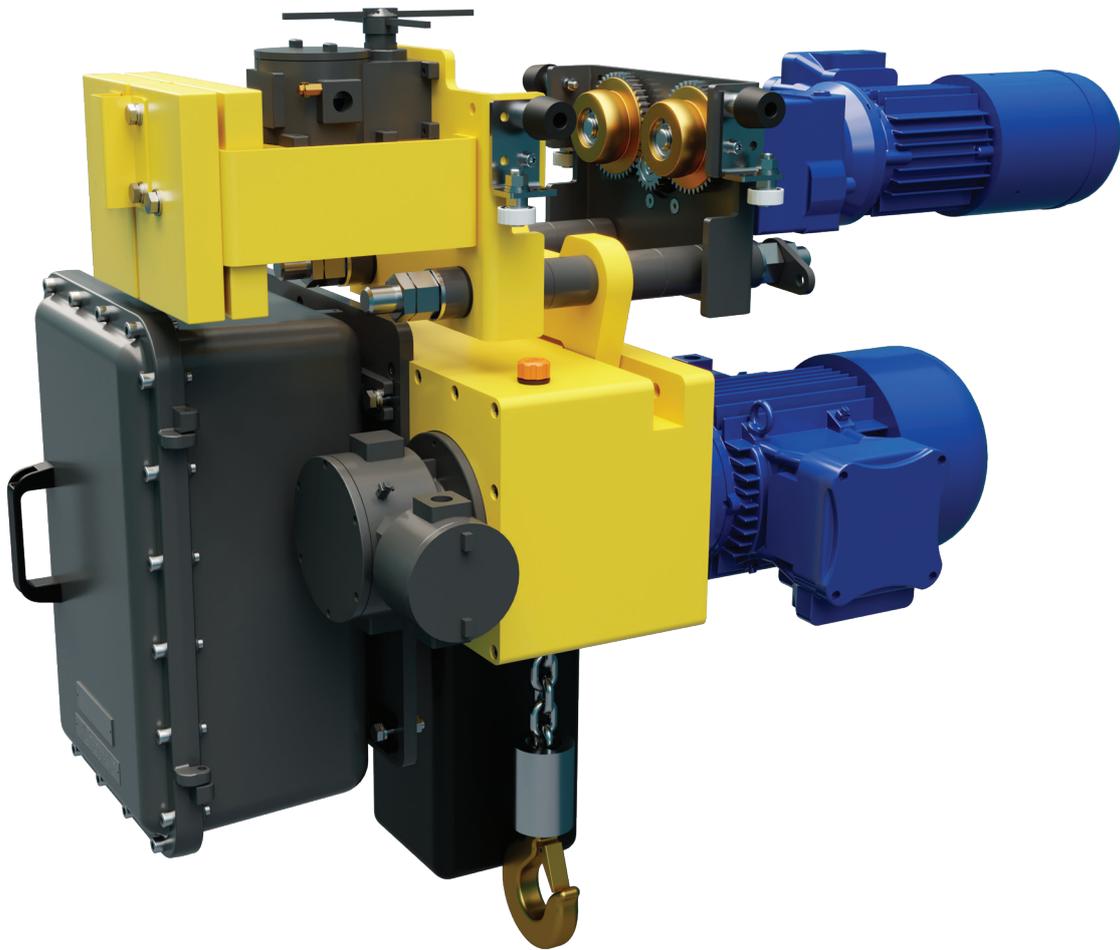




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EXPLOSION PROOF ELECTRIC CHAIN HOISTS



The way to lift your ideas

THE COMPANY

ETS is a Leading Company in the manufacturing of Lifting Devices dedicated to the OIL & Gas market both On-Shore & Off-Shore.

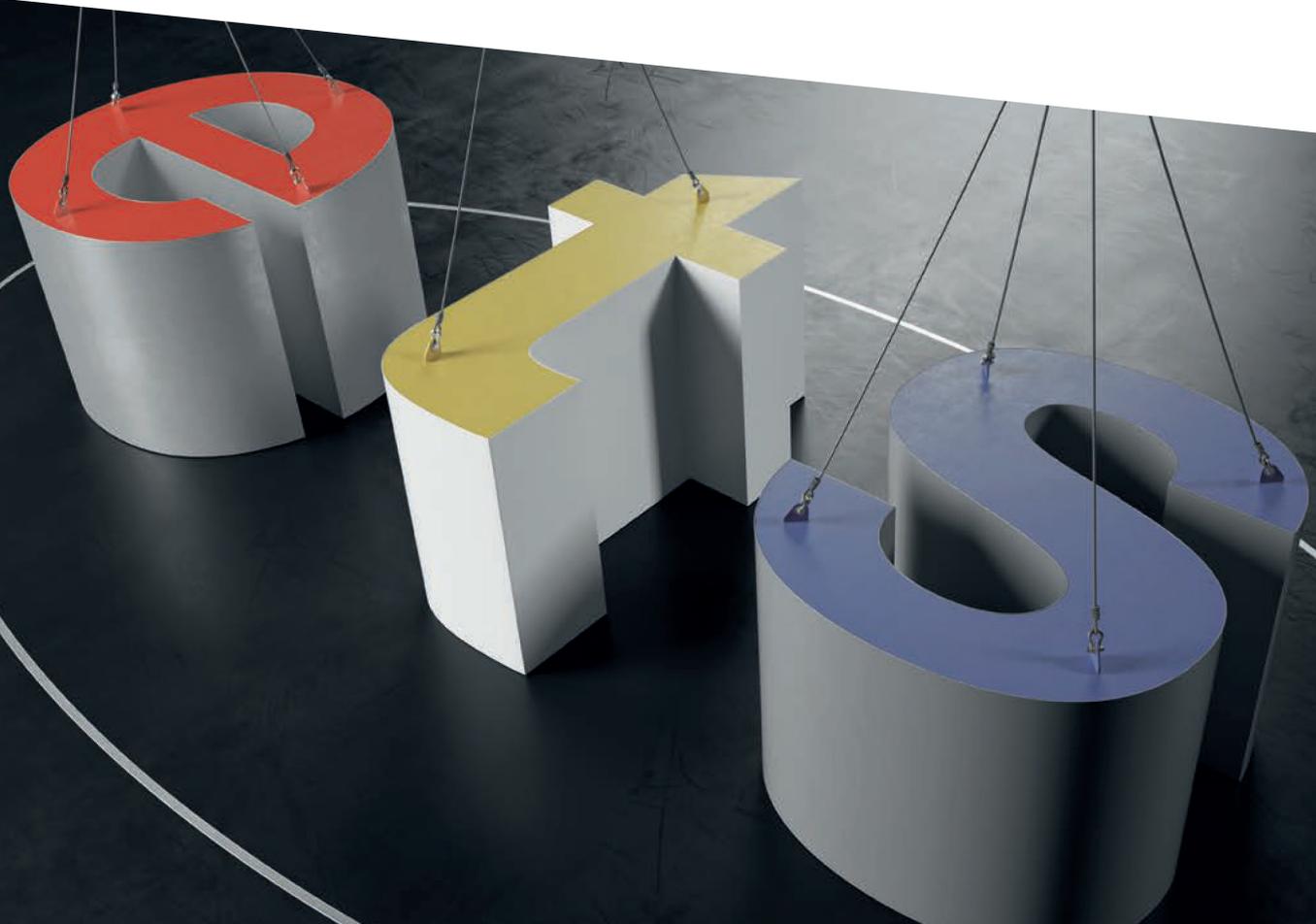
ETS main responsibility is towards the continuous improvement of the quality of the product with special attention to environment and safety.

Modern technologies, constant training and commitment are the key factors that complete the great experience matured in the lifting sector after more than 40 years of activities.

Each achievement is the lifeblood for a new challenge.

Commitment, expertise, flexibility, innovation make ETS one of the most fair and dynamic companies of this sector in Europe with thousands of projects awarded all over the world for all major EPC companies.

Follow us in our daily endeavor to study, design and realize for you THE WAY TO LIFT YOUR IDEAS.



QUALITY

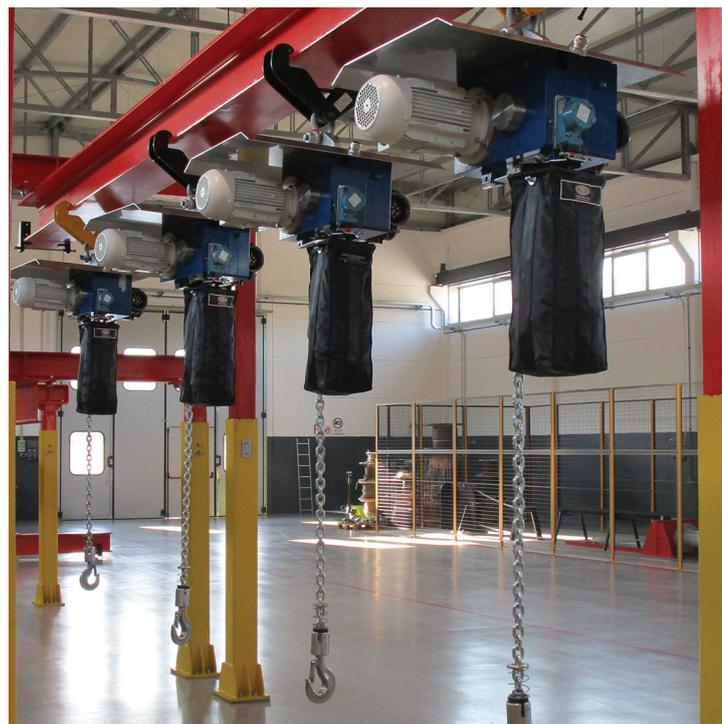


ETS Engineering Spa besides the design and production of cranes and hoists in accordance with Machine Directive 2006/42/EC, is also to design and produce cranes and hoists in accordance to European Directive Atex 2014/34/EU.

ETS is certified ISO 9001, ISO 14001 and OHSAS 18001 and notified through Bureau Veritas for the production of explosion-proof devices with deposit of Technical File of Risk Analysis as prescribed by the Annex VIII of Atex Directive.

All ETS products satisfy safety requirements for explosion-proof areas Group II and Category 2 a 3 (Zone 1 and Zone 2 for Gas plus Zone 21 and 22 for Dust).

The explosion-proof classification comply with Exd and Exd/e enclosure protection.



DIRECTIVE

Classification of Hazardous Areas

Directive 2014/34/EU applies from 26th February 2014 for devices and protective systems intended for use in potentially explosive areas. It replaces Directive 94/9/EC.

To determine the necessary safeguards in potentially explosive areas, these are divided into zones. Duration and frequency are key factors of the presence of potentially explosive atmospheres with gases and vapours, as well as with dusts.

ZONE		PROBABILITY OF AN EXPLOSIVE ATMOSPHERE
Gases	Dusts	
0	20	Very high - explosive atmosphere is continual or very frequent
1	21	High - explosive atmosphere is occasional
2	22	Low - explosive atmosphere rarely occurs

ETS Hoists comply with Zone 1 and Zone 2 for Gas as well as Zone 21 and Zone 22 for Dust



Explosion protection ETS Electric Chain Hoists

ETS products are entirely designed and manufactured in Italy using only high quality materials with full traceability and in compliance with the applicable directives. For ETS safety of operations comes first.

Our EX hoists fulfill the highest safety standards. They comply with the Atex Directive 2014/34/EU, the FEM regulations, the IEC 60079 standard and the European safety standards (EN).

Gas, mist and vapours

- Petro-Chemical industry
- Refineries
- Gas supply
- Pharmaceutical plant
- Wastewater treatment
- Distilleries
- Production plants
- Drilling and Off-Shore facilities

Dusts

- Silo plants
- Mills
- Wood processing
- Paint shops
- Grinding workshops
- Feed production plants
- Bulk materials
- Synthetic fibre production



FEATURES

Ex Base Features Electric Chain Hoist ECH

- 2 speeds hoisting motors (4:1)
- 2 speeds motor (4:1)
- Thermal protection for hoisting and travelling motors
- 2 steps limit switch
- Slip Clutch Friction
- Operating Temperature -20°/+40°C
- Hoisting Brake Manual Release in case of Power Failure
- Brakes Fails Safe Type
- Painting C5-I
- Working Mechanism Class M5
- Protection IP55 for Gas & IP66 for Dust
- 3.1 Certificate for Loading Chain and Hook
- Drawings in 3D files.
- Zinc Plated Load Chain
- Panels Marine Aluminum Type Copper Free
- Cables Glands Nickel Brass



Ex Options Electric Chain Hoist ECH

- Motors with fan IC411
- Type Tests on Motors
- Wireless Remote Control
- Load Cell for overload protection (on 2 chain falls version)
- Painting C5-M or Special based on Client's Specification
- Solid Bronze Wheels for trolley
- Hook Bronze coated
- Cables armoured type
- Operating temperature -40°C or +40°C
- Operating temperature +55°C
- Stainless Steel Load Chain
- Stainless Panels, Glands and Limit Switches
- VFD for traversing motor
- Articulated Trolley for traversing on cruved monorail
- Rack & Pinion System for Off-Shore applications
- Compliance to foreign regulations & standards (UL-NEMA, CSA, EAC, AS, NORSOK, IMMETRO, etc.)

Ex Zone 1-21

- ATEX 2G/D c Ex d IIC T4
- Completely closed, cooled with fan
- PTC thermistor
- Insulation class F, Protection rating IP55/IP66

Ex Zone 2-22

- ATEX 3G/D c Ex nA IIB T3
- Standard "nA" motor
- PTC thermistor
- Insulation class F, Protection rating IP55/IP66

Areas

GAS ZONES		
EX zone 1 II 2G	Gas group IIB	Temperature class T4 (135°C)*
EX zone 1 II 2G	Gas group IIC	Temperature class T4 (135°C)*
EX zone 2 II 3G	Gas group IIB	Temperature class T3 (200°C)*
EX zone 2 II 3G	Gas group IIC	Temperature class T3 (200°C)*
DUST ZONES		
EX zone 21 II 2D	Dust group IIIC	Temperature class T135°C*
EX zone 22 II 3D	Dust group IIIC	Temperature class T135°C*

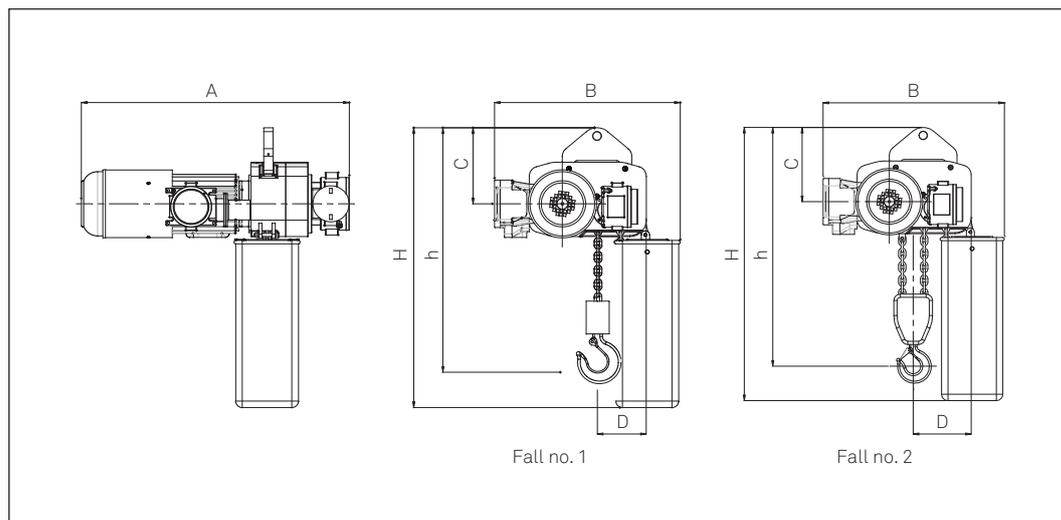
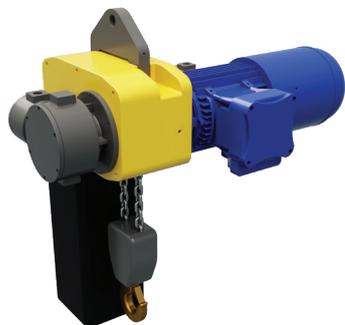


Product Line

MODEL	CAPACITY (kg)	ISO	LIFT (m)	%ED	HOISTING				TRAVERSING		
					Speed (m/min)		Motor kW x pole		Speed (m/min)		Motor kW x pole
					60Hz	50Hz	60Hz	50Hz	60Hz	50Hz	
ECH10-025-1	250	M6	3	40/20	9,6 10,4/2,5	8 8/2	0,75 -2P 1,1/0,30-2/8P	0,75 -2P 1,1/0,30-2/8P	19 25/6,3	16 20/5	0,25 x 2P 0,12/0,03 x 2/8P
ECH10-025-1	250	M6	3	40/20							
ECH10-050-1	500	M6	3	40/20	9,6 10,4/2,5	8 8/2	0,75 -2P 1,1/0,30-2/8P	0,75 -2P 1,1/0,30-2/8P	19 25/6,3	16 20/5	0,25 x 2P 0,12/0,03 x 2/8P
ECH10-050-1	500	M6	3	40/20							
ECH10-100-1	1000	M5	3	40/20	4,8 5/1,5	4 4/1	1,1 -4P 1,1/0,30-2/8P	0,75 -4P 1,1/0,30-2/8P	19 25/6,3	16 20/5	0,37 x 2P 0,36/0,06 x 2/8P
ECH10-100-1	1000	M5	3	40/20							
ECH10-160-2	1600	M4	3	40/20	2,4	2	2,2-4P	2,2-4P	19	16	0,37 x 2P
ECH10-200-2	2000	M4	3	40/20							0,37 x 2P
ECH20-160-1	1600	M5	3	40/20	4,8	4	2,2-4P	2,2-4P	19	16	0,37 x 2P
ECH20-160-2	1600	M5	3	40/20	2,4	2			25/6,3	20/5	0,36/0,06 x 2/8P
ECH20-200-1	2000	M5	3	40/20	4,8	4	2,2-4P	2,2-4P	19	16	0,37 x 2P
ECH20-200-1	2000	M5	3	40/20	5/1,6	4,2/1,3	1,8/0,6-4/12P	1,8/0,6-4/12P	25/6,3	20/5	0,36/0,06 x 2/8P
ECH20-100-2	2000	M5	3	40/20	2,4	2	2,2-4P	2,2-4P	25/6,3	20/5	0,36/0,06 x 2/8P
ECH20-250-2	2500	M4	3	40/20	2,4	2	2,2 -4P	2,2-4P	25/6,3	20/5	0,36/0,06 x 2/8P
ECH20-250-2	2500	M4	3	40/20	2,4/0,8	2/0,65	2,2/0,6-4/12P	2,2/0,6-4/12P	25/6,3	20/5	0,36/0,06 x 2/8P
ECH20-320-2	3200	M4	3	40/20	2,4	2	2,2-4P	2,2-4P	25/6,3	20/5	0,36/0,06 x 2/8P
ECH20-320-2	3200	M4	3	40/20	2,4/0,8	2/0,65	2,6/0,7-2/8P	2,6/0,7-2/8P	25/6,3	20/5	0,36/0,06 x 2/8P
ECH20-400-2	4000	M4	3	40/20	2,4	2	2,2-4P	2,2-4P	25/6,3	20/5	0,36/0,06 x 2/8P
ECH20-400-2	4000	M4	3	40/20	2,4/0,8	2/0,65	2,6/0,7-2/8P	2,6/0,7-2/8P	25/6,3	20/5	0,36/0,06 x 2/8P



Type ECH-F-10 Exd & Exn



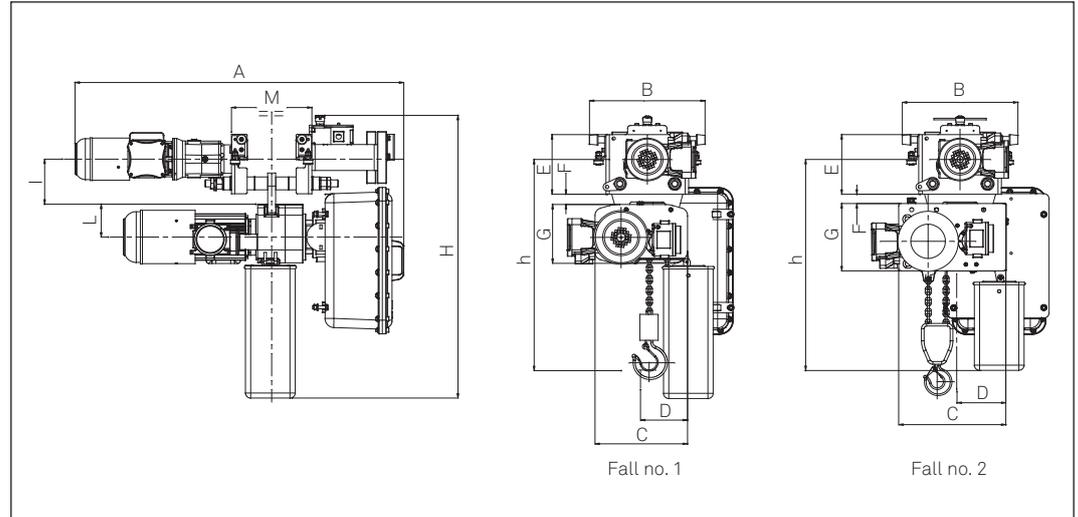
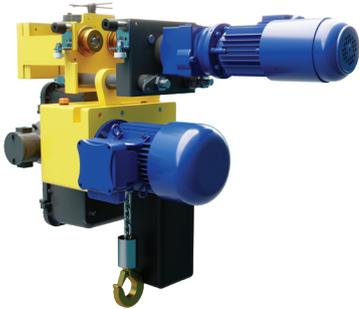
Dimensions

MODEL	DIMENSIONS (min)						LOAD CHAIN		N.W. (kg)
	A	B	C	H	h	D	∅ (mm)	Fall no.	
ECH-F-10-025-1	811	563	232	854	746	60	7,0	1	32
ECH-F-10-050-1	811	563	232	854	746	60	7,0	1	45
ECH-F-10-100-1	811	563	232	854	746	60	7,0	1	65
ECH-F-10-160-2	811	563	232	854	746	180	7,0	2	70
ECH-F-10-200-2	811	563	232	854	746	180	7,0	2	70

Technical data

MODEL	CAPACITY (kg)	ISO	LIFT (m)	%ED	HOISTING			
					Speed (m/min)		Motor kW x pole	
					60Hz	50Hz	60Hz	50Hz
ECH-F-10-025-1	250	M6	3	40/20	9,6 10,4/2,5	8 8/2	0,75 -2P 1,1/0,30-2/8P	0,75 -2P 1,1/0,30-2/8P
ECH-F-10-025-1	250	M6	3	40/20				
ECH-F-10-050-1	500	M6	3	40/20	9,6 10,4/2,5	8 8/2	0,75 -2P 1,1/0,30-2/8P	0,75 -2P 1,1/0,30-2/8P
ECH-F-10-050-1	500	M6	3	40/20				
ECH-F-10-100-1	1000	M5	3	40/20	4,8 5/1,5	4 4/1	1,1 -4P 1,1/0,30-2/8P	0,75 -4P 1,1/0,30-2/8P
ECH-F-10-100-1	1000	M5	3	40/20				
ECH-F-10-160-2	1600	M4	3	40/20	2,4	2	2,2-4P	2,2-4P
ECH-F-10-200-2	2000	M4	3	40/20				

Type ECH-T-10 Exd & Exn



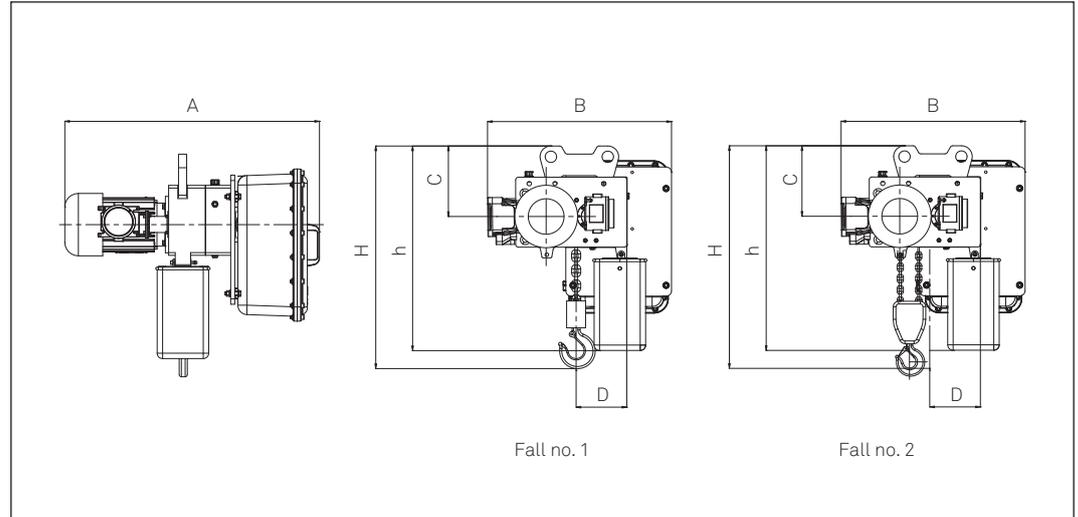
Dimensions

MODEL	DIMENSIONS (min)												LOAD CHAIN		N.W. (kg)
	A	B	C	D	E	F	G	H	h	I	L	M	∅ (mm)	Fall no.	
ECH-T-10-025-1	1150	442	354	60	230	40	227	750	911	174	127	308	7,0	1	165
ECH-T-10-050-1	1150	442	354	60	230	40	227	750	911	174	127	308	7,0	1	185
ECH-T-10-100-1	1256	442	354	60	230	40	227	820	911	174	127	308	7,0	1	200
ECH-T-10-160-2	1256	442	354	180	230	40	227	820	911	174	127	308	7,0	2	250
ECH-T-10-200-2	1256	442	354	180	230	40	227	820	911	174	127	308	7,0	2	250

Technical data

MODEL	CAPACITY (kg)	ISO	LIFT (m)	%ED	HOISTING				TRAVERSING		
					Speed (m/min)		Motor kW x pole		Speed (m/min)		Motor kW x pole
					60Hz	50Hz	60Hz	50Hz	60Hz	50Hz	
ECH-T-10-025-1	250	M6	3	40/20	9,6 10,4/2,5	8 8/2	0,75 -2P 1,1/0,30-2/8P	0,75 -2P 1,1/0,30-2/8P	19 25/6,3	16 20/5	0,25 x 2P 0,12/0,03 x 2/8P
ECH-T-10-025-1	250	M6	3	40/20							
ECH-T-10-050-1	500	M6	3	40/20	9,6 10,4/2,5	8 8/2	0,75 -2P 1,1/0,30-2/8P	0,75 -2P 1,1/0,30-2/8P	19 25/6,3	16 20/5	0,25 x 2P 0,12/0,03 x 2/8P
ECH-T-10-050-1	500	M6	3	40/20							
ECH-T-10-100-1	1000	M5	3	40/20	4,8 5/1,5	4 4/1	1,1 -4P 1,1/0,30-2/8P	0,75 -4P 1,1/0,30-2/8P	19 25/6,3	16 20/5	0,37 x 2P 0,36/0,06 x 2/8P
ECH-T-10-100-1	1000	M5	3	40/20							
ECH-T-10-160-2	1600	M4	3	40/20	2,4	2	2,2-4P	2,2-4P	19	16	0,37 x 2P
ECH-T-10-200-2	2000	M4	3	40/20							

Type ECH-F-20 Exd & Exn



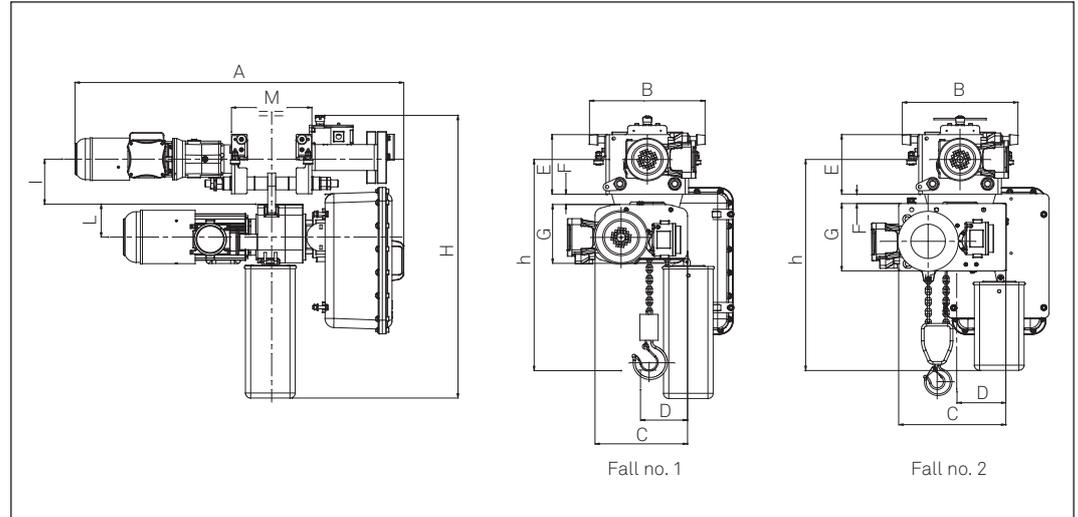
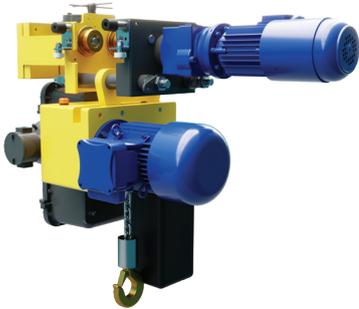
Dimensions

MODEL	DIMENSIONS (min)						LOAD CHAIN		N.W. (kg)
	A	B	C	D	H	h	Ø (mm)	Fall no.	
ECH-F-20-160-1	940	679	230	187	911	761	10,0	1	70
ECH-F-20-160-2	940	442	230	187	911	761	10,0	2	70
ECH-F-20-200-1	940	442	230	187	911	761	10,0	1	70
ECH-F-20-100-2	940	442	230	187	911	761	10,0	2	70
ECH-F-20-250-2	940	442	230	187	911	761	10,0	2	100
ECH-F-20-320-2	940	442	230	187	911	761	10,0	2	100
ECH-F-20-400-2	940	442	230	187	911	761	10,0	2	100

Technical data

MODEL	CAPACITY (kg)	ISO	LIFT (m)	%ED	HOISTING			
					Speed (m/min)		Motor kW x pole	
					60Hz	50Hz	60Hz	50Hz
ECH-F-20-160-1	1600	M5	3	40/20	4,8	4	2,2 -4P	2,2 -4P
ECH-F-20-160-2	1600	M5	3	40/20	2,4	2	2,2 -4P	2,2 -4P
ECH-F-20-200-1	2000	M5	3	40/20	4,8	4	2,2 -4P	2,2 -4P
ECH-F-20-200-1	2000	M5	3	40/20	5/1,6	4,2/1,3	1,8/0,6 -4/12P	1,8/0,6 -4/12P
ECH-F-20-100-2	2000	M5	3	40/20	2,4	2	2,2 -4P	2,2 -4P
ECH-F-20-250-2	2500	M4	3	40/20	2,4	2	2,2 -4P	2,2 -4P
ECH-F-20-250-2	2500	M4	3	40/20	2,4/0,8	2/0,65	2,2/0,6 -4/12P	2,2/0,6 -4/12P
ECH-F-20-320-2	3200	M4	3	40/20	2,4	2	2,2 -4P	2,2 -4P
ECH-F-20-320-2	3200	M4	3	40/20	2,4/0,8	2/0,65	2,6/0,7-2/8P	2,6/0,7-2/8P
ECH-F-20-400-2	4000	M4	3	40/20	2,4	2	2,2 -4P	2,2 -4P
ECH-F-20-400-2	4000	M4	3	40/20	2,4/0,8	2/0,65	2,6/0,7-2/8P	2,6/0,7-2/8P

Type ECH-T-20 Exd & Exn



Dimensions

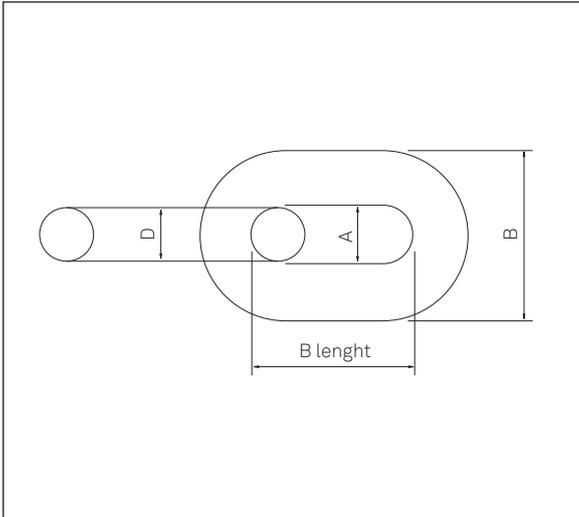
MODEL	DIMENSIONS (min)												LOAD CHAIN		N.W. (kg)
	A	B	C	D	E	F	G	H	h	I	L	M	Ø (mm)	Fall no.	
ECH-T-20-160-1	1256	442	410	187	230	36	260	820	911	170	130	308	10,0	1	250
ECH-T-20-160-2	1256	442	410	187	230	36	260	820	911	170	130	308	10,0	2	250
ECH-T-20-200-1	1256	442	410	187	230	36	260	820	911	170	130	308	10,0	1	250
ECH-T-20-100-2	1256	442	410	187	230	36	260	820	911	170	130	308	10,0	2	250
ECH-T-20-250-2	1256	442	410	187	230	36	260	820	911	170	130	308	10,0	2	250
ECH-T-20-320-2	1256	442	410	187	230	36	260	820	911	170	130	308	10,0	2	300
ECH-T-20-400-2	1256	442	410	187	230	36	260	820	911	170	130	308	10,0	2	300

Technical data

MODEL	CAPACITY (kg)	ISO	LIFT (m)	%ED	HOISTING				TRAVERSING		
					Speed (m/min)		Motor kW x pole		Speed (m/min)		Motor kW x pole
					60Hz	50Hz	60Hz	50Hz	60Hz	50Hz	
ECH-T-20-160-1	1600	M5	3	40/20	4,8	4	2,2 -4P	2,2 -4P	19	16	0,37 x 2P
ECH-T-20-160-2	1600	M5	3	40/20	2,4	2	2,2 -4P	2,2 -4P	25/6,3	20/5	0,36/0,06 x 2/8P
ECH-T-20-200-1	2000	M5	3	40/20	4,8	4	2,2 -4P	2,2 -4P	19	16	0,37 x 2P
ECH-T-20-200-1	2000	M5	3	40/20	5/1,6	4,2/1,3	1,8/0,6 -4/12P	1,8/0,6 -4/12P	25/6,3	20/5	0,36/0,06 x 2/8P
ECH-T-20-100-2	2000	M5	3	40/20	2,4	2	2,2 -4P	2,2 -4P	25/6,3	20/5	0,36/0,06 x 2/8P
ECH-T-20-250-2	2500	M4	3	40/20	2,4	2	2,2 -4P	2,2 -4P	25/6,3	20/5	0,36/0,06 x 2/8P
ECH-T-20-250-2	2500	M4	3	40/20	2,4/0,8	2/0,65	2,2/0,6 -4/12P	2,2/0,6 -4/12P	25/6,3	20/5	0,36/0,06 x 2/8P
ECH-T-20-320-2	3200	M4	3	40/20	2,4	2	2,2-4P	2,2-4P	25/6,3	20/5	0,36/0,06 x 2/8P
ECH-T-20-320-2	3200	M4	3	40/20	2,4/0,8	2/0,65	2,6/0,7-2/8P	2,6/0,7-2/8P	25/6,3	20/5	0,36/0,06 x 2/8P
ECH-T-20-400-2	4000	M4	3	40/20	2,4	2	2,2-4P	2,2-4P	25/6,3	20/5	0,36/0,06 x 2/8P
ECH-T-20-400-2	4000	M4	3	40/20	2,4	2/0,65	2,6/0,7-2/8P	2,6/0,7-2/8P	25/6,3	20/5	0,36/0,06 x 2/8P

Load Chain DIN EN 818

Dimensions



MODEL REFERENCE BEING USED	DIAMETER D (mm)	INNER LENGTH P (mm)	INNER WIDTH A (mm)	OUTER WIDTH B (mm)	BREAKING LOAD (mm)
ECH10-025-1	7,0	21	9,1	23,1	61,6
ECH10-050-1					
ECH10-100-1					
ECH20-160-1	10,0	28	12	34	126
ECH20-160-2					
ECH20-200-1					
ECH20-200-2					
ECH20-250-2					
ECH20-320-2					
ECH20-400-2					

QUALITY AND DESIGNATION			RTS	RTD	RTB
Stress at manufacturing proof force	σ_{FPmin}	N/mm ²	500		
Stress at breaking force	σ_{Bmin}	N/mm ²	800		
Total ultimate elongation	A_{min}	%	10		
Surface hardness according to DIN EN 818-7	$d \leq 6,5 \varnothing$ $d \geq 7 \varnothing$	HV 5 HV10	500 - 650		
Case depth in the joint (after macro-etching)	$\dots d$ $\pm 0,01 d$	mm	$\leftarrow \varnothing 4 / 0,05$ $\varnothing 4,1-7 / 0,04$ $\varnothing 8-16 / 0,03$ $\rightarrow \varnothing 16,1 / 0,02$	$< \varnothing 8 / 0,05$ $\varnothing 8-11,5 / 0,04$ $\rightarrow \varnothing 12 / 0,03$	
Fatigue strength		N/mm ²	130 ± 80	130 ± 90	130 ± 100

DIMENSIONS (mm)	LOAD CAPACITY F_{TR} (kg) ACCORDING TO MECHANISM GROUP				MANUFACTURING PROOF FORCE F_{FPmin} (kN)	BREAKING FORCE F_{Bmin} (kN)	RTS	RTD	RTB	WEIGHT (kg/m)
	M3 (1Bm)	M4 (1Am)	M5 (2m)	M6 (3m)						
	Nominal stress: 160 N/mm ²	Nominal stress: 140 N/mm ²	Nominal stress: 125 N/mm ²	Nominal stress: 112 N/mm ²						
	Safety factor 5	Safety factor 5,7	Safety factor 6,4	Safety factor 7,1						
7 x 21	1250	1090	980	870	38,5	61,6	x	x	x	1,1
10 x 28	2560	2240	2000	1790	78,5	126	x	-	-	2,2



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