HADEF®

EC DIRECTIVE
2014/34/EU

INFORMATION AND GUIDELINES

Trust
in years of experience

Our Expertise:

The complete range
of lifting equipment
for your hazardous areas

- Manual hoists
- Electric chain hoists
- Pneumatic chain hoists
- Electric winches
- Pneumatic winches
- Cranes



Certified quality management system in accordance with ISO 9001

EC DIRECTIVE 2014/34/EU

ALWAYS TECHNICALLY UP TO DATE



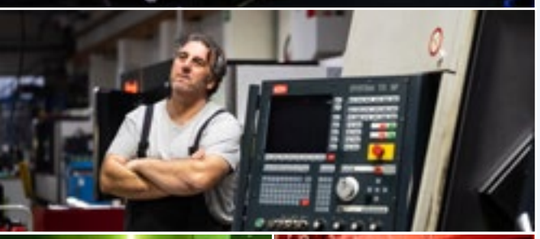


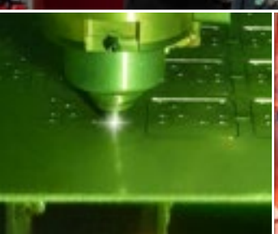














HADEF® and IECEx

IECEx stands for „International Electrotechnical Commission System for Certification to Standards Relating to Equipment for Use in Explosive Atmospheres“.

This is an international certification system for equipment used in potentially explosive atmospheres areas. In comparison, *ATEX is a mandatory application restricted to Europe.*

IECEx, on the other hand, is an international certification accepted worldwide and regulates/standardizes the safety of Ex equipment. IECEx certification is based on standards developed by the International Electrotechnical Commission (IEC). Both systems aim to minimize the dangers of potential ignition hazards and protect human life by ensuring that equipment meets the required safety standards.

- Heinrich De Fries can supply hoists, winches and crane systems in accordance with the European ATEX certification system.

In the IECEx area, we can supply all electrical components in accordance with IECEx certification.

The complete hoist cannot be supplied with an IECEx certificate, as we supply our hoists in accordance with the European Machinery Directive and standards valid in Europe.

HADEF®

Your benefits:

- One contact person for your projects
- Individual and solution-oriented advice
- HADEF® engineering
- own manufacture on modern machines and a large vertical range of production
- Commissioning and service on-site
- After-sales service
- In-house training or at the dealer‘s premises



EXPLOSION PROTECTION

EC DIRECTIVE
2014/34/EU

MANUAL

Manual hoists acc. to ATEX	II 2G Ex h IIB T4 Gb II 2D Ex h IIIA T135°C Db	II 2G Ex h IIB T3 Gb II 2D Ex h IIIA T200°C Db
	**53/09 Ex** 800 kg — 9000 kg/3 **14/12 Ex** 500 — 10.000 kg/4	**16/12 Ex** ≥ 5.000 kg
	**19/90 Ex** 500 kg — 10.000 kg **22/90 Ex** 500 — 25.000 kg **20/94 AFR + AFH Ex** 500 — 25.000 kg	
	**27/12 HR, HH Ex** 500 — 10.000 kg/4	**26/12 HH Ex** ≥ 5.000 kg
	Low headroom **28/12 HR, HH Ex** 500 — 5.000 kg/2	Low headroom **28/12 HH Ex** ≥ 10.000 kg/2
	Ultralow headroom **29/12 HH Ex** 1.000 — 6.300 kg/4	Ultralow headroom **29/12 HH Ex** ≥ 10.000 kg/2

Manual Winches acc. to ATEX	II 3G IIC T3 Gc II 3D IIIC T200°C Dc	II 3G Ex IIC T4 Gc II 3D Ex IIIC T135°C Dc
	**194/17 Ex** 1.000 + 1.500 kg	
		**238/10 Ex** 250 — 7.500 kg

ELECTRIC AND PNEUMATIC

Electric chain Hoists acc. to ATEX	II 2G Ex IIB T4 Gb II 2D Ex IIIA T135°C Db
	**90/09 Ex** 250 — 60.000 kg
	Low headroom **92/15 Ex** 500 — 40.000 kg
	Ultralow headroom **91/09 Ex** 250 — 60.000 kg

pneumatic chain Hoists acc. to ATEX	II 2G Ex h IIB T4 Gb II 2D Ex h IIIA T135°C Db
	**70/06 Ex** 500 — 30.000 kg
	Low headroom **28/06 AP Ex** 500 — 40.000 kg
	Ultralow headroom **29/06 AP Ex** 1.000 — 60.000 kg

Electric Winches acc. to ATEX	II 2G Ex h IIB T4 Gb II 2D Ex h IIIA T135°C Db
	**93/18 E Ex** 1.000 — 3.200 kg
	**95/18 E Ex** 2.000 — 20.000 kg

pneumatic Winches acc. to ATEX	II 2G Ex h IIB T4 Gb II 2D Ex h IIIA T135°C Db
	**43/86 P Ex** 125 — 3.200 kg
	**42/87 P Ex** 500 — 10.000 kg

EXPLOSION PROTECTION

EC DIRECTIVE 2014/34/EU

MANUAL HOIST ACC. TO ATEX



Data sheet

14/12 Ex

- Reinforced safety catch of suspension and load hook
- Bolt for easy installation
- Lifetime guarantee for the brake mechanism[1]
- Low maintenance due to sintered brake linings
- High-quality surface treatment of the unpainted parts
- Rigid construction and steel housing
- Light hand chain pull

Capacity/ Chain falls	Load chain	Hand chain	Lift at 30 m hand chain	Hand chain pull	Weight at 3 m suspension height	Weight per m add. lift
kg	mm	mm	mm	N	kg (ca.)	kg (ca.)
500 | 1	5x15	4,8x22	1112	23	7,5	1,5
1000 | 1	6,3x19,1	5x25	690	28	13	1,8
1500 | 1	7,1x21		519	34	16	2,1
2000 | 1	8x24		423	35	23	2,3
3000 | 2	7,1x21		260	35	24	3,2
5000 | 2	9x27		151	33	41	4,4
7500 | 3	9x27		101	34	57	6,2
10000 | 4	9x27		76	35	66	7,9

- Should the sintered brake linings be worn, please return the ratchet wheel to us and we will send you free of charge a new ratchet wheel with sintered brake lining. Costs for installation of the new parts will not be refunded.

EXPLOSION PROTECTION

EC DIRECTIVE 2014/34/EU

MANUAL HOIST ACC. TO ATEX



Data sheet

53/09 Ex

- Encapsulated, automatic load pressure brake
- Reinforced safety latch of suspension and load hook
- Connecting bolt accessible from the outside facilitates hook replacement
- Lifetime guarantee for the brake mechanism[1]
- Longer maintenance intervals due to sintered brake linings
- Corrosion protection of components not painted
- Rigid construction and steel housing
- Easy handling thanks to reduced lever length and lightweight

Capacity/ Chain falls	Load chain	Low headroom dimension	Lever force	Weight	Weight per m additional lift
kg	mm	mm	kg	kg	kg
800 | 1	5,6x15,8	280	25	5,7	0,7
1600 | 1	7,1x20,1	335	30	8,0	11,1
2500 | 1	9x24,8	375	32	11,2	1,7
3200 | 1	10x28,1	395	32	15,0	2,3
6300 | 2	10x28,1	540	34	26,0	4,7
9000 | 3	10x28,1	680	35	40,0	7,0

- Should the sintered brake linings be worn, please return the ratchet wheel to us and we will send you free of charge a new ratchet wheel with sintered brake lining. Costs for installation of the new parts will not be refunded.

EXPLOSION PROTECTION

EC DIRECTIVE 2014/34/EU

MANUAL HOIST ACC. TO ATEX

19/90 Ex



- Integrated derailment and bumping protection
- Zinc-plated load bars, washers and locking nuts
- Excellent traverse travel ability due to wheels in ball bearing
- Adjustable to all standard beam sizes
- Manufactured in Germany

Capacity	Flange width from - to for load bar size	Flange width from - to for load bar size	Min. curve radius standard trolley		Min. curve radius modified trolley	Weight 1N	Weight 2N
kg	1N mm	2N mm	m		m [1, 2]	kg (ca.)	kg (ca.)
500	50 – 146	147 – 302	1 (standard)	0,5 (modified)	0,5 (modified)	4,1	4,5
1000	50 – 179	180 – 310	1,3		0,9	6,8	8,5
1500	50 – 173	174 – 316	1,5		0,9	7,8	9,9
2000	50 – 173	174 – 316	1,5		0,9	7,8	9,9
2500	66 – 186	187 – 310	5,0		1,3	16,6	19,9
3200	66 – 186	187 – 310	5,0		1,3	16,6	19,9
5000	74 – 182	183 – 310	5,0		1,8	31,5	39,4
6300	74 – 164	165 – 310	5,0		1,8	31,5	39,4
7500	119 – 189	190 – 310	6,0		2,25	69	71
10000	119 – 160	161 – 310	6,0		2,25	88	91

Data sheet

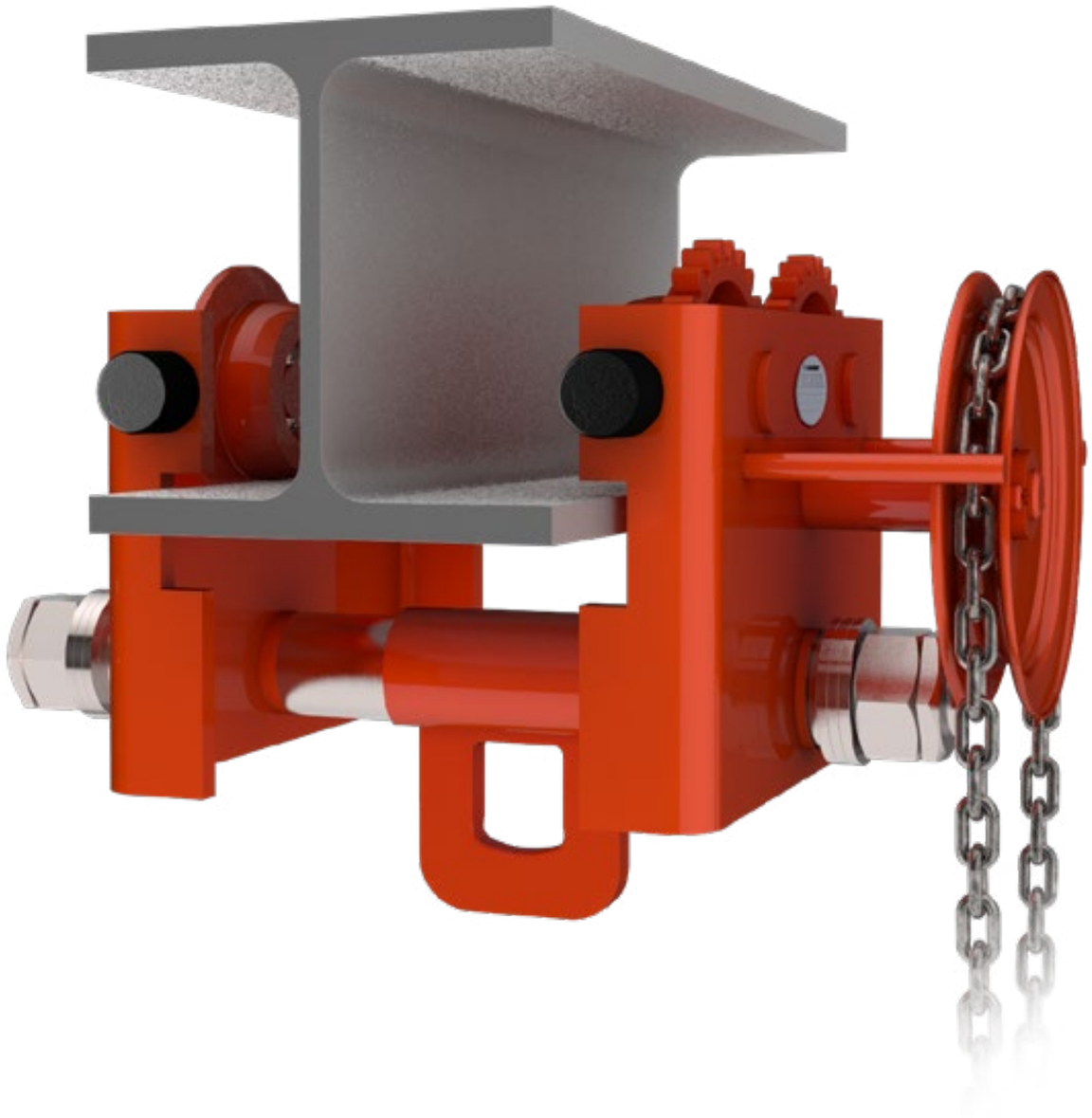
[1] As option for add. price | [2] Smaller curve radius with swivelling trolley

EXPLOSION PROTECTION

EC DIRECTIVE
2014/34/EU

MANUAL HOIST ACC. TO ATEX

22/90 Ex



- Integrated derailment and bumping protection
- Zinc-plated load bars, washers, and locking nuts
- According to DIN 15018
- Trolley wheels with ball bearing
- Incl. Rubber end stops
- Manufactured in Germany

Capacity	Flange width from - to for load bar size	Flange width from - to for load bar size	Travel distance at 30 m hand chain path	Hand chain pull	Weight 1N	Weight 2N
kg	1N mm	2N mm	m	daN (ca.)	kg (ca.)	kg (ca.)
500	50 – 146	147 – 302	7,8	6,5	6,3	7,8
1000	50 – 179	180 – 310	10,0	10,0	12,2	15,1
1500	50 – 173	174 – 316	10,0	15,0	17,0	20,7
2000	50 – 173	174 – 316	10,0	20,0	17,0	20,5
2500	66 – 186	187 – 310	6,5	12,0	32,1	34,5
3200	66 – 186	187 – 310	6,5	16,0	32,1	34,5
5000	74 – 182	183 – 310	6,3	17,0	56,7	61,5
6300	74 – 164	165 – 310	6,3	21,0	56,7	615
7500	119 – 189	190 – 310	6,4	21,0	104,0	116,6
10000	119 – 160	161 – 310	3,2	14,0	104,0	116,6
12500	130 – 310	-	4,8	17,0	241,0	-
16000	130 – 310	-	4,8	21,0	241,0	-
20000	160 – 310	-	3,7	17,0	297,4	-
25000	160 – 310	-	3,7	17,0	381,1	-

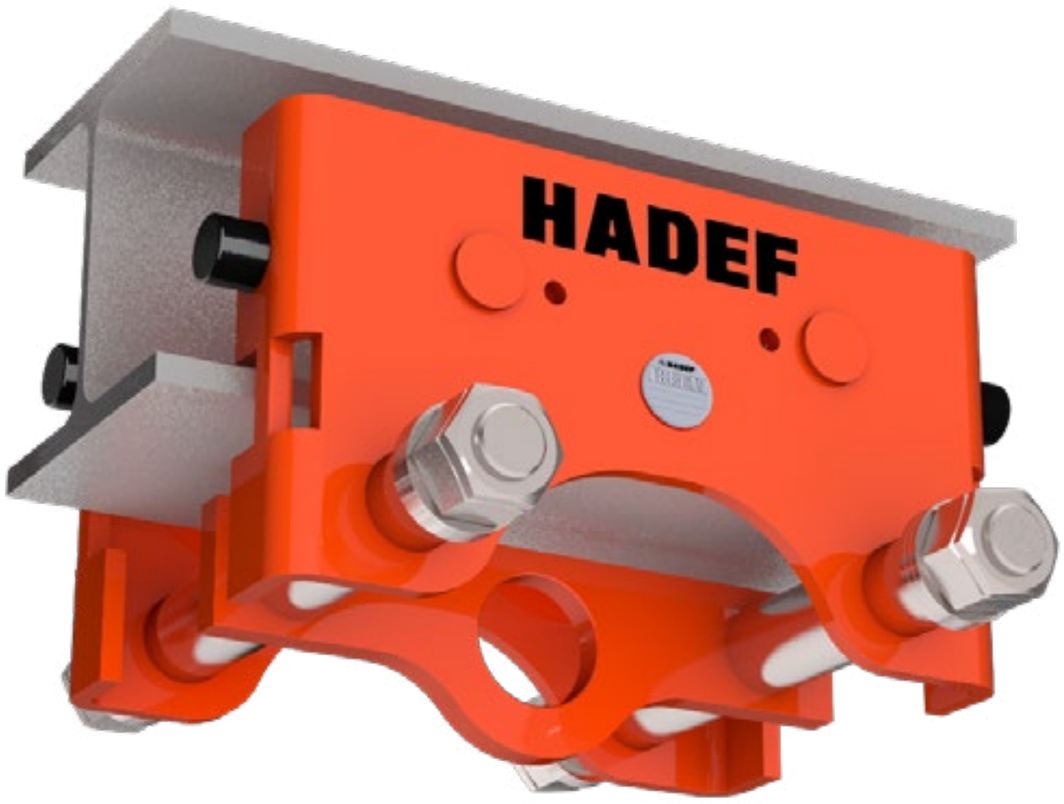
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EXPLOSION PROTECTION

EC DIRECTIVE 2014/34/EU

MANUAL HOIST ACC. TO ATEX

20/94 AFR Ex



- Integrated derailment and bumping protection
- Adjustable to all standard beam sizes
- Trolley wheels with ball bearing
- Zinc-plated load bars, washers, and locking nuts
- Manufactured in Germany

Capacity	Flange width from - to for load bar size	Flange width from - to for load bar size	Min. curve radius standard trolley		Min. curve radius modified trolley	Weight kg (ca.)	Weight kg (ca.)
kg	1N mm	2N mm	m		m [1,2]	1N	2N
500	50 – 146	147 – 302	3 (standard)	1 (modified)	1 (modified)	7,9	9,7
1000	50 – 179	180 – 310	3,0		1,0	13,3	14,3
2000	66 – 185	186 – 310	3,5		1,5	29,1	31,7
3200	74 – 196	197 – 310	6,5		1,8	58,3	62,5
4000	74 – 196	197 – 310	6,5		1,8	58,3	62,5
5000	74 – 192	193 – 310	7,0		2,0	74,7	78,6
6300	119 – 215	216 – 312	8,0		2,2	159,4	164,2
7500	119 – 215	216 – 312	8,0		2,2	159,4	164,2
10000	119 – 215	216 – 312	8,0		2,2	159,4	164,2
12000	119 – 215	216 – 312	8,0		2,2	159,4	164,2
15000	160 – 310	-	15,0		4,5	521,5	-
20000	160 – 310	-	15,0		4,5	521,5	-
25000	160 – 310	-	15,0		6,0 (modified)	745,2	-

Data sheet

[1] As option for add. price | [2] Smaller curve radius with swivelling trolley

EXPLOSION PROTECTION

EC DIRECTIVE 2014/34/EU

MANUAL HOIST ACC. TO ATEX

20/94 AFH Ex



- Integrated derailment and bumping protection
- Adjustable to all standard beam sizes
- Trolley wheels with ball bearing
- Load suspension eye
- Zinc-plated load bars, washers and locking nuts
- Manufactured in Germany

Capacity	Flange width from - to for load bar size	Flange width from - to for load bar size	Travel distance at 30 m hand chain path	Hand chain pull	min. curve radius standard trolley	Min. curve radius standard trolley	Weight kg (ca.)	Weight kg (ca.)
kg	1N mm	2N mm	m	da N	m	m [1,2]	1N	2N
500	50 – 146	147 – 302	9,9	4	3,0	1,0	9,2	11,0
1000	50 – 179	180 – 310	14,1	8	3,0	1,0	17,3	18,3
2000	66 – 185	186 – 310	14,1	12	3,5	1,5	33,5	36,1
3200	74 – 196	197 – 310	9,0	8	6,5	1,8	63,9	68,1
4000	74 – 196	197 – 310	9,0	10	6,5	1,8	63,9	68,1
5000	74 – 192	193 – 310	9,0	13	7,0	2,0	76,3	79,5
6300	119 – 215	216 – 312	6,3	10	8,0	2,2	164,8	169,6
7500	119 – 215	216 – 312	6,3	12	8,0	2,2	164,8	169,6
10000	119 – 215	216 – 312	6,3	15	8,0	2,2	164,8	169,6
12000	119 – 215	216 – 312	6,3	18	8,0	2,2	164,8	169,6
15000	160 – 310	-	6,6	20	15,0	4,5	525	-
20000	160 – 310	-	6,6	20	15,0	4,5	525	-
25000	160 – 310	-	6,6	21	15,0	6,0 (modified)	594	-

Data sheet

[1] As option for add. price | [2] Smaller curve radius with swivelling trolley

EXPLOSION PROTECTION

EC DIRECTIVE 2014/34/EU

MANUAL HOIST ACC. TO ATEX



Data sheet

27/12 HR HH Ex

- Incorporating a Spur Gear Hoist Type 14/12
- Lifetime guarantee for the brake mechanism*
- Low maintenance due to sintered brake linings
- Trolley wheels with maintenance-free ball bearings
- Zinc-plated load and hand chains, load chain acc. to EN 818-7
- Reinforced safety latch of suspension and load hook

Capacity/ Chain falls	Load chain	Flange width from - to for load bar size	Flange width from - to for load bar size	Lift at 30 m hand chain path	Hand chain pull for lifting	Hand chain pull for travel	Weight at 3 m track height	Weight per m add. lift
kg	mm	1N mm	2N mm	mm	da N [2]	da N [1]	kg	kg
500 | 1	5x15	50 – 146	147 – 302	1112,0	23,0	6,5	18,7	2,5
1000 | 1	6,3x19,1	50 – 179	180 – 310	690,0	28,0	10,0	27,5	2,8
1500 | 1	7,1x21	66 – 185	186 – 310	519	34,0	11,0	47,0	3,1
2000 | 1	8x24	66 – 185	186 – 310	423,0	35,0	15,0	54,0	3,3
3000 | 2	7,1x21	74 – 196	197 – 310	260,0	35,0	11,0	73,0	4,2
5000 | 2	9x27	74 – 192	193 – 310	151,0	33,0	17,0	96,0	5,4
7500 | 3	9x27	119 – 215	216 – 312	101,0	34,0	21,0	134,5	7,2
10000 | 4	9x27	119 – 215	216 – 312	76,0	35,0	21,0	143,5	8,9

* Should the sintered brake linings be worn, please return the ratchet wheel to us and we will send you free of charge a new ratchet wheel with sintered brake lining. Costs for installation of the new parts will not be refunded.

[1] Hand chain for travel/ = 5x18,5 mm | [2] Hand chain for lifting/ = 4,8x22 mm (500 kg), 5x25 mm

EXPLOSION PROTECTION

EC DIRECTIVE 2014/34/EU

MANUAL HOIST ACC. TO ATEX



Data sheet

28/12 HR HH Ex | Low headroom

- Compact design, low headroom configuration
- Incorporating a Spur Gear Hoist 14/12 (from 10t/2 with 16/12)
- Trolley with two bad bars ensures excellent traverse travel ability
- Machined trolley wheels with roller bearings
- Zinc-plated load and hand chains
- Manufactured in Germany

Capacity/ Chain falls	Load chain	Flange width from - to for load bar size	Flange width from - to for load bar size	Lift at 30 m hand chain path	Hand chain pull for lifting	Hand chain pull for travel	Weight at 3 m track height	Weight per m add. lift
kg	mm	1N mm	2N mm	mm	da N	da N	kg	kg
500 | 1	5 x 15	100 – 185	186 – 310	1112,0	23,0	3,0	45,0	2,5
1000 | 1	6,3 x 19,1	110 – 196	197 – 310	690,0	28,0	4,0	96,0	2,9
1500 | 1	8 x 24	140 – 192	193 – 310	423,0	35,0	4,0	124,0	3,4
2000 | 1	8 x 24	140 – 192	193 – 310	423,0	35,0	5,0	124,0	3,4
3000 | 2	7,1 x 21	140 – 192	193 – 310	260,0	35,0	8,0	125,0	4,2
5000 | 2	9 x 27	155 – 215	216 – 312	151,0	33,0	7,0	218,0	5,6
10000 | 2[1]	13 x 36	150 – 189	190 – 310	74,0	31,0	14,0	435,0	9,8
15000 | 3[1]	13 x 36	150 – 189	190 – 310	50,0	33,0	8,0	730,0	13,6
20000 | 4[1]	13 x 36	220 – 310	-	37,0	35,0	11,0	780,0	17,4
25000 | 5[1]	13 x 36	220 – 310	-	30,0	37,0	14,0	950,0	21,2

[1] HH hand geared trolley/

EXPLOSION PROTECTION

EC DIRECTIVE 2014/34/EU

MANUAL HOIST ACC. TO ATEX



Data sheet

29/12 HR HH Ex | Ultralow headroom

- Compact design, low headroom configuration
- Incorporating a Spur Gear Hoist 14/12 (from 10t/2 with 16/12)
- Overload protection by slipping-clutch
- Excellent traverse travel ability
- Swivelling load hook with ball bearing from 5000 kg up
- Zinc-plated high quality RUD load chain acc. to EN 818-7-T
- Manufactured in Germany

Capacity/ Chain falls	Load chain	Flange width from - to for load bar size			Lift at 30 m hand chain path		Manual force at nominal load for lifting	Hand chain pull for travel	Weight at 3 m track height	Weight per m add. lift
					Lifting distance	Travel distance				
kg	mm	1N mm	2N mm	3N mm	mm	m	daN	daN	kg	kg
1000 | 2	5x15	74 – 150	151 – 220	221 – 310	556,0	7,8	25,0	9,0	75,0	3,1
2000 | 2	6,3x19,1	82 – 156	157 – 210	211 – 306	345,0	9,8	36,0	13,0	145,0	3,8
3200 | 2	8x24	106 – 223	224 – 310	-	212,0	6,3	42,0	10,0	225,0	4,8
5000 | 4	8x24	119 – 215	216– 312	-	106,0	6,5	35,0	12,0	370,0	7,6
6300 | 4	8x24	119 – 215	216 – 312	-	106,0	6,5	43,0	15,0	370,0	7,6
10000 | 2	16x45	155 – 310	-	-	35,0	4,0	19,0	28,0	1020,0	14,7
12000 | 2	16x45	155 – 310	-	-	35,0	4,0	19,0	28,0	1020,0	14,7
16000 | 4	16x45	185 – 310	-	-	17,5	4,0	19,0	28,0	1625,0	26,1
20000 | 4	16x45	185 – 310	-	-	17,5	4,0	19,0	28,0	1660,0	26,1
25000 | 4	16x45	185 – 310	-	-	17,5	4,0	19,0	28,0	1680,0	26,1
30000 | 6[1]	16x45	185 – 310	-	-	11,7	4,0	19,0	28,0	1850,0	26,1

[1] With 8 running wheels

EXPLOSION PROTECTION

EC DIRECTIVE
2014/34/EU

MANUAL WINCH ACC. TO ATEX

194/17 Ex



- Compact construction
- Adjustable crank with ergonomic grip
- Declutchable wire rope drum for fast unwinding of the wirerope
- Closed gearbox
- Maintenance-free bearing
- Load pressure brake with ratchet system
- Stainless Steel V2A 1.4301

Capacity		Wirerope		Wirerope storage	Rope length per crank turn	Crank effort	Weight without rope
First layer	Second layer	Ø	Nec. min. breaking load				
kg		mm	kN	m	mm	daN	kg
1000	614	8	34	33	20	11	27
1500	927	10	51	21	14	12	27,5

Data sheet

EXPLOSION PROTECTION

EC DIRECTIVE 2014/34/EU

MANUAL WINCH ACC. TO ATEX

238/10 Ex



- Robust, safe design
- Maintenance-free bearing
- Coating specification (RAL 1004, 240 µm `gem. ISO 12944, C5M)
- Adjustable crank handle
- Load pressure safety brake
- Closed gearbox IP 54

Capacity		Wirerope		Wirerope storage		Numb. of layers	Rope length per crank turn	Crank effort	Weight without rope
First layer	Top layer	Ø	Nec. min. breaking load	First layer	Top layer				
kg	kg	mm	kN				mm	da N	kg
1500	846	10	51	4	36	5	9	14	30
3000	1667	14	102	6	66	6	11 (5)	31 (14)	104
5000	3276	18	168	6	38	4	13 (3)	73 (14)	135

Data sheet

EXPLOSION PROTECTION

EC DIRECTIVE
2014/34/EU

ELECTRIC CHAIN HOIST ACC. TO ATEX



Data sheet

90/09 Ex | Low headroom

- Motor, terminal box and brake are flameproof enclosed
- Hoist- and trolley motor with PTC thermal sensor for temperature control
- Hoist protection by slipping clutch up to 5000 kg capacity (AK 4 – AK 8)
- Hoist protection by current cut-off from 5000 kg single chain fall up (AK 9 – AK 10)
- Low voltage control and phase monitoring relay
- Operating switch lifting/lowering and limit switch for trolley movement
- Two-speed push button pendant control with emergency stop

Capacity/ Chain falls	Lifting speed	Hoist motor output	Duty cycle	FEM 9.511 ISO 4301	Model	Flange width	
kg	m/min	kW	ED %			1N mm	2N mm
250 | 1	6,0/1,5	0,37/0,09	40/25	2 m/M5	AK 4002-1	50 - 173	174 - 316
500 | 2	3,0/0,7	0,37/0,09	40/25	2 m/M5	AK 4005-2	50 - 173	174 - 316
500 | 1	14,1/3,4	1,8/0,55	40/25	2 m/M5	AK 4005-1	66 - 185	186 - 310
1000 | 2	4,0/1,0	1,8/0,55	40/25	2 m/M5	AK 6010-2	66 - 185	186 - 310
1000 | 1	8,0/2,0	1,8/0,55	40/25	2 m/M5	AK 6010-1	66 - 185	186 - 310
1600 | 1	8,0/2,0	2,8/0,7	40/25	2 m/M5	AK 7016-1	74 - 196	197 - 310
2000 | 2	4,0/1,0	1,8/0,55	40/25	2 m/M5	AK 6020-2	66 - 185	186 - 310
2000 | 1	12,8/3,1	4,8/1,4	40/25	2 m/M5	AK 8020-2	74 - 196	197 - 310
2500 | 2	4,0/1,0	2,8/0,7	40/25	2 m/M5	AK 7025-2	66 - 185	186 - 310
2500 | 1	7,7/1,8	4,8/1,4	40/25	2 m/M5	AK 8025-2	74 - 196	197 - 310
3200 | 2	4,0/1,0	2,8/0,7	40/25	2 m/M5	AK 7032-2	74 - 196	197 - 310
4000 | 2	6,4/1,6	4,8/1,4	40/25	2 m/M5	AK 8040-2	74 - 192	193 - 310
5000 | 2	3,8/0,9	4,8/1,4	40/25	2 m/M5	AK 8050-2	74 - 192	193 - 310
5000 | 1	4,8/1,2	4,8/1,4	40/25	2 m/M5	AK 9050-1	119 - 215	216 - 312
6300 | 1	4,8/1,2	4,8/1,4	40/25	1 Bm/M3	AK 9063-1	119 - 215	216 - 312
10000 | 2	2,4/0,6	4,8/1,4	40/25	2 m/M5	AK9100-2	119 - 215	216 - 312
12000 | 2	2,4/0,6	4,8/1,4	40/25	1 Bm/M3	AK 9120-2	119 - 215	216 - 312
15000 | 3	1,6/0,4	4,8/1,4	40/25	2 m/M5	AK 9150-3	131 - 221	222 - 312
20000 | 4	1,2/0,3	4,8/1,4	40/25	2 m/M5	AK 9200-4	160 - 310	-
25000 | 5	0,9/0,3	4,8/1,4	40/25	2 m/M5	AK 9250-5	160 - 310	-
30000 | 6	0,8/0,2	4,8/1,4	40/25	2 m/M5	AK 9300-6	160 - 310	-

- Travel speed: 8,0/6,0 m/min
- Trolley motor output: 0,3/0,21 kW. Ab 15t/3: 0,6 / 0,9 kW Ab 25t/5: 0,55 / 1,8 kW

EXPLOSION PROTECTION

EC DIRECTIVE
2014/34/EU

ELECTRIC CHAIN HOIST ACC. TO ATEX



Data sheet

92/15 Ex | Low headroom

- Motor, terminal box and brake are flameproof enclosed
- Hoist- and trolley motor with PTC thermal sensor for temperature control
- Hoist protection by slipping clutch up to 5000 kg capacity (AK 4 – AK 8)
- Hoist protection by current cut-off from 5000 kg single chain fall up (AK 9 – AK 10)
- Low voltage control and phase monitoring relay
- Operating switch lifting/lowering and limit switch for trolley movement
- Two-speed push button pendant control with emergency stop

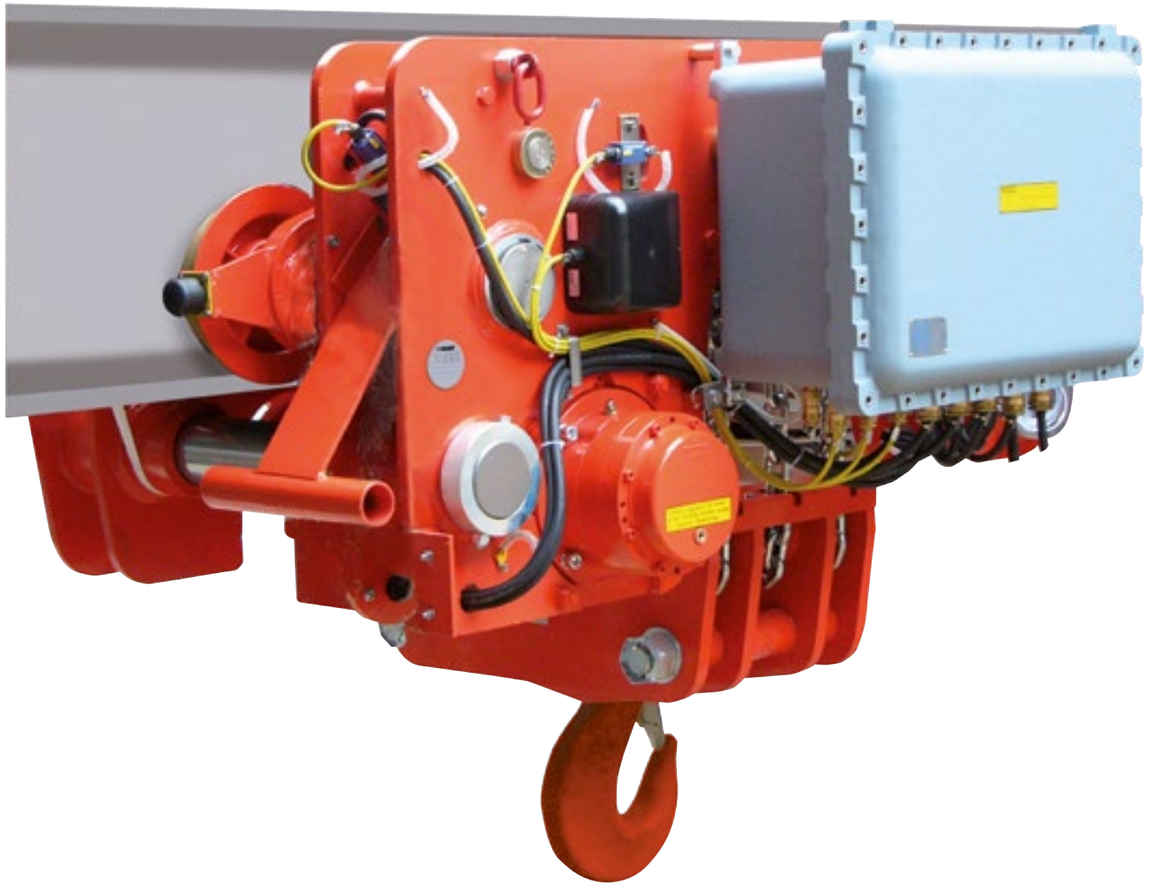
Capacity/ Chain falls	Lifting speed	Hoist motor output	Duty cycle	FEM 9.511 ISO 4301	Smallest hook size	Flange width	Model
kg	m/min	kW	ED%		mm	mm	
500 | 1	13,7/3,4	1,8/0,55	40/25	2m/M5	300	100 – 310	AK 6
1000 | 1	8,0/2,0	1,8/0,55	40/25	2m/M5	346	110 – 310	AK 6
1600 | 1	8,0/2,0	2,8/0,7	40/25	2m/M5	441	150 – 310	AK 7
2000 | 2	4,0/1,0	1,8/0,55	40/25	2m/M5	456	110 – 310	AK 6
2500 | 2	4,0/1,0	2,8/0,7	40/25	2m/M5	547	150 – 310	AK 7
2500 | 1	7,7/1,8	4,8/1,4	40/25	2m/M5	430	155 – 312	AK 8
3200 | 2	4,0/1,0	2,8/0,7	40/25	2m/M5	547	150 – 310	AK 7
5000 | 2	3,8/0,9	4,8/1,4	40/25	2m/M5	543	155 – 312	AK 8
5000 | 1	4,8/1,2	4,8/1,4	40/25	2m/M5	540	190 – 310	AK 9
6300 | 1	4,8/1,2	4,8/1,4	40/25	1Bm/M3	540	190 – 310	AK 9
10000 | 2	2,4/0,6	4,8/1,4	40/25	2m/M5	775	150 – 310	AK 9
12000 | 2	2,4/0,6	4,8/1,4	40/25	2m/M5	775	150 – 310	AK 9
15000 | 3	1,6/0,4	4,8/1,4	40/25	2m/M5	850	150 – 310	AK 9
20000 | 4	1,2/0,3	4,8/1,4	40/25	2m/M5	858	220 – 310	AK 9
25000 | 5	0,9/0,3	4,8/1,4	40/25	2m/M5	925	220 – 310	AK 9
30000 | 6	0,8/0,2	4,8/1,4	40/25	2m/M5	975	220 – 310	AK 9

- Travel speed: 8,0/6,0 m/min (Load capacities from 500 — 15000), 2x 8,0/6,0 m/min (Load capacities from 20000 — 30000)
- Hoist motor output: 0,3/0,21 kW (Load capacities from 500 — 12000), 0,9/0,6 (Load capacity 15000), 1,8/0,6 (Load capacity 20000 — 25000) 2x 0,9/0,6 (Load capacity 30000)

EXPLOSION PROTECTION

EC DIRECTIVE 2014/34/EU

ELECTRIC CHAIN HOIST ACC. TO ATEX



Data sheet

91/09 Ex | Ultralow headroom

- Motor, terminal box and brake are flameproof enclosed
- Hoist- and trolley motor with PTC thermal sensor for temperature control
- Hoist protection by slipping clutch up to 5000 kg capacity (AK 4 – AK 8)
- Hoist protection by current cut-off from 5000 kg single chain fall up (AK 9 – AK 10)
- Low voltage control and phase monitoring relay
- Operating switch lifting/lowering and limit switch for trolley movement
- Two-speed push button pendant control with emergency stop

Capacity/ Chain falls	Lifting speed	Hoist motor output	Duty cycle	FEM 9.511 ISO 4301	Model	Flange width	
kg	m/min	kW	ED%			1N mm	2N mm
1000 | 2	6,8/1,7	1,8/0,55	40/25	2m/M5	AK 6010-2	74 - 150	151 - 220
2000 | 2	4,0/1,0	1,8/0,55	40/25	2m/M5	AK 6020-2	82 - 156	157 - 210
2500 | 2	5,6/1,4	2,8/0,7	40/25	2m/M5	AK 7025-2	106 - 223	224 - 310
3200 | 2	4,0/1,0	2,8/0,7	40/25	2m/M5	AK 7032-2	106 - 223	224 - 310
5000 | 4	4,5/1,1	4,8/1,4	40/25	2m/M5	AK 8050-2	119 - 215	216 - 310
10000 | 2	2,4/0,6	4,8/1,4	40/25	2m/M5	AK9100-2	155 - 310	-
12000 | 2	2,4/0,6	4,8/1,4	40/25	1Bm/M3	AK 9120-2	155 - 310	-
20000 | 4	1,2/0,3	4,8/1,4	40/25	2m/M5	AK 9200-4	185 - 310	-
30000 | 6	0,8/0,2	4,8/1,4	40/25	2m/M5	AK 9300-6	185 - 310	-

- Travel speed: 8,0/6,0 m/min | Hoist motor output: 0,3/0,21 kW

EXPLOSION PROTECTION

EC DIRECTIVE 2014/34/EU

PNEUMATIC CHAIN HOIST ACC. TO ATEX



Data sheet

70/06 Ex | Low headroom

- Hoist protection by slipping clutch (AP 4-8)
- Overload protection by main air supply cut-off (AP 9)
- Indirect control/ pilot control
- AP 4 (APS/APR/APH) optionally with precision direct control, without add. price
- AP 4-9 - limit switch lifting/lowering
- Zinc-plated high quality RUD load chain acc. to EN 818-7-T with optimised tolerances

Capacity/ Chain falls	Load chain	Lifting speed lifting/ lowering	Hoist motor output	Model	FEM 9.511 ISO 4301	Air consumption 100%load/ lifting	Main air supply	Weight	
								3 m	+ 1 m lift
kg		m/min	kW			m³/min	Zoll (")	kg	kg
500 | 1	5,0 x 15,0	8,5/22,0	0,75	AP 405	2 m/M5	1,9	R ½“	65	0,6
1000 | 2	5,0x15,0	4,2/11,0	0,75	AP 410	2 m/M5	2,0	R ½“	75	1,0
1000 | 1	7,0 x 21,0	8,0/15,0	1,5	AP 610	2 m/M5	2,8	R ¾“	103	1,3
1600 | 1	9,0 x 27,0	7,0/16,0	2,5	AP 716	2 m/M5	3,2	R 1“	128	2,1
2000 | 2	7,0 x 21,0	4,0/7,5	1,5	AP 620	2 m/M5	2,8	R ¾“	107	2,5
2500 | 1	11,3 x 31,0	3,0/6,0	2,5	AP 820	2 m/M5	3,3	R 1“	(2)	(2)
3200 | 2	9,0 x 27,0	3,5/8,0	2,5	AP 732	2 m/M5	3,2	R 1“	135	3,9
5000 | 2	11,3 x 31,0	1,5/3,0	2,5	AP 850	2 m/M5	3,3	R 1“	(2)	(2)
5000 | 1	16,0 x 45,0	1,8/3,0	2,5	AP 905	2 m/M5	3,9	R 1“	280	6
6300 | 1	16,0 x 45,0	1,8/3,0	2,5	AP906	1 Bm/M3	3,9	R 1“	280	6
10000 | 2	16,0 x 45,0	0,9/1,4	2,5	AP 910	2 m/M5	3,8	R 1“	370	11,7
12000 | 2	16,0 x 45,0	0,9/1,4	2,5	AP 912	1 Bm/M3	3,8	R 1“	370	11,7
15000 | 3	16,0 x 45,0	0,6/0,9	2,5	AP 915	2 m/M5	4,1	R 1“	450	17,4
20000 | 4	16,0 x 45,0	0,5/0,7	2,5	AP 920	2 m/M5	4,2	R 1“	565	23,1
25000 | 5	16,0 x 45,0	0,4/0,5	2,5	AP 925	1 Bm/M3	4,2	R 1“	605	28,8
30000 | 6	16,0 x 45,0	0,3/0,5	2,5	AP 930	2 m/M5	4,3	R 1“	(2)	(2)

[1] With air pressure 6 bar

[2] on request

EXPLOSION PROTECTION

EC DIRECTIVE 2014/34/EU

PNEUMATIC CHAIN HOIST ACC. TO ATEX



Data sheet

28/06 AP Ex | Low headroom

- Hoist protection by slipping-clutch up to 5 t/2 chain falls
- Hoist protection by main air supply cut-off from 5 t /2 chain falls
- Pneumatique trolley with rubber end stops and travel speed 8,0 m/min
- Incl. operating limit switch (lifting/lowering)
- Manufactured in Germany

Capacity/ Chain falls	Load chain	Flange width from - to for load bar size		Travel distance at 30 m hand chain path	Hand chain pull for travel	Duty group FEM 9.511 ISO 4301	Weight	
							3 m	+ 1 m lift
kg	mm	1N mm	2N mm	m	daN		kg	kg
500 | 1	5,0 x 15,0	100 – 185	186 – 310	14,1	3	2 m/M5	100	0,8
1000 | 1	7,0 x 21,0	110 – 196	197 – 310	9,0	4	2 m/M5	135	1,3
1600 | 1	9,0x 27,0	150 – 192	193 – 310	9,0	4	2 m/M5	180	2,1
2000 | 2	7,0 x 21,0	110 – 196	197– 310	9,0	5	2 m/M5	170	2,5
2500 | 1	11,3 x 31,0	155 – 215	216 – 312	6,3	6	2 m/M5	190	3,1
3200 | 2	9,0 x 27,0	150 – 192	193 – 310	9,0	8	2 m/M5	185	3,9
5000 | 2	11,3 x 31,0	155 – 215	216 – 312	6,3	7	2 m/M5	250	5,6
6300 | 1	16,0 x 45,0	190 – 164	165 – 310	6,3	1	1 Bm/M3	925	6,0
12000 | 2	16,0 x 45,0	150 – 189	190 – 310	3,2	14	2 m/M5	925	11,7
15000 | 2	16,0x 45,0	150 – 189	190 – 310	3,2	15	2 m/M5	980	11,7
20000 | 4	16,0 x 45,0	220 – 310	-	1,3	11	2 m/M5	1185	23,1
25000 | 5	16,0 x 450	220 – 310	-	1,3	14	2 m/M5	1610	28,8
30000 | 6	16,0 x 45,0	220 – 310	-	1,6	17	2 m/M5	1760	34,8
40000 | 2x4	16,0 x 45,0	220 – 310	-	1,6	22	2 m/M5	2520	46,2

EXPLOSION PROTECTION

EC DIRECTIVE 2014/34/EU

PNEUMATIC CHAIN HOIST ACC. TO ATEX



Data sheet

29/06 AP Ex | Ultralow headroom

- Ultralow headroom configuration
- Incorporating a Pneumatic Chain Hoist 70/06
- Hoist protection by main air supply cut-off from 10 t/4-strängig
- Hoist protection by slipping-clutch up to 10 t/2-chain falls
- Pneumatique trolley with rubber end stops and travel speed 8,0 m/min
- Limit switch, lifting/ lowering
- Manufactured in Germany

Capacity/ Chain falls	Load chain	Hook to hook dimension	Speed		Air supply	Air consump-tion [2]	Flange width	Weight	
			Lifting	Lowering				3 m	+ 1 m lift
kg	mm	mm	m/min	m/min	Zoll (")	m³/min	mm	kg	kg
1000 | 2	5,5 x 15	155	4,25	11,0	R ½"	2,0	74 - 310	135	2,3
2000 | 2	7,0 x 21	185	4,0	7,5	R ¾"	2,8	82 - 306	220	3,5
2500 | 2	9,0 x 27	213	2,1	6,5	R ¾"	3,2	106 - 310	240	4,9
3200 | 2	9,0 x 27	213	3,5	8,0	R 1"	3,2	106 - 310	250	4,9
5000 | 4	9,0 x 27	276	1,75	4,0	R 1"	3,3	119 - 310	420	8,5
6300 | 4	9,0 x 27	276	1,6	4,4	R 1"	3,4	119 - 310	420	8,5
10000 | 4	16,0 x 45	305	0,75	1,5	R 1"	3,5	119 - 310	(1)	(1)
10000 | 2	16,0 x 45	380	0,9	1,4	R 1"	3,8	155 - 310	1060	13,7
12000 | 2	16,0 x 45	380	0,9	1,4	R 1"	3,8	155 - 310	1065	13,7
16000 | 4	16,0 x 45	407	0,5	1,0	R 1"	4,1	185 - 310	1665	29,0
20000 | 4	16,0 x 45	487	0,5	0,7	R 1"	4,2	185 - 310	1680	29,0
25000 | 6	16,0 x 45	560	0,4	0,5	R 1"	4,2	185 - 310	2380	42,0
30000 | 6	16,0 x 45	560	0,3	0,5	R 1"	4,3	185 - 310	2380	42,0
40000 | 2x4	16,0 x 45	710	0,7	1,1	R 1"	2x 4,2	300 - 400	(1)	56,0
50000 | 2x5	16,0 x 45	730	0,3	0,35	R 1"	2x 4,2	300 - 400	(1)	70,0

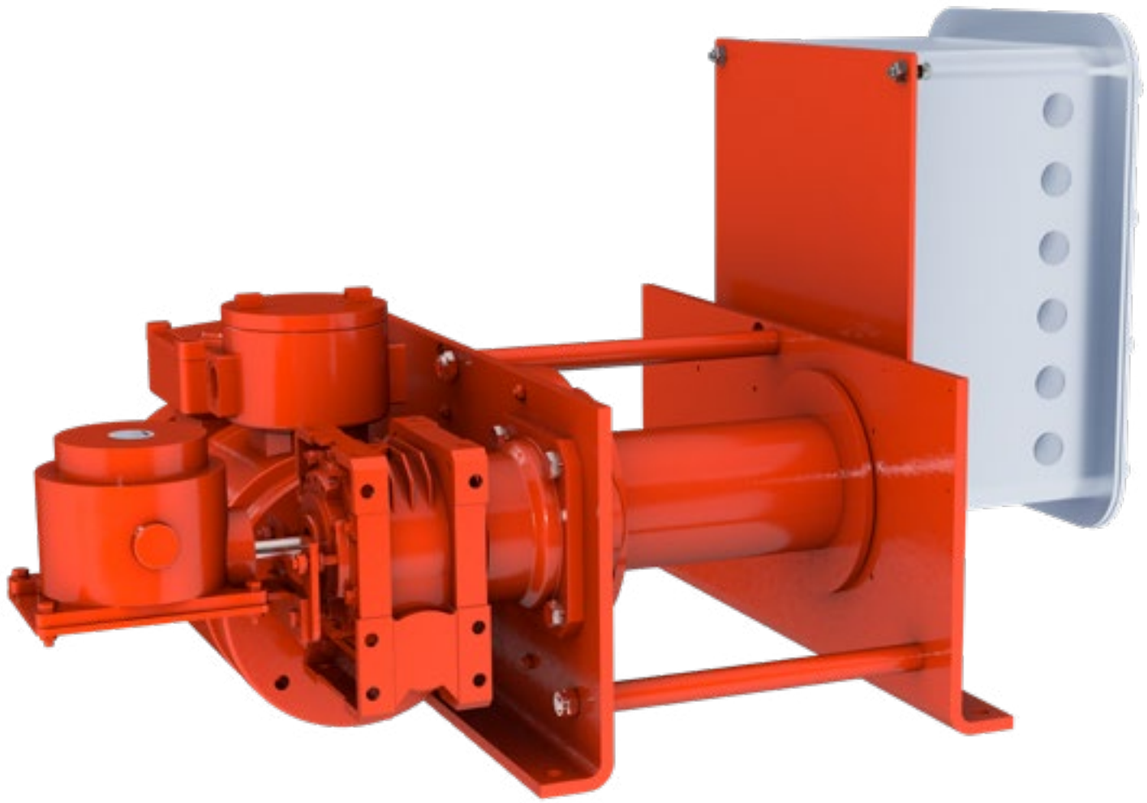
[1] On request/

[2] 6 bar 100% load lifting

EXPLOSION PROTECTION

EC DIRECTIVE 2014/34/EU

ELECTRIC WINCH ACC. TO ATEX



93/18 Ex

- Compact and robust construction
- Maintenance-free bearing
- Engine group according to FEM 9.111 / ISO 4301: 1Bm/M3
- Overload protection due to current cut-off
- Manufactured in Germany

Capacity	Wirerope storage (First layer)	Rope speed velocity (First layer)	Capacity (Top layer)	Wirerope storage (Top layer)	Rope speed velocity (First layer)	Rope layers (Number)	Required rope Ø	Required mini-mum breaking force	Drive unit group FEM 9.511	Engine power	Power con-sump-tion	Noise level
kg	m	m/min	kg	m	m/min		mm	kN		kW	A	dB(A)
1000	8,4 (6,8)	4,5	780	30 (29)	6,0	3	8	36	1Bm	1,5	3,3	79
2000	8 (6,3)	3,6	1560	30 (28)	4,6	3	11	70	1Bm	1,5	3,3	80
3200	9 (8)	3,5	2500	37 (36)	4,5	3	16	114	1Bm	3,0	7,0	80

Data sheet

- Three-phase current 400 V 50 Hz

EXPLOSION PROTECTION

EC DIRECTIVE 2014/34/EU

ELECTRIC WINCH ACC. TO ATEX



Data sheet

95/18 Ex

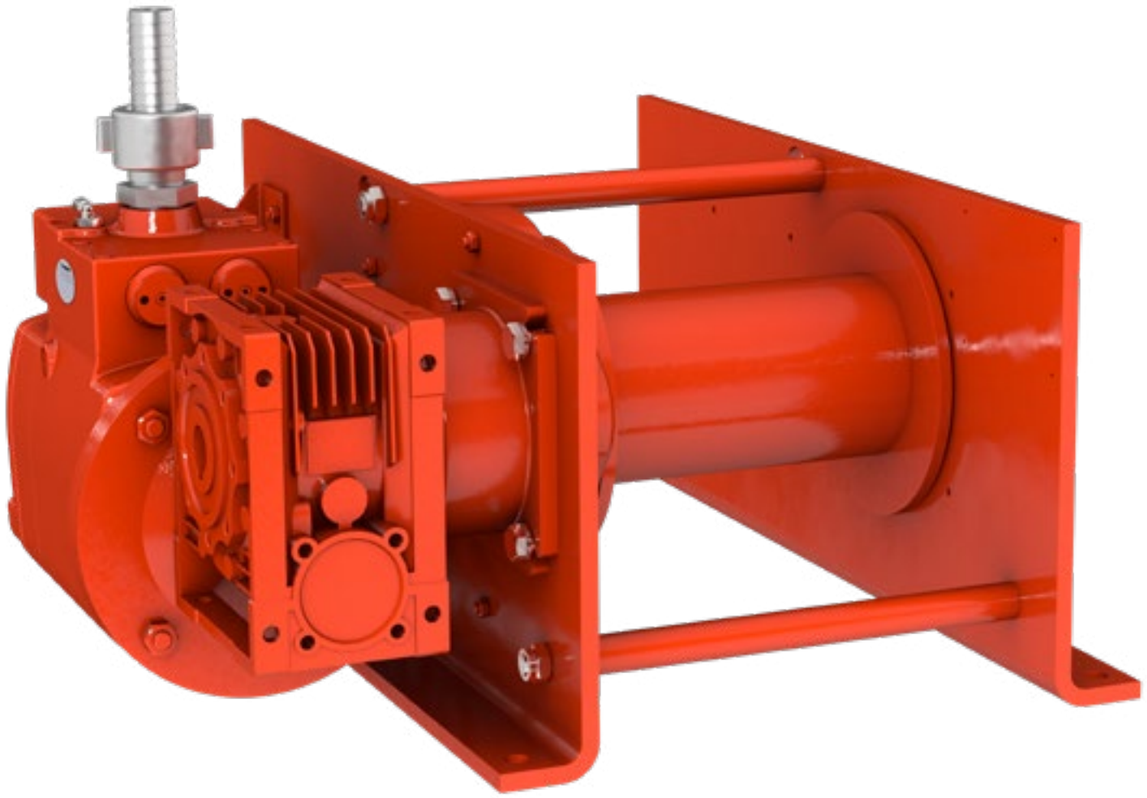
- Versions of our 93/18 Ex winch, but with additional capacities and speeds.
- Precision planetary gearbox (external for easy maintenance)
- Duty classification FEM selectable between 1Bm and 2m
- Large rope holder for all areas of application
- Rigid welded construction
- Manufactured in Germany

	Rope speed	Rope layer												
Capacity		1	kg	500	990/1000	2000	3200	4000	5000	6300	8000	10000	12500	16000	20000
		2		440	880	1750	2800	3500	4400	5500	7050	8800	11000	14000	17500
		3		390	790	1550	2500	3100	3900	4950	6300	7800	9900	12500	15500
		4		360	710	1400	2250	2800	3600	4450	5700	7100	9000	11400	14000
		5		330	650	1300	2050	2500	3200	4050	5200	6500	8200	10400	13000
Rope-Ø			mm	6	8	10	12	13	14	16	18	20	22	25	28
Rope holder (with ungrooved rope drum)		1	m	27	25	20	23	22	25	20	22	22	22	22	22
		2		58	56	45	52	49	55	52	50	50	52	47	50
		3		94	90	72	84	80	88	84	84	84	87	84	84
		4		132	128	103	120	112	126	120	120	120	122	120	120
		5		175	169	135	160	150	165	155	155	155	160	160	160
Rope speed	I	1	m/min	2,7/0,7	3,5/0,9	14,0/3,5	9,0/2,2	6,0/1,5	5,0/1,2	4,0/1	3,5/0,9	2,5/0,7	2,5/0,6	2,0/0,5	-
	II			6,2/1,6	8,0/2,0	23,0/5,5	12,0/3,0	11,0/2,5	8,0/2,0	7,0/1,7	5,5/1,3	4,0/1,0	3,5/0,9	2,5/0,6	2,0/0,5
	III			18,0/4,6	19,0/5,0	35,0/8,5	19,0/4,5	14,0/3,5	12,0/3,0	10,0/2,5	7,5/1,9	6,0/1,5	5,0/1,2	3,5/0,9	3,0/0,8
	I	2		3,1/0,8	3,9/1,0	16,0/4,0	10,0/2,5	7,0/1,7	6,0/1,5	5,0/1,2	4,0/1,0	3,0/0,8	2,7/0,6	2,0/0,5	-
	II			7,0/1,8	9,0/2,3	26,0/6,5	14,0/3,4	12,0/3,0	9,0/2,2	8,0/2,0	8,0/2,0	5,0/1,7	4,0/1,0	2,8/0,7	2,3/0,6
	III			20,0/5,2	22,0/5,6	10,0/40,0	22,0/5,5	16,0/4,0	14,0/3,5	12,0/3,0	9,0/2,2	7,0/2,3	6,0/1,5	3,8/0,9	3,3/0,8
	I	3		3,4/0,9	4,4/1,1	18,0/4,5	12,0/3,0	8,0/2,0	6,5/1,6	5,5/1,4	4,5/1,1	3,5/0,9	3,0/0,7	2,5/0,6	-
	II			7,8/1,9	10,0/2,5	30,0/7,5	16,0/4,0	14,0/3,5	10,0/2,5	8,5/2,1	6,5/1,6	5,5/1,3	4,5/1,1	3,2/0,8	2,7/0,7
	III			23,0/5,7	25,0/6,2	44,0/11,0	24,0/6,0	18,0/4,5	16,0/4,0	13,0/3,2	10,0/2,5	7,5/1,8	6,5/1,6	4,2/1,0	3,7/0,9
	I	4		3,7/0,9	4,9/1,2	20,0/5,0	13,0/3,2	9,0/2,2	7,0/1,7	6,0/1,5	5,0/1,2	4,0/1,0	3,2/0,8	2,7/0,6	-
	II			8,6/2,1	11,0/2,8	32,0/8,0	18,0/4,5	15,0/3,7	11,0/2,7	9,0/2,2	7,0/1,7	6,0/1,5	5,0/1,2	3,6/0,9	3,1/0,8
	III			25,0/6,3	27,0/6,9	50,0/12,5	28,0/7,0	20,0/5,0	18,0/4,5	14,0/3,5	11,0/2,7	8,0/2,0	7,0/1,7	4,6/1,1	4,1/1,0
	I	5		4,1/1,0	5,3/1,3	22,0/5,5	14,0/3,5	10,0/2,5	8,0/2,0	7,0/1,7	5,5/1,3	4,5/1,1	3,5/0,9	3,0/0,8	-
	II			9,4/2,3	12,0/3,0	36,0/9,0	20,0/5,0	16,0/4,0	12,0/3,0	10,0/2,5	8,0/2,0	7,0/1,7	5,5/1,3	4,0/1,0	3,5/0,9
	III			27,0/6,9	30,0/7,5	54,0/13,5	30,0/7,5	22,0/5,5	20,0/5,0	16,0/4,0	12,0/2,5	9,0/2,3	7,5/1,8	5,0/1,2	4,5/1,1
Engine power	I		kW	1,0/0,25	1,0/0,25	4,8/1,4	4,8/1,4	4,8/1,4	4,8/1,4	4,8/1,4	4,8/1,4	4,8/1,4	4,8/1,4	4,8/1,4	-
	II			1,0/0,25	1,8/0,4	9,0/2,2	9,0/2,2	9,0/2,2	9,0/2,2	9,0/2,2	9,0/2,2	9,0/2,2	9,0/2,2	9,0/2,2	9,0/2,2
	III			1,8/0,4	4,0/1,1	12,0/2,5	12,0/2,5	12,0/2,5	12,0/2,5	12,0/2,5	12,0/2,5	12,0/2,5	12,0/2,5	12,0/2,5	12,0/2,5
Power consumption	I		A	2,3/1,1	2,3/1,1	12,5/5,6	12,5/5,6	12,5/5,6	12,5/5,6	12,5/5,6	12,5/5,6	12,5/5,6	12,5/5,6	12,5/5,6	-
	II			2,3/1,1	5,3/2,5	21,0/7,5	21,0/7,5	21,0/7,5	21,0/7,5	21,0/7,5	21,0/7,5	21,0/7,5	21,0/7,5	21,0/7,5	21,0/7,5
	III			5,3/2,5	10,0/6,0	28,0/9,0	28,0/9,0	28,0/9,0	28,0/9,0	28,0/9,0	28,0/9,0	28,0/9,0	28,0/9,0	28,0/9,0	28,0/9,0
Req. min. breaking strength			kN	17	35	71	114	142	178	224	284	355	444	568	710
Max. noise level. ca.			dB (A)	70	70	70	70	70	70	70	70	70	70	70	70

EXPLOSION PROTECTION

EC DIRECTIVE 2014/34/EU

PNEUMATIC WINCH ACC. TO ATEX



Data sheet

43/86 P Ex

- Compact and robust design
- Maintenance-free ball bearings
- Duty classification acc. to FEM 9.511/ISO 4301:1Bm/M3
- Used in industry, mining and offshore
- Spring pressure disc brake
- Low noise emission
- Lightweight
- Manufactured in Germany

Capacity	Nr. of rope layers	Rope		Usable rope length [1]			Max. rope speed		Motor output at 6 bar	Air consumption at 6 bar	Air supply	Weight without rope
First layer [1]		Ø	Nec. minimum breaking load	First layer	Third layer	Fourth layer	Lifting	Lowering				
kg		mm	kN	m	m	m	m/min	m/min	kW	m³/min	Inch "	kg
250	4	4	9	6 (5) [1]	-	32 (24)	7,0	12,0	0,55	1,5	R ½	36
250	4	4	9	6 (5) [1]	-	32 (24)	12,0	18,0	0,75	1,5	R ½	45
500	4	6	18	5 (4) [1]	-	27 (24)	4,0	7,0	0,55	1,5	R ½	40
500	4	6	18	5 (4) [1]	-	27 (24)	8,0	16,0	0,75	1,5	R ½	50
500	4	6	18	5 (4) [1]	-	27 (24)	12,0	16,0	1,5	2,4	R ¾	68
990	3	8	36	7 (6) [1]	39 (35)	-	6,0	12,0	1,8	3,3	R ¾	110
1000	3	8	36	7 (5) [1]	54 (47)	-	6,0	12,0	1,8	3,3	R ¾	110
2000	3	11	70	6 (5) [1]	57 (50)	-	3,0	6,0	2,5	3,3	R 1	175

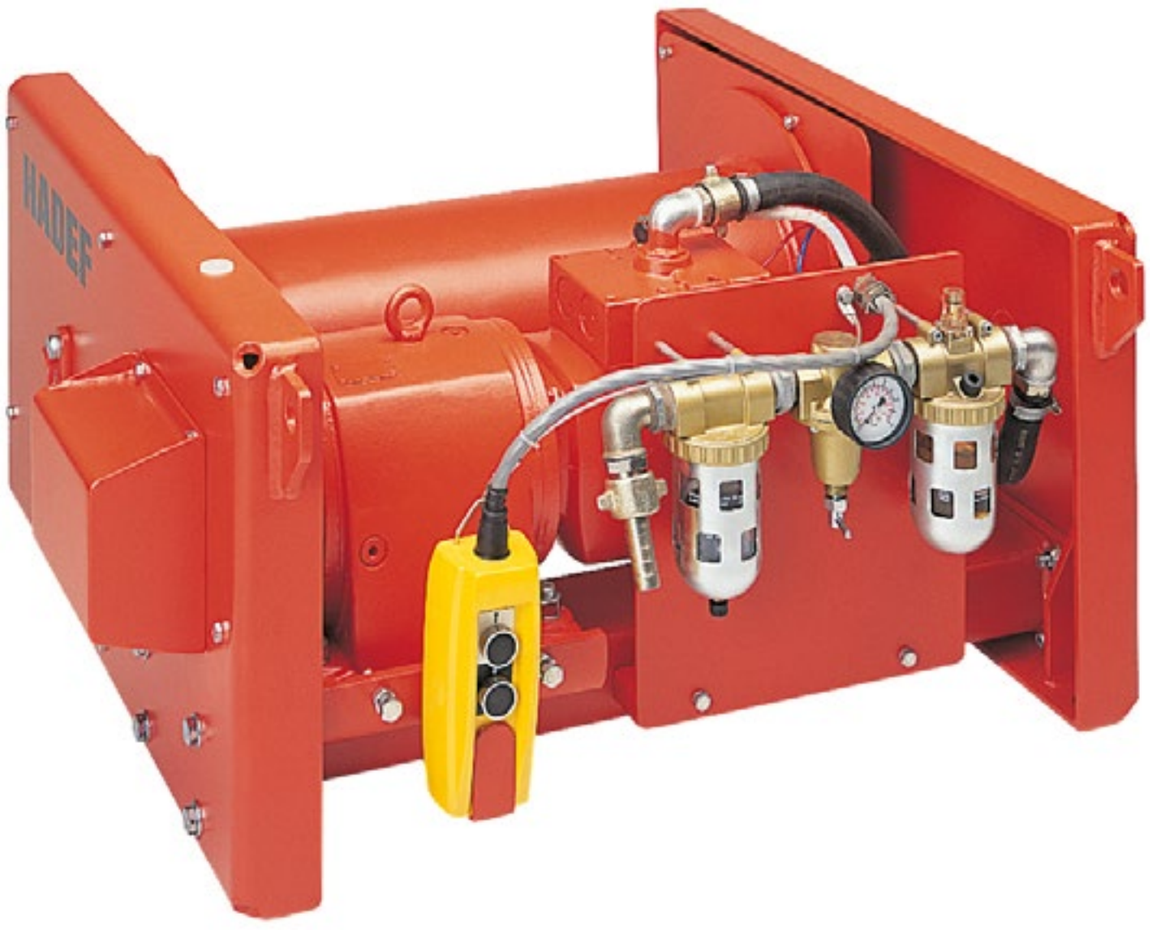
[1] With grooved rope drum

EXPLOSION PROTECTION

EC DIRECTIVE 2014/34/EU

PNEUMATIC WINCH ACC. TO ATEX

42/87 P Ex



- Robust design
- Maintenance-free ball bearings
- Used in industry, mining and offshore
- Duty classification acc. to FEM 9.111 / ISO 4301: 1Am/M4
- Spring pressure disc brake
- Low noise emission
- Manufactured in Germany

Pulling rope force		Nr. of rope layers	Rope		Usable rope length [1]		Max. rope speed		Motor output at 6 bar	Air consumption at 6 bar	Air supply	Weight without rope
First layer	Top layer		Ø	Nec. minimum breaking load	First layer	Top layer	Lifting	Lowering				
daN	daN		mm	kN	m	m	m/min	m/min	kW	m³/min	Inch "	kg
500	320	5	6	20	28 (24)	183 (179)	15,0	28	1,8	3,3	R ¾	75
990	650	4	9	40	30 (25)	151 (145)	10,0	17	1,8	3,3	R ¾	160
1000	650	4	9	40	30 (25)	151 (145)	10,0	17	1,8	3,3	R ¾	160
2000	1400	5	12	80	36 (30)	231 (226)	5,0	9	1,8	3,3	R ¾	260
3200	2000	5	16	128	35 (31)	234 (230)	7,0	12	5,0	5,4	R 1	440
5000	3200	5	20	200	39 (35)	263 (259)	5,0	9	5,0	5,4	R 1	600
7500	5000	5	24	300	54 (47)	358 (351)	3,0	5	5,0	4,4	R 1	1000
10000	6300	4	28	400	57 (50)	288 (282)	2,5	4	5,0	5,5	R 1	1320

Data sheet

[1] NWith grooved rope drum







EXPLOSION PROTECTION

EC DIRECTIVE 2014/34/EU

HOISTS - WINCHES - CRANES

HADEF® products in explosion-proof design

In mining, the chemical industry and various other branches, it may be necessary to use equipment for potentially explosive atmospheres. The escape of flammable gases, vapours, mists and dusts, in combination with an oxygen/air mixture, creates an explosive atmosphere. Inflammation causes an explosion, which can cause serious personal injury and property damage. For such applications HADEF® can offer a wide range of lifting equipment which are suitable for the following maximum operating conditions in EX areas

Manual- electric- and pneumatic powered equipment

- Equipment class II
- Equipment category for gas 2G and/or 3G
- Equipment category for dust 2D and/or 3D
- Zone 1,2 and 21,22
- Explosion group for gas IIB
- Temperature class T3 oder T4
- Explosion group for dust IIIA
- Temperature class 135°C oder 200°C

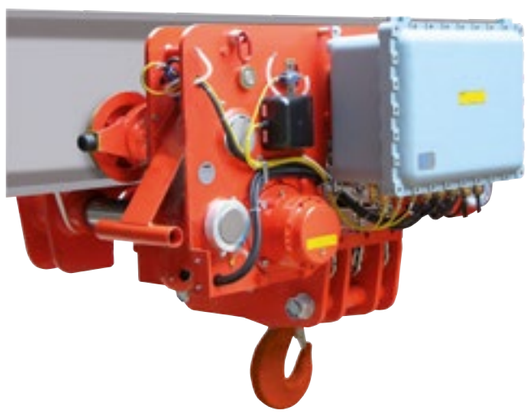
Exceptions are the IIB-gases:

Hydrogen sulphide, “ethylene oxide” , light metal and impact-sensitive dust.

Use with simultaneous occurrence of explosive atmospheres of gases AND dusts, so-called “hybrid mixtures” are not permitted!

The following equipment can be supplied:

- Spur gear hoists
- Ratchet lever hoists
- Manual winches
- Manual trolleys
- Manual cranes
- Electric hoists
- Electric winches
- Electric cranes
- Pneumatic hoists
- Pneumatic winches
- Pneumatic trolleys
- Pneumatic cranes





BASIC INFORMATION

EX ZONES

Hazardous areas are **divided into zones**. For zone classification, please refer to **IEC 60079-10 and national standards.** In the following table you will find an overview of the zone classification in relation to the equipment category.

Gas Mist Steam	Equipment category	Dust	Equipment category	Existing explosive atmosphere
Zone 0	1G	Zone 20	1D	permanently, long lasting or often
Zone 1	2G	Zone 21	2D	from time to time
Zone 2	3G	Zune 22	3D	seldom or for short time

EXPLOSION GROUP II GAS

The following temperature classes can classify combustible gases and steam according to their flammability.

Substance	Ignition point	Temperature class	Explosions group
Acetone	540° C	T1	IIA
Ammonia	630° C	T1	IIA
Benzol (pure)	555° C	T1	IIA
Ethanoic Acid	485° C	T1	IIA
Ethane	515° C	T1	IIA
Ethyl acetate	460° C	T1	IIA
City gas (lighting gas)	560° C	T1	IIB
Ethanol	425° C	T2	IIB
Heating oil	300° C	T3	IIA
Acetaldehyde	140° C	T4	IIA
Ethyl ether	180° C	T4	IIB
Acetylene	305° C	T2	IIC
Hydrogen sulfide	270° C	T3	IIB
Hydrogen	560° C	T1	IIC

EXPLOSION GROUP III DUST

Subdivision of group III:

IIIA	for flammable suspended particles
IIIB	for flammable suspended particles and non-conductive dust *ATTENTION:* *The operator is obliged to check whether the specified maximum surface temperature of 135°C of the HADEF® devices is lower than the ignition temperature of the existing dust.*
IIIC	for flammable suspended particles; non-conductive and conductive dust

TEMPERATURE CLASSES

The maximum surface temperature of the equipment must always be lower than the ignition temperature of the gas/steam/air mixture. Of course, equipment classified in a higher temperature class can be used within a lower temperature class as well. In practice gas/air mixtures do not occur for temperature class T5 and only occasionally for temperature class T6 for certain gas/air mixtures, such as carbon disulphide (IIC). Our devices are not classified into these temperature classes.

Temperature classes	Ignition temperature of gas	Max. surface temperature of the equipment
T1	> 450° C	450° C
T2	> 300° C < 450° C	300° C
T3	> 200° C < 300° C	200° C
T4	> 135° C < 200° C	135° C
T5	> 100° C < 135° C	100° C
T6	> 85° C < 100° C	85° C

EXPLOSION PROTECTION

EC DIRECTIVE 2014/34/EU

INFORMATION AND GUIDELINES

HADEF* information of lifting equipment for use in areas at risk from explosion

The directive applies to all industrial EX areas, including mining and dust explosion protection. The range of application extends to all electrical and non-electrical equipment and protection systems.

In addition to the essential safety requirements, the classification of equipment and protective systems into categories and their certification and labelling have also been revised.

The manufacturer is obliged to manufacture his equipment in accordance with the applicable directives, rules, standards and regurelations for explosion-protected equipment, classify it in EX classes and label it accordingly.

From 20.04.2016, EC Directive 2014/34/EU applies to placing explosion-protected equipment on the market. HEINRICH DE FRIES GMBH offers explosion-proof hoists according to these guidelines. Hoists, according to iECEx standards, are not supplied by **HADEF***.

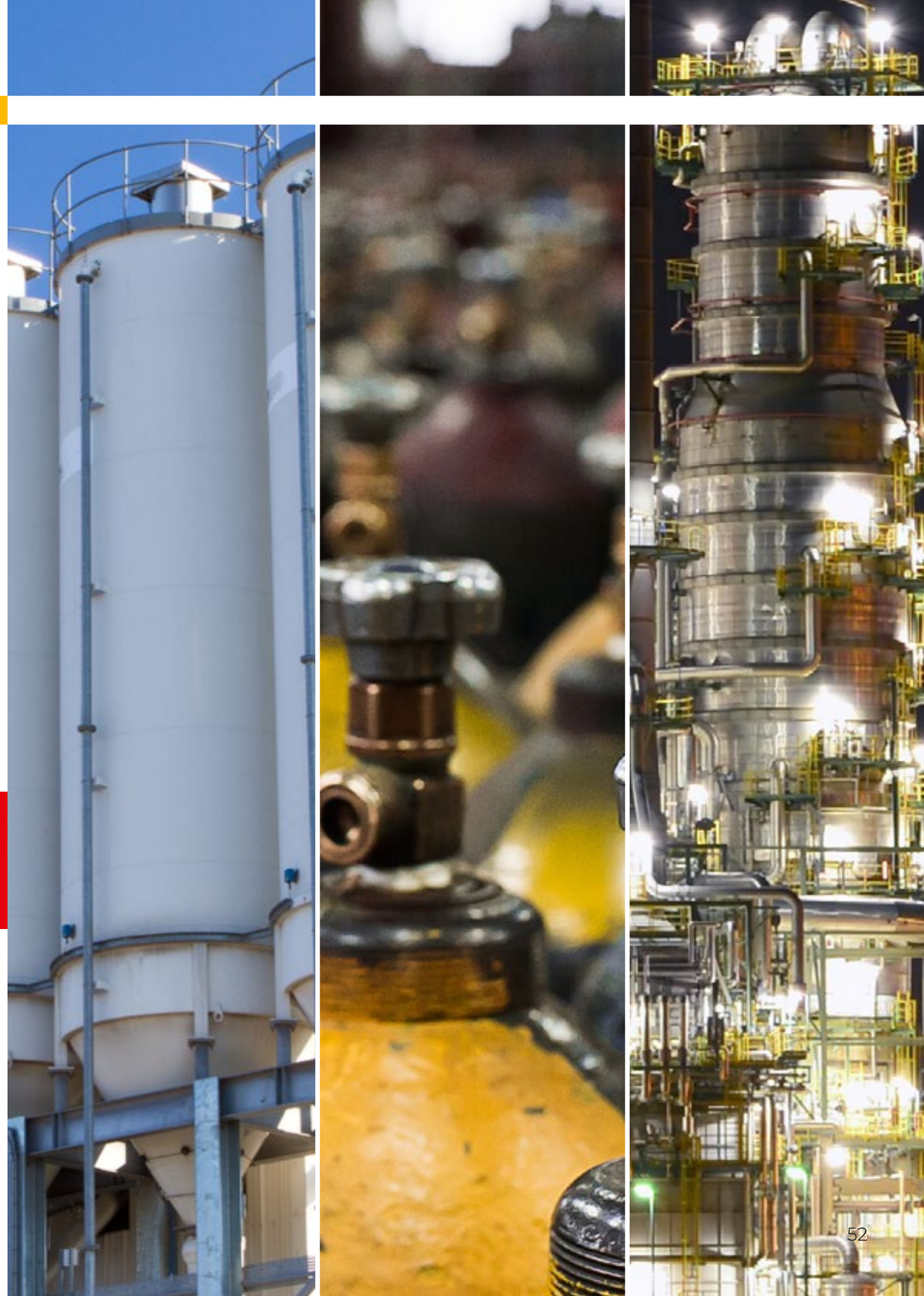
Only appropriately marked devices may be used in potentially explosive atmospheres. These areas are to be defined by the operator. The operator must also determine which device classifications are suitable for his applications. Lifting equipment manufactured by **HADEF*** for hazardous areas may only be used in the specified or a lower classification!

	Manual and pneumatic equipment	Electric equipment
Gases	Ex II 2G Ex h IIB T4 Gb Ex II 2G Ex h IIB T3 Gb Ex II 3G Ex h IIB T4 Gc	Ex II 2G Ex IIB T4 Gb Ex II 2G Ex IIB T3 Gb
Dust	Ex II 2D Ex h IIIA T135° C Db Ex II 2D Ex h IIIA T200° C Db Ex II 3D Ex h IIIA T135° C Dc	Ex II 2D Ex IIIA T135° C Db Ex II 2D Ex IIIA T200° C Db

Our sales department is available to answer your questions about which devices can be supplied in detail and for which EX classification.

It applies:

The standards, regulations and guidelines of the responsible authorities, e.g. the Employer's liability insurance association chemistry, concerning the use of equipment in hazardous areas, must be observed by the operator **before installation, assembly and operation of "hoists protected against the risk of explosion"!**



EXPLOSION PROTECTION

EC DIRECTIVE 2014/34/EU

INFORMATION AND GUIDELINES

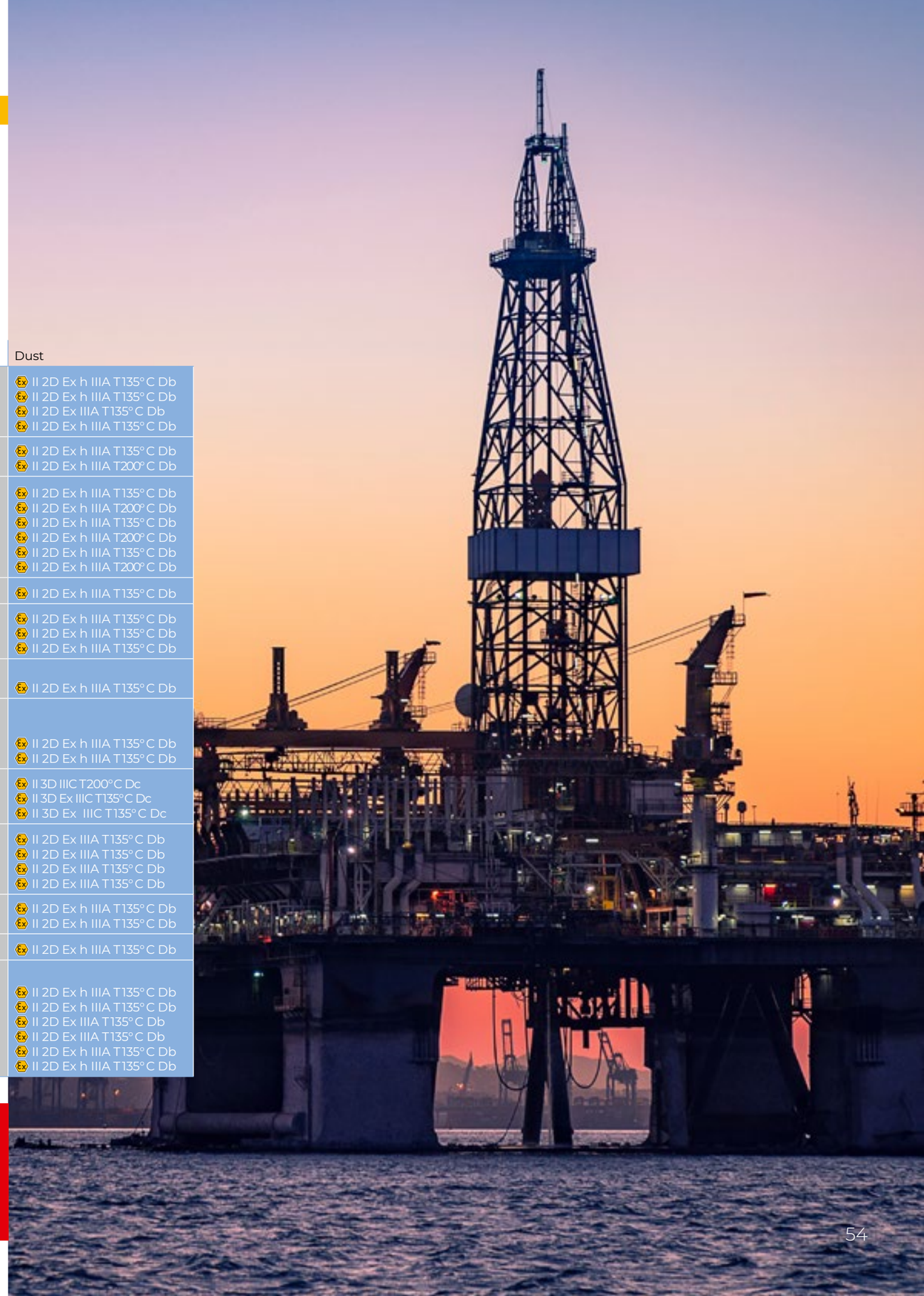
DEVICE SELECTION

HADEF® hoists must not be used in zones 0 and 20, just as in zones 1, 2, 21 and 22, with gases classified into group IIC and not with IIB gas „hydrogen sulphide“ and „ethylene oxide“ as well as light metal dust and impact-sensitive dust

In hazardous areas caused by combustible dusts, the maximum surface temperature mut not exceed 2/3 of the ignition temperature in °C of the dust/air mixture. The specifications for the temperature class on **HADEF**® hoists are based on an ambient Temperature range of -20°C and +40°C

			Gases		Dust
Trolleys	Push travel trolley Hand geared trolley Electric trolley Pneumatic trolley	19/90-EX, 20/94 AFR 32/20 R-EX 22/90-EX, 20/94 AFH 32/20 H-EX 22/90-E, 20/94 AFE -EX 20/94-AFP-EX	II 2G Ex h IIB T4 Gb II 2G Ex h IIB T4 Gb II 2G Ex IIB T4 Gb II 2G Ex h IIB T4 Gb		II 2D Ex h IIIA T135° C Db II 2D Ex h IIIA T135° C Db II 2D Ex IIIA T135° C Db II 2D Ex h IIIA T135° C Db
Spur gear hoists	Up to a capacity of 10 t/4 Up to a capacity of 5 t/1 bis 50 t/2x5	14/12 -EX 16/12 -EX	II 2G Ex h IIB T4 Gb II 2G Ex h IIB T3 Gb		II 2D Ex h IIIA T135° C Db II 2D Ex h IIIA T200° C Db
Spur gear hoists combined with trolley • low headroom • low headroom • ultralow headroom • ultralow headroom	Push-or hand geared trolley up to 10 t/4 Hand geared trolley 5 t/1 up to 25 t/5 Push- or hand geared trolley up to 5 t/2 Hand geared trolley 10t/2up to 10 t/2 bis 25 t/5 Hand geared trolley 10t/2up to 6,3 t/4 Hand geared trolley 10 t/2 bis 30 t/6	27/12 -EX 26/12 -EX 28/12 -EX 28/12 -EX 29/12 -EX 29/12 -EX	II 2G Ex h IIB T4 Gb II 2G Ex h IIB T3 Gb II 2G Ex h IIB T4 Gb II 2G Ex h IIB T3 Gb II 2G Ex h IIB T4 Gb II 2G Ex h IIB T3 Gb		II 2D Ex h IIIA T135° C Db II 2D Ex h IIIA T200° C Db II 2D Ex h IIIA T135° C Db II 2D Ex h IIIA T200° C Db II 2D Ex h IIIA T135° C Db II 2D Ex h IIIA T200° C Db
Lever Hoists	Up to a capacity of 0,8 t/1 bis 9 t/3	53/09 -EX	II 2G Ex h IIB T4 Gb		II 2D Ex h IIIA T135° C Db
Electric chain Hoists • low headroom • ultralow headroom	Stationary, push-, hand geared-, electric trolley Push-, hand geared- or electric trolley with push-, hand geared- or electric trolley	90/09 -EX 92/15 -EX 91/09 -EX	II 2G Ex IIB T4 Gb II 2G Ex h IIB T4 Gb II 2G Ex h IIB T4 Gb		II 2D Ex h IIIA T135° C Db II 2D Ex h IIIA T135° C Db II 2D Ex h IIIA T135° C Db
Pneumatic chain Hoists	Stationary and push-, hand geared- or electric trolley	70/06 -EX	II 2G Ex h IIB T4 Gb		II 2D Ex h IIIA T135° C Db
Pneumatic chain Hoists with trolley • low headroom • ultralow headroom	Push-, hand geared- or pneumatic trolley Hand geared- or pneumatic trolley	28/06 -EX 29/06 -EX	II 2G Ex h IIB T4 Gb II 2G Ex h IIB T4 Gb		II 2D Ex h IIIA T135° C Db II 2D Ex h IIIA T135° C Db
Manual Winches	Spur gear winch Worm gear winch Worm gear winch	194/17 238/10 -EX 260/23 -EX	II 3G IIC T3 Gc II 3G Ex IIC T4 Gc II 3G Ex IIC T4 Gc		II 3D IIIC T200° C Dc II 3D Ex IIIC T135° C Dc II 3D Ex IIIC T135° C Dc
Electric Winches	Liftboy	93/18E-EX 95/18E-EX 96/21E-EX 97/21E-EX	II 2G Ex IIB T4 Gb II 2G Ex IIB T4 Gb II 2G Ex IIB T4 Gb II 2G Ex IIB T4 Gb		II 2D Ex IIIA T135° C Db II 2D Ex IIIA T135° C Db II 2D Ex IIIA T135° C Db II 2D Ex IIIA T135° C Db
pneumatic Winches		43/86 -EX 42/87 -EX	II 2G Ex h IIB T4 Gb II 2G Ex h IIB T4 Gb		II 2D Ex h IIIA T135° C Db II 2D Ex h IIIA T135° C Db
Rope sheave block		108/22 -EX	II 2G Ex h IIB T4 Gb		II 2D Ex h IIIA T135° C Db
Cranes • manual • manual • elektric • elektric • pneumatic • pneumatic	OTC - Overhead travelling Cranes Underslung Cranes OTC - Overhead travelling Cranes Underslung Cranes OTC - Overhead travelling Cranes Underslung Cranes	EHH -EX EDHH -EX EEE -EX EDEE -EX EDD -EX EDDD -EX	III 2G Ex h IIB T4 Gb II 2G Ex h IIB T4 Gb II 2G Ex IIB T4 Gb II 2G Ex IIB T4 Gb II 2G Ex h IIB T4 Gb II 2G Ex h IIB T4 Gb		II 2D Ex h IIIA T135° C Db II 2D Ex h IIIA T135° C Db II 2D Ex IIIA T135° C Db II 2D Ex IIIA T135° C Db II 2D Ex h IIIA T135° C Db II 2D Ex h IIIA T135° C Db

The devices must not be used in zones 0 to 2 and in areas 20 to 22 if IIC or IIB gases, hydrogen sulphide and ethylene oxide, light metals, or impact-sensitive dusts are involved!



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This brochure does not claim to be exhaustive.
It is intended to provide an overview of the use of operating in the field of explosion protection. It does not replace the acquisition of specialised knowledge of the relevant legal and standards.
Subject to change without notice.

11 | 25