



MM FORST
TECHNIK



SYNCRO 45

The latest generation of cable yarders
for economical timber harvesting

SYNCRO 45

Innovation from tradition

Our cable yarders were originally developed for our own forestry business due to the dissatisfaction with the available solutions and the requirement for high work safety, productivity and value retention. To this day, this motivates us to continue to drive forward innovations together with our customers. The latest are the SYNCRO 45 cable yarder and the MM-SHERPA UE universal carriage.

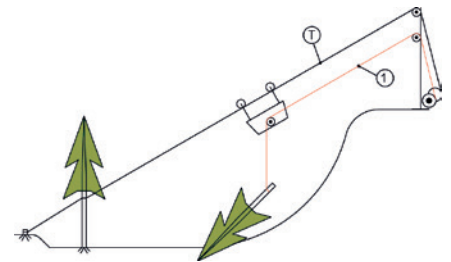


Criteria for high profitability

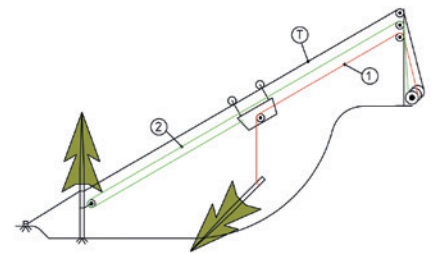
- **Productivity**
 - Very high carriage speed when traveling empty and loaded
 - High pulling power even when the cable drum is full
 - High pulling power
- **Flexibility**
 - Wide range of use
 - High payload (weak to strong wood)
 - Suitable for all modes of operation (2-/ 3-cable, uphill, downhill and flat terrain)
 - For long cable corridors and additional lengths
- **Machine availability**
 - Low downtime
 - Low operating costs
 - Low fuel consumption due to the high energy efficiency
 - Low ongoing maintenance
- **Length of life**
 - Long length of life with regular maintenance
- **High resale value**
 - High resale value for used machines
- **Safety**
 - High safety standard for the operating team and the machine

Cable systems

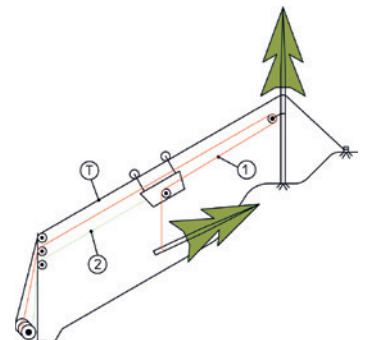
2-cable uphill



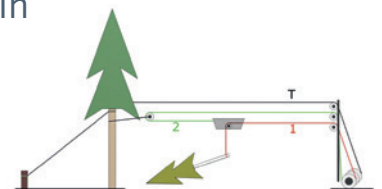
3-cable uphill



3-cable downhill



3-cable flat terrain



THE SYNCRO-PRINCIPLE



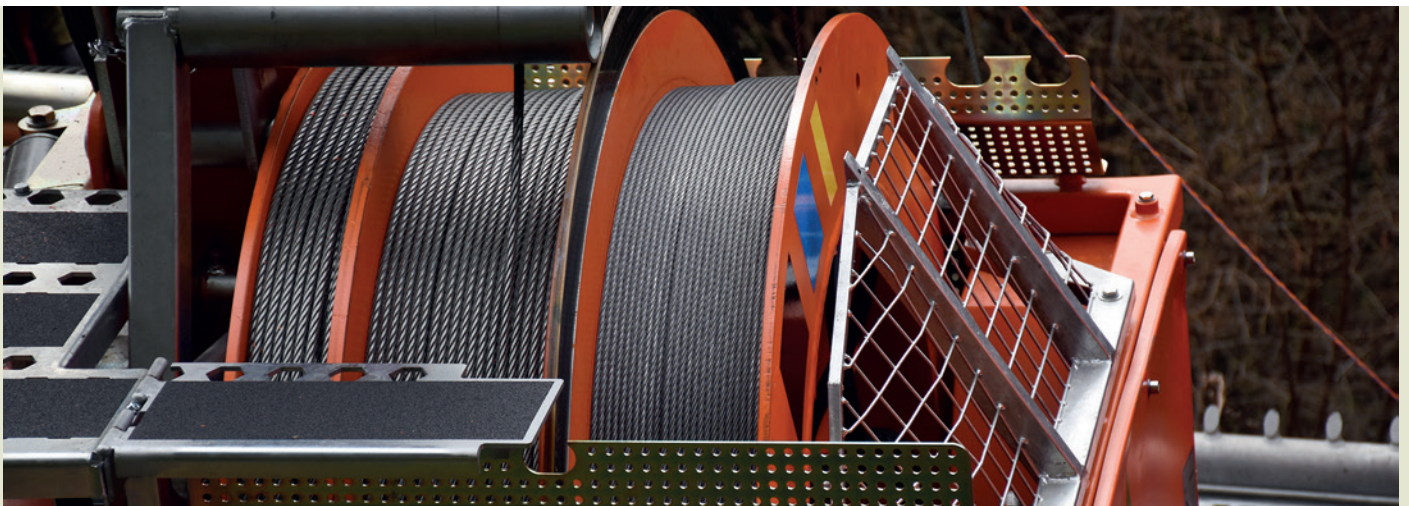
Functionality

Conventional winches for the pull and return rope are driven separately. The respective winding winch "pulls" the respective unwinding winch "brakes" to keep the rope system tight and therefore stable.

With the **SYNCRO winch**, two coaxially mounted large cable drums, which are driven by a common hydraulic motor, form a common winch for the towing and return cable. The working ropes are wound up on the drums in opposite directions. As a result, when the drums rotate together, one rope is wound up while the other is unwound. Another hydraulic motor, which connects the two drums and pretensions them against each other, ensures that the working ropes are pretensioned.

Advantages of the SYNCRO winch over conventional systems:

- **Unbraked traction independent of the preload**
- **No loss of braking due to the restraining cable**
- **High energy efficiency**
- **Smooth running and cable speed thanks to the very well pretensioned cable system**
- **Work that is gentle on the rope thanks to the large diameter**



SYNCRO BOOST SYSTEM

The two hydraulic motors can be coupled when pulling the load to the carriage and during the load travel to the cable yarder (permanent in 2-cable operation, briefly in 3-cable operation). This increases the maximum tractive effort, the maximum tractive power and thus also the maximum speed when loaded by up to 50%.

Advantages SYNCRO BOOST SYSTEM:

- **Extension of the area of application in strong timber and windthrow processing**
- **Increase in productivity (load travel speed and payload)**
- **Increased safety through controlled tractive force amplification**

MOUNTAIN HARVESTER

Universal carriage MM-SHERPA UE

- For every route, length and incline uphill and downhill
- Electrical slack pulling in 2-cable operation
- Slack pulling for cable 2 in 3-cable operation
- Low weight
- Robust construction
- Excellent running

Hydraulic system

- Design for simultaneous cable car, crane and harvester head operation
- Filter concept with ultra-fine filtration for a long service life of the hydraulic components and the hydraulic oil

Controls

- Automatic distance
- Wide range of remote options
- Wide range of remote systems
- Robust constructions

Skyline winch

- to 800 m cable length
- to 120 kN basic tension
- to 150 kN max. tension

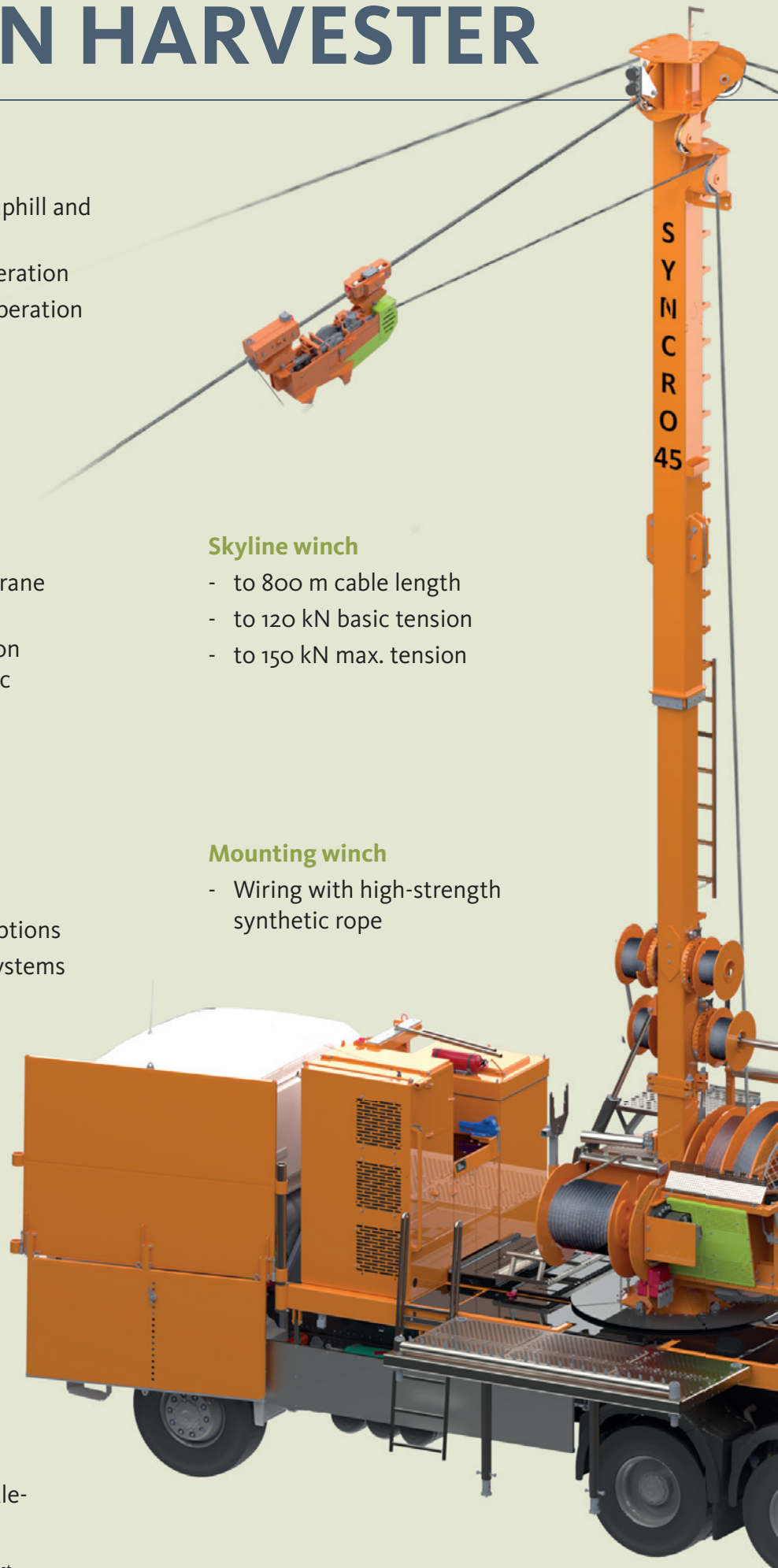
Mounting winch

- Wiring with high-strength synthetic rope

OFF ROAD CARRIER VEHICLE

- Optionally mounted on a 3-axle- or a 4-axle truck (MAN TGS*)

* other manufacturers also possible on customer request





Tower

- 12 m telescopic tower
- Alternative lowered operating height
- Tower tilt up 12° all sides
- Swivel range up to 360°
- Flexible supported tower

SYNCRO-winch with SYNCRO BOOST SYSTEM

- to 45 kN average pulling force, 140 kW pulling power, up to max. 10 m/s rope speed
- to 1,800 m rope length
- excellent synchronization of the working ropes
- high energy efficiency
- constantly visibly rope drums

Guy line winches

- up to large length a diameter

Processorcrane PALFINGER S280L94

- Large lifting force & range
(up to 1.000 kg at 9.4m range added to the harvester head)
- Working with loader and processor is possible without lifted tower!

Cabin

- Safety distance to the rope line
- Front- and side door
- Large inner height
- Air conditioner (optionally)

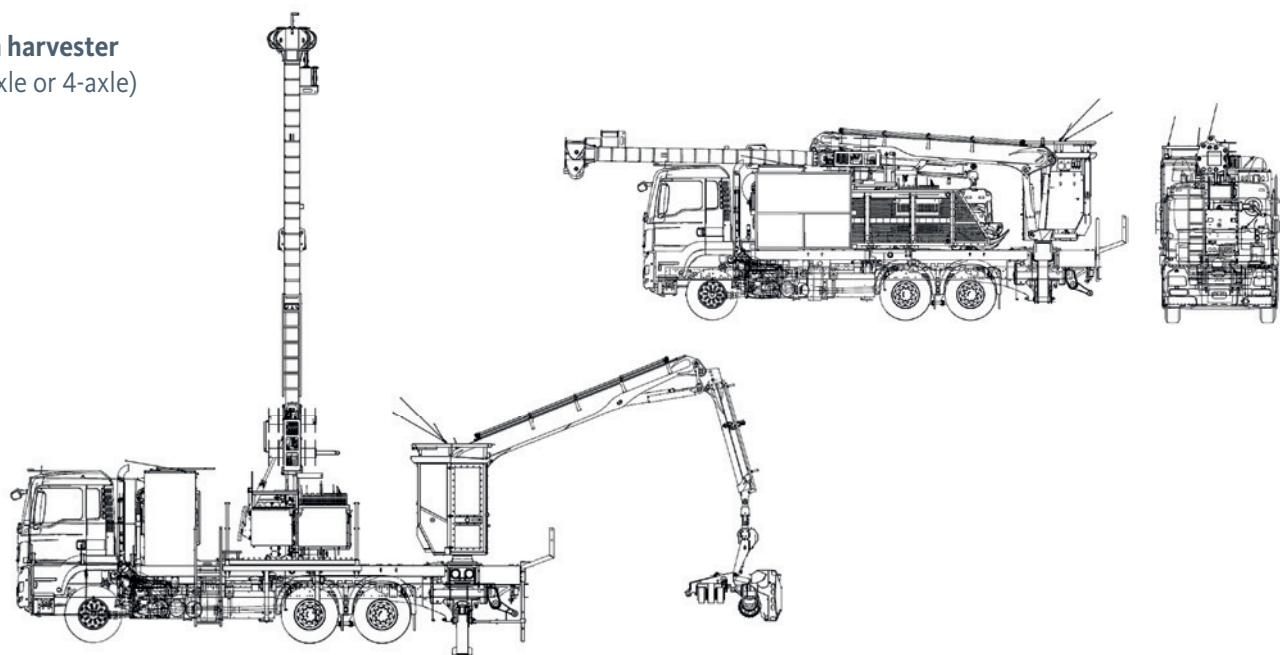
Harvester head

- According to customer requirements



DATA SHEETS

Mountain harvester (Truck 3-axle or 4-axle)



Cable yarders

		WANDERFALKE 3to	SYNCROFALKE 3to	SYNCRO 45	SYNCROFALKE 4to	SYNCRO 55
Tower						
Telescope tower high (Truck mounted)	m	11.5	11.5	12	12	12
Folding tower high (mounted on trailer or crawler)	m	11	11	12.3	12.3	12.3
Skyline winch						
max. Basic tension skyline	kN	70	85	120	120	120
max. working tension	kN	98	120	150	150	180
diameter	mm	(16)/18	18.5/20	(18.5)/20.5/22	(18.5)/20.5/22	(20.5)/22.5
max. length	m	700/600	750/700	900/800/700	1200/1100/950	1100/950
Anchorwinch						
Diameter steel cable	mm	16–18	18–20	20–22	20–22	20–24
Diameter synthetic ropes	mm	18–20	20–22	22–26	22–26	22–26
max. length	m	85 (16mm)	70 (18mm)	70 (26mm)	70 (26mm)	70 (26mm)
Winches for mainline & haul-back line						
Working principle ¹⁾		conventional	SYNCRO	SYNCRO	SYNCRO	SYNCRO
max. traction cable 1	kN	23–34	26–34	38–50	36–50	48–62
max. pulling power	kW	90	120	180 (120) ²⁾	180	240 (180) ²⁾
max. speed	m/s	7,5	10	10	10	10
cable 1						
Diameter	mm	10	11	12	12	14
max. length	m	1200	1800	1900	1900	1900
cable 2						
diameter	mm	7	8	8 (10)	10	10
max. length	m	1200	1800	1900	1900	1900
Universal carriage: MM-SHERPA		U3 / UE3	U3 / UE 3 / UE 4L / UH 4L	U 4L / UE 4L / UH 4L	U 4L / UE 4L / UH 4L	U 4L / UE 4L / UH 4L

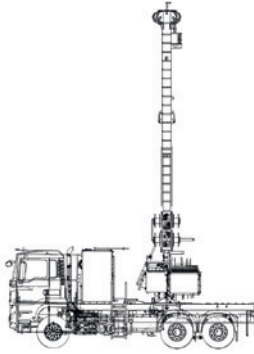
1) No reduction of pulling force & power by the force of the haul back line working with the SYNCRO-principle with 3 lines

2) Increased pulling power using the SYNCRO BOOST SYSTEM working with 2 lines uphill

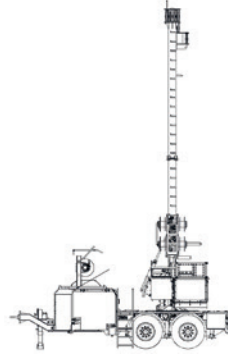
TYPES OF MACHINES



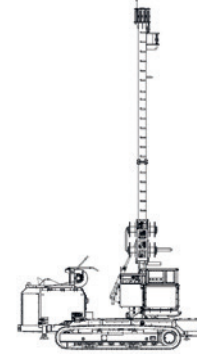
Yarder on truck



... on trailer



... on crawler



Types of machines

Mountain harvester		WF 3to K	SF 3to K	SY 45 K	SF 4to K	SY 55 K
Telescope tower height	m	11.5	11.5	12	12	12
Weight ¹⁾	kg	30000	32000	32000	36500	37500
Transport dimensions (LxWxH)	m	11.1 x 2.55 x 4	11.1 x 2.55 x 4	11.8 x 2.55 x 4	11.3 x 2.55 x 4	11.3 x 2.55 x 4
Crane: Palfinger S280L94						
Reach	m	9.4	9.4	9.4	9.4	9.4
Lifting moment	kNm	229	229	229	229	229
Swivel moment	kNm	49.2	49.2	49.2	49.2	49.2
max. lifting load at ma. range ²⁾	kg	1000	1000	1000	1000	1000
Harvester head: by request of the customer ³⁾						
Truck: Standard Truck: MAN TGS ⁴⁾						
axles		6x4 / 6x6	6x4 / 6x6	6x4 / 6x6 / 8x6 / 8x8	8x6 / 8x8	8x6 / 8x8
Engine power	PS/kW	470 / 346	470 / 346	470 / 346	470 / 346	470 / 346
Yarder on TRUCK						
Telescope tower height	m	11.5	11.5	12	12	12
Weight ¹⁾	kg	21500	23500	25000	27000	28000
Transport dimensions (LxWxH)	m	9.5 x 2.55 x 4	9.5 x 2.55 x 4	10 x 2.55 x 4	10 x 2.55 x 4	10 x 2.55 x 4
Truck: Standard Truck: MAN TGS ⁴⁾						
axles		6x4 / 6x6	6x4 / 6x6	6x4 / 6x6	6x4 / 6x6	6x4 / 6x6
Engine power	PS/kW	430 / 316	430 / 316	430 / 316	430 / 316	430 / 316
Yarder on trailer						
Telescope tower height	m	11	11	12.3	12.3	12.3
Weight ¹⁾	kg	13000	15000	16500	18500	19500
Transport dimensions (LxWxH)	m	7.15 x 2.5 x 3.7	7.15 x 2.5 x 3.7	7.15 x 2.5 x 3.7	7.15 x 2.5 x 3.7	7.15 x 2.5 x 3.7
Engine power	PS/kW	190 / 140	190 / 140	278 / 205	278 / 205	278 / 205
Chassis		2-axle tandem	2-axle tandem	2-axle tandem	2-axle tandem	2-axle tandem
yarder on crawler						
Telescope tower height	m	11	11	12.3	12.3	12.3
Weight ¹⁾	kg	15500	17500	19000	21000	22000
Transport dimensions (LxWxH)	m	5.9 x 2.45 x 3.1	5.9 x 2.45 x 3.1	6.0 x 2.45 x 3.1	6.0 x 2.45 x 3.1	6.0 x 2.45 x 3.1
Engine power	PS/kW	190 / 140	190 / 140	278 / 205	278 / 205	278 / 205
Chassis		crawler 500mm	crawler 500mm	crawler 500mm	crawler 500mm	crawler 500mm

1) depends on the specifications of the machine

2) Max. lifting load at maximum horizontal range additional to the weight of the harvester head (app. 1,500 kg)

3) Separate technical calculation needed

4) on customers request alternative truck possible

Universal carriage MM-SHERPA UE



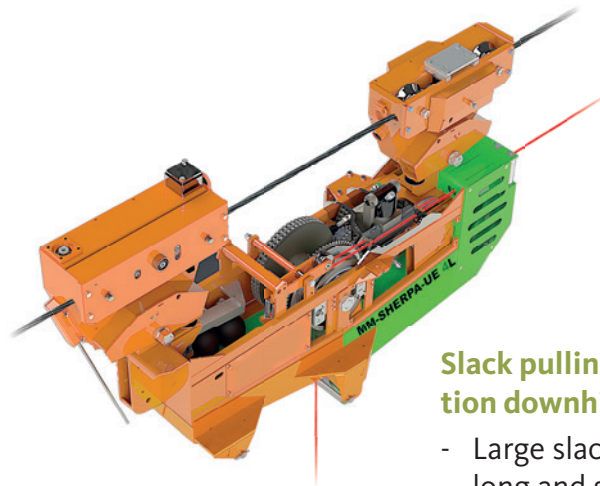
Low weight

- reduces fuel consumption

Robust design

Electric slack pulling in 2-cable system uphill

- Any spooling length
- 2 m/s spooling speed
- Charging the battery when moving in



Very smooth running on the skyline

High traction

- Also by pulling from far away from lateral position

Slack pulling by cable 2 in 3-cable operation downhill, uphill and in flat terrain

- Large slack pulling force & speed also on long and steep lines
- Long spooling length

Technical specifications

MM-carriages

		MM-SHERPA						MM-PRISYS
		BA 1,5	U 3	U 4L	UE 3	UE 4L	UH 4L	H 3
Payload	kg	1500	3500	4700	3500	4700	4700	3000
Skyline Ø	mm	14–20	14–20	18–26	14–20	18–26	18–26	18–24
Weight	kg	190	460	540	530	590	720	580
Mainline Ø	mm	6–12	8,5–14	8,5–14	8,5–14	8,5–14	8,5–14	10–12
max. tilt angle skyline	°	75°	75°	75°	75°	75°	75°	75°
max. tilt angle laterally	°	90°	90°	90°	90°	90°	90°	90°
2-cable operation		yes	no	no	yes	yes	yes	yes
Slack pulling		manually			electric	electric	hydraulic	hydraulic
max. slack pulling length	m	any			any	any	100 / 80	80
max. slack pulling speed	m/s				2	2	6 ...*	6 ... *
max. slack pulling force	kN				3,5	3,5	1,6 / 2	1,6
3-cable operation		no	yes	yes	yes	yes	yes	no
Slack pulling type			Slack pulling performed by cable 2	Slack pulling performed by cable 2	Slack pulling performed by cable 2	Slack pulling performed by cable 2	Slack pulling performed by cable 2	
max. slack pulling length								
Ø 7mm	m		150	220	110	220	220	
Ø 8mm	m		110	160	80	160	160	
Ø 10mm	m		75	110	55	110	110	
Ø 12mm	m		50	80	40	80	80	
max. slack pulling speed*	m/s		4	4	4	4	4	
max. slack pulling force *	kN		15	15	15	15	15	

* ... depends on the cable yarder

We reserve the right to make technical changes during current development. E2018



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