

Document Title: Volvo standard tightening torques	Function Group: 030	Information Type: Service Information	Date: 4/6/2026
Profile: JL120HZ			

Volvo standard tightening torques

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Valid for serial numbers			
Model	Production site	Serial number start	Serial number stop
JL120HZ			

The tightening torques in the following tables apply to bolts and nuts with tensile strength. The tables should be used as a general instruction for tightening bolts and nuts without specified values. The charts contains values for course thread bolts and nuts.

Torque values should be increased with $\approx 10\%$, for flange bolts.

All standard torques for bolts are without surface treatment.

The standard torque for bolts lubricated with oil should be reduced with 20% of the given value.

Standard tightening torque charts

Bolt size Metric Coarse Threads	Tensile strength 8.8		Tensile strength 10.9	
	(Nm)	(lbf ft)	(Nm)	(lbf ft)
M5	6	4	8	6
M6	10	7	14	11
M8	25	18	35	26
M10	50	37	70	52
M12	87	64	122	90
M14	139	103	195	144
M16	213	157	299	220
M18	293	216	413	305
M20	416	307	585	432
M24	719	530	1010	745
M27	1060	782	1490	1100
M30	1140	840	2025	1493
M36	2500	1844	3600	2653

Bolt size Inch SAE Coarse Threads	Tensile strength 5		Tensile strength 8	
	(lbf ft)	(Nm)	(lbf ft)	(Nm)
1/4	10	13,6	14	19
5/16	21	28,5	29	39,3
3/8	37	50,2	52	70
7/16	59	80	84	114
1/2	90	122	128	174
9/16	130	176	184	250
5/8	200	271	284	388
3/4	270	364	384	520
7/8	340	460	484	654
1	410	550	584	794
1 1/8	490	660	704	944
1 1/4	570	770	814	1094
1 3/8	650	880	934	1264
1 1/2	730	990	1044	1414
1 5/8	810	1100	1164	1584
1 3/4	890	1210	1284	1744
1 7/8	970	1320	1404	1914
2	1050	1430	1524	2064
2 1/8	1130	1540	1644	2234
2 1/4	1210	1650	1764	2404
2 3/8	1290	1760	1884	2574
2 1/2	1370	1870	2004	2744
2 5/8	1450	1980	2124	2914
2 3/4	1530	2090	2244	3084
2 7/8	1610	2200	2364	3254
3	1690	2310	2484	3424
3 1/8	1770	2420	2604	3594
3 1/4	1850	2530	2724	3764
3 3/8	1930	2640	2844	3934
3 1/2	2010	2750	2964	4104
3 5/8	2090	2860	3084	4274
3 3/4	2170	2970	3204	4444
3 7/8	2250	3080	3324	4614
4	2330	3190	3444	4784
4 1/8	2410	3300	3564	4954
4 1/4	2490	3410	3684	5124
4 3/8	2570	3520	3804	5294
4 1/2	2650	3630	3924	5464
4 5/8	2730	3740	4044	5634
4 3/4	2810	3850	4164	5804
4 7/8	2890	3960	4284	5974
5	2970	4070	4404	6144
5 1/8	3050	4180	4524	6314
5 1/4	3130	4290	4644	6484
5 3/8	3210	4400	4764	6654
5 1/2	3290	4510	4884	6824
5 5/8	3370	4620	5004	6994
5 3/4	3450	4730	5124	7164
5 7/8	3530	4840	5244	7334
6	3610	4950	5364	7504
6 1/8	3690	5060	5484	7674
6 1/4	3770	5170	5604	7844
6 3/8	3850	5280	5724	8014
6 1/2	3930	5390	5844	8184
6 5/8	4010	5500	5964	8354
6 3/4	4090	5610	6084	8524
6 7/8	4170	5720	6204	8694
7	4250	5830	6324	8864
7 1/8	4330	5940	6444	9034
7 1/4	4410	6050	6564	9204
7 3/8	4490	6160	6684	9374
7 1/2	4570	6270	6804	9544
7 5/8	4650	6380	6924	9714
7 3/4	4730	6490	7044	9884
7 7/8	4810	6600	7164	10054
8	4890	6710	7284	10224
8 1/8	4970	6820	7404	10394
8 1/4	5050	6930	7524	10564
8 3/8	5130	7040	7644	10734
8 1/2	5210	7150	7764	10904
8 5/8	5290	7260	7884	11074
8 3/4	5370	7370	8004	11244
8 7/8	5450	7480	8124	11414
9	5530	7590	8244	11584
9 1/8	5610	7700	8364	11754
9 1/4	5690	7810	8484	11924
9 3/8	5770	7920	8604	12094
9 1/2	5850	8030	8724	12264
9 5/8	5930	8140	8844	12434
9 3/4	6010	8250	8964	12604
9 7/8	6090	8360	9084	12774
10	6170	8470	9204	12944
10 1/8	6250	8580	9324	13114
10 1/4	6330	8690	9444	13284
10 3/8	6410	8800	9564	13454
10 1/2	6490	8910	9684	13624
10 5/8	6570	9020	9804	13794
10 3/4	6650	9130	9924	13964
10 7/8	6730	9240	10044	14134
11	6810	9350	10164	14304
11 1/8	6890	9460	10284	14474
11 1/4	6970	9570	10404	14644
11 3/8	7050	9680	10524	14814
11 1/2	7130	9790	10644	14984
11 5/8	7210	9900	10764	15154
11 3/4	7290	10010	10884	15324
11 7/8	7370	10120	11004	15494
12	7450	10230	11124	15664
12 1/8	7530	10340	11244	15834
12 1/4	7610	10450	11364	16004
12 3/8	7690	10560	11484	16174
12 1/2	7770	10670	11604	16344
12 5/8	7850	10780	11724	16514
12 3/4	7930	10890	11844	16684
12 7/8	8010	11000	11964	16854
13	8090	11110	12084	17024
13 1/8	8170	11220	12204	17194
13 1/4	8250	11330	12324	17364
13 3/8	8330	11440	12444	17534
13 1/2	8410	11550	12564	17704
13 5/8	8490	11660	12684	17874
13 3/4	8570	11770	12804	18044
13 7/8	8650	11880	12924	18214
14	8730	11990	13044	18384
14 1/8	8810	12100	13164	18554
14 1/4	8890	12210	13284	18724
14 3/8	8970	12320	13404	18894
14 1/2	9050	12430	13524	19064
14 5/8	9130	12540	13644	19234
14 3/4	9210	12650	13764	19404
14 7/8	9290	12760	13884	19574
15	9370	12870	14004	19744
15 1/8	9450	12980	14124	19914
15 1/4	9530	13090	14244	20084
15 3/8	9610	13200	14364	20254
15 1/2	9690	13310	14484	20424
15 5/8	9770	13420	14604	20594
15 3/4	9850	13530	14724	20764
15 7/8	9930	13640	14844	20934
16	10010	13750	14964	21104
16 1/8	10090	13860	15084	21274
16 1/4	10170	13970	15204	21444
16 3/8	10250	14080	15324	21614
16 1/2	10330	14190	15444	21784
16 5/8	10410	14300	15564	21954
16 3/4	10490	14410	15684	22124
16 7/8	10570	14520	15804	22294
17	10650	14630	15924	22464
17 1/8	10730	14740	16044	22634
17 1/4	10810	14850	16164	22804
17 3/8	10890	14960	16284	22974
17 1/2	10970	15070	16404	23144
17 5/8	11050	15180	16524	23314
17 3/4	11130	15290	16644	23484
17 7/8	11210	15400	16764	23654
18	11290	15510	16884	23824
18 1/8	11370	15620	17004	24000
18 1/4	11450	15730	17124	24176
18 3/8	11530	15840	17244	24352
18 1/2	11610	15950	17364	24528
18 5/8	11690	16060	17484	24704
18 3/4	11770	16170	17604	24880
18 7/8	11850	16280	17724	25056
19	11930	16390	17844	25232
19 1/8	12010	16500	17964	25408
19 1/4	12090	16610	18084	25584
19 3/8	12170	16720	18204	25760
19 1/2	12250	16830	18324	25936
19 5/8	12330	16940	18444	26112
19 3/4	12410	17050	18564	26288
19 7/8	12490	17160	18684	26464
20	12570	17270	18804	26640
20 1/8	12650	17380	18924	26816
20 1/4	12730	17490	19044	26992
20 3/8	12810	17600	19164	27168
20 1/2	12890	17710	19284	27344
20 5/8	12970	17820	19404	27520
20 3/4	13050	17930	19524	27696
20 7/8	13130	18040	19644	27872
21	13210	18150	19764	28048
21 1/8	13290	18260	19884	28224
21 1/4	13370	18370	20004	28400
21 3/8	13450	18480	20124	28576
21 1/2	13530	18590	20244	28752
21 5/8	13610	18700	20364	28928
21 3/4	13690	18810	20484	29104
21 7/8	13770	18920	20604	29280
22	13850	19030	20724	29456
22 1/8	13930	19140	20844	29632
22 1/4	14010	19250	20964	29808
22 3/8	14090	19360	21084	30000
22 1/2	14170	19470	21204	30192
22 5/8	14250	19580	21324	30384
22 3/4	14330	19690	21444	30576
22 7/8	14410	19800	21564	30768
23	14490	19910	21684	30960
23 1/8	14570	20020	21804	31152
23 1/4	14650	20130	21924	31344
23 3/8	14730	20240	22044	31536
23 1/2	14810	20350	22164	31728
23 5/8	14890	20460	22284	31920
23 3/4	14970	20570	22404	32112
23 7/8	15050	20680	22524	32304
24	15130	20790	22644	32496
24 1/8	15210	20900	22764	32688
24 1/4	15290	21010	22884	32880
24 3/8	15370	21120	23004	33072
24 1/2	15450	21230	23124	33264
24 5/8	15530	21340	23244	33456
24 3/4	15610	21450	23364	33648
24 7/8	15690	21560	23484	33840
25	15770	21670	23604	34032
25 1/8	15850	2178		

Product: JL120HZ Volvo Wheel Loaders Service Manual

Full Download: <https://www.arepairmanual.com/downloads/jl120hz-volvo-wheel-loaders-service-manual/>

3/4	320	434	451	612
7/8	515	700	728	988
1	775	1052	1091	1480
1 1/8	953	1290	1545	2100
1 1/4	1344	1823	2180	2960
1 3/8	1600	2170	2650	3600
1 1/2	2000	2714	3200	4340

Sample manual. Download All 698 pages at:

<https://www.arepairmanual.com/downloads/jl120hz-volvo-wheel-loaders-service-manual/>

Document Title: Conversion tables	Function Group: 030	Information Type: Service Information	Date: 4/6/2026
Profile: JL120HZ			

Conversion tables

Showing Selected Profile

Valid for serial numbers			
Model	Production site	Serial number start	Serial number stop
JL120HZ			

Length

Unit	cm	m	km	in	ft	yd	mile
cm	1	0.01	0.00001	0.3937	0.03281	0.01094	0.000006
m	100	1	0.001	39.37	3.2808	1.0936	0.00062
km	100000	1000	1	39370.7	3280.8	1093.6	0.62137
in	2.54	0.0254	0.000025	1	0.08333	0.02777	0.000015
ft	30.48	0.3048	0.000304	12	1	0.3333	0.000189
yd	91.44	0.9144	0.000914	36	3	1	0.000568
mile	160930	1609.3	1.6093	63360	5280	1760	1

1 mm = 0.1 cm - 1 mm = 0.001 m

Area

Unit	cm ²	m ²	km ²	a	ft ²	yd ²	in ²
cm ²	1	0.0001	-	0.000001	0.001076	0.000012	0.155000
m ²	10000	1	0.000001	0.01	10.764	1.1958	1550.000
km ²	-	1000000	1	10000	1076400	1195800	-
a	0.01	100	0.0001	1	1076.4	119.58	-
ft ²	-	0.092903	-	0.000929	1	0.1111	144.000
yd ²	-	0.83613	-	0.008361	9	1	1296.00
in ²	6.4516	0.000645	-	-	0.006943	0.000771	1

1 ha = 100 a - 1 mile² = 259 ha = 2.59 km²

Volume

Unit	cm ³ = cc	m ³	l	in ³	ft ³	yd ³
cm ³ = ml	1	0.000001	0.001	0.061024	0.000035	0.000001
m ³	1000000	1	1000	61024	35.315	1.30796
dm ³ (l)	1000	0.001	1	61.024	0.035315	0.001308
in ³	16.387	0.000016	0.01638	1	0.000578	0.000021
ft ³	28316.8	0.028317	28.317	1728	1	0.03704
yd ³	764529.8	0.76453	764.53	46656	27	1

1 gal (US) = 3785.41 cm³ = 231 in³ = 0.83267 gal (UK)

Weight

Unit	g	kg	t	oz	lb
g	1	0.001	0.000001	0.03527	0.0022
kg	1000	1	0.001	35.273	2.20459
t	1000000	1000	1	35273	2204.59
oz	28.3495	0.02835	0.000028	1	0.0625
lb	453.592	0.45359	0.000454	16	1

1 ton (metric) = 1.1023 ton (US) = 0.9842 ton (UK)

Pressure

Unit	kp/cm ²	bar	Pa=N/m ²	kPa	lbf/in ²	lbf/ft ²
kp/cm ²	1	0.98067	98066.5	98.0665	14.2233	2048.16
bar	1.01972	1	100000	100	14.5037	2088.6
Pa=N/m ²	0.00001	0.001	1	0.001	0.00015	0.02086
kPa	0.01020	0.01	1000	1	0.14504	20.886
lbf/in ²	0.07032	0.0689	6894.76	6.89476	1	144
lbf/ft ²	0.00047	0.00047	47.88028	0.04788	0.00694	1

kg/cm² = 735.56 Dry (mmHg) = 0.96784 atm

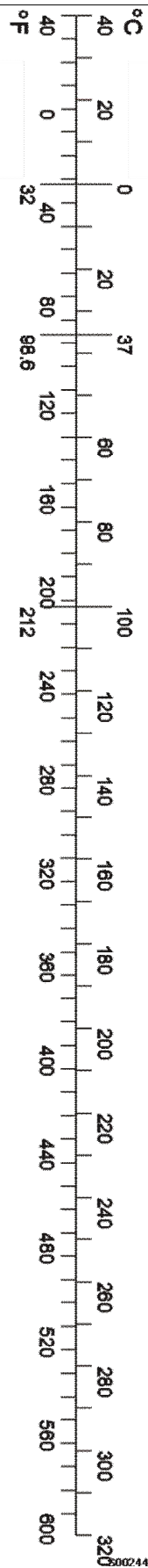
Unit explanations

Unit	abbreviation
Newton meter	Nm
Kilopoundmeter	kpm
Kilopascal	kPa
Megapascal	MPa
Kilowatt	kW
kilojoule	kJ
British thermal unit	Btu
Calorie	cal

Approx. conversion

SI unit	Conversion factor	Non SI	Conversion factor	SI
Torque				
Nm	x10.2	=kg/cm	x0.8664	=lb in
Nm	x0.74	=lbf-ft	x1.36	=Nm
Nm	x0.102	=kg/m	x7.22	=lbft
Pressure (Pa = N/m²)				
kPa	x4.0	=in.H ₂ O	x0.249	=kPa
kPa	x0.30	=in.Hg	x3.38	=kPa
kPa	x0.145	=psi	x6.89	=kPa
bar	x14.5	=psi	x0.069	=bar
kp/cm ²	x14.22	=psi	x0.070	=kp/cm ²
N/mm ²	x145.04	=psi	x0.069	=bar
MPa	x145	=psi	x0.00689	=MPa
Power (W = J/s)				
kW	x1.36	=hp(cv)	x0.736	=kW

kW	x1.34	= bhp	x0.746	= kW
kW	x0.948	= Btu/s	x1.055	= kW
W	x0.74	= ft-lb/s	x1.36	= W
Energy (J = Nm)				
kJ	x0.948	= Btu	x1.055	= kJ
J	x0.239	= calorie	x4.19	= J
Speed and acceleration				
m/s ²	x3.28	= ft/s ²	x0.305	= m/s ²
m/s	x3.28	= ft/s	x0.305	= m/s
km/h	x0.62	= mph	x1.61	= km/h
Horsepower/torque				
Bhp x5252 rpm= TQ (lb-ft)			TQ x rpm 5252=bhp	
Temperature				
$^{\circ}\text{C} = (^{\circ}\text{F} - 32) / 1.8$			$^{\circ}\text{F} = (^{\circ}\text{C} \times 1.8) + 32$	
Flow factor				
l/min (dm ³ /min)	x0.264	= US gal/min	x3.785	= liter/min



Document Title: Operation numbers for additional work	Function Group: 070	Information Type: Service Information	Date: 4/6/2026
Profile: Wheel Loaders (WLO)			

Operation numbers for additional work

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These operations can be used to identify work that is not included in the time guide or described in the methods in the Service Manual. When these operations are used, a description of the work that has been performed must be provided.

Other work related to engine

Op. no. 070-210

This operation can be used when work has been done related to the engine and function group 2 when no applicable method description was available. When this operation is used, additional information is required:

- Description of work that has been done

Other work related to electrical system

Op. no. 070-310

This operation can be used when work has been done related to the electrical system and function group 3 when no applicable method description was available. When this operation is used, additional information is required:

- Description of work that has been done

Other work related to transmission, gearbox, travel motor, swing motor

Op. no. 070-410

This operation can be used when work has been done related to the transmission, gearbox, travel motor or swing motor and function group 4 when no applicable method description was available. When this operation is used, additional information is required:

- Description of work that has been done

Other work related to drive axle

Op. no. 070-470

This operation can be used when work has been done related to the drive axle and function group 46 when no applicable method description was available. When this operation is used, additional information is required:

- Description of required work that have been done

Other work related to brake system

Op. no. 070-510

This operation can be used when work has been done related to the brake system and function group 5 when no applicable

method description was available. When this operation is used, additional information is required:

- Description of work that has been done

Other work related to steering system

Op. no. 070-610

This operation can be used when work has been done related to the steering system and function group 6 when no applicable method description was available. When this operation is used, additional information is required:

- Description of work that has been done

Other work related to frame link, axle suspension

Op. no. 070-710

This operation can be used when work has been done related to the frame link, axle suspension and other parts related to function group 7 when no applicable method description was available. When this operation is used, additional information is required:

- Description of work that has been done

Other work related to cab, air conditioning

Op. no. 070-810

This operation can be used when work has been done related to the cab, air conditioning and other parts related to function group 8 when no applicable method description was available. When this operation is used, additional information is required:

- Description of work that has been done

Other work related to hydraulic system

Op. no. 070-910

This operation can be used when work has been done related to the hydraulic system and other parts related to function group 9 when no applicable method description was available. When this operation is used, additional information is required:

- Description of work that has been done

Document Title: Infrared Thermometer	Function Group: 080	Information Type: Service Information	Date: 4/6/2026
Profile: Wheel Loaders (WLO)			

Infrared Thermometer

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Gun Style Infrared Thermometer Laser Sight Model: SIG1

9998519 Infrared thermometer (user instruction in FGI 080) Application

This tool can be used to measure fast and easy temperature differences. For instance in case of troubleshooting it is sometimes necessary to measure temperature differences on two equal parts with the same surface.



Never point the device towards the eyes permanent eye damage may occur. Use extreme caution when using the laser. Keep out of the reach of children. Be careful around mirror surfaces since mirrors can reflect the laser. Looking into the reflected laser is just as damaging as looking directly at the laser.

General information

1. Field of view: The SIG1 takes it's measurement from a circle of a size determined by a simple ratio of 10:1. The diameter of this circle is 1/10 the distance between the target and the tip of the SIG1. For example, if you're standing 20 feet (610 cm) from your target, the size of the circle you're taking the average temperature of will be 2 feet (61 cm) wide.
2. If you want to get the temperature of something small, such as a pipe, you must get close enough for the pipe to take up the whole viewing area circle. Otherwise the pipe and the background temperatures will be averaged into the reading.
3. You need to be aware that if the target surface is reflective enough, it may reflect infrared from other objects. For example, if you take a reading of a shiny metal surface, the infrared energy of your face may reflect enough energy off the surface to affect the reading. For this reason, it's a good idea to put non-reflective tape or paint on reflective surfaces when taking infrared temperature readings.

NOTE!

The measured temperature will be lower than actual.

Operation

1. Point the laser towards the target to be measured.
2. Pull trigger to light the target with the laser and measure its surface temperature.
3. As long as the trigger is held down, the SIG1 will constantly update the measurement and the blue backlight will illuminate the display.
4. When the trigger is pulled the red laser dot will shine about 1/4" above the centre of the circular area being measured by the thermometer.
5. Once the trigger is released, the last measurement will be shown and held until the trigger is pressed again or until the SIG1 turns off.

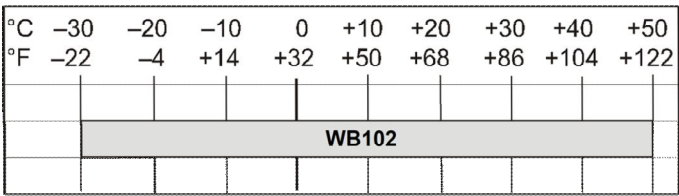
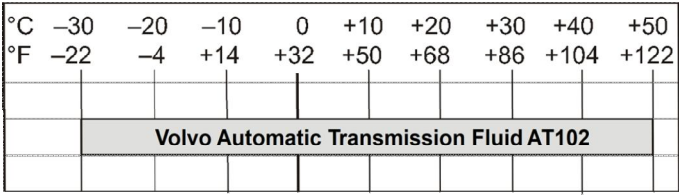
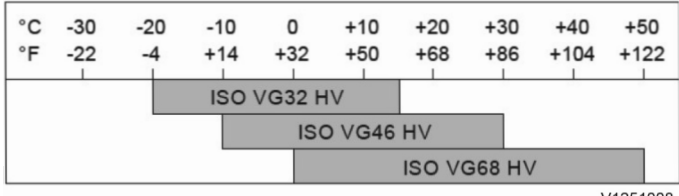
Document Title: Recommended lubricants	Function Group: 160	Information Type: Service Information	Date: 4/6/2026
Profile: JL120HZ			

Recommended lubricants

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Valid for serial numbers			
Model	Production site	Serial number start	Serial number stop
JL120HZ			

For any questions or more information about oils, lubricants and extreme outdoor temperatures, please contact your dealer.

	Oil grade	Service interval		Recommended viscosity at various ambient temperatures
		First (hours)	Every (hours)	
AXLES	Volvo Wet Brake Oil 97304 WB102	1000	2000	 <p style="text-align: right;">V1095848</p>
REAR AXLE BEARING (if applicable)	Volvo Wet Brake Oil 97304 WB102	—	4000	<p>Figure 1</p>  <p style="text-align: right;">V1095847</p>
TRANSMISSION	Volvo Automatic Transmission Fluid 97342 AT102	—	4000	<p>Figure 2</p>  <p style="text-align: right;">V1251008</p>
HYDRAULIC SYSTEM	Volvo Hydraulic Oil 98609 Extra 32 or Volvo Hydraulic Oil 98609 Extra 46	—	4000	<p>Figure 3</p>
	Volvo Hydraulic Oil 98608 Super 68	—	4000	
COOLING SYSTEM	Volvo Coolant	—	6000 or	

VCS-2
For more
information,
see: [Coolant](#).

max 4
years

Document Title: Grease	Function Group: 160	Information Type: Service Information	Date: 4/6/2026
Profile: JL120HZ			

Grease

Showing Selected Profile

Valid for serial numbers			
Model	Production site	Serial number start	Serial number stop
JL120HZ			

Volvo Super Grease Lithium EP2

Or corresponding grease on lithium base with EP additives and consistency NLGI class 2.

If the machine is provided with automatic greasing system, other recommended lubricants apply.

Rear axle bearings

Front rear axle bearing:

Axle oil according to Recommended Lubricants, see page [Recommended lubricants](#).

Rear rear axle bearing:*

Rubens HT2 (Q8)

Chevron Ultra Duty No. 2

Texaco Starplex HD2

Almagard 3752

*Rear rear axle bearing is maintenance-free, and only greased in connection with a service.

Document Title: Hydraulic oil	Function Group: 160	Information Type: Service Information	Date: 4/6/2026
Profile: JL120HZ			

Hydraulic oil

Showing Selected Profile

Valid for serial numbers			
Model	Production site	Serial number start	Serial number stop
JL120HZ			

For further information, see [Recommended lubricants](#).

Document Title: Change intervals	Function Group: 160	Information Type: Service Information	Date: 4/6/2026
Profile: JL120HZ			

Change intervals

Showing Selected Profile

Valid for serial numbers			
Model	Production site	Serial number start	Serial number stop
JL120HZ			

Oil and fluid changes	Hours
Coolant	6000[T1] ⓘ
Front and rear axles	2000[T2] ⓘ
Transmission, at the same time clean suction strainer	4000
Hydraulic system (working hydraulics, brake system and steering system)	4000

[T1] Change coolant every 6000 hours or every fourth year. See also page [Coolant](#).

[T2] First change after 1000 hours.

Filter change	Hours
Transmission, oil filter	4000
Drive axles, breather filter	2000
Cab, ventilation filters	2000[T1] ⓘ
Hydraulic system, return oil filter	2000
Hydraulic system, breather filter	2000

[T1] Change the prefilter every 1000 hours.

Document Title: Lubricants and filling capacities	Function Group: 160	Information Type: Service Information	Date: 4/6/2026
Profile: JL120HZ			

Change capacities

Showing Selected Profile

Valid for serial numbers			
Model	Production site	Serial number start	Serial number stop
JL120HZ			

Capacities	When changing	Total
Transmission oil incl. filter	39 litres (10.3 US gal)	
Front axle	36 litres (9.51 US gal)	
Rear axle	41 litres (10.8 US gal)	
Rear axle mounting	0.5 litres (0.13 US gal)	
Hydraulic system		210 litres (55.44 US gal)
Hydraulic oil tank	133 litres (35.1 US gal)	
Cooling system	Passive cooling 22 litres (5.81 US gal) Traction battery cooling 11.2 litres (2.96 US gal) Cab cooling 1.7 litres (0.45 US gal)	

Document Title: Coolant	Function Group: 160	Information Type: Service Information	Date: 4/6/2026
Profile: JL120HZ			

Coolant

Showing Selected Profile

Valid for serial numbers			
Model	Production site	Serial number start	Serial number stop
JL120HZ			

The Volvo Coolant VCS is replaced by the Volvo Coolant VCS-2.

Only use Volvo Coolant VCS or VCS-2 when topping up or changing coolant.

NOTE!

To avoid damage to engine and cooling system, Volvo Coolant VCS and VCS-2 must never be mixed with other brands of coolant or additives.

The Volvo Coolant VCS-2 is orange.

The Volvo Coolant VCS is yellow.

Volvo Coolant VCS and VCS-2 can be mixed, the color of the coolant changes depending on the mixing ratio.

When using concentrated Volvo Coolant VCS or VCS-2 and clean water, the mixture should contain 40–60% concentrated coolant and 60–40% clean water.

The amount of concentrated coolant must never be less than 40% of the total mixture, see table below.

Volvo Coolant VCS

Freeze protection down to	Mixed-in amount of concentrated coolant
-25 °C (-13 °F)	40%
-35 °C (-31 °F)	50%
-46 °C (-51 °F)	60%

Volvo Coolant VCS-2

Freeze protection down to	Mixed-in amount of concentrated coolant
-25 °C (-13 °F)	40%
-37 °C (-35 °F)	50%
-45 °C (-49 °F)	60%

The concentrated coolant must not be mixed with water that contains a high degree of lime (hard water), salt or metals.

The clean water for the cooling system must also meet the following requirements:

Description	Value
Total number of solid particles	< 300 ppm
Total hardness	< 120 ppm or 7° dH
Chloride	< 40 ppm

Sulphate	< 100 ppm
pH value	6.5 – 8.5
Silica	< 20 ppm
Iron	< 0.10 ppm
Manganese	< 0.05 ppm
Electrical conductivity	< 400 μ S/cm
Organic material, COD-Mn	< 8 ppm

If there is any doubt about the water quality, use ready-mixed Volvo Coolant VCS or VCS-2, which contains 40% concentrated coolant.

Do not mix with any other ready-mixed coolants since this may result in engine damage.

Document Title: Purpose of fluid analysis	Function Group: 160	Information Type: Service Information	Date: 4/6/2026
Profile: JL120HZ			

Purpose of fluid analysis

Showing Selected Profile

Valid for serial numbers			
Model	Production site	Serial number start	Serial number stop
JL120HZ			

Operational issues in machines, engines and other components are often reflected in current condition of the fluid. Fluid analysis determines when the properties of the fluid have reached a point at which they are no longer serviceable or the machine is starting to develop a problem.

This helps in three main business areas:

Maintenance

- Identify contamination and wear and identify corrective actions such as fluid and filter replacements.
- Reduce in-service failures by improving machine maintenance.
- Establish condition based fluid drain intervals and maintenance actions.

Management

- Improve business reliability and productivity.
- Improve manufactured products quality and reduce waste and spoilage.
- Reduce unnecessary maintenance such as time dependent component replacements.
- Assist in product selection (e.g. lube oils, coolants, greases), to make the machine to run most efficiently.

Uptime

- Reduce machine downtime.
- Increase the machine's overall usable life.
- Extend drain intervals, reduce oil consumption, reduce disposal costs and reduce environmental impact.

Keys to successful fluid analysis

A successful fluid analysis program requires an organized and sustained effort. No preventive maintenance initiative will reach its goal without integrating processes for continued improvement and a conscious effort by both user and laboratory to work together in all aspects of the program to achieve optimal machine health and reliability.

These proven steps are key

- Clearly define program goals and requirements to be sure the test packages utilized are appropriate for the application and the service is being fully utilized on a regular, on-going basis.
- Take representative samples that are indicative of the true condition of the fluid and the component so that the testing and analysis performed is accurate and reliable.
- Have a frequent communication with the laboratory to optimize both laboratory interpretations and recommendations as well as machine diagnostics and maintenance action.
- Provide complete and accurate sample information so that data analysts may provide an accurate interpretation of the test results with well-informed, actionable maintenance or diagnostic recommendations.
- Review test reports promptly to be sure abnormal or critical machine or fluid conditions are addressed quickly and equipment damage and production losses are minimized.

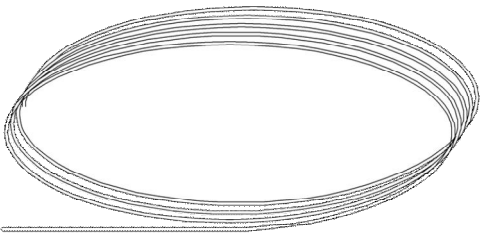
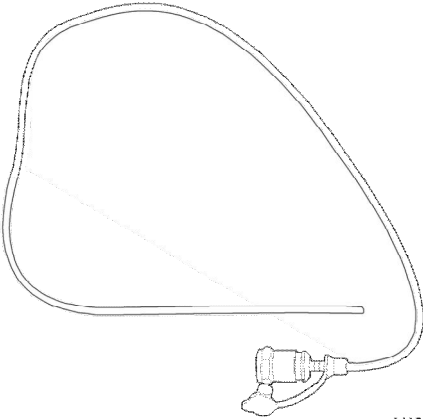
Document Title: Fluid analysis, tools	Function Group: 160	Information Type: Service Information	Date: 4/6/2026
Profile: JL120HZ			

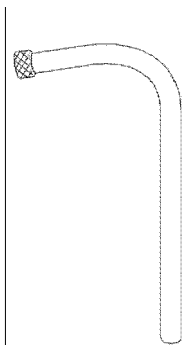
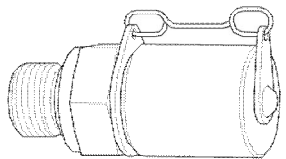
Fluid analysis, tools

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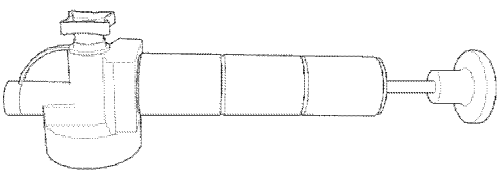
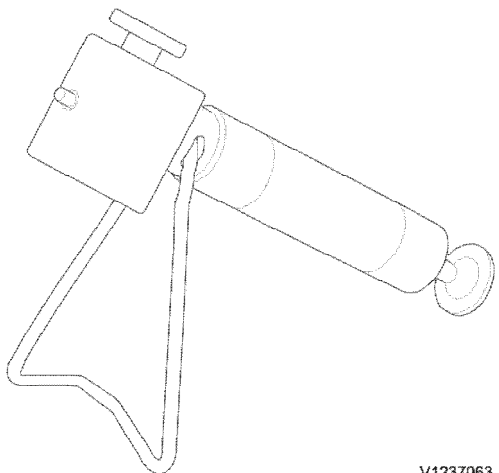
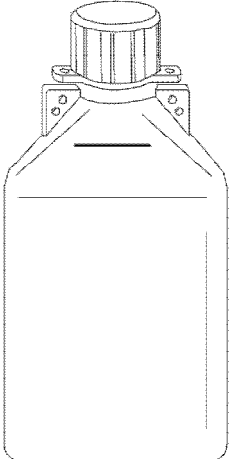
Valid for serial numbers			
Model	Production site	Serial number start	Serial number stop
JL120HZ			

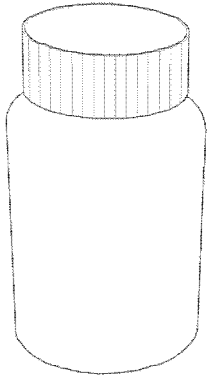
Sampling equipment

Image	Part No.	Description	Comment
 <p style="text-align: right;">V1236918</p> <p>Figure 1</p>	<i>TUBE</i> (VOE54041577)	Tubing roll	Roll of tubing 100 ft (North America only)
	<i>TUBE</i> (VOE54538320)	Tubing short	10 m tubing (all regions except for North America)
	<i>TUBE</i> (VOE54059017)	Tubing short	1 m tubing (all regions except for North America)
 <p style="text-align: right;">V1236920</p> <p>Figure 2</p>	<i>HOSE</i> (VOE14025152)	Sampling hose	For pressurized systems

 <p style="text-align: center;">V1238681</p> <p>Figure 3</p>	<p><i>DRAIN VALVE</i> (VOE16891310)</p>	<p>Drain valve</p>	<p>Coupling – M26x1.5</p>
 <p style="text-align: center;">V1236950</p> <p>Figure 4</p>	<p><i>NIPPLE</i> (VOE936442)</p>	<p>Nipple</p>	<p>M10x1 – M16x2</p>
<td> <p><i>TESTING NIPPLE</i> (VOE15184094)</p> </td> <td> <p>Nipple</p> </td> <td> <p>M16x1,5 – M16x2</p> </td>	<p><i>TESTING NIPPLE</i> (VOE15184094)</p>	<p>Nipple</p>	<p>M16x1,5 – M16x2</p>
<td> <p><i>TESTING NIPPLE</i> (VOE936446)</p> </td> <td> <p>Nipple</p> </td> <td> </td>	<p><i>TESTING NIPPLE</i> (VOE936446)</p>	<p>Nipple</p>	
<td> <p><i>TEST NIPPLE</i> (TEL15319306)</p> </td> <td> <p>Nipple</p> </td> <td> <p>1/4" BSPP</p> </td>	<p><i>TEST NIPPLE</i> (TEL15319306)</p>	<p>Nipple</p>	<p>1/4" BSPP</p>

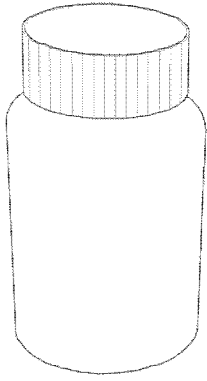
| V1244916 **Figure 5** | *NIPPLE* (VOE14612084) | T-Nipple | M26x1.5 |
| V1244912 **Figure 6** | *NIPPLE* (VOE14557502) | Nipple | M16x1.5 |

 <p>V1236949</p> <p>Figure 7</p>	<p><i>PUMP</i> (VOE54376076)</p>	<p>Sampling pump</p>	<p>Sampling pump, standard - 38 mm (1,500 in)</p>
 <p>V1237063</p> <p>Figure 8</p>	<p><i>PUMP</i> (VOE54042482)</p>	<p>Sampling pump</p>	<p>Sampling pump, heavy duty - 38 mm (1,500 in)</p>
 <p>V1239813</p> <p>Figure 9</p>	<p><i>PLASTIC BOTTLE</i> (VOE54231335)</p>	<p>Single sampling bottle, fuel</p>	<p>Bottle for fuel sampling</p>
<p><i>KIT</i> (VOE54042464)</p>			
		<p>Kit 100 sampling bottles</p>	<p>100 sampling bottles with flatpacks.</p>



V1239814

Figure 10

 <p>V1239814</p> <p>Figure 10</p>	<p><i>PLASTIC BOTTLE</i> (VOE54236381)</p>	<p>Kit 20 sampling bottles</p>	<p>Cardboard box with 20 sampling bottles</p>
	<p><i>BAG</i> (VOE54041827)</p>	<p>Return bag</p>	<p>Prepaid plastic bag for 10 bottles (North America only) (Atlanta GA – lab)</p>
	<p><i>BAG</i> (VOE54745898)</p>	<p>Return bag</p>	<p>Prepaid plastic bag for 10 bottles (North America only) (Chicago IL – lab)</p>
	<p><i>BAG</i> (VOE54745900)</p>	<p>Return bag</p>	<p>Prepaid plastic bag for 10 bottles (North America only) (Houston TX – lab)</p>
	<p><i>KIT</i> (VOE54041771)</p>	<p>Starter kit</p>	<p>Sampling pump (metal body) standard, tube 100 ft (North America only)</p>

Document Title: Fluid analysis, submission process	Function Group: 160	Information Type: Service Information	Date: 4/6/2026
Profile: JL120HZ			

Fluid analysis, submission process

Showing Selected Profile

Valid for serial numbers			
Model	Production site	Serial number start	Serial number stop
JL120HZ			

Preparation for sample submission

- Check fluid sampling interval, see [Recommendations for fluid sampling intervals](#).
- Ensure all tools and supplies for obtaining a sample are available.
- Make sure the bottle is clean.

NOTE!

The test sampling is time sensitive and needs to be sent to the lab immediately.

Register

Register using Mobile-App

1. A sample can be registered using CHAIN Mobile-App (Now Mobile) or Zhangwo-App for China only.



V1246449

2. If you need to install Now Mobile app, see [Now Mobile-App \(CHAIN\). installation](#) or Fluid Analysis Resource Center by scanning the below QR code.



V1245724

3. Log into the Mobile-App to register the bottle for sampling. If you do not have an account – it can be requested by clicking on Sign up or contact your Service Market Manager.
4. Use only one QR-code per bottle.
5. Scan the QR-code with the Mobile-App and follow the required steps to complete the sample registration.
6. Make sure the scanned QR-code sticker is applied to the bottle.
7. Specify whether the sample was drawn in cold, describe atypical conditions, include equipment ID number, and

indicate test point locations.

Register using submission form

Paper submission form can be used to register the sample in the following cases:

- If you don't have network on your phone to register a sample using the Mobile-App
- If you cannot find the servicing machine in the list

Send

1. The sampling bottle should be packed in a proper sized box, plastic envelope, or hard plastic mailer.
2. Ensure that your return address and the laboratory address are clearly visible and correct.
3. Send sample immediately to the laboratory. Use Volvo's local logistics partner, a traceable courier service (see inside the lid of the sampling bottle box, applicable in all markets except North America), or through a delivery service of your choice.

Results and implementation

1. Once the report is ready, you will get an e-mail notification with the link to the file.
2. Review sample results.
3. Implement corrective actions. Review maintenance recommendations without delay.
4. By building a historical data you will be able to run trend analysis. Together with information on how the machine is used and where, Fluid Analysis Trend data can indicate deviations from this reference, which may require our attention.

Document Title: Arrival Inspection, according to Inspection Programme	Function Group: 171	Information Type: Service Information	Date: 4/6/2026
Profile: Wheel Loaders (WLO)			

Arrival Inspection, according to Inspection Programme

Op nbr 171-001

Total procedure time (hr): 1.75

1. This Inspection Programme can be found as a PDF file in the document library in PROSIS.

Document Title: Delivery Inspection, according to Inspection Programme	Function Group: 171	Information Type: Service Information	Date: 4/6/2026
Profile: Wheel Loaders (WLO)			

Delivery Inspection, according to Inspection Programme

Op nbr 171-002

Total procedure time (hr): 2.50

1. This Inspection Programme can be found as a PDF file in the document library in PROSIS.

Document Title: Delivery Instructions, according to Inspection Programme	Function Group: 171	Information Type: Service Information	Date: 4/6/2026
Profile: Wheel Loaders (WLO)			

Delivery Instructions, according to Inspection Programme

Op nbr 171-004

1. This Inspection Programme can be found as a PDF file in the document library in PROSIS.

Document Title: Maintenance of Stored Machines, according to Inspection Programme	Function Group: 171	Information Type: Service Information	Date: 4/6/2026
Profile: Wheel Loaders (WLO)			

Maintenance of Stored Machines, according to Inspection Programme

Op nbr 171-003

Total procedure time (hr): 1.50

1. This Inspection Programme can be found as a PDF file in the document library in PROSIS.

Document Title: Maintenance service, as required	Function Group: 173	Information Type: Service Information	Date: 4/6/2026
Profile: JL120HZ			

Maintenance service, as required

Showing Selected Profile

Valid for serial numbers			
Model	Production site	Serial number start	Serial number stop
JL120HZ			

This interval only contains the methods that supplement the relevant standard interval. See example in Foreword, [Service](#).

Op nbr 173-001

Total procedure time (hr): 5.00

1. Place the machine in Service Position 1. Refer to [Service position 1](#).
2. [Coolant level checking](#).

Document Title: Maintenance service, first 1000 hours	Function Group: 173	Information Type: Service Information	Date: 4/6/2026
Profile: JL120HZ			

Maintenance service, first 1000 hours

Showing Selected Profile

Valid for serial numbers			
Model	Production site	Serial number start	Serial number stop
JL120HZ			

This interval only contains the methods that supplement the relevant standard interval. See example in Foreword, [Service](#).

Op nbr 173-042

Total procedure time (hr): 0.90

Tools:

[9993831 Support](#)

1. Place the machine in service position according to: [Service position 2](#).
2. [Drive axle oil changing](#)
3. [Restoring of the machine](#)
4. Fill in the Service journal that is included in the Operator's Manual.

Document Title: Maintenance service, every 50 hours	Function Group: 173	Information Type: Service Information	Date: 4/6/2026
Profile: JL120HZ			

Maintenance service, every 50 hours

Showing Selected Profile

Valid for serial numbers			
Model	Production site	Serial number start	Serial number stop
JL120HZ			

Op nbr 173-004

Total procedure time (hr): 1.25

1. Place the machine in service position according to: [Service position 1](#).
2. [Basic service](#)
3. [Lubrication, every 50 hours](#)
4. [Tyre wear and air pressure checking](#)
5. [Restoring of the machine](#)