



Technical guide Explosions proofed Nova rope hoist

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1 Update history

Section	Changes	Date	Handled by
Characteristics	NF- hoists added	24.12.03	KHVAZE
	NC- drum lengths added	10.04.03	KHHRJU
	ND- true vertical lift hoists added	02.04.03	KHHRJU
	NE- hoists added	02.04.03	KHHRJU
	IWRC L+Lr rope added for NF26 & NF28	14.10.04	KHVSLE
	ND- hoists, D drum length NA with LHT	31.10.05	KHVLFO
	Ex hoists - Zone 2	18.04.07	KHVJBO
Travelling speeds	NF- hoists added	24.12.03	KHVAZE
	ND- true vertical lift hoists added	02.04.03	KHHRJU
	NE- hoists added	02.04.03	KHHRJU
	Travelling speed table	08.03.05	KHVSLE
	ND- true vertical lift 22 & 24 EC11	06.07.06	KHVLFO
	Zone 2 - Chapter added	20.06.07	KHVJBO
Travelling motors	Chapters added	24.05.07	KHVJBO
Wire rope data	Rope types added	02.04.03	KHHRJU
	IWRC ropes added	13.10.04	KHVSLE
Hook	NF- hook blocks added	24.12.03	KHVAZE
	ND- and NE- hook blocks added	01.04.03	KHHRJU
	RSN2.5 forcing added	01.04.03	KHHRJU
Height of lift	NE- & NF- hoists	30.08.04	KHVSLE
Ex specifications	Add equipments	03.12.04	KHVSLE
Ex hoisting motors	Codes of the E4 and the E6 hoisting motors	22.03.06	KHVLFO
	Sparkproof -'nA'- motors / Zone 2	16.04.07	KHVJBO
Surface treatment	Thickness of the epoxy finishing paint for the motors	06.04.06	KHVLFO
Color codes	Rope guide NC RAL 7021	29.06.05	KHVSLE
	Guide roller added	29.06.05	KHVSLE
	Rope guide ND RAL 7021	29.06.05	KHVSLE
	Color codes for SWF and R&M Q hoists	06.04.06	KHVLFO
	Color code for Morris	24.05.07	KHVJBO
Hoist product code (Q code)	P 'nA' pole change motor	16.04.07	KHVJBO
Materials	Chapter added	18.04.07	KHVJBO
Drum and rope sheave diameters	Chapter added	18.04.07	KHVJBO

2 Hoist product code

N	C	ex	04	L	5	B	F	P	2	35	A	P	1	N
1	2	3,4	5,6	7	8	9	10	11	12	13,14	15	16	17	18

Pos	Code	Feature	Available properties	
1	N	Nova hoist		
2	C	Frame size	C D	355 mm rope drum diameter 406 mm rope drum diameter
3,4	ex	Explosion proof	EX	
5,6	04	Rope falls	0 1 2 A B M	Reeving code 1 rope fixed to drum 1 rope fixed to drum (in case of 10 falls) 2 ropes fixed to drum, true vertical 1 x 6.7 mm rope on C frame drum 1 x 8 mm rope on D frame drum rope from machinery hoist drum
7	L	Trolley type	F L H M W	Fixed hoist Low headroom trolley Double girder trolley high connection Double girder trolley medium connection Double girder trolley low connection
8	5	Hoist duty class	4 5 6	ISO M4 - FEM 1Am ISO M5 - FEM 2m ISO M6 - FEM 3m
9	B	Drum length	B C D E F G	340 mm rope drum length 440 mm rope drum length 540 mm rope drum length 660 mm rope drum length 810 mm rope drum length 1000 mm rope drum length
10	F	Hoisting gear	E F H	Hoist speed 4 m/min Hoist speed 5 m/min Hoist speed 8 m/min
11	E	Hoist motor type	E P	Zone1 "d" pole change motor Zone2 'nA' pole change motor
12	2	Hoisting motor size	#	1-9 or A as motor power code (see technical guide)
13,14	35	Flange width/ Rail gauge	#	Flange width cm (L / N trolleys) i.e. 350 mm = 35
15	A	Overload device	A C	Mechanical overload device NovaMaster
16	P	Trolley motor type	N P	No trolley motor controls Pole change motor
17	1	Hoist usage type	1 2	Single hoist for crane Hoist for tandem use
18	N	Special properties	N F	Standard hoist without any options Options selected only from feature list

(na) = not available

3 Technical characteristics

3.1 Ex hoists – Zone 1

Load	Frame	Falls	Trolley		Duty		Drum		Rope		Contactor control					
			D D D		FEM ISO		Code	HOL (m)	Load (kg)	Type	Gear		Motor	Speed (m/min)	(tm/min)	
			L	M	N	F					V	Type				Ratio
800	NC	02	L	M	N	F	3m M6	B	12	400	D	F	160.3	E 1	10/1.7	8
								C	18							
								D	24							
							E	30								
								F	40							
							G	50								
1000	NC	02	L	M	N	F	2m M5	B	12	500	D	F	160.3	E 1	10/1.7	10
								C	18							
								D	24							
							E	30								
								F	40							
							G	50								
1000	NC	02	L	M	N	F	3m M6	B	12	500	D	E	192.6	E 1	8/1.3	8
								C	18							
								D	24							
							E	30								
								F	40							
							G	50								
1250	NC	02	L	M	N	F	2m M5	B	12	625	D	E	192.6	E 1	8/1.3	10
								C	18							
								D	24							
							E	30								
								F	40							
							G	50								
1600	NC	02	L	M	N	F	3m M6	B	12	800	D	F	160.3	E 2	10/1.7	16
								C	18							
								D	24							
							E	30								
								F	40							
							G	50								
1600	NC	04	L	M	N	F	3m M6	B	6	400	D	F	160.3	E 1	5/0.8	8
								C	9							
								D	12							
							E	15								
								F	20							
							G	25								
2000	NC	02	L	M	N	F	2m M5	B	12	1000	D	F	160.3	E 2	10/1.7	20
								C	18							
								D	24							
							E	30								
								F	40							
							G	50								
2000	NC	02	L	M	N	F	3m M6	B	12	1000	D	E	192.6	E 2	8/1.3	16
								C	18							
								D	24							
							E	30								
								F	40							
							G	50								
2000	NC	04	L	M	N	F	2m M5	B	6	500	D	F	160.3	E 1	5/0.8	10
								C	9							
								D	12							
							E	15								
								F	20							
							G	25								

Load	Frame	Falls	Trolley			Duty		Drum		Rope		Contactor control				
			D D D			FEM	ISO	Code	HOL	Load	Type	Gear		Motor	Speed	(tm/
			L	M	N F	V			(m)	(kg)	pe	Type	Ratio		(m/min)	min)
2000	NC	04	L	M	N F		3m M6	B	6	500	D	E	192.6	E 1	4/0.7	8
								C	9							
								D	12							
			M	N	F			E	15							
								F	20							
								G	25							
2500	NC	02	L	M	N F		2m M5	B	12	1250	D	E	192.6	E 2	8/1.3	20
								C	18		F					
								D	24							
			M	N	F			E	30							
								F	40							
								G	50							
2500	NC	04	L	M	N F		2m M5	B	6	625	D	E	192.6	E 1	4/0.7	10
								C	9							
								D	12							
			M	N	F			E	15							
								F	20							
								G	25							
3200	NC	04	L	M	N F		3m M6	B	6	800	D	F	160.3	E 2	5/0.8	16
								C	9							
								D	12							
			M	N	F			E	15							
								F	20							
								G	25							
4000	NC	04	L	M	N F		2m M5	B	6	1000	D	F	160.3	E 2	5/0.8	20
								C	9							
								D	12							
			M	N	F			E	15							
								F	20							
								G	25							
4000	NC	04	L	M	N F		3m M6	B	6	1000	D	E	192.6	E 2	4/0.7	16
								C	9							
								D	12							
			M	N	F			E	15							
								F	20							
								G	25							
5000	NC	04	L	M	N F		2m M5	B	6	1250	D	E	192.6	E 2	4/0.7	20
								C	9							
								D	12							
			M	N	F			E	15							
								F	20							
								G	25							
6300	NC	06		M	N F		2m M5	C	6	1050	D	F	160.3	E 2	3.2/0.5	20
								D	8							
								E	10							
								F	13							
								G	17							
7500	NC	06		M	N F		2m M5	C	6	1250	D	E	192.6	E 2	2.5/0.4	20
								D	8							
								E	10							
								F	13							
								G	17							
8000	NC	08		M	N F		1Am M4	C	4.5	1250	D	F	160.3	E 2	2.5/0.4	20
								D	6							
								E	7.5							
								F	10							
								G	12.5							
10000	NC	08		M	N F		1Am M4	C	4.5	1250	D	E	192.6	E 2	2/0.3	20
								D	6							

Load	Frame	Falls	Trolley			Duty	Drum		Rope		Contactor control							
			D D D			FEM ISO	Code	HOL	Load	Ty	Gear		Motor	Speed	(tm/			
			L	M	N F	V		(m)	(kg)	pe	Type	Ratio		(m/min)	min)			
							<i>E</i>	7.5										
							<i>F</i>	10										
							<i>G</i>	12.5										
3200	ND	02	<i>M N F</i>			3m M6	<i>D</i>	18	1600	G	<i>H</i>	113.8	<i>E 6</i>	16/2.7	50			
			<i>L M N F</i>					24										
			<i>M N F</i>					32										
4000	ND	02	<i>M N F</i>			3m M6	<i>D</i>	18	2000	G	<i>E</i>	223.8	<i>E 4</i>	8/1.3	32			
			<i>L M N F</i>					24										
			<i>M N F</i>					32										
4000	ND	02	<i>M N F</i>			2m M5	<i>D</i>	18	2000	G	<i>H</i>	113.8	<i>E 6</i>	16/2.6	64			
			<i>L M N F</i>					24										
			<i>M N F</i>					32										
5000	ND	02	<i>M N F</i>			2m M5	<i>D</i>	18	2500	G	<i>E</i>	223.8	<i>E 4</i>	8/1.3	40			
			<i>L M N F</i>					24										
			<i>M N F</i>					32										
5000	ND	02	<i>M N F</i>			1Am M4	<i>D</i>	18	2500	G	<i>H</i>	113.8	<i>E 6</i>	16/2.6	80			
			<i>L M N F</i>					24										
			<i>M N F</i>					32										
6300	ND	04	<i>M N F</i>			3m M6	<i>D</i>	9	1600	G	<i>H</i>	113.8	<i>E 6</i>	8/1.3	50			
			<i>L M N F</i>					12										
			<i>M N F</i>					16										
8000	ND	04	<i>M N F</i>			3m M6	<i>D</i>	9	2000	G	<i>E</i>	223.8	<i>E 4</i>	4/0.7	32			
			<i>L M N F</i>					12										
			<i>M N F</i>					16										
8000	ND	04	<i>M N F</i>			2m M5	<i>D</i>	9	2000	G	<i>H</i>	113.8	<i>E 6</i>	8/1.3	64			
			<i>L M N F</i>					12										
			<i>M N F</i>					16										
10000	ND	04	<i>M N F</i>			2m M5	<i>D</i>	9	2500	G	<i>E</i>	223.8	<i>E 4</i>	4/0.7	40			
			<i>L M N F</i>					12										
			<i>M N F</i>					16										
10000	ND	04	<i>M N F</i>			1Am M4	<i>D</i>	9	2500	G	<i>H</i>	113.8	<i>E 6</i>	8/1.3	80			
			<i>L M N F</i>					20										
			<i>M N F</i>					26										

Load	Frame	Falls	Trolley			Duty		Drum		Rope		Contactor control				
			D D D			FEM ISO		Code	HOL (m)	Load (kg)	Type	Gear		Motor	Speed (m/min)	(tm/min)
			L	M	N F V	Type	Ratio									
			L	M	N F			E	12							
								F	16							
					M N F			G	20							
								H	26							
								J	35							
12500	ND	06			M N F	2m M5		D	6	2085	G	H	113.8	E 6	5/0.8	64
								E	8							
								F	10							
								G	13							
								H	17							
								J	23							
15000	ND	06			M N F	2m M5		D	6	2500	G	E	223.8	E 4	2.5/0.4	40
								E	8			F	185.3	E 6	3.2/0.5	64
								F	10							
								G	13							
								H	17							
								J	23							
15000	ND	06			M N F	1Am M4		D	6	2500	G	H	113.8	E 6	5/0.8	50
								E	8							
								F	10							
								G	13							
								H	17							
								J	23							
20000	ND	08			M N F	1Am M4		D	4.5	2500	G	E	223.8	E 4	2/0.3	40
								E	6			F	185.3	E 6	2.5/0.4	80
								F	8							
								G	10							
								H	13			H	113.8	E 6	4/0.7	80
								J	17.5							
3200	ND	22			M F	3m M6		D	8.5	1600	D + Dr	E	223.8	E 4	8/1.3	25
								E	13			F	185.3	E 6	10/1.7	32
								F	18			H	113.8	E 6	16/2.7	50
								G	25							
								H	33.5							
								J	46							
4000	ND	22			M F	2m M5		D	8.5	2000	D + Dr	E	223.8	E 4	8/1.3	32
								E	13			F	185.3	E 6	10/1.7	40
								F	18			H	113.8	E 6	16/2.7	64
								G	25							
								H	33.5							
								J	46							
4000	ND	22			M F	3m M6		D	8.5	2000	D + Dr	E	223.8	E 4	8/1.3	32
								E	13			F	185.3	E 6	10/1.7	40
								F	18							
								G	25							
								H	33.5							
								J	46							
5000	ND	22			M F	1Am M4		D	8.5	2500	D + Dr	E	223.8	E 4	8/1.3	40
								E	13			F	185.3	E 6	10/1.7	50
								F	18			H	113.8	E 6	16/2.7	80
								G	25							
								H	33.5							
								J	46							
5000	ND	22			M F	2m M5		D	8.5	2500	D + Dr	E	223.8	E 4	8/1.3	40
								E	13			F	185.3	E 6	10/1.7	50
								F	18							
								G	25							
								H	33.5							
								J	46							

Load	Frame	Falls	Trolley		Duty	Drum		Rope		Contactor control					
			D D D		FEM ISO	Code	HOL	Load	Ty	Gear		Motor	Speed	(tm/	
			L	H	M	W	N	F	V	(m)	(kg)	pe	Type	Ratio	(m/min)
6300	ND	24	M	F	3m M6	D	4	1600	D	E	223.8	E 4	4/0.7	25	
						E	6.5		F	185.3	E 6	5/0.8	32		
						F	9		H	113.8	E 6	8/1.3	50		
						G	12.5								
						H	16.5								
8000	ND	24	M	F	2m M5	D	4	2000	D	E	223.8	E 4	4/0.7	32	
						E	6.5		F	185.3	E 6	5/0.8	40		
						F	9		H	113.8	E 6	8/1.3	64		
						G	12.5								
						H	16.5								
8000	ND	24	M	F	3m M5	D	4	2000	D	E	223.8	E 4	4/0.7	32	
						E	6.5		F	185.3	E 6	5/0.8	40		
						F	9								
						G	12.5								
						H	16.5								
10000	ND	24	M	F	1Am M4	D	4	2500	D	E	223.8	E 4	4/0.7	40	
						E	6.5		F	185.3	E 6	5/0.8	50		
						F	9		H	113.8	E 6	8/1.3	80		
						G	12.5								
						H	16.5								
10000	ND	24	M	F	2m M5	D	4	2500	D	E	223.8	E 4	4/0.7	40	
						E	6.5		F	185.3	E 6	5/0.8	50		
						F	9								
						G	12.5								
						H	16.5								
12500	ND	26	M	F	2m M5	E	4	2000	D	E	223.8	E 4	2.5/0.4	32	
						F	6		F	185.3	E 6	3.2/0.5	40		
						G	8		H	113.8	E 6	5/0.8	64		
						H	11								
						J	15								
15000	ND	26	M	F	1Am M4	E	4	2500	D	E	223.8	E 4	2.5/0.4	40	
						F	6		F	185.3	E 6	3.2/0.5	50		
						G	8		H	113.8	E 6	5/0.8	80		
						H	11								
						J	15								
15000	ND	26	M	F	2m M5	E	4	2500	D	E	223.8	E 4	2.5/0.4	40	
						F	6		F	185.3	E 6	3.2/0.5	50		
						G	8								
						H	11								
						J	15								
20000	ND	28	M	F	1Am M4	F	4.5	2500	D	E	223.8	E 4	2/0.3	40	
						G	6		F	185.3	E 6	2.5/0.4	50		
						H	8		H	113.8	E 6	3.2/0.5	80		
						J	11.5								
6300	NE	02	M	N	1Am M4	C	15.5	3150	K	E	340.6	E 6	8/1.3	50	
						D	21			F	269.0	E 6	10/1.7	64	
						E	28								
						F	36								
						G	47								
						H	61								
						J	80.5								
K	97														
6300	NE	02	M	N	2m M5	C	15.5	3150	K	E	340.6	E 6	8/1.3	50	
						D	21			F	269.0	E 6	10/1.7	64	

Load	Frame	Falls	Trolley					Duty		Drum		Rope		Contactor control					
			D D D					FEM	ISO	Code	HOL	Load	Ty	Gear		Motor	Speed	(tm/ min)	
			L	H	M	W	N							F	V				Type
									<i>E</i>	28		M							
									<i>F</i>	36									
									<i>G</i>	47									
									<i>H</i>	61									
									<i>J</i>	80.5									
									<i>K</i>	97									
6300	<i>NE</i>	<i>02</i>		<i>M</i>	<i>N</i>	<i>F</i>	3m	M6	<i>C</i>	15.5	3150	K	<i>E</i>	340.6	<i>E 6</i>	8/1.3	50		
									<i>D</i>	21									
									<i>E</i>	28		M							
									<i>F</i>	36									
									<i>G</i>	47									
									<i>H</i>	61									
									<i>J</i>	80.5									
									<i>K</i>	97									
8000	<i>NE</i>	<i>02</i>		<i>M</i>	<i>N</i>	<i>F</i>	1Am	M4	<i>C</i>	15.5	4000	K	<i>E</i>	340.6	<i>E 6</i>	8/1.3	64		
									<i>D</i>	21			<i>F</i>	269.0	<i>E 6</i>	10/1.7	80		
									<i>E</i>	28		M							
									<i>F</i>	36									
									<i>G</i>	47									
									<i>H</i>	61									
									<i>J</i>	80.5									
									<i>K</i>	97									
8000	<i>NE</i>	<i>02</i>		<i>M</i>	<i>N</i>	<i>F</i>	2m	M5	<i>C</i>	15.5	4000	K	<i>E</i>	340.6	<i>E 6</i>	8/1.3	64		
									<i>D</i>	21									
									<i>E</i>	28		M							
									<i>F</i>	36									
									<i>G</i>	47									
									<i>H</i>	61									
									<i>J</i>	80.5									
									<i>K</i>	97									
10000	<i>NE</i>	<i>02</i>		<i>M</i>	<i>N</i>	<i>F</i>	1Am	M4	<i>C</i>	15.5	5000	K	<i>E</i>	340.6	<i>E 6</i>	8/1.3	80		
									<i>D</i>	21									
									<i>E</i>	28		M							
									<i>F</i>	36									
									<i>G</i>	47									
									<i>H</i>	61									
									<i>J</i>	80.5									
									<i>K</i>	97									
12500	<i>NE</i>	<i>04</i>		<i>M</i>	<i>N</i>	<i>F</i>	1Am	M4	<i>C</i>	7.5	3125	K	<i>E</i>	340.6	<i>E 6</i>	4/0.7	50		
									<i>D</i>	10.5			<i>F</i>	269.0	<i>E 6</i>	5/0.8	64		
									<i>E</i>	14									
									<i>F</i>	18									
									<i>G</i>	23.5									
									<i>H</i>	30.5									
									<i>J</i>	40									
									<i>K</i>	48.5									
12500	<i>NE</i>	<i>04</i>		<i>M</i>	<i>N</i>	<i>F</i>	2m	M5	<i>C</i>	7.5	3125	K	<i>E</i>	340.6	<i>E 6</i>	4/0.7	50		
									<i>D</i>	10.5			<i>F</i>	269.0	<i>E 6</i>	5/0.8	64		
									<i>E</i>	14									
									<i>F</i>	18									
									<i>G</i>	23.5									
									<i>H</i>	30.5									
									<i>J</i>	40									
									<i>K</i>	48.5									
12500	<i>NE</i>	<i>04</i>		<i>M</i>	<i>N</i>	<i>F</i>	3m	M6	<i>C</i>	7.5	3125	K	<i>E</i>	340.6	<i>E 6</i>	4/0.7	50		
									<i>D</i>	10.5									
									<i>E</i>	14									
									<i>F</i>	18									
									<i>G</i>	23.5									
									<i>H</i>	30.5									

Load	Frame	Falls	Trolley					Duty		Drum		Rope		Contactor control													
			D D D					FEM	ISO	Code	HOL	Load	Ty	Gear		Motor	Speed	(tm/ min)									
			L	H	M	N	F							Type	Ratio				(m/min)								
									<i>J</i>	40																	
									<i>K</i>	48.5																	
16000	<i>NE</i>	<i>04</i>				<i>M</i>	<i>N</i>	<i>F</i>	1Am	M4	<i>C</i>	7.5	4000	K	<i>E</i>	340.6	<i>E 6</i>	4/0.7	64	<i>F</i>	269.0	<i>E 6</i>	5/0.8	80			
									<i>D</i>	10.5																	
									<i>E</i>	14																	
									<i>F</i>	18																	
									<i>G</i>	23.5																	
									<i>H</i>	30.5																	
									<i>J</i>	40																	
									<i>K</i>	48.5																	
16000	<i>NE</i>	<i>04</i>				<i>M</i>	<i>N</i>	<i>F</i>	2m	M5	<i>C</i>	7.5	4000	K	<i>E</i>	340.6	<i>E 6</i>	4/0.6	64								
											<i>D</i>	10.5															
									<i>E</i>	14																	
									<i>F</i>	18																	
									<i>G</i>	23.5																	
									<i>H</i>	30.5																	
									<i>J</i>	40																	
									<i>K</i>	48.5																	
20000	<i>NE</i>	<i>04</i>				<i>M</i>	<i>N</i>	<i>F</i>	1Am	M4	<i>C</i>	7.5	5000	K	<i>E</i>	340.6	<i>E 6</i>	4/0.6	80								
											<i>D</i>	10.5															
									<i>E</i>	14																	
									<i>F</i>	18																	
									<i>G</i>	23.5																	
									<i>H</i>	30.5																	
									<i>J</i>	40																	
									<i>K</i>	48.5																	
20000	<i>NE</i>	<i>06</i>				<i>M</i>	<i>N</i>	<i>F</i>	1Am	M4	<i>C</i>	5	3330	K	<i>E</i>	340.6	<i>E 6</i>	2.5/0.4	50	<i>F</i>	269.0	<i>E 6</i>	3.2/0.5	64			
											<i>D</i>	7															
									<i>E</i>	9																	
									<i>F</i>	12																	
									<i>G</i>	15.5																	
									<i>H</i>	20																	
									<i>J</i>	26.5																	
									<i>K</i>	32																	
20000	<i>NE</i>	<i>06</i>				<i>M</i>	<i>N</i>	<i>F</i>	2m	M5	<i>C</i>	5	3330	K	<i>E</i>	340.6	<i>E 6</i>	2.5/0.4	50	<i>F</i>	269.0	<i>E 6</i>	3.2/0.5	64			
											<i>D</i>	7															
									<i>E</i>	9																	
									<i>F</i>	12																	
									<i>G</i>	15.5																	
									<i>H</i>	20																	
									<i>J</i>	26.5																	
									<i>K</i>	32																	
25000	<i>NE</i>	<i>06</i>				<i>M</i>	<i>N</i>	<i>F</i>	1Am	M4	<i>C</i>	5	4170	K	<i>E</i>	340.6	<i>E 6</i>	2.5/0.4	62	<i>F</i>	269.0	<i>E 6</i>	3.2/0.5	80			
											<i>D</i>	7															
									<i>E</i>	9																	
									<i>F</i>	12																	
									<i>G</i>	15.5																	
									<i>H</i>	20																	
									<i>J</i>	26.5																	
									<i>K</i>	32																	
25000	<i>NE</i>	<i>06</i>				<i>M</i>	<i>N</i>	<i>F</i>	2m	M5	<i>C</i>	5	4170	K	<i>E</i>	340.6	<i>E 6</i>	2.5/0.4	62								
											<i>D</i>	7															
									<i>E</i>	9																	
									<i>F</i>	12																	
									<i>G</i>	15.5																	
									<i>H</i>	20																	
									<i>J</i>	26.5																	
									<i>K</i>	32																	
30000	<i>NE</i>	<i>06</i>				<i>M</i>	<i>N</i>	<i>F</i>	1Am	M4	<i>C</i>	5	5000	K	<i>E</i>	340.6	<i>E 6</i>	2.5/0.4	75								
											<i>D</i>	7															

Load	Frame	Falls	Trolley			Duty	Drum		Rope		Contactor control				
			D D D			FEM ISO	Code	HOL (m)	Load (kg)	Ty pe	Gear		Motor	Speed (m/min)	(tm/ min)
			L	H	M W N F V						Type	Ratio			
							<i>E</i> 9 <i>F</i> 12 <i>G</i> 15.5 <i>H</i> 20 <i>J</i> 26.5 <i>K</i> 32								
25000	<i>NE</i>	<i>08</i>	<i>M N F</i>	1Am M4	<i>D</i>	5.8 7 9 11.5 15 20 24	3125	K	<i>E</i> 340.6 <i>F</i> 269.0	<i>E 6</i> <i>E 6</i>	2/0.3 2.5/0.4	50 64			
32000	<i>NE</i>	<i>08</i>	<i>M N F</i>	1Am M4	<i>D</i>	5.8 7 9 11.5 15 20 24	4000	K	<i>E</i> 340.6 <i>F</i> 269.0	<i>E 6</i> <i>E 6</i>	2/0.3 2.5/0.4	64 80			
40000	<i>NE</i>	<i>08</i>	<i>M N F</i>	1Am M4	<i>D</i>	5.8 7 9 11.5 15 20 24	5000	K	<i>E</i> 340.6	<i>E 6</i>	2/0.3	80			
8000	<i>NE</i>	<i>22</i>	<i>M N F</i>	1Am M4	<i>E</i> <i>F</i> <i>G</i> <i>H</i> <i>J</i> <i>K</i> <i>L</i> <i>M</i> <i>N</i>	17 23 30 42.5 53 64.5 78 87.5 99	4000	G + Gr	<i>E</i> 340.6 <i>F</i> 269.0	<i>E 6</i> <i>E 6</i>	8/1.3 10/1.7	64 80			
8000	<i>NE</i>	<i>22</i>	<i>M N F</i>	2m M5	<i>E</i> <i>F</i> <i>G</i> <i>H</i> <i>J</i> <i>K</i> <i>L</i> <i>M</i> <i>N</i>	17 23 30 42.5 53 64.5 78 87.5 99	4000	G + Gr	<i>E</i> 340.6	<i>E 6</i>	8/1.3	64			
10000	<i>NE</i>	<i>22</i>	<i>M N F</i>	1Am M4	<i>E</i> <i>F</i> <i>G</i> <i>H</i> <i>J</i> <i>K</i> <i>L</i> <i>M</i> <i>N</i>	17 23 30 42.5 53 64.5 78 87.5 99	5000	G + Gr	<i>E</i> 340.6	<i>E 6</i>	8/1.3	80			
12500	<i>NE</i>	<i>24</i>	<i>M N F</i>	1Am M4	<i>E</i> <i>F</i> <i>G</i> <i>H</i>	8.5 11.5 15 20	3125	G + Gr	<i>E</i> 340.6 <i>F</i> 269.0	<i>E 6</i> <i>E 6</i>	4/0.7 5/0.8	50 64			
					<i>J</i> <i>K</i>	26.5 32									

Load	Frame	Falls	Trolley			Duty	Drum		Rope		Contactor control														
			D D D			FEM ISO	Code	HOL	Load	Ty	Gear		Motor	Speed	(tm/										
			L	H	M W N F V			(m)	(kg)	pe	Type	Ratio		(m/min)	min)										
							<i>L</i>	39																	
							<i>M</i>	43.5																	
							<i>N</i>	49.5																	
12500	<i>NE</i>	24		<i>M</i>	<i>N F</i>	2m M5	<i>E</i>	8.5	3125	G		<i>E</i>	340.6	<i>E 6</i>	4/0.7	50									
							<i>F</i>	11.5		+ Gr		<i>F</i>	269.0	<i>E 6</i>	5/0.8	64									
							<i>G</i>	15																	
							<i>H</i>	20																	
							<i>J</i>	26.5																	
							<i>K</i>	32																	
							<i>L</i>	39																	
							<i>M</i>	43.5																	
							<i>N</i>	49.5																	
12500	<i>NE</i>	24		<i>M</i>	<i>N F</i>	3m M6	<i>E</i>	8.5	3125	G		<i>E</i>	340.6	<i>E 6</i>	4/0.7	50									
							<i>F</i>	11.5		+ Gr															
							<i>G</i>	15																	
							<i>H</i>	20																	
							<i>J</i>	26.5																	
							<i>K</i>	32																	
							<i>L</i>	39																	
							<i>M</i>	43.5																	
							<i>N</i>	49.5																	
16000	<i>NE</i>	24		<i>M</i>	<i>N F</i>	1Am M4	<i>E</i>	8.5	4000	G		<i>E</i>	340.6	<i>E 6</i>	4/0.7	64									
							<i>F</i>	11.5		+ Gr		<i>F</i>	269.0	<i>E 6</i>	5/0.8	80									
							<i>G</i>	15																	
							<i>H</i>	20																	
							<i>J</i>	26.5																	
							<i>K</i>	32																	
							<i>L</i>	39																	
							<i>M</i>	43.5																	
							<i>N</i>	49.5																	
16000	<i>NE</i>	24		<i>M</i>	<i>N F</i>	2m M5	<i>E</i>	8.5	4000	G		<i>E</i>	340.6	<i>E 6</i>	4/0.6	64									
							<i>F</i>	11.5		+ Gr															
							<i>G</i>	15																	
							<i>H</i>	20																	
							<i>J</i>	26.5																	
							<i>K</i>	32																	
							<i>L</i>	39																	
							<i>M</i>	43.5																	
							<i>N</i>	49.5																	
20000	<i>NE</i>	24		<i>M</i>	<i>N F</i>	1Am M4	<i>E</i>	8.5	5000	G		<i>E</i>	340.6	<i>E 6</i>	4/0.6	80									
							<i>F</i>	11.5		+ Gr															
							<i>G</i>	15																	
							<i>H</i>	20																	
							<i>J</i>	26.5																	
							<i>K</i>	32																	
							<i>L</i>	39																	
							<i>M</i>	43.5																	
							<i>N</i>	49.5																	
20000	<i>NE</i>	26		<i>M</i>	<i>N F</i>	1Am M4	<i>E</i>	5.5	3330	G		<i>E</i>	340.6	<i>E 6</i>	2.5/0.4	50									
							<i>F</i>	7.5		+ Gr		<i>F</i>	269.0	<i>E 6</i>	3.2/0.5	64									
							<i>G</i>	10																	
							<i>H</i>	13																	
							<i>J</i>	17.5																	
							<i>K</i>	21.5																	
							<i>L</i>	26																	
							<i>M</i>	29																	
							<i>N</i>	33																	
20000	<i>NE</i>	26		<i>M</i>	<i>N F</i>	2m M5	<i>E</i>	5.5	3330	G		<i>E</i>	340.6	<i>E 6</i>	2.5/0.4	50									
							<i>F</i>	7.5		+ Gr		<i>F</i>	269.0	<i>E 6</i>	3.2/0.5	64									
							<i>G</i>	10																	

Load	Frame	Falls	Trolley			Duty	Drum		Rope		Contactor control						
			D D D			FEM ISO	Code	HOL	Load	Ty	Gear		Motor	Speed	(tm/		
			L	H	M W N F V			(m)	(kg)	pe	Type	Ratio		(m/min)	min)		
							<i>H</i> 13 <i>J</i> 17.5 <i>K</i> 21.5 <i>L</i> 26 <i>M</i> 29 <i>N</i> 33										
25000	<i>NE</i>	26	<i>M</i> <i>N</i> <i>F</i>	1Am M4	<i>E</i> 5.5 <i>F</i> 7.5 <i>G</i> 10 <i>H</i> 13 <i>J</i> 17.5 <i>K</i> 21.5 <i>L</i> 26 <i>M</i> 29 <i>N</i> 33	4170	G + Gr	<i>E</i> 340.6 <i>F</i> 269.0	<i>E</i> 6 <i>E</i> 6	2.5/0.4 3.2/0.5	62 80						
25000	<i>NE</i>	26	<i>M</i> <i>N</i> <i>F</i>	2m M5	<i>E</i> 5.5 <i>F</i> 7.5 <i>G</i> 10 <i>H</i> 13 <i>J</i> 17.5 <i>K</i> 21.5 <i>L</i> 26 <i>M</i> 29 <i>N</i> 33	4170	G + Gr	<i>E</i> 340.6	<i>E</i> 6	2.5/0.4	62						
30000	<i>NE</i>	26	<i>M</i> <i>N</i> <i>F</i>	1Am M4	<i>E</i> 5.5 <i>F</i> 7.5 <i>G</i> 10 <i>H</i> 13 <i>J</i> 17.5 <i>K</i> 21.5 <i>L</i> 26 <i>M</i> 29 <i>N</i> 33	5000	G + Gr	<i>E</i> 340.6	<i>E</i> 6	2.5/0.4	75						
25000	<i>NE</i>	28	<i>M</i> <i>N</i> <i>F</i>	1Am M4	<i>F</i> 5.5 <i>G</i> 7.5 <i>H</i> 9.5 <i>J</i> 13 <i>K</i> 16 <i>L</i> 19.5 <i>M</i> 21.5 <i>N</i> 24.5	3125	G + Gr	<i>E</i> 340.6 <i>F</i> 269.0	<i>E</i> 6 <i>E</i> 6	2/0.3 2.5/0.4	50 64						
32000	<i>NE</i>	28	<i>M</i> <i>N</i> <i>F</i>	1Am M4	<i>F</i> 5.5 <i>G</i> 7.5 <i>H</i> 9.5 <i>J</i> 13 <i>K</i> 16 <i>L</i> 19.5 <i>M</i> 21.5 <i>N</i> 24.5	4000	G + Gr	<i>E</i> 340.6 <i>F</i> 269.0	<i>E</i> 6 <i>E</i> 6	2/0.3 2.5/0.4	64 80						
40000	<i>NE</i>	28	<i>M</i> <i>N</i> <i>F</i>	1Am M4	<i>F</i> 5.5 <i>G</i> 7.5 <i>H</i> 9.5 <i>J</i> 13 <i>K</i> 16 <i>L</i> 19.5 <i>M</i> 21.5 <i>N</i> 24.5	5000	G + Gr	<i>E</i> 340.6	<i>E</i> 6	2/0.3	80						
12500	<i>NF</i>	22	<i>M</i>	1Am M4	<i>F</i> 15.5 <i>G</i> 20.5 <i>H</i> 27.5	3150	K + Kr	<i>E</i> 340.6 <i>F</i> 269.0	<i>2E</i> 6 <i>2E</i> 6	8/1.3 10/1.7	100 125						

Load	Frame	Falls	Trolley			Duty		Drum		Rope		Contactor control					
			D D D			FEM	ISO	Code	HOL (m)	Load (kg)	Ty pe	Gear		Motor	Speed (m/min)	(tm/ min)	
			L	H	M W N F V							Type	Ratio				
								J 37.5 K 46 L 55.5 M 62.5 N 71									
12500	NF	22	M			2m M5	F 15.5 G 20.5 H 27.5 J 37.5 K 46 L 55.5 M 62.5 N 71	3150	K + Kr	E 340.6 F 269.0	2E 6 2E 6	8/1.3 10/1.7	100 125				
12500	NF	22	M			3m M6	F 15.5 G 20.5 H 27.5 J 37.5 K 46 L 55.5 M 62.5 N 71	3150	K + Kr	E 340.6 F 269.0	2E 6 2E 6	8/1.3 10/1.7	100 160				
16000	NF	22	M			1Am M4	F 15.5 G 20.5 H 27.5 J 37.5 K 46 L 55.5 M 62.5 N 71	4000	K + Kr	E 340.6 F 269.0	2E 6 2E 6	8/1.3 10/1.7	128 160				
16000	NF	22	M			2m M5	F 15.5 G 20.5 H 27.5 J 37.5 K 46 L 55.5 M 62.5 N 71	4000	K + Kr	E 340.6 F 269.0	2E 6 2E 6	8/1.3 10/1.7	128 160				
20000	NF	22	M			1Am M4	F 15.5 G 20.5 H 27.5 J 37.5 K 46 L 55.5 M 62.5 N 71	5000	K + Kr	E 340.6 F 269.0	2E 6 2E 6	8/1.3 10/1.7	160 125				
25000	NF	24	M			1Am M4	F 7.5 G 10 H 13.5 J 18.5 K 23 L 27.5 M 31 N 35.5	3125	K + Kr	E 340.6 F 269.0	2E 6 2E 6	4/0.7 5/0.8	100 125				
25000	NF	24	M			2m M5	F 7.5 G 10 H 13.5 J 18.5	3125	K + Kr	E 340.6 F 269.0	2E 6 2E 6	4/0.7 5/0.8	100 125				
							K 23 L 27.5 M 31										

Load	Frame	Falls	Trolley			Duty		Drum		Rope		Contactor control				
			D D D			FEM ISO		Code	HOL (m)	Load (kg)	Type	Gear		Motor	Speed (m/min)	(tm/min)
			L	H	M W N F V							Type	Ratio			
25000	NF	24	M	3m	M6	N	35.5	3125	K + Kr	E	340.6	2E 6	4/0.7	100		
							F								7.5	
							G								10	
							H								13.5	
							J								18.5	
							K								23	
							L								27.5	
M	31															
N	35.5															
32000	NF	24	M	1Am	M4	F	7.5	4000	K + Kr	E	340.6	2E 6	4/0.7	128		
							G								10	
							H								13.5	
							J								18.5	
							K								23	
							L								27.5	
							M								31	
N	35.5															
32000	NF	24	M	2m	M5	F	7.5	4000	K + Kr	E	340.6	2E 6	4/0.6	128		
							G								10	
							H								13.5	
							J								18.5	
							K								23	
							L								27.5	
							M								31	
N	35.5															
40000	NF	24	M	1Am	M4	F	7.5	5000	K + Kr	E	340.6	2E 6	4/0.6	160		
							G								10	
							H								13.5	
							J								18.5	
							K								23	
							L								27.5	
							M								31	
N	35.5															
40000	NF	26	M	1Am	M4	F	5.5	3330	K + Kr	E	340.6	2E 6	2.5/0.4	100		
							G								7.5	
							H								9.5	
							J								13	
							K								15.5	
							L								19	
							M								21.5	
N	24															
40000	NF	26	M	2m	M5	F	5	3330	K + Kr	E	340.6	2E 6	2.5/0.4	100		
							G								6.5	
							H								9	
							J								12.5	
							K								15	
							L								18.5	
							M								20.5	
N	23.5															
40000	NF	26	M	3m	M5	F	5	3330	L + Lr	E	340.6	2E 6	2.5/0.4	100		
							G								6.5	
							H								9	
							J								12.5	
							K								15	
							L								18.5	
							M								20.5	
N	23.5															
50000	NF	26	M	1Am	M4	F	5	4170	K + Kr	E	340.6	2E 6	2.5/0.4	125		
							G								6.5	
							H								9	

Load	Frame	Falls	Trolley			Duty		Drum		Rope		Contactor control								
			D D D			FEM	ISO	Code	HOL (m)	Load (kg)	Ty pe	Gear		Motor	Speed (m/min)	(tm/ min)				
			L	H	M							W	N				F	V	Type	Ratio
								J	12.5											
								K	15											
								L	18.5											
								M	20.5											
								N	23.5											
50000	NF	26			M		2m	M5	F	5	4170	K	E	340.6	2E 6	2.5/0.4	125			
									G	6.5		+ Kr								
									H	9										
									J	12.5										
									K	15										
									L	18.5										
									M	20.5										
									N	23.5										
60000	NF	26			M		1Am	M4	F	5	5000	K	E	340.6	2E 6	2.5/0.4	150			
									G	6.5		+ Kr								
									H	9										
									J	12.5										
									K	15										
									L	18.5										
									M	20.5										
									N	23.5										
50000	NF	28			M		1Am	M4	H	6.5	3125	K	E	340.6	2E 6	2/0.3	100			
									J	9		+ Kr	F	269.0	2E 6	2.5/0.4	125			
									K	11										
									L	13.5										
									M	15.5										
									N	17.5										
50000	NF	28			M		2m	M5	H	6.5	3125	K	E	340.6	2E 6	2/0.3	100			
									J	9		+ Kr	F	269.0	2E 6	2.5/0.4	125			
									K	11										
									L	13.5										
									M	15.5										
									N	17.5										
63000	NF	28			M		1Am	M4	H	6.5	4000	K	E	340.6	2E 6	2/0.3	125			
									J	9		+ Kr	F	269.0	2E 6	2.5/0.4	160			
									K	11										
									L	13.5										
									M	15.5										
									N	17.5										
63000	NF	28			M		2m	M5	H	6.5	4000	L	E	340.6	2E 6	2/0.3	125			
									J	9		+ Lr								
									K	11										
									L	13.5										
									M	15.5										
									N	17.5										
80000	NF	28			M		1Am	M4	H	6.5	5000	K	E	340.6	2E 6	2/0.3	160			
									J	9		+ Kr								
									K	11										
									L	13.5										
									M	15.5										
									N	17.5										

3.2 Ex hoists – Zone 2

Load	Frame	Falls	Trolley		Duty		Drum		Rope		Contactor control					
			D D D		FEM ISO		Code	HOL (m)	Load (kg)	Type	Gear		Motor	Speed (m/min)	(tm/min)	
			L	M	N	F					Type	Ratio				
800	NC	02	L	M	N	F	3m M6	B	12	400	D	F	160.3	P 1	10/1.7	8
								C	18							
								D	24							
							E	30								
								F	40							
							G	50								
1000	NC	02	L	M	N	F	2m M5	B	12	500	D	F	160.3	P 1	10/1.7	10
								C	18							
								D	24							
							E	30								
								F	40							
							G	50								
1000	NC	02	L	M	N	F	3m M6	B	12	500	D	E	192.6	P 1	8/1.3	8
								C	18							
								D	24							
							E	30								
								F	40							
							G	50								
1250	NC	02	L	M	N	F	2m M5	B	12	625	D	E	192.6	P 1	8/1.3	10
								C	18							
								D	24							
							E	30								
								F	40							
							G	50								
1600	NC	02	L	M	N	F	3m M6	B	12	800	D	F	160.3	P 2	10/1.7	16
								C	18							
								D	24							
							E	30								
								F	40							
							G	50								
1600	NC	04	L	M	N	F	3m M6	B	6	400	D	F	160.3	P 1	5/0.8	8
								C	9							
								D	12							
							E	15								
								F	20							
							G	25								
2000	NC	02	L	M	N	F	2m M5	B	12	1000	D	F	160.3	P 2	10/1.7	20
								C	18							
								D	24							
							E	30								
								F	40							
							G	50								
2000	NC	02	L	M	N	F	3m M6	B	12	1000	D	E	192.6	P 2	8/1.3	16
								C	18							
								D	24							
							E	30								
								F	40							
							G	50								
2000	NC	04	L	M	N	F	2m M5	B	6	500	D	F	160.3	P 1	5/0.8	10
								C	9							
								D	12							
							E	15								
								F	20							
							G	25								
2000	NC	04	L	M	N	F	3m M6	B	6	500	D	E	192.6	P 1	4/0.7	8
								C	9							
								D	12							

Load	Frame	Falls	Trolley		Duty		Drum		Rope		Contactor control				
			D D D		FEM ISO		Code	HOL (m)	Load (kg)	Type	Gear		Motor	Speed (m/min)	(tm/min)
			L	H M W N F V	Type	Ratio									
			<i>M N F</i>				<i>E</i>	15							
			<i>F</i>				<i>F</i>	20							
			<i>G</i>				<i>G</i>	25							
2500	NC	02	<i>L</i>	<i>M N F</i>	2m M5	<i>B</i>	12	1250	D	<i>E</i>	192.6	<i>P 2</i>	8/1.3	20	
			<i>C</i>			<i>C</i>	18		F						
			<i>D</i>			<i>D</i>	24								
			<i>E</i>			<i>E</i>	30								
			<i>F</i>			<i>F</i>	40								
			<i>G</i>			<i>G</i>	50								
2500	NC	04	<i>L</i>	<i>M N F</i>	2m M5	<i>B</i>	6	625	D	<i>E</i>	192.6	<i>P 1</i>	4/0.7	10	
			<i>C</i>			<i>C</i>	9								
			<i>D</i>			<i>D</i>	12								
			<i>E</i>			<i>E</i>	15								
			<i>F</i>			<i>F</i>	20								
			<i>G</i>			<i>G</i>	25								
3200	NC	04	<i>L</i>	<i>M N F</i>	3m M6	<i>B</i>	6	800	D	<i>F</i>	160.3	<i>P 2</i>	5/0.8	16	
			<i>C</i>			<i>C</i>	9								
			<i>D</i>			<i>D</i>	12								
			<i>E</i>			<i>E</i>	15								
			<i>F</i>			<i>F</i>	20								
			<i>G</i>			<i>G</i>	25								
4000	NC	04	<i>L</i>	<i>M N F</i>	2m M5	<i>B</i>	6	1000	D	<i>F</i>	160.3	<i>P 2</i>	5/0.8	20	
			<i>C</i>			<i>C</i>	9								
			<i>D</i>			<i>D</i>	12								
			<i>E</i>			<i>E</i>	15								
			<i>F</i>			<i>F</i>	20								
			<i>G</i>			<i>G</i>	25								
4000	NC	04	<i>L</i>	<i>M N F</i>	3m M6	<i>B</i>	6	1000	D	<i>E</i>	192.6	<i>P 2</i>	4/0.7	16	
			<i>C</i>			<i>C</i>	9								
			<i>D</i>			<i>D</i>	12								
			<i>E</i>			<i>E</i>	15								
			<i>F</i>			<i>F</i>	20								
			<i>G</i>			<i>G</i>	25								
5000	NC	04	<i>L</i>	<i>M N F</i>	2m M5	<i>B</i>	6	1250	D	<i>E</i>	192.6	<i>P 2</i>	4/0.7	20	
			<i>C</i>			<i>C</i>	9								
			<i>D</i>			<i>D</i>	12								
			<i>E</i>			<i>E</i>	15								
			<i>F</i>			<i>F</i>	20								
			<i>G</i>			<i>G</i>	25								
6300	NC	06	<i>M N F</i>		2m M5	<i>C</i>	6	1050	D	<i>F</i>	160.3	<i>P 2</i>	3.2/0.5	20	
			<i>D</i>			<i>D</i>	8								
			<i>E</i>			<i>E</i>	10								
			<i>F</i>			<i>F</i>	13								
			<i>G</i>			<i>G</i>	17								
7500	NC	06	<i>M N F</i>		2m M5	<i>C</i>	6	1250	D	<i>E</i>	192.6	<i>P 2</i>	2.5/0.4	20	
			<i>D</i>			<i>D</i>	8								
			<i>E</i>			<i>E</i>	10								
			<i>F</i>			<i>F</i>	13								
			<i>G</i>			<i>G</i>	17								
8000	NC	08	<i>M N F</i>		1Am M4	<i>C</i>	4.5	1250	D	<i>F</i>	160.3	<i>P 2</i>	2.5/0.4	20	
			<i>D</i>			<i>D</i>	6								
			<i>E</i>			<i>E</i>	7.5								
			<i>F</i>			<i>F</i>	10								
			<i>G</i>			<i>G</i>	12.5								
10000	NC	08	<i>M N F</i>		1Am M4	<i>C</i>	4.5	1250	D	<i>E</i>	192.6	<i>P 2</i>	2/0.3	20	
			<i>D</i>			<i>D</i>	6								
			<i>E</i>			<i>E</i>	7.5								
			<i>F</i>			<i>F</i>	10								
			<i>G</i>			<i>G</i>	12.5								

Load	Frame	Falls	Trolley		Duty		Drum		Rope		Contactor control						
			D D D		FEM ISO	Code	HOL (m)	Load (kg)	Type	Gear		Motor	Speed (m/min)	(tm/min)			
			L	H M W N F V						Type	Ratio						
3200	ND	02	M N F		3m M6	D	18	1600	G	H	113.8	P 6	16/2.7	50			
			L M N F												E	24	J
			M N F														
		M N F				G	40										
		M N F						H	52								
		M N F				J	70										
4000	ND	02	M N F		3m M6			D	18	2000	G	E	223.8	P 4	8/1.3	32	
			L M N F			F	32										J
			M N F														
		M N F				H	52										
		M N F						J	70								
		M N F				F	185.3										
		M N F						G	40								
4000	ND	02	M N F		2m M5	D	18			2000	G	H	113.8	P 6	16/2.6	64	
			L M N F					E	24								J
			M N F														
		M N F				H	52										
		M N F						J	70								
		M N F				F	185.3										
		M N F						G	40								
5000	ND	02	M N F		2m M5	D	18			2500	G	E	223.8	P 4	8/1.3	40	
			L M N F					F	32								J
			M N F														
		M N F				H	52										
		M N F						J	70								
		M N F				F	185.3										
		M N F						G	40								
5000	ND	02	M N F		1Am M4	D	18			2500	G	H	113.8	P 6	16/2.6	80	
			L M N F					E	24								J
			M N F														
		M N F				H	52										
		M N F						J	70								
		M N F				F	185.3										
		M N F						G	40								
6300	ND	04	M N F		3m M6	D	9			1600	G	H	113.8	P 6	8/1.3	50	
			L M N F					E	12								
			M N F														
		M N F				H	26										
		M N F						J	35								
		M N F				F	16										
		M N F						G	20								
8000	ND	04	M N F		3m M6	D	9			2000	G	E	223.8	P 4	4/0.7	32	
			L M N F					F	16								
			M N F														
		M N F				H	25										
		M N F						J	35								
		M N F				F	16										
		M N F						G	20								
8000	ND	04	M N F		2m M5	D	9			2000	G	H	113.8	P 6	8/1.3	64	
			L M N F					E	12								
			M N F														
		M N F				H	26										
		M N F						J	35								
		M N F				F	16										
		M N F						G	20								
10000	ND	04	M N F		2m M5	D	9			2500	G	E	223.8	P 4	4/0.7	40	
			L M N F					F	16								
			M N F														
		M N F				H	26										
		M N F						J	35								
		M N F				F	16										
		M N F						G	20								
10000	ND	04	M N F		1Am M4	D	9			2500	G	H	113.8	P 6	8/1.3	80	
			L M N F					E	12								
			M N F														
		M N F				H	26										
		M N F						J	35								
		M N F				F	16										
		M N F						G	20								

Load	Frame	Falls	Trolley				Duty		Drum		Rope		Contactor control				
			D D D				FEM ISO		Code	HOL (m)	Load (kg)	Type	Gear		Motor	Speed (m/min)	(tm/min)
			L	H	M	N	F	V					Type	Ratio			
12500	ND	06	M	N	F	2m	M5	J	35	2085	G	H	113.8	P 6	5/0.8	64	
								D	6								
								E	8								
								F	10								
								G	13								
H	17																
J	23																
15000	ND	06	M	N	F	2m	M5	D	6	2500	G	E	223.8	P 4	2.5/0.4	40	
								E	8								
								F	10								
								G	13								
								H	17								
J	23																
15000	ND	06	M	N	F	1Am	M4	D	6	2500	G	H	113.8	P 6	5/0.8	50	
								E	8								
								F	10								
								G	13								
								H	17								
J	23																
20000	ND	08	M	N	F	1Am	M4	D	4.5	2500	G	E	223.8	P 4	2/0.3	40	
								E	6								
								F	8								
								G	10								
								H	13								
J	17.5																
3200	ND	22	M	F	3m	M6	D	8.5	1600	D + Dr	E	223.8	P 4	8/1.3	25		
							E	13									
							F	18									
							G	25									
							H	33.5									
J	46																
4000	ND	22	M	F	2m	M5	D	8.5	2000	D + Dr	E	223.8	P 4	8/1.3	32		
							E	13									
							F	18									
							G	25									
							H	33.5									
J	46																
4000	ND	22	M	F	3m	M6	D	8.5	2000	D + Dr	E	223.8	P 4	8/1.3	32		
							E	13									
							F	18									
							G	25									
							H	33.5									
J	46																
5000	ND	22	M	F	1Am	M4	D	8.5	2500	D + Dr	E	223.8	P 4	8/1.3	40		
							E	13									
							F	18									
							G	25									
							H	33.5									
J	46																
5000	ND	22	M	F	2m	M5	D	8.5	2500	D + Dr	E	223.8	P 4	8/1.3	40		
							E	13									
							F	18									
							G	25									
							H	33.5									
J	46																
6300	ND	24	M	F	3m	M6	D	4	1600	D	E	223.8	P 4	4/0.7	25		
							E	6.5									
							F	9									
							G	12.5									
							H	113.8									

Load	Frame	Falls	Trolley				Duty		Drum		Rope		Contactor control					
			D D D				FEM ISO		Code	HOL (m)	Load (kg)	Type	Gear		Motor	Speed (m/min)	(tm/min)	
			L	H	M	W	N	F					V	Type				Ratio
								<i>H</i>	16.5									
								<i>J</i>	23									
8000	<i>ND</i>	<i>24</i>	<i>M</i>	<i>F</i>			2m M5	<i>D</i>	4	2000	D		<i>E</i>	223.8	<i>P 4</i>	4/0.7	32	
								<i>E</i>	6.5		+ Dr		<i>F</i>	185.3	<i>P 6</i>	5/0.8	40	
								<i>F</i>	9				<i>H</i>	113.8	<i>P 6</i>	8/1.3	64	
								<i>G</i>	12.5									
								<i>H</i>	16.5									
								<i>J</i>	23									
8000	<i>ND</i>	<i>24</i>	<i>M</i>	<i>F</i>			3m M5	<i>D</i>	4	2000	D		<i>E</i>	223.8	<i>P 4</i>	4/0.7	32	
								<i>E</i>	6.5		+ Dr		<i>F</i>	185.3	<i>P 6</i>	5/0.8	40	
								<i>F</i>	9									
								<i>G</i>	12.5									
								<i>H</i>	16.5									
								<i>J</i>	23									
10000	<i>ND</i>	<i>24</i>	<i>M</i>	<i>F</i>			1Am M4	<i>D</i>	4	2500	D		<i>E</i>	223.8	<i>P 4</i>	4/0.7	40	
								<i>E</i>	6.5		+ Dr		<i>F</i>	185.3	<i>P 6</i>	5/0.8	50	
								<i>F</i>	9				<i>H</i>	113.8	<i>P 6</i>	8/1.3	80	
								<i>G</i>	12.5									
								<i>H</i>	16.5									
								<i>J</i>	23									
10000	<i>ND</i>	<i>24</i>	<i>M</i>	<i>F</i>			2m M5	<i>D</i>	4	2500	D		<i>E</i>	223.8	<i>P 4</i>	4/0.7	40	
								<i>E</i>	6.5		+ Dr		<i>F</i>	185.3	<i>P 6</i>	5/0.8	50	
								<i>F</i>	9									
								<i>G</i>	12.5									
								<i>H</i>	16.5									
								<i>J</i>	23									
12500	<i>ND</i>	<i>26</i>	<i>M</i>	<i>F</i>			2m M5	<i>E</i>	4	2000	D		<i>E</i>	223.8	<i>P 4</i>	2.5/0.4	32	
								<i>F</i>	6		+ Dr		<i>F</i>	185.3	<i>P 6</i>	3.2/0.5	40	
								<i>G</i>	8				<i>H</i>	113.8	<i>P 6</i>	5/0.8	64	
								<i>H</i>	11									
								<i>J</i>	15									
15000	<i>ND</i>	<i>26</i>	<i>M</i>	<i>F</i>			1Am M4	<i>E</i>	4	2500	D		<i>E</i>	223.8	<i>P 4</i>	2.5/0.4	40	
								<i>F</i>	6		+ Dr		<i>F</i>	185.3	<i>P 6</i>	3.2/0.5	50	
								<i>G</i>	8				<i>H</i>	113.8	<i>P 6</i>	5/0.8	80	
								<i>H</i>	11									
								<i>J</i>	15									
15000	<i>ND</i>	<i>26</i>	<i>M</i>	<i>F</i>			2m M5	<i>E</i>	4	2500	D		<i>E</i>	223.8	<i>P 4</i>	2.5/0.4	40	
								<i>F</i>	6		+ Dr		<i>F</i>	185.3	<i>P 6</i>	3.2/0.5	50	
								<i>G</i>	8									
								<i>H</i>	11									
								<i>J</i>	15									
20000	<i>ND</i>	<i>28</i>	<i>M</i>	<i>F</i>			1Am M4	<i>F</i>	4.5	2500	D		<i>E</i>	223.8	<i>P 4</i>	2/0.3	40	
								<i>G</i>	6		+ Dr		<i>F</i>	185.3	<i>P 6</i>	2.5/0.4	50	
								<i>H</i>	8				<i>H</i>	113.8	<i>P 6</i>	3.2/0.5	80	
								<i>J</i>	11.5									
6300	<i>NE</i>	<i>02</i>	<i>M</i>	<i>N</i>	<i>F</i>		1Am M4	<i>C</i>	15.5	3150	K		<i>E</i>	340.6	<i>P 6</i>	8/1.3	50	
								<i>D</i>	21				<i>F</i>	269.0	<i>P 6</i>	10/1.7	64	
								<i>E</i>	28		M							
								<i>F</i>	36									
								<i>G</i>	47									
								<i>H</i>	61									
								<i>J</i>	80.5									
								<i>K</i>	97									
6300	<i>NE</i>	<i>02</i>	<i>M</i>	<i>N</i>	<i>F</i>		2m M5	<i>C</i>	15.5	3150	K		<i>E</i>	340.6	<i>P 6</i>	8/1.3	50	
								<i>D</i>	21				<i>F</i>	269.0	<i>P 6</i>	10/1.7	64	
								<i>E</i>	28		M							
								<i>F</i>	36									
								<i>G</i>	47									
								<i>H</i>	61									

Load	Frame	Falls	Trolley				Duty		Drum		Rope		Contactor control				
			D D D				FEM ISO		Code	HOL (m)	Load (kg)	Type	Gear		Motor	Speed (m/min)	(tm/min)
			L	H	M	N	F	V					Type	Ratio			
								J	80.5								
6300	NE	02	M	N	F	3m	M6	K	15.5	3150	K	E	340.6	P 6	8/1.3	50	
								M	21								
									28								
									36								
									47								
									61								
									80.5								
8000	NE	02	M	N	F	1Am	M4	K	15.5	4000	K	E	340.6	P 6	8/1.3	64	
								M	21								
									28								
									36								
									47								
									61								
									80.5								
8000	NE	02	M	N	F	2m	M5	K	15.5	4000	K	E	340.6	P 6	8/1.3	64	
								M	21								
									28								
									36								
									47								
									61								
									80.5								
10000	NE	02	M	N	F	1Am	M4	K	15.5	5000	K	E	340.6	P 6	8/1.3	80	
								M	21								
									28								
									36								
									47								
									61								
									80.5								
12500	NE	04	M	N	F	1Am	M4	K	7.5	3125	K	E	340.6	P 6	4/0.7	50	
									10.5								
									14								
									18								
									23.5								
									30.5								
									40								
12500	NE	04	M	N	F	2m	M5	K	7.5	3125	K	E	340.6	P 6	4/0.7	50	
									10.5								
									14								
									18								
									23.5								
									30.5								
									40								
12500	NE	04	M	N	F	3m	M6	K	7.5	3125	K	E	340.6	P 6	4/0.7	50	
									10.5								
									14								
									18								
									23.5								
									30.5								
									40								
	48.5																
								J	40								
16000	NE	04	M	N	F	1Am	M4	K	7.5	4000	K	E	340.6	P 6	4/0.7	64	
								D	10.5								F

Load	Frame	Falls	Trolley				Duty		Drum		Rope		Contactor control				
			D D D				FEM ISO		Code	HOL (m)	Load (kg)	Type	Gear		Motor	Speed (m/min)	(tm/min)
			L	H	M	N F V	Type	Ratio									
								<i>E</i>	14								
								<i>F</i>	18								
								<i>G</i>	23.5								
								<i>H</i>	30.5								
								<i>J</i>	40								
								<i>K</i>	48.5								
16000	NE	04			M N F	2m	M5	C	7.5	4000	K	E	340.6	P 6	4/0.6	64	
								D	10.5								
								E	14								
								F	18								
								G	23.5								
								H	30.5								
								J	40								
								K	48.5								
20000	NE	04			M N F	1Am	M4	C	7.5	5000	K	E	340.6	P 6	4/0.6	80	
								D	10.5								
								E	14								
								F	18								
								G	23.5								
								H	30.5								
								J	40								
								K	48.5								
20000	NE	06			M N F	1Am	M4	C	5	3330	K	E	340.6	P 6	2.5/0.4	50	
								D	7			F	269.0	P 6	3.2/0.5	64	
								E	9								
								F	12								
								G	15.5								
								H	20								
								J	26.5								
								K	32								
20000	NE	06			M N F	2m	M5	C	5	3330	K	E	340.6	P 6	2.5/0.4	50	
								D	7			F	269.0	P 6	3.2/0.5	64	
								E	9								
								F	12								
								G	15.5								
								H	20								
								J	26.5								
								K	32								
25000	NE	06			M N F	1Am	M4	C	5	4170	K	E	340.6	P 6	2.5/0.4	62	
								D	7			F	269.0	P 6	3.2/0.5	80	
								E	9								
								F	12								
								G	15.5								
								H	20								
								J	26.5								
								K	32								
25000	NE	06			M N F	2m	M5	C	5	4170	K	E	340.6	P 6	2.5/0.4	62	
								D	7								
								E	9								
								F	12								
								G	15.5								
								H	20								
								J	26.5								
								K	32								
30000	NE	06			M N F	1Am	M4	C	5	5000	K	E	340.6	P 6	2.5/0.4	75	
								D	7								
								E	9								
								F	12								
								G	15.5								
								H	20								

Load	Frame	Falls	Trolley				Duty		Drum		Rope		Contactor control								
			D D D				FEM ISO		Code	HOL (m)	Load (kg)	Type	Gear		Motor	Speed (m/min)	(tm/min)				
			L	H	M	N	W	F					V	Type				Ratio			
								<i>J</i>	26.5												
								<i>K</i>	32												
25000	<i>NE</i>	<i>08</i>		<i>M</i>	<i>N</i>	<i>F</i>	1Am M4	<i>D</i>	5.8	3125	K	<i>E</i>	340.6	<i>P 6</i>	2/0.3	50	<i>F</i>	269.0	<i>P 6</i>	2.5/0.4	64
								<i>E</i>	7												
								<i>F</i>	9												
								<i>G</i>	11.5												
								<i>H</i>	15												
								<i>J</i>	20												
								<i>K</i>	24												
32000	<i>NE</i>	<i>08</i>		<i>M</i>	<i>N</i>	<i>F</i>	1Am M4	<i>D</i>	5.8	4000	K	<i>E</i>	340.6	<i>P 6</i>	2/0.3	64	<i>F</i>	269.0	<i>P 6</i>	2.5/0.4	80
								<i>E</i>	7												
								<i>F</i>	9												
								<i>G</i>	11.5												
								<i>H</i>	15												
								<i>J</i>	20												
								<i>K</i>	24												
40000	<i>NE</i>	<i>08</i>		<i>M</i>	<i>N</i>	<i>F</i>	1Am M4	<i>D</i>	5.8	5000	K	<i>E</i>	340.6	<i>P 6</i>	2/0.3	80					
								<i>E</i>	7												
								<i>F</i>	9												
								<i>G</i>	11.5												
								<i>H</i>	15												
								<i>J</i>	20												
								<i>K</i>	24												
8000	<i>NE</i>	<i>22</i>		<i>M</i>	<i>N</i>	<i>F</i>	1Am M4	<i>E</i>	17	4000	G + Gr	<i>F</i>	340.6	<i>P 6</i>	8/1.3	64	<i>F</i>	269.0	<i>P 6</i>	10/1.7	80
								<i>F</i>	23												
								<i>G</i>	30												
								<i>H</i>	42.5												
								<i>J</i>	53												
								<i>K</i>	64.5												
								<i>L</i>	78												
								<i>M</i>	87.5												
								<i>N</i>	99												
8000	<i>NE</i>	<i>22</i>		<i>M</i>	<i>N</i>	<i>F</i>	2m M5	<i>E</i>	17	4000	G + Gr	<i>F</i>	340.6	<i>P 6</i>	8/1.3	64					
								<i>F</i>	23												
								<i>G</i>	30												
								<i>H</i>	42.5												
								<i>J</i>	53												
								<i>K</i>	64.5												
								<i>L</i>	78												
								<i>M</i>	87.5												
								<i>N</i>	99												
10000	<i>NE</i>	<i>22</i>		<i>M</i>	<i>N</i>	<i>F</i>	1Am M4	<i>E</i>	17	5000	G + Gr	<i>F</i>	340.6	<i>P 6</i>	8/1.3	80					
								<i>F</i>	23												
								<i>G</i>	30												
								<i>H</i>	42.5												
								<i>J</i>	53												
								<i>K</i>	64.5												
								<i>L</i>	78												
								<i>M</i>	87.5												
								<i>N</i>	99												
12500	<i>NE</i>	<i>24</i>		<i>M</i>	<i>N</i>	<i>F</i>	1Am M4	<i>E</i>	8.5	3125	G + Gr	<i>F</i>	340.6	<i>P 6</i>	4/0.7	50	<i>F</i>	269.0	<i>P 6</i>	5/0.8	64
								<i>F</i>	11.5												
								<i>G</i>	15												
								<i>H</i>	20												
								<i>J</i>	26.5												
								<i>K</i>	32												
								<i>L</i>	39												
								<i>M</i>	43.5												
								<i>N</i>	49.5												

Load	Frame	Falls	Trolley		Duty		Drum		Rope		Contactor control											
			D D D		FEM ISO		Code	HOL (m)	Load (kg)	Type	Gear		Motor	Speed (m/min)	(tm/min)							
			L	H	M	W					N	F				V	Type	Ratio				
12500	NE	24	M	N	F	2m	M5	E	8.5	3125	G	E	340.6	P	6	4/0.7	50					
								F	11.5				F					269.0	P	6	5/0.8	64
								G	15													
								H	20													
								J	26.5													
								K	32													
								L	39													
M	43.5																					
N	49.5																					
12500	NE	24	M	N	F	3m	M6	E	8.5	3125	G	E	340.6	P	6	4/0.7	50					
								F	11.5													
								G	15													
								H	20													
								J	26.5													
								K	32													
								L	39													
M	43.5																					
N	49.5																					
16000	NE	24	M	N	F	1Am	M4	E	8.5	4000	G	E	340.6	P	6	4/0.7	64					
								F	11.5				F					269.0	P	6	5/0.8	80
								G	15													
								H	20													
								J	26.5													
								K	32													
								L	39													
M	43.5																					
N	49.5																					
16000	NE	24	M	N	F	2m	M5	E	8.5	4000	G	E	340.6	P	6	4/0.6	64					
								F	11.5													
								G	15													
								H	20													
								J	26.5													
								K	32													
								L	39													
M	43.5																					
N	49.5																					
20000	NE	24	M	N	F	1Am	M4	E	8.5	5000	G	E	340.6	P	6	4/0.6	80					
								F	11.5													
								G	15													
								H	20													
								J	26.5													
								K	32													
								L	39													
M	43.5																					
N	49.5																					
20000	NE	26	M	N	F	1Am	M4	E	5.5	3330	G	E	340.6	P	6	2.5/0.4	50					
								F	7.5				F					269.0	P	6	3.2/0.5	64
								G	10													
								H	13													
								J	17.5													
								K	21.5													
								L	26													
M	29																					
N	33																					
20000	NE	26	M	N	F	2m	M5	E	5.5	3330	G	E	340.6	P	6	2.5/0.4	50					
								F	7.5				F					269.0	P	6	3.2/0.5	64
								F	7.5													
								G	10													
								H	13													
								J	17.5													
								K	21.5													

Load	Frame	Falls	Trolley				Duty		Drum		Rope		Contactor control				
			D D D				FEM ISO		Code	HOL (m)	Load (kg)	Ty pe	Gear		Motor	Speed (m/min)	(tm/ min)
			L	H	M	N	F	V					Type	Ratio			
								<i>L</i>	26								
								<i>M</i>	29								
								<i>N</i>	33								
25000	NE	26	M	N	F	1Am	M4	<i>E</i>	5.5	4170	G + Gr	<i>E</i>	340.6	P 6	2.5/0.4	62	
								<i>F</i>	7.5			<i>F</i>	269.0	P 6	3.2/0.5	80	
								<i>G</i>	10								
								<i>H</i>	13								
								<i>J</i>	17.5								
								<i>K</i>	21.5								
								<i>L</i>	26								
								<i>M</i>	29								
								<i>N</i>	33								
25000	NE	26	M	N	F	2m	M5	<i>E</i>	5.5	4170	G + Gr	<i>E</i>	340.6	P 6	2.5/0.4	62	
								<i>F</i>	7.5								
								<i>G</i>	10								
								<i>H</i>	13								
								<i>J</i>	17.5								
								<i>K</i>	21.5								
								<i>L</i>	26								
								<i>M</i>	29								
								<i>N</i>	33								
30000	NE	26	M	N	F	1Am	M4	<i>E</i>	5.5	5000	G + Gr	<i>E</i>	340.6	P 6	2.5/0.4	75	
								<i>F</i>	7.5								
								<i>G</i>	10								
								<i>H</i>	13								
								<i>J</i>	17.5								
								<i>K</i>	21.5								
								<i>L</i>	26								
								<i>M</i>	29								
								<i>N</i>	33								
25000	NE	28	M	N	F	1Am	M4	<i>F</i>	5.5	3125	G + Gr	<i>E</i>	340.6	P 6	2/0.3	50	
								<i>G</i>	7.5			<i>F</i>	269.0	P 6	2.5/0.4	64	
								<i>H</i>	9.5								
								<i>J</i>	13								
								<i>K</i>	16								
								<i>L</i>	19.5								
								<i>M</i>	21.5								
								<i>N</i>	24.5								
32000	NE	28	M	N	F	1Am	M4	<i>F</i>	5.5	4000	G + Gr	<i>E</i>	340.6	P 6	2/0.3	64	
								<i>G</i>	7.5			<i>F</i>	269.0	P 6	2.5/0.4	80	
								<i>H</i>	9.5								
								<i>J</i>	13								
								<i>K</i>	16								
								<i>L</i>	19.5								
								<i>M</i>	21.5								
								<i>N</i>	24.5								
40000	NE	28	M	N	F	1Am	M4	<i>F</i>	5.5	5000	G + Gr	<i>E</i>	340.6	P 6	2/0.3	80	
								<i>G</i>	7.5								
								<i>H</i>	9.5								
								<i>J</i>	13								
								<i>K</i>	16								
								<i>L</i>	19.5								
								<i>M</i>	21.5								
								<i>N</i>	24.5								
12500	NF	22	M			1Am	M4	<i>F</i>	15.5	3150	K + Kr	<i>E</i>	340.6	2P 6	8/1.3	100	
								<i>G</i>	20.5			<i>F</i>	269.0	2P 6	10/1.7	125	
								<i>H</i>	27.5								
								<i>J</i>	37.5								
								<i>K</i>	46								
								<i>L</i>	55.5								

Load	Frame	Falls	Trolley				Duty		Drum		Rope		Contactor control					
			D D D				FEM ISO		Code	HOL (m)	Load (kg)	Type	Gear		Motor	Speed (m/min)	(tm/min)	
			L	H	M	W	N	F					V	Type				Ratio
								<i>M</i>	62.5									
12500	<i>NF</i>	22			<i>M</i>		2m M5	<i>F</i>	15.5	3150	K + Kr	<i>E</i>	340.6	2P 6	8/1.3	100		
								<i>G</i>	20.5			<i>F</i>	269.0	2P 6	10/1.7	125		
								<i>H</i>	27.5									
								<i>J</i>	37.5									
								<i>K</i>	46									
								<i>L</i>	55.5									
								<i>M</i>	62.5									
								<i>N</i>	71									
12500	<i>NF</i>	22			<i>M</i>		3m M6	<i>F</i>	15.5	3150	K + Kr	<i>E</i>	340.6	2P 6	8/1.3	100		
								<i>G</i>	20.5									
								<i>H</i>	27.5									
								<i>J</i>	37.5									
								<i>K</i>	46									
								<i>L</i>	55.5									
								<i>M</i>	62.5									
								<i>N</i>	71									
16000	<i>NF</i>	22			<i>M</i>		1Am M4	<i>F</i>	15.5	4000	K + Kr	<i>E</i>	340.6	2P 6	8/1.3	128		
								<i>G</i>	20.5			<i>F</i>	269.0	2P 6	10/1.7	160		
								<i>H</i>	27.5									
								<i>J</i>	37.5									
								<i>K</i>	46									
								<i>L</i>	55.5									
								<i>M</i>	62.5									
								<i>N</i>	71									
16000	<i>NF</i>	22			<i>M</i>		2m M5	<i>F</i>	15.5	4000	K + Kr	<i>E</i>	340.6	2P 6	8/1.3	128		
								<i>G</i>	20.5									
								<i>H</i>	27.5									
								<i>J</i>	37.5									
								<i>K</i>	46									
								<i>L</i>	55.5									
								<i>M</i>	62.5									
								<i>N</i>	71									
20000	<i>NF</i>	22			<i>M</i>		1Am M4	<i>F</i>	15.5	5000	K + Kr	<i>E</i>	340.6	2P 6	8/1.3	160		
								<i>G</i>	20.5									
								<i>H</i>	27.5									
								<i>J</i>	37.5									
								<i>K</i>	46									
								<i>L</i>	55.5									
								<i>M</i>	62.5									
								<i>N</i>	71									
25000	<i>NF</i>	24			<i>M</i>		1Am M4	<i>F</i>	7.5	3125	K + Kr	<i>E</i>	340.6	2P 6	4/0.7	100		
								<i>G</i>	10			<i>F</i>	269.0	2P 6	5/0.8	125		
								<i>H</i>	13.5									
								<i>J</i>	18.5									
								<i>K</i>	23									
								<i>L</i>	27.5									
								<i>M</i>	31									
								<i>N</i>	35.5									
25000	<i>NF</i>	24			<i>M</i>		2m M5	<i>F</i>	7.5	3125	K + Kr	<i>E</i>	340.6	2P 6	4/0.7	100		
								<i>G</i>	10			<i>F</i>	269.0	2P 6	5/0.8	125		
								<i>H</i>	13.5									
								<i>J</i>	18.5									
								<i>K</i>	23									
								<i>L</i>	27.5									
								<i>M</i>	31									
								<i>N</i>	35.5									
25000	<i>NF</i>	24			<i>M</i>		3m M6	<i>F</i>	7.5	3125	K +	<i>E</i>	340.6	2P 6	4/0.7	100		
								<i>G</i>	10									

Load	Frame	Falls	Trolley				Duty		Drum		Rope		Contactor control					
			D D D				FEM ISO		Code	HOL (m)	Load (kg)	Type	Gear		Motor	Speed (m/min)	(tm/min)	
			L	H	M	W	N	F					V	Type				Ratio
								<i>H</i>	13.5		Kr							
								<i>J</i>	18.5									
								<i>K</i>	23									
								<i>L</i>	27.5									
								<i>M</i>	31									
								<i>N</i>	35.5									
32000	<i>NF</i>	24		<i>M</i>	1Am	M4	<i>F</i>	7.5	4000		K + Kr	<i>E</i>	340.6	2P 6	4/0.7	128		
							<i>G</i>	10				<i>F</i>	269.0	2P 6	5/0.8	160		
							<i>H</i>	13.5										
							<i>J</i>	18.5										
							<i>K</i>	23										
							<i>L</i>	27.5										
							<i>M</i>	31										
							<i>N</i>	35.5										
32000	<i>NF</i>	24		<i>M</i>	2m	M5	<i>F</i>	7.5	4000		K + Kr	<i>E</i>	340.6	2P 6	4/0.6	128		
							<i>G</i>	10										
							<i>H</i>	13.5										
							<i>J</i>	18.5										
							<i>K</i>	23										
							<i>L</i>	27.5										
							<i>M</i>	31										
							<i>N</i>	35.5										
40000	<i>NF</i>	24		<i>M</i>	1Am	M4	<i>F</i>	7.5	5000		K + Kr	<i>E</i>	340.6	2P 6	4/0.6	160		
							<i>G</i>	10										
							<i>H</i>	13.5										
							<i>J</i>	18.5										
							<i>K</i>	23										
							<i>L</i>	27.5										
							<i>M</i>	31										
							<i>N</i>	35.5										
40000	<i>NF</i>	26		<i>M</i>	1Am	M4	<i>F</i>	5.5	3330		K + Kr	<i>E</i>	340.6	2P 6	2.5/0.4	100		
							<i>G</i>	7.5				<i>F</i>	269.0	2P 6	3.2/0.5	128		
							<i>H</i>	9.5										
							<i>J</i>	13										
							<i>K</i>	15.5										
							<i>L</i>	19										
							<i>M</i>	21.5										
							<i>N</i>	24										
40000	<i>NF</i>	26		<i>M</i>	2m	M5	<i>F</i>	5	3330		K + Kr	<i>E</i>	340.6	2P 6	2.5/0.4	100		
							<i>G</i>	6.5				<i>F</i>	269.0	2P 6	3.2/0.5	128		
							<i>H</i>	9										
							<i>J</i>	12.5										
							<i>K</i>	15										
							<i>L</i>	18.5										
							<i>M</i>	20.5										
							<i>N</i>	23.5										
40000	<i>NF</i>	26		<i>M</i>	3m	M5	<i>F</i>	5	3330		L + Lr	<i>E</i>	340.6	2P 6	2.5/0.4	100		
							<i>G</i>	6.5										
							<i>H</i>	9										
							<i>J</i>	12.5										
							<i>K</i>	15										
							<i>L</i>	18.5										
							<i>M</i>	20.5										
							<i>N</i>	23.5										
50000	<i>NF</i>	26		<i>M</i>	1Am	M4	<i>F</i>	5	4170		K + Kr	<i>E</i>	340.6	2P 6	2.5/0.4	125		
							<i>G</i>	6.5				<i>F</i>	269.0	2P 6	3.2/0.5	160		
							<i>H</i>	9										
							<i>J</i>	12.5										
							<i>K</i>	15										
							<i>L</i>	18.5										

Load	Frame	Falls	Trolley				Duty		Drum		Rope		Contactor control					
			D D D				FEM ISO		Code	HOL (m)	Load (kg)	Type	Gear		Motor	Speed (m/min)	(tm/min)	
			L	H	M	W	N	F					V	Type				Ratio
								M	20.5									
								N	23.5									
50000	NF	26			M		2m M5	F	5	4170	K		E	340.6	2P 6	2.5/0.4	125	
								G	6.5		K + Kr							
								H	9									
								J	12.5									
								K	15									
								L	18.5									
								M	20.5									
								N	23.5									
60000	NF	26			M		1Am M4	F	5	5000	K		E	340.6	2P 6	2.5/0.4	150	
								G	6.5		K + Kr							
								H	9									
								J	12.5									
								K	15									
								L	18.5									
								M	20.5									
								N	23.5									
50000	NF	28			M		1Am M4	H	6.5	3125	K		E	340.6	2P 6	2/0.3	100	
								J	9		K + Kr		F	269.0	2P 6	2.5/0.4	125	
								K	11									
								L	13.5									
								M	15.5									
								N	17.5									
50000	NF	28			M		2m M5	H	6.5	3125	K		E	340.6	2P 6	2/0.3	100	
								J	9		K + Kr		F	269.0	2P 6	2.5/0.4	125	
								K	11									
								L	13.5									
								M	15.5									
								N	17.5									
63000	NF	28			M		1Am M4	H	6.5	4000	K		E	340.6	2P 6	2/0.3	125	
								J	9		K + Kr		F	269.0	2P 6	2.5/0.4	160	
								K	11									
								L	13.5									
								M	15.5									
								N	17.5									
63000	NF	28			M		2m M5	H	6.5	4000	L		E	340.6	2P 6	2/0.3	125	
								J	9		L + Lr							
								K	11									
								L	13.5									
								M	15.5									
								N	17.5									
80000	NF	28			M		1Am M4	H	6.5	5000	K		E	340.6	2P 6	2/0.3	160	
								J	9		K + Kr							
								K	11									
								L	13.5									
								M	15.5									
								N	17.5									

4 Ex specifications

Standard EEx de IIB T4
 EEx de IIC T4 available upon request
 EEx de nA IIB T3
 EEx de nA IIC T3

Equipment	Type	Protection	IP degree	Certification number	
Hoisting motors	MF10 EB/EC	Ex II 2 G EEx de / d IIC T4	IP66	LCIE 02 ATEX 6035	
	MF13 EB/EC	Ex II 2 G EEx de / d IIC T4	IP66	LCIE 02 ATEX 6059	
	MF10 M	Ex II 3 G EEx nA II T3	IP66	SELF CERTIFICATION	
	MF10 Z	Ex II 3 G EEx nA II T3	IP66	SELF CERTIFICATION	
	MF10 X	Ex II 3 G EEx nA II T3	IP66	SELF CERTIFICATION	
	MF11 X MF13 Z	Ex II 3 G EEx nA II T3 Ex II 3 G EEx nA II T3	IP66 IP66	SELF CERTIFICATION SELF CERTIFICATION	
Travelling motors	MF07EA, MF07EB, MF07EC	EEx de / d IIC T4	IP66	LCIE 02 ATEX 6036	
	MF10E	EEx de / d IIC T4	IP66	LCIE 02 ATEX 6035	
Limit switches and overload device	XCW	EEx d IIC T6	IP67	INERIS 03 ATEX 0083	
	XCR, 1-step	EEx de IIC T6	IP66	INERIS 04 ATEX 0038X	
	XRC, 2-step	EEx de IIC T6	IP66	INERIS 04 ATEX 0039X	
Control panels "d"	NC L and N versions	PBX-3	EEx d IIB T4, T5, T6	IP66	INERIS 02 ATEX 0065
	ND L and N versions	PBX-4	EEx d IIB T4, T5, T6	IP66	INERIS 02 ATEX 0065
	NE N version	PBX-5	EEx d IIB T4, T5, T6	IP66	INERIS 02 ATEX 0065
	NC and ND DGT	AD412201	EEx d IIB T5, T6	IP65	LCIE 03 ATEX 0112
	NC	AD442005	EEx d IIC or IIB T5, T6	IP65	INERIS 03 ATEX 0093
	NC, ND, NE	CCA, AD442006	EEx d IIC T4	IP66	CESI 01 ATEX 034U/035/036
	ND, NE, NF	DE8-WH GUB, AD442007	EEx d IIC T4, T5, T6 EEx d IIC T3,T4,T5,T6	IP66 IP67	INERIS 03 ATEX0121 X INERIS 01 ATEX 0057
Special request	DE8-BC	EEx d IIB T4, T5, T6	IP66	INERIS 03 ATEX 0005 X	
Junction boxes "e"	NC and ND	AD531	EEx e II T6	IP65	LCIE 03 ATEX 6069
	On DB8-WH	DE1-WH	EEx e II T4, T5, T6	IP65-6	INERIS 03 ATEX 0006
Control box	XAW - P / F / G	EEx de IIC T4, T5, T6	IP65	INERIS 03 ATEX 0122	
Cable glands	"d" & "e" panels	ADE	EEx de / d IIB T6	IP68	LCIE 97 ATEX 6008 X
		ADL	EEx de / d IIC T6	IP68	LCIE 97 ATEX 6008 X
	"e" panels	ECDEP	EEx e II T6	IP66	LCIE 97 ATEX 6007 X
Optional features	Horn	DB	EEx d IIC T4	IP56	BAS 00 ATEX 2097 X
	Flashing light (5J)	AD442	EEx d IIC T4	IP65	INERIS 03 ATEX 0093
	Floodlights	XQF, XSF, XMF, XEF or XHF	EEx d IIC T4	IP65	LCIE 00 ATEX 6019 X LCIE 00 ATEX 6024
	Runway end terminal boxes	XBL	EEx e II T6	IP66	LCIE 00 ATEX 6022
	Wall mounted switches	SRC315 (15A) SRC340 (40A)	EEx d IIC T6 EEx d IIC T6	IP56 IP56	LCIE 00 ATEX 6022 LCIE 00 ATEX 6022
Travelling motors for special travelling speeds	EJB063 (63A)	EEx d IIB T5, T6	IP56	LCIE 00 ATEX 6021 X	
	AD442005 (63A)	EEx d IIC T4	IP66	INERIS 03 ATEX 0093	
	F71 / 80 / 90 / 100	EEx de IIB or IIC T4 to T6	IP65	LCIE 00 ATEX 6036	
Remote control	Zone 2	Ex II 3 G EEx nA c (L) II T4	IP65	Self certification	
	Zone 1 Joystick	Ex II 2 G EEx ib IIB T4	IP65	TUV Ex5 99 04 31016 001	
	Receiver	Ex II 2 G EEx d IIB T4 / IIC	IP65	TUV Ex5 99 04 31016 001	

5 Ex hoisting motors

5.1 Explosionproof -'d'- motors / Zone 1

5.1.1 Motor data, 2-speed pole change motors, 50 Hz

Duty Group Fem/ISO	Q motor data			E1		E2		E4		E6			
				MF10EB106		MF10EC106		MF13EF106		MF13EG106			
		Rated power	kW	1.8	0.25	3.6	0.5	7.5	1.2	15	2.5		
		Synchronous speed	RPM	3000	500	3000	500	3000	500	3000	500	3000	500
		Brake torque	Nm	21		21		54		100			
		Max el. br. torque	Nm		42		60		72		210		
		El. br. torque	Nm		19		38		40		100		
		Power fact. start		0.82	0.77	0.79	0.71	0.69	0.55	0.66	0.68		
		Starting torque	Nm	17	14	26	25	51	42	105	86		
		Weight	kg	70		73		145		145			
		Brake inertia	kgm ²	0.00017		0.00017		0.0007		0.0007			
Inertia w/o brake	kgm ²	0.0055		0.006		0.04		0.04					
1Am/M4 180 starts/h 30 % ED 15/3 min	180 starts/h 40 % ED	Load	tm/min	10		20		40		80			
		Nominal power	kW	1.8	0.25	3.6	0.5	7.5	1.2	15	2.5		
		Nominal torque	Nm	6.1	6.1	12.3	12.3	24	24	48	48		
		Nominal speed	RPM	2750	410	2750	420	2830	420	2740	420		
		Short time duty	min	60	30	30	15	30	15	20	10		
		Power factor		0.92	0.56	0.94	0.55	0.92	0.50	0.87	0.59		
		Efficiency		0.64	0.31	0.68	0.35	0.73	0.56	0.75	0.42		
2m/M5 240 starts/h 40 % ED 30/3.5 min	240 starts/h 40 % ED	Load	tm/min	10		20		40		64			
		Nominal power	kW	1.8	0.25	3.6	0.5	7.5	1.2	12	2.0		
		Nominal torque	Nm	6.1	6.1	12.3	12.3	24	24	38	38		
		Nominal speed	RPM	2750	410	2750	420	2830	420	2780	430		
		Short time duty	min										
		Power factor		0.92	0.56	0.94	0.55	0.92	0.50	0.87	0.58		
		Efficiency		0.64	0.31	0.68	0.35	0.73	0.56	0.75	0.42		
3m/M6 300 starts/h 50 % ED 30/4 min	300 starts/h 50 % ED	Load	tm/min	8		16		32		52			
		Nominal power	kW	1.5	0.2	2.9	0.4	6.0	1.0	9.6	1.4		
		Nominal torque	Nm	4.9	4.9	9.8	9.8	19.2	19.2	32	32		
		Nominal speed	RPM	2790	420	2780	430	2870	440	2840	450		
		Short time duty	min										
		Power factor		0.90	0.54	0.92	0.52	0.91	0.45	0.85	0.52		
		Efficiency		0.62	0.29	0.67	0.33	0.72	0.55	0.74	0.40		
		Load	tm/min										
		Nominal power	kW										
		Nominal torque	Nm										
		Nominal speed	RPM										
		Short time duty	min										
		Power factor											
		Efficiency											

5.1.2 Motor data, 2-speed pole change motors, 60 Hz

Duty Group Fem/ISO	Q motor data			E1		E2		E4		E6	
				MF10EB106		MF10EC106		MF13EF106		MF13EG106	
		Rated power	kW	2.2	0.3	4.3	0.7	9.0	1.4	18	3.0
		Synchronous speed	RPM	3600	600	3600	600	3600	600	3600	600
		Brake torque	Nm	21		21		54		100	
		Max el. br. torque	Nm		42		58		67		200
		El. br. torque	Nm		19		36		38		95
		Power fact. start		0.76	0.73	0.76	0.67	0.63	0.52	0.66	0.67
		Starting torque	Nm	17	14	25	24	48	39	99	83
		Weight	kg	70		73		145		145	
		Brake inertia	kgm ²	0.00017		0.00017		0.0007		0.0007	
Inertia w/o brake	kgm ²	0.0055		0.006		0.04		0.04			
1Am/M4 180 starts/h 30 % ED 15/3 min	180 starts/h 40 % ED	Load	tm/min	12		24		48		96	
		Nominal power	kW	2.2	0.3	4.3	0.7	9.0	1.4	18	3.0
		Nominal torque	Nm	6.1	6.1	12.3	12.3	24	24	48	48
		Nominal speed	RPM	3330	500	3350	510	3410	500	3320	515
		Short time duty	min	60	30	30	15	30	15	20	10
		Power factor		0.92	0.56	0.94	0.55	0.92	0.52	0.88	0.59
		Efficiency		0.62	0.35	0.66	0.40	0.73	0.57	0.76	0.48
2m/M5 240 starts/h 40 % ED 30/3.5 min	240 starts/h 40 % ED	Load	tm/min	12		24		48		76	
		Nominal power	kW	2.2	0.3	4.3	0.7	9.0	1.4	14	2.3
		Nominal torque	Nm	6.1	6.1	12.3	12.3	24	24	38	38
		Nominal speed	RPM	3330	500	3350	510	3410	500	3350	540
		Short time duty	min								
		Power factor		0.92	0.56	0.94	0.55	0.92	0.52	0.88	0.56
3m/M6 300 starts/h 50 % ED 30/4 min	300 starts/h 50 % ED	Load	tm/min	9.6		19.2		38		63	
		Nominal power	kW	1.8	0.25	3.5	0.5	7.2	1.2	11.5	1.6
		Nominal torque	Nm	4.9	4.9	9.8	9.8	19.2	19.2	32	32
		Nominal speed	RPM	3370	520	3390	530	3460	530	3390	550
		Short time duty	min								
		Power factor		0.91	0.53	0.93	0.52	0.91	0.44	0.86	0.50
		Efficiency		0.60	0.32	0.65	0.38	0.73	0.54	0.76	0.46
		Load	tm/min								
		Nominal power	kW								
		Nominal torque	Nm								
		Nominal speed	RPM								
		Short time duty	min								
Power factor											
Efficiency											

5.1.3 Motor currents, 2-speed pole change motors, 50 Hz

			Currents								
Nominal voltage			230 V		400 V		500 V		660 V		
Used in voltage range			220...240 V		380...415 V		500...525 V		660...690 V		
		tm/min	fast	slow	fast	slow	fast	slow	fast	slow	
E1 MF10EB106	Starting current (A)		37	6.5	21	3.7	17	3.0	13	2.3	
	Nominal current (A)										
		10	7.7	3.8	4.4	2.2	3.5	1.8	2.7	1.4	
		8	7.0	3.7	4.0	2.1	3.2	1.7	2.4	1.3	
	No-load current (A)		2.8	3.7	1.6	2.1	1.3	1.7	1.0	1.3	
E2 MF10EC106	Starting current (A)		63	11.5	36	6.6	29	5.3	22	4.0	
	Nominal current (A)										
		20	14	6.8	8.0	3.9	6.4	3.1	4.9	2.4	
		16	12	6.6	6.9	3.8	5.5	3.0	4.2	2.3	
	No-load current (A)		4.4	6.6	2.5	3.8	2.0	3.0	1.5	2.3	
E4 MF13EF106	Starting current (A)		143	16.5	82	9.4	66	7.5	50	5.7	
	Nominal current (A)										
		40	30	11	17	6.0	14	4.8	10	3.6	
		32	24	10	14	5.5	11	4.4	8.5	3.3	
	No-load current (A)		9.2	8.7	5.3	5.0	4.2	4	3.2	3.0	
E6 MF13EG106	Starting current (A)		NOT AVAILABLE		135	23	108	18	82	14	
	Nominal current (A)										
		80			32	14	26	11	20	8.5	
		64			29	13	23	10	18	7.9	
		52			24	13	19	10	15	7.6	
	No-load current (A)				8.6	12.3	6.9	10	5.2	7.5	

5.1.4 Motor currents, 2-speed pole change motors, 60 Hz

		Nominal voltage	Currents							
			220 V		380 V		460 V		575 V	
		Used in voltage range	208...230 V		360...400 V		440...480 V		575...600 V	
		tm/min	fast	slow	fast	slow	fast	slow	fast	slow
E1 MF10EB106	Starting current (A)		48	8.2	28	4.7	23	3.9	18.4	3.1
	Nominal current (A)									
		12	9.6	4.6	5.6	2.7	4.6	2.2	3.7	1.8
		9.6	9.2	4.4	5.3	2.5	4.4	2.1	3.5	1.7
	No-load current (A)		3.6	4.2	2.1	2.4	1.7	2.0	1.4	1.6
E2 MF10EC106	Starting current (A)		78	14.2	45	8.2	37	6.8	30	5.5
	Nominal current (A)									
		24	17	8.2	9.9	4.7	8.2	3.9	6.6	3.1
		19.2	16	8.0	9.2	4.6	7.6	3.8	6.1	3.0
	No-load current (A)		5.0	7.3	2.9	4.2	2.4	3.5	1.9	2.8
E4 MF13EF106	Starting current (A)		176	19.3	102	11.1	84	9.2	67	7.4
	Nominal current (A)									
		48	36	12	21	7.0	17	5.8	14	4.6
		38	29	12	17	6.7	14	5.5	11	4.4
	No-load current (A)		10.3	9.6	5.9	5.6	4.9	4.6	3.9	3.7
E6 MF13EG106	Starting current (A)				155	27	128	22	102	18
	Nominal current (A)									
		96			39	16	32	13	26	11
		76			35	16	29	13	23	11
		63			29	15	24	12	19	10
No-load current (A)				9.6	14	7.9	11.5	6.3	9.2	

5.2 Sparkproof - 'nA' - motors / Zone 2

5.2.1 Motor data, 2-speed pole change motors, 50 Hz

Duty Group Fem/ISO	Q motor data			P1		P2		P3	
				MF10M-106		MF10Z-106		MF10X-106	
		Rated power	kW	1.8	0.25	3.6	0.5	4.5	0.7
		Synchronous speed	RPM	3000	500	3000	500	3000	500
		Brake torque	Nm	21		21		42	
		Max el. br. torque	Nm		32		63		77
		El. br. torque	Nm		12.6		25		38
		Power fact. start		0.8	0.83	0.83	0.78	0.84	0.77
		Starting torque	Nm	12.4	10.7	25	22	34	28
		Weight	kg	22.6		30.6		35	
		Brake inertia	kgm ²	0.00017		0.00017		0.00045	
		Inertia w/o brake	kgm ²	0.0027		0.0049		0.0059	
2m/M5 240 Starts/h 40 % ED 30/3.5 min	300 starts/h 50 % ED	Load	tm/min	10		20		25	
		Nominal power	kW	1.8	0.25	3.6	0.5	4.5	0.7
		Nominal torque	Nm	6.1	6.1	12.3	12.3	15.3	15.3
		Nominal speed	RPM	2780	420	2800	400	2750	415
		Short time duty	min	60	15	60	15	30	15
		Power factor		0.82	0.67	0.87	0.63	0.92	0.61
		Efficiency		0.66	0.24	0.73	0.30	0.72	0.30
3m/M6 300 Starts/h 50 % ED 30/4 min	300 starts/h 50 % ED	Load	tm/min	8		16		20	
		Nominal power	kW	1.5	0.2	2.9	0.4	3.6	0.5
		Nominal torque	Nm	4.9	4.9	9.8	9.8	12.3	12.3
		Nominal speed	RPM	2830	435	2850	420	2830	430
		Short time duty	min						
		Power factor		0.78	0.64	0.84	0.58	0.89	0.56
		Efficiency		0.64	0.22	0.76	0.29	0.74	0.29
	300 starts/h 50 % ED	Load	tm/min	6.3		12.5		16	
		Nominal power	kW	1.2	0.16	2.4	0.35	2.9	0.4
		Nominal torque	Nm	3.9	3.9	7.7	7.7	9.8	9.8
		Nominal speed	RPM	2860	445	2890	435	2870	440
		Short time duty	min						
		Power factor		0.73	0.61	0.77	0.53	0.85	0.51
		Efficiency		0.61	0.18	0.75	0.26	0.73	0.27
	300 starts/h 50 % ED	Load	tm/min	5		10		12.5	
		Nominal power	kW	0.9	0.12	1.8	0.25	2.4	0.35
		Nominal torque	Nm	3	3	6.1	6.1	7.7	7.7
		Nominal speed	RPM	2890	460	2920	450	2900	450
		Short time duty	min						
		Power factor		0.66	0.58	0.69	0.50	0.81	0.48
		Efficiency		0.58	0.15	0.73	0.23	0.72	0.24

Duty Group Fem/ISO	Q motor data			P4		P5		P6	
				MF11XA-106		MF11X-106		MF13Z-106	
		Rated power	kW	9	1.4	9	1.4	15	2.5
		Synchronous speed	RPM	3600	600	3000	500	3000	500
		Brake torque	Nm	54		54		100	
		Max el. br. torque	Nm		105		107		190
		El. br. torque	Nm		56		57		84
		Power fact. start		0.73	0.67	0.77	0.69	0.67	0.68
		Starting torque	Nm	54	44	67	56	107	84
		Weight	kg	51		59		86	
		Brake inertia	kgm ²	0.0007		0.0007		0.0007	
Inertia w/o brake	kgm ²	0.0101		0.0116		0.036			
2m/M5 240 starts/h 40 % ED 30/3.5 min	300 starts/h 50 % ED	Load	tm/min	48		50		80	
		Nominal power	kW	9	1.4	9	1.4	15	2.5
		Nominal torque	Nm	24	24	30	30	48	48
		Nominal speed	RPM	3230	450	2680	335	2740	420
		Short time duty	min	30	12	30	10	30	15
		Power factor		0.90	0.45	0.90	0.61	0.87	0.59
		Efficiency		0.74	0.34	0.72	0.28	0.78	0.45
3m/M6 300 starts/h 50 % ED 30/4 min	300 starts/h 50 % ED	Load	tm/min	38		40		63	
		Nominal power	kW	7.2	1.2	7.5	1.2	12	2
		Nominal torque	Nm	19.2	19.2	24	24	38	38
		Nominal speed	RPM	3315	490	2760	370	2810	440
		Short time duty	min						
		Power factor		0.88	0.49	0.87	0.56	0.82	0.52
		Efficiency		0.76	0.33	0.79	0.28	0.80	0.43
	300 starts/h 50 % ED	Load	tm/min	30		32		50	
		Nominal power	kW	5.4	0.9	6	1	9	1.4
		Nominal torque	Nm	15.3	15.3	19.2	19.2	30	30
		Nominal speed	RPM	3390	520	2820	400	2860	455
		Short time duty	min						
		Power factor		0.85	0.43	0.84	0.52	0.78	0.48
	300 starts/h 50 % ED	Load	tm/min	24		25		40	
		Nominal power	kW	4.3	0.7	4.5	0.7	7.5	1.2
		Nominal torque	Nm	12.3	12.3	15.3	15.3	24	24
		Nominal speed	RPM	3440	450	2870	425	2900	465
		Short time duty	min						
		Power factor		0.78	0.39	0.80	0.47	0.70	0.42
Efficiency		0.74	0.28	0.79	0.25	0.77	0.34		

5.2.2 Motor currents, 2-speed pole change motors, 50 Hz.

			Currents							
Nominal voltage			230 V		400 V		500 V		660 V	
Used in voltage range			220...240 V		380...415 V		500...525 V		660...690 V	
		tm/min	fast	slow	fast	slow	fast	slow	fast	slow
P1 MF10M-106	Starting current (A)		35	6.1	20	3.6	16	2.9	12	2.2
	Nominal current (A)									
		10	8.5	4.9	4.9	2.8	3.9	2.2	3.0	1.7
		8	7.5	4.3	4.3	2.5	3.4	2.0	2.6	1.5
		6.3	7.0	4.3	4	2.5	3.2	2.0	2.4	1.5
		5	6.6	4.3	3.8	2.5	3.0	2.0	2.3	1.5
	No-load current (A)		6.3	4.9	3.6	2.8	2.9	2.2	2.2	1.7
P2 MF10Z-106	Starting current (A)		68	11.7	39	6.7	31	5.4	24	4.1
	Nominal current (A)									
		20	14	7.1	8.2	4.1	6.6	3.3	5.0	2.5
		16	12.2	6.6	7	3.8	5.6	3.0	4.2	2.3
		12.5	10.4	6.4	6	3.7	4.8	3.0	3.6	2.2
		10	9.2	6.6	5.3	3.8	4.2	3.0	3.2	2.3
	No-load current (A)		7.8	7.5	4.5	4.3	3.6	3.4	2.7	2.6
P3 MF10X-106	Starting current (A)		77	15	44	8.6	35	6.9	27	5.2
	Nominal current (A)									
		25	17	9.6	9.9	5.5	7.9	4.4	6.0	3.3
		20	14.6	8.7	8.4	5	6.7	4.0	5.1	3.0
		16	12.2	8.7	7	5	5.6	4.0	4.2	3.0
		12.5	10.6	8.9	6.1	5.1	4.9	4.1	3.7	3.1
	No-load current (A)		7.7	9.6	4.4	5.5	3.5	4.4	2.7	3.3
P5 MF11X-106	Starting current (A)		144	28	83	16	66	12.8	50	9.7
	Nominal current (A)									
		50	33	19	19	11	15	8.8	12	6.7
		40	28	16	16	9	13	7.2	9.9	5.5
		32	23	15	13.5	8.9	10.8	7.1	8.2	5.4
		25	19	15	11.1	8.9	8.9	7.1	6.7	5.4
	No-load current (A)		14	17	7.8	10	6.2	8.0	4.7	6.1
P6 MF13Z-106	Starting current (A)		252	43	145	25	116	20	88	15
	Nominal current (A)									
		80	56	24	32	14	26	11	19	8.5
		63	43	21	25	12	20	9.6	15	7.3
		50	38	21	22	12	18	9.6	13	7.3
		40	35	21	20	12	16	9.6	12	7.3
	No-load current (A)		28	23	16	13	13	10.4	9.7	7.9

5.2.3 Motor data, 2-speed pole change motors, 60 Hz

Duty Group Fem/ISO	Q motor data			P1		P2		P3	
				MF10M-106		MF10Z-106		MF10X-106	
		Rated power	kW	2.2	0.3	4.3	0.7	5.4	0.9
		Synchronous speed	RPM	3600	600	3600	600	3600	600
		Brake torque	Nm	21		21		42	
		Max el. br. torque	Nm		32		63		77
		El. br. torque	Nm		12.6		25		38
		Power fact. start		0.76	0.81	0.77	0.73	0.78	0.74
		Starting torque	Nm	12.4	10.7	24.6	21.7	34	28
		Weight	kg	22.6		30.6		35	
		Brake inertia	kgm ²	0.00017		0.00017		0.00045	
Inertia w/o brake	kgm ²	0.0027		0.0049		0.0059			
2m/M5 240 starts/h 40 % ED 30/3.5 min	300 starts/h 50 % ED	Load	tm/min	12		24		30	
		Nominal power	kW	2.2	0.3	4.3	0.7	5.4	0.9
		Nominal torque	Nm	6.1	6.1	12.3	12.3	15.3	15.3
		Nominal speed	RPM	3410	525	3400	500	3350	495
		Short time duty	min	60	15	60	15	30	15
		Power factor		0.83	0.65	0.89	0.61	0.93	0.60
		Efficiency		0.71	0.28	0.75	0.38	0.74	0.36
3m/M6 300 starts/h 50 % ED 30/4 min	300 starts/h 50 % ED	Load	tm/min	9.6		19.2		24	
		Nominal power	kW	1.8	0.25	3.5	0.5	4.3	0.7
		Nominal torque	Nm	4.9	4.9	9.8	9.8	12.3	12.3
		Nominal speed	RPM	3450	540	3450	520	3410	530
		Short time duty	min						
		Power factor		0.80	0.58	0.87	0.54	0.91	0.53
	300 starts/h 50 % ED	Efficiency		0.71	0.25	0.75	0.36	0.75	0.34
		Load	tm/min	7.6		15		19.2	
		Nominal power	kW	1.4	0.2	2.9	0.4	3.5	0.5
		Nominal torque	Nm	3.9	3.9	7.7	7.7	9.8	9.8
		Nominal speed	RPM	3480	550	3490	540	3450	540
		Short time duty	min						
	300 starts/h 50 % ED	Power factor		0.75	0.55	0.82	0.49	0.88	0.49
		Efficiency		0.68	0.21	0.74	0.31	0.75	0.31
		Load	tm/min	6		12		15	
		Nominal power	kW	1.1	0.15	2.2	0.3	2.9	0.4
		Nominal torque	Nm	3	3	6.1	6.1	7.7	7.7
		Nominal speed	RPM	3510	565	3520	550	3490	550
	300 starts/h 50 % ED	Short time duty	min						
		Power factor		0.67	0.52	0.76	0.45	0.85	0.45
		Efficiency		0.66	0.18	0.71	0.28	0.73	0.28

Table continue...

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Duty Group Fem/ISO	Q motor data			P5		P6	
				MF11X-106		MF13Z-106	
		Rated power	kW	11	1.6	18	3
		Synchronous speed	RPM	3600	600	3600	600
		Brake torque	Nm	54		100	
		Max el. br. torque	Nm		112		182
		El. br. torque	Nm		64		82
		Power fact. start		0.75	0.68	0.60	0.64
		Starting torque	Nm	63	51	102	82
		Weight	kg	59		86	
		Brake inertia	kgm2	0.0007		0.0007	
		Inertia w/o brake	kgm2	0.0116		0.036	
2m/M5 240 starts/h 40 % ED 30/3.5 min	300 starts/h 50 % ED	Load	tm/min	60		96	
		Nominal power	kW	11	1.6	18	3
		Nominal torque	Nm	30	30	48	48
		Nominal speed	RPM	3250	440	3320	515
		Short time duty	min	30	10	30	15
		Power factor		0.91	0.57	0.88	0.59
		Efficiency		0.75	0.35	0.80	0.50
3m/M6 300 starts/h 50 % ED 30/4 min	300 starts/h 50 % ED	Load	tm/min	48		76	
		Nominal power	kW	9	1.4	14	2.3
		Nominal torque	Nm	24	24	38	38
		Nominal speed	RPM	3320	470	3390	540
		Short time duty	min				
		Power factor		0.90	0.53	0.85	0.52
		Efficiency		0.77	0.35	0.82	0.48
	300 starts/h 50 % ED	Load	tm/min	38		60	
		Nominal power	kW	7.2	1.2	11	1.6
		Nominal torque	Nm	19.2	19.2	30	30
		Nominal speed	RPM	3395	500	3445	555
		Short time duty	min				
		Power factor		0.87	0.47	0.82	0.48
	300 starts/h 50 % ED	Load	tm/min	30		48	
		Nominal power	kW	5.4	0.9	9	1.4
		Nominal torque	Nm	15.3	15.3	24	24
		Nominal speed	RPM	3450	525	3495	565
		Short time duty	min				
		Power factor		0.83	0.42	0.74	0.42
Efficiency		0.77	0.31	0.82	0.39		

5.2.4 Motor currents, 2-speed pole change motors, 60 Hz.

		Currents									
		Nominal voltage		220 V		380 V		460 V		575 V	
		Used in voltage range		208...230 V		360...400 V		440...480 V		575...600 V	
	tm/min	fast	slow	fast	slow	fast	slow	fast	slow		
P1 MF10M-106	Starting current (A)		42	9	23	4.7	19	3.9	15	3.1	
	Nominal current (A)										
		12	9.8	5.9	5.0	3.4	4.7	2.8	3.6	2.2	
		9.6	8.8	5.2	5.1	3.0	4.2	2.5	3.4	2.0	
		7.6	7.9	5.2	4.6	3.0	3.8	2.5	3.0	2.0	
		6	7.1	5.2	4.1	3.0	3.4	2.5	2.7	2.0	
	No-load current (A)		5.2	5.9	3	3.1	2.5	2.8	2	2.1	
P2 MF10Z-106	Starting current (A)		90	15	52	8.8	43	7.3	34	5.8	
	Nominal current (A)										
		24	17	8.4	10	4.8	8.3	4.0	6.6	3.2	
		19.2	15.3	8.2	8.8	4.7	7.3	3.9	5.8	3.1	
		15	12.5	8.2	7.3	4.7	6	3.9	4.8	3.1	
		12	11.5	8.2	6.7	4.7	5.5	3.9	4.4	3.1	
	No-load current (A)		7.9	8.6	4.6	5.0	3.8	4.1	3.0	3.3	
P3 MF10X-106	Starting current (A)		102	18	59	10.2	49	8.4	39	6.7	
	Nominal current (A)										
		30	22	11	13	6.5	10	5.4	8.2	4.3	
		24	18	10.2	10.3	5.9	8.5	4.9	6.8	3.9	
		19.2	15	10.2	8.7	5.9	7.2	4.9	5.8	3.9	
		15	13	10.2	7.3	5.9	6	4.9	4.8	3.9	
	No-load current (A)		8.4	11.3	4.8	6.5	4	5.4	3.2	4.3	
P5 MF11X-106	Starting current (A)		167	31	97	18.2	80	15	64	12.0	
	Nominal current (A)										
		60	42	21	24	12	20	10	16	8.0	
		48	33	18	19	10.5	16	8.7	12.8	7.0	
		38	28	18	16	10.3	13.5	8.5	10.8	6.8	
		30	23	18	13	10.3	11	8.5	8.8	6.8	
	No-load current (A)		14	20	8.1	11.5	6.7	9.5	5.4	7.6	
P6 MF13Z-106	Starting current (A)		312	52	180	30	149	25	119	20	
	Nominal current (A)										
		96	67	27	39	16	32	13	26	10	
		76	54	27	31	15.7	26	13	21	10.4	
		60	46	25	27	14.5	22	12	18	9.6	
		48	36	25	21	14.5	17	12	13.6	9.6	
	No-load current (A)		27	25	16	14.5	13	12	10.4	9.6	

6 Ex travelling motors

6.1 Explosionproof - 'd' - motors / Zone 1

Two speeds, 3000/750rpm (50Hz) and 3600/900rpm (60Hz)

Duty type	Motor code	MF07EA104		MF07EA104		MF07EB104		MF07EB104		
	Speed control	2-speed		2-speed		2-speed		2-speed		
	Voltage	400 V		460 V		400 V		460 V		
	Frequency	50 Hz		60 Hz		50 Hz		60 Hz		
	Brake type	DC		DC		DC		DC		
		fast	slow	fast	slow	fast	slow	fast	slow	
	Synchronous speed	RPM	3000	750	3600	900	3000	750	3600	900
	Brake torque	Nm	4	4	4	4	4	4	4	4
	Starting torque	Nm	3.3	2.7	3.2	2.7	6.1	4.2	6.0	4.1
	Electric braking torque	Nm		6.0/5.6		6.0/5.6		9.7/8.5		9.5/8.3
	Starting current	A	5.3	1.2	5.4	1.2	8.3	1.9	8.8	2.0
	Maximum torque	Nm	3.3	2.7	3.2	2.7	6.1	4.2	6.0	4.1
	Speed at max. torque	RPM	2070	350	2480	420	1790	300	2150	360
	80% of max. torque	Nm	2.6	2.2	2.6	2.2	4.9	3.4	4.8	3.3
	Speed at 80% torque	RPM	2500	500	3000	600	2450	500	2940	600
	Current at 80% torque	A	2.3	0.95	2.4	1.0	4.0	1.6	3.9	1.6
	Inertia	kgm ²	0.001	0.001	0.001	0.001	0.0014	0.0014	0.0014	0.0014
	Inertia with flywheel	kgm ²								
	Power factor, starting		0.88	0.75	0.87	0.72	0.87	0.75	0.84	0.72
	Weight with fan	kg								
	Weight	kg	13	13	13	13	15	15	15	15
	No-load current	A	1.6	0.75	1.4	0.75	2.0	1.3	1.7	1.2
	Iron losses	W								
	Stator resistance at 20 °C	Ω	45	173	45	173	29	115	29	115
S3-30%	Speed	RPM	2750	580	3360	720	2760	550	3380	730
	Power	kW	0.45	0.11	0.55	0.13	0.65	0.15	0.75	0.18
	Current	A	1.8	0.9	1.8	0.9	2.4	1.4	2.3	1.3
	Starting burden	kgm ² /h	1.8		1.3		2.5		1.7	
	Power factor		0.78	0.64	0.78	0.64	0.74	0.68	0.75	0.61
	Efficiency		0.50	0.28	0.53	0.31	0.57	0.25	0.59	0.28
S3-40%	Speed	RPM	2750	580	3360	720	2760	550	3380	730
	Power	kW	0.45	0.11	0.55	0.13	0.65	0.15	0.75	0.18
	Current	A	1.8	0.9	1.8	0.9	2.4	1.4	2.3	1.3
	Starting burden	kgm ² /h	1.8		1.3		2.5		1.7	
	Power factor		0.78	0.64	0.78	0.64	0.74	0.68	0.75	0.61
	Efficiency		0.50	0.28	0.53	0.31	0.57	0.25	0.59	0.28
S3-60%	Speed	RPM	2800	620	3410	750	2800	620	3430	770
	Power	kW	0.37	0.09	0.45	0.11	0.55	0.13	0.65	0.15
	Current	A	1.7	0.9	1.6	0.9	2.2	1.4	2.0	1.3
	Starting burden	kgm ² /h	1.5		1.1		2.1		1.5	
	Power factor		0.72	0.59	0.73	0.56	0.70	0.61	0.70	0.56
	Efficiency		0.48	0.27	0.50	0.30	0.55	0.24	0.58	0.28
S3-60%	Speed	RPM	2870	670	3480	820				
	Power	kW	0.25	0.06	0.30	0.07				
	Current	A	1.6	0.8	1.5	0.8				
	Starting burden	kgm ² /h	1.5		1.1					
	Power factor		0.60	0.52	0.63	0.48				
	Efficiency		0.40	0.22	0.41	0.25				

Duty type	Motor code		MF10E-104		MF10E-104	
	Speed control		2-speed		2-speed	
Voltage		400 V		460 V		
Frequency		50 Hz		60 Hz		
Brake type		DC		DC		
		fast	slow	fast	slow	
Synchronous speed	RPM	3000	750	3600	900	
Brake torque	Nm	12-21	12-21	12-21	12-21	
Starting torque	Nm	10	9.0	9.6	8.5	
Electric braking torque	Nm		34/15		32/14	
Starting current	A	16	3.4	16	3.5	
Maximum torque	Nm	10	9.0	9.7	8.5	
Speed at max. torque	RPM	1960	370	2360	450	
80% of max. torque	Nm	8.0	7.2	7.8	6.8	
Speed at 80% torque	RPM	2510	500	3010	600	
Current at 80% torque	A	8.0	2.7	8.5	2.6	
Inertia	kgm ²	0.0055	0.0055	0.0055	0.0055	
Inertia with flywheel	kgm ²					
Power factor, starting		0.76	0.76	0.76	0.76	
Weight with fan	kg	72	72	72	72	
Weight	kg					
No-load current	A	1.2	1.1	1.2	1.1	
Iron losses	W					
Stator resistance at 20 °C	Ω	11	51	11	51	
S3-30%	Speed	RPM	2760	640	3330	790
	Power	kW	1.3	0.3	1.5	0.35
	Current	A	3.7	1.5	3.8	1.5
	Starting burden	kgm ² /h	5.0		3.5	
	Power factor		0.93	0.70	0.93	0.71
	Efficiency		0.61	0.45	0.59	0.48
S3-40%	Speed	RPM	2760	640	3330	790
	Power	kW	1.3	0.3	1.5	0.35
	Current	A	3.7	1.5	3.8	1.5
	Starting burden	kgm ² /h	5.0		3.5	
	Power factor		0.93	0.70	0.93	0.71
	Efficiency		0.61	0.45	0.59	0.48
S3-60%	Speed	RPM	2760	640	3330	790
	Power	kW	1.3	0.3	1.5	0.35
	Current	A	3.7	1.5	3.8	1.5
	Starting burden	kgm ² /h	5.0		3.5	
	Power factor		0.93	0.70	0.93	0.71
	Efficiency		0.61	0.45	0.59	0.48
S3-60%	Speed	RPM				
	Power	kW				
	Current	A				
	Starting burden	kgm ² /h				
	Power factor					
	Efficiency					

Duty type	Motor code		MF10EA104		MF10EA104	
	Speed control		2-speed		2-speed	
	Voltage		400 V		460 V	
	Frequency		50 Hz		60 Hz	
	Brake type		DC		DC	
			fast	slow	fast	slow
	Synchronous speed	RPM	3000	750	3600	900
	Brake torque	Nm	12-21	12-21	12-21	12-21
	Starting torque	Nm	18	16	16	15
	Electric braking torque	Nm		62/29		56/27
	Starting current	A	25	6.0	26	6.2
	Maximum torque	Nm	19	16	17	15
	Speed at max. torque	RPM	2100	400	2500	480
	80% of max. torque	Nm	15	13	14	12
	Speed at 80% torque	RPM	2570	560	3090	670
	Current at 80% torque	A	11	3.2	11	3.0
	Inertia	kgm ²	0.0055	0.0055	0.0055	0.0055
	Inertia with flywheel	kgm ²				
	Power factor, starting		0.80	0.78	0.75	0.74
	Weight with fan	kg	72	72	72	72
	Weight	kg				
	No-load current	A	1.8	1.9	1.7	1.9
	Iron losses	W				
	Stator resistance at 20 °C	Ω	6.3	31	6.3	31
S3-30%	Speed	RPM	2800	660	3410	800
	Power	kW	2.2	0.55	2.5	0.60
	Current	A	5.3	2.3	5.5	2.3
	Starting burden	kgm ² /h	7.0		4.9	
	Power factor		0.92	0.66	0.93	0.66
	Efficiency		0.68	0.49	0.68	0.54
S3-40%	Speed	RPM	2800	660	3410	800
	Power	kW	2.2	0.55	2.5	0.60
	Current	A	5.3	2.3	5.5	2.3
	Starting burden	kgm ² /h	7.0		4.9	
	Power factor		0.92	0.66	0.93	0.66
	Efficiency		0.68	0.49	0.68	0.54
S3-60%	Speed	RPM	2840	680	3460	830
	Power	kW	1.8	0.45	2.2	0.55
	Current	A	4.5	2.2	4.6	2.2
	Starting burden	kgm ² /h	7.8		5.4	
	Power factor		0.91	0.59	0.92	0.59
	Efficiency		0.67	0.48	0.66	0.52
S3-60%	Speed	RPM				
	Power	kW				
	Current	A				
	Starting burden	kgm ² /h				
	Power factor					
	Efficiency					

6.2 Explosionproof - 'd' – motors / Zone 1 / 1500 / 750 rpm

Duty type	Motor code	MF07EA204		MF07EA204		MF07EB204		MF07EB204		
		fast	slow	fast	slow	fast	slow	fast	slow	
	Speed control	2-speed		2-speed		2-speed		2-speed		
	Voltage	400 V		460 V		400 V		460 V		
	Frequency	50 Hz		60 Hz		50 Hz		60 Hz		
	Brake type	DC		DC		DC		DC		
	Synchronous speed	RPM	1500	750	1800	900	1500	750	1800	900
	Brake torque	Nm	4	4	4	4	4	4	4	4
	Starting torque	Nm	2.6	2.7	2.6	2.7	6.6	5.9	6.6	5.8
	Electric braking torque	Nm		6.0/5.6		6.0/5.6		10.6/6.4		10.3/6.2
	Starting current	A	2.9	1.2	3.0	1.2	4.8	2.5	5.0	2.6
	Maximum torque	Nm	2.6	2.7	2.6	2.7	6.6	5.9	6.6	5.8
	Speed at max. torque	RPM	0	0	0	0	0	0	0	0
	80% of max. torque	Nm	2.1	2.2	2.1	2.2	5.2	4.7	5.2	4.6
	Speed at 80% torque	RPM	1200	500	1440	600	1200	570	1440	680
	Current at 80% torque	A								
	Inertia	kgm ²	0.001	0.001	0.001	0.001	0.0014	0.0014	0.0014	0.0014
	Inertia with flywheel	kgm ²								
	Power factor, starting		0.80	0.75	0.78	0.72	0.84	0.82	0.82	0.80
	Weight with fan	kg								
	Weight	kg	13	13	13	13	15	15	15	15
	No-load current	A	1.1	0.75	1.1	0.75	1.4	1.8	1.3	1.8
	Iron losses	W								
	Stator resistance at 20 °C	Ω	90	173	90	173	46	94	46	94
S3-30%	Speed	RPM								
	Power	kW								
	Current	A								
	Starting burden	kgm ² /h								
	Power factor									
	Efficiency									
S3-40%	Speed	RPM	1370	580	1640	720	1370	590	1650	750
	Power	kW	0.25	0.11	0.30	0.13	0.40	0.18	0.50	0.23
	Current	A	1.3	0.9	1.3	0.9	1.8	1.8	1.8	1.8
	Starting burden	kgm ² /h	7		5		10.5		8	
	Power factor		0.75	0.64	0.75	0.60	0.65	0.63	0.65	0.61
	Efficiency		0.59	0.28	0.60	0.31	0.55	0.21	0.59	0.25
S3-60%	Speed	RPM								
	Power	kW								
	Current	A								
	Starting burden	kgm ² /h								
	Power factor									
	Efficiency									
S3-60%	Speed	RPM								
	Power	kW								
	Current	A								
	Starting burden	kgm ² /h								
	Power factor									
	Efficiency									

Duty type	Motor code	MF10E-204		MF10E-204		MF10EA204		MF10EA204		
	Speed control	2-speed		2-speed		2-speed		2-speed		
	Voltage	400 V		460 V		400 V		460 V		
	Frequency	50 Hz		60 Hz		50 Hz		60 Hz		
	Brake type	DC		DC		DC		DC		
		fast	slow	fast	slow	fast	slow	fast	slow	
	Synchronous speed	RPM	1500	750	1800	900	1500	750	1800	900
	Brake torque	Nm	12-21	12-21	12-21	12-21	12-21	12-21	12-21	12-21
	Starting torque	Nm	8.1	9.0	7.9	8.5	15	16	14	15
	Electric braking torque	Nm		34/15		32/14		62/29		56/27
	Starting current	A	5.9	3.4	6.1	3.5	11.2	6.0	11.5	6.2
	Maximum torque	Nm	8.1	9.0	7.9	8.5	15	16	14	15
	Speed at max. torque	RPM	0	0	0	0	0	0	0	0
	80% of max. torque	Nm	6.5	7.2	6.3	6.8	12	13	11	12
	Speed at 80% torque	RPM	1300	500	1560	600	1300	560	1560	670
	Current at 80% torque	A								
	Inertia	kgm ²	0.0055	0.0055	0.0055	0.0055	0.0055	0.0055	0.0055	0.0055
	Inertia with flywheel	kgm ²								
	Power factor, starting		0.76	0.76	0.76	0.76	0.77	0.78	0.74	0.74
	Weight with fan	kg	72	72	72	72	72	72	72	72
	Weight	kg								
	No-load current	A	0.8	1.1	0.8	1.1	1.5	1.9	1.5	1.9
	Iron losses	W								
	Stator resistance at 20 °C	Ω	34	51	34	51	15.2	31	15.2	31
S3-30%	Speed	RPM								
	Power	kW								
	Current	A								
	Starting burden	kgm ² /h								
	Power factor									
	Efficiency									
S3-40%	Speed	RPM	1360	640	1630	790	1370	660	1640	800
	Power	kW	0.65	0.3	0.75	0.35	1.1	0.55	1.3	0.60
	Current	A	1.6	1.5	1.6	1.5	2.6	2.3	2.6	2.3
	Starting burden	kgm ² /h	15		13		25		18	
	Power factor		0.82	0.70	0.83	0.71	0.81	0.66	0.82	0.66
	Efficiency		0.70	0.45	0.71	0.48	0.70	0.49	0.71	0.54
S3-60%	Speed	RPM								
	Power	kW								
	Current	A								
	Starting burden	kgm ² /h								
	Power factor									
	Efficiency									
S3-60%	Speed	RPM								
	Power	kW								
	Current	A								
	Starting burden	kgm ² /h								
	Power factor									
	Efficiency									

6.3 Explosionproof - 'd' – motors / Zone 1 Inverters

6.3.1 One speed, 4800rpm (80Hz).

These motors are driven with fixed voltages and frequencies with the specified line voltages (=inverter supply voltage).

Duty type	Motor code	MF07EA200		MF07EB200		MF07EC200		MF10E-200		
	Speed control	inverter		inverter		inverter		inverter		
	Inverter supply voltage	380-480V	440-480V	380-480V	440-480V	380-480V	440-480V	380-480V	440-480V	
	Motor voltage	400V	460V	400V	460V	400V	460V	400V	460V	
	Frequency	100Hz	120Hz	100Hz	120Hz	100Hz	120Hz	100Hz	120Hz	
	Brake type	DC	DC	DC	DC	DC	DC	DC	DC	
	Synchronous speed	RPM	3000	3600	3000	3600	3000	3600	3000	3600
	Brake torque	Nm	4	4	4-8	4-8	4-8	4-8	12-21	12-21
	Starting torque	Nm	3.5	3.3	7	6.5	12	11.5	20	20
	Electric braking torque	Nm								
	Starting current	A	5.5	5.4	9.2	9.0	15	15	25	24
	Maximum torque	Nm	3.5	3.3	7	6.5	12	11.5	20	20
	Speed at max. torque	RPM	0	0	0	0	0	0	0	0
	80% of max. torque	Nm	2.8	2.6	5.6	5.2	9.6	9.2	16	16
	Speed at 80% torque	RPM	2100	2520	2150	2600	2020	2650	2350	2800
	Current at 80% torque	A	3.0	2.9	5.3	5.1	8.5	8.3	14	13
	Inertia	kgm ²	0.001	0.001	0.0014	0.0014	0.0014	0.0014	0.0055	0.0055
	Inertia with flywheel	kgm ²								
	Power factor, starting		0.58	0.56	0.60	0.58	0.64	0.61	0.71	0.69
	Weight with fan	kg							72	72
	Weight	kg	13	13	15	15	15	15		
	No-load current	A	1.1	1.1	1.3	1.3	2.2	2.1	2.4	2.3
	Iron losses	W								
	Stator resistance at 20 °C	Ω	20	20	10	10	6.3	6.3	2.8	2.8
S3-30%	Speed	RPM								
	Power	kW								
	Current	A								
	Starting burden	kgm ² /h								
	Power factor									
	Efficiency									
S3-40%	Speed	RPM					2700	3270		
	Power	kW					1.5	1.5		
	Current	A					4.1	3.7		
	Starting burden	kgm ² /h								
	Power factor						0.75	0.75		
	Efficiency						0.70	0.71		
S3-60%	Speed	RPM	2880	3460	2700	3270			2780	3370
	Power	kW	0.45	0.55	0.9	1.1			2.2	2.5
	Current	A	1.3	1.3	2.5	2.6			4.3	4.3
	Starting burden	kgm ² /h								
	Power factor		0.72	0.73	0.75	0.75			0.87	0.88
	Efficiency		0.66	0.66	0.67	0.67			0.80	0.80
S3-60%	Speed	RPM								
	Power	kW								
	Current	A								
	Starting burden	kgm ² /h								
	Power factor									
	Efficiency									

6.3.2 One speed, 3000rpm (100Hz), 3600rpm (120Hz)

These motors are driven with fixed voltages and frequencies with the specified line voltages (=inverter supply voltage).

Duty type	Motor code	MF07EA100	MF07EB100	MF07EC100	MF10E-100
	Speed control	inverter		inverter	
	Inverter supply voltage	380-480V	380-480V	380-480V	380-480V
	Motor voltage	400V	400V	400V	400V
	Frequency	80Hz	80Hz	80Hz	80Hz
	Brake type	DC	DC	DC	DC
	Synchronous speed	RPM 4800	RPM 4800	RPM 4800	RPM 4800
	Brake torque	Nm 4	Nm 4-8	Nm 4-8	Nm 12-21
	Starting torque	Nm 3.3	Nm 6.3	Nm 11	Nm 13
	Electric braking torque	Nm			
	Starting current	A 6.9	A 12	A 19	A 26
	Maximum torque	Nm 3.3	Nm 6.3	Nm 11	Nm 13
	Speed at max. torque	RPM 0	RPM 0	RPM 0	RPM 0
	80% of max. torque	Nm 2.6	Nm 5.0	Nm 8.8	Nm 10.4
	Speed at 80% torque	RPM 2640	RPM 2640	RPM 2640	RPM 2800
	Current at 80% torque	A 3.7	A 7.0	A 12.5	A 15
	Inertia	kgm ² 0.001	kgm ² 0.0014	kgm ² 0.0014	kgm ² 0.0055
	Inertia with flywheel	kgm ²			
	Power factor, starting	0.70	0.72	0.77	0.59
	Weight with fan	kg			72
	Weight	kg 13	kg 15	kg 15	
	No-load current	A 1.1	A 1.1	A 2.4	A 1.4
	Iron losses	W			
	Stator resistance at 20 °C	Ω 20	Ω 8.8	Ω 5.6	Ω 2.8
S3-30%	Speed	RPM			
	Power	kW			
	Current	A			
	Starting burden	kgm ² /h			
	Power factor				
S3-40%	Speed	RPM		4450	
	Power	kW		1.3	
	Current	A		3.8	
	Starting burden	kgm ² /h			
	Power factor			0.78	
S3-60%	Speed	RPM	4560	4350	4490
	Power	kW	0.45	0.9	2.2
	Current	A	1.2	2.3	4.3
	Starting burden	kgm ² /h			
	Power factor		0.81	0.89	0.95
S3-60%	Speed	RPM			
	Power	kW			
	Current	A			
	Starting burden	kgm ² /h			
	Power factor				
	Efficiency				

6.4 Sparkproof -'nA'- motors / Zone 2

Two speed, 3000/750 RPM (50Hz) and 3600/900 RPM (60Hz)

Duty type	Motor code	MF06LA104		MF06LA104		MF07X-104		MF07X-104		
	Speed control	2-speed		2-speed		2-speed		2-speed		
	Voltage	400 V		460 V		400 V		460 V		
	Frequency	50 Hz		60 Hz		50 Hz		60 Hz		
	Brake type	DC		DC		DC		DC		
		fast	slow	fast	slow	fast	slow	fast	slow	
	Synchronous speed	RPM	3000	750	3600	900	3000	750	3600	900
	Brake torque	Nm	2	2	2	2	8	8	8	8
	Starting torque	Nm	3.3	2.5	3.3	2.4	5.8	5.2	5.6	4.8
	Electric braking torque	Nm		8/3.5		8/3.5		10/9		10/9
	Starting current	A	5.0	1.4	5.3	1.5	8.0	2.4	8.0	2.3
	Maximum torque	Nm	3.6	2.7	3.5	2.6	5.9	5.2	5.7	4.8
	Speed at max. torque	RPM	1620	380	2220	530	1700	0	2040	0
	80% of max. torque	Nm	2.8	2.1	2.7	2.0	4.6	4.1	4.5	3.8
	Speed at 80% torque	RPM	2100	530	2800	680	2400	590	2880	710
	Current at 80% torque	A	2.3	1.3	2.2	1.3	3.9	2.3	3.6	2.3
	Inertia	kgm ²	0.0006	0.0006	0.0006	0.0006	0.0012	0.0012	0.0012	0.0012
	Inertia with flywheel	kgm ²					0.0036	0.0036	0.0036	0.0036
	Power factor, starting		0.92	0.93	0.91	0.92	0.90	0.80	0.89	0.78
	Weight with fan	kg								
	Weight	kg	7.8	7.8	7.8	7.8	13.5	13.5	13.5	13.5
	No-load current	A	1.1	1.2	1.1	1.2	2.2	1.7	1.9	1.7
	Iron losses	W								
	Stator resistance at 20 °C	Ω	50	175	50	175	23	75	23	75
S3-20%	Speed	RPM	2760	660	3340	810	2720	590	3370	750
	Power	kW	0.45	0.1	0.55	0.12	0.75	0.18	0.9	0.2
	Current	A	1.3	1.2	1.3	1.2	2.7	1.9	2.7	1.9
	Starting burden	kgm ² /h	3		2.1		7		4.9	
	Power factor		0.83	0.67	0.82	0.80	0.80	0.67	0.79	0.64
	Efficiency		0.67	0.20	0.67	0.20	0.57	0.24	0.62	0.26
S3-40%	Speed	RPM	2760	660	3340	810	2720	590	3370	750
	Power	kW	0.45	0.1	0.55	0.12	0.75	0.18	0.9	0.2
	Current	A	1.3	1.2	1.3	1.2	2.7	1.9	2.7	1.9
	Starting burden	kgm ² /h	2.5		1.9		6.5		4.5	
	Power factor		0.83	0.67	0.82	0.80	0.80	0.67	0.79	0.64
	Efficiency		0.67	0.20	0.67	0.20	0.57	0.24	0.62	0.26
S3-50%	Speed	RPM					2720	590	3370	750
	Power	kW					0.75	0.18	0.9	0.2
	Current	A					2.7	1.9	2.7	1.9
	Starting burden	kgm ² /h					5.8		4	
	Power factor						0.80	0.67	0.79	0.64
	Efficiency						0.57	0.24	0.62	0.26
S3-60%	Speed	RPM								
	Power	kW								
	Current	A								
	Starting burden	kgm ² /h								
	Power factor									
	Efficiency									

7 Travelling speeds

7.1 Zone 1

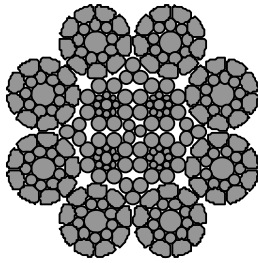
Load kg	Trolley	Falls	Wheel Dia. mm	Gear type	Motor type	High Speed M/min 50Hz	Real speed	Bronze type
5000	NC-L	02, 04	125	GEK106	MF07EA104 0.45/0.11kW	20	19.7	CuZn19Al6
5000	NC-N	02, 04	100	GEK106	MF07EA104 0.45/0.11kW	20	19.8	CuZn19Al6
10000	NC-N	06, 08	100	2XGEK106	MF07EA104 0.45/0.11kW	20	19.8	CuZn19Al6
5000	NC-D	02, 04	90	GES342 PS4	MF07EA104 0.45/0.11kW	20	18.5	CuZn19Al6
10000	NC-D	06, 08	110	2XGES342 PS4	MF07EA104 0.45/0.11kW	25	22.6	CuZn19Al6
5000	ND-L	02,04	150	2xGEK106	MF07EA104 0.45/0.11kW	25	23.7	CuZn19Al6
5000	ND-N	02,04	100	2xGEK106	MF07EA104 0.45/0.11kW	20	19.8	CuZn19Al6
10000	ND-L	02,04	125	2xGEK106	MF07EA104 0.45/0.11kW	20	19.7	CuZn19Al6
10000	ND-N	02,04	100	2xGEK106	MF07EA104 0.45/0.11kW	20	19.8	CuZn19Al6
15000	ND-N	06	125	4xGEK106	MF07EA104 0.45/0.11kW	20	19.7	CuZn19Al6
20000	ND-N	08	125	4xGEK106	MF07EA104 0.45/0.11kW	20	19.7	CuZn19Al6
10000	ND-D	02, 22	110	2XGES342 PS4	MF07EA104 0.45/0.11kW	25	22.6	CuZn19Al6
10000	ND-D	04, 24	110	2XGES342 PS3	MF07EA104 0.45/0.11kW	25	22.6	CuZn19Al6
15000	ND-D	06	200	2xGES490 PS3	MF07EB104 0.65/0.15kW	20	19.2	CuZn19Al6
20000	ND-D	08, 26, 28	200	2xGES490 PS3	MF07EB104 0.65/0.15kW	20	19.2	CuZn19Al6
10000	NE-N	02, 22	125	2XGEK106	MF07EA104 0.45/0.11kW	20	19.7	CuZn19Al6
20000	NE-N	04	180	2XGES320 PS3	MF07EA104 0.45/0.11kW	20	20.3	CuZn19Al6
20000	NE-N	24	125	4XGEK106	MF07EA104 0.45/0.11kW	20	19.7	CuZn19Al6
30000	NE-N	06, 26	180	4XGES320 PS3	MF07EA104 0.45/0.11kW	20	20.3	CuZn19Al6
40000	NE-N	08, 28	180	4XGES320 PS3	MF07EA104 0.45/0.11kW	20	20.3	CuZn19Al6
10000	NE-D	02, 22	200	2xGES490	MF07EA104 0.45/0.11kW	20	19.2	CuZn19Al6
20000	NE-D	04, 24	200	2xGES490	MF07EA104 0.45/0.11kW	20	19.2	CuZn19Al6
30000	NE-D	06, 26	250	2xGES5B5	MF10E-104 1.3/0.3kW	20	18.9	CuZn19Al6
40000	NE-D	08, 28	250	2xGES5B5	MF10E-104 1.3/0.3kW	20	18.9	CuZn19Al6
20000	NF-D	22	200	GES490	MF07EA104 0.45/0.11kW	20	19.2	CuZn19Al6
40000	NF-D	24	250	GES5B5	MF10E-104 1.3/0.3kW	20	18.9	CuZn19Al6
6000	NF-D	26	250	GES5B5	MF10E-104 1.3/0.3kW	20	18.9	CuZn19Al6
80000	NF-D	28	250x6	GES5B5	MF10E-104 1.3/0.3kW	20	18.9	CuZn19Al6

7.2 Zone 2

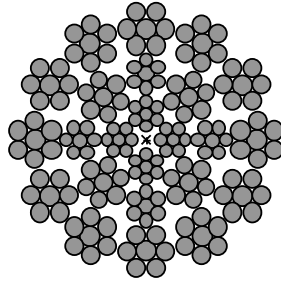
Load kg	Trolley	Falls	Wheel Dia. mm	Gear type	Motor type	High Speed M/min 50Hz	Real speed	Bronze type
5000	NC-L	02, 04	100	GEK106	MF06LA104 0.45/0.1kW	20	19.7	CuZn19Al6
5000	NC-N	02, 04	100	GEK106	MF06LA104 0.45/0.1kW	20	19.8	CuZn19Al6
10000	NC-N	06, 08	100	2XGEK106	MF06LA104 0.45/0.1kW	20	19.8	CuZn19Al6
5000	NC-D	02, 04	90	GES342 PS4	MF06LA104 0.45/0.1kW	20	18.5	CuZn19Al6
10000	NC-D	06, 08	110	2XGES342 PS4	MF06LA104 0.45/0.1kW	20	22.6	CuZn19Al6
5000	ND-L	02,04	125	2xGEK106	MF06LA104 0.45/0.1kW	20	23.7	CuZn19Al6
5000	ND-N	02,04	100	2xGEK106	MF06LA104 0.45/0.1kW	20	19.8	CuZn19Al6
10000	ND-L	02,04	125	2xGEK106	MF06LA104 0.45/0.1kW	20	19.7	CuZn19Al6
10000	ND-N	02,04	100	2xGEK106	MF06LA104 0.45/0.1kW	20	19.8	CuZn19Al6
15000	ND-N	06	125	4xGEK106	MF06LA104 0.45/0.1kW	20	19.7	CuZn19Al6
20000	ND-N	08	125	4xGEK106	MF06LA104 0.45/0.1kW	20	19.7	CuZn19Al6
10000	ND-D	02, 22	110	2XGES342 PS4	MF06LA104 0.45/0.1kW	20	22.6	CuZn19Al6
10000	ND-D	04, 24	110	2XGES342 PS3	MF06LA104 0.45/0.1kW	20	22.6	CuZn19Al6
15000	ND-D	06	200	2xGES490 PS3	MF06LA104 0.45/0.1kW	20	19.2	CuZn19Al6
20000	ND-D	08, 26, 28	200	2xGES490 PS3	MF06LA104 0.45/0.1kW	20	19.2	CuZn19Al6
10000	NE-N	02, 22	125	2XGEK106	MF06LA104 0.45/0.1kW	20	19.7	CuZn19Al6
20000	NE-N	04	180	2XGES320 PS3	MF06LA104 0.45/0.1kW	20	20.3	CuZn19Al6
20000	NE-N	24	125	4XGEK106	MF06LA104 0.45/0.1kW	20	19.7	CuZn19Al6
30000	NE-N	06, 26	180	4XGES320 PS3	MF06LA104 0.45/0.1kW	20	20.3	CuZn19Al6
40000	NE-N	08, 28	180	4XGES320 PS3	MF06LA104 0.45/0.1kW	20	20.3	CuZn19Al6
10000	NE-D	02, 22	200	2xGES490	MF06LA104 0.45/0.1kW	20	19.2	CuZn19Al6
20000	NE-D	04, 24	200	2xGES490	MF06LA104 0.45/0.1kW	20	19.2	CuZn19Al6
30000	NE-D	06, 26	250	2xGES5B5	MF07X-104 0.75/0.18kW	20	18.9	CuZn19Al6
40000	NE-D	08, 28	250	2xGES5B5	MF07X-104 0.75/0.18kW	20	18.9	CuZn19Al6
20000	NF-D	22	200	GES490	MF06LA104 0.45/0.1kW	20	19.2	CuZn19Al6
40000	NF-D	24	250	GES5B5	MF07X-104 0.75/0.18kW	20	18.9	CuZn19Al6
6000	NF-D	26	250	GES5B5	MF10E-104 1.3/0.3kW	20	18.9	CuZn19Al6
80000	NF-D	28	250x6	GES5B5	MF10E-104 1.3/0.3kW	20	18.9	CuZn19Al6

(*) MF10E-104 : 'd' motor

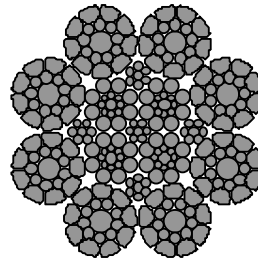
8 Wire rope data



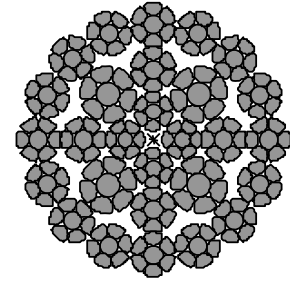
Cross section
Rope type: D and Dr



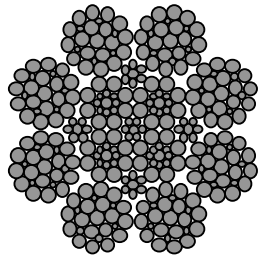
Cross section
Rope type: F



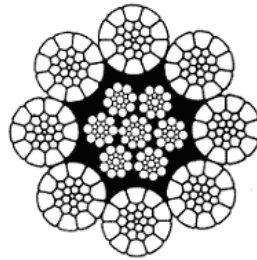
Cross section
Rope type: G and Gr



Cross section
Rope type: J and M



Cross section
Rope type: K and Kr



Cross section
Rope type: E, Er, H, Hr, L, Lr

Rope	Dia. mm	Minimum Breaking Load kN	Calculated Braking Load kN	Strand Constr.	Wire Strength N/mm ²	Core	Rope Lay	Comp. Outer Strands	Wire Material	Weight kg/m	Rot. resist.
D	8.0	65.6	73.0	8 x 19	2160	Steel core parallel strands	LR	Yes	Galvanized steel	0.30	No
Dr	8.0	65.6	73.0	8 x 19	2160	Steel core parallel strands	RR	Yes	Galvanized steel	0.30	No
F	8.0	56.0	66.0	24 x 7	2160	Steel core	LL	No	Galvanized steel	0.27	Yes
G	11.0	128	141.4	8 x 19	2160	Steel core parallel strands	LR	Yes	Galvanized steel	0.56	No
Gr	11.0	128	141.4	8 x 19	2160	Steel core parallel strands	RR	Yes	Galvanized steel	0.56	No
J	11.0	115.0	137.3	28 x 7	2160	Steel core	LR	Yes	Galvanized steel	0.56	Yes
K	15.0	221.6	257.5	8 x 25	2160	Steel core parallel strands	LR	No	Galvanized steel	1.03	No
Kr	15.0	221.6	257.5	8 x 25	2160	Steel core parallel strands	RR	No	Galvanized steel	1.03	No
M	15.0	218	249.0	28 x 7	2160	Steel core	LR	Yes	Galvanized steel	1.03	Yes
E	8.0	65.6	78.1	8 x 19	2160	Independent wire rope core	LR	Yes	Galvanized steel	0.33	No
Er	8.0	65.6	78.1	8 x 19	2160	Independent wire rope core	RR	Yes	Galvanized steel	0.33	No
H	11.0	128	152	8 x 19	2160	Independent wire rope core	LR	Yes	Galvanized steel	0.63	No
Hr	11.0	128	152	8 x 19	2160	Independent wire rope core	RR	Yes	Galvanized steel	0.63	No
L	15.0	229	273	8 x 26	2160	Independent wire rope core	LR	Yes	Galvanized steel	1.14	No
Lr	15.0	229	273	8 x 26	2160	Independent wire rope core	RR	Yes	Galvanized steel	1.14	No

LR = left hand regular lay
 RR = right hand regular lay
 LL = left hand Lang's lay

9 Materials

Part	Fabrication method							Material								Material		Standard Finishing			
	1	2	3	4	5	6	7	1	2	3	4	5	6	7	8	Description	Standard	1	2	3	4
HOIST FRAME																					
Drum						•		•								S355J2G3	EN10025				
Rope guide	•						•					•				EN-GJS-500	EN1563	•			
Frame rods								•								S355J2G3	EN10025	•			
Frame ends, A,B,C				•					•							S355MC	EN10149	•			
Frame ends, D,E				•					•							S355J2G3	EN10025	•			
Frame protection cover				•						•						DC01	EN10130	•			
Drum seal ring																POM					
ROPE SHEAVE ASSEMBLIES																					
Rope sheaves	•						•						•			EN-GJS-700	EN1563	•			
Rope sheave shafts								•								S355J2G3	EN10025			•	
Suspension beam					•				•							S355J2G3	EN10025	•			
ROPE ANCHORAGE																					
Rope clamps							•		•							S355J2G3	EN10025			•	
Rope anchorage housing	•												•			EN-GJS-500	EN1563	•			
Rope anchorage wedge	•													•		EN-GJS-500	EN1563	•			
Rope anchorage shaft								•					•			S355J2G3	EN10025			•	
HOOK																					
Hook forging		•					•						•			34CrMo4QT	EN10083	•			
Hook forging		•					•						•			34CrNiMo6QT	EN10083	•			
Hook block housing, A, B, C, when 04 rope falls					•				•							S355MC	EN10149	•			
Hook block housing								•					•			S355J2G3	EN10025	•			
Sheave cover					•								•			DC03	EN10130	•			
HOISTING GEARBOX																					
Gearbox housing, A, B	•						•								•	G-AISI7Mg	EN1706	•			
Gearbox housing, C, D, E	•												•			EN-GJS-500	EN1563	•			
Gear wheels								•					•			AISI 8620	AISI 8620				
Shafts inside gearbox								•					•			AISI 8620	AISI 8620				
Coupling								•								S355J2G3	EN10025				
HOISTING MOTORS, nA																					
Motor frame			•				•								•	AlMgSi-T5	EN573				
Rotor shaft													•			42CrMo4QT	EN10083				
Mounting flange	•														•	G-AISI10Mg	EN1706				
Mounting flange, motor MF13	•													•		EN-GJL-200	EN1561	•			
TRAVELLING GEARBOX																					
Gearbox housing	•							•							•	G-AISI10Mg	EN1706	•			
Gear wheels									•				•			AISI 8620	AISI 8620				
Gearbox shafts									•				•			AISI 8620	AISI 8620				
TRAVELLING MOTOR, nA																					
Motor frame			•				•								•						
Rotor shaft													•								
Mounting flange	•													•							
TRAVELLING & HOISTING MOTORS, 'd'																					
MF07																					
Stator frame	•							•							•	AlSi10Mg-T6	ISO R164, ISO 208				
Rotor shaft									•				•			42CrMo4QT	EN10083				
Mounting flange	•								•						•	G-AISI10Mg	EN1706				

Part	Fabrication method							Material								Material		Standard Finishing				
	1	2	3	4	5	6	7	1	2	3	4	5	6	7	8	Description	Standard	1	2	3	4	
MF10																						
Stator frame						•								•			500-7	ISO 1083				
Rotor shaft						•								•			42CrMo4QT	EN10083				
Mounting flange						•										Gr.20	ISO 185					
Terminal box	•						•								•	ALSi10Mg-T6	ISO R164, ISO 208					
MF13																						
Stator frames						•									•		500-7	ISO 1083				
Rotor shaft						•									•		42CrMo4QT	EN10083				
Mounting flange						•									•		Gr.20	ISO185				
LOW HEADROOM TROLLEY																						
Frame beams						•										S355J2G3	EN10025			•		
Frame plates				•		•		•								S355J2G3	EN10025		•			
Travel wheel shafts						•		•								S355J2G3	EN10025					
Travel wheels	•														•	EN-GJS-700	EN1563		•			
Counter weight						•		•								S235JRG2	EN10025		•			
NORMAL HEADROOM TROLLEY																						
Trolley plates					•	•		•								S355J2G3	EN10025		•			
Trolley suspension frame					•	•		•								S355J2G3	EN10025		•			
Trolley suspension shaft. b<420					•									•		S355J2G3	EN10025			•		
Trolley suspension shaft, b>420					•									•		42CrMo4QT	EN10083			•		
Travel wheels	•														•	EN-GJS-700	EN1563		•			
Travel wheel shafts						•		•								S355J2G3	EN10025					
DOUBLE GIRDER TROLLEY																						
Trolley wheels	•														•	EN-GJS-700	EN1563		•			
Trolley wheel shafts (if any)						•		•								S355J2G3	EN10025					
Trolley wheel supports (if any)	•														•	EN-GJS-500	EN1563		•			
Trolley end carriages						•		•								S275JR	EN10025		•			
Intermediate beam						•		•								S355J2G3	EN10025		•			

10Hook

10.1 Hook block dimensions

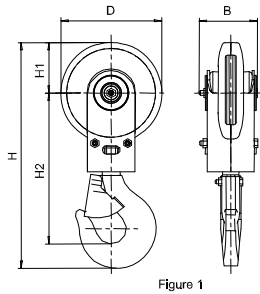


Figure 1

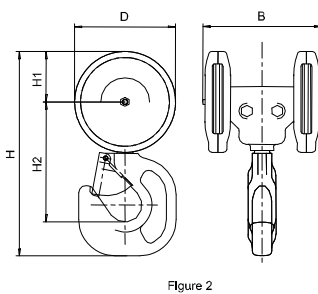


Figure 2

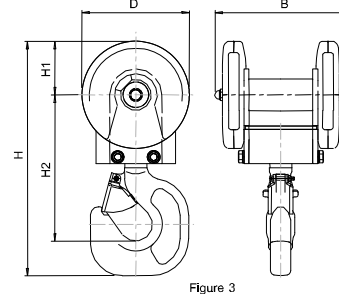


Figure 3

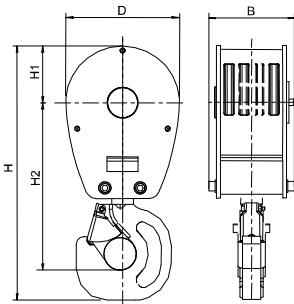


Figure 4

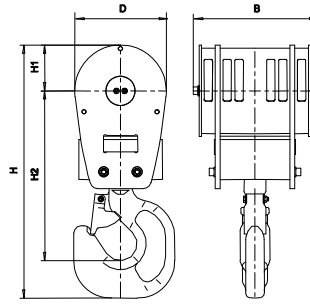


Figure 5

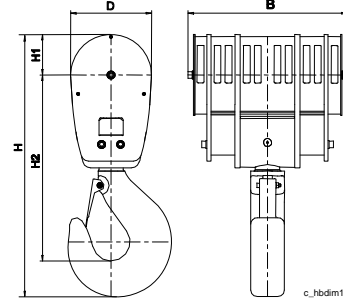
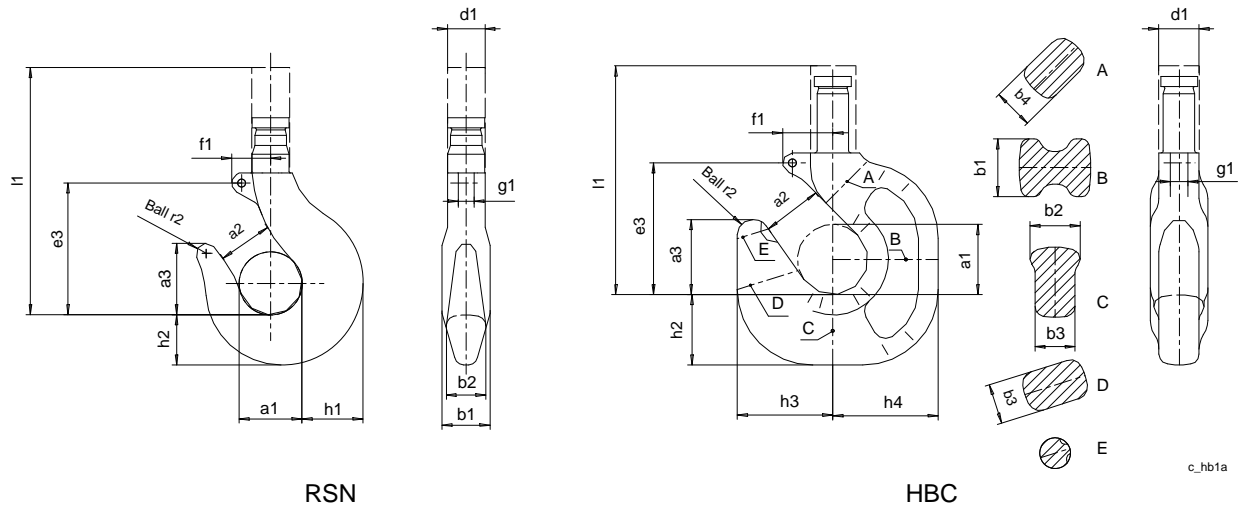


Figure 6

Trolley types L, D, N, F

Hoist frame	Rope falls	Hoist duty			Hook forging	Fig.	Hook block dimensions (mm)					Weight (kg)
		1Am/M4	2m/M5	3m/M6			H	H1	H2	D	B	
NC	02	X (M4)	M5	M6	RSN 1 V	1	414	102	272	204	118	14
NC	04		M5	M6	HBC 2.5 V	2	426	102	259	204	270	21.8
NC	04	X (M4)			HBC 2.5 V	3	443	102	276	204	241	31.5
NC	06		M5		HBC 2.5 V	4	499	110	324	220	165	37
NC	08	M4			HBC 2.5 V	4	499	110	324	220	165	40
ND	02	X (M4)	M5	M6	HBC 2.5 V	1	578	142	371	283	132	31
ND	04		M5	M6	HBC 5 V	2	547	142	316	283	376	46.5
ND	04	X (M4)			HBC 5 V	3	604	142	372	283	341	77.5
ND	06		M5		HBC 5 V	4	687	150	447	300	220	88
ND	08	M4	M5		HBC 5 V	4	687	150	447	300	220	95
ND	22		M5	M6	HBC 2.5 V	4	499	110	324	220	165	29
ND	24		M5	M6	HBC 2.5 V	5	608	110	408	220	220	67
ND	26		M5	M6	HBC 5 V	5	608	110	408	220	296	78
ND	28	M4	M5		HBC 5 V	5	608	110	408	220	354	86
NE	02	M4	M5	M6	HBC 5 V	4	778	198	500	395	219	94
NE	04	M4	M5	M6	HBC 5 V	4	778	198	500	395	219	106
NE	06	M4	M5		RSN10 T	4	930	198	625	395	259	173
NE	08	M4			RSN 16 T	5	1067	198	735	395	289	251
NE	22	M4	M5	M6	HBC 5 V	4	677	150	447	300	240	79
NE	24	M4	M5	M6	HBC 5 V	4	677	150	447	300	240	94
NE	26	M4	M5		RSN10 T	5	844	150	587	300	373	162
NE	28	M4			RSN 16 T	6	974	150	690	300	483	222
NF	22	M4	M5	M6	HBC 5 V	4	778	198	500	395	219	106
NF	24	M4	M5	M6	RSN 16 T	5	1067	198	735	395	289	251
NF	26	M4	M5		RSN 20 T	5	1140	198	790	395	399	340
NF	28	M4			RSN 25 T	6	1235	198	866	395	533	532

10.2 Hook forging dimensions



RSN (DIN 15401) and HBC dimensions

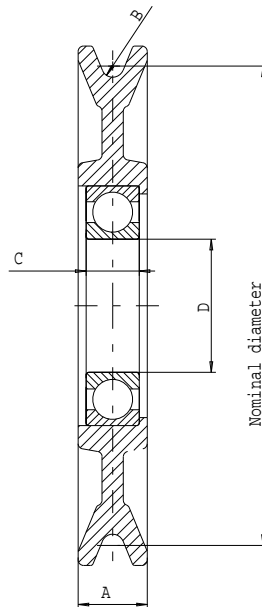
	RSN										HBC		
	RSN 1	RSN 1.6	RSN 2.5	RSN 4	RSN 5	RSN 6	RSN 10	RSN 16	RSN 20	RSN 25	HBC 1.6	HBC 2.5	HBC 5
a ₁	50	56	63	71	80	90	112	140	160	180	56	63	80
a ₂	40	45	50	56	63	71	80	112	125	140	45	49	63
a ₃	57	64	72	80	90	101	127	160	180	202	60	65	84
b ₁	38	45	53	63	71	80	100	125	140	160	46	53	71
b ₂	32	38	45	53	60	67	85	106	118	132	40	45	60
b ₃	-	-	-	-	-	-	-	-	-	-	32	38	55
b ₄	-	-	-	-	-	-	-	-	-	-	32	38	45
d ₁	30	36	42	48	53	60	75	95	106	118	38	44	55
e ₃	105	118	132	148	165	185	221	280	330	360	105	118	148
f ₁	31	35	40	45	51	57	46	58	68	74	40	45	52.5
g ₁	12.5	14	16	16	18	18	25	35	35	40	14	16	18
h ₁	48	56	67	80	90	100	125	160	180	200	-	-	-
h ₂	40	48	58	67	75	85	106	132	150	170	56	65	90
h ₃	-	-	-	-	-	-	-	-	-	-	76	85	112
h ₄	-	-	-	-	-	-	-	-	-	-	84	100	130
l ₁	197	210	253	285	318	374	460	595	665	735	199	260	290
r ₂	8	9	10	12	14	16	20	25	28	32	12	15	18
weight (forging)	3.2 kg	4.5 kg	6.3 kg	8.8 kg	12.3 kg	17.1 kg	40 kg	77 kg	112 kg	160 kg	5.1 kg	8 kg	15 kg

Note: Safety latch decreases dimension a₁ about 5 mm on HBC forging and about 15mm on RSN forging.

10.3 Hook forging standards

	RSN	HBC
Dimension standard	DIN 15401	Oversized DIN 15401
Material standard	DIN 15400	DIN 15400

11 Drum and rope sheave diameters



Rope sheave diameters (nominal, in)	A (in)	B (in)	C (in)	D (in)
5,75	0,87	0,13	0,71	1,57
7,09	1,02	0,17	0,79	1,97
9,76	1,26	0,23	0,91	2,56
13,31	1,57	0,31	1,1	3,35

Frame size code	Rope diameter (in)	Reeving	Rope drum diameter (nominal, in)	Rope drum pitch (in)	Rope sheave diameter (nominal, in)	Number of rope clamps on drum
B	0,31	Standard	13,98	0,36	7,09	3
C	0,43	Standard	15,98	0,49	9,76	4
C	0,31	True vertical	15,98	0,36	7,09	2x3
D	0,59	Standard	23,94	0,67	13,31	6
D	0,43	True vertical	23,94	0,49	9,76	2x4
E	0,59	True vertical	23,94	0,67	13,31	2x6

12 Surface treatment

12.1 Standard Painting system

	Wet painting		Alternative: Powder coating	
Product group	Steel parts, Load carrying parts	Steel parts, outfitting parts as covers, Aluminium parts	Steel parts, Load carrying parts	Steel parts, outfitting parts as covers, Aluminium parts
Parts and components	End plates Support beam Support of wedge locking Pulley support Hook block Hook side plate Trolley Hoisting and travelling motors	Covers Etc.	End plates Support beam Support of wedge locking Pulley support Hook block Hook side plate Trolley Hoisting and travelling motors	Covers Etc.
Class	C2M		C2M	
Standard/ Painting system	ISO 12944-5 S2.15 EP120/2-FeSa2½	EP80/1-FeSa2½	ISO 12944 EP/PE 120/1- [color code]	ISO 12944 EP/PE 100/1- [color code]
Steel work	05 (SFS 8145)	05 (SFS 8145)	05 (SFS 8145)	05 (SFS 8145)
Preliminary treatment	Wash, removal of grease Shot blasting Sa2½	Wash, removal of grease Shot blasting Sa2½	Wash, removal of grease Zinc- or ironphosphate	Wash, removal of grease Zinc- or ironphosphate
Priming paint	Epoxy priming paint 1 x 60 µm			
Finishing paint	Epoxy finishing paint 1 x 60 µm	Epoxy finishing paint 1 x 80 µm	Epoxy polyester powder coating 1 x 120 µm	Epoxy polyester powder coating 1 x 100 µm
Total paint thickness	120 µm	80 µm	120 µm	100 µm

12.2 Optional surface treatment

	Special paint thickness for hoist	Special paint thickness for the motors	Off-shore painting for hoist	Off-shore painting for the motors.
Class	C3M	/	C5-IM	/
Product group	Steel parts, Load carrying parts	Steel parts	Steel parts, Load carrying parts	Steel parts
Parts and components	End plates Support beam Support of wedge locking Pulley support Hook block Hook side plate Trolley Motors	Hoisting and travelling motors	End plates Support beam Support of wedge locking Pulley support Hook block Hook side plate Trolley Motors	Hoisting and travelling motors
Standard/ Painting system	ISO 12944-5 S3.18 EP200/3-FeSa2½	ISO 12944-5 S2.15 EP120/2-FeSa2½	ISO 12944-5 S6.05 EPZn(R)EPPUR160/3-FeSa2½	ISO 12944-5 S6.05 EPZn(R)EPPUR160/3-FeSa2½
Steel work	05 (SFS 8145)	05 (SFS 8145)	05 (SFS 8145)	05 (SFS 8145)
Preliminary treatment	Wash, removal of grease Shot blasting Sa2½	Wash, removal of grease Shot blasting Sa2½	Wash, removal of grease Shot blasting Sa2½	Wash, removal of grease Shot blasting Sa2½
Priming paint	Epoxy priming paint 1 x 100 µm	Epoxy priming paint 1 x 60 µm	Zinc epoxy paint 1 x 40µm Epoxy priming paint 1 x 80 µm	Zinc epoxy paint 1 x 40µm Epoxy priming paint 1 x 60 µm
Finishing paint	Epoxy finishing paint 1 x 100 µm	Epoxy finishing paint 2 x 60 µm	Polyurethane paint 1x 40 µm	Epoxy finishing paint 1 x 60 µm
Total paint thickness	200 µm	180 µm	160 µm	160 µm

12.3 Color codes

Part	Color code
Hoisting unit	
Hoist frame	RAL 7021
Frame cover	RAL 9006
Hoist motor	RAL 7021
Rope reeving	
Hook forging	RAL 7021
Cross bar	RAL 7021
Hook sheave cover plate	RAL 1021
Locking plate	RAL 7021
Sheave	RAL 7021
Sheave support	RAL 7021
Guide roller	*
Rope guide NC	RAL 7021
Rope guide ND	RAL 7021
Electrical cubicle	
Cubicle bottom (L and N trolleys)	RAL 9006
Cubicle bottom (DGT)	RAL 7021
Cubicle cover	RAL 9006
Junction box (L and N trolleys)	Polyamid
Junction box (DGT)	RAL 9006
Cubicle supports	RAL 7021
Back plate (L)	RAL 7021
Counterweight	RAL 7021
DGT trolley	RAL 7021
L and N trolley	RAL 7021
Traveling machinery	
Travel motor	RAL7021
Travel gear (frame)	RAL 7021
Travel wheel	Not painted

EPOXY paint	Color
RAL 7021	Black grey
RAL 9006	Silver
RAL 1021	Cadmium Yellow
RAL 1028	Melon yellow
DZ 2369	Green peppermint

*) Fe/Zn 12 cC ISO R 2081 yellow passivated

**) DIN 50961- Fe/Zn 12 A (Colorless)