# **VOLVO CONSTRUCTION EQUIPMENT**

# **VOLVO TOOTH SYSTEM**

PARTS REFERENCE GUIDE FOR EXCAVATORS





# **VOLVO TOOTH SYSTEM - DISCOVER THE DIFFERENCE**

The bucket's tooth system is exposed to extreme stresses when it encounters a combination of hard materials, shocks and high breakout forces. In that environment it's impossible to eliminate wear – but it is possible to reduce the effect it has on the tooth system. The great challenge is designing a tooth system that is optimized for the forces and wear to which it is exposed. Such a tooth system gives optimum service life with maintained performance. Volvo has faced that challenge and succeeded. Discover the difference.

# Success is built from the ground up

It is important that the tooth system is engineered correctly and that it has the right design to give optimized efficiency and the longest possible wear life. Volvo tooth system is another result of Volvo's commitment to innovation and development.

The tooth system has undergone extensive field testing in various types of materials and applications to analyze and to ensure its high quality and good characteristics. It has shown several advantages, for example:

- The teeth have a self-sharpening design which gives them long-lasting good penetration capability and high productivity.
- Strategically placed wear material in the thooth design provides maximum wear life.
- The correct fit between the tooth and adapter, as well as large stabilizing surfaces, provides a very strong unit which can withstand high tolerance from forces and stresses.
- High-quality steel alloy increases wear resistance.
- A vertical patented locking device makes mounting and removing fast and easy.

#### **High quality**

When choosing steel, there is no compromising. Volvo's teeth have the right balance between hardness and high tension steel, which is the key to quality and long wear life.

The teeth consist of a specifically designed steel alloy, with a hardness of approx. 500 Brinell, dependant on the type and size of the tooth.

From the selection of raw materials for the molten steel to blasting and heat treatment of the finished teeth, continuous checks and measurements are performed to avoid any deviations with regards to steel quality, technical specifications and the fit of the tooth and adapter.

### Wide product range

In the Volvo Tooth System range, there are teeth and adapters for all types of applications, from handling easily broken bank materials to breaking out hard and rocky materials, such as shot rock.

The adapters are developed to fit new Volvo buckets, as well as accommodate bucket rebuilds for older machines from Volvo Construction Equipment.

For instructions about welding on different types of adapters on buckets, contact your nearest Volvo Construction Equipment dealer.



# Total operating economy is the key

Design and material selection make Volvo tooth system the obvious choice for all applications.

#### Better penetration capability gives:

- better and faster bucket filling
- less wear of bucket and machine
- lower fuel consumption

#### Long service life due to:

- strategically placed wear material
- High-quality steel alloy
- self-sharpening design
- correct fit between adapter and tooth

#### Shorter downtime when changing gives:

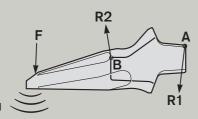
- lower maintenance costs
- increased productivity

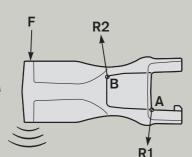




#### **Distribution of forces**

Volvo tooth system has a longer distance between **A** and **B** compared to other systems. When the tooth is exposed to shocks and forces from the side or vertically **(F)**, the reactive forces **(R1** and **R2)** are lower compared to other systems in identical working conditions. The "tooth box", meaning the connection between the tooth and the adapter, provides optimal absorption of the stresses to which it is exposed.





## Better

resistance to forces
The edge of the adapters and teeth have an acute angle, less than 90 degrees.
This gives better resistance to frontal forces and reduces the risk of the "tooth box" opening.

### Two parts, one unit

**Patented** 

Iocking device
The unique positive locking device integrates the locking pin completely in the adapter body. Position and design give complete protection. The locking device consists of two components: one reusable steel pin as well as an elastic and flexible lock retainer. The design of the tooth and adapter gives a smooth transfer of forces, without the locking device having to absorb the

stresses, resulting in a locking

device with significantly

longer service life.

A perfect fit between the tooth and adapter, together with large stabilizing surfaces, provides a very strong unit with minimal internal wear. Stresses are reduced due to minimum movement between the tooth and adapter.

### Selfsharpening teeth

Due to their profile, the teeth have a small penetration area, which gives reduced penetration force. This provides better bucket fill factor, lower fuel consumption as well as reduced wear on bucket and machine. The self-sharpening design and strategically placed wear material give maximum wear life with maintained performance.

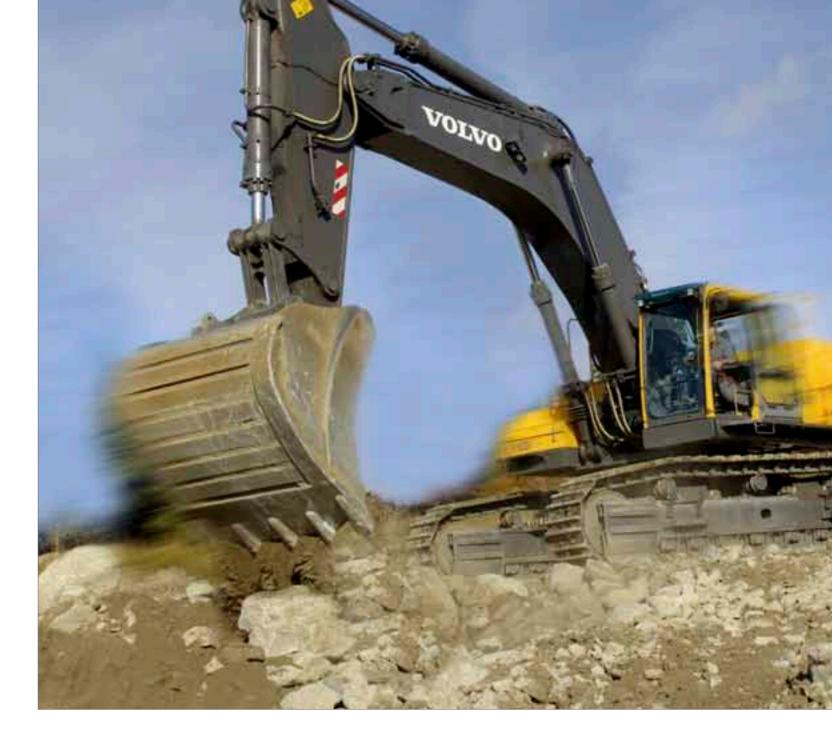
### Robust design

Reinforced area that protects the adapter and the tooth's guide lugs from early wear.

# **Guide tables Volvo tooth system for excavators**

MACHINE MODEL	VOLVO PART NO	DESCRIPTION	DESIGNATION	TYPE/APPLICATION	WEIG KG
VOLVO					
EC/EW140/C	VOE 14522960	Adapter	EA15BL30	Bottom leg 1 1/2 (long bottom leg)	5.9
EW145B	VOE 14523551	Tooth	15GPE	General Purpose	3.1
EC/EW160/C	VOE 14524192	Tooth	15AMRE	Abrasive material with extra wear metal	3.6
EC/EW180/C	VOE 14530835	Tooth	15PPE	Extremely compact material	2.8
LC/LW100/C	VOE 14530836	Tooth	15TPE	Extremely compact material	3.7
	VOE 14531280	Tooth	15SNE		3.8
	VOE 14531260 VOE 11417145	Locking device, complete*)	15P	Levelling, cleaning, grading and backfilling	0.07
	VOE 11417143 VOE 11417316	Retainer	15/20R	Standard	0.07
	VOE 11716119	Retainer	15/20K 15/20MR	Heavy duty	
E0040 (0	VOE 4 4500004		E400BL 40	D :: 1 44/0/! 1 :: 1 )	40.4
EC210/C	VOE 14522961	Adapter	EA20BL40	Bottom leg 1 1/2 (long bottom leg)	10.4
	VOE 14523655	Tooth	20GPE	General Purpose	4.5
	VOE 14526753	Tooth	20AMRE	Abrasive material with extra wear metal	5.4
	VOE 14531279	Tooth	20PPE	Extremely compact material	4.0
	VOE 14531283	Tooth	20TPE	Extremely compact material	5.4
	VOE 14531281	Tooth	20SNE	Levelling, cleaning, grading and backfilling	5.8
	VOE 11417146	Locking device, complete*)	20P		0.1
	VOE 11417316 VOE 11716119	Retainer Retainer	15/20R 15/20MR	Standard Heavy duty	
	VOL 11710119	Retaillei	13/20WIK	Tieavy duty	
	VOE 14522962	Adapter	EA30BL40	Bottom leg 1 1/2 (long bottom leg)	12.5
	VOE 14523552	Tooth	30GPE	General Purpose	6.7
	VOE 14523946	Tooth	30AMRE	Abrasive material with extra wear metal	7.8
	VOE 14526514	Tooth	30PPE	Extremely compact material	5.6
	VOE 14530837	Tooth	30TPE	Extremely compact material	6.9
	VOE 14530841	Tooth	30SNE	Levelling, cleaning, grading and backfilling	8.4
	VOE 11417147	Locking device, complete*)	30P		0.15
	VOE 11417317	Retainer	30/40R	Standard	
	VOE 11716120	Retainer	30/40MR	Heavy duty	
	VOE 15002778	Locking device, complete**)	30PHS	Hot slag	0.2
	VOE 15002854	Retainer***)	30/40MRS	Hot slag	0.03
EC240/C	VOE 14522962	Adapter	EA30BL40	Bottom leg 1 1/2 (long bottom leg)	12.5
	VOE 14523552	Tooth	30GPE	General Purpose	6.7
	VOE 14523946	Tooth	30AMRE	Abrasive material with extra wear metal	7.8
	VOE 14526514	Tooth	30PPE	Extremely compact material	5.6
	VOE 14530837	Tooth	30TPE	Extremely compact material	6.9
	VOE 14530841	Tooth	30SNE	Levelling, cleaning, grading and backfilling	8.4
	VOE 11417147	Locking device, complete*)	30P	3, 3 44 3 44 44	0.15
	VOE 11417317	Retainer	30/40R	Standard	
	VOE 11716120	Retainer	30/40MR	Heavy duty	
	VOE 15002778	Locking device, complete**)	30PHS	Hot slag	0.2
	VOE 15002854	Retainer***)	30/40MRS	Hot slag	0.03
EC290/C	VOE 14522963	Adapter	EA40BL50	Bottom leg 1 1/2 (long bottom leg)	20.1
LC230/C	VOE 14523553	Tooth	40GPE	General Purpose	9.4
	VOE 14526754	Tooth	40AMRE	Abrasive material with extra wear metal	11.5
	VOE 14526515	Tooth	40PPE	Extremely compact material	8.1
	VOE 14520313	Tooth	40TPE	Extremely compact material	10.6
	VOE 14530838 VOE 14530842	Tooth	40SNE	Levelling, cleaning, grading and backfilling	12.9
	VOE 14530042 VOE 14524860	Locking device, complete*)	40P	Levelling, cleaning, grading and backlilling	0.2
	VOE 14324800 VOE 11417317	Retainer	30/40R	Standard	0.2
	VOE 11716120	Retainer	30/40R 30/40MR	Heavy duty	
	VOE 11716120 VOE 15002890	Locking device, complete**)	40PHS	Hot slag	0.3
	VOE 15002854	Retainer***)	30/40MRS	Hot slag	0.03
EC330/B	VOE 14524709	Adapter	EA55BL50	Bottom leg 1 1/2 (long bottom leg)	23.6
EC360/B	VOE 14524191	Tooth	55GPE	General Purpose	13.0
	VOE 14523656	Tooth	55AMRE	Abrasive material with extra wear metal	15.9
	VOE 14526516	Tooth	55PPE	Extremely compact material	11.7
	VOE 14530839	Tooth	55TPE	Extremely compact material	14.7
	VOE 14530843	Tooth	55SNE	Levelling, cleaning, grading and backfilling	17.8
	VOE 11417148	Locking device, complete*)	55P		0.3
	VOE 11417318	Retainer	55/65R	Standard	
	VOE 11716121	Retainer	55/65MR	Heavy duty	
	VOE 15002928	Locking device, complete**) Retainer***)	55PHS	Hot slag	0.4
	VOE 15002939	retainer "")	55/65MRS	Hot slag	0.05
EC460/B	VOE 14524709	Adapter	EA55BL50	Bottom leg 1 1/2 (long bottom leg)	23.6
	VOE 14524191	Tooth	55GPE	General Purpose	13.0
	VOE 14523656	Tooth	55AMRE	Abrasive material with extra wear metal	15.9
	VOE 14526516	Tooth	55PPE	Extremely compact material	11.7
	VOE 14530839	Tooth	55TPE	Extremely compact material	14.7
	VOE 14530843	Tooth	55SNE	Levelling, cleaning, grading and backfilling	17.8
	VOE 11417148	Locking device, complete*)	55P	g, grading and backlining	0.3
	VOE 11417148	Retainer	55/65R	Standard	0.0
	VOE 11716121	Retainer	55/65MR	Heavy duty	
	VOE 11716121 VOE 15002928	Locking device, complete**)	55PHS	Hot slag	0.4
	VOE 15002928 VOE 15002939	Retainer***)	55/65MRS	Hot slag	0.05
		· ·			
	VOE 14526776	Adapter	EA65BL50	Bottom leg 1 1/2 (long bottom leg)	31.6
	VOE 14522964	Adapter	EA65BL60	Bottom leg 1 1/2 (long bottom leg)	34.6
	VOE 14526510	Tooth	65GPE	General Purpose	16.0

<sup>\*)</sup> Locking device complete consists of pin and standard retainer \*\*) Locking device complete consists of pin, hot slag retainer and two springs

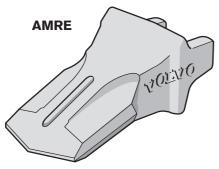


MACHINE MODEL	VOLVO PART NO	DESCRIPTION	DESIGNATION	TYPE/APPLICATION	WEIGH
VOLVO					
EC460/B	VOE 14522959	Tooth	65AMRE	Abrasive material with extra wear metal	21.1
EC460/B					
	VOE 14526517	Tooth	65PPE	Extremely compact material	15.7
	VOE 14530840	Tooth	65TPE	Extremely compact material	20.1
	VOE 14531282	Tooth	65SNE	Levelling, cleaning, grading and backfilling	28.1
	VOE 14524710	Locking device, complete*)	65P		0.4
	VOE 11417318	Retainer	55/65R	Standard	
	VOE 11716121	Retainer	55/65MR	Heavy duty	
	VOE 15002951	Locking device, complete**)	65PHS	Hot slag	0.5
	VOE 15002939	Retainer***)	55/65MRS	Hot slag	0.05
EC700B	VOE 14526788	Adapter	EA80BL65	Bottom leg 1 1/2 (long bottom leg)	40.8
	VOE 14526509	Adapter	EA80BL70	Bottom leg 1 1/2 (long bottom leg)	40.1
	VOE 14526511	Tooth	80GPE	General Purpose	23.0
	VOE 14526512	Tooth	80AMRE	Abrasive material with extra wear metal	27.5
	VOE 14526518	Tooth	80PPE	Extremely compact material	20.2
	VOE 14531655	Tooth	80TPE	Extremely compact material	25.5
	VOE 14524711	Locking device, complete*)	80P	, , , , , , , , , , , , , , , , , , , ,	0.50
	VOE 14526513	Retainer	80/125R	Standard	
	VOE 15002956	Locking device, complete**)	80PHS	Hot slag	0.7
	VOE 15002958	Retainer***)	80MRS	Hot slag	0.09
	132.3332300	,	- 3	9	0.00

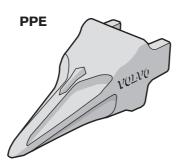
<sup>\*\*\*)</sup> Retainer complete consists of hot slag retainer and two springs



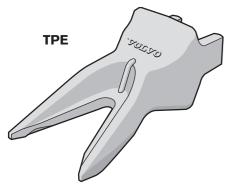
General purpose tooth with good penetration and long



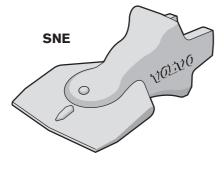
Tooth with extra wear metal and longer service life intended for rock and abrasive material. Self-sharpening.



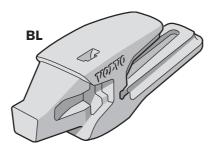
Pick point tooth for work in extremely compact material. Maximum penetration capability in hard clay, frozen ground etc. Can be used in combination with TPE.



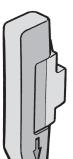
Twin pick point tooth for work in extremely compact material. Maximum penetration capability in hard clay, frozen ground etc. Can be used in combination with PPE.



Spade nose tooth for levelling, cleaning, grading and backfilling.



1 ½ bottom leg adapter (long bottom leg), for welding to both sides of the cutting edge.

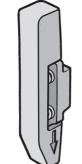


#### **Locking device**

Locking device for tooth and adapter reusable steel pin. When it's time to change adapter, it's also suitable to change the complete locking device.

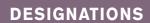


#### Heavy duty retainer in steel/polyurethane for work in very wet finegrained clay and coal handling.



Locking device, hot slag

Steel locking for hot slag appli-cations. Consists of a reusable steel pin, a steel retainer and two



#### Example: tooth for an excavator. 15 GP E

15 = size of tooth.

**GP** = type of tooth. In this case, General Purpose.

E = excavator.

#### Example: adapter for an excavator.

### **EA 20 BL 40**

**EA** = excavator adapter.

20 = size of adapter.

**BL** = type of adapter. In this case, bottom leg 1 ½ (long bottom leg).

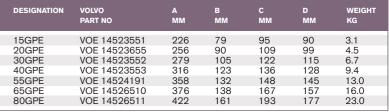
**40** = thickness of bucket cutting edge.

# **Tools** Tool for easy mounting and removal of locking devices. Part Nos for tools, see page 10.

IMPORTANT! If the machine operates in varying conditions, it is important to size the teeth for the heaviest applications. In extremely demanding applications it may be appropriate to select a larger point size than that what is specified. Contact your Volvo dealer for further information.

### **Dimensions and weights**







DESIGNATION	VOLVO PART NO	A MM	B MM	C MM	D MM	WEIGHT KG
15AMRE	VOE 14524192	232	86	95	89	3.6
20AMRE	VOE 14526753	257	99	109	100	5.4
30AMRE	VOE 14523946	284	114	122	115	7.8
40AMRE	VOE 14526754	330	133	137	127	11.5
55AMRE	VOE 14523656	362	139	155	145	15.9
65AMRE	VOE 14522959	403	155	168	157	21.1
80AMRE	VOE 14526512	438	169	191	177	27.5

#### **PPE TEETH**

DESIGNATION	VOLVO PART NO	A MM	B MM	C MM	D MM	WEIGHT KG
15PPE	VOE 14530835	233	11	95	89	2.8
20PPE	VOE 14531279	283	31	111	101	4.0
30PPE	VOE 14526514	310	35	122	115	5.6
40PPE	VOE 14526515	361	36	136	127	8.1
55PPE	VOE 14526516	389	49	156	145	11.7
65PPE	VOE 14526517	440	53	168	156	15.7
80PPE	VOE 14526518	462	59	191	177	20.2

#### **TPE TEETH**

DESIGNATION	VOLVO PART NO	A MM	B MM	C MM	D MM	WEIGHT KG
15TPE	VOE 14530836	233	104	95	90	3.7
20TPE	VOE 14531283	279	119	109	99	5.4
30TPE	VOE 14530837	309	134	124	116	6.9
40TPE	VOE 14530838	363	154	137	127	10.6
55TPE	VOE 14530839	392	171	157	147	14.7
65TPE	VOE 14530840	442	188	168	157	20.1
80TPE	VOE 14531655	463	197	190	180	25.5

#### **SNE TEETH**

DESIGNATION	VOLVO PART NO	A MM	B MM	C MM	D MM	WEIGHT KG
15SNE	VOE 14531280	232	127	94	89	3.8
20SNE	VOE 14531281	273	151	111	101	5.8
30SNE	VOE 14530841	300	177	122	114	8.4
40SNE	VOE 14530842	334	207	137	128	12.9
55SNE	VOE 14530843	378	234	155	146	17.8
65SNE	VOE 14531282	419	254	168	157	28.1

#### BL BOTTOM LEG 1 1/2 (LONG BOTTOM LEG) ADAPTERS

Ξ	21 20110 III 21 II 2 (20114 20110 III 214) ADAI 1210							
	DESIGNATION	VOLVO PART NO	CUTTING EDGE THICKNESS MM	CUTTING EDGE ANGLE °	A MM	B MM	WEIGHT KG	
	EA15BL30 EA20BL40 EA30BL40 EA40BL50	VOE 14522960 VOE 14522961 VOE 14522962 VOE 14522963	30 40 40 50	30 30 30 30	308 370 393 459	92 107 119 140	5.9 10.4 12.5 20.1	
	EA55BL50 EA65BL50 EA65BL60 EA80BL65 EA80BL70	VOE 14524709 VOE 14526776 VOE 14522964 VOE 14526788 VOE 14526509	50 50 60 65 70	30 30 30 30 30 30	459 532 529 541 541	153 167 167 188 188	23.6 31.6 34.6 40.8 40.1	



#### LOCKING DEVICES

DESIGNATION	VOLVO PART NO	DESCRIPTION	LENGTH(L) MM	WEIGHT KG
15P	VOE 11417145	Locking device, complete*)	67	0.07
15/20R	VOE 11417316	Retainer, standard	39	-
15/20MR	VOE 11716119	Retainer, heavy duty	39	-
20P	VOE 11417146	Locking device, complete*)	76	0.1
15/20R	VOE 11417316	Retainer, standard	39	-
15/20MR	VOE 11716119	Retainer, heavy duty	39	-
000	VOE 11 41 71 47	1 - 1 - 1 - 1 - 1 - 1 + 1	0.7	0.15
30P 30/40R	VOE 11417147 VOE 11417317	Locking device, complete*)	87 51	0.15
30/40R 30/40MR	VOE 11417317 VOE 11716120	Retainer, standard		-
30/40IVIR	VUE 11/16120	Retainer, heavy duty	51	-
40P	VOE 14524860	Locking device, complete*)	97	0.2
30/40R	VOE 11417317	Retainer, standard	51	-
30/40MR	VOE 11716120	Retainer, heavy duty	51	-
55P	VOE 11417148	Locking device, complete*)	108	0.3
55/65R	VOE 11417318	Retainer, standard	64	-
55/65MR	VOE 11716121	Retainer, heavy duty	64	-
050	VOE 4 450 474 0		447	
65P	VOE 14524710	Locking device, complete*)	117	0.4
55/65R	VOE 11417318	Retainer, standard	64	-
55/65MR	VOE 11716121	Retainer, heavy duty	64	-
80P	VOE 14524711	Locking device, complete*)	130	0.5
80/125R	VOE 14526513	Retainer, standard	77	-
30/1231	VOL 17020010	Notalilel, Stallualu	11	-

<sup>\*)</sup> Locking device complete consists of pin and standard retainer.

#### LOCKING DEVICES. HOT SLAG

	EOCRING DEVICES, NOT SEAG						
	DESIGNATION	VOLVO PART NO	DESCRIPTION	LENGTH(L) MM	WEIGHT KG		
	30PHS	VOE 15002778	Locking device, complete*)	94	0.2		
	30/40MRS	VOE 15002854	Retainer, complete, hot slag**)	50	0.03		
	40PHS	VOE 15002890	Locking device, complete*)	105	0.3		
	30/40MRS	VOE 15002854	Retainer, complete, hot slag**)	50	0.03		
	55PHS	VOE 15002928	Locking device, complete*)	117	0.4		
	55/65MRS	VOE 15002939	Retainer, complete, hot slag**)	62	0.05		
	65PHS	VOE 15002951	Locking device, complete*)	127	0.5		
	55/65MRS	VOE 15002939	Retainer, complete, hot slag**)	62	0.05		
			· ·				
	80PHS	VOE 15002956	Locking device, complete*)	140	0.7		
	80MRS	VOE 15002958	Retainer, complete, hot slag**)	77	0.09		
- 1							

<sup>\*)</sup> Locking device complete consists of pin, retainer and two springs.
\*\*) Retainer complete consists of retainer and two springs.

#### TOOLS FOR MOUNTING AND REMOVAL

TOOLS FOR MOONTING AND REMOVAL							
DESIGNATION	VOLVO PART NO	DESCRIPTION	WEIGHT KG	FOR TOOTH SIZE			
15/30T	VOE 11417168	Tool	1.1	15, 20, 30			
40/55T	VOE 11417377	Tool	1.2	40, 55			
65/80T	VOE 14527253	Tool	1.6	65, 80			

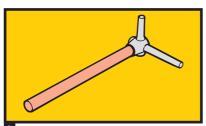
Dimensions and weights are approximate.

### **Changing Volvo teeth**

### 1. Before you start



1 Use a hammer, weight approx. 1 kilo, and protective gear: a hard hat, protective glasses, gloves and work shoes.



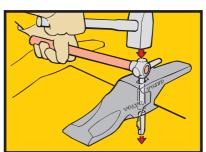
2 To make work easier, Volvo has developed a special tool. It consists of a handle and a head. The head consists of two pins, one shorter and one longer, as well as a striking surface for each pin. The tool is available in different sizes, depending



3 To make tooth mounting easier, angle back the bucket a bit so that the adapters face slightly upwards.

### 2. Dismantling of teeth



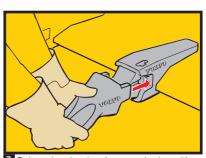


5 Place the tool's longer pin in the opening for the lock pin. Drive out the lock pin using a hammer, so that the lock retainer is removed from its seat. Drive out the lock pin so that it comes out on the underside. Remove the tooth.

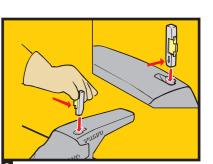
### 3. Mounting of teeth



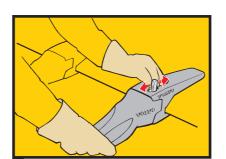
6 Thoroughly clean the adapter's nose and the hole for the lock pin, so that the tooth and lock pin can be fitted in the



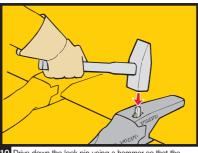
7 Fit the tooth on the adapter's nose, so that the tooth's guide lugs fit in the adapter's slots.



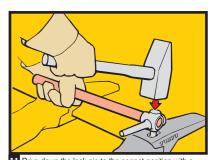
on the lock pin faces down and the lock retainer faces forward toward the tip of the tooth. Always use a new lock retainer in the correct size.



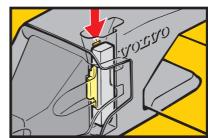
9 Check manually that the lock pin has been mounted



10 Drive down the lock pin using a hammer so that the lock pin is flush with the top of the adapter body.



11 Drive down the lock pin to the correct position with a hammer and the shorter pin on the tool. Use a correctly sized tool.



12 The lock pin is mounted correctly when the mark in the hole is visible just above the lock pin.

10 11



Always use genuine Volvo parts. They are the surest way to high machine availability and good operating economy.

Every genuine part is developed and manufactured together with all other machine components. It is a complete system where each separate part works in perfect harmony with the others. Only by using genuine Volvo parts can you be completely sure of keeping the system intact and maintaining the qualities and features Volvo intended from the beginning.

By choosing genuine Volvo parts, you know that your machine will function as intended in the future as well. Down to the smallest detail.

More care. Built in.

Under our policy of continuous improvement, we reserve the right to change specifications and designs without prior notice.

Contact your dealer for further information.

