



SMALL 8-9G9@

TORQUE SPECIFICATIONS

K4N

SERIES



SERVICE BULLETIN

BULLETIN No.: K2005-009 (1/2)

MITSUBISHI HEAVY INDUSTRIES, LTD.
GENERAL MACHINERY & SPECIAL VEHICLE HEADQUARTERS

GROUP: Engine Body

MODELS: K4N

DATE: April 2005

SUBJECT: Tightening Torque for K4N-IDI Series

1. Purpose

Tightening torque is specified for standard bolts, plug and studs, and dedicated bolts for K4N-IDI series engine.

2. Description

Standard bolts

Size	4T		7T	
	N·m	kgf·m	N·m	kgf·m
M6	-	-	7.85-9.80	0.8-1.0
M8	9.80-12.7	1.0-1.3	14.7-21.6	1.5-2.2
M10	17.7-24.5	1.8-2.5	29.4-41.2	3.0-4.2
M12	29.4-41.2	3.0-4.2	53.9-73.5	5.5-7.5

Standard Plugs

Size	For Aluminum Materials		For Steel Materials	
	N·m	kgf·m	N·m	kgf·m
NPTF1/16	4.90-7.85	0.5-0.8	7.85-11.8	0.8-1.2
PT1/8	7.85-11.8	0.8-1.2	14.7-21.6	1.5-2.2
PT1/4, NPTF1/4	19.6-29.4	2.0-3.0	34.3-44.1	3.5-4.5
PT3/8	39.2-53.9	4.0-5.5	53.9-73.5	5.5-7.5

Standard Studs

Size	For Aluminum Materials		For Steel Materials	
	N·m	kgf·m	N·m	kgf·m
M8	6.37-8.34	0.65-0.85	11.8-13.7	1.2-1.4
M10	12.7-147.7	1.3-1.5	21.6-25.5	2.2-2.6

User:

K4N-Y261DG, -Y261DP MENA

K4N-Y262MF MOBESAN

APPLICABLE No.:

MODIFIED No.:

DATE OF SERVICE PARTS AVAILABLE:

INTERCHANGEABILITY:

R=(NEW) ⇄ (CURRENT)

1=Out of Supply.

S=(NEW) ⇄ (CURRENT)

2=Yes as an assembly.

N=(NEW) ⇄ (CURRENT)

3=Yes as a single part.

EO No.
30G0-7165
30G0-7956

Please pass to:	DEPT. MANAGER	SECT. MANAGER	MECHANICS or CLERKS

SMALL **8-9G9@**

TORQUE SPECIFICATIONS

SK

SERIES



SERVICE BULLETIN

RESTRICTED

MITSUBISHI HEAVY INDUSTRIES, LTD.

GENERAL MACHINERY & SPECIAL VEHICLE HEADQUARTERS

BULLETIN No.: SK2003-007 (1/3)

GROUP: Engine Body

MODELS: S4K, S6K

SUBJECT: Tightening Torque for SK Series

DATE: July 2003

1. Purpose

Revised lists of tightening torques for general bolts, general studs, general plugs and special bolts of SK Series are issued for the maintenance work. The lists in this Service Bulletin supersede the lists of tightening torque in Service Bulletin No. K2001-052.

2. Description:

Note: indicates "Addition" as of April 18, 2003

Tightening Torque for General bolts

Size	4T		7T	
	N·m	kgf·m	N·m	kgf·m
M6	2.94 ~ 4.90	0.3 ~ 0.5	7.85 ~ 9.80	0.8 ~ 1.0
M8	9.80 ~ 12.7	1.0 ~ 1.3	14.7 ~ 21.6	1.5 ~ 2.2
M10	17.7 ~ 24.5	1.8 ~ 2.5	29.4 ~ 41.2	3.0 ~ 4.2
M12	29.4 ~ 41.2	3.0 ~ 4.2	53.9 ~ 73.5	5.5 ~ 7.5

Tightening Torque for General studs

Size	Mount to aluminum material		Mount to ferrous material	
	N·m	kgf·m	N·m	kgf·m
M8	4.90 ~ 5.90	0.50 ~ 0.60	11.8 ~ 13.7	1.2 ~ 1.4
M10	12.7 ~ 14.7	1.3 ~ 1.5	21.6 ~ 25.5	2.2 ~ 2.6

Tightening Torque for General plugs

Size	Tighten to aluminum material		Tighten to ferrous material	
	N·m	kgf·m	N·m	kgf·m
NPTF1/16	4.90 ~ 7.85	0.5 ~ 0.8	7.85 ~ 11.8	0.8 ~ 1.2
PT1/8	7.85 ~ 11.8	0.8 ~ 1.2	14.7 ~ 21.6	1.5 ~ 2.2
PT1/4, NPTF1/4	19.6 ~ 29.4	2.0 ~ 3.0	34.3 ~ 44.1	3.5 ~ 4.5
PT3/8	—	—	53.9 ~ 73.5	5.5 ~ 7.5

APPLICABLE No.:

MODIFIED No.:

DATE OF SERVICE PARTS AVAILABLE:

INTERCHANGEABILITY:

R=(NEW)↔(OLD)
1=Out of Supply.

S=(NEW)↔(OLD)
2=Yes as an assembly.

N=(NEW)↔(OLD)
3=Yes as a single part.

E0 No
3420-2320
3420-3385

Please pass to :	DEPT. MANAGER	SECT. MANAGER	MECHANICS or CLERKS



Part name (Tightening part)	Size	Width across flat	Tightening torque		Remarks
			N·m	kgf·m	
CYLINDER HEAD BOLT	M12 × 1.75	19	118 ~ 128	12.0 ~ 13.0	With multi-shaft tightening tool
			113 ~ 123	11.5 ~ 12.5	
ROCKER COVER NUT	M8 × 1.25	14	6.9 ~ 9.8	0.7 ~ 1.0	
ROCKER SHAFT BRACKET BOLT	M8 × 1.25	12	10.0 ~ 20.0	1.0 ~ 2.0	
MAIN BEARING CAP BOLT	M14 × 2	22	132 ~ 142	13.5 ~ 14.5	
CONNECTING ROD CAP NUT	M12 × 1.25	17	98 ~ 108	10.0 ~ 11.0	
FLYWHEEL BOLT	M12 × 1.25	17	78.5 ~ 88.3	8.0 ~ 9.0	
CAMSHAFT THRUST PLATE BOLT	M8 × 1.25	12	10.0 ~ 13.0	1.0 ~ 1.3	
FRONT PLATE BOLT	M10 × 1.5	14	29.4 ~ 41.2	3.0 ~ 4.2	
TIMING GEAR CASE BOLT	M10 × 1.5	14	29.4 ~ 41.2	3.0 ~ 4.2	
CRANKSHAFT PULLEY NUT	M30 × 1.5	46	480 ~ 500	49 ~ 51	
IDLER THRUST PLATE BOLT	M10 × 1.25	14	29.0 ~ 39.0	3.0 ~ 4.0	
OIL PAN BOLT	M8 × 1.25	12	14.7 ~ 21.6	1.5 ~ 2.2	
OIL PAN DRAIN COCK	M24 × 1.5		44.0 ~ 54.0	4.5 ~ 5.5	
OIL PAN DRAIN PLUG	M24 × 1.5	27	54.0 ~ 64.0	5.5 ~ 6.5	
	M14 × 1.5	22	34.0 ~ 44.0	3.5 ~ 4.5	
NOZZLE GRAND (DIRECT INJECTION TYPE)	M8 × 1.25	12	21.0 ~ 23.0	2.0 ~ 2.4	
INJECTION PUMP DELIVERY VALVE HOLDER		22	39.0 ~ 44.0	4.0 ~ 4.5	(A TYPE)
		22	49.0 ~ 54.0	5.0 ~ 5.5	(AD TYPE)
FUEL LEAK-OFF PIPE FITTING NUT	M12 × 1.5	17	20.6 ~ 24.5	2.1 ~ 2.5	
INJECTION PUMP GEAR NUT	M14 × 1.5	19	83.4 ~ 98.0	8.5 ~ 10.0	
AIR HEATER TERMINAL NUT	M6 × 1	10	11.8 ~ 13.7	1.2 ~ 1.4	
INLET MANIFOLD BOLT	M8 × 1.25	12	14.7 ~ 21.6	1.5 ~ 2.2	
EXHAUST MANIFOLD NUT	M8 × 1.25	12	14.7 ~ 21.6	1.5 ~ 2.2	
RELIEF VALVE	M22 × 1.5	27	44.1 ~ 53.9	4.5 ~ 5.5	



Part name (Tightening part)	Size	Width across flat	Tightening torque		Remarks
			N·m	kgf·m	
SAFETY VALVE	M18 × 1.5	24	39.0 ~ 49.0	4.0 ~ 5.0	
INJECTION PIPE NUT	M12 × 1.5	19	26.5 ~ 32.4	2.7 ~ 3.3	
OVERHEAT WARNING UNIT (THERMOSTAT)	M16 × 1.5	19	20.6 ~ 24.5	2.1 ~ 2.5	
LIFTING BOLT	M12 × 1.75	19	78 ~ 88	8.0 ~ 9.0	
STARTER B TERMINAL	M8 × 1.25	12	9.81 ~ 11.8	1.0 ~ 1.2	
PLUG	M16 × 1.5	24	39.2 ~ 49.0	4.0 ~ 5.0	
BALANCER	M8 × 1.25	12	27.5 ~ 33.4	2.8 ~ 3.4	
INJECTION PUMP LUBRICATING PIPE (FLARE)	M12 × 1.0	17	16.0 ~ 23.0	1.6 ~ 2.3	
INJECTION PUMP EYEBOLT	M14 × 1.5	22	20.0 ~ 29.0	2.0 ~ 3.0	
INJECTION PUMP OVERFLOW VALVE		17	20.0 ~ 25.0	2.0 ~ 2.5	
OIL LEVEL SENSOR	1-1/16-12	24	49.0 ~ 58.8	5.0 ~ 6.0	(34390-01300)
TURBO LUBRICATING EYEBOLT	M10 × 1.25	14	13.7 ~ 18.6	1.4 ~ 1.9	

SMALL **8-9G9@**

TORQUE SPECIFICATIONS

L

SERIES



SERVICE BULLETIN

MITSUBISHI HEAVY INDUSTRIES, LTD.
GENERAL MACHINERY & SPECIAL VEHICLE HEADQUARTERS

BULLETIN No.: L2008-016 (1/2)

GROUP: Basic engine

MODELS: L2, L3

DATE: 28 November 2008

SUBJECT: Tightening Torque for L Series

1. Purpose

Service Bulletin No. L2003-016 was issued with tightening torque tables. New tightening torque tables were then prepared with addition of PT3/8 to general plugs, addition of general studs and nuts, and review of unit tightening torque values. These new tightening torque tables are given here for use in inspection and maintenance.

2. Description

Tightening torque for general bolts

Size	4T		7T	
	N·m	kgf·m	N·m	kgf·m
M6	—	—	7.85 - 9.80	0.8 - 1.0
M8	—	—	14.7 - 21.6	1.5 - 2.2
M10	—	—	29.4 - 41.2	3.0 - 4.2

GL3-dedicated parts

Point of use	Size	Tightening torque	
		N·m	kgf·m
Oil filter bracket flange bolt	M8	11.8 - 14.7	1.2 - 1.5
Front plate blind plug (torque spring set screw hole)	M12	9.8 - 12.7	1.0 - 1.3
Carburetor and intake pipe tightening nut	M6	3.9 - 5.9	0.4 - 0.6
Throttle lever tightening nut	M8	9.8 - 12.7	1.0 - 1.3
Distributor fixing nut	M8	9.8 - 12.7	1.0 - 1.3
Spark plug	M14	19.6 - 29.4	2.0 - 3.0

Tightening torque for general plugs

Size	Tighten to aluminum material		Tighten to ferrous material	
	N·m	kgf·m	N·m	kgf·m
NPTF 1/16	—	—	7.85 - 11.8	0.8 - 1.2
PT 1/8	7.85 - 11.8	0.8 - 1.2	14.7 - 21.6	1.5 - 2.2
PT 1/4, NPTF 1/4	19.6 - 29.4	2.0 - 3.0	34.3 - 44.1	3.5 - 4.5
PT 3/8	39.2 - 53.9	4.0 - 5.5	53.9 - 73.5	5.5 - 7.5

APPLICABLE No.:

MODIFIED No.:

DATE OF SERVICE PARTS AVAILABLE:

INTERCHANGEABILITY:

R=(NEW) ⇄ (OLD)

S=(NEW) ⇄ (OLD)

N=(NEW) ⇄ (OLD)

1=Out of Supply.

2=Yes as an assembly.

3=Yes as a single part.

EO No.
30G0-A213
30G0-B609
30G0-B648

Please pass to:	DEPT. MANAGER	SECT. MANAGER	MECHANICS or CLERKS



Tightening torque for general studs and nuts

Size	Mounted to aluminum material		Mounted to ferrous material	
	N·m	kgf·m	N·m	kgf·m
M8	6.37 - 8.34	0.65 - 0.85	11.8 - 13.7	1.2 - 1.4
M10	12.7 - 14.7	1.3 - 1.5	21.6 - 25.5	2.2 - 2.6

Part name (Tightening part)	Size	Tightening torque		Remarks	
		N·m	kgf·m		
Cylinder head bolt	Main	M10	73.5 - 83.4	7.5 - 8.5	
	Sub	M8	19.6 - 29.4	2.0 - 3.0	
Connecting rod cap nut		M8	31.4 - 34.3	3.2 - 3.5	
Flywheel bolt		M10	83.4 - 93.2	8.5 - 9.5	
Crank pulley nut		M16	98.1 - 117.7	10 - 12	
Bearing cap bolt		M10	49.0 - 53.9	5.0 - 5.5	
Rocker stay bolt		M8	14.7 - 21.6	1.5 - 2.2	
Nozzle holder		M20	49.0 - 58.8	5.0 - 6.0	
Fuel leak-off pipe nut		M12	20.6 - 24.5	2.1 - 2.5	
Nozzle retaining nut		M16	34.3 - 39.2	3.5 - 4.0	
Fuel injection pipe nut		M12	24.5 - 29.4	2.5 - 3.0	Use dedicated tool for torque control
Delivery valve holder (injection pump)		—	34.3 - 39.2	3.5 - 3.9	
Hollow screw (injection pump)		M10	9.8 - 14.7	1.0 - 1.5	
Air vent screw (injection pump)		—	4.9 - 6.9	0.5 - 0.7	
Rocker cover nut		M6	4.9 - 6.9	0.5 - 0.7	
		M8	10.0 - 13.0	1.0 - 1.3	
Stop solenoid fixing nut		M30	39.2 - 49.0	4.0 - 5.0	
Water temperature gauge unit and joint		M16	19.6 - 29.4	2.0 - 3.0	
Oil filter		M20	10.8 - 12.7	1.1 - 1.3	
Oil relief plug		M18	39.2 - 49.0	4.0 - 5.0	
Oil drain plug		M18	49.0 - 58.8	5.0 - 6.0	
Special nut for torque spring set		M12	14.7 - 24.5	1.5 - 2.5	
Glow plug		M10	14.7 - 19.6	1.5 - 2.0	
Glow plug lead wire nut		M4	0.98 - 1.47	0.1 - 0.15	
Water temperature gauge unit plug		M16	19.6 - 24.5	2.0 - 2.5	
Alternator terminal B		M5	2.9 - 4.9	0.3 - 0.5	
		M6	3.9 - 5.9	0.4 - 0.6	
		M8	6.9 - 12.7	0.7 - 1.3	
Rocker adjusting nut (4T)		M6	9.0 - 11.0	0.9 - 1.1	
Rocker adjusting nut (6T)		M6	12.0 - 14.0	1.2 - 1.4	

Note 1: To improve reliability against loosening, rocker nuts are unified to 6T nuts.

SMALL **8-9G9@**

TORQUE SPECIFICATIONS

SL

SERIES



SERVICE BULLETIN

MITSUBISHI HEAVY INDUSTRIES, LTD.
GENERAL MACHINERY & SPECIAL VEHICLE HEADQUARTERS

BULLETIN No.: SL2008-012 (1/2)

GROUP: Basic engine

MODELS: S3L, S4L

DATE: 28 November 2008

SUBJECT: Tightening Torque for SL Series

1. Purpose

Service Bulletin No. SL2003-020 was issued with tightening torque tables. New tightening torque tables were then prepared with addition of general studs and review of unit tightening torque values. These new tightening torque tables are given here for use in inspection and maintenance.

2. Description

Tightening torque for general bolts

Size	4T		7T	
	N·m	kgf·m	N·m	kgf·m
M6	2.94 - 4.90	0.3 - 0.5	7.85 - 9.80	0.8 - 1.0
M8	9.8 - 12.7	1.0 - 1.3	14.7 - 21.6	1.5 - 2.2
M10	17.7 - 24.5	1.8 - 2.5	29.4 - 41.2	3.0 - 4.2
M12	29.4 - 41.2	3.0 - 4.2	53.9 - 73.5	5.5 - 7.5

Tightening torque for general plugs

Size	Tighten to aluminum material		Tighten to ferrous material	
	N·m	kgf·m	N·m	kgf·m
NPTF 1/16	4.90 - 7.85	0.5 - 0.8	7.85 - 11.8	0.8 - 1.2
PT 1/8	7.85 - 11.8	0.8 - 1.2	14.7 - 21.6	1.5 - 2.2
PT 1/4, NPTF 1/4	19.6 - 29.4	2.0 - 3.0	34.3 - 44.1	3.5 - 4.5
PT 3/8	39.2 - 53.9	4.0 - 5.5	53.9 - 73.5	5.5 - 7.5

Tightening torque for general studs and nuts

Size	Mounted to aluminum material		Mounted to ferrous material	
	N·m	kgf·m	N·m	kgf·m
M8	6.37 - 8.34	0.65 - 0.85	11.8 - 13.7	1.2 - 1.4
M10	12.7 - 14.7	1.3 - 1.5	21.6 - 25.5	2.2 - 2.6

APPLICABLE No.:

MODIFIED No.:

DATE OF SERVICE PARTS AVAILABLE:

INTERCHANGEABILITY:

R=(NEW) ⇄ (OLD)

S=(NEW) ⇄ (OLD)

N=(NEW) ⇄ (OLD)

1=Out of Supply.

2=Yes as an assembly.

3=Yes as a single part.

EO No.
30G0-7954
30G0-A212
30G0-B611

Please pass to:	DEPT. MANAGER	SECT. MANAGER	MECHANICS or CLERKS



Part name (Tightening part)	Size	Tightening torque		Remarks
		N·m	kgf·m	
Cylinder head bolt	M10	83.4 - 93.2	8.5 - 9.5	
Rocker shaft bracket bolt	M8	9.81 - 19.6	1.0 - 2.0	
Rocker cover bolt	M8	9.81 - 12.7	1.0 - 1.3	
Flywheel bolt	M12	127 - 137	13 - 14	
Crank pulley nut	M18	147 - 196	15 - 20	
Connecting rod cap nut	M9	32.4 - 37.3	3.3 - 3.8	
Bearing cap bolt	M10	49.0 - 53.9	5.0 - 5.5	
Hollow screw (injection pump)	M12	14.7 - 19.6	1.5 - 2.0	
	M14	19.6 - 24.5	2.0 - 2.5	
Delivery valve holder (injection pump)	—	39.2 - 49.0	4.0 - 5.0	
Air vent screw (injection pump)	M8	9.81 - 13.7	1.0 - 1.4	
Nozzle retaining nut	IDI	M16	34.3 - 39.2	Specified value for delivered product
	DI	M15	29.4 - 39.2	
Nozzle holder	IDI	M20	49.0 - 58.8	
Nozzle mounting bolt	DI	M8	19.6 - 24.5	
Fuel injection pipe nut	M12	24.5 - 34.3	2.5 - 3.5	Use dedicated tool for torque control
Fuel leak-off pipe nut	M12	20.6 - 24.5	2.1 - 2.5	
Oil relief valve	M22	44.1 - 53.9	4.5 - 5.5	
Oil pan drain plug	M14	34.3 - 44.1	3.5 - 4.5	
Oil filter	M20	10.8 - 12.7	1.1 - 1.3	
Oil cooler connector	M20	58.8 - 78.5	6.0 - 8.0	With cooler
Stop solenoid fixing nut	M30	39.2 - 49.0	4.0 - 5.0	
Stop solenoid blind plug	M30	39.2 - 49.0	4.0 - 5.0	
Glow plug	M10	14.7 - 19.6	1.5 - 2.0	
Glow plug lead wire nut	M4	0.98 - 1.47	0.1 - 0.15	
Thermo switch	M16	18.6 - 26.5	1.9 - 2.7	
Oil pressure switch	PT1/8	7.85 - 11.8	0.8 - 1.2	
Starter terminal B	M8	9.87 - 11.8	1.0 - 1.2	
Sliding sleeve shaft	M10	29.4 - 41.2	3.0 - 4.2	
Special nut for torque spring set	M12	14.7 - 24.5	1.5 - 2.5	
Oil pan mounting bolt (FC, AL cast oil pans)	M8	24.5 - 30.4	2.5 - 3.1	
Oil pan mounting bolt (pressed oil pan for general engines)	M8	9.80 - 12.7	1.0 - 1.3	4T equivalent
Rear plate mounting bolt (rear plate for tractor engines)	M12	83.4 - 103	8.5 - 10.5	
Rear plate mounting bolt (rear plate for general engines)	M12	53.9 - 73.5	5.5 - 7.5	7T equivalent
Turbocharger mounting bolt and nut	M8	24.5 - 29.4	2.5 - 3.0	Turbocharger specification
Turbocharger lubricating oil pipe mounting bolt	M10	13.7 - 18.6	1.4 - 1.9	Turbocharger specification
Tachometer L joint union nut	M22	16.7 - 22.6	1.7 - 2.3	
Band-type hose clamp (05317-50200)	—	2.9 - 3.4	0.3 - 0.35	S3L2-T11C
Thermostat case plug (gasket seal)	M16	39.2 - 49.0	4.0 - 5.0	
Oil strainer nut	M16	24.5 - 29.4	2.5 - 3.0	
Alternator terminal B	M5	2.9 - 4.9	0.3 - 0.5	
	M6	3.9 - 5.9	0.4 - 0.6	
	M8	6.9 - 12.7	0.7 - 1.3	
Rocker adjusting nut (6T)	M8	18.0 - 22.0	1.8 - 2.2	

SMALL **8-9G9@**

TORQUE SPECIFICATIONS

SQ

SERIES



SERVICE BULLETIN

RESTRICTED

MITSUBISHI HEAVY INDUSTRIES, LTD.

GENERAL MACHINERY & SPECIAL VEHICLE HEADQUARTERS

BULLETIN No.: SQ2003-010 (1/3)

GROUP: Engine Body

MODELS: S4Q

SUBJECT: Tightening Torque for SQ Series

DATE: July 2003

1. Purpose

Revised lists of tightening torques for general bolts, general studs, general plugs and special bolts of SQ Series are issued for the maintenance work. The lists in this Service Bulletin supersede the lists of tightening torque in Service Bulletin No. K2001-057.

2. Description:

Note: indicates "Addition" as of April 18, 2003

Tightening Torque for General bolts

Size	4T		7T	
	N·m	kgf·m	N·m	kgf·m
M6	2.94 ~ 4.90	0.3 ~ 0.5	7.85 ~ 9.80	0.8 ~ 1.0
M8	9.80 ~ 12.7	1.0 ~ 1.3	14.7 ~ 21.6	1.5 ~ 2.2
M10	17.7 ~ 24.5	1.8 ~ 2.5	29.4 ~ 41.2	3.0 ~ 4.2
M12	29.4 ~ 41.2	3.0 ~ 4.2	53.9 ~ 73.5	5.5 ~ 7.5

Tightening Torque for General studs

Size	Mount to aluminum material		Mount to ferrous material	
	N·m	kgf·m	N·m	kgf·m
M8	6.37 ~ 8.34	0.65 ~ 0.85	11.8 ~ 13.7	1.2 ~ 1.4
M10	12.7 ~ 14.7	1.3 ~ 1.5	21.6 ~ 25.5	2.2 ~ 2.6

Tightening Torque for General plugs

Size	Tighten to aluminum material		Tighten to ferrous material	
	N·m	kgf·m	N·m	kgf·m
NPTF1/16	4.90 ~ 7.85	0.5 ~ 0.8	7.85 ~ 11.8	0.8 ~ 1.2
PT1/8	7.85 ~ 11.8	0.8 ~ 1.2	14.7 ~ 21.6	1.5 ~ 2.2
PT1/4, NPTF1/4	19.6 ~ 29.4	2.0 ~ 3.0	34.3 ~ 44.1	3.5 ~ 4.5
PT3/8	—	—	53.9 ~ 73.5	5.5 ~ 7.5

APPLICABLE No.:

MODIFIED No.:

DATE OF SERVICE PARTS AVAILABLE:

INTERCHANGEABILITY:

R=(NEW)↔(OLD)
1=Out of Supply.

S=(NEW)↔(OLD)
2=Yes as an assembly.

N=(NEW)↔(OLD)
3=Yes as a single part.

E0 No.
3060-8780

Please pass to :	DEPT. MANAGER	SECT. MANAGER	MECHANICS or CLERKS



Part name (Tightening part)	Size	Width across flat	Tightening torque		Remarks
			N·m	kgf·m	
CYLINDER HEAD BOLT	M12 × 1.75	19	118 ~ 128	12.0 ~ 13.0	With multi-shaft tightening tool
			113 ~ 123	11.5 ~ 12.5	
ROCKER COVER NUT	M8 × 1.25	12	10.8 ~ 12.7	1.1 ~ 1.3	
ROCKER SHAFT BRACKET BOLT (LONGER)	M8 × 1.25	12	12.7 ~ 16.7	1.3 ~ 1.7	
MAIN BEARING CAP BOLT	M12 × 1.75	12	78.5 ~ 88.3	8.0 ~ 9.0	
CONNECTING ROD CAP NUT	M10 × 1.0	14	49.0 ~ 58.8	5.0 ~ 6.0	
FLYWHEEL BOLT	M12 × 1.25	17	78.5 ~ 88.3	8.0 ~ 9.0	
CAMSHAFT THRUST PLATE BOLT	M8 × 1.25	12	10.8 ~ 12.7	1.1 ~ 1.3	
FRONT PLATE BOLT	M8 × 1.25	12	10.8 ~ 12.7	1.1 ~ 1.3	
TIMING GEAR CASE BOLT	M8 × 1.25	12	10.8 ~ 12.7	1.1 ~ 1.3	
CRANKSHAFT PULLEY NUT	M24 × 1.5	34	382 ~ 402	39 ~ 41	
REAR HOUSING	M10 × 1.25	14	54.0 ~ 65.7	5.5 ~ 6.7	Agricultural tractor use
REAR PLATE STUD	M10 × 1.25	—	21.6 ~ 25.5	2.2 ~ 2.6	For starter mounting
OIL PAN BOLT	M8 × 1.25	12	6.87 ~ 8.83	0.7 ~ 0.9	Press product
OIL PAN BOLT	M8 × 1.25	12	27.5 ~ 33.4	2.8 ~ 3.4	Cast oil pan for agricultural tractor
OIL PAN DRAIN PLUG	M14 × 1.5	22	35.3 ~ 43.1	3.6 ~ 4.4	
OIL FILTER SHAFT	M20 × 1.5	—	44.1 ~ 53.9	4.5 ~ 5.5	w/o cooler
OIL COOLER CONNECTOR	M20 × 1.5	32	58.8 ~ 78.5	6.0 ~ 8.0	w/ cooler
OIL FILTER	M20 × 1.5	—	10.8 ~ 12.7	1.1 ~ 1.3	
NOZZLE	M20 × 1.5	21	53.0 ~ 64.7	5.4 ~ 6.6	
FUEL LEAK-OFF PIPE FITTING NUT	M12 × 1.5	17	20.6 ~ 24.5	2.1 ~ 2.5	
INJECTION PUMP GEAR NUT (DISTRIBU- TION TYPE, CAV)	M14 × 1.5	22	76.5 ~ 86.3	7.8 ~ 8.8	
INJECTION PUMP GEAR NUT (DISTRIBU- TION TYPE, VE)	M12 × 1.75	19	59.0 ~ 69.0	6.0 ~ 7.0	
INJECTION PUMP GEAR (IN-LINE TYPE)	M12 × 1.75	19	58.8 ~ 68.6	6.0 ~ 7.0	
STARTER B TERMINAL	M8 × 1.25	12	9.81 ~ 11.8	1.0 ~ 1.2	
GLOW PLUG (BODY) (TERMINAL)	M10 × 1.25	12	15.7 ~ 19.6	1.6 ~ 2.0	
	M4 × 0.7	8	1.08 ~ 1.47	0.11 ~ 0.15	
EXHAUST MANIFOLD	M8 × 1.25	12	27.5 ~ 33.3	2.8 ~ 3.4	
RELIEF VALVE	M22 × 1.5	27	44.1 ~ 53.9	4.5 ~ 5.5	
WATER DRAIN PLUG	1/4-18NPTF	14	35.3 ~ 43.1	3.6 ~ 4.4	
INJECTION PIPE NUT	M12 × 1.5	19	26.5 ~ 32.4	2.7 ~ 3.3	
RETURN PIPE NUT	M10 × 1.25	14	17.7 ~ 21.6	1.8 ~ 2.2	



Part name (Tightening part)	Size	Width across flat	Tightening torque		Remarks
			N·m	kgf·m	
OIL PUMP SET BOLT	M12 × 1.75	17	30.4 ~ 38.2	3.1 ~ 3.9	
OVERHEAT WARNING UNIT (THERMOSTAT)	M16 × 1.5	19	20.6 ~ 24.5	2.1 ~ 2.5	
PLUG	M16 × 1.5	24	39.2 ~ 49.0	4.0 ~ 5.0	Cylinder head
HOSE CLAMP	—	6.3	1.18 ~ 1.57	0.12 ~ 0.16	Clamping water drain hose
OIL FILTER BRACKET EYEBOLT	M20 x 1.5	30	34.3 ~ 44.1	3.5 ~ 4.5	Mounting oil filter bracket

SMALL **8-9G9@**

TORQUE SPECIFICATIONS

SS

SERIES



SERVICE BULLETIN

MITSUBISHI HEAVY INDUSTRIES, LTD.
GENERAL MACHINERY & SPECIAL VEHICLE HEADQUARTERS

BULLETIN No.: SS2008-019 (1/3)

GROUP: Basic engine

MODELS: S4S, S6S

DATE: 28 November 2008

SUBJECT: Tightening Torque for SS Series

1. Purpose

Service Bulletin No. SS2003-020 was issued with tightening torque tables. New tightening torque tables were then prepared with addition of new unit torque values and review of existing unit torque values. These new tightening torque tables are given here for use in inspection and maintenance.

2. Description

Tightening torque for general bolts

Size	4T		7T	
	N·m	kgf·m	N·m	kgf·m
M6	2.94 - 4.90	0.3 - 0.5	7.85 - 9.80	0.8 - 1.0
M8	9.8 - 12.7	1.0 - 1.3	14.7 - 21.6	1.5 - 2.2
M10	17.7 - 24.5	1.8 - 2.5	29.4 - 41.2	3.0 - 4.2
M12	29.4 - 41.2	3.0 - 4.2	53.9 - 73.5	5.5 - 7.5

Tightening torque for general plugs

Size	Tighten to aluminum material		Tighten to ferrous material	
	N·m	kgf·m	N·m	kgf·m
NPTF 1/16	4.90 - 7.85	0.5 - 0.8	7.85 - 11.8	0.8 - 1.2
PT 1/8	7.85 - 11.8	0.8 - 1.2	14.7 - 21.6	1.5 - 2.2
PT 1/4, NPTF 1/4	19.6 - 29.4	2.0 - 3.0	34.3 - 44.1	3.5 - 4.5
PT 3/8	—	—	53.9 - 73.5	5.5 - 7.5

Tightening torque for general studs

Size	Mounted to aluminum material		Mounted to ferrous material	
	N·m	kgf·m	N·m	kgf·m
M8	4.90 - 5.90	0.50 - 0.60	11.8 - 13.7	1.2 - 1.4
M10	12.7 - 14.7	1.3 - 1.5	21.6 - 25.5	2.2 - 2.6

APPLICABLE No.:

MODIFIED No.:

DATE OF SERVICE PARTS AVAILABLE:

INTERCHANGEABILITY:

R=(NEW) ⇄ (OLD)

S=(NEW) ⇄ (OLD)

N=(NEW) ⇄ (OLD)

1=Out of Supply.

2=Yes as an assembly.

3=Yes as a single part.

EO No.

32A0-B026
 32A0-B251
 32A0-B580
 32A0-B816
 32A0-B683
 32A0-B836
 32A0-B893

Please pass to:

DEPT. MANAGER

SECT. MANAGER

MECHANICS or CLERKS



Part name (Tightening part)	Size	Width across flats	Tightening torque		Remarks	
			N·m	kgf·m		
Cylinder head bolt	M12×1.75	19	118 - 128	12.0 - 13.0	Multi-axis tightening machine used	
			113 - 123	11.5 - 12.5		
Rocker cover	M8×1.25	12	10.0 - 13.0	1.0 - 1.3		
Rocker shaft bracket bolt (long)	M8×1.25	12	15.0 - 20.0	1.5 - 2.0		
Main bearing cap	M14×2.0	22	98 - 108	10.0 - 11.0		
Connecting rod cap	M10×1.25	14	49.0 - 59.0	5.0 - 6.0		
Flywheel	M12×1.25	17	78.5 - 88.3	8.0 - 9.0		
Camshaft thrust plate	M8×1.25	12	10.0 - 13.0	1.0 - 1.3		
Front plate	M8×1.25	12	10.0 - 13.0	1.0 - 1.3		
Timing gear case cover	M8×1.25	12	17.0 - 20.0	1.7 - 2.0		
Crankshaft pulley	M30×1.5	46	480 - 500	49 - 51		
Idler thrust plate	M10×1.25	14	29.0 - 39.0	3.0 - 4.0		
Oil pan	M8×1.25	12	10.0 - 13.0	1.0 - 1.3	Pressed oil pan	
Oil pan	M8×1.25	12	27.5 - 33.4	2.8 - 3.4	Cast oil pan for agricultural tractors	
Rear plate	M10×1.25	14	54.0 - 65.7	5.5 - 6.7	For agricultural tractors	
Oil pan drain plug	M14×1.5	22	34.0 - 44.0	3.5 - 4.5		
	M20×1.5	24	73.0 - 83.0	7.5 - 8.5		
Nozzle gland (DI)	M8×1.25	12	21.0 - 23.0	2.0 - 2.4		
Nozzle (swirl chamber type)	M20×1.5	21	53.0 - 64.7	5.4 - 6.6		
Injection pump delivery valve holder	—	22	34.0 - 39.0	3.5 - 4.0		
Fuel leak-off pipe mounting nut	M12×1.5	17	20.6 - 24.5	2.1 - 2.5		
Injection pump gear (distributor type)	M14×1.5	22	76.5 - 86.3	7.8 - 8.8		
Injection pump gear (in-line type, VE, swirl chamber type)	M12×1.75	19	58.8 - 68.6	6.0 - 7.0		
Injection pump gear (in-line type, VE, DI)	M14×1.5	22	83.4 - 98.0	8.5 - 10.0		
Glow plug	Plug (swirl chamber type)	M10×1.25	12	15.0 - 20.0	1.5 - 2.0	
	Plug (DI)	M12×1.25	12	20.0 - 30.0	2.0 - 3.0	
	Terminal	M4×0.7	8	1.0 - 1.5	0.10 - 0.15	
Exhaust manifold (bolt alone)	M8×1.25	12	27.5 - 33.3	2.8 - 3.4		
Exhaust manifold (with spacer)	M8×1.25	12	15.0 - 22.0	1.5 - 2.2		
Relief valve	M22×1.5	27	44.1 - 53.9	4.5 - 5.5		
Safety valve or blind plug	M18×2.0	24	64.0 - 74.0	6.5 - 7.5		
Water drain plug	1/4-18NPTF	14	35.3 - 43.1	3.6 - 4.4		
Injection pipe nut	M12×1.5	17	26.5 - 32.4	2.7 - 3.3		
Return pipe nut	M10×1.25	14	17.7 - 21.6	1.8 - 2.2		
Oil pump gear	M10×1.25	14	28.0 - 38.0	2.9 - 3.9		
Overheat warning unit (thermo switch)	M16×1.5	19	20.6 - 24.5	2.1 - 2.5		
Starter terminal B	M8×1.25	12	9.81 - 11.8	1.0 - 1.2		
Plug	M16×1.5	24	39.2 - 49.0	4.0 - 5.0	Cylinder head	
Balancer	M8×1.25	12	27.5 - 33.4	2.8 - 3.4		
Injection pump oil pipe (flare)	M12×1.0	17	16.0 - 23.0	1.6 - 2.3		
Injection pump eye bolt	M14×1.5	22	15.0 - 20.0	1.5 - 2.0		
Injection pump overflow valve	—	17	15.0 - 20.0	1.5 - 2.0		



Part name (Tightening part)	Size	Width across flats	Tightening torque		Remarks
			N·m	kgf·m	
Oil level sensor	1-1/16-12	24	49.0 - 58.8	5.0 - 6.0	34390-01300
Turbocharger oil eye bolt	M10×1.25	14	13.7 - 18.6	1.4 - 1.9	
DENSO VE pump distributor head bolt	M8×1.25	14	23 - 26	2.3 - 2.6	(For DI)
Bosch VE pump distributor head bolt	M8×1.25	12	14 - 20	1.4 - 2.0	(For IDI)
Turbocharger air hose plate clamp	—	7	3 - 5	0.3 - 0.5	
Thermostat case	M8×1.25	12	17 - 20	1.7 - 2.0	
Rear plate	M10×1.25	14	50.0 - 61.7	5.1 - 6.3	For TCM F/L
Turbocharger oil nipple	M14×1.5	19	27.0 - 33.0	2.7 - 3.3	
Drain cock	M10×1.25	—	4.5 - 5.5	0.46 - 0.56	Crankcase water drain
Hose clamp (plate clamp)	—	7	3.5 - 4.5	0.36 - 0.46	Thermostat bypass hose
Muffler U bolt	M10×1.25	14	9.8 - 11.8	1.0 - 1.2	
Bosh VE pump distributor head bolt	M8×1.25	12	23 - 26	2.3 - 2.6	(For DI)
Rocker adjusting nut (6T)	M8×1.25	12	18.0 - 22.0	1.8 - 2.2	F2325-08000
Shutoff valve	M20×1.5	30	7.0 - 9.0	0.7 - 0.9	Made of plastic 32A43-03200
Seal clamp	7/16-14UNC	—	68.6 - 98.1	7.0 - 10.0	34232-00700