



BALKANSKO ECHO

BULGARIA

PRODUCTION OF
ELECTRIC HOISTS, ELECTRIC MOTORS,
CRANES AND CRANE COMPONENTS



CATALOGUE
EXPLOSION-PROOF WIRE ROPE HOISTS

BT SERIES

www.balkanskoecho.com

CATALOGUE EXPLOSION-PROOF WIRE ROPE HOISTS BT SERIES



BALKANSKO ECHO

CERTIFICATES





BALKANSKO ECHO

THE COMPANY

Dear customers, colleagues and friends,

In front of you is the catalogue which contains valuable and useful information about the manufacturing activity and high-quality production of one of the leading companies for travel and hoist systems worldwide.

“Balkansko Echo” company is unique with its three separate factories situated on a total manufacturing area of over 20 000 m², more than 600 metal-working machines and more than 550 dedicated and highly qualified specialists, as all this makes the company independent from outer subcontractors and cooperative deliveries.

The company is designing, constructing, manufacturing, assembling and servicing the following:

- electric wire rope hoists of “T” and “MT” series with a lifting capacity of up to 50 t and a lifting height of up to 120 m, which are to be known for their exceptional reliability and durability;
- electric chain hoists, with a lifting capacity from 0,125 t to 2 t;
- single and double girder electric traveling cranes with a control from the cabin and from the ground with a lifting capacity of up to 100 t;
- bracket electric cranes with a lifting capacity from 1t to 10 t and outrigger length of 10 m;
- induction cone hoist motors, single and double- speeded, with a built-in brake and a thermo-protection from 0,12 kW to 30 kW;
- induction, mono-phase and three-phase cylindrical electric motors from 0,55 kW to 37 kW;
- geared motors for setting in motion the running gears of travel and hoist systems;
- lifting capacity limiting devices for all kinds of hoists and crane travel and hoist systems;
- complete spare parts range for all products.

All company’s products are manufactured in a general-industry, fire-safe and explosion-proof execution, and they can operate in different climate zones, including chemically aggressive environment.

The company’s system for quality management and control has been certified according to ISO 9001:2008 by TÜV Rheinland.

The company’s production has been certified according to the requirements of the countries where it is used.

By the end of 2010, “Balkansko Echo” had manufactured and sold more than 20 000 electric hoists, including 5000 explosion-proof ones, more than 600 cranes and over 50 000 general-industry and explosion-proof electric motors.

The production of “Balkansko Echo” company proves every day its high-tech qualities, security and reliability in different countries, like Russia, Kazakhstan, Belarus, Ukraine, Czech Republic, Slovakia, Turkey, Iran, etc. We are proud to announce that our goods are the only ones in the world with a 36-month warranty.

The aim of this catalogue is to provoke your interest to the goods we manufacture with great responsibility.

By this catalogue we would like to turn to you, our customers, and declare our willingness to make the most suitable product for your manufacturing, and also to assure you that you’ll make the best choice.

Please use the following telephone numbers for a twenty-four-hour contact with us: +35967302220; +359885000555; +359888223344 or you can write to us at balkanskoecho@abv.bg

WIRE ROPE HOISTS

Based on the basic construction decisions of wire rope hoists T series and keeping its technical features, BT series explosion-proof wire rope hoists is intended to operate in an explosion hazardous environment.

The electrical equipment included in these goods, like: electric motor, electric appliances panel, control panel, final switch-cuts, etc., is manufactured in the so called “explosion-proof” execution, and it is marked by: (Ex) d IIB T5 and (Ex) d IIC T5, where:

CATALOGUE EXPLOSION-PROOF WIRE ROPE HOISTS BT SERIES

CLASSIFICATION OF EXPLOSIVE GASES

BY GROUPS AND CLASS OF TEMPERATURE

Groups	Gas	Ignition temperature, °C	Class of temperature						
			T1	T2	T3	T4	T5	T6	
I	methane (marsh gas)								
II	A	acetone	540	X					
		acetic acid	485	X					
		ammonia	630	X					
		ethane	515	X					
		methylene chloride	556	X					
		methane (CH ₄)	595	X					
		carbon monoxide	605	X					
		propane	470	X					
		benzol	555	X					
		naphthalene	540	X					
	B	ethyl chloride	510	X					
		n-butane	365		X				
		n-butyl	370		X				
		hydrogen sulfide	270			X			
		n-hexane	240			X			
		acetaldehyde	140				X		
		ether	170				X		
		ethyl nitrate	90					X	
		C	ethylene	425		X			
			ethylene oxide	429-440		X			
C	acetylene (C ₂ H ₂)	305		X					
	carbon disulphide	102					X		
	hydrogen (H ₂)	560	X						

(Ex) - marking for an electric equipment which prevents from a possible ignition of the surrounding explosively hazardous environment;

d - explosion proof shield - all elements of the equipment that are possible to ignite the surrounding explosively hazardous environment are placed in a shield that can sustain the gas pressure received by the explosion of hazardous mixtures inside of it, while at the same time, the hot gases pass through the so called "blast ways" (windage between the parts) and cool down to a safe temperature.

IIB - group of explosive gases;

T5 - class of temperature showing the maximum temperature on the outer surfaces that could be reached.

Technical data:

Voltage: 380- 400V (special executions - by request)

Frequency: 50 Hz (special executions - by request)

Operational voltage: 24V, (42V)

Class of protection IP54 (EN 60529)



BALKANSKO ECHO

The wire rope hoists manufactured by “Balkansko Echo” EOOD prove their qualities every day by working more than a decade in different parts of the world.

Guarantee for the quality of the goods being manufactured is the implemented and certified system for quality management according to ISO 9001:2008.

Operational conditions *

- climate - normal, tropical or marine
- normal or chemically aggressive environment
- temperature of the environment
 - 1) normal: from -25°C up to +40°C
 - 2) low: from -40°C up to +40°C
- relative air humidity - 80% at 20°C
- in closed rooms or in the open air under a shelter by normal fire-hazard

* special execution by a request

STRUCTURE

The hoists are based on a module construction consisting of the following elements:

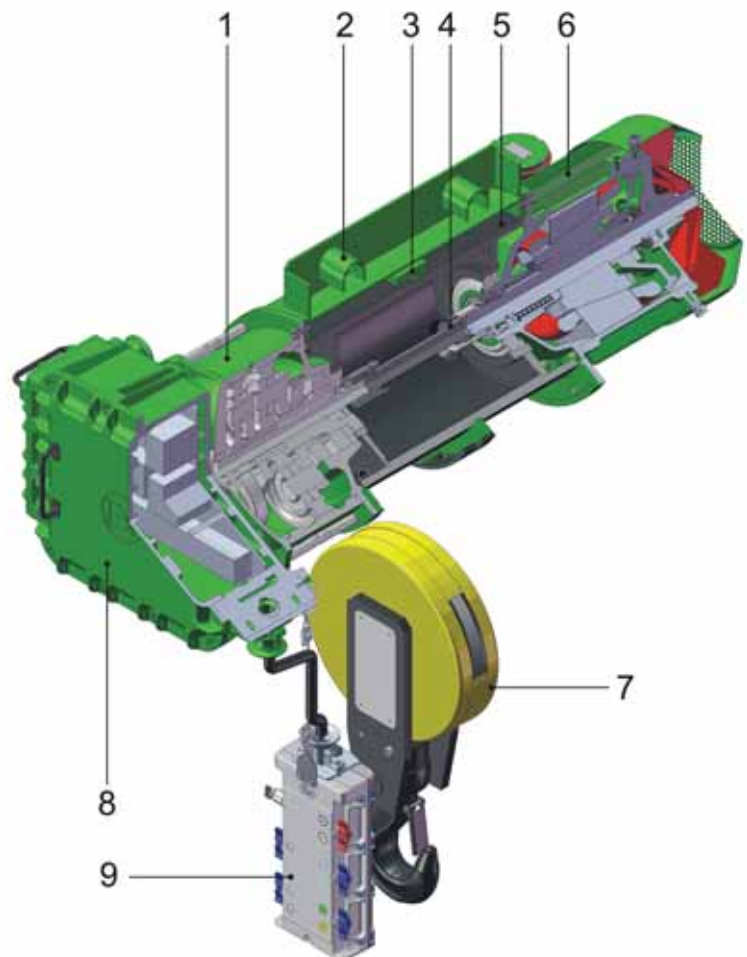
1. REDUCTION GEAR

The two-stepped planetary reduction gear is positioned out of the roll or the body of the hoist.

The solid construction allows a reliable torque transmission towards the roll of the machine. The use of high-quality materials during the manufacturing process of the reduction gear is a guarantee for its reliable performance. Its positioning allows an easy service during the period of use.

2. TOOTHED CLUTCH

A construction that allows safe transmission of the motor torque to the reduction gear shaft, with sufficient possibility for axial and angle compensation - all this guarantees a normal and safe performance of the machine.



CATALOGUE EXPLOSION-PROOF WIRE ROPE HOISTS BT SERIES

STRUCTURE

3. ROLL

The roll is positioned axle-like to the reduction gear and the electric motor. It has got ball bearings at the front guards of the electric motor and the reduction gear. It has also been designed with a screw channel for positioning the rope, according to DIN 15020.

4. BODY

It is a steel-welded construction with a round form made of sheet material. The reduction gear and the electric motor are mounted on both the opposite sides of the body. When the execution is with a trolley, it is also attached to it. The fixed end of the rope is also attached to the body. Different reeving systems can be realized by means of additional supporting elements.

5. ROPE LEAD

The rope lead ensures the correct arrangement and lead of the rope in the screw channel of the roll, and also its normal going out of it. Apart this, it also functions for operating the cut-offs of the lifting mechanism, which are fixing the end up and end down position of the hook.

6. LIFTING ELECTRIC MOTOR

It's a three-phase induction motor with a cone rotor and a built-in brake, it is manufactured in an explosion-proof execution which is marked by (Ex) d IIB T5 or (Ex) d IIC T5. It's with a built-in overheating protection of the stator coil.

Typical for it is its simple construction giving it a great reliability and maintainability. The completely automatic brake allows safe hold of the load. It is simple in service and adjustment during the process of operation.

Class of protection IP54, IP22 (EN 60529) for the brake; class of insulation F (H- by agreement with the customer).

We can also offer double-speeded executions with a ratio of micro-speed : main-speed- 1:4; 1:6, or stepless ones by request.

7. HOOK

The hook construction and the roller block of the reeving are performed according to the requirements of DIN 15400.





BALKANSKO ECHO

CONTROL BLOCK

The control block consists of a body with two explosion-proof chambers marked by: (Ex) d IIB T5 or (Ex) d IIC T5. The electric appliances are positioned in the first one, and the input devices are positioned in the second one. The body, its chambers and covers are made of cast-iron moulding with sufficient strength to prevent leakage of hot gases into the explosively hazardous environment.

CONTROL DESK

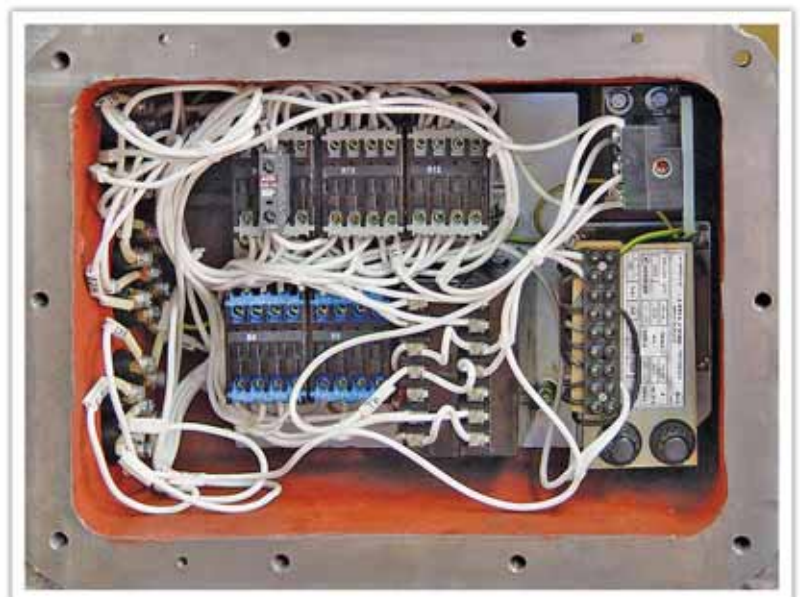
It is an explosion-proof shield marked by (Ex) d IIB T5 or (Ex) d IIC T5, and it is manufactured from aluminum alloy that prevents formation of friction sparks.

SINGLE-GIRDER TROLLEY

Normal and reduced headroom execution. They are being driven by electric motors with cone rotor and an automatic cone brake, in an explosion-proof execution, with marking (Ex) d IIB T5 or (Ex) d IIC T5, single and double-speeded (ratio 1:3, and stepless also by request), class of protection IP54, class of insulation F. These can be driven on rectilinear and curve sections, onto single girder roads with 90...300 mm in width.

DOUBLE-GIRDER CRANE TROLLEY

Executions in a variety of lifting capacity, driven by one or two gearmotor groups, equipped with electric motors with cone rotor and an automatic cone brake, single and double-speeded (ratio 1:3, and stepless also by request), class of protection IP54, class of insulation F. Great variety of girder wheel-base length (1000 -2800 mm).



CATALOGUE EXPLOSION-PROOF WIRE ROPE HOISTS BT SERIES

STANDARD EXECUTIONS

Stationary

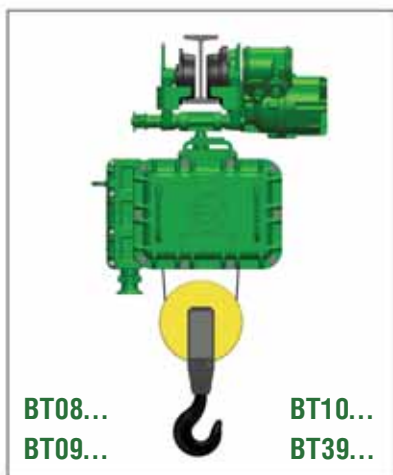
Lifting capacity: 400 – 16 000 kg

Reeving – 1/1; 2/1; 4/1; 2/2

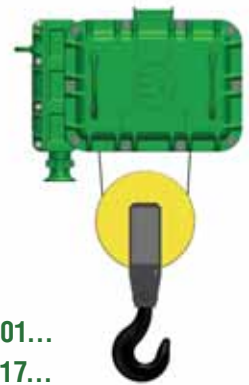
Lifting height: 6 - 72 m

Lifting speed: 2 - 16 m/min

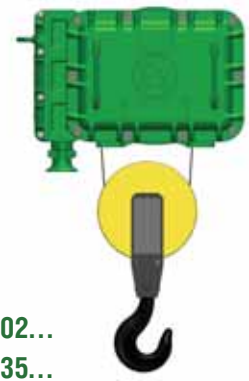
(by microscope at a rate of 1:4)



Pin mounted (hung)



Foot mounted (stand or hung)



With a single-girder trolley (normal headroom height)

Lifting capacity: 400 – 12 500 kg

Reeving – 2/1; 4/1

special executions - 1/1; 2/2

Lift height: 6 – 36 m

special executions- up to 72 m

Lifting speed: 2 - 8 m/min

(by microscope at a rate of 1:4)

special executions - 16 m/min

Conveying speed:

8; 10; 20; 12/4; 15/5; 20/6; 32/10 m/min



BALKANSKO ECHO

With a single-girder trolley (reduced headroom height)

Lifting capacity: 400 – 16 000 kg

Reeving – 2/1; 4/1; 2x1; 4x2

special executions - 4/2

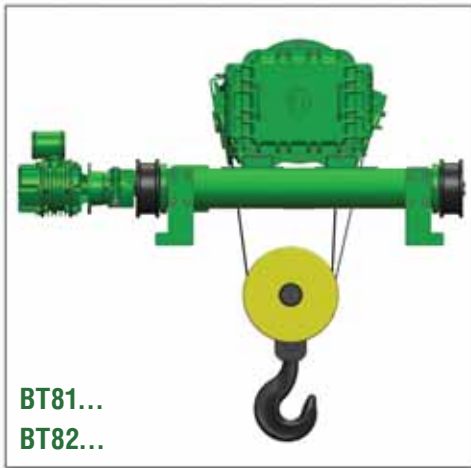
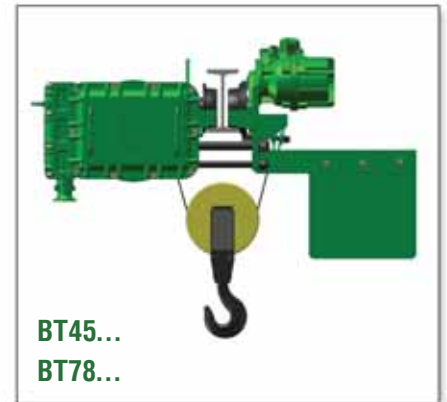
Lift height: 5.5 – 60 m

special executions - up to 120m

Lift speed: 1- 32 m/min

(by microscope at a rate of 1:4 and 1:6)

Conveying speed: 8; 10; 12; 15; 20; 32; 12/4; 15/5; 20/6; 32/10 m/min



With a double-girder trolley

Lifting capacity: 1000 – 16 000 kg

Reeving – 1/1; 2/1; 4/1; 2/2

Lift height: 6 – 36 m

special executions - up to 72m

Lift speed: 2- 8 m/min (by microscope at a rate of 1:4)

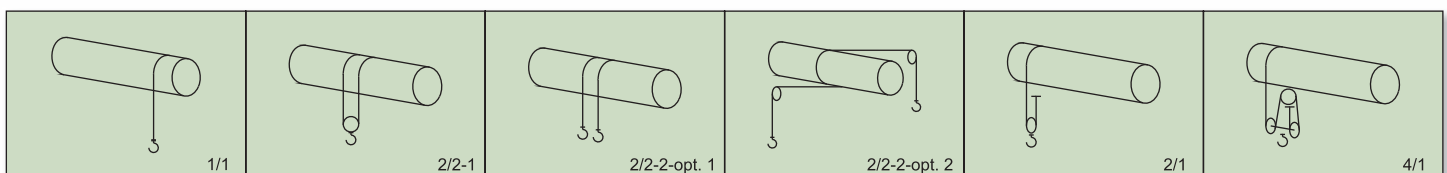
special executions - 32 m/min

Conveying speed: 8; 10; 12; 15; 20 m/min

(by microscope at a rate of 1:3)

Gauge: 1 000- 2 800 mm

REEVING SYSTEM



CATALOGUE EXPLOSION-PROOF WIRE ROPE HOISTS BT SERIES

CRITERIA FOR THE CHOICE

In order to be able to make the right choice of a lifting device you need to know:

1. The maximum load that is going to be uplifted.
2. The maximum height of the lift.
3. The necessary speed of the lift.
4. The operational conditions.
5. The group and the class of temperature of the explosively hazard environment.

After that you need to determine the operational rate group of the lifting device according to FEM 9.511, DIN 15020, ISO 4301 or GOCT 25835.

With regard to this you need to define in advance:

- class of loading
- class of use

The class of loading can be determined by the loading factor K, using the formula:

$K = \sum [(Q_i / Q_{nom})^3 \cdot t_i / \sum t_i]$, where:

Q_i - load being lifted by the device for a definite time t_i

Q_{nom} - the nominal (maximum) capacity of the device

t_i - duration of operation with load Q_i

$\sum t_i$ - sum of time for device operation with load.

After that the average machine time T_M for a day is being defined:

$T_M = 2.H.N.T / 60.V$, where:

H - average height of lift

N - number of cycles per hour (a cycle means: lift-pause-lift down-pause)

T - daily duration of operation

V - lift speed, m/min

The data received is used to define the operational rate group, and then you may continue with the choice of a lifting device.

EXAMPLE

Lifting capacity	-	2000 kg
Average height of lift	H	3 m
Lifting speed	V	8 m/min
Reeving	-	2/1
Class of loading	-	medium
Number of cycles per hour	N	30
Daily duration of operation	T	8 h
Explosively hazard environment	-	acetylene

The average machine time per a day is calculated:

$$T_M = 2.H.N.T / 60.V = 2.2.30.8 / 60.8 = 3, h$$

Using the table for operation range, for $T_M = 3h$ and class of loading "medium", you can define the group of operation range for the lifting device - 2 m, according to FEM 9.511.

Knowing the needed capacity of 2000 kg and using the already defined group of operation range - 2m, and the type of reeving - 2/1, we can define the lifting device as type BT..4..

Using the table for the classification of explosive gases by groups and classes of temperature, we can define:

Group IIC, Class of temperature T2

Therefore, the needed wire rope hoist is marked by (Ex) d IIC T5.



CLASSIFICATION OF THE LIFTING DEVICES

Operational rate				Class of use				
Class of loading	Loading factor, K	Performance						
Light	< 0.125	Operation with loads less than the nominal ones		T_M, h 1)				
				2-4	4-8	8-16	>16	
medium	0.125 - 0.25	Operation with medium and nominal loads		T_M, h				
				1-2	2-4	4-8	8-16	
Heavy	0.25 - 0.5	Operation with nominal or close to nominal loads		T_M, h				
				0,5-1	1-2	2-4	4-8	
Very heavy	0.5 - 1	Repeated operation with nominal or close to nominal loads		T_M, h				
				0,25-0,5	0,5-1	1-2	2-4	
Duration of switching, %				30	40	50	60	
Frequency of switching, h ⁻¹				180	240	300	360	
Operational rate group			FEM 9.511 / DIN15020	1Am	2m	3m	4m	
			ISO 4301	M4	M5	M6	M7	
			ГОСТ 25835	2M	3M	4M	5M	
REEVING			Dimensions	Type				
1/1	2/1	4/1						
Lifting capacity, kg			3	-	-	-	BT..3.. *	
320	630	1250		-	-	BT..3..	-	
400	800	1600		-	BT..3..	-	-	
500	1000	2000		-	-	-	BT..4.. *	
630	1250	2500		4	-	-	BT..4..	-
800	1600	3200		-	BT..4..	-	BT..5.. *	
1000	2000	4000		-	-	BT..5..	-	
1250	2500	5000		5	-	BT..5..	-	
1600	3200	6300		-	BT..5..	-	BT..6.. *	
2000	4000	8000		-	-	BT..6..	-	
2500	5000	10000	6	-	BT..6..	-		
3200	6300	12500	-	BT..6..	-	BT..7.. *		
4000	8000	16000	7	-	-	BT..7..	-	
			-	BT..7..	-	-		

* special execution by customer order

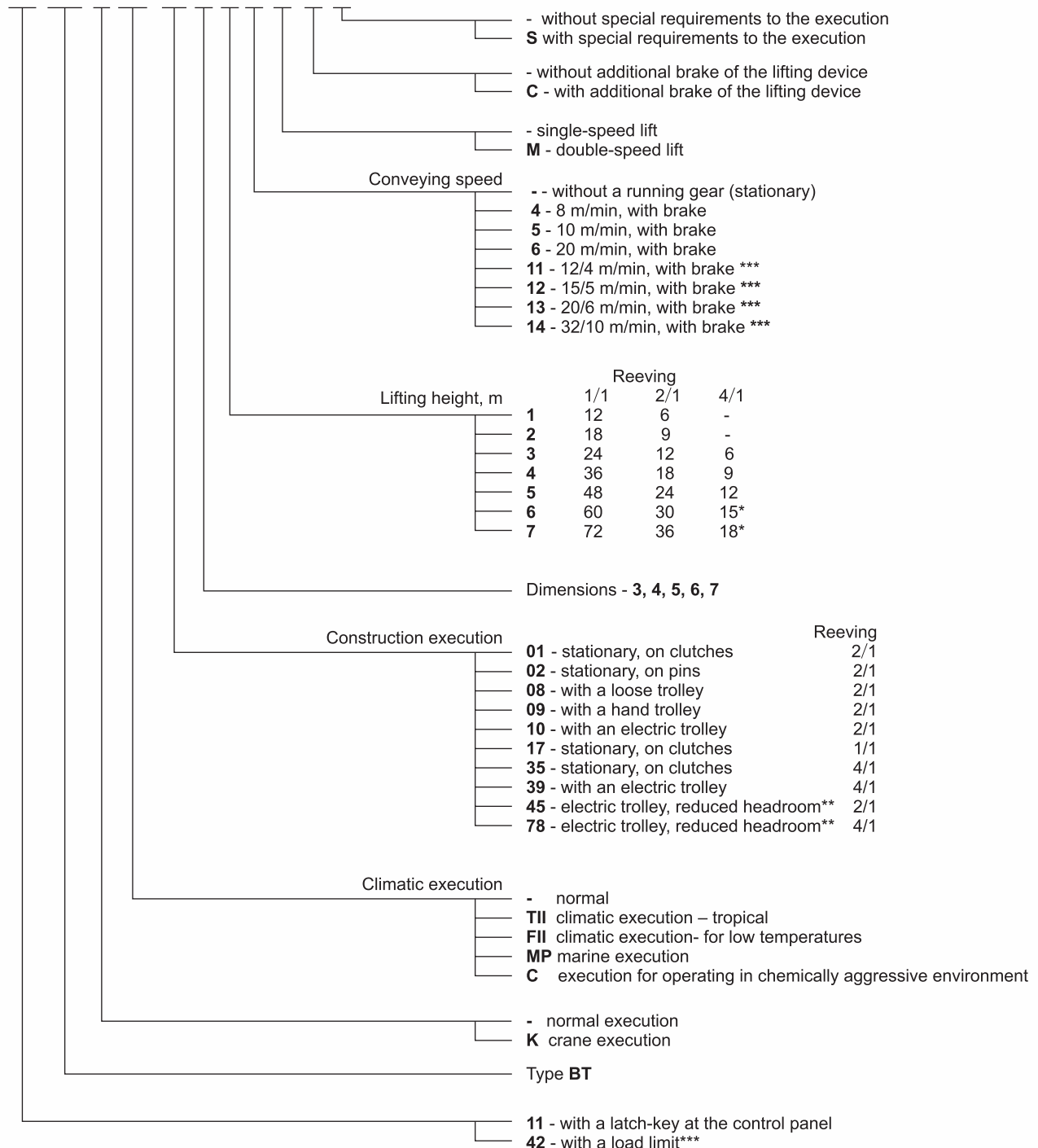
1) T_M – average machine time per day

2) T_{MO} – total time for the complete operational period

CATALOGUE EXPLOSION-PROOF WIRE ROPE HOISTS BT SERIES

NOTATION

11 BT K TII 10 3 1 6 M C S



* special execution by request

** reduced headroom

*** being developed



TECHNICAL DATA

Lifting capacity kg	Reeving 1/1 – 2/2 ¹⁾				
	Type	DIN 15020 FEM 9.511	Lifting height, m		Lifting speed, m/min
			1/1	2/2	
400	BT..3..	3m	12;18;24;36;48;60;72	8;12;19;27	16
500	BT..3..	2m	12;18;24;36;48;60;72	8;12;19;27	16
800	BT..4..	3m	12;18;24;36;48;60;72	8;12;21;29	16; 4/16
1 000	BT..4..	2m	12;18;24;36;48;60;72	8;12;21;29	16; 4/16
1 250	BT..5..	3m	12;18;24;36;48;60;72	7;10;17;24	10; 2.5/10
1 600	BT..5..	2m	12;18;24;36;48;60;72	7;10;17;24	10; 2.5/10
2 000	BT..6..	3m	12;18;24;36;48;60;72	6;9;16;23	16; 4/16
2 500	BT..6..	2m	12;18;24;36;48;60;72	6;9;16;23	16; 4/16
3 200	BT..7..	3m	18;24;36;48;60;72	13;20;27;34	8; 2/8
4 000	BT..7..	2m	18;24;36;48;60;72	13;20;27;34	8; 2/8

1) 1)Refers only to stationary wire rope hoists, without any limit of load

Lifting capacity kg	Reeving 2/1				
	Type	DIN 15020 FEM 9.511	Lifting height, m		Lifting speed, m/min
800	BT..3..	3m	6;9;12;18;24;30;36		8
1 000	BT..3..	2m	6;9;12;18;24;30;36		8
1 600	BT..4..	3m	6;9;12;18;24;30;36		8; 2/8
2 000	BT..4..	2m	6;9;12;18;24;30;36		8; 2/8
2 500	BT..5..	3m	6;9;12;18;24;30;36		5; 1.25/5
3 200	BT..5..	2m	6;9;12;18;24;30;36		5; 1.25/5
4 000	BT..6..	3m	6;9;12;18;24;30;36		8; 2/8
5 000	BT..6..	2m	6;9;12;18;24;30;36		8; 2/8
6 300	BT..7..	3m	9;12;18;24;30;36		4; 1/4
8 000	BT..7..	2m	9;12;18;24;30;36		4; 1/4

CATALOGUE EXPLOSION-PROOF WIRE ROPE HOISTS BT SERIES

TECHNICAL DATA

Lifting capacity kg	Reeving 4/1			
	Typr	DIN 15020 FEM 9.511	Lifting height, m	Lifting speed, m/min
1 600	BT..3..	3m	6;9;12	4
2 000	BT..3..	2m	6;9;12	4
3 200	BT..4..	3m	6;9;12	4; 1/4
4 000	BT..4..	2m	6;10;13	4; 1/4
5 000	BT..5..	3m	6;9;12	2.5; 0.63/2.5
6 300	BT..5..	2m	6;9;12	2.5; 0.63/2.5
8 000	BT..6..	3m	6;9;12	4; 1/4
10 000	BT..6..	2m	6;9;12	4; 1/4
12 500	BT..7..	3m	6;9;12;15;18	2; 0.5/2
16 000	BT..7..	2m	6;9;12;15;18	2; 0.5/2

ELECTRO-MOTORS PARAMETERS

PARAMETERS OF THE LIFTING ELECTRIC MOTORS WITH A BUILT-IN BRAKE (400 V, 50 HZ)

Dimensions	Lifting capacity, kg	Group by FEM 9.511	Single-speed lift		Double-speed lift	
			V1		V1	
			PH, kW	IH, A	PH, kW	IH, A
BT..3..	1000	2m	1.5	5.8	-	-
BT..4..	2000		3.0	11.0	0.7/3.0	6.0/7.5
BT..5..	3200		4.5	12.3		
BT..6..	5000		8.0	24.5	1.7/8.0	15.0/18.0
BT..7..	8000					

PARAMETERS OF THE ELECTRIC MOTORS WITH A BUILT-IN BRAKE FOR MONORAIL HOIST RUNNING GEARS (400 V, 50 HZ)

Dimensions	Lifting capacity, kg		Group by FEM 9.511	Lifting height, m		Conveying speed, m/min				
	2/1	4/1		2/1	4/1	8,10,12, 20		4/12, 5/15, 6.5/20, 10/32		
						PH, kW	IH, A	PH, kW	IH, A	
BT..3..	1000	-	2m	18;24;30;36	-	2x0.12	0.75	2x0.06/0.18	1.3/0.8	
	-	2000		-	9;12					
BT..4..	2000	4000		18;24;30;36	9;12	2x0.25	1.2	-	-	
BT..5..	3200	6300		18;24;30;36	9;12					
BT..6..	5000	-		18;24;30;36	-	2x0.55	1.6	2x0.25/0.75	3.0/2.4	
	-	10000		-	6;9;12					
BT..7..	8000	-		3m	9;12;18;24;30;36	-				
	-	12500			-	6;9;12;15;18				



BALKANSKO ECHO

PARAMETERS OF THE ELECTRIC MOTORS WITH A BUILT-IN BRAKE FOR MONORAIL HOIST RUNNING GEARS (400 V, 50 HZ)

Dimns.	Lifting capacity, kg		Group by FEM 9.511	Lifting height, m		Conveying speed, m/min			
						8,10,12, 20		4/12, 5/15, 6.5/20, 10/32	
	2/1	4/1		2/1	4/1	P _H , kW	I _H , A	P _H , kW	I _H , A
BT..3..	1000	-	2m	6;9;12	-	0.12	0.75	0.06/0.18	1.3/0.8
	-	2000		-	6				
BT..4..	2000	4000		6;9;12	6	0.25	1.1	-	-
BT..5..	3200	-		6;9;12	-				
	-	6300		-	6	0.55	1.6	0.25/0.75	3.0/2.4
BT..6..	5000	-		6;9;12	-				

WE MANUFACTURE ALSO

T - WIRE ROPE HOISTS

The electric wire rope hoists T series are the most famous and well-sold electric hoists worldwide. More than 1 800 000 pieces have already been produced and sold in more than 40 countries. Their main advantages are: high reliability, durability, simple maintenance. These advantages in combination with the broad range of weight lifting capacity, lift and convey speeds, construction executions, and ability to be used in different conditions, make the hoists of this series preferred to the other executions despite their 30-year-old history.

MT - WIRE ROPE HOISTS

The wire rope hoists of MT series are the inheritors of the world's most popular series of electric wire rope hoists T. By keeping the basic technical features and thanks to the use of a new body construction, contemporary steel ropes, hooks, etc., we offer our customers a series of electric hoists with much extended opportunities like lifting capacity, lift speed and conveying speed. All this expands new opportunities for a more efficient operation of our products.

BMT - EXPLOSION-PROOF WIRE ROPE HOISTS

The electric wire rope hoists BMT series are based on the basic technical solutions being used in BT and MT series. Based on the higher technical parameters of MT series and the already proven technical decisions of BT series regarding explosion proof, we have created an electric explosion-proof wire rope hoist having much better operational features, such as lifting capacity, lift speed and conveying speed. The electrical equipment is identical to BT series, which presupposes the identical explosion-proof execution and marking: (Ex) d IIB T5 and (Ex) d IIC T5.

INDUCTION ELECTRO-MOTORS

1. With built-in brakes, for the main lift of electric chain and wire rope hoists and other running gears - from 0.75 kW up to 30 kW. Explosion-proof execution as an option.
2. With built-in brakes, for running gears of electric chain hoists and wire rope hoists and other lifting parts - from 0.12 kW to 3 kW. Explosion-proof execution as an option.
3. Electric motors for general purposes, executions of IM B3, IM B5, IM b35, IM B14, etc., with or without a built-in brake - from 0.55 kW to 37 kW.

WEIGHT-LIFTING CRANES

1. Single-girder underslung traveling cranes - lifting capacity from 1 to 16 t and a span from 3 to 25 m.
 2. Single-girder stationary traveling cranes - lifting capacity from 1 to 16 t and a span from 4.5 to 25.5 m.
 3. Double-girder stationary traveling cranes - lifting capacity from 5 to 100 t and a span from 10.5 to 50 m.
 4. Bracket stationary and wall-mounted cranes - lifting capacity from 1 to 10 t and an outrigger spread from 3 to 10 m.
- Ground and cabin control. Explosion-proof execution as an option.

CRANE COMPONENTS

1. Reduction gears and geared motor groups - intended for driving the running gears of girder cranes and other lifting equipment. These are available in a great variety of output revolutions and torques. They are driven by electric motors with built-in cone brakes. Explosion-proof execution as an option.
2. Front girders for stationary traveling cranes - diameters of traveling wheels from 160 to 400 mm, load of the traveling wheel from 4000 to 19 500 kg, conveying speeds from 8 to 32 m/min. Explosion-proof execution as an option.
3. Cable trolleys - intended for carrying supply and operation cables of traveling cranes. Available in executions for traveling onto profile or straight steel rope.



“BALKANSKO ECHO” EOOD

Bulgaria

5460 Kravenik village, municipality Sevlievo, region Gabrovo

tel.: +359 67302 220

fax: +359 67302 375

e-mail: balkanskoecho@abv.bg

www.balkanskoecho.com