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TECHNICAL GUIDE & CHARACTERISTICS

WIRE ROPE HOIST NOVA

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Unit of measure: SI

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1 Update history

Section	Changes	Date	Handled by	
Hoist standard features	Hoist standard features lists added. (Moved from SLEQ Products;Technical Guide;Features to Technical Guide;Characteristics)	7.10.04	KHFIKA	
	NZ features added, for other products features checked and revised	4.11.2005	KHHJII	
	Ambient temperature range changed. Additional information can be found from the Outdoor specification.	16.5.2007	KHHJII	
Product code	MHS brand added	5.3.03	KHHRJU	
	Trolley types added	5.3.03	KHHRJU	
	Reeving code; A rope 6.2mm => NB - rope	26.3.03	KHHRJU	
	Morris brand added, layout changed, information checked and revised	4.11.2005	KHHJII	
Characteristics	Hoisting speeds updated	20.1.03	KHHRJU	
	NF rope type added	5.3.03	KHHRJU	
	NF shading removed	5.3.03	KHHRJU	
	Loads for NC06, ND06, NE06, NE08	20.3.03	KHHRJU	
	ND26, NE26, NE28, NF26, NF28 added.	20.3.03	KHHRJU	
	Tm/min value for NE06, NE08 and NE28 32t changed	28.10.03	KHHRJU	
	Drum lengths L, M and N added for NF	28.10.03	KHHRJU	
	NE0x and NE2x Normal headroom trolleys added	28.10.03	KHHRJU	
	Some hoisting motors changed	28.10.03	KHHRJU	
	Gear ratio for gear type G, NE and NF changed	28.10.03	KHHRJU	
	NE- V machinery hoists added	28.10.03	KHHRJU	
	NC- V, ND-V, 1Am machinery hoists added	4.11.03	KHHRJU	
	Hoists with 01, 21, 10, 20 rope reeving removed	4.11.03	KHHRJU	
	NF26 load changed 38000kg/ 3m=> 40000kg/3m	17.11.03	KHHRJU	
	NC-V M2 1000kg rope type corrected	12.5.04	KHHJII	
	IWRC ropes added for R8/28 2m and R6/26 3m hoists	12.5.04	KHHJII	
	NE and NF HOLS changed	12.5.04	KHHJII	
	NE-V HOLS changed	12.5.04	KHHJII	
	NZ information added	4.11.2005	KHHJII	
	IWRC ropes added for all R8/28 and R6/26 reevings	4.11.2005	KHHJII	
	Gear ratios changed for NE and NF	4.11.2005	KHHJII	
	Machineries GT7, GT8, HT8, HT9 and JT9 added for NF	4.11.2005	KHHJII	
	Contact control machineries corrected for NF-R28-2m	4.11.2005	KHHJII	
	Preliminary info for ND-N-R2x added, follow Markman notifications for product launch	4.11.2005	KHHJII	
	NC-R08 wrong rope force corrected	4.8.2006	KHHJII	
	NE-R2x HOLS changed because of new rope guide.	4.8.2006	KHHJII	
	NC-R06/08 wrong rope type corrected	29.9.2006	KHHJII	
	Hoisting motor	Note. "P8 hoisting motor only for 1Am use" added.	5.3.03	KHHRJU
		T9- and TA- hoisting motors, shading removed	5.3.03	KHHRJU
		Hoisting motor table updated (P8 low voltage currents added)	4.11.03	KHHRJU
		One speed motors added, information checked and revised	4.11.2005	KHHJII
	Travelling motor	MF06LA200 0.65kW => MF06LA20P	26.3.03	KHHRJU
NZ motors added, information checked and revised		8.11.2005	KHHJII	
Trolley speed	EC/ GES travelling speeds added, Inverter	20.3.03	KHHRJU	
	EC/ GES travelling speeds added, 2 speed	26.3.03	KHHRJU	
	Overlapping travelling machinery combinations removed, N and L trolleys	26.3.03	KHHRJU	
	ND08 / ND28 and NE04/NE24 travelling motor changed, was MF06LA200, correct motor is MF06LA20P	28.10.03	KHHRJU	
	Travelling machineries for NE- N added	4.11.03	KHHRJU	
	D-trolley Inverter; ND R6/26 15-32m/min with GES342 + MF06LA20P	12.5.04	KHHJII	
	NE R6/26 travelling motor corrected to MF06LA20P	12.5.04	KHHJII	
	N-trolley contactor; NC A2/A4 removed; not available	12.5.04	KHHJII	
	ND R2 DMCS007 changed to DMCS022	12.5.04	KHHJII	
	DMCS040 changed to D2M004	4.11.2005	KHHJII	
	All inverter selections checked and revised, some inverters increased	4.11.2005	KHHJII	
	NZ travelling information added	4.11.2005	KHHJII	

Section	Changes	Date	Handled by
	Inverter type/size corrections	4.8.2006	KHHJII
	60Hz speed ranges added, values corrected	29.9.2006	KHHJII
Surface treatment	Color codes according to the brand face lift information	4.11.2005	KHHJII
Wire rope Data	D+Dr MBL changed	5.3.03	KHHRJU
	G+Gr MBL changed	5.3.03	KHHRJU
	IWRC ropes added	12.5.04	KHHJII
	Rope pictures and rope table updated	14.11.2006	KUIKKAJU
Hoist materials	Material list updated	29.9.2006	KHHJII
Hook block	Dimension changes	15.1.03	KHHRJU
	Hook forging for ND24 changed	4.11.03	KHHRJU
	NZ information added, ND-R26/R28 forging changed to RSN	4.11.2005	KHHJII
	Information checked and revised	4.11.2005	KHHJII
Hook forging	Dimensions for RSN2.5 hook forging added.	20.3.03	KHHRJU
	Text: "Safety latch decreases..." added.	20.3.03	KHHRJU
	Dimensions and weights for RSN 1.6,10,16,20,25 and HBC 2.5,5 changed	5.7.04	KHHMTU
	Information checked and revised	4.11.2005	KHHJII
	Tolerances added for hook forgings	7.11.2007	KHHJII
Sheave diameter	Table "Rope sheave diameters" added.	21.3.03	KHHRJU
	NZ information added, information checked and revised	4.11.2005	KHHJII
	NE/NF increased diam. sheaves added. Nominal rope diameters added	27.11.2006	ETTMRI

2 Hoist standard features

2.1 NZ Standard features

Features for...	
Hoisting	<input type="checkbox"/> Mechanical limit switch as overload protector <input type="checkbox"/> Upper and lower hoisting limit switch
Hoist motor	<input type="checkbox"/> Two-speed pole-change hoisting motor, 6:1 speed ratio <input type="checkbox"/> Option one-speed hoisting motor <input type="checkbox"/> 40 % ED <input type="checkbox"/> F class insulation <input type="checkbox"/> IP55 protection <input type="checkbox"/> Klixon type bimetal switch for thermal protection
Hook	<input type="checkbox"/> 2-roped: Hook forging strength class V DIN15400, size RSN1 DIN15401 <input type="checkbox"/> 4-roped: Hook forging strength class V DIN15400, size RSN 1.6 (DIN15401) <input type="checkbox"/> Safety latch
Rope reeving	<input type="checkbox"/> Rope guide <input type="checkbox"/> GGG-70 rope sheaves <input type="checkbox"/> Rope sheave / rope diameter ratio according to ISO M6 duty class as minimum
Travelling	<input type="checkbox"/> Special low headroom trolley; flange width range 75 – 300 mm. <input type="checkbox"/> One travel motor in trolley. <input type="checkbox"/> GGG-70 cast iron flanged rail wheels, 2 driven by travelling machinery <input type="checkbox"/> 4 pcs rubber buffers <input type="checkbox"/> Jump-off and axle failure protection
Travel machinery	<input type="checkbox"/> 2-speed motor with DC disc brake <input type="checkbox"/> Option one-speed motor with compact brake only available with one-speed hoisting motor <input type="checkbox"/> 40 % ED
Electrical outfit	<input type="checkbox"/> Standard 3-phase voltages 50Hz: 200V*, 220V*, 230V*, 240V*, 380V, 400V, 415V, 500V*, 525V* <input type="checkbox"/> Standard 3-phase voltages 60Hz: 200V*, 220V*, 230V*, 240V*, 440V, 460V, 480V, 575V*, 600V* (*additional price and delivery time) <input type="checkbox"/> Standard control voltages 48V / 50Hz, 115V / 50Hz or 60Hz <input type="checkbox"/> Assembly according to IEC standards <input type="checkbox"/> IP 55 / NEMA 4 steel control panel <input type="checkbox"/> Electrics for single hoist use in crane application (main contactor nor control voltage transformer not included) <input type="checkbox"/> Electrics for single hoist use in solo application (optional)
Environment	<input type="checkbox"/> Ambient temperature –10 °C...+40°C
Surface treatment	<input type="checkbox"/> Two-component epoxy paint. Thickness 120 µ for load carrying parts.
Marking	<input type="checkbox"/> Hoist type plate incl. CE mark <input type="checkbox"/> Rope code sticker <input type="checkbox"/> Hoist stickers: brand name and type designation <input type="checkbox"/> Hook stickers: brand name and load
Documents	<input type="checkbox"/> 1 pcs Hoist Owner's Manual <input type="checkbox"/> Hoist test certificate <input type="checkbox"/> Wire rope certificate <input type="checkbox"/> Hook certificate <input type="checkbox"/> EC Declaration of conformity for machineries
Delivery	<input type="checkbox"/> Enclosed plywood box <input type="checkbox"/> Anticorrosion plastics around the hoist

2.2 NB Standard features

Features for...	
Hoisting	<input type="checkbox"/> Mechanical limit switch as overload protector <input type="checkbox"/> 4-step hoisting limit switch (hook low, hook up slow down, stop and phase mismatch protection)
Hoist motor	<input type="checkbox"/> Two-speed pole-change hoisting motor, 6:1 speed ratio <input type="checkbox"/> 60 % ED <input type="checkbox"/> F class insulation <input type="checkbox"/> IP55 protection <input type="checkbox"/> Klixon type bimetal switch for thermal protection
Hook	<input type="checkbox"/> 2-rope: Hook forging strength class V DIN15400, size RSN1 DIN15401 <input type="checkbox"/> 4-rope: Hook forging strength class V DIN15400, design HBC with hand grip, size min. 1.6 (DIN15401, oversized) <input type="checkbox"/> Safety latch
Rope reeving	<input type="checkbox"/> GGG-50 cast iron rope guide incl. pressure roll for slack rope protection. Machinery hoists: pressure bar along the drum to hold the rope. <input type="checkbox"/> GGG-70 rope sheaves <input type="checkbox"/> Rope sheave / rope diameter ratio according to ISO M6 duty class as minimum
Travelling	<input type="checkbox"/> Low headroom trolley flange width range 80 – 410 mm. <i>Factory settings max. width or package size</i> <input type="checkbox"/> Normal headroom trolley flange width range 80 – 450 mm. <input type="checkbox"/> Medium double girder trolley rail gauges 1200, 1400, 1700, 2000 mm <input type="checkbox"/> High mounted double girder trolley rail gauge 900, 1200, 1400, 1700, 2000 mm <input type="checkbox"/> One travel motor in trolley. In N-trolley the amount depends on reeving system. <input type="checkbox"/> GGG-70 cast iron flanged rail wheels, groove width 65 mm, 2 driven by travelling machinery <input type="checkbox"/> 4 pcs rubber buffers <input type="checkbox"/> Jump-off and axle failure protection in single girder trolleys (N, L)
Travel machinery	<input type="checkbox"/> Frequency converter motor with compact brake, DMCS controller in hoist panel <input type="checkbox"/> Two adjustable speeds with ramp functions min. 5m/min, max. 20 m/min (MS2-control). <i>Factory settings 20 / 5</i> <input type="checkbox"/> 40 % ED
Electrical outfit	<input type="checkbox"/> Standard 3-phase voltages 50Hz: 220V*, 230V*, 240V*, 380V, 400V, 415V, 500V*, 525V* <input type="checkbox"/> Standard 3-phase voltages 60Hz: 220V*, 230V*, 240V*, 440V, 460V, 480V, 575V*, 600V* (*additional price and delivery time) <input type="checkbox"/> Standard control voltages 48V / 50Hz, 115V / 50Hz or 60Hz, 230V / 50Hz or 60Hz <input type="checkbox"/> Assembly according to IEC standards <input type="checkbox"/> IP 55 / NEMA 4 steel control panel <input type="checkbox"/> Electrics for single hoist use in crane application (main contactor nor control voltage transformer not included) <input type="checkbox"/> Plug in connectors for power supply and control cables
Environment	<input type="checkbox"/> Ambient temperature –10 °C...+40°C
Surface treatment	<input type="checkbox"/> Two-component epoxy paint. Thickness 120 µ for load carrying parts.
Marking	<input type="checkbox"/> Hoist type plate incl. CE mark <input type="checkbox"/> Rope code sticker <input type="checkbox"/> Hoist stickers: brand name and type designation <input type="checkbox"/> Hook stickers: brand name and load
Documents	<input type="checkbox"/> 1 pcs Hoist Owner's Manual <input type="checkbox"/> Hoist test certificate <input type="checkbox"/> Wire rope certificate <input type="checkbox"/> Hook certificate <input type="checkbox"/> EC Declaration of conformity for machineries
Delivery	<input type="checkbox"/> Enclosed plywood box length 1530 x width 780 mm x height 570 mm for L and N –trolleys <input type="checkbox"/> Wooden grate packing for double girder trolleys. Size according to the trolley. <input type="checkbox"/> Anticorrosion plastics around the hoist

2.3 NC Standard features

Features for...	
Hoisting	<input type="checkbox"/> Mechanical limit switch as overload protector <input type="checkbox"/> 4-step hoisting limit switch (hook low, hook up slow down, stop and phase mismatch protection)
Hoist motor	<input type="checkbox"/> Two-speed pole-change hoisting motor, 6:1 speed ratio <input type="checkbox"/> 60 % ED <input type="checkbox"/> F class insulation <input type="checkbox"/> IP55 protection <input type="checkbox"/> Klixon type bimetal switches for thermal protection
Hook	<input type="checkbox"/> 2-roped: Hook forging strength class V DIN15400, size RSN1 DIN15401 4-, 6- and 8-roped: Hook forging strength class V DIN15400, design HBC with hand grip, size min. 2.5 (DIN15401, oversized) <input type="checkbox"/> Safety latch
Rope reeving	<input type="checkbox"/> GGG-50 cast iron rope guide incl. pressure roll for slack rope protection. Machinery hoists: pressure bar along the drum to hold the rope. <input type="checkbox"/> GGG-70 rope sheaves <input type="checkbox"/> Rope sheave / rope diameter ratio according to ISO M6 duty class as minimum
Travelling	<input type="checkbox"/> Low headroom trolley flange width range 100 – 490 mm. <i>Factory settings max. width or the package size</i> <input type="checkbox"/> Normal headroom trolley flange width range 80 – 450 mm. <input type="checkbox"/> Medium double girder trolley rail gauges 1200, 1400, 1700, 2000 mm (depends on H.O.L.) <input type="checkbox"/> High mounted double girder trolley rail gauge 900, 1200, 1400, 1700, 2000 mm <input type="checkbox"/> One travel motor in trolley. In N-trolley the amount depends on reeving system. <input type="checkbox"/> GGG-70 cast iron flanged rail wheels, groove width 65 mm, 2 driven by travelling machinery <input type="checkbox"/> 4 pcs rubber buffers <input type="checkbox"/> Jump-off and axle failure protection in single girder trolleys (N, L)
Travel machinery	<input type="checkbox"/> Frequency converter motor with compact brake, DMCS controller in hoist panel <input type="checkbox"/> Two adjustable speeds with ramp functions min. 5 m/min, max. 20 m/min (MS2-control). <i>Factory settings 20 / 5</i> <input type="checkbox"/> 40 % ED
Electrical outfit	<input type="checkbox"/> Standard 3-phase voltages 50Hz: 220V*, 230V*, 240V*, 380V, 400V, 415V, 500V*, 525V* <input type="checkbox"/> Standard 3-phase voltages 60Hz: 220V*, 230V*, 240V*, 440V, 460V, 480V, 575V*, 600V* (*additional price and delivery time) <input type="checkbox"/> Standard control voltages 48V / 50Hz, 115V / 50Hz or 60Hz, 230V / 50Hz or 60Hz <input type="checkbox"/> Assembly according to IEC standards <input type="checkbox"/> IP 55 steel control panel <input type="checkbox"/> Electrics for single hoist use in crane application (main contactor or control voltage transformer not included) <input type="checkbox"/> Plug in connectors for power supply and control cables
Environment	<input type="checkbox"/> Ambient temperature –10 °C...+40°C
Surface treatment	<input type="checkbox"/> Two-component epoxy paint. Thickness 120 µ for load carrying parts.
Marking	<input type="checkbox"/> Hoist type plate incl. CE mark <input type="checkbox"/> Rope code sticker <input type="checkbox"/> Hoist stickers: brand name and type designation <input type="checkbox"/> Hook stickers: brand name and load
Documents	<input type="checkbox"/> 1 pcs Hoist Owner's Manual <input type="checkbox"/> Hoist test certificate <input type="checkbox"/> Wire rope certificate <input type="checkbox"/> Hook certificate <input type="checkbox"/> EC Declaration of conformity for machineries
Delivery	<input type="checkbox"/> Wooden grate packing. Size according to the trolley. <input type="checkbox"/> Anticorrosion plastics around the hoist

2.4 ND Standard features

Features for...	
Hoisting	<input type="checkbox"/> Mechanical limit switch as overload protector <input type="checkbox"/> 4-step hoisting limit switch (hook low, hook up slow down, stop and phase mismatch protection)
Hoist motor	<input type="checkbox"/> Two-speed pole-change hoisting motor, 6:1 speed ratio <input type="checkbox"/> 60 % ED <input type="checkbox"/> F class insulation <input type="checkbox"/> IP55 protection <input type="checkbox"/> Klixon type bimetal switches for thermal protection
Hook	<input type="checkbox"/> Hook forging strength class V DIN15400 <input type="checkbox"/> Hook forging design HBC with handgrip, 4-roped size min. 5.0 (DIN15401, oversized), 2-roped models size min. 2.5. <input type="checkbox"/> 6- and 8-roped models with forging type RSN6 (DIN15401) <input type="checkbox"/> Safety latch
Rope reeving	<input type="checkbox"/> GGG-50 cast iron rope guide incl. pressure roll for slack rope protection. Machinery hoists: pressure bar along the drum to hold the rope. <input type="checkbox"/> GGG-70 rope sheaves <input type="checkbox"/> Rope sheave / rope diameter ratio according to ISO M6 duty class as minimum
Travelling	<input type="checkbox"/> Low headroom trolley flange width range 100 – 610 mm. <i>Factory settings max. width or package size</i> <input type="checkbox"/> Normal headroom trolley flange width ranges 04/02-roped 80 – 450 mm, 06/08-roped 100-450 mm. <input type="checkbox"/> Medium double girder trolley rail gauges 1400, 1700, 2000, 2400 mm (depends on H.O.L. and rope reeving) <input type="checkbox"/> High mounted double girder trolley rail gauge 1200, 1400, 1700, 2000, 2400 mm <input type="checkbox"/> Low double girder trolley rail gauges 1400, 1700 or 2000 mm (depends on H.O.L.) <input type="checkbox"/> Two travel motors in double girder trolley. In N-trolley the amount depends on reeving system. <input type="checkbox"/> GGG-70 cast iron flanged rail wheels, groove width 65 mm, 2 driven by travelling machineries <input type="checkbox"/> 4 pcs rubber buffers <input type="checkbox"/> Jump-off and axle failure protection in single girder trolleys (N, L)
Travel machinery	<input type="checkbox"/> Frequency converter motor with compact brake, DMCS controller in hoist panel <input type="checkbox"/> Two adjustable speeds with ramp functions min. 5 m/min, max. 20 m/min (MS2-control). <i>Factory settings 20 / 5</i> <input type="checkbox"/> 40 % ED
Electrical outfit	<input type="checkbox"/> Standard 3-phase voltages 50Hz: 220V*, 230V*, 240V*, 380V, 400V, 415V, 500V*, 525V* <input type="checkbox"/> Standard 3-phase voltages 60Hz: 220V*, 230V*, 240V*, 440V, 460V, 480V, 575V*, 600V* (*additional price and delivery time) <input type="checkbox"/> Standard control voltages 48V / 50Hz, 115V / 50Hz or 60Hz, 230V / 50Hz or 60Hz <input type="checkbox"/> Assembly according to IEC standards <input type="checkbox"/> IP 55 / NEMA 4 steel control panel <input type="checkbox"/> Electrics for single hoist use in crane application (main contactor or control voltage transformer not included) <input type="checkbox"/> Plug in connectors for power supply and control cables
Environment	<input type="checkbox"/> Ambient temperature –10 °C...+40°C
Surface treatment	<input type="checkbox"/> Two-component epoxy paint. Thickness 120 µ for load carrying parts.
Marking	<input type="checkbox"/> Hoist type plate incl. CE mark <input type="checkbox"/> Rope code sticker <input type="checkbox"/> Hoist stickers: brand name and type designation <input type="checkbox"/> Hook stickers: brand name and load
Documents	<input type="checkbox"/> 1 pcs Hoist Owner's Manual <input type="checkbox"/> Hoist test certificate <input type="checkbox"/> Wire rope certificate <input type="checkbox"/> Hook certificate <input type="checkbox"/> EC Declaration of conformity for machineries
Delivery	<input type="checkbox"/> Wooden grate packing. Size according to the trolley. <input type="checkbox"/> Anticorrosion plastics around the hoist

2.5 NE Standard features

Features for...	
Hoisting	<input type="checkbox"/> Mechanical limit switch as overload protector <input type="checkbox"/> 4-step hoisting limit switch (hook low, hook up slow down, stop and phase mismatch protection)
Hoist motor	<input type="checkbox"/> Two-speed pole-change hoisting motor, 6:1 speed ratio <input type="checkbox"/> 60 % ED <input type="checkbox"/> F class insulation <input type="checkbox"/> IP55 protection <input type="checkbox"/> Klixon type bimetal switches for thermal protection
Hook	<input type="checkbox"/> Load max. 20 t: Hook forging strength class V DIN15400, hook forging design HBC with hand grip, size min. 5.0 (DIN15401, oversized) Load over 20 t: Hook forging strength class T DIN15400, size RSN10 (6-roped) or RSN16 (8-roped) DIN15401 <input type="checkbox"/> Safety latch
Rope reeving	<input type="checkbox"/> GGG-50 cast iron rope guide. Machinery hoists: pressure bar along the drum to hold the rope. <input type="checkbox"/> GGG-70 rope sheaves <input type="checkbox"/> Rope sheave / rope diameter ratio according to ISO M6 duty class as minimum
Travelling	<input type="checkbox"/> Normal headroom trolley flange width ranges 2-roped 100 – 610 mm, 4- and 6-roped 120 – 610 mm, 8-roped 200-610 mm. <input type="checkbox"/> Medium double girder trolley rail gauges 1700, 2000, 2400, 2700, 3100, 3400, 3800 and 4200 mm (depends on H.O.L. and rope reeving) <input type="checkbox"/> Two travel motors in double girder trolley. In N-trolley the amount depends on reeving system. <input type="checkbox"/> GGG-70 cast iron flanged rail wheels, groove width 65 mm, 2 driven by travelling machineries <input type="checkbox"/> 4 pcs rubber buffers <input type="checkbox"/> Jump-off and axle failure protection in single girder trolleys (trolley type N)
Travel machinery	<input type="checkbox"/> Frequency converter motor, inverter controller in hoist panel <input type="checkbox"/> Two adjustable speeds with ramp functions min. 5 m/min, max. 20 m/min (MS2-control) <i>Factory settings 20 / 5</i> <input type="checkbox"/> 40 % ED
Electrical outfit	<input type="checkbox"/> Standard 3-phase voltages 50Hz: 220V*, 230V*, 240V*, 380V, 400V, 415V, 500V*, 525V* <input type="checkbox"/> Standard 3-phase voltages 60Hz: 220V*, 230V*, 240V*, 440V, 460V, 480V, 575V*, 600V* (*additional price and delivery time) <input type="checkbox"/> Standard control voltages 48V / 50Hz, 115V / 50Hz or 60Hz, 230V / 50Hz or 60Hz <input type="checkbox"/> Assembly according to IEC standards <input type="checkbox"/> IP 55 / NEMA 4 steel control panel <input type="checkbox"/> Electrics for single hoist use in crane application (main contactor or control voltage transformer not included) <input type="checkbox"/> Plug in connectors for power supply and control cables
Environment	<input type="checkbox"/> Ambient temperature –10 °C...+40°C
Surface treatment	<input type="checkbox"/> Two-component epoxy paint. Thickness 120 µ for load carrying parts.
Marking	<input type="checkbox"/> Hoist type plate incl. CE mark <input type="checkbox"/> Rope code sticker <input type="checkbox"/> Hoist stickers: brand name and type designation <input type="checkbox"/> Hook stickers: brand name and load
Documents	<input type="checkbox"/> 1 pcs Hoist Owner's Manual <input type="checkbox"/> Hoist test certificate <input type="checkbox"/> Wire rope certificate <input type="checkbox"/> Hook certificate <input type="checkbox"/> EC Declaration of conformity for machineries
Delivery	<input type="checkbox"/> Wooden grate packing. Size according to the trolley. <input type="checkbox"/> Anticorrosion plastics around the hoist

2.6 NF Standard features

Features for...	
Hoisting	<input type="checkbox"/> Mechanical limit switch as overload protector <input type="checkbox"/> 4-step hoisting limit switch (hook low, hook up slow down, stop and phase mismatch protection)
Hoist motor	<input type="checkbox"/> 2 pcs two-speed pole-change hoisting motor, 6:1 speed ratio <input type="checkbox"/> 60 % ED <input type="checkbox"/> F class insulation <input type="checkbox"/> IP55 protection <input type="checkbox"/> Klixon type bimetal switches for thermal protection
Hook	<input type="checkbox"/> Load max. 20 t: Hook forging strength class V DIN15400, hook forging design HBC with hand grip, size min. 5.0 (DIN15401, oversized) Load over 20 t: Hook forging strength class T DIN15400, size RSN16 (2x4-roped), RSN20 (2x6-roped) or RSN25 (2x8 roped) DIN15401 <input type="checkbox"/> Safety latch
Rope reeving	<input type="checkbox"/> True vertical rope reeving <input type="checkbox"/> GGG-50 cast iron rope guide. Machinery hoists: pressure bar along the drum to hold the rope. <input type="checkbox"/> GGG-70 rope sheaves <input type="checkbox"/> Rope sheave / rope diameter ratio according to ISO M6 duty class as minimum
Travelling	<input type="checkbox"/> Medium double girder trolley rail gauges 1700, 2000, 2400, 2700, 3100, 3400, 3800 and 4200 mm (depends on H.O.L. and rope reeving) <input type="checkbox"/> Two travel motors in trolley <input type="checkbox"/> GGG-70 cast iron flanged rail wheels, groove width 65 mm, 2 driven by travelling machineries <input type="checkbox"/> 4 pcs rubber buffers
Travel machinery	<input type="checkbox"/> Frequency converter motor, inverter controller in hoist panel <input type="checkbox"/> Two adjustable speeds with ramp functions min. 5 m/min, max. 20 m/min (MS2-control) <i>Factory settings 20 / 5</i> <input type="checkbox"/> 40 % ED
Electrical outfit	<input type="checkbox"/> Standard 3-phase voltages 50Hz: 220V*, 230V*, 240V*, 380V, 400V, 415V, 500V*, 525V* <input type="checkbox"/> Standard 3-phase voltages 60Hz: 220V*, 230V*, 240V*, 440V, 460V, 480V, 575V*, 600V* (*additional price and delivery time) <input type="checkbox"/> Standard control voltages 48V / 50Hz, 115V / 50Hz or 60Hz, 230V / 50Hz or 60Hz <input type="checkbox"/> Assembly according to IEC standards <input type="checkbox"/> IP 55 / NEMA 4 steel control panel <input type="checkbox"/> Electrics for single hoist use in crane application (main contactor or control voltage transformer not included) <input type="checkbox"/> Plug in connectors for power supply and control cables
Environment	<input type="checkbox"/> Ambient temperature -10 °C...+40°C
Surface treatment	<input type="checkbox"/> Two-component epoxy paint. Thickness 120 µ for load carrying parts.
Marking	<input type="checkbox"/> Hoist type plate incl. CE mark <input type="checkbox"/> Rope code sticker <input type="checkbox"/> Hoist stickers: brand name and type designation <input type="checkbox"/> Hook stickers: brand name and load
Documents	<input type="checkbox"/> 1 pcs Hoist Owner's Manual <input type="checkbox"/> Hoist test certificate <input type="checkbox"/> Wire rope certificate <input type="checkbox"/> Hook certificate <input type="checkbox"/> EC Declaration of conformity for machineries
Delivery	<input type="checkbox"/> Wooden grate packing. Size according to the trolley. <input type="checkbox"/> Anticorrosion plastics around the hoist

3 Hoist type code NOVA

	N	B	04	L	5	A	F	P	2	35	A	T	1	N
		GE09	DES27	(DES01)	(DIM01)	GE08	HS06	HM01	HM02	(DIM03) (DIM05)	(HS03)	(TM01)	(EL05)	
	1	2	3,4	5	6	7	8	9	10	11,12	13	14	15	16

Pos.	Code	Feature code	Feature	Available properties																																					
1	N		Nova hoist																																						
2	B	GE09	Frame size	Z 243 mm rope drum diameter B 303 mm rope drum diameter C 355 mm rope drum diameter	D 406 mm rope drum diameter E 608 mm rope drum diameter F 608 mm rope drum diameter (2 hoisting motors)																																				
3,4	04	DES27	Rope Reeving code	0 Reeving code 0 1 rope fixed to drum 1 1 rope fixed to drum (≥ 10 rope falls) 2 2 ropes fixed to drum, true vertical A 1 x QA rope on B frame drum B 1 x 8 mm rope on C frame drum	4 Number of rope falls per Rope 1 1 rope fall 2 2 rope falls per rope 3 3 rope falls per rope 4 4 rope falls per rope 6 6 rope falls per rope 8 8 rope falls per rope 0 10 rope falls per rope (not available)																																				
				M1 Machinery hoist, 1 rope fixed to drum M2 Machinery hoist, 2 ropes fixed to drum																																					
5	L	(DES01)	Trolley Type	<table border="1"> <thead> <tr> <th colspan="2">DES01 value</th> <th colspan="2">DES01 value</th> </tr> </thead> <tbody> <tr> <td>F</td> <td>Fixed hoist</td> <td>F</td> <td>N Normal headroom trolley</td> </tr> <tr> <td>L</td> <td>Low headroom trolley</td> <td>L</td> <td>V Machinery hoist</td> </tr> <tr> <td>H</td> <td>Double girder trolley high connection</td> <td>H</td> <td>A Two hoist trolley, main</td> </tr> <tr> <td>M</td> <td>Double girder trolley medium connection</td> <td>M</td> <td>B Two hoist trolley, aux.</td> </tr> <tr> <td>W</td> <td>Double girder trolley low connection</td> <td>W</td> <td>T Twin hoist (common hook)</td> </tr> <tr> <td>J</td> <td>Special low headroom trolley</td> <td>J</td> <td>X Special trolley</td> </tr> <tr> <td>(D)</td> <td>Double girder trolley (for system use)</td> <td>-</td> <td></td> </tr> </tbody> </table>		DES01 value		DES01 value		F	Fixed hoist	F	N Normal headroom trolley	L	Low headroom trolley	L	V Machinery hoist	H	Double girder trolley high connection	H	A Two hoist trolley, main	M	Double girder trolley medium connection	M	B Two hoist trolley, aux.	W	Double girder trolley low connection	W	T Twin hoist (common hook)	J	Special low headroom trolley	J	X Special trolley	(D)	Double girder trolley (for system use)	-					
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6	5	(DIM01)	Hoist duty group	<table border="1"> <thead> <tr> <th colspan="2">DIM01 value</th> <th colspan="2">DIM01 value</th> </tr> </thead> <tbody> <tr> <td>3</td> <td>ISO M3</td> <td>M3</td> <td>6 ISO M6</td> </tr> <tr> <td>4</td> <td>ISO M4</td> <td>M4</td> <td>X ISO M4 and load increased (6.3t, 12.5 t etc.)</td> </tr> <tr> <td>5</td> <td>ISO M5</td> <td>M5</td> <td>M6</td> </tr> <tr> <td></td> <td></td> <td></td> <td>M4</td> </tr> </tbody> </table>		DIM01 value		DIM01 value		3	ISO M3	M3	6 ISO M6	4	ISO M4	M4	X ISO M4 and load increased (6.3t, 12.5 t etc.)	5	ISO M5	M5	M6				M4																
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5	ISO M5	M5	M6																																						
			M4																																						
7	A	GE08	Hoist drum length	A 310 mm rope drum length B 340 mm rope drum length (if frame size Z, 394 mm) C 440 mm rope drum length (if frame size Z, 504 mm) D 540 mm rope drum length (if frame size Z, 614 mm) E 660 mm rope drum length F 810 mm rope drum length G 1000 mm rope drum length H 1250 mm rope drum length	Z 1400 mm rope drum length J 1600 mm rope drum length K 1900 mm rope drum length L 2250 mm rope drum length M 2500 mm rope drum length N 2800 mm rope drum length X Special drum length																																				
8	F	HS06	Hoisting gear type	E Hoist speed 4 m/min F Hoist speed 5 m/min G Hoist speed 6,3 m/min	H Hoist speed 8 m/min J Hoist speed 10 m/min Note: Speeds for 4 roped, 50Hz																																				
9	P	HM01	Hoist motor type	P Pole change motor T Frequency converter motor R Pole change motor 3:1	E Ex-proof pole change motor O Single speed motor C Cast iron pole change motor																																				
10	2	HM02	Hoisting motor size	X Nom. Power 1.5 kW / 50Hz 1 Nom. Power 1.8 kW / 50Hz Z Nom. Power 2.5 kW / 50Hz 2 Nom. Power 3.6 kW / 50Hz 3 Nom. Power 4.5 kW / 50Hz 4 Nom. Power 7.5 kW / 50Hz	5 Nom. Power 9 kW / 50Hz 6 Nom. Power 15 kW / 50Hz 7 Nom. Power 18 kW / 50Hz 8 Nom. Power 23 kW / 50Hz 9 Nom. Power 28 kW / 50Hz A Nom. Power 35 kW / 50Hz																																				
11,12	35	(DIM03) (DIM05)	Flange width/ Rail gauge	## Flange width (L / N trolleys) i.e. 350 mm = 35	## Rail gauge (D trolleys) i.e. 1200 mm = 12																																				
13	A	(HS03)	Overload device	<table border="1"> <thead> <tr> <th colspan="2">HS03 value</th> <th colspan="2">HS03 value</th> </tr> </thead> <tbody> <tr> <td>A</td> <td>Mechanical limit switch</td> <td>MEC</td> <td>C Hoist power measurement</td> </tr> <tr> <td>B</td> <td>Strain gauge</td> <td>SG</td> <td>D Mechanical limit switch and hoist power measure</td> </tr> <tr> <td>N</td> <td>No overload device</td> <td>NO</td> <td>POW</td> </tr> <tr> <td></td> <td></td> <td></td> <td>MECP</td> </tr> <tr> <td></td> <td></td> <td></td> <td>OW</td> </tr> </tbody> </table>		HS03 value		HS03 value		A	Mechanical limit switch	MEC	C Hoist power measurement	B	Strain gauge	SG	D Mechanical limit switch and hoist power measure	N	No overload device	NO	POW				MECP				OW												
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16	N		Special properties	N Standard hoist without any options F Options selected only from feature list	S Special properties																																				

4 Technical characteristics

Product code is bolded on table.

Load	Frame	Falls	Trolley				Duty		Drum		Rope *) Drum		Contactor control				Inverter control					
			D D D				FEM	ISO	Code	HOL	Load	Ty	Gear		Motor	Speed	(tm/	Gear		Motor	Speed	(tm/
			L	H	M	N	F	V		(m)	(kg)	pe	Type	Ratio		(m/min)	(min)	Type	Ratio		(m/min)	(min)
400	NB	M1				V	3m	M6	A	24	* 400	B	F	134.2	P 1	20/3.3	8	F	134.2	T 1	20	8
									C	38			G	106	P 2	25/4.2	10	G	106	T 2	25	10
													H	87.7	P 3	32/5.3	12.8	H	87.7	T 3	32	12.8
400	NB	M2				V	3m	M6	A	7	* 400	B	F	134.2	P 1	20/3.3	8	F	134.2	T 1	20	8
									C	15			G	106	P 2	25/4.2	10	G	106	T 2	25	10
													H	87.7	P 3	32/5.3	12.8	H	87.7	T 3	32	12.8
500	NB	M1				V	2m	M5	A	24	* 500	B	F	134.2	P 1	20/3.3	10	F	134.2	T 1	20	10
									C	38			G	106	P 2	25/4.2	12.5	G	106	T 2	25	12.5
													H	87.7	P 3	32/5.3	16	H	87.7	T 3	32	16
500	NB	M2				V	2m	M5	A	7	* 500	B	F	134.2	P 1	20/3.3	10	F	134.2	T 1	20	10
									C	15			G	106	P 2	25/4.2	12.5	G	106	T 2	25	12.5
													H	87.7	P 3	32/5.3	16	H	87.7	T 3	32	16
500	NB	02	L H M	N F			3m	M6	A	12	250	A	F	134.2	P 1	10/1.7	5	F	134.2	T 1	10	5
									C	19		B	G	106	P 2	12.5/2.1	6.3	G	106	T 2	12.5	6.3
													H	87.7	P 3	16/2.7	8	H	87.7	T 3	16	8
	NC	A2	L						C	22.5			F	160.3	P 2	10/1.7	5	F	160.3	T 2	10	5
									D	30			H	104.7	P 4	16/2.7	8	H	104.7	T 4	16	8
630	NB	02	L H M	N F			3m	M6	A	12	315	A	F	134.2	P 1	10/1.7	6.3	F	134.2	T 1	10	6.3
									C	19		B	G	106	P 2	12.5/2.1	8	G	106	T 2	12.5	8
													H	87.7	P 3	16/2.7	10	H	87.7	T 3	16	10
	NC	A2	L						C	22.5			F	160.3	P 2	10/1.7	6.3	F	160.3	T 2	10	6.3
									D	30			H	104.7	P 4	16/2.7	10	H	104.7	T 4	16	10
600	NB	M1				V	3m	M6	A	24	* 600	B	F	134.2	P 2	20/3.3	12	F	134.2	T 2	20	12
									C	38			G	106	P 2	25/4.2	15	G	106	T 2	25	15
													H	87.7	P 3	32/5.3	19.2	H	87.7	T 3	32	19.2
600	NB	M2				V	3m	M6	A	7	* 600	B	F	134.2	P 2	20/3.3	12	F	134.2	T 2	20	12
									C	15			G	106	P 2	25/4.2	15	G	106	T 2	25	15
													H	87.7	P 3	32/5.3	19.2	H	87.7	T 3	32	19.2
800	NB	M1				V	2m	M5	A	24	* 800	B	F	134.2	P 2	20/3.3	16	F	134.2	T 2	20	16
									C	38			G	106	P 2	25/4.2	20	G	106	T 2	25	20
													H	87.7	P 3	32/5.3	25.6	H	87.7	T 3	32	25.6
800	NB	M2				V	2m	M5	A	7	* 800	B	F	134.2	P 2	20/3.3	16	F	134.2	T 2	20	16
									C	15			G	106	P 2	25/4.2	20	G	106	T 2	25	20
													H	87.7	P 3	32/5.3	25.6	H	87.7	T 3	32	25.6
800	NB	02	L H M	N F			3m	M6	A	12	400	A	F	134.2	P 1	10/1.7	8	F	134.2	T 1	10	8
									C	19		B	G	106	P 2	12.5/2.1	10	G	106	T 2	12.5	10
													H	87.7	P 3	16/2.7	12.8	H	87.7	T 3	16	12.8
	NC	A2	L						C	22.5			F	160.3	P 2	10/1.7	8	F	160.3	T 2	10	8
									D	30			H	104.7	P 4	16/2.7	12.8	H	104.7	T 4	16	12.8
1000	NZ	02	J				2m	M5	B	6	500	N	E	133.8	P X	8/1.3	8					
									B	12		A	E	133.8	O X	8	8					
	NB	02	L H M	N F					A	12		A	F	134.2	P 1	10/1.7	10	F	134.2	T 1	10	10
									C	19			G	106	P 2	12.5/2.1	12.5	G	106	T 2	12.5	12.5
													H	87.7	P 3	16/2.7	16	H	87.7	T 3	16	16
	NC	A2	L						C	22.5		B	F	160.3	P 2	10/1.7	10	F	160.3	T 2	10	10
									D	30			H	104.7	P 4	16/2.7	16	H	104.7	T 4	16	16
1000	NB	04	L H M	N F			3m	M6	A	6	250	A	F	134.2	P 1	5/0.8	5	F	134.2	T 1	5	5
									C	9.5			G	106	P 2	6.3/1.1	6.3	G	106	T 2	6.3	6.3
													H	87.7	P 3	8/1.3	8	H	87.7	T 3	8	8
	NC	A4	L						C	11		A	F	160.3	P 2	5/0.8	5	F	160.3	T 2	5	5
									D	15			H	104.7	P 4	8/1.3	8	H	104.7	T 4	8	8
1000	NB	02	L H M	N F			3m	M6	A	12	500	A	F	134.2	P 2	10/1.7	10	F	134.2	T 2	10	10
									C	19			G	106	P 2	12.5/2	12.5	G	106	T 2	12.5	12.5
													H	87.7	P 3	16/2.7	16	H	87.7	T 3	16	16

Load	Frame	Falls	Trolley			Duty		Drum		Rope) Drum	
			D D D			FEM	ISO	Code	HOL	Load	Ty
			L	H	M W N F V						
	NC	A2	L					C	22.5		B
			D					D	30		
1250	NB	04	L H M N F			3m	M6	A	6	313	A
								C	9.5		
	NC	A4	L					C	11		A
			D					D	15		
1250	NB	02	L H M N F			3m	M6	A	12	625	A
								C	19		
	NC	A2	L					C	22.5		B
			D					D	30		
1600	NB	02	L H M N F			2m	M5	A	12	800	A
								C	19		
	NC	A2	L					C	22.5		B
			D					D	30		
1600	NB	04	L H M N F			3m	M6	A	6	400	A
								C	9.5		
	NC	A4	L					C	11		A
			D					D	15		
2000	NZ	04	J			2m	M5	B	6	500	N
								C	9		
	NB	04	L H M N F					A	6		A
								C	9.5		
	NC	A4	L					C	11		A
			D					D	15		
2000	NB	04	L H M N F			3m	M6	A	6	500	A
								C	9.5		
	NC	A4	L					C	11		A
			D					D	15		
2500	NB	04	L H M N F			3m	M6	A	6	625	A
								C	9.5		
	NC	A4	L					C	11		A
			D					D	15		
3200	NB	04	L H M N F			2m	M5	A	6	800	A
								C	9.5		
	NC	A4	L					C	11		A
			D					D	15		

Contactor control					Inverter control				
Gear		Motor	Speed	(tm/ min)	Gear		Motor	Speed	(tm/ min)
Type	Ratio				Type	Ratio			
F	160.3	P 2	10/1.7	10	F	160.3	T 2	10	10
H	104.7	P 4	16/2.7	16	H	104.7	T 4	16	16
F	134.2	P 1	5/0.8	6.3	F	134.2	T 1	5	6.3
G	106	P 2	6.3/1.1	8	G	106	T 2	6.3	8
H	87.7	P 3	8/1.3	10	H	87.7	T 3	8	10
F	160.3	P 2	5/0.8	6.3	F	160.3	T 2	5	6.3
H	104.7	P 4	8/1.3	10	H	104.7	T 4	8	10
F	134.2	P 2	10/1.7	12.5	F	134.2	T 2	10	12.5
G	106	P 2	12.5/2.1	16	G	106	T 2	12.5	16
H	87.7	P 3	16/2.7	20	H	87.7	T 3	16	20
F	160.3	P 2	10/1.7	12.5	F	160.3	T 2	10	12.5
H	104.7	P 4	16/2.7	20	H	104.7	T 4	16	20
F	134.2	P 2	10/1.7	16	F	134.2	T 2	10	16
G	106	P 2	12.5/2.1	20	G	106	T 2	12.5	20
H	87.7	P 3	16/2.7	25.6	H	87.7	T 3	16	25.6
F	160.3	P 2	10/1.7	16	F	160.3	T 2	10	16
H	104.7	P 4	16/2.7	26	H	104.7	T 4	16	26
F	134.2	P 1	5/0.8	8	F	134.2	T 1	5	8
G	106	P 2	6.3/1.1	10	G	106	T 2	6.3	10
H	87.7	P 3	8/1.3	12.8	H	87.7	T 3	8	12.8
F	160.3	P 2	5/0.8	8	F	160.3	T 2	5	8
H	104.7	P 4	8/1.3	12.8	H	104.7	T 4	8	12.8
E	133.8	P X	4/0,7	8					
G	79.1	O Z	6.7	13.4					
F	134.2	P 1	5/0.8	10	F	134.2	T 1	5	10
G	106	P 2	6.3/1.1	12.6	G	106	T 2	6.3	12.6
H	87.7	P 3	8/1.3	16	H	87.7	T 3	8	16
F	160.3	P 2	5/0.8	10	F	160.3	T 2	5	10
H	104.7	P 4	8/1.3	16	H	104.7	T 4	8	16
F	134.2	P 2	5/0.8	10	F	134.2	T 2	5	10
G	106	P 2	6.3/1.1	12.6	G	106	T 2	6.3	12.6
H	87.7	P 3	8/1.3	16	H	87.7	T 3	8	16
F	160.3	P 2	5/0.8	10	F	160.3	T 2	5	10
H	104.7	P 4	8/1.3	16	H	104.7	T 4	8	16
F	134.2	P 2	5/0.8	12.5	F	134.2	T 2	5	12.5
G	106	P 2	6.3/1.1	16	G	106	T 2	6.3	16
H	87.7	P 3	8/1.3	20	H	87.7	T 3	8	20
F	160.3	P 2	5/0.8	12.5	F	160.3	T 2	5	12.5
H	104.7	P 4	8/1.3	20	H	104.7	T 4	8	20
F	134.2	P 2	5/0.8	16	F	134.2	T 2	5	16
G	106	P 2	6.3/1.1	20	G	106	T 2	6.3	20
H	87.7	P 3	8/1.3	25.6	H	87.7	T 3	8	25.6
F	160.3	P 2	5/0.8	16	F	160.3	T 2	5	16
H	104.7	P 4	8/1.3	25.6	H	104.7	T 4	8	25.6

1000	NC	M1	V	3m	M6	B	24	* 1000	F
						C	36		
						D	48		
						E	62		
1000	NC	M2	V	3m	M6	B	9.5	* 1000	B
						C	17		
						D	25		
						E	34		
1250	NC	M1	V	2m	M5	B	24	* 1250	F
						C	36		
						D	48		
						E	62		
1250	NC	M2	V	2m	M5	B	9.5	* 1250	B
						C	17		
						D	25		

F	160.3	P 3	20/3.3	20	F	160.3	T 3	20	20
H	104.7	P 4	32/5.3	32	H	104.7	T 4	32	32
F	160.3	P 3	20/3.3	20	F	160.3	T 3	20	20
H	104.7	P 4	32/5.3	32	H	104.7	T 4	32	32
F	160.3	P 3	20/3.3	25	F	160.3	T 3	20	25
H	104.7	P 4	32/5.3	40	H	104.7	T 4	32	40
F	160.3	P 3	20/3.3	25	F	160.3	T 3	20	25
H	104.7	P 4	32/5.3	40	H	104.7	T 4	32	40

Load	Frame	Falls	Trolley			Duty		Drum		Rope *) Drum			
			D	D	D	FEM	ISO	Code	HOL	Load	Ty		
			L	H	M	W	N	F	V	(m)	(kg)	pe	
1600	NC	M1				V	1Am	M4	B	24	* 1600	Y	
									C	36			
									D	48			
									E	62			
1600	NC	M2				V	1Am	M4	B	9.5	* 1600	B	
									C	17			
									D	25			
									E	34			
1600	NC	02	L	H	M	N	F	3m	M6	B	12	800	D
										C	18		F
										D	24		F
			H	M	N	F				E	30		F
2000	NC	02	L	H	M	N	F	3m	M6	B	12	1000	D
										C	18		F
										D	24		F
			H	M	N	F				E	30		F
2500	NC	02	L	H	M	N	F	2m	M5	B	12	1250	D
										C	18		F
										D	24		F
			H	M	N	F				E	30		F
3200	NC	04	L	H	M	N	F	3m	M6	B	6	800	D
										C	9		
										D	12		
			H	M	N	F				E	15		
3200	NC	02	L	H	M	N	F	1Am	M4	B	12	1600	D
										C	18		Y
										D	24		Y
			H	M	N	F				E	30		
4000	NC	04	L	H	M	N	F	3m	M6	B	6	1000	D
										C	9		
										D	12		
			H	M	N	F				E	15		
5000	NC	04	L	H	M	N	F	2m	M5	B	6	1250	D
										C	9		
										D	12		
			H	M	N	F				E	15		
6300	NC	04	L	H	M	N	F	1Am	M4	B	6	1575	D
										C	9		
										D	12		
			H	M	N	F				E	15		
6000	NC	06	H	M	N	F		3m	M6	C	6	1000	E
										D	8		
										E	10		
7500	NC	06	H	M	N	F		2m	M5	C	6	1250	E
										D	8		
										E	10		
8000	NC	08	H	M	N	F		2m	M5	C	4.5	1000	E
										D	6		
										E	7.5		
10000	NC	08	H	M	N	F		1Am	M4	C	4.5	1250	E
										D	6		
										E	7.5		

Contactor control					Inverter control				
Gear		Motor	Speed	(tm/ min)	Gear		Motor	Speed	(tm/ min)
Type	Ratio				Type	Ratio			
E	192.6	P 3	16/ 2.7	26	E	192.6	T 3	16/ 2.7	26
E	192.6	P 3	16/ 2.7	26	E	192.6	T 3	16/ 2.7	26
F	160.3	P 2	10/1.7	16	F	160.3	T 2	10	16
H	104.7	P 4	16/2.7	26	H	104.7	T 4	16	26
F	160.3	P 3	10/1.7	20	F	160.3	T 3	10	20
H	104.7	P 4	16/2.7	32	H	104.7	T 4	16	32
F	160.3	P 3	10/1.7	25	F	160.3	T 3	10	25
H	104.7	P 4	16/2.7	40	H	104.7	T 4	16	40
F	160.3	P 2	5/0.8	16	F	160.3	T 2	5	16
H	104.7	P 4	8/1.3	26	H	104.7	T 4	8	26
E	192.6	P 3	8/1.3	26	E	192.6	T 3	8	26
F	160.3	P 3	5/0.8	20	F	160.3	T 3	5	20
H	104.7	P 4	8/1.3	32	H	104.7	T 4	8	32
F	160.3	P 3	5/0.8	25	F	160.3	T 3	5	25
H	104.7	P 4	8/1.3	40	H	104.7	T 4	8	40
E	192.6	P 3	4/0.7	25	E	192.6	T 3	4	25
F	160.3	P 3	3.2/0.5	24	F	160.3	T 3	3.2	24
H	104.7	P 4	5/0.8	38	H	104.7	T 4	5	38
F	160.3	P 3	3.2/0.5	24	F	160.3	T 3	3.2	24
H	104.7	P 4	5/0.8	38	H	104.7	T 4	5	38
F	160.3	P 3	2.5/0.4	20	F	160.3	T 3	2.5	20
H	104.7	P 4	4/0.7	32	H	104.7	T 4	4	32
F	160.3	P 3	2.5/0.4	25	F	160.3	T 3	2.5	25
H	104.7	P 4	4/0.7	40	H	104.7	T 4	4	40

2000	ND	M1				V	3m	M6	D	36	* 2000	J
									E	48		
									F	64		
									G	82		
2000	ND	M2				V	3m	M6	D	18	* 2000	F

F	185.3	P 5	20/3.3	40	F	185.3	T 5	20	40
H	113.8	P 6	32/5.3	64	H	113.8	T 6	32	64
J	94.3	P 7	40/6.7	80	J	94.3	T 7	40	80
F	185.3	P 5	20/3.3	40	F	185.3	T 5	20	40

Load	Frame	Falls	Trolley		Duty		Drum		Rope *) Drum	
			D D D	FEM ISO	Code	HOL	Load	Ty		
			L H M W N F V			(m)	(kg)	pe		
							E 27 F 38 G 50			
2500	ND	M1		V	2m M5		D 36 E 48 F 64 G 82	* 2500		J
2500	ND	M2		V	2m M5		D 18 E 27 F 38 G 50	* 2500		F
3150	ND	M1		V	1Am M4		D 36 E 48 F 64 G 82	* 3150		Z
3150	ND	M2		V	1Am M4		D 18 E 27 F 38 G 50	* 3150		Y
4000	ND	02	L H M W N F		3m M6		D 18 E 24 F 32 G 40	2000		G J J
			H M W N F							
5000	ND	02	L H M W N F		2m M5		D 18 E 24 F 32 G 40	2500		G J J
			H M W N F							
6300	ND	02	L H M W N F		1Am M4		D 18 E 24 F 32 G 40	3100		G Z Z
			H M W N F							
6300	ND	04	L H M W N F		3m M6		D 9 E 12 F 16 G 20	1600		G
			H M W N F							
8000	ND	04	L H M W N F		3m M6		D 9 E 12 F 16 G 20	2000		G
			H M W N F							
10000	ND	04	L H M W N F		2m M5		D 9 E 12 F 16 G 20	2500		G
			H M W N F							
12500	ND	04	L H M W F		1Am M4		D 9 E 12 F 16 G 20	3125		G
			H M W F							
12000	ND	06	H M W N F		3m M6		D 6 E 8 F 10 G 13	2000		H
15000	ND	06	H M W N F		2m M5		D 6 E 8 F 10 G 13	2500		H
16000	ND	08	H M W N F		2m M5		D 4.5 E 6 F 8 G 10	2000		H

Contactor control					Inverter control				
Gear		Motor	Speed	(tm/ min)	Gear		Motor	Speed	(tm/ min)
Type	Ratio		(m/min)		Type	Ratio		(m/min)	
H	113.8	P 6	32/5.3	64	H	113.8	T 6	32	64
J	94.3	P 7	40/6.7	80	J	94.3	T 7	40	80
F	185.3	P 5	20/3.3	50	F	185.3	T 5	20	50
H	113.8	P 6	32/5.3	80	H	113.8	T 6	32	80
J	94.3	P 7	40/6.7	100	J	94.3	T 7	40	100
F	185.3	P 5	20/3.3	50	F	185.3	T 5	20	50
H	113.8	P 6	32/5.3	80	H	113.8	T 6	32	80
J	94.3	P 7	40/6.7	100	J	94.3	T 7	40	100
E	223.8	P 5	16/2.7	50	E	223.8	T 5	16/2.7	50
E	223.8	P 5	16/2.7	50	E	223.8	T 5	16/2.7	50
F	185.3	P 5	10/1.7	40	F	185.3	T 5	10	40
H	113.8	P 6	16/2.7	64	H	113.8	T 6	16	64
J	94.3	P 7	20/3.3	80	J	94.3	T 7	20	80
F	185.3	P 5	10/1.7	50	F	185.3	T 5	10	50
H	113.8	P 6	16/2.7	80	H	113.8	T 6	16	80
J	94.3	P 7	20/3.3	100	J	94.3	T 7	20	100
E	223.8	P 5	8/1.3	50	E	223.8	T 5	8	50
F	185.3	P 5	5/0.8	38	F	185.3	T 5	5	38
H	113.8	P 6	8/1.3	50	H	113.8	T 6	8	50
J	94.3	P 7	10	63	J	94.3	T 7	10	63
F	185.3	P 5	5/0.8	40	F	185.3	T 5	5	40
H	113.8	P 6	8/1.3	64	H	113.8	T 6	8	64
J	94.3	P 7	10	80	J	94.3	T 7	10	80
F	185.3	P 5	5/0.8	50	F	185.3	T 5	5	50
H	113.8	P 6	8/1.3	80	H	113.8	T 6	8	80
J	94.3	P 7	10	100	J	94.3	T 7	10	100
E	223.8	P 5	4/0.7	50	E	223.8	T 5	4	50
F	185.3	P 5	3.2/0.5	48	F	185.3	T 5	3.2	48
H	113.8	P 6	5/0.8	75	H	113.8	T 6	5	75
J	94.3	P 7	6.3/1.1	95	J	94.3	T 7	6.3	95
F	185.3	P 5	3.2/0.5	48	F	185.3	T 5	3.2	48
H	113.8	P 6	5/0.8	75	H	113.8	T 6	5	75
J	94.3	P 7	6.3/1.1	95	J	94.3	T 7	6.3	95
F	185.3	P 5	2.5/0.4	40	F	185.3	T 5	2.5	40
H	113.8	P 6	4/0.7	64	H	113.8	T 6	4	64
J	94.3	P 7	5/0.8	80	J	94.3	T 7	5	80

Load	Frame	Falls	Trolley			Duty		Drum		Rope) Drum	
			D D D			FEM	ISO	Code	HOL (m)	Load (kg)	Ty pe
			L	H	M W N F V						
20000	ND	08	HMWNF			1Am	M4	D	4.5	2500	H
								E	6		
								F	8		
								G	10		

Contactor control					Inverter control				
Gear		Motor	Speed (m/min)	(tm/ min)	Gear		Motor	Speed (m/min)	(tm/ min)
Type	Ratio				Type	Ratio			
F	185.3	P 5	2.5/0.4	50	F	185.3	T 5	2.5	50
H	113.8	P 6	4/0.7	80	H	113.8	T 6	4	80
J	94.3	P 7	5/0.8	100	J	94.3	T 7	5	100

4000	ND	2 2	HMWNF			3m	M6	D	8.5	1000	D
								E	13	*2000	+
								F	18		Dr
								G	25		
								H	33.5		
								J	46		
5000	ND	22	HMWNF			2m	M5	D	8.5	1250	D
								E	13	*2500	+
								F	18		Dr
								G	25		
								H	33.5		
								J	46		
6300	ND	24	HMWNF			3m	M6	D	4	800	D
								E	6.5	*1600	+
								F	9		Dr
								G	12.5		
								H	16.5		
								J	23		
8000	ND	24	HMWNF			3m	M6	D	4	1000	D
								E	6.5	*2000	+
								F	9		Dr
								G	12.5		
								H	16.5		
								J	23		
10000	ND	24	HMWNF			2m	M5	D	4	1250	D
								E	6.5	*2500	+
								F	9		Dr
								G	12.5		
								H	16.5		
								J	23		
12000	ND	26	HMWNF			3m	M6	E	4	1000	E
								F	6	*2000	+
								G	8		Er
								H	11		
								J	15		
15000	ND	26	HMWNF			2m	M5	E	4	1250	E
								F	6	*2500	+
								G	8		Er
								H	11		
								J	15		
16000	ND	28	HMWNF			2m	M5	F	4.5	1000	E
								G	6	*2000	+
								H	8		Er
								J	11.5		
20000	ND	28	HMWNF			1Am	M4	F	4.5	1250	E
								G	6	*2500	+
								H	8		Er
								J	11.5		

F	185.3	P 5	10/1.7	40	F	185.3	T 5	10	40
H	113.8	P 6	16/2.7	64	H	113.8	T 6	16	64
J	94.3	P 7	20/3.3	80	J	94.3	T 7	20	80
F	185.3	P 5	10/1.7	50	F	185.3	T 5	10	50
H	113.8	P 6	16/2.7	80	H	113.8	T 6	16	80
J	94.3	P 7	20/3.3	100	J	94.3	T 7	20	100
F	185.3	P 5	5/0.8	32	F	185.3	T 5	5	32
H	113.8	P 6	8/1.3	50	H	113.8	T 6	8	50
J	94.3	P 7	10/1.7	63	J	94.3	T 7	10	63
F	185.3	P 5	5/0.8	40	F	185.3	T 5	5	40
H	113.8	P 6	8/1.3	64	H	113.8	T 6	8	64
J	94.3	P 7	10/1.7	80	J	94.3	T 7	10	80
F	185.3	P 5	5/0.8	50	F	185.3	T 5	5	50
H	113.8	P 6	8/1.3	80	H	113.8	T 6	8	80
J	94.3	P 7	10/1.7	100	J	94.3	T 7	10	100
F	185.3	P 5	3.2/0.5	38	F	185.3	T 5	3.2	38
H	113.8	P 6	5/0.8	60	H	113.8	T 6	5	60
J	94.3	P 7	6.3/1.1	76	J	94.3	T 7	6.3	76
F	185.3	P 5	3.2/0.5	48	F	185.3	T 5	3.2	48
H	113.8	P 6	5/0.8	75	H	113.8	T 6	5	75
J	94.3	P 7	6.3/1.1	95	J	94.3	T 7	6.3	95
F	185.3	P 5	2.5/0.4	40	F	185.3	T 5	2.5	40
H	113.8	P 6	4/0.7	64	H	113.8	T 6	4	64
J	94.3	P 7	5/0.8	80	J	94.3	T 7	5	80
F	185.3	P 5	2.5/0.4	50	F	185.3	T 5	2.5	50
H	113.8	P 6	4/0.7	80	H	113.8	T 6	4	80
J	94.3	P 7	5/0.8	100	J	94.3	T 7	5	100

3200	NE	M1	V			3m	M6	C	32	*3200	M
								D	43		
								E	56.5		
								F	73		
								G	94.5		
								H	122.5		

E	344.9	P 6	16/2.7	51	E	344.9	T 6	16	51
F	269.1	P 6	20/3.3	64	F	269.1	T 6	20	64
G	223.1	P 7	25/4	80	G	223.1	T 7	25	80
					H	184.1	T 8	32	102
					J	143.6	T 9	40	128

Load	Frame	Falls	Trolley			Duty		Drum		Rope *) Drum		Contactor control				Inverter control					
			D D D			FEM	ISO	Code	HOL	Load	Ty	Gear		Motor	Speed	(tm/	Gear		Motor	Speed	(tm/
			L	H	M	W	N	F	V	(m)	(kg)	pe	Type	Ratio	(m/min)	(min)	Type	Ratio	(m/min)	(min)	
10000	NE	02	M	N	F	1Am	M4	C	97	5000	K	E	344.9	P 6	8/1.3	80	E	344.9	T 6	8	80
								D	21			F	269.1	P 7	10/1.7	100	F	269.1	T 7	10	100
								E	28			G	223.1	P 8	12.5/2	125	G	223.1	T 8	12.5	125
								F	36			H	184.1	T 9	16	160					
								G	47			J	143.6	T A	20	200					
								H	61												
								J	80.5												
12500	NE	04	M	N	F	3m	M6	C	7.5	3125	K	E	344.9	P 6	4/0.7	50	E	344.9	T 6	4	50
								D	10.5			F	269.1	P 6	5/0.8	63	F	269.1	T 6	5	63
								E	14			G	223.1	P 7	6.3/1.1	79	G	223.1	T 7	6.3	79
								F	18			H	184.1	T 8	8	100					
								G	23.5			J	143.6	T 9	10	125					
								H	30.5												
								J	40												
16000	NE	04	M	N	F	2m	M5	C	7.5	4000	K	E	344.9	P 6	4/0.6	64	E	344.9	T 6	4	64
								D	10.5			F	269.1	P 6	5/0.8	80	F	269.1	T 6	5	80
								E	14			G	223.1	P 7	6.3/1.1	101	G	223.1	T 7	6.3	101
								F	18			H	184.1	T 8	8	128					
								G	23.5			J	143.6	T 9	10	160					
								H	30.5												
								J	40												
20000	NE	04	M	N	F	1Am	M4	C	7.5	5000	K	E	344.9	P 6	4/0.6	80	E	344.9	T 6	4	80
								D	10.5			F	269.1	P 7	5/0.8	100	F	269.1	T 7	5	100
								E	14			G	223.1	P 8	6.3/1.1	126	G	223.1	T 8	6.3	126
								F	18			H	184.1	T 9	8	160					
								G	23.5			J	143.6	T A	10	200					
								H	30.5												
								J	40												
20000	NE	06	M	N	F	3m	M6	C	5	3340	L	E	344.9	P 6	2.5/0.4	50	E	344.9	T 6	2.5	50
								D	7			F	269.1	P 6	3.2/0.5	64	F	269.1	T 6	3.2	64
								E	9			G	223.1	P 7	4/0.7	80	G	223.1	T 7	4	80
								F	12			H	184.1	T 8	5	100					
								G	15.5			J	143.6	T 9	6.3	126					
								H	20												
								J	26.5												
25000	NE	06	M	N	F	2m	M5	C	5	4170	L	E	344.9	P 6	2.5/0.4	63	E	344.9	T 6	2.5	63
								D	7			F	269.1	P 6	3.2/0.5	80	F	269.1	T 6	3.2	80
								E	9			G	223.1	P 7	4/0.7	100	G	223.1	T 7	4	100
								F	12			H	184.1	T 8	5	125					
								G	15.5			J	143.6	T 9	6.3	158					
								H	20												
								J	26.5												
30000	NE	06	M	N	F	1Am	M4	C	5	5000	L	E	344.9	P 6	2.5/0.4	75	E	344.9	T 6	2.5	75
								D	7			F	269.1	P 7	3.2/0.5	96	F	269.1	T 7	3.2	96
								E	9			G	223.1	P 8	4/0.7	120	G	223.1	T 8	4	120
								F	12			H	184.1	T 9	5	150					
								G	15.5			J	143.6	T A	6.3	189					
								H	20												
								J	26.5												
32000	NE	08	M	N	F	2m	M5	E	7	4000	L	E	344.9	P 6	2/0.3	64	E	344.9	T 6	2	64
								F	9			F	269.1	P 7	2.5/0.4	80	F	269.1	T 7	2.5	80
								G	11.5			G	223.1	T 8	3.2	102					

Load	Frame	Falls	Trolley			Duty		Drum		Rope) Drum	
			D D D			FEM	ISO	Code	HOL	Load	Ty
			L	H	M W N F V						
								L	38.5		
								M	43		
								N	49		
20000	NE	26	M N F	3m	M6	E	5.5	F	7	1670	H
						G	9.5	H	13	*3340	+ Hr
						J	17	K	21		
						L	25.5	M	28.5		
						N	32.5				
25000	NE	26	M N F	2m	M5	E	5.5	F	7	2085	H
						G	9.5	H	13	*4200	+ Hr
						J	17	K	21		
						L	25.5	M	28.5		
						N	32.5				
30000	NE	26	M N F	1Am	M4	E	5.5	F	7	2500	H
						G	9.5	H	13	*5000	+ Hr
						J	17	K	21		
						L	25.5	M	28.5		
						N	32.5				
32000	NE	28	M N F	2m	M5	F	5.5	G	7	2000	H
						H	9.5	J	13	*4000	+ Hr
						K	15.5	L	19		
						M	21.5	N	24.5		
40000	NE	28	M N F	1Am	M4	F	5.5	G	7	2500	H
						H	9.5	J	13	*5000	+ Hr
						K	15.5	L	19		
						M	21.5	N	24.5		

Contactor control					Inverter control				
Gear		Motor	Speed	(tm/ min)	Gear		Motor	Speed	(tm/ min)
Type	Ratio				Type	Ratio			
E	344.9	P 6	2.5/0.4	63	E	344.9	T 6	2.5	63
F	269.1	P 6	3.2/0.5	80	F	269.1	T 6	3.2	80
G	223.1	P 7	4/0.7	100	G	223.1	T 7	4	100
					H	184.1	T 8	5	125
					J	143.6	T 9	6.3	158
E	344.9	P 6	2.5/0.4	63	E	344.9	T 6	2.5	63
F	269.1	P 6	3.2/0.5	80	F	269.1	T 6	3.2	80
G	223.1	P 7	4/0.7	100	G	223.1	T 7	4	100
					H	184.1	T 8	5	125
					J	143.6	T 9	6.3	158
E	344.9	P 6	2.5/0.4	75	E	344.9	T 6	2.5	75
F	269.1	P 7	3.2/0.5	96	F	269.1	T 7	3.2	96
G	223.1	P 8	4/0.7	120	G	223.1	T 8	4	120
					H	184.1	T 9	5	150
					J	143.6	T A	6.3	189
E	344.9	P 6	2/0.3	80	E	344.9	T 6	2	64
F	269.1	P 7	2.5/0.4	100	F	269.1	T 7	2.5	80
					G	223.1	T 8	3.2	102
					H	184.1	T 9	4	128
					J	143.6	T A	5	160
E	344.9	P 6	2/0.3	80	E	344.9	T 6	2	80
F	269.1	P 7	2.5/0.4	100	F	269.1	T 7	2.5	100
G	223.1	P 8	3.2/0.5	128	G	223.1	T 8	3.2	128
					H	184.1	T 9	4	160
					J	143.6	T A	5	200

12500	NF	22	M F	3m	M6	F	15.5	G	20.5	3125	K
						H	27.5	J	37.5	*6300	+ Kr
						K	46	L	55.5		
						M	62.5	N	71		
16000	NF	22	M F	2m	M5	F	15.5	G	20.5	4000	K
						H	27.5	J	37.5	*8000	+ Kr
						K	46				

E	344.9	2P 6	8/1.2	100	E	344.9	2T 6	8	100
F	269.1	2P 6	10/1.6	125	F	269.1	2T 6	10	125
G	223.1	2P 7	12.5/2	157	G	223.1	2T 7	12.5	157
					H	184.1	2T 8	16	200
					J	143.6	2T 9	20	250
E	344.9	2P 6	8/1.2	128	E	344.9	2T 6	8	128
F	269.1	2P 6	10/1.6	160	F	269.1	2T 6	10	160
G	223.1	2P 7	12.5/2	200	G	223.1	2T 7	12.5	200
					H	184.1	2T 8	16	250
					J	143.6	2T 9	20	320

Load	Frame	Falls	Trolley			Duty		Drum		Rope) Drum	
			D D D			FEM	ISO	Code	HOL	Load	Ty
			L	H	M W N F V				(m)	(kg)	pe
								L	55.5		
								M	62.5		
								N	71		
20000	NF	22	M	F	1Am	M4	F	15.5	5000	K	
							G	20.5	*10000	+	
							H	27.5		Kr	
							J	37.5			
							K	46			
							L	55.5			
							M	62.5			
							N	71			
25000	NF	24	M	F	3m	M6	F	7.5	3125	K	
							G	10	*6300	+	
							H	13.5		Kr	
							J	18.5			
							K	23			
							L	27.5			
							M	31			
							N	35.5			
32000	NF	24	M	F	2m	M5	F	7.5	4000	K	
							G	10	*8000	+	
							H	13.5		Kr	
							J	18.5			
							K	23			
							L	27.5			
							M	31			
							N	35.5			
40000	NF	24	M	F	1Am	M4	F	7.5	5000	K	
							G	10	*10000	+	
							H	13.5		Kr	
							J	18.5			
							K	23			
							L	27.5			
							M	31			
							N	35.5			
40000	NF	26	M	F	3m	M6	F	5	3333	L	
							G	6.5	*6667	+	
							H	9		Lr	
							J	12.5			
							K	15			
							L	18.5			
							M	20.5			
							N	23.5			
50000	NF	26	M	F	2m	M5	F	5	4167	L	
							G	6.5	*8300	+	
							H	9		Lr	
							J	12.5			
							K	15			
							L	18.5			
							M	20.5			
							N	23.5			
60000	NF	26	M	F	1Am	M4	F	5	5000	L	
							G	6.5	*10000	+	
							H	9		Lr	
							J	12.5			
							K	15			
							L	18.5			
							M	20.5			
							N	23.5			
63000	NF	28	M	F	2m	M5	H	6.5	3978	L	

Contactor control					Inverter control				
Gear		Motor	Speed	(tm/	Gear		Motor	Speed	(tm/
Type	Ratio		(m/min)	min)	Type	Ratio		(m/min)	min)
E	344.9	2P 6	8/1.2	160	E	344.9	2T 6	8	160
F	269.1	2P 7	10/1.6	200	F	269.1	2T 7	10	200
					G	223.1	2T 8	12.5	250
					H	184.1	2T 9	16	320
E	344.9	2P 6	4/0.6	100	E	344.9	2T 6	4	100
F	269.1	2P 6	5/0.8	125	F	269.1	2T 6	5	125
G	223.1	2P 7	6.3/1	158	G	223.1	2T 7	6.3	158
					H	184.1	2T 8	8	200
					J	143.6	2T 9	10	250
E	344.9	2P 6	4/0.6	128	E	344.9	2T 6	4	128
F	269.1	2P 6	5/0.8	160	F	269.1	2T 6	5	160
G	223.1	2P 7	6.3/1	202	G	223.1	2T 7	6.3	202
					H	184.1	2T 8	8	250
					J	143.6	2T 9	10	320
E	344.9	2P 6	4/0.6	160	E	344.9	2T 6	4	160
F	269.1	2P 7	5/0.8	200	F	269.1	2T 7	5	200
					G	223.1	2T 8	6.3	250
					H	184.1	2T 9	8	320
E	344.9	2P 6	2.5/0.4	100	E	344.9	2T 6	2.5	100
F	269.1	2P 6	3.2/0.5	128	F	269.1	2T 6	3.2	128
G	223.1	2P 7	4/0.6	160	G	223.1	2T 7	4	160
					H	184.1	2T 8	5	200
					J	143.6	2T 9	6.3	250
E	344.9	2P 6	2.5/0.4	125	E	344.9	2T 6	2.5	125
F	269.1	2P 6	3.2/0.5	160	F	269.1	2T 6	3.2	160
G	223.1	2P 7	4/0.6	200	G	223.1	2T 7	4	200
					H	184.1	2T 8	5	250
					J	143.6	2T 9	6.3	315
E	344.9	2P 6	2.5/0.4	150	E	344.9	2T 6	2.5	150
F	269.1	2P 7	3.2/0.5	192	F	269.1	2T 7	3.2	192
					G	223.1	2T 8	4	240
					H	184.1	2T 9	5	300
E	344.9	2P 6	2/0.3	126	E	344.9	2T 6	2	126

Load	Frame	Falls	Trolley			Duty		Drum		Rope *) Drum	
			D	D	D	FEM	ISO	Code	HOL	Load	Ty
			L	H	M	W	N	F	V	(m)	(kg)
								J	9	*7875	+
								K	11		Lr
								L	13.5		
								M	15.5		
								N	17.5		
80000	NF	28	M	F	1Am	M4	H	6.5	5000	L	
							J	9	*10000	+	
							K	11		Lr	
							L	13.5			
							M	15.5			
							N	17.5			

* Drum load

Contactor control					Inverter control				
Gear		Motor	Speed (m/min)	(tm/ min)	Gear		Motor	Speed (m/min)	(tm/ min)
Type	Ratio				Type	Ratio			
F	269.1	2P 6	2.5/0.4	158	F	269.1	2T 6	2.5	158
G	223.1	2P 7	3.2/0.5	200	G	223.1	2T 7	3.2	200
					H	184.1	2T 8	4	250
					J	143.6	2T 9	5	315
E	344.9	2P 6	2/0.3	160	E	344.9	2T 6	2	160
F	269.1	2P 7	2.5/0.4	200	F	269.1	2T 7	2.5	200
					G	223.1	2T 8	3.2	250
					H	184.1	2T 9	4	320

5 Hoisting motors

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

Duty Group Fem/ISO	motor data			PX		P1		P2		P3	
				MF09ZA106		MF10M-106		MF10Z-106		MF10X-106	
		Rated power	kW	1.5	0.25	1.8	0.25	3.6	0.5	4.5	0.7
		Synchronous speed	RPM	3000	500	3000	500	3000	500	3000	500
		Brake torque	Nm	14		21		21		42	
		Max el. br. torque	Nm		-		32		63		77
		El. br. torque	Nm		-		12.6		25		38
		Power fact. start		0.89	0.77	0.8	0.83	0.83	0.78	0.84	0.77
		Starting torque	Nm	11	10	12.4	10.7	25	22	34	28
		Weight	kg	21		22.6		30.6		35	
		Brake inertia	kgm ²	0.00017		0.00017		0.00017		0.00045	
Inertia w/o brake	kgm ²	0.0039		0.0027		0.0049		0.0059			
2m/M5 240 Starts/h 40 % ED 30/3.5 min	300 starts/h 60 % ED	Load	tm/min	8 *)		10		20		25	
		Nominal power	kW	1.5	0.25	1.8	0.25	3.6	0.5	4.5	0.7
		Nominal torque	Nm	5.4	5.4	6.1	6.1	12.3	12.3	15.3	15.3
		Nominal speed	RPM	2750	400	2780	420	2800	400	2750	415
		Short time duty	min	30	15	60	15	60	15	30	15
		Power factor		0.88	0.66	0.82	0.67	0.87	0.63	0.92	0.61
		Efficiency		0.66	0.23	0.66	0.24	0.73	0.30	0.72	0.30
		Efficiency									
3m/M6 300 Starts/h 50 % ED 30/4 min	300 starts/h 60 % 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 60 % 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 60 % 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

*) motor data for PX 240 starts/h, 40% ED

For Duty Group 1Am/M4 use the motor values of Duty Group 2m/M5.

Duty Group Fem/ISO	Q motor data			P4		P5		P6		P7	
				MF11XA106		MF11X-106		MF13Z-106		MF13X-106	
		Rated power	kW	7.5	1.2	9	1.4	15	2.5	18	3
		Synchronous speed	RPM	3000	500	3000	500	3000	500	3000	500
		Brake torque	Nm	54		54		100		130	
		Max el. br. torque	Nm		105		107		190		225
		El. br. torque	Nm		56		57		84		111
		Power fact. start		0.79	0.69	0.77	0.69	0.67	0.68	0.62	0.65
		Starting torque	Nm	57	48	67	56	107	84	120	111
		Weight	kg	51		59		86		99	
		Brake inertia	kgm ²	0.0007		0.0007		0.0007		0.0017	
Inertia w/o brake	kgm ²	0.0101		0.0116		0.036		0.043			
2m/M5 240 starts/h 40 % ED 30/3.5 min	300 starts/h 60 % ED	Load	tm/min	40		50		80		100	
		Nominal power	kW	7.5	1.2	9	1.4	15	2.5	18	3
		Nominal torque	Nm	24	24	30	30	48	48	62	62
		Nominal speed	RPM	2650	355	2680	335	2740	420	2770	425
		Short time duty	min	30	12	30	10	30	15	30	15
		Power factor		0.90	0.56	0.90	0.61	0.87	0.59	0.91	0.56
		Efficiency		0.73	0.28	0.72	0.28	0.78	0.45	0.80	0.47
3m/M6 300 starts/h 50 % ED 30/4 min	300 starts/h 60 % ED	Load	tm/min	32		40		63		80	
		Nominal power	kW	6	1	7.5	1.2	12	2	15	2.5
		Nominal torque	Nm	19.2	19.2	24	24	38	38	48	48
		Nominal speed	RPM	2730	390	2760	370	2810	440	2820	440
		Short time duty	min								
		Power factor		0.87	0.52	0.87	0.56	0.82	0.52	0.89	0.47
	300 starts/h 60 % ED	Load	tm/min	25		32		50		63	
		Nominal power	kW	4.5	0.7	6	1	9	1.4	12	2
		Nominal torque	Nm	15.3	15.3	19.2	19.2	30	30	38	38
		Nominal speed	RPM	2800	420	2820	400	2860	455	2865	455
		Short time duty	min								
		Power factor		0.82	0.47	0.84	0.52	0.78	0.48	0.87	0.41
	300 starts/h 60 % ED	Load	tm/min	20		25		40		50	
		Nominal power	kW	3.6	0.5	4.5	0.7	7.5	1.2	9	1.4
		Nominal torque	Nm	12.3	12.3	15.3	15.3	24	24	30	30
		Nominal speed	RPM	2840	440	2870	425	2900	465	2900	465
		Short time duty	min								
		Power factor		0.76	0.45	0.80	0.47	0.70	0.42	0.84	0.36
		Efficiency		0.74	0.23	0.79	0.25	0.77	0.34	0.82	0.35

For Duty Group 1Am/M4 use the motor values of Duty Group 2m/M5.

Duty Group Fem/ISO	motor data	P8*			
		MF13XA106			
		Rated power	kW	23	3.5
		Synchronous speed	RPM	3000	500
		Brake torque	Nm	200	
		Max el. br. torque	Nm		290
		El. br. torque	Nm		150
		Power fact. start		0.73	0.67
		Starting torque	Nm	165	140
		Weight	kg	99	
		Brake inertia	kgm ²	0.0017	
		Inertia w/o brake	kgm ²	0.043	
1Am/M4 180 starts/h 30 % ED 15/3 min	300 starts/h 50 % ED	Load	tm/min	125	
		Nominal power	kW	23	3.5
		Nominal torque	Nm	76	76
		Nominal speed	RPM	2790	420
		Short time duty	min	15	10
		Power factor		0.84	0.57
		Efficiency		0.83	0.44

* Note! P8 hoisting motor for 1Am use only. External fan as standard.

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

			Currents							
			230 V		400 V		500 V		660 V	
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
PX MF09ZA106	Starting current (A)				15	3.0				
	Nominal current (A)									
		8			3.7	2.2				
	No-load current (A)				2.1	2.1				
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
P4 MF11XA106	Starting current (A)		118	22	68	12.7	54	10.2	41	7.7
	Nominal current (A)									
		40	30	17	17	9.5	14	7.6	10	5.8
		32	24	15	13.7	8.6	11.0	6.9	8.3	5.2
		25	19	15	11	8.6	8.8	6.9	6.7	5.2
		20	17	15	10	8.6	8.0	6.9	6.1	5.2
	No-load current (A)		12	16	7.0	9.2	5.6	7.4	4.2	5.6
P5 MF11X-106	Starting current (A)		144	28	83	16	66	12.8	50	9.7
	Nominal current									
		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
P7 MF13X-106	Starting current (A)		339	59	195	34	156	27.2	118	21
	Nominal current (A)									
		100	66	31	38	18	30	14	23	11
		80	49	26	28	15	22	12.0	17	9.1
		63	40	26	23	15	18	12.0	14	9.1
		50	33	26	19	15	15	12.0	11.5	9.1
	No-load current (A)		21	31	12	18	9.6	14.4	7.3	10.9
P8 MF13XA106	Starting current (A)		389	68	212	39	170	31	128	24
	Nominal current (A)									
		125	85	40	49	23	39	18	30	14
	No-load current (A)		43	38	25	22	20	18	15	13

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

Duty Group Fem/ISO	Q motor data			PX		P1		P2		P3	
				MF09ZA106		MF10M-106		MF10Z-106		MF10X-106	
		Rated power	kW	1.8	0.3	2.2	0.3	4.3	0.7	5.4	0.9
		Synchronous speed	RPM	3600	600	3600	600	3600	600	3600	600
		Brake torque	Nm	14		21		21		42	
		Max el. br. torque	Nm		-		32		63		77
		El. br. torque	Nm		-		12.6		25		38
		Power fact. start		0.87	0.73	0.76	0.81	0.77	0.73	0.78	0.74
		Starting torque	Nm	11	10	12.4	10.7	24.6	21.7	34	28
		Weight	kg	21		22.6		30.6		35	
		Brake inertia	kgm ²	0.00012		0.00017		0.00017		0.00045	
Inertia w/o brake	kgm ²	0.0039		0.0027		0.0049		0.0059			
2m/M5 240 starts/h 40 % ED 30/3.5 min	300 starts/h 60 % ED	Load	tm/min	9.6 *)		12		24		30	
		Nominal power	kW	1.8	0.3	2.2	0.3	4.3	0.7	5.4	0.9
		Nominal torque	Nm	5.4	5.4	6.1	6.1	12.3	12.3	15.3	15.3
		Nominal speed	RPM	3350	500	3410	525	3400	500	3350	495
		Short time duty	min	30	15	60	15	60	15	30	15
		Power factor		0.90	0.68	0.83	0.65	0.89	0.61	0.93	0.60
		Efficiency		0.68	0.25	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 60 % 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 60 % 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								
		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		
	300 starts/h 60 % ED	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
		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		

*) Q motor data for PX 240 starts/h, 40% ED

For Duty Group 1Am/M4 use the motor values of Duty Group 2m/M5.

Duty Group Fem/ISO	Q motor data			P4		P5		P6		P7	
				MF11XA106		MF11X-106		MF13Z-106		MF13X-106	
		Rated power	kW	9	1.4	11	1.6	18	3	21	3.5
		Synchronous speed	RPM	3600	600	3600	600	3600	600	3600	600
		Brake torque	Nm	54		54		100		130	
		Max el. br. torque	Nm		105		112		182		205
		El. br. torque	Nm		56		64		82		101
		Power fact. start		0.73	0.67	0.75	0.68	0.60	0.64	0.55	0.59
		Starting torque	Nm	54	44	63	51	102	82	114	101
		Weight	kg	51		59		86		99	
		Brake inertia	kgm2	0.0007		0.0007		0.0007		0.0017	
Inertia w/o brake	kgm2	0.0101		0.0116		0.036		0.043			
2m/M5 240 starts/h 40 % ED 30/3.5 min	300 starts/h 60 % ED	Load	tm/min	48		60		96		120	
		Nominal power	kW	9	1.4	11	1.6	18	3	21	3.5
		Nominal torque	Nm	24	24	30	30	48	48	62	62
		Nominal speed	RPM	3230	450	3250	440	3320	515	3360	520
		Short time duty	min	30	12	30	10	30	15	30	15
		Power factor		0.90	0.54	0.91	0.57	0.88	0.59	0.92	0.55
		Efficiency		0.74	0.34	0.75	0.35	0.80	0.50	0.81	0.52
3m/M6 300 starts/h 50 % ED 30/4 min	300 starts/h 60 % ED	Load	tm/min	38		48		76		96	
		Nominal power	kW	7.2	1.2	9	1.4	14	2.3	18	3
		Nominal torque	Nm	19.2	19.2	24	24	38	38	48	48
		Nominal speed	RPM	3315	490	3320	470	3390	540	3410	540
		Short time duty	min								
		Power factor		0.88	0.49	0.90	0.53	0.85	0.52	0.90	0.47
	300 starts/h 60 % ED	Load	tm/min	30		38		60		76	
		Nominal power	kW	5.4	0.9	7.2	1.2	11	1.6	14	2.3
		Nominal torque	Nm	15.3	15.3	19.2	19.2	30	30	38	38
		Nominal speed	RPM	3390	520	3395	500	3445	555	3460	555
		Short time duty	min								
		Power factor		0.85	0.43	0.87	0.47	0.82	0.48	0.88	0.41
	300 starts/h 60 % ED	Load	tm/min	24		30		48		60	
		Nominal power	kW	4.3	0.7	5.4	0.9	9	1.4	11	1.6
		Nominal torque	Nm	12.3	12.3	15.3	15.3	24	24	30	30
		Nominal speed	RPM	3440	540	3450	525	3495	565	3495	565
		Short time duty	min								
		Power factor		0.78	0.39	0.83	0.42	0.74	0.42	0.85	0.37
		Efficiency		0.74	0.28	0.77	0.31	0.82	0.39	0.83	0.41

For Duty Group 1Am/M4 use the motor values of Duty Group 2m/M5.

Duty Group Fem/ISO	Q motor data	P8*			
		MF13XA106			
		Rated power	kW	25	3.8
		Synchronous speed	RPM	3600	600
		Brake torque	Nm	200	
		Max el. br. torque	Nm		290
		El. br. torque	Nm		150
		Power fact. start		0.68	0.69
		Starting torque	Nm	160	140
		Weight	kg	99	
		Brake inertia	kgm ²	0.0017	
		Inertia w/o brake	kgm ²	0.043	
1Am/M4 180 starts/h 30 % ED 15/3 min	300 starts/h 50 % ED	Load	tm/min	135	
		Nominal power	kW	25	3.8
		Nominal torque	Nm	69	69
		Nominal speed	RPM	3430	530
		Short time duty	min	15	10
		Power factor		0.87	0.54
		Efficiency		0.86	0.49

* Note! P8 hoisting motor for 1Am use only. External fan as standard.

5.4 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
PX MF09ZA106	Starting current (A)						15	3.0		
	Nominal current (A)									
		9.6					3.7	2.2		
	No-load current (A)						2.1	2.1		
P1 MF10M-106	Starting current (A)		42	9	23	4.7				
	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
P4 MF11XA106	Starting current (A)		146	29	85	17	70.0	14.0	56	11.2
	Nominal current (A)									
		48	36	19	21	11	17	9.1	14	7.3
		38	27	17	16	10.0	13	8.3	10.4	6.6
		30	23	17	13	10.0	11	8.3	8.8	6.6
		24	21	17	12	10.0	10	8.3	8.0	6.6
	No-load current (A)		12.5	18	7.3	10.7	6.0	8.8	4.8	7.0
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
P7 MF13X-106	Starting current (A)		433	73	251	42	207	35	166	28
	Nominal current (A)									
		120	79	33	46	19	38	16	30	13
		96	59	29	34	17	28	14	22	11.2
		76	46	29	27	17	22	14	18	11.2
		60	40	29	23	17	19	14	15	11.2
	No-load current (A)		21	33	12	19	10	16	8.0	12.8
P8 MF13XA106	Starting current (A)		460	121	266	70	220	35	176	28
	Nominal current (A)									
		135	98	47	57	27	47	22	38	18
	No-load current (A)		40	41	23	24	19	20	15.2	16

5.5 Motor data, inverter motors, 100 Hz

Duty Group Fem/ISO	Q motor data			T1	T2	T3	T4	T5	T6
				MF10MA200	MF10MB200	MF10MC200	MF11MA200	MF11MB200	MF13Z-200
		Rated power	kW	1.8	3.6	4.5	7.5	9	15
		Synchronous speed	RPM	3000	3000	3000	3000	3000	3000
		Brake torque	Nm	21	42	42	54	54	100
		Max el. br. torque	Nm						
		El. br. torque	Nm						
		Power fact. start							
		Pull-out torque	Nm	16.6	32	40	80	80	165
		Speed at 80% of pull-out torque	rpm	2500	2500	2410	2500	2500	2700
		Starting torque	Nm						
		Weight	kg	23	23	23	37	37	59
		Brake inertia	kgm ²	0.00017	0.00017	0.00045	0.0007	0.0007	0.0007
Inertia w/o brake	kgm ²	0.0027	0.0027	0.0027	0.0075	0.0075	0.024		
2m/M5 240 starts/h 40 % ED 30/3.5 min	300 starts/h 60 % ED	Load	tm/min	10	20	25	40	50	80
		Nominal power	kW	1.8	3.6	4.5	7.5	9	15
		Nominal torque	Nm	6.1	12.3	15.3	24	30	48
		Nominal speed	RPM	2830	2790	2780	2860	2830	2910
		Short time duty	min	60	60	60	30	30	30
		Power factor		0.74	0.75	0.78	0.74	0.78	0.85
		Efficiency		0.73	0.75	0.77	0.81	0.81	0.86
3m/M6 300 starts/h 50 % ED 30/4 min	300 starts/h 60 % ED	Load	tm/min	8	16	20	32	40	63
		Nominal power	kW	1.5	2.9	3.6	6	7.5	12
		Nominal torque	Nm	4.9	9.8	12.3	19.2	24	38
		Nominal speed	RPM	2860	2830	2830	2900	2860	2925
		Short time duty	min						
		Power factor		0.69	0.69	0.72	0.67	0.74	0.79
300 starts/h 60 % ED	300 starts/h 60 % ED	Load	tm/min	6.3	12.5	16	25	32	50
		Nominal power	kW	1.2	2.4	2.9	4.5	6	9
		Nominal torque	Nm	3.9	7.7	9.8	15.3	19.2	30
		Nominal speed	RPM	2880	2870	2880	2925	2900	2940
		Short time duty	min						
		Power factor		0.64	0.63	0.65	0.61	0.67	0.72
300 starts/h 60 % ED	300 starts/h 60 % ED	Load	tm/min	5	10	12.5	20	25	40
		Nominal power	kW	0.9	1.8	2.4	3.6	4.5	7.5
		Nominal torque	Nm	3	6.1	7.7	12.3	15.3	24
		Nominal speed	RPM	2905	2900	2905	2940	2925	2960
		Short time duty	min						
		Power factor		0.57	0.55	0.58	0.55	0.61	0.68
		Efficiency		0.63	0.69	0.74	0.76	0.78	0.81

For Duty Group 1Am/M4 use the values of Duty Group 2m/M5.

Duty Group Fem/ISO	Q motor data			T7	T8	T9	TA
				MF13ZA200	MF13ZB200	MF13ZC200	MF13X-200
		Rated power	kW	18	23	28	35
		Synchronous speed	RPM	3000	3000	3000	3000
		Brake torque	Nm	130	200	200	200
		Max el. br. torque	Nm				
		El. br. torque	Nm				
		Power fact. start					
		Pull-out torque	Nm	165	200	275	350
		Speed at 80% of pull-out torque	rpm	2700	2720	2710	2750
		Starting torque	Nm				
		Weight	kg	59	72	85	99
		Brake inertia	kgm ²	0.0017	0.0017	0.0017	0.0017
		Inertia w/o brake	kgm ²	0.024	0.030	0.036	0.043
2m/M5 240 starts/h 40 % ED 30/3.5 min	300 starts/h 60 % ED	Load	tm/min	100	125	160	200
		Nominal power	kW	18	23	28	35
		Nominal torque	Nm	62	76	96	116
		Nominal speed	RPM	2890	2890	2880	2880
		Short time duty	min	30	30	30	30
		Power factor		0.87	0.88	0.87	0.85
		Efficiency		0.87	0.89	0.89	0.90
3m/M6 300 starts/h 50 % ED 30/4 min	300 starts/h 60 % ED	Load	tm/min	80	100	125	160
		Nominal power	kW	15	18	23	28
		Nominal torque	Nm	48	62	76	96
		Nominal speed	RPM	2910	2910	2920	2930
		Short time duty	min				
		Power factor		0.85	0.86	0.84	0.83
		Efficiency		0.86	0.89	0.89	0.89
	300 starts/h 60 % ED	Load	tm/min	63	80	100	125
		Nominal power	kW	12	15	18	23
		Nominal torque	Nm	38	48	62	76
		Nominal speed	RPM	2925	2930	2935	2940
		Short time duty	min				
		Power factor		0.79	0.82	0.80	0.78
		Efficiency		0.86	0.89	0.88	0.89
	300 starts/h 60 % ED	Load	tm/min	50	63	80	100
		Nominal power	kW	9	12	15	18
		Nominal torque	Nm	30	38	48	62
		Nominal speed	RPM	2940	2940	2950	2950
		Short time duty	min				
		Power factor		0.72	0.77	0.74	0.73
		Efficiency		0.84	0.88	0.87	0.88

For Duty Group 1Am/M4 use the values of Duty Group 2m/M5.

5.6 Motor data, inverter motors, 120 Hz

Duty Group Fem/ISO	Q motor data			T1	T2	T3	T4	T5	T6
				MF10MA200	MF10MB200	MF10MC200	MF11MA200	MF11MB200	MF13Z-200
		Rated power	kW	2.2	4.3	5.4	9	11	18
		Synchronous speed	RPM	3600	3600	3600	3600	3600	3600
		Brake torque	Nm	21	21	42	54	54	100
		Max el. br. torque	Nm						
		El. br. torque	Nm						
		Power fact. start							
		Pull-out torque	Nm	16	31	39	76	76	152
		Speed at 80% of pull-out torque	rpm	3100	3100	3040	3100	3100	3300
		Starting torque	Nm						
		Weight	kg	23	23	23	37	37	59
		Brake inertia	kgm ²	0.00017	0.00017	0.00045	0.0007	0.0007	0.0007
Inertia w/o brake	kgm ²	0.0027	0.0027	0.0027	0.0075	0.0075	0.024		
2m/M5 240 starts/h 40 % ED 30/3.5 min	300 starts/h 60 % ED	Load	tm/min	12	24	30	48	60	96
		Nominal power	kW	2.2	4.3	5.4	9	11	18
		Nominal torque	Nm	6.1	12.3	15.3	24	30	48
		Nominal speed	RPM	3420	3370	3340	3440	3410	3500
		Short time duty	min	60	60	60	30	30	30
		Power factor		0.75	0.77	0.80	0.75	0.78	0.85
		Efficiency		0.71	0.76	0.77	0.78	0.81	0.86
3m/M6 300 starts/h 50 % ED 30/4 min	300 starts/h 60 % ED	Load	tm/min	9.6	19.2	24	38	48	76
		Nominal power	kW	1.8	3.5	4.3	7.2	9	14
		Nominal torque	Nm	4.9	9.8	12.3	19.2	24	38
		Nominal speed	RPM	3450	3415	3390	3485	3440	3520
		Short time duty	min						
		Power factor		0.72	0.70	0.76	0.69	0.75	0.81
	300 starts/h 60 % ED	Efficiency		0.69	0.75	0.77	0.78	0.78	0.85
		Load	tm/min	7.6	15.4	19.2	30	38	60
		Nominal power	kW	1.4	2.9	3.5	5.4	7.2	11
		Nominal torque	Nm	3.9	7.7	9.8	15.3	19.2	30
		Nominal speed	RPM	3475	3455	3430	3515	3485	3540
		Short time duty	min						
	300 starts/h 60 % ED	Power factor		0.68	0.66	0.70	0.62	0.69	0.75
		Efficiency		0.65	0.74	0.76	0.75	0.78	0.82
		Load	tm/min	6	12	15.4	24	30	48
		Nominal power	kW	1.1	2.2	2.9	4.3	5.4	9
		Nominal torque	Nm	3	6.1	7.7	12.3	15.3	24
		Nominal speed	RPM	3500	3490	3470	3530	3515	3560
	300 starts/h 60 % ED	Short time duty	min						
		Power factor		0.62	0.58	0.63	0.56	0.62	0.70
		Efficiency		0.61	0.70	0.73	0.73	0.75	0.80

For Duty Group 1Am/M4 use the values of Duty Group 2m/M5.

Duty Group Fem/ISO	Q motor data			T7	T8	T9	TA
				MF13ZA200	MF13ZB200	MF13ZC200	MF13X-200
		Rated power	kW	21	27	34	42
		Synchronous speed	RPM	3600	3600	3600	3600
		Brake torque	Nm	130	200	200	200
		Max el. br. torque	Nm				
		El. br. torque	Nm				
		Power fact. start					
		Pull-out torque	Nm	152	190	265	335
		Speed at 80% of pull-out torque	rpm	3300	3260	3210	3250
		Starting torque	Nm				
		Weight	kg	59	72	85	99
		Brake inertia	kgm ²	0.0017	0.0017	0.0017	0.0017
		Inertia w/o brake	kgm ²	0.024	0.030	0.036	0.043
2m/M5 240 starts/h 40 % ED 30/3.5 min	300 starts/h 60 % ED	Load	tm/min	120	150	192	240
		Nominal power	kW	21	27	34	41
		Nominal torque	Nm	62	76	96	116
		Nominal speed	RPM	3480	3470	3470	3470
		Short time duty	min	30	30	30	30
		Power factor		0.87	0.88	0.88	0.87
		Efficiency		0.87	0.89	0.89	0.89
3m/M6 300 starts/h 50 % ED 30/4 min	300 starts/h 60 % ED	Load	tm/min	96	120	150	192
		Nominal power	kW	18	21	27	34
		Nominal torque	Nm	48	62	76	96
		Nominal speed	RPM	3500	3500	3500	3500
		Short time duty	min				
		Power factor		0.85	0.86	0.86	0.86
		Efficiency		0.86	0.89	0.89	0.89
	300 starts/h 60 % ED	Load	tm/min	76	96	120	150
		Nominal power	kW	14	18	21	27
		Nominal torque	Nm	38	48	62	76
		Nominal speed	RPM	3520	3520	3520	3520
		Short time duty	min				
		Power factor		0.81	0.84	0.83	0.84
		Efficiency		0.85	0.89	0.89	0.90
	300 starts/h 60 % ED	Load	tm/min	60	76	96	120
		Nominal power	kW	11	14	18	21
		Nominal torque	Nm	30	38	48	62
		Nominal speed	RPM	3540	3540	3540	3540
		Short time duty	min				
		Power factor		0.75	0.80	0.78	0.80
		Efficiency		0.82	0.89	0.88	0.91

For Duty Group 1Am/M4 use the values of Duty Group 2m/M5.

5.7 Motor currents, inverter motors, 100 Hz and 120 Hz

		100 Hz		120 Hz	
		Current		Current	
Nominal voltage		400 V		460	
Used in voltage range		380...415 V		440...480 V	
		tm/min		tm/min	
T1 MF10MA200	Current at 80% of pull-out torque (A)		11.0		11.0
	Nominal current (A)	10	4.8	12	4.9
		8	4.4	9.6	4.6
		6.3	4.1	7.6	4.1
		5	3.7	6	3.7
No-load current (A)		3.2		3.0	
T2 MF10MB200	Current at 80% of pull-out torque (A)		17.2		17.2
	Nominal current (A)	20	9.4	24	9.3
		16	8.3	19.2	8.2
		12.5	7.5	15	7.3
		10	6.9	12	6.6
No-load current (A)		6.2		5.7	
T3 MF10MC200	Current at 80% of pull-out torque (A)		21.2		21.5
	Nominal current (A)	25	10.7	30	10.8
		20	9.3	24	9.3
		16	8.3	19.2	8.1
		12.5	7.6	15	7.5
No-load current (A)		6.3		5.9	
T4 MF11MA200	Current at 80% of pull-out torque (A)		42		42
	Nominal current (A)	40	18	48	19
		32	15.5	38	17
		25	14.3	30	15.0
		20	13.8	24	14.0
No-load current (A)		11.8		11.0	
T5 MF11MB200	Current at 80% of pull-out torque (A)		42		42
	Nominal current (A)	50	21	60	22
		40	18	48	19
		32	15.5	38	17
		25	14.3	30	15.0
No-load current (A)		11.8		11.0	
T6 MF13Z-200	Current at 80% of pull-out torque (A)		78		78
	Nominal current (A)	80	31	96	31
		63	25	76	26
		50	23	60	23
		40	20	48	20
No-load current (A)		15		14	

		100 Hz		120 Hz	
		Current		Current	
Nominal voltage		400 V		460	
Used in voltage range		380...415 V		440...480 V	
		tm/min		tm/min	
T7 MF13ZA200	Current at 80% of pull-out torque	(A)		78	78
	Nominal current	(A)	100	36	120
			80	31	96
			63	25	76
	No-load current	(A)		15	14
T8 MF13ZB200	Current at 80% of pull-out torque	(A)		90	93
	Nominal current	(A)	125	42	150
			100	34	120
			80	28	96
	No-load current	(A)		17	16
T9 MF13ZC200	Current at 80% of pull-out torque	(A)		125	130
	Nominal current	(A)	160	55	192
			125	45	150
			100	39	120
	No-load current	(A)		22	20
TA MF13X-200	Current at 80% of pull-out torque	(A)		157	160
	Nominal current	(A)	200	64	240
			160	57	192
			125	48	150
	No-load current	(A)		26	23

5.8 Motor data, one speed motors, 50 Hz

Duty Group Fem/ISO	Q motor data			MF07X-100	MF09ZB100
				OX	OZ
		Rated power	kW	1.5	2.5
		Synchronous speed	RPM	3000	3000
		Brake torque	Nm	12	21
		Max el. br. torque	Nm	-	-
		El. br. torque	Nm	-	-
		Power fact. start		0.83	0.75
		Starting torque	Nm	12	22
		Weight	kg	10	21
		Brake inertia	kgm ²	0.00006	0.00017
		Inertia w/o brake	kgm ²	0.0012	0.0039
2m/M5 240 starts/h 40 % ED 30/3.5 min	240 starts/h 40 % ED	Load	tm/min	8	13.4
		Nominal power	kW	1.5	2.5
		Nominal torque	Nm	5.4	8.5
		Nominal speed	RPM	2700	2850
		Short time duty	min	30	30
		Power factor		0.79	0.88
		Efficiency		0.63	0.68

For Duty Group 1Am/M4 use the values of Duty Group 2m/M5.

5.9 Motor currents, one speed motors, 50 Hz

			Currents			
Nominal voltage			200 V	400 V	500 V	660 V
Used in voltage range			180...220 V	380...415 V	500...525 V	660...690 V
		tm/min				
OX MF07X-100	Starting current (A)	8	27	14		
	Nominal current (A)		8.7	4.3		
	No-load current (A)		6.6	4.4		
OZ MF09ZB100	Starting current (A)	13.4	64	32		
	Nominal current (A)		12.3	6.0		
	No-load current (A)		6.0	3.0		

5.10 Motor data, one speed motors, 60 Hz

Duty Group Fem/ISO	Q motor data			MF07X-100 OX	MF09ZB100 OZ
		Rated power	kW	1.8	3.0
		Synchronous speed	RPM	3600	3600
		Brake torque	Nm	12	21
		Max el. br. torque	Nm	-	-
		El. br. torque	Nm	-	-
		Power fact. start		0.83	0.75
		Starting torque	Nm	9	14
		Weight	kg	10	21
		Brake inertia	kgm ²	0.00006	0.00017
		Inertia w/o brake	kgm ²	0.0012	0.0039
2m/M5 240 starts/h 40 % ED 30/3.5 min	240 starts/h 40 % ED	Load	tm/min	9.6	16
		Nominal power	kW	1.8	3.0
		Nominal torque	Nm	5.4	8.6
		Nominal speed	RPM	2950	3380
		Short time duty	min	30	30
		Power factor		0.90	0.92
		Efficiency		0.57	0.70

For Duty Group 1Am/M4 use the values of Duty Group 2m/M5.

5.11 Motor currents, one speed 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				
OX MF07X-100	Starting current (A)	9.6	25		14	
	Nominal current (A)		8.7		4.3	
	No-load current (A)		4.2		4.4	
OZ MF09ZB100	Starting current (A)	16	60		32	
	Nominal current (A)		12.4		7.0	
	No-load current (A)		4.3		3.0	

6 Travelling motors

6.1 One speed, 3000 RPM (100 Hz), 3600 RPM (120 Hz) and 4800 RPM (80Hz)

These motors are driven with fixed voltages and frequencies with the below specified line voltages (=inverter supply voltage). Motor nameplate data is the same for all line voltages. Other voltage/frequency versions are not available for these motors.

Duty type	Motor code	MF06MA100		MF06MA200		MF06LA100		MF06LA200	
	Speed control	inverter		inverter		inverter		inverter	
	Inverter supply voltage	380-480V		380-480V	440-480V	380-480V		380-480V	440-480V
	Motor voltage	400 V		400 V	460 V	400 V		400 V	460 V
	Frequency	80 Hz		100 Hz	120 Hz	80 Hz		100 Hz	120 Hz
	Brake type	compact		compact	compact	compact		compact	compact
	Synchronous speed	RPM	4800	3000	3600	4800		3000	3600
	Brake torque	Nm	2	2	2	2		2	2
	Starting torque	Nm	3.2	3.0	2.9	5.6		7.2	7.1
	Electric braking torque	Nm							
	Starting current	A	6.5	4.2	4.3	10.3		8.2	8.5
	Maximum torque	Nm	3.2	3.0	2.9	5.6		7.2	7.1
	Speed at max. torque	RPM	0	0	0	0		0	0
	80% of max. torque	Nm	2.6	2.4	2.4	4.5		5.7	5.7
	Speed at 80% torque	RPM	3700	2200	2600	3600		2200	2650
	Current at 80% torque	A	3.8	2.1	2.1	6.0		4.8	4.8
	Inertia	kgm ²	0.0004	0.0004	0.0004	0.0007		0.0007	0.0007
	Inertia with flywheel	kgm ²							
	Power factor, starting		0.74	0.72	0.70	0.75		0.71	0.69
	Weight with fan	kg							
	Weight	kg	4.9	4.9	4.9	6.8		6.8	6.8
	No-load current	A	1.2	1.0	1.0	1.1		1.6	1.6
	Iron losses	W							
	Stator resistance at 20 °C	Ω	19.5	34	34	12.2		14.7	14.7
S3-20%	Speed	RPM	4550	2760	3380	4500		2780	3330
	Power	kW	0.45	0.45	0.45	0.9		0.75	0.75
	Current	A	2.1	1.4	1.4	2.3		2.3	2.3
	Starting burden	kgm ² /h							
	Power factor		0.63	0.68	0.63	0.77		0.67	0.67
	Efficiency		0.66	0.66	0.66	0.72		0.74	0.74
S3-40%	Speed	RPM	4550	2855	3430	4560		2850	3440
	Power	kW	0.45	0.3	0.37	0.65		0.45	0.55
	Current	A	2.1	1.2	1.2	2.1		1.8	1.8
	Starting burden	kgm ² /h							
	Power factor		0.63	0.57	0.59	0.71		0.52	0.53
	Efficiency		0.66	0.65	0.65	0.68		0.73	0.74
S3-60%	Speed	RPM		2855	3450	4640		2850	3470
	Power	kW		0.3	0.3	0.45		0.45	0.45
	Current	A		1.2	1.2	1.8		1.8	1.8
	Starting burden	kgm ² /h							
	Power factor			0.57	0.59	0.60		0.52	0.52
	Efficiency			0.65	0.65	0.64		0.73	0.73
S3-100%	Speed	RPM							
	Power	kW							
	Current	A							
	Starting burden	kgm ² /h							
	Power factor								
	Efficiency								

Duty type	Motor code		MF06LA20P		MF06LB100		MF06LB200	
	Speed control		inverter		inverter		inverter	
	Inverter supply voltage		380-480V	440-480V	380-480V		380-480V	440-480V
	Motor voltage		400 V	460 V	400 V		400 V	460 V
	Frequency		100 Hz	120 Hz	80 Hz		100 Hz	120 Hz
	Brake type		compact	compact	DC		DC	DC
	Synchronous speed	RPM	3000	3600	4800		3000	3600
	Brake torque	Nm	2	2	4		4	4
	Starting torque	Nm	7.2	7.1	10.4		10.5	10.4
	Electric braking torque	Nm						
	Starting current	A	8.2	8.5	16.4		12.9	12.6
	Maximum torque	Nm	7.2	7.1	10.4		11	10.8
	Speed at max. torque	RPM	0	0	0		1480	1770
	80% of max. torque	Nm	5.7	5.7	8.3		8.9	8.9
	Speed at 80% torque	RPM	2200	2650	3350		2350	2820
	Current at 80% torque	A	4.8	4.8	9.0		6.6	6.6
	Inertia	kgm ²	0.0007	0.0007	0.0006		0.0006	0.0006
	Inertia with flywheel	kgm ²						
	Power factor, starting		0.71	0.69	0.84		0.77	0.74
	Weight with fan	kg						
	Weight	kg	6.8	6.8	7.8		7.8	7.8
	No-load current	A	1.6	1.6	2.0		2.2	2.0
	Iron losses	W						
	Stator resistance at 20 °C	Ω	14.7	14.7	8.8		10.4	10.4
S3-20%	Speed	RPM			4450		2720	3320
	Power	kW			1.3		1.3	1.3
	Current	A			3.1		3.3	3.2
	Starting burden	kgm ² /h						
	Power factor				0.82		0.77	0.74
	Efficiency				0.78		0.73	0.76
S3-40%	Speed	RPM	2800	3360	4500		2770	3370
	Power	kW	0.65	0.75	1.1		1.1	1.1
	Current	A	2.1	2.1	2.9		3.0	2.9
	Starting burden	kgm ² /h						
	Power factor		0.61	0.61	0.78		0.73	0.74
	Efficiency		0.73	0.74	0.78		0.74	0.76
S3-60%	Speed	RPM			4600		2840	3450
	Power	kW			0.75		0.65	0.65
	Current	A			2.3		2.5	2.4
	Starting burden	kgm ² /h						
	Power factor				0.65		0.60	0.62
	Efficiency				0.75		0.70	0.71
S3-100%	Speed	RPM						
	Power	kW						
	Current	A						
	Starting burden	kgm ² /h						
	Power factor							
	Efficiency							

Duty type	Motor code	MF07XA100		MF07XB100		MF07XA200		MF07XB200		
	Speed control	inverter		inverter		inverter		inverter		
	Inverter supply voltage	380-480V		380-480V		380-480V	440-480V	380-480V	440-480V	
	Motor voltage	400 V		400 V		400 V	460 V	400 V	460 V	
	Frequency	80 Hz		80 Hz		100 Hz	120 Hz	100 Hz	120 Hz	
	Brake type	DC		DC		DC	DC	DC	DC	
	Synchronous speed	RPM	4800		4800		3000	3600	3000	3600
	Brake torque	Nm	16		16		16	16	16	16
	Starting torque	Nm	11.7		16.5		13.5	12.7	23.5	21.6
	Electric braking torque	Nm								
	Starting current	A	23.5		32		19.3	19.4	35	34
	Maximum torque	Nm	12		17		17.5	16.5	25	23
	Speed at max. torque	RPM	2250		2200		2010	2410	1590	1910
	80% of max. torque	Nm	9.6		13		14	13.1	20	18
	Speed at 80% torque	RPM	3770		4050		2620	3140	2470	2970
	Current at 80% torque	A	10.4		14		10	10.6	15	13.5
	Inertia	kgm ²	0.0012		0.0012		0.0012	0.0012	0.0012	0.0012
	Inertia with flywheel	kgm ²								
	Power factor, starting		0.77		0.79		0.67	0.63	0.67	0.64
	Weight with fan	kg	13		13		13	13	13	13
	Weight	kg								
	No-load current	A	2.6		6.0		2.5	2.3	5.4	4.9
	Iron losses	W								
	Stator resistance at 20 °C	Ω	5.6		3.75		6.3	6.3	3.8	3.8
S3-20%	Speed	RPM	4440		4420		2820	3370	2840	3440
	Power	kW	2.2		3.6		1.8	2.2	2.5	3.0
	Current	A	5.0		8.8		4.3	4.6	7.2	6.9
	Starting burden	kgm ² /h								
	Power factor		0.88		0.79		0.79	0.81	0.68	0.71
	Efficiency		0.74		0.74		0.74	0.75	0.74	0.76
S3-40%	Speed	RPM	4520		4460		2850	3430	2860	3460
	Power	kW	1.8		3.0		1.5	1.8	2.2	2.5
	Current	A	4.3		7.9		3.9	3.9	6.9	6.5
	Starting burden	kgm ² /h								
	Power factor		0.84		0.78		0.75	0.76	0.66	0.68
	Efficiency		0.75		0.74		0.75	0.76	0.73	0.75
S3-60%	Speed	RPM	4520		4460		2850	3430	2860	3460
	Power	kW	1.8		3.0		1.5	1.8	2.2	2.5
	Current	A	4.3		7.9		3.9	3.9	6.9	6.5
	Starting burden	kgm ² /h								
	Power factor		0.84		0.78		0.75	0.76	0.66	0.68
	Efficiency		0.75		0.74		0.75	0.76	0.73	0.75
S3-100%	Speed	RPM	4520		4460		2850	3430	2890	3480
	Power	kW	1.8		3.0		1.5	1.8	1.8	2.2
	Current	A	4.3		7.9		3.9	3.9	6.4	6.1
	Starting burden	kgm ² /h								
	Power factor		0.84		0.78		0.75	0.76	0.59	0.63
	Efficiency		0.75		0.74		0.75	0.76	0.70	0.74

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

Duty type	Motor code		MF06MA104		MF06MA104		MF06LA104		MF06LA104	
			2-speed		2-speed		2-speed		2-speed	
Speed control		380V - 415V		440V - 480V		380V - 415V		440V - 480V		
Voltage		50 Hz		60 Hz		50 Hz		60 Hz		
Frequency		DC		DC		DC		DC		
Brake type		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	2	2	2	2
	Starting torque	Nm	2.2	1.7	2.2	1.8	3.3	2.5	3.3	2.4
	Electric braking torque	Nm		5.6/2.0		5.6/2.0		8/3.5		8/3.5
	Starting current	A	3.5	1.0	3.9	1.1	5.0	1.4	5.3	1.5
	Maximum torque	Nm	2.2	1.8	2.2	1.8	3.6	2.7	3.5	2.6
	Speed at max. torque	RPM	2150	400	2750	550	1620	380	2220	530
	80% of max. torque	Nm	1.7	1.4	1.7	1.4	2.8	2.1	2.7	2.0
	Speed at 80% torque	RPM	2500	570	3080	740	2100	530	2800	680
	Current at 80% torque	A	1.5	0.8	1.5	0.8	2.3	1.3	2.2	1.3
	Inertia	kgm ²	0.0004	0.0004	0.0004	0.0004	0.0006	0.0006	0.0006	0.0006
	Inertia with flywheel	kgm ²								
	Power factor, starting		0.94	0.93	0.91	0.92	0.92	0.93	0.91	0.92
	Weight with fan	kg								
	Weight	kg	5.7	5.7	5.7	5.7	7.8	7.8	7.8	7.8
	No-load current	A	0.9	0.8	0.9	0.8	1.1	1.2	1.1	1.2
	Iron losses	W								
	Stator resistance at 20 °C	Ω	69	280	69	280	50	175	50	175
S3-20%	Speed	RPM	2800	690	3400	810	2760	660	3340	810
	Power	kW	0.3	0.05	0.37	0.07	0.45	0.1	0.55	0.12
	Current	A	1.0	0.8	0.9	0.9	1.3	1.2	1.3	1.2
	Starting burden	kgm ² /h	2		1.4		3		2.1	
	Power factor		0.7	0.77	0.74	0.78	0.83	0.67	0.82	0.80
	Efficiency		0.67	0.12	0.67	0.12	0.67	0.20	0.67	0.20
S3-40%	Speed	RPM	2800	690	3400	810	2760	660	3340	810
	Power	kW	0.3	0.05	0.37	0.07	0.45	0.1	0.55	0.12
	Current	A	1.0	0.8	0.9	0.9	1.3	1.2	1.3	1.2
	Starting burden	kgm ² /h	1.5		1.0		2.5		1.9	
	Power factor		0.7	0.77	0.74	0.78	0.83	0.67	0.82	0.80
	Efficiency		0.67	0.12	0.67	0.12	0.67	0.20	0.67	0.20
S3-60%	Speed	RPM								
	Power	kW								
	Current	A								
	Starting burden	kgm ² /h								
	Power factor									
	Efficiency									
S3-100%	Speed	RPM								
	Power	kW								
	Current	A								
	Starting burden	kgm ² /h								
	Power factor									
	Efficiency									

Duty type	Motor code	MF07X-104		MF07X-104		MF07XA104		MF07XA104		
	Speed control	2-speed		2-speed		2-speed		2-speed		
	Voltage	380V - 415V		440V - 480V		380V - 415V		440V - 480V		
	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	8	8	8	8	8	8	8	8
	Starting torque	Nm	5.8	5.2	5.6	4.8	7.5	5.4	6.9	5.0
	Electric braking torque	Nm		10/9		10/9		11/9		11/9
	Starting current	A	8.0	2.4	8.0	2.3	9.9	3.1	10	3.1
	Maximum torque	Nm	5.9	5.2	5.7	4.8	7.5	5.4	6.9	5.0
	Speed at max. torque	RPM	1700	0	2040	0	0	0	0	0
	80% of max. torque	Nm	4.6	4.1	4.5	3.8	6	4.3	5.5	4
	Speed at 80% torque	RPM	2400	590	2880	710	2360	505	2830	605
	Current at 80% torque	A	3.9	2.3	3.6	2.3	4.9	2.4	4.7	2.4
	Inertia	kgm ²	0.0012	0.0012	0.0012	0.0012	0.0012	0.0012	0.0012	0.0012
	Inertia with flywheel	kgm ²	0.0036	0.0036	0.0036	0.0036	0.0036	0.0036	0.0036	0.0036
	Power factor, starting		0.90	0.80	0.89	0.78	0.89	0.79	0.88	0.76
	Weight with fan	kg								
	Weight with flywheel	kg	13.5	13.5	13.5	13.5	13.5	13.5	13.5	13.5
	No-load current	A	2.2	1.7	1.9	1.7	3.2	2.2	3.0	2.2
	Iron losses	W								
	Stator resistance at 20 °C	Ω	23	75	23	75	19	72	19	72
S3-20%	Speed	RPM	2720	590	3370	750	2730	590	3310	740
	Power	kW	0.75	0.18	0.9	0.2	0.9	0.2	1.1	0.25
	Current	A	2.7	1.9	2.7	1.9	3.5	2.3	3.4	2.3
	Starting burden	kgm ² /h	7		4.9		7.1		5	
	Power factor		0.80	0.67	0.79	0.64	0.74	0.70	0.77	0.63
	Efficiency		0.57	0.24	0.62	0.26	0.59	0.21	0.62	0.25
S3-40%	Speed	RPM	2720	590	3370	750	2730	590	3310	740
	Power	kW	0.75	0.18	0.9	0.2	0.9	0.2	1.1	0.25
	Current	A	2.7	1.9	2.7	1.9	3.5	2.3	3.4	2.3
	Starting burden	kgm ² /h	6.5		4.5		6.6		4.6	
	Power factor		0.80	0.67	0.79	0.64	0.74	0.70	0.77	0.63
	Efficiency		0.57	0.24	0.62	0.26	0.59	0.21	0.62	0.25
S3-60%	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				
S3-100%	Speed	RPM								
	Power	kW								
	Current	A								
	Starting burden	kgm ² /h								
	Power factor									
	Efficiency									

Duty type	Motor code		MF10M-104		MF10M-104	
	Speed control		2-speed		2-speed	
Voltage		380V - 415V		440V - 480V		
Frequency		50 Hz		60 Hz		
Brake type		DC		DC		
		fast	slow	fast	slow	
Synchronous speed	RPM	3000	750	3600	900	
Brake torque	Nm	21	21	21	21	
Starting torque	Nm	10	8	10	8	
Electric braking torque	Nm		33/13		33/13	
Starting current	A	12.8	3.0	13.7	3.3	
Maximum torque	Nm	10.3	8	10.3	8	
Speed at max. torque	RPM	1380	0	1650	0	
80% of max. torque	Nm	8	6.4	8	6.4	
Speed at 80% torque	RPM	2380	570	2850	680	
Current at 80% torque	A	5.5	1.7	5.6	1.7	
Inertia	kgm ²	0.0027	0.0027	0.0027	0.0027	
Inertia with flywheel	kgm ²	0.018	0.018	0.018	0.018	
Power factor, starting		0.83	0.84	0.79	0.81	
Weight with fan	kg					
Weight with flywheel	kg	26	26	26	26	
No-load current	A	1.3	1.2	1.2	1.2	
Iron losses	W					
Stator resistance at 20 °C	Ω	13.5	69	13.5	69	
S3-20%	Speed	RPM	2500	585	3200	750
	Power	kW	1.5	0.35	1.8	0.4
	Current	A	4.6	1.6	3.8	1.6
	Starting burden	kgm ² /h	10		6.9	
	Power factor		0.92	0.77	0.91	0.75
	Efficiency		0.62	0.45	0.68	0.50
S3-40%	Speed	RPM	2700	630	3310	780
	Power	kW	1.3	0.3	1.5	0.35
	Current	A	3.0	1.4	3.0	1.4
	Starting burden	kgm ² /h	8		5.6	
	Power factor		0.89	0.70	0.89	0.68
	Efficiency		0.69	0.47	0.70	0.51
S3-60%	Speed	RPM	2700	630	3310	780
	Power	kW	1.3	0.3	1.5	0.35
	Current	A	3.0	1.4	3.0	1.4
	Starting burden	kgm ² /h	6		4.2	
	Power factor		0.89	0.70	0.89	0.68
	Efficiency		0.69	0.47	0.70	0.51
S3-100%	Speed	RPM	2700	630	3310	780
	Power	kW	1.3	0.3	1.5	0.35
	Current	A	3.0	1.4	3.0	1.4
	Starting burden	kgm ² /h	4		2.8	
	Power factor		0.89	0.70	0.89	0.68
	Efficiency		0.69	0.47	0.70	0.51

6.3 One speed, 3000 RPM (50Hz) and 3600 RPM (60Hz)

Duty type	Motor code		MF06L-100	MF06L-100
	Speed control		1-speed	1-speed
	Voltage		380V - 415V	440V - 480V
	Frequency		50Hz	60Hz
	Brake type		compact	compact
	Synchronous speed	RPM	3000	3600
	Brake torque	Nm	2	2
	Starting torque	Nm	2.1	2.1
	Electric braking torque	Nm		
	Starting current	A	2.5	2.7
	Maximum torque	Nm	1.8	1.8
	Speed at max. torque	RPM	1830	2550
	80% of max. torque	Nm	1.6	1.6
	Speed at 80% torque	RPM	2180	2790
	Current at 80% torque	A	1.4	1.3
	Inertia	kgm ²	0.0007	0.0007
	Inertia with flywheel	kgm ²		
	Power factor, starting		0.79	0.76
	Weight with fan	kg		
	Weight with flywheel	kg	6.8	6.8
	No-load current	A	0.32	0.32
	Iron losses	W		
	Stator resistance at 20 °C	Ω	62	62
S3-20%	Speed	RPM	2570	3150
	Power	kW	0.3	0.37
	Current	A	1.0	1.0
	Starting burden	kgm ² /h	1.9	1.3
	Power factor		0.83	0.83
	Efficiency		0.57	0.65
S3-40%	Speed	RPM	2570	3150
	Power	kW	0.3	0.37
	Current	A	1.0	1.0
	Starting burden	kgm ² /h	1.7	1.2
	Power factor		0.83	0.83
	Efficiency		0.57	0.65

17 Trolley speed tables

7.1 Inverter control(T), Speed range

1.1.17.1.1 Low headroom trolley, Inverter control

Frame	Rope Reeving	Duty		Gear type	Total ratio	Wheel diameter [mm]	Motor type	Pcs	Inverter power	Speed range [m/min] ¹⁾		
										Min	380V-415V Max	460V-480V Max
NB	02		M5 M6	GEK106	34.9	80	MF06MA200	1	DMCS007	10	20	24
NB	02		M5 M6	GEK106	34.9	80	MF06MA100	1	DMCS007	16	32	32
NB	04		M5 M6	GEK106	34.9	80	MF06MA200	1	DMCS007	10	20	24
NB	04		M5 M6	GEK106	34.9	80	MF06MA100	1	DMCS007	16	32	32
NC	A2		M5 M6	GEK106	43.7	100	MF06MA200	1	DMCS007	10	20	24
NC	A2		M5 M6	GEK106	43.7	100	MF06MA100	1	DMCS007	16	32	32
NC	A4		M5 M6	GEK106	43.7	100	MF06MA200	1	DMCS007	10	20	24
NC	A4		M5 M6	GEK106	43.7	100	MF06MA100	1	DMCS007	16	32	32
NC	02	X	M5 M6	GEK106	43.7	100	MF06LA200	1	DMCS007	10	20	24
NC	02	X	M5 M6	GEK106	43.7	100	MF06LA100	1	DMCS007	16	32	32
NC	04		M5 M6	GEK106	43.7	100	MF06LA200	1	DMCS007	10	20	24
NC	04		M5 M6	GEK106	43.7	100	MF06LA100	1	DMCS007	16	32	32
NC	04	X		GEK106	54.8	125	MF06LA200	1	DMCS007	10	20	24
NC	04	X		GEK106	54.8	125	MF06LA100	1	DMCS007	16	32	32
ND	02	X	M5 M6	GEK106	54.8	125	MF06MA200	2	DMCS022	10	20	24
ND	02	X	M5 M6	GEK106	54.8	125	MF06LA100	2	DMCS022	16	32	32
ND	04		M5 M6	GEK106	54.8	125	MF06LA200	2	DMCS022	10	20	24
ND	04		M5 M6	GEK106	54.8	125	MF06LA100	2	DMCS022	16	32	32
ND	04	X		GEK106	54.8	150	MF06LA200	2	DMCS022	12.5	25	30
ND	04	X		GEK106	54.8	150	MF06LA100	2	DMCS022	20	40	40

¹⁾ The maximum speed depends on the line voltage. With higher line voltage greater speeds can be achieved.

The table is calculated with maximum loads for the hoists. With derated loads it may be possible to use smaller inverters. In these cases the inverter selection must be verified with KC Drive or Markman.

1.1.27.1.2 Normal headroom trolley, Inverter control

Frame	Rope Reeving	Duty			Gear type	Total ratio	Wheel diameter [mm]	Motor type	Pcs	Inverter power	Speed range [m/min] ¹⁾		
											Min	380V-415V Max	460V-480V Max
NB	02		M5	M6	GEK106	43.7	100	MF06LA200	1	DMCS007	10	20	24
NB	02		M5	M6	GEK106	43.7	100	MF06LA100	1	DMCS007	16	32	32
NB	04		M5	M6	GEK106	43.7	100	MF06LA200	1	DMCS007	10	20	24
NB	04		M5	M6	GEK106	43.7	100	MF06LA100	1	DMCS007	16	32	32
NC	02		M5	M6	GEK106	43.7	100	MF06LA200	1	DMCS007	10	20	24
NC	02		M5	M6	GEK106	43.7	100	MF06LA100	1	DMCS007	16	32	32
NC	04		M5	M6	GEK106	43.7	100	MF06LA200	1	DMCS007	10	20	24
NC	04		M5	M6	GEK106	43.7	100	MF06LA100	1	DMCS022	16	32	32
NC	06		M5	M6	GEK106	43.7	100	MF06MA200	2	DMCS007	10	20	24
NC	06		M5	M6	GEK106	43.7	100	MF06LA100	2	DMCS022	16	32	32
NC	08		M5	M6	GEK106	43.7	100	MF06LA200	2	DMCS022	10	20	24
NC	08		M5	M6	GEK106	43.7	100	MF06LA100	2	DMCS022	16	32	32
ND	02/22		M5	M6	GEK106	43.7	100	MF06MA200	2	DMCS022	10	20	24
ND	02/22		M5	M6	GEK106	43.7	100	MF06LA100	2	DMCS022	16	32	32
ND	04/24		M5	M6	GEK106	43.7	100	MF06LA200	2	DMCS022	10	20	24
ND	04/24		M5	M6	GEK106	43.7	100	MF06LA100	2	DMCS022	16	32	32
ND	06/26		M5	M6	GEK106	54.8	125	MF06MA200	4	DMCS022	10	20	24
ND	06/26		M5	M6	GEK106	54.8	125	MF06LA100	4	D2M003	16	32	32
ND	08/28		M5	M6	GEK106	54.8	125	MF06MA200	4	DMCS022	10	20	24
ND	08/28		M5	M6	GEK106	54.8	125	MF06LA100	4	D2M003	16	32	32
NE	02/22	M4	M5	M6	GEK106	54.8	125	MF06LA200	2	DMCS022	10	20	25
NE	02/22	M4	M5	M6	GEK106	54.8	125	MF06LA100	2	DMCS022	16	32	32
NE	04	M4	M5	M6	GES320	79.6	180	MF06LA200	3	D2M003	10	20	24
NE	04	M4	M5	M6	GES320	79.6	180	MF06LA100	4	D2M004	16	32	32
NE	24	M4	M5	M6	GEK106	54.8	125	MF06LA200	3	D2M003	10	20	24
NE	24	M4	M5	M6	GEK106	54.8	125	MF06LA100	4	D2M004	16	32	32
NE	06/26	M4	M5	M6	GES320	79.6	180	MF06LA200	3	D2M004	10	20	24
NE	06/26	M4	M5	M6	GES320	79.6	180	MF06LA100	4	D2M005	16	32	32
NE	08/28	M4	M5		GES320	79.6	180	MF06LA200	4	D2M004	10	20	24

¹⁾ The maximum speed depends on the line voltage. With higher line voltage greater speeds can be achieved.

The table is calculated with maximum loads for the hoists. With derated loads it may be possible to use smaller inverters. In these cases the inverter selection must be verified with KC Drive or Markman.

1.1.37.1.3 Double girder trolley, Inverter control

Frame	Rope reeving	Load	End truck	Pcs	Gear	Motor	Inverter	Speed Range [m/min] ¹⁾			Note!
								Min	380V-415V Max	460V-480V Max	
NB	02	1.6t 2m	EC09	1x	GES342	MF06MA200	DMCS007	10	20	24	
NB	02	1.6t 2m	EC09	1x	GES342	MF06MA100	DMCS007	16	32	32	
NB	04	3.2t 2m	EC09	1x	GES342	MF06MA200	DMCS007	10	20	24	
NB	04	3.2t 2m	EC09	1x	GES342	MF06MA100	DMCS007	16	32	32	
NC	02	3.2t 1Am	EC09	1x	GES342	MF06LA200	DMCS007	10	20	24	
NC	02	3.2t 1Am	EC09	1x	GES342	MF06LA100	DMCS007	16	32	32	
NC	04	5t 2m	EC09	1x	GES342	MF06LA200	DMCS007	10	20	24	
NC	04	5t 2m	EC09	1x	GES342	MF06LA100	DMCS007	16	32	32	
NC	04	6.3t 1Am	EC09	1x	GES342	MF06LA200	DMCS007	10	20	24	
NC	04	6.3t 1Am	EC09	1x	GES342	MF06LA100	DMCS022	16	32	32	
NC	06	7.5t 2m	EC11	2x	GES342	MF06MA200	DMCS007	10	20	24	
NC	06	7.5t 2m	EC11	2x	GES342	MF06LA100	DMCS022	20	40	40	
NC	08	10t 1Am	EC11	2x	GES342	MF06MA200	DMCS022	10	20	24	
NC	08	10t 1Am	EC11	2x	GES342	MF06LA100	DMCS022	20	40	40	
ND	02/22	6.3t 1Am	EC11	2x	GES342	MF06MA200	DMCS007	10	20	24	
ND	02/22	6.3t 1Am	EC11	2x	GES342	MF06LA100	DMCS022	20	40	40	
ND	04/24	10t 2m	EC11	2x	GES342	MF06MA200	DMCS022	10	20	24	
ND	04/24	10t 2m	EC11	2x	GES342	MF06LA100	DMCS022	20	40	40	
ND	04	12.5t 1Am	EC11	2x	GES342	MF06LA200	DMCS022	10	20	24	
ND	04	12.5t 1Am	EC11	2x	GES342	MF06LA100	DMCS022	20	40	40	
ND	06/26	15t 2m	EC14	2x	GES342	MF06LA20P	DMCS022	15	32	32	
ND	08/28	20t 1Am	EC14	2x	GES342	MF06LA20P	D2M003	10	32	32	
ND	08/28	20t 1Am	EC20	2x	GES490	MF06LB100	D2M003	10	32	32	Oversized end truck
NE	02/22	10t 1Am	EC14	2x	GES342	MF06LA200	DMCS022	16	32	32	
NE	04/24	20t 1Am	EC14	2x	GES342	MF06LA20P	D2M003	10	25	25	
NE	04/24	20t 1Am	EC20	2x	GES490	MF06LB100	D2M003	10	32	32	Oversized end truck
NE	06/26	30t 1Am	EC20	2x	GES490	MF06LA20P	DMCS022	10	20	24	
NE	06/26	30t 1Am	EC20	2x	GES490	MF06LB100	D2M003	10	32	32	
NE	08/28	40t 1Am	EC20	2x	GES490	MF06LB200	D2M003	10	20	24	
NE	08/28	40t 1Am	EC20	2x	GES490	MF06LB100	D2M004	10	32	32	
NF	22	20t 1Am	EC20	2x	GES490	MF06LA200	DMCS022	10	20	24	
NF	22	20t 1Am	EC20	2x	GES490	MF06LB100	D2M003	10	32	32	
NF	24	40t 1Am	EC20	2x	GES490	MF06LB200	D2M003	10	20	24	
NF	24	40t 1Am	EC20	2x	GES490	MF06LB100	D2M004	10	32	32	
NF	26	60t 1Am	EC25	2x	GES590	MF07XA200	D2M005	10	25	25	
NF	26	60t 1Am	EC25	2x	GES572	MF07XA200	D2M007	10	32	32	
NF	28	80t 1Am	EC25x6	2x	GES590	MF07XA200	D2M007	10	25	25	
NF	28	80t 1Am	EC25x6	2x	GES572	MF07XB200	D2M011	10	32	32	

OPTIONAL SPEED

¹⁾ The maximum speed depends on the line voltage. With higher line voltage greater speeds can be achieved.

The table is calculated with maximum loads for the hoists. With derated loads it may be possible to use smaller inverters. In these cases the inverter selection must be verified with KC Drive or Markman.

1.27.2 Contactor control (P), Speeds

1.2.17.2.1 Low headroom trolley, Contactor control

Frame	Rope Falls	Duty		Gear type	Motor type	Total ratio	Whl. diam. [mm]	Pcs	50 Hz				60 Hz			
									Max speed		Min speed		Max speed		Min speed	
									Trl Spd [m/min]	Sync. Mot. Speed [rpm]	Trl Spd [m/min]	Sync. Mot. Speed [rpm]	Trl Spd [m/min]	Sync. Mot. Speed [rpm]	Trl Spd [m/min]	Sync. Mot. Speed [rpm]
NZ	02		M5 M6	GEK106PT1B0	MF06MA104	34.9	80	1	20	3000	5	750	24	3600	6	900
NZ	04		M5 M6	GEK106PT1B0	MF06MA104	34.9	80	1	20	3000	5	750	24	3600	6	900
NZ	02		M5 M6	GEK106PT1B0	MF06L-100	34.9	80	1	20	3000		*)	24	3600		*)
NZ	04		M5 M6	GEK106PT1B0	MF06L-100	34.9	80	1	20	3000		*)	24	3600		*)
NB	02		M5 M6	GEK106PT1B0	MF06MA104	34.9	80	1	20	3000	5	750	24	3600	6	900
NB	04		M5 M6	GEK106PT1B0	MF06MA104	34.9	80	1	20	3000	5	750	24	3600	6	900
NC	A2		M5 M6	GEK106PT1B0	MF06MA104	34.9	80	1	20	3000	5	750	24	3600	6	900
NC	A4		M5 M6	GEK106PT1B0	MF06MA104	34.9	80	1	20	3000	5	750	24	3600	6	900
NC	02	X	M5 M6	GEK106PT1B0	MF06MA104	43.7	100	1	20	3000	5	750	24	3600	6	900
NC	04	X	M5 M6	GEK106PT1B0	MF06MA104	43.7	100	1	20	3000	5	750	24	3600	6	900
ND	02	X	M5 M6	GEK106PT1B0	MF06MA104	54.8	125	2	20	3000	5	750	24	3600	6	900
ND	04		M5 M6	GEK106PT1B0	MF06MA104	54.8	125	2	20	3000	5	750	24	3600	6	900
ND	04	X		GEK106PT1B0	MF06LA104	54.8	150	2	24	3000	6	750	29	3600	7	900

*) One-speed motor

1.2.27.2.2 Normal headroom trolley, Contactor control

Frame	Rope Falls	Duty		Gear type	Motor type	Total ratio	Whl. diam. [mm]	Pcs	50 Hz				60 Hz			
									Max speed		Min speed		Max speed		Min speed	
									Trl Spd [m/min]	Sync. Mot. Speed [rpm]	Trl Spd [m/min]	Sync. Mot. Speed [rpm]	Trl Spd [m/min]	Sync. Mot. Speed [rpm]	Trl Spd [m/min]	Sync. Mot. Speed [rpm]
NB	02		M5 M6	GEK106PT1B0	MF06LA104	43.7	100	1	20	3000	5	750	24	3600	6	900
NB	04		M5 M6	GEK106PT1B0	MF06LA104	43.7	100	1	20	3000	5	750	24	3600	6	900
NC	02		M5 M6	GEK106PT1B0	MF06LA104	43.7	100	1	20	3000	5	750	24	3600	6	900
NC	04		M5 M6	GEK106PT1B0	MF06LA104	43.7	100	1	20	3000	5	750	24	3600	6	900
NC	06		M5 M6	GEK106PT1B0	MF06MA104	43.7	100	2	20	3000	5	750	24	3600	6	900
NC	08	M4		GEK106PT1B0	MF06MA104	43.7	100	2	20	3000	5	750	24	3600	6	900
ND	02/22		M5 M6	GEK106PT1B0	MF06MA104	43.7	100	2	20	3000	5	750	24	3600	6	900
ND	04/24		M5 M6	GEK106PT1B0	MF06MA104	43.7	100	2	20	3000	5	750	24	3600	6	900
ND	06/26		M5	GEK106PT1B0	MF06MA104	54.8	125	4	20	3000	5	750	24	3600	6	900
ND	08/28	M4		GEK106PT1B0	MF06MA104	54.8	125	4	20	3000	5	750	24	3600	6	900
NE	02/22	M4 M5	M6	GEK106PT1B0	MF06LA104	54.8	125	2	20	3000	5	750	24	3600	6	900
NE	04	M4 M5	M6	GES320PT3B0	MF06LA104	79.6	180	3	20	3000	5	750	24	3600	6	900
NE	24	M4 M5	M6	GEK106PT1B0	MF06LA104	54.8	125	3	20	3000	5	750	24	3600	6	900
NE	06/26	M4 M5	M6	GES320PT3B0	MF06LA104	79.6	180	3	20	3000	5	750	24	3600	6	900
NE	08/28		M5 M6	GES320PT3B0	MF06LA104	79.6	180	4	20	3000	5	750	24	3600	6	900

7.2.3 Double girder trolley, Contactor control

Frame	Rope reeving	Load	End truck	Pcs	Gear	Motor	Speed 50Hz		Speed 60Hz		Note!
							High	Low	High	Low	
NB	02	1.6t 2m	EC09	1x	GES342	MF06MA104	20	5	24	6	
NB	04	3.2t 2m	EC09	1x	GES342	MF06MA104	20	5	24	6	
NC	02	3.2t 1Am	EC09	1x	GES342	MF06MA104	20	5	24	6	
NC	04	6.3t 1Am	EC09	1x	GES342	MF06LA104	20	5	24	6	
NC	06	7.5t 2m	EC11	2x	GES342	MF06MA104	20	5	24	6	
NC	08	10t 1Am	EC11	2x	GES342	MF06MA104	20	5	24	6	
ND	02/22	6.3t 1Am	EC11	2x	GES342	MF06MA104	20	5	24	6	
ND	04/24	12.5t 1Am	EC11	2x	GES342	MF06LA104	20	5	24	6	
ND	06/26	15t 2m	EC20	2x	GES490	MF06LA104	20	5	24	6	End truck bigger than with inverter travelling*
ND	08/28	20t 1Am	EC20	2x	GES490	MF06LA104	20	5	24	6	End truck bigger than with inverter travelling*
NE	02/22	10t 1Am	EC20	2x	GES490	MF06LA104	20	5	24	6	End truck bigger than with inverter travelling*
NE	04/24	20t 1Am	EC20	2x	GES490	MF06LA104	20	5	24	6	End truck bigger than with inverter travelling*
NE	06/26	30t 1Am	EC25	2x	GES5B5	MF07X-104	20	5	24	6	End truck bigger than with inverter travelling*
NE	08/28	40t 1Am	EC25	2x	GES5B5	MF07X-104	20	5	24	6	End truck bigger than with inverter travelling*
NF	22	20t 1Am	EC20	2x	GES490	MF06LA104	20	5	24	6	
NF	24	40t 1Am	EC25	2x	GES5B5	MF07X-104	20	5	24	6	End truck bigger than with inverter travelling*
NF	26	60t 1Am	EC25	2x	GES5B5	MF10M-104	20	5	24	6	
NF	28	80t 1Am	EC25 x6	2x	GES5B5	MF10M-104	20	5	24	6	

* Note: Trolley higher than with inverter travelling, consult factory for further information.

8 Surface treatment

8.1 Standard painting system

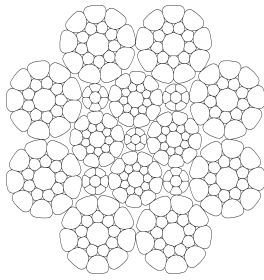
Product group	Wet painting		Alternative: Powder coating	
	Steel parts, Load carrying parts	Steel parts, outfitting parts as covers, Aluminium parts	Steel parts, Load carrying parts	Steel parts, outfitting parts as covers, Aluminium parts
Parts and components	End plates Support beam Support of wedge locking Pulley support Hook block Hookd side plate Trolley	Covers Etc.	End plates Support beam Support of wedge locking Pulley support Hook block Hookd side plate Trolley	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 1x60 µm			
Finishing paint	Epoxy finishing paint 1x60 µm	Epoxy finishing paint 1x80 µm	Epoxy polyester powder coating 1x100 µm	Epoxy polyester powder coating 1x100 µm
Total paint thickness	120 µm	80 µm	100 µm	100 µm

8.2 Color codes

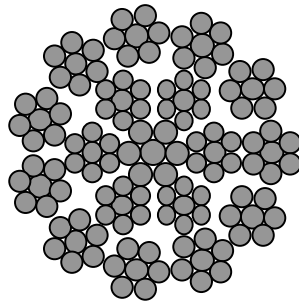
Part	Color code					
	K	V	S	R	M	U
Hoisting unit						
Hoist frame	RAL 7021	RAL 7021	RAL 7021	RAL 7021	RAL 7021	RAL 7021
Frame cover	RAL 9006	DZ 2369	RAL 9006	RAL 1021	RAL 9006	RAL 1021
Hoist motor (frame)	Aluminum	Aluminum	Aluminum	Aluminum	Aluminum	Aluminum
Hoist motor (fan cover)	RAL 7021	RAL 7021	RAL 7021	RAL 7021	RAL 7021	RAL 7021
Hoist gear (frame)	RAL 7021	RAL 7021	RAL 7021	RAL 7021	RAL 7021	RAL 7021
Junction box	RAL 7021	RAL 7021	RAL 7021	RAL 7021	RAL 7021	RAL 7021
Rope reeving						
Hook forging	RAL 7021	RAL 7021	RAL 7021	RAL 7021	RAL 7021	RAL 7021
Cross bar	RAL 7021	RAL 7021	RAL 7021	RAL 7021	RAL 7021	RAL 7021
Hook sheave cover plate	RAL 1021	RAL 1021	RAL 1021	RAL 1021	RAL 1021	RAL 1021
Locking plate	RAL 7021	RAL 7021	RAL 7021	RAL 7021	RAL 7021	RAL 7021
Sheave	RAL 7021	RAL 7021	RAL 7021	RAL 7021	RAL 7021	RAL 7021
Sheave support	RAL 7021	RAL 7021	RAL 7021	RAL 7021	RAL 7021	RAL 7021
Rope guide	RAL 7021	RAL 7021	RAL 7021	RAL 7021	RAL 7021	RAL 7021
Electrical cubicle						
Cubicle bottom	RAL 7021	RAL 7021	RAL 7021	RAL 7021	RAL 7021	RAL 7021
Cubicle cover	RAL 7021	DZ 2369	RAL 9006	RAL 1021	RAL 7021	RAL 1021
Cubicle support (Low headroom)	RAL 7021	RAL 7021	RAL 7021	RAL 7021	RAL 7021	RAL 7021
Back plate (Low headroom)	RAL 7021	RAL 7021	RAL 7021	RAL 7021	RAL 7021	RAL 7021
Counterweight	RAL 7021	RAL 7021	RAL 9006	RAL 7021	RAL 7021	RAL 7021
Trolley						
Trolley, Double girder	RAL 7021	RAL 7021	RAL 7021	RAL 7021	RAL 7021	RAL 7021
Trolley (others)	RAL 7021	RAL 7021	RAL 7021	RAL 7021	RAL 7021	RAL 7021
Travelling machinery						
Travel motor (frame)	Anodised (black)	Anodised (black)	Anodised (black)	Anodised (black)	Anodised (black)	Anodised (black)
Travel gear (frame)	RAL 7021	RAL 7021	RAL 7021	RAL 7021	RAL 7021	RAL 7021
Travel wheel	RAL 7021	RAL 7021	RAL 7021	RAL 7021	RAL 7021	RAL 7021

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

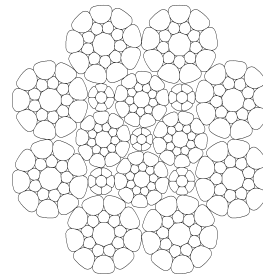
9 Wire rope data



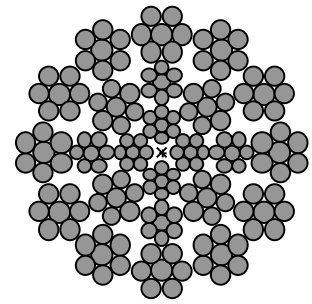
Cross section
Rope type: A



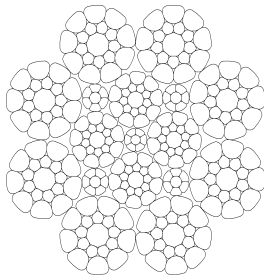
Cross section
Rope type: B



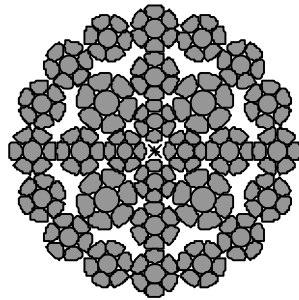
Cross section
Rope type: D and Dr



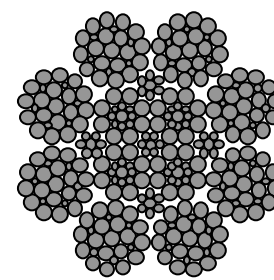
Cross section
Rope type: F and Y



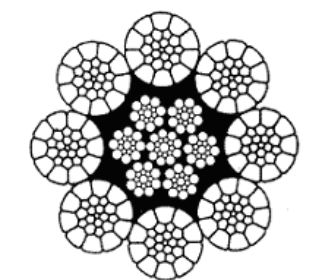
Cross section
Rope type: G and Gr



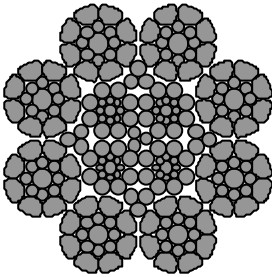
Cross section
Rope type: J, Z and M



Cross section
Rope type: K and Kr



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



Cross section
Rope type: N

Rope	Dia. mm	Minimum Breaking Load kN	Calculated Breaking Load kN	Strand Constr.	Wire Strength N/mm ²	Core	Rope Lay	Comp. Outer Strands	Wire Material	Weight kg/m	Rot. resist.
N	6.2	36.4	45.5	8 x 17	2160	Steel core parallel strands	LO	Yes	Galvanized steel	0.17	No
A	6.4	43.7	51.4	8 x 19	2160	Steel core parallel strands	LO	Yes	Galvanized steel	0.20	No
B	6.7	37.0	47.4	17 x 7	2160	Steel core	LO	No	Galvanized steel	0.18	Yes
D	8.0	68.9	81.1	8 x 19	2160	Steel core parallel strands	LO	Yes	Galvanized steel	0.33	No
Dr	8.0	68.9	81.1	8 x 19	2160	Steel core parallel strands	RO	Yes	Galvanized steel	0.33	No
F	8.0	56.0	66.0	24 x 7	2160	Steel core	LL	No	Galvanized steel	0.27	Yes
Y	8.5	63.5	80.0	24 x 7	2160	Steel core	LL	No	Galvanized steel	0.32	Yes
G	11.0	127.2	149.7	8 x 19	2160	Steel core parallel strands	LO	Yes	Galvanized steel	0.62	No
Gr	11.0	127.2	149.7	8 x 19	2160	Steel core parallel strands	RO	Yes	Galvanized steel	0.62	No
J	11.0	115.0	137.3	28 x 7	2160	Steel core	LO	Yes	Galvanized steel	0.56	Yes
Z	11.5	125.0	150.3	28 x 7	2160	Steel core	LO	Yes	Galvanized steel	0.61	Yes
K	15.0	221.6	257.5	8 x 25	2160	Steel core parallel strands	LO	No	Galvanized steel	1.03	No
Kr	15.0	221.6	257.5	8 x 25	2160	Steel core parallel strands	RO	No	Galvanized steel	1.03	No
M	15.0	218	249.0	28 x 7	2160	Steel core	LO	Yes	Galvanized steel	1.03	Yes
C	6.5	36.7	43.2	8 x 19	1960	Independent wire rope core	LO	Yes	Galvanized steel	0.2	No
E	8.0	65.6	78.1	8 x 19	2160	Independent wire rope core	LO	Yes	Galvanized steel	0.33	No
Er	8.0	65.6	78.1	8 x 19	2160	Independent wire rope core	RO	Yes	Galvanized steel	0.33	No
H	11.0	128	152	8 x 19	2160	Independent wire rope core	LO	Yes	Galvanized steel	0.63	No
Hr	11.0	128	152	8 x 19	2160	Independent wire rope core	RO	Yes	Galvanized steel	0.63	No
L	15.0	229	273	8 x 26	2160	Independent wire rope core	LO	Yes	Galvanized steel	1.14	No
Lr	15.0	229	273	8 x 26	2160	Independent wire rope core	RO	Yes	Galvanized steel	1.14	No

LO = left hand ordinary lay

RO = right hand ordinary lay

LL = left hand Lang's lay

10 Materials

FIGURE	Part	Fabrication method							Material									Material		Standard Finishing			
		1	2	3	4	5	6	7	1	2	3	4	5	6	7	8	9	Description	Standard	1	2	3	4
FA/B	HOIST FRAME																						
A4	Drum						•		•									S355J2	EN10025				
B6	Drum Cover																•	POM					
B3	Drum seal ring																•	POM					
	Sealing																•	Felt PL3					
A7	Rope guide	•					•						•					EN-GJS-500	EN1563	•			
A7	Rope Guide, Z					•											•	POM+S355J2					
B4	Frame rods						•		•									S355J2	EN10025	•			
A1	Frame ends, A,B,C				•				•									S355MC	EN10149	•			
	Frame ends, D,E				•		•		•									S355J2MC	EN10149	•			
	Frame protection cover				•				•									DC01	EN10130	•			
B2	Bearing part, A,B,C,Z																•	POM					
B1	Slide Part																•	PE					
A3	Junction box																•	PPE+PS	Noryl				
	Junction box seal																•	PUR					
	Cable duct																•	PA6					
	Cable duct clamp																•	PA					
FC	HOOK																						
	Hook forging		•				•										•	34CrMo4	EN10083	•			
C1	Hook forging		•				•										•	34CrNiMo6	EN10083	•			
C2	Hook block housing, A,B,C, when 04 rope falls				•								•					S355MC	EN10149	•			
C2	Hook block housing						•		•									S355J2	EN10025	•			
C3	Sheave cover				•				•									DC03	EN10130	•			
FC	ROPE SHEAVE ASSEMBLIES																						
C4	Rope sheaves	•					•									•		EN-GJS-700	EN1563	•			
C5	Rope sheave shafts						•		•									S355J2	EN10025		•		
C6	Suspension beam					•	•		•									S355J2	EN10025	•			
FD	ROPE ANCHORAGE																						
D1	Rope clamps						•		•									S355J2	EN10025			•	
D2	Rope anchorage housing	•														•		EN-GJS-500	EN1563	•			
D3	Rope anchorage wedge	•														•		EN-GJS-500	EN1563	•			
D4	Rope anchorage shaft						•		•									S355J2	EN10025			•	
FD	OVERLOAD DEVICE																						
D5	Beam																•	S355J2	EN10025				
D6	U-Beam																•	S235J2	EN10025				
D7	Bearing						•		•									S355J2	DIN2448				
D8	Fixing plate																•	DC01	EN10131				
D9	Limit switch mechanical																•	PC,PVC					
D10	Limit switch back up																•	fibre reinforced PA, POM					
D9	Strain Gauge, A, B						•											Silicone rubber, PVC, High Strength Low Alloy or Aluminium					
D9	Strain Gauge, C, D, E						•		•									Silicone rubber, PVC, High Strength Low Alloy, Aluminium or S355J2					
FA	HOISTING GEARBOX																						

A2	Gearbox housing, A,B	•																	EN AC-AISI7Mg	EN1706	•				
	Gearbox housing, C,D,E	•																	EN-GJS-500	EN1563	•				
	Gear wheels																		AISI 8620	AISI 8620					
	Shafts inside gearbox																		AISI 8620	AISI 8620					
	O-ring																		NBR						
	Coupling																		S355J2	EN10025					

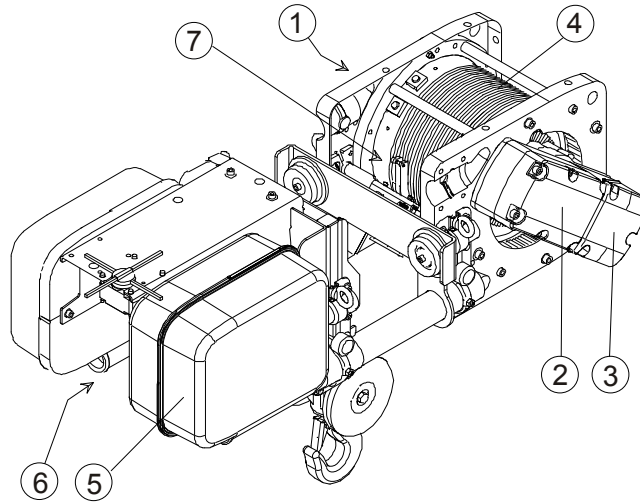


Figure A

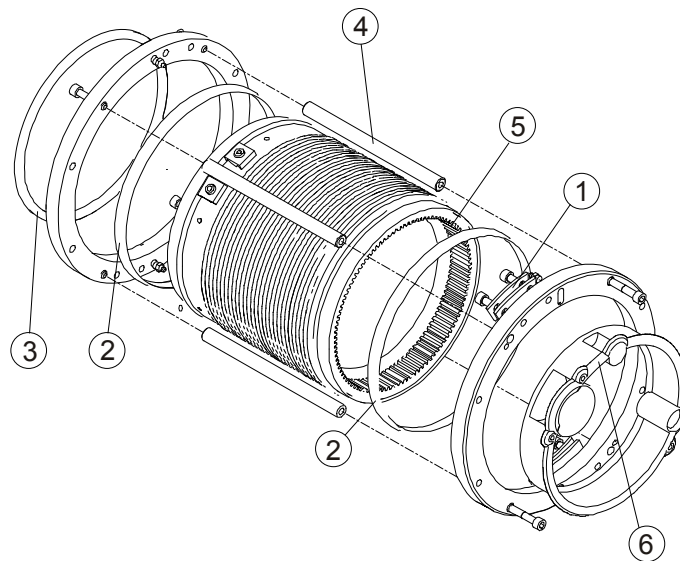


Figure B

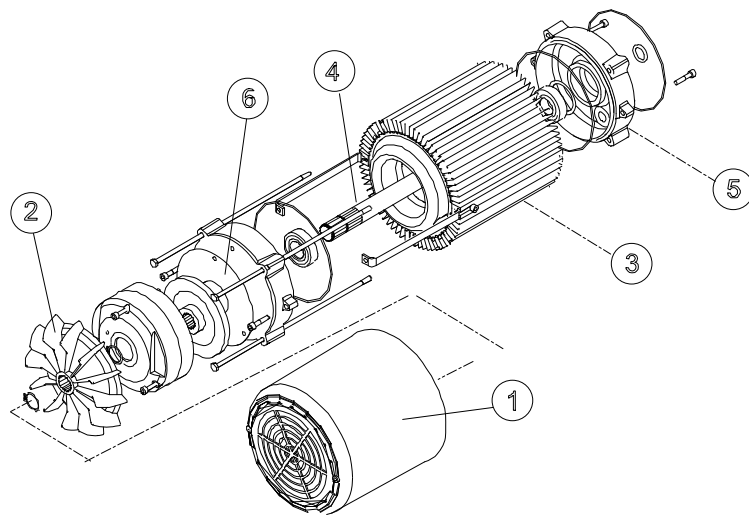


Figure G

FIGURE	Part	Fabrication method							Material									Material		Standard Finishing			
		1	2	3	4	5	6	7	1	2	3	4	5	6	7	8	9	Description	Standard	1	2	3	4
LOW HEADROOM TROLLEY																							
	Frame beams						•	•										S355J2	EN10025	•			
	Frame plates				•	•		•										S355J2	EN10025	•			
	Travel wheel shafts						•	•										S355J2	EN10025				
	Travel wheels	•					•						•					EN-GJS-700	EN1563	•			
	Counter weight						•					•						S235JR	EN10025	•			
	Grease, Plug cover, A,B,C																	PA					
	Tube end																	PA					
	Buffer																	NR					
NORMAL HEADROOM TROLLEY																							
	Trolley plates						•	•										S355J2	EN10025	•			
	Trolley suspension frame						•	•										S355J2	EN10025	•			
	Trolley suspension shaft. b<420							•										S355J2	EN10025		•		
	Trolley suspension shaft, b>420							•										42CrMo4	EN10083		•		
	Travel wheels	•					•											EN-GJS-700	EN1563	•			
	Travel wheel shafts							•										S355J2	EN10025				
	Buffer																	NR					
DOUBLE GIRDER TROLLEY																							
	Trolley wheels	•						•										EN-GJS-700	EN1563	•			
	Trolley wheel shafts (if any)							•										S355J2	EN10025				
	Trolley wheel supports (if any)	•						•										EN-GJS-500	EN1563	•			
	Trolley end carriages							•										S355J2	EN10025	•			
	Intermediate beam							•										S355J2	EN10025	•			
	Buffer																	NR					

LIMIT SWITCHES	
Travelling limit switch / 1 step	Zamak Zn-dope, Al Alloy (ET6060T5), NBR
Travelling limit switch / 2 step	Zamak Zn-dope, Al Alloy (ET6060T5), NBR
Travelling limit switch / Magnet	AlSi12, painted, lacquered
Manual reset extra stop limit switch	PA66 / PA6.66, Delrin 500, NBR,
Light shell anti-collision travelling limit switch	ABS, PMMA, PVC
Light shell anti-collision travelling limit switch	Al, glass
Ultrasonic limit switch	PBT, Nickel-plated Brass, fibre reinforced PUR-EP
Hoisting limit switch (TER)	PA66 25%, AISI 303, POM Delrin 500, PC Lexan

11 Hook

11.1 Hook block dimensions

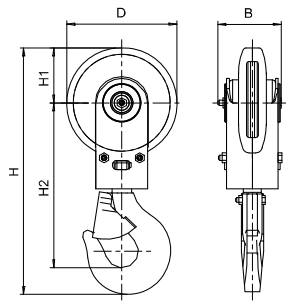


Figure 1

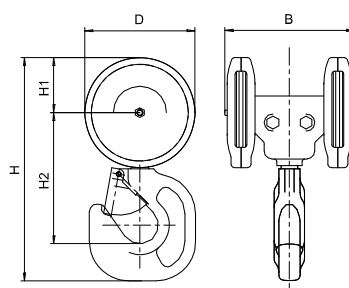


Figure 2

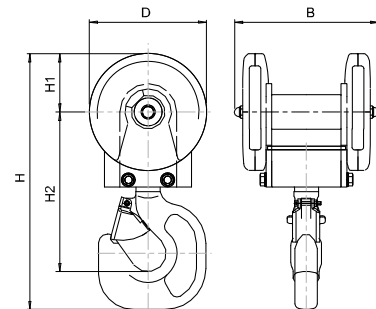


Figure 3

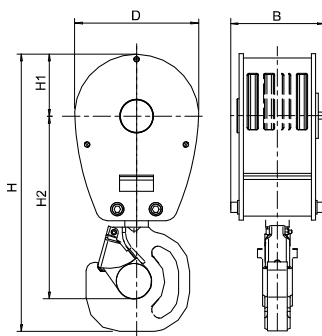


Figure 4

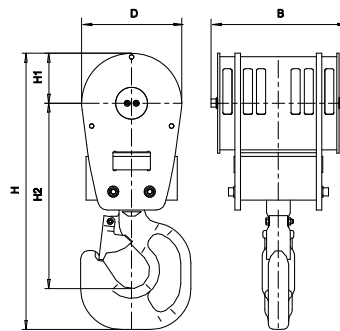


Figure 5

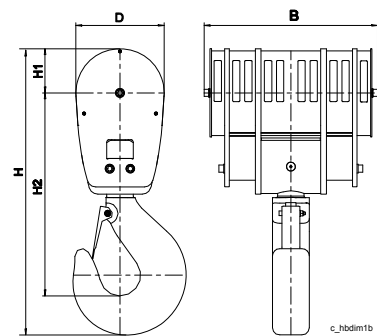


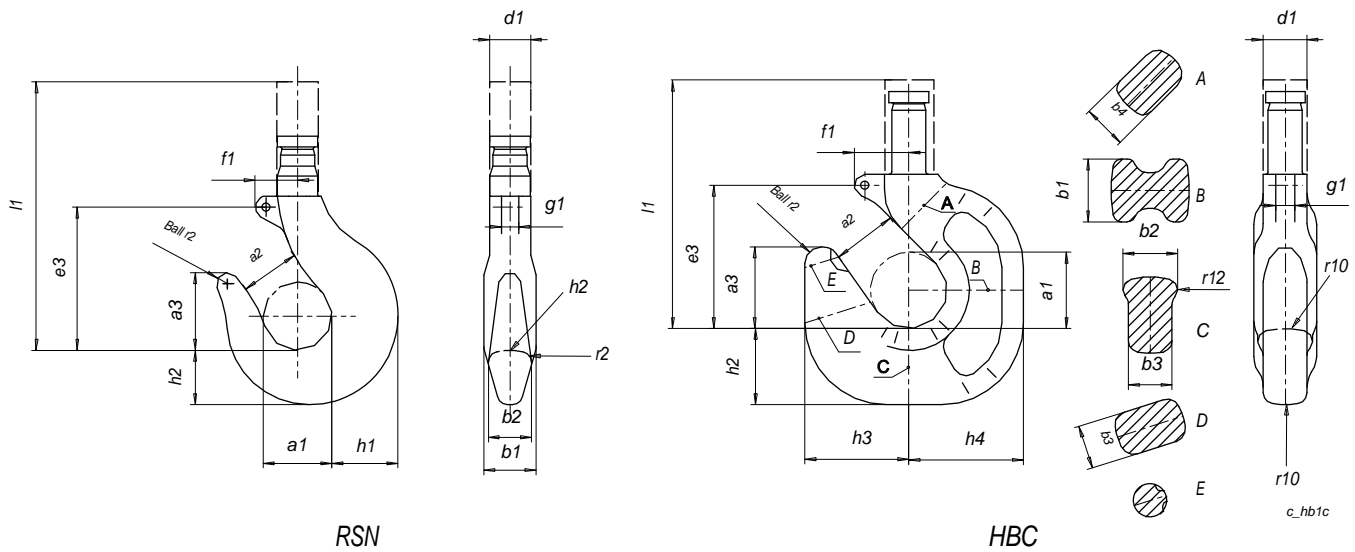
Figure 6

c_hbdm1b

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	
NZ	02		M5		RSN1 V	1	385	84	261	168	108	9.3
NZ	04		M5		RSN1.6 V	3	391	84	258	168	202	16.2
NB	02		M5	M6	RSN 1 V	1	385	84	261	168	108	9.3
NB	04		M5	M6	HBC 1.6 V	2	337	84	198	168	221	13
NC	02	X (M4)	M5	M6	RSN 1 V	1	425	102	282	204	118	14
NC	04		M5	M6	HBC 2.5 V	2	426	102	259	204	270	22
NC	04	X (M4)			HBC 2.5 V	3	443	102	276	204	241	31.5
NC	06		M5	M6	HBC 2.5 V	4	499	110	324	220	165	37
NC	08	M4	M5		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	148	31
ND	04		M5	M6	HBC 5 V	2	548	142	316	283	376	46.5
ND	04	X (M4)			HBC 5 V	3	604	142	372	283	341	77.5
ND	06		M5	M6	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 5 V	5	608	110	408	220	220	67
ND	26		M5	M6	RSN 6 V	5	644	110	448	220	286	80
ND	28	M4	M5		RSN 6 V	5	644	110	448	220	344	88
NE	02	M4	M5	M6	HBC 5 V	4	788	198	500	395	226	95
NE	04	M4	M5	M6	HBC 5 V	4	788	198	500	395	226	107
NE	06	M4	M5	M6	RSN10 T	4	930	198	625	395	259	182
NE	08	M4	M5		RSN 16 T	5	1067	198	735	395	289	259
NE	22	M4	M5	M6	HBC 5 V	4	687	150	447	300	224	90
NE	24	M4	M5	M6	HBC 5 V	4	717	170	457	340	271	125
NE	26	M4	M5	M6	RSN10 T	5	862	170	585	340	405	240
NE	28	M4	M5		RSN 16 T	6	999	170	695	300	487	306
NF	22	M4	M5	M6	HBC 5 V	4	788	198	500	395	219	107
NF	24	M4	M5	M6	RSN 16 T	5	1114	228	753	455	335	309
NF	26	M4	M5	M6	RSN 20 T	5	1201	228	822	455	487	485

NF	28	M4	M5		RSN 25 T	6	1285	228	886	455	579	587
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11.2 Hook forging dimensions

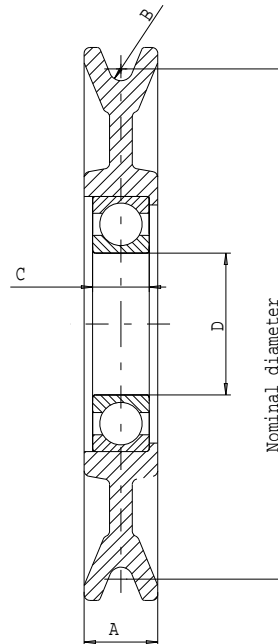


	RSN										HBC		
	RSN 1	RSN 1.6	RSN 2.5	RSN 4	RSN 5	RSN 6	RSN 10	RSN 16	RSN 20	RSN 25	HBC 1.6	HBC 2.5	HBC 5
a ₁	50+3	56+3	63+3	71+4	80+4	90+5	112+6	140+6	160+8	180+8	56+3	63+3	80+3
a ₂	40+3	45+3	50+3	56+4	63+4	71+5	90+6	112+6	125+8	140+8	45+3	51+3	63+3
a ₃	57+3	64+3	72+3	80+4	90+4	101+5	127+6	160+6	180+8	202+8	60+3	65+3	84+3
b ₁	38+3	45+3	53+3	63+4	71+4	80+5	100+6	125+6	140+8	160+8	46+3	52+3	75+3
b ₂	32+3	38+3	45+3	53+4	60+4	67+5	85+6	106+6	118+8	132+8	40+3	44+3	64+3
b ₃	-	-	-	-	-	-	-	-	-	-	32+3	37+3	59+3
b ₄	-	-	-	-	-	-	-	-	-	-	32+3	37+3	45+2
d ₁	30+3	36+3	42+3	48+4	53+4	60+5	75+6	95+6	106+8	118+8	38+3	44+3	55+3
e ₃	105+3	118+3	132+3	148+4	165+4	185+5	221+6	280+6	330+8	360+8	105+3	118+3	148+3
f ₁	31+1	35+1	40+1	45+2	51+2	57+2	46+3	58+3	68+3	74+3	40+1	45+2	56+2
g ₁	12.5+1	14+1	16+1	16+2	18+2	18+2	23+3	33+3	33+3	38+3	14+1	16+1	18+2
h ₁	48+3	56+3	67+3	80+4	90+4	100+5	125+6	160+6	180+8	200+8	-	-	-
h ₂	40+3	48+3	58+3	67+4	75+4	85+5	106+6	132+6	150+8	170+8	56+3	65+3	90+4
h ₃	-	-	-	-	-	-	-	-	-	-	76+3	85+3	112+4
h ₄	-	-	-	-	-	-	-	-	-	-	84+3	100+3	130+4
l ₁	197+3	224+3	253+3	285+4	318+4	380+5	452+6	582+6	653+8	724+8	199+3	260+3	300+4
r ₂	50+3	56+3	63+3	71+4	80+4	90+5	112+6	140+6	160+8	180+8	56+3	63+3	80+4
r ₁₀											56+3	65+3	80+3
r ₁₂											8	8	10
weight (forging)	3.2 kg	4.5 kg	6.3 kg	8.8 kg	12.3 kg	17.1 kg	34 kg	66 kg	95 kg	136 kg	5.1 kg	8 kg	15 kg

Note: Safety latch on HBC forging decreases dimension a₂ about 5 mm and about 15mm on RSN forging.
 Note: The '+ number' after the nominal dimension indicates the tolerance. For example 160+6 means that the actual dimension is between 160 mm 166 mm.

	Hook forging standard	
	RSN	HBC
Dimension standard	DIN 15401	DIN 15401 when applicable
Material standard	DIN 15400	DIN 15400

12 Drum and rope sheave diameters



Rope sheave diameters	Rope diameter	Duty class	A	B	C	D
(nominal, mm)	(nominal, mm)	FEM / ISO	(mm)	(mm)	(mm)	(mm)
146	6.4	3m / ISO M6	22/22	3.3	18	40
180	8	3m / ISO M6	26/26	4.2	20	50
248	11	3m / ISO M6	32/38	5.8	23	65
288 ⁽¹⁾	11	4m / ISO M7	32/48	5.8	33	65
338	15	3m / ISO M6	40/46	8	28	85
398 ⁽¹⁾	15	4m / ISO M7	40/59	8	41	85

¹⁾ Standard as center wheels on true-vertical lift hooks

Frame size code	Rope diameter (mm)	Reeving	Rope drum diameter (nominal, mm)	Rope drum pitch (mm)	Rope sheave diameter (nominal, mm)	Number of rope clamps on drum
NZ	6.2	Standard	243	7.0	146	2
NB	6.4	Standard	303	7.2	146	2
NC	8	Standard	355	9.1	180	3
ND	11	Standard	406	12.5	248	4
ND	8	True vertical	406	9.1	180	2x3
NE	15	Standard	608	17.1	338	6
NE	11	True vertical	608	12.5	248 and 288	2x4
NF	15	True vertical	608	17.1	338 and 398	2x6