Eickhoff

ETH Series – for universal use

Milling Cutters

Eickhoff Milling Cutters of the ETH series

The hydraulic milling cutters of the ETH series can be mounted to an excavator in lieu of the bucket. The milling cutter is of **simple** and **compact** design and **maintenance-free** with the exception of oil changes.

Hydraulic excavators of any type having the corresponding service weight and diesel power are suited for this purpose.

The milling cutter mainly consists of an Eickhoff gearbox and a pair of transverse cutting heads which are fitted with round shank picks. It is driven by a hydraulic motor which is fed with pressure oil from the excavator hydraulics.

An adapter is required for attachment to the different excavator types and can be supplied upon request. Should the customer provide the adapter, Eickhoff would supply the attachment dimensions.

The position of the milling cutter which is mounted to the adapter, turned through 90°, even allows cutting of narrow trenches down to a width of 27 ½''.

For operating the hydraulic milling cutter with an excavator, the control of the hydraulic motor for the milling cutter will have to be installed at the operator's panel. The operation of the excavator movement is maintained in any case.

ETH 50 mounted to an O&K RH 20 excavator

Special features of the ETH series

FEATURES	BENEFITS
Eickhoff a manufacturer of **boom-type roadheaders**	Transfer of the **cutting experience** to the ETH series
Gearbox design and manufacture **by Eickhoff**	**Robust integral component** of the ETH series
Thick-walled **robust cutting drums** with reinforcing web	Safe resistance **to high cutting forces**
Positive connection of drum and gearbox by means of a square flange	Safe transmission **of high torques**
Turning of the milling cutter through 90°	Cutting of narrow trenches **down to a width of 27 ½’’**
Optimum pick arrangement based on the experience gained with boom-type roadheaders	**High cutting rate** at a compressive strength of the rock of up to 14,500 psi
Use of commercially available **standard pick types**	**Minimization of the cost** of wear parts
Wear protection at the gear housing	**Protection of units** which are not involved in cutting

Examples for possible applications

The hydraulic milling cutter is suited for cutting natural rocks, concrete, asphalt, industrial minerals, masonry and similar materials for:

- **Tunneling and mining**

Heading, profiling
Restoration, ripping
Mineral extraction

- **Civil engineering**

Trench milling down to a width of 27 ½''
Foundation milling
Cellar excavation

- **Road construction**

Asphalt cutting

- **Demolition**

Well-controlled and pinpointed demolition
Partial demolition while safeguarding the remaining part of the building

- **Hydraulic engineering**

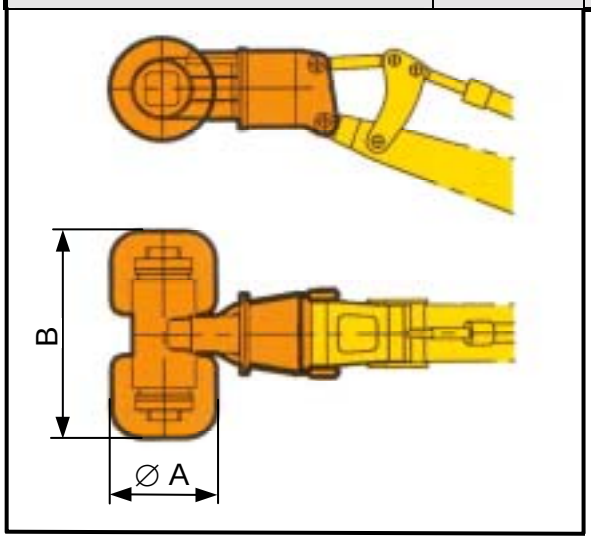
Lowering of navigable water ways
Milling of trenches for pile planking
Milling of culverts in river beds

- **Low noise operation**

In all places where other excavating equipment (e.g. hydraulic hammers) is too noisy

Specification:

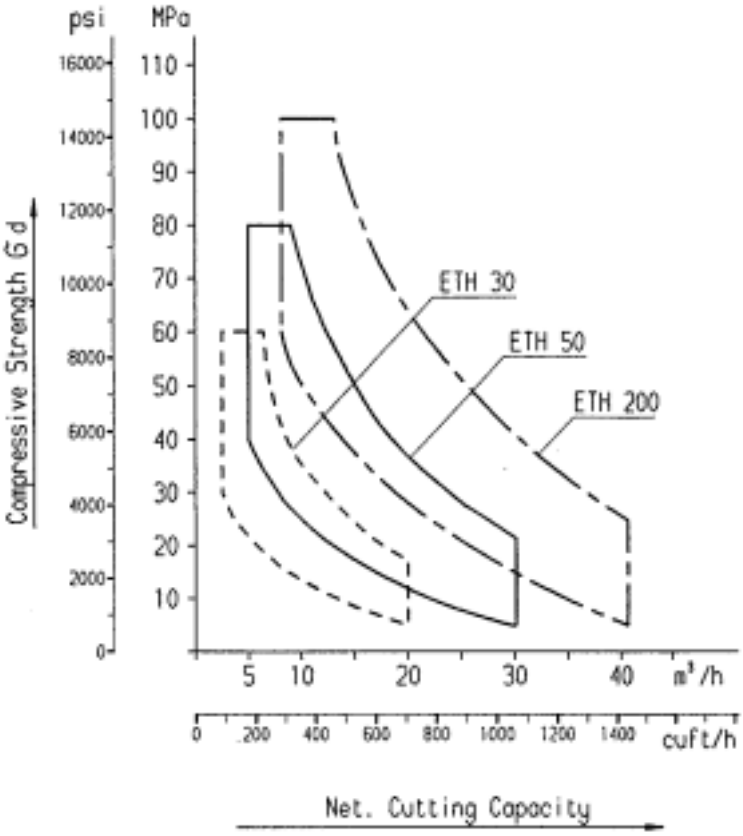
		ETH 30	ETH 50	ETH 200
Excavator class (min.)	lb	45,000	65,000	130,000
Power of the ETH	hp	135 **4,350 psi / 53 gpm**	200 **4,350 psi / 80 gpm**	360 **4,350 psi / 143 gpm**
Operating pressure * (max.)	psi	4,350	4,350	4,350
Oil flow rate **	gpm	53 - 66	80 - 120	143 -198
Revs. of the cutting head	rpm	75 - 95	60 - 90	52 - 72
Pick tip speed	fpm	510 - 650	450 - 675	590 - 820
Output torque (max.)	ft lb	9,600	16,960	36,875
Cutting force (max.)	lb	9,000	13,500	20,000
Weight (approx.)	lb	3,800	6,100	16,800
Picks	quantity	60	76	152
Dimension A: Cutting head diameter over pick tips	inch	26 3/8	29 1/2	43 3/8
Dimension B: Cutting head width	inch	48	59	78



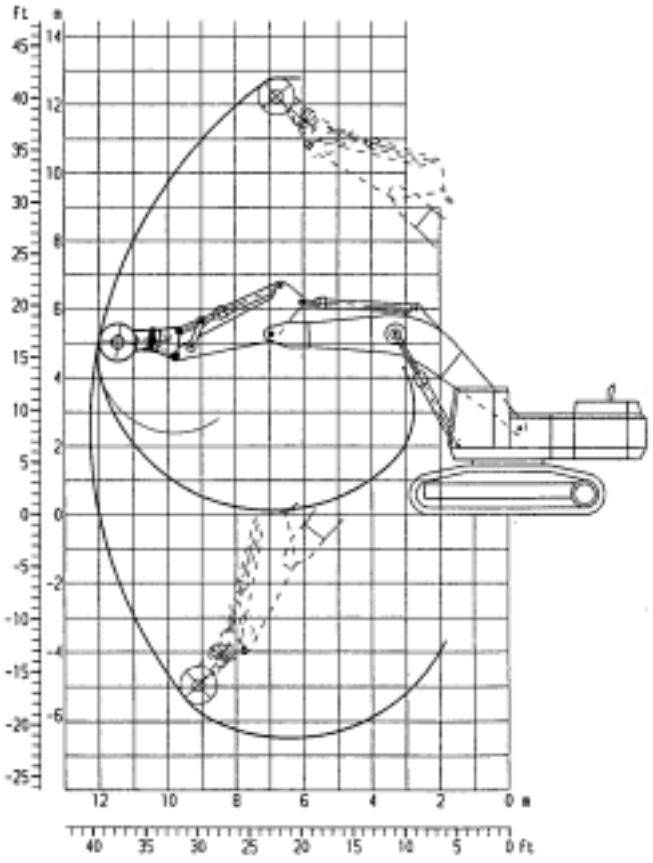
* The output torque and the cutting force is lower at a lower operating pressure

** The revs./min. and the cutter speed are lower at a lower oil flow rate

Cutting Capacity:
Rock type and excavator determine the cutting capacity of the hydraulic milling cutters to a great extent.



Cutting Range:
Example of an ETH 200 mounted to a CAT 375 ME excavator. Other excavators offer different cutting ranges.



Examples of combinations

excavator type		weight [lp]	motor power [KW	(HP)]	ETH 30	ETH 50	ETH 200
Atlas	1704	53,000	125	(167)	X		
	1804	69,000	152	(203)	X		
	2004	80,000	178	(238)	X	X	
Case Poclain	1288	62,000	127	(170)	X		
	1488	80,000	148	(198)	X	X	
Case USA	9040	53,000	125	(167)	X		
	9050	69,000	166	(222)	X	X	
	9060	97,000	205	(274)		X	
Caterpillar	320 C	49,000	103	(138)	X		
	322 C	55,000	121	(162)	X		
	325 C	60,000	128	(171)	X		
	330 C	75,000	181	(242)	X		
	345 B-II	108,000	239	(320)		X	
	350	108,000	213	(285)		X	
	365 B	146,000	287	(384)		X	X
	375	177,000	319	(427)			X
	385 B	185,000	382	(512)			X
Daewoo	Solar 220	47,000	108	(144)	X		
	Solar 280	62,000	143	(191)	X		
	Solar 330	71,000	184	(246)	X	X	
	Solar 400	84,000	191	(256)	X	X	
	Solar 450	97,000	221	(296)		X	
Furukawa	640 LS	49,000	115	(154)	X		
	645 LS	60,000	141	(189)	X		
	650 E	80,000	150	(201)	X	X	
Fiat-Hitachi	FH 220.3	55,000	114	(152)	X		
	FH 240.3	58,000	114	(152)	X		
	FH 270.3	60,000	122	(163)	X		
	FH 300.2	69,000	147	(197)	X		
	FH 330.3	73,000	162	(217)	X	X	
	FH 400.2	97,000	209	(280)		X	
	FH 450.3	102,000	220	(295)		X	
Hitachi	EX 220	51,000	114	(152)	X		
	EX 300	62,000	154	(206)	X		
	EX 400	91,000	206	(276)		X	
	EX 550	119,000	272	(364)		X	
	EX 600	124,000	272	(364)		X	
	EX 700	148,000	309	(414)			X
	EX 750	161,000	324	(434)			X
	EX 800	166,000	324	(434)			X
	EX 1100	232,000	412	(552)			X
Hyundai	290 LC-3	64,000	136	(182)	X		
	320 LC-3	69,000	162	(217)	X	X	
	360 LC-3	80,000	184	(246)	X	X	
	450 LC-3	97,000	213	(285)		X	
JCB	JS 240 LC	53,000	114	(152)	X		
	JS 260 LC	58,000	114	(152)	X		
	JS 300 LC	71,000	151	(202)	X	X	
	JS 450 LC	100,000	213	(285)		X	
John Deere	230 LC	51,000	127	(170)	X		
	270 LC	51,000	134	(179)	X		
	330 LC	73,000	175	(234)	X	X	
	370	73,000	175	(234)	X	X	

excavator type		weight [lb]	motor power [KW	(HP)]	ETH 30	ETH 50	ETH 200
Kobelco	SK 210	45,000	103	(138)	X		
	SK 250	55,000	121	(162)	X		
	SK 330	69,000	169	(226)	X	X	
	SK 460	95,000	213	(285)		X	
Komatsu	PC 200-6	45,000	100	(134)	X		
	PC 210-7	47,000	107	(143)	X		
	PC 220-5	49,000	114	(152)	X		
	PC 240-7	53,000	125	(167)	X		
	PC 290-7	62,000	134	(179)	X		
	PC 300-5	71,000	154	(206)	X		
	PC 340-7	73,000	180	(241)	X	X	
	PC 360-5	82,000	162	(217)	X	X	
	PC 380-6	91,000	173	(231)	X	X	
	PC 400-5	100,000	206	(276)		X	
	PC 450-6	100,000	228	(305)		X	
	PC 600-6	133,000	286	(383)		X	
	PC 650-5	150,000	302	(404)		X	X
	PC 750-6	172,000	331	(443)			X
	PC 1000-1	212,000	405	(543)			X
	PC 1100-6	227,000	456	(611)			X
Liebherr	912 Lit	45,000	100	(134)	X		
	912 Lit Tunnel	58,000	100	(134)	X		
	914 Lit	47,000	105	(140)	X		
	922 Lit	53,000	112	(150)	X		
	924 Lit	55,000	112	(150)	X		
	932 Lit	60,000	132	(177)	X		
	932 Lit Tunnel	75,000	132	(177)	X		
	934 Lit	62,000	137	(183)	X		
	942 Lit	71,000	164	(219)	X	X	
	944 Lit	75,000	164	(219)	X	X	
	954 B Lit	105,000	210	(281)		X	
	964 B Lit	133,000	270	(362)		X	
	974 B Lit	172,000	360	(482)			X
	984 C Lit	243,000	504	(675)			X
O&K	RH 6-20	45,000	126	(168)	X		
	RH 6-22	49,000	131	(175)	X		
	RH 6.5	47,000	113	(151)	X		
	RH 8.5	55,000	131	(175)	X		
	RH 9.5	64,000	145	(194)	X		
	RH 12.5	75,000	186	(249)	X	X	
	RH 16.5	89,000	186	(249)	X	X	
	RH 20	104,000	228	(305)	X	X	
	RH 23.5	106,000	235	(315)		X	
	RH 25.5	130,000	298	(399)		X	
	RH 30 F	190,000	340	(455)			X
	RH 40 E	220,000	365	(489)			X
Samsung	SE 240 LC-3	51,000	132	(177)	X		
	SE 280 LC-3	62,000	132	(177)	X		
	SE 350 LC-2	78,000	184	(246)	X	X	
	SE 450 LC-2	97,000	221	(296)		X	

Tunneling

ETH 50

mounted to a CAT 245 excavator, for “true to profile“ milling of overdimensions from shotcrete in the Engelberg tunnel near Stuttgart, Germany.

ETH 50

mounted to a CAT 350 excavator, for profiling the side walls down to the mounting position of the concrete segments and for profiling the tunnel roof section in hard shale and limestone for a project of the University of Minneapolis, U.S.A.

ETH 50

mounted to a Broyt X600D front shovel excavator, for “true to profile“ milling of over-dimensions from shotcrete in the Rennsteigtunnel of the Thuringian Forest in Germany

ETH 30

mounted to a LIEBHERR 932 excavator tunnel-type, for milling thin-bedded marl and shale for driving the Sieberg tunnel near St.Valentin, Austria (high-speed railway Vienna-Salzburg).

Trenching

ETH 30

mounted to an Liebherr R 934 excavator, turned through 90°, for milling a 27 ½'' wide trench from layers of asphalt, concrete and hard compact sandstone.

ETH 50

mounted to a HITACHI EX 400 excavator, turned through 90°, for milling a 32’’ wide trench in Swiss Jura (hard limestone) in Switzerland.

Trenching

ETH 30
mounted to an ATLAS 1804 excavator, for milling a 6 ft wide trench from hard compact sandstone.

ETH 30

mounted to an O&K RH 9 excavator, for milling a 7 ft wide trench from layers of asphalt, concrete and hard compact sandstone

Demolition

ETH 30

mounted to a Komatsu PC 240 excavator, for **low-vibration** demolition of bridge piles without destroying the historical masonry.

ETH 50

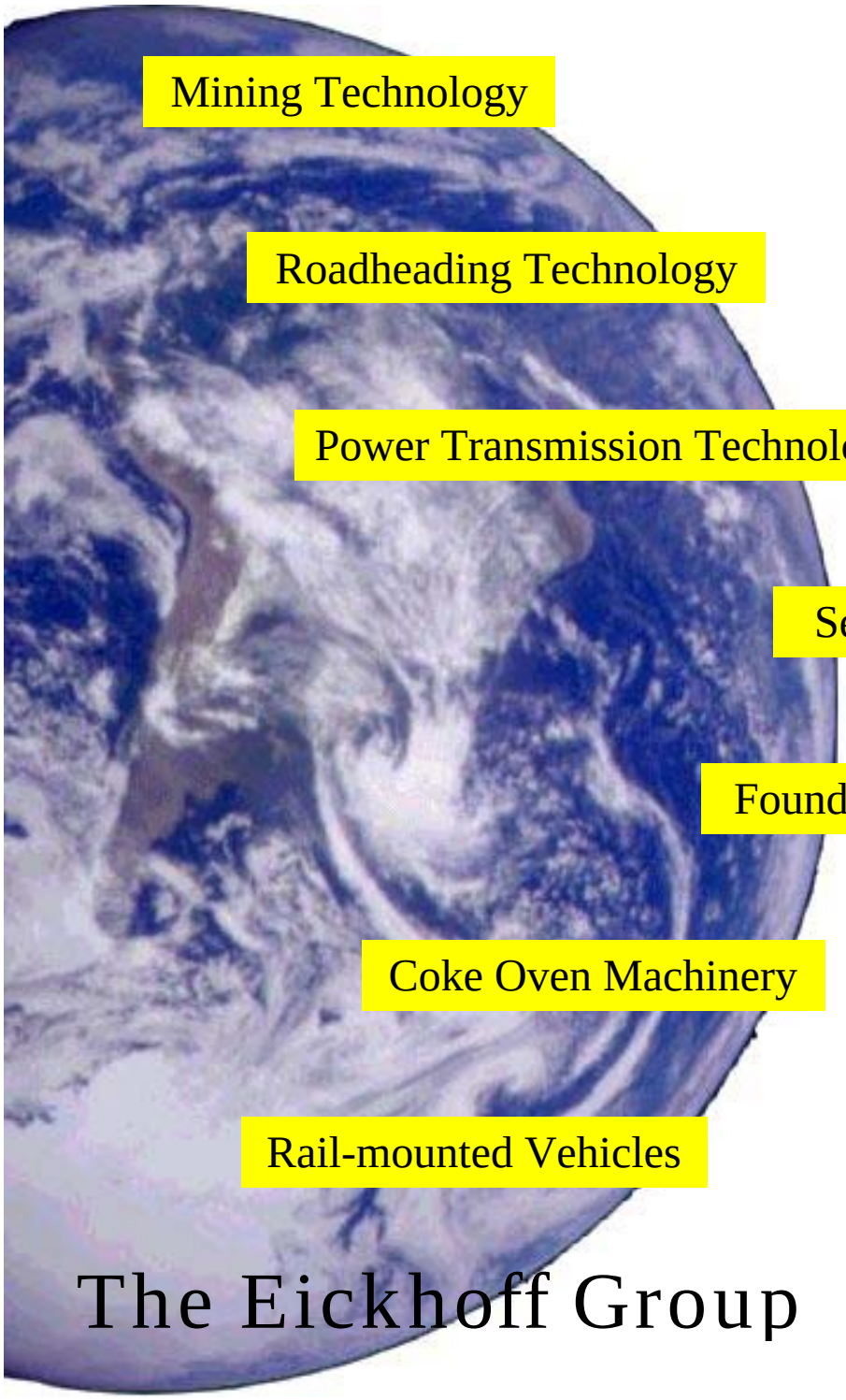
mounted to an O&K RH 20 excavator, for **low-noise** demolition of an air-raid shelter in the city of Dortmund, Germany.

Hydraulic Engineering

ETH 30
mounted to an O&K RH 9 excavator, for demolishing a bridge foundation under water.

ETH 200

mounted to a LIEBHERR 984 excavator, for milling the river bed to lower the navigable water way of the river Saar in Germany.



Mining Technology

Roadheading Technology

Power Transmission Technology

Service

Foundry

Coke Oven Machinery

Rail-mounted Vehicles

The Eickhoff Group

QUALITY SYSTEM

certified by DQS according to
DIN EN ISO 9001 Reg. No. 2298

Eickhoff
Bergbautechnik GmbH

Hunscheidtstrasse 176
D-44789 Bochum • Germany
Phone: +49 234. 975-0
Fax: +49 234. 975-2040
e-mail: vt@eickhoff-bochum.de
Internet: www.eickhoff-bochum.de