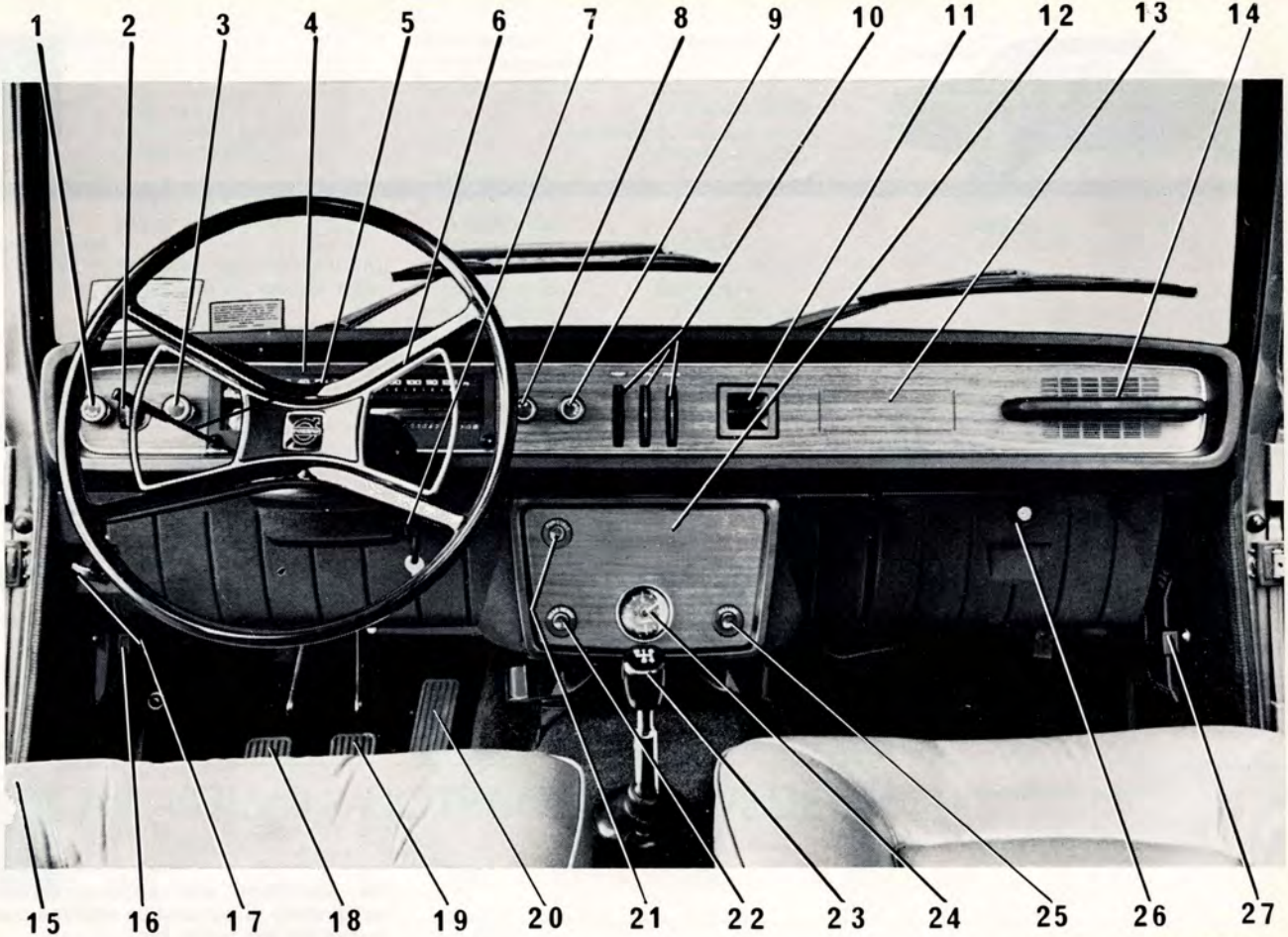
SUPPLEMENT TO OWNER'S MANUAL

VOLVO 164

The alterations and additions contained herein apply in conjunction with the owner's manual for the Volvo 164.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INSTRUMENTS AND CONTROLS

1. Windscreen wiper and washer switch
2. Choke control (not B 30 E)
3. Lighting switch
4. Instrument panel
5. Turn indicator switch lever dipped beams and headlight flasher
6. Horn
7. Ignition switch and steering wheel lock
8. Fan switch
9. Cigarette lighter
10. Heater/ventilation controls
11. Ashtray
12. Panel (foldable) for fusebox (for fuse change, see page 8)
13. Place for radio
14. Grab handle
15. Parking brake
16. Fresh-air intake vent
17. Bonnet release handle
18. Clutch pedal
19. Brake pedal
20. Accelerator pedal
21. Foglight switch
22. Switch, electrically heated rear window
23. Gear lever
24. Clock
25. Emergency warning signal flasher switch
26. Glove locker
27. Fresh-air intake vent

Described below are new instruments and controls and those with altered function.

4 **Instrument panel**
Warning lamp, choke

The lamp gives a steady amber light when the choke control is pulled out. Drive as little distance as possible with the choke out.
The 164 E does not have this lamp.

21 **Foglight switch**
22 **Switch, electrically heated rear window**
25 **Emergency warning signal flasher switch**

Push in the above switches to switch them on. Pushing them in again switches them off.

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Door handles

The Volvo 164 has recessed door handles. The front doors are locked from the outside by pushing down the lock button on the inside window ledge and shutting the door with the handle pulled out as shown in the picture.
To lock the rear doors merely push down the lock button on the inside and shut the door. No need to hold the handle pulled out. Do not leave the keys inside the car.

DRIVING

Starting the engine, B 30 E

1. Check that the parking brake is on and move the gear lever to neutral. (Position **N** or **P** for automatic transmission.)
2. Always make a habit of depressing the clutch pedal until the engine starts.
3. Turn the ignition key to the start position. Release it as soon as the engine has started.

   Note: Do not depress the accelerator pedal if the engine is cold. If the engine stops, start it again without touching the accelerator pedal.
   If the engine is warm, the accelerator pedal should only be depressed half way. Try to avoid repeated attempts at starting. (Each new attempt operates the start valve which causes fuel to be injected into the inlet duct.) Instead, run the starter motor a little longer (but max. 15—20 seconds) at each attempt.

Never race the engine up to high speed immediately after starting from cold.

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STARTING AND DRIVING

Automatic transmission

The positions for the selector shift lever are marked on the console next to the lever.
P = Parking position
R = Reverse position
N = Neutral position
D = Driving position
2
1 = low speed positions

The selector lever can be moved freely between positions **D** and **2** where the other positions are blocked with a gate which is opened by means of the push button in the knob of the selector lever.

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To shift from **D** and **2** to positions **N** or **1** all that is required is a light push on the buttom with the palm of the hand. With the push button in this position, the selector lever can be moved between the four positions, **1, 2 D** and **N.**
To shift to positions **R** and **P** more force is required to press down the button. This can be done with the thumb. Similar force is also required to move the selector lever **out of the P position.** In other words, with the push button fully depressed, the selector lever can be moved freely between the various shift gear positions in the transmission.

P-position

Engage selector lever in position P for parking, whether the engine is stopped or running. When parking on a steep gradient, the parking brake should also be applied. In the P position the transmission is mechanically locked.
P position may only be selected when the car is standing still.

R-position

This position is used when reversing.
R position may only be selected when the car is standing still.

N-position

N position is for neutral, that is, no gear is engaged.

D-position

This position is the normal one for driving. Start is in 1st gear and the transmission automatically shifts up in accordance with road speed and accelerator position. Downshifting takes place automatically with decreasing speed.

2-position

In position **2** the transmission can shift up or down automatically between 1st and 2nd gear.
In this position there is no shifting up to 3rd gear.
2 position can be used to obtain immediate downshifting (to 2nd gear) and also when shifting up from 2nd to 3rd gear is not desired, for example, at the following times:
— during certain types of highway driving
— during crawling town driving
— when driving in hilly country
— when overtaking
— in order to increase engine braking
Do not select **2 position** for speeds exceeding 115 and 125 kmph (72 and 78 mph) for the B 30 A and B 30 E engines respectively.

1-position

With **1** position there is automatic downshifting **but no upshifting.**
If **1** position is selected at high speed, 2nd gear is engaged. It is only when the speed has dropped to about 10 kmph (6 mph) that 1st gear engages. This gear can also be engaged by kick-down below about 55 kmph (35 mph). If you want to drive in 1st gear without intending to shift up, use **1** position.
Do not select **1** position for speeds exceeding 115 and 125 kmph (72 and 78 mph) for the B 30 A and B 30 E engines respectively.

Kick-down

When the accelerator pedal is depressed passed the full throttle position, kick-down is obtained, i.e., immediate downshifting to the next lower gear. As soon as maximum speed for this gear has been reached or if the accelerator pedal is eased from the kick-down position, there is an automatic change up to the next higher gear.

Driving

Starting the engine

Move the selector lever to position **P** or **N**. A starter inhibitor contact prevents the engine from starting if the lever is moved to any of the other gear positions.

Start the engine as follows:

1. Check that the parking brake is on or depress the brake pedal. If this is not done, the car will start to creep when the selector lever is moved to any of the gear positions.
2. Engage the selector lever in the gear position intended for driving off.
3. Release the brakes and depress the accelerator pedal.

The car is stopped in the usual way by taking your foot off the accelerator pedal and braking with the brake pedal. No need to touch the selector lever.

If the car gets stuck in snow, loose soil, etc., it can be rocked free by moving the selector lever alternately between the **D** and **R** positions under even, light accelerator pedal pressure.

Important

Do not select position **P** or **R** when the car is moving.

Do not select position **D**, **2**, **1** or **R** at higher engine speed than idling when the car is standing still.

Do not select position **2** or **1** at speeds exceading 115 and 125 kmph (73 and 78 mph) for the B 30 A and E engines respectively.

Towing

If necessary, the car can be towed with the selector lever in position **N**, providing that the transmission is accordingly adjusted and the oil level is correct. Maximum permissible speed for towing is 30 kmph (20 mph) and the maximum distance is 30 km (20 miles). For longer distances or if you suspect that the transmission is faulty, raise the rear wheels or disconnect the propeller shaft to avoid damage to the transmission.

Current legislation concerning maximum towing speed should be observed.

Remember that a car with automatic transmission cannot be started by towing. If the battery is flat, the engine can be started by connecting an auxiliary battery to the car battery with the auxiliary battery cables.

IMPORTANT. Always connect the plus cable of the auxiliary battery to the plus pole of the car battery and the minus cable of the auxiliary battery to the minus pole of the car battery.

Standard transmission

Recommended max. and min. speeds, kmph (mph) for the various gears:

Engine	1 st gear	2nd gear	3rd gear	4th gear
B 30 E	0—50 (0—30)	20—90 (15—55)	35—140 (22—88)	45*— (28—)*

* 60 kmph (38 mph) with overdrive engaged

Automatic transmission

Gear speeds with full throttle kick-down, kmph (mph)

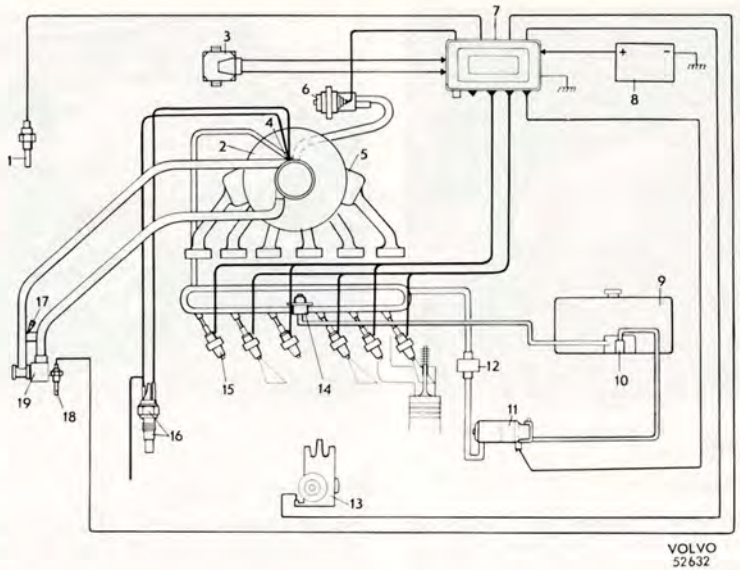
Gear	B 30 E
1—2	70 (44)
2—3	125 (78)

Max. speed when kick-down downshifting can be obtained, kmph (mph)

Gear	B 30 E
3—2	110 (69)
3—1	55 (34)

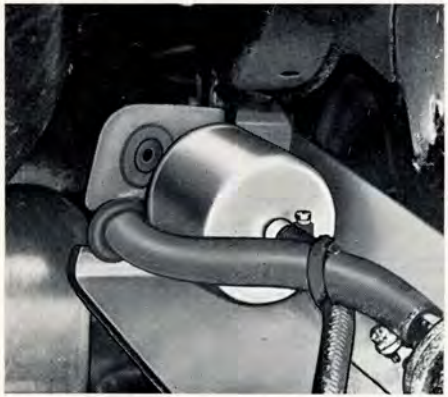
Fuel system (B 30 E)

The B 30 E engine is fitted with an electronic fuel injection system.
This system includes an electronic control unit (7) which converts the impulses from the various sensors in the engine to control signals which regulate the four solenoid-actuated fuel injectors (15). The control signals influence the opening times of the injectors and thereby the amount of fuel injected.
The mixture of fuel and air is modified the whole time according to the conditions under which the engine is running. Engine speed is governed by the triggering contacts (13) in the distributor, the operating temperature by the sensor (18) for the coolant, the temperature of the induced air by the sensor (1) and the engine load by the pressure sensor (6) which is connected to the inlet duct. In addition, the control unit is provided with information concerning the position of the throttle valve by means of the throttle valve switch (3). This information is computerized in the control unit and re-transmitted in the form of control impulses to the injectors.
Fuel is injected into the inlet ports in the cylinder head just before the intake valves. The fuel is delivered to the injectors via an electric fuel pump (11) which maintains a constant pressure of 2 kp/cm² (30 psi) in the fuel line with the help of a pressure regulator (14).



Principle of operation, fuel injection system B 30 E

1. Temperature sensor for induction air
2. Air cleaner
3. Throttle valve switch
4. Cold start valve
5. Inlet duct
6. Pressure sensor
7. Control unit (electronic)
8. Battery
9. Fuel tank
10. Fuel filter, suction side
11. Electric fuel pump
12. Fuel filter, discharge side
13. Triggering contacts in distributor
14. Pressure regulator
15. Injectors
16. Thermal timer contact
17. Idling adjusting screw
18. Temperature sensor for coolant
19. Auxiliary air regulator



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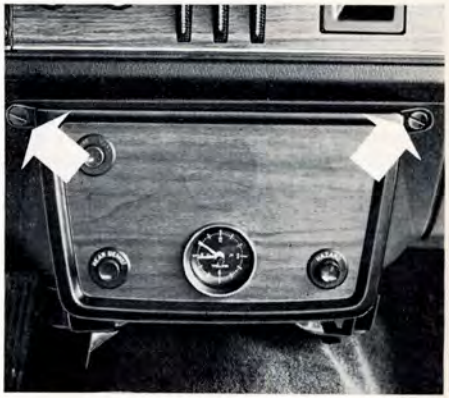

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SERVICING

Fuel filter (B 30 E)

The fuel filter is located under the car close to the fuel tank. This filter is to be changed after every 20 000 km (12 000 miles). The filter is replaced as one complete unit.
Clean the fuel lines and the surrounding components before carrying out the change. When changing the filter, pinch the fuel lines to prevent fuel from running out. Notice when fitting the new filter that the arrow on the filter housing is to point in the direction of flow. Filter replacement should be carried out by an authorized Volvo workshop.

Air cleaner (B 30 E)

The air cleaner consists of a container with replaceable paper insert. Replace the insert every 40 000 km (24 000 miles). Replace more often when driving regularly on dusty roads. No other servicing is required outside the interval just stated.
When replacing undo all the clips securing the cover to the air cleaner container. Lift off the cover and replace.
When refitting the cover the arrow points on the cover and the cleaner container should coincide.

Changing fuses

The electrical equipment is protected by a number of fuses located under the instrument panel and accessible after folding down the control panel in front of the gear lever. The panel is folded down by slackening slightly anti-clockwise the screws at the upper corners of the panel. This can be done with a screwdriver or coin.
The various fuses protect the following components:

1. Windscreen wipers and washers 8 A
2. Warning lamp, fullbeam headlights 5 A
3. Heater fan, temperature and fuel gauges. Warning lamps for brakes, oil pressure, battery and choke. Gear-positions light, autom. trans. 8 A
4. Blinkers, reversing lights, overdrive 8 A
5. Elec. heated rear window, horn, cigarette lighter 16 A
6. Glove locker light, warning buzzer (USA) interior light, engine compartment light, luggage compartment light 5 A
7. Emergency warning lights, brake lights, clock 8 A
8. Left rear light and parking light, clock light and license plate light 5 A
9. Right rear light and parking light, instrument panel and warning buzzer light 5 A

The 164 E has an extra fuse located in the fusebox in the engine compartment. It protects the relay for the fuel pump.

Special instructions when working on the electronic fuel injection system

1. **Never** let the engine run without the battery being connected.
2. **Never** use a high speed battery charger as a starting aid.
3. When using a high speed charger to charge the battery in the vehicle, the battery should be disconnected from the rest of the electrical system.
4. The control unit **may not** overheat above +85° C (185° F). The control unit must not be connected up (the engine started) when the ambient temperature exceeds +70° C (158° F). (With paintwork, etc., when the vehicle is being stove heated, it may not be driven out of the oven, it must be conveyed out. If there is risk of temperatures exceeding 85° C (185° F), the control unit must first be removed.)
5. The ignition should be switched off before connecting up or disconnecting the control unit.
6. For all work with fuel lines, **great** care must be taken to ensure that no dirt enters the system. Even small dust particles can jam injectors.

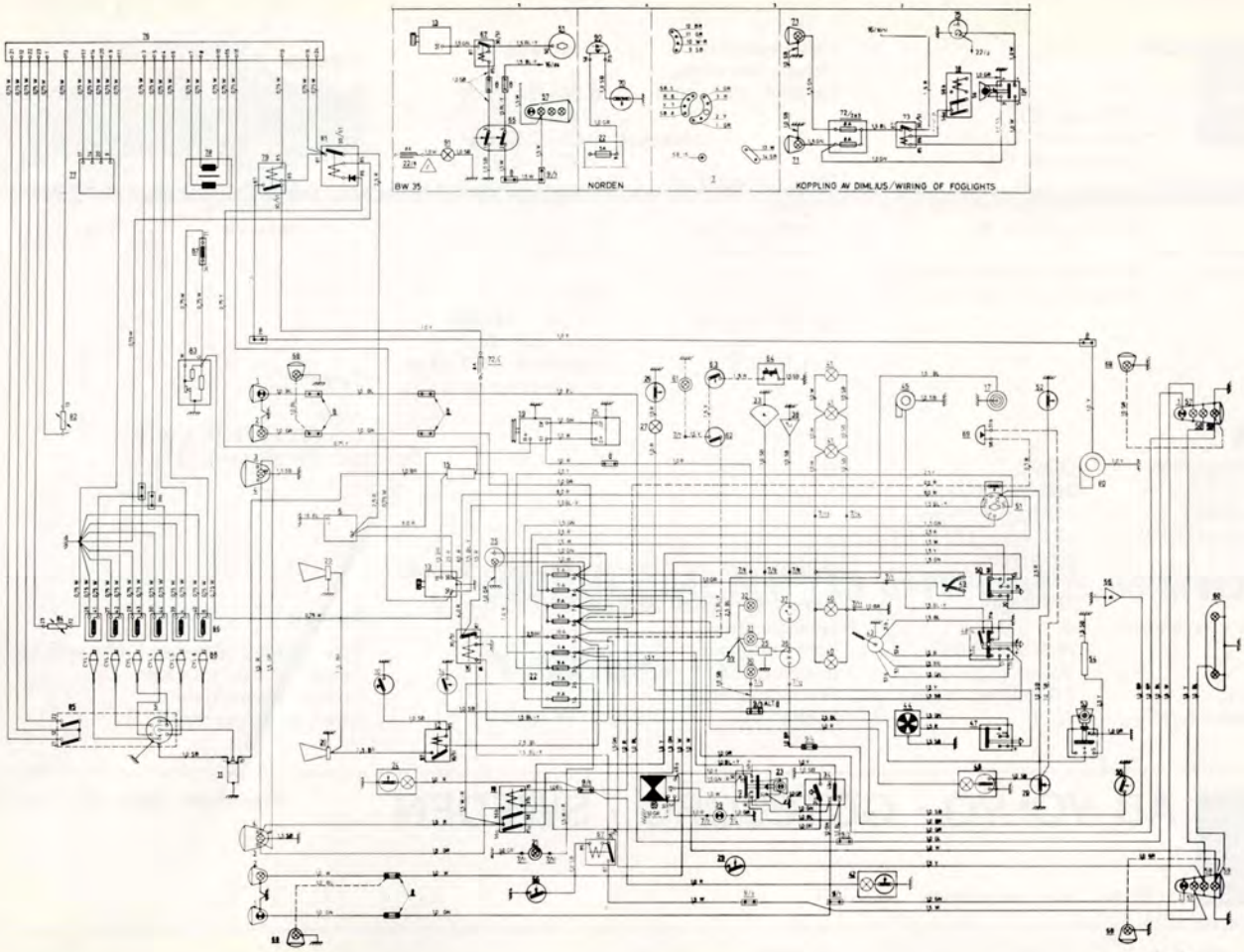
Any work to be done on the electronic fuel injection system should be carried out by an authorized Volvo workshop which has the proper equipment for doing this.

Wiring diagram (B 30 E)

1. Turn indicators 32 cp
2. Parking lights 5 W
3. Dipped headlights 40 W
4. Mainbeam headlights 45 W
5. Distributor
6. Terminal at instrument panel
8. Connector
9. Part of 6-pole terminal board
10. Horn ring
11. Ignition coil
12. Relay for horn
13. Starter motor 1 hp
14. Brake warning switch
15. Resistor
16. Main relay, ignition switch
17. Cigarette lighter
18. Step relay for mainbeam and dipped headlights, mainbeam flasher
19. Alternator 12 V 55 A
20. Horn
21. Warning lamp, mainbeams, 1.2 W
22. Fusebox
23. Switch, emergency warning flashers
24. Engine compartment light 18 W
25. Charging regulator
26. Switch for glove locker light
27. Glove locker light bulb
28. Flasher and switch for emergency warning lights
29. Brake contact
30. Warning lamp, brakes, 1.2 W
31. Warning lamp, oil pressure, 1.2 W
32. Warning lamp, battery charging, 1.2 W
33. Oil pressure sensor
34. Switch for turn indicators and mainbeam flasher
35. Voltage stabilizer
36. Fuel gauge
37. Temperature gauge
38. Temperature sensor
39. Warning lamp, blinkers, 1.2 W
40. Instrument light, 2×3 W
41. Light for heating controls, 3×1.2 W
42. Luggage compartment light, 18 W
43. Windscreen wipers
44. Heater
45. Windscreen washer
46. Interior light, 10 W
47. Heater switch
48. Switch, windscreen wipers and washer
49. Rheostat for instrument panel light
50. Lighting switch
51. Ignition switch
52. Door switch
53. Switch, elec. heated rear window
54. Elec. heated rear window
55. Switch, parking brake light
56. Fuel level sender
57. Reversing lights, 15 W
58. Brake stop lights 15 W } 32/4 cp
59. Rear lights, }
60. License plate light 2×5 W
61. Warning lamp for overdrive 1.2 W
62. Switch for overdrive
63. Switch on gearbox for overdrive
64. Control solenoid for overdrive
65. Switch on transmission, BW 35
66. Swith for reversing lights
    Only for M 400 and M 410 gearboxes
67. Relay for reversing lights on M 400
    M 410 and start relay for BW 35
68. Side marker lights 4 cp (only USA)
69. Warning buzzer for ignition switch (only USA)
70. Door switch, left
71. Foglights 55 W
72. Fusebox for foglights
73. Relay for foglights
74. Switch for foglights
75. Clock with bulb 2 W
76. Control unit
77. Throttle control switch
78. Pressure sensor
79. Relay for fuel pump
80. Fuel pump
81. Main relay for fuel pump
82. Temperatur sensor I
83. Thermal timer contact
84. Temperature sensor II
85. Release contact
86. Injectors
87. Cold start valve
88. Spark plugs
89. Flasher device
90. Warning buzzer, light
91. Gear positions light, autom. transmission

SB	BLACK
W	WHITE
GN	GREEN
GR	GRE
R	RED
BR	BROWN
BL	BLUE
GN-R	GREEN-RED
BL-Y	BLUE-YELLOW
W-R	WHITE-RED

Note that variations can exist for different markets. The wiring diagram shows the foglights wired across the parking and dipped headlights. On certain markets, they are wired across the parking and mainbeam headlights. Where this is the case, the white-red cable between the foglight relay (73) and the step relay (18) is connected to 56 b. If the foglights are connected across the parking lights only, the cable is then wired to 56.


BW 35
NORDEN
KOPPLING AV DIMLJUS/WIRING OF FOGLIGHTS
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SPECIFICATIONS

General

Width	1705 mm (67″)
Kerb weight	1425—1470 kg (3135—3235 lb),
Permissible total weight	depending on vehicle type 1850 kg (4070 lb)
Permissible load (excl. driver)	380—425 kg (835—935 lb), depending on vehicle type

ENGINE

Type designation	B 30 E
Output (DIN)	160 hp/5500 rpm
Output (SAE)	175 hp/5800 rpm
Max. torque (DIN)	23.5 kpm (170 lb ft) /2500 rpm
Max. torque (SAE)	24.5 kpm (177 lb ft) /2500 rpm
Number of cylinders	6
Bore	88.9 mm (3.50″)
Stroke	80 mm (3.15″)
Capacity	2.978 litres
Compression ratio	10:1
Valve system	Overhead
Valve clearances, hot and cold, inlet	0.50—0.55 mm (0.020—0.022″)
exhaust	0.50—0.55 mm (0.020—0.022″)
Idling speed (hot engine)	
with standard transmission	900 rpm
with autom. transmission	800 rpm
Ignition setting	10° B.T.D.C. at 700—800 rpm
Spark plug	Bosch W 225 T 35 or corresponding

Bulbs	Output	Socket	Number
Brake/rear lights	32/4 cp	BAY 15 d	2
Gear positions light (autom. transmission)	1.2 W	W 1.8 d	1
Warning lamp, choke	1.2 W	W 1.8 d	1

Gearbox

Type designation		M 400	M 410
Ratio	1st gear	3.54:1	3.54:1
	2nd gear	2.12:1	2.12:1
	3rd gear	1.34:1	1.34:1
	4th gear	1:1	1:1
	overdrive	—	0.80:1
	reserve	3.54:1	3.54:1

Tyres

Size
165 SR 15 (with B 30 A)
165 HR 15 (with B 30 E)

Tool kit

Box spanner for wheel nuts and spark plugs
Lever for box spanner
Philips screwdriver
Open end. spanners (2)

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