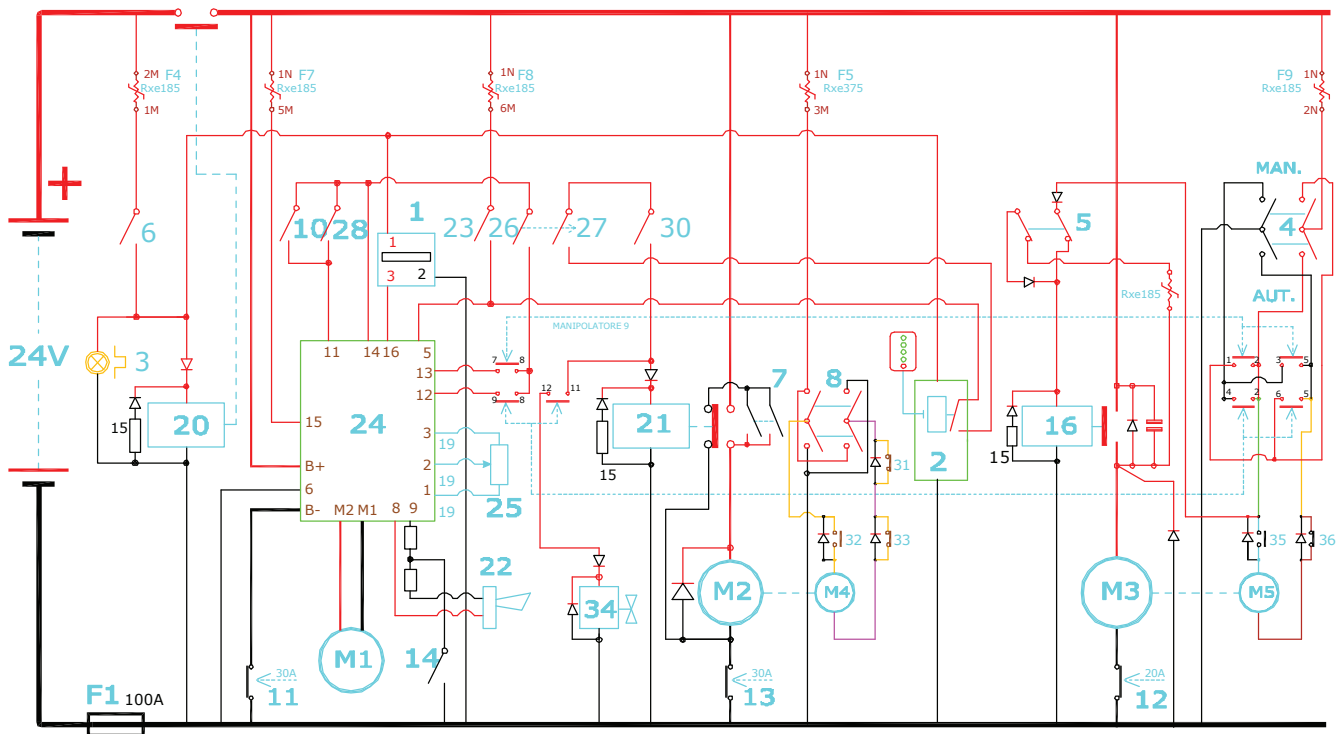


ELECTRICAL DIAGRAM



PROGRAMMING CONSOLE

CONSOLE SERVICES

The console allows to:

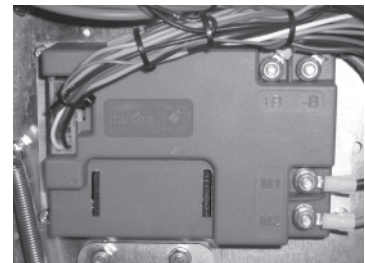
- Program the traction card to have a customized performance of the traction.
- Test and check the electric values and the electric circuit conditions (only the traction part).
- Read the alarm and warnings to help the operator to solve the problems.

CONSOLE USE

The right sequence to connect the console is the following:

1. TURN OFF the machine with the key switch
2. Connect the console in the socket on the traction card
3. TURN ON the machine with the key switch
4. Terminate any program you used with the console and TURN OFF the machine with the key switch
5. Take off the console from its socket

A OPERATION SEQUENCE DIFFERENT FROM THAT SHOWN ABOVE CAN COMPROMISE OR DAMAGE THE TRACTION CARD OR THE CONSOLE



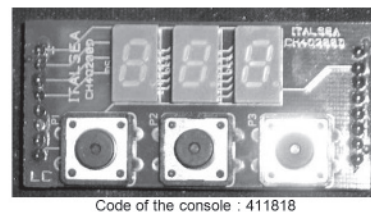
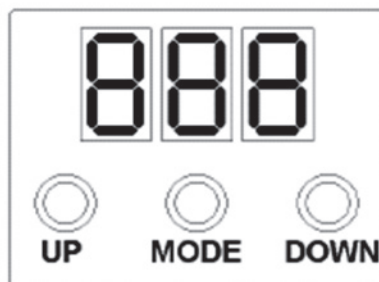
ALARM AND WARNING TABLE

Alarms or warnings stop the machine. The number of the alarm occurred is readable by the console display or counting the flashes of the alarm led. The number of flashes matches with the alarm number (for example 4 flashes are equal to A4).

Message	Purpose	Alarm
A1	FORWARD GEAR TURNED ON DURING SWITCHING	CONTROL THE MICRO FORWARD GEAR
A2	REVERSE GEAR TURNED ON DURING SWITCHING	CONTROLS THE MICRO REVERSE GEAR
A3	TEAR POTENTIOMETER	CONTROL THE CABLES OF THE POTENTIOMETER
A4	POTENTIOMETER NOT SET TO ZERO DURING SWITCHING – SET	THE POSITION OF THE ZERO POINT OF THE POTENTIOMETER
A5	THERMAL PROTECTION (it activates at temperature over 190° F, causing stopping of the machine, until the temperature is below limits – control the value of temperature with the parameter F14=4))	CONTROL THE ABSORPTION OF THE MOTOR – INCREASE THE DISSIPATION
A6	SHORT MOS DURING THE SWITCHING	SWITCH OFF, VERIFY AND SWITCH ON AGAIN. CONNECTIONS. IF IT PERSISTS CHANGE THE OPERATION.
A7	OVER CURRENT LINE 1	CONTROLS THE MOTOR OR – DECREASE THE MAX. CURRENT
A8	OVER CURRENT LINE 2	CONTROLS THE MOTOR OR – DECREASE THE MAX. CURRENT
A9	UNDER VOLTAGE	VOLTAGE < 18V CONTROLS THE CONNECTIONS AND THE SECTION OF THE CABLES OF POWER
A10	OVER VOLTAGE	VOLTAGE > 45 V
A11	AMP PROTECTION	CONTROLS THE CURRENT OF THE MOTOR
A12	DISABLE	CONTROLS THE CONNECTION OF THE PIN 6
A13	ALARM SWITCHING OFF	CONTROLS THE KEY AND THE CORRESPONDENT CONNECTION
A14	ALARM EEPROM	SWITCH OFF AND SWITCH ON AGAIN

PROGRAMMING THE TRACTION CARD

To enter into the programming functions, push “MODE”. Then will appear the text indicating the first parameter (“F0”); pushing “UP” and “DOWN” to select the required parameter. Push “MODE” to enter into the modes of the change and push “UP” and “DOWN” to obtain the required value; when it's selected, confirm another time the new value with “MODE”.



Code of the console : 411818

PARAMETERS

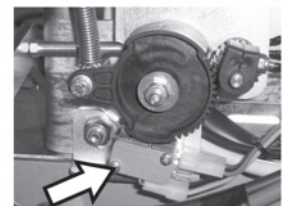
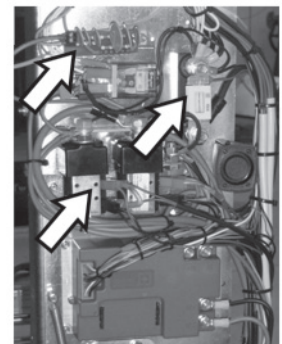
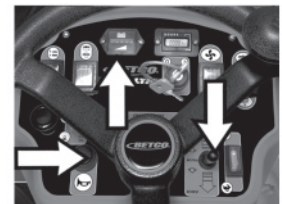
Name	Default	Min	Max	Description
F 0	2	0	2	Parameters of default (F0=2), switch off and switch on again
F 1 *	50	0	999	IGSL
F 2 *	100	0	999	PGSL
F 3 *	70	0	999	IGCL
F 4 *	600	0	999	PGCL
F 5	20	5	50 Ramp	Acceleration (10=1s)
F 6	10	5	50 Ramp	Deceleration when reversing (10=1s)
F 7	8	5	50	Deceleration ramp when stopping (10=1s)
F 8	60	0	60	Limit of current [A] - I _{max}
F 9	60	0	100	Decrease reverse gear [%]
F 10	0	0	2	Refer of speed 0=potentiometer 0-max. with 2 micro of gear 1=potentiometer wig-wag with micro of gear 2=potentiometer wig-wag without micro of gear
F 11 *	----	----	----	LPOT
F 12 *	----	----	----	CPOT
F 13 *	----	----	----	HPOT
F 14	2	0	99	Display view: 0=none 1=motor current [1=1A] 2=motor voltage [10=1V] 3=potentiometer voltage [10=1V] 4=temperature dissipater [°C] 5=battery voltage [10=1V] 9=software version
F 15	5	0	100	Late of release electric brake (10=1s)
F 16	0	0	20	Minimal speed (% respect of the max speed)
F 17	20	0	20	Nominal current of the motor – I _n
F 18	15	0	15	Time ammeter [s] with max current – t
F 19	15	5	50	Dead strip potentiometer (10=0,1V)
F 20	0	0	1	Qualification calibration potentiometer 0=no qualified / 1 = qualified
F 21	0	0	100	Time duration anticrushing (0,1 s)
F 22	100	0	100	Max. speed with forward gear [%]
F 23	1	0	2	Entrance Multimode: 0=inhibited entrance 1=reduction of speed with mando Multimode, 2=reduction of current with mando Multimode
F 24	60	0	100	Max. speed in Multimode [%]
F 25	25	0	40	Max current in Multimode [A]
F 26	0	0	100	RxI [100=10% a 120 A (60 A)]
F 27	0	0	100	Speed in anticrushing [%of speed max] F27=0 DISABLES ANTICRUSHING
F 28	0	0	1	VOLTAGE battery [0 = 24V ; 1 = 36V] SWITCH OFF AND SWITCH ON AGAIN TO CONFIRM
F 29 *	---	---	---	I_TAR
F 30	0	0	1	Entrance key to parameters (*)
F 31	1	0	1	Entrance logic disable [0=N.A. ; 1=N.C.]

POTENTIOMETER CALIBRATION

1. Be sure that the machine is turned off.
2. Connect the programming console to the traction card and then turn on the machine.
3. A check out message (like - -3 or similar will flash few times) will be shown and then "0" will appear.
4. Push the ENTER button, "F1" will appear.
5. Push the "UP" button until "F20" appear and then press the Enter button to be able to change the parameter 20.
6. Push the "UP" button to set the parameter at "1" then confirm the value with the ENTER button.
7. Wait until the console shows "0".
8. Push simultaneously the "UP" and "DOWN" keys and keep them pressed for few seconds.
9. The low flashing segment and the potentiometer voltage value will appear.
10. With pedal in idle condition press "ENTER" to store in the traction card the idle potentiometer value.
11. Then a the high segment will start to flash.
12. Push the accelerator pedal to its end stroke and, keeping it pressed, push the "ENTER" button to store in the traction card the maximum potentiometer value.
13. Wait until on the console "0" appears.
14. Then push the "ENTER" button to let "F1" appear.
15. Push the "UP" button until "F20" appear and then press the "ENTER" button.
16. The console will show the number 1 which is the value of the parameter 20.
17. Push the "DOWN" button to set the parameter 20 to 0 and confirm with the "ENTER" button.
18. Wait until the console shows the number "0".
19. Turn off the machine and restart it.
20. The Accelerator Programming is finished.
21. Be sure to disconnect the console only if the machine is turned off.

ELECTRIC PLANT TEST

1. Disconnect the supply plug.
2. Check the connections of the battery cables.
3. Check the tightness of power cables, **relays, fuses (RXE)** motors etc.
4. Check the conditions and the right values of **fuses**.
5. Check the functionality of **traction micro switch**.
6. Check that the potentiometer support is adjusted so if the potentiometer is at maximum travel the pedal touches the bottom plate. This is to prevent potentiometer damage.
7. Connect the battery plug.
8. Turn on the machine with the key switch.
9. Check the lamps and the switches:
 - Check the functionality of **battery level LEDS**.
 - Check the functionality of the horn.
 - Check the functionality of **forward back switch**.



SPEED CONTROL PEDAL ADJUSTMENT

1. Verify that if the potentiometer gears are at the end of stroke, the speed control pedal touches the bottom plate. This is important to avoid the gears breaking down for a too high pressure.
2. If an adjustment is needed:
 - Unscrew the **two M6 nuts** which lock the potentiometer plate.
 - Put the **potentiometer gears** at end of stroke and, using the slot on the plate, move the potentiometer plate to let the **pedal** lay on the bottom plate.
 - Tighten the **two M6 nuts**.

