



TURNKEY[®]
GRIZZLY

Bucket Equipement for
Construction

www.turnkeyteeth.com



30 YEARS OF EXPERIENCE

A subsidiary of the international Safe group, FEURST was created in 1992. FEURST manufactures teeth, adapters and protections in the group's factories and our selected subcontractors. Over 1 million wear parts are produced and sold each year worldwide.



R&D

With its own Design and Methods Office, equipped with the latest 3D design and printing technologies, Feurst is able to adapt to all market demands, including the most demanding ones.



PATENTED TECHNOLOGY

FEURST holds patents on the TURNKEY® Grizzly and TURNKEY® Rhino range, which cover the locking devices and adapters.



TECHNICAL SUPPORT

Thanks to a very knowledgeable technical and sales team, FEURST is able to offer tailor-made solutions adapted to all applications.



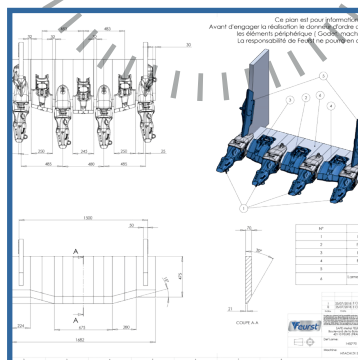
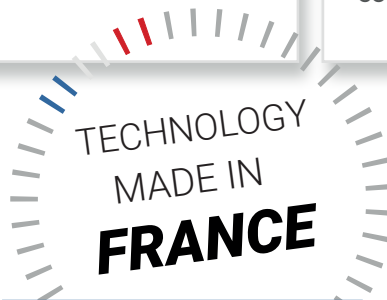
CUSTOMER SUPPORT

Thanks to an optimised Supply chain, sales administration, its new online platform, allow FEURST to deliver a high level of performance to any customers.



CSR

95% of FEURST products are made from recycled materials (scrap). And 90% of its own waste is recycled. The Safe Group invests and builds a long-term action plan to reduce its carbon footprint and therefore its energy consumption.





TURNKEY®GRIZZLY a new range of ground engaging tools using hammerless locking devices with permanent compression for teeth.

The *TURNKEY®Grizzly* process is :

- A secured pin locking at 180°
- A tapered rubberplug
- Clockwise rotation (Pictogram on teeth)

The horizontal, rotative, and self locking devices, offers to the user a great ease and safe handling during assembly and disassembly.

75 %
Wear ratio

- 30 %
assembly time

55 T
Max. excavators weight

65 T
Max. loaders weight

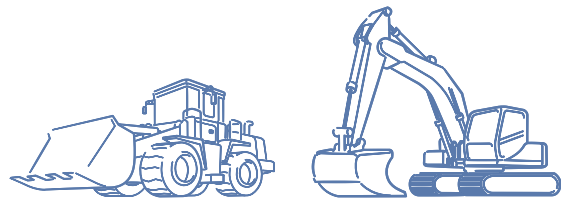


The Technology **TURNKEY® Grizzly**

FEURST's patented TURNKEY® Grizzly range of teeth & adapters are designed to fulfill the requirements of Construction and Quarry entry-level machines.

Our buckets equipments combine performance, productivity, and durability in the toughest abrasive shock applications.

A new range for loaders and excavators.



Cout d'exploitation optimum

All teeth profiles are designed to self-sharpen as they wear and do not need to be reversed.

This reduces machine downtime.

The adapter's geometry is designed to protect the welds from wear, ensuring a secure fitting at all times.

The teeth are locked onto the adapter, minimizing movement and thus wear on the adapter nose.

Optimized soil penetration and bucket loading for easy, precise and comfortable working.

New tooth profile for optimized soil penetration.



Optimum Safety

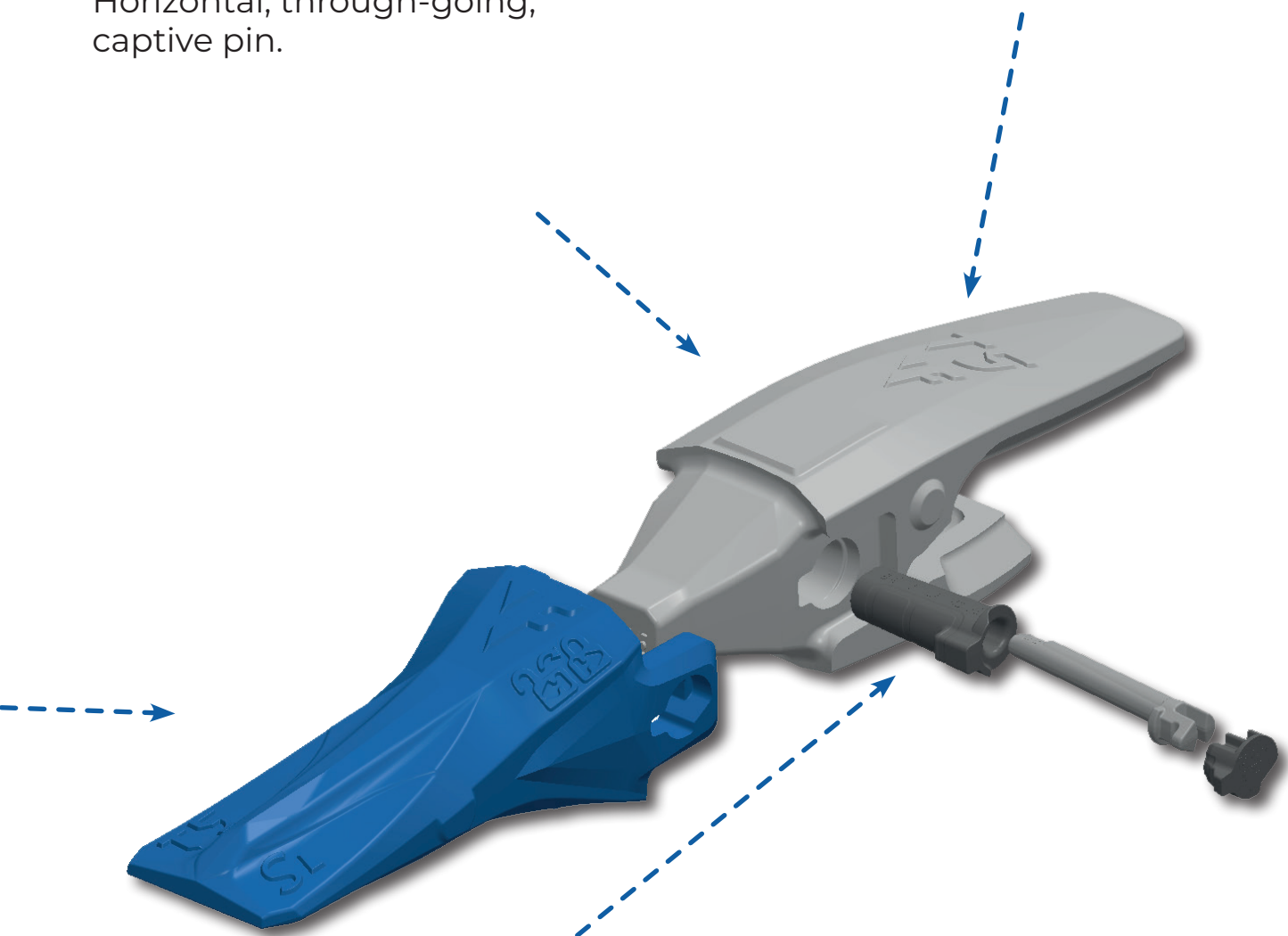
The TURNKEY® Grizzly locking device is a hammerless system , greatly reducing the risk of metal projection and accidents.

The pins are simply pushed in by hand and turned clockwise through 180° using the special socket supplied with the teeth.

Horizontal, through-going, captive pin.

Quicker Teeth Change

Teeth and wear caps are quick and easy to replace on site by a single person.



Pin, Plug & Cap

An intuitive locking system facilitates installation and maintenance, and is single-use. The caps secure quick access to pin socket hole.



The Solution for

More wear Material

The tooth's ears combined with the nose's geometry perform a load transfer, reducing mechanical constraints on the adapter.



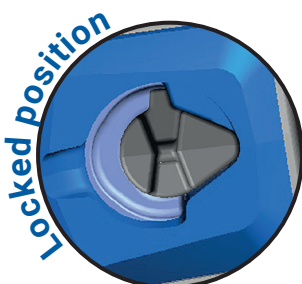
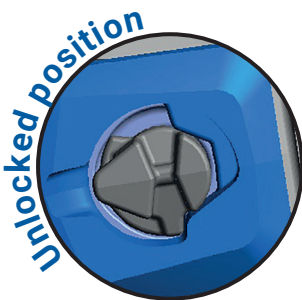
Features of the new **TURNKEY® Grizzly** locking devices

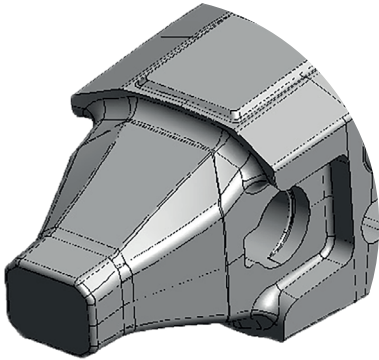
Reduce risk of bad fitting

Only one way coding conical fitting plug

Only one way coding fitting pin

After 180° clockwise rotation, a mechanical stop confirms that the system is locked.





Nose

The complex shapes of the nose, the conical seats, the stabilization flats, combined with the ears, allow optimal tightening with the help of the locking devices.

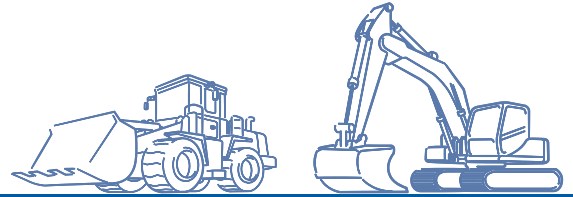


Locking devices

The innovative, rotating, eccentric, and dustproof system that compresses the tooth on the adapter, combined with the performance of the nose, ensures assembly performance, in-service holding, and disassembly under all circumstances.

Single-use locking device.

The cap is an integral part of the locking system.



BENEFITS



◆ Performance and Safety in service

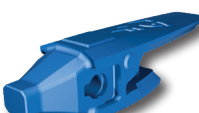
- *Innovative and secure locking devices*
- *Perfect fitting*
- *No loss of teeth*
- *Better soil penetration*
- *Driver comfort*
- *Easy assembly and disassembly*
- *Bucket loading optimization*
- *Accuracy / ease of operation*



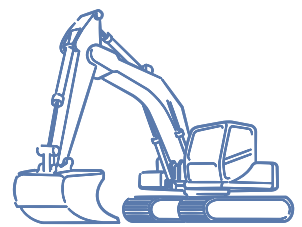
◆ Reduction of operating costs (T.C.O*)

- *Zero machine downtime* 
- *Best quality / price ratio*
 - Lightweight adapters
 - Increased wear ratio up to 75%
 - Protection of the machine and its components
 - Increased durability
- *Several blade thicknesses available for each size*

ADAPTERS

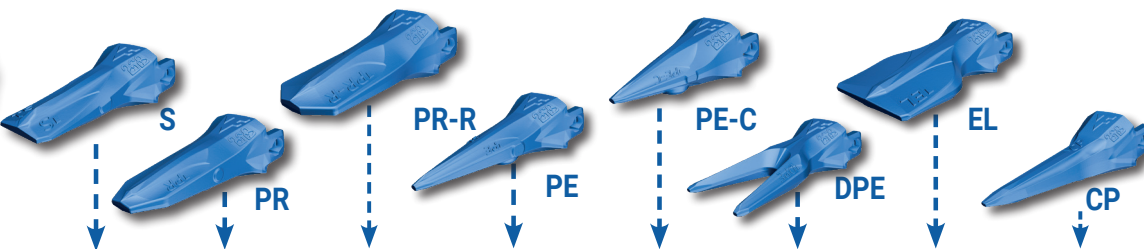
			      				
SIZE	Max. Machine Weight	Blade Thickness (mm)	Standard	Abrasion		BP-Clamshell	Welding Nose / NS
3	Standard 10.5 T - HD 8 T	25	T3 1325-10			*T3 BP	*T3 NS
		30		T3 1530-16			
4	Standard 15.7 T - HD 12 T	25	T4 1325-10			*T4 BP	*T4 NS
		30	T4 1330-10	T4 1530-16			
5	Standard 21.7 T - HD 16.3 T	30	T5 1330-10			*T5 BP	T5 NS
		35	T5 1335-10	T5 1535-10	T5 1535-0°		
7	Standard 30 T - HD 22.5 T	35	T7 1335-10			*T7 BP	T7 NS
		40	T7 1340-10	T7 1540-10	T7 1540-0°		
8	Standard 40 T - HD 30 T	40	T8 1340-10				T8 NS
		45	T8 1345-10	T8 1545-10	T8 1545-0°		
9	Standard 55 T - HD 40 T	45	T9 1345-10				T9 NS
		50	T9 1350-10	T9 1550-10	T9 1350-0°		

Excavators



TEETH

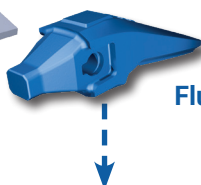
LOCKING DEVICES



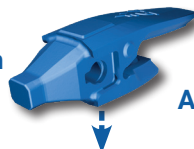
T3 S	T3 PR		T3 PE	T3 PE-C	T3 DPE	T3 EL	
T4 S	T4 PR		T4 PE	T4 PE-C	T4 DPE	T4 EL	
T5 S	T5 PR		T5 PE	T5 PE-C	T5 DPE	T5 EL	
T7 S	T7 PR	T7 PR-R	T7 PE	T7 PE-C	T7 DPE	T7 EL	
T8 S	T8 PR	T8 PR-R	T8 PE	T8 PE-C	T8 DPE	T8 EL	T8 CP
T9 S	T9 PR	T9 PR-R	T9 PE	T9 PE-C	T9 DPE	T9 EL	T9 CP

T3 CL	T3 SB	T3 CPR
T4 CL	T4 SB	T4 CPR
T5 CL	T5 SB	T5 CPR
T7 CL	T7 SB	T7 CPR
T8 CL	T8 SB	T8 CPR
T9 CL	T9 SB	T9 CPR

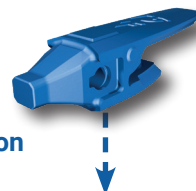
ADAPTERS



Flush



Abrasion

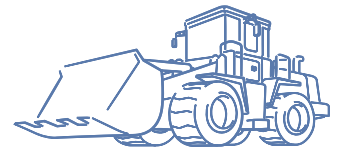


Welding
Nose
/ NS

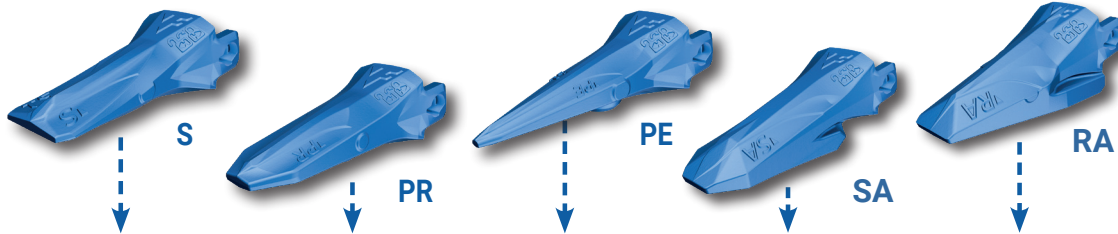
SIZE	Max. Machine Weight	Blade Thickness (mm)				
3	Standard 11.55 T - HD 8.9 T	25	T3 1025-16	T3 1525-16		*T3 NS
		30		*T3 1530-16		
4	Standard 16.7 T - HD 12.9 T	30	T4 1030-16	*T4 1530-16		*T4 NS
		35		*T4 1535-16		
5	Standard 25 T - HD 19.5 T	35	T5 1035-16	T5 1535-16		T5 NS
		40		T5 1540-16	T5 1535-0°	
7	Standard 33.8 T - HD 25 T	40	T7 1040-16	T7 1540-16		T7 NS
		45		T7 1545-16	T7 1540-0°	
8	Standard 47 T - HD 33.5 T	45	T8 1045-16	*T8 1545-16	T8 1545-0°	T8 NS
		50		T8 1550-16		
9	Standard 63.6 T - HD 46.9 T	50	T9 1050-16	T9 1550-16	T9 1350-0°	T9 NS

*Under development

Wheel Loaders



TEETH

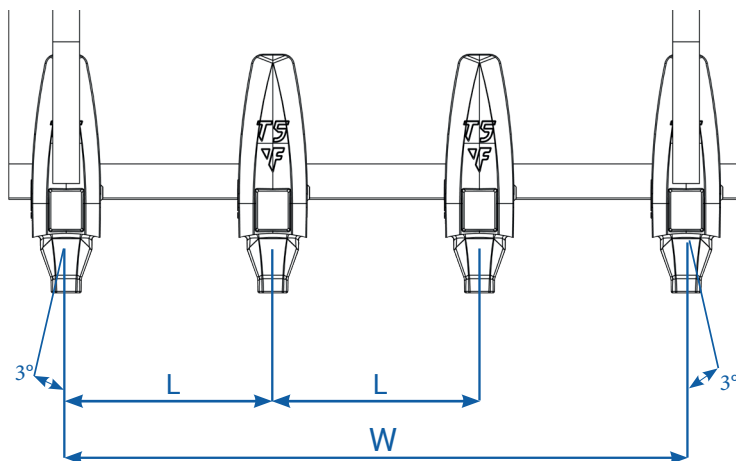


LOCKING DEVICES



T3 S	T3 PR	T3 PE			T3 CL	T3 SB	T3 CPR
T4 S	T4 PR	T4 PE	T4 SA		T4 CL	T4 SB	T4 CPR
T5 S	T5 PR	T5 PE	T5 SA	T5 RA	T5 CL	T5 SB	T5 CPR
T7 S	T7 PR	T7 PE	T7 SA	T7 RA	T7 CL	T7 SB	T7 CPR
T8 S	T8 PR	T8 PE	T8 SA	T8 RA	T8 CL	T8 SB	T8 CPR
T9 S	T9 PR	T9 PE	T9 SA	T9 RA	T9 CL	T9 SB	T9 CPR

Determination of the number of TURNKEY® adapters for a given width of bucket data



Determination of the number of adapters for a given width:

(For an easier calculation, it is assumed that the corner adapter centerline is aligned with the inside of side plate)

W= Inside lips width (mm)

L mini & L maxi = adapters spacing (See dimensions below)

Minimum number of adapters : $\frac{W}{L \text{ maxi}} + 1 =$

Maximum number of adapters : $\frac{W}{L \text{ mini}} + 1 =$

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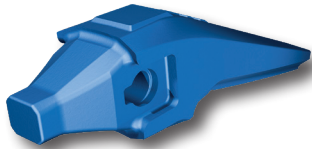


The choice of the number of adapters is made according to the criteria of applications encountered, knowing that we will put for example :

- In an abrasive environment, a maximum of adapters are recommended
- For better penetration in less abrasive environments, install the minimum number of adapters bucket

Excavator				Wheel Loader	
L (mm)		Size	Adapter Width (mm)	L (mm)	
Mini	Maxi			Mini	Maxi
180	255	T 3	72.5	240	322
220	310	T 4	83	300	400
230	320	T 5	89	315	420
250	350	T 7	106	350	470
285	400	T 8	121	380	505
330	465	T 9	138	440	590

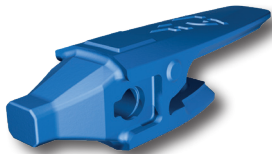
Adapters definition



Flush : Adapter of Flush-type for loaders, flush mount. Very high abrasion resistance.



Standard : Adaptor for excavators and loaders. Holds perfectly on the blade. Shape adapted to the tooth; high abrasion resistance.



0° : Specific adaptor for excavators and loaders for applications where the tooth needs to be aligned with the blade axis (ex : rock handling, no marks on the ground).



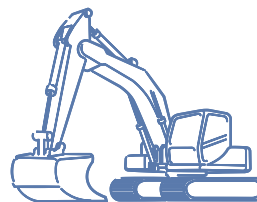
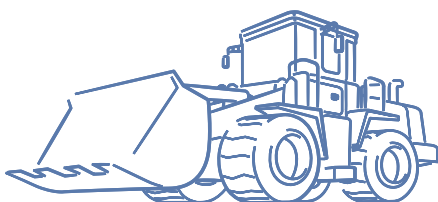
Abrasion : Adaptor for heavy duty excavators and loaders. Optimum abrasion resistance.



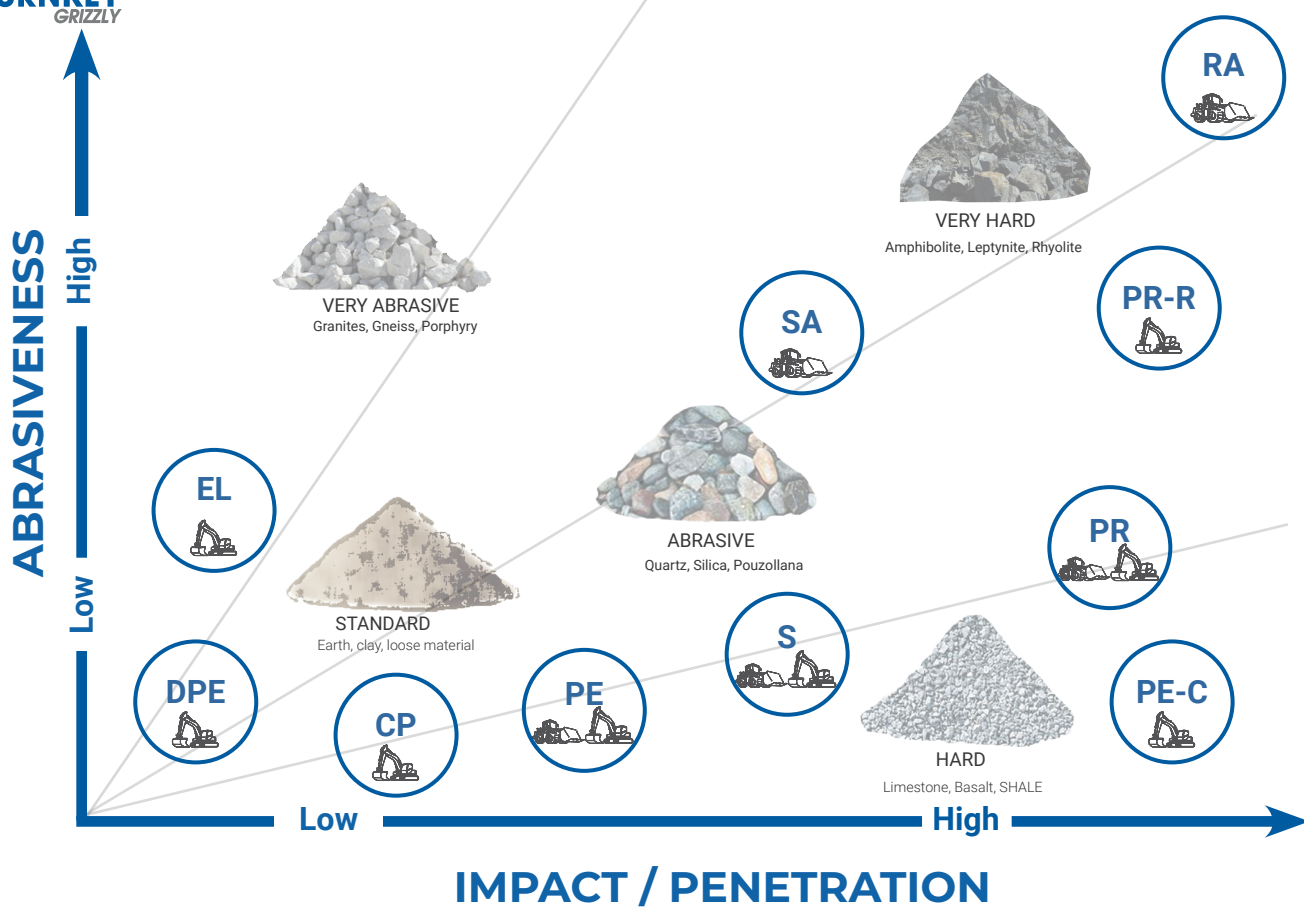
Clamshells : Flush-type adaptor for digging or rehandling clamshells. High abrasion resistance.



Weld-on nose : Adapter for rock cutting works and for repairing any adapter.



Tooth / Soil



Standard : Long, flat tooth. Ideal profile for earthworks, good penetration and abrasion resistance.



Rock Chisel : Perfect tooth shape for a strong penetration. Excellent compromise wear material/penetration.



Rock Chisel + : Enough material for a correct abrasion resistance perfect shape enabling better penetration.



Twin Pick : Double vector tooth used on bucket corners to protect the sides from wear.



Pick : Long and sharp tooth ensuring an excellent penetration.



Pick Short : Short tooth, accurate shape to be used as rock cutting tooth..



Extra-Large (Flare) : Tooth for excavators and loaders. Flat profile for pick-up and construction work.



Super Abrasion : Excellent abrasion resistance with penetration-maintaining heel profile.



Reinforced Abrasion : Loader tooth for highly abrasive use, large heel.



Coal Penetration : Pointed and penetrating tooth, used to scalp layers of materials in less abrasive environments (such as coal).

**Equipment recommendations between machine weight and its breakout force
(B.O.F= Break Out Force) expressed in Tons (T)**

Size		T 3		T 4		T 5		T 7		T 8		T 9	
Machine		Standard	HD	Standard	HD	Standard	HD	Standard	HD	Standard	HD	Standard	HD
 Excavator	Max Weight	10.5T	8T	15.7T	12T	21.7T	16.3T	30T	22.5T	40T	30T	55T	40T
	Max. B.O.F. 	8T	6.5T	11T	8.8T	15T	12T	19T	15.5T	25T	20T	32T	25.6T
 Wheel Loader	Max Weight	11.55T	8.9T	16.7T	12.9T	25T	19.5T	33.8T	25T	47T	33.5T	63.6T	46.9T
	Max. B.O.F. 	11.5T	8.9T	16.7T	12.9T	25T	19.5T	32.6T	25T	39.9T	32.3T	49.2T	39.9T

1 Tonne = 9.8067 Kn

Recommendation valid for a standard excavator bucket equipped with 5 teeth or a loader equipped with 8 teeth.

In case of extremely severe use, oversize by one size.

Applications and working conditions must be taken into consideration, consult your FEURST dealer.

Data provided for recommendation purposes only, under no circumstances can FEURST's liability be engaged.

Bucket Selection Based on Application

Standard Bucket : Suitable for digging and loading of soft to medium hard, compact and non-abrasive materials such as earth/rock, sand/gravel, coal, chalk, and non-abrasive ores.

HD Bucket : Suitable for digging and loading of mixed earth and rock soils with a high proportion of rock or other abrasive materials

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Machine-specific recommendations



SIZE	Poids Machine / Machine Weight	Epaisseur de Lame / Blade Thickness	VOLVO	HITACHI	CAT	LIEBHERR	KOMATSU
T3	S :10.5T HD: 8T	25mm / 30mm	EC 80 EC 88	ZX 85	308 310	-	PC 88 PC 118
T4	S:15.7T HD:12T	30mm / 35mm	EC 130 EC 140	ZX 110 ZX 130	312 314	R 900	PC 138
T5	S :21.7T HD:16.3T	35mm / 40mm	EC 160 EC 200	ZX 160 ZX180	317 320	R 902 R 904	PC 160 PC 180
T7	S :30T HD: 22.5T	35mm 40mm 45mm	EC 210 EC 240	ZX 210 ZX 240	322 325	R 914 R 924	PC 210 PC 240
T8	S :40T HD:30T	45mm / 50mm	EC 280 EC 300	ZX 290 ZX 300	330	R 932	PC 280 PC 300
T9	S :55T HD:40T	45mm / 50mm	EC 330 EC 360	ZX 330 ZX 350	335 336	R 934	PC 350



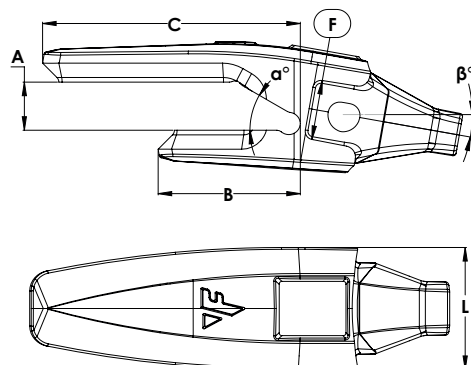
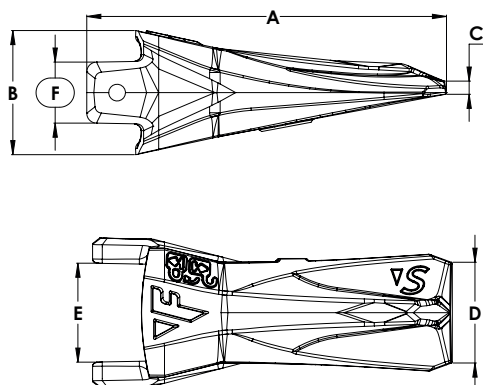
SIZE	Poids Machine / Machine Weight	Epaisseur de Lame / Blade Thickness	VOLVO	HITACHI	CAT	LIEBHERR	KOMATSU
T3	S :11.5T HD: 8.9T	25mm / 30mm	L 70	-	-	-	WA 200
T4	S:16.7T HD:12.9T	30mm / 35mm	L 120	ZW 140 ZW 180	950	L 542	WA 250 WA 320
T5	S :25T HD:19.5T	35mm / 40mm	L 150	ZW 220	962 966	L 556	WA 430
T7	S :33.8T HD: 25T	40mm / 45mm	L 180	ZW 310	972	L 566	WA 480
T8	S :47T HD:33.5T	45mm / 50mm	L 220	ZW 370	980	L 576	WA 500
T9	S :63.6T HD:46.9T	50mm	L 260	ZW 550	986	L 586	WA 600

Teeth Dimensions

SIZE	TYPE	PART NO.	WEIGHT [kg]	DIMENSIONS [mm]					
				A	B	C	D	E	F
3	S	T3 S	2,07	186	71	8	57	55	35
3	PR	T3 PR	2,25	196	71	8	28	55	35
3	PE	T3 PE	1,85	213	71	7	8	55	35
3	DPE	T3 DPE	2,06	213	71	4	82	55	35
3	PE-C	T3 PE-C	1,60	173	71	7	8	55	35
3	EL	T3 EL	2,40	186	71	10	114	55	35
4	S	T4 S	3,28	221	78	9	68	63	39
4	PR	T4 PR	3,42	236	78	10	32	63	39
4	PE	T4 PE	2,68	237	78	8	10	63	39
4	DPE	T4 DPE	3,03	237	78	4	99	63	39
4	PE-C	T4 PE-C	2,28	187	78	7	10	63	39
4	EL	T4 EL	4,02	221	78	11	127	63	39
4	SA	T4 SA	5,99	246	78	9	50	63	39
5	S	T5 S	4,06	255	88	10	70	70	44
5	PR	T5 PR	5,10	266	88	13	35	70	44
5	PE	T5 PE	3,95	287	88	8	10	70	44
5	DPE	T5 DPE	4,49	287	88	5	116	70	44
5	PE-C	T5 PE-C	3,56	237	88	7	11	70	44
5	EL	T5 EL	6,20	265	88	13	152	70	44
5	SA	T5 SA	7,26	290	88	10	39	70	44
5	RA	T5 RA	7,72	265	100	10	53	70	44
7	S	T7 S	6,86	280	105	11	84	81	51
7	PR	T7 PR	6,86	302	105	12	43	81	51
7	PE	T7 PE	5,82	312	105	8	13	81	51
7	DPE	T7 DPE	6,95	312	105	6	133	81	51
7	PE-C	T7 PE-C	5,30	255	105	8	13	81	51
7	EL	T7 EL	9,30	299	105	15	178	81	51
7	SA	T7 SA	11,43	327	105	11	42	81	51
7	PR-R	T7 PR-R	8,44	314	105	15	44	81	51
7	RA	T7 RA	12,37	296	117	17	67	81	51
8	S	T8 S	10,60	313	125	13	103	92	57
8	PR	T8 PR	10,80	343	125	13	47	92	57
8	PE	T8 PE	9,10	353	125	9	14	92	57
8	DPE	T8 DPE	10,44	353	125	7	149	92	57
8	PE-C	T8 PE-C	7,78	300	125	10	13	92	57
8	EL	T8 EL	13,40	331	125	18	203	92	57
8	SA	T8 SA	16,10	364	125	11	49	92	57
8	PR-R	T8 PR-R	12,33	352	125	18	48	92	57
8	RA	T8 RA	18,45	334	136	18	75	92	57
8	CP	T8 CP	8,23	378	125	7	14	92	57
9	S	T9 S	14,93	346	144	15	108	103	64
9	PR	T9 PR	16,10	385	144	14	52	103	64
9	PE	T9 PE	13,05	390	144	10	15	103	64
9	DPE	T9 DPE	15,46	390	144	9	167	103	64
9	PE-C	T9 PE-C	11,85	336	144	12	15	103	64
9	EL	T9 EL	19,10	365	144	21	227	103	64
9	SA	T9 SA	22,56	410	144	11	56	103	64
9	PR-R	T9 PR-R	17,95	391	144	22	54	103	64
9	RA	T9 RA	24,82	398	151	21	83	103	64

Adapters Dimensions

SIZE	PART NO.	WEIGHT [kg]	Blade Th. [mm]	DIMENSIONS [mm]							APPLICATIONS
				A	B	C	F	L	α°	β°	
3	T3 1525 16	3,89		25,5	80	147	35	72	22,5° - 30°	16°	L
3	T3 1530 16	4,06		31	80	147	35	72	22,5° - 30°	16°	L
3	T3 1325 10	3,60		25,5	166	81	35	72	22,5° - 30°	10°	E
3	T3 1025 16	4,40		25,5	/	177	35	72	25°	16°	E
3	T3 NS	1,82		/	67	11	35	72	/	/	E / L
3	T3 BP	3,93		/	/	124	35	72	/	10°	E
4	T4 1530 10	5,09		31	92	172	40	83	22,5° - 30°	10°	L
4	T4 1530 16	6,08		31	90	179	40	83	22,5° - 30°	16°	L
4	T4 1535 16	6,02		36	90	179	40	83	22,5° - 30°	16°	E
4	T4 1325 10	5,66		25,5	181	99	40	83	22,5° - 30°	10°	E
4	T4 1330 10	4,91		31	181	99	40	83	22,5° - 30°	10°	E
4	T4 1030 16	6,42		31	/	202	40	83	25°	16°	E / L
4	T4 NS	2,52		/	74	15	40	83	/	/	E / L
4	T4 BP	6,63		/	/	187	40	83	/	10°	E
5	T5 1535 10	6,68		36	105	190	45	89	30°	10°	E
5	T5 1535 16	7,94		36	115	196	45	89	30°	16°	L
5	T5 1540 16	7,86		41	99	196	45	89	30°	16°	L
5	T5 1535 0	6,37		36	97	197	45	89	30°	0°	E / L
5	T5 1330 10	6,72		31	192	108	45	89	30°	10°	E
5	T5 1335 10	6,68		36	204	115	45	89	30°	10°	E
5	T5 1035 16	8,59		36	/	240	45	89	25°	16°	L
5	T5 NS	3,91		/	89	22	45	89	/	/	E / L
5	T5 BP	9,68		/	/	210	45	89	/	/	E
7	T7 1540 10	11,87		41	128	235	52	106	30°	10°	E
7	T7 1540 16	12,33		41	121	222	52	106	30°	16°	L
7	T7 1545 16	12,86		46	121	222	52	106	30°	16°	L
7	T7 1540 0	10,35		41	108	216	52	106	30°	0°	E / L
7	T7 1335 10	11,50		36	237	129	52	106	30°	10°	E
7	T7 1340 10	11,73		41	237	129	52	106	30°	10°	E
7	T7 1040 16	12,26		41	/	252	52	106	25°	16°	L
7	T7 NS	5,70		/	101	19	52	106	/	/	E / L
7	T7 BP	14,02		/	/	238	52	106	/	10°	E



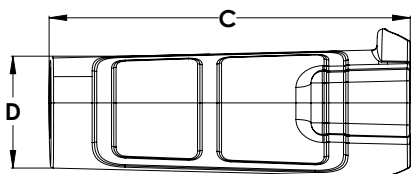
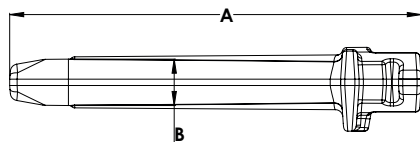
E = Excavator / L = Loader

SIZE	PART NO.	WEIGHT [kg]	Blade Th. [mm]	DIMENSIONS [mm]							APPLICATIONS
				A	B	C	F	L	α°	β°	
8	T8 1545 10	17,78		46	130	253	58	121	30°	10°	E
8	T8 1545 16	18,00		46	130	252	58	121	30°	16°	L
8	T8 1550 16	18,33		51	130	252	58	121	30°	16°	L
8	T8 1545 0	16,43		46	124	248	58	121	30°	0°	E / L
8	T8 1340 10	17,63		41	250	132	58	121	30°	10°	E
8	T8 1345 10	17,52		46	250	132	58	121	30°	10°	E
8	T8 1045 16	17,75		46	/	292	58	121	25°	16°	L
8	T8 NS	8,30		/	121	19	58	121	/	/	E / L
9	T9 1550 10	23,48		51	158	279	65	138	30°	10°	E
9	T9 1550 16	24,85		51	175	285	65	138	30°	16°	L
9	T9 1550 0	22,27		51	178	282	65	138	30°	0°	E / L
9	T9 1345 10	23,14		46	278	156	65	138	30°	10°	E
9	T9 1350 10	23,19		51	278	156	65	138	30°	10°	E
9	T9 1050 16	24,21		51	/	315	65	138	25°	16°	L
9	T9 NS	13,62		/	140	19	65	138	/	/	E / L

E = Excavatrice / C = Chargeuse

Dimensioning of Locking Devices

SIZE	PART NO.	WEIGHT [g]	DIMENSIONS [mm]			
			A	B	C	D
3	T3 LOCK SET	165,00	79	10	52	15
4	T4 LOCK SET	185,00	91	11	60	18
5	T5 LOCK SET	245,00	98	12	69	21
7	T7 LOCK SET	310,00	113	14	79	24
8	T8 LOCK SET	370,00	129	15	90	25
9	T9 LOCK SET	475,00	145	17	100	28



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