technical sheet	SECALT building maintenance units (BMU) MARS models Ma115, Ma213, Ma215 and Ma318	ref.: T-644 rev. no.: 3 date: 11/2001 page: 1/7

1. DESCRIPTION

The MARS model Building Maintenance Unit (BMU) is a simple and economic system for all cleaning and maintenance access on buildings and structures. The cradle is designed to take **two people** together with their tools and cleaning materials, up to **a maximum working height of 60 m.**

The system consists of:
– a mobile traversing trolley with a fixed or rotating spreader bar on a single jib, housing also the lifting mechanism and the controls,
– an aluminium cradle suspended from the trolley by galvanised steel wire ropes.

A motorised TIRAK hoist is used for lifting and lowering the cradle, manufactured by the TRACTEL Group and specially designed for SECALT building maintenance units.

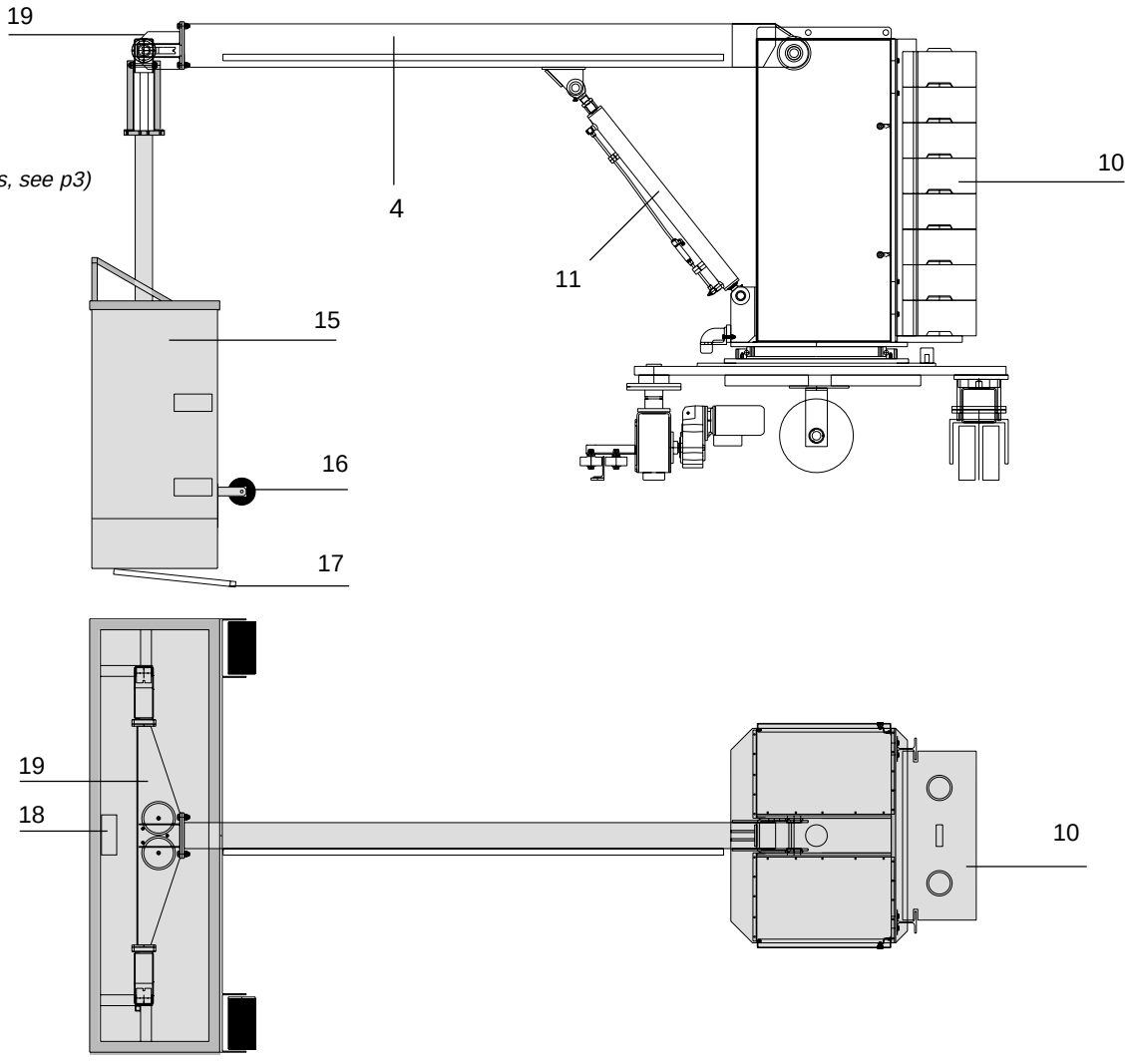
Access of personnel to the cradle is totally safe, with the cradle positioned either at the front the chassis (model Ma115) or on the roof next to the trolley (models Ma213, Ma215, Ma218 and Ma318).

All the operations are powered :
- lifting and lowering of the cradle
- angle of the jib
- traversing of the trolley
- slewing of the turret
- slewing of the spreader bar.

The MARS machine conforms to EU Directives and is manufactured in accordance with ISO 9001.

TÜV CERT DIN EN ISO 9001:2000 Certificat : 01 100 6535

Fig. 1
(references, see p3)



2. STANDARD MODELS: 42 models

model	spreader bar*	max. height m	jib length m											track		fixing distance mm		
			3	3,5	4	4,5	5	5,5	6	6,5	7	7,5	8	8,5	concrete	rails	1300	1500	1800
Ma 115 A	Fixed	60	X	X	X	X									X			X	
Ma 115 B	Fixed	60	X	X	X	X										X		X	
Ma 213 A	Fixed	60	X	X	X	X	X								X		X		
	Rotating	60	X	X	X	X									X		X		
Ma 213 B	Fixed	60	X	X	X	X	X	X								X	X		
	Rotating	60	X	X	X	X	X									X	X		
Ma 215 A	Fixed	60						X							X			X	
	Rotating	60					X								X			X	
Ma 215 B	Fixed	60							X							X		X	
	Rotating	60						X								X		X	
Ma 218 B	Fixed	60								X	X					X			X
	Rotating	60							X	X						X			X
Ma 318 B	Fixed	60										X	X	X		X			X
	Rotating	60									X	X	X			X			X

2. 1. Machine identification

Ma = MARS machine with 2 m cradle for 2 people

Ma | **1** | **15** | **A**

A = concrete track
B = rails

1 = machine **without** slewing ring
2 = machine **with** slewing ring
3 = machine **with** slewing ring **heavy duty**

15 = wheel span 1500 mm
13 = wheel span 1300 mm
18 = wheel span 1800 mm

3. TECHNICAL SPECIFICATIONS

Trolley

traversing by brake motor		0.25 kW 50Hz
traversing speed		8 m/min.
lifting hoist	type	TIRAK XD-312P
nominal capacity	daN	350
safety device	type	Integrated
power supply cable		4G-2.5
useful length	m	20

Cradle

dimensions	mm	2000x600
nominal load	daN	CE version = 240 kg
= max. number of persons		2
deadweight	±kg	100
lifting / lowering speed	m/mn	8.5
control		via pendant cable
suspension wire rope	type	Ø 6.5 mm, 5 strands
number		1 + 1
diameter	mm	6.5
guaranted breaking load	daN	2840

4. DESCRIPTION OF THE EQUIPMENT

4.1 Main components

1. Turret
2. Powered slewing ring
3. Lower trolley/Central beam
4. Jib
5. Powered wheel box
6. Geared motor
7. Double swivel castors
8. Guide wheel
9. Reel for power supply cable
10. Counterweight
11. Hydraulic ram
12. TIRAK XD-312P hoist with double wire rope reeler
13. Hydraulic power pack
14. Wire rope
15. Cradle
16. Support roller
17. Anti-collision bar
18. Cradle control box
19. Fixed spreader bar
20. End stop

4.2 Traversing trolley

The lower trolley (3) is in ST37 steel, hot galvanised at 500 gr/m^2. On the 213, 215 and 318 models the trolley (3) and the turret (1) are connected by a powered slewing ring (2).

The trolley has 4 wheels, 2 front wheels are powered and the two rear wheels are mounted on an articulated beam. A polyurethane layer gives smooth and silent traversing and a good grip.

The trolley is guided along the track by guide wheels (8) attached to the wheel box when "L" shaped guide rails (Fig. 2) or rails (Fig. 3) are used.

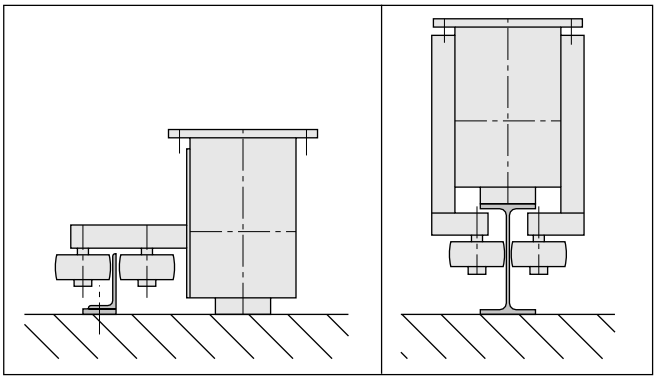


Fig. 2 - Traversing on concrete track, with "L" shaped guide rail

Fig. 3 - Traversing on rails

4.3 Lifting mechanism

The lifting mechanism is the TIRAK electric traction hoist, model XD-312P, especially designed for man-riding. The operation of the TIRAK is based on the principle of pressure pulleys. The gripping of the wire rope in the pulley is achieved by a set of rollers, activated by a compression spring (Fig. 4).

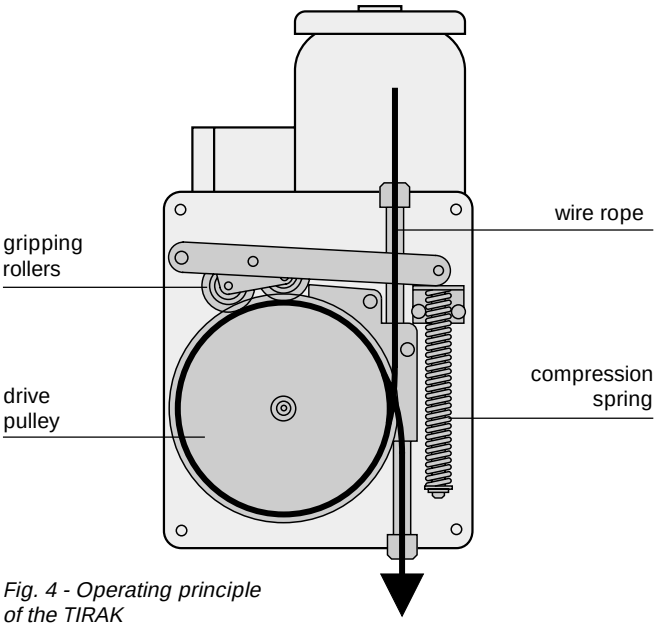


Fig. 4 - Operating principle of the TIRAK

Fig. 6
*Model Ma213A **with** slewing ring*

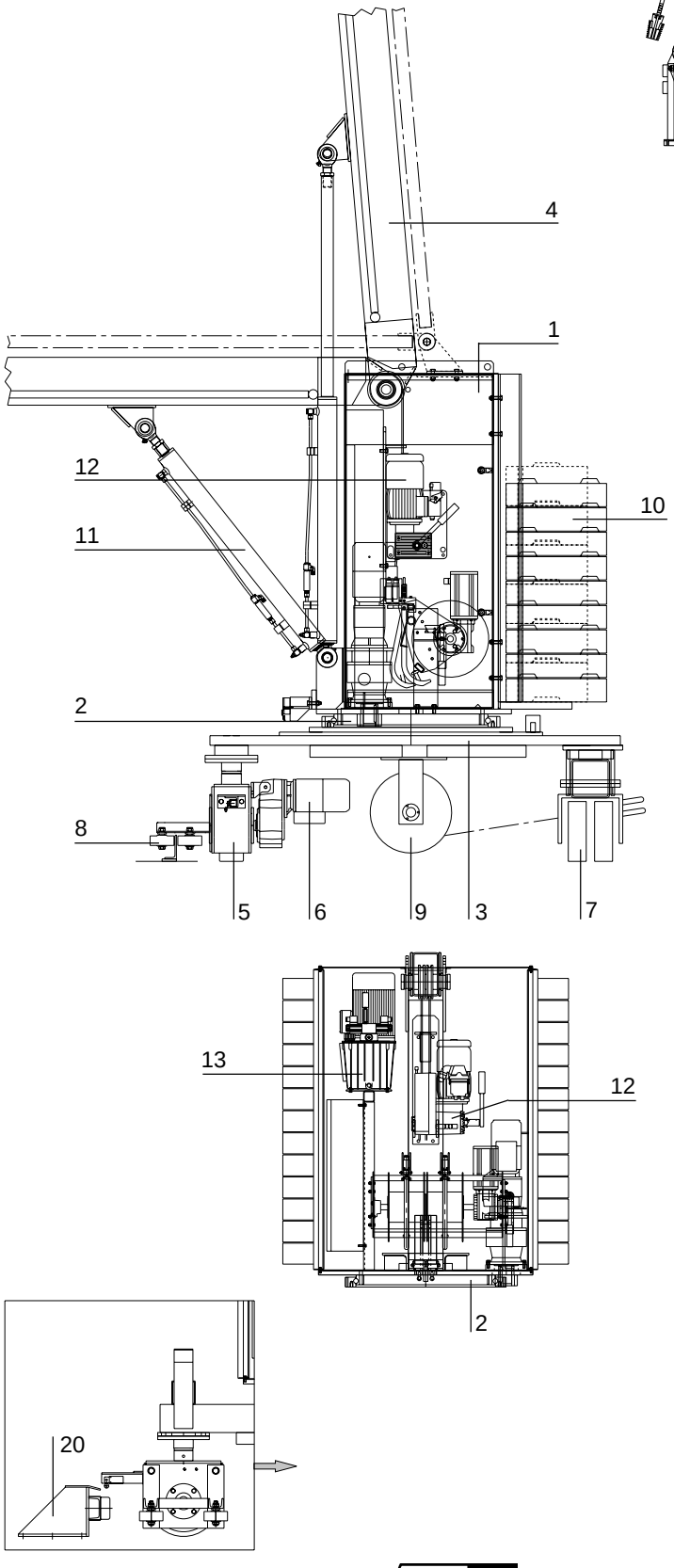
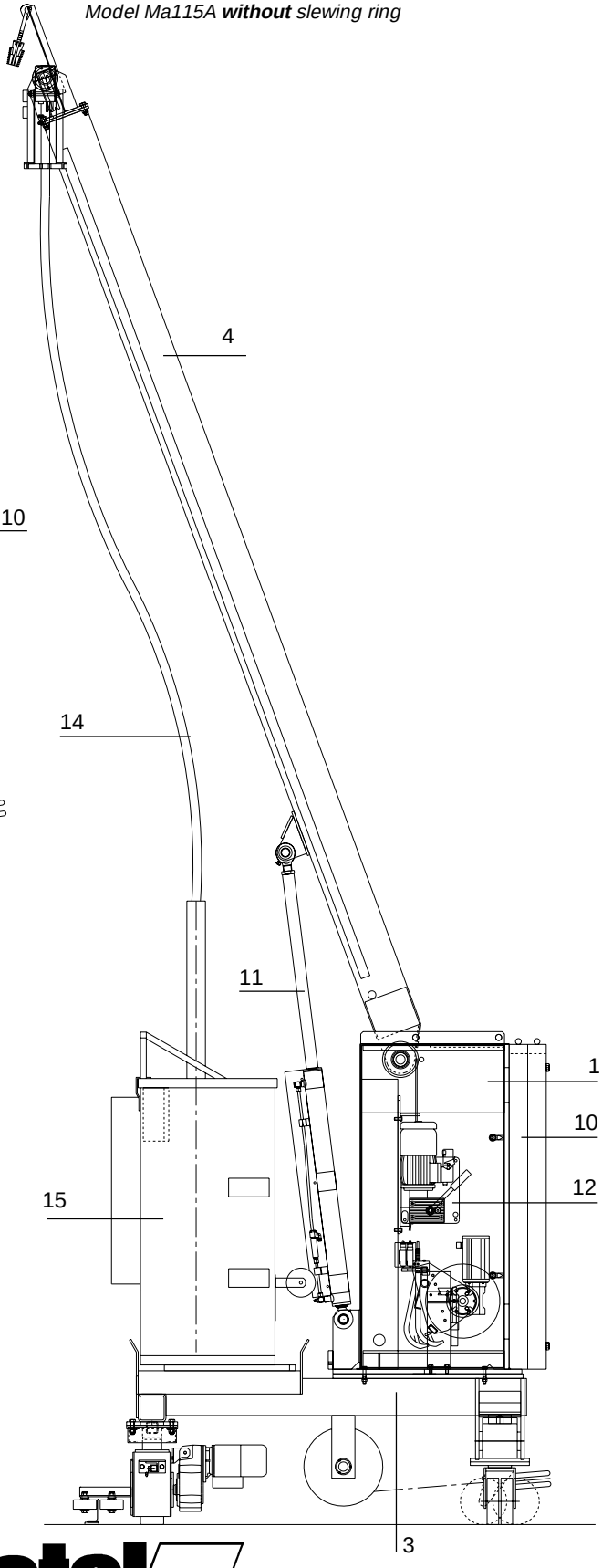


Fig. 5
*Model Ma115A **without** slewing ring*



4.4 Jib

The jib (4), in tubular steel section, articulates on a shaft fixed to the frame of the turret and activated by a hydraulic ram. The hydraulic power pack is located in the turret. The jib length can be up to 8.5 m.

4.5 Spreader bar

The spreader bar is a welded galvanised steel construction, that can be either fixed (19) or rotating, to bring the cradle perfectly parallel to the facade.

4.6 Electrical controls

The electrical controls consist of the following main items:

On the trolley

- the power supply cable for connecting the trolley to the power points. This cable is stored on a reeler (9) under the trolley.
- an electrical control box

On the cradle

- a control box

4.7 Cradle

The cradle (15) is a tubular aluminium structure, cladded with perforated aluminium panels.
Two foam rollers (16) allow the cradle to rest lightly against the facade (max. effort 25 daN) and absorb the swaying movements.
An anti-collision bar (17) fitted under the cradle prevents collision with obstacles when lowering.

4.8 Wire ropes

The cradle is suspended from the jib by sheaved wire ropes. The TIRAK XD-312P is equipped with an overspeed safety brake. This brake acts in case of a too speedy descent of the cradle. Then the wire ropes are collected on a powered double reeler (12.1).

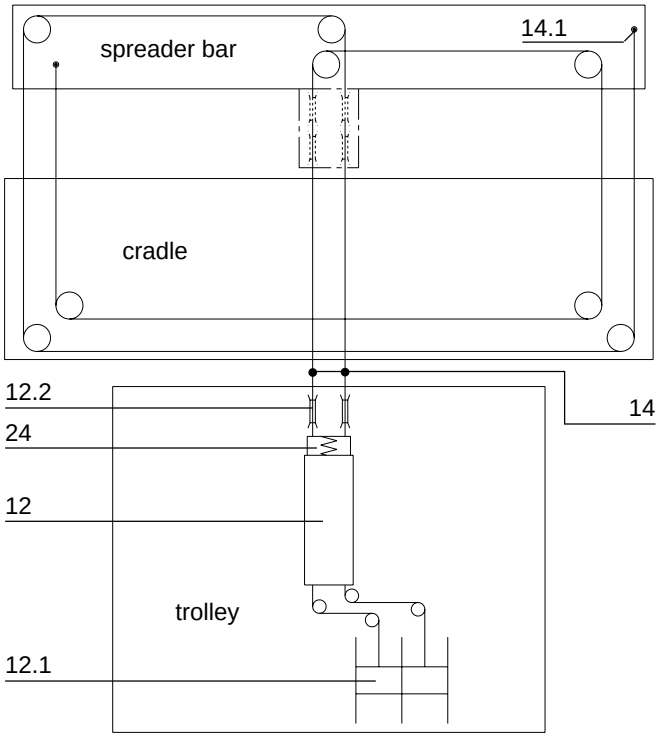


Fig. 7 - Diagrammatic representative of the wire ropes

12	*TIRAK hoist*	*14.1*	*Cable attachment on the spreader bar*
12.1	*Double wire rope reel*	*24*	*Overload safety device*
12.2	*Return pulley*		
14	*Wire ropes*		

4.9. CONTROLS

Selection of the control panel

The equipment has two control panels :

- 1 main control panel in the cradle (Fig. 10), connected to the trolley by a flexible cable.
- 1 control panel (Fig. 9) on the trolley for back-up operations in the event of failure of the main control panel.

The control panel is selected using the lockable switch (32) on the trolley control box.

Cradle control box

41. Start
42. Emergency stop
43. Lower anti-collision bar shunt
44. Light for overload
46. Lift cradle
47. Lower cradle
50. Slewing of spreader bar to left*
51. Slewing of spreader bar to right*
52. Slew turret to left*
53. Slew turret to right*
54. Lift jib
55. Lower jib
56. Traverse left
57. Traverse right

** Only for series Ma200 and Ma300*

Trolley control box

26. Traverse right
27. Traverse left
28. Lower jib
31. Main switch + emergency stop
32. Lockable rotary switch for TROLLEY control or CRADLE control
34. Buzzer
35. Lift cradle
36. Lower cradle
37. Slew turret to right
38. Slew turret to left
39. Start
40. Lift jib

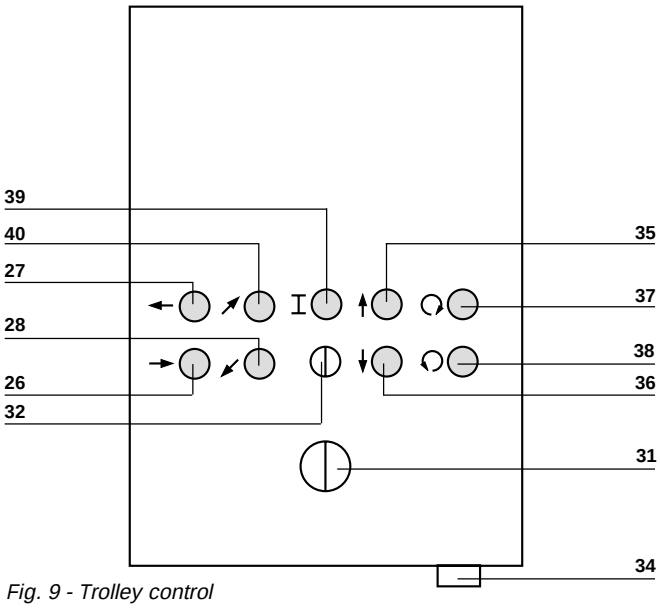


Fig. 9 - Trolley control

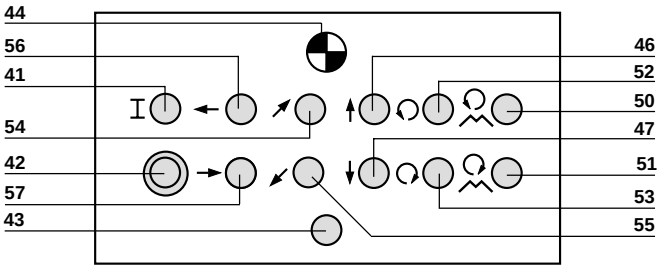


Fig. 10 - Cradle control

5. SAFETY DEVICES

To ensure safe operation without danger to personnel, the machine is fitted with a number of safety devices which monitor the correct operation of the various components and operate in the event of a breakdown or fault.

5.1. Safety devices on the cradle

- emergency stop
- lower anti-collision bar

5.2 Safety devices on the trolley

- emergency stop
- cradle upper safety limit
- cradle FINAL upper safety limit
- cradle overload safety device
- safety device
- slack wire rope safety device
- end of wire rope safety device
- electrical supply cable end limit
- slewing of turret
- slewing of spreader bar
- traversing end limit
- emergency lowering handle
- phase order safety device
- manual lowering in the event of a power break

The machine all components described in this technical sheet can be modified any time by the manufacturer without prior warning.