

ECL Electrical Component Locations

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GENERAL

This repair group covers electrical component locations, fuse locations and ground points.

Electrical equipment and accessories included vary with model and model year. Confirm component identification whenever you begin work on the electrical system.

See also:

- **600 Electrical System-General** for bus systems
- **ELE Electrical Wiring Diagrams** for electrical schematics

BMW acronyms

BMW uses many abbreviations and acronyms in the technical literature, service bulletins, wiring diagrams and parts bulletins it distributes. See **Table a** for common BMW and industry acronyms.

ECL-2 Electrical Component Locations

BMW acronyms

Table a. Common BMW acronyms

Acronym	Component or system
A/C	air-conditioning
ABS	antilock brakes
ACC	active cruise control
AFS	active front steering
AGS	adaptive gearbox system
ARS	active stabilizer (dynamic drive)
AS	active steering
AUC	automatic air recirculation control
BST	battery safety terminal
CA	comfort access
CAN	controller area network (bus)
CAS	car access system (module)
CBS	condition-based service
CCC/M-ASK	car communications computer / audio system controller
CID	central information display
DISA	variable intake manifold system
DME	digital motor electronics
DMTL	diagnosis module—tank leakage
DSC	dynamic stability control
DWA	anti-theft alarm
ECM	engine control module
ECO	electronically controlled orifice
ECT	engine coolant temperature (sensor)
EDK	electronic throttle
EEPROM	flash programmable read-only memory
EGS	electronic transmission control
EHC	electronic height control (air suspension)
EKP	fuel pump module
ELV	electronic steering lock
EPROM	erasable / programmable read-only memory
EVAP	fuel tank evaporative control system
EWS	electronic immobilizer
FH	power windows
FTM	flat tire monitoring
GPS	global positioning system
HPS	head protection airbag
IAT	intake air temperature (sensor)
IBS	intelligent battery sensor
IHKA	automatic heating and air-conditioning
IKE	integrated instrument cluster module
ITS	inflatable tubular structure (head protection airbag)
KBM	basic body module

Table a. Common BMW acronyms

Acronym	Component or system
KGM	body gateway module
KL 15	battery positive, ignition switch on RUN
KL 30	battery positive (B+), power
KL 31	battery / chassis ground
KL 50	ignition start position, power
KL R	battery positive, ignition on accessories
LDP	fuel tank leak diagnosis pump
LED	light emitting diode
LEV	low emissions vehicle
LIN	local interconnected network (bus)
MAP	manifold absolute pressure
MIL	malfunction indicator light
MPM	micro-power module
MRS	multiple restraint system (airbags)
NAV	navigation system
NLEV	national low emissions vehicle
NTC	negative temperature coefficient (resistor)
OBD II	second generation on-board diagnostics
PDC	park distance control
PWG	accelerator pedal module
RAM	random access memory
RDC	tire pressure control
RDW	tire pressure warning
RXD	receive data line
SGM	safety and gateway module
SHD	sunroof module
SMG	sequential manual gearbox
SRA	headlight cleaning system
SRS	supplemental restraint system (airbags)
SZL	steering column switch cluster
SZM	center console switch cluster
TAGE	electronic outer door handle module
TCM	automatic transmission control module
TCU	telematics control module
TDC	top dead center
TI	injection signal
TLEV	transitional low emissions vehicle
TPM	tire pressure monitoring
TXD	transmit data line
ULEV	ultra low emissions vehicle
VANOS	variable camshaft timing
VVT	Valvetronic

Electrical Component Locations ECL-3

Warnings and Cautions

Warnings and Cautions

WARNING—

- The battery safety terminal, pyrotechnic seat belt tensioners and airbags utilize explosive devices. Handle with extreme care. See warnings and cautions in **121 Battery, Alternator, Starter, 720 Seat Belts, and 721 Airbag System (SRS)**.

CAUTION—

- Prior to disconnecting the battery, read the battery disconnection precautions in **001 Warnings and Cautions**.
- Relay and fuse positions vary from car to car. If questions arise, an authorized BMW dealer is the best source for the most accurate and up-to-date information.
- A good way to verify a relay position is to compare the wiring colors at the relay socket to the colors indicated on the wiring diagrams in **ELE Electrical Wiring Diagrams**.
- Switch the ignition OFF and remove the negative (-) battery cable before removing any electrical components. Connect and disconnect ignition system wires, multiple connectors, and ignition test equipment leads while the ignition is switched OFF.
- Use a digital multimeter for electrical tests.

ELECTRICAL COMPONENTS

Electrical components table

Table b is a cross-referenced listing of electrical components.

- **Column 1:** Components alphabetized by names in current usage
- **Column 2:** BMW alphanumeric code (corresponds to code in electrical wiring diagrams)
- **Column 3:** Location in vehicle
- **Column 4:** Figure number in this repair group, if illustrated
- **Column 5:** Page number for illustration

Table b. Component locations

Component	Code	Location	Fig #	Page #
12v outlet, center console	A839	Rear of center console between front seats		
12v socket, rear	A14112	Right side trunk or cargo compartment		
A/C		see also IHKA entries		
A/C and heating control panel (module)	A11a	Center dashboard		
A/C compressor control valve	Y2a	Right side of engine on A/C compressor	Fig 58	Pg 55
A/C refrigerant pressure sensor	B97	Right side engine compartment underneath coolant reservoir	Fig 30	Pg 45
ABS		see also DSC entries		
ABS / DSC control module	A65	Right front engine compartment	Fig 38	Pg 48
ABS wheel speed sensor	B1, B2 B3, B4	Wheel hub, left front, right front, left rear, or right rear wheel	Fig 136	Pg 74
Acceleration sensor, DSC	B75	from 09 / 2005: Left front floor, underneath seat		
Acceleration sensor, DSC	B75	to 09 / 2005: Right front floor, underneath seat	Fig 87	Pg 62
Acceleration sensor, left front	B6249	Behind left front wheel housing, behind wheel	Fig 130	Pg 73

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Electrical components table

Table b. Component locations				
Component	Code	Location	Fig #	Page #
Acceleration sensor, right front	B49	Right front floor, underneath rug	Fig 87	Pg 62
Acceleration sensor, right front (AFS)	B41	Underneath right front fender	Fig 134	Pg 74
Acceleration sensor, right rear	B48	Trunk or cargo compartment, right rear behind trim	Fig 115	Pg 69
Accelerator pedal sensor	B10	Integrated with accelerator pedal	Fig 78	Pg 60
Active backrest		see Backrest adjustment (active backrest) module, driver, passenger seat		
Active cruise control distance sensor	B155	Center right, front bumper		
Active cruise control module	A144a	Center of front bumper, underneath right kidney grille		
Active cruise control proximity sensors	B153 B154	Sides of front grill, left, right		
Active stabilizer		see Dynamic drive (active stabilizer) entries		
Active steering control module	A467	Passenger seat floor, underneath rug	Fig 89	Pg 63
Active steering electronically controlled crifice (ECO) valve	Y14040a	Behind power steering pump, left lower engine	Fig 27	Pg 44
Active steering motor	M179	Steering shaft at steering rack		
Active steering yaw sensor	B105	from 09 / 2005: Underneath passenger seat		
Active steering yaw sensor	B105	to 09 / 2005: Underneath rear of driver seat, under center console	Fig 82	Pg 61
Adaptive headlights control module	A214	Behind glove compartment		
Air suspension		see EHC (air suspension) entries		
Airbag		see also Crash entries		
Airbag and horn contact (volute spring)	I01086	Underneath steering wheel, at steering column switch cluster (SZL)		
Airbag deactivation switch, passenger airbag	S559	Right end of dashboard		
Airbag gas generator, head protection, left, right	G17 G18	A-pillar next to base of windshield, left, right		
Airbag sensor, rear side airbag	A173a A174a	Lower B-pillar under trim		
Airbag, driver	G5	In steering wheel under horn button		
Airbag, knee, driver	G30	Dashboard lower trim, underneath steering column		
Airbag, knee, passenger	G31	Underneath glove compartment		
Airbag, passenger	G6	Under right end of dashboard	Fig 77	Pg 60
Airbag, side, driver, passenger	G14b G15b	Front door, under trim, left, right	Fig 93	Pg 64
Airbag, side, rear	G20a G21a	Left rear, right rear door, under trim panel	Fig 94	Pg 64
Alarm		see Anti-theft		
Alternator (generator)	G6524	Left front of engine	Fig 38 Fig 48	Pg 48 Pg 51
Amplifier, sound system	N40a	Trunk or cargo compartment, left rear behind trim	Fig 112 Fig 114 Fig 120	Pg 68 Pg 69 Pg 70
Antenna		see Antenna components in this repair group see also Comfort access (CA) antennas see also Tire pressure control (RDC) antenna		Pg 39

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Electrical components table

Table b. Component locations

Component	Code	Location	Fig #	Page #
Antenna amplifier and diversity module	N8a	<i>Sedan</i> : Top right of rear window	Fig 16	Pg 40
Antenna amplifier and diversity module	N8a	<i>Sports Wagon</i> : Top of rear window, behind spoiler	Fig 19	Pg 40
Antenna noise suppression filter	Z13	<i>Sedan</i> : Rear parcel shelf behind trim, left	Fig 14	Pg 39
Antenna noise suppression filter	Z13 Z402	<i>Sports Wagon</i> : Right rear headliner, behind trim	Fig 18 Fig 19	Pg 40 Pg 40
Antenna, SDRS (satellite radio)	I01106	Roof top, center rear	Fig 19	Pg 40
Antenna, VICS	A457	Center top windshield	Fig 12	Pg 39
Anti-theft alarm system control module (DWA)	A121a	Integrated with anti-theft alarm system control module (DWA)		
Anti-theft siren and tilt sensor (DWA)	H1b	Behind right rear bumper cover	Fig 141	Pg 76
AUC sensor		see Automatic recirculation sensor		
Audio system controller / car communications computer (CCC/M-ASK)	N38a	Center dashboard		
Audio-visual socket	A18807	Rear of center console between front seats		
Automatic recirculation sensor	B414	<i>to 09 / 2005</i> : Right front engine compartment on radiator	Fig 29	Pg 45
Automatic recirculation sensor	B414	<i>from 09 / 2005</i> : Right cabin microfilter housing cover, above E-box		
Automatic transmission control module (TCM)	A7000a	In transmission housing, rear see also SMG control module		
Automatic transmission gear selector switch (GWS)	S227a	Center console, front		
Automatic transmission selector lever module	A134	Left of selector lever on center console		
Automatic transmission steptronic switch	S224	Under selector lever bezel, center console		
Auxiliary heater	I01062	IHKA housing, underneath top dashboard trim	Fig 21	Pg 41
Auxiliary sound system connector	A267a	Rear of center console between front seats		
B+ jump start terminal	G6430	Left rear engine compartment	Fig 38 Fig 53	Pg 48 Pg 53
B+ power distribution	A2076	E-box, right rear engine compartment	Fig 5 Fig 8	Pg 29 Pg 30
Backrest adjustment (active backrest) module, front seat	A853 A854	Underneath front seat	Fig 23 Fig 98	Pg 43 Pg 65
Back-up light switch		<i>Automatic transmission</i> : Transmission range switch		
Back-up light switch	S8511	<i>Manual transmission</i> : Right rear transmission housing		
Basic body module (KBM)	A1a	Behind glove compartment	Fig 22 Fig 23 Fig 85	Pg 42 Pg 43 Pg 62
Battery	G1	Right side trunk or cargo compartment, behind trim	Fig 115	Pg 69
Battery safety terminal (BST)	G19a	Positive battery terminal, in trunk or cargo compartment	Fig 115	Pg 69
Battery sensor	B895	Battery negative post, top of battery, in trunk or cargo compartment		
Bistable relay		<i>2004 - 2005</i> : In micro-power module (MPM) <i>2006 - 2010</i> : In body-gateway module (KGM)		
Blower	M30	Under right side dashboard		
Blower output stage	N2	On blower under right side dashboard		
Body-gateway module (KGM)	A16760	Behind glove compartment	Fig 85	Pg 62

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Electrical components table

Table b. Component locations

Component	Code	Location	Fig #	Page #
Brake disc ventilation flap sensor, right, left	I01224 I01225	Behind right, left edge of front of bumper		
Brake fluid level switch	B18a	Brake fluid reservoir, left rear engine compartment	Fig 38 Fig 53	Pg 48 Pg 53
Brake light switch	S29	Above brake pedal		
Brake pad wear sensor, left front	B16a	Left front brake caliper	Fig 128	Pg 72
Brake pad wear sensor, right front	B118	Right front brake caliper		
Brake pad wear sensor, right rear	B17a	Right rear brake caliper		
BST		see Battery safety terminal (BST)		
CA		see Comfort access (CA) entries		
Camshaft sensor, exhaust	B6224	M54 engine: Front of cylinder head, left	Fig 37	Pg 47
Camshaft sensor, intake	B6214	M54 engine: Front of cylinder head, left	Fig 36	Pg 47
Camshaft sensor, intake, exhaust	B6214 B6224	N52 engine: Front of cylinder head, left, right	Fig 42	Pg 49
Camshaft sensor, intake, exhaust	B6214 B6224	N54 engine: Front of cylinder head, left, right	Fig 51	Pg 52
Camshaft sensors, intake, exhaust	B62141 B62142 B62241 B62242	V8 engine: Rear of cylinder heads	Fig 54 Fig 56 Fig 61 Fig 62	Pg 54 Pg 54 Pg 56 Pg 56
Car access system (CAS) module	A149a	Underneath left dashboard, left of steering column	Fig 22 Fig 23 Fig 79	Pg 42 Pg 43 Pg 60
Car communications computer		see Audio system controller / car communications computer (CCC/M-ASK)		
Cargo compartment roller cover motor	M237	Left rear cargo compartment behind trim	Fig 122	Pg 71
Cargo compartment roller cover release	M300 M301	D-pillar behind quarter glass, left, right	Fig 122	Pg 71
CAS		see Car access system (CAS) module		
CCC/M-ASK		see Audio system controller / car communications computer (CCC/M-ASK)		
CD changer	N22	Right side dashboard behind glove compartment see also DVD changer	Fig 84	Pg 61
Center brake light	H34a	Above rear window	Fig 16	Pg 40
Center console switch center (SZM)	A169	Above center console in lower center dashboard		
Center console switch center electronics	A862	Behind glove compartment		
Central information display	A165	Center dashboard		
Charging and hands-free module	U400c	Sedan: Left rear trunk, behind trim		
Charging and hands-free module	U400c	Sports Wagon: Floor of cargo compartment		
Charging and hands-free module auxiliary battery	G402	Sedan: Left rear trunk, behind trim		
Charging and hands-free module auxiliary battery	G402	Sports Wagon: Floor of cargo compartment		
Classification resistor		see xDrive classification resistor		
Clutch sensor (SMG)	B6574	Left side SMG transmission	Fig 110	Pg 68
Clutch switch	S805a	Above clutch pedal		

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Electrical components table

Table b. Component locations

Component	Code	Location	Fig #	Page #
Comfort access (CA) antennas	I01039 W10a - W15	Throughout interior <i>see also Antenna components</i>	Fig 22 Fig 23	Pg 42 Pg 43 Pg 39
Comfort access (CA) control module	A215	Behind glove compartment	Fig 22 Fig 86	Pg 42 Pg 62
Compressor		<i>see A/C compressor</i>		
Condensation sensor	B100	Top center of windshield		
Coolant		<i>see Engine coolant entries</i>		
Cooler box	A445	Rear seat armrest		
Crankcase breather heater	E65390	<i>N52 engine:</i> Intake manifold	Fig 39	Pg 49
Crankcase breather heater	E65390	<i>N54 engine:</i> Intake manifold	Fig 49	Pg 49
Crankcase breather heater	E65393 - E65395	<i>N52 engine:</i> Behind left rear of cylinder head at intake manifold	Fig 47	Pg 51
Crankcase breather heater relay	K6539	E-box, right rear engine compartment		
Crankshaft sensor	B6203	<i>V8 engine:</i> Right side bell housing	Fig 125	Pg 72
Crankshaft sensor	B6203	<i>6-cylinder engine:</i> Left side bell housing	Fig 49	Pg 51
Crash module, center satellite	A161	Under center console, between front seats		
Crash modules, left, right satellite	A157 A158	Behind B-pillar trim, left, right	Fig 90	Pg 63
Crash safety module	A12a	Between front seats, under center console		
Crash sensor, front left, front right	B10508, B10509	Engine compartment front, underneath headlight assemblies	Fig 26	Pg 44
Crash sensor, front side airbag	B78a B79a	Front of front door behind trim, left, right	Fig 93	Pg 64
Digital tuner	N41 N48	Trunk or cargo compartment, left rear behind trim	Fig 113 Fig 121	Pg 69 Pg 71
DISA		<i>see Variable intake manifold (DISA) controllers</i>		
Diversity		<i>see Antenna amplifier and diversity module</i>		
DLC		<i>see OBD II socket</i>		
DME main relay	K6300	E-box, right rear engine compartment	Fig 6 Fig 8	Pg 29 Pg 30
Door handle control module, front, rear	S263 S264 S265a S266a	Outer door handle, front, rear, right, left door		
Door lock motor, soft close, right, left, front, rear door	M408 - M411	Rear edge, lower door cavity	Fig 93	Pg 64
Door locks, driver door, passenger door	S246 S254	Rear of door in door cavity, left, right	Fig 93	Pg 64
Door locks, right rear, left rear	S255a S256a	Rear edge of door inside door cavity, right, left,	Fig 94	Pg 64
Door module, driver door, passenger door	A23a A24a	Inside driver door cavity, upper front		
Door switch cluster, driver door	S126	Driver door arm rest		
DSC		<i>see also ABS entries</i>		
DSC / DTC switch	S6	Center console switch center (SZM)		
DSC control module		<i>see ABS / DSC control module</i>		

ECL-8 Electrical Component Locations

Electrical components table

Table b. Component locations

Component	Code	Location	Fig #	Page #
DSC hydraulic unit		On DSC control module		
DSC steering angle sensor		Steering column switch center (SZL)		
DVD changer	N39a	Trunk or cargo compartment, left rear behind trim <i>see also</i> CD changer	Fig 113	Pg 69
DVD changer cooling fan	M304	<i>Sedan</i> : Left rear trunk, behind trim		
DWA		<i>see</i> Anti-theft entries		
Dynamic drive (active stabilizer) control module	A148a	Behind right kick panel trim	Fig 86	Pg 62
Dynamic drive (active stabilizer) lateral acceleration sensor	A139	Right front floor underneath rug	Fig 87	Pg 62
Dynamic drive (active stabilizer) valve block	Y40	Behind right front wheel, behind wheel housing liner		
Dynamic stability control		<i>see</i> ABS / DSC <i>see also</i> DSC		
E-box		Right rear engine compartment under cover <i>see E-box fuses, relays and modules</i>	Fig 38 Fig 53	Pg 48 Pg 53
E-box cooling fan	M6506	Base of E-box, right rear engine compartment		
ECM		<i>see</i> Engine control module (ECM)		
ECO valve		<i>see</i> Active steering electronically controlled orifice (ECO) valve		
EHC (air suspension) compressor	Y22	Underneath vehicle, between spare tire well and battery box	Fig 143	Pg 76
EHC (air suspension) compressor relay	K126	<i>Sports Wagon</i> : Spare tire well	Fig 24 Fig 25	Pg 43 Pg 44
EHC (air suspension) module	A118a	<i>Sports Wagon</i> : Spare tire well	Fig 24 Fig 25	Pg 43 Pg 44
EHC (air suspension) sensor, front	B42	Right front suspension	Fig 137	Pg 75
EHC (air suspension) sensor, front	B69 B70	Rear suspension, right, left	Fig 140	Pg 76
EHC (air suspension) valves, rear	Y403 Y404	Rear air spring towers, behind rear seat backrest	Fig 118	Pg 70
Electric cooling fan	M135	Between radiator and engine	Fig 29	Pg 45
Electronic height control		<i>see</i> EHC (air suspension) entries		
Electronic power steering		<i>see</i> Active steering entries		
Electronics box		<i>see</i> E-box		
Emergency call button	S253a	Front dome light unit	Fig 76	Pg 59
Engine control module (ECM)	A6000	E-box, right rear engine compartment	Fig 6 Fig 8 Fig 10 Fig 38 Fig 53	Pg 29 Pg 30 Pg 32 Pg 48 Pg 53*
Engine control module relay		<i>see</i> DME main relay		
Engine coolant level switch	S63b	Bottom of coolant reservoir, right front engine compartment		
Engine coolant pump, electric	M6035	<i>N52 engine</i> : Right front lower engine compartment	Fig 46	Pg 50
Engine coolant pump, electric	M6035	<i>N54 engine</i> : Right front lower engine compartment	Fig 52	Pg 52
Engine coolant temperature (ECT) sensor	B6236	<i>M54 engine</i> : Cylinder head, underneath intake manifold	Fig 32	Pg 46
Engine coolant temperature (ECT) sensor	B6236	<i>N54 engine</i> : Left front of cylinder head, on thermostat housing cover	Fig 51	Pg 52

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Electrical components table

Table b. Component locations

Component	Code	Location	Fig #	Page #
Engine coolant temperature (ECT) sensor	B6236	N62 engine: Coolant manifold, front of engine	Fig 57	Pg 55
Engine coolant temperature (ECT) sensor	B6236	N62TU engine: Coolant manifold, front of engine	Fig 65	Pg 57
Engine coolant temperature (ECT) sensor	B6236a	N52 engine: Front of engine on coolant outlet	Fig 38 Fig 43	Pg 48 Pg 50
Engine coolant temperature sensor, radiator outlet	B604	Lower radiator hose, right front engine compartment	Fig 29	Pg 45
Engine coolant thermostat	Y6279	M54 engine: Front of cylinder head on coolant manifold	Fig 37	Pg 47
Engine coolant thermostat	Y6279	N52 engine: Right front lower engine compartment on electric coolant pump	Fig 46	Pg 50
Engine coolant thermostat	Y6279	N54 engine: Right front lower engine compartment on electric coolant pump	Fig 52	Pg 52
Engine electronics fuse carriers	A8680 A8681 A8684 A8685	see Fuse Locations and Ratings in this repair group see also E-box fuses, relays and modules in this repair group		Pg 21 Pg 29
Engine hood contact switch	S19	E-box, right rear engine compartment		
Engine hood lock microswitch, right, left	A137 A138	Radiator upper support, right, left		
Entertainment center, rear compartment	N554	Rear of center console between front seats		
Evaporative emissions valve	Y6120	M54 engine: Left front of cylinder head	Fig 35	Pg 46
Evaporative emissions valve	Y6120	N52 engine: Left front of cylinder head	Fig 40	Pg 49
Evaporative emissions valve	Y6120	N54 engine: Behind cylinder head, left side	Fig 49	Pg 51
Evaporative emissions valve	Y6120	N62 engine: Front of left cylinder head	Fig 55	Pg 54
Evaporative emissions valve	Y6120	N62TU engine: Front of left cylinder head	Fig 66	Pg 57
Exhaust camshaft sensor		see Camshaft sensor		
Fan cutoff relay	K9137	Trunk or cargo compartment, right rear behind trim	Fig 116	Pg 69
Final stage unit		see Blower final stage		
Flashlight charging socket, glove compartment	I01100	Left edge of glove compartment		
Fresh air temperature sensor	B13729	Left side dashboard ducts		
Front fuse and relay panel	A41a	Behind glove compartment	Fig 84 Fig 85	Pg 61 Pg 62
Fuel filler flap lock motor	M16	Trunk or cargo compartment, right rear behind trim		
Fuel injector relay	K6327	E-box, right rear engine compartment	Fig 6	Pg 29
Fuel injectors	Y6101 - Y6108	Non-turbo: Intake manifold Turbo: Top of cylinder head		
Fuel level sensor	B25a	Top of fuel tank, underneath rear seat		
Fuel pressure sensor, low pressure	B6125a	N54 engine: Left side of engine underneath intake manifold	Fig 48	Pg 51
Fuel pump	M2	Underneath right rear seat cushion, top of fuel tank		
Fuel pump control module (EKPS)	A13663	Behind right rear shock absorber tower, right side trunk or cargo compartment, behind trim	Fig 123	Pg 71
Fuel pump relay	K96	to 09 / 2005: Behind glove compartment	Fig 84	Pg 61
Fuel rail pressure sensor	B2261	N54 engine: Left side of engine underneath intake manifold	Fig 48	Pg 51
Fuel tank flap emergency release cable		Trunk or cargo compartment, behind right trim		
Fuel tank leakage diagnostic module	M119a	Underneath vehicle, behind left rear wheel housing	Fig 142	Pg 76

ECL-10 Electrical Component Locations

Electrical components table

Table b. Component locations

Component	Code	Location	Fig #	Page #
Fuel volume control valve	Y2381	N54 engine: Left side of engine underneath intake manifold, on high pressure fuel pump	Fig 48	Pg 51
Fuse carrier, engine electronics		see E-box fuses, relays and modules in this repair group		Pg 29
Fuses		see Fuse Locations and Ratings in this repair group		Pg 21
Gear indicator light, automatic transmission	E82	Under selector lever bezel		
Gearshift paddles	I01091 I01092	On steering wheel spokes		
Gearshift sensor (SMG)	B6572	Top of SMG transmission	Fig 109	Pg 68
Gearshift solenoids (SMG)	Y6561 - Y6564	Underneath rear of SMG transmission	Fig 108	Pg 67
Generator		see Alternator (generator)		
Glove compartment light switch	S37a	Left of glove compartment, underneath dashboard		
GPS		see Audio system controller / car communications computer (CCC/M-ASK) see also Navigation		
Ground bus	I01053	Right of E-box, right rear engine compartment	Fig 5	Pg 29
Grounds		see Grounds in this repair group		Pg 34
GWS		see Automatic transmission gear selector switch (GWS)		
Hall effect camshaft position sensor		see Camshaft sensor		
Hand-free microphone	B429a	Front dome light unit, left	Fig 76	Pg 59
Hazard warning switch	S18	Center dashboard		
Head restraint horizontal extender, driver, passenger	G43 G44	Head restraint, driver, passenger seat		
Head restraint vertical extender, driver, passenger	G34a G35a	Top of seat backrest, driver, passenger seat	Fig 107	Pg 67
Head up display projector	A503	Left front dashboard		
Headlight washer pump		see Washer pumps		
Headlight washer relay	K6	to 09 / 2005: Behind glove compartment	Fig 84	Pg 61
Headlight washer relay	K6	from 09 / 2005: Rear power distribution and fuse panel, right rear trunk or cargo compartment, behind trim	Fig 3	Pg 23
Headset socket	A468	Rear of center console between front seats		
Heated oxygen sensor		see Oxygen sensor		
Heater valve	Y4	Left rear engine compartment	Fig 28	Pg 45
Heating		see Climate control components in this repair group		Pg 41
Horn button	S4 S4a	Steering wheel center		
Horn contact spring		see Airbag and horn contact (volute spring)		
Horns	H2 H3	Behind front bumper, right side	Fig 133	Pg 74
Hot-film mass air flow sensor		see Mass air flow sensor		
Hydraulic pressure sensor (SMG)	B6571	Underneath rear of SMG transmission	Fig 108	Pg 67
Hydraulic pump (SMG)	Y6975	Underneath SMG transmission	Fig 108	Pg 67
IBS		see Battery sensor		

Electrical Component Locations ECL-11

Electrical components table

Table b. Component locations

Component	Code	Location	Fig #	Page #
Idle speed control valve	Y6130	M54 engine: Underneath intake manifold, above throttle housing	Fig 33	Pg 49
iDrive controller	A167a S14099	Center console between front seats		
Ignition coils	T6151 - T6158	Top of cylinder head cover(s) above spark plugs	Fig 38 Fig 53	Pg 48 Pg 53
Ignition coils suppression capacitor	I01046	N52 engine: Between ignition coil connectors 2 and 3	Fig 44	Pg 50
Ignition coils suppression capacitor	I01046	V8 engine: Next to ignition coil 8 connector	Fig 60	Pg 55
Ignition key slot	S2 S14028	Right side of steering column		
IHKA		see Climate control components in this repair group		Pg 41
IHKA control panel	A11a	Center dashboard		
Infrared interface, rear seat entertainment	I01174	Rear of center console between front seats		
Instrument cluster module	A2a	Dashboard		
Intake camshaft sensor		see Camshaft sensor		
Intake pressure (MAP) sensor	B6239	N52 engine: Left rear of intake manifold	Fig 39	Pg 49
Intake pressure (MAP) sensor	B6239	N54 engine: Air intake duct, left rear engine compartment	Fig 49	Pg 51
Intake pressure (MAP) sensor	B6239	N62 engine: Rear of right cylinder head	Fig 59	Pg 55
Intake pressure (MAP) sensor	B6239	N62 TU engine: Rear of intake manifold	Fig 63	Pg 56
Intake resonance valve		see Variable intake manifold (DISA) controllers		
Intake temperature and boost pressure sensor	B6583	N54 engine: Rear of intake manifold	Fig 49	Pg 51
Integrated voltage supply module (IVM)	A6009	E-box, right rear engine compartment	Fig 10	Pg 32
Intelligent battery sensor		see Battery sensor		
Interior movement sensor (ultrasonic detector)		Rear dome light unit		
IVM		see Integrated voltage supply module (IVM)		
KBM		see Basic body module (KBM)		
KGM		see Body-gateway module (KGM)		
Knock sensor	B6257 B6258	V8 engine: Underneath intake manifold on engine block		
Knock sensors	B62400	6-cylinder engine: Left side of engine underneath intake manifold	Fig 48	Pg 51
Level sensor		see EHC (air suspension) entries		
Light module	A3	Underneath left dashboard, left of steering column	Fig 22 Fig 23 Fig 79	Pg 42 Pg 43 Pg 60
Light sensor		see Rain and light sensor		
Light switch	S8	Left of steering column		
Load reduction (load shedding) relay terminal 15	K9	from 09 / 2005: Behind glove compartment	Fig 84	Pg 61
Longitudinal dynamics management control module	A144b	Behind glove compartment		
Low fuel pressure sensor		see Fuel rail pressure sensor		
MAP sensor		see Intake pressure (MAP) sensor entries		

ECL-12 Electrical Component Locations

Electrical components table

Table b. Component locations

Component	Code	Location	Fig #	Page #
Mass air flow sensor	B6207 B6207b	Air intake duct between air filter housing and throttle housing	Fig 38 Fig 68	Pg 48 Pg 57
Microphone	B400	Front dome light unit, right		
Micro-power module (MPM)	A16021	<i>Sports Wagon</i> : Spare tire well	Fig 24 Fig 25	Pg 43 Pg 44
Mirror, electrochromic (inside)	A22	Top center of windshield		
Mirror, outside, left, right	Y5 Y6	Driver door, passenger door		
Mixing flap control, rear compartment	R012	Rear of center console between front seats		
MOST-bus connector	I14255	Trunk or cargo compartment, left rear behind trim	Fig 111 Fig 120	Pg 68 Pg 70
MPM		see Micro-power module (MPM)		
MRS		see Crash entries		
Multifunction switch assemblies	I01032 I01033	On steering wheel spokes		
Navigation module	A112a	Left side trunk or cargo compartment behind trim		
Neutral safety switch	Y19	Under selector lever bezel, center console		
Night vision camera	A860	Front bumper, center left		
Night vision module	A859	Behind glove compartment		
O ₂ sensor		see Oxygen sensor		
OBD II socket	X19527	Edge of driver door post		
Oil condition sensor (OZS)	B62540	Oil pan	Fig 125	Pg 72
Oil level sensor	B6254	Oil pan		
Oil pressure control valve	Y6384	<i>N52K engine</i> : Right lower crankcase, toward front	Fig 45	Pg 50
Oil pressure switch	B6231	<i>M54 engine</i> : Left front of cylinder head	Fig 35	Pg 46
Oil pressure switch	B6231	<i>N52 engine</i> : Left front of cylinder head	Fig 38	Pg 48
Oil pressure switch	B6231	<i>N54 engine</i> : Left side of engine underneath intake manifold	Fig 48	Pg 51
Oil pressure switch	B6231	<i>N62 engine</i> : Right front of right cylinder head	Fig 58	Pg 55
Oil pressure switch	B6231	<i>N62TU engine</i> : Right front of right cylinder head	Fig 65	Pg 57
Oil temperature sensor	B6238	<i>M54 engine</i> : Left front of cylinder head	Fig 35	Pg 46
Outside temperature sensor	B21a	Underneath engine on lower splash shield	Fig 126	Pg 72
Oxygen sensor		see Oxygen sensors in this repair group		Pg 57
Oxygen sensor connectors	X62101 X62102 X62201 X62202	Top or sides of engine	Fig 38 Fig 67 Fig 69 Fig 74 Fig 75	Pg 48 Pg 57 Pg 58 Pg 59 Pg 59
Panorama		see Sunroof		
Park / neutral position switch		see Neutral safety switch		
Park distance control (PDC) module	A81a	Spare tire well	Fig 22 Fig 25	Pg 42 Pg 44
Park distance control sensor, rear	B34a - B37a	Rear bumper		
Park distance control sensors, front	B30a - B33a	Front bumper		

Electrical Component Locations ECL-13

Electrical components table

Table b. Component locations

Component	Code	Location	Fig #	Page #
Parking brake warning switch	S31	Base of parking brake handle, under center console		
Passenger airbag warning light	H23	Front dome light unit	Fig 76	Pg 59
PDC		see Park distance control (PDC) entries		
Power steering		see Steering see also Active steering		
Power steering fluid level switch	S65	Power steering fluid reservoir		
Radiator outlet coolant temperature sensor		see Engine coolant temperature sensor, radiator outlet		
Radiator shutter drive motor	M1997	Below center of radiator		
Radiator shutter solenoid	Y13864	Underneath center of radiator behind front bumper		
Rain and light sensor	B57b	Top center of windshield	Fig 22 Fig 23 Fig 76	Pg 42 Pg 43 Pg 59
RDC		see Tire pressure control (RDC) entries		
Rear power distribution and fuse panel	A46	Above battery, right rear trunk or cargo compartment, behind trim	Fig 2 Fig 3	Pg 23 Pg 23
Rear window defogger	E9	Rear window		
Rear window defogger relay	I01061	Rear power distribution and fuse panel, right rear trunk or cargo compartment, behind trim	Fig 2 Fig 3	Pg 23 Pg 23
Rear window lock motor	M96	<i>Sports Wagon:</i> Rear window lower edge, integrated with rear window wiper assembly		
Rear window release button	S147a	<i>Sports Wagon:</i> Base of rear window		
Relay, terminal 15	I01069	Rear power distribution and fuse panel, right rear trunk or cargo compartment, behind trim	Fig 2 Fig 3	Pg 23 Pg 23
Relay, terminal 30g	I01068	Rear power distribution and fuse panel, right rear trunk or cargo compartment, behind trim	Fig 2 Fig 3	Pg 23 Pg 23
Resonance valve		see Variable intake manifold (DISA) controllers		
Ride height control (EHC)		see EHC (air suspension) entries		
Roller cover position switch	S562	<i>Sports Wagon:</i> Right D-pillar		
rpm sensor	Y8616	Right side SMG transmission	Fig 109	Pg 68
Run flat indicator switch	I01137	Center console switch center (SZM)		
Safety and gateway module (SGM)	A220	Behind glove compartment	Fig 85	Pg 62
Satellite radio	N47	Trunk or cargo compartment, left rear behind trim	Fig 114	Pg 69
Seat belt pretensioner, driver	G39	Base of driver seat backrest, left		
Seat belt tensioner, pyrotechnic, left, right, front, rear	G12a G13a G25 G26	Base of seat belt buckle, left, right, front or rear seats		
Seat components		see Seat components in this repair group		Pg 64
Seat control module, front seat	A186 A187	Underneath front seat	Fig 22 Fig 23	Pg 42 Pg 43
Seat control switch, front	S50 S56	Outboard edge of front seat, left, right		
Seat heater coil, left, right, front, rear	E56a - E59a E65a - E68a	Seat cushion, backrest, left, right, front or rear seats		

ECL-14 Electrical Component Locations

Electrical components table

Table b. Component locations

Component	Code	Location	Fig #	Page #
Seat heating module, front seat	A186a A187a	Underneath front seat	Fig 22 Fig 23	Pg 42 Pg 43
Seat heating switch, front, left, right	S838 S840	Center console switch center (SZM)		
Seat heating switch, rear, left, right	S68 S69	Rear of center console between front seats		
Seat occupancy detection module, front seats	A221 A222	Front seat cushion	Fig 105	Pg 67
Seat occupancy sensor pad	I01023	Seat cushion	Fig 105	Pg 67
Seatbelt buckle contact microswitch, front	S58a S59a	Front seat belt buckle, left, right		
Secondary air injection pump	M63	Behind front bumper, right side	Fig 133	Pg 74
Secondary air injection pump relay	K6304a	E-box, right rear engine compartment	Fig 5 Fig 10	Pg 29 Pg 32
Selector angle sensor (SMG)	B6573	Top of SMG transmission <i>see also</i> Crankshaft sensor	Fig 109	Pg 68
Sequential manual gearbox components		<i>see SMG components</i> in this repair group.		Pg 67
Servotronic valve	B15a	Underneath front subframe at steering shaft	Fig 127	Pg 72
SGM		<i>see</i> Safety and gateway module (SGM)		
Slide-in compartment		<i>see</i> Ignition key slot		
SMG components		<i>see SMG components</i> in this repair group.		Pg 67
SMG control module	A70010	E-box, right rear engine compartment	Fig 9	Pg 30
SMG hydraulic pump relay	K6318	E-box, right rear engine compartment	Fig 11	Pg 33
SMG paddle shifter buttons	I01028 I01030	Above steering column spokes		
Solar sensor	B66	Front center of dashboard		
Sound system control panel cooling fan	M455	Sound system control panel		
Speaker, center dashboard	H77a	Center dashboard		
Speaker, emergency	H82	Underneath steering column		
Speaker, high-range (tweeter), front right, left	H50a H59a	Front of window frame, front door, right, left	Fig 93	Pg 64
Speaker, high-range (tweeter), rear right, left	H53 H56	<i>Sedan:</i> Rear parcel shelf behind trim, right, left	Fig 14	Pg 39
Speaker, high-range (tweeter), rear right, left	H53 H56	<i>Sports Wagon:</i> Rear headliner behind trim, right, left	Fig 18	Pg 40
Speaker, low-range (subwoofer), left, right	H75 H76	Underneath rug under front seat, left, right	Fig 90	Pg 63
Speaker, midrange, front door, left, right	H68a H69a	Center of front door behind trim, left, right		
Speaker, mid-range, rear door, left, right	H78a H79a	Front of rear door behind trim, left, right	Fig 94	Pg 64
Speaker, midrange, rear left, right	H70a H71a	<i>Sedan:</i> Rear parcel shelf behind trim, left, right	Fig 14	Pg 39
Speaker, midrange, rear left, right	H70a H71a	<i>Sports Wagon:</i> Rear headliner behind trim, right, left	Fig 18	Pg 40
Speed (rpm) sensor		<i>see</i> Crankshaft sensor		

Electrical Component Locations ECL-15

Electrical components table

Table b. Component locations

Component	Code	Location	Fig #	Page #
SRS		see Airbag entries see also Crash safety module		
START - STOP button	S2a	Dashboard, right of steering column		
Starter	M6510a	V8 engine: Right side of engine under exhaust manifold		
Starter	M6510 M6510a	6-cylinder engine: Left side of engine under intake manifold	Fig 31 Fig 48	Pg 45 Pg 51
Steering angle sensor		Steering column switch center (SZL)		
Steering column adjustment motor	M137	Left side of steering column	Fig 79	Pg 60
Steering column switch center (SZL)	A72	Behind steering wheel on steering column		
Steering lock	M137a	Underneath steering column		
Steering module		see Active steering control module		
Steering wheel heater	I01118	Steering wheel rim		
Steering wheel heater switch	I01122	Stalk switch, left of steering column		
Steering wheel module	I01004	Center spoke, steering wheel		
Stepper motor		see Climate control components in this repair group		Pg 41
Steptronic switch		see Automatic transmission steptronic switch		
Sunroof module	A33a A33b	to 03 / 2007: Behind glove compartment	Fig 86	Pg 62
Sunroof module	A33b	from 03 / 2007: Spare tire well	Fig 25	Pg 44
Sunroof motor	M14105	Sports Wagon: Above center of windshield, behind headliner		
Sunroof switch	S38a	Front dome light unit	Fig 76	Pg 59
Sunshade motor, rear window	M74	Underneath rear parcel shelf		
Supplemental restraint system		see Crash entries		
Tailgate inner release button	S237	Bottom of tailgate, right of latch		
Tailgate lift module	A204a	Sports Wagon: Spare tire well	Fig 24 Fig 25	Pg 43 Pg 44
Tailgate lift motor	M10	Cargo compartment, left rear behind trim	Fig 119	Pg 70
Tailgate lock motor	M17b	Tailgate		
Tailgate lock motor, soft close	M407	Tailgate lock striker		
Tailgate lock switch	S172	Left side tailgate		
Tailgate opening angle sensor	S236	Tailgate lift strut, left	Fig 119	Pg 70
Tailgate release	S117	Center tailgate above license plate		
Tailgate release button, interior	S204	Edge of driver door post		
Tailgate soft-close relay	K207	Sports Wagon: Spare tire well	Fig 24 Fig 25	Pg 43 Pg 44
Tailpipe flap actuator	Y198	Trunk or cargo compartment, left rear behind trim	Fig 111 Fig 121	Pg 68 Pg 71
TCM		see Automatic transmission control module (TCM)		
Telematics control module (TCU)	U400b	Sports Wagon: Floor of cargo compartment		
Telematics control module (TCU)	U400b	Sedan: Left rear trunk, behind trim	Fig 114	Pg 69
Telephone		see 650 Radio		
Telephone compensator	N27	Trunk or cargo compartment, left rear behind trim	Fig 121	Pg 71
Telephone eject box	A117a	Center console, between front seats		
Telephone transceiver	U400	Sedan: Left rear trunk, behind trim		

ECL-16 Electrical Component Locations

Electrical components table

Table b. Component locations

Component	Code	Location	Fig #	Page #
Telephone transceiver	U400a	<i>Sports Wagon</i> : Floor of cargo compartment		
Temperature sensor, evaporator	B14a	IHKA housing, underneath top dashboard trim	Fig 21	Pg 41
Temperature sensors, heater core	B11a B12a	Top of IHKA housing, underneath top dashboard trim	Fig 20	Pg 41
Thermostat, coolant	B6279 Y6279	<i>M54 engine</i> : Coolant manifold, front of engine	Fig 37	Pg 47
Thermostat, engine coolant	Y6279	<i>N62 engine</i> : Coolant manifold, front of engine	Fig 57	Pg 55
Thermostat, engine coolant	Y6279	<i>N62TU engine</i> : Coolant manifold, front of engine	Fig 65	Pg 57
Throttle valve	Y6390	<i>M54 engine</i> : Underneath intake manifold	Fig 33	Pg 49
Throttle valve	Y6390	<i>N52 engine</i> : Underneath intake manifold	Fig 40	Pg 49
Throttle valve	Y6390	<i>N62 engine</i> : Front of intake manifold	Fig 57	Pg 55
Throttle valve	Y6390	<i>N62TU engine</i> : Front of intake manifold	Fig 66	Pg 57
Throttle valve	Y63900	<i>N52K engine</i> : Underneath intake manifold	Fig 41	Pg 49
Throttle valve	Y63900	<i>N54 engine</i> : Underneath intake manifold	Fig 50	Pg 51
Tilt sensor		see Anti-theft entries		
Tire pressure control (RDC) antenna	B46a	Underneath vehicle, below driver seat	Fig 138	Pg 75
Tire pressure control (RDC) module	A85a	Trunk or cargo compartment, underneath spare tire	Fig 24	Pg 43
Tire pressure control (RDC) sensor	B43b B44b B45b B47b	Inside each wheel	Fig 132	Pg 73
Tire pressure control (RDC) transmitter	B43a B44a B45a B47a	Left front, right front, left rear, right rear fender housing	Fig 129 Fig 141	Pg 73 Pg 76
Towing hitch motor	M8540a	Under rear bumper		
Trailer hitch module	A195a	<i>Sports Wagon</i> : Spare tire well	Fig 25	Pg 44
Trailer module	A6	<i>Sports Wagon</i> : Spare tire well	Fig 25	Pg 44
Transfer case control module	A70006	Underneath carpet in front of passenger seat	Fig 88	Pg 62
Transmission		see Automatic transmission entries see also SMG entries		
Trunk lid lock motor	M17b	Trunk lid	Fig 117	Pg 70
Trunk lid lock switch	S172	Left side trunk lid	Fig 117	Pg 70
Trunk lid release	S117	Center trunk lid above license plate		
Trunk lid release button, interior	S204	Edge of driver door post		
Turn signal / high beam switch		Steering column switch center (SZL), right side		
Turn signal, front left, right	H4a H7a	Headlight assembly, left, right		
Turn signal, side, right, left	H8a H9a	Side of front fender, right, left		
Ultrasonic detector		see Interior movement sensor (ultrasonic detector)		
USB hub	A873	Trunk or cargo compartment, left rear behind trim		
Vacuum pump relay	K213	Behind right side dashboard	Fig 77	Pg 60
Valvetronic control module	A60210	E-box, right rear engine compartment	Fig 53	Pg 53

Electrical Component Locations ECL-17

Electrical components table

Table b. Component locations

Component	Code	Location	Fig #	Page #
Valvetronic actuator	M6351 M6352	N62 engine: Top center of cylinder head cover	Fig 53 Fig 54 Fig 56	Pg 53 Pg 54 Pg 54
Valvetronic actuator	M6353	N52 engine: Top center of cylinder head cover	Fig 38 Fig 44	Pg 48 Pg 50
Valvetronic eccentric shaft sensor	B60213	N52 engine: Top front of cylinder head cover	Fig 44	Pg 50
Valvetronic eccentric shaft sensors, left, right	B60213 B60223	V8 engine: Rear of cylinder heads	Fig 54 Fig 56 Fig 61 Fig 62	Pg 54 Pg 54 Pg 56 Pg 56
Valvetronic relay	K6319	E-box, right rear engine compartment	Fig 8	Pg 30
Valvetronic sensor		see Eccentric shaft sensor		
Vanity mirror switch, left, right	S77 S78	Behind sun visor, left, right		
VANOS solenoid, exhaust	Y6276	M54 engine: Front of cylinder head	Fig 37	Pg 47
VANOS solenoid, intake	Y6275	M54 engine: Front of cylinder head	Fig 36	Pg 47
VANOS solenoid, intake, exhaust	Y6275 Y6276	N52 engine: Front of cylinder head	Fig 42	Pg 49
VANOS solenoid, intake, exhaust	Y6275 Y6276	N54 engine: Front of cylinder head	Fig 51	Pg 52
VANOS solenoids, left cylinder head	Y6283 Y6284	N62 engine: Front of left cylinder head	Fig 55	Pg 54
VANOS solenoids, left cylinder head	Y6283 Y6284	N62TU engine: Front of left cylinder head	Fig 64	Pg 56
VANOS solenoids, right cylinder head	Y6281 Y6282	N62 engine: Front of right cylinder head	Fig 57	Pg 55
VANOS solenoids, right cylinder head	Y6281 Y6282	N62TU engine: Front of right cylinder head	Fig 65	Pg 57
Variable intake manifold (DISA) solenoid	Y6167	M54 engine: Rear of engine on intake manifold	Fig 34	Pg 46
Variable intake manifold (DISA) solenoid	Y6167	N62 engine: Rear of engine on intake manifold	Fig 59	Pg 55
Variable intake manifold (DISA) solenoid	Y6540 Y6541	N52 engine: Intake manifold	Fig 38 Fig 39	Pg 48 Pg 49
Variable intake manifold (DISA) solenoid	Y6540 Y6541	N62TU engine: Rear of engine on intake manifold, right, left	Fig 63	Pg 56
Video module	A197	Left side trunk or cargo compartment behind trim	Fig 121	Pg 71
Visor motor	M14104	Sports Wagon: Behind rear dome light unit		
Volute spring		see Airbag and horn contact (volute spring)		
VTG actuator		see xDrive clutch (VTG) actuator		
Washer fluid level switch	S136	Washer fluid reservoir in front of left front wheel, behind wheel housing liner	Fig 131	Pg 73
Washer pumps	M4 M7 M95	Washer fluid reservoir in front of left front wheel, behind wheel housing liner	Fig 131	Pg 73
Washer switch		Steering column switch center (SZL), right side		
Wastegate solenoid	Y6039 Y6723	N54 engine: Right side of cylinder head	Fig 72	Pg 58
Wheel speed sensor		see ABS wheel speed sensor see also 340 Brakes		

ECL-18 Electrical Component Locations

Harness connectors, wire splices (X connectors)

Table b. Component locations

Component	Code	Location	Fig #	Page #
Window regulator motor, left front, right front	M21 M23	Center of front door inside door cavity, left, right	Fig 93	Pg 64
Window regulator motors, left rear, right rear	M20a M22a	Center of rear door inside door cavity, left, right	Fig 94	Pg 64
Window switch, driver		see Door switch cluster, driver door		
Window switch, passenger	S127	Passenger door armrest		
Window switch, rear	S128a S129a	Rear door armrest, left, right		
Windshield washer nozzle heater, left, right	E51a E52a	Base of windshield on engine hood		
Windshield wiper relay	K11	E-box, right rear engine compartment	Fig 5 Fig 8 Fig 11	Pg 29 Pg 30 Pg 33
Wiper motor, rear window	M94	<i>Sports Wagon:</i> Rear window lower edge, integrated with rear window lock		
Wiper motor, windshield	M3a	Underneath plenum chamber cover, left rear engine compartment	Fig 38 Fig 53	Pg 48 Pg 53
Wiper relay, rear window	K91	<i>Sports Wagon:</i> Spare tire well	Fig 24 Fig 25	Pg 43 Pg 44
Wiper switch		Steering column switch center (SZL), right side		
X connector		see Harness connectors, wire splices (X connectors) in this repair group.		
X ground		see Grounds in this repair group		
xDrive classification resistor	R8554	Rear of transmission housing on transfer case	Fig 139	Pg 75
xDrive clutch (VTG) actuator	M8533	Rear of transmission housing on transfer case	Fig 139	Pg 75
xDrive control module		see Transfer case control module		
Yaw sensor, active steering		see Active steering yaw sensor		

Harness connectors, wire splices (X connectors)

BMW electrical components connect to the electrical harness via X connectors. Most connectors bear the same numerical designation as the component they attach to. For example, the connector for Y6279 (coolant thermostat) is designated X6279.

Note that grounds are also designated with X numbers. See **Grounds** in this repair group.

Table c lists harness connectors and wire splices not attached directly to components and gives brief location information for each.

Table c. X connectors

Code	Description and application	Location	Fig #	Page #
X10116	Wire splice	Behind right side dashboard		
X10183	Wire splice	Behind right side dashboard		
X10184	Wire splice	Behind right side dashboard		
X1019	Wire splice	Behind right side dashboard		
X10547	Wire splice	Behind right side dashboard		

Electrical Component Locations ECL-19

Harness connectors, wire splices (X connectors)

Table c. X connectors

Code	Description and application	Location	Fig #	Page #
X10550	Wire splice	Behind right side dashboard, base of A-pillar		
X10551	PT-CAN bus wire splice	<i>Sports Wagon:</i> Right side cargo compartment behind trim	Fig 123	Pg 71
X10552				
X1091	Wire splice	Right side center console		
X1101	Wire splice	Behind instrument cluster		
X11212	12v power wire splice	Behind right side dashboard		
X11273	Ground splice	Trunk lid behind trim		
X113	Connector, right front wheel speed sensor	Behind right front wheel housing liner		
X114	Connector, left front wheel speed sensor	Behind left front wheel housing liner	Fig 128	Pg 72
X11544	Wire splice	Right side center console		
X13125	Wire splice	Left side center console		
X13276	Ground splice	Tailgate behind trim		
X13502	Wire splice	Behind right side dashboard		
X13637	Wire splice	Behind instrument cluster		
X13796	Wire splice	Behind right side dashboard		
X13887	Wire splice	Behind right side dashboard		
X13895	Ground splice	Behind right taillight	Fig 115	Pg 69
X14023	F-CAN bus wire splice	Right front floor underneath rug	Fig 87	Pg 62
X14024				
X14174	Wire splice	Right side center console		
X14197	Ground splice	Behind right side dashboard		
X14252	Wire splice	Right side center console		
X14276	Wire splice	Right side center console		
X15009	F-CAN bus wire splice	Right C-pillar behind trim	Fig 92	Pg 63
X15010				
X1662	Ground splice	Behind right side dashboard		
X1663	Ground splice	Behind right side dashboard		
X16678	Wire splice	Passenger seat rail, underneath rug	Fig 89	Pg 63
X16679				
X1680	Wire splice	<i>to 09 / 2004:</i> Behind instrument cluster		
X1681		<i>from 03 / 2005:</i> Underneath left side dashboard		
X1720	Wire splice	Right side center console		
X1727	Speaker wire splice	Behind right side dashboard		
X1728				
X18063	Ground splice	Behind right side dashboard		
X181	Wire splice	Behind right side dashboard		
X18121	Wire splice, basic body module	Behind right side dashboard		
X18122	Wire splice, basic body module	<i>Sedan:</i> Behind right side dashboard <i>Sport Wagon from 03 / 2005:</i> Right D-pillar behind trim		
X18132	Ground splice	Behind instrument cluster		
X18139	Ground splice	Behind right side dashboard		
X18145	Connector, left front brake pad sensor	Behind left front wheel housing liner	Fig 128	Pg 72
X18146	Connector, right rear brake pad sensor	Behind right rear wheel housing liner		

ECL-20 Electrical Component Locations

Harness connectors, wire splices (X connectors)

Table c. X connectors

Code	Description and application	Location	Fig #	Page #
X1816	Ground splice	to 03 / 2005: Behind right side dashboard from 03 / 2005: Right C-pillar behind trim		
X186	Wire splice	Behind right side dashboard		
X18726	Ground splice	Behind instrument cluster		
X18740	Ground splice	Behind right side dashboard		
X18749	Wire splice	Behind right side dashboard		
X18750	Ground splice	Behind right side dashboard		
X18751	Ground splice	to 09 / 2004: Behind instrument cluster from 03 / 2005: Underneath left side dashboard		
X2350	Terminal 31 support	E-box, right rear engine compartment	Fig 5	Pg 29
X243	Wire splice	Behind right side dashboard		
X376	Connector, right rear wheel speed sensor	Behind right rear wheel housing liner		
X377	Connector, left rear wheel speed sensor	Behind left rear wheel housing liner		
X60531 X60541	Connector, engine electronics	E-box, right rear engine compartment	Fig 5	Pg 29
X62101 X62102 X62201 X62202	Oxygen sensor connectors	Top or sides of engine	Fig 38 Fig 67 Fig 69 Fig 74 Fig 75	Pg 48 Pg 57 Pg 58 Pg 59 Pg 59
X6450 X6460	Wire splice, engine management components	Top right center of engine, between valve cover and intake manifold.		
X64541 X64542	Ground splices	Right of E-box, right rear engine compartment	Fig 5	Pg 29
X793	Wire splice	Right C-pillar behind trim	Fig 92	Pg 63
X806	Wire splice	to 09 / 2004: Behind instrument cluster from 03 / 2005: Underneath left side dashboard		
X834	Ground splice, left rear door	Behind left rear door panel		
X835	Ground splice, right rear door	Behind right rear door panel		
X849	Ground splice, driver door	Behind driver door panel		
X875	Wire splice	Behind right side dashboard		
X891	Ground splice, passenger door	Behind passenger door panel		
X908	Wire splice	Behind right side dashboard		
X913	Ground splice	Behind and below left headlight		
X923	Ground splice	Behind and below right headlight		
X273 - X274	Rear door electronics harness connector, left, right	Front of door, B-pillar, left, right	Fig 94	Pg 64
X256 - X257	Front door electronics harness connector, right, left	Front of door, A-pillar, right, left	Fig 93	Pg 64
X942	Ground splice	Behind right end of front bumper		
X943	Ground splice	Behind right side dashboard		

FUSE LOCATIONS AND RATINGS

Fuse panels

For a description of the power supply system, see **600 Electrical System-General**.

⚡ Fuses and fusible links in 5 Series vehicle are located as follows:

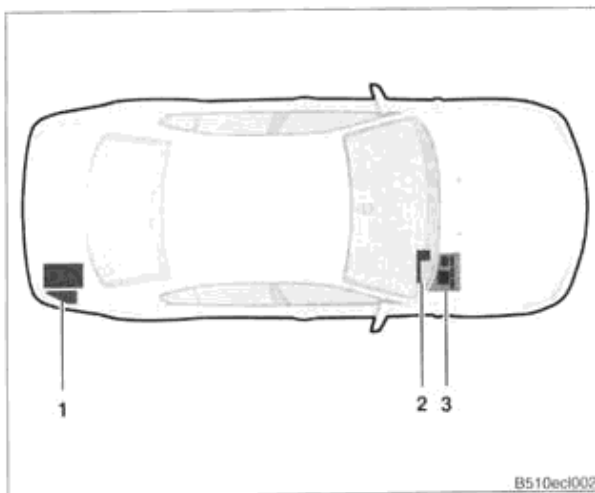
1. **A46** Rear power distribution and fuse panel in trunk or cargo compartment:
 - High amperage fuses on back of panel. See **Rear power distribution and fuse panel (A46)** in this repair group.
 - Rear fuses. See **Rear fuses** in this repair group.
2. **A41** Front fuse panel under right side dashboard, behind glove compartment. See **Front fuses** in this repair group.
3. E-box fuse carriers, right rear engine compartment: See **E-box fuses, relays and modules** in this repair group.

Rear power distribution and fuse panel (A46)

⚡ Sedan:

- Remove trunk floor liner.
- Twist trunk right side trim plastic retainers (arrows) 90° to remove.
- Slide right side trunk trim backward and remove to expose rear fuse panel.

⚡ Sport Wagon: Open right cargo compartment cover (arrow). Peel rear fuse panel cover up to expose panel.



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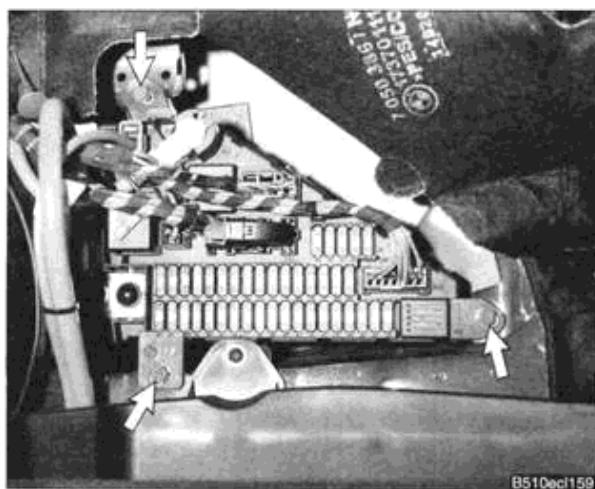
B510ecl165



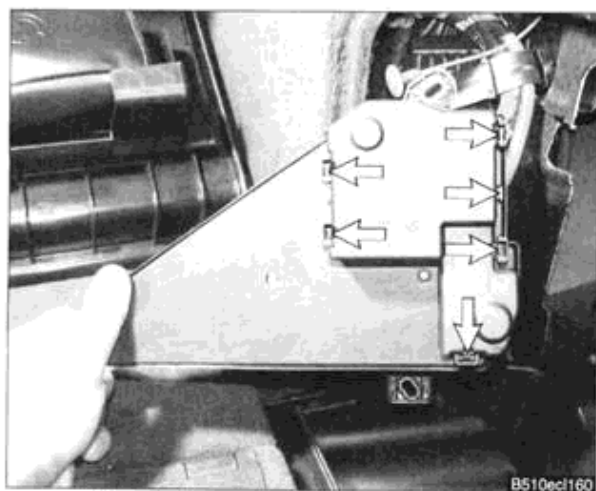
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ECL-22 Electrical Component Locations

Rear power distribution and fuse panel (A46)



- Remove panel mounting bolts (**arrows**) to gain access to high amperage fuses (fusible links) in back of panel.



- Using thin-bladed screwdriver, pry back lock tabs (**arrows**) to remove fusible link cover.

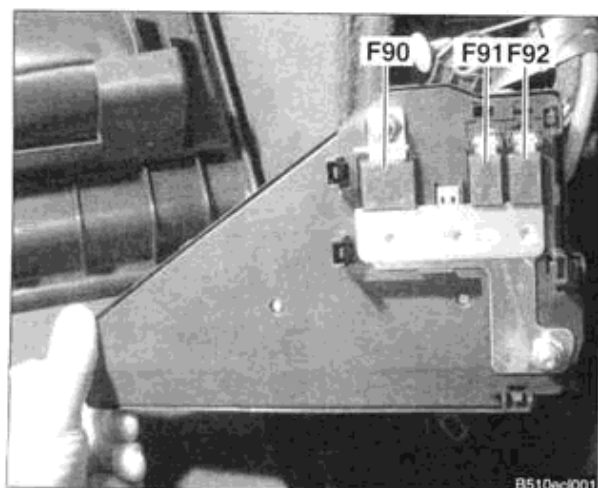


Fig 1 Right rear trunk or cargo compartment

- A46** Back of fuse panel.

Ratings for fusible links (high amperage fuses) are in **Table d**

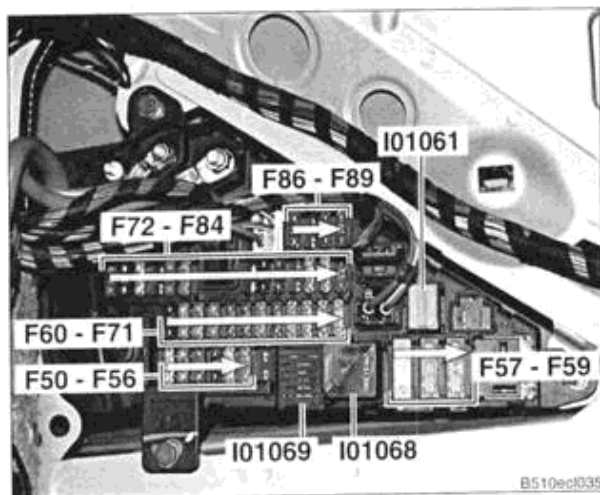
Table d. High amperage fuses in rear power distribution and fuse panel (A46)

Fuse	Rating in amps	Protected circuits
F90	200	Front fuse panel (A41)
F91	100	N52: Valvetronic power supply V8: Integrated supply module (IVM) (A6009)
F92	100	Auxiliary heater (not USA)

Electrical Component Locations ECL-23

Rear power distribution and fuse panel (A46)

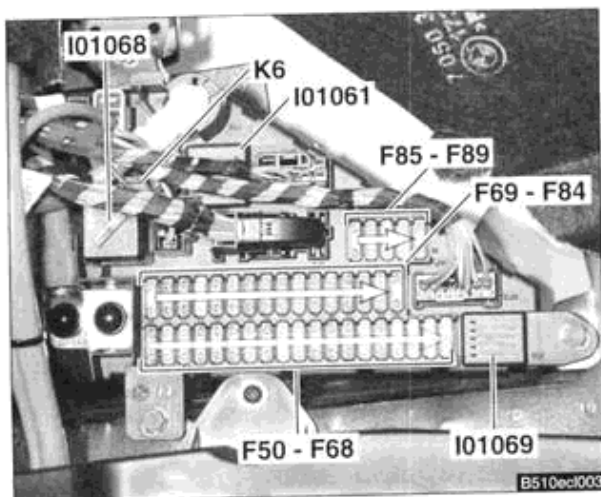
Fig 2 Right rear trunk or cargo compartment
(to 09 / 2005)



◀ **A46** Front of fuse panel.

- **F50 - F89** Fuses
See fuse ratings in **Table e**.
- **I01061** Rear window defogger relay
- **I01068** Terminal 30g relay
- **I01069** Terminal 15 relay

Fig 3 Right rear trunk or cargo compartment
(from 09 / 2005)

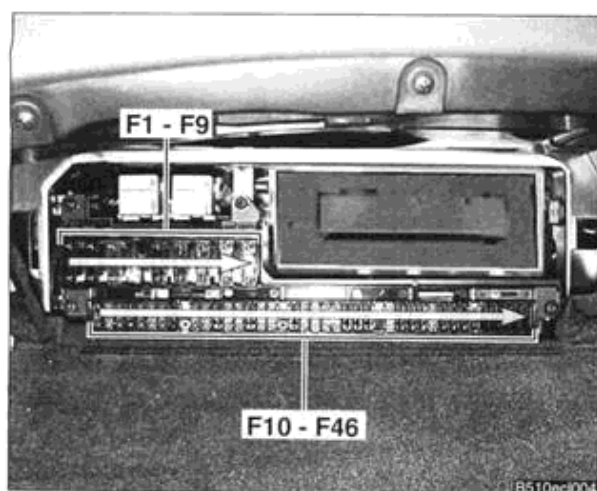


◀ **A46** Front of fuse panel.

- **F50 - F89** Fuses
See fuse ratings in **Table f**.
- **I01061** Rear window defogger relay
- **I01068** Terminal 30g relay
- **I01069** Terminal 15 relay
- **K6** Headlight washer relay

ECL-24 Electrical Component Locations

Rear fuses



Rear fuses

Table e. Rear fuses to 09 / 2005

Fuse	Rating in amps	Protected circuits
F50	20	Fuel pump
F51	5	Anti-theft alarm Comfort access door Electrochromic mirror
F52	10	Micro-power module
F53	7.5	to 09 / 2004: Trunk lid or tailgate soft-close relay 09 / 2004 - 09 / 2005: Comfort access Outer door handle electronic modules
F54	20	Load-shedding (unloader) relay terminal 15
F55	5	Rain and light sensor
F56		not used
F57	20	Micro-power module
F58	40	Rear window defogger
F59	5	Antenna tuner
F60		not used
F61	20	Front cigar lighter Glove compartment 12v utility socket
F62	5	Load-shedding (unloader) relay terminal 15
F63	5	Electrochromic mirror Park distance control (PDC)
F64	10	Central information display (CID) iDrive controller
F65	10	Head-up display Headset module

Table e. Rear fuses to 09 / 2005

Fuse	Rating in amps	Protected circuits
F66	5	DSC Transfer box
F67	10	to 03 / 2006: Satellite radio Video module
F68	5	to 03 / 2006: Seats
F69	5	Park distance control (PDC)
F70	5	Adaptive headlights
F71	20	Rear wiper
F72	40	EHC (air suspension) compressor
F73	30	Trailer
F74	20	Trailer
F75	30	Transfer box
F76	40	Trunk lid lift
F77	5	Antenna
F78		not used
F79	7.5	EHC (air suspension)
F80	30	Amplifier
F81		not used
F82	20	Rear cigar lighter Rear 12v utility socket
F83	20	Sunroof
F84	10	Active cruise control
F85		not used
F86	15	Transmission
F87		not used
F88	30	Center console switch center (SZM)
F89	15	Gearshift lighting Telephone eject box

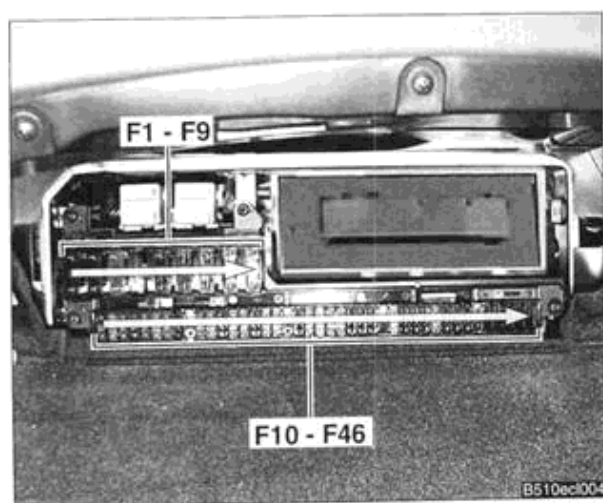


Table f. Rear fuses from 09 / 2005

Fuse	Rating in amps	Protected circuits
F50	30	Headlight washer pump
F51	5	Anti-theft alarm Comfort access Electrochromic mirror
F52	40	EHC (air suspension) compressor
F53	30	Active seat backrest
F54	30	Rear window defogger
F55	40	Trunk lid lift
F56	5	Rain and light sensor
F57	7.5	Climate control Washer system
F58	20	Rear wiper
F59	5	Antenna
F60	10	DVD changer
F61	7.5	Rear arm-rest cooler box
F62	30	Window control
F63	20	Climate control
F64	15	Climate control
F65	20	Trailer connection
F66	20	Window control
F67	20	Window control
F68	20	from 03 / 2006: Left doors soft-close
F69	5	Park distance control (PDC)
F70	10	Active cruise control
F71	30	Center console switch center (SZM)
F72	20	Fuel pump

Table f. Rear fuses from 09 / 2005

Fuse	Rating in amps	Protected circuits
F73	30	09 / 2005 - 09 / 2007: Amplifier
	40	from 09 / 2007: Amplifier
F74	5	09 / 2005 - 09 / 2007: DSC Seat control
	7.5	from 09 / 2007: Seats
F75	10	Radio Satellite radio Video module
F76	10	Dynamic drive (active stabilizer)
F77	10	Cooling fan Head-up display
F78	5	DSC Transfer case
F79	10	Central information display (CID) iDrive
F80	10	Gearshift light Telephone
F81	7.5	EHC (air suspension)
F82	7.5	Tire pressure control (RDC)
F83	30	Active backrest
F84	15	Transmission
F85	7.5	Transmission
F86	40	Active steering
F87	20	Front cigar lighter Glove compartment 12v utility socket
F88	20	Rear 12v utility socket
F89	5	Electrochromic mirror Load-shedding (unloader) relay terminal 15

ECL-26 Electrical Component Locations

Front fuses



Front fuses

- ◀ Open glove compartment and twist plastic retainers (**arrows**) 90° to release fuse panel cover.

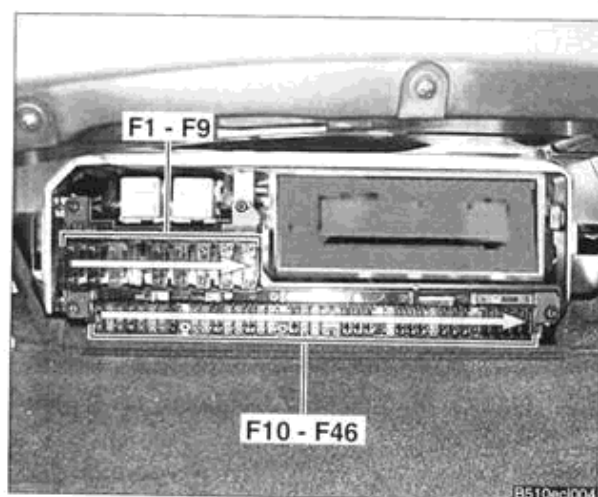


Fig 4 In glove compartment

- ◀ **A41** Front fuse panel.

Ratings for front fuses are in **Table g** and **Table h**.

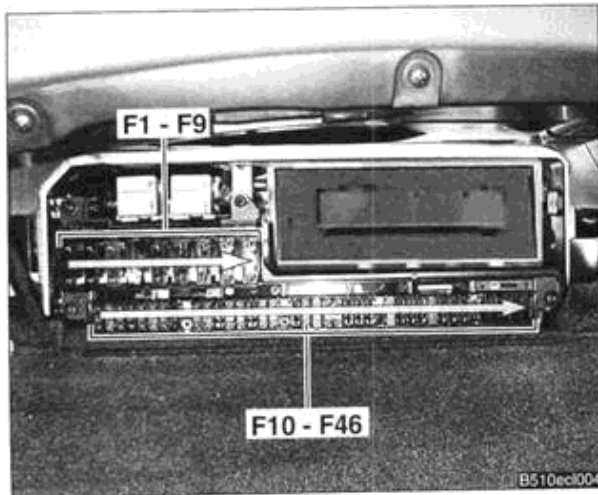


Table g. Front fuses to 09 / 2005

Fuse	Rating in amps	Protected circuits
F1	50	DSC
F2	60	Secondary air injection pump relay
F3	40	Blower output stage
F4	40	Active steering
F5	50	Light module
F6	50	Light module
F7	30	Car access system (CAS)
F8	60	<i>6-cylinder engines:</i> A2076 B+ power distribution Engine electronics fuse carriers DME main relay Engine control module (ECM) <i>V8 engine, no SMG transmission:</i> Integrated supply module (IVM) <i>V8 engine, SMG transmission:</i> A8683 Engine electronics fuse carrier SMG transmission hydraulic pump relay
F9	60	Electric cooling fan
F10	30	Driver door module
F11	5	Basic body module
F12	30	Passenger door module
F13	7.5	Instrument cluster
F14	30	Driver seat control
F15	5	Car access system (CAS)
F16	30	Windshield wiper relay
F17		not used
F18	30	Headlight washer relay

Table g. Front fuses to 09 / 2005

Fuse	Rating in amps	Protected circuits
F19	5	Gear indicator lighting
F20		not used
F21	30	Passenger seat control
F22	30	Basic body module
F23		not used
F24	30	Basic body module
F25	30	DSC
F26	7.5	Climate control
F27	30	Basic body module
F28	20	Steering column switch cluster
F29	10	OBD II plug Safety and gateway module
F30	15	Climate control
F31	30	Driver seat module
F32	10	Dynamic drive
F33	30	Passenger seat module
F34	30	Radio (CCC / M - ASK)
F35	5	Navigation
F36		not used
F37	10	TCU Telephone eject box ULF
F38	10	CD changer
F39	5	Steering column switch cluster
F40	10	DVD changer
F41	7.5	<i>from 03 / 2005:</i> Instrument cluster
F42		not used
F43		
F44		
F45		
F46		

ECL-28 Electrical Component Locations

Front fuses

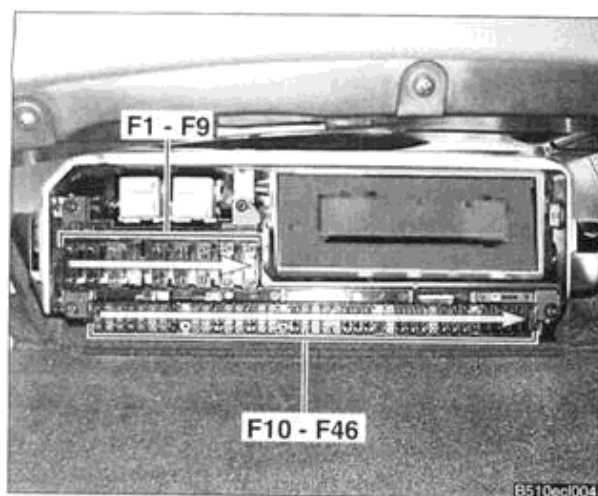


Table h. Front fuses from 09 / 2005

Fuse	Rating in amps	Protected circuits
F1	50	DSC
F2		not used
F3	40	Blower output stage
F4		not used
F5	40	Light module
F6	40	Light module
F7	30	Car access system (CAS)
F8	60	<i>6-cylinder engines:</i> A2076 B+ power distribution Engine electronics fuse carriers DME main relay Engine control module (ECM) <i>V8 engine, no SMG transmission:</i> Integrated supply module (IVM) <i>V8 engine, SMG transmission:</i> A8683 Engine electronics fuse carrier SMG transmission hydraulic pump relay
F9	60	Electric cooling fan
F10	30	Body gateway module
F11	5	Basic body module
F12	30	Body gateway module
F13	30	Transfer case control module
F14	30	Driver seat control
F15	5	Car access system (CAS)
F16	30	Windshield wiper relay
F17	5	Steering column switch cluster
F18	30	Body gateway module

Table h. Front fuses from 09 / 2005

Fuse	Rating in amps	Protected circuits
F19	5	Gear indicator lighting
F20	20	On-board diagnostics
F21	30	Passenger seat control
F22	30	Basic body module
F23	30	Engine control module
F24	30	Basic body module
F25	30	DSC
F26	20	Load-shedding (unloader) relay
F27	30	Basic body module
F28	20	Steering column switch cluster
F29	10	Body gateway module OBD II plug
F30	20	Fuel pump relay
F31	10	Engine control module
F32	10	Driver door switch cluster Outside mirror control
F33	30	Instrument cluster Seat heating
F34	20	Radio (CCC / M - ASK)
F35	5	Navigation
F36	10	Comfort access control module Outer door handle electronic modules
F37	5	TCU Telephone eject box ULF
F38	5	CD changer
F39	5	Steering column switch cluster
F40	10	DVD changer
F41	7.5	Instrument cluster
F42		not used
F43		
F44		
F45		
F46		

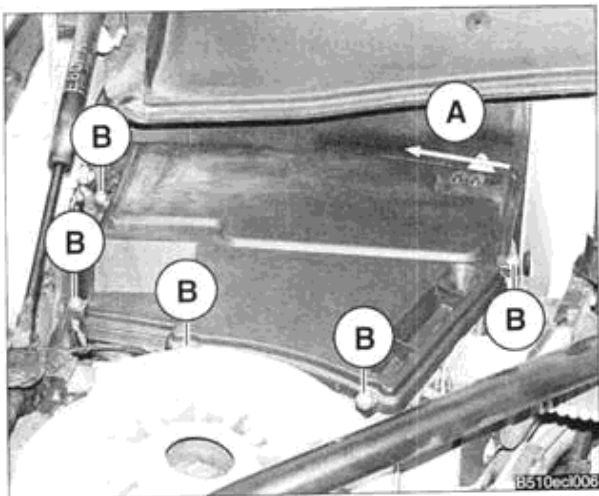
E-box cover, removing

- Working at right rear of engine compartment: Remove right side cabin microfilter housing and plenum cover. See **Engine Covers** in 020 Maintenance.



Working at E-box cover:

- Slide lock (A) in direction of arrow to unlock cover.
- Loosen cover hold-down screws (B) approx. 1/2 in each and remove cover. Note that these are captured screws. Loosening more than 1/2 in may allow them to fall out of cover and become lost.



E-box fuses, relays and modules

Fig 5 E-box components (M54 engine)



E-box cover removed (see **E-box cover, removing** in this repair group):

- A2076 B+ power distribution
- I01053 Ground bus
- K11 Windshield wiper relay
- K6304a Secondary air injection pump relay
- X6 Ground connection
See **Grounds** in this repair group.
- X1242 Connector
- X2350 Connector
- X6304 Connector
- X60531 Connector
- X60541 Connector
- X64541 Ground splice to X6
- X64542 Ground splice to X6

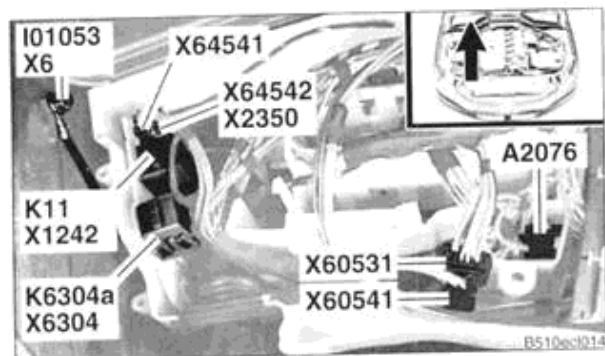
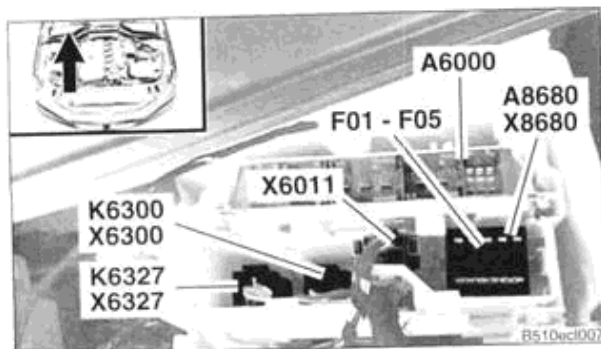


Fig 6 E-box components (M54 engine)



E-box cover removed (see **E-box cover, removing** in this repair group):

- A6000 Engine control module (ECM)
- A8680 Engine electronics fuse carrier
- F01 - F05 Engine electronics fuses
- K6300 DME main relay
- K6327 Fuel injector relay
- X6011 Connector
- X6300 Connector
- X6327 Connector



Engine electronics fuse ratings are in **Table i**.

ECL-30 Electrical Component Locations

E-box fuses, relays and modules

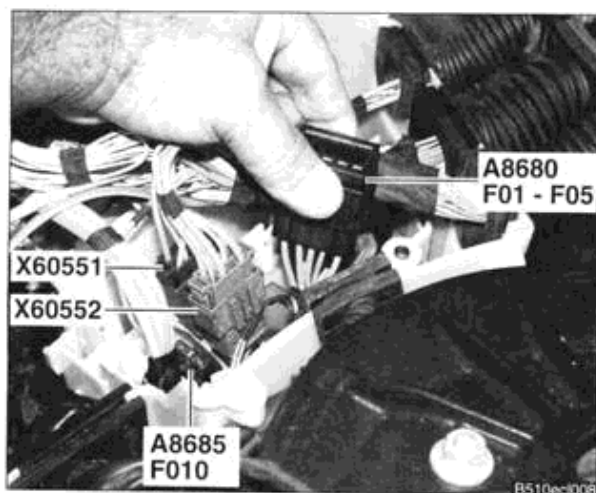


Fig 7 E-box components (N52 engine)

➤ E-box cover removed (see **E-box cover, removing** in this repair group):

- A8680 Engine electronics fuse carrier
- A8685 Engine electronics fuse carrier
- F01 - F05 Engine electronics fuses
- F010 Engine electronics fuse
- X60551 Connector
- X60552 Connector

Engine electronics fuse ratings are in **Table j**.

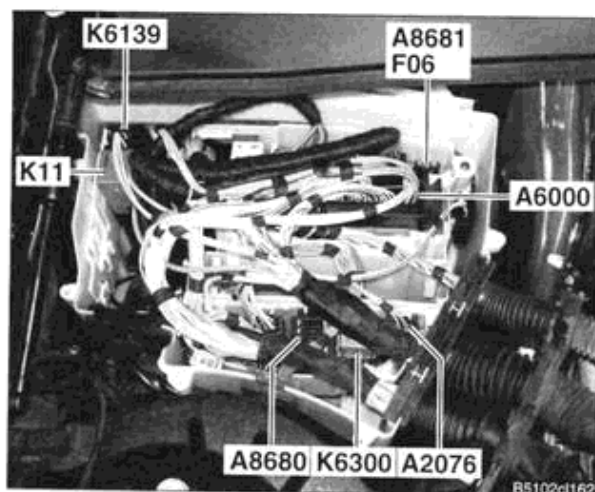


Fig 8 E-box components (N52 engine)

➤ E-box cover removed (see **E-box cover, removing** in this repair group):

- A2076 B+ power distribution
- A6000 Engine control module (ECM)
- A8680 Engine electronics fuse carrier
- A8681 Engine electronics fuse carrier
- F06 Engine electronics fuse
- K11 Windshield wiper relay
- K6300 DME main relay
- K6139 Valvetronic relay

Engine electronics fuse ratings are in **Table j**.

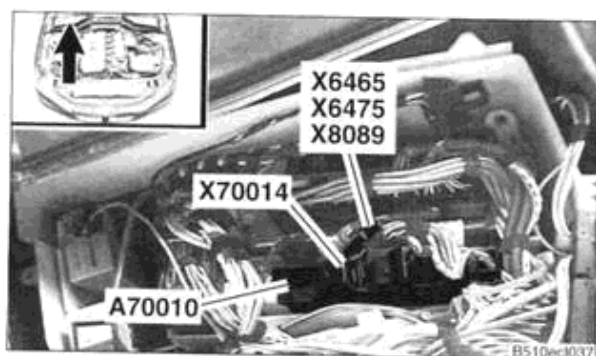


Fig 9 E-box components (N52 engine)

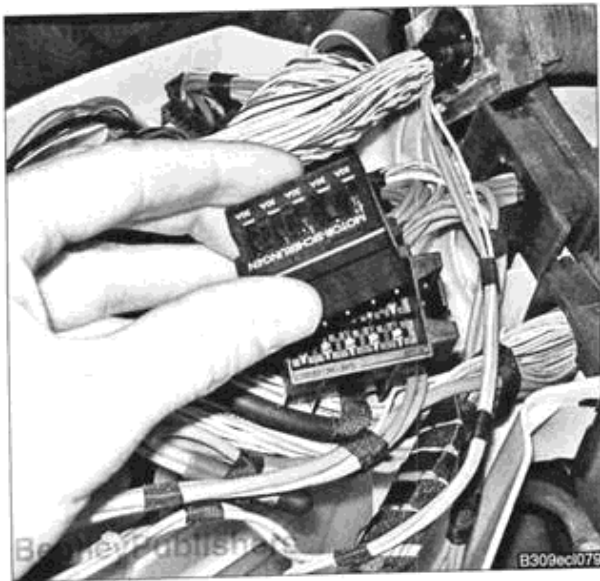
➤ E-box cover removed (see **E-box cover, removing** in this repair group):

- A70010 SMG control module
- X6465 Connector
- X6475v
- X8089 Connector
- X70014 Connector

Electrical Component Locations ECL-31

E-box fuses, relays and modules

◀ If replacing fuses F01 - F05, unplug fuse carrier A8680.



◀ Pry open A8680 cover using sharp tools. Fuse ratings are in Table i and Table j.

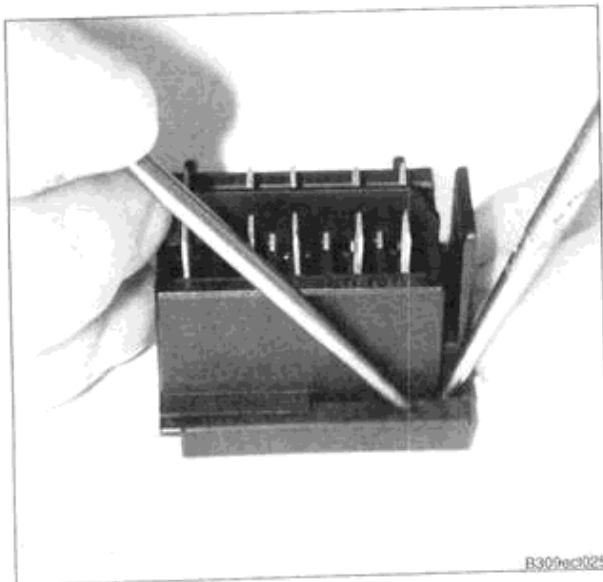


Table i. Engine electronics fuses in A8680, A8681 (M54 engine)

Fuse	Rating in amps	Protected circuits
F001	30	SMG hydraulic pump relay
F01	30	Ignition coils
F02	30	Engine control module (ECM) Fuel pump relay Fuel tank leakage diagnostic module (DMTL) Fuel tank vent valve Idle actuator Mass air flow sensor Radiator shutter solenoid Secondary air injection pump relay Secondary air injection pump valve VANOS solenoids Variable intake manifold solenoid
F03	20	Camshaft sensors Coolant thermostat Crankshaft sensor Mass air flow sensor
F04	30	Oxygen sensor heater SMG control module
F05	30	Fuel injectors relay

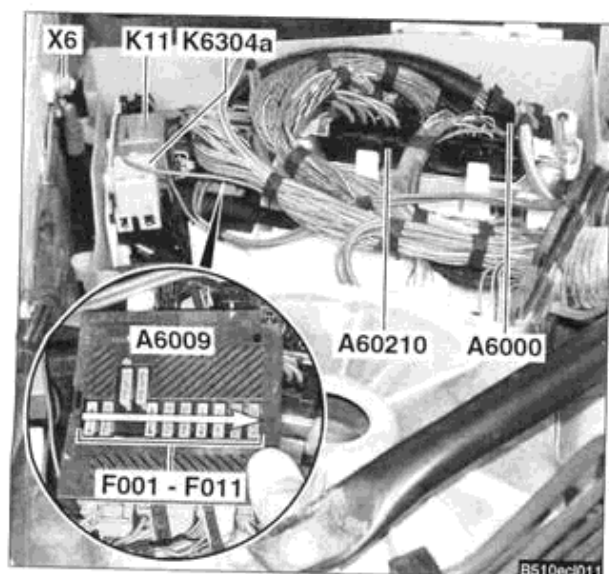
ECL-32 Electrical Component Locations

E-box fuses, relays and modules

Table j. Engine electronics fuses in A8680, A8681, A8682 (N52 engine)

Fuse	Rating in amps	Protected circuits
F01	30	Ignition coils Interference suppression capacitor
F02	30	Camshaft sensors Coolant thermostat Electric coolant pump VANOS solenoids
F03	20	Crankshaft sensor Engine control module (ECM) Fuel tank vent valve Mass air flow sensor Oil condition sensor (OZS) Variable intake manifold (DISA) solenoids
F04	30	Crankcase breather heater Oxygen sensor heaters SMG transmission control module
F05	30	Fuel injectors relay
F06	10	AUC sensor Brake air flap sensors E-box fan Fuel tank leakage diagnostic module (DMTL) Nitrogen oxide module Radiator shutter solenoid Secondary air injection mass air flow sensor Secondary air injection pump relay Tailpipe flap
F07	40	Valvetronic relay
F010	5	Engine breather heater

Fig 10 E-box components (V8 engine)



➤ E-box cover removed (see **E-box cover, removing** in this repair group):

- **A6000** Engine control module (ECM)
 - **A6009** Integrated voltage supply module (IVM)
 - To gain access to fuses, slide upward out of E-box.
 - Holds engine electronics fuses **F001 - F011**.
 - For fuse ratings, see **Table k**
 - **A60210** Valvetronic control module
 - **K11** Wiper relay
 - **K6304a** Secondary air injection relay
 - **X6** Ground post
- See **Ground applications** in this repair group

Electrical Component Locations ECL-33

E-box fuses, relays and modules

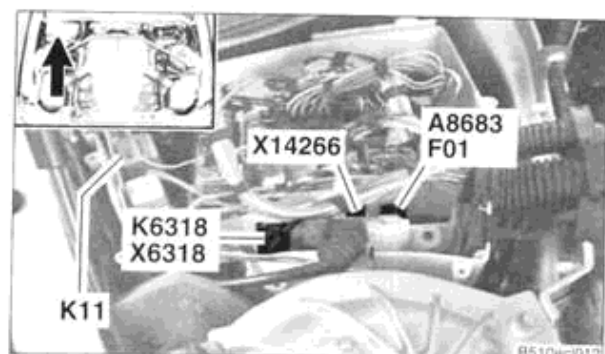


Fig 11 E-box components (V8 engine)

➤ E-box cover removed (see **E-box cover, removing** in this repair group):

- **A8683** Engine electronics fuse carrier
- **F01** Engine electronics fuse
- **K11** Windshield wiper relay
- **K6318** SMG hydraulic pump relay
- **X6318** Connector
- **X14266** Connector

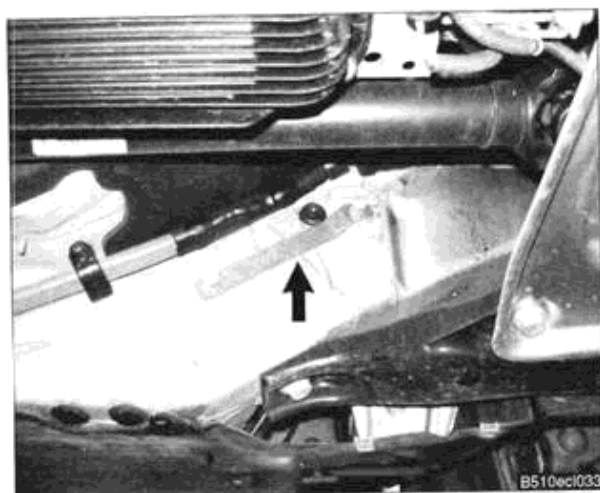
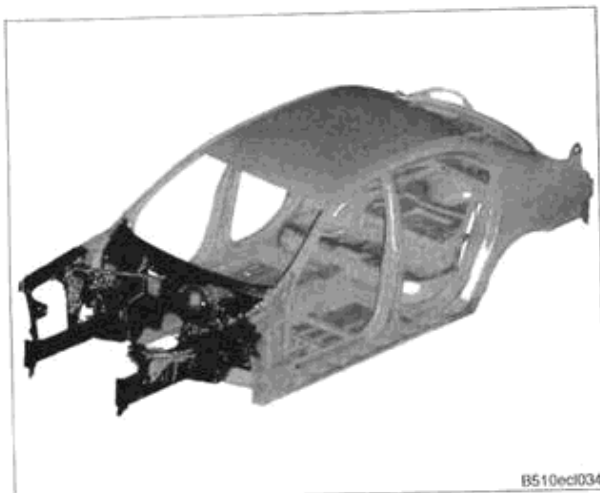
Ratings for engine electronics fuses in IVM and A8683 fuse holder are in **Table k**.

Table k. Engine electronics fuses in IVM, A8683 fuse holder (V8 engine)

Fuse	Rating in amps	Protected circuits
F01	30	SMG transmission hydraulic pump relay
F001	30	Engine control module (ECM) Fuel injectors 5 - 8 SMG transmission control module Valvetronic control module
F002	20	Camshaft sensors (left cylinder head) Fuel tank vent valve VANOS solenoids (left cylinder head)
F003	20	Ignition coils 1 - 4
F004	20	Ignition coils 5 - 8
F005	30	Camshaft sensors (right cylinder head) Coolant thermostat Crankshaft sensor Mass air flow sensor VANOS solenoids (right cylinder head)
F006	20	Fuel injectors 1 - 4
F007	20	Engine control module (ECM) SMG control module
F008	30	Engine control module (ECM) Oil condition sensor (OZS) Oxygen sensor heaters
F009	10	AUC sensor Brake air flap sensors E-box fan Fuel pump relay Fuel tank leakage diagnostic module (DMTL) Radiator shutter solenoid Secondary air injection pump relay Tailpipe flap
F010	40	Valvetronic control module
F011	40	Valvetronic control module

ECL-34 Electrical Component Locations

Body panel grounding



GROUNDS

Body panel grounding

◀ In order to reduce vehicle weight, the front end of the E60 vehicle is built almost entirely of aluminum panels. This reduced-weight aluminum front end or GRAV is bonded and riveted to the remainder of the vehicle, which is steel, in the front bulkhead area. In the accompanying illustration, aluminum components are darker.

◀ Riveted and bonded aluminum components do not necessarily provide a reliable circuit to ground. Therefore, individual front end panels are connected to each other and to steel components with small EMC safety weld seams. When repairing or replacing body components, be sure to use grounding straps (arrow) are reinstalled.

Ground distribution

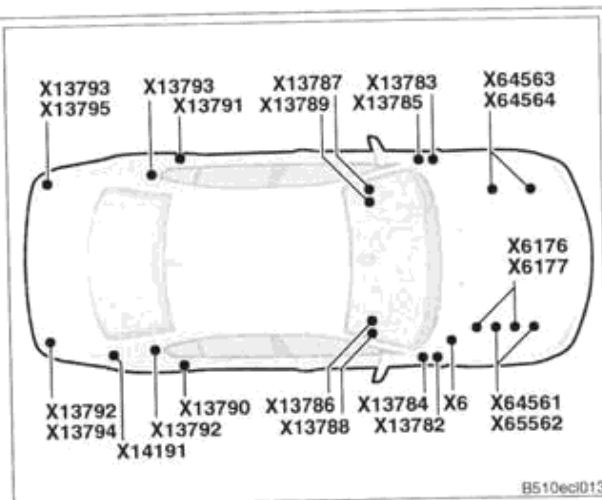
Grounds are distributed throughout the vehicle body. Many are found under the interior carpets or behind trim panels. Several components grounds are often ganged. Ground positions vary among models. Lugs and connectors attached to ground are susceptible to damage and corrosion. Clean or renew as necessary.

Most ground positions are illustrated in photos in this repair group. See figure and page references in **Table I**. Ground applications are detailed in **Table m**.

Electrical Component Locations ECL-35

Ground distribution

Table I. Ground locations

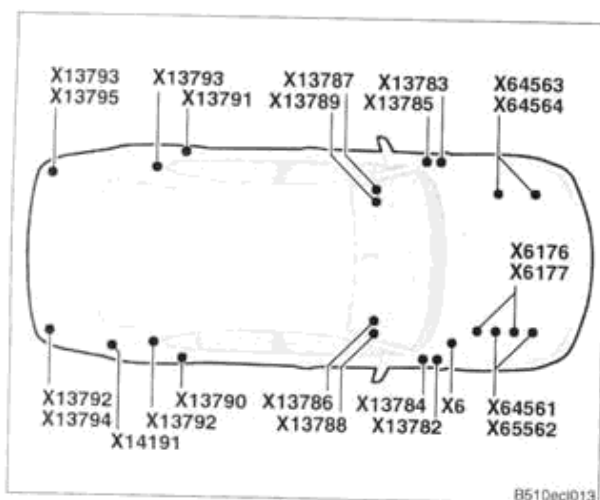


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Code	Location, application	Fig #	Page #
X13782	Behind right kick panel, near door opening	Fig 86	Pg 62
X13783	Behind left kick panel, near door opening	Fig 81	Pg 61
X13784	Behind right kick panel, near door opening	Fig 86	Pg 62
X13785	Behind left kick panel, near door opening	Fig 81	Pg 61
X13786	Passenger seat rail, under rug	Fig 89	Pg 63
X13787	Driver seat rail, under rug	Fig 83	Pg 61
X13788	Passenger seat rail, under rug	Fig 89	Pg 63
X13789	Driver seat rail, under rug	Fig 83	Pg 61
X13790	Right C-pillar behind trim	Fig 92	Pg 63
X13791	Left C-pillar behind trim	Fig 91	Pg 63
X13792	<i>Sports Wagon:</i> Behind right side cargo compartment trim	Fig 123	Pg 71
X13792	<i>Sedan:</i> Inside trunk, underneath right taillight, behind trim	Fig 115	Pg 69
X13793	<i>Sports Wagon:</i> Behind left side cargo compartment trim	Fig 120	Pg 70
X13793	<i>Sedan:</i> Inside trunk, underneath left taillight, behind trim	Fig 111	Pg 68
X13794	Inside trunk, underneath right taillight, behind trim	Fig 115	Pg 69
		Fig 123	Pg 71
X13795	Inside trunk, underneath left taillight, behind trim	Fig 111	Pg 68
		Fig 121	Pg 71
		Fig 89	Pg 63
X14234	Passenger side floor, under rug		
X6176	Ignition coils 1 - 3 ground <i>M54 engine:</i> Between ignition coils 2 and 3 <i>N52 engine:</i> Right of ignition coil 2		
X6177	Ignition coils 4 - 6 ground <i>M54 engine:</i> Between ignition coils 4 and 5 <i>N52 engine:</i> Right of ignition coil 5		
X6	Right rear engine compartment, to right of E-box	Fig 5	Pg 29
		Fig 38	Pg 48
		Fig 53	Pg 53
		Fig 56	Pg 54
X64561	Ignition coils 1 - 4 ground:		
X64562	<i>V8 engine:</i> Right side cylinder head cover, top of engine	Fig 54	Pg 54
X64563	Ignition coils 5 - 8:		
X64564	<i>V8 engine:</i> Left side cylinder head cover, top of engine	Fig 61	Pg 56

ECL-36 Electrical Component Locations

Ground applications



Ground applications

Table m. Ground applications

Circuit	Ground	Fig #	Pg #
Adaptive headlights	X13782	Fig 86	Pg 62
Basic body module	X13782	Fig 86	Pg 62
Cigar lighter, front (from 03 / 2005)	X13782	Fig 86	Pg 62
Door sill light, right front	X13782	Fig 86	Pg 62
DSC	X13782	Fig 86	Pg 62
Dynamic drive (active stabilizer)	X13782	Fig 86	Pg 62
Foglight, right front	X13782	Fig 86	Pg 62
Footwell light, right front	X13782	Fig 86	Pg 62
Headlight, right (to 03 / 2005)	X13782	Fig 86	Pg 62
Hood contact switch (from 03 / 2005)	X13782	Fig 86	Pg 62
Horns	X13782	Fig 86	Pg 62
Oil level switch	X13782	Fig 86	Pg 62
Secondary air pump	X13782	Fig 86	Pg 62
Turn signal, right front (to 03 / 2005)	X13782	Fig 86	Pg 62
Windshield wiper motor	X13782	Fig 86	Pg 62
Coolant level sensor	X13783	Fig 81	Pg 61
Door sill light, left front	X13783	Fig 81	Pg 61
Foglight, left front	X13783	Fig 81	Pg 61
Footwell light, left front	X13783	Fig 81	Pg 61
Headlight, left	X13783	Fig 81	Pg 61
Heater valve	X13783	Fig 81	Pg 61
Seat adjustment switch, driver	X13783	Fig 81	Pg 61
Turn signal, left front	X13783	Fig 81	Pg 61
Washer fluid level sensor	X13783	Fig 81	Pg 61
Washer pumps	X13783	Fig 81	Pg 61
12v utility outlet, glove compartment	X13784	Fig 86	Pg 62
AUC sensor	X13784	Fig 86	Pg 62

Table m. Ground applications

Circuit	Ground	Fig #	Pg #
Center console switch center (SZM) (to 03 / 2005)	X13784	Fig 86	Pg 62
Central locking switch	X13784	Fig 86	Pg 62
Climate control panel	X13784	Fig 86	Pg 62
Comfort access control module	X13784	Fig 86	Pg 62
Condensation sensor (to 03 / 2005)	X13784	Fig 86	Pg 62
Fresh air temperature sensor	X13784	Fig 86	Pg 62
Gear indicator lighting	X13784	Fig 86	Pg 62
Glove compartment light	X13784	Fig 86	Pg 62
Hazard warning switch	X13784	Fig 86	Pg 62
Hood contact switch (to 03 / 2005)	X13784	Fig 86	Pg 62
iDrive controller	X13784	Fig 86	Pg 62
Integrated supply module (IVM)	X13784	Fig 86	Pg 62
Passenger seat control	X13784	Fig 86	Pg 62
Secondary air pump relay	X13784	Fig 86	Pg 62
Shift lock	X13784	Fig 86	Pg 62
SMG transmission selector lever	X13784	Fig 86	Pg 62
Steptronic switch	X13784	Fig 86	Pg 62
Turn signal, right front (from 03 / 2005)	X13784	Fig 86	Pg 62
Windshield wiper relay	X13784	Fig 86	Pg 62
12v utility outlet, rear	X13785	Fig 81	Pg 61
Car access system (CAS) (to 03 / 2005)	X13785	Fig 81	Pg 61
Cigar lighter, rear	X13785	Fig 81	Pg 61
Head-up display	X13785	Fig 81	Pg 61
Light module (to 03 / 2005)	X13785	Fig 81	Pg 61
Seat control, driver seat	X13785	Fig 81	Pg 61
Seat heating, rear seat	X13785	Fig 81	Pg 61
Steering column switch cluster (to 03 / 2005)	X13785	Fig 81	Pg 61
Washer jet heater	X13785	Fig 81	Pg 61
Active cruise control	X13786	Fig 86	Pg 62
Airbag indicator light	X13786	Fig 86	Pg 62
Automatic transmission control	X13786	Fig 86	Pg 62
Crash sensor, center console	X13786	Fig 86	Pg 62
Crash sensor, right B-pillar	X13786	Fig 86	Pg 62
DSC acceleration sensor	X13786	Fig 86	Pg 62
Passenger seat occupancy sensor	X13786	Fig 86	Pg 62
Safety and gateway module	X13786	Fig 86	Pg 62
Brake fluid level sensor	X13787	Fig 83	Pg 61
Brake light switch	X13787	Fig 83	Pg 61
Car access system (CAS) (from 03 / 2005)	X13787	Fig 83	Pg 61

Electrical Component Locations ECL-37

Ground applications

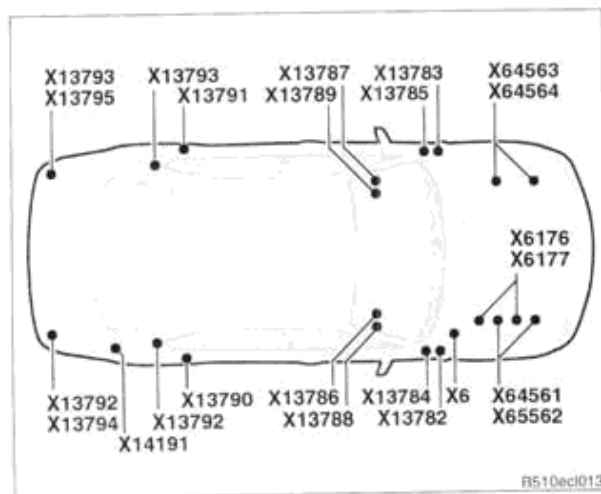


Table m. Ground applications

Circuit	Ground	Fig #	Pg #
Center console switch center (SZM) (from 03 / 2005)	X13787	Fig 83	Pg 61
Central information display (CID)	X13787	Fig 83	Pg 61
Clutch switch module	X13787	Fig 83	Pg 61
Crash sensor, left B-pillar	X13787	Fig 83	Pg 61
Instrument cluster	X13787	Fig 83	Pg 61
Light module (from 03 / 2005)	X13787	Fig 83	Pg 61
OBD II plug	X13787	Fig 83	Pg 61
Outer door handle electronic modules	X13787	Fig 83	Pg 61
Rear compartment display	X13787	Fig 83	Pg 61
Steering column switch cluster (from 03 / 2005)	X13787	Fig 83	Pg 61
Steering rack	X13787	Fig 83	Pg 61
Active steering	X13788	Fig 89	Pg 63
Blower output stage	X13788	Fig 89	Pg 63
Door electrical components, passenger door	X13788	Fig 89	Pg 63
EDC	X13788	Fig 89	Pg 63
Headlight washer relay (from 03 / 2005)	X13788	Fig 89	Pg 63
12v utility outlet, rear	X13789	Fig 83	Pg 61
Cigar lighter, rear	X13789	Fig 83	Pg 61
Door electrical components, driver door	X13789	Fig 83	Pg 61
Head-up display	X13789	Fig 83	Pg 61
OBD II plug	X13789	Fig 83	Pg 61
Seat control, driver seat	X13789	Fig 83	Pg 61
Trunk lid or tailgate inside release switch	X13789	Fig 83	Pg 61
Windshield wiper relay	X13789	Fig 83	Pg 61
Anti-theft alarm	X13790	Fig 92	Pg 63

Table m. Ground applications

Circuit	Ground	Fig #	Pg #
Cigar lighter, front (to 03 / 2005)	X13790	Fig 92	Pg 63
Condensation sensor (from 03 / 2005)	X13790	Fig 92	Pg 63
Door electrical components, right rear	X13790	Fig 92	Pg 63
Headlight washer relay (to 03 / 2005)	X13790	Fig 92	Pg 63
Headlight, right (from 03 / 2005)	X13790	Fig 92	Pg 63
Micro-power module	X13790	Fig 92	Pg 63
Park distance control	X13790	Fig 92	Pg 63
Rain and light sensor	X13790	Fig 92	Pg 63
Rear fuse and relay panel (A46)	X13790	Fig 92	Pg 63
Seat heating, rear seat	X13790	Fig 92	Pg 63
Trunk lid or tailgate soft-close	X13790	Fig 92	Pg 63
Antenna noise suppression filter	X13791	Fig 91	Pg 63
Door electrical components, left rear	X13791	Fig 91	Pg 63
Emergency call button	X13791	Fig 91	Pg 63
Interior light, left rear	X13791	Fig 91	Pg 63
Roller cover motor release, cargo compartment, left	X13791	Fig 91	Pg 63
Seat heating, rear seat	X13791	Fig 91	Pg 63
Vanity mirrors	X13791	Fig 91	Pg 63
12v utility outlet, luggage compartment	X13792	Fig 123	Pg 71
Dome light, rear	X13792	Fig 123	Pg 71
Electrochromic mirror, inside	X13792	Fig 115 Fig 123	Pg 69 Pg 71
Fuel pump	X13792	Fig 115 Fig 123	Pg 69 Pg 71
Fuel pump module	X13792	Fig 115 Fig 123	Pg 69 Pg 71
License plate lights	X13792	Fig 115 Fig 123	Pg 69 Pg 71
Rear window button	X13792	Fig 123	Pg 71
Sunroof	X13792	Fig 123	Pg 71
Taillights, right	X13792	Fig 115 Fig 123	Pg 69 Pg 71
Trailer socket	X13792	Fig 123	Pg 71
Trunk lid or tailgate lock	X13792	Fig 115 Fig 123	Pg 69 Pg 71
Trunk lid or tailgate lock release button	X13792	Fig 115 Fig 123	Pg 69 Pg 71
Antenna	X13793	Fig 111 Fig 120	Pg 68 Pg 70
Rear window defogger	X13793	Fig 111 Fig 120	Pg 68 Pg 70
Sound system components	X13793	Fig 111 Fig 120	Pg 68 Pg 70

ECL-38 Electrical Component Locations

Ground applications

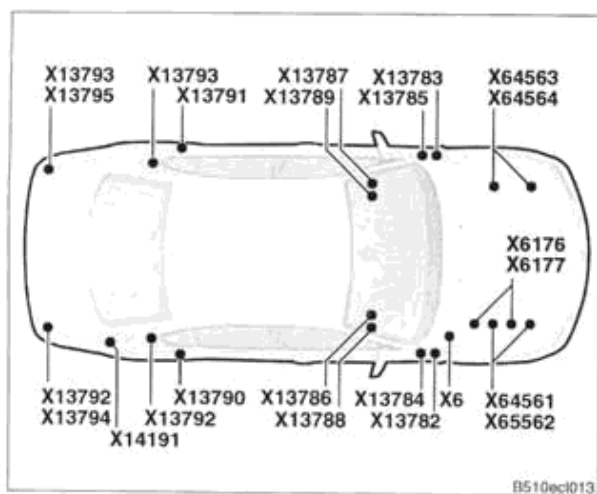


Table m. Ground applications

Circuit	Ground	Fig #	Pg #
Telematics	X13793	Fig 111 Fig 120	Pg 68 Pg 70
Telephone	X13793	Fig 111 Fig 120	Pg 68 Pg 70
Video module	X13793	Fig 111 Fig 120	Pg 68 Pg 70
Antenna noise suppression filter	X13794	Fig 123	Pg 71
Load-shedding (unloader) relay terminal 15	X13794	Fig 115 Fig 123	Pg 69 Pg 71
Roller cover motor release, cargo compartment, right	X13794	Fig 123	Pg 71
Spare wheel well fan	X13794	Fig 115 Fig 123	Pg 69 Pg 71
Tailgate lift motor	X13794	Fig 123	Pg 71
Trailer module	X13794	Fig 115 Fig 123	Pg 69 Pg 71
Trunk lid or tailgate soft-close	X13794	Fig 115 Fig 123	Pg 69 Pg 71
Wiper, rear window	X13794	Fig 123	Pg 71
CD changer cooling fan	X13795	Fig 111 Fig 121	Pg 68 Pg 71
Rear window lock	X13795	Fig 111 Fig 121	Pg 68 Pg 71
Taillight, left	X13795	Fig 111 Fig 121	Pg 68 Pg 71
Trunk lid or tailgate lift motor	X13795	Fig 111 Fig 121	Pg 68 Pg 71
Trunk lid or tailgate soft close	X13795	Fig 111 Fig 121	Pg 68 Pg 71
Trunk lid or tailgate lock	X13795	Fig 111 Fig 121	Pg 68 Pg 71
Active steering control module	X14234	Fig 89	Pg 63

Table m. Ground applications

Circuit	Ground	Fig #	Pg #
A/C compressor	X6	Fig 5 Fig 38 Fig 53	Pg 29 Pg 48 Pg 53
Back-up light switch	X6	Fig 5 Fig 38 Fig 53	Pg 29 Pg 48 Pg 53
Crankcase breather heater	X6	Fig 5 Fig 38 Fig 53	Pg 29 Pg 48 Pg 53
DISA controller	X6	Fig 5 Fig 38 Fig 53	Pg 29 Pg 48 Pg 53
Engine control module (ECM)	X6	Fig 5 Fig 38 Fig 53	Pg 29 Pg 48 Pg 53
Fuel injector relay	X6	Fig 5 Fig 38 Fig 53	Pg 29 Pg 48 Pg 53
Oil level sensor (OZS)	X6	Fig 5 Fig 38 Fig 53	Pg 29 Pg 48 Pg 53
SMG transmission control	X6	Fig 5 Fig 38 Fig 53	Pg 29 Pg 48 Pg 53
Ignition coils (6-cylinder engine)	X6176 X6177		
Ignition coils (V8 engine)	X64561 X64562 X64563 X64564		

COMPONENT LOCATION PHOTOS

Antenna components

For comfort access (CA) antennas, see **Control modules, relays** in this repair group.

Fig 12 Top center windshield

- Right of rear view mirror:
- **A457** Antenna, VICS

Fig 13 Center of cabin

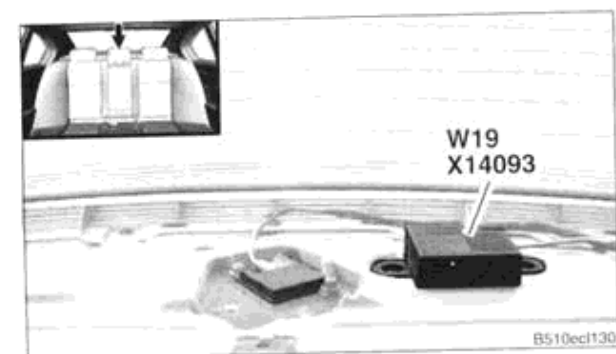
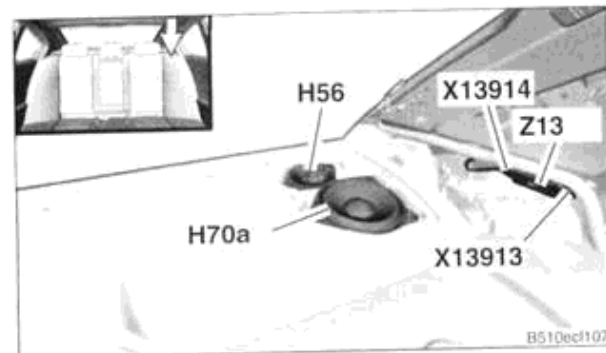
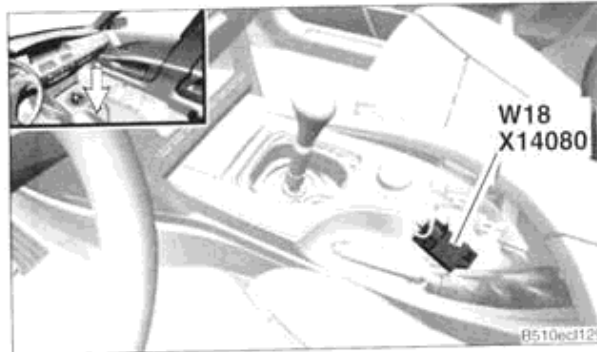
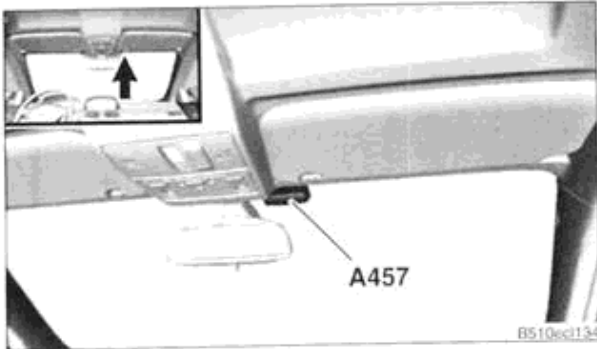
- Underneath center console:
- **W18** Antenna, bluetooth
 - **X14080** Connector

Fig 14 Parcel shelf, left side (Sedan)

- Behind trim:
- **H56** Left rear tweeter
 - **H70a** Left rear midrange speaker
 - **X13913** Connector
 - **X13914** Connector
 - **Z13** Antenna noise suppression filter

Fig 15 Parcel shelf, center (Sedan)

- Behind trim:
- **W19** Antenna, emergency call
 - **X14093** Connector



ECL-40 Electrical Component Locations

Antenna components

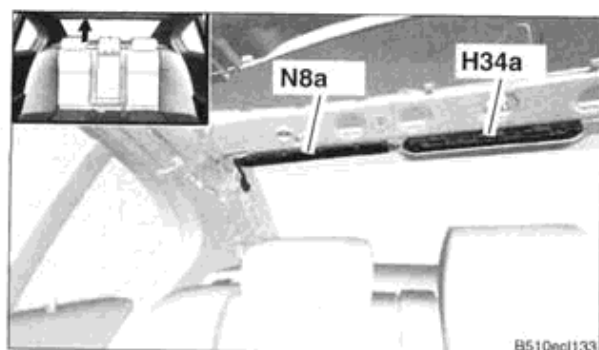


Fig 16 Above rear window (Sedan)

- Behind trim:
- **H34a** Center brake light
 - **N8a** Antenna amplifier with diversity module

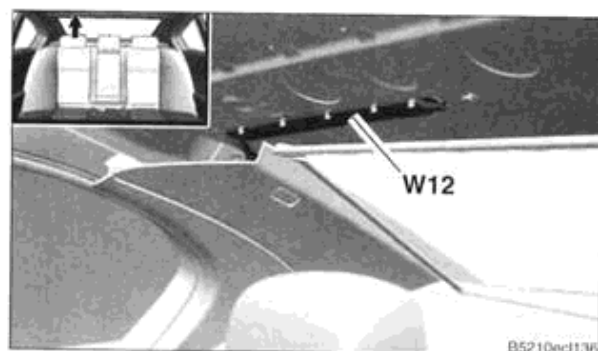


Fig 17 Right rear roof (Sedan)

- Behind headliner:
- **W12** Antenna, interior

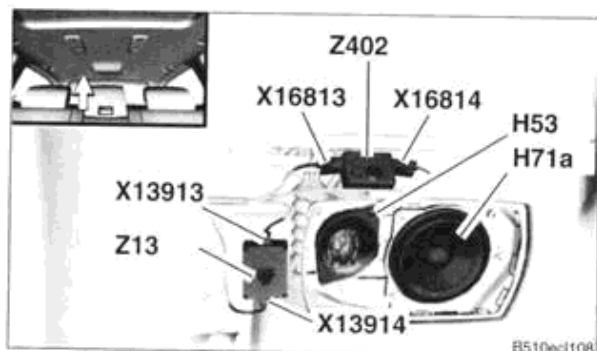


Fig 18 Right rear headliner (Sport Wagon)

- Behind trim:
- **H53** Right rear tweeter
 - **H71a** Right rear midrange speaker
 - **X13913** Connector
 - **X13914** Connection
 - **X16813** Connector
 - **X16814** Connector
 - **Z13** Antenna noise suppression filter (center brake light)
 - **Z402** Antenna noise suppression filter

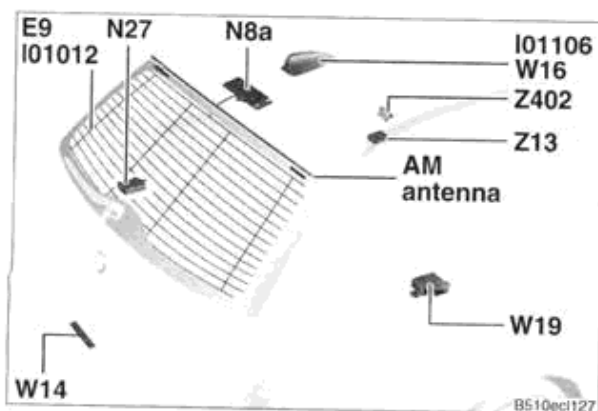
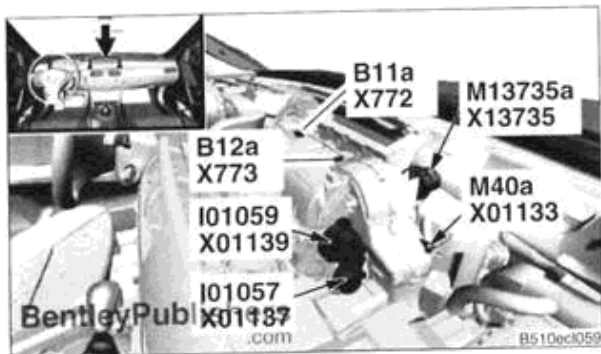


Fig 19 Body rear (Sport Wagon)

- Tailgate, headliner:
- **AM antenna** under spoiler
 - **E9** Rear window defogger
 - **I01012** Antennas, FM1 - FM3
 - **I01106** Antenna, satellite (SDARS)
 - **N8a** Antenna amplifier with diversity module under spoiler
 - **N27** Telephone compensator
 - **W14** Antenna, rear bumper
 - **W16** Antenna, telematics (TCU)
 - **W19** Antenna, emergency call
 - **Z13** Noise suppression filter (center brake light)
 - **Z402** Noise suppression filter

Climate control components

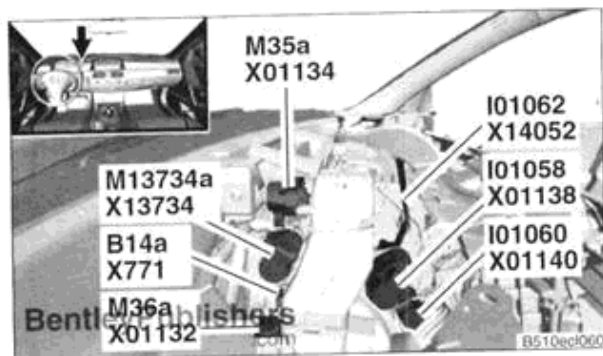
Fig 20 Underneath top dashboard trim



Top of IHKA housing:

- B11a Heater core temperature sensor, left side
- B12a Heater core temperature sensor, right side
- I01057 Fresh air flap stepper motor
- I01059 Right ventilation flap stepper motor
- M40a Right fresh-recirculated air flap stepper motor
- M13735a Right footwell flap stepper motor
- X772 Connector
- X773 Connector
- X01133 Connector
- X01137 Connector
- X01139 Connector

Fig 21 Underneath top dashboard trim



Top of IHKA housing:

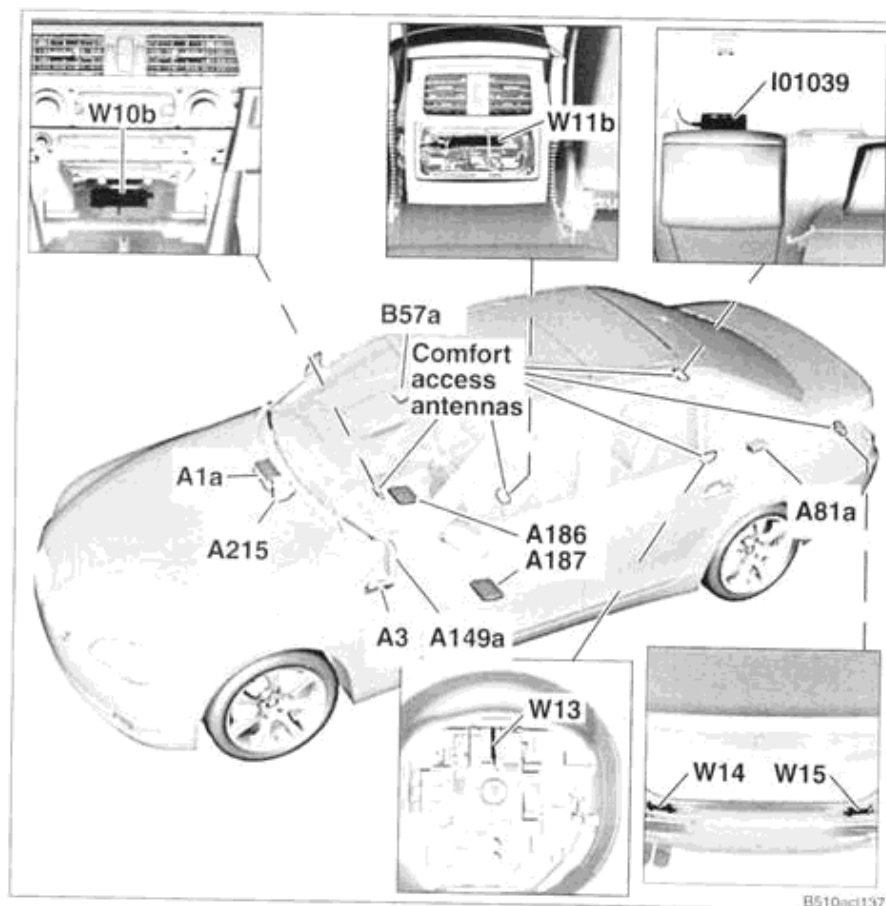
- B14a Evaporator temperature sensor
- I01058 Left ventilation flap stepper motor
- I01060 Rear compartment mixing flap stepper motor
- I01062 Electric auxiliary heater
- M35a Defroster flap stepper motor
- M36a Left fresh-recirculated air flap stepper motor
- M13734a Left footwell flap stepper motor
- X771 Connector
- X01132 Connector
- X01134 Connector
- X01138 Connector
- X01140 Connector
- X13734 Connector
- X14052 Connector

ECL-42 Electrical Component Locations

Control modules, relays

Control modules, relays

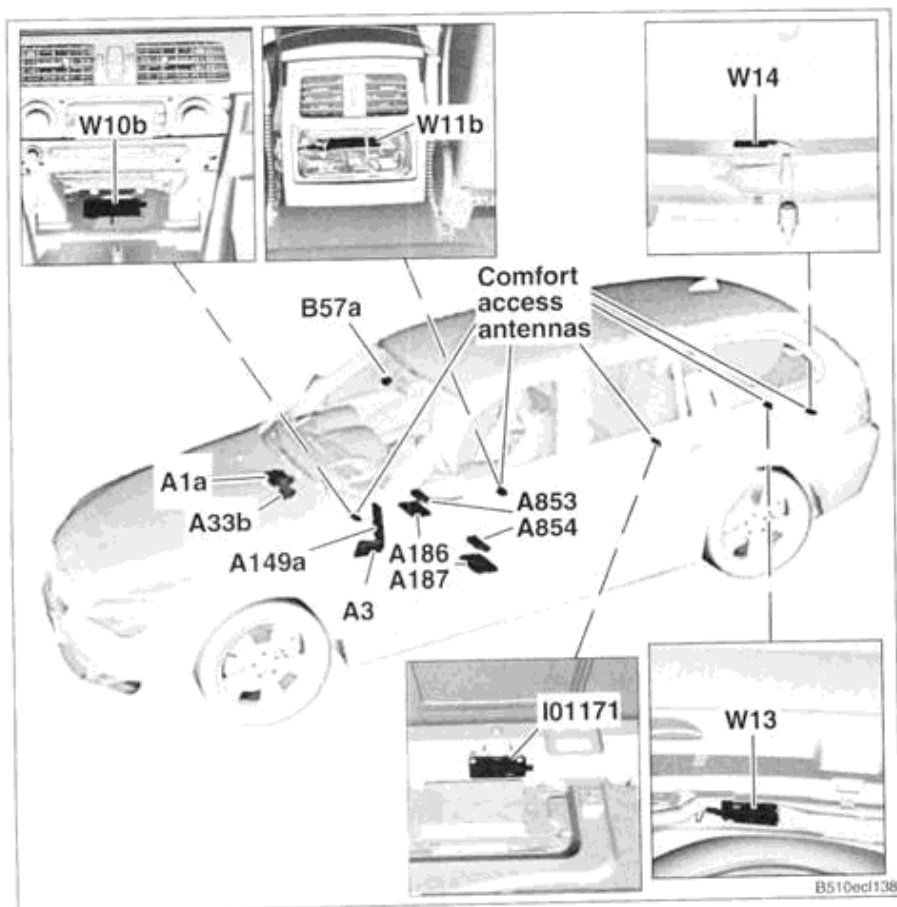
Fig 22 Sedan control modules



- **A1a** Basic body module (KBM)
- **A3** Light module
- **A81a** Park distance control (PDC) control module
- **A149a** Car access system (CAS)
- **A186 - A187** Seat control modules
- **A215** Comfort access control module
- **B57b** Rain and light sensor
- Comfort access antennas
- I01039** Rear parcel shelf
- W10a** Center dashboard
- W11b** Rear of center console
- W13** Trunk, spare tire well
- W14 - W15** Rear bumper

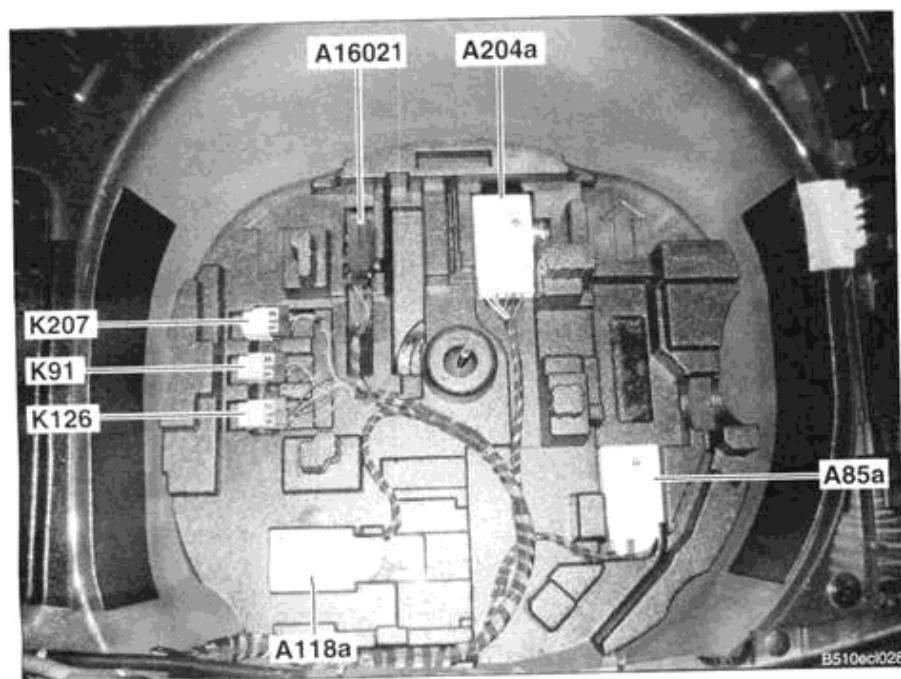
B510act137

Fig 23 Sport Wagon control modules



- **A1a** Basic body module (KBM)
- **A3** Light module
- **A33b** Sunroof module (to 03 / 2007)
- **A149a** Car access system (CAS)
- **A186 - A187** Seat control modules
- **A853 - A854** Backrest adjustment (active backrest) control modules
- **B57b** Rain and light sensor
- Comfort access antennas
I01171 Front, spare tire well
W10a Center dashboard
W11b Rear of center console
W13 Rear, spare tire well
W14 Rear bumper

Fig 24 Spare tire well, version 1 (Sport Wagon)

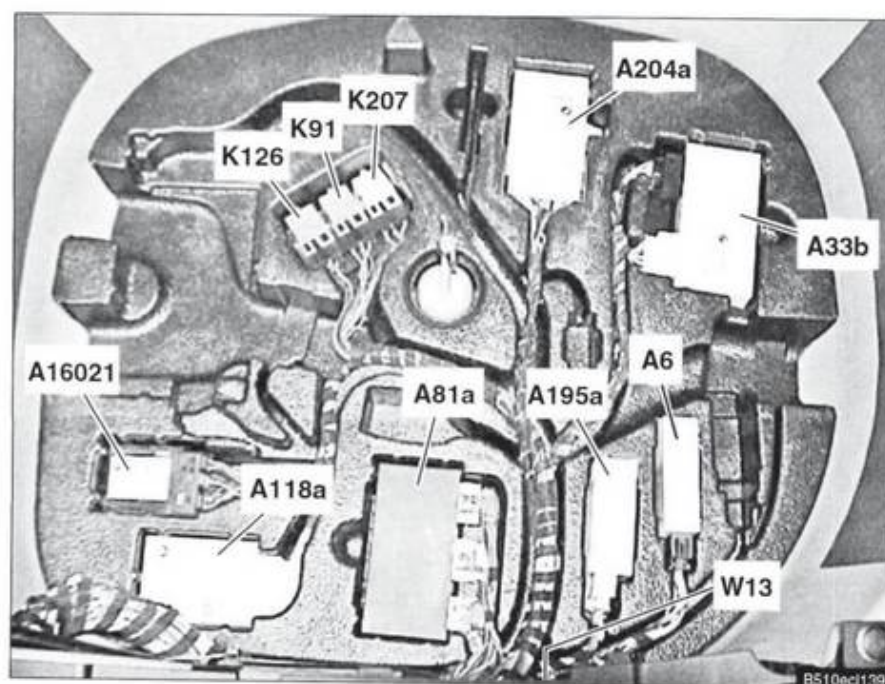


- **A85a** Tire pressure control (RDC) module
- **A118a** EHC (air suspension) module
- **A204a** Tailgate lift module
- **A16021** Micro-power module (MPM)
- **K91** Rear wiper relay
- **K126** EHC (air suspension) compressor relay
- **K207** Tailgate soft-close relay

ECL-44 Electrical Component Locations

Engine compartment

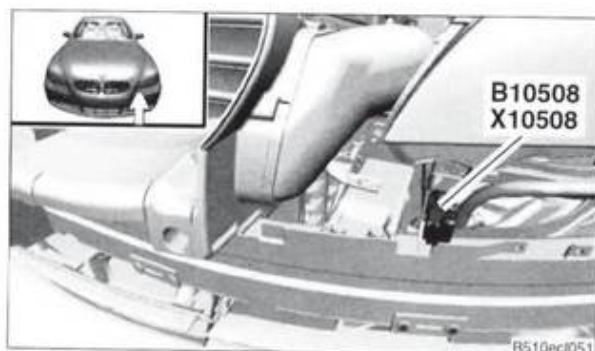
Fig 25 Spare tire well, version 2 (Sport Wagon)



- A6 Trailer module
- A33b Sunroof module (from 03/ 2007)
- A81a Park distance control (PDC) module
- A118a EHC (air suspension) module
- A195a Trailer hitch module
- A204a Tailgate lift module
- A16021 Micro-power module (MPM)
- K91 Rear wiper relay
- K126 EHC (air suspension) compressor relay
- K207 Tailgate soft-close relay
- W13 Comfort access (CA) antenna

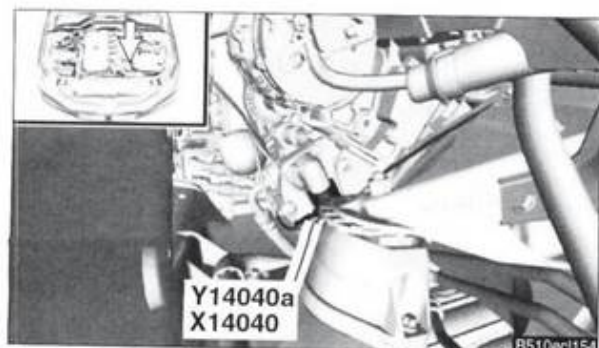
Engine compartment

Fig 26 Left front engine compartment



- Underneath left headlight assembly:
- B10508 Left front crash sensor
 - X10508 Connector

Fig 27 Left front engine



- Behind power steering pump:
- Y14040a Active steering ECO valve
 - X14040 Connector

Electrical Component Locations ECL-45

Engine compartment (M54 engine)

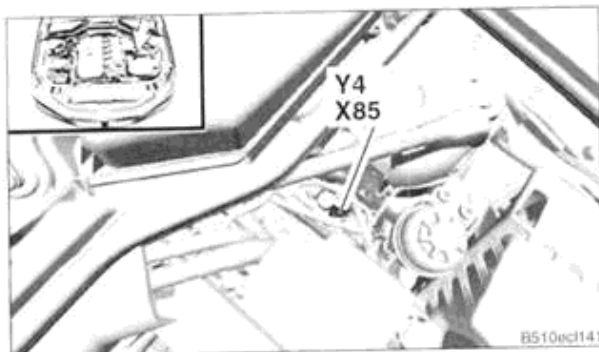


Fig 28 Left rear engine compartment

- At strut tower:
- X85 Connector
 - Y4 Heater valve

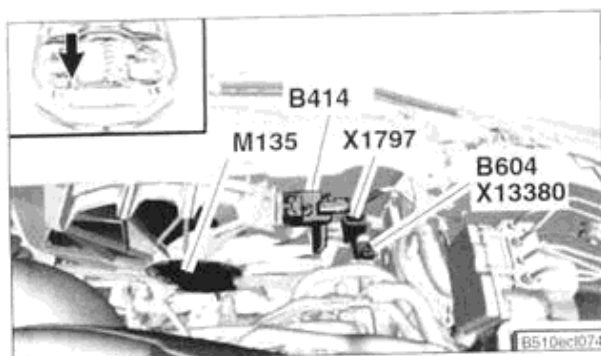


Fig 29 Right front engine compartment

- At radiator:
- B414 Automatic recirculation (AUC) sensor
 - B604 Engine coolant temperature sensor, radiator outlet
 - M135 Engine cooling fan
 - X1797 Connector
 - X13380 Connector

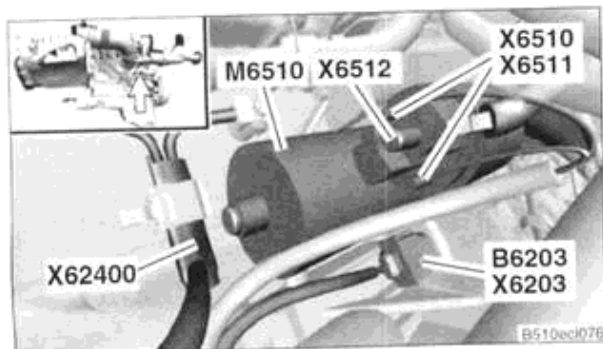


Fig 30 Right side engine compartment

- Underneath coolant overflow reservoir:
- B97 A/C refrigerant pressure sensor

Engine compartment (M54 engine)

Fig 31 Left rear engine



- At transmission bell housing, underneath intake manifold:
- B6203 Crankshaft sensor
 - M6510 Starter
 - X6203 Connector
 - X6510 - X6512 Starter connectors
 - X62400 Connector

ECL-46 Electrical Component Locations

Engine compartment (M54 engine)

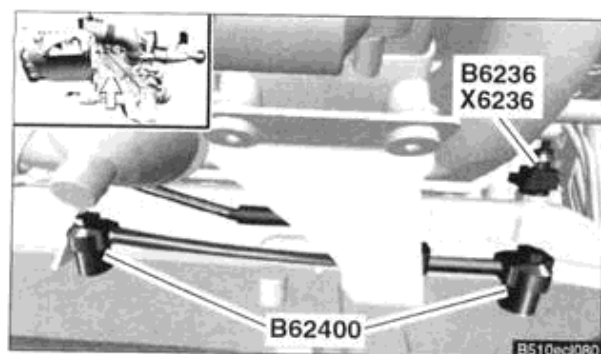


Fig 32 Left side engine



Underneath intake manifold:

- B6236 Engine coolant temperature (ECT) sensor
- B62400 Knock sensors
- X6236 Connector

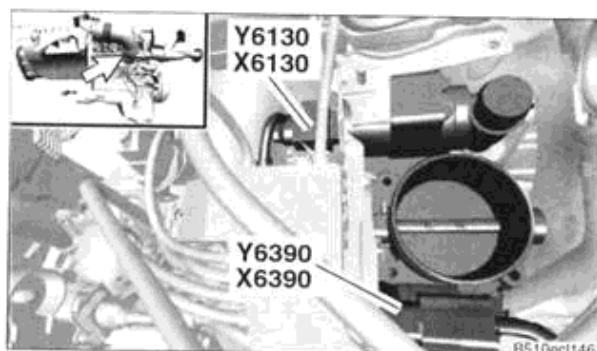


Fig 33 Left side engine



Underneath intake manifold:

- X6130 Connector
- X6390 Connector
- Y6130 Idle speed control valve
- Y6390 Throttle valve

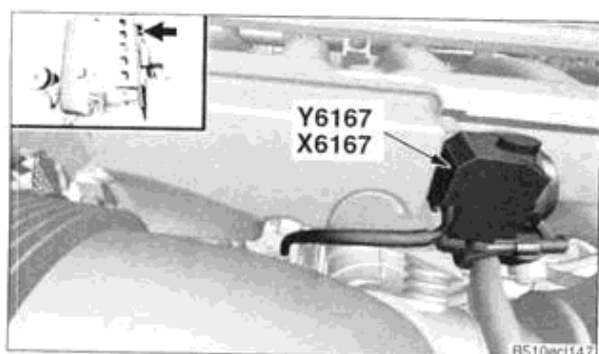


Fig 34 Left side engine



On intake manifold:

- X6167 Connector
- Y6167 Variable intake manifold (DISA) solenoid

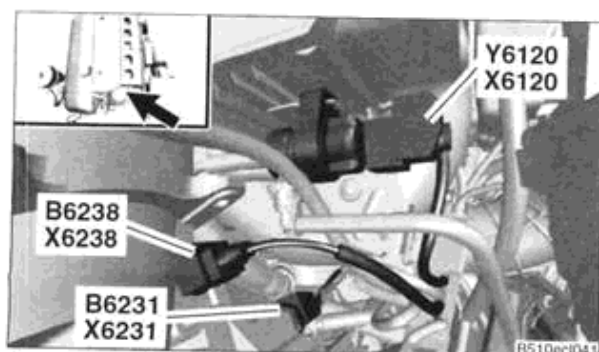


Fig 35 Left front of engine



Behind and below oil filter housing:

- B6231 Oil pressure switch
- B6238 Oil temperature sensor
- X6120 Connector
- X6231 Connector
- X6238 Connector
- Y6120 Fuel tank evaporative emissions control valve

Electrical Component Locations ECL-47

Engine compartment (M54 engine)

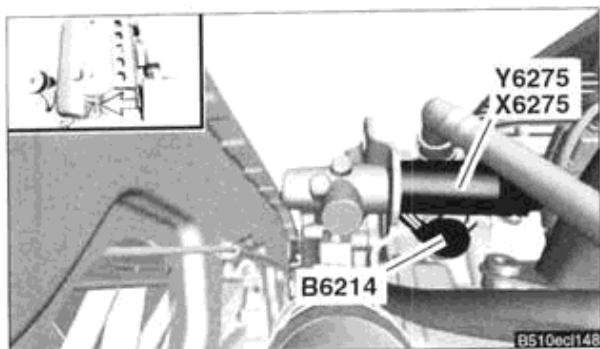


Fig 36 Left front of cylinder head

◀ Above crankshaft vibration damper:

- B6214 Intake camshaft sensor
- X6275 Connector
- Y6275 Intake VANOS solenoid

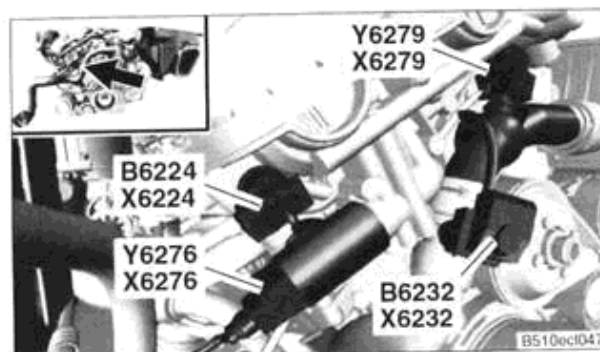


Fig 37 Front of cylinder head

◀ Above crankshaft vibration damper:

- B6224 Exhaust camshaft sensor
- B6232 Engine coolant temperature (ECT) sensor
- B6279 Coolant thermostat
- X6224 Connector
- X6232 Connector
- X6276 Connector
- X6279 Connector
- Y6276 Exhaust VANOS solenoid

ECL-48 Electrical Component Locations

Engine compartment (N52 engine)

Engine compartment (N52 engine)

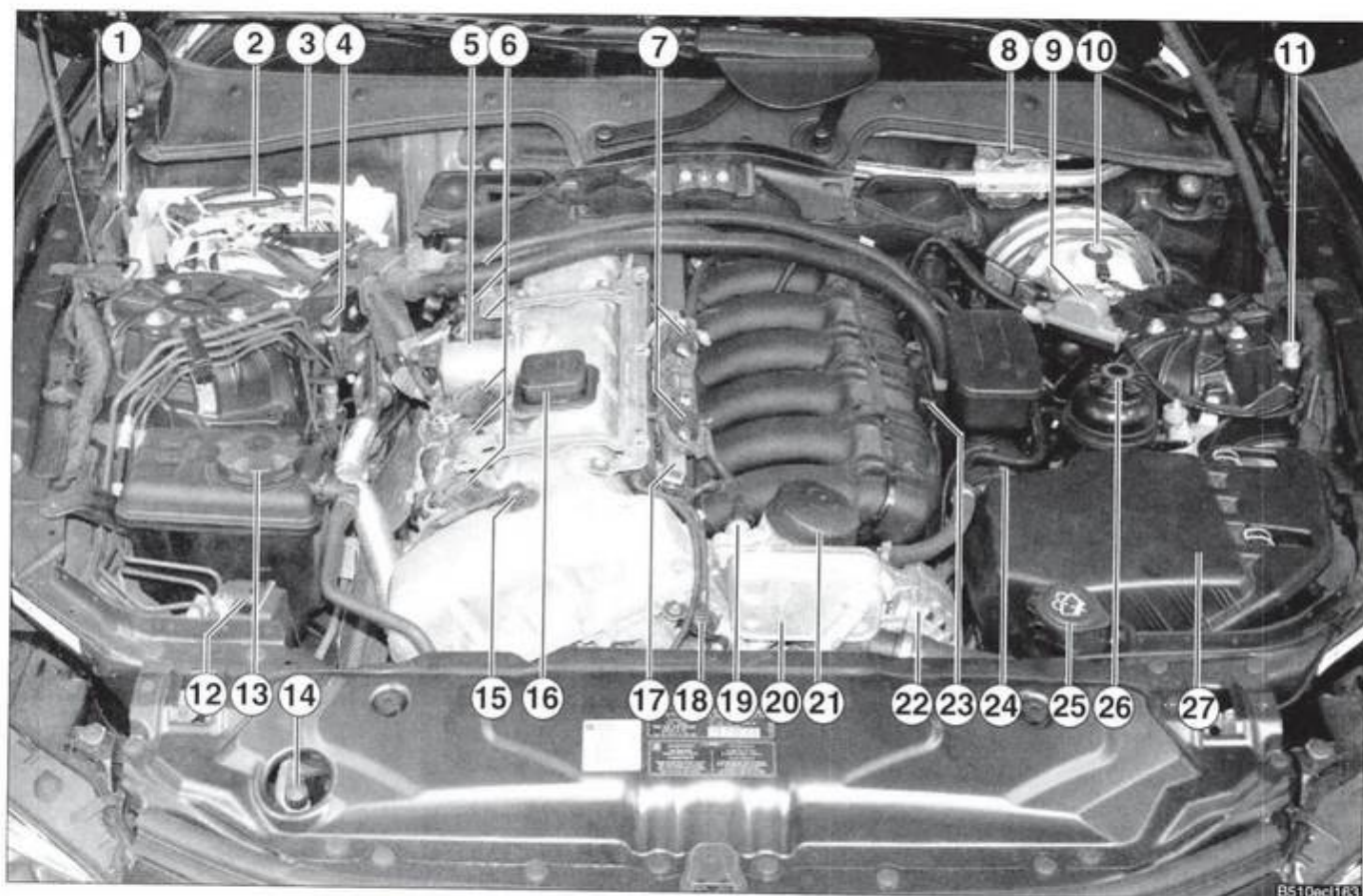


Fig 38 Engine compartment, covers removed
(N52 engine)

- | | |
|---|--|
| 1. X6 Ground lug | 13. Engine coolant overflow reservoir |
| 2. E-box | 14. A/C refrigerant port |
| 3. A6000 Engine control module (ECM) | 15. Cylinder head cover breather port |
| 4. A/C refrigerant port | 16. Oil filler cap |
| 5. M6353 Valvetronic actuator | 17. Fuel rail |
| 6. T6151 -T6156 Ignition coils | 18. B6236a Engine coolant temperature sensor |
| 7. X62102 - X62202 Post-catalyst oxygen sensor connectors | 19. B6231 Oil pressure switch |
| 8. M3a Windshield wiper motor | 20. Engine oil cooler |
| 9. G6430 B+ jump start terminal | 21. Oil filter housing cap |
| 10. B18a Brake fluid level switch | 22. G6524 Alternator (generator) |
| 11. Ground jumper lug | 23. Y6540 Variable intake manifold (DISA) solenoid |
| 12. A65 ABS / DSC control module | 24. B6207 Mass air flow sensor |
| | 25. Washer fluid reservoir cap |
| | 26. Power steering fluid reservoir cap |
| | 27. Air filter housing |

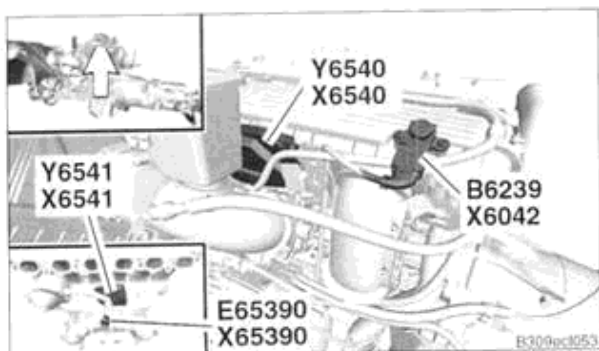


Fig 39 Left of cylinder head



Top of intake manifold:

- B6239 Intake pressure (MAP) sensor
- E65390 Crankcase breather heater
- X6042 Connector
- X6540 Connector
- X6541 Connector
- X65390 Connector
- Y6540 Variable intake manifold (DISA) controller 1
- Y6541 Variable intake manifold (DISA) controller 2

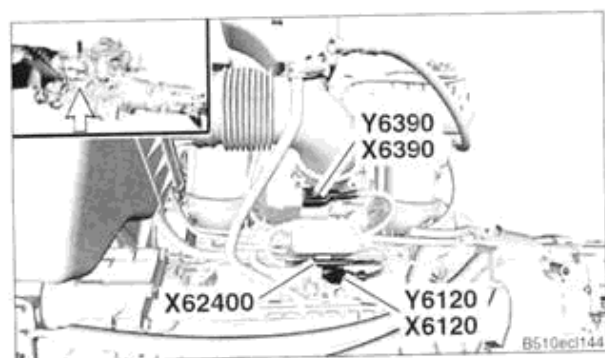


Fig 40 Left of cylinder head (N52 engine)



Underneath intake manifold:

- X6120 Connector
- X6390 Connector
- X62400 Connector
- Y6120 Fuel tank evaporative emissions control valve
- Y6390 Throttle valve

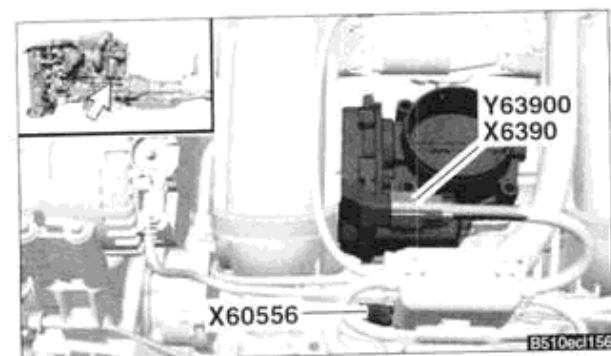


Fig 41 Left of cylinder head (N52K engine)



Underneath intake manifold:

- X6390 Connector
- X60556 Connector
- Y63900 Throttle valve

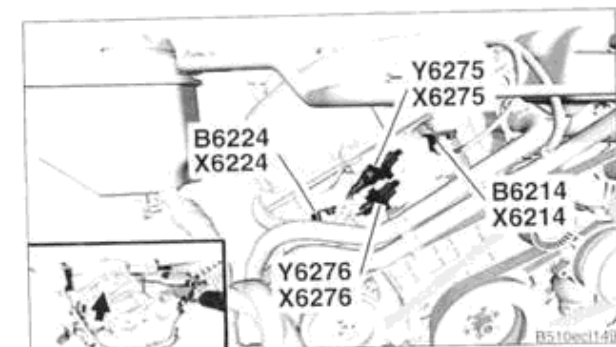


Fig 42 Front of cylinder head



On coolant outlet:

- B6214 Intake camshaft sensor
- B6224 Exhaust camshaft sensor
- X6214 Connector
- X6224 Connector
- X6275 Connector
- X6276 Connector
- Y6275 Intake VANOS solenoid
- Y6276 Exhaust VANOS solenoid

ECL-50 Electrical Component Locations

Engine compartment (N52 engine)

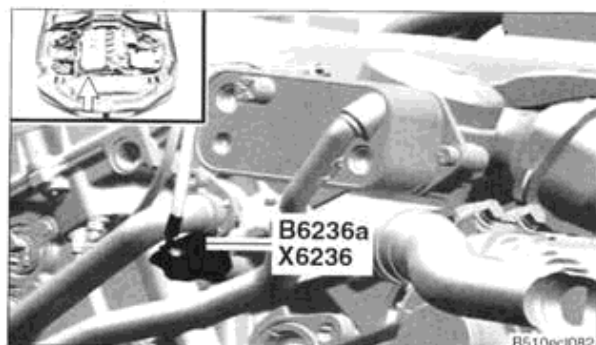


Fig 43 Front of cylinder head



On coolant outlet:

- B6236a Engine coolant temperature (ECT) sensor
- X6236 Connector

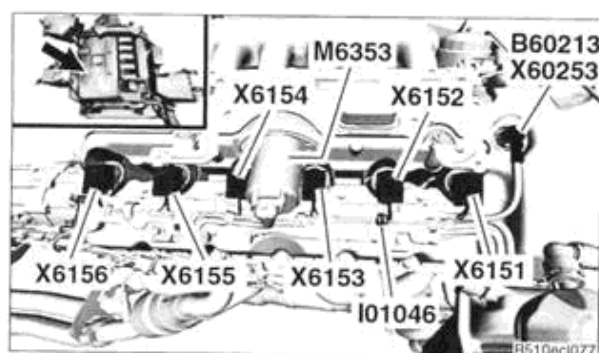


Fig 44 Right of cylinder head



Underneath ignition coil plastic cover:

- B60213 Valvetronic eccentric shaft sensor
- M6353 Valvetronic actuator
- I01046 Interference suppression capacitor, ignition coils
- X6151 - X6156 Ignition coil connectors
- X60253 Connector

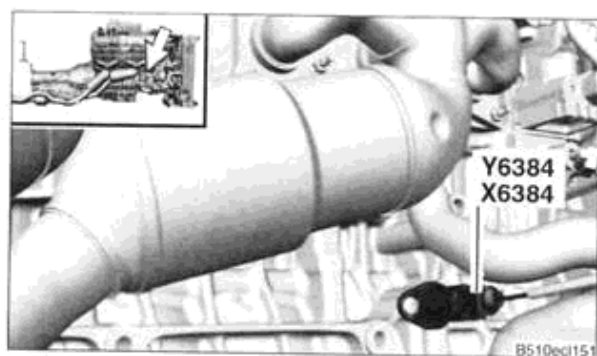


Fig 45 Right front engine compartment



right front lower engine block:

- X6384 Connector
- Y6384 Oil pressure control valve

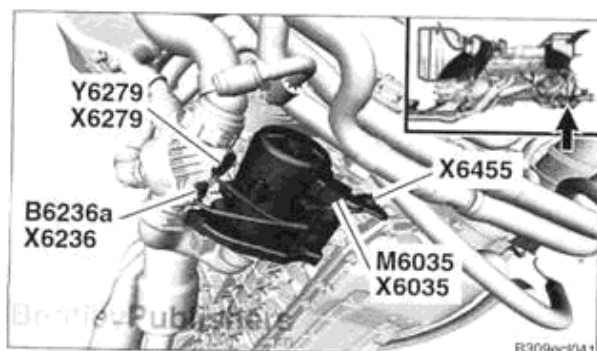


Fig 46 Right front engine compartment



Bolted to lower front right of engine:

- B6236a Engine coolant temperature (ECT) sensor
- M6035 Electric coolant pump
- X6035 Connector
- X6236 Connector
- X6279 Connector
- X6455 Ground Electric coolant pump
- Y6279 Coolant thermostat

Electrical Component Locations ECL-51

Engine compartment (N54 engine)

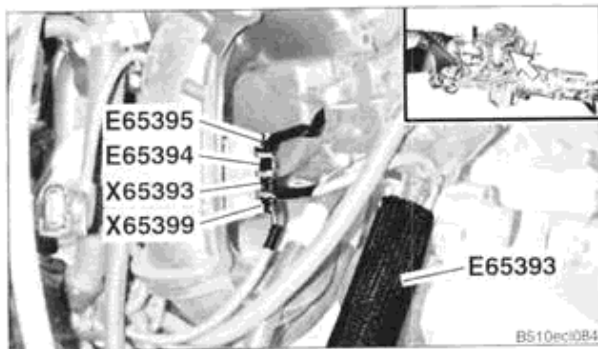


Fig 47 Rear of engine



Rear of intake manifold:

- E65393 - E65395 Crankcase breather heater
- X65393 Connector
- X65399 Connector

Engine compartment (N54 engine)

Fig 48 Left side of engine



Intake manifold removed:

- B2261 Fuel rail pressure sensor
- B6125a Low fuel pressure sensor
- B6231 Oil pressure switch
- B62400 Knock sensors
- G6524 Alternator
- M6510a Starter
- Y2381 Fuel volume control valve

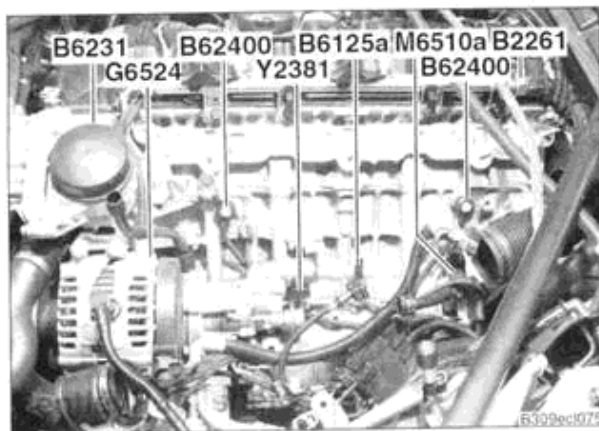


Fig 49 Left side of engine



Left rear of engine:

- B6203 Crankshaft sensor
- B6239 Intake pressure (MAP) sensor
- B6583 Intake temperature and boost pressure sensor
- E65390 Crankcase breather heater
- X6120 Connector
- X6203 Connector
- X6239 Connector
- X6583 Connector
- X65391 Connector
- Y6120 Evaporative emissions control valve

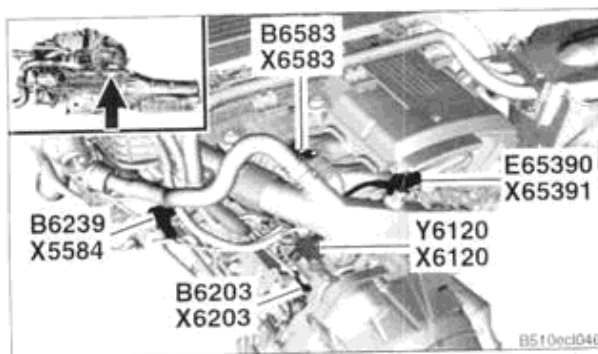
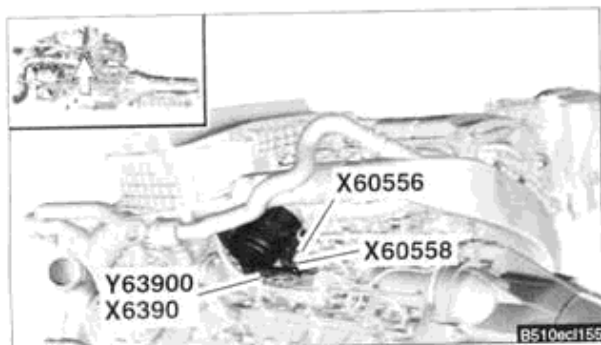


Fig 50 Left side of engine



Underneath intake manifold:

- X6390 Connector
- X60556 Connector
- X60558 Connector
- Y63900 Throttle valve



ECL-52 Electrical Component Locations

Engine compartment (N54 engine)

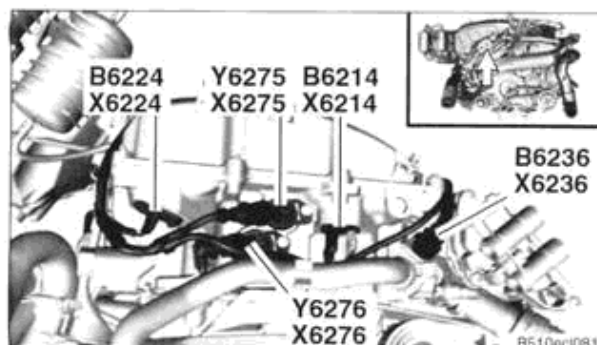


Fig 51 Front of engine



Front of cylinder head:

- B6214 Intake camshaft sensor
- B6224 Exhaust camshaft sensor
- X6214 Connector
- X6224 Connector
- X6236 Connector
- X6275 Connector
- X6276 Connector
- Y6275 Intake VANOS solenoid
- Y6276 Exhaust VANOS solenoid

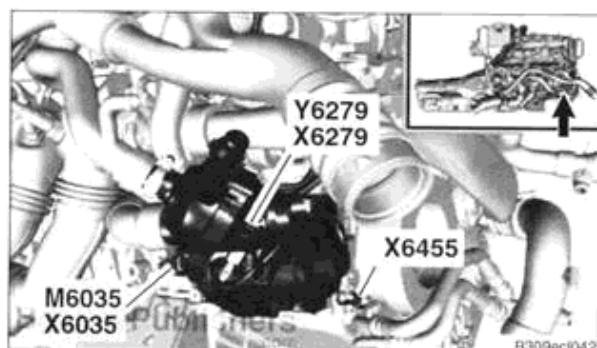


Fig 52 Right front engine compartment



Bolted to lower front right of engine (arrow):

- M6035 Electric coolant pump
- X6035 Connector
- X6455 Ground
Electric coolant pump
- X6279 Connector
- Y6279 Coolant thermostat

Engine compartment (N62 engine)

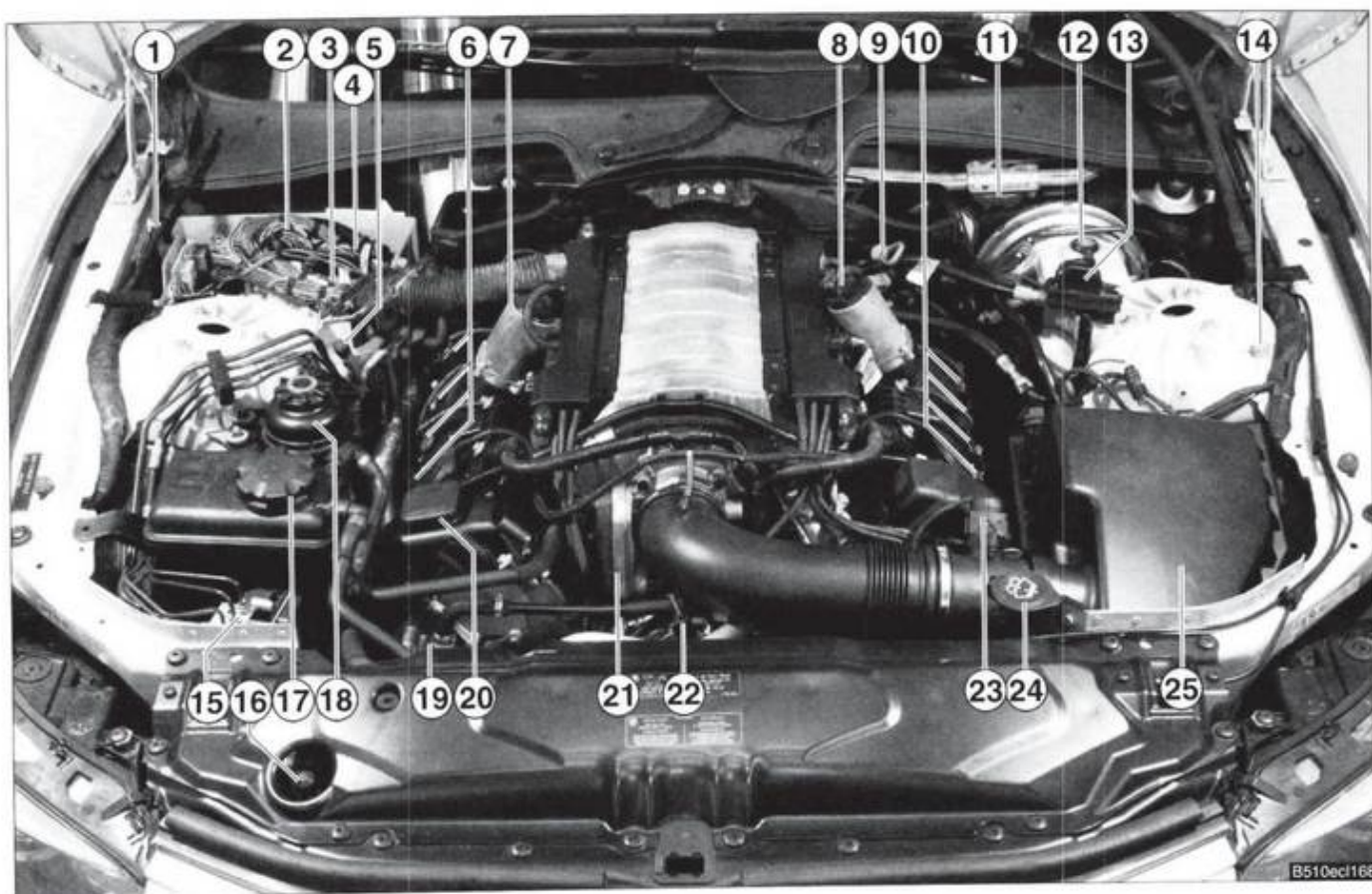


Fig 53 Engine compartment, covers removed (N62 engine)

- | | |
|---|---|
| 1. X6 Ground lug | 12. B18a Brake fluid level switch |
| 2. E-box | 13. G6430 B+ jump start terminal |
| 3. A60210 Valvetronic control module | 14. Ground jumper lug |
| 4. A6000 Engine control module (ECM) | 15. A65 ABS / DSC control module |
| 5. A/C refrigerant port | 16. A/C refrigerant port |
| 6. T6151 - T6154 Ignition coils, right bank | 17. Engine coolant overflow reservoir |
| 7. M6351 Valvetronic actuator, right bank | 18. Power steering fluid reservoir cap |
| 8. M6352 Valvetronic actuator, left bank | 19. Vacuum pump |
| 9. Engine oil dipstick | 20. Oil filler cap |
| 10. T6155 - T6158 Ignition coils, left bank | 21. Y6390 Throttle valve |
| 11. M3a Windshield wiper motor | 22. B6236 Engine coolant temperature sensor |
| | 23. B6207 Mass air flow sensor |
| | 24. Washer fluid reservoir cap |
| | 25. Air filter housing |

ECL-54 Electrical Component Locations

Engine compartment (N62 engine)

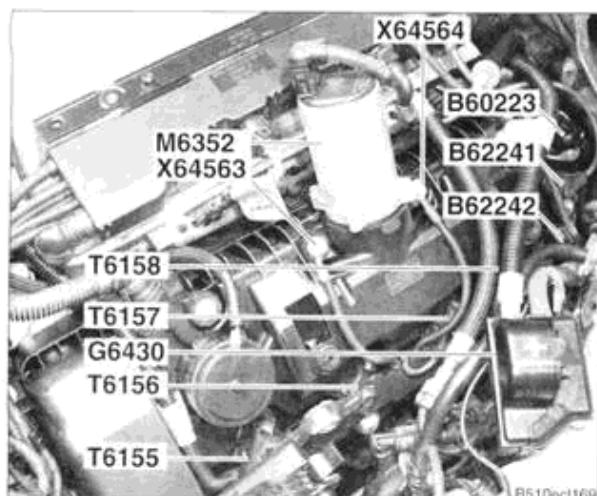


Fig 54 Left side of engine



Cylinder head cover, left bank:

- B60223 Valvetronic eccentric shaft sensor, left bank
- B62241 Intake camshaft sensor, left bank
- B62242 Exhaust camshaft sensor, left bank
- G6430 B+ jump start terminal
- M6352 Valvetronic actuator, left bank
- T6155 - T6158 Ignition coils 5 - 8
- X64563 - X64564 Ignition coil grounds

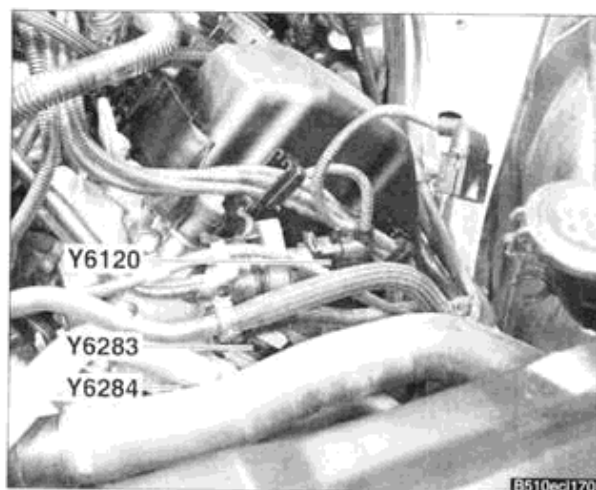


Fig 55 Left front of engine



Front of left cylinder head, air filter housing and duct removed:

- Y6120 Fuel tank evaporative emissions control valve
- Y6283 VANOS intake solenoid, left cylinder head
- Y6284 VANOS exhaust solenoid, left cylinder head

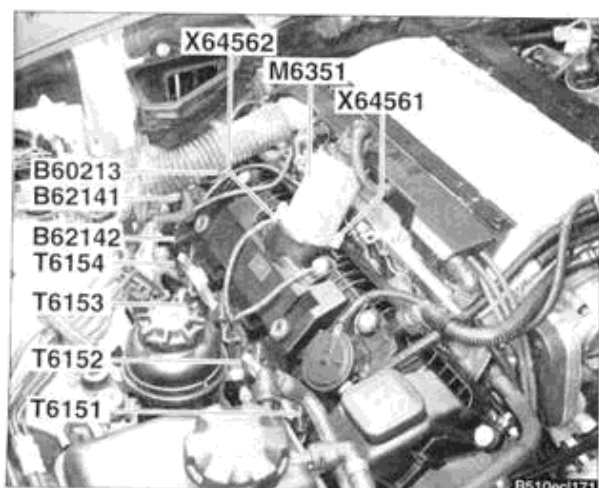


Fig 56 Right side of engine



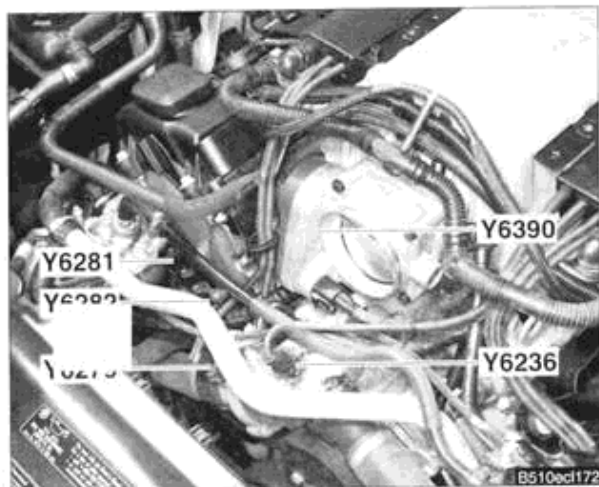
Cylinder head, right bank:

- B60213 Valvetronic eccentric shaft sensor, right bank
- B62141 Intake camshaft sensor, right bank
- B62142 Exhaust camshaft sensor, right bank
- M6351 Valvetronic actuator, right bank
- T6151 - T6154 Ignition coils 1 - 4

Electrical Component Locations ECL-55

Engine compartment (N62TU engine)

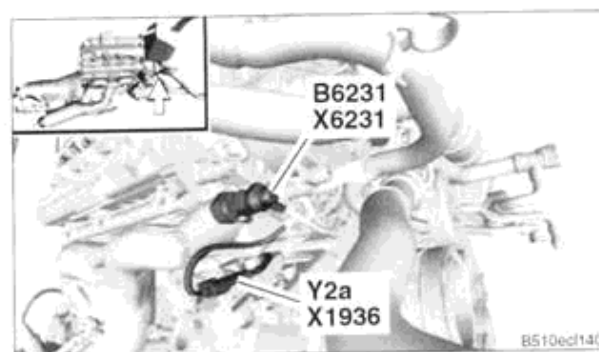
Fig 57 Front of engine



Air intake duct removed:

- Y6236 Engine coolant temperature (ECT) sensor
- Y6279 Engine coolant thermostat (characteristic cooling map)
- Y6281 VANOS intake solenoid, right cylinder head
- Y6282 VANOS exhaust solenoid, right cylinder head
- Y6390 Throttle valve actuator

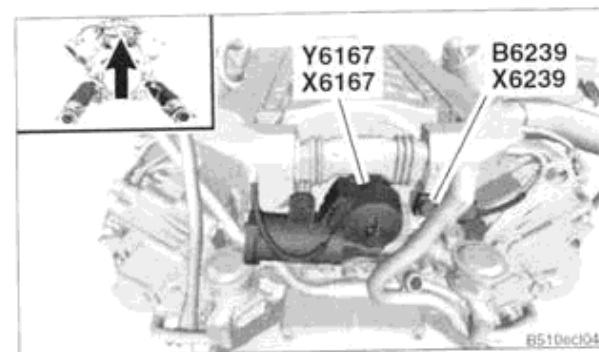
Fig 58 Right front of engine



Front of right cylinder head:

- B6231 Oil pressure switch
- X1936 Connector
- X6231 Connector
- Y2a A/C compressor control valve

Fig 59 Rear of engine

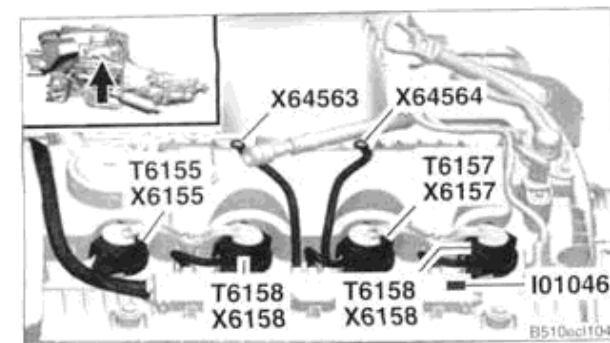


On intake manifold:

- B6239 Intake pressure (MAP) sensor
- X6167 Connector
- X6239 Connector
- Y6167 Variable intake manifold (DISA) solenoid

Engine compartment (N62TU engine)

Fig 60 Left side of engine



Cylinder head, left bank:

- I01046 Interference suppression capacitor, ignition coils
- T6155 - T6158 Ignition coils 5 - 8
- X64563 - X64564 Ignition coil grounds

ECL-56 Electrical Component Locations

Engine compartment (N62TU engine)

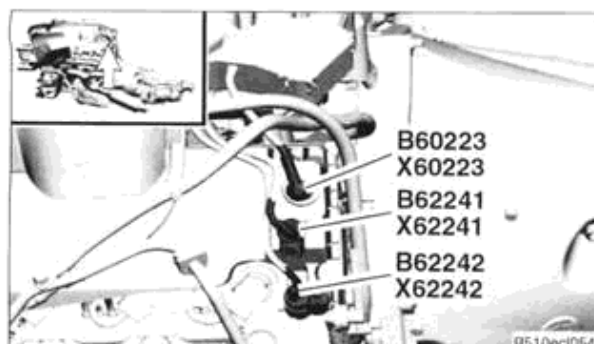


Fig 61 Left side of engine



Cylinder head, left bank, rear:

- B60223 Eccentric shaft sensor, left bank
- B62241 Intake camshaft sensor, left bank
- B62242 Exhaust camshaft sensor, left bank
- X60223 Connector
- X62241 Connector
- X62242 Connector

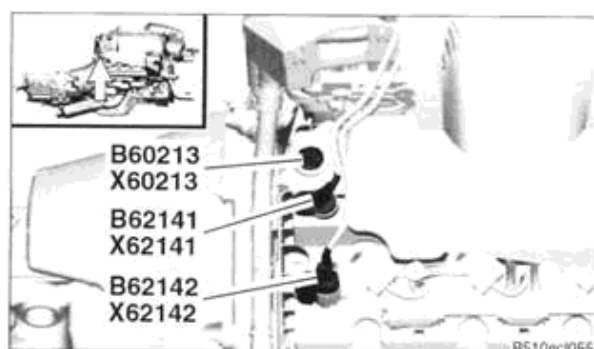


Fig 62 Right side of engine



Cylinder head, left bank, rear:

- B60213 Eccentric shaft sensor, right bank
- B62141 Intake camshaft sensor, right bank
- B62142 Exhaust camshaft sensor, right bank
- X60213 Connector
- X62141 Connector
- X62142 Connector

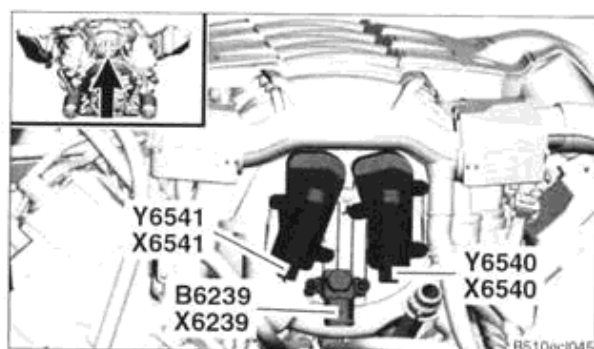


Fig 63 Rear of engine



On intake manifold:

- B6239 Intake pressure (MAP) sensor
- X6239 Connector
- X6540 Connector
- X6541 Connector
- Y6540 Variable intake manifold (DISA) controller, right cylinder head
- Y6541 Variable intake manifold (DISA) controller, left cylinder head

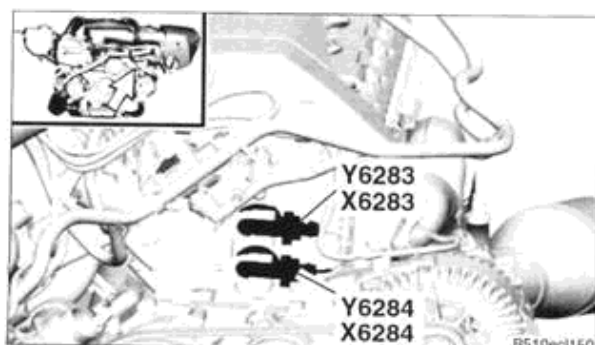


Fig 64 Front of engine



Front of left cylinder head:

- X6283 Connector
- X6284 Connector
- Y6283 VANOS intake solenoid, left cylinder head
- Y6284 VANOS exhaust solenoid, left cylinder head

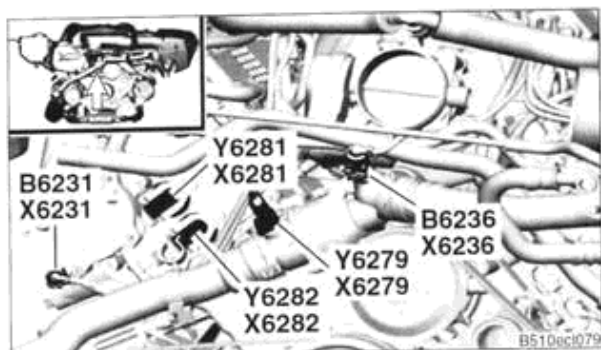


Fig 65 Front of engine



Front of right cylinder head:

- B6231 Oil pressure switch
- B6236 Engine coolant temperature (ECT) sensor
- X6231 Connector
- X6236 Connector
- X6279 Connector
- X6281 Connector
- X6282 Connector
- Y6279 Engine coolant thermostat
- Y6281 VANOS intake solenoid, right cylinder head
- Y6282 VANOS exhaust solenoid, right cylinder head

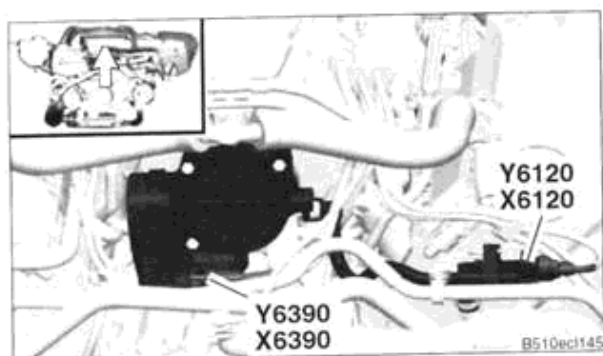


Fig 66 Front of engine



At intake manifold:

- X6120 Connector
- X6390 Connector
- Y6120 Fuel tank evaporative emissions control valve
- Y6390 Throttle valve

Oxygen sensors

Fig 67 Exhaust manifold (M54 engine)



Right side engine compartment:

- B62101 Pre-catalyst oxygen sensor, cyl 1 - 3
- B62201 Pre-catalyst oxygen sensor, cyl 4 - 6
- X62101 Oxygen sensor connector
- X62102 Oxygen sensor connector

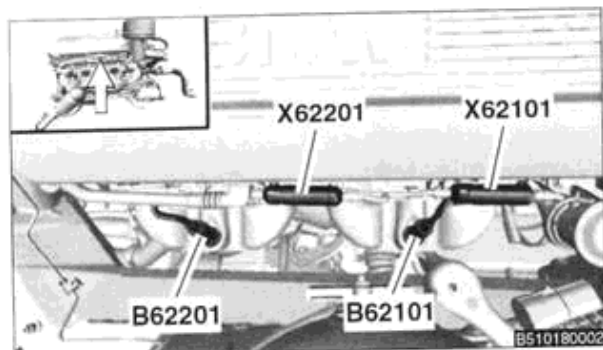
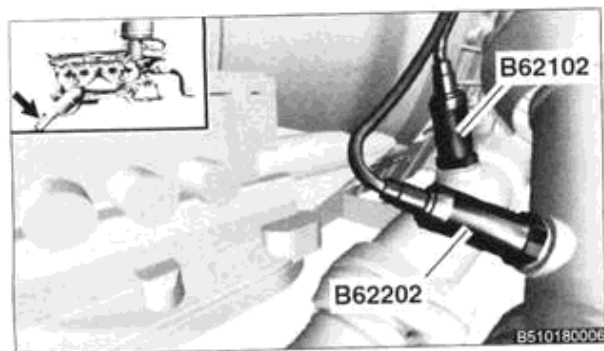


Fig 68 Exhaust pipe (M54 engine)



Underneath right side engine, below catalytic converters:

- B62102 Post-catalyst oxygen sensor, cyl 1 - 3
- B62202 Post-catalyst oxygen sensor, cyl 4 - 6



ECL-58 Electrical Component Locations

Oxygen sensors

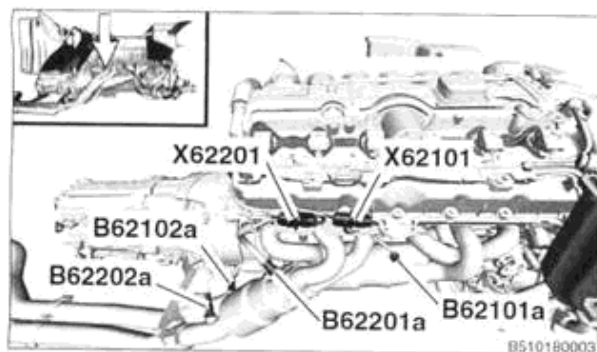


Fig 69 Exhaust manifold (N52 engine)

Right side engine compartment:

- B62101a Pre-catalyst oxygen sensor, cyl 1 - 3
- B62102a Post-catalyst oxygen sensor, cyl 1 - 3
- B62201a Pre-catalyst oxygen sensor, cyl 4 - 6
- B62202a Post-catalyst oxygen sensor, cyl 4 - 6
- X62101 Oxygen sensor connector
- X62201 Oxygen sensor connector

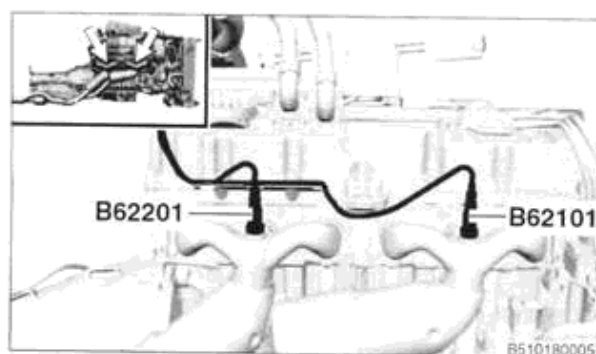


Fig 70 Exhaust manifold (N52K engine)

Right side engine compartment:

- B62101 Pre-catalyst oxygen sensor, cyl 1 - 3
- B62202 Pre-catalyst oxygen sensor, cyl 4 - 5

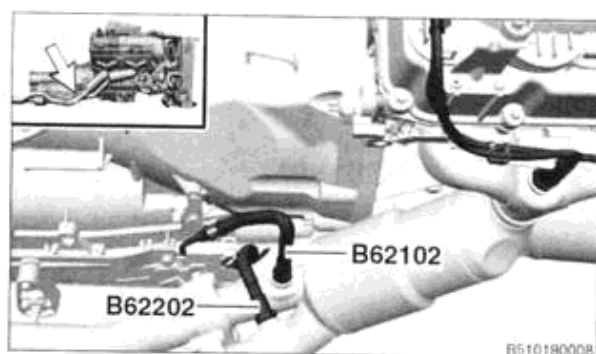


Fig 71 Exhaust pipe (N52K engine)

Underneath right side engine, below catalytic converters:

- B62102 Post-catalyst oxygen sensor, cyl 1 - 3
- B62202 Post-catalyst oxygen sensor, cyl 4 - 6

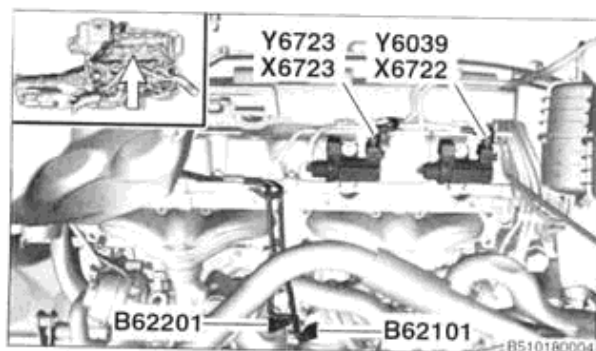


Fig 72 Exhaust manifold (N54 engine)

Right side engine compartment:

- B62101 Pre-catalyst oxygen sensor, cyl 1 - 3
- B62201 Pre-catalyst oxygen sensor, cyl 4 - 6
- X6722 Connector
- X6723 Connector
- Y6039 Wastegate solenoid 1
- Y6723 Wastegate solenoid 2

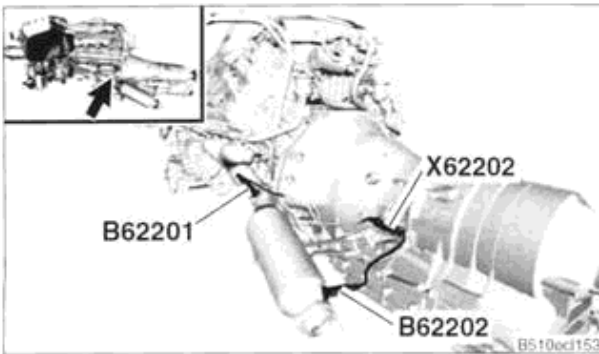


Fig 73 Left bank front pipe and catalytic converter (N62 engine)



Left bank catalytic converter:

- B62201 Pre-catalyst oxygen sensor, left bank
- B62202 Post-catalyst oxygen sensor, left bank
- X62202 Oxygen sensor connector

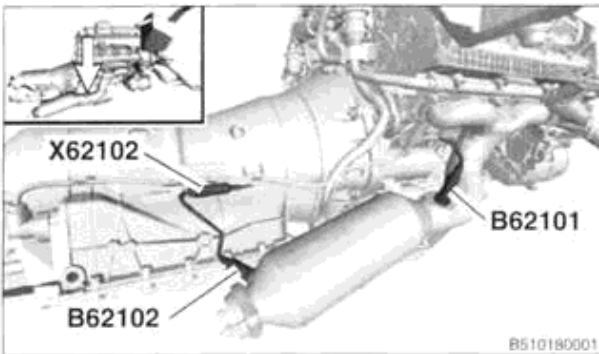


Fig 74 Right bank front pipe and catalytic converter (N62 engine)



Right bank catalytic converter:

- B62101 Pre-catalyst oxygen sensor, right bank
- B62102 Post-catalyst oxygen sensor, right bank
- X62102 Oxygen sensor connector

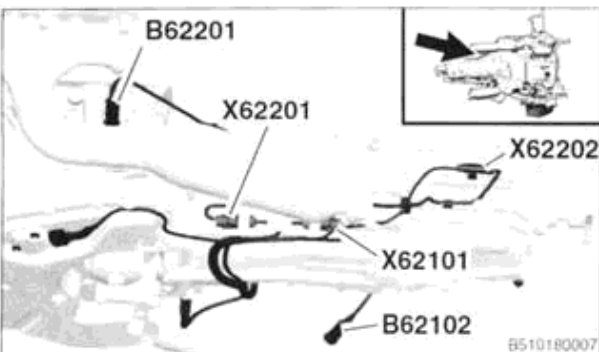


Fig 75 front pipes and catalytic converters (N62TU engine)



Left bank catalytic converter:

- B62102 Post-catalyst oxygen sensor, right bank
- B62201 Pre-catalyst oxygen sensor, left bank
- X62102 Oxygen sensor connector
- X62201 Oxygen sensor connector
- X62202 Oxygen sensor connector

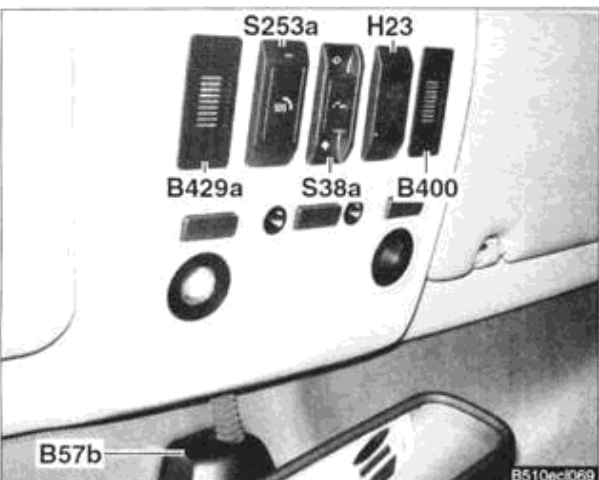
Passenger compartment components

Fig 76 Top of windshield



In headliner:

- B57b Rain and light sensor
- B400 Microphone
- B429a Hands-free microphone
- H23 Passenger airbag deactivated warning light
- S38a Sunroof switch
- S253a Emergency call button



ECL-64 Electrical Component Locations

Seat components

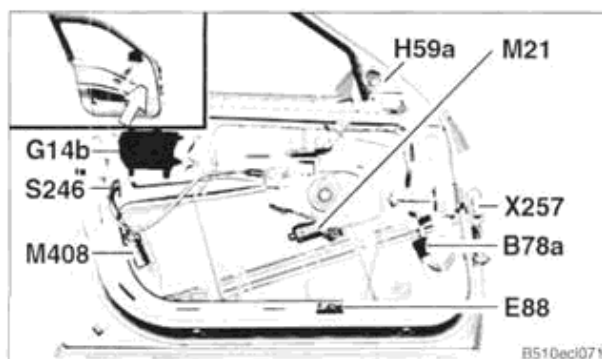


Fig 93 Driver door



Behind trim:

- B78a Airbag crash sensor
- E88 Door courtesy light
- G14b Side airbag
- H59a Tweeter
- M21 Window regulator motor
- M408 Soft-close lock motor
- S246 Door lock motor
- X257 Driver door electronics harness connector

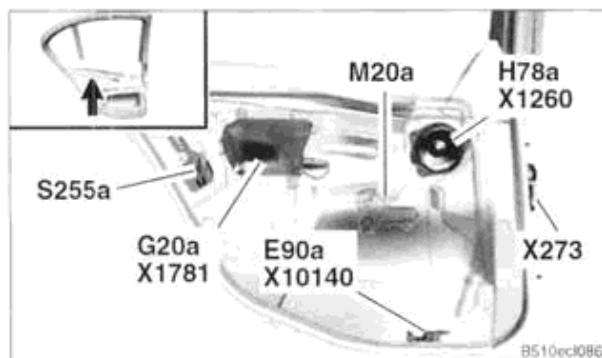
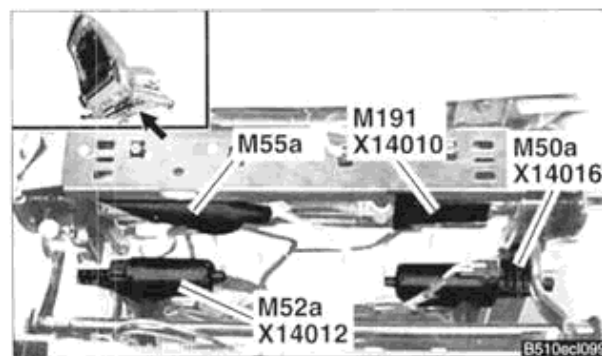


Fig 94 Left rear door



Behind trim:

- E90a Door courtesy light
- G20a Rear side airbag
- H78a Midrange speaker
- M20a Window regulator motor
- S255a Door lock motor
- X273 Left rear door electronics harness connector
- X1260 Connector
- X1781 Connector
- X10140 Connector



Seat components

Fig 95 Driver seat



Seat control motors, underneath seat:

- M50a Seat angle adjustment motor
- M52a Seat height adjustment motor
- M55a Lumbar support adjustment motor
- M191 Seat depth adjustment motor
- X14010 Connector
- X14012 Connector
- X14016 Connector

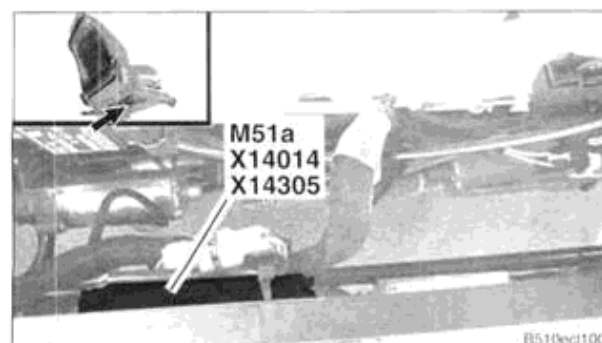


Fig 96 Driver seat



Seat control motor, underneath seat:

- M51a Seat fore-aft control motor
- X14014 Connector
- X14305 Connector

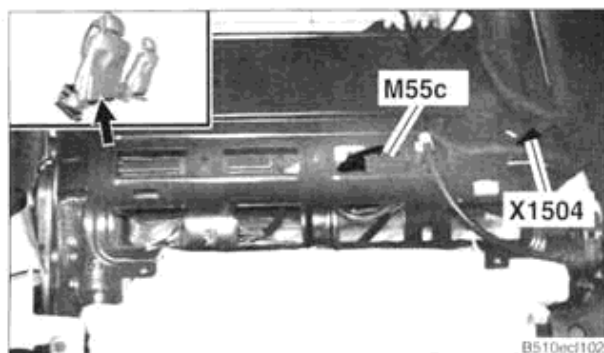


Fig 97 Driver seat

- Seat control motor, underneath seat:
- M55c Lumbar support drive unit
 - X729 Connector
 - X1503 Connector
 - Y193 Valve block, lumbar support

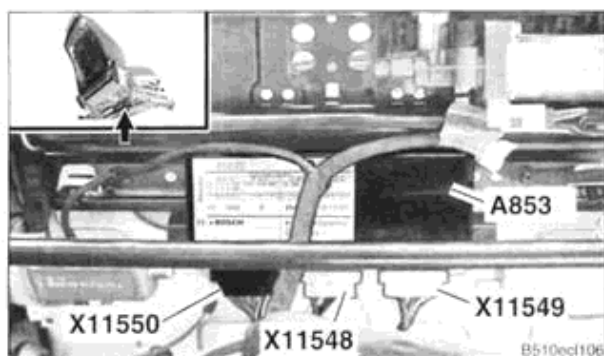


Fig 98 Driver seat

- Underneath seat:
- A853 Backrest width adjustment (active backrest) module
 - X11550 Connector
 - X11548 Connector
 - X11549 Connector

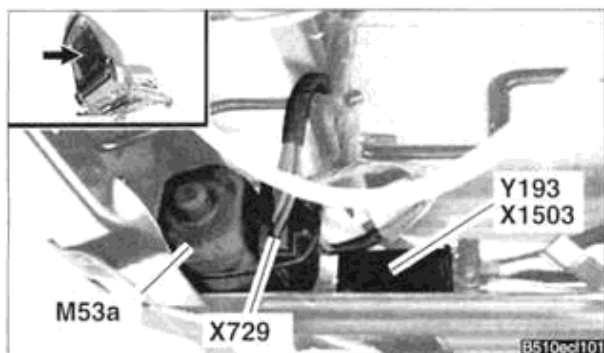


Fig 99 Driver seat backrest

- Seat rear panel removed:
- M53a Backrest angle adjustment motor
 - X729 Connector
 - X1503 Connector
 - Y193 Valve block, lumbar support

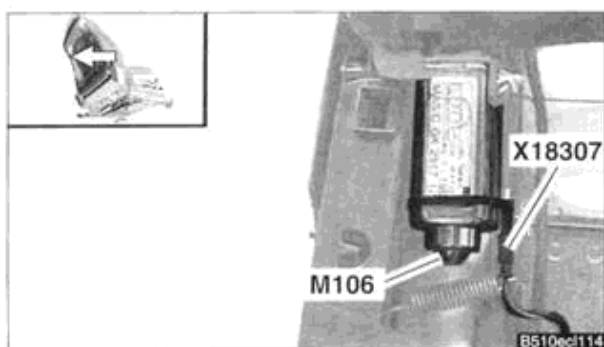


Fig 100 Driver seat backrest

- Seat rear panel removed:
- M106 Upper backrest angle adjustment motor
 - X18307 Connector