Document Title: **Volvo standard tightening torques**	Function Group: **030**	Information Type: **Service Information**	Date: **4/13/2026**
Profile: **L220H Volvo**			

Volvo standard tightening torques

Showing Selected Profile

Valid for serial numbers			
Model	**Production site**	**Serial number start**	**Serial number stop**
L220H Volvo			

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 ≈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	180	244	254	345

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

Document Title: **Conversion tables**	Function Group: **030**	Information Type: **Service Information**	Date: **4/13/2026**
Profile: **L220H Volvo**			

Conversion tables

Showing Selected Profile

Valid for serial numbers			
Model	**Production site**	**Serial number start**	**Serial number stop**
L220H Volvo			

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 mm							

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 $mile^2$ = 259 ha = 2.59 km^2							

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 cm^3 = 231 in^3 = 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/cm^2 = 735.56 Dry (mmHg) = 0.96784 atm						

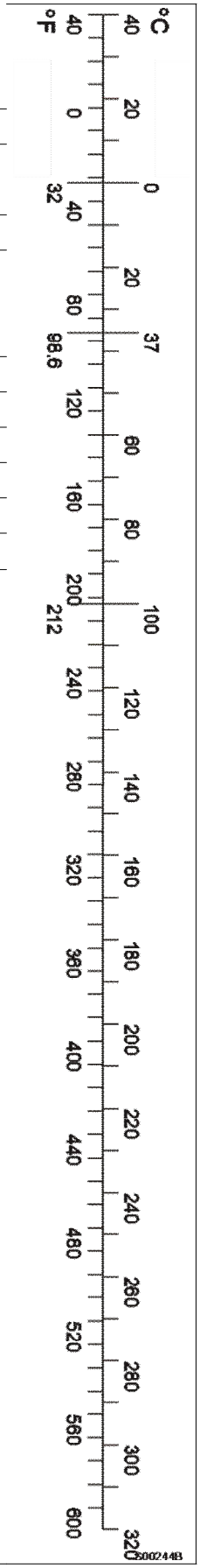
Unit explanations

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 ($Pa = N/m^2$)				
kPa	x4.0	$=in.H_2O$	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				
ºC =(ºF-32)/1.8			ºF =(ºC x1.8) +32	
Flow factor				
l/min (dm^3/min)	x0.264	= US gal/min x3.785		=liter/min



Document Title: **Torque wrench extension**	Function Group: **030**	Information Type: **Service Information**	Date: **4/13/2026**
Profile: **L220H Volvo**			

Torque wrench extension

Showing Selected Profile

Valid for serial numbers			
Model	**Production site**	**Serial number start**	**Serial number stop**
L220H Volvo			

When an extension is used together with a torque wrench (e.g.88830381 Wrench), the torque applied to the screw increases since the lever arm is extended.

The following formula is used to calculate the correct torque wrench settings:
M1 = M2 x (L1/L2)

M1 is the torque to be set on the torque wrench.
L1 is the normal length of the torque wrench.
M2 is the tightening torque according to specification.
L2 is the total length of the torque wrench and extension.

NOTE!
The extension and the torque wrench must be in a straight line for the calculation to be correct.

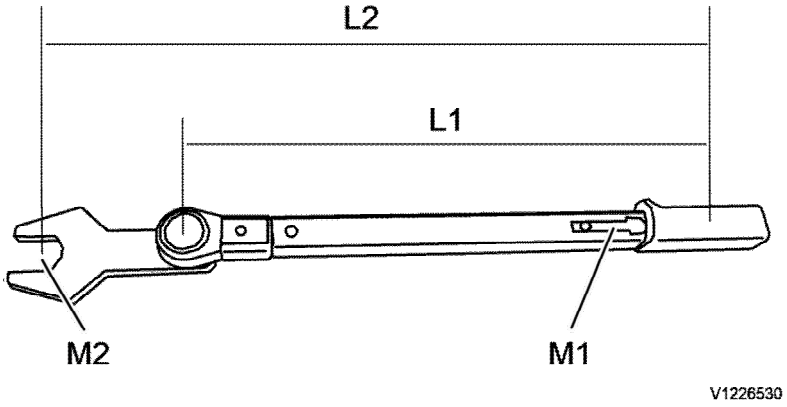


Figure 1

Calculation example
M1 is the torque to be set on the torque wrench.
M2 is the tightening torque according to specification, e.g. 100 Nm.
L1 is the measured length of the torque wrench, e.g. 45 cm.
L2 is the measured length of the extension and the torque wrench, e.g. 60 cm.

L1 = 45 cm
L2 = 60 cm
M2 = 100 Nm

M1 = 100 Nm × (45 cm/60 cm) = 75 Nm

Document Title: **Operation numbers for additional work**	Function Group: **070**	Information Type: **Service Information**	Date: **4/13/2026**
Profile: **Wheel Loaders (WLO)**			

Operation numbers for additional work

Showing Selected Profile

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. Hhen 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: **E1680, Holder**	Function Group: **080**	Information Type: **Service Information**	Date: **4/13/2026**
Profile: **L220H Volvo**			

E1680, Holder

Showing Selected Profile

Valid for serial numbers			
Model	**Production site**	**Serial number start**	**Serial number stop**
L220H Volvo			

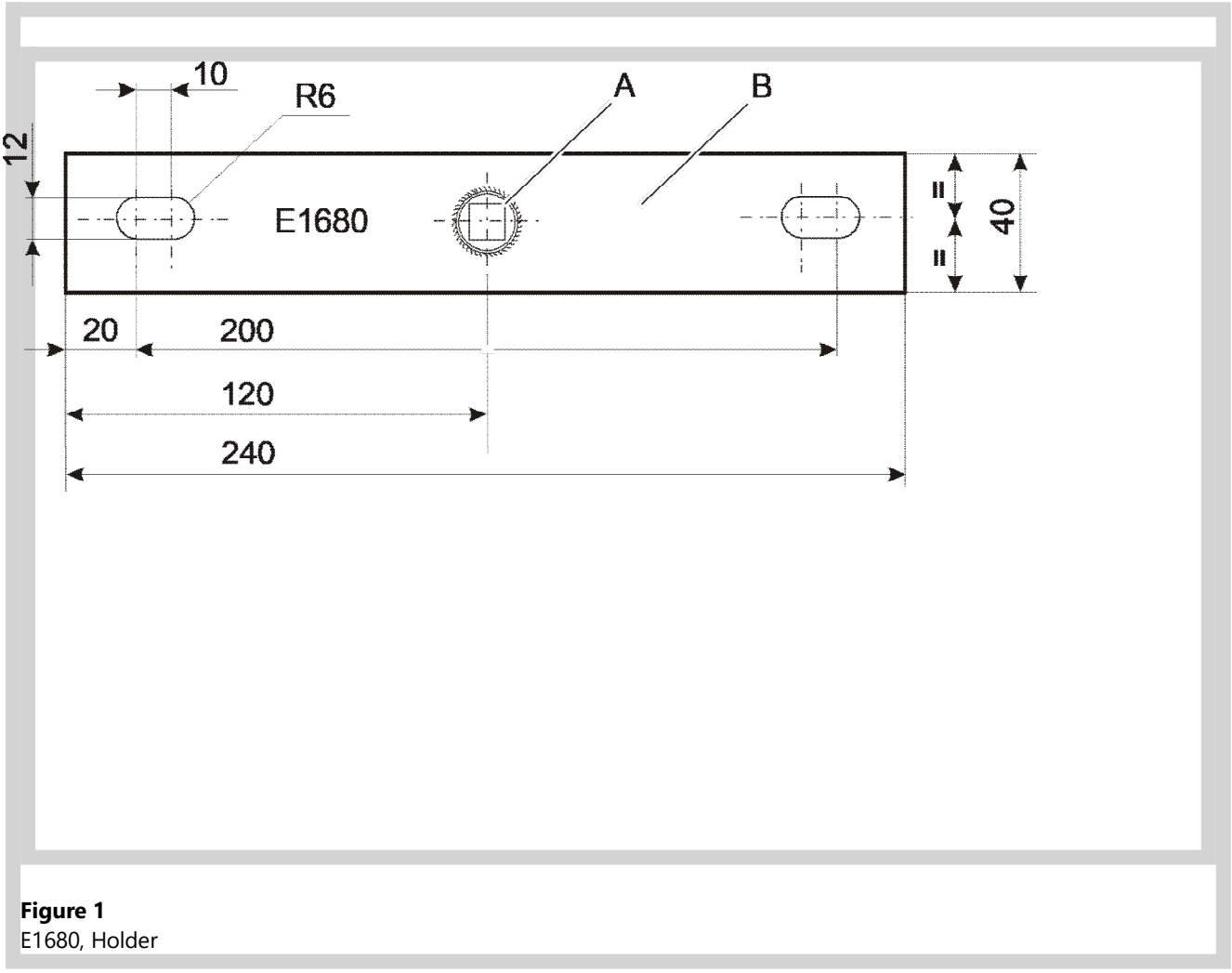


Figure 1
E1680, Holder

A	1/2" Socket
B	Flat iron bar 5 mm

Document Title:	Function Group:	Information Type:	Date:
E 1708, Checking point	**080**	**Service Information**	**4/13/2026**
Profile: **L220H Volvo**			

E 1708, Checking point

Showing Selected Profile

Valid for serial numbers			
Model	**Production site**	**Serial number start**	**Serial number stop**
L220H Volvo			

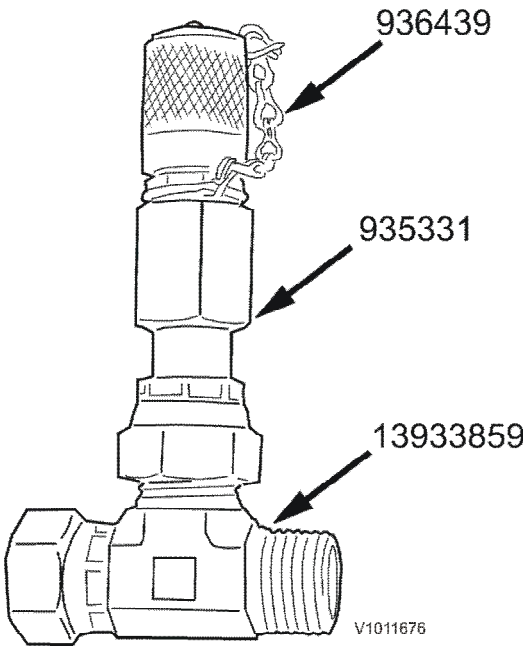


Figure 1

Document Title: **E1711**	Function Group: **080**	Information Type: **Service Information**	Date: **4/13/2026**
Profile: **L220H Volvo**			

E1711

Showing Selected Profile

Valid for serial numbers			
Model	**Production site**	**Serial number start**	**Serial number stop**
L220H Volvo			

E1711

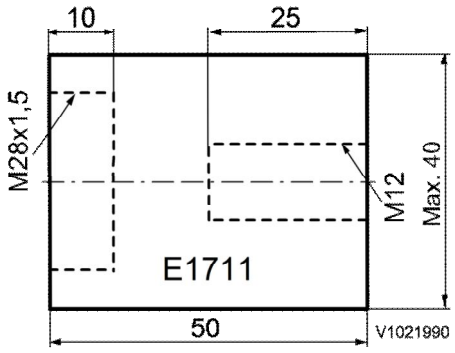


Figure 1
E1711

Document Title: **E-2001**	Function Group: **080**	Information Type: **Service Information**	Date: **4/13/2026**
Profile: **L220H Volvo**			

E-2001

Showing Selected Profile

Valid for serial numbers			
Model	**Production site**	**Serial number start**	**Serial number stop**
L220H Volvo			

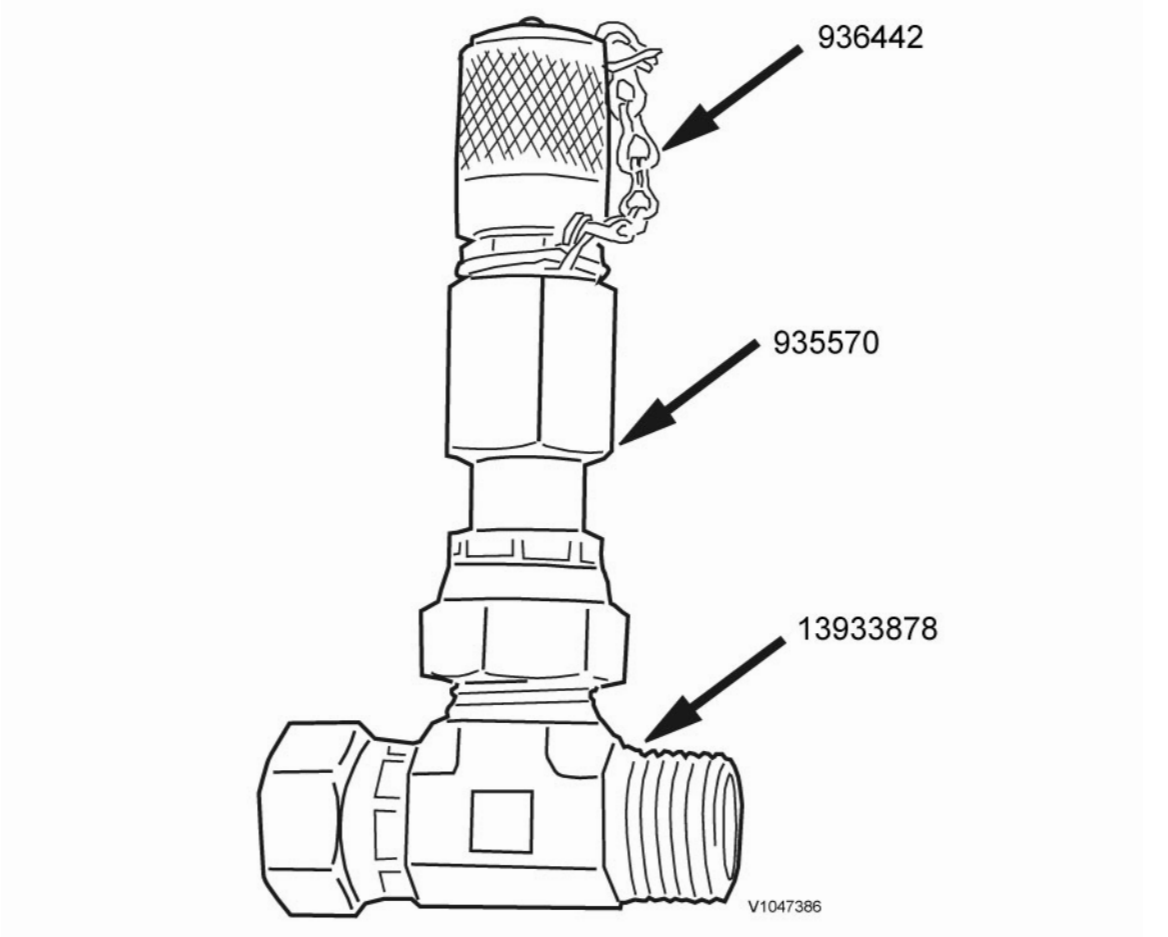


Figure 1

Document Title: **E-2005**	Function Group: **080**	Information Type: **Service Information**	Date: **4/13/2026**
Profile: **L220H Volvo**			

E-2005

Showing Selected Profile

Valid for serial numbers			
Model	**Production site**	**Serial number start**	**Serial number stop**
L220H Volvo			

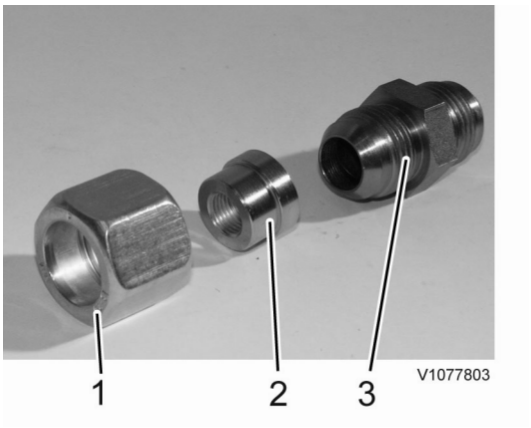


Figure 1
E-tool 2005

1. Coupling nut 931206
2. Test nipple 11054368 Thread R1/4"
3. Nipple 929315

VOLVO

Service Information

Document Title:	Function Group:	Information Type:	Date:
E-2007	**080**	**Service Information**	**4/13/2026**
Profile: **L220H Volvo**			

E-2007

Showing Selected Profile

Valid for serial numbers			
Model	**Production site**	**Serial number start**	**Serial number stop**
L220H Volvo			

Figure 1

Document Title: **E-2014**	Function Group: **080**	Information Type: **Service Information**	Date: **4/13/2026**
Profile: **L220H Volvo**			

E-2014

Showing Selected Profile

Valid for serial numbers			
Model	**Production site**	**Serial number start**	**Serial number stop**
L220H Volvo			

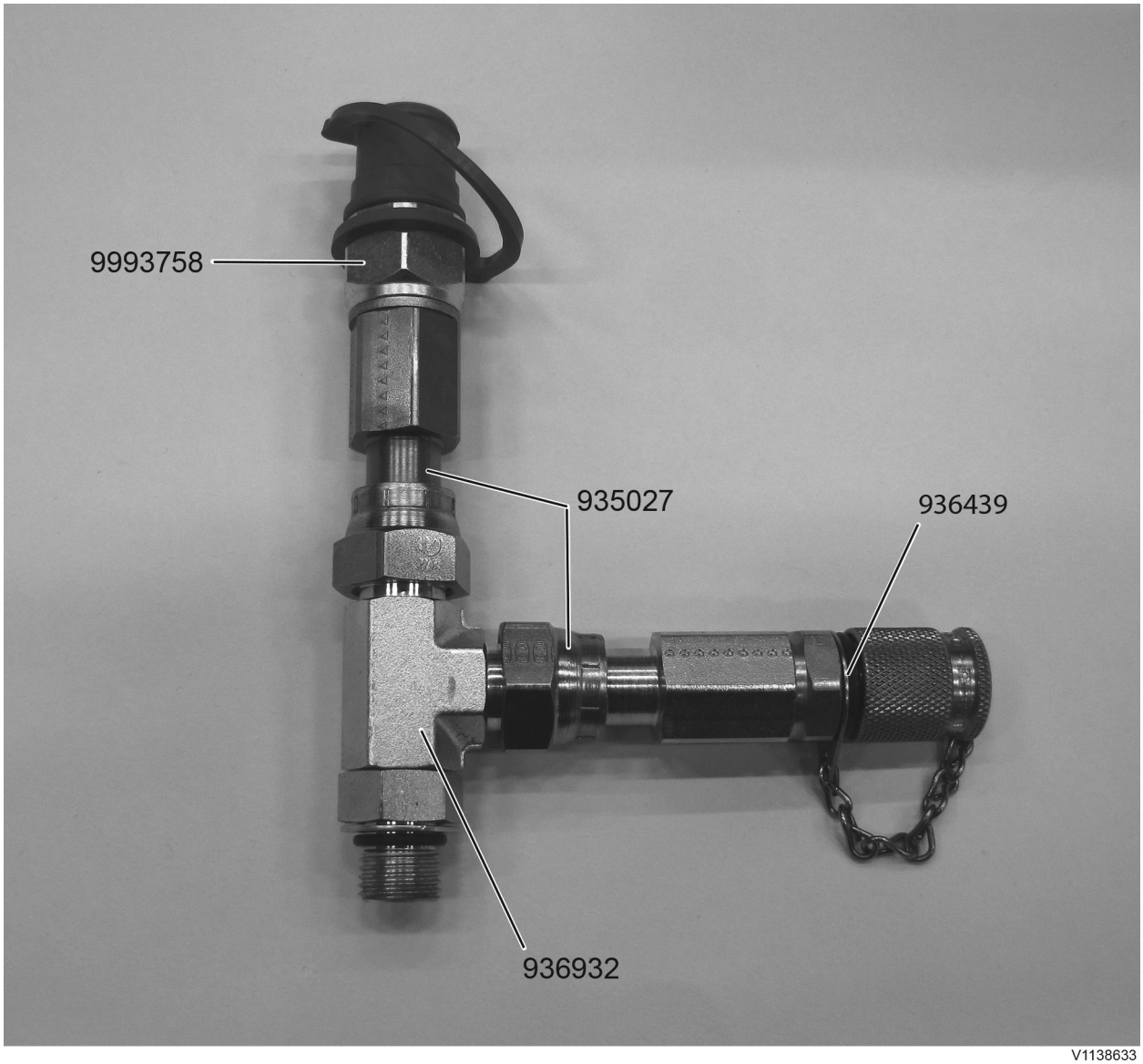


Figure 1

Document Title: **E-2015**	Function Group: **080**	Information Type: **Service Information**	Date: **4/13/2026**
Profile: **L220H Volvo**			

E-2015

Showing Selected Profile

Valid for serial numbers			
Model	**Production site**	**Serial number start**	**Serial number stop**
L220H Volvo			

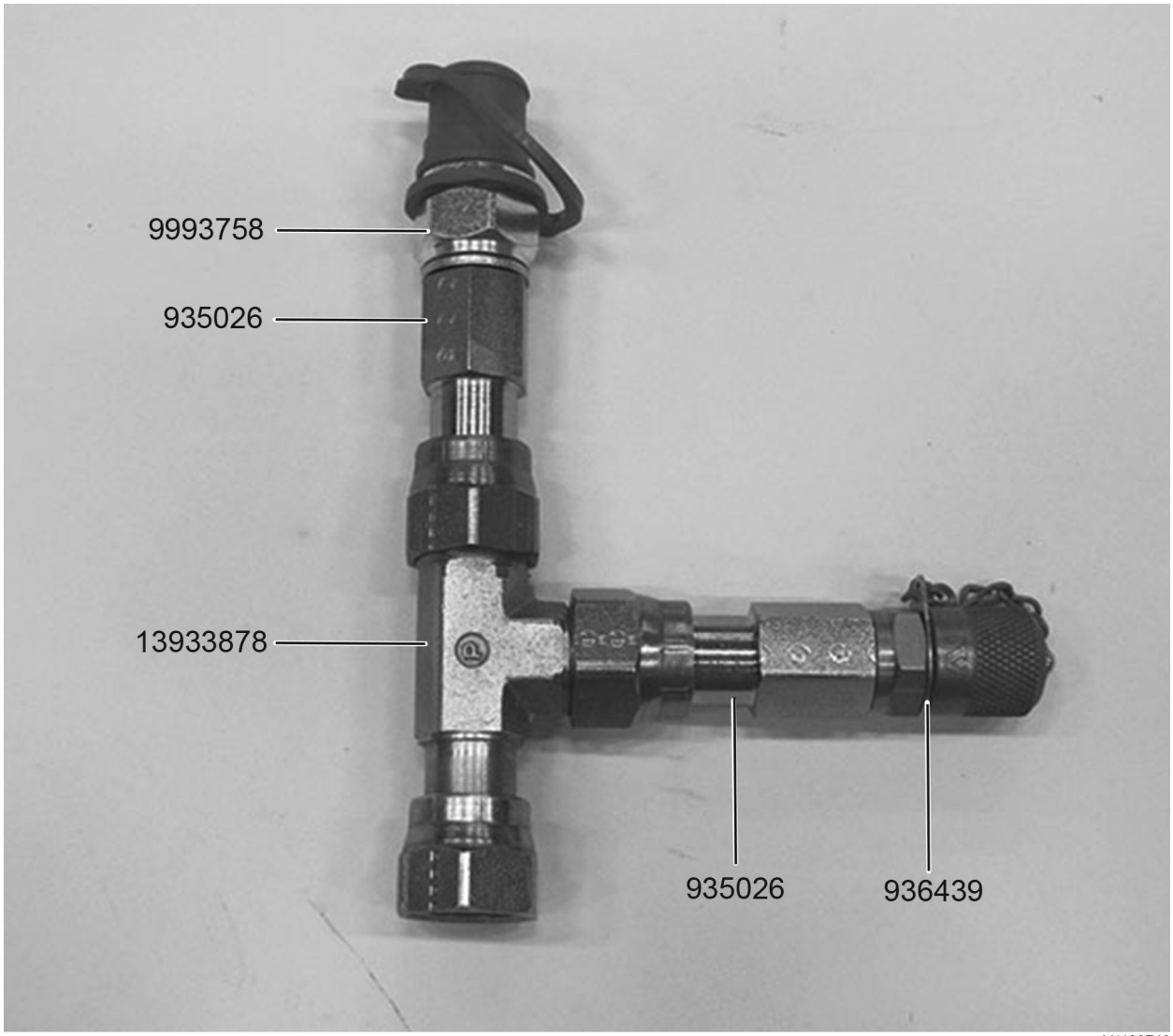


Figure 1

Document Title: **E-2016**	Function Group: **080**	Information Type: **Service Information**	Date: **4/13/2026**
Profile: **L220H Volvo**			

E-2016

Showing Selected Profile

Valid for serial numbers			
Model	**Production site**	**Serial number start**	**Serial number stop**
L220H Volvo			

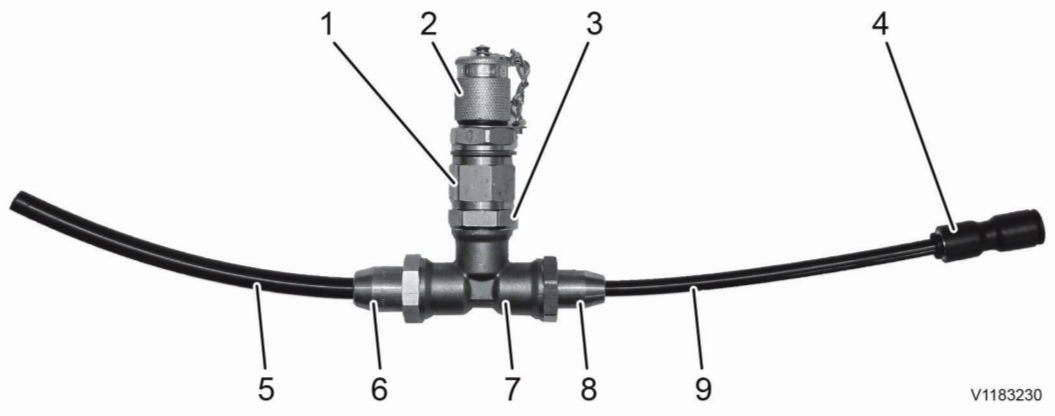


Figure 1

1. 88830130 Nipple
2. 15018967 Testing nipple
3. 11196161 Nipple
4. 17413665 Connector Ø 6/8 mm
5. 980832 Tube Ø 8 mm
6. 977789 Fitting Ø 8 mm
7. 15023142 T-coupling
8. 979282 Fitting Ø 6 mm
9. 980831 Tube Ø 6mm

Document Title:	Function Group:	Information Type:	Date:
E-2017	**080**	**Service Information**	**4/13/2026**
Profile: **L220H Volvo**			

E-2017

Showing Selected Profile

Valid for option/configuration			
Model	**Option no.**	**Option**	**Configuration**
L220H Volvo	53217072	Engine	D13J China IV
L220H Volvo	85625	Engine	D13J EU Stage IV
L220H Volvo	85626	Engine	D13J US Tier 4 final
L220H Volvo	87231	Engine	D13J US Tier 4 final
L220H Volvo	87233	Engine	D13J EU Stage IV
L220H Volvo	87258	Engine	D13J US Tier 4 final
L220H Volvo	87726	Engine	D13J US Tier 4 final
L220H Volvo	87738	Engine	D13J EU Stage V

Valid for serial numbers			
Model	**Production site**	**Serial number start**	**Serial number stop**
L220H Volvo	Arvika	2001	3140
L220H Volvo	Arvika	3141	5000
L220H Volvo	Arvika	5001	7000

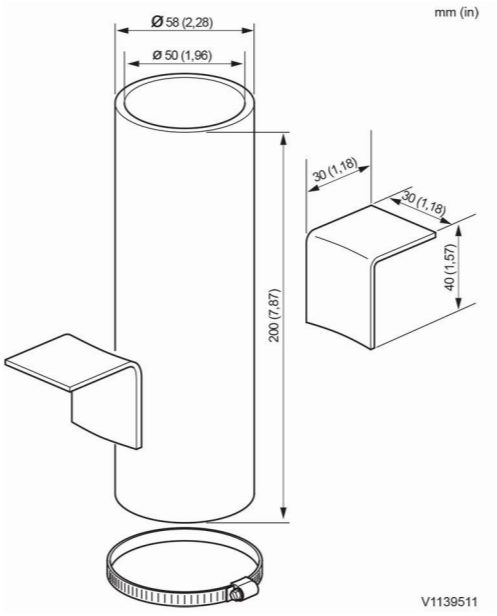


Figure 1

Document Title: **E-2018**	Function Group: **080**	Information Type: **Service Information**	Date: **4/13/2026**
Profile: **L220H Volvo**			

E-2018

Showing Selected Profile

Valid for serial numbers			
Model	**Production site**	**Serial number start**	**Serial number stop**
L220H Volvo			

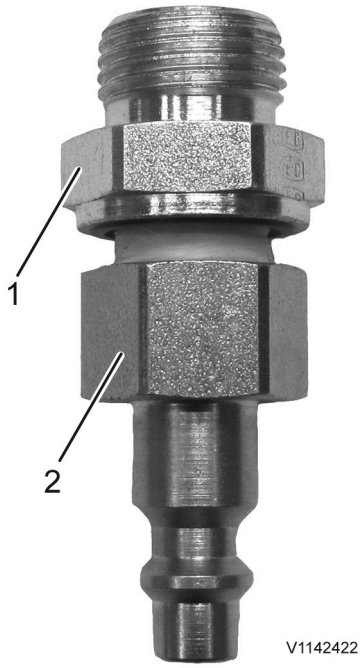


Figure 1

1. 963948
2. 17420996

VOLVO

Service Information

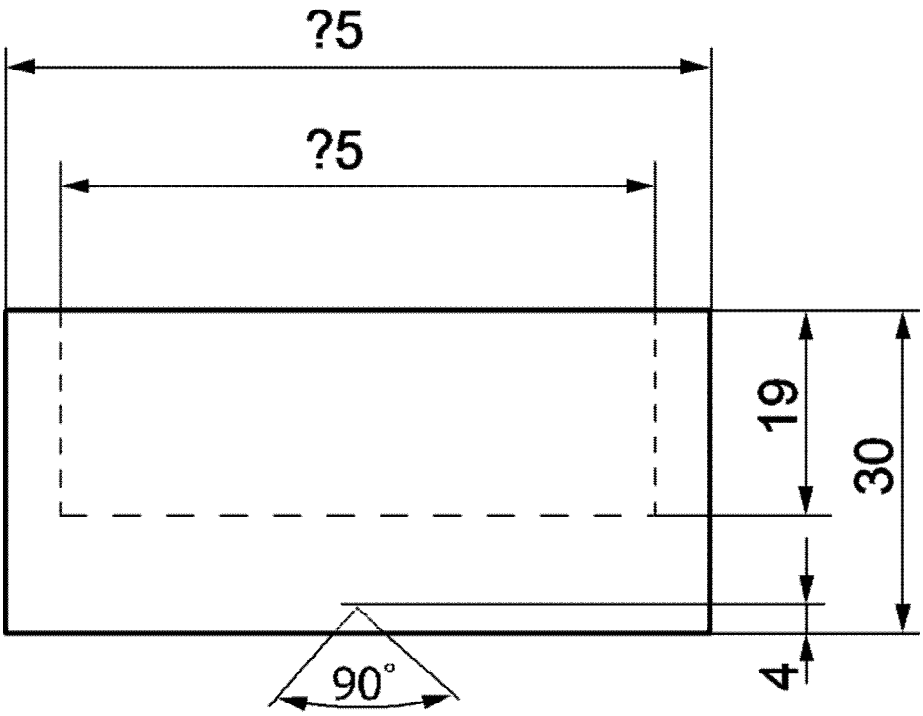
Document Title:	Function Group:	Information Type:	Date:
E-2023	**080**	**Service Information**	**4/13/2026**
Profile: **L220H Volvo**			

E-2023

Showing Selected Profile

Valid for serial numbers			
Model	**Production site**	**Serial number start**	**Serial number stop**
L220H Volvo			

E-2023



Material: Steel

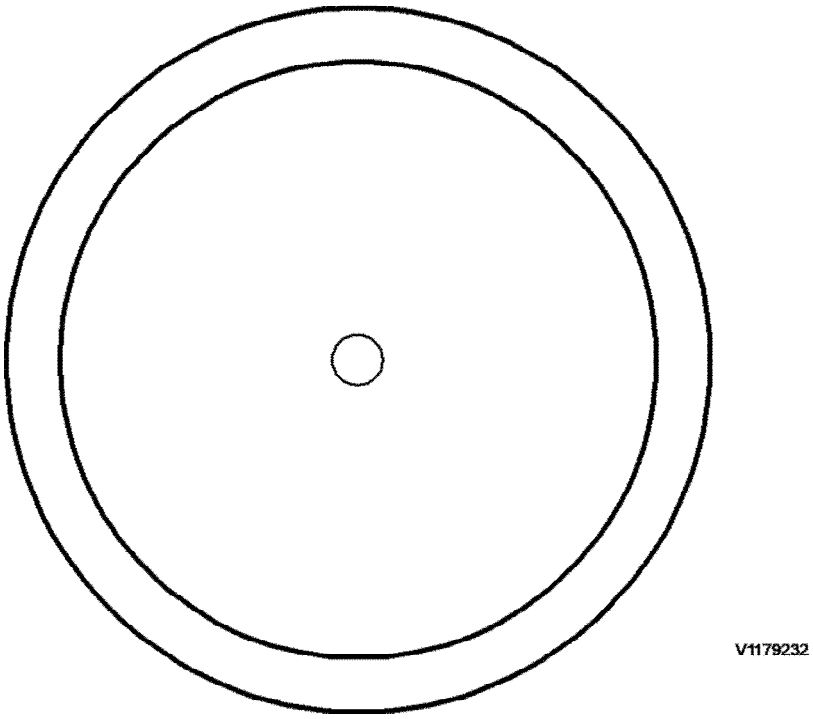


Figure 1

VOLVO

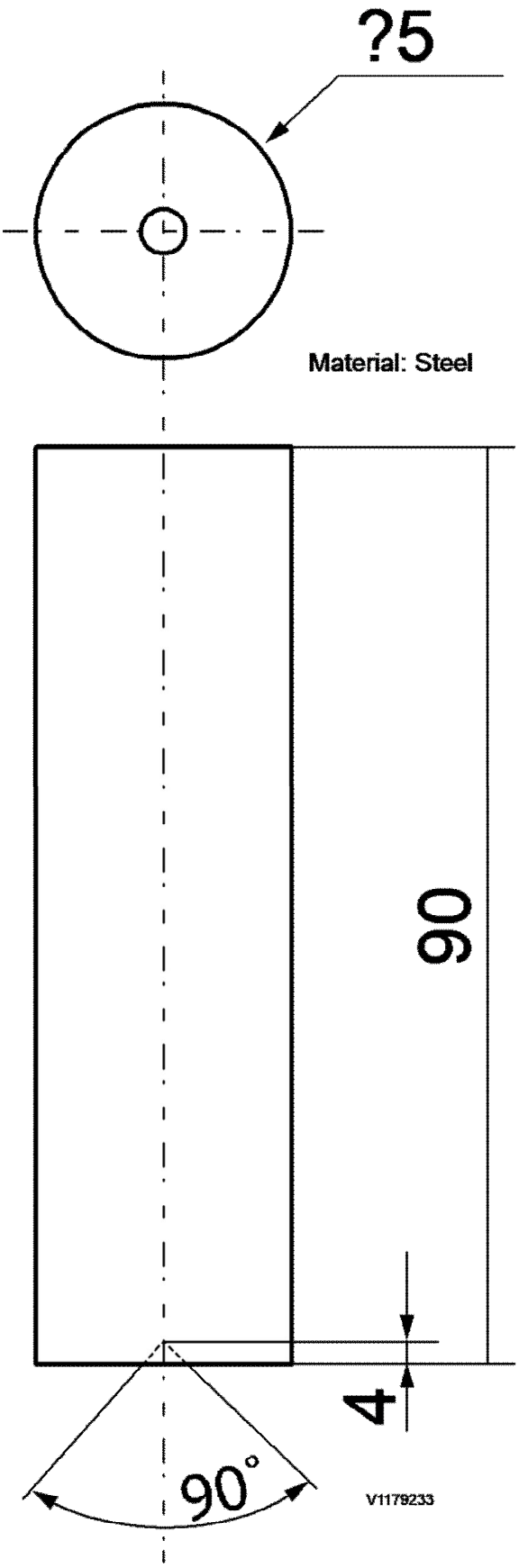
Service Information

Document Title:	Function Group:	Information Type:	Date:
E-2024	**080**	**Service Information**	**4/13/2026**
Profile: **L220H Volvo**			

E-2024

Showing Selected Profile

Valid for serial numbers			
Model	**Production site**	**Serial number start**	**Serial number stop**
L220H Volvo			



E-2024

Figure 1

VOLVO

Service Information

Document Title:	Function Group:	Information Type:	Date:
E-2025	**080**	**Service Information**	**4/13/2026**
Profile: **L220H Volvo**			

E-2025

Showing Selected Profile

Valid for serial numbers			
Model	**Production site**	**Serial number start**	**Serial number stop**
L220H Volvo			

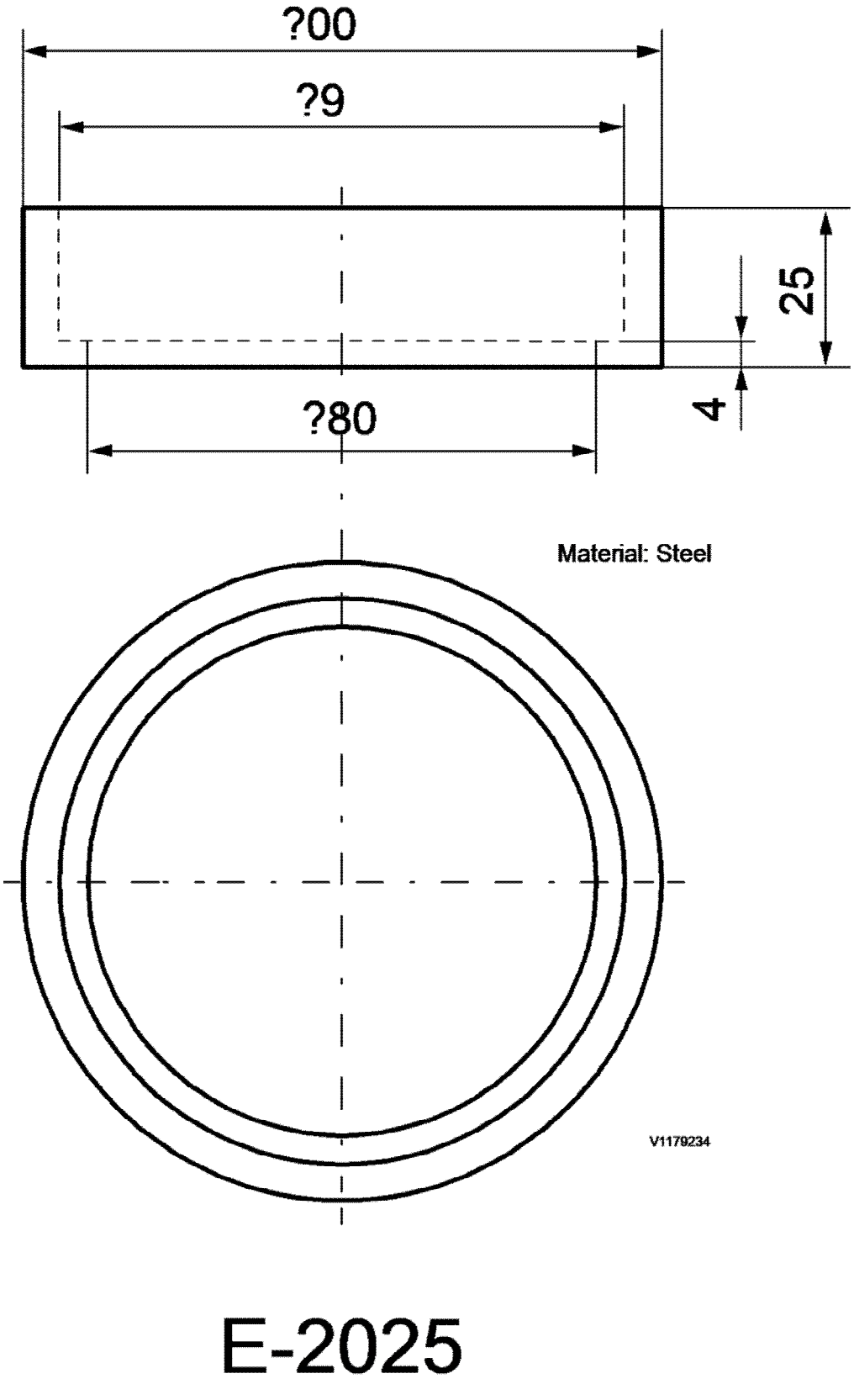


Figure 1

Document Title: **E-2037**	Function Group: **080**	Information Type: **Service Information**	Date: **4/13/2026**
Profile: **L220H Volvo**			

E-2037

Showing Selected Profile

Valid for option/configuration			
Model	**Option no.**	**Option**	**Configuration**
L220H Volvo	53217072	Engine	D13J China IV
L220H Volvo	85625	Engine	D13J EU Stage IV
L220H Volvo	85626	Engine	D13J US Tier 4 final
L220H Volvo	87231	Engine	D13J US Tier 4 final
L220H Volvo	87233	Engine	D13J EU Stage IV
L220H Volvo	87258	Engine	D13J US Tier 4 final
L220H Volvo	87726	Engine	D13J US Tier 4 final
L220H Volvo	87738	Engine	D13J EU Stage V

Valid for serial numbers			
Model	**Production site**	**Serial number start**	**Serial number stop**
L220H Volvo	Arvika	2001	3140
L220H Volvo	Arvika	3141	5000
L220H Volvo	Arvika	5001	7000

Plate

Dimensions on the drawing are given in mm.

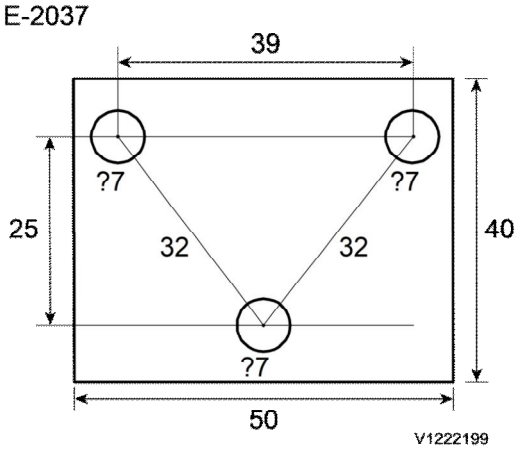


Figure 1
E-2037

Flat iron bar, thickness 6 mm

Document Title: **E-2045**	Function Group: **080**	Information Type: **Service Information**	Date: **4/13/2026**
Profile: **L220H Volvo**			

E-2045

Showing Selected Profile

Valid for serial numbers			
Model	**Production site**	**Serial number start**	**Serial number stop**
L220H Volvo			

Installation tool

Dimensions on the drawing are given in mm.

E-2045

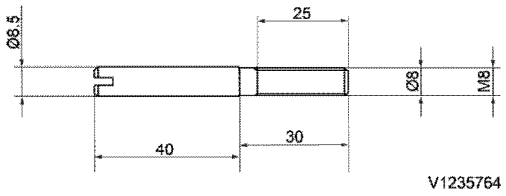


Figure 1

Material: S235JR

Document Title: **9993807 Lifting tool user instructions**	Function Group: **080**	Information Type: **Service Information**	Date: **4/13/2026**
Profile: **L220H Volvo**			

9993807 Lifting tool user instructions

Showing Selected Profile

Valid for serial numbers			
Model	**Production site**	**Serial number start**	**Serial number stop**
L220H Volvo			

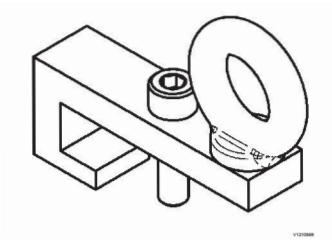


Figure 1
9993807 Lifting tool

Instructions

This instruction is a guide on how to use and maintain the lifting tool correctly. The instructions must be studied carefully by the personnel concerned before the lifting tool can be put into use.

The instructions must always be available to the personnel maintaining and using the lifting tool daily.

It is also important to:

- Keep the instructions and other applicable documents during the entire lifetime of the lifting tool.
- Pass the instructions to other owners or users of the lifting tool.
- Update the instructions with additions or changes made by the manufacturer.

Pay careful attention to information about warnings mentioned in the instructions and found on the warning signs on the lifting tools. If this information is not observed, severe personal injuries and equipment damage can arise.

Responsibility

The instructions describe the authorized method to use the lifting tool.

The lifting tool may only be used by personnel with adequate technical training or corresponding professional experience and in consultation with the manufacturer.

If the instructions have not been followed, the manufacturer is not responsible for personal injuries or damage to equipment.

Marking

Do not remove or make machine labels or other labels unreadable.
The lifting tool is marked with a CE mark, which means that it is designed, manufactured and described in accordance with EC Machinery Directive 2006/42/EC.
Warning decals and CE mark on lifting tool must be clearly visible. If a part provided with warning decals or CE mark is changed, a new warning decal and CE mark must be mounted in the same place. Defective decals and CE marks must be replaced immediately.

Figure 2
CE-marking

Manufacturer

Company: Volvo Construction Equipment AB
Address: CE-46840, RLA 0301
Postal address: 631 85 Eskilstuna, Sweden

Rebuilding

If the lifting tool is rebuilt or supplemented with other parts without permission by the manufacturer, the CE marking does not include this part. If such rebuilding or added parts changes the function of the lifting tool, the CE marking in its entirety is no longer valid. After rebuilding, it is important that the instructions are supplemented with the necessary illustrations, photos and texts.

NOTE!
If not explicitly stated otherwise, always assume this instruction reference the use of two 9993807 Lifting tools.

Intended usage

The lifting toll specified in this document is only intended for lifting torque converters with a maximum weight of 100 kg.
Intended users are appointed and trained personnel, the lifting gear is not intended to be used by unauthorised or underage personnel.
To fulfil the requirements for intended use, the user must follow all instructions and maintenance directions written by the manufacturer.

Technical data

Type designation: lifting tool for torque converter
Maximum load, lifting tool x 2: 100 kg (220 lb)
Mass, lifting tool x 2 with shackles and chain slings: 5 kg (11 lb)
Test factor for static testing (for lifting tools): 1.5

Safety information

Limits of use

The lifting tools may only be used for the intended purpose. All other use is forbidden.
Lifting hooks must be equipped with a self-locking hook.
Shackles should be used for connecting the tools.
Lifting sling and straps should be marked with lifting capacity.
All accessories for the lift must have sufficient lifting capacity.

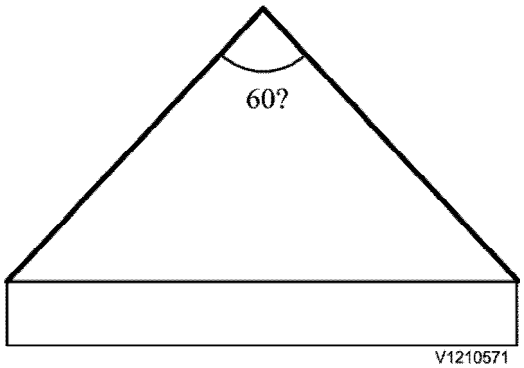


Figure 3
Max lift-angle
Maximum lift angles must not exceed 60°.

Handling
To meet the requirements for intended use, the user must observe all user and maintenance instructions prescribed by the manufacturer.

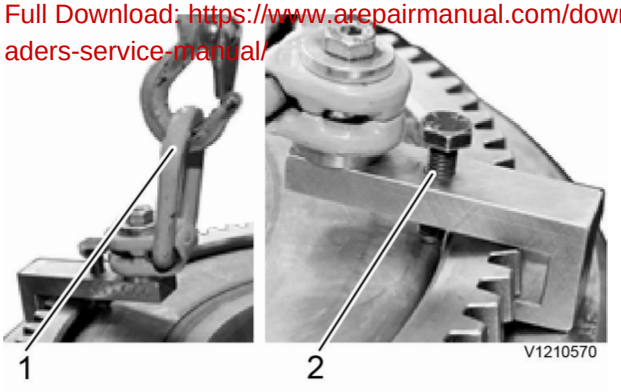


Figure 4

1. **Lifting equipment**
   Use lifting sling with sufficient lifting capacity, 100 kg (220 lb).
   Always use lifting hooks equipped with a self-locking hook.
   Use shackles with sufficient lifting capacity, 100 kg (220 lb).
2. **Bolts**
   Position the lifting tool under gear ring and tighten the bolts.
   Tighten until the lifting tool is unable to move independently of the gear ring.

Intended user

The lifting device is intended to be used by trained personnel, it is not intended to be used by unauthorized or underage personnel.

Conditions and preparatory measures

Lifting tool with damaged parts must not be used.
Before lifting, check that the lifting tool does not have indications of cracks or deformations.

Maintenance

Maintenance must be performed by person with appropriate technical training or equivalent professional experience and in consultation with the manufacturer.

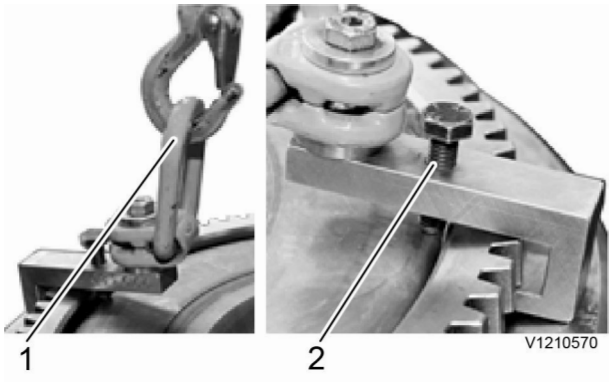


Figure 5

Detail/interval	Control/oversight
1 Shackles. Annual check.	Check that shackles does no have visible defects, cracks or deformations.
2 9993807 Lifting tool. Annual check.	Check that the lifting tool with threads and bolt does no have visible defects, cracks or deformations.

General

A defective lifting tool must be replaced.