Daewoo Bus Chassis Service Manual
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SERVICE MANUAL

DAEWOO BUS

SM-1E-0505

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DAEWOO BUS

SERVICE MANUAL
CHASSIS

FOREWORD

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

The section index on the contents page enables the user to quickly locate any desired section.

At the beginning of each section containing more than one major subject is a Table of Contents, which gives the page number on which each major subject begins.

An index is placed at the beginning of each major subject within the section. Any reference to brand names in this manual is intended merely is an example o the types of lubricants, tools, materials ,etc. recommended for use in servicing Daewoobus vehicles.

In all cases, an equivalent may be used.

This manual should be kept in handy place for ready technician to better serve the owners of Daewoobus built vehicles.

All information, illustrations and specifications contained in this literature are based on the latest publication approval. The right is reserved to make changes at any time without notice.

DAEWOO BUS CORP.

SECTION INDEX

SECTION 1

GENERAL INFORMATION

1. General Repair Instructions

▣ To assure safety, park the vehicle on level ground and brace the front or rear wheels when lifting the vehicle.

▣ Raise the vehicle with a jack set against the axle or the frame and perform service operations after supporting the vehicle on chassis stands.

▣ Before performing service operation, disconnect the grounding cable from the battery to reduce the chance of cable damage of burning due to short-circuiting.

▣ Use a cover on the body, seats and floor to protect them against damage and contamination.

▣ Brake fluid and anti-freeze solution must be handled with reasonable care as they can cause paint damage.

▣ The use of proper tools and special tools where specified is important to efficient an reliable service operation.

▣ Use genuine Daewoobus parts.

▣ Use cotter pins, gaskets, O-rings, oil seal, lock washers and self lock nuts should be discarded and new ones should be prepared for installation as normal function of the parts can not be maintained if these parts are reused.

▣ To facilitate proper and smooth reassembly operation, keep disassembled parts neatly in groups. Keeping fixing bolts and nuts separate is very important as they vary in hardness and design depending on position of installation.

▣ Clean the parts before inspection or reassembly. Also clean oil ports, etc. with compressed air to make certain they are free from obstructions.

▣ Lubricate rotating and sliding faces of all parts with oil or grease before installation.

▣ When necessary, use a sealer on gaskets to prevent leakage.

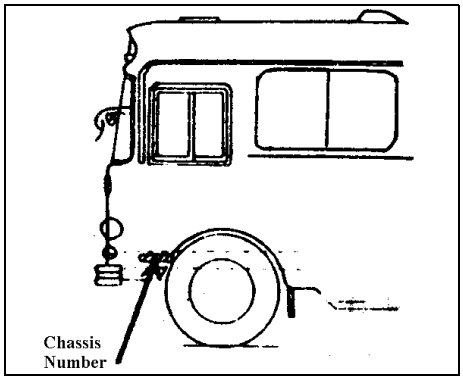
▣ Carefully observe all specifications for bolt and nut torques.

▣ When a service operation is completed, make a final check to be sure everything has been done properly.

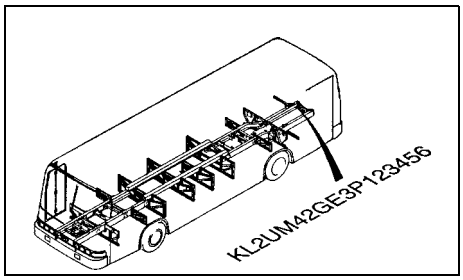
▣ To assurance safety, always slowly release air pressure from the air tanks before disconnecting pipes, hoses or other parts from any unit under air pressure.

2. Identification

2.1. Chassis Number

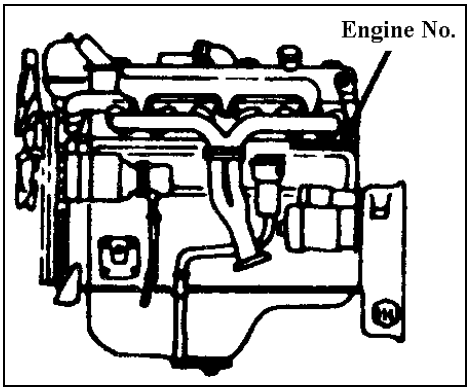


▣ The chassis number of the front engine bus is stamped on the left front side of the chassis frame.



▣ The chassis number of the rear engine bus is stamped on the left rear side of the chassis frame within the engine compartment.

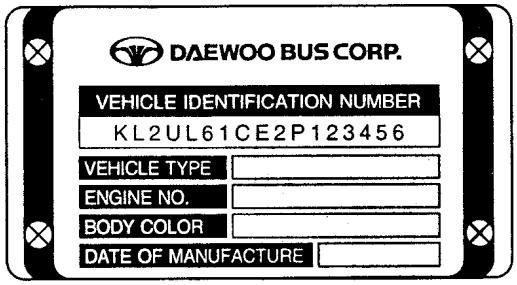
2.2. Engine Number



The engine number is stamped on the face of the cylinder body.

2.3. V.I.N. Plate

The vehicle identification number plate is attached above the front door.



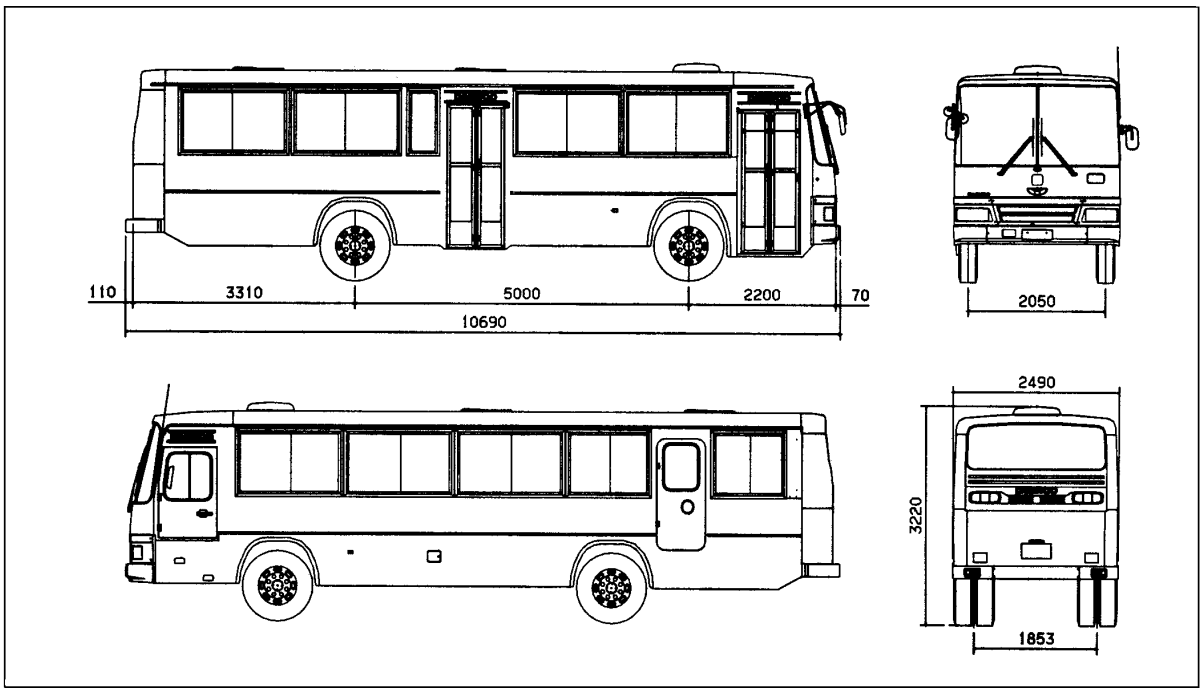
The type A is applicable for buses in all countries except GCC members.

The type B is applicable for buses in GCC members

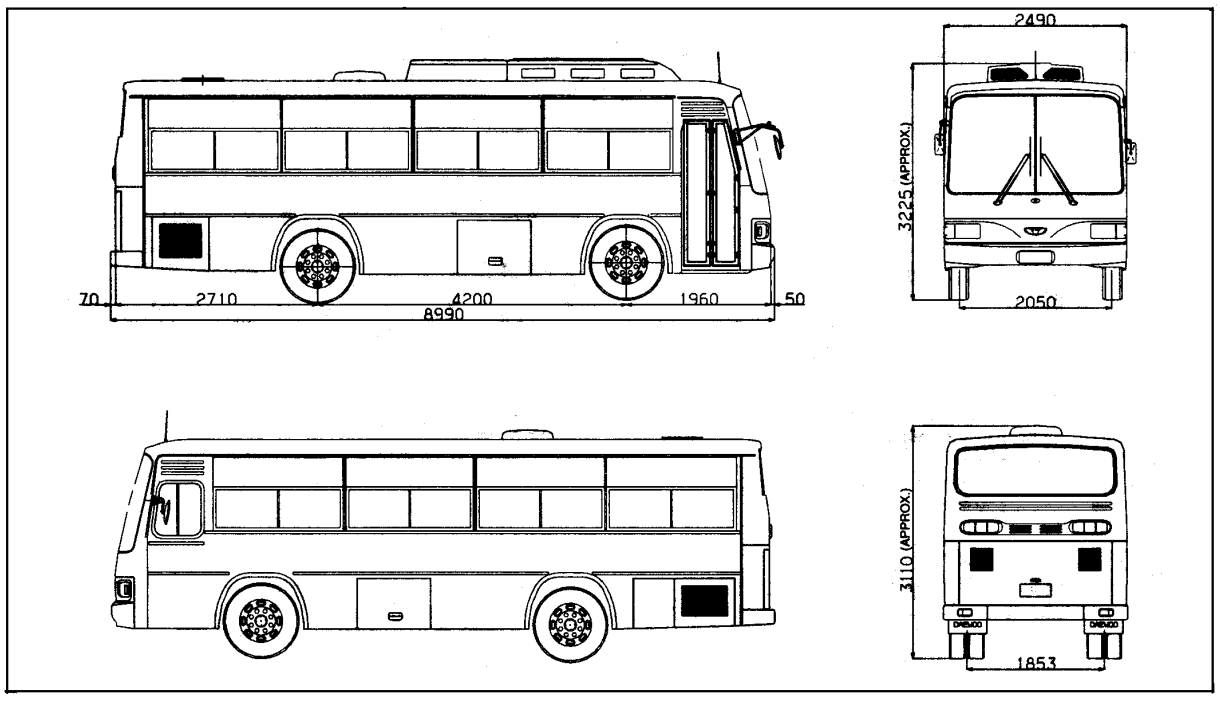
3. Specification

3.1. Body dimension

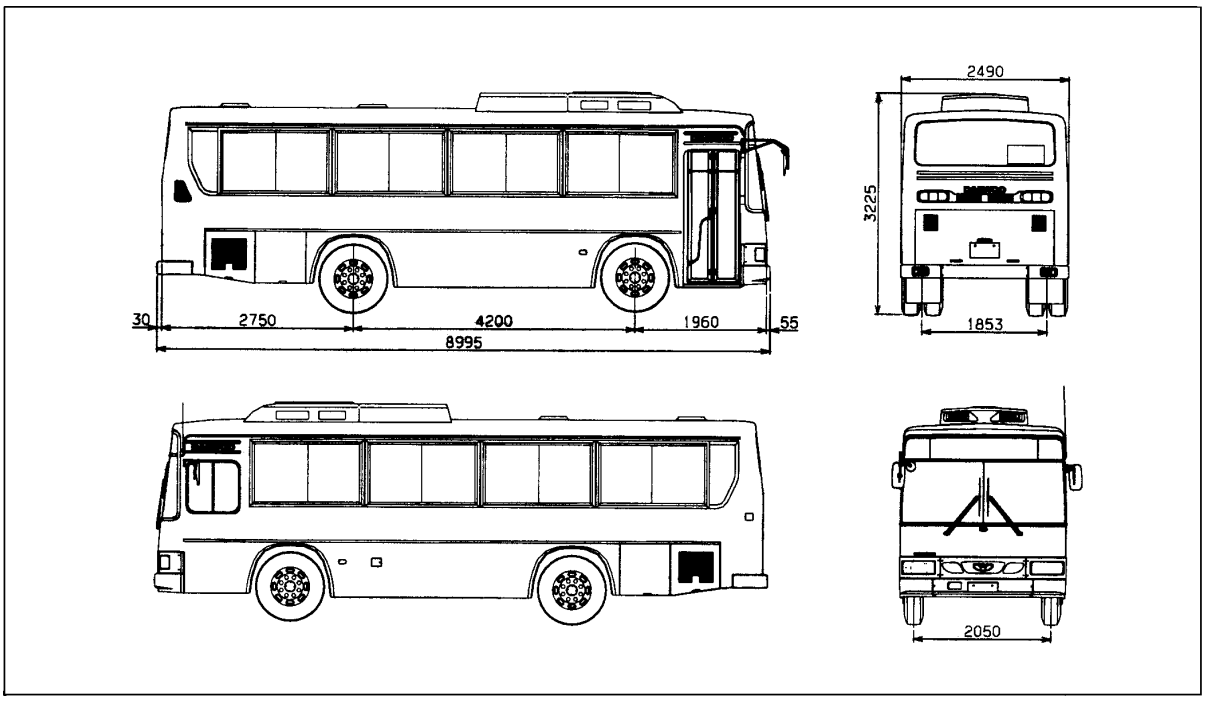
▣ **Model BF106**



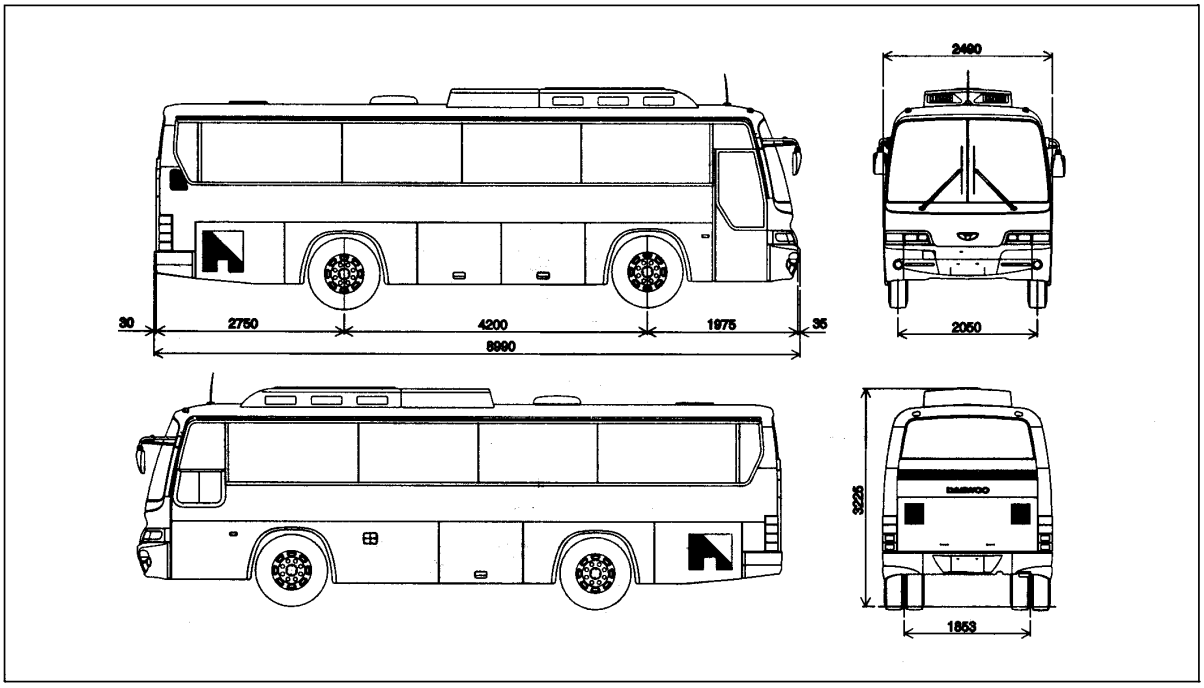
▣ **Model BM090**



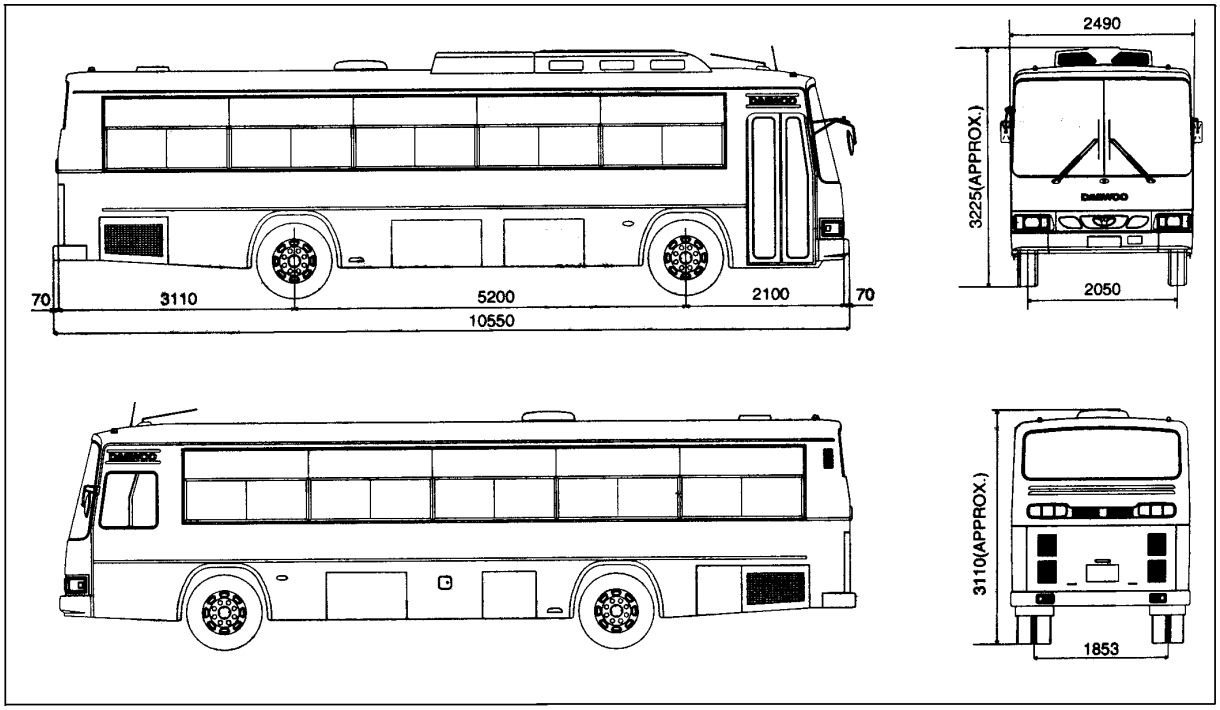
▣ Model BS090



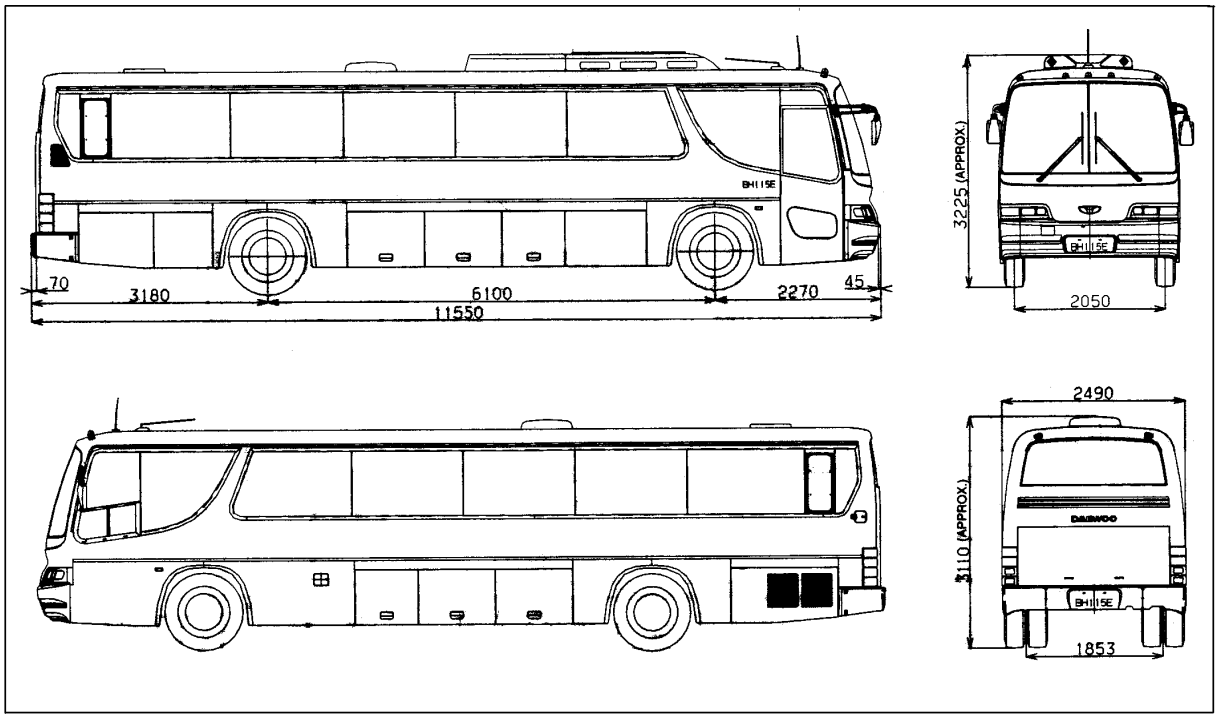
▣ Model BH090



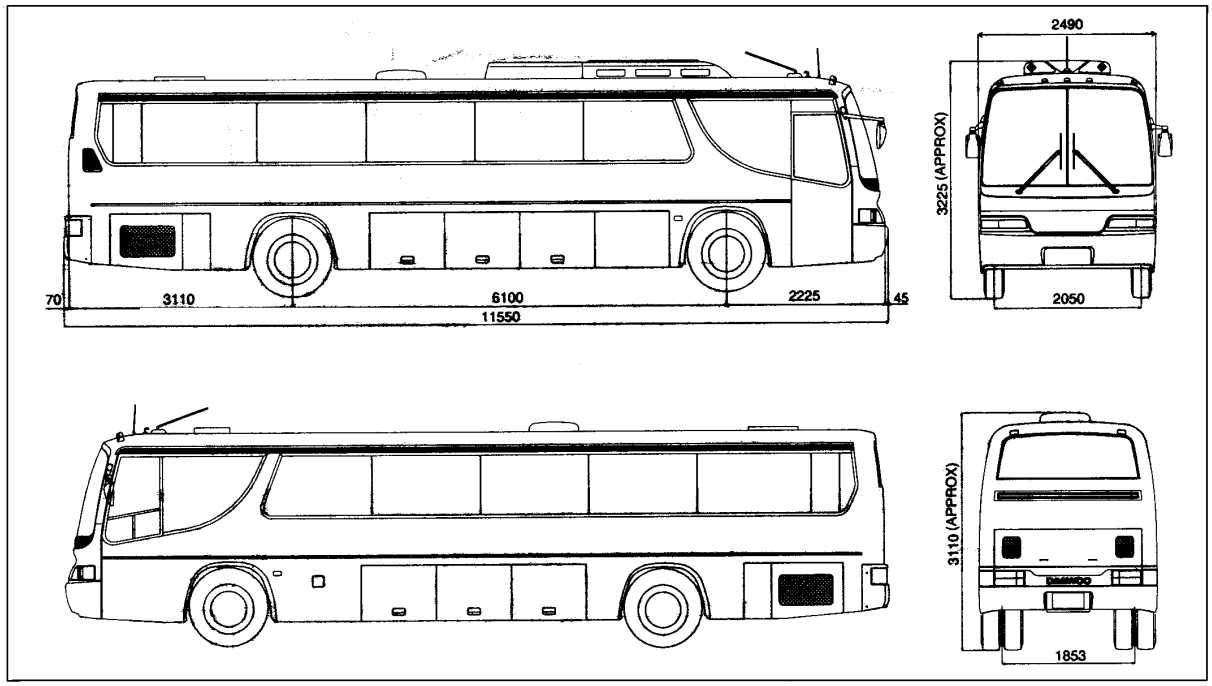
▣ Model BS106



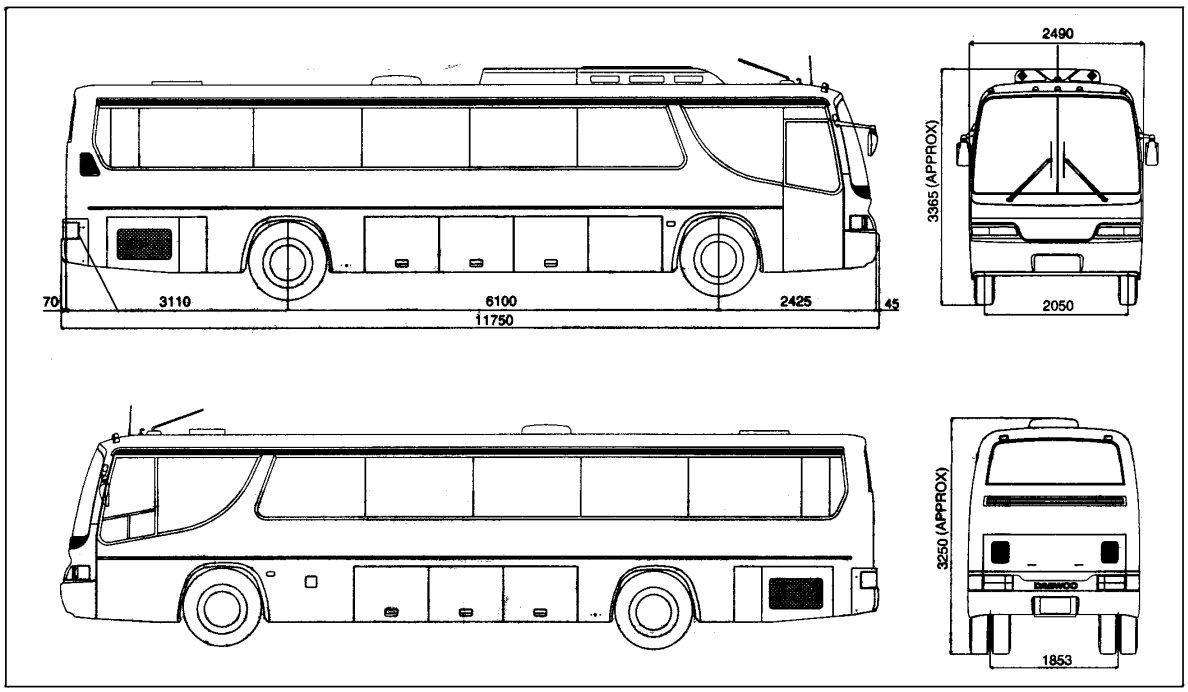
▣ Model BH115E



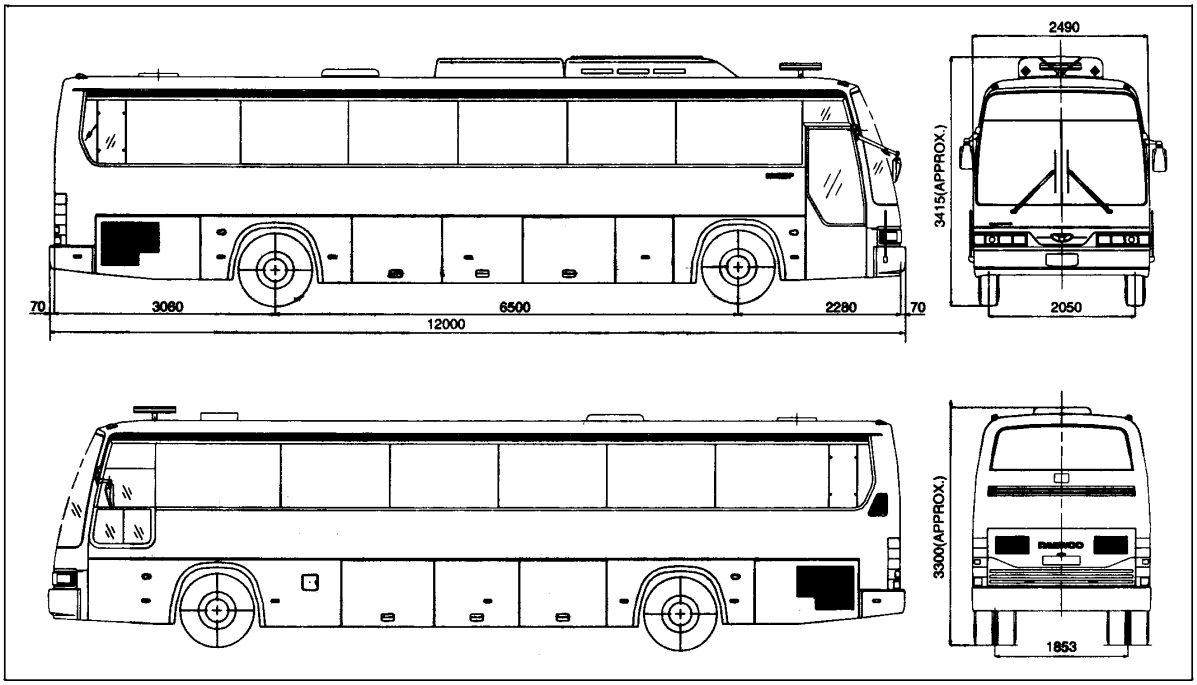
▣ Model BH116



▣ Model BH117



▣ Model BH120


2490
3415(APPROX.)
2050
70
3080
6500
2280
70
12000
3300(APPROX.)
1853

3.2. MAIN DATA

▣ ENGINE (Euro Ⅰ)

Model		DE12	DE12T	DE12Ti	DV15T
Type		Water cooled 4 cycle in-line, overhead valve type			V type
		Direct injection type			
Cylinder liner type		Dry type			Wet type
No. of piston ring		Compression ring : 2EA oil ring : 1 EA			
No of cylinder		9			8
Bore x stroke (㎜)		123 x 155			128 x 42
Piston displacement (cc)		11051			14618
Compression ratio		17.1 : 1			16.5 :1
Engine Dimension (㎜)	Length	1317			1394
	Width	746	847	874	1024
	Height	1028	1021	1090	963
Engine weight (dry) (kg)		945	960	990	1050
Idle speed		600 ± 50			
Fuel injection timing		BTDC 10	BTDC 9	BTDC 12	BTDC 7
Fuel injection order		1-5-3-6-2-4			1-5-7-2-6-3-4-8
Intake valves	Open at	BTDC 18			BTDC 12
	Close at	ABDC 34			ABDC 48
Exhaust valves	Open at	BBDC 46			BBDC 61
	Close at	ATDC 14			ATDC 11
Oil pump type		Gear type			
Oil cooler type		Water cooled			
Oil capacity (ℓ)		Engine total : 20.0ℓ, (Oil fan : 17.0ℓ)			Eng. total : 27.0ℓ (Oil fan : 24.0ℓ)
Cooling method		Fresh water forced circulation			
Cooling water capacity (ℓ)		19			
Water pump type		Centrifugal type			
Thermostat type		Wax-pellet type			
Max. output (ps/rpm, SAE)		235/2200	300/2200	340/2100	365/2300
Max. torque (kg.m/rpm, SAE)		81.5/1400	110/1300	135/1200	138/1300
Starter motor output (V-KW)		24-6.0			24-6.6
Battery capacity (V-AH)		24-150			

ENGINE (Euro Ⅱ)

Model		D1146	D1146Ti	DE08Tis		DE12	DE12Ti			DE12Tis			DV15T	DV15Tis
				225PS	240PS		280PS	310PS	340PS	290PS	310PS	340PS		
Type		Water cooled 4 cycle in-line, overhead valve type												
		Direct injection type												
Cylinder liner type		Dry type											Wet type	
No. of piston ring		Compression ring : 2EA, Oil ring : 2EA												
No of cylinder		6											8	
Bore x stroke (㎜)		111x139				123x155							128x142	
Piston displacement (cc)		8,071				11,051							14,618	
Compression ratio		18.0:1	16.7:1	18.5:1		17.1:1	16.1:1			17.0:1			16.5:1	17.4:1
Engine Dimension (㎜)	Length	1,253		1,169		1,317							1,290	1,112
	Width	811.5	812.5	812		744	847						1,024	1,024
	Height	934.5	1,009	1,003		1,015	1,064						1,023	1,015
Engine weight (dry) (kg)		730	745			872	910						920	950
Idle speed		600±50		600~650		600±50				600~650			600±50	550~600
Fuel injection timing		BTDC15	BTDC9	BTDC3		BTDC10	BTDC12			BTDC1			BTDC7	BTDC5.5
Fuel injection order		1-5-3-6-2-4											1-5-7-2-6-3-4-8	
Intake valves	Open at	BTDC16				BTDC18				BTDC18			BTDC12	BTDC15
	Close at	ABDC36				ABDC34				ABDC32			ABDC48	ABDC35
Exhaust valves	Open at	BBDC46								BBDC70			BBDC61	BBDC71.5
	Close at	ATDC14								ATDC30			ATDC11	ATDC15.5

Model	D1146	D1146Ti	DE08Tis		DE12	DE12Ti			DE12Tis			DV15T	DV15Tis
			225ps	240ps		280PS	310PS	340PS	290PS	310PS	340PS		
Oil pump type	Gear type												
Oil cooler type	Water cooled, integral type												
Oil capacity (ℓ)	Engine:15.5 Oil Pan:13.0		Engine:19.0 Oil Pan:15.5		Engine:20.0 Oil Pan:17.0				Engine:22.0 Oil Pan:19.0			Engine:27.0 Oil Pan:24.0	Engine:23.0 Oil Pan:20.0
Cooling method	Fresh water forced circulation												
Cooling water capacity (ℓ)	11				19								21
Water pump type	Centrifugal type												
Thermostat type	Wax-pellet type												
Max. output (ps/rpm, SAE)	182/2500	205/2200	225/2300	240/2300	230/2200	280/2100	310/2100	340/2100	290/2100	310/2100	340/2100	365/2300	390/2200
Max. torque (kg.m/rpm, SAE)	57/1600	75/1400	82/1000	90/1000	81/1300	115/1260	125/1260	135/1260	112/1260	125/1260	145/1260	138/1300	160/1300
Starter motor output (V-KW)	24x4.5								24x6.0			24x6.6	
Battery capacity (V-AH)	24x150											24x200	24x150

▣ CLUTCH

Distinction		BF106			
		D1146	DE08Tis	DE12	DE08Tis
Type		Dry single plate with coil spring dampers hydraulic circuit Incorporating clutch minipack			
Clutch facing dimension(㎜)	Outside dia.	380		430	
	Inside dia.	240		250	
	Thickness	5			
Clutch clamping force(㎏)		1240±10%	1470±10%	1380±10%	←
Clutch pedal	Ratio	7.09			
	Free play	48.8			
	Max. stroke	170			
Clutch minipack start working pressure(㎏/㎠)		5.5			
Master cylinder bore dia. (㎜)		20			

Distinction		BM090/BS090	BH090/BS106	BH115E	BH120E
Type		Dry single plate with coil spring dampers hydraulic circuit Incorporating clutch minipack			
Clutch facing dimension(㎜)	Outside dia.	380	430	←	←
	Inside dia.	240	250	←	←
	Thickness	5	←	←	←
Clutch clamping force(㎏)	D1146	1240±10%			
	D1146Ti	1470±10%			
	DE12	1380±10%			
	DE08Tis(210ps)	1360±10%			
	DE08Tis(240ps)	1450±10%			
	DE12/T/Ti/Tis(280ps)	1950±10%			
	DE12Ti/Tis(310ps)	2100±10%			
	DE12Ti/Tis(340ps)	2320±10%			
Clutch pedal	Ratio	6.75	6.67	6.75	←
	Free play	46.4	46.6	47.2	47.4
	Max. stroke	170	150	170	←
Clutch minipack start working pressure(㎏/㎠)		5.5	6.1	5.5	←
Master cylinder bore dia. (㎜)		20			

Distinction		BH116	BH117	BH120
Type		Dry single plate with coil spring dampers hydraulic circuit Incorporating clutch minipack		
Clutch facing dimension(㎜)	Outside dia.	430	←	←
	Inside dia.	250	←	←
	Thickness	5	←	←
Clutch clamping force(㎏)	DE12T	1950±10%		
	DE12Ti/Tis(310ps)	2100±10%		
	DE12Ti/Tis(340ps)	2320±10%		
	DV15T/15Tis			
Clutch pedal	Ratio	6.75	←	←
	Free play	47.2	47.2	←
	Max. stroke	170	←	←
Clutch minipack start working pressure(㎏/㎠)		5.5	←	←
Master cylinder bore dia. (㎜)		20		

▣ TRANSMISSION (MANUAL)

Model		K805A	K805P	K806P	T8HS5B	T8HS5P	T8HS6P	T-9	T10S5B
Speed		5.D.D	5.O.D	6.O.D	5.D.D	5.O.D	6.O.D	5.D.D	5.D.D
Torque(㎏.m)		82	←	←	←	←	←	90	125
Gear ratio	1st	6.666	5.455	6.666	6.571	5.405	6.571	←	6.589
	2nd	3.826	3.130	3.826	3.807	3.447	3.807	←	4.002
	3rd	2.213	1.728	2.213	2.201	1.739	2.201	←	2.430
	4th	1.417	1.000	1.417	1.463	1.000	1.463	←	1.507
	5th	1.000	0.745	1.000	1.000	0.738	1.000	←	1.000
	6th	-	-	0.734	-	-	0.751	-	-
	Rev.	6.851	5.606	6.851	6.240	5.650	6.240	6.239	6.888
Dry weight(㎏)		192	←	200	234	←	279	240	250
Oil capacity(ℓ)		9.8	←	11.2	10.0	←	12.0	10	13

Model		T13S5B	K1005C	K1005P	K1006R	K1205C	K1205P	K1206R	K1405A	K1406P
Speed		5.D.D	5.D.D	5.O.D	6.O.D	5.D.D	5.O.D	6.O.D	5.D.D	6.D.D
Torque(㎏.m)		135	115	←	←	125	←	←	145	←
Gear ratio	1st	6.589	6.608	5.500	←	6.608	5.500	←	6.608	6.608
	2nd	4.002	3.993	3.323	3.482	3.993	3.323	3.482	4.184	4.184
	3rd	2.430	2.423	1.782	2.147	2.423	1.782	2.147	2.580	2.580
	4th	1.507	1.518	1.000	1.348	1.518	1.000	1.348	1.518	1.618
	5th	1.000	←	0.755	1.000	←	0.755	1.000	←	←
	6th	-	-	-	0.755	-	-	0.755	-	0.759
	Rev.	6.888	6.937	5.774	←	6.937	5.774	←	7.003	←
Dry weight(㎏)		250	←	←	260	250	←	260	290	340
Oil capacity(ℓ)		13	9.7	←	11.2	9.7	←	11.2	14.5	16.0

▣ TRANSMISSION (AUTO)

Model		MT643	B300R	B400R	B500R	D851.2	D863	D854.2	D864	HP500	HP590	HP600
Speed		4.D.D	4DD/5OD/6OD	4DD/5OD/6OD	4DD/5OD/6OD	3.D.D	3.D.D	4.O.D	4.O.D	4DD/5OD/6OD	4DD/5OD/6OD	4DD/5OD/6OD
Torque(kg.m)		88.4	97.8	125.4	179.6	102	132.7	102	132.7	112.2	127.6	142.9
Gear ratio	1st	3.58	3.49	←	3.51		3N 6.2 3S 5.9 4N 5.4 4S 5.1	- 3S 5.9 4N 5.4 4S 5.1	3N 6.2 3S 5.9 4N 5.4 4S 5.1	3.43	←	←
	2nd	2.09	1.86	←	1.91	3N/3S 1.43 4N/4S 1.36	←	←	←	2.01	←	←
	3rd	1.39	1.41	←	1.43	3N/3S 1.00 4N/4S 1.00	←	←	←	1.42	←	←
	4th	1.00	←	←	←	-	-	3N/3S 0.70 4N/4S 0.73	←	1.00	←	←
	5th	-	0.75	←	0.74	-	-	-	-	0.83	←	←
	6th	-	0.65	←	0.64	-	-	-	-	0.59	←	←
	Rev.	5.67	5.03	←	4.80	3N 6.2 3S 5.9 4N 5.4 4S 5.1	3N 6.2 3S 5.9 4N 5.4 4S 5.1	3N 6.2 3S 5.9 4N 5.4 4S 5.1	3N 6.2 3S 5.9 4N 5.4 4S 5.1	4.84	←	←
Dry weight(kg)		231	227	←	412	295	300	330	335	310	315	330
Oil capacity(ℓ)		25	←	←	45	28	←	←	←	30	←	←

▣ PROPELLER SHAFT (Manual Transmission)

Distinction		BF106				
		D1146	D1146		DE12	
		K805A/P T8HS5B/P	K806P	T8HS6P	K806P	T8HS6P
1st piece(㎜) (when equipped)	Length	1586	1494.2	1485.2	1535.8	1526.8
	Outside dia.	88.9	←	←	←	←
	Inside dia.	80.9	←	←	←	←
1st piece(㎜) (when equipped)	Length	1467.5	←	←	1334.1	←
	Outside dia.	88.9	←	←	←	←
	Inside dia.	80.9	←	←	←	←
1st piece(㎜) (when equipped)	Length	1360	←	←	1350	←
	Outside dia.	88.9	←	←	←	←
	Inside dia.	80.9	←	←	←	←

Distinction		D1146 D1146Ti	DE08Tis			DE12		DE12T	DE12Ti		DE12Tis	
		BM090 BS090	BM090 BS090	BH090	BS106	BS106	BH115E BH120E	BH115E BH120E	BS106	BH115E BH120E	BS106	BH115E BH120E
K805A K805P	Length	320	340.0	320.0								
	Outside dia.	88.9	88.9	←								
	Inside dia.	80.9	80.9	←								
T-9	Length				690.0	577.0						
	Outside dia.				88.9	88.9						
	Inside dia.				80.9	80.9						
K4005C K1005P	Length					557.	←	560.0	←	←	←	←
	Outside dia.					88.9	←	101.6	←	←	←	←
	Inside dia.					80.9	←	91.6	←	←	←	←
K1006R	Length					463.0	←	367.0	←	←	←	←
	Outside dia.					88.9	←	101.6	←	←	←	←
	Inside dia.					80.9	←	91.6	←	←	←	←
T-10	Length							535.8		535.8		535.8
	Outside dia.							101.6		101.6		101.6
	Inside dia.							91.6		91.6		91.6
K1205C K1205P	Length							560.0		560.0		560.0
	Outside dia.							101.6		101.6		101.6
	Inside dia.							91.6		91.6		91.6
K1206R	Length							367.0		367.6		367.6
	Outside dia.							101.6		101.6		101.6
	Inside dia.							91.6		91.6		91.6

Distinction		DE12T	DE12Ti/Tis (310ps)	DE12Ti/Tis (340ps)	DV15T	DV15TiS
		BH116		BH116/BH117	BH117/BH120F	
K1105C K1006R	Length	600.2				
	Outside dia.	101.6				
	Inside dia.	91.6				
K1006R	Length	400.7				
	Outside dia.	101.6				
	Inside dia.	91.6				
T-10S5B	Length	569.9	569.9			
	Outside dia.	101.6	101.6			
	Inside dia.	91.6	91.6			
K1205C K1205P	Length		600.2			
	Outside dia.		101.3			
	Inside dia.		91.6			
K1206R	Length		400.7			
	Outside dia.		101.6			
	Inside dia.		91.6			
K1405A	Length			541.4	730.3	
	Outside dia.			101.6	101.6	
	Inside dia.			91.6	91.6	
K1406P	Length				620.3	
	Outside dia.				101.6	
	Inside dia.				91.6	
T16DS5A	Length					709.8
	Outside dia.					114.3
	Inside dia.					101.1
K1605A	Length					678.0
	Outside dia.					114.3
	Inside dia.					101.1

Daewoo Bus Chassis Service Manual
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▣ PROPELLER SHAFT (Auto Transmission)

Distinction		D1146 D1146Ti	DE08Tis			DE12		DE12T	DE12Ti		DE12Tis	
		BM090 BS090	BM090 BS090	BH090	BS106	BS106	BH115E BH120E	BH115E BH120E	BS106	BH115E BH120E	BS106	BH115E BH120E
MT643	Length				577.0	470.0	←					
	Outside dia.					88.9	←					
	Inside dia.					80.9	←					
B300	Length				626.0		←					
	Outside dia.				88.9	88.9	←					
	Inside dia.				80.9	80.9	←					
B400	Length											
	Outside dia.											
	Inside dia.											
D851.2	Length				660.0	557.0	←					
	Outside dia.				88.9	88.9	←					
	Inside dia.				80.9	80.9	←					
D854.2	Length											
	Outside dia.											
	Inside dia.											
D863	Length							529.0		529.0		
	Outside dia.							114.3		114.3		
	Inside dia.							101.6		101.1		
D864	Length											
	Outside dia.											
	Inside dia.											
HP500	Length			393.0	676.0	566.0	←	569.5			569.5	
	Outside dia.			88.9	88.9	88.9	←	101.6			101.6	
	Inside dia.			80.9	80.9	80.9	←	91.6			91.6	
HP600	Length							569.5		569.5		
	Outside dia.							101.6		101.6		
	Inside dia.							91.6		91.6		

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