Document Title:	Function Group:	Information Type:	Date:
General	**00**	**Service Information**	**7/30/2025**
Profile:			

General

Description EC200

The machine is crawler excavator with a weight between 18.1 and 19.8 tonnes.
A standard machine consists of the following three main parts:

superstructure
undercarriage
digging unit

Superstructure frame with boom attachment, counterweight, machine housing and cab

The engine is a water cooled, six-cylinder, four-stroke, direct-injection, turbocharged diesel engine with an output of 107 kW (146 hp) and the type designation Volvo TD61GE. The engine powers the hydraulic system of the excavator via a pump gearbox. Three pumps for the working hydraulics are connected to this gearbox on the standard version of the machine. A separate pump for the servo-hydraulic circuit is fitted on the diesel engine timing gear casing cover.

The machine has triple-circuit hydraulics with Volvo Excavators priority system and COS (= Capacity Optimised System). Thereby all three pumps can be used for separate excavating movements. The utilisaition of the pumps is controlled by a so called Mode Selector through the following three programmes:

HLD = Heavy Lift Device
ECO = Economy
CAP = Capacity

The pumps are controlled through PSC (Pressure Sensing Control) in order to avoid stalling the diesel-engine.

The superstructure is slewed with the aid of an axial piston motor. Between engine and slewing ring there is a slew brake, gearbox and slewing pinion. The pinion runs against the internal teeth of the slewing ring. The slewing ring connects the superstructure with the undercarriage. A centre passage connects the superstructure and the undercarriage hydraulically.

The cab has ventilation filters and is prepared for air conditioning. The cab contains a computerised monitoring system for the diesel engine and the hydraulic system. Under the operator's seat there is also an electrical distribution box where most of the fuses and relays are positioned.

Undercarriage with crawler unit and travel motors

Propulsion of the machine is achieved through two two-stage hydraulic motors driving the tracks. The motors are provided with hydraulic brakes. The brakes are negative, that is locked/applied by spring loading and only released when they are actuated by servo-pressure.

Rollers and idlers are greased for life.

Digging equipment with boom, dipper arm and bucket

The digging equipment is connected to the superstructure frame through the boom attachment.
The boom cylinder movement is provided with float position for higher excavating speed and smoother operation.
A hose rupture valve is fitted on the boom cylinder.
Depending on choice of attachment, various combinations of boom, dipper arm and attachments are available.
This manual describes the most common alternatives.

Document Title: **Product Identification Signs**	Function Group: **00**	Information Type: **Service Information**	Date: **7/30/2025**
Profile:			

Product Identification Signs

Product Identification Signs and stamped-in markings for EC 200

The adjacent illustrations, which do not apply to a specific machine model, show which signs and markings there are on the machine and where they can be found.
When ordering spare parts and in all enquiries by telephone or correspondence the model designation and the Reg. No. should always be stated.
When applicable the stamped-in data on separate components should also be stated.

Item. No.

1. Product identification sign with model designation and number is positioned on the outside of the cab under the rear left side window.
2. The sign for the bucket with part number, modification number, weight and capacity is positioned on top of the bucket to the left of the dipper arm attachment.
3. The diesel engine type designation, product and serial number are stamped onto the left side of the engine at the upper edge of the cylinder block.
4. The undercarriage part number and modification number are stamped obliquely in front of and to the right of the slewing ring.
5. The superstructure part number, modification number and the machine Reg. No. are stamped into the right or the left boom attachment.
6. The part number and modification number of the hydraulic cylinders are stamped into the envelope surface of the cylinder cover at the oil connection at the piston rod end of the cylinders.
7. The part number and modification number of the piston rods are stamped into the end surface of the piston rods.

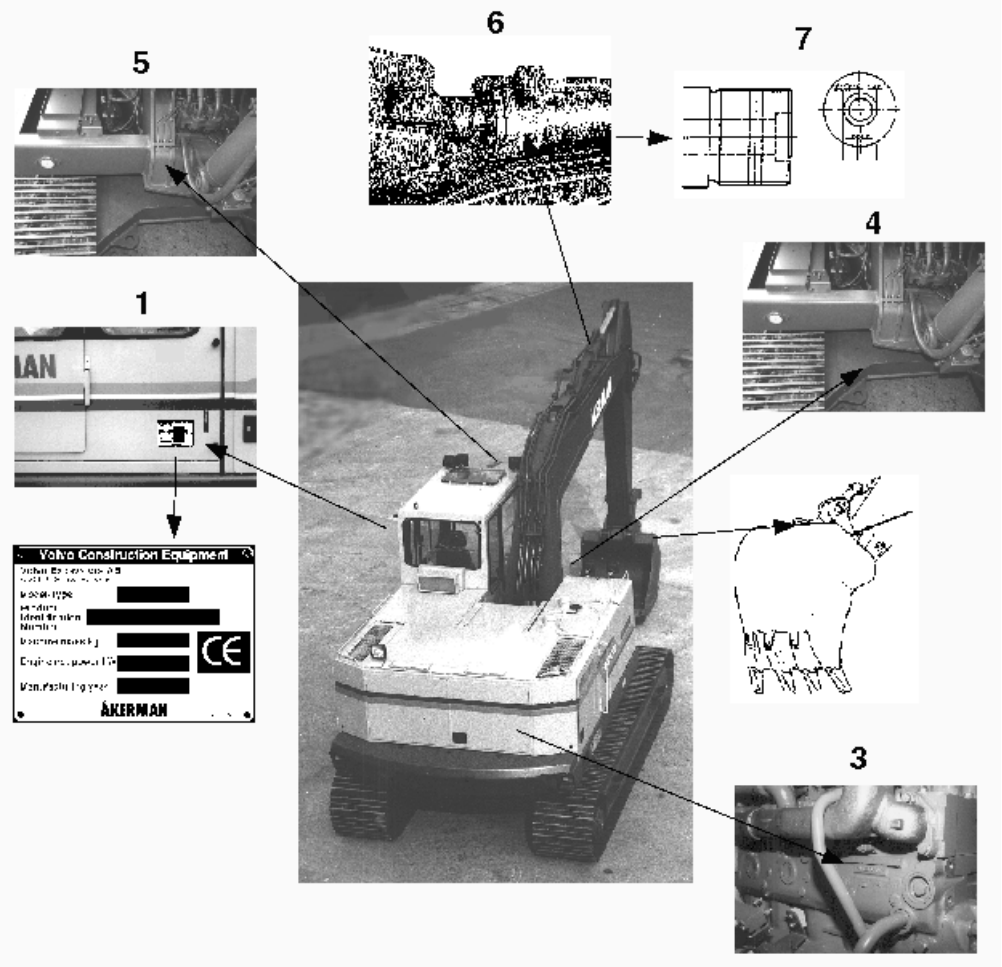


Figure 1

Document Title: **Crawler unit**	Function Group: **03**	Information Type: **Service Information**	Date: **7/30/2025**
Profile:			

Crawler unit

Bottom rollers

	Degree of wear in %				
	0	**25**	**50**	**75**	**100**
Diameter in mm inches	155 6.10	150 5.90	145 5.70	140 5.51	135 5.31

Skid rails

	Degree of wear in %				
	0	**25**	**50**	**75**	**100**
Thickness in mm inches	20 0.79	16 0.63	12 0.47	8 0.31	3 0.12

Sprocket rim

Degrees of wear	**Degree of wear in %**				
measured across 5 teeth	**0**	**25**	**50**	**75**	**100**
A-measurement in mm in inches	335.5 13.21	32.5 13.09	329.5 12.97	326.5 12.85	323.5 12.74

Tracks

Chain size	B4B
Number of track plates/side	52 pcs
Track widths	600 mm (23.6 in)
Track widths	750 mm (29.5 in)
Track widths	900 mm (35.4 in)

Track chains

Link chain type	B4B
Make	IT (Intertrac)

Track tension

Slack: EC200, 245 ±10 mm (9.6 ±0.4 in).

NOTE!

Also applies to machines equipped with skid rail.

Longitudinal measurement

Measured across 4 links	Degree of wear in %				
	0	**25**	**50**	**75**	**100**
L-measurement in mm in inches	686 27.0	690 27.2	693 27.3	697 27.4	700 27.6

Height measurement

	Degree of wear in %				
	0	**25**	**50**	**75**	**100**
Height measurement in mm in inches	96.0 3.78	93.5 3.68	91.0 3.58	88.5 3.48	86.0 3.39

Chain bushing outside measurement

	Degree of wear in %				
	0	**25**	**50**	**75**	**100**
Measurement D in mm inches	53.8 2.12	52.0 2.05	50.0 1.97	48.0 1.89	46.0 1.81

Slewing system

The superstructure is slewed with the aid of an axial piston motor.
Between motor and slewing ring there is a slew brake, gearbox and slewing pinion in engagement with the internal teeth of the slewing ring.

Slewing speed	7.9 rpm
90_ slewing, from start to stop	5.0 s
180_ slewing, from start to stop	7.0 s

(Empty bucket - digging equipment at full reach)

Cylinder data

Boom cylinder, for boom 4.65 m (15 ft 3 in) and 5.2 m (17 ft 0.7 in)

Cylinder inner diameter	160 mm (6.30 in)
Piston rod diameter	105 mm (4.13 in)
Stroke	1125 mm (3 ft 8.29 in)
Piston force, out	523 kN (53.3 Mp) (117,580 lbf)
Piston force, out in HLD	603 kN (61.5 Mp) (135,560 lbf)

Boom cylinder for 2-piece boom

Cylinder inner diameter	160 mm (6.30 in)
Piston rod diameter	105 mm (4.13 in)
Stroke	1005 mm (3 ft 3.56 in)
Piston force, out	523 kN (53.3 Mp) (117413 lbf)
Piston force, out in HLD	603 kN (61.5 Mp) (135374 lbf)

Adjusting cylinder for 2-piece boom

Cylinder inner diameter	125 mm (4.92 in)

Piston rod diameter	70 mm (2.76 in)
Stroke	700 mm (2 ft 3.56 in)
Piston force, out	319 kN (32.5 Mp) (71616 lbf)

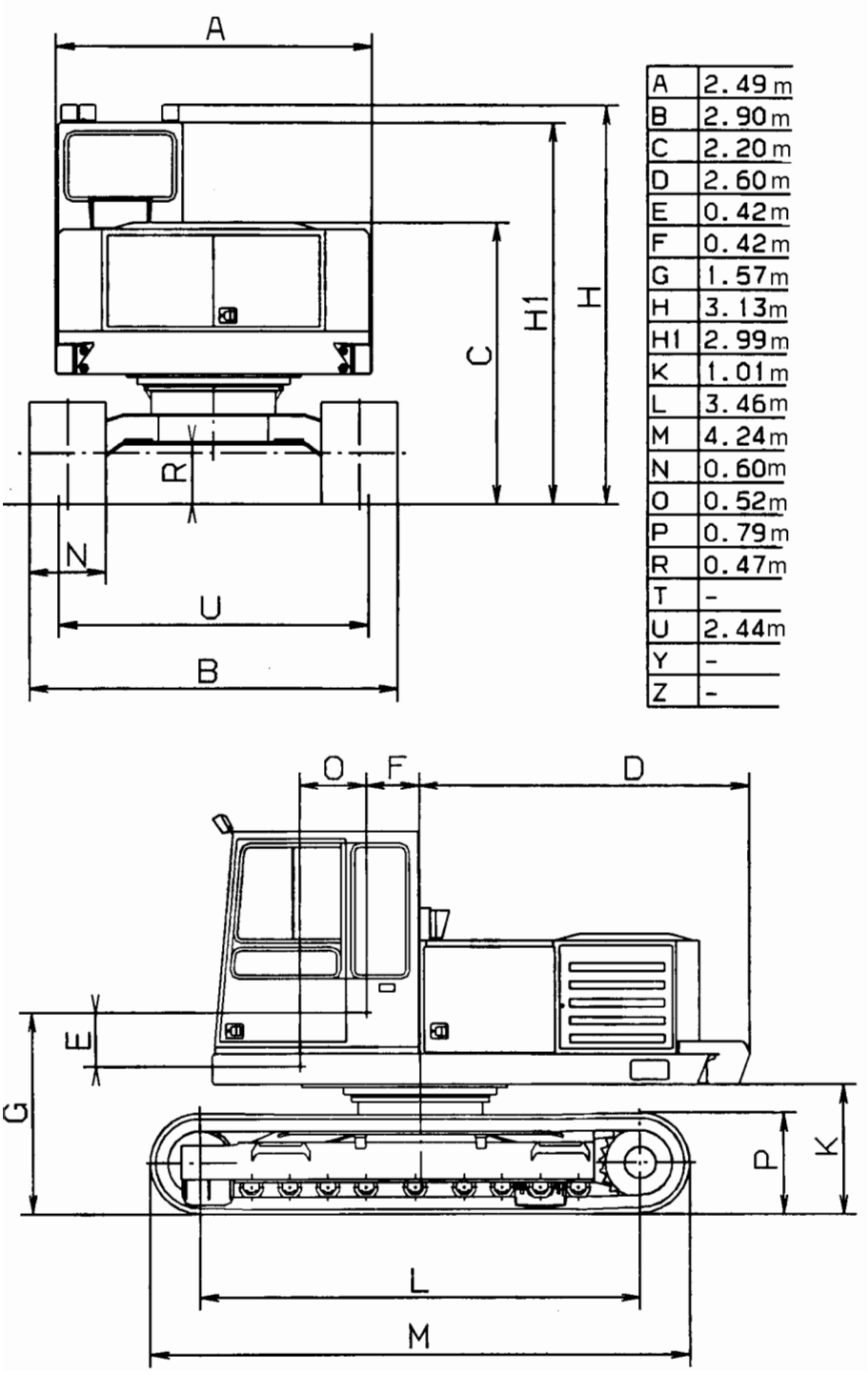
Dipper arm cylinder

Cylinder inner diameter	140 mm (5.51 in)
Piston rod diameter	90 mm (3.54 in)
Stroke	1100 mm (3 ft 7.31 in)
Piston force, out	400 kN (39.2 Mp) (89,920 lbf)
Piston force, out in HLD	462 kN (47.1 Mp) (103,860 lbf)

Bucket cylinder

Cylinder inner diameter	125 mm (4.92 in)
Piston rod diameter	80 mm (3.15 in)
Stroke	850 mm (3 ft 9.46 in)
Piston force, out	319 kN (32.5 Mp) (71,710 lbf)
Piston force, out in HLD	368 kN (37.5 Mp) (82,730 lbf)

Main dimensions



A	2.49 m
B	2.90 m
C	2.20 m
D	2.60 m
E	0.42 m
F	0.42 m
G	1.57 m
H	3.13 m
H1	2.99 m
K	1.01 m
L	3.46 m
M	4.24 m
N	0.60 m
O	0.52 m
P	0.79 m
R	0.47 m
T	-
U	2.44 m
Y	-
Z	-

Figure 1

The data only applies to machines equipped according to factory standard.
For machines equipped in another way - see the respective specifications.

Capacities

Fuel tank	290 litre (76,6 US gal)
Hydraulically powered fuel filling pump, capacity, approx.	90 litre (23,8 US gal) per minute
Cooling system (incl. glycol)	32 litre (7.0 US gal)
Hydraulic system, total	320 litre (84.5 US gal)
Hydraulic oil tank	220 litre (58.1 US gal)
Diesel engine (lubricating oil)	22 litre (5.8 US gal)
Pump gearbox	3.1 litre (0.8 US gal)

Slewing gearbox	16.5 litre (4.4 US gal)
Travel gearbox	2 x 3.4 litre (0.9 US gal)

Weights

Basic machine with 600 mm (23.6 in) track, incl. counterweight	15370 kg (33890 lb)
Counterweight	2600 kg (5730 lb)

Digging equipment incl. dipper arm and quickfit bracket (excl. bucket)	**Boom 4.65 m 15 ft 3.0 in**	**Boom 5.2 m 17 ft 0.7 in**
Dipper arm 2.0 m (6 ft 6.7 in)	2295 kg 5060 lb	2430 kg 5360 lb
Dipper arm 2.4 m (7 ft 10.5 in	2375 kg 5240 lb	2410 kg 5310 lb
Dipper arm 2.8 m (9 ft 2.2 in)	2450 kg 5400 lb	585 kg 5700 lb

Operating weights and ground pressure for complete excavator with:

5.2 m boom (17 ft 0.7 in), 2.4 m (7 ft 10.5 in) dipper arm, 950 litre (33.6 ft^3) bucket and 2600 kg (5730 lb) counterweight

Track width	**Ground pressure**	**Total weight**
600 mm (23.6 in)	40.5 kPa (0.405 bar) (5.9 psi)	18.5 tonnes
750 mm (29.5 in)	33.8 kPa (0.338 bar) (4.9 psi)	19.3 tonnes
900 mm (35.4 in)	28.9 kPa (0.289 bar) (4.2 psi)	19.8 tonnes

Additional Weights

Superstructure, incl. counterweight and diesel engine	8915 kg (19660 lb)
Diesel engine, incl. pump gearbox and pumps	850 kg (1870 lb)

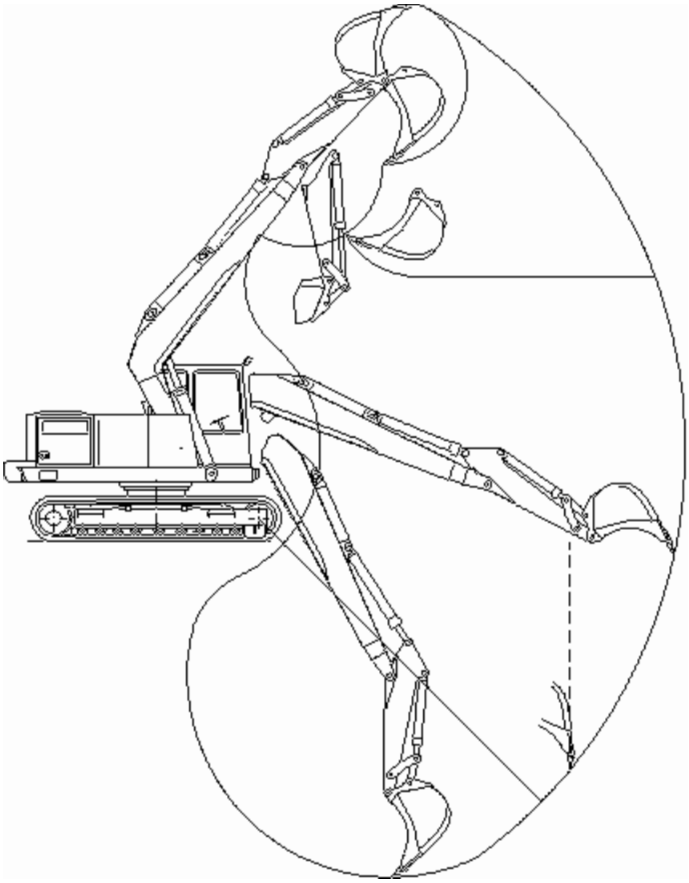


Figure 2

The data only applies to machines equipped according to factory standard.
For machines equipped in another way - see the respective specifications.

Excavating data in metre and feet and inches

Digging or excavating data

Boom length	**4.65 m (15 ft 3.0 in)**			**5.20 m (17 ft 0.7 in)**		
Dipper arm length	**2.0 m 6 ft 6.7 in**	**2.4 m 7 ft 10.5 in**	**2.8 m 9 ft 2.2 in**	**2.0 m 6 ft 6.7 in**	**2.4 m 7 ft 10.5 in**	**2.8 m 9 ft 2.2 in**
Max. reach at ground level	8.3 m 27 ft 3 in	8.8 m 28 ft 10 in	9.1 m 29 ft 10 in	8.9 m 29 ft 2 in	9.2m 30 ft 2 in	9.5 m 31 ft 2 in
Max. excavating depth	5.3 m 17 ft 4 in	5.7 m 18 ft 8 in	6.1 m 20 ft 0 in	5.8 m 19 ft 0 in	6.1 m 20 ft 0 in	6.4 m 21 ft 0 in
Max. height ground level - tooth tip	8.9 m 29 ft 2 in	9.3 m 30 ft 6 in	9.6 m 31 ft 6 in	9.2 m 30 ft 2 in	9.5 m 31 ft 2 in	9.6 m 31 ft 6 in
Max. dumping height	5.9 m 19 ft 4 in	6.3 m 20 ft 8 in	6.6 m 21 ft 8 in	6.3 m 20 ft 8 in	6.7 m 22 ft 0 in	7.1 m 23 ft 3 in
Max. practical dumping height	3.9 m 12 ft 9 in	3.8 m 12 ft 6 in	3.8 m 12 ft 6 in	4.4 m 14 ft 5 in	4.4 m 14 ft 5 in	4.4 m 14 ft 5 in
Practical excav. depth when material angle of slide is 45°or less	4.1 m 13 ft 5 in	4.4 m 14 ft 5 in	.7 m 15 ft 5 in	4.5 m 14 ft 9 in	4.7 m 15 ft 5 in	4.9 m 16 ft 1 in
Max. vertical excavating depth	3.8 m 12 ft 6 in	4.3 m 14 ft 1 in	4.5 m 14 ft 9 in	4.0 m 13 ft 1 in	4.4 m 14 ft 5 in	4.5 m 14 ft 9 in
Min. front	3.1 m	3.3 m	3.4 m	3.3 m	3.5 m	3.5 m

slewing radius	10 ft 2 in	10 ft 10 in	11 ft 2 in	10 ft 10 in	11 ft 6 in	11 ft 6 in

Transporting data in metre and feet and inches

Transporting data in metre and feet and inches

Boom length	**Boom 4.65 (15 ft 3.0 in)**			**Boom 5.2 (17 ft 0.7 in)**		
Dipper arm length	**2.0 m 6 ft 6.7 in**	**2.4 7 ft 10.5 in**	**2.8 m 9 ft 2.2 in**	**2.0 m 6 ft 6.7 in**	**2.4 m 7 ft 10.5 in**	**2.8 m 9 ft 2.2 in**
Min. transporting length with retracted digging equipment	8.4 m 27 ft 7 in	8.3 m 27 ft 3 in	8.2 m 26 ft 11 in	8.9 m 29 ft 2 in	8.9 m 29 ft 2 in	8.8 m 28 ft 10 in
Min. transporting height with retracted digging equipment	3.1 m 10 ft 2 in	3.2 m 10 ft 6 in	3.3 m 10 ft 10 in	3.1 m 10 ft 2 in	3.2 m 10 ft 6 in	3.3 m 10 ft 10 in
Overall length with digging equipment at full reach (B)	10.9 m 35 ft 9 in	11.4 m 37 ft 5 in	11.7 m 38 ft 5 in	11.5 m 37 ft 9 in	11.8 m 38 ft 9 in	12.1 m 39 ft 8 in
Min. transp. height with digging equipment at full reach (A)	3.1 m 10 ft 2 in	3.1 m 10 ft 2 in	3.1 m 10 ft 2 in	3.1 m 10 ft 2 in	3.1 m 10 ft 2 in	3.1 m 10 ft 2 in

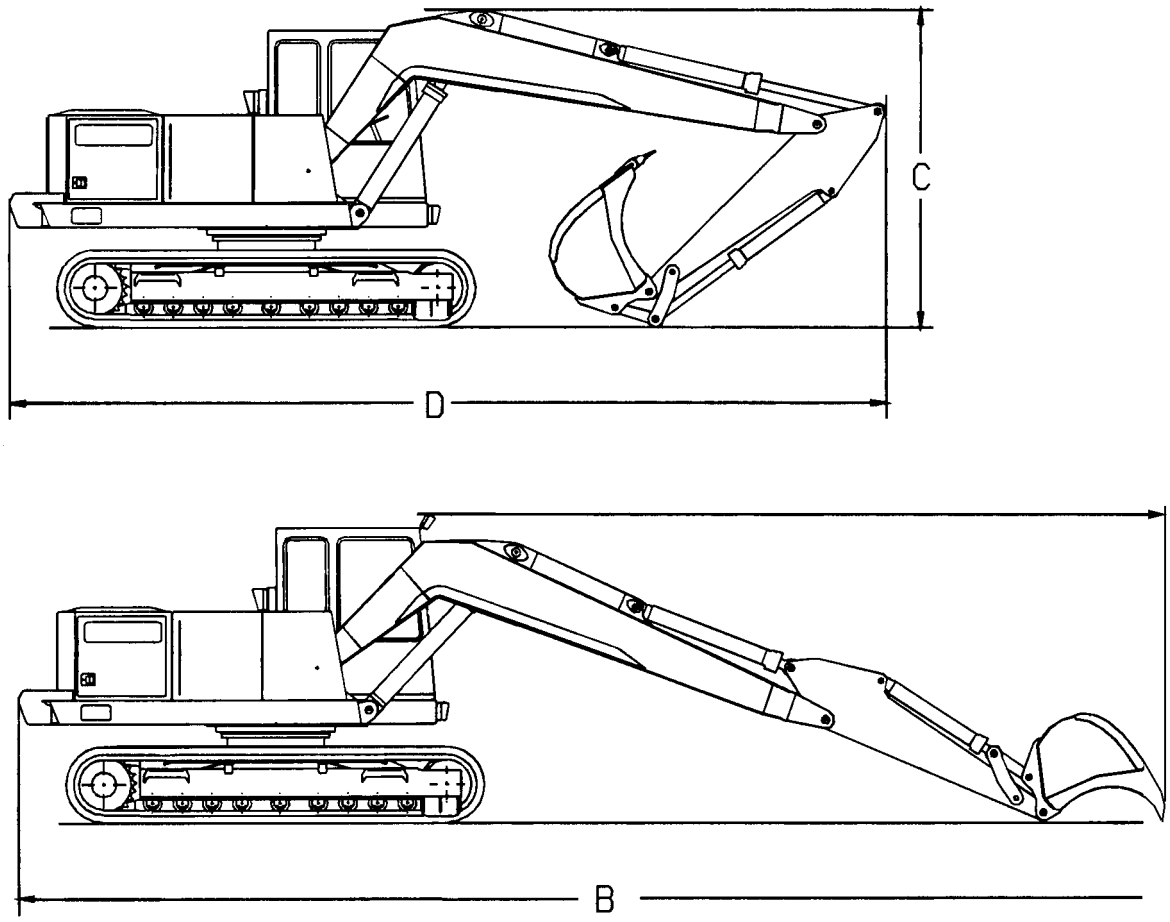


Figure 3

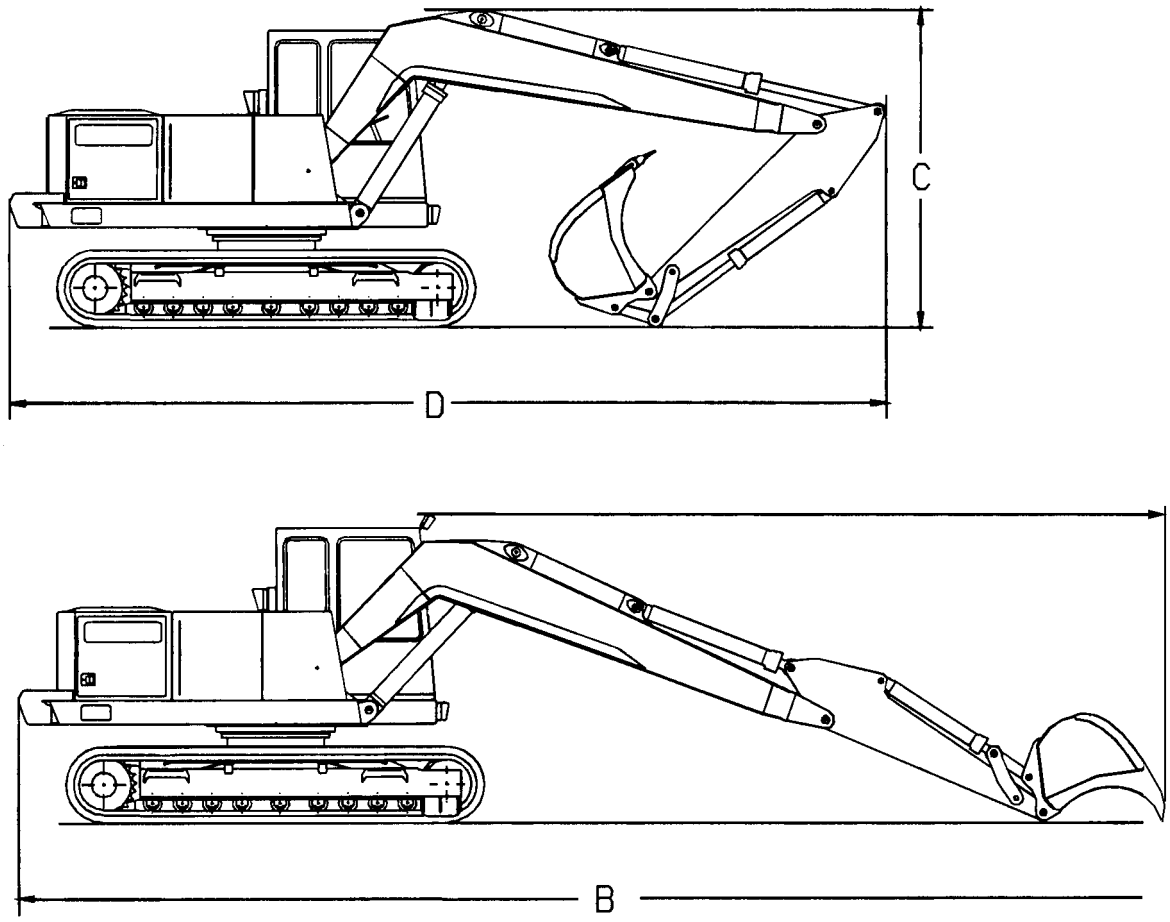


Figure 4

Tightening torques for nuts and bolts of steel
This standard applies when tightening with a torque wrench under the following conditions:

Condition No.	**Surface finish (see below table)**		**Lubrication condition**	**Nut**	
		Bolt			
1	Unt.	Unt.	Oiled		
2	Phos.	Unt. or Phos.	Oiled		
3	Gzb	Unt. or Gzb	Dry		
4	Gzv	Unt. or Gzb	Oiled		

Unt.	= Untreated
Phos.	= Phosphatized
Gzb	= Bright galvanized
Gzv	= Hot galvanized

When machine-tightening (using a nut runner) the tightening torque shown in the tables must be reduced by approx. 5% because of the greater variation of the obtained torque and thus to avoid reaching the yield point of the bolt.
When the supporting surface has a hardness lower than 200 HB a washer should be positioned under both bolt head and nut, in order to reduce the risk of settlement in the material with consequent reduction of the prestressing force.
When fitting, the tightening should be made to the prescribed torque without stopping in order to avoid that the higher static friction releases the torque wrench at a too low torque.

Thread	**Tensile strength class**	**Thread**

M		8.8			10.9		M	12.9	
		Mv in Nm (lbf ft) Condition No.			Mv in Nm (lbf ft) Condition No.			Mv in Nm (lbft) Condition No.	
		1	2	3	1	2		1	
M6	10 (7.4)	10 (7.4)	10 (7.4)	15 (11.1)	12 (8.9)	20 (14.8)	M6		
M8	25 (18.4)	25 (18.4)	25 (18.4)	35 (25.8)	30 (22.1)	40 (29.5)	M8		
M10	50 (37)	45 (33.2)	50 (37)	65 (48)	55 (41)	80 (59)	M10		
M12	80 (59)	80 (59)	90 (66)	120 (89)	100 (74)	140 (103)	M12		
M14	130 (96)	125 (92)	140 (103)	180 (135)	160 (118)	220 (160)	M14		
M16	200 (150)	190 (140)	210 (155)	280 (210)	240 (180)	340 (250)	M16		
M20	390 (290)	370 (270)	420 (310)	540 (400)	470 (350)	650 (480)	M20		
M22	520 (380)	500 (370)	560 (410)	730 (540)	630 (470)	880 (650)	M22		
M24	670 (490)	640 (470)	720 (530)	940 (690)	800 (590)	1120 830)	M24		
M30	1310 (970)	1260 (930)	1400 (1030)	1840 (1360)	1580 (1170)	2210 (1630)	M30		
M36	2280 (1680)	2190 (1620)	2440 (1800)	3210 (2370)	2760 (2040)	3850 (2840)	M36		

Thread UNC	Tensile strength class						Thread UNC		
		8.8			10.9			12.9	
		Mv in Nm (lbf ft) Condition No.			Mv in Nm (lbf ft) Condition No.			Mv in Nm (lbf ft) Condition No.	
		1	2	3	1	2		1	
1/4	10 (7.4)	10 (7.4)	10 (7.4)	15 (11.1)	13 (9.6)	20 (14.8)	1/4		
5/16	20 (14.8)	20 (14.8)	20 (14.8)	30 (22.1)	25 (18.4)	40 (29.5)	5/16		
3/8	40 (29.5)	35 (25.8)	40 (29.5)	55 (41)	45 (33.2)	70 (52)	3/8		
7/16	60 (44)	60 (44)	65 (48)	90 (66)	75 (55)	110 (81)	7/16		
1/2	100 (74)	90 (66)	100 (74)	130 (96)	110 (81)	170 (125)	1/2		
9/16	140 (103)	130 (96)	140 (103)	190 (140)	160 (118)	240 (180)	9/16		
5/8	190 (140)	180 (135)	200 (150)	260 (190)	220 (160)	330 (240)	5/8		
3/4	320 (240)	310 (230)	350 (260)	460 (340)	390 (290)	570 (420)	3/4		
1	770 (570)	740 550)	830 (610)	1090 (800)	940 (690)	1360 (1000)	1		
1 1/8	1090 (800)	1050 (770)	1170 (860)	1550 (1140)	1330 (980)	1930 (1420)	1 1/8		
1 1/4	1530 (1130)	1470 (1080)	1640 (1210)	2160 (1590)	1860 (1370)	2690 (1980)	1 1/4		
1 3/8	2020 (1490)	1940 (1430)	2160 (1590)	2850 (2100)	2450 (1810)	3550 (1620)	1 3/8		
1/2	2650 (1950)	2550 (1880)	2840 (2090)	3750 (2770)	3230 (2380)	4680 (3450)	1 1/2		

Mv =Tightening torque
When converting from N to kgf: 1 N = 0.1020 kgf
When converting from N m to lbf ft, multiply the Nm value by 0.73756

Recommended tolerances for tightening torque

TIGHTENING TORQUES in Nm (lbf ft)

	-50 (37)	51-100 (37.5 - 73.5)	101-200 (74 - 147)	201-400 (148 - 295)	401-1000 (296 - 738)	1001- (739 -)
Tolerance	± 2	± 5	± 10	± 20	± 40	± 50

Tightening torque for track shoe bolts

The tightening should be done in 2 steps according to the table below.
A tolerance of +10 % applies to both torque and angle.

Thread UNF and M	Step 1 Torque in Nm (lbf ft)	Step 2 Angle
9/16 - 18	300 (220)	90°(1/4 turn)
5/8 - 18	400 (295)	60°(1/6 turn)
M18x1.5	570 (420)	60° (1/6 turn)
3/4 - 16	700 (520)	60° (1/6 turn)
7/8 - 14	1040 (770)	0°

Recommendations for hydraulic oil

Type of oil	Viscosity	Ambient temperature	Compatibility	Remark
SHS 32	ISO VG 32 HR	- 30 to + 35_C	Mixable with SHS 46	
SHS 46	ISO VG 46 HR	- 15 to + 50_C	Mixable with SHS 32	
PANOLIN HLP SE SYNTH 46 (Biodegradable)	Same as for mineral oil	- 15 to +50_C	Mixable with mineral oil but not other syn thetic oils	Before changing from mineral oil to synthetic oil - contact Volvo Construction Equipment AB - Service
BP BIOHYD SE 46 (Biodegradable)	Same as for mineral oil	- 15 to + 50_C	Mixable with mineral oil but not other syn thetic oils	Before changing from mineral oil to synthetic oil - contact Volvo Construction Equipment AB - Service

The machine is normaly delivered with oil of typ the SHS 46.

NOTE!

Digging equipment bearings

Bearing location	Pin diameter 50 - 80 mm							
		Degree of wear mm						
		Pin - Lug				Totalt		
		25 %	50 %	75 %	100 %	25 %	50 %	75 %	100 %
Boom - boom attachment	0.4	0.7	1.0	1.3	0.8	1.2	1.7	2.2	
Dipper arm - bucket	0.7	1.2	1.8	2.5	1.6	2.4	3.3	4.3	

Boom - dipper arm								
Hydraulic cylinders	0.5	0.9	1.4	1.9	1.2	1.8	2.5	3.3
Bucket linkage								

Bearing location	**Pin diameter >80-120**							
		Degree of wear mm						
		Pin - Lug				**Totalt**		
		25 %	**50 %**	**75 %**	**100 %**	**25 %**	**50 %**	**75 %**	**100 %**
Boom - boom attachment	0.4	0.7	1.1	1.5	0.9	1.3	1.9	2.5	
Dipper arm - bucket	0.8	1.4	2.1	2.9	1.8	2.7	3.8	4.9	
Boom - dipper arm									
Hydraulic cylinders	0.6	1.1	1.6	2.2	1.4	2.1	2.9	3.8	
Bucket linkage									

Measurements of new parts

Total theoretical maximum play:

Pin diameter 50 - 80 mm (1.96 - 3.15 in) = 0.262 mm (0.010 in)
Pin diameter >80 - 120 (3.15 - 4.72 in) = 0.316 mm (0.012 in)

Document Title:	Function Group:	Information Type:	Date:
Diesel engine	**03**	**Service Information**	**7/30/2025**
Profile:			

Diesel engine

Volvo TD61GE

TD61GE is a water cooled, direct injected, six cylinder, four stroke, turbocharged diesel engine.

Output gross at 1800 rpm	107 kW (146 hp)
(According to ISO 2534 Intermittent, gross)	
Cylinder bore	98.43 mm (3.875 in)
Stroke	120 mm (4.724 in)
Displacement	5.48 litres

The engine is equipped with an electric preheating coil in order to facilitate starting in cold weather - and a butane fired engine preheater. Standard equipment also includes a Fuel-Miser for automatic lowering of the engine speed when the operating controls are not activated.

Document Title: **Diesel engine speeds**	Function Group: **03**	Information Type: **Service Information**	Date: **7/30/2025**
Profile:			

Diesel engine speeds

High idling speed: Maximum speed when engine is not loaded.
Rated speed: Nominal speed at max. stated output.

Setting tolerances

Low idling speed: +40/-20
High idling speed: +25
Conversion of kW to hp: 1 kW = 1.36 hp

Engine data

Reg. no.	Engine type	Low idling speed rpm	High idling speed rpm	Rated speed rpm	Output kW
2101	TD61GE	600	1960	1800	107 ISO 2534

Document Title:	Function Group:	Information Type:	Date:
Electrical system, 24 V	**03**	**Service Information**	**7/30/2025**
Profile:			

Electrical system, 24 V

System voltage	24 V
Alternator	28 V / 55 A
Battery, 4 pcs.	12 V
Battery capacity	2 x 60 Ah

Document Title: **Specifications**	Function Group: **03**	Information Type: **Service Information**	Date: **7/30/2025**
Profile:			

Specifications

The data only applies to machines equipped according to factory standard.
For machines equipped in any other way - see the respective specifications.

Hydraulic system

Pump 1 (P1)
Pump 1 is a pressure controlled, bent axis, piston pump that primarely powers the slewing.

Max. flow	4 litre (16.9 US gal) per minute

Pump 2 and 3 (P2, P3)
P2 and P3 are power and pressure controlled, bent axis, piston pumps that powers digging equipment and tracks.

Max. flow	2 x 114 litre (30 US gal) per minute

Servo pump (PS)
(PS) is a gear pump that powers the servo circuit.

Flow approx.	17 litre (4.5 US gal) per minute

Hydraulic pressure
The pressures are given in MPa.

Conversion of MPa to bar:	1 MPa = 10 bar. MPa to psi = multiply MPa value by 145.038

PRESSURE-SETTING VALUES

FUNCTION	**DESIGNATION**	**PRESSURE MPa**	**PRESSURE psi**
Pressure limiting, servo	PSA	6.5	940
Pressure limiting, P1	AA	34.0	4930
Slewing acceleration	AD	32.0	4640
Slewing retardation	AE	22.0	3190
Pressure control, P1	AG	28.0	4060
Pressure limiting, P2 & P3	AB & AC	30.0	4350
Pressure limiting, P2, optional equipment	AO	30.0	4350
Pressure control, P2 & P3	AH & AM	26.0	3770
Power control, P2 & P3	AK & AN	9.0	2750

Document Title:	Function Group:	Information Type:	Date:
Undercarriage	**03**	**Service Information**	**7/30/2025**
Profile:			

Undercarriage

Drive

Each track is driven by a two-step hydraulic motor of the axial piston type.
Between drive sprocket and motor there is a three-step planetary gearbox with a built-in track brake.
The track brakes are of the disc type. The brakes are applied by spring force and released hydraulically by servo pressure (PS) (negative brakes).

Max. tractive effort	196 kN (19.6 Mp = 44000 lbf)
Track speed, CAP	5.14 km/h (3.2 mph)
Track speed, ECO	4.00 km/h (2.5 mph)
Track speed, HLD	2.10 km/h (1.3 mph)
Rollers/side	9 bottom rollers and 1 top roller or skid rail

Document Title: **Dieseling in hydraulic cylinders**	Function Group: **170**	Information Type: **Service Information**	Date: **7/30/2025**
Profile:			

Dieseling in hydraulic cylinders

If hydraulic oil mixed with air is compressed, the temperature rises and at a certain temperature some of the oil evaporates and ignites, thus so called dieseling takes place.
Dieseling causes burned piston seals and rings.
This problem is avoided if, after repairs, the lines to the hydraulic cylinders are vented in the following way. The hydraulic cylinders should be operated between end of stroke positions until the air is removed from the system. The load on the hydraulic system must be kept very low, while the air is being removed.
The dipper arm and bucket cylinders should be positioned so that any air will rise and gather at the outlet end of the cylinder. This means that the outlet end should be the highest point.
The piston should be at the opposite end of the cylinder. Wait a minute or so from the moment the cylinder is placed in this position, before you run the piston towards the outlet side.
Repeat this procedure several times (for instance three to five times).
Boom cylinders, which cannot be positioned as described above, must be run in and out about five times without any load in the bucket.

NOTE!
If the cylinders become pressurised through lifting the machine or lifting a load in the bucket before the air in the system has been removed, the seals will probably be damaged.

If a cylinder is to be pressure-tested after it has been repaired, the piston rod should be run in and out a few times, before the pressure is increased up to the test pressure.

Document Title: **Filtering hydraulic oil**	Function Group: **170**	Information Type: **Service Information**	Date: **7/30/2025**
Profile:			

Filtering hydraulic oil

Op nbr

Filtering unit 14031832
Consumables: Disposable filter 14025665

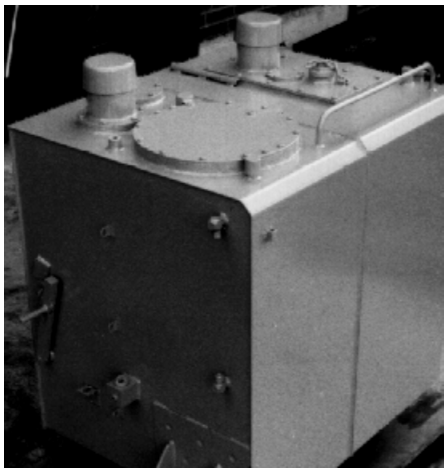
1. 

   Figure 1

   Filtering must be carried out in the following cases:

   - After major work on the hydraulic system for example work on the valve block, when changing tank and in cases of breakdown of a pump, hydraulic motor or a cylinder.
   - After a test has proven that the oil is contaminated.
   - On machines with re-occurring malfunctions of the hydraulic system.

2. Secure the filtering unit to the hydraulic tank. The unit is secured with the bolts for the hydraulic tank filter cover.

3. Warm up the hydraulic oil to 35 _C if needed. Stop the diesel engine.

4. Remove the protective caps A and B from the top of the hydraulic tank.

5. Connect the suction line of the filtering unit to connection B and the return line to connection A, marked in the figure.

6. Start the filtering unit and run the hydraulic oil in the tank through the unit for approx. one hour.

7. Change the filter in the tank if the hydraulic oil was heavily contaminated.

8. Start the diesel engine and continue the filtering for a further two hours while operating the hydraulic functions of the machine. Make sure that all hydraulic functions are activated so that the oil in the entire system is filtered. Carry out the movements carefully so that the filtering unit is not dislocated from the tank.

9. Remove the filtering unit and re-fit the blind flanges to the tank.
   After the filtering unit has been used, its filter container should be cleaned and a new disposable filter fitted.

VOLVO

Service Information

Document Title:	Function Group:	Information Type:	Date:
Instructions for shrinking	**170**	**Service Information**	**7/30/2025**
Profile:			

Instructions for shrinking

1. General
2. Equipment
3. Heating
4. Assembling
5. Dismantling

1. General

By "shrinkage fit" is meant that, at a certain temperature difference and a consequent change in measurements, a shaft and a hub can be assembled and become fixed when the temperature of the heated part drops and its size shrinks.Usually the shaft is kept at room temperature, or preferably below, whereas the hub is heated in different ways. This method used, for instance, when fitting a gear wheel to a shaft, is described below.

2. Equipment

a. Heating equipment
   A gas burner with an adequate nozzle or an electric hot plate with an output of approx. 1500 - 2000 W, and a diameter of approx. 250 mm (10 in).
b. Measuring equipment
   A shrinkage gauge Part.no. 14194288 for checking the correct measurement change in the hub.

3. Heating

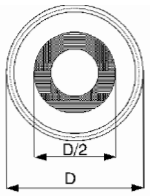


Figure 1

Prior to heating, make sure that the hub and shaft are free from burrs and defects that might otherwise impede the assembling of the parts.

a. Hot plate
   Heat the gear wheel on the plate until the shrinkage gauge can be easily pushed into the hub. Avoid exposing the measuring pin to heat or cold, as this will change its measurement. We recommend cooling the gauge to room temperature in between the times the gauge is used.
b. Gas flame
   Concentrate the heating to a circular area around the hub corresponding to about half of the gear wheel diameter, see **[Invalid linktarget]** . If the heat around the hub is to result in an increase in the diameter of the hole, some heat has to be added to the outer edge of the gear wheel. This has to be done with care so as not to damage the hardening of the gear teeth. Proceed with the heating of the gear wheel until the shrinkage gauge can be easily inserted in the hub.

4. Assembling

Once the assemling has been started, the parts should be assembled as quickly as possible, to avoid heat from being transferred to the shaft, thus making assembling difficult or causing the parts to jam before they are correctly assembled. It is also important that the shaft is securely fixed in a vertical position in case the gear wheel should jam in an oblique

position. With the shaft securely fixed it is easier to wriggle off the gear wheel quickly. If the gear wheel becomes fixed to the shaft before it is in its correct position, try to separate the wheel from the shaft as quickly as possible. If this is not possible, allow the parts to cool and proceed as described in the paragraph "Dismantling".

5. Dismantling

Try to press the shaft out of the hub without heating the hub. If this fails, apply pressure to the shaft in a hydraulic press. Gradually heat the hub, while the parts are fitted in the press, until the shaft loosens. If the heat is transmitted into the shaft, the shaft diameter increases with the risk that the fit will become too tight, thus making dismantling impossible. If the parts tend to bind because of the heat being transmitted into the shaft, stop the operation and cool off the parts. Then make a new dismantling attempt.

Document Title: **Instructions for vacuum pump**	Function Group: **170**	Information Type: **Service Information**	Date: **7/30/2025**
Profile:			

Instructions for vacuum pump

Op nbr

Vacuum pump 14190806

WARNING

When working on the hydraulic system of the machine, avoid contact with leaking hydraulic oil under pressure. Also avoid contact with hot hydraulic oil.

Fitting

1.

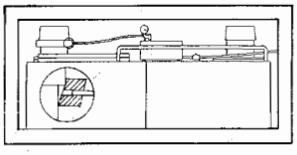


Figure 1

NOTE!
The diesel engine must never be running when the sealing boot is blocking the breather filter of the hydraulic tank as this might cause serious damage to the pump.

- Place the pump on the hydraulic oil tank.
- Connect the plug to the 24 Volt socket on the machine and route the cable so that it will not be pinched anywhere.
- Fit the sealing boot on the cap for the breather filter of the hydraulic tank and connect the hose from the pump to the sealing boot as shown in **[Invalid linktarget]** .
- Start the pump with the switch and adjust the valve so that the partial vacuum **never** exceeds 300 millibar (8.86 in Hg).

NOTE!
If the partial vacuum exceeds 300 mb (8.86 in Hg), there is a risk that the gearbox oil may be sucked into the hydraulic system and that the hydraulic oil tank may be damaged.

Removing

2.

- Turn off the current for the pump with the switch.
- Remove the hose from the sealing boot and then remove the sealing boot from the hydraulic oil tank cap.
- Remove the plug from the 24 V socket on the machine.
- Remove the pump.

Document Title:	Function Group:	Information Type:	Date:
Measuring backlash in slewing system	**170**	**Service Information**	**7/30/2025**
Profile:			

Measuring backlash in slewing system

The total backlash in the slewing system is the sum of the play or clearance between all parts in the system, such as the radial play in the slewing ring and ball bearings, wear of gear teeth, play in splined joints if present.
This means that the measurement of the backlash does not give any definite information about, for instance, the tooth flank wear of the slewing ring. The measured backlash only indicates whether the play is abnormal and thus whether a more thorough inspection is necessary. See the Specifications for the given limits.

Measuring procedure:

1. Place the machine on level ground, with the boom and dipper arm over the idlers, in the longitudinal direction of the undercarriage.
2. Extend the boom and dipper arm and lock the slew brake with the bucket off the ground.
3. Place the magnetic base of a dial indicator gauge on the super structure with the flexible arm over the slewing ring pan and mount a pointed metal pin in the retainer.
4. Adjust and secure the pin about 1 mm (0.04 in) from the pan wall.
5. Push the boom and dipper arm by hand until the superstructure stops at one end of the backlash and mark the position of the metal point on the slewing ring pan.
6. Move the superstructure in the opposite direction to the end of the backlash and measure the distance between the measuring point and the mark previously made.

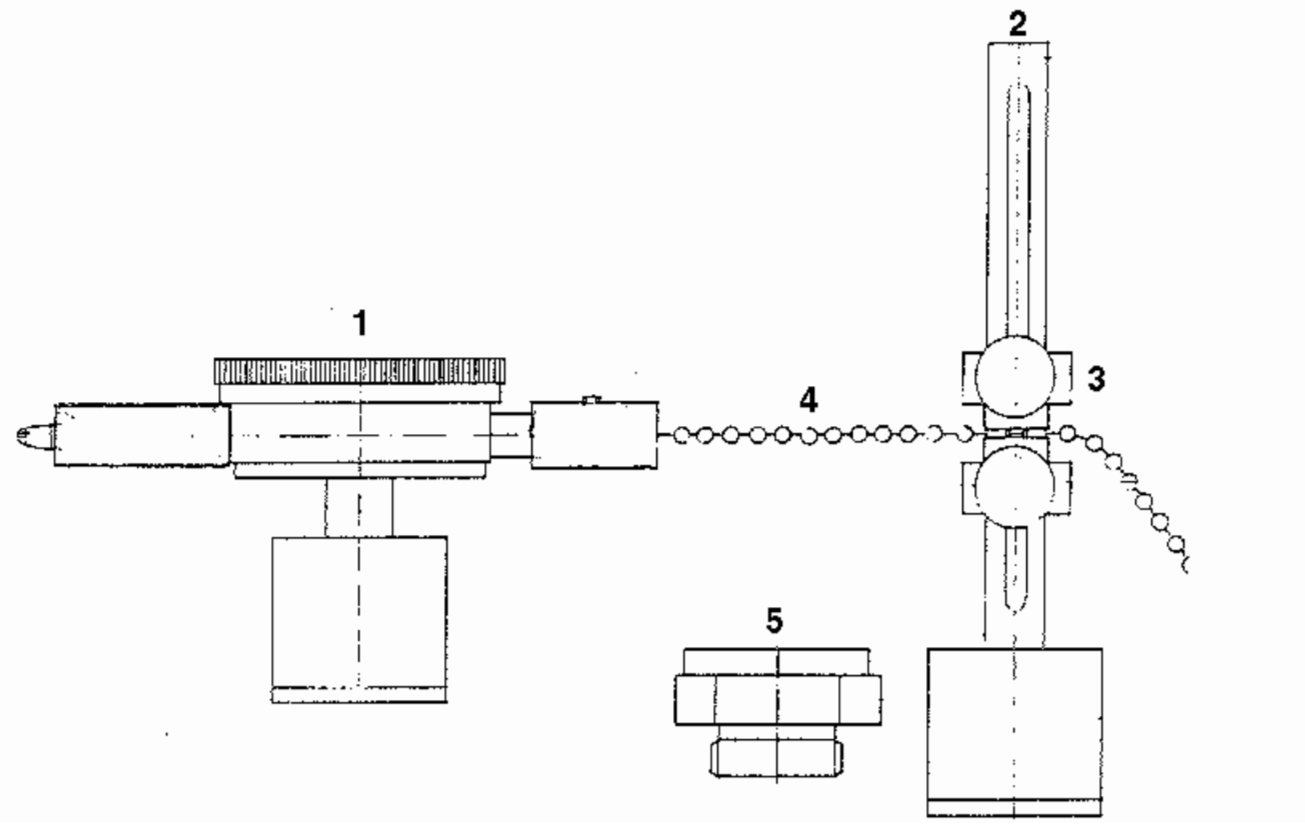


Figure 1

VOLVO

Service Information

Document Title: **Measuring radial clearance in the digging equipment bearings**	Function Group: **170**	Information Type: **Service Information**	Date: **7/30/2025**
Profile:			

Measuring radial clearance in the digging equipment bearings

Op nbr

Special tool: Measuring tool 14290000.

The item numbers refer to **[Invalid linktarget]** .

Place the machine on firm, level ground. Determine the position of the digging equipment where the play of the bearing to be measured is the greatest.

Measuring the overall clearance

1. Determine the measuring direction and place the dial gauge (item 1) on the bearing lug of the pin. Place the dial gauge with the pointer in the intended measuring direction and turned so that the ball link points to where the column (item 2) is to be placed.

2. Place the column (item. 2) on the reference part, i.e. part with bushing or link bearing, and lock the bottom locking sleeve (item. 3) so that its sharp edge coincides with the centre height of the dial gauge pointer.

3. Pull the ball link (item. 4) through the column slit and lock it between the lower and upper locking sleeves. Tension the ball link so that the dial gauge pointer moves to the middle of the measuring range.

4. Move the machine parts, so that the play in the bearings can be read off on the gauge.

Measuring clearance between bearing lug and pin

5. Determine the measuring direction and place the dial gauge (item 1) on the end surface of the pin. Place the gauge with the pointer pointing in the measuring direction and turned so that the ball link is directed to where the column (item 2) is to be placed.

6. If the pin has a centre hole G 3/4", the magnetic base (item 5) must first be fitted in the hole and then the dial gauge placed on the magnetic base. The reason for this is that the magnetic base of the dial gauge will not "stick" if placed directly on top of the centre hole.

7. Place the column (item. 2) on the bearing lug of the pin and lock the bottom locking sleeve (item 3) in a position where its sharp edge coincides with the centre height of the dial gauge pointer.

8. Pull the ball link (item 4) through the column slit and lock it between the upper and lower locking sleeve. Stretch the ball link so much that the pointer of the dial gauge is in the middle of the measuring range.

9. Move the machine parts in a suitable way, so that the play can be read off on the gauge.

Document Title:	Function Group:	Information Type:	Date:
Measuring track tension	**170**	**Service Information**	**7/30/2025**
Profile:			

Measuring track tension

WARNING

NO PERSONS MAY BE UNDER A RAISED UNDERCARRIAGE!

The hose failure valve does not work during a hose failure when the machine is raised by means of the boom and dipper arm! (The valve does not work on the piston rod end of the boom cylinder).

Lift the track clear off the ground with the boom positioned at 90 degrees to the track. Measure the slack between the idler and the drive sprocket from the centre of the middle, bottom roller down to the upper side of the bottom track shoe. The measurement should be as shown in the Specifications.

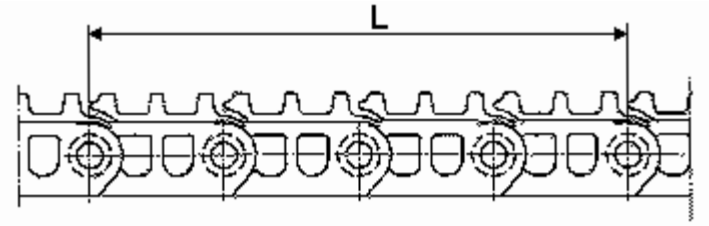


Figure 1

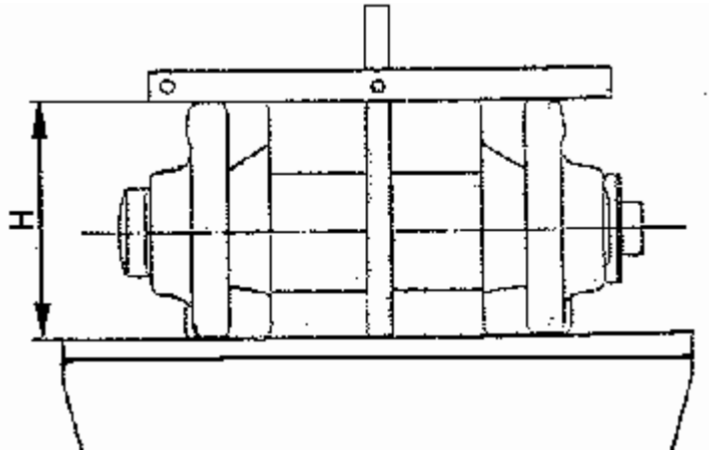


Figure 2

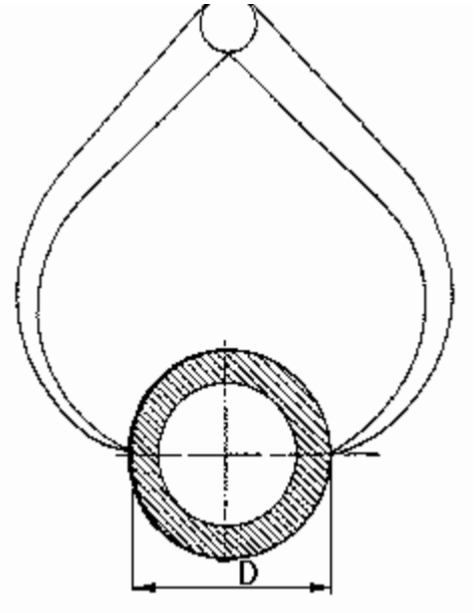


Figure 3

Document Title: **Measuring wear of crawler unit**	Function Group: **170**	Information Type: **Service Information**	Date: **7/30/2025**
Profile:			

Measuring wear of crawler unit

Bottom rollers

Measuring tool: 14030799 Outside calipers
Check the measurements of visibly worn rollers according to **[Invalid linktarget]** .
The measurement of new parts and wear limits are given in the Specifications.

Skid rails

Measuring tool: Sliding calipers
Measure the thickness of the skid rails according to **[Invalid linktarget]** .
The measurement of new parts and wear limits are given in the Specifications.

Sprocket ring

Measuring tool: Steel measuring tape
Check the measurements according to **[Invalid linktarget]** .
Wear limits are given in the Specifications.