



ISUZU
KB P190
MY 2007
WORKSHOP
REPAIR MANUAL
MAIN INDEX

ISUZU

CONTENTS

GENERAL INFORMATION	0
HEATING AND VENTILATION	1
FRAME AND CAB	2
STEERING SUSPENSION WHEELS AND TYRES	3
AXLE	4
BRAKES	5
ENGINE	6
TRANSMISSION	7
BODY	8
RESTRAINTS	9
CAB	10
SECURITY	11



SECTION 0 GENERAL INFORMATION

TABLE OF CONTENTS

	PAGE
Section 0A General Informantion	3
Section 0B Maintainance and Lubrication.....	19

SECTION 0A

GENERAL INFORMATION

TABLE OF CONTENTS

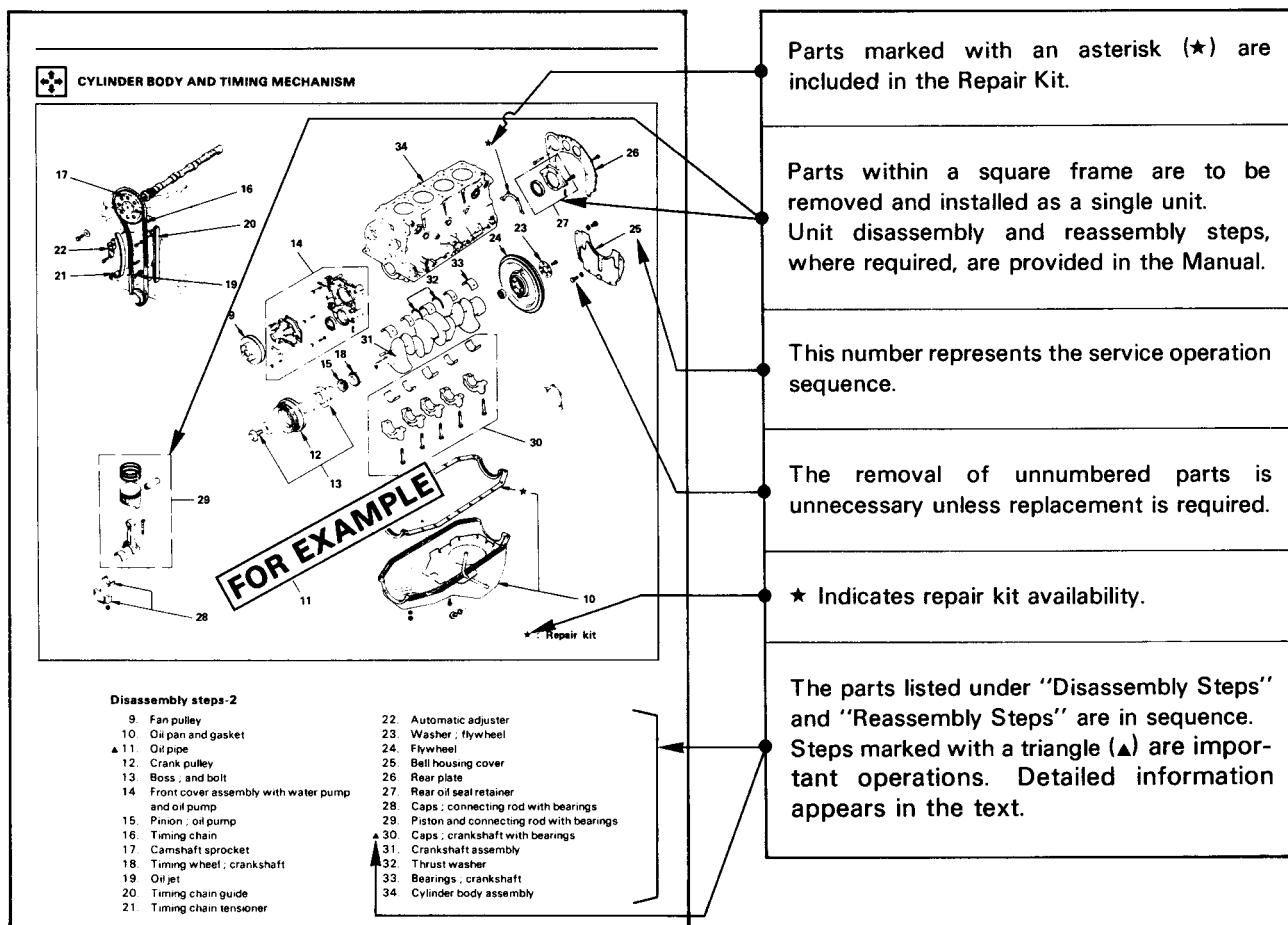
	PAGE
General Repair Instructions	0A- 2
Notes on the Format of this Manual.....	0A- 3
Identification	0A- 6
Lifting Instructions	0A- 7
Conversion Table	0A- 9

GENERAL REPAIR INSTRUCTIONS

1. Park the vehicle on level ground and chock the front or rear wheels before lifting the vehicle.
2. Raise the vehicle with a jack set against the axle or the frame.
3. Support the vehicle on chassis stands.
4. Use covers on the vehicle body, seats, and floor to prevent damage and/or contamination.
5. Disconnect the grounding cable from the battery before performing service operations.
This will prevent cable damage or burning due to short circuiting.
6. Handle brake fluid and antifreeze solution with great care.
Spilling these liquids on painted surfaces will damage the paint.
7. The use of the proper tool(s) and special tool(s) where specified is essential to efficient, reliable, and safe service operations.
8. Always use genuine ISUZU replacement parts.
9. Discard used cotter pins, gaskets, O-rings, oil seals, lock washers, and self-locking nuts at disassembly.
Normal function of these parts cannot be guaranteed if they are reused.
10. Prepare new cotter pins, gaskets, O-rings, oil seals, lock washers, and self-locking nuts for installation.
11. Keep the disassembled parts neatly in groups.
This will facilitate smooth and correct reassembly.
12. Keep fixing nuts and bolts separate.
Fixing nuts and bolts vary in hardness and design according to installation position.
13. Clean all parts before inspection or reassembly.
14. Clean the oil ports and other openings with compressed air to make certain that they are free from dirt and obstructions.
15. Lubricate the rotating and sliding faces of all moving parts with oil or grease before installation.
16. Use the recommended liquid gasket to prevent leakage.
17. Carefully observe all nut and bolt torque specifications.
18. When removing or replacing parts that require refrigerant to be discharged from the air conditioning system, be sure to use the Vehicle Refrigerant Recovery and Recycling Equipment (VRRRE) to recover and recycle R134a, to promote the aim of the protection of the ozone layer covering the earth.
19. Check and recheck your work. No service operation is complete until you have done this.

NOTES ON THE FORMAT OF THIS MANUAL

1. Find the applicable section by referring to the index at the front of the Workshop Manual binder.
2. The following technical service information is included in this Section:
 - Identification
 - Maintenance schedules
 - Recommended lubricants
 - Recommended fuels
 - Oil viscosity charts
3. Individual sections of this Workshop Manual are divided into the following categories:
 - Main data and specifications
 - Torque specifications
 - Recommended liquid gasket
 - Loctite application procedure
 - Servicing
 - Removal and installation
 - Disassembly
 - Inspection and repair
 - Reassembly
 - Troubleshooting
4. Each "Major Components" page of this Workshop Manual has an exploded view of the applicable area.
A brief explanation of the notation used follows:



0A-4 GENERAL INFORMATION

5. Below is a sample of the Workshop Manual text following the "Major Components" page.
A brief explanation of the notation used follows:

Important operations

2. Bearing outer race
Installer : J-29038
Grip : J-8092

3. Bearing outer
Installer : J-29039
Grip

(2) Clean the side bearing bores. Install dial indicator with discs and arbor. Then install and tighten bearing caps to the specified torque.

Torque	kg-m (ft.lbs.)	7.0 (50)
① Dial indicator	: J-8001	
② Disc (2 pcs.)	: J-23597-4	
③ Arbor	: J-23597-1	
④ Gage plate	: J-23597-26	

FOR EXAMPLE

This is the item shown in the illustration. It is marked with a triangle (▲) on the "Major Components" page.

Special or recommended tools are identified by the tool name and/or number. The illustration shows how the tool is to be used.

Letters and numbers within a circle refer to identically labeled parts or measurements in the illustration.

This symbol indicates the type of service operation to be performed. A more detailed explanation of the various symbols follows.

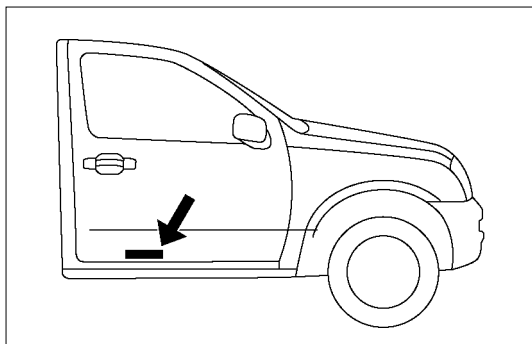
This table gives important service specifications and data.

6. The following symbols appear throughout the Workshop Manual.
They tell you at a glance the type of service operation to perform.

- Removal
- Adjustment
- Installation
- Cleaning
- Disassembly
- Important operation requiring extra care
- Reassembly
- Specified torque
- ISUZU special tool(s) required or recommended
- Alignment
- Other special tool(s) required or recommended
- Directional indication
- Lubrication (Oil)
- Inspection
- Lubrication (Grease)
- Measurement
- Torque angle method
- Liquid gasket application

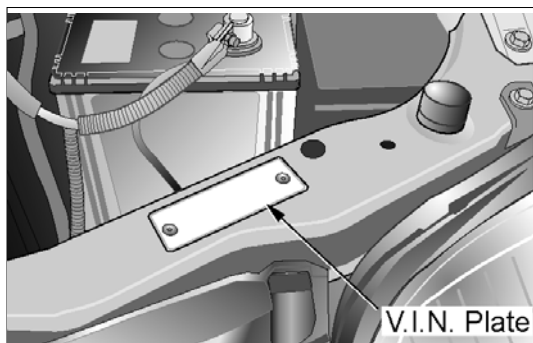
7. Measurement criteria are defined by the terms "standard" and "limit".
A measurement falling within the "standard" range indicates that the applicable part or parts are serviceable.
"Limit" is an absolute value.
A measurement falling outside the "limit" indicates that the applicable part or parts must be repaired or replaced.
8. Components and parts are listed in the singular form throughout the Workshop Manual.
9. The following directional criteria are used throughout the Workshop Manual:
Front:
The cooling fan side of the engine.
Right:
The right-hand side of the engine viewed from the flywheel.
Left:
The left-hand side of the engine viewed from the flywheel.
Rear:
The flywheel side of the engine.
Cylinder numbers are counted from the front of the engine towards the rear.
The engine's rotation is clockwise viewed from the front of the engine.

IDENTIFICATION



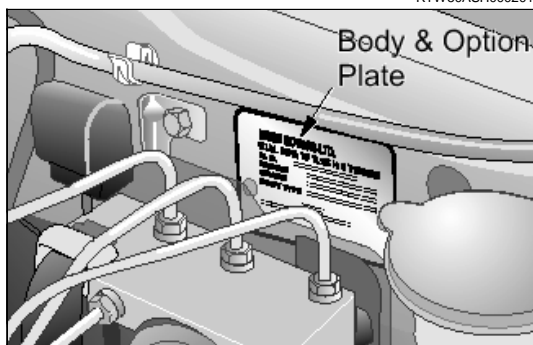
CHASSIS NUMBER

The chassis number is stamped on the right-hand side of the chassis side member under the right door.



VEHICLE IDENTIFICATION PLATE

The vehicle identification plate is attached to the upper face of the radiator sill in the engine compartment.



BODY AND OPTION IDENTIFICATION PLATE

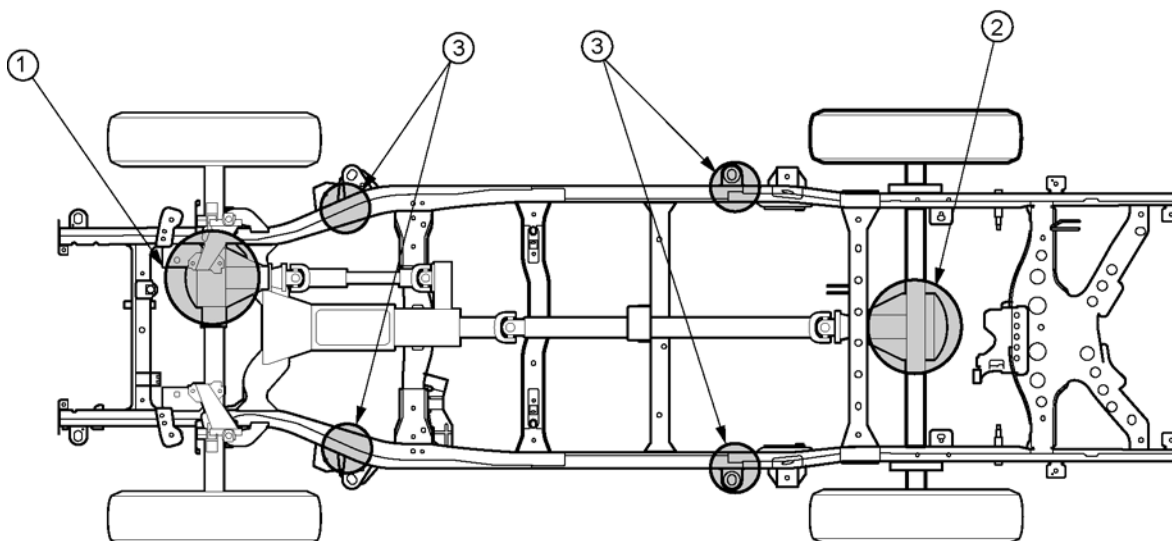
The body and option plate shows body style, body serial number, paint and trim colour combination, paint number, engine transmissions, axle ratio options and built date. The built date is defined as 'the date of manufacture' by the calendar month and year in which the body shell and power train sub-assemblies are co-joined or moved from the production line.

LIFTING INSTRUCTIONS

If a lifting device other than the original jack is used, it is most important that the device be applied only to the correct lifting points. (See the illustration.) Raising the vehicle from any other point may result in serious damage.

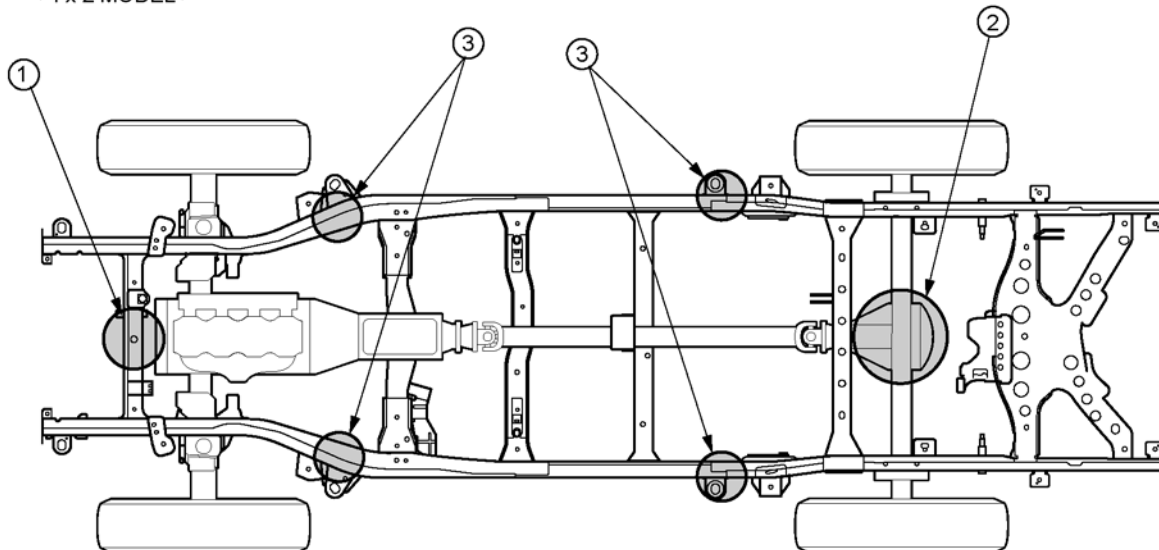
Lifting Points and Supportable Point-Locations

< 4 x 4 MODEL >



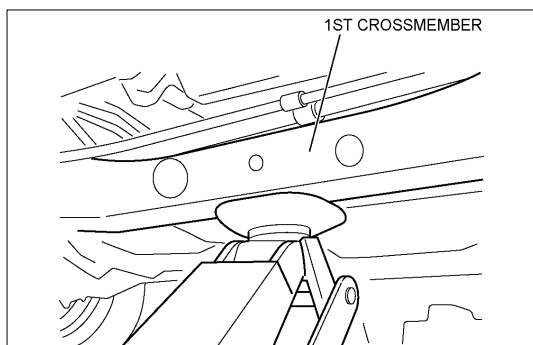
- ① Front axle center
- ② Rear axle center
- ③ Side frame

< 4 x 2 MODEL >

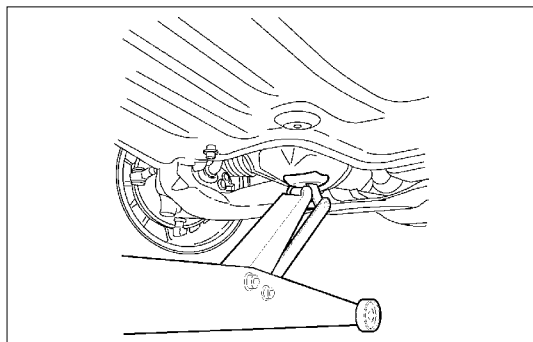


- ① 1st cross member center
- ② Rear axle center
- ③ Side frame

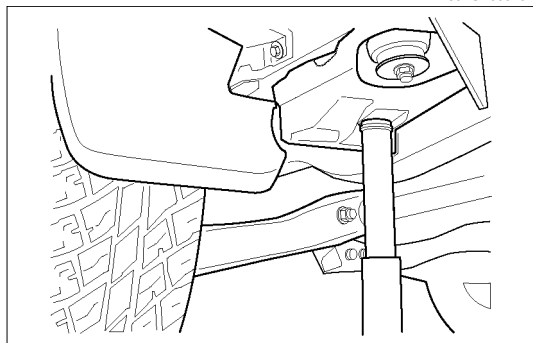
0A-8 GENERAL INFORMATION



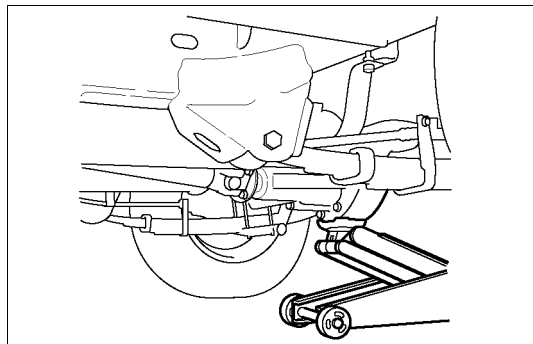
RUW50ASH000101



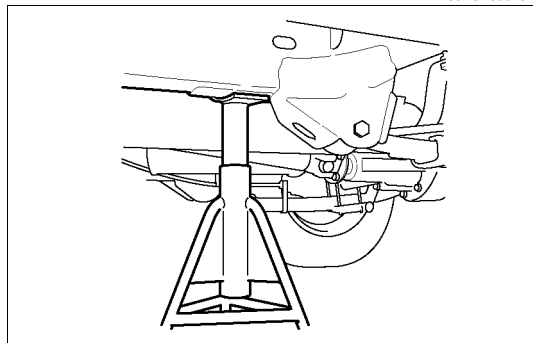
RTW60ASH000101



RTW60ASH000201



RTW30ASH000101



RTW30ASH000201

LIFTING POINT; FRONT**4x2 model**

- When using floor jack, lift the center of 1st cross member.

4x4 model

- When using floor jack, lift the center of front axle case.

SUPPORTABLE POINT; FRONT

- Position the chassis stands at the bottom of the frame side member, backward of front wheel.

LIFTING POINT; REAR

- When using floor jack, lift the center of rear axle case.

SUPPORTABLE POINT; REAR

- Position the chassis stands at the bottom of the frame side member, forward of the rear wheel.

CONVERSION TABLE

TABLE OF CONTENTS

	PAGE
Length	0A-10
Area	0A-11
Volume	0A-12
Mass	0A-13
Pressure	0A-14
Torque	0A-15
Temperature.....	0A-16

LENGTH

MILLIMETERS TO INCHES

mm	in.	mm	in.	mm	in.	mm	in.
1	0.0394	26	1.0236	51	2.0079	76	2.9921
2	0.0787	27	1.0630	52	2.0472	77	3.0315
3	0.1181	28	1.1024	53	2.0866	78	3.0709
4	0.1575	29	1.1417	54	2.1260	79	3.1102
5	0.1969	30	1.1811	55	2.1654	80	3.1496
6	0.2362	31	1.2205	56	2.2047	81	3.1890
7	0.2756	32	1.2598	57	2.2441	82	3.2283
8	0.3150	33	1.2992	58	2.2835	83	3.2677
9	0.3543	34	1.3386	59	2.3228	84	3.3071
10	0.3937	35	1.3780	60	2.3622	85	3.3465
11	0.4331	36	1.4173	61	2.4016	86	3.3858
12	0.4724	37	1.4567	62	2.4409	87	3.4252
13	0.5118	38	1.4961	63	2.4803	88	3.4646
14	0.5512	39	1.5354	64	2.5197	89	3.5039
15	0.5906	40	1.5748	65	2.5591	90	3.5433
16	0.6299	41	1.6142	66	2.5984	91	3.5827
17	0.6693	42	1.6535	67	2.6378	92	3.6220
18	0.7087	43	1.6929	68	2.6772	93	3.6614
19	0.7480	44	1.7323	69	2.7165	94	3.7008
20	0.7874	45	1.7717	70	2.7559	95	3.7402
21	0.8268	46	1.8110	71	2.7953	96	3.7795
22	0.8661	47	1.8504	72	2.8346	97	3.8189
23	0.9055	48	1.8898	73	2.8740	98	3.8583
24	0.9449	49	1.9291	74	2.9134	99	3.8976
25	0.9843	50	1.9685	75	2.9528	100	3.9370

101	3.9764	111	4.3701	121	4.7638	131	5.1575
102	4.0157	112	4.4094	122	4.8031	132	5.1968
103	4.0551	113	4.4488	123	4.8425	133	5.2362
104	4.0945	114	4.4882	124	4.8819	134	5.2756
105	4.1339	115	4.5276	125	4.9213	135	5.3150
106	4.1732	116	4.5669	126	4.9606	136	5.3543
107	4.2126	117	4.6063	127	5.0000	137	5.3937
108	4.2520	118	4.6457	128	5.0394	138	5.4331
109	4.2913	119	4.6850	129	5.0787	139	5.4724

INCHES TO MILLIMETERS

	in.	mm	in.	mm
	1/64	0.3969	33/64	13.0969
	1/32	0.7938	17/32	13.4938
	3/64	1.1906	35/64	13.8906
1/16		1.5875	9/16	14.2875
	5/64	1.9844	37/64	14.6844
	3/32	2.3813	19/32	15.0813
	7/64	2.7781	39/64	15.4781
1/8		3.1750	5/8	15.8750
	9/64	3.5719	41/64	16.2719
	5/32	3.9688	21/32	16.6688
	11/64	4.3656	43/64	17.0656
3/16		4.7625	11/16	17.4625
	13/64	5.1594	45/64	17.8594
	7/32	5.5563	23/32	18.2563
	15/64	5.9531	47/64	18.6531
1/4		6.3500	3/4	19.0500
	17/64	6.7469	49/64	19.4469
	9/32	7.1438	25/32	19.8438
	19/64	7.5406	51/64	20.2406
5/16		7.9375	13/16	20.6375
	21/64	8.3344	53/64	21.0344
	11/32	8.7313	27/32	21.4313
	23/64	9.1281	55/64	21.8281
3/8		9.5250	7/8	22.2250
	25/64	9.9219	57/64	22.6219
	13/32	10.3188	29/32	23.0188
	27/64	10.7156	59/64	23.4156
7/16		11.1125	15/16	23.8125
	29/64	11.5094	61/64	24.2094
	15/32	11.9063	31/32	24.6063
	31/64	12.3031	63/64	25.0031
1/2		12.7000	1	25.4000

0A-10 GENERAL INFORMATION

FEET TO METERS

ft.	0	1	2	3	4	5	6	7	8	9	ft.
-	m	m	m	m	m	m	m	m	m	m	-
10	3.048	3.353	3.658	3.962	4.267	4.572	4.877	5.182	5.486	5.791	10
20	6.096	6.401	6.706	7.010	7.315	7.620	7.925	8.230	8.534	8.839	20
30	9.144	9.449	9.754	10.058	10.363	10.668	10.973	11.278	11.582	11.887	30
40	12.192	12.497	12.802	13.106	13.411	13.716	14.021	14.326	14.630	14.935	40
50	15.240	15.545	15.850	16.154	16.459	16.764	17.069	17.374	17.678	17.983	50
60	18.288	18.593	18.898	19.202	19.507	19.812	20.117	20.422	20.726	21.031	60
70	21.336	21.641	21.946	22.250	22.555	22.860	23.165	23.470	23.774	24.079	70
80	24.384	24.689	24.994	25.298	25.603	25.908	26.213	26.518	26.822	27.127	80
90	27.432	27.737	28.042	28.346	28.651	28.956	29.261	29.566	29.870	30.175	90
100	30.480	30.785	31.090	31.394	31.699	32.004	32.309	32.614	32.918	33.223	100

METERS TO FEET

m	0	1	2	3	4	5	6	7	8	9	m
-	ft.	ft.	ft.	ft.	ft.	ft.	ft.	ft.	ft.	ft.	-
10	32.8084	36.0892	39.3701	42.6509	45.9318	49.2126	52.4934	55.7743	59.0551	62.3360	10
20	65.6168	68.8976	72.1785	75.4593	78.7402	82.0210	85.3018	88.5827	91.8635	95.1444	20
30	98.4252	101.7060	104.9869	108.2677	111.5486	114.8294	118.1102	121.3911	124.6719	127.9528	30
40	131.2336	134.5144	137.7953	141.0761	144.3570	147.6378	150.9186	154.1995	157.4803	160.7612	40
50	164.0420	167.3228	170.6037	173.8845	177.1654	180.4462	183.7270	187.0079	190.2887	193.5696	50
60	196.8504	200.1312	203.4121	206.6929	209.9738	213.2546	216.5354	219.8163	223.0971	226.3780	60
70	229.6588	232.9396	236.2205	239.5013	242.7822	246.0630	249.3438	252.6247	255.9055	259.1864	70
80	262.4672	265.7480	269.0289	272.3097	275.5906	278.8714	282.1522	285.4331	288.7139	291.9948	80
90	295.2756	298.5564	301.8373	305.1181	308.3990	311.6798	314.9606	318.2415	321.5223	324.8032	90
100	328.0840	331.3648	334.6457	337.9265	341.2074	344.4882	347.7690	351.0499	354.3307	357.6116	100

MILES TO KILOMETERS

miles	0	1	2	3	4	5	6	7	8	9	miles
-	km	km	km	km	km	km	km	km	km	km	-
10	16.093	17.703	19.312	20.921	22.531	24.140	25.750	27.359	28.968	30.578	10
20	32.187	33.796	35.406	37.015	38.624	40.234	41.843	43.452	45.062	46.671	20
30	48.280	49.890	51.499	53.108	54.718	56.327	57.936	59.546	61.155	62.764	30
40	64.374	65.983	67.592	69.202	70.811	72.420	74.030	75.639	77.249	78.858	40
50	80.467	82.077	83.686	85.295	86.905	88.514	90.123	91.733	93.342	94.951	50
60	96.561	98.170	99.779	101.389	103.000	104.607	106.217	107.826	109.435	111.045	60
70	112.654	114.263	115.873	117.482	119.091	120.700	122.310	123.919	125.529	127.138	70
80	128.748	130.357	131.966	133.576	135.185	136.794	138.404	140.013	141.622	143.232	80
90	144.841	146.450	148.060	149.669	151.278	152.888	154.497	156.106	157.716	159.325	90
100	160.934	162.544	164.153	165.762	167.372	168.981	170.590	172.200	173.809	175.418	100

KILOMETERS TO MILES

km	0	1	2	3	4	5	6	7	8	9	km
-	miles	miles	miles	miles	miles	miles	miles	miles	miles	miles	-
10	6.214	6.835	7.456	8.078	8.699	9.321	9.942	10.563	11.185	11.806	10
20	12.427	13.049	13.670	14.292	14.913	15.534	16.156	16.777	17.398	18.020	20
30	18.641	19.262	19.884	20.505	21.127	21.748	22.370	22.990	23.612	24.233	30
40	24.855	25.476	26.098	26.719	27.340	27.962	28.583	29.204	29.826	30.447	40
50	31.065	31.690	32.311	32.933	33.554	34.175	34.797	35.418	36.039	36.661	50
60	37.282	37.904	38.525	39.146	39.768	40.389	41.010	41.632	42.253	42.875	60
70	43.496	44.117	44.739	45.360	45.981	46.603	47.224	47.845	48.467	49.088	70
80	49.711	50.331	50.952	51.574	52.195	52.816	53.438	54.059	54.681	55.302	80
90	55.923	56.545	57.166	57.787	58.409	59.030	59.652	60.273	60.894	61.516	90
100	62.137	62.758	63.390	64.001	64.622	65.244	65.865	66.487	67.108	67.729	100

AREA

SQUARE INCHES TO SQUARE CENTIMETERS

in ²	0 cm ²	1 cm ²	2 cm ²	3 cm ²	4 cm ²	5 cm ²	6 cm ²	7 cm ²	8 cm ²	9 cm ²	in ²
-		6.452	12.903	19.355	25.806	32.258	38.710	45.161	51.613	58.064	-
10	64.516	70.968	77.419	83.871	90.322	96.774	103.226	109.677	116.129	122.580	10
20	129.032	135.484	141.935	148.387	154.838	161.290	167.742	174.193	180.645	187.096	20
30	193.548	200.000	206.451	212.903	219.354	225.806	232.258	238.709	245.161	251.612	30
40	258.064	264.516	270.967	277.419	283.870	290.322	296.774	303.225	309.677	316.128	40
50	322.580	329.032	335.483	341.935	348.386	354.838	361.290	367.741	374.193	380.644	50
60	387.096	393.548	399.999	406.451	412.902	419.354	425.806	432.257	438.709	445.160	60
70	451.612	458.064	464.515	470.967	477.418	483.870	490.322	496.773	503.225	509.676	70
80	516.128	522.580	529.031	535.483	541.934	548.386	554.838	561.289	567.741	574.192	80
90	580.644	587.096	593.547	599.999	606.450	612.902	619.354	625.805	632.257	638.708	90
100	645.160	651.612	658.063	664.515	670.966	677.418	683.870	690.312	696.773	703.224	100

SQUARE CENTIMETERS TO SQUARE INCHES

cm ²	0 in ²	1 in ²	2 in ²	3 in ²	4 in ²	5 in ²	6 in ²	7 in ²	8 in ²	9 in ²	cm ²
-		0.155	0.310	0.465	0.620	0.775	0.930	1.085	1.240	1.395	-
10	1.550	1.705	1.860	2.015	2.170	2.325	2.480	2.635	2.790	2.945	10
20	3.100	3.255	3.410	3.565	3.720	3.875	4.030	4.185	4.340	4.495	20
30	4.650	4.805	4.960	5.115	5.270	5.425	5.580	5.735	5.890	6.045	30
40	6.200	6.355	6.510	6.665	6.820	6.975	7.130	7.285	7.440	7.595	40
50	7.750	7.905	8.060	8.215	8.370	8.525	8.680	8.835	8.990	9.145	50
60	9.300	9.455	9.610	9.765	9.920	10.075	10.230	10.385	10.540	10.695	60
70	10.850	11.005	11.160	11.315	11.470	11.625	11.780	11.935	12.090	12.245	70
80	12.400	12.555	12.710	12.865	13.020	13.175	13.330	13.485	13.640	13.795	80
90	13.950	14.105	14.260	14.415	14.570	14.725	14.880	15.035	15.190	15.345	90
100	15.500	15.655	15.810	15.965	16.120	16.275	16.430	16.583	16.740	16.895	100

VOLUME

CUBIC INCHES TO CUBIC CENTIMETERS

in ³	0 cm ³ (cc)	1 cm ³ (cc)	2 cm ³ (cc)	3 cm ³ (cc)	4 cm ³ (cc)	5 cm ³ (cc)	6 cm ³ (cc)	7 cm ³ (cc)	8 cm ³ (cc)	9 cm ³ (cc)	in ³
-		16.387	32.774	49.161	65.548	81.935	98.322	114.709	131.097	147.484	-
10	163.871	180.258	196.645	213.032	229.419	245.806	262.193	278.580	294.967	311.354	10
20	327.741	344.128	360.515	376.902	393.290	209.677	426.064	442.451	458.838	475.225	20
30	491.612	507.999	524.386	540.773	557.160	573.547	589.934	606.321	622.708	639.095	30
40	655.483	671.870	688.257	704.644	721.031	737.418	753.805	770.192	786.579	802.966	40
50	819.353	835.740	852.127	868.514	884.901	901.289	917.676	934.063	950.450	966.837	50
60	983.224	999.611	1015.998	1032.385	1048.772	1065.159	1081.546	1097.933	1114.320	1130.707	60
70	1147.094	1163.482	1179.869	1196.256	1212.643	1229.030	1245.417	1261.804	1278.191	1294.578	70
80	1310.965	1327.352	1343.739	1360.126	1376.513	1392.900	1409.288	1425.675	1442.062	1458.449	80
90	1474.836	1491.223	1507.610	1523.997	1540.384	1556.771	1573.158	1589.545	1605.932	1622.319	90
100	1638.706	1655.093	1671.481	1687.868	1704.255	1720.642	1737.029	1753.416	1769.803	1786.190	100

CUBIC CENTIMETERS TO CUBIC INCHES

cm ³ (cc)	0 in ³	1 in ³	2 in ³	3 in ³	4 in ³	5 in ³	6 in ³	7 in ³	8 in ³	9 in ³	cm ³ (cc)
-		0.0610	0.1220	0.1831	0.2441	0.3051	0.3661	0.4272	0.4882	0.5492	-
10	0.6102	0.6713	0.7323	0.7933	0.8543	0.9153	0.9764	1.0374	1.0984	1.1594	10
20	1.2205	1.2815	1.3425	1.4035	1.4646	1.5256	1.5866	1.6476	1.7086	1.7697	20
30	1.8307	1.8917	1.9527	2.0138	2.0748	2.1358	2.1968	2.2579	2.3189	2.3799	30
40	2.4409	2.5020	2.5630	2.6240	2.6850	2.7460	2.8071	2.8681	2.9291	2.9901	40
50	3.0512	3.1122	3.1732	3.2342	3.2952	3.3563	3.4173	3.4783	3.5393	3.6004	50
60	3.6614	3.7224	3.7834	3.8444	3.9055	3.9665	4.0275	4.0885	4.1496	4.2106	60
70	4.2716	4.3326	4.3937	4.4547	4.5157	4.5767	4.6377	4.6988	4.7598	4.8208	70
80	4.8818	4.9429	5.0039	5.0649	5.1259	5.1870	5.2480	5.3090	5.3700	5.4310	80
90	5.4921	5.5531	5.6141	5.6751	5.7362	5.7972	5.8582	5.9192	5.9803	6.0413	90
100	6.1023	6.1633	6.2243	6.2854	6.3464	6.4074	6.4684	6.5295	6.5905	6.6515	100

0A-12 GENERAL INFORMATION

GALLONS (U.S.) TO LITERS

U.S. gal.	0 liters	1 liters	2 liters	3 liters	4 liters	5 liters	6 liters	7 liters	8 liters	9 liters	U.S. gal.
-		3.7854	7.5709	11.3563	15.1417	18.9271	22.7126	26.4980	30.2834	34.0633	-
10	37.8543	41.6397	45.4251	49.2105	52.9960	56.7814	60.5668	64.3523	68.1377	71.9231	10
20	75.7085	79.4940	83.2794	87.0648	90.8502	94.6357	98.4211	102.2065	105.9920	109.7774	20
30	113.5629	117.3482	121.1337	124.9191	128.7045	132.4901	136.2754	140.0608	143.8462	147.6316	30
40	141.4171	155.2025	158.9879	162.7734	166.5588	170.3442	174.1296	177.9151	181.7005	185.4859	40
50	189.2713	193.0568	196.8422	200.6276	204.4131	208.1985	211.9839	215.7693	219.5548	223.3402	50
60	227.1256	230.9110	234.6965	238.4819	242.2673	246.0527	249.8382	253.6236	257.4090	261.1945	60
70	264.9799	268.7653	272.5507	276.3362	280.1216	283.9070	287.6924	291.4779	295.2633	299.0487	70
80	302.8342	306.6196	310.4050	314.1904	317.9759	321.7613	325.5467	329.3321	333.1176	336.9030	80
90	340.6884	344.4738	348.2593	352.0447	355.8301	359.6156	363.4010	367.1864	370.9718	374.7573	90
100	378.5427	382.3281	386.1135	389.8990	393.6844	397.4698	401.2553	405.0407	408.8261	412.6115	100

LITERS TO GALLONS (U.S.)

liters	0 gal.	1 gal.	2 gal.	3 gal.	4 gal.	5 gal.	6 gal.	7 gal.	8 gal.	9 gal.	liters
-		0.2642	0.5283	0.7925	1.0567	1.3209	1.5850	1.8492	2.1134	2.3775	-
10	2.6417	2.9059	3.1701	3.4342	3.6984	3.9626	4.2268	4.4909	4.7551	5.0193	10
20	5.2834	5.5476	5.8118	6.0760	6.3401	6.6043	6.8685	7.1326	7.3968	7.6610	20
30	7.9252	8.1893	8.4535	8.7177	8.9818	9.2460	9.5102	9.7743	10.0385	10.3027	30
40	10.5669	10.8311	11.0952	11.3594	11.6236	11.8877	12.1519	12.4161	12.6803	12.9444	40
50	13.2086	13.4728	13.7369	14.0011	14.2653	14.5295	14.7936	15.0578	15.3220	15.5861	50
60	15.8503	16.1145	16.3787	16.6428	16.9070	17.1711	17.4354	17.6995	17.9637	18.2279	60
70	18.4920	18.7562	19.0204	19.2846	19.5487	19.8129	20.0771	20.3412	20.6054	20.8696	70
80	21.1338	21.3979	21.6621	21.9263	22.1904	22.4546	22.7188	22.9830	23.2471	23.5113	80
90	23.7755	24.0397	24.3038	24.5680	24.8322	25.0963	25.3605	25.6247	25.8889	26.1530	90
100	26.4172	26.6814	26.9455	27.2097	27.4739	27.7381	28.0022	28.2664	28.5306	28.7947	100

GALLONS (IMP.) TO LITERS

Imp gal.	0 liters	1 liters	2 liters	3 liters	4 liters	5 liters	6 liters	7 liters	8 liters	9 liters	Imp gal.
-		4.5459	9.0918	13.6377	18.1836	22.7295	27.2754	31.8213	36.3672	40.9131	-
10	45.4590	50.0049	54.5508	59.0967	63.6426	68.1885	72.7344	77.2803	81.8262	86.3721	10
20	90.9180	95.4639	100.0098	104.5557	109.1016	113.6475	118.1934	122.7393	127.2852	131.8311	20
30	136.3770	140.9229	145.4688	150.0147	154.5606	159.1065	163.6524	168.1983	172.7442	177.2901	30
40	181.8360	186.3819	190.9278	195.4737	200.0196	204.5655	209.1114	213.6573	218.2032	222.7491	40
50	227.2950	231.8409	236.3868	240.9327	245.4786	250.0245	254.5704	259.1163	263.6622	268.2081	50
60	272.7540	277.2999	281.8458	286.3917	290.9376	295.4835	300.0294	304.5753	309.1212	313.6671	60
70	318.2130	322.7589	327.3048	331.8507	336.8966	340.9425	345.4884	350.0343	354.5802	359.1261	70
80	363.6720	368.2179	372.7638	377.3097	381.8556	386.4015	390.9474	395.4933	400.0392	404.5851	80
90	409.1310	413.6769	418.2228	422.7687	427.3146	431.8605	436.4064	440.9523	445.4982	450.0441	90
100	454.5900	459.1359	463.6818	468.2277	472.7736	477.3195	481.8654	486.4113	490.9572	495.5031	100

LITERS TO GALLONS (IMP.)

liters	0 gal.	1 gal.	2 gal.	3 gal.	4 gal.	5 gal.	6 gal.	7 gal.	8 gal.	9 gal.	liters
-		0.2200	0.4400	0.6599	0.8799	1.0999	1.3199	1.5399	1.7598	1.9798	-
10	2.1998	2.4198	2.6398	2.8597	3.0797	3.2997	3.5197	3.7397	3.9596	4.1796	10
20	4.3996	4.6196	4.8396	5.0595	5.2795	5.4995	5.7195	5.9395	6.1594	6.3794	20
30	6.5994	6.8194	7.0394	7.2593	7.4793	7.6993	7.9193	8.1393	8.3592	8.5792	30
40	8.7992	9.0192	9.2392	9.4591	9.6791	9.8991	10.1191	10.3391	10.5590	10.7790	40
50	10.9990	11.2190	11.4390	11.6590	11.8789	12.0989	12.3189	12.5389	12.7588	12.9788	50
60	13.1988	13.4188	13.6388	13.8587	14.0787	14.2987	14.5187	14.7387	14.9586	15.1786	60
70	15.3986	15.6186	15.8386	16.0585	16.2785	16.4985	16.7185	16.9385	17.1584	17.3784	70
80	17.5984	17.8184	18.0384	18.2583	18.4783	18.6983	18.9183	19.1383	19.3582	19.5782	80
90	19.7982	20.0182	20.2382	20.4581	20.6781	20.8981	21.1181	21.3381	21.5580	21.7780	90
100	21.9980	22.2180	22.4380	22.6579	22.8779	23.0979	23.3179	23.5379	23.7578	23.9778	100

MASS

POUNDS TO KILOGRAMS

lbs.	0	1	2	3	4	5	6	7	8	9	lbs.
-	kg	kg	kg	kg	kg	kg	kg	kg	kg	kg	-
10	4.536	4.990	5.443	5.897	6.350	6.804	7.257	7.711	8.165	8.618	10
20	9.072	9.525	9.979	10.433	10.886	11.340	11.793	12.247	12.701	13.154	20
30	13.608	14.061	14.515	14.969	15.422	15.876	16.329	16.783	17.237	17.690	30
40	18.144	18.597	19.051	19.504	19.958	20.412	20.865	21.319	21.772	22.226	40
50	22.680	23.133	23.587	24.040	24.494	24.948	25.401	25.855	26.308	26.762	50
60	27.216	27.669	28.123	28.576	29.030	29.484	29.937	30.391	30.844	31.298	60
70	31.751	32.205	32.659	33.112	33.566	34.019	34.473	34.927	35.380	35.834	70
80	36.287	36.741	37.195	37.648	38.102	38.555	39.009	39.463	39.916	40.370	80
90	40.823	41.277	41.731	42.184	42.638	43.091	43.545	43.998	44.452	44.906	90
100	45.359	45.813	46.266	46.720	47.174	47.627	48.081	48.534	48.988	49.442	100

KILOGRAMS TO POUNDS

kg	0	1	2	3	4	5	6	7	8	9	kg
-	lbs.	lbs.	lbs.	lbs.	lbs.	lbs.	lbs.	lbs.	lbs.	lbs.	-
10	22.046	24.251	26.455	28.660	30.865	33.069	35.274	37.479	39.683	41.888	10
20	44.092	46.297	48.502	50.706	52.911	55.116	57.320	59.525	61.729	63.934	20
30	66.139	68.343	70.548	72.753	74.957	77.162	79.366	81.571	83.776	85.980	30
40	88.185	90.390	92.594	94.799	97.003	99.208	101.413	103.617	105.822	108.026	40
50	110.231	112.436	114.640	116.845	119.050	121.254	123.459	125.663	127.868	130.073	50
60	132.277	134.482	136.687	138.891	141.096	143.300	145.505	147.710	149.914	152.119	60
70	154.324	156.528	158.732	160.937	163.142	165.347	167.551	169.756	171.961	174.165	70
80	176.370	178.574	180.780	182.984	185.188	187.393	189.597	191.802	194.007	196.211	80
90	198.416	200.621	202.825	205.030	207.234	209.439	211.644	213.848	216.053	218.258	90
100	220.462	222.667	224.871	227.076	229.281	231.485	233.690	235.895	238.099	240.304	100

KILOGRAMS TO NEWTONS

kg	0	1	2	3	4	5	6	7	8	9	kg
-	N	N	N	N	N	N	N	N	N	N	-
10	98.07	107.87	117.68	127.49	137.29	147.10	156.91	166.71	176.52	186.33	10
20	196.13	205.94	215.75	225.55	235.36	245.17	254.97	264.78	274.59	284.39	20
30	294.20	304.01	313.81	323.62	333.43	343.23	353.04	362.85	372.65	382.46	30
40	392.27	402.07	411.88	421.69	431.49	441.30	451.11	460.91	470.72	480.53	40
50	490.33	500.14	509.95	519.75	529.56	539.37	549.17	558.98	568.79	578.59	50
60	588.40	598.21	608.01	617.82	627.63	637.43	647.24	657.05	666.85	676.66	60
70	686.47	696.27	706.08	715.89	725.69	735.50	745.31	755.11	764.92	774.73	70
80	784.53	794.34	804.15	813.95	823.76	833.57	843.37	853.18	862.99	872.79	80
90	882.60	892.41	902.21	912.02	921.83	931.63	941.44	951.25	961.05	970.86	90
100	980.67	990.47	1000.28	1010.08	1019.89	1029.70	1039.50	1049.31	1059.12	1068.92	100

NEWTONS TO KILOGRAMS

N	0	10	20	30	40	50	60	70	80	90	kg
-	kg	kg	kg	kg	kg	kg	kg	kg	kg	kg	N
10	10.197	11.217	12.237	13.256	14.276	15.296	16.316	17.335	18.355	19.375	10
20	20.394	21.414	22.434	23.453	24.473	25.493	26.513	27.532	28.552	29.572	20
30	30.592	31.611	32.631	33.651	34.670	35.690	36.710	37.730	38.749	39.769	30
40	40.789	41.809	42.828	43.848	44.868	45.887	46.907	47.927	48.947	49.966	40
50	50.986	52.006	53.025	54.045	55.065	56.085	57.104	58.124	59.144	60.163	50
60	61.183	62.203	63.223	64.242	65.262	66.282	67.302	68.321	69.341	70.361	60
70	71.380	72.400	73.420	74.440	75.459	76.479	77.499	78.518	79.538	80.558	70
80	81.578	82.597	83.617	84.637	85.656	86.676	87.696	88.716	89.735	90.755	80
90	91.775	92.795	93.814	94.834	95.854	96.873	97.893	98.913	99.933	100.952	90
100	101.972	102.992	104.011	105.031	106.051	107.071	108.090	109.110	110.130	111.149	100

0A-14 GENERAL INFORMATION

PRESSURE

POUNDS PER SQUARE INCH TO KILOGRAMS PER SQUARE CENTIMETER

lb/in ² (psi)	0 kg/cm ²	1 kg/cm ²	2 kg/cm ²	3 kg/cm ²	4 kg/cm ²	5 kg/cm ²	6 kg/cm ²	7 kg/cm ²	8 kg/cm ²	9 kg/cm ²	lb/in ² (psi)
-	-	0.0703	0.1406	0.2109	0.2812	0.3515	0.4218	0.4921	0.5625	0.6328	-
10	0.7031	0.7734	0.8437	0.9140	0.9843	1.0546	1.1249	1.1952	1.2655	1.3358	10
20	1.4061	1.4764	1.5468	1.6171	1.6874	1.7577	1.8280	1.8983	1.9686	2.0389	20
30	2.1092	2.1795	2.2498	2.3201	2.3904	2.4607	2.5311	2.6014	2.6717	2.7420	30
40	2.8123	2.8826	2.9529	3.0232	3.0935	3.1638	3.2341	3.3044	3.3747	3.4450	40
50	3.5154	3.5857	3.6560	3.7263	3.7966	3.8669	3.9372	4.0075	4.0778	4.1481	50
60	4.2184	4.2887	4.3590	4.4293	4.4996	4.5700	4.6403	4.7106	4.7809	4.8512	60
70	4.9215	4.9918	5.0621	5.1324	5.2027	5.2730	5.3433	5.4136	5.4839	5.5543	70
80	5.6246	5.6947	5.7652	5.8355	5.9058	5.9761	6.0464	6.1167	6.1870	6.2573	80
90	6.3276	6.3979	6.4682	6.5386	6.6089	6.6792	6.7495	6.8198	6.8901	6.9604	90
100	7.0307	7.1010	7.1713	7.2416	7.3119	7.3822	7.4525	7.5228	7.5932	7.6635	100

KILOGRAMS PER SQUARE CENTIMETER TO POUNDS PER SQUARE INCH

kg/cm ²	0 lb/in ² (psi)	1 lb/in ² (psi)	2 lb/in ² (psi)	3 lb/in ² (psi)	4 lb/in ² (psi)	5 lb/in ² (psi)	6 lb/in ² (psi)	7 lb/in ² (psi)	8 lb/in ² (psi)	9 lb/in ² (psi)	kg/cm ²
-	-	14.22	28.45	42.67	56.89	71.12	85.34	99.56	113.78	128.01	-
10	142.23	156.45	170.68	184.90	199.12	213.35	227.57	241.79	256.01	270.24	10
20	284.46	298.6	312.91	327.13	341.35	355.58	369.80	384.02	398.24	412.47	20
30	426.69	440.91	455.14	469.36	483.58	497.81	512.03	526.25	540.47	554.70	30
40	568.92	583.14	597.37	611.59	625.81	640.04	654.26	668.48	682.70	696.93	40
50	711.16	725.37	739.60	753.82	768.04	782.27	796.49	810.71	824.93	839.16	50
60	853.38	867.60	881.83	896.05	910.27	924.50	938.72	952.94	967.16	981.39	60
70	995.61	1009.83	1024.06	1038.28	1052.50	1066.73	1080.95	1095.17	1109.39	1123.62	70
80	1137.84	1152.06	1166.27	1180.51	1194.73	1208.96	1223.18	1237.40	1251.62	1265.85	80
90	1280.07	1294.20	1308.52	1322.74	1336.96	1351.19	1365.41	1379.63	1393.85	1408.08	90
100	1422.30	1436.52	1450.75	1464.97	1479.19	1493.42	1507.64	1521.86	1536.08	1550.31	100

KILOGRAMS PER SQUARE CENTIMETER TO KILO-PASCALS

kg/cm ²	0 KPa	1 KPa	2 KPa	3 KPa	4 KPa	5 KPa	6 KPa	7 KPa	8 KPa	9 KPa	kg/cm ²
-	-	98.1	196.1	294.2	392.3	490.3	588.4	686.5	784.5	882.6	-
10	980.7	1078.7	1176.8	1274.9	1372.9	1471.0	1569.1	1667.1	1765.2	1863.3	10
20	1961.3	2059.4	2157.5	2255.5	2353.6	2451.7	2549.7	2647.8	2745.9	2843.9	20
30	2942.0	3040.1	3138.1	3236.2	3334.3	3432.3	3530.4	3628.5	3726.5	3824.6	30
40	3922.7	4020.7	4118.8	4216.9	4314.9	4413.0	4511.1	4609.1	4707.2	4805.3	40
50	4903.3	5001.4	5099.5	5197.5	5295.6	5393.7	5491.7	5589.8	5687.9	5785.9	50
60	5884.0	5982.1	6080.1	6178.2	6276.3	6374.3	6472.4	6570.5	6668.5	6766.6	60
70	6864.7	6962.7	7060.8	7158.9	7256.9	7355.0	7453.1	7551.1	7649.2	7747.3	70
80	7845.3	7943.4	8041.5	8139.5	8237.6	8335.7	8433.7	8531.8	8629.9	8727.9	80
90	8826.0	8924.1	9022.1	9120.2	9218.3	9316.3	9414.4	9512.5	9610.5	9708.6	90
100	9806.7	9904.7	10002.8	10100.8	10198.9	10297.0	10395.0	10493.1	10591.2	10689.2	100

KILO-PASCALS TO KILOGRAMS PER SQUARE CENTIMETER

KPa	0	100	200	300	400	500	600	700	800	900	KPa
	kg/cm ²	kg/cm ²	kg/cm ²	kg/cm ²	kg/cm ²	kg/cm ²	kg/cm ²	kg/cm ²	kg/cm ²	kg/cm ²	
-	-	1.020	2.039	3.059	4.079	5.099	6.118	7.138	8.158	9.177	-
1000	10.197	11.217	12.237	13.256	14.276	15.296	16.316	17.335	18.355	19.375	1000
2000	20.394	21.414	22.434	23.453	24.473	25.493	26.513	27.532	28.552	29.572	2000
3000	30.592	31.611	32.631	33.651	34.670	35.690	36.710	37.730	38.749	39.769	3000
4000	40.789	41.809	42.828	43.848	44.868	45.887	46.907	47.927	48.947	49.966	4000
5000	50.986	52.006	53.025	54.045	55.065	56.085	57.104	58.124	59.144	60.163	5000
6000	61.183	62.203	63.223	64.242	65.262	66.282	67.302	68.321	69.341	70.361	6000
7000	71.380	72.400	73.420	74.440	75.459	76.479	77.499	78.518	79.538	80.558	7000
8000	81.578	82.597	83.617	84.637	85.656	86.676	87.696	88.716	89.735	90.755	8000
9000	91.775	92.794	93.814	94.834	95.854	96.873	97.893	98.913	99.933	100.952	9000
10000	101.972	102.992	104.011	105.031	106.051	107.071	108.090	109.110	110.130	111.149	10000

TORQUE

FOOT POUNDS TO KILOGRAM METERS

ft. lbs.	0	1	2	3	4	5	6	7	8	9	ft. lbs.
-	kg-m	kg-m	kg-m	kg-m	kg-m	kg-m	kg-m	kg-m	kg-m	kg-m	-
10	1.383	1.521	1.659	1.797	1.936	2.074	2.212	2.350	2.489	2.627	10
20	2.765	2.903	3.042	3.180	3.318	3.456	3.595	3.733	3.871	4.009	20
30	4.148	4.286	4.424	4.562	4.700	4.839	4.977	5.115	5.253	5.392	30
40	5.530	5.668	5.807	5.945	6.083	6.221	6.360	6.498	6.636	6.774	40
50	6.913	7.051	7.189	7.328	7.466	7.604	7.742	7.881	8.019	8.157	50
60	8.295	8.434	8.572	8.710	8.848	8.987	9.125	9.263	9.401	9.540	60
70	9.678	9.816	9.954	10.093	10.231	10.369	10.507	10.646	10.784	10.922	70
80	11.060	11.199	11.337	11.475	11.613	11.752	11.890	12.028	12.166	12.305	80
90	12.442	12.581	12.719	12.858	12.996	13.134	13.272	13.410	13.549	13.687	90
100	13.826	13.964	14.102	14.240	14.379	14.517	14.655	14.793	14.932	15.070	100

KILOGRAM METERS TO FOOT POUNDS

kg-m	0	1	2	3	4	5	6	7	8	9	kg-m
-	ft. lbs.	ft. lbs.	ft. lbs.	ft. lbs.	ft. lbs.	ft. lbs.	ft. lbs.	ft. lbs.	ft. lbs.	ft. lbs.	-
10	72.33	79.56	86.80	94.03	101.26	108.50	115.73	122.96	130.19	137.43	10
20	144.66	151.89	159.13	166.36	173.59	180.83	188.06	195.29	202.52	209.76	20
30	217.00	224.22	231.46	238.69	245.92	253.16	260.39	267.62	274.85	282.09	30
40	289.32	296.55	303.79	311.02	318.25	325.49	332.72	339.95	347.18	354.42	40
50	361.65	368.88	376.12	383.35	390.58	397.82	405.05	412.28	419.51	426.75	50
60	433.98	441.21	448.45	455.68	462.91	470.15	477.38	484.61	491.84	499.08	60
70	506.31	513.54	520.78	528.01	535.24	542.48	549.71	556.94	564.17	571.41	70
80	578.64	585.87	593.11	600.34	607.57	614.81	622.04	629.27	636.50	643.74	80
90	650.97	658.20	665.44	672.67	679.90	687.14	694.37	701.60	708.83	716.07	90
100	723.30	730.53	737.77	745.00	752.23	759.47	766.70	773.93	781.16	788.40	100

KILOGRAM METERS TO NEWTON METERS

kg-m	0	1	2	3	4	5	6	7	8	9	kg-m
-	N-m	N-m	N-m	N-m	N-m	N-m	N-m	N-m	N-m	N-m	-
10	98.07	107.87	117.68	127.49	137.29	147.10	156.91	166.71	176.52	186.33	10
20	196.13	205.94	215.75	225.55	235.36	245.17	254.97	264.78	274.59	284.39	20
30	294.20	304.01	313.81	323.62	333.43	343.23	353.04	362.85	372.65	382.46	30
40	392.27	402.07	411.88	421.69	431.49	441.30	451.11	460.91	470.72	480.53	40
50	490.33	500.14	509.95	519.75	529.56	539.37	549.17	558.98	568.79	578.59	50
60	588.40	598.21	608.01	617.82	627.63	637.43	647.24	657.05	666.85	676.66	60
70	686.47	696.27	706.08	715.89	725.69	735.50	745.31	755.11	764.92	774.73	70
80	784.53	794.34	804.15	813.95	823.76	833.57	843.37	853.18	862.99	872.79	80
90	882.60	892.41	902.21	912.02	921.83	931.63	941.44	951.25	961.05	970.86	90
100	980.67	990.47	1000.28	1010.08	1019.89	1029.70	1039.50	1049.31	1059.12	1068.92	100

NEWTON METERS TO KILOGRAM METERS

N-m	0	10	20	30	40	50	60	70	80	90	N-m
-	kg-m	kg-m	kg-m	kg-m	kg-m	kg-m	kg-m	kg-m	kg-m	kg-m	-
100	10.197	11.217	12.236	13.256	14.276	15.296	16.315	17.335	18.355	19.374	100
200	20.394	21.414	22.433	23.453	24.473	25.493	26.512	27.532	28.552	29.571	200
300	30.591	31.611	32.630	33.650	34.670	35.690	36.710	37.729	38.749	39.768	300
400	40.789	41.808	42.827	43.847	44.867	45.887	46.906	47.926	48.946	49.965	400
500	50.986	52.005	53.024	54.044	55.064	56.084	57.103	58.123	59.143	60.162	500
600	61.183	62.202	63.221	64.241	65.261	66.281	67.300	68.320	69.340	70.359	600
700	71.380	72.399	73.418	74.438	75.458	76.478	77.497	78.517	79.537	80.556	700
800	81.577	82.596	83.615	84.635	85.655	86.675	87.694	88.714	89.734	90.753	800
900	91.774	92.793	93.812	94.832	95.852	96.872	97.891	98.911	99.931	100.950	900
1000	101.972	102.990	104.009	105.029	106.049	107.069	108.088	109.108	110.128	111.147	1000

0A-16 GENERAL INFORMATION

TEMPERATURE

FAHRENHEIT TO CENTIGRADE

°F	°C	°F	°C	°F	°C	°F	°C	°F	°C	°F	°C	°F	°C	°F	°C
-60	-51.1	-2	-18.9	56	13.3	114	45.6	172	77.8	230	110.0	288	142.2	346	174.4
-58	-50	0	-17.8	58	14.4	116	46.7	147	78.9	232	111.1	290	143.3	348	175.6
-56	-48.9	2	-16.7	60	15.6	118	47.8	176	80.0	234	112.2	292	144.4	350	176.7
-54	-47.8	4	-15.6	62	16.7	120	48.9	178	81.1	236	113.3	294	145.6	352	177.8
-52	-46.7	6	-14.4	64	17.8	122	50.0	180	82.2	238	114.4	296	146.7	354	178.9
-50	-45.6	8	-13.3	66	18.9	124	51.1	182	83.3	240	115.6	298	147.8	356	180.0
-48	-44.4	10	-12.2	68	20.0	126	52.2	184	84.4	242	116.7	300	148.9	358	181.1
-46	-43.3	12	-11.1	70	21.1	128	53.3	186	85.6	244	117.8	302	150.0	360	182.2
-44	-42.2	14	-10.0	72	22.2	130	54.4	188	86.7	246	118.9	304	151.1	362	183.3
-42	-41.1	16	-8.9	74	23.3	132	55.6	190	87.8	248	120.0	306	152.2	364	184.4
-40	-40.0	18	-7.8	76	24.9	134	56.7	192	88.9	250	121.1	308	153.3	366	185.6
-38	-38.9	20	-3.7	78	25.6	136	57.8	194	90.0	252	122.2	310	154.4	368	186.7
-36	37.8	22	-5.6	80	26.7	138	58.9	196	91.1	254	123.3	312	155.6	370	187.8
-34	36.7	24	-4.4	82	27.8	140	60.0	198	92.2	256	124.4	314	156.7	372	188.9
-32	-35.6	26	-3.3	84	28.9	142	61.1	200	93.3	258	125.6	316	157.8	374	190.0
-30	-34.4	28	-2.2	86	30.0	144	62.2	202	94.4	260	126.7	318	158.9	376	191.1
-28	-33.3	30	-1.1	88	31.1	146	63.3	204	95.6	262	127.8	320	160.0	378	192.2
-26	-32.2	32	0	90	32.2	148	64.4	206	96.7	264	128.9	322	161.1	380	193.3
-24	-31.1	34	1.1	92	33.3	150	65.6	208	97.8	266	130.0	324	162.2	382	194.4
-22	-30.0	36	2.2	94	34.4	152	66.7	210	98.9	268	131.1	326	163.3	384	195.6
-20	-28.9	38	3.3	96	35.6	154	67.8	212	100.0	270	132.2	328	164.4	386	196.7
-18	-27.8	40	4.4	98	36.7	156	68.9	214	101.1	272	133.3	330	165.6	388	197.8
-16	-26.7	42	5.6	100	37.8	158	70.0	216	102.2	274	134.4	332	166.7	390	198.9
-14	-25.6	44	6.7	102	38.9	160	71.1	218	103.3	276	135.6	334	167.8	382	200.0
-12	-24.4	46	7.8	104	40.0	162	72.2	220	104.4	278	136.7	336	168.9	400	204.4
-10	-23.3	48	8.9	106	41.1	164	73.3	222	105.6	280	137.8	338	170.0	410	210.0
-8	-22.2	50	10.0	108	42.2	166	74.4	224	106.7	282	138.9	340	171.1	420	215.6
-6	-21.1	52	11.1	110	43.3	168	75.6	226	107.8	284	140.0	342	172.2	430	221.1
-4	-20.0	54	12.2	112	44.4	170	76.7	228	108.9	286	141.1	344	173.3	440	226.7

CENTIGRADE TO FAHRENHEIT

°C	°F	°C	°F	°C	°F	°C	°F	°C	°F	°C	°F	°C	°F	°C	°F
-50	-58.0	-18	-0.4	14	57.2	46	114.8	78	172.4	110	230.0	142	287.6	174	345.2
-49	-56.2	-17	1.4	15	59.0	47	116.6	79	174.2	111	231.8	143	289.4	175	347.0
-48	-54.4	-16	3.2	16	60.8	48	118.4	80	176.0	112	233.6	144	291.2	176	348.8
-47	-52.6	-15	5.0	17	62.6	49	120.2	81	177.8	113	235.4	145	293.0	177	350.6
-46	-50.8	-14	6.8	18	64.4	50	122.0	82	179.6	114	237.2	146	294.8	178	352.4
-45	-49.0	-13	8.6	19	66.2	51	123.8	83	181.4	115	239.0	147	296.6	179	354.2
-44	-47.2	-12	10.4	20	68.0	52	125.6	84	183.2	116	240.8	148	298.4	180	356.0
-43	-45.4	-11	12.2	21	69.8	53	127.4	85	185.0	117	242.6	149	300.2	181	357.8
-42	-43.6	-10	14.0	22	71.6	54	129.2	86	186.8	118	244.4	150	302.0	182	359.6
-41	-41.8	-9	15.8	23	73.4	55	131.0	87	188.6	119	246.2	151	303.8	183	361.4
-40	-40.0	-8	17.6	24	75.2	56	132.8	88	190.4	120	248.0	152	305.6	184	363.2
-39	-38.2	-7	19.4	25	77.0	57	134.6	89	192.2	121	249.8	153	307.4	185	365.0
-38	-36.4	-6	21.2	26	78.8	58	136.4	90	194.0	122	251.6	154	309.2	186	366.8
-37	-34.6	-5	23.0	27	80.6	59	138.2	91	195.8	123	253.4	155	311.0	187	368.6
-36	-32.8	-4	24.8	28	82.4	60	140.0	92	197.6	124	255.2	156	312.8	188	370.4
-35	-31.0	-3	26.6	29	84.2	61	141.8	93	199.4	125	257.0	157	314.6	189	372.2
-34	-29.2	-2	28.4	30	86.0	62	143.6	94	201.2	126	258.8	158	316.4	190	374.0
-33	-27.4	-1	30.2	31	87.8	63	145.4	95	203.0	127	260.6	159	318.2	191	375.8
-32	-25.6	0	32.0	32	89.6	64	147.2	96	204.8	128	262.4	160	320.0	192	377.6
-31	-23.8	1	33.8	33	91.4	65	149.0	97	206.6	129	264.2	161	321.8	193	379.4
-30	-22.0	2	35.6	34	93.2	66	150.8	98	208.4	130	266.0	162	323.6	194	381.2
-29	-20.2	3	37.4	35	95.0	67	152.6	99	210.2	131	267.8	163	325.4	195	383.0
-28	-18.4	4	39.2	36	96.8	68	154.4	100	212.0	132	269.6	164	327.2	196	384.8
-27	-16.6	5	41.0	37	98.6	69	156.2	101	213.8	133	271.4	165	329.0	197	386.6
-26	-14.8	6	42.8	38	100.4	70	158.0	102	215.6	134	273.2	166	330.8	198	388.4
-25	-13.0	7	44.6	39	102.2	71	159.8	103	217.4	135	275.0	167	332.6	199	390.2
-24	-1.2	8	46.4	40	104.0	72	161.6	104	219.2	136	276.8	168	334.4	200	392.0
-23	-9.4	9	48.2	41	105.8	73	163.4	105	221.0	137	278.6	169	336.4	210	410.0
-22	-7.6	10	50.0	42	107.6	74	165.2	106	222.8	138	280.4	170	338.0	220	428.0
-21	-5.8	11	51.8	43	109.4	75	167.0	107	224.6	139	282.2	171	339.8	230	446.0
-20	-4.4	12	53.6	44	111.2	76	168.8	108	226.4	140	284.0	172	341.6	240	464.0
-19	-2.2	13	55.4	45	113.0	77	170.6	109	228.2	141	285.8	173	343.4	250	482.0

SECTION 0B

MAINTENANCE AND LUBRICATION

TABLE OF CONTENTS

	PAGE
Maintenance Schedule (For GENERAL EXPORT).....	0B- 2
Maintenance Schedule (For EUROPE).....	0B- 5
Severe Conditions Maintenance Schedule (For GENERAL EXPORT)	0B- 9
Severe Conditions Maintenance Schedule (For EUROPE)	0B-10
Recommended Fluids and Lubricants (For GENERAL EXPORT)	0B-11
Recommended Fluids and Lubricants (For EUROPE)	0B-13
Oil Viscosity Chart.....	0B-14

0B-2 MAINTENANCE AND LUBRICATION

MAINTENANCE SCHEDULE (For GENERAL EXPORT)

Items followed by an asterisk (*) require more frequent maintenance if the vehicle is driven under severe conditions. Replace the fuel filter (**Mark) when the fuel filter indicator light is lit. Refer to "SEVERE CONDITIONS MAINTENANCE SCHEDULE."

I : Inspect and correct or replace as necessary A : Adjust
R : Replace or change T : Tighten to specified torque L : Lubricate

SERVICE INTERVAL:	5	10	15	20	25	30	35	40	45	50	55	60	65	70	75	80	85	90	95	100	
(Use odometer reading × 1,000 km)	3	6	9	12	15	18	21	24	27	30	33	36	39	42	45	48	51	54	57	60	
or months whichever comes first)	6	12	18	24	30	36	42	48	54	60	66	72	78	84	90	96	102	108	114	120	
or months																					
ENGINE																					
Idling speed and acceleration																					
(GASOLINE)	I	I	-	I	-	I	-	I	-	I	-	I	-	I	-	I	-	I	-	I	
(DIESEL)	I	I	I	I	I	I	I	I	I	I	I	I	I	I	I	I	I	I	I	I	
* Air cleaner element																					
(GASOLINE)	-	I	-	I	-	I	-	R	-	I	-	I	-	I	-	R	-	I	-	I	
(DIESEL)	I	I	I	I	I	I	I	R	I	I	I	I	I	I	I	R	I	I	I	I	
* Engine oil																					
(HFV6)	-	-	R	-	-	R	-	-	R	-	-	R	-	-	R	-	-	R	-	-	
(C24SE)	Replace every 12,000km																				
(4JH1-TC, 4JJ1 (Standard Output), 4JJ1 (High Output))	-	R	-	R	-	R	-	R	-	R	-	R	-	R	-	R	-	R	-	R	
(4JA1-T)	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	
* Engine oil filter																					
(HFV6)	-	-	R	-	-	R	-	-	R	-	-	R	-	-	R	-	-	R	-	-	
(C24SE)	Replace every 12,000km																				
(4JH1-TC, 4JA1-T)	-	R	-	R	-	R	-	R	-	R	-	R	-	R	-	R	-	R	-	R	
(4JJ1 (Standard Output), 4JJ1 (High Output))	-	-	-	R	-	-	-	R	-	-	-	R	-	-	-	R	-	-	-	R	
Oil leakage and contamination																					
(GASOLINE)	-	I	-	I	-	I	-	I	-	I	-	I	-	I	-	I	-	I	-	I	
(DIESEL)	I	I	I	I	I	I	I	I	I	I	I	I	I	I	I	I	I	I	I	I	
Fuel leakage																					
Fuel tank																					
O ₂ Sensor																					
(C24SE)	Replace every 160,000km																				
(HFV6)	MIL diagnostic Indicates O ₂ Sensor																				
Valve clearances																					
(6VE1)	Check and adjust if noisy																				
(4JH1-TC, 4JA1-T)	A	-	-	A	-	-	-	A	-	-	-	A	-	-	-	A	-	-	-	A	
(4JJ1 (Standard Output), 4JJ1 (High Output))	-	-	-	-	-	-	-	A	-	-	-	-	-	-	-	A	-	-	-	-	
Spark plugs (C24SE) (for leaded fuel use)																					
Spark plugs (C24SE) (for unleaded fuel use)																					
Spark plugs																					
(HFV6)	Replace every 120,000km																				
Spark plug wire																					
Fuel filter																					
(GASOLINE)	-	-	-	R	-	-	-	R	-	-	-	R	-	-	-	R	-	-	-	R	
(4JH1-TC, 4JA1-T)	-	-	R	-	-	R	-	-	R	-	-	R	-	-	R	-	-	R	-	-	
** (4JJ1 (Standard Output), 4JJ1 (High Output))																					
Replace the fuel filter when the fuel filter indicator light is lit.																					
Fuel pump in fuel tank																					
(4JJ1 (Standard Output), 4JJ1 (High Output))	-	-	-	-	-	-	-	I	-	-	-	-	-	-	-	I	-	-	-	-	
Engine / Accessory drive belt																					
(C24SE)	-	-	-	-	-	-	-	-	-	I	-	-	-	-	-	-	-	-	-	I	
(HFV6)	Replace every 100,000km																				
Fan belt tension and damage																					
(DIESEL)	I	I	I	I	I	I	I	I	I	I	I	I	I	I	I	I	I	I	I	I	
* Exhaust system																					
Engine coolant concentration																					
(HFV6)	-	I	-	I	-	I	-	I	-	I	-	I	-	I	-	I	-	I	-	R	
(C24SE)	-	I	-	I	-	I	-	I	-	R	-	I	-	I	-	I	-	I	-	R	
(DESEL)	-	I	-	I	-	I	-	I	-	I	-	I	-	I	-	I	-	I	-	I	
Engine coolant																					
(4JJ1 (Standard Output), 4JJ1 (High Output))	Change every 2 years																				
Cooling system for water leakage																					
All hoses and pipes in engine compartment for clogs or damage																					
Timing belt																					
(C24SE)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	I	-	-	-	-	
Replace every 120,000km																					
(6VE1)	Replace every 160,000km																				