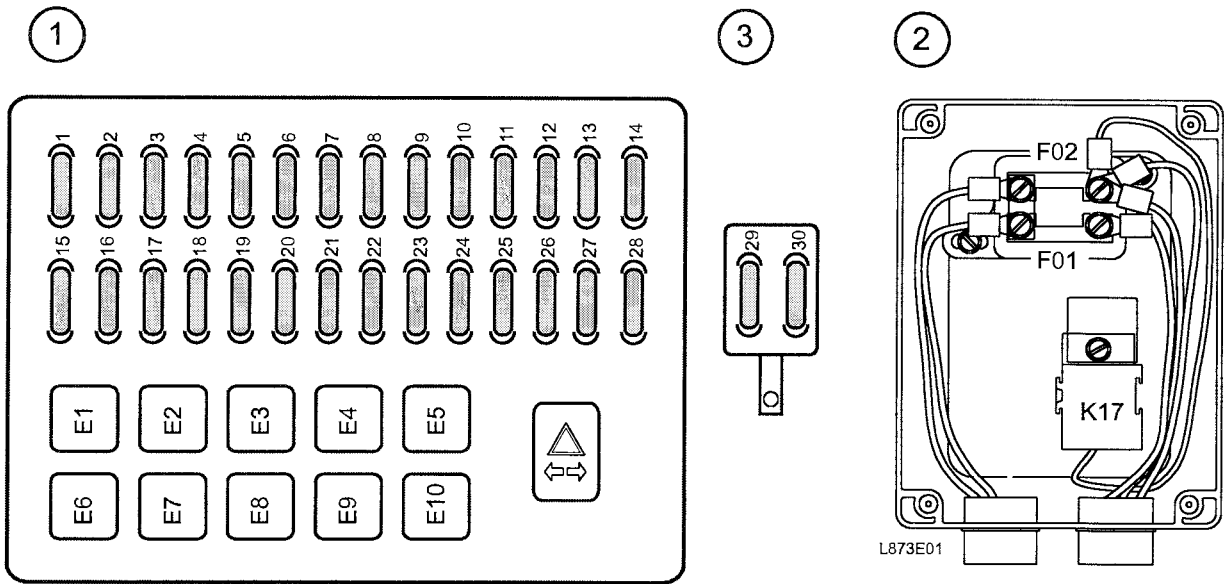


**HML 23      SERVICE-MANUAL**

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- 1 = fuse and relay box..... seat console, bottom right
- 2 = starter box ..... engine compartment dividing wall - tank, right
- 3 = fuse box ..... behind fuse and relay box (pos. 1)

Location	Relay	Function
E 1	K 1	Starting safety
E 2	K 2	Parking brake; travel
E 3	K 3	Travel - reverse
E 4	K 4	Travel - forward
E 5	K 5	Brake light
E 6	K 6	Low idle
E 7	K 7	Flasher transmitter
E 8		not assigned
E 9	K 9	Working floodlight, front
E 10	K 10	Working floodlight, rear
		not assigned
	K 17	Start-up
	K18	Pre-heating time control (engine compartment dividing wall - near generator)

## Fuse and diode assignment

Position	Ampere	assigned to	Position	Ampere	assigned to
F 1	10	Flasher Immobilizer	F 15	15	Engine shut off
F 2	10	Travel - quick / slow	F 16	10	Heater fan
F 3	10	Working hydraulics Float; add. control circuit	F 17	10	Front wiper
F 4	10	Dashboard illumination D+	F 18	10	Rear wiper
F 5	10	Signal horn	F 19		Option
F 6	10	Brake light	D 7 (F 20)	Diode 3A	Blocking diode
F 7		Option	D 8 (F 21)	Diode 3A	Blocking diode
F 8	10	Working floodlight front	D 9 (F 22)	Diode 3A	Blocking diode
F 9	10	Working floodlight rear	F 23	10	Side marker light left
F 10	10	Hazard warning switch Immobilizer	F 24	10	Side marker light right
F 11	10	Rotation beacon Cab light	D 6 (F 25)	Diode 3A	Blocking diode D+
F 12	10	Socket	D 1 (F 26)	Diode 3A	Starting safety
F 13	10	Low beam	D 2 (F 27)	Diode 3A	Starting safety
F 14	10	High beam	D 3 (F 28)	Diode 3A	Engine cut off diode

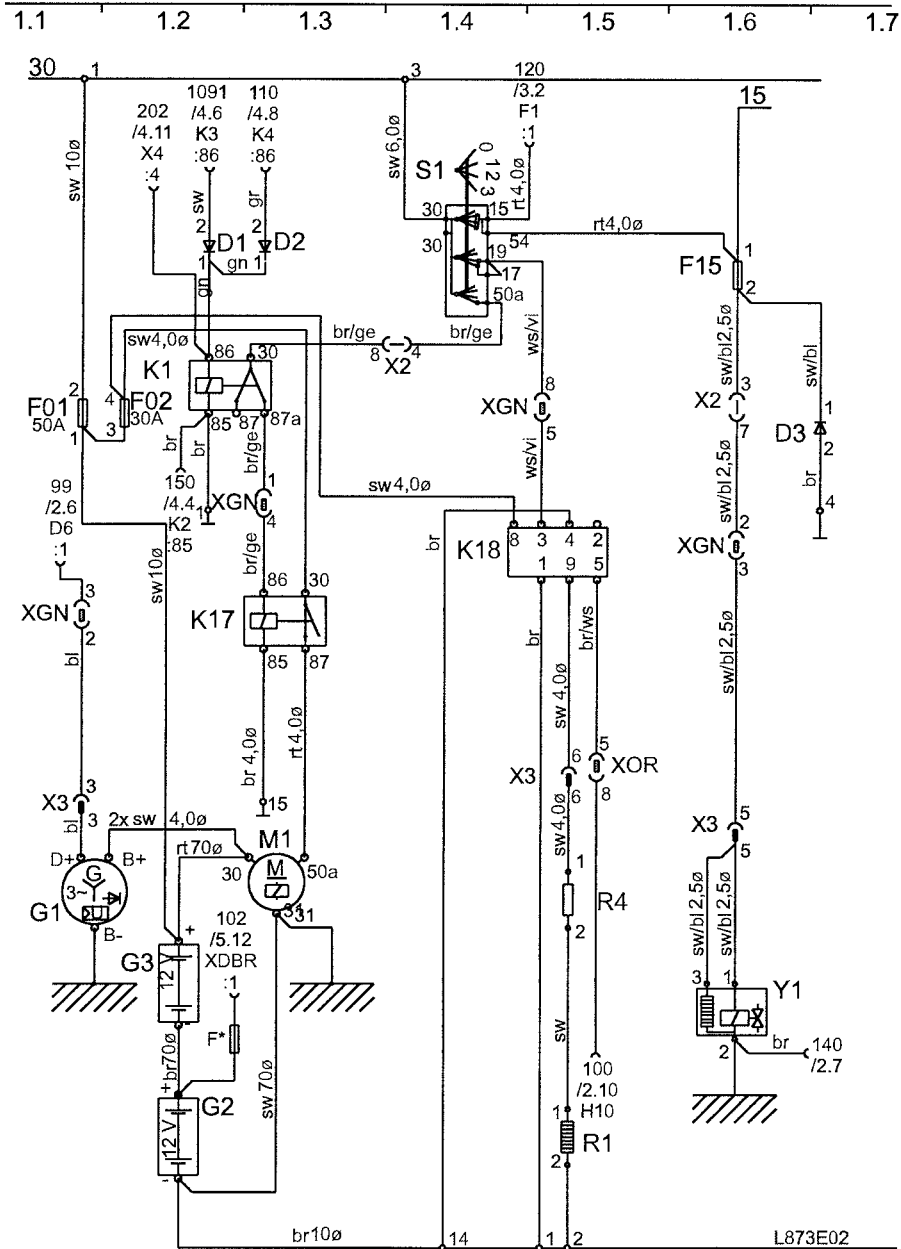
F 01	50	Pre-heat / starter switch	F 02	30	Starter
F *	10	Radio (cable fuse - near battery)			

D 10 (F 29)	Diode 3A	Float position	D 11 (F 30)	Diode 3A	Float position
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## Cable and plug colours

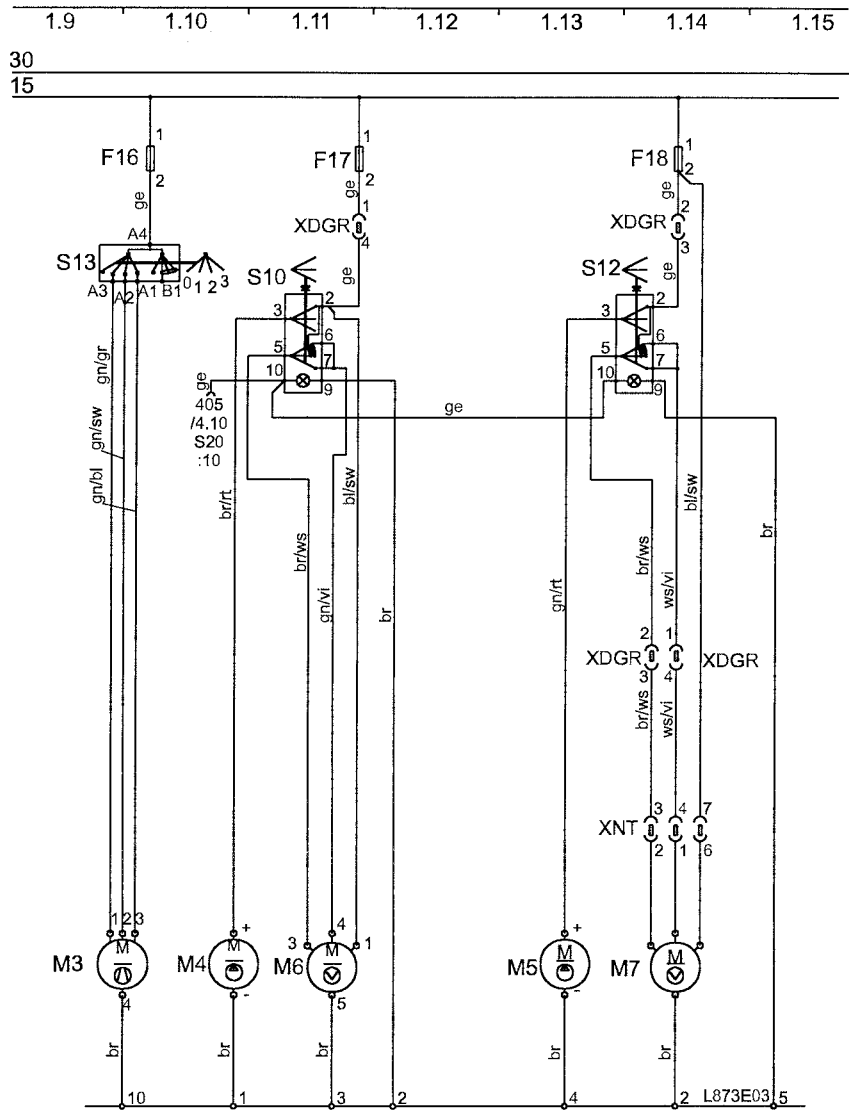
bg	beige	dgr	dark grey	hbr	light brown	rt	red
bl	blue	ge	yellow	hgr	light grey	sw	black
br	brown	gn	green	hr	light red	vi	violet
dbl	dark blue	gr	grey	nt	nature	ws	white
dbr	dark brown	hbl	light blue	or	orange		

## Start-up, pre-heat system



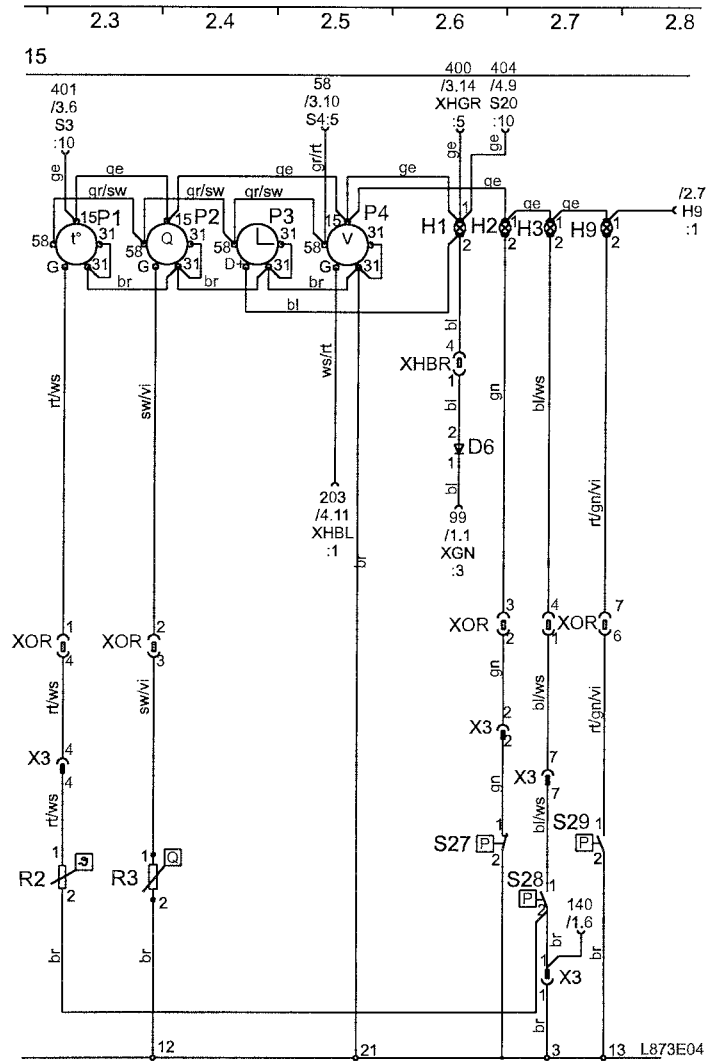
Path	Designation	Device	Path	Designation	Device
		<b>Start-up, pre-heat system</b>			
1.1	F01	Flat-type fuse 50A	1.2	G2	Battery 12V
1.1	F02	Flat-type fuse 30A	1.2	G3	Battery 12V
1.2	D1	Blocking diode	1.4	S1	Pre-heat / starter switch
1.3	D2	Blocking diode	1.5	K18	Pre-heat time control unit
1.2	K1	Start relay (starting safeguard)	1.5	R1	Flame-type glow plug
1.3	K17	Start relay (starting aid)	1.6	F15	Fuse
1.1	G1	Generator	1.7	D3	Blocking diode
1.3	M1	Starter	1.6	Y1	Cut-off

<b>Heater fan</b>	<b>Wash / wipe system</b>
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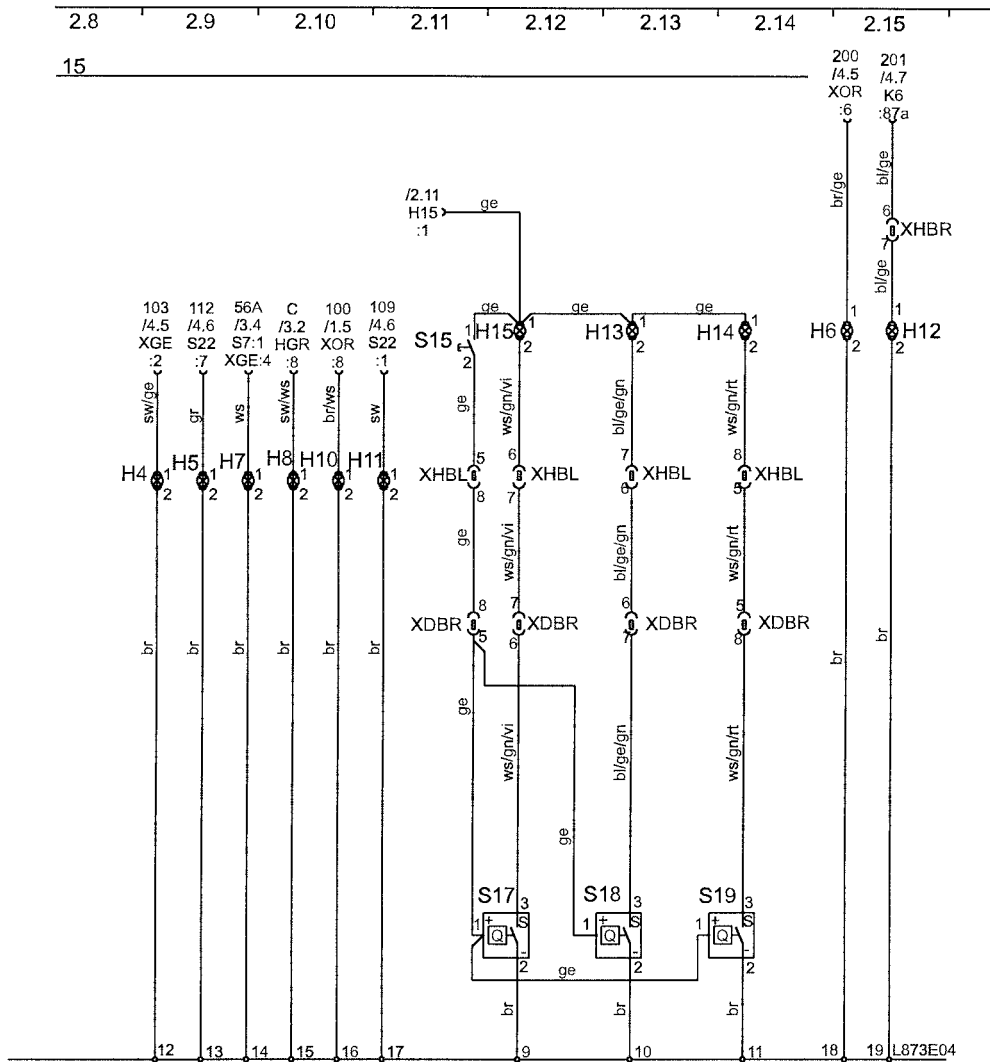
Path	Designation	Device	Path	Designation	Device
		<b>Heater fan</b>			<b>Rear wash / wipe system</b>
1.10	F16	Fuse	1.14	F18	Fuse
1.10	S13	Heater fan switch	1.14	S12	Rear wash / wipe switch
1.10	M3	Heater fan	1.13	M5	Rear washer pump
		<b>Front wash / wipe system</b>	1.14	M7	Rear wipe motor
1.12	F17	Fuse			
1.11	S10	Front wash / wipe switch			
1.11	M4	Front washer pump			
1.11	M6	Front wipe motor			

## Instruments, Indicating units



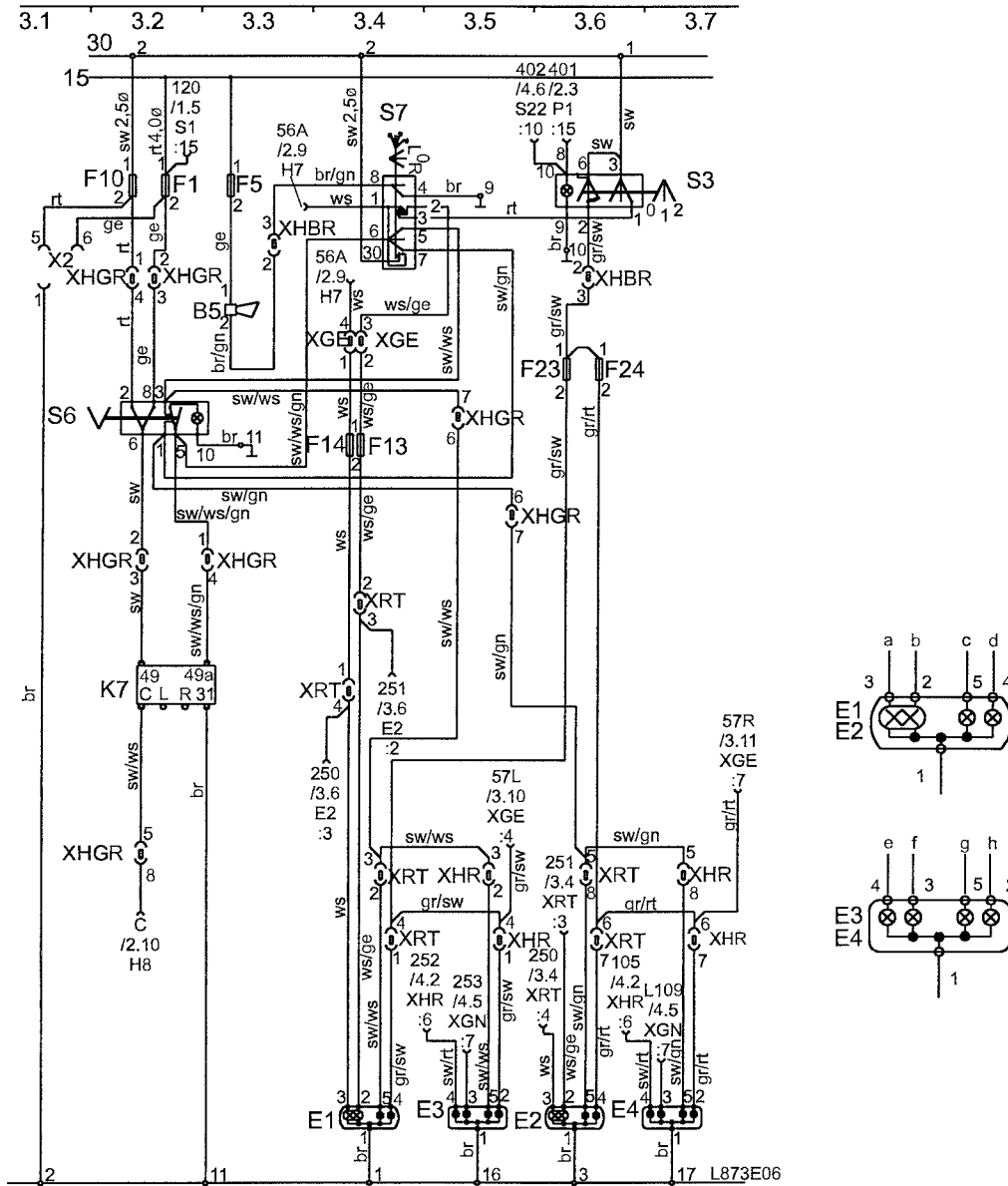
Path	Designation	Device	Path	Designation	Device
		<b>Indicating units</b>			<b>Indicating units</b>
2.3	P1	Temperature indicator	2.6	H1	Battery charge indicator lamp
2.3	R2	Coolant temperature sensor	2.6	D6	Blocking diode
2.4	P2	Fuel gauge	2.7	H2	Engine oil pressure indicator
2.4	R3	Fuel gauge transmitter	2.7	S27	Engine oil pressure switch
2.4	P3	Operating hour meter	2.7	H3	Air filter clogging indicator lamp
2.5	P4	Speedometer	2.7	S28	Air filter clogging switch
			2.8	H9	Indicator lamp hydraulic oil filter
			2.8	S29	Service unit hydraulic

# Indicator instruments, indicator lamps / check instruments



Path	Designation	Device	Path	Designation	Device
		<b>Indicator lamps and transmitter</b>			
2.9	H4	Parking brake indicator lamp	2.12	S17	Engine oil level gauge
2.9	H5	Travel - forward	2.13	H13	Coolant level gauge / indicator
2.10	H7	Upper beam indicator lamp	2.13	S18	Coolant level gauge
2.10	H8	Flasher	2.14	H14	Hydraulic oil level gauge / indicator
2.10	H10	Pre-heat indicator lamp	2.14	S19	Hydraulic oil level gauge
2.11	H11	Travel - reverse	2.15	H6	Spring loaded accumulator brake / indicator
2.12	H15	Engine oil level gauge / indicator	2.15	H12	Gear shifting, neutral position indicator lamp
2.12	S15	Check button			

## Lighting and signalling system

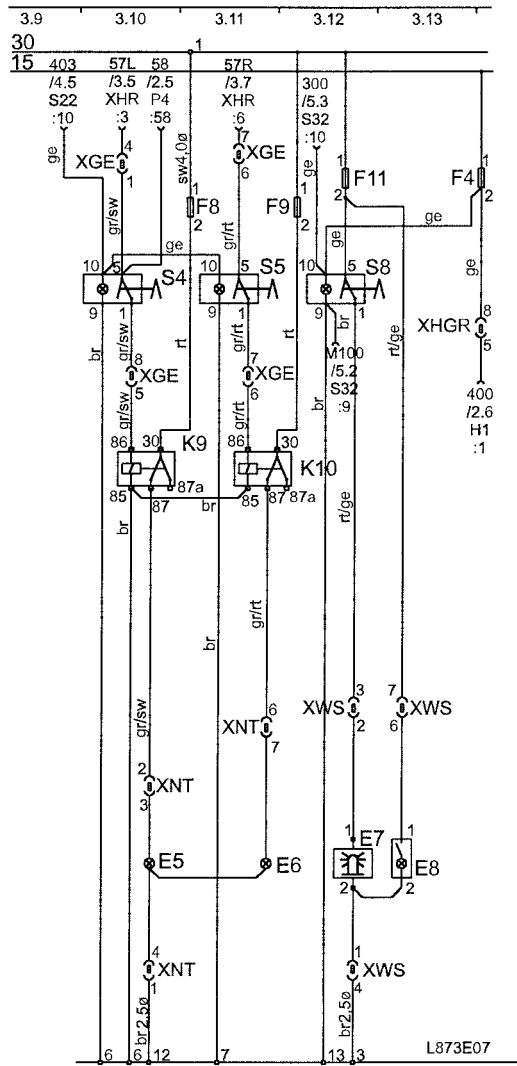


- |                       |                         |                       |
|-----------------------|-------------------------|-----------------------|
| a = Upper beam        | d = Side marker light   | g = Turning indicator |
| b = Lower beam        | e = Brake light         | h = Side marker light |
| c = Turning indicator | f = Reversing headlight |                       |

Path	Designation	Device	Path	Designation	Device
		<b>Lighting and signalling system</b>	3.4	F13	Fuse
			3.4	F14	Fuse
3.2	F10	Fuse	3.5	E1	Headlight left
3.2	F1	Fuse	3.5	E3	Rear light left
3.2	S6	Hazard warning switch	3.6	S3	Light switch
3.2	K7	Flashlight turning signal relay	3.6	F23	Fuse
3.3	F5	Fuse	3.6	F24	Fuse
3.3	B5	Horn	3.6	E2	Headlight right
3.4	S7	Steering column switch	3.7	E4	Rear light right

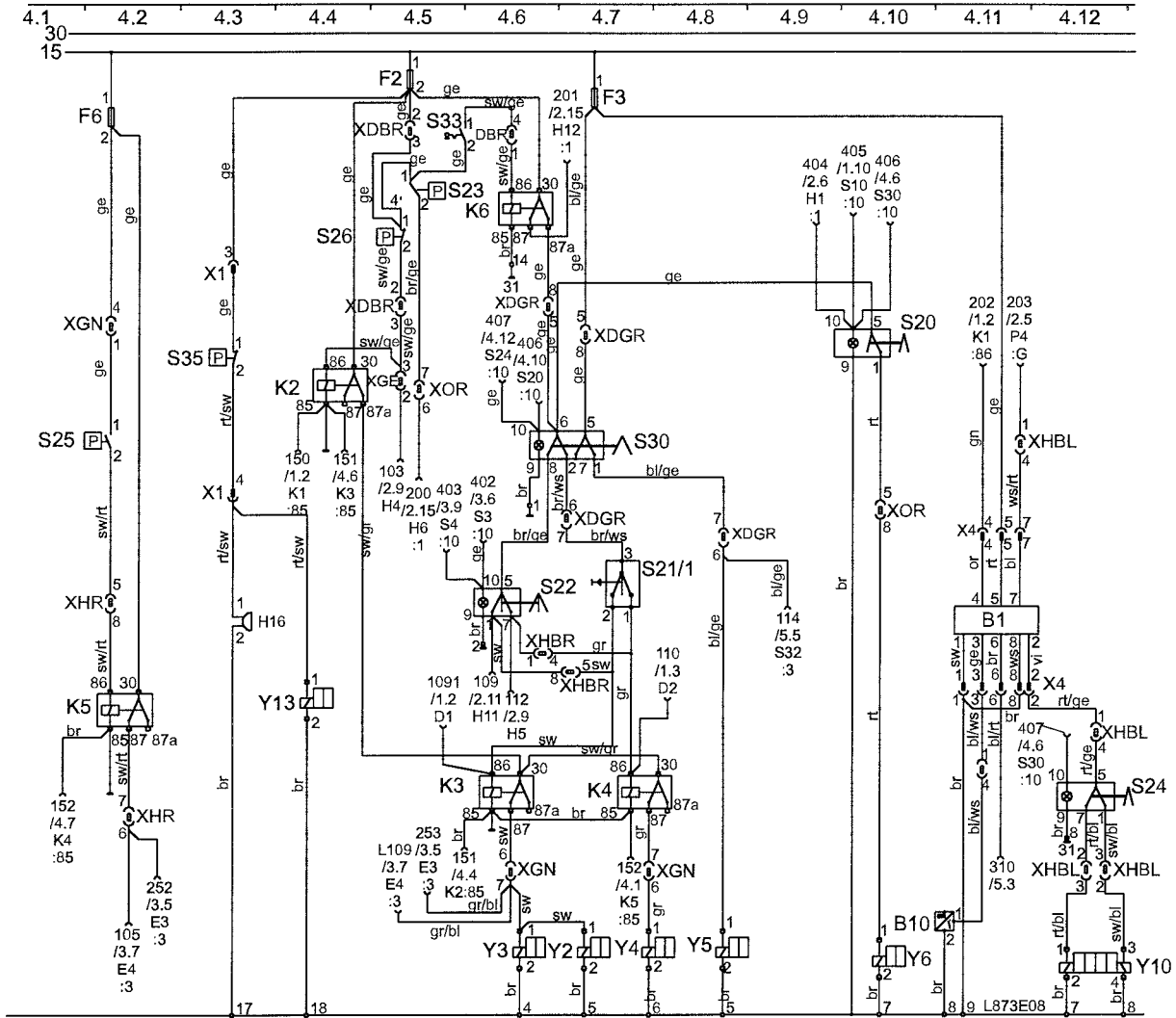


# Working headlamp, Rotating beacon



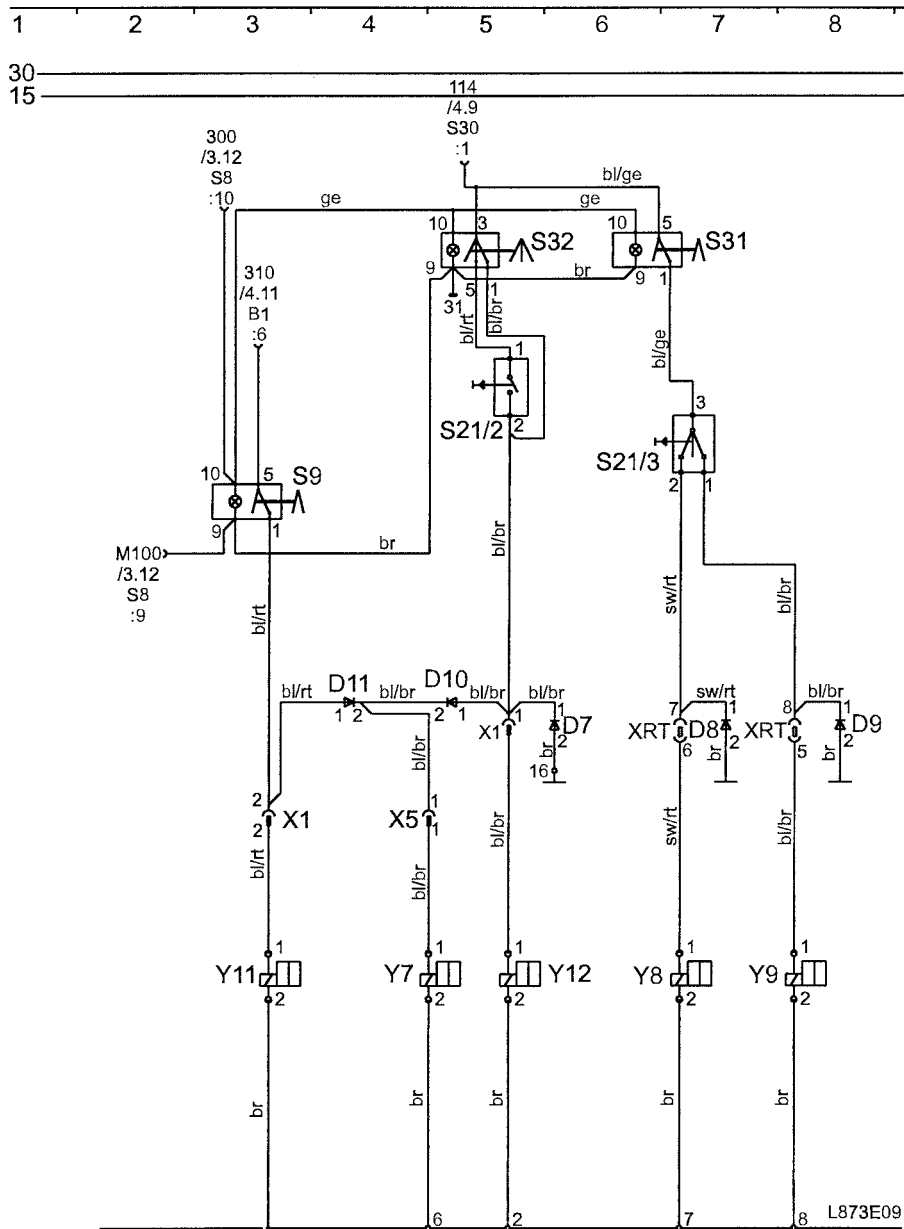
Path	Designation	Device	Path	Designation	Device
		<b>Working headlamp, Rotating beacon</b>	3.11	K 10	Rear working light relay
			3.11	E6	Rear working light
3.10	S4	Headlight switch	3.12	F11	Fuse
3.10	F8	Fuse	3.12	S8	Rotating beacon switch
3.10	K 9	Headlight relay	3.12	E7	Rotating beacon
3.10	E5	Headlight	3.13	E8	Cab lighting
3.11	S5	Rear working light switch	3.14	F4	Fuse dash light
3.12	F9	Fuse			

## Brakes, travel, working hydraulic



Path	Designation	Device	Path	Designation	Device
		<b>Brakes, travel, working hydraulic</b>	4.7	S30	Working hydraulic cut-off
			4.6	S22	Travel / forward - reverse
4.2	F6	Fuse	4.7	S21/1	Co-ordinate lever
4.2	S25	Brake light switch	4.6	K3	Travel reverse relay
4.2	K5	Brake light relay	4.7	K4	Travel forward relay
4.3	S35	Steering / switch	4.6	Y3	Valve for travel, reverse
4.3	H16	Warning buzzer	4.7	Y2	Direction-of-travel recognition
4.4	Y13	Valve for steering	4.7	Y4	Valve for travel, forward
4.5	F2	Fuse	4.8	Y5	Valve for working hydraulic
4.5	S23	Accumulator pressure	4.10	S20	Travel / fast - slow
4.5	S26	Parking brake switch	4.10	Y6	Valve for travel, fast - slow
4.4	K2	Parking brake / travel relay	4.11	B1	Control unit
4.6	S33	Gear box switch	4.11	B10	Tacho transmitter
4.6	K6	Gear shifting, neutral position relay	4.12	S24	Selector switch 1./2. Speed
4.7	F3	Fuse	4.12	Y10	Valve gearbox

# Float position, Option



Path	Designation	Device	Path	Designation	Device
		<b>Float position, Option</b>	5.5	Y7	Valve for Float position
5.3	S9	Cut off lifting frame damping	5.5	Y12	Valve for Float position
5.4	D11	Blocking diode	5.7	S31	Switch / option
5.5	D10	Blocking diode	5.7	S21/3	Co-ordinate lever
5.3	Y11	Valve lifting frame damping	5.7	D8	Blocking diode
5.5	S32	Float position switch	5.8	D9	Blocking diode
5.5	S21/2	Co-ordinate lever	5.7	Y8	Valve - Option 1
5.5	D7	Blocking diode	5.8	Y9	Valve - Option 2

**Thank you very much for reading.**

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