JUPITER
building maintenance units (BMU)

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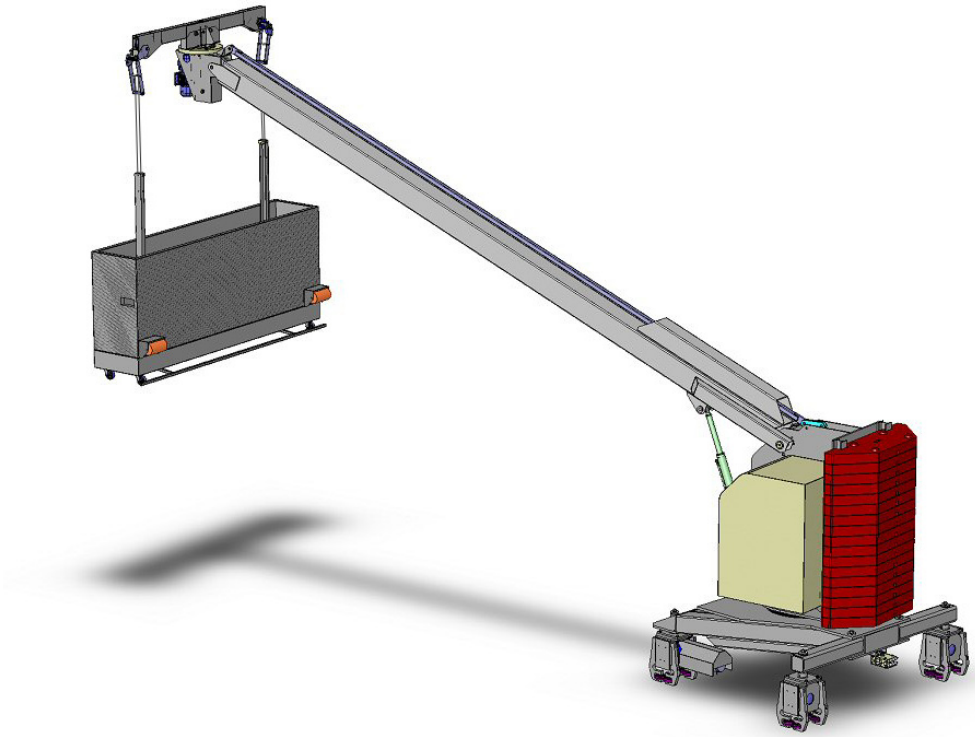


Summary

CE

The JUPITER equipment conforms to EU Directives and is manufactured in accordance with ISO 9001.

DESCRIPTION

Applications

The JUPITER BMU is a medium size machine with remarkable performances for buildings up to 280 m that need special cradles or an additional load hoist. PLC and wireless MAGTRON™ control are standard.

The system consists of:

- mobile traversing trolley (roof car) with slewing spreader bar on a single jib, and a turret enclosing the lifting mechanism and the controls,
- cradle suspended from the trolley by galvanised steel wire ropes.

All the operations are powered:

- lifting and lowering the cradle
- traversing the trolley
- slewing the turret
- jib luffing
- slewing the spreader bar.

Protection:
Trolley and cradle are manufactured from painted, hot dipped galvanised steel.

Advantages

- Pratically invisible from the ground when in parking position
- Reach over high parapets

Variants

Variant	Hoist	Max. Lifting Height*
JUPITER single	1x TIRAK™ XD-300P	160 m
JUPITER dual	2x TIRAK™ XD-500P	280 m

*) depending on jib length (see Fig. 2).

Functioning

Stability

The equipment stability is ensured by applying the factors of safety required by EN1808 between the weight of the cradle with its working load and the weight of the trolley with its counterweights (11).

Movement axes

Traversing

on track or rail (depending on model) by two motor-driven wheels, with speed of about 6.5 m/min.; negotiation of curves by means of swivel wheel assemblies (5) guided along the path by side guide roller wheels (8).

Slewing of turret (1) and spreader bar (28)

by electrically powered motor driving a geared slewing ring.

Raising / lowering the jib (4)

by means of a hydraulic ram (12). The pivoting spreader bar (28) ends ensure that the cradle (22) remains in horizontal position permanently independent from the jib position (4).

Cradle hosting up/down control

by electrically powered TIRAK™ (13) mounted in roof trolley turret.

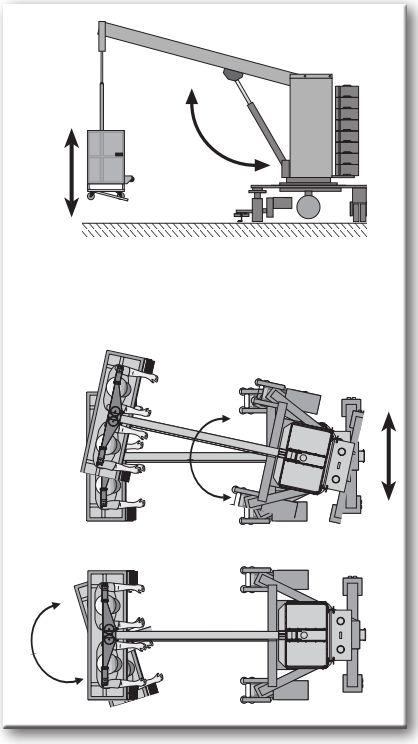
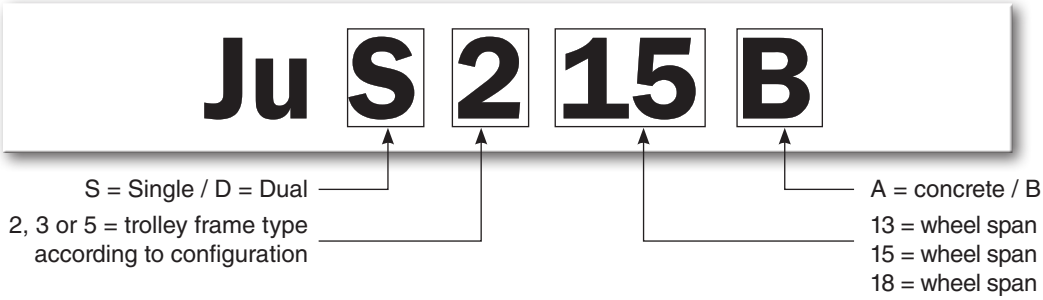


Fig. 1. - JUPITER - Movement axes

Machine Identification



Standard Models

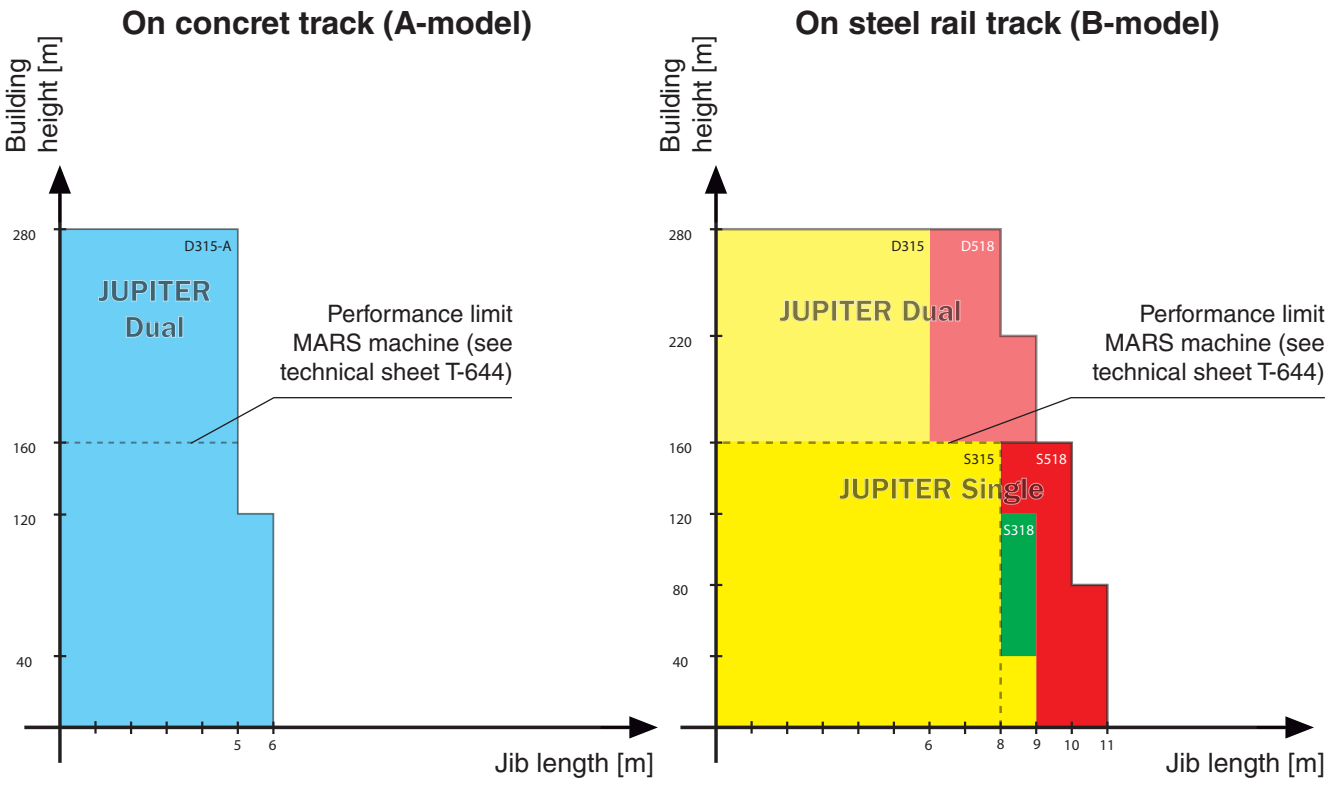


Fig. 2. - JUPITER - Standard range

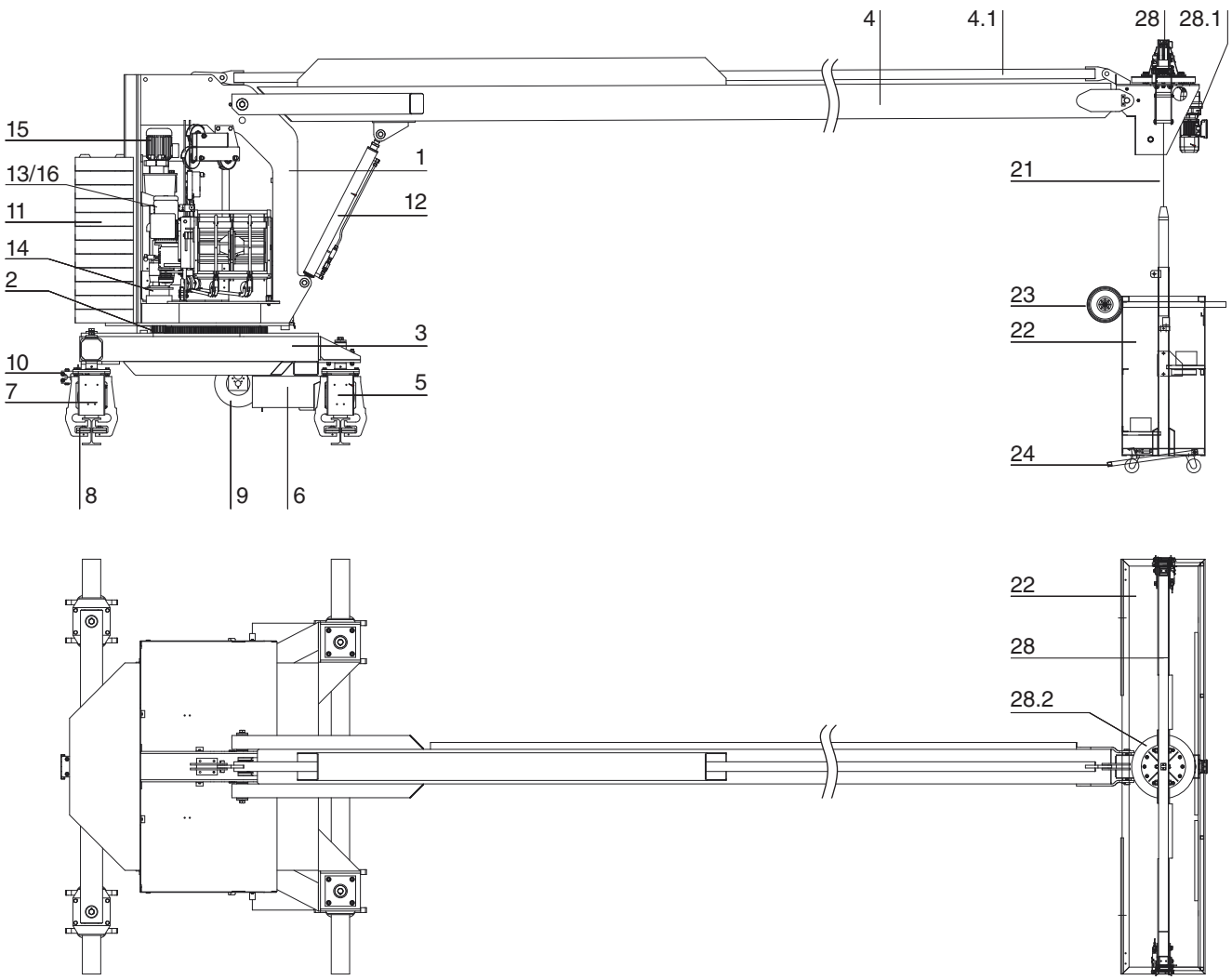


Fig. 3. - JUPITER dual - Main components

Main components

1	Turret
2	Powered slewing ring
3	Trolley
4	Jib
4.1	Connecting rod
5	Powered front wheel assembly
6	Geared motor with brake
7	Rear wheel assembly (not powered)
8	Guide roller
9	Reeler for power supply cable
10	Guide for power supply cable with end limit sensor
11	Counterweight
12	Hydraulic ram
13	TIRAK™ XD hoist
14	Geared slewing motor
15	Hydraulic unit
16	Overload safety device
17	RESCUE control box (trolley)
18	Upper limit safety device
19	Final upper limit safety device
20	Double wire rope reeler
21	Suspension wire rope
22	Cradle
23	Facade protection roller
24	Anti-collision bar
26	Cradle control box
28	Spreader bar
28.1	Spreader bar geared motor
28.2	Spreader bar slewing ring

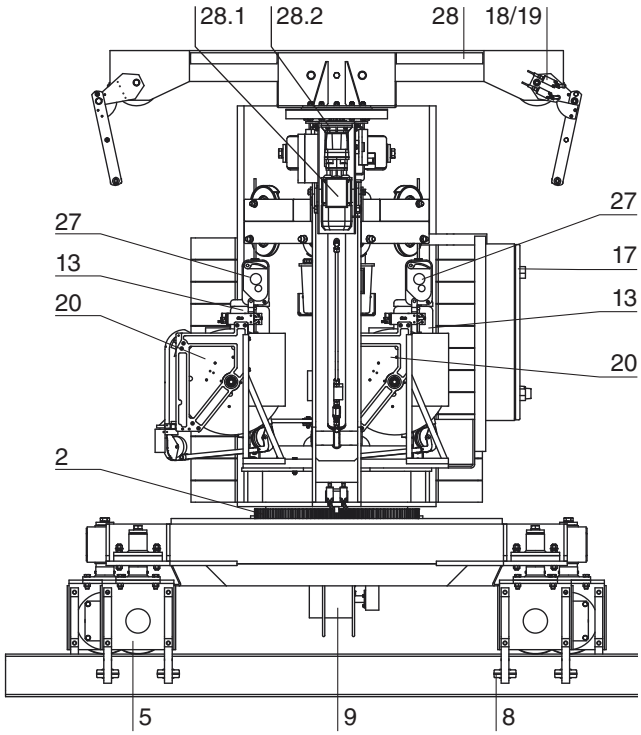


Fig. 4. - JUPITER dual - Front view

Spreader bar components

18 Upper limit safety device
19 Final upper limit safety device
28 Spreader bar
28.1 Spreader bar geared motor
28.2 Spreader bar slewing ring

Rail track

A-model - concrete track:
The trolley moves on concrete track guided by «L» shaped guide rail; the wheels are covered with a polyurethane layer giving smooth, quiet traversing and good adhesion.

B-model - steel rail track:
The trolley moves on fixed (or free laid) rail profiles.

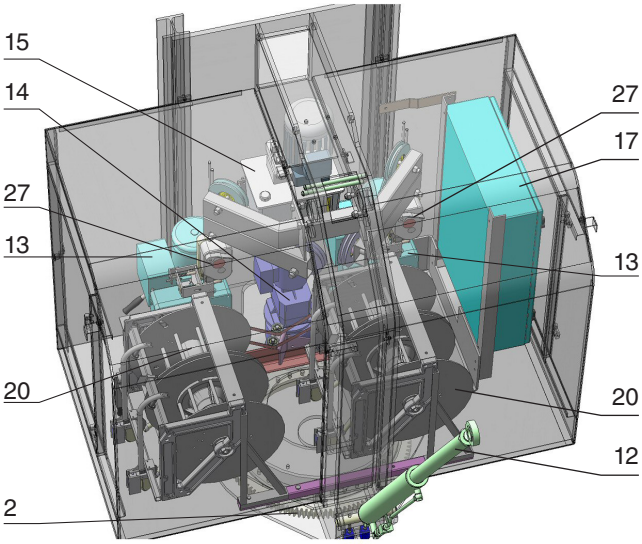


Fig. 5. - JUPITER dual - Turret

Turret components

2 Powered slewing ring
5 Powered front roller frame
8 Guide roller
9 Reeler for power supply cable
12 Hydraulic ram
13 TIRAK™ XD hoist
14 Geared slewing motor
15 Hydraulic unit
17 RESCUE control box (trolley)
20 Double wire rope reeler
27 BLOCSTOP™ BSO fall arrest device overspeed (only on JUPITER dual)

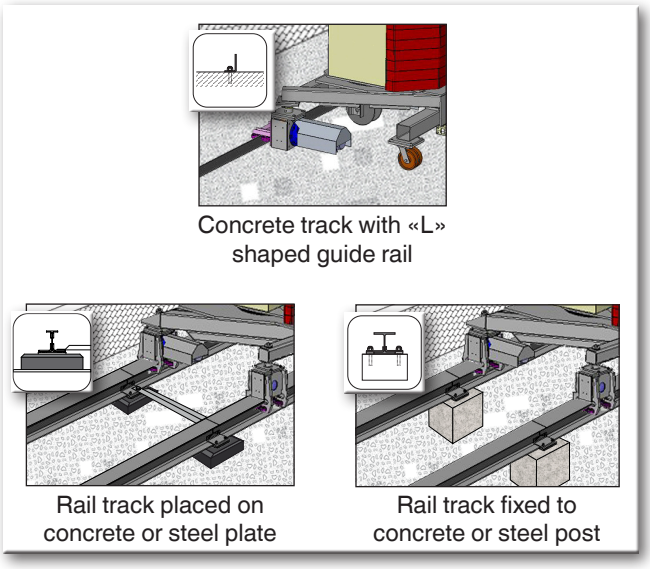


Fig. 6. - Rail tracks

Electrical circuit

The electrical controls consist of the following main items:

a) On the building (not supplied by Tractel Secalt)
- Main switch located on roof.
- Power connectors, three phases + neutral + earth, positioned along the track, protected by a 30 mA residual-current device.

b) On the trolley (3)
- Power supply cable, stored on a reeler (9) mounted under trolley.
- Rescue control box.

c) On the cradle
- Main control box (26).

Cradle

- Tubular hot dip galvanised steel structure, clad with perforated aluminium panels. Colour to match the trolley.
- Aluminium floor panels.
- Two foam rollers (23) allow the cradle to rest lightly against the facade (max. force 25 daN) and absorb the swinging movements.
- Four castor wheels fitted under the cradle allow manual movement on the ground.
- An anti-collision bar (24) fitted under the cradle prevents from collision with obstacles when lowering.
- Complete aluminium cradle as an option.

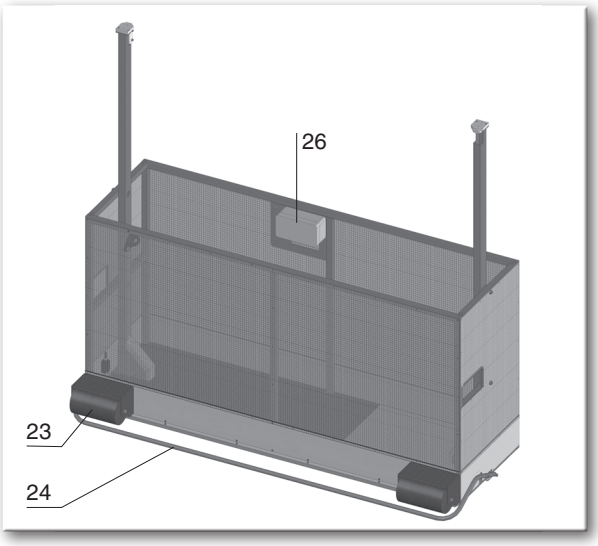


Fig. 7. - Standard cradle 2 m (steel)

Hydraulic system

The hydraulic power pack (15) operates the jib (4) using the hydraulic ram (12). The hydraulic components are essentially as follows:

1 hydraulic ram,
1 hydraulic unit,
1 geared pump,
1 electric motor,
1 non-return valve,
1 safety valve,
1 two-way weatherproofed electro-valve,
1 throttle.

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.

... on the cradle

- Emergency stop
- Lower anti-collision bar

... on the trolley

- Emergency stop
- Cradle upper safety limit switch
- Cradle final upper safety limit switch
- Electrical supply cable end limit switch
- Turret slewing end limit switch
- Spreader bar slewing end limit switch
- Traversing end limit switch
- Phase reversal safety device
- Manual lowering in the event of a power loss
- Detection of presence of emergency lowering crank handle

... integrated in the lifting mechanism

- Overload safety device
- Fall arrest safety device
- Slack wire rope safety device
- End of wire rope safety device

... optionals

- Upper anti-collision bar on cradle
- Low temperature safety device
- Anemometer
- Turret pinning in parking position for long jibs
- Retractable ram buffer (only on machines with jib luffing)
- Jib anticollision detector
- Detection of rail presence (rail tracks with rail switches)

Hoist

The lifting mechanism TIRAK™ XD electric traction hoist is 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.

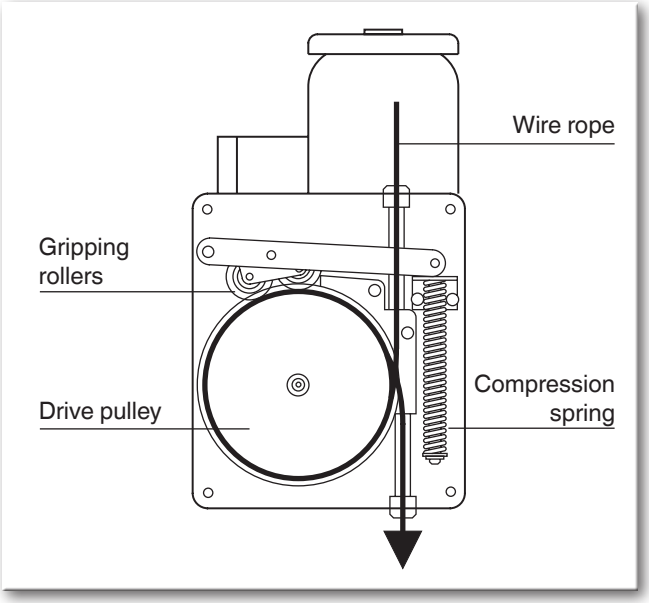


Fig. 8. - TIRAK™ - Operating principle

Wire ropes (single)

On «Single» machines the cradle is suspended from the jib by two sheaved wire ropes. At the exit of the hoist the wire ropes are stored on a powered double reeler (20). The TIRAK™ XD-300P (13) is equipped with an overspeed safety brake. This brake acts in the event that the cradle descends too speedily.

Wire rope diagram (single)

3 Trolley
13 TIRAK™ XD-300P hoist
17.1 Transducer*
20 Double wire rope reeler
21 Suspension wire ropes
21.1 Wire rope attaching point
21.2 Return pulley
22 Cradle
28 Spreader bar

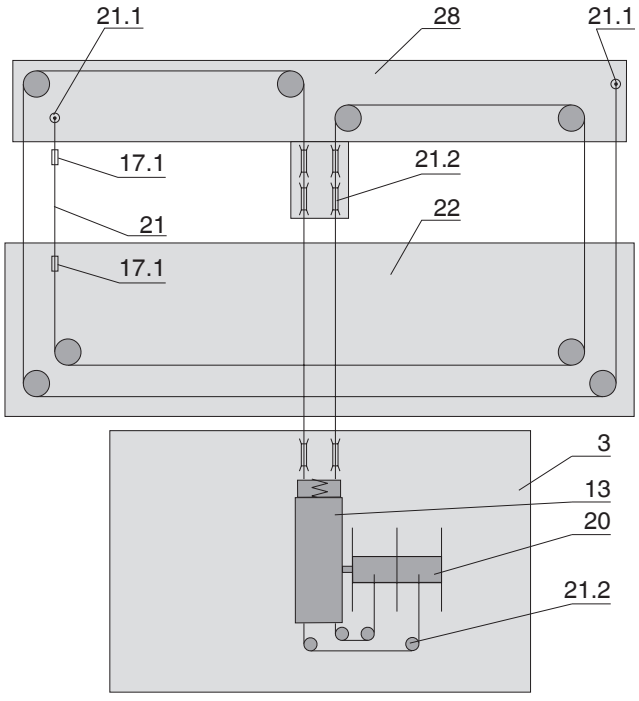


Fig. 9. - Wire rope diagram - Single version

* only on machines with MAGTRON™ control.

Wire ropes (dual)

On «Dual» machines the cradle is suspended from the jib by four wire ropes. At the exit of the hoists the wire ropes are stored on powered double reelers (20). On each hoist (13) a BLOCSTOP™ BSO fall arrest device (27) acts in the event that the cradle descents too speedily.

Wire rope diagram (dual)

3 Trolley
13 TIRAK™ XD-500P hoist
17.1 Transducer*
20 Double wire rope reeler
21 Suspension wire ropes
21.1 Wire rope attaching point
21.2 Return pulley
22 Cradle
27 BLOCSTOP™ BSO fall arrest device
28 Spreader bar

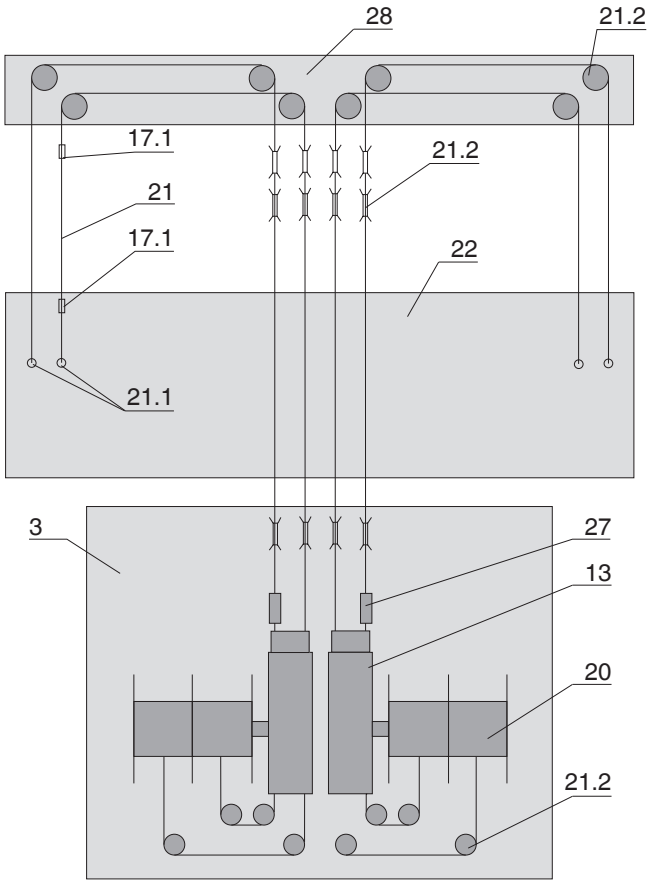


Fig. 10. - Wire rope diagram - Dual version

* only on machines with MAGTRON™ control.

TECHNICAL SPECIFICATIONS

Trolley

	Single	Dual
Traversing by brake motor	0.25/0.37 kW - 50Hz/60Hz	0.25/0.37 kW - 50Hz/60Hz
Traversing speed	6.5 m/mn	6.5 m/mn
Lifting hoist type	1x TIRAK™ XD-312P	2x TIRAK™ XD-500P
Nominal capacity	350 daN	500 daN
Fall arrest device	incorporated	2x BLOCSTOP™ BSO 500
Power supply cable	4G-2.5	4G-2.5
Useful length	20 m	20 m
Hydraulic unit		
tank capacity	12.5 l	12.5 l
electrical motor drive	1.5 kW 50Hz/60Hz	1.5 kW 50Hz/60Hz

Cradle

Dimensions	2,000 x 600 mm	3,000 x 700 mm
Nominal load version CE or ...	240 kg	240 kg
... max. number of persons	2	2
Deadweight	±110 kg	±160 kg
Lifting / lowering speed	8.5 m/mn	8.5 m/mn
Max. lifting height	160 m	280 m
Suspension wire rope	Ø 6.5 mm, 5 strands	Ø 8 mm, 5 strands
number	1 + 1	2 + 2
guaranted breaking load	2,840 daN	5,000 daN

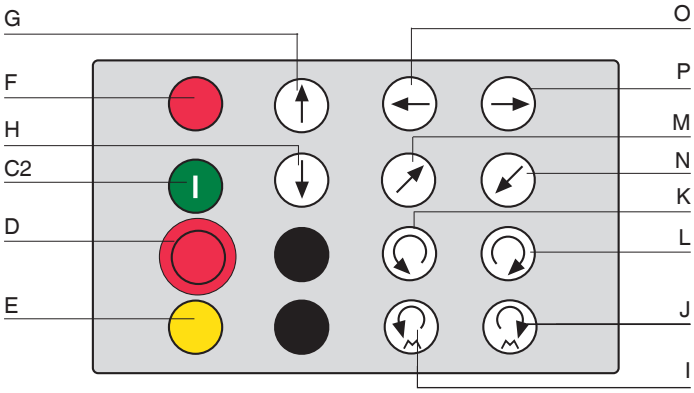
CONTROLS

All control systems in Tractel Secalt Building Maintenance Units benefit from a clever conception and from the selection of high-quality components which guaranties outstanding reliability.
The complexity of the machine determines the control system to be chosen:

1. For simple machines the traditional control system without PLC is the right choice due to its high reliability and easy maintenance.
2. Additional safety devices (automatic stop levels, anemometers, ...) make it necessary to use a PLC.
3. The MAGTRON™ remote control patented by Tractel Secalt S.A. ensures the duplex transmission of data by induction of a magnetic field through the suspension wire ropes between cradle and roof car (trolley). When the lifting height exceeds 80 m the electrical cable connecting the cradle to the roof car represents a heavy load. Frequently this cable is replaced by suspension wire ropes with integrated electrical wires which are very costly when the wire ropes must be changed. With the MAGTRON™ technology always associated to a PLC no electrical cable is required between cradle and roof car. The cradle control box is powered by a rechargable battery.

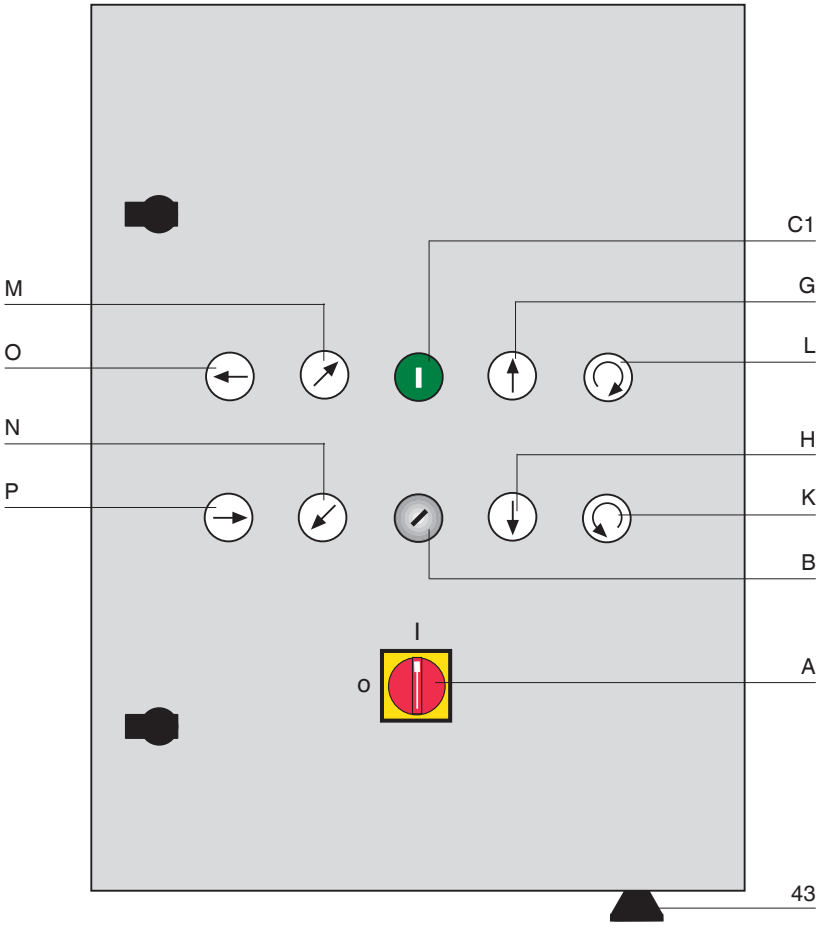
Machine *without* PLC

Cradle main control box



C2 Cradle start control
D Emergency stop
E Anti-collision bar shunt
F Overload indicator
G Lift cradle
H Lower cradle
I Slew spreader bar left
J Slew spreader bar right
K Slew turret left
L Slew turret right
M Jib up*
N Jib down*
O Traversing left
P Traversing right

Trolley control box



A Main switch and emergency stop
B Rotary keyswitch for RESCUE control or CRADLE control
C1 Equipment start control

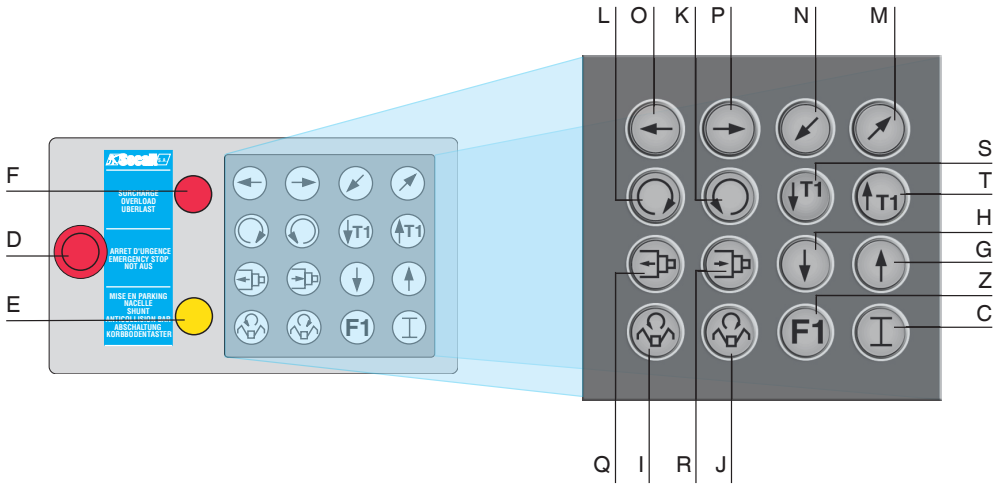
43 Buzzer

* Depending on the equipment

Fig. 11. - Control boxes of machines without PLC

Machine *with* PLC

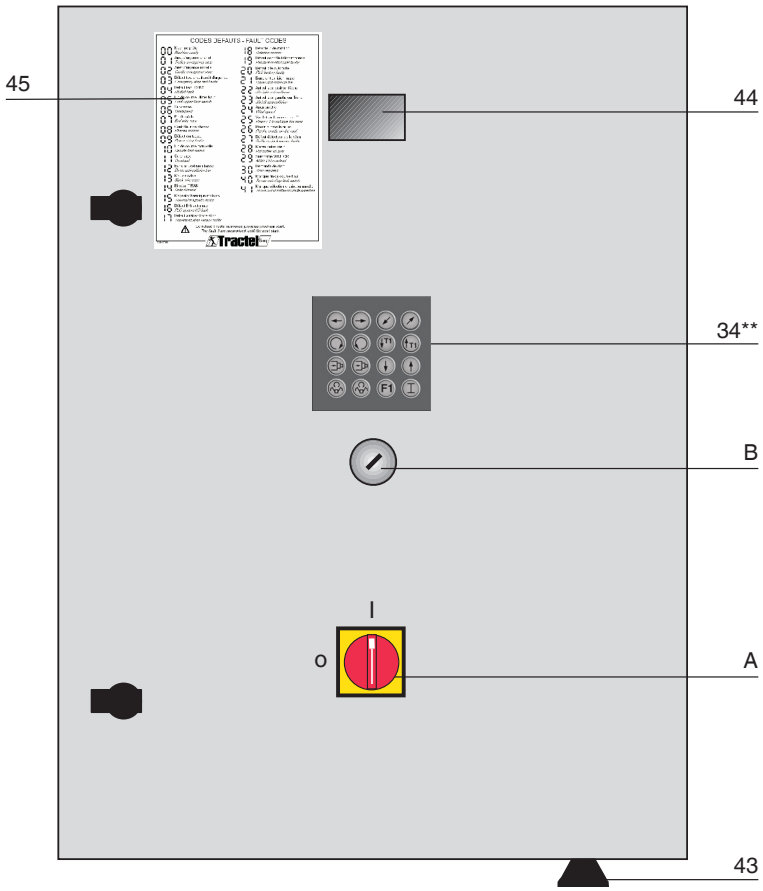
CRADLE main control box



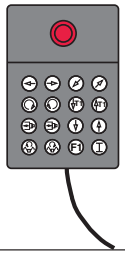
C Cradle start control
D Emergency stop
E Anti-collision bar shunt
F Overload indicator
G Lift cradle
H Lower cradle
I Slew spreader bar left
J Slew spreader bar right
K Slew turret left
L Slew turret right
M Jib/mast up*
N Jib/mast down*
O Traversing left
P Traversing right
Q Retract telescopic jib (option)
R Extend telescopic jib (option)
S Hoist T1 down (option)
T Hoist T1 up (option)

Z Store/confirm automatic stop (option)

Trolley control box with RESCUE keypad



Option: removable remote control panel with keypad** and emergency stop button for RESCUE operations.



A Main switch and emergency stop
B Rotary keyswitch for RESCUE control or CRADLE control

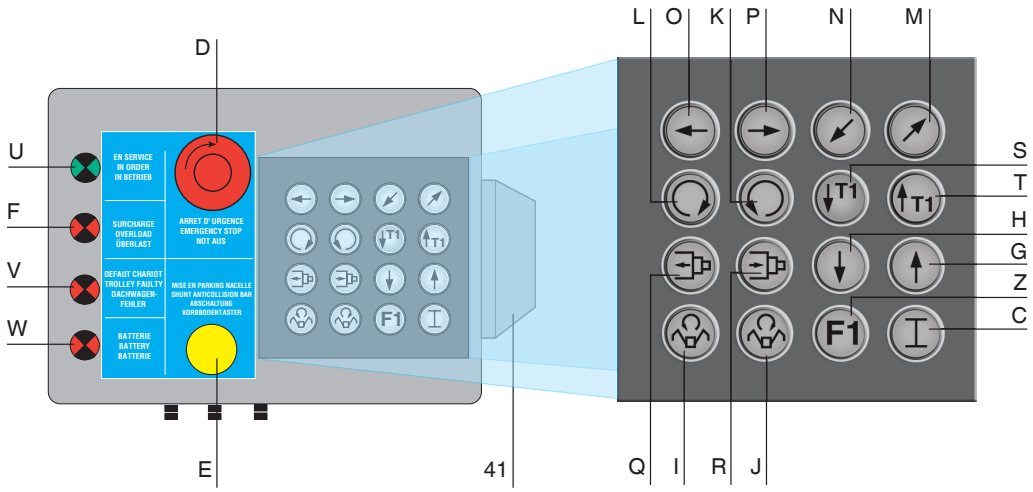
34 Keypad for RESCUE operations**
43 Buzzer
44 Fault code display
45 Fault code list

* Depending on the equipment
** Keypad identical to that of cradle

Fig. 12. - Control boxes of machines with PLC

Machine *with* PLC and MAGTRON™

CRADLE main control box (MAGTRON™)

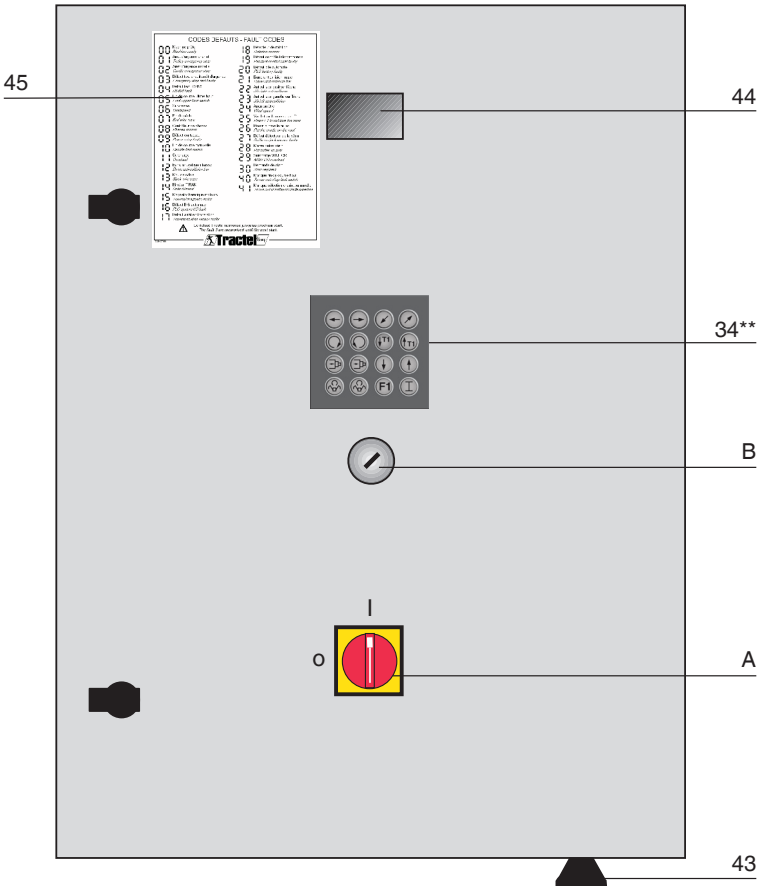


C Cradle start control
D Emergency stop
E Anti-collision bar shunt
F Overload indicator
G Lift cradle
H Lower cradle
I Slew spreader bar left
J Slew spreader bar right
K Slew turret left
L Slew turret right
M Jib/mast up*
N Jib/mast down*
O Traversing left
P Traversing right
Q Retract telescopic jib (option)
R Extend telescopic jib (option)
S Hoist T1 down (option)
T Hoist T1 up (option)
U Machine ready indicator
V Trolley fault indicator
W Battery low indicator

Z Store/confirm automatic stop (option)

41 Battery connector

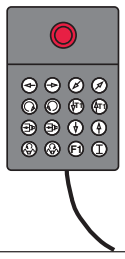
Trolley control box with RESCUE keypad



A Main switch and emergency stop
B Rotary keyswitch for RESCUE control or CRADLE control

34 Keypad for RESCUE operations**
43 Buzzer
44 Fault code display
45 Fault code list

Option: removable remote control panel with keypad** and emergency stop button for RESCUE operations.



* Depending on the equipment
** Keypad identical to that of cradle

Fig. 13. - Control boxes of machines with PLC and MAGTRON™

OPTIONS

- Watertank 15 l
- Electrical cable box
- Cradle structure made of aluminium
- Cradle with additional basket
- Deported cradle
- Pantograph cradle
- Telescopic jib
- Upper anti-collision bar on cradle
- Low temperature safety device
- Anemometer
- Turret pinning in parking position for long jibs
- Retractable ram buffer (only on machines with jib luffing)
- Jib anticollision detector
- Detection of rail presence (rail tracks with rail switches)
- Additional load winch for material handling
- Signal transmission to technical control office (fault report)
- Cradle restraint system on facade with automatic stops (compulsory for lifting heights exceeding 40 m according to EN 1808)

Contact

Tractel Secalt S.A.
3, rue du Fort Dumoulin
P.O. box 1113 • L-1011 Luxembourg
Phone: (352) 43 42 42-1
Fax (352) 43 42 42-200
e-mail: secalt@tractel.com
www.tractel.com