLOTS OF CAMSHAFTS TO SET THEN IN THE RIGHT POSITION.
- THEN CLAMP THE DAMPER PULLEY AND RUNDOWN PULLEY LOCK BOLT TO SPECIFIED TORQUE.
- REMOVE TIMING PEG AND UN-LOCK CAMSHAFTS,CRANKSHAFT.

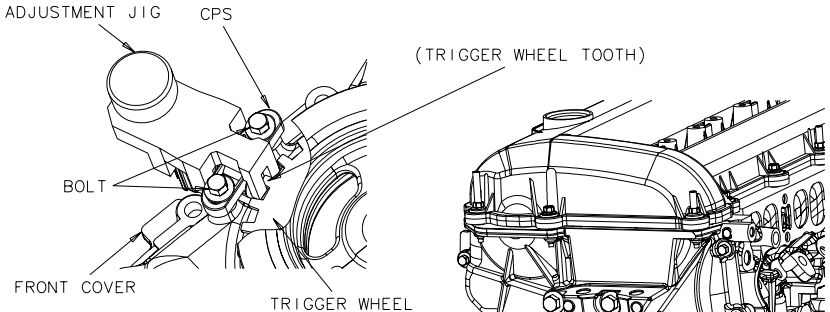
ADD FACTORY FILL
ENGINE OIL ON PULLEY
SEALING SURFACE,
PRIOR TO INSTALL
ON TO CRANKSHAFT.



NOTE :- DO NOT REUSE DAMPER BOLT.

RESTRICTIONS				PART NAME/TITLE			
				PULLEY/DAMPER-CRANKSHAFT			
SPECIFICATION NO.	REV	RELEASE NO.	DATE	MODEL	SHEET	CONTD.	
C1S7G-543-AC	AN	EN00 E 11208966 001	01-06-08	2001 2.0L-4V NON DI CD132	55	56-C	

ENGINE ASSEMBLY PROCEDURES AND INSTRUCTIONS CLEARANCE LIMITS AND SPECIFICATIONS



CPS ASSEMBLY PROCEDURE

1. SET THE CRANK ANGLE SO THAT CYL.#1 IS SET TO THE 'TDC' POSITION.
2. ASSEMBLE CPS INTO ADJUSTMENT JIG.
3. LOCATE JIG WITH CPS TOGETHER OVER TRIGGER WHEEL TOOTH. (AS IN PICTURE)
4. ASSEMBLE 2 BOLTS. (HAND START)
- KEEPING THE JIG LOCATED ON THE TOOTH.
5. RUN DOWN 2 BOLTS TO FINAL TORQUE
- KEEPING THE JIG LOCATED ON TOOTH.
6. REMOVE JIG.

W701219-S309 / 9XG01219X9
BOLT FLNG HEAD M6X16
2 PLACES
TORQUE 6.5±1 N·m

-6C315- / 18 221
SENSOR-CRANKSHAFT POSITION(CPS)

NOTE :

INSTALLATION OF CPS : ORIENTATE THE SENSOR SO THAT THE ELECTRICAL TERMINALS ARE POINTING AT THE REAR.

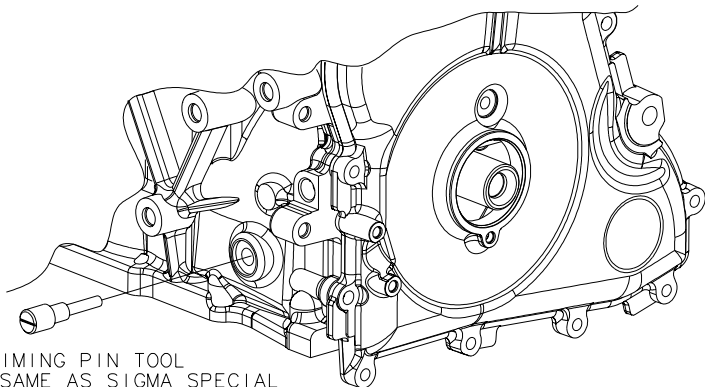
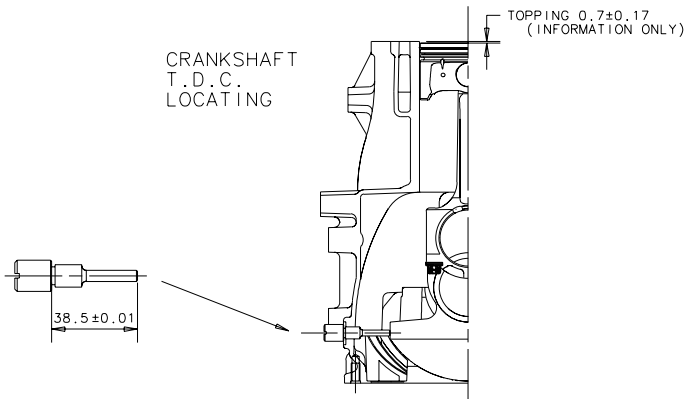
RESTRICTIONS

PART NAME/TITLE

SENSOR-CRANKSHAFT POSITION

SPECIFICATION NO.	REV	RELEASE NO.	DATE	MODEL	SHEET	CONTD.
C1S7G-543-AC	R	EN00E11069681001	00-04-20	2002 1.8L-4V DI C0132	56-C	57

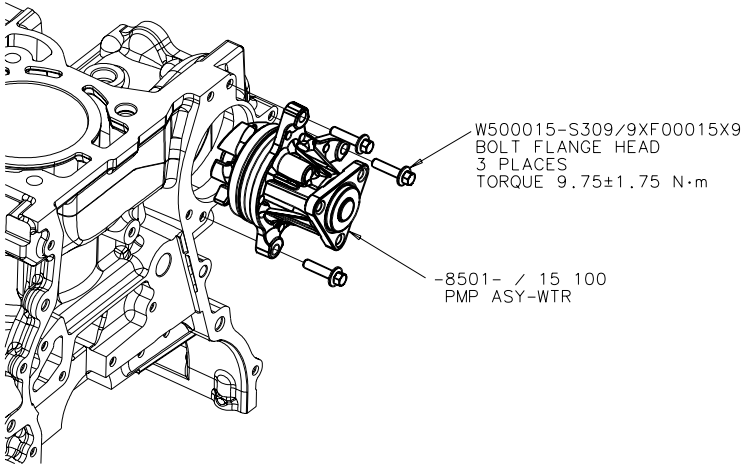
ENGINE ASSEMBLY PROCEDURES AND INSTRUCTIONS
CLEARANCE LIMITS AND SPECIFICATIONS



TIMING PIN TOOL
(SAME AS SIGMA SPECIAL
TOOL : 21-210)

RESTRICTIONS					PART NAME/TITLE			
					SPROCKET-CRANKSHAFT & TIMING PLATE			
SPECIFICATION NO.	REV	RELEASE NO.	DATE	MODEL	SHEET	CONTD.		
C1S7G-543-AC	AE	EN00 E 11157486 001	01-01-31	2001 2.0L-4V NON D1 CD132	57	58		

ENGINE ASSEMBLY PROCEDURES AND INSTRUCTIONS
CLEARANCE LIMITS AND SPECIFICATIONS



NOTES

1. COMPATIBLE WITH "SEALUB S-4"-NOK OR "ESE-M99B144-A" "ESE-M99B144-B" -Merpol TO BE APPLIED TO O_RING BEFORE PUMP ASSEMBLY. MINERAL LUBE(ENGINE OIL,A/T FLUID,GASOLINE etc.)MUST NOT BE USED.
2. STAINS,OILS,FOREIGN MATTER etc.MUST NOT BE VISUALLY PRESENT ON SEAL AREAS OF BLOCK AND PUMP.
3. ASSEMBLE THE PUMP TO BLOCK SQUARELY TO AVOID O_RING DISTORTION.
4. THE PUMP O_RING MUST BE FITTED TO PUMP GROOVE BEFORE ASSEMBLY.
5. DO NOT ASSEMBLE PARTS THAT HAVE DAMAGE.

RESTRICTIONS

PART NAME/TITLE

WATER PUMP & GASKET

SPECIFICATION NO.
C1S7G-543-AC

REV
T

RELEASE NO.
EN00E11095813000

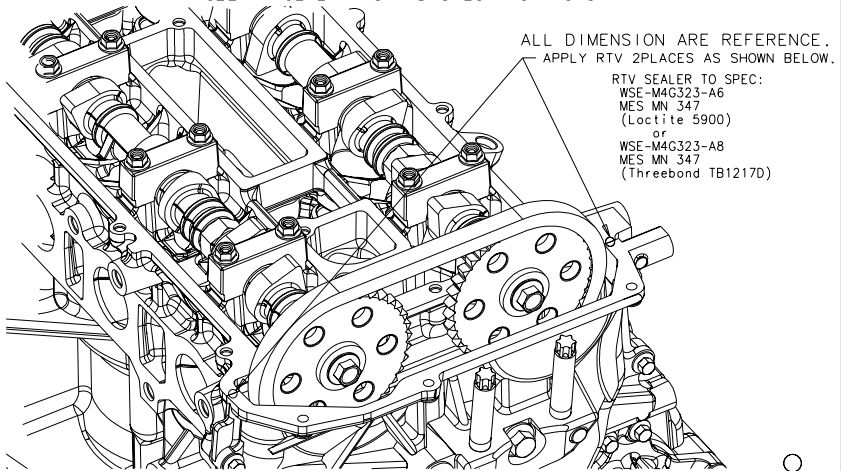
DATE
'00-06-30

MODEL
2001 2.0L-4V NON DI CD132
2001 2.3L-4V NON DI RANGER

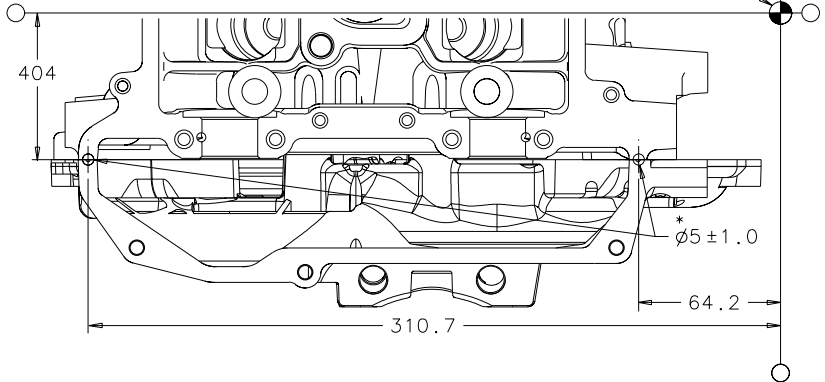
SHEET
59

CONTD.
60

ENGINE ASSEMBLY PROCEDURES AND INSTRUCTIONS CLEARANCE LIMITS AND SPECIFICATIONS



0 POINT OF CYL. BLOCK



NOTES

1. After applying RTV, complete assembling camshaft cover and cylinder head within 10 min and then complete tightening all bolts within further 5 min. (within 15 min in total.)

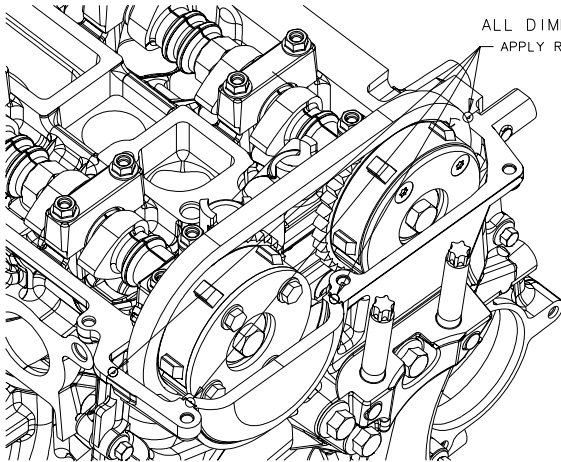
RESTRICTIONS

PART NAME/TITLE

RTV SEALER - CAM COVER

SPECIFICATION NO.	REV	RELEASE NO.	DATE	MODEL	SHEET	CONTD.
C1S7G-543-AC	AA	EN00E11087761000	00-11-17	2001 2.0L-4V NON D1 CD132	60	60-A

ENGINE ASSEMBLY PROCEDURES AND INSTRUCTIONS CLEARANCE LIMITS AND SPECIFICATIONS



ALL DIMENSION ARE REFERENCE.

APPLY RTV 4PLACES AS SHOWN BELOW.

RTV SEALER TO SPEC:

WSE-M4G323-A6

MES MN 347

(Loctite 5900)

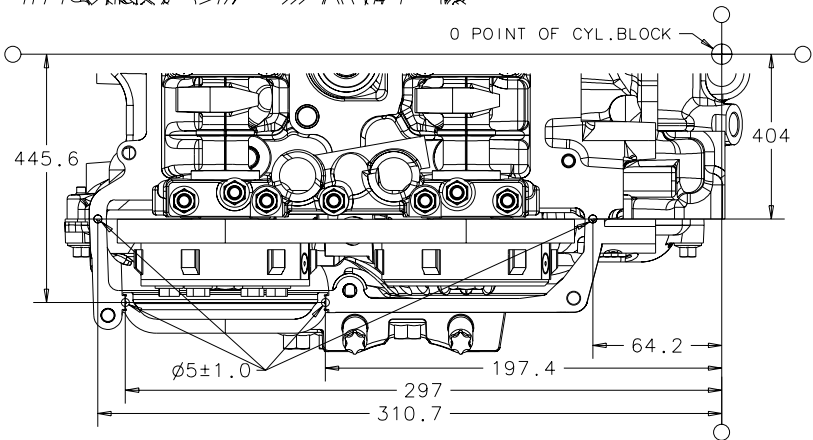
or

WSE-M4G323-A8

MES MN 347

(Threebond TB1217D)

0 POINT OF CYL.BLOCK

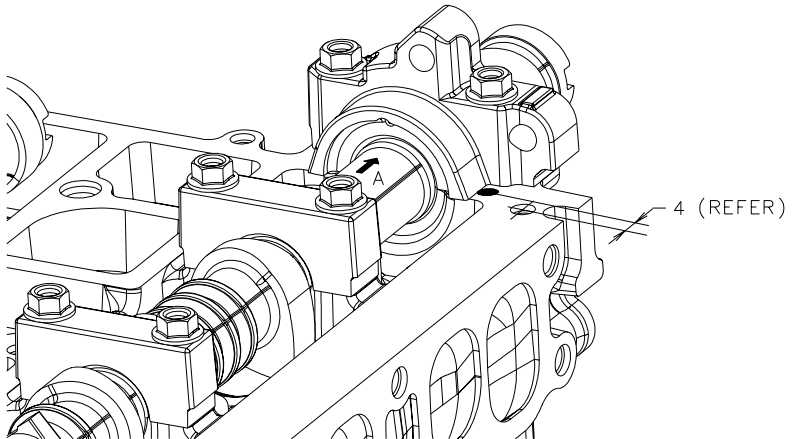


NOTES

- After applying RTV, complete assembling camshaft cover and cylinder head within 10 min and then complete tightening all bolts within further 5 min. (within 15 min in total.)

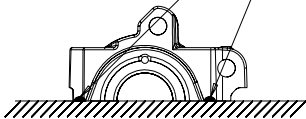
RESTRICTIONS				PART NAME/TITLE			
				RTV SEALER - CAM COVER			
SPECIFICATION NO.	REV	RELEASE NO.	DATE	MODEL	SHEET	CONTD.	
C1S7G-543-AC	AA	EN00E11087761000	00-11-17	2003 2.3L-4V DUAL-WT U204	60-A	60-C	

ENGINE ASSEMBLY PROCEDURES AND INSTRUCTIONS
CLEARANCE LIMITS AND SPECIFICATIONS



RTV SEALER TO SPEC:
WSE-M4G323-A6/MES MN 347
(LOCTITE 5900) OR
WSE-M4G323-A8/MES MN 347
(THREEBOND TB1217D)
2PLACES AS SHOWN BELOW

ø5 (REFER)



HEAD

VIEW A

JOINT CLOSURE TIME 10 MINUTES.
FIXING TO BE TORQUED WITHIN A FURTHER
5 MINUTES (within 15 min in total).

RESTRICTIONS

SPECIFICATION NO.
C1S7G-543-AC

REV
U

RELEASE NO.
EN00E11085584000

DATE
00-07-11

MODEL
2002 2.0L-4V DI CD132

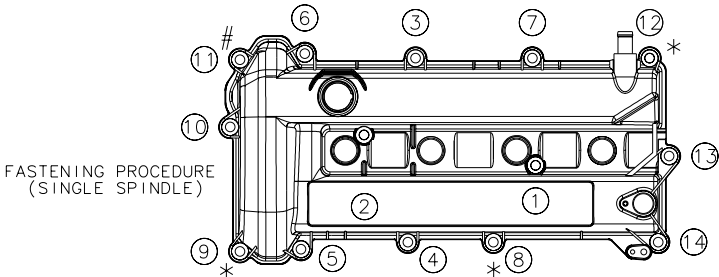
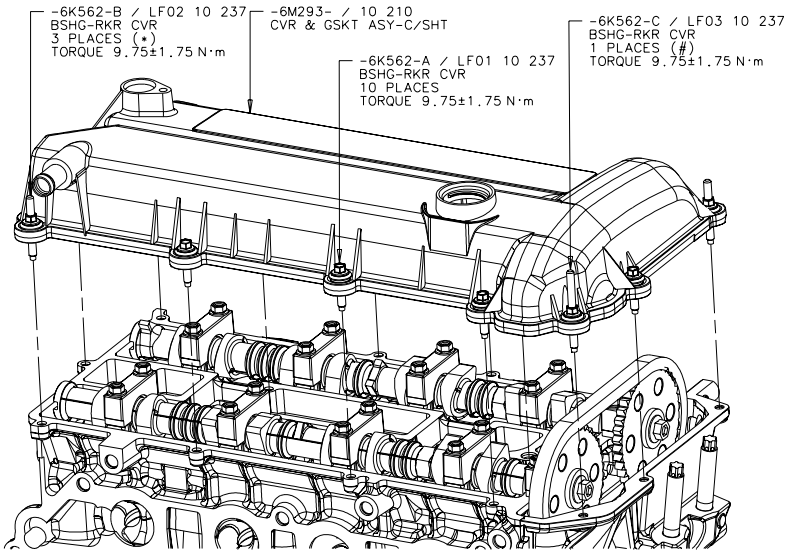
SHEET
60-C

CONTD.
61-A

PART NAME/TITLE
CAM COVER & GASKET ASSEMBLY

ENGINE ASSEMBLY PROCEDURES AND INSTRUCTIONS

CLEARANCE LIMITS AND SPECIFICATIONS



NOTES

1. No sticking of stain, dust, etc is allowed on camshaft cover sealing surface of cylinder head and camshaft cover.
2. If parts have scratch on seal face of camshaft cover assembly, which might give negative effect on sealability, those have to be replaced with good part.

RESTRICTIONS

PART NAME/TITLE

CAM COVER & GASKET ASSEMBLY

 SPECIFICATION NO.
 C1S7G-543-AC

 REV
 H

 RELEASE NO.
 EN00E11007392000

 DATE
 99-09-06

 MODEL
 2001 2.0L-4V NON DI CD132

 SHEET
 61-A

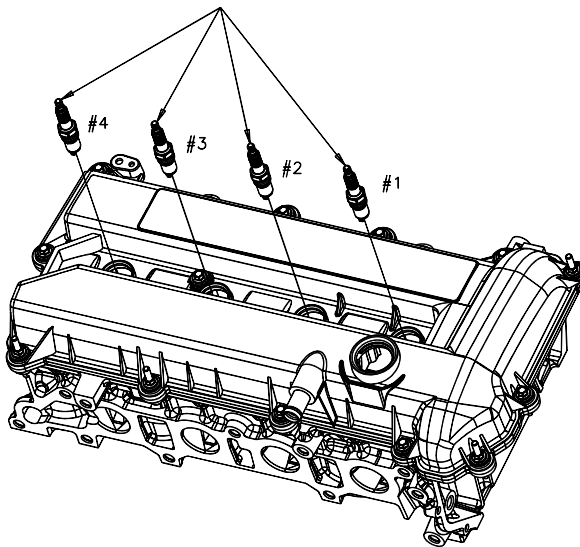
 CONTD.
 61-B

ENGINE ASSEMBLY PROCEDURES AND INSTRUCTIONS CLEARANCE LIMITS AND SPECIFICATIONS

(*) EXCEPT J56A/F/J, J16L, C1

ENG.	PLUG TYPE	ID. COLOR	QUANTITY
1.8/2.0L EW (*)	PTR6F-13	GREEN	4
2.3L NS	PTR5F-11	WHITE	4
2.3L EW (*)	PTR6F-11	YELLOW	4
1.8L DI EW	HGR 7 HQPE0	BLUE	4
PZEV, J56A/F/J, J16L, C1	ITR 6F-13	PINK	4

-12405- / 18 110
SPARK PLUG
TORQUE 12±2 N·m



RESTRICTIONS

PART NAME/TITLE
SPARK PLUG

SPECIFICATION NO.
C1S7G-543-AC

REV
BL

RELEASE NO.
EN00E11271652000

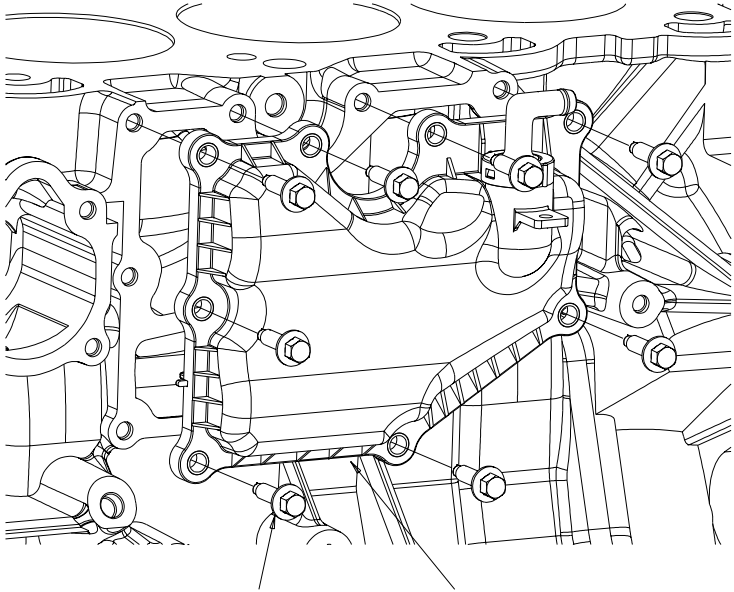
DATE
01-11-15

MODEL
2001 2.0L-4V NON DI

SHEET
62-A

CONTD.
62-B

ENGINE ASSEMBLY PROCEDURES AND INSTRUCTIONS CLEARANCE LIMITS AND SPECIFICATIONS



W500214/9XF00214

BOLT M6

8 PLACES

TORQUE $9.75 \pm 1.75 \text{ N}\cdot\text{m}$

-6A785-/13 570

CRANKCASE VENTILATION COVER ASY

NOTES

1. DO NOT ASSEMBLE PARTS WHERE THERE ARE SCRATCHES OR FOREIGN MATTER WHICH WILL AFFECT SEALABILITY. (INCLUDING CYLINDER BLOCK)
2. THE GASKET MUST BE FITTED TO SEAL GROOVE BEFORE ASSEMBLY.
3. DO NOT ASSEMBLE PARTS THAT HAVE DAMAGE.

RESTRICTIONS

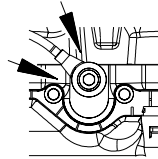
PART NAME/TITLE

CRANKCASE VENTILATION COVER

SPECIFICATION NO.	REV	RELEASE NO.	DATE	MODEL	SHEET	CONTD.
CIS7G-543-AC	BL	EN00E11271652000	01-11-15	2001 2.0L-4V NON DI CD132	64	65-A

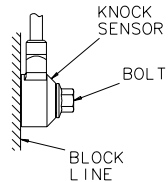
ENGINE ASSEMBLY PROCEDURES AND INSTRUCTIONS

CLEARANCE LIMITS AND SPECIFICATIONS

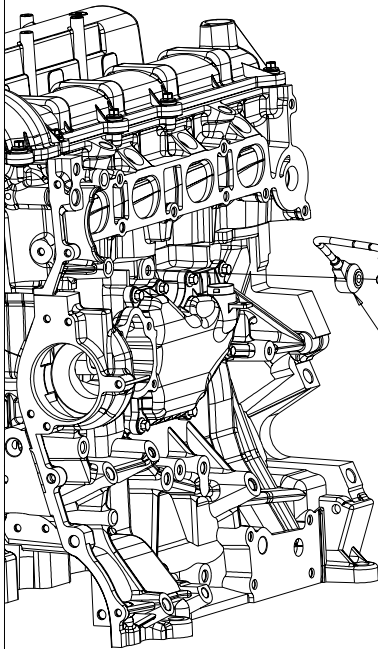


VIEW A

ROTATE SENSOR AS FAR ANTICLOCKWISE AS POSSIBLE, WITHOUT TOUCHING CRANKCASE VENT COVER.



NOTE: ORIENTATION RELATIVE TO BLOCK (SIDE VIEW)



W500025-S309/9XF00025X9
SCREW M8X30
TORQUE 20±4 N·m

-12A699-/18 921
KNOCK SENSOR

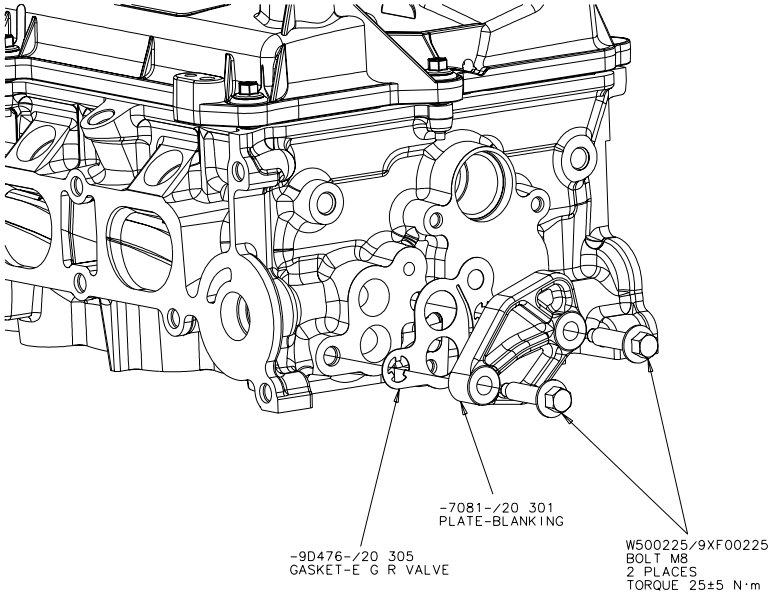
RESTRICTIONS

PART NAME/TITLE

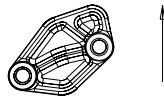
SENSOR-KNOCK

SPECIFICATION NO.	REV	RELEASE NO.	DATE	MODEL	SHEET	CONTD.
C1S7G-543-AC	R	EN00E11069681001	00-04-20	2001 2.3L-4V NON DI RANGER	65-B	65-C

ENGINE ASSEMBLY PROCEDURES AND INSTRUCTIONS
CLEARANCE LIMITS AND SPECIFICATIONS



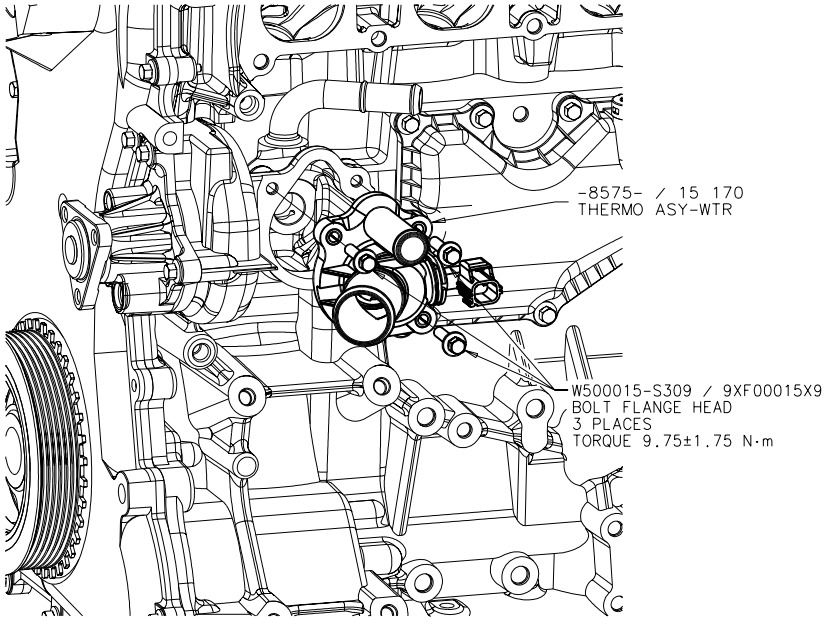
DIRECTION UPWARD



FOR GASHOL/LEADED, ONLY

RESTRICTIONS				PART NAME/TITLE			
				EGR BLANKING PLATE			
SPECIFICATION NO.	REV	RELEASE NO.	DATE	MODEL	SHEET	CONTD.	
C1S7G-543-AC	N	EN00E11030674000	00-02-10	2001 2.0L-4V NON DI CD132	67-B	67-D	

ENGINE ASSEMBLY PROCEDURES AND INSTRUCTIONS CLEARANCE LIMITS AND SPECIFICATIONS

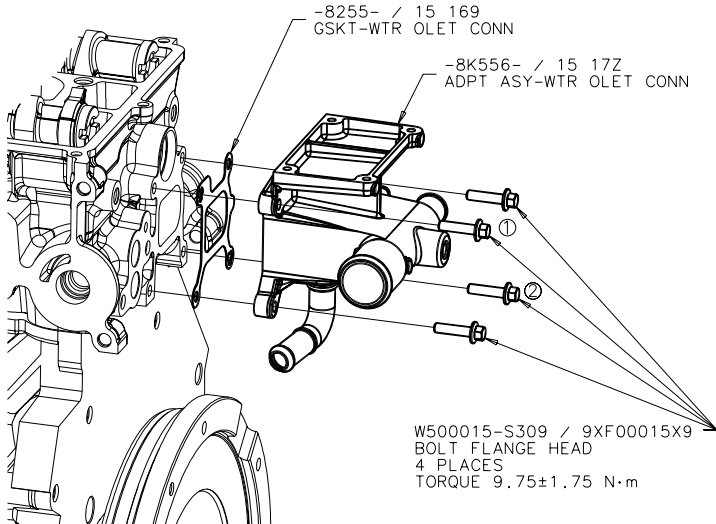


NOTES

1. DO NOT ASSEMBLE PARTS WHERE THERE IS GREASE/OIL/FOREIGN MATTER ON THE SEAL SURFACES OF THERMOSTAT OR BLOCK.
2. A THERMOSTAT THAT HAS BEEN DROPPED OR MIS HANDLED MUST NOT BE ASSEMBLED IRRESPECTIVE OF ITS VISUAL APPEARANCE.
3. THE O-RING MUST BE CORRECTLY SEALED IN THE THERMOSTAT BEFORE ASSEMBLY.

RESTRICTIONS				PART NAME/TITLE THERMOSTAT			
SPECIFICATION NO. C1S7G-543-AC	REV H	RELEASE NO. EN00E11007392000	DATE '99-09-06	MODEL 2001 2.0L-4V NON D1	CD132	SHEET 68	CONTD. 69-C
				2001 2.3L-4V NON D1	RANGER		

ENGINE ASSEMBLY PROCEDURES AND INSTRUCTIONS CLEARANCE LIMITS AND SPECIFICATIONS



NOTES

1. BOLTS ① AND ② WILL HELP TO RETAIN THE GASKET TO WATER OUTLET DURING ASSEMBLY.
2. ENSURE GASKET TAB IS AT EXHAUST SIDE. (SEE SKETCH)
3. DO NOT ASSEMBLE PARTS WHERE THERE ARE SCRATCHES OR GREASE/OIL/FOREIGN MATTER WHICH WILL AFFECT SEALABILITY. (INCLUDING CYLINDER HEAD)

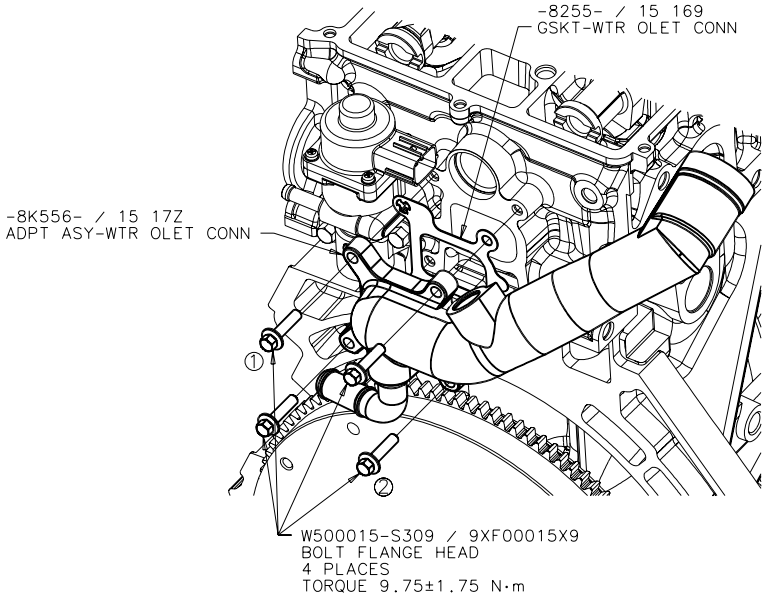
RESTRICTIONS

PART NAME/TITLE

WATER OUTLET CONNECTOR & GASKET

SPECIFICATION NO.	REV	RELEASE NO.	DATE	MODEL	SHEET	CONTD.
C1S7G-543-AC	H	EN00E11007392000	'99-09-06	2001 2.0L-4V NON DI CD132	71-A	71-B

ENGINE ASSEMBLY PROCEDURES AND INSTRUCTIONS CLEARANCE LIMITS AND SPECIFICATIONS



NOTES

1. BOLTS ① AND ② WILL HELP TO RETAIN THE GASKET TO WATER OUTLET DURING ASSEMBLY.
2. ENSURE GASKET TAB IS AT EXHAUST SIDE. (SEE SKETCH)
3. DO NOT ASSEMBLE PARTS WHERE THERE ARE SCRATCHES OR GREASE/OIL/FOREIGN MATTER WHICH WILL AFFECT SEALABILITY. (INCLUDING CYLINDER HEAD)

RESTRICTIONS

PART NAME/TITLE

WATER OUTLET CONNECTOR & GASKET

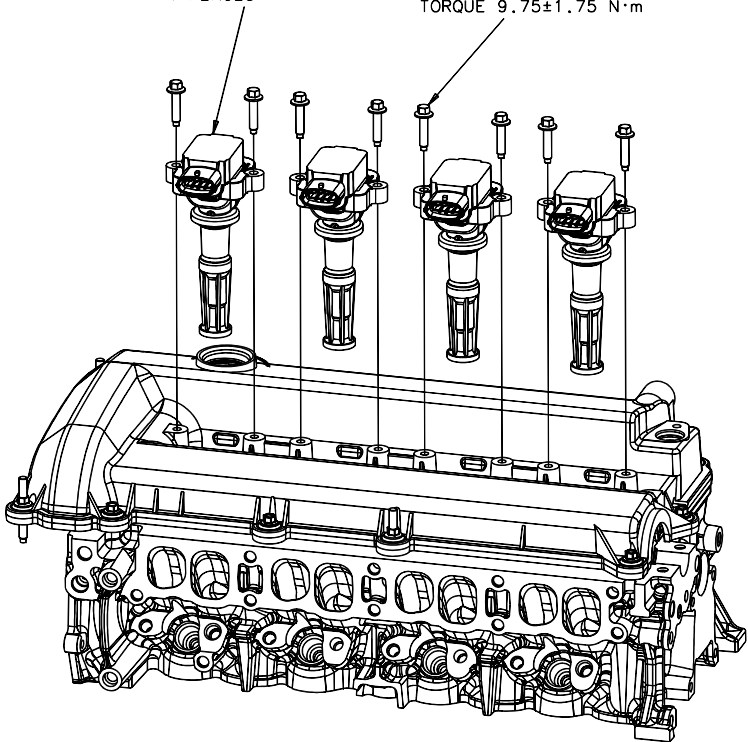
SPECIFICATION NO.	REV	RELEASE NO.	DATE	MODEL	SHEET	CONTD.
C1S7G-543-AC	H	EN00E11007392000	'99-09-06	2001 2.3L-4V NON DI RANGER	71-B	71-C

ENGINE ASSEMBLY PROCEDURES AND INSTRUCTIONS

CLEARANCE LIMITS AND SPECIFICATIONS

-12029- / 18 100
IGNITION COIL
4 PLACES

W500215-S309 / 9XF00215X9
BOLT FLNG HEAD M6X25
8 PLACES
TORQUE 9.75 ± 1.75 N·m



RESTRICTIONS

PART NAME/TITLE

IGNITION COIL

SPECIFICATION NO.
C1S7G-543-AC

REV
BL

RELEASE NO.
EN00E11271652000

DATE
01-11-15

MODEL
2002 1.8L-4V DI CD132

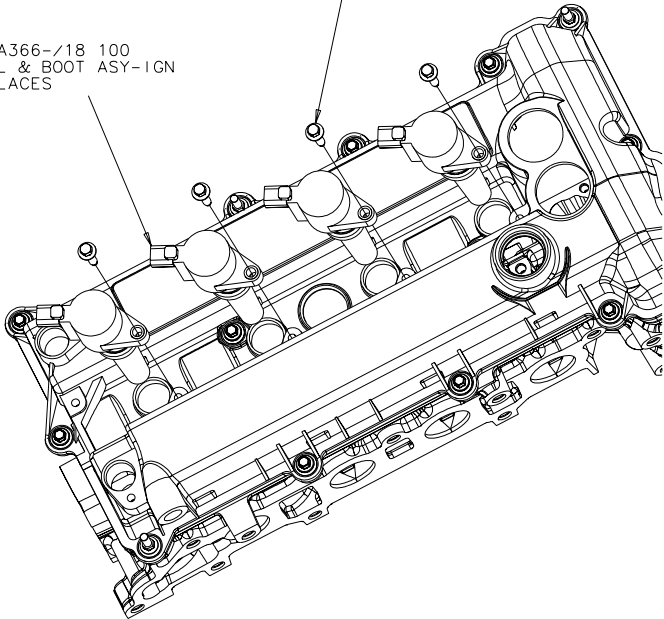
SHEET
73-C

CONTD.
73-D

ENGINE ASSEMBLY PROCEDURES AND INSTRUCTIONS CLEARANCE LIMITS AND SPECIFICATIONS

W500215-S309/9XF00215X9
BOLT M6X25
4 PLACES
TORQUE 9.75±1.75 N·m

-12A366-/18 100
COIL & BOOT ASY-IGN
4 PLACES



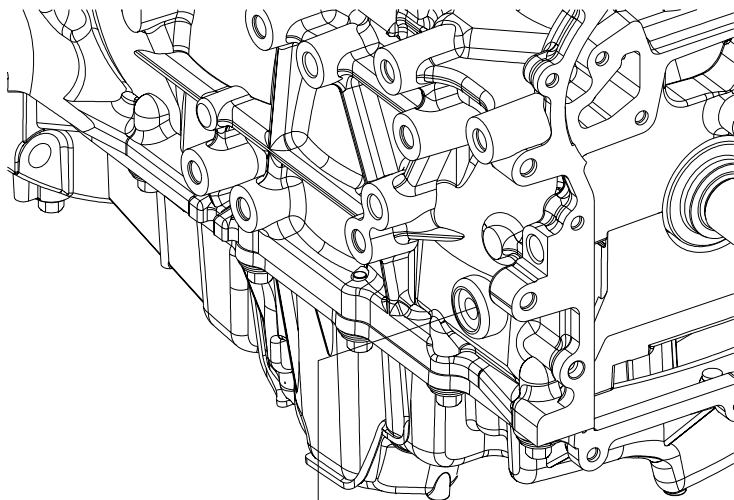
RESTRICTIONS

PART NAME/TITLE

IGNITION COIL

SPECIFICATION NO.	REV	RELEASE NO.	DATE	MODEL	SHEET	CONTD.
C1S7G-543-AC	AH	EN00E11190272000	01-03-28	2003 2.3L-4V NON DI	73-E	74-C

ENGINE ASSEMBLY PROCEDURES AND INSTRUCTIONS CLEARANCE LIMITS AND SPECIFICATIONS



W700115-S309 / 9XG00115X9
 PLUG AND WASHER ASY
 TORQUE 20 ± 2 N·m
 TIMING PIN HOLE
 FIT PLUG AFTER COMPLETING
 CRANKSHAFT TIMING PROCEDURE

RESTRICTIONS

PART NAME/TITLE

PLUG-TIMING PIN HOLE

SPECIFICATION NO.
C1S7G-543-AC

REV
BD

RELEASE NO.
EN00 E 11271059 000

DATE
01-11-02

MODEL
2001 2.0L-4V NON DI CD132

SHEET
75

CONTD.
76-A

ENGINE ASSEMBLY PROCEDURES AND INSTRUCTIONS CLEARANCE LIMITS AND SPECIFICATIONS

-9U550-/13 158
SPACER
2 PLACES

SPACER

INSTALLED CONDITION
OF SPACER.

-9H487-/13 15X
FUEL RAIL ASY

W500224/9XF00224
BOLT M8
2 PLACES
▽▽ TORQUE 25±5 N·m

BAR CODE
FORD PART # 1S7G-CB 950505A
LF01 13 15X

MAZDA PART #

MISASSEMBLY IS NOT ALLOWED.

BAR CODE IS AVAILABLE FOR CHECKING CORRECT FUEL RAIL TO CORRECT ENGINE.

LUBRICATE WITH ENGINE OIL TO O-RING ON INJECTOR.
4 PLACES

PROCEDURE

1. INSERT THE SPACERS INTO CYLINDER HEAD.
2. INSTALL THE FCA UNTIL THE BRACKETS CONTACT TO THE SPACERS.
3. ENGAGE THE BOLTS IN THREAD.
4. TIGHTEN BOLTS TO SPECIFIED TORQUE.

ENGINE	FORD PART #	MAZDA PART #
1.8L	1S7G-D*	L801 13 15X
2.0L	1S7G-C*	LF01 13 15X
2.3LE/W	2L8G-A*	L305 13 15X

*: REVISION NUMBER

ENGINE	INJECTOR COLOR
1.8L NON-DI	LIGHT GRAY
2.0L NON-DI	BLACK
2.3L NON-DIE/W	BLACK

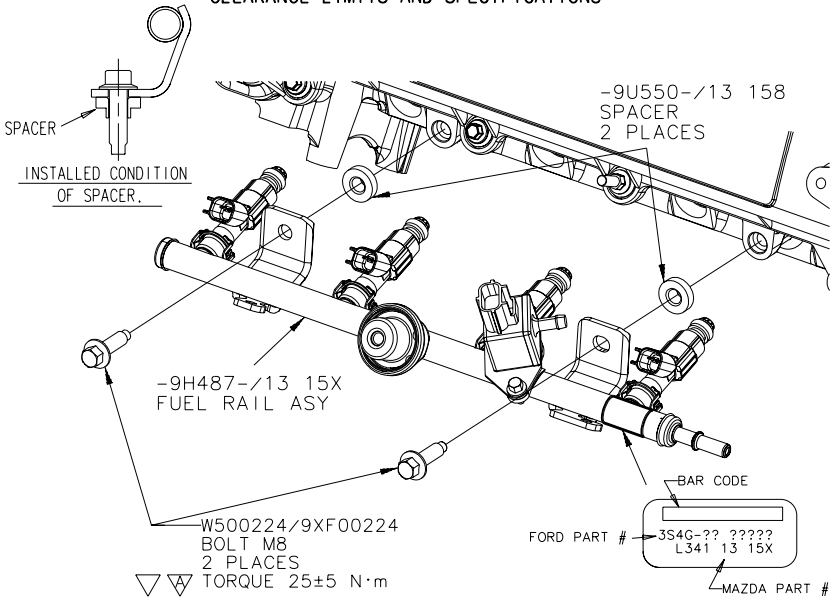
NOTE: INTAKE MANIFOLD OMITTED FOR CLARITY.

RESTRICTIONS

PART NAME/TITLE
FUEL RAIL ASSEMBLY

SPECIFICATION NO.	REV	RELEASE NO.	DATE	MODEL	SHEET	CONTD.
C1S7G-543-AC	R	EN00E11069681001	00-04-20	2001 2.0L-4V NON DI CD132	78-A	78-B

ENGINE ASSEMBLY PROCEDURES AND INSTRUCTIONS CLEARANCE LIMITS AND SPECIFICATIONS



PROCEDURE

1. INSERT THE SPACERS INTO CYLINDER HEAD.
2. INSTALL THE FCA UNTIL THE BRACKETS CONTACT TO THE SPACERS.
3. ENGAGE THE BOLTS IN THREAD.
4. TIGHTEN BOLTS TO SPECIFIED TORQUE.

MISASSEMBLY IS NOT ALLOWED.

BAR CODE IS AVAILABLE FOR CHECKING CORRECT FUEL RAIL TO CORRECT ENGINE.

NOTE: INTAKE MANIFOLD OMMITTED FOR CLARITY.

ENGINE	FORD PART #	MAZDA PART #
2.3LE/W	3S4G-A*	L341 13 15X

*: REVISION NUMBER

ENGINE	INJECTOR COLOR
2.3L NON-DIE/W	FIRE RED

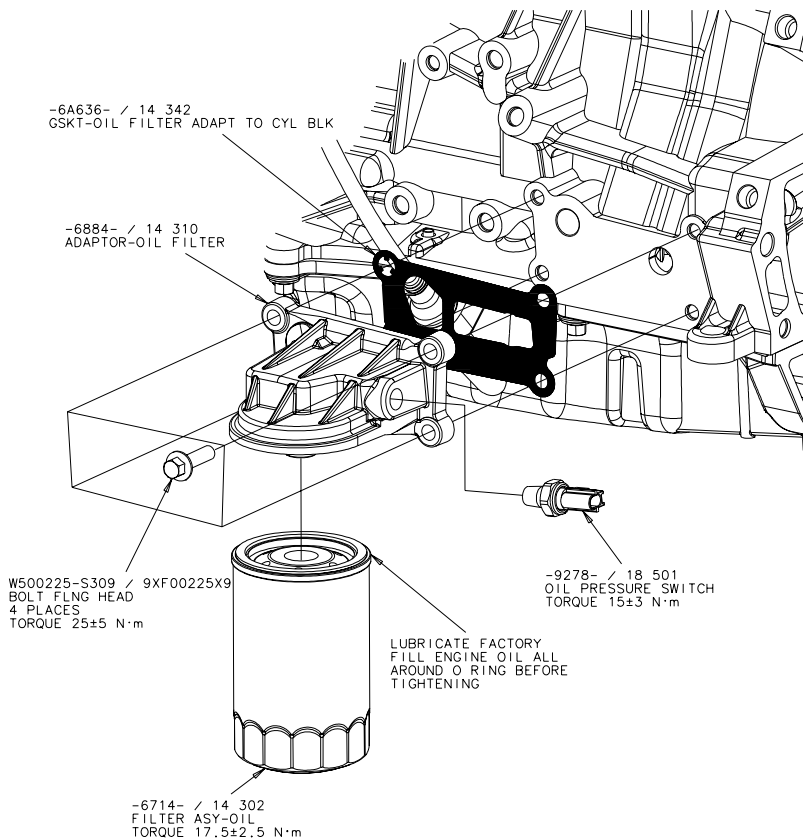
RESTRICTIONS

PART NAME/TITLE

FUEL RAIL ASSEMBLY

SPECIFICATION NO.	REV	RELEASE NO.	DATE	MODEL	SHEET	CONTD.
C3S4G-543-AC	AV	EN00 E 11252991 000	01-08-11	2003 2.3L-4V NON DI C170	78-F	79-C

ENGINE ASSEMBLY PROCEDURES AND INSTRUCTIONS CLEARANCE LIMITS AND SPECIFICATIONS



RESTRICTIONS

PART NAME/TITLE

FILTER ASY-OIL / ADAPTOR / OIL PRESSURE SWITCH

SPECIFICATION NO.
C1S7G-543-AC

REV
W

RELEASE NO.
EN00 E 11140144 000

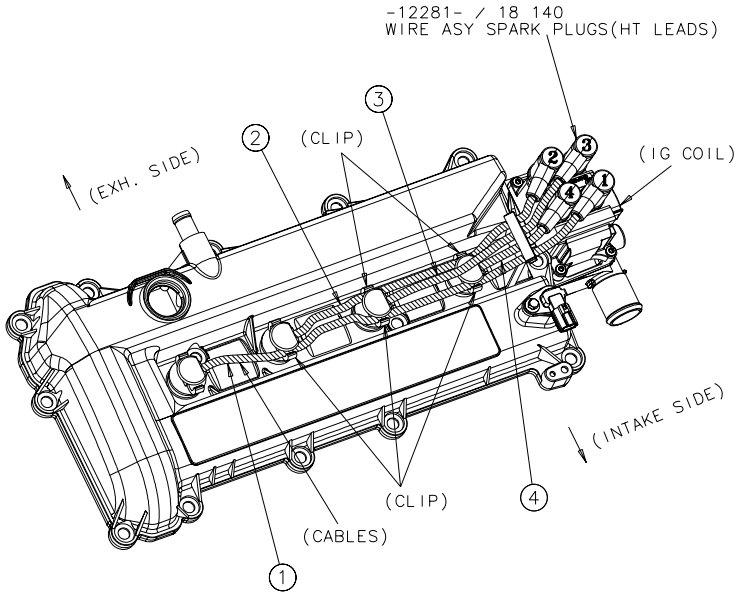
DATE
00-10-01

MODEL
2001 2.3L-4V NON DI RANGER

SHEET
93-B

CONTD.
94

ENGINE ASSEMBLY PROCEDURES AND INSTRUCTIONS CLEARANCE LIMITS AND SPECIFICATIONS



NOTES:

INSTALL EACH HT LEAD CONNECTOR STRAIGHT ON TO THE APPROPRIATE IG COIL TERMINAL.
DO NOT APPLY ANY DYNAMIC FORCE ON TO ANY PORTION OF THE HT LEAD.
(E.G. DO NOT STRIKE USING HAMMERS)

INSTALLATION SEQUENCE : INSTALL CABLES IN SEQUENCE FROM EXHAUST SIDE TO INTAKE SIDE. (IN THE ORDER OF #2,#3,#4,#1)

CLIP OF CABLES : SET THE CABLES(#1,#2) IN THE APPROPRIATE CLIPS MOUNTED ON THE PLUG CAPS.

FIRING ORDER : #1,#3,#4,#2

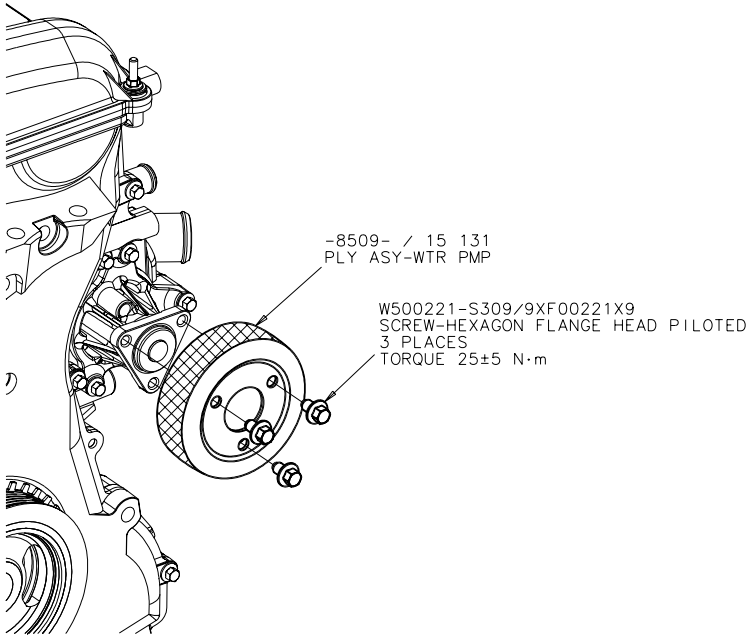
RESTRICTIONS

PART NAME/TITLE

SPARK PLUG LEADS

SPECIFICATION NO.	REV	RELEASE NO.	DATE	MODEL	SHEET	CONTD.
C1S7G-543-AC	R	EN00E11069681001	00-04-20	2001 2.0L-4V NON DI CD132	98-A	98-B

ENGINE ASSEMBLY PROCEDURES AND INSTRUCTIONS CLEARANCE LIMITS AND SPECIFICATIONS



NOTES

1. ENSURE THERE IS NOT ANY GREASE, OIL OR FOREIGN MATTER ON THE HATCHED AREA BEFORE SHIPMENT.
2. DAMAGED PULLEY MUST NOT BE ASSEMBLED.
3. THE PULLEY MUST NOT CONTACT ANY OTHER PARTS OF THE ENGINE DURING ROTATION.

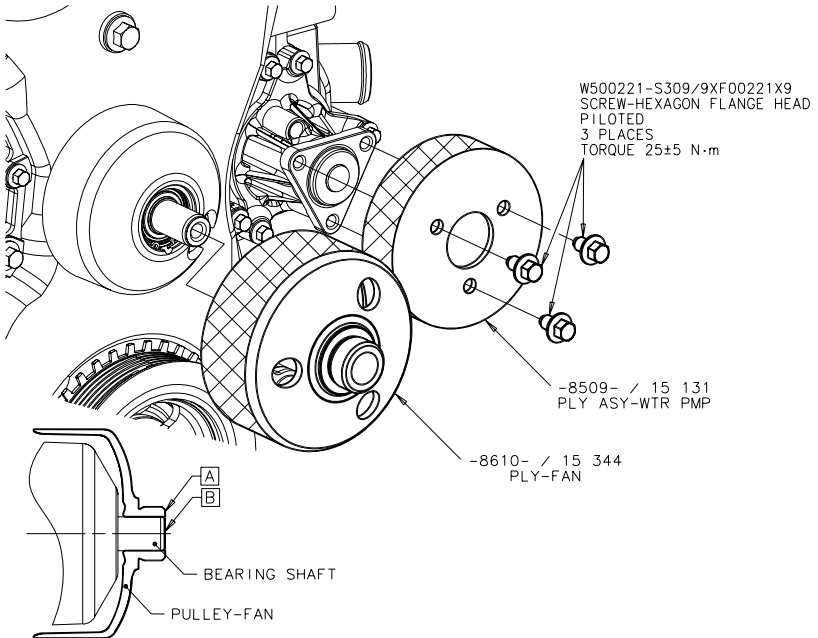
RESTRICTIONS

PART NAME/TITLE

WATER PUMP PULLEY

SPECIFICATION NO.	REV	RELEASE NO.	DATE	MODEL	SHEET	CONTD.
C1S7G-543-AC	N	EN00E11030674000	00-02-10	2001 2.0L-4V NON DI CD132	107-A	107-B

ENGINE ASSEMBLY PROCEDURES AND INSTRUCTIONS CLEARANCE LIMITS AND SPECIFICATIONS



NOTES

1. FAN PULLEY TO BE PRESSED-IN INTO BEARING SHAFT PULLEY A AND B SHALL BE FLUSH($\pm 0.2\text{mm}$)
2. ENSURE THERE IS NOT ANY GREASE, OIL OR FOREIGN MATTER ON THE HATCHED AREA BEFORE SHIPMENT.
3. DAMAGED PULLEY MUST NOT BE ASSEMBLED.
4. THE PULLEY MUST NOT CONTACT ANY OTHER PARTS OF THE ENGINE DURING ROTATION.

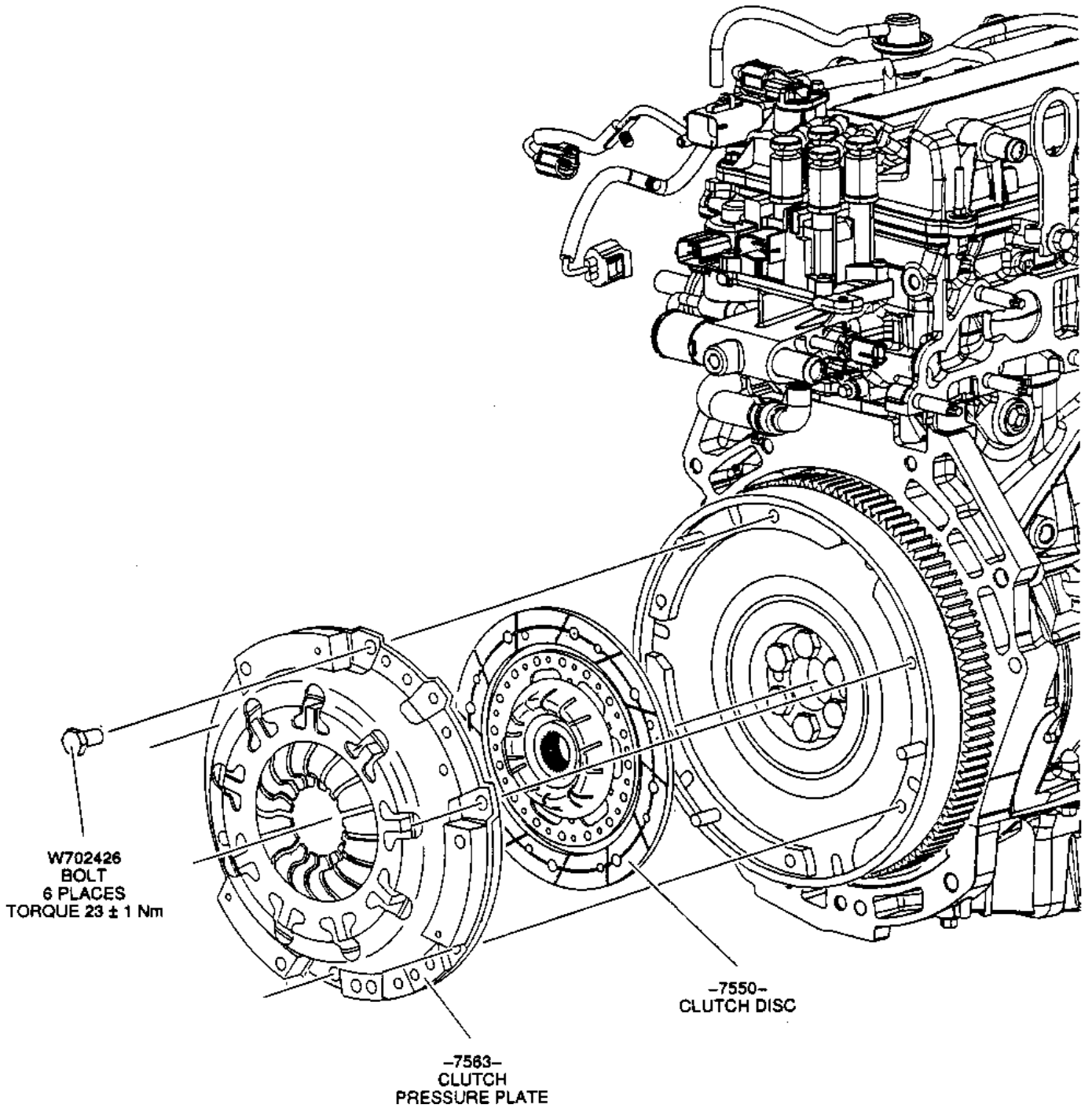
RESTRICTIONS

PART NAME/TITLE

WATER PUMP PULLEY & FAN PULLEY

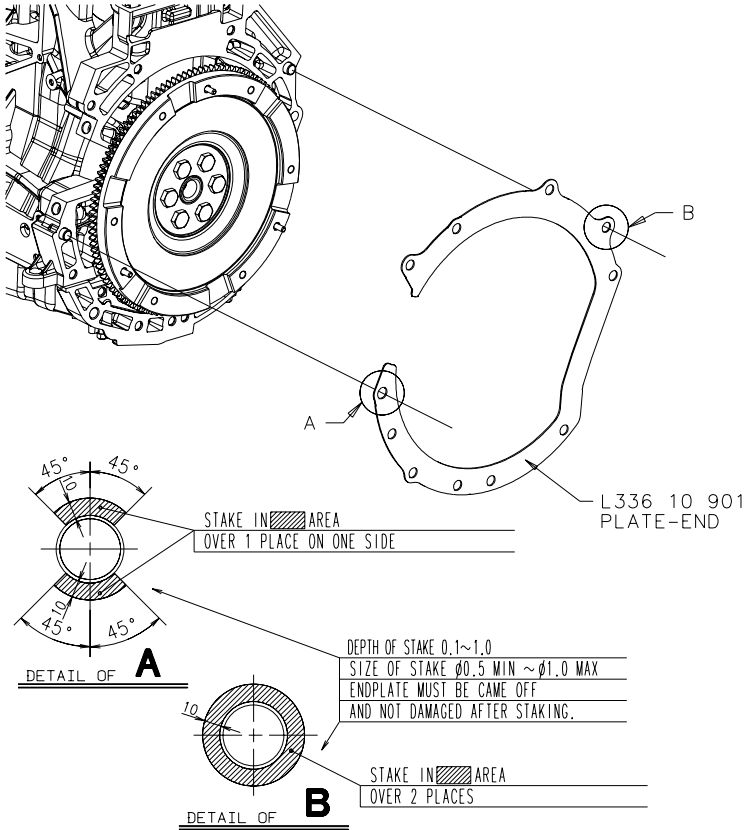
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C1S7G-543-ACREV
AFRELEASE NO.
EN00E11151946000DATE
01-02-09MODEL
2001 2.3L-4V NON DI RANGERSHEET
107-BCONTD.
108

**ENGINE ASSEMBLY PROCEDURES AND INSTRUCTIONS
CLEARANCE LIMITS AND SPECIFICATIONS**



RESTRICTIONS				PART NAME/TITLE INSTALLATION DUAL MASS FLYWHEEL		
SPECIFICATION NO. C1S7G-543-AC	REV BH	RELEASE NO. EN00 E11266219 000	DATE 01-11-12	MODEL 2001 2.0L-4V NON DI CD132	SHEET 110	CONTD. 110-A

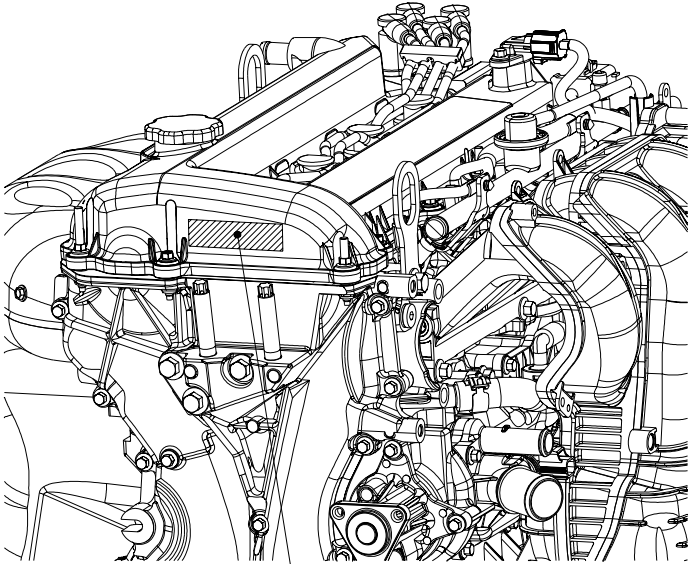
ENGINE ASSEMBLY PROCEDURES AND INSTRUCTIONS
CLEARANCE LIMITS AND SPECIFICATIONS



UNIQUE TO MAZDA ONLY.

RESTRICTIONS				PART NAME/TITLE PLATE END			
SPECIFICATION NO.	REV	RELEASE NO.	DATE	MODEL	SHEET	CONTD.	
C1S7G-543-AC	BH	EN00 E 11266219 000	01-11-12	2002 2.3L-4V NON DI J16	110-A	111	

ENGINE ASSEMBLY PROCEDURES AND INSTRUCTIONS
CLEARANCE LIMITS AND SPECIFICATIONS



Eng.Size/Prefix/Suffix:Eng.Parts No.

Buyoff Date Code

Barcode

1.8 1A-139-AA	C	24/05/2000
<input type="text"/>	H	019
1051900180711	P	000507

Engine Derivative Number

CHEP 5/19 2000 18:07:11
UNIQUE ENGINE NUMBER

REFER TO CAM COVER DRAWING
FOR LOCATION DIMENSIONS.

Sequence Number

RESTRICTIONS

PART NAME/TITLE
BARCODE

SPECIFICATION NO.	REV	RELEASE NO.	DATE	MODEL	SHEET	CONTD.
C1S7G-543-AC	T	EN00E11095813000	00-06-30	2001 2.0L-4V NON DI CD132	1 11	END