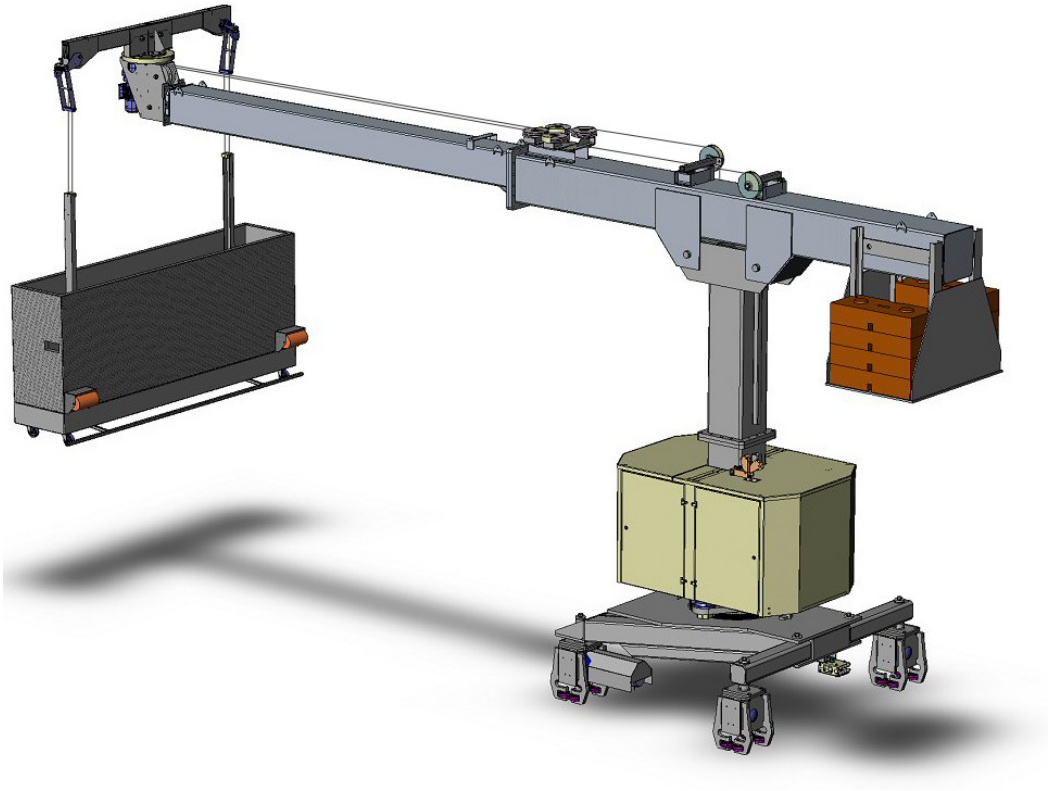


Summary

CE

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

DESCRIPTION

Applications

The MUSTANG model Building Maintenance Unit (BMU) is a simple and economic system for cleaning and maintenance work on all types of high rise buildings or structures, up to 280 m working height. The cradle is designed to take two people together with their tools.

The system consists of:

- mobile traversing trolley (roof car) with a 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 of the cradle
- traversing the trolley
- slewing the turret
- slewing the spreader bar.

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

Advantages

- Counterweights located at the rear end of the jib:
  - › reduced reaction forces on the roof,
  - › small overall dimensions.
- Mast height may be customised depending on the parapet height.

Variants

Variant	Hoist	Max. Lifting Height*
MUSTANG single	1x TIRAK XD-300P	160 m
MUSTANG 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 rail tracks by two motor-driven wheels, with speed of 8 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.

Cradle hosting up/down control

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

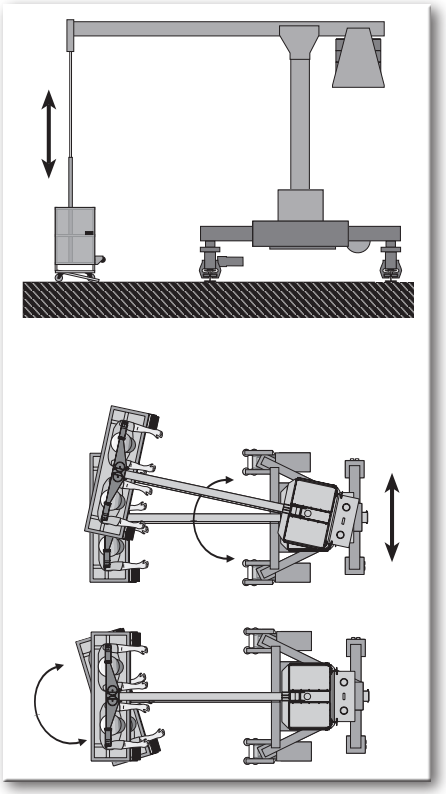
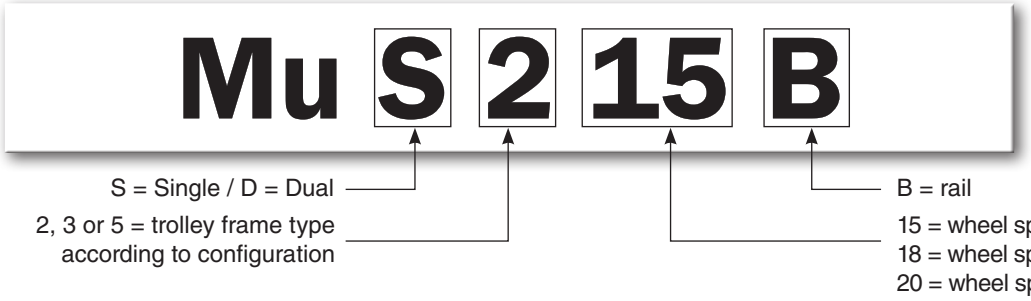


Fig. 1. - MUSTANG - Movement axes

Machine Identification



Standard Models

Only on rail tracks (B-type model)

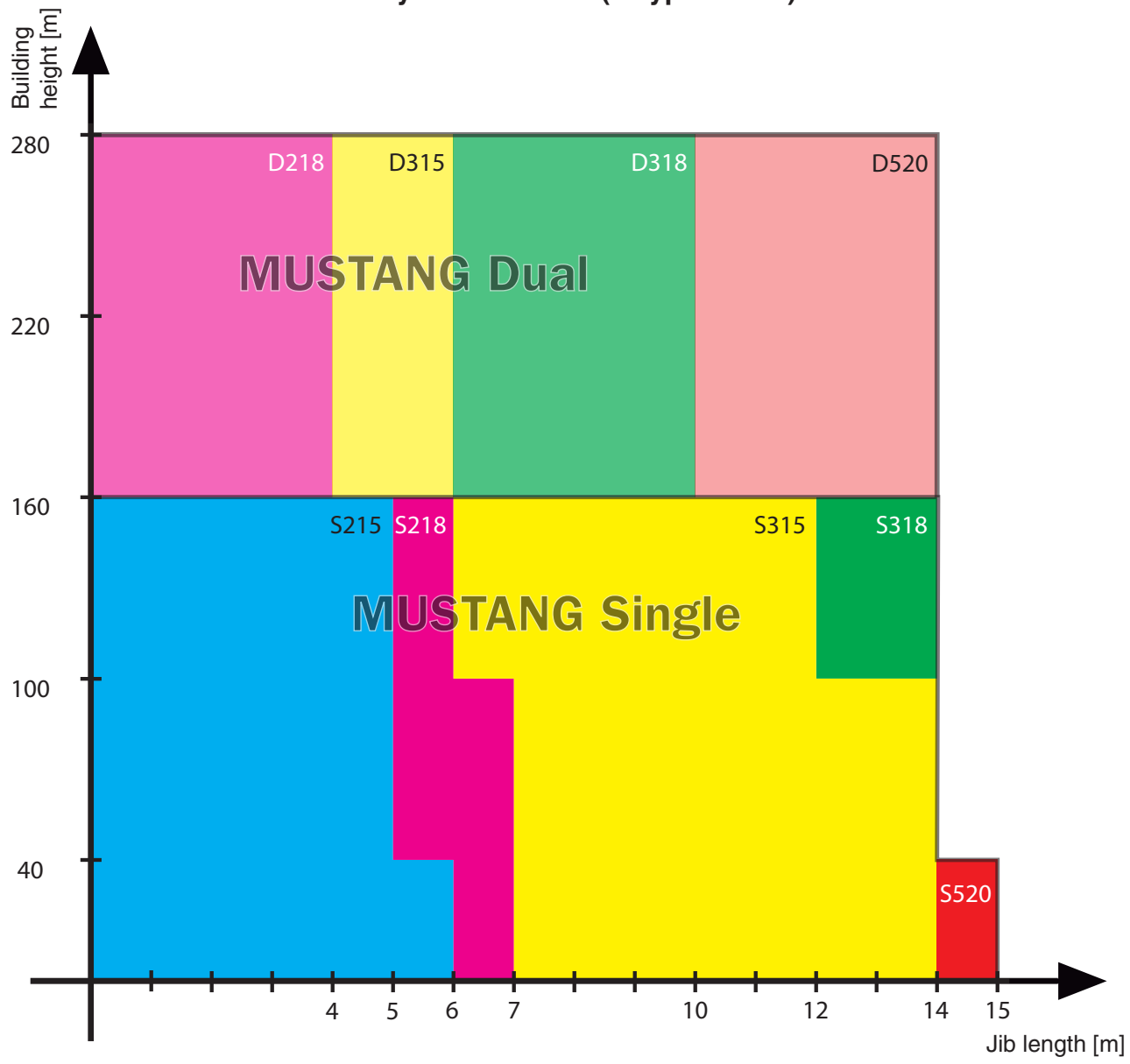


Fig. 2. - MUSTANG - Standard range

Main components

1 Turret
2 Powered slewing ring
3 Trolley
4 Jib
4.1 Wire rope guide
5 Powered front wheel assembly
6 Geared motor with brake
7 Rear wheel assembly (not powered)
8 Side guide roller wheel
9 Reeler for power supply cable
10 Guide for power supply cable
11 Counterweight
13 TIRAK™ XD hoist
14 Geared slewing motor
16 Overload safety device
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
27 BLOCSTOP BSO fall arrest device overspeed (only on MUSTANG dual)
28 Spreader bar
28.1 Spreader bar geared motor

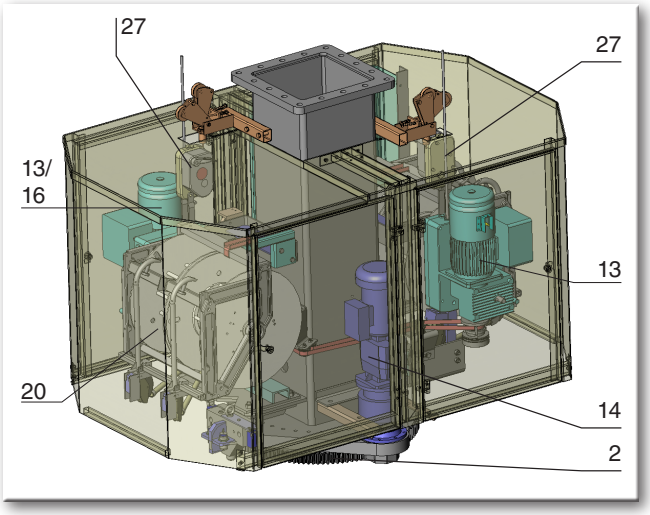


Fig. 4. - MUSTANG dual - Turret

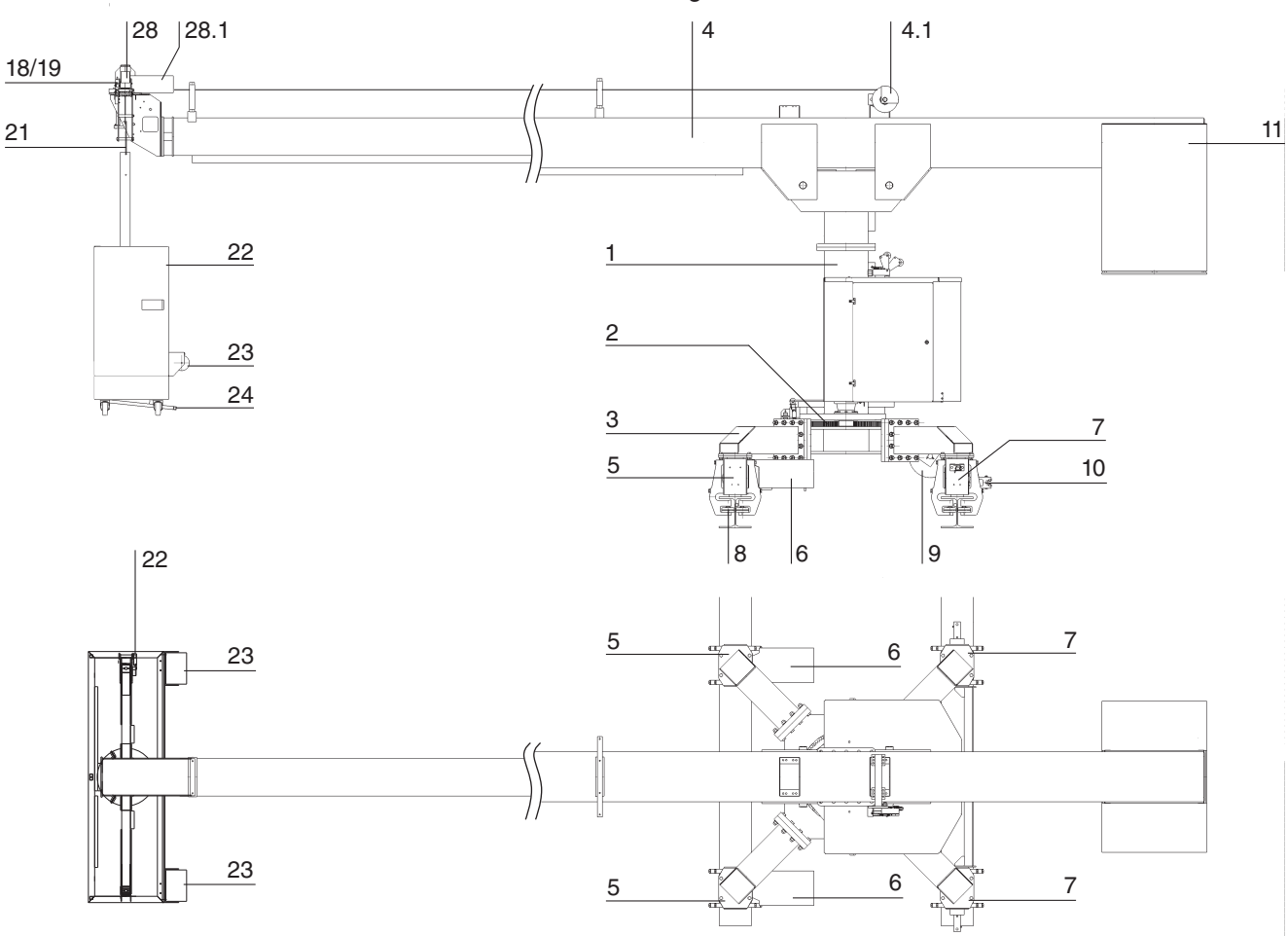


Fig. 3. - MUSTANG single - Main components

Traversing system
The trolley (roof car) is driven by two powered wheels located on the facade side, speed 8 m/min.

Rail track
The trolley moves on fixed (or free laid) rail profiles (B model), A models for concrete tracks are not available.

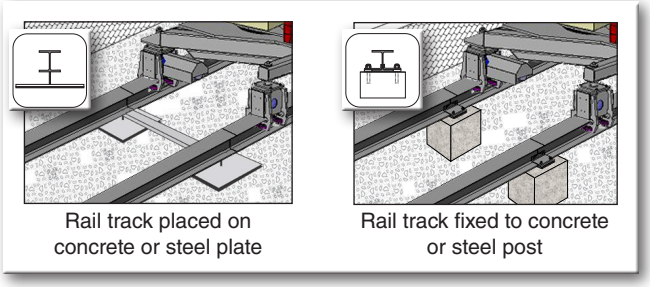


Fig. 5. - Rail tracks

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 collision with obstacles when lowering.

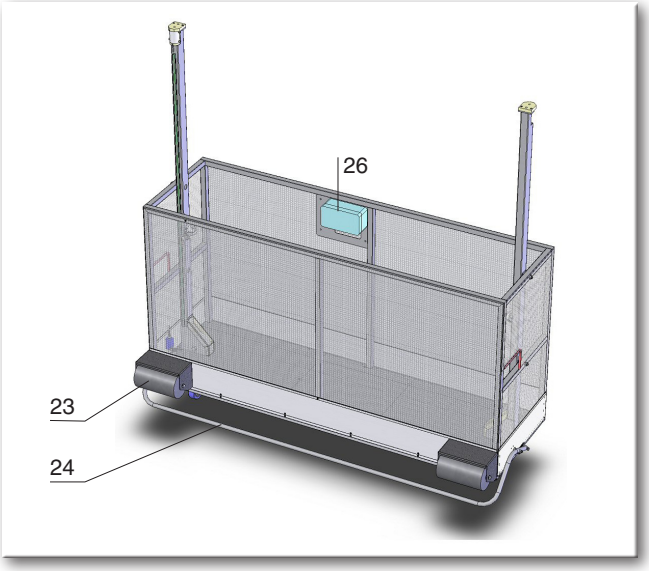


Fig. 6. - Standard cradle 2 m

Electrical circuit
The electrical controls consist of the following main items:

a) On the building (not supplied by 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 câble, stored on a reeler (9) mounted under trolley.
- Rescue control box.

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

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
- Parking position safety device
- Retractable ram buffer (only on machines with jib luffing)
- Jib anticollision sensor

Lifting Mechanism

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.

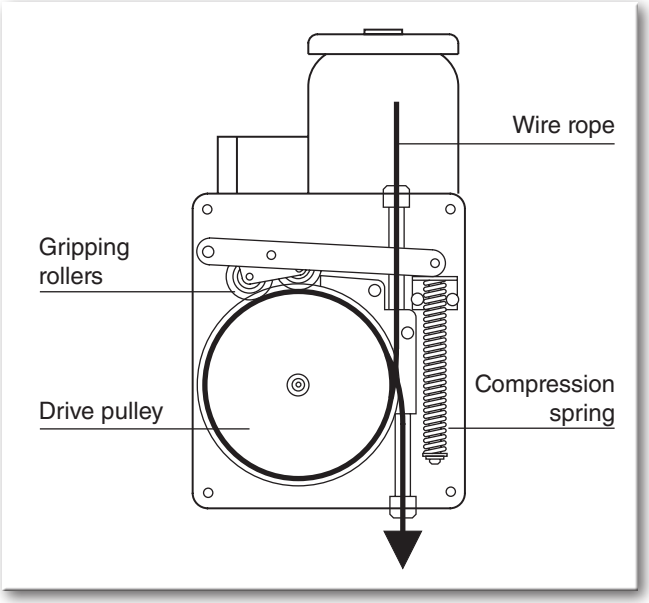


Fig. 7. - TIRAK™ - Operating principle

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

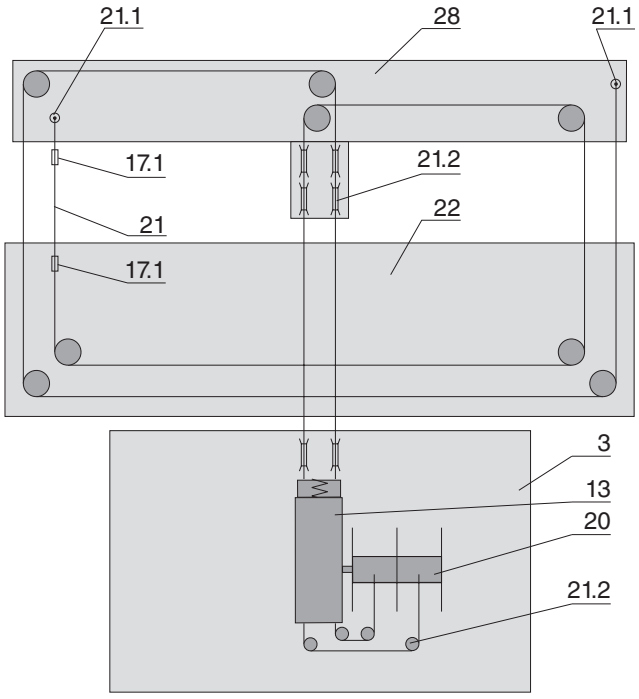


Fig. 8. - Wire rope diagram - Single version

* 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

* only on machines with MAGTRON™ control.

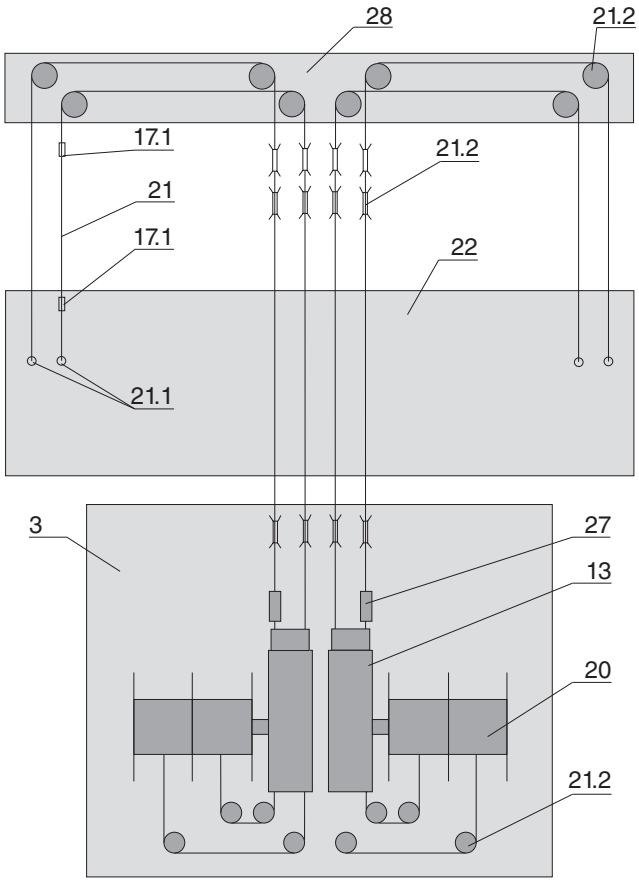


Fig. 9. - Wire rope diagram - Dual version

TECHNICAL SPECIFICATIONS

Trolley

	Single	Dual
Traversing by brake motor	0.25 kW 50Hz	0.25 kW 50Hz
Traversing speed	8 m/mn	8 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

Cradle

Dimensions	2,000 x 600 mm	3,000 x 600 mm
Nominal load version CE or ...	240 kg	240 kg
... max. number of persons	2	2
Deadweight	±110 kg	±130 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

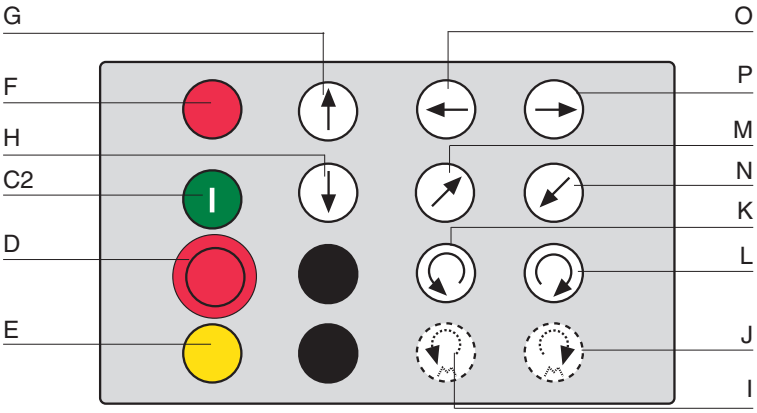
CONTROLS

All control systems in 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 SECALT™ 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.

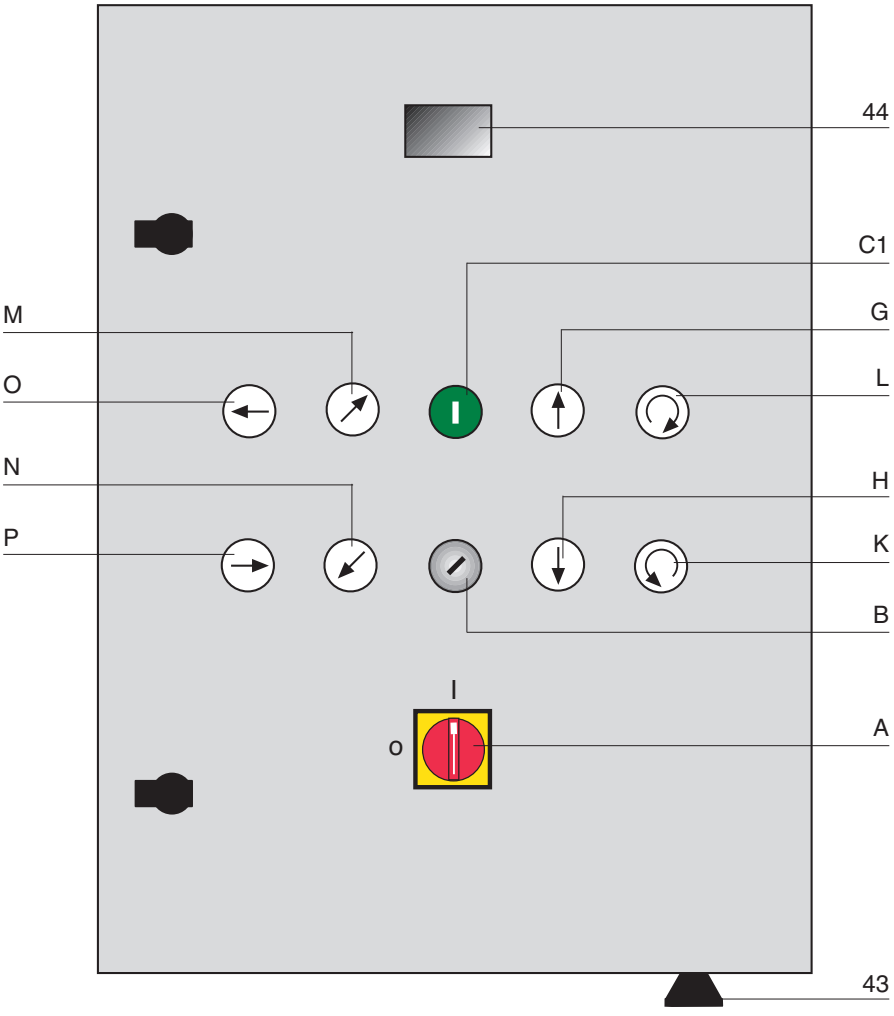
Machine *without* PLC

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 (option)
J Slew spreader bar right (option)
K Slew turret left
L Slew turret right
M Jib/mast up*
N Jib/mast 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

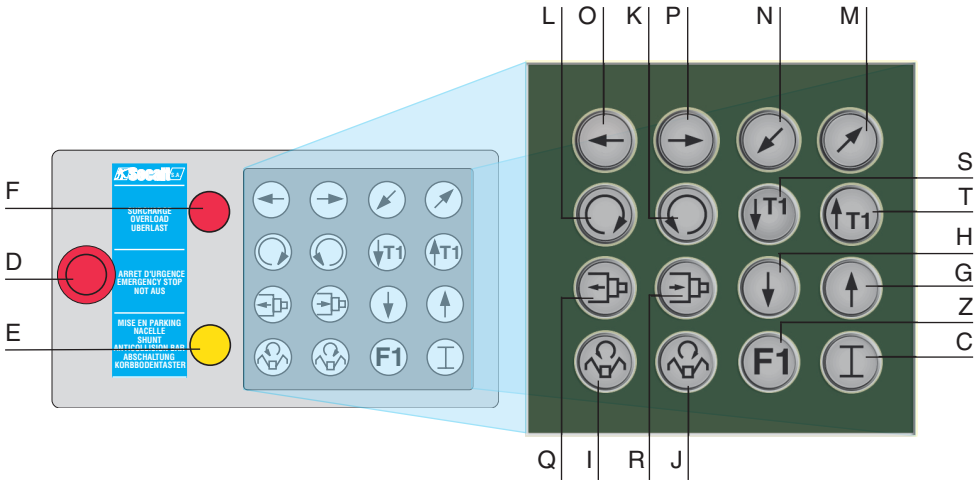
43 Buzzer
44 Inspection glass, phase controller

*) Depending on the equipement

Fig. 10. - Control boxes of machines without PLC

Machine *with* PLC

CRADLE main control box

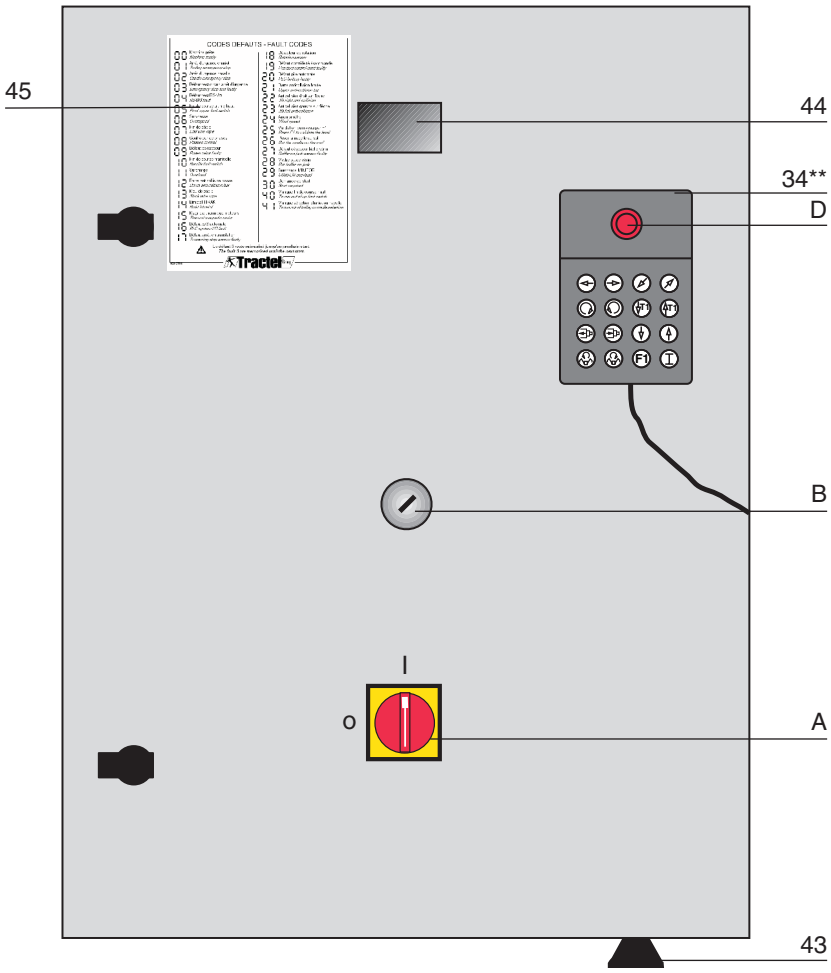


C Cradle start control
D Emergency stop
E Anti-collision bar shunt
F Overload indicator
G Lift cradle
H Lower cradle
I Slew spreader bar left
J Slew spreader bar right
K Slew turret left
L Slew turret right
M Jib/mast up*
N Jib/mast down*
O Traversing left
P Traversing right
Q Retract telescopic jib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

Z Store/confirm automatic stop (option)

41 Battery connector

Trolley control box with RESCUE pendant control



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

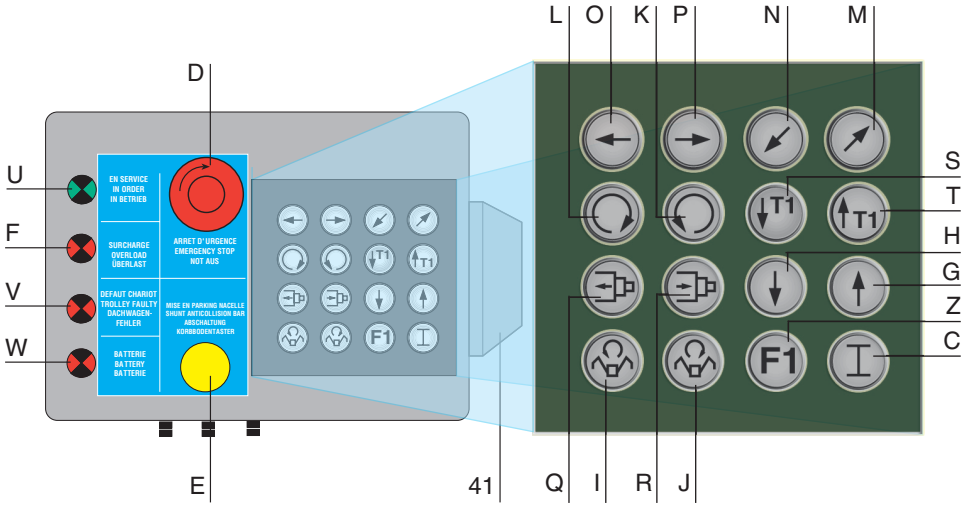
34 Removable RESCUE operation pendant control*
43 Buzzer
44 Fault code display
45 Fault code list

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

Fig. 11. - Control boxes of machines with PLC

Machine *with* PLC and MAGTRON™

CRADLE main control box (MAGTRON™)

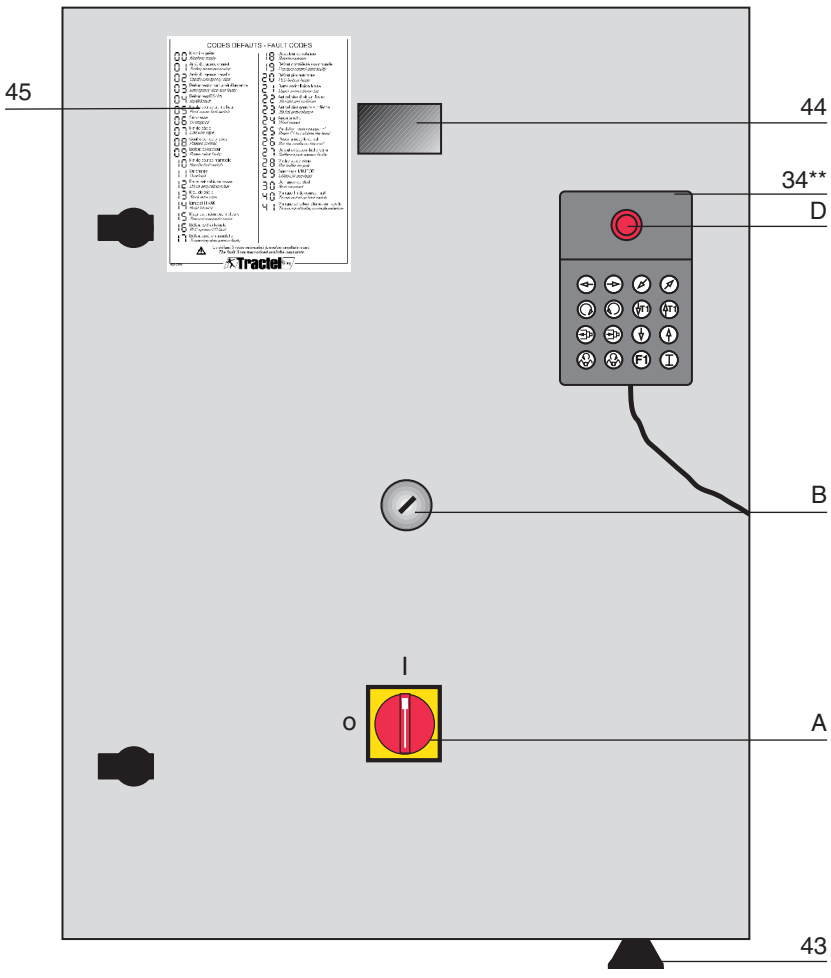


C Cradle start control
D Emergency stop
E Anti-collision bar shunt
F Overload indicator
G Lift cradle
H Lower cradle
I Slew spreader bar left
J Slew spreader bar right
K Slew turret left
L Slew turret right
M Jib/mast up*
N Jib/mast down*
O Traversing left
P Traversing right
Q Retract telescopic jib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



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

34 Removable RESCUE operation pendant control*
43 Buzzer
44 Fault code display
45 Fault code list

*) Depending on the equipement
**) Keypad identical to that of cradle

Fig. 12. - Control boxes of machines with PLC and MAGTRON™

OPTIONS

- Cradle with additional basket
- Excentric cradle
- Pantographe cradle
- Telescopic jib
- Telescopic mast
- Upper anti-collision bar
- Electrical cable box
- Jib anti-collision detector
- Anemometer
- Detection of presence of rail (tracks with track switch)
- Additional load winch for glass replacement
- 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

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