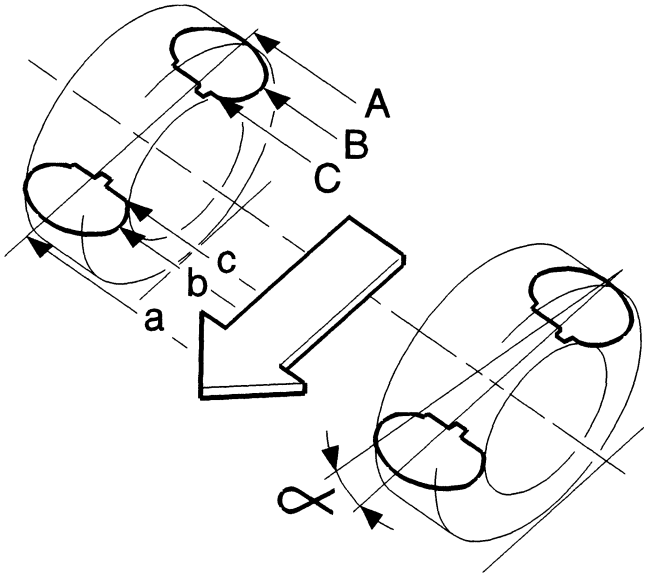


## Section 6 Suspension and steering

## Group 60 Wheel alignment

Turning circle, measured on V70 tyre size 195-225 .....	11.25-12.2 m (36.9-40 ft.)
Turning circle, measured on V70XC tyre size 215 .....	11.6 m (38.1 ft)
Turning circle V70 - R	13.3 m (43.6 ft.)
Steering wheel turns, measured on tyre size 205 .....	3.16

<b>Toe-in:</b>	V70 Check and setting values	V70 AWD Check and setting values	V70 XC Check and setting values
Front:			
Camber .....	$-0.3^{\circ} \pm 0.9^{\circ}$	$-0.3^{\circ} \pm 0.9^{\circ}$	$-0.3^{\circ} \pm 0.9^{\circ}$
Castor .....	$4.0^{\circ} \pm 1^{\circ}$	$4.0^{\circ} \pm 1^{\circ}$	$4.0^{\circ} \pm 1^{\circ}$
Toe-in, can be adjusted ...	$-0.15^{\circ} \pm 0.1^{\circ}$	$-0.15^{\circ} \pm 0.1^{\circ}$	$-0.2^{\circ} \pm 0.1^{\circ}$
Rear:			
Camber .....	$0^{\circ} \pm 1.0^{\circ}$	$-0.3^{\circ} \pm 1.0^{\circ}$	$0.3^{\circ} \pm 1.0^{\circ}$
Toe-in, can be adjusted ...	$0.2^{\circ} \pm 0.2^{\circ}$	$0.2^{\circ} \pm 0.2^{\circ}$	$0.2^{\circ} \pm 0.2^{\circ}$
Thrust angle, can be adjusted .....	$0^{\circ} \pm 0.25^{\circ}$	$0^{\circ} \pm 0.25^{\circ}$	$0^{\circ} \pm 0.25^{\circ}$

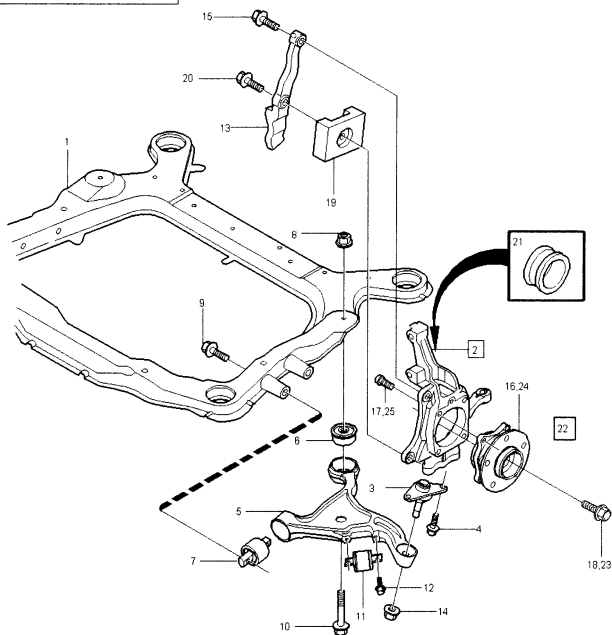
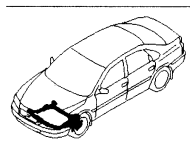


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**Conversion table for Toe-in from degrees to mm (inches)**

Wheel size:	A – a mm (inches)	B – b mm (inches)	C – c mm (inches)
Front wheel 16"	1.0 ± 1.0 (0.04" ± 0.04")	0.9 ± 0.9 (0.04" ± 0.04")	0.8 ± 0.8 (0.03" ± 0.03")
Rear wheel 16"		1.9 ± 1.9 (0.075" ± 0.075")	1.5 ± 1.5 (0.060" ± 0.060")
V70XC			
Front wheel 16"		3.8 ± 0.9	3.1 ± 0.8
Rear wheel 16"		1.9 ± 1.9 (0.075" ± 0.075")	1.5 ± 1.5 (0.060" ± 0.060")

## Group 61 Front suspension



Front wheel suspension		
Number (as illustrated)	P/N	Designation
1		Sub-frame
2	86 34 757	Steering arm, Left-hand drive car
2	86 34 758	Steering arm, Right-hand drive car
3		Ball joint
4	96 82 332	Flanged screw
5	86 23 957	Link arm
6	86 30 604	Bushing rear
7	94 43 882	Bushing front
8	97 11 002	Flanged locknut
9	98 57 272	Flanged screw
10	98 10 231	Flanged screw
11	94 73 205	Rolling tyre circumference: 195/65, 205/55, 205/65
11	94 73 206	Rolling tyre circumference: 215/55
11	94 73 207	Rolling tyre circumference: 225/45, 225/50, 225/55, 235/45
12	98 17 212	Flanged screw
13	94 92 077	Limiter left
13	94 92 078	Limiter right
14	86 72 175	Sems nut
15	98 13 451	Flanged screw
16	86 72 371	Front wheel hub
17	98 30 724	Sems screw
18	98 17 711	Sems screw
19	94 85 145	Vibration damper
20	98 05 601	Flanged screw
21	94 92 980	Seal
22	27 42 981	Hub kit
23	98 17 711	Sems screw
24	86 72 371	Front wheel hub
25	98 30 724	Sems screw

Designation	Tightening torques		
	Nm	lbf ft.	Dimensions
<b>Mechanical component:</b>			
Ball joint - Spring strut steel .....	50 ± 12	37 ± 9	M10
Ball joint - Spring strut aluminium ..	40 ± 10	30 ± 9	M10
Ball joint - Link arm .....	80 ± 20	59 ± 15	M12
<b>Control arm - Sub-frame, Left:</b>			
Stage 1 .....	65		
Step 2 .....	120°	48	M12
<b>Control arm - Sub-frame, Right</b>			
Stage 1 .....	65		
Step 2 .....	120°	48	M12
<b>Control arm - Sub-frame:</b>			
Stage 1 .....	105		
Step 2 .....	90°	78	M14
Anti-roll bar - Sub-frame .....	50 ± 12	37 ± 9	M10
Anti-roll bar - Link .....	50 ± 12	37 ± 9	M10
Anti-roll bar - Link .....	2001 60 ± 15		
Link - Spring strut .....	80 ± 20	59 ± 15	M12
<b>Shock absorber - Steering arm:</b>			
Stage 1 .....	105		
Step 2 .....	60°	77	M14
<b>Front wheel hub - Steering arm:</b>			
Stage 1 .....	20		
Stage 2 .....	45	15	M12
Step 3 .....	60°	33	
Front wheel hub - Drive shaft .....	50 ± 12	37 ± 9	M10
Front wheel hub - Drive shaft .....	2001 35 + 90°		
Shock absorber - Upper bearing ..	70 ± 15	52 ± 11	M14

V70

## Group 64 Steering

## Group 64 Steering

<b>Steering gear:</b>		
Make: .....	-2004	SMI
.....	2004-	ZF
Turns of the steering wheel lock to lock:		
Tyre size: 195/65R15-205/55R16 .....	S60/V70	3.16
Tyre size: 215/55R16 .....	S60/V70	3.01
205/65R15 .....	S80	3.01
Tyre size: 225/45R17 .....	S60/V70	2.87
215/55R16 .....	S80	2.87
Tyre size: 225/50R17, 235/40R18 .....	S80	2.77
Tyre size: 235/40R18 .....	S60/V70-R	2.47
Gear ratios .....		16.4:1
Friction torque, max .....	-2004	2.2 Nm (1.6 lbf ft.)
.....	2004-	4.5 Nm (3.3 lbf ft.)
Lubricants:		
Grease .....	Volvo P/N:	11 61 669
Quantity .....		100 grams (0.2 lbs.)
Power steering fluid, power steering gear:		
Oil type: PENTOSIN, CHF 11S:		
Power steering fluid .....	Volvo P/N:	11 61 529
Quantity .....	SMI	0.9 litres (0.95 qt)
.....	ZF	1.0 litres (1.05 qt)
Power steering pump:		
Max pressure .....	SMI	11 MPa
.....	ZF	12 MPa

## Tightening torques

<b>Mechanical component: Designation:</b>	<b>Tightening torques Nm</b>	<b>Tightening torques lbf ft.</b>	<b>Dimen- sions</b>
Steering gear - Sub-frame, side	50 ± 12	37 ± 9	M10
Steering gear - Mounting, centre	50 ± 12	37 ± 9	M10
Track rod - Outer ball joint	70 ± 15	52 ± 11	M14
Track rod ball joint - Steering arm, steel	70 ± 15	52 ± 11	M12
Track rod ball joint - Steering arm, aluminium	80 ± 20	59 ± 15	M12
Pressure pipe - Steering gear	25 ± 6	18 ± 4.5	M16
Pressure hose - Pump	32 ± 5	23	M16
Return pipe - Steering gear	25 ± 6	18 ± 4.5	M18
Heat deflector plate - Steering gear	6 ± 1.5	4.5 ± 1	M5
Mounting, centre - Sub-frame	50 ± 12	37 ± 9	M10
Steering column - X member	25 ± 6	18 ± 4.5	M8
Steering shaft, lower - Steering column	25 ± 6	18 ± 4.5	M8
Steering wheel - Steering column	40 ± 10	30 ± 7	M14
Airbag unit - Steering wheel	10 ± 2.5	7 ± 2	M6
Cover - Steering wheel lock	>18	>13	M8
Lower cover - Steering wheel lock	3 ± 0.7	2.2±0.5	M5
Steering shaft, lower - Steering gear	30 ± 7	22 ± 5	M8
Bracket - Sub-frame	50 ± 12	37 ± 9	M10
Strut, steering column - Strut, A post	25 ± 6	18 ± 4.5	M8
ABS sensor, screw	10	7	
Steering wheel - Steering column	40	30	
Steering shaft joint mounting	25	18	
Steering shaft joint mounting steering gear	25	18	
Return pipe mounting steering gear	25	18	
Power steering pump, screw mounting	25	18	
Power steering pump Diesel cars, screw motor	24	17	

V70*Group 64 Steering*

<b>Mechanical component: Designation:</b>	Tightening torques Nm	Tightening torques lbf ft.	Dimen- sions
Power steering pump Diesel cars, screw pump	24	17	
Steering column, screw steering	25	18	
Track rod end - stub axle	70	51	
Delivery line mounting steering gear	25	18	
Delivery line mounting power steering pump	25	18	



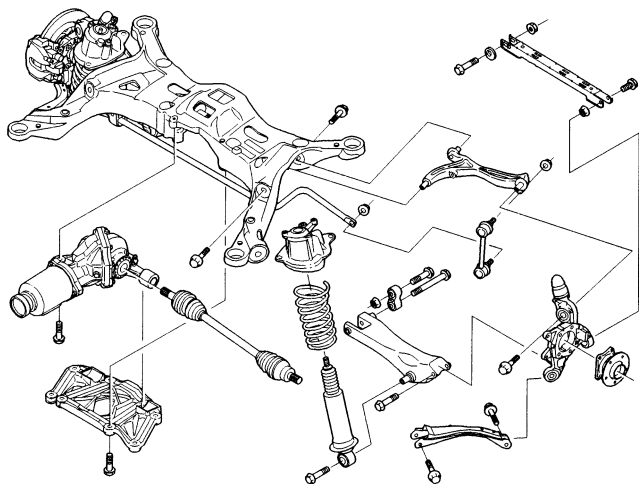
## Group 65 Rear suspension

Mechanical component	Tightening torques Nm	Tightening torques lbf ft.	Dimen- sions
Rear suspension 2WD:			
Sub-frame - Lower control arm	80 ± 20	59 ± 15	M12
Control arm upper, rear - Sub-frame	80 ± 20	59 ± 15	M12
Control arm upper, front - Sub-frame	80 ± 20	59 ± 15	M12
Sub-frame - Track rod	80 ± 20	59 ± 15	M12
Anti-roll bar - Sub-frame	80 ± 20	59 ± 15	M12
Lateral link - Sub-frame	80 ± 20	59 ± 15	M12
Lateral link - Wheel unit	80 ± 20	59 ± 15	M12
Sub-frame, front - Car body	80 ± 20	59 ± 15	M12
Sub-frame, rear - Car body	80 ± 20	59 ± 15	M12
Shock absorber - Upper bearing	60 ± 15	44 ± 11	M12
Control arm lower - Wheel unit	80 ± 20	59 ± 15	M12
Bottom flange - Body	80 ± 20	59 ± 15	M12
Track rod - Wheel unit	80 ± 20	59 ± 15	M12
Bracket ABS cable - Lateral link	2.4 ± 0.4	2 ± 0.2	ST4.8
Control arm lower - Shock absorber	80 ± 20	59 ± 15	M12
Upper bearing - Spring mounting	25 ± 6	18 ± 4.5	M8
Link - Anti-roll bar	80 ± 20	59 ± 15	M12
Upper control arm - Link	80 ± 20	59 ± 15	M12
Rear wheel hub - Wheel bearing housing			M12
Stage 1	20	15	
Stage 2	45	33	
Step 3 ..... angle-tightening	60°		
EVAP canister - Sub-frame	25 ± 6	18 ± 4.5	M8
Control arm upper - Wheel unit	80 ± 20	59 ± 15	M12
Exhaust mounting - Sub-frame	25 ± 6	18 ± 4.5	M8
Upper bearing - Body	25 ± 6	18 ± 4.5	M8
Bump rubber bracket - Body	25 ± 6	18 ± 4.5	M8
Spring mounting - Body	50 ± 12	37 ± 9	M10
EVAP canister bracket - EVAP canister	10 ± 2.5	7 ± 2	M6

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Group 65 Rear suspension

Rear axle AWD / XC



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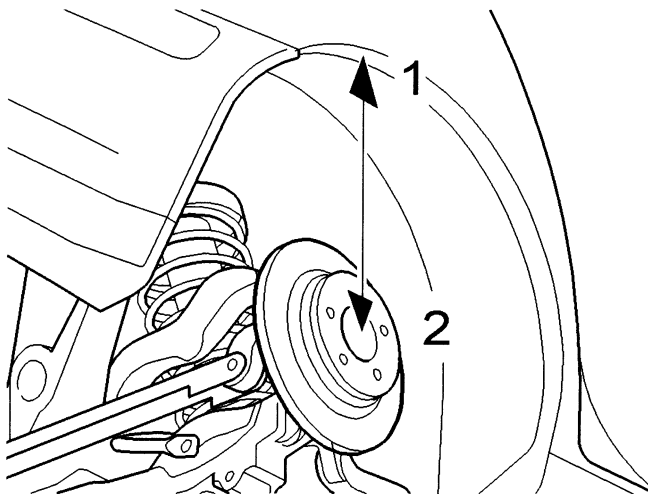
## Rear axle AWD / XC, tightening torques

Mechanical component Designation:	Tightening torques:		Dimension:
	Nm	lbf ft.	
Sub-frame - Lower control arm	80±20	59	M12
Upper rear control arm - Subframe	80±20	59	M12
Upper front control arm - Subframe	80±20	59	M12
Sub frame - Track rod	80±20	59	M12
Anti-roll bar - Subframe	80±20	59	M12
Lateral link - Subframe	80±20	59	M12
Lateral link - Wheel unit	80±20	59	M12
Sub-frame, front - Car body	80±20	59	M12
Sub-frame, rear - Car body	80±20	59	M12
Shock absorber - Upper bearing	60±15	44	M12
Control arm lower - Wheel unit	80±20	59	M12
Bottom flange - Body	80±20	59	M12
Track rod - Wheel unit	80±20	59	M12
Control arm lower - Shock absorber	80±20	59	M12
Upper bearing - Spring mounting	25±6	18	M8
Link - Anti-roll bar	80±20	59	M12
Upper control arm - Link	80±20	59	M12
EVAP canister - Subframe	25±6	18	M8
Control arm upper - Wheel unit	80±20	59	M12
Exhaust mounting - Subframe	25±6	18	M8
Upper bearing - Body	25±6	18	M8
Bump rubber bracket - Body	25±6	18	M8

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Group 65 Rear suspension

Mechanical component Designation:	Tightening torques:		Dimension:
	Nm	lbf ft.	
Spring mounting - Body	50±12	37	M10
EVAP canister bracket - EVAP canister	10±2.5	7	M6
Subframe-Lock subframe	100±20	74	M12
Lower control arm - Subframe	80±20	59	M12
Lower control arm - Subframe	80±20	59	M12
Lower control arm - Shock absorber	80±20	59	M12
Sub-frame - Front bushing final drive	80±20	59	M12
Control arm lower - Wheel unit	80±20	59	M12
Rear wheel hub - Drive shaft	50±12	37	M10
Washer upper bearing - Upper mounting	25±6	18	M8
Subframe - EVAP canister collision protection	50±12	37	M10
Subframe - Collision protection system canister 4WD 2001	25±6		M8
Bracket shut-off valve - Collision protection system	10±2.5	7	M6
Rear bracket - Collision protection system	10±2.5	7	M6
ABS sensor - Wheel bearing housing	10±2.5	7	M6
Wheel bearing housing: ABS - Bracket	10±2.5	7	M6
Brake lamp	50±12	37	M10
Mechanical cable bracket for handbrake - Subframe	20±6	15	M8
Mechanical cable bracket for handbrake - Subframe	20±6	15	M8
Rear wheel hub - Wheel bearing housing	20	15	
Stage 1			
Stage 2	45	33	
Step 3 Angle-tightening	60°		



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### Tightening the screwed joint in the control arms

Tighten when the rear suspension is in the normal position:

The normal position of the rear suspension is when the distance from the wing edge 1

to centre of wheel 2)

is the following:

2WD .....	$394 \pm 1$ mm ( $15.5 \pm 0.04$ ")
V70 AWD .....	$418 \pm 1$ mm ( $16.5 \pm 0.04$ ")
V70 XC .....	$434 \pm 1$ ( $17" \pm 0.04"$ )