



Operator's Handbook

IDENTIFICATION DATA OF THE MANUFACTURER

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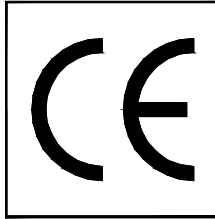
IDENTIFICATION DATA OF THE PRODUCT

MODEL: ACE Screw Counter
CODE: 020021 for EDU1FR/SG
020022 for EDU..BR/SG and EDU1AE
YEAR OF COSTRUCTION: 2010

THECNICAL DATA OF THE PRODUCT

TENSION: 12V DC

DECLARATION OF CONFORMITY



KOLVER S.r.l.
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Declare that the new machine here described:

System:

ACE Screw Counter

Is in conformity with the following standards documents:
98/37/CE, 89/336/CE and 2006/95/CE,
EN 50144-1 and EN 60204-1.
It is also in conformity with RoHS normative.

Name: Giovanni Colasante
Position: Amministratore Delegato

Thiene, 01/01/2010

Giovanni Colasante
KOLVER S.r.l.

GENERAL SAFETY RULES

WARNING: when using automatic systems, basic safety precautions should always be followed to reduce the risk of fire, electric shock and personal injury. Read all the instructions below before using the screwdriver and save them.

1. **Keep the work area clean and well lit.**
 2. **Do not use the unit in damp or wet locations or in presence of flammable liquid or gases.**
 3. **Avoid body contact with grounded surfaces as pipes, radiators, refrigerators etc.**
 4. **Keep children and visitors away from work area.**
 5. **When not in use screwdrivers should be stored in dry and locked-up place and out of the reach of children.**
 6. **Do not use the unit for purposes or works not intended**
 7. **Never carry the screwdriver by cable or pull it to disconnect it from socket.**
 8. **Keep proper footing and balance at all times.**
 9. **Inspect tool cable periodically and, if damaged, have it repaired or replaced by authorized service facility**
 10. **Disconnect tools from power supply before any operation of servicing**
 11. **When unit is used outdoors, only operate with extension cords intended for use outdoors and so marked**
 12. **Always check the unit is not damaged before using it. Defective switches must be replaced by authorized service centre. Never use tools that cannot be turned on or off by the switch.**
 13. **The use of any other accessory other than recommended in this operating instruction may represent a risk of personal injury.**
 14. **Have the screwdriver repaired only by authorized and expert people.**
- Failing to do so may represent a serious danger.**

1. General view

The Screw Counter is a process control system that monitors the fastening assembly process by calculating the fastening time and by checking how many screws are left to be tightened. The system works by comparing the motor time on and off window, to a pre set MIN/MAX value.

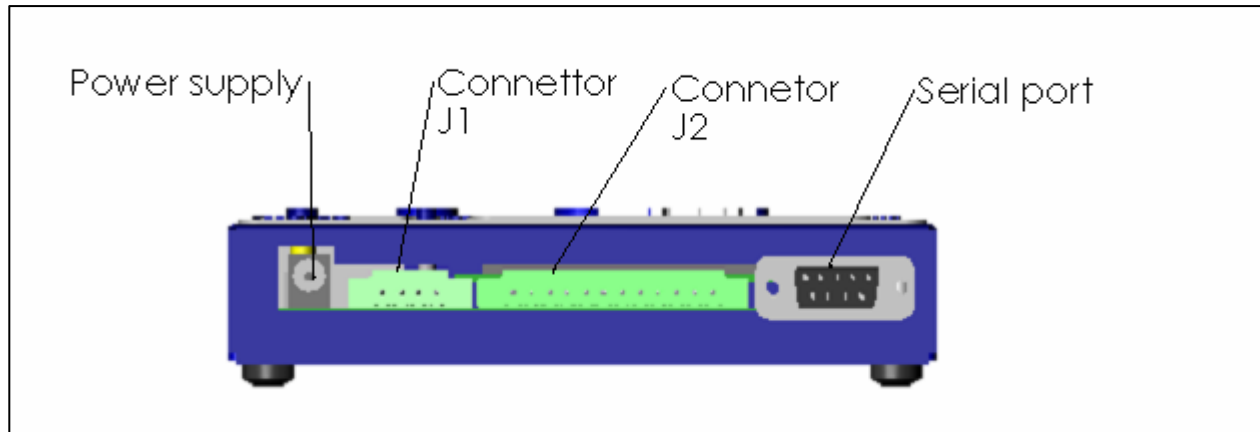


Fig. 1.0 Back panel

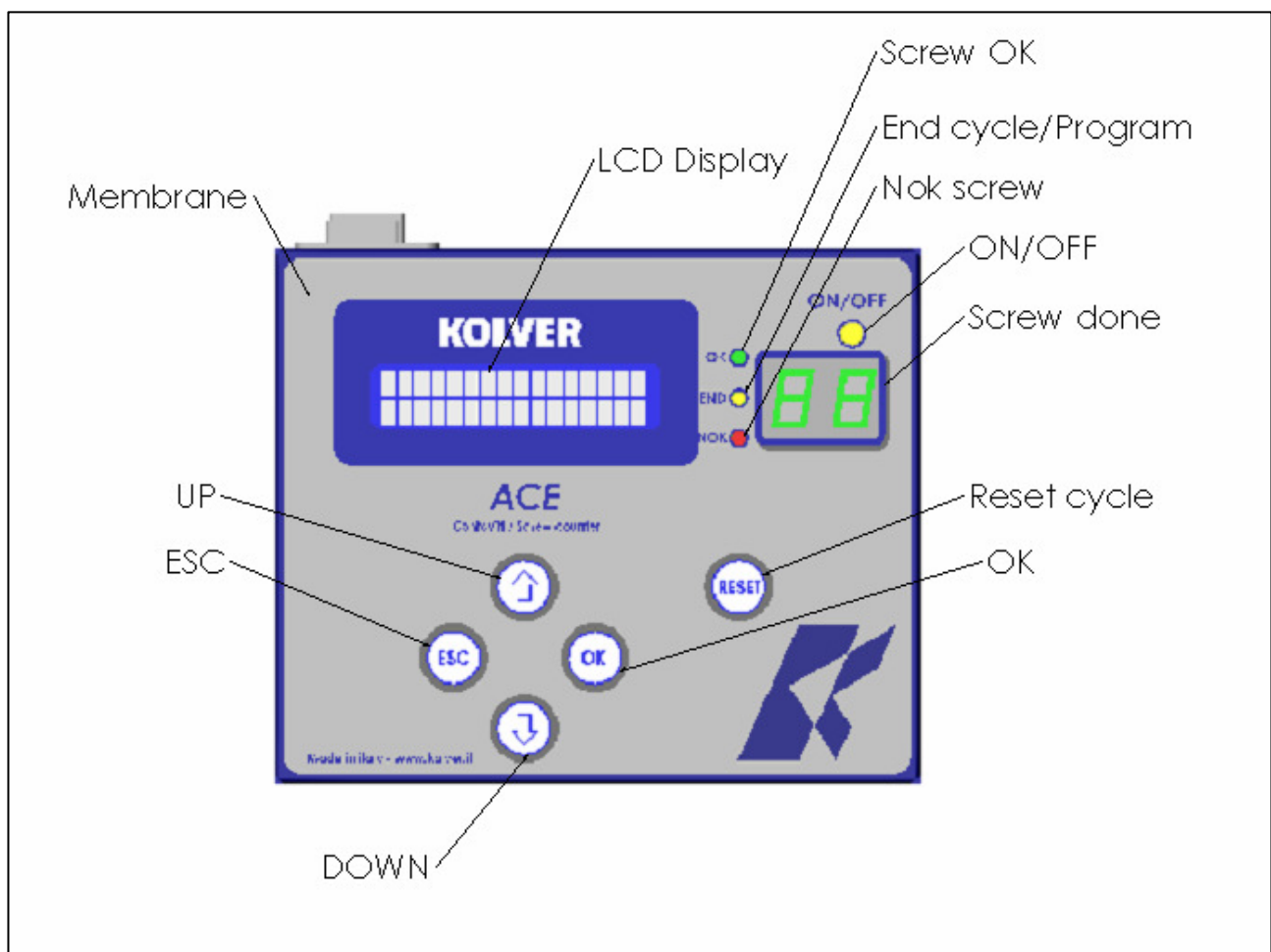


Fig 1.1 Front side

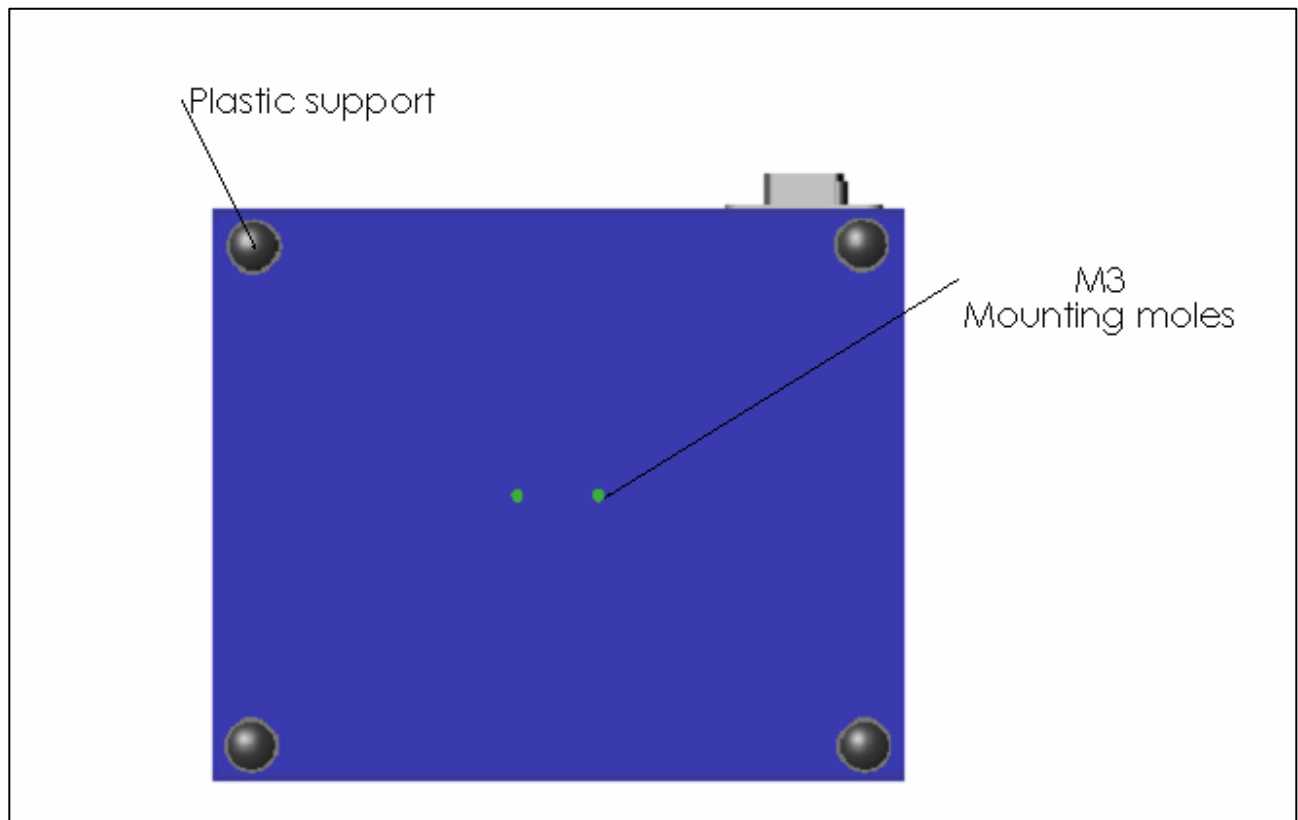


Fig 1.2 Bottom

2. Main features

- 9 independent programs
- Up to 99 screw for each program
- Min and max fastening time (accuracy: 0.01sec)
- User confirmation: active stop motor: push OK, to start a new cycle.
- In case of error, push ESC to continue (active stop motor).
- Password at the first starting and every time after the unit has been switched off
- Sequence of 4 programs
- Statistics: total number of correct screws done, wrong screws, cycles done, sequences done
- Connectors on the back panel with output signal of OK, NOK and END CYCLE
- Remote control of the system (optional)
- RS232 port

3. Main Display

The *ACE Screw Counter* offers 2 different modes of operation:

- Single program/Cycle,
- Sequence.

SINGLE PROGRAM: to perform a cycle for each program. The display will show all the parameters needed to run the program.

SEQUENCE: to perform up to 4 programs in sequence. On the display the selected programs need more information: screws done, screws to be done, total programs of the sequence and the program you are in.

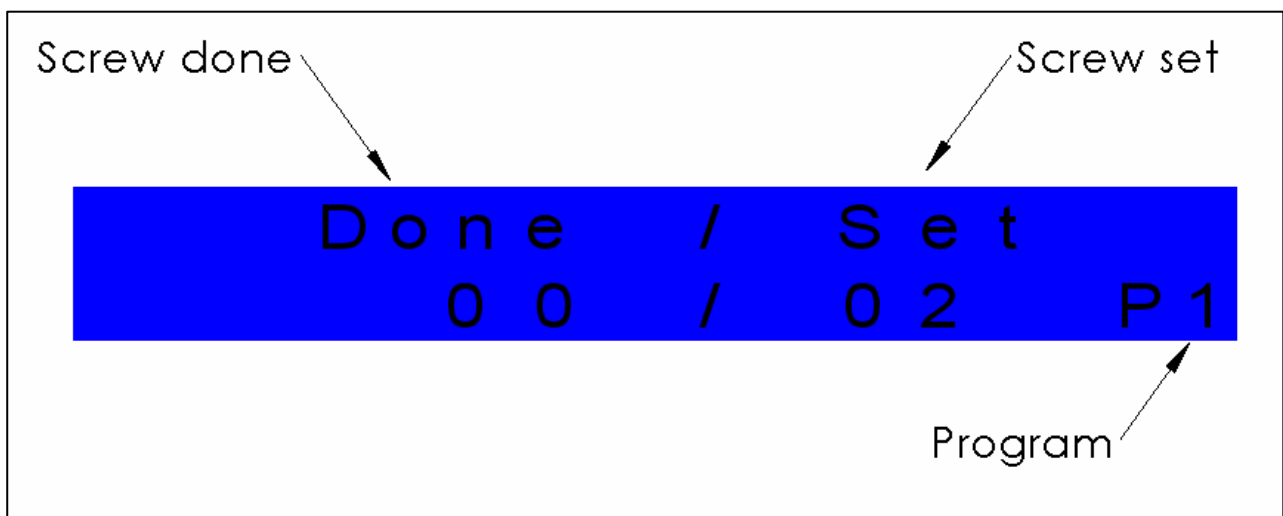


Fig 3.0 Single program: main screen

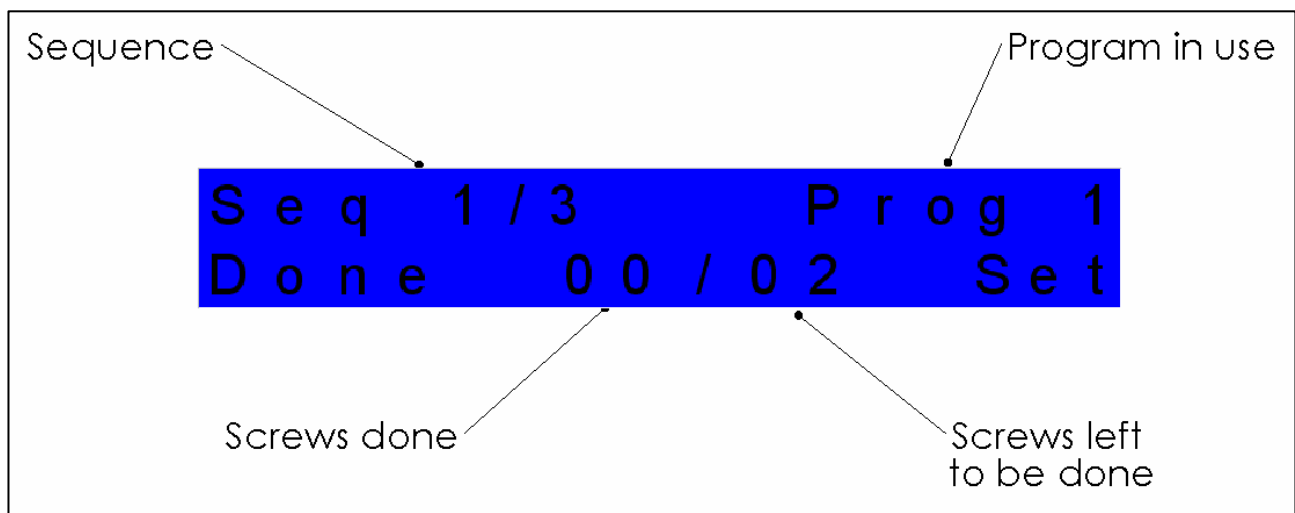


Fig 3.1 Sequence: main screen

If the screw has been done correctly, the unit will display the fastening time and the correct result of the screw (Screw OK – fig. 3.2).

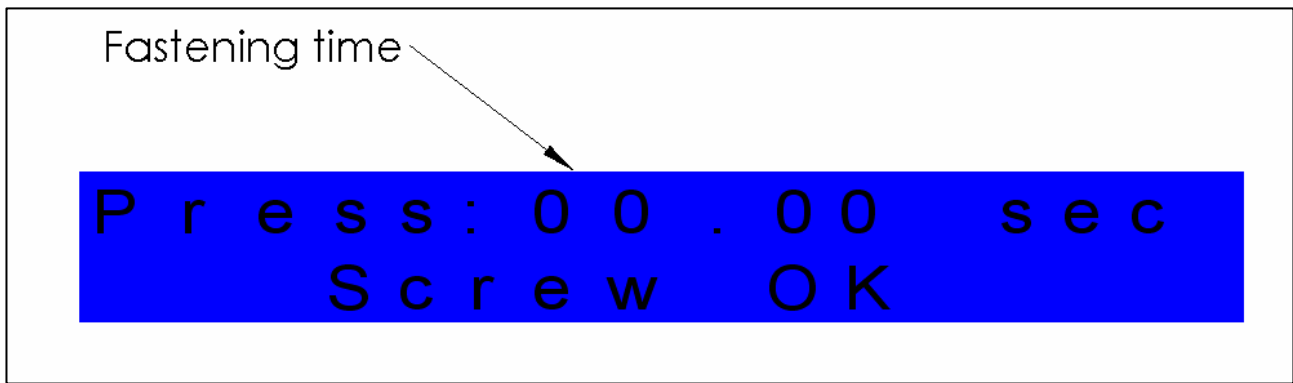


Fig 3.2 Screw OK

If the screw has been done wrongly, the unit will display the fastening time and the type of error (fig. 3.3).

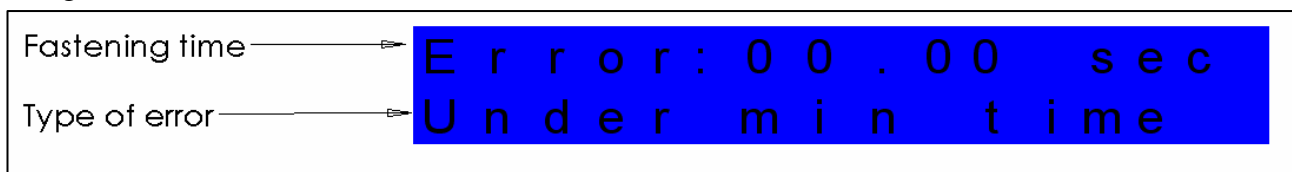


Fig. 3.3 Screw NOK

Errors can be:

- “Under min time”: when the torque is reached under the pre-set min time
- “Over max time”: when the fastening time is over the pre-set max time. In this case the screwdriver will stop.

If the program you are in is finished, the unit will display the END CYCLE (fig. 3.4).

If the automatic reset is not active, this screen will be on until you push OK; instead if the automatic reset is active, the unit will go to the next program.

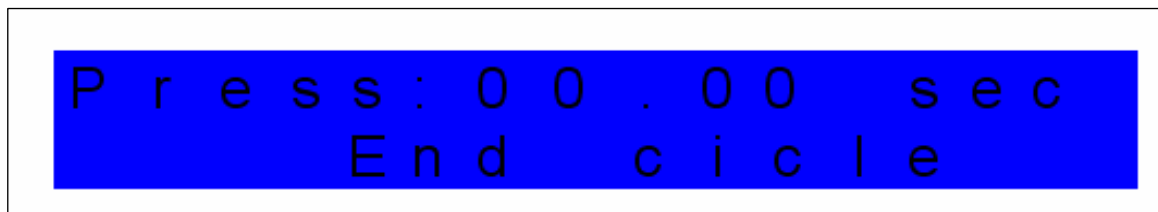


Fig. 3.4 End program screen

In case of Sequence and last cycle, if the RESET is set on manual (fig. 3.5), push OK to re-start the sequence; instead the unit will re-start the sequence automatically.

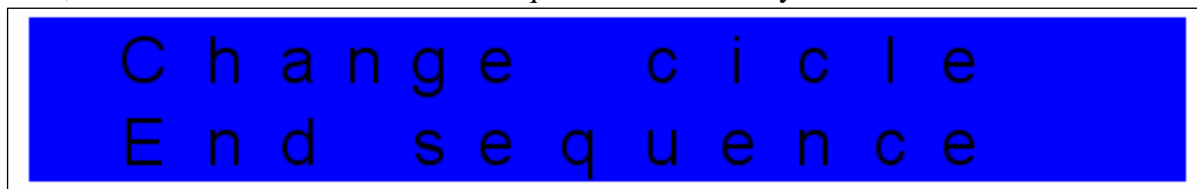


Fig. 3.5 End of sequence screen

Screw done display

This display shows the OK screws done. Its bigger digits ensure a more effective reading.

LED OK/ END/ NOK

To check more quickly the result of your fastening operation, 3 leds will help:

- GREEN: Screw OK
- YELLOW: end of program or end of sequence
- RED: Screw NOT-OK

Beep sounds

Beep sounds at the end of the screwing allow to check if the screwing itself is correct or not.

- 1 beep: Screw ok
- 3 beep: Screw not-ok
- 5 beep: end of cycle

1. Menu

To enter the menu, push ESC for 1 sec.

At the first starting, you must digit a password: through UP/DOWN keys, digit the number and push OK to save it. Default password: 0000.

Menu:

- 1) Program: X
- 2) Screw : XX
- 3) Tmin : X.XX
- 4) Tmax : X.XX
- 5) Reset : YES/NO
- 6) Password
- 7) Sequence YES/NO
- 8) Sequence: XXXX
- 9) Statistic

To enter, select through UP/DOWN and push OK:

- 1) Program: to select the desired program. Once set, Pieces and Time will automatically be loaded. The selected program will be used in "Single Program" mode.
Select the program through the UP/DOWN keys and push OK to save it or ESC to exit without saving.
- 2) Screws: to select the number of pieces for each program.
Select the program through UP/DOWN keys and push OK to save it or ESC to exit without saving.
- 3) Tmin: to set the minimum fastening time. Reaching the torque under the min time will result in error. The min time must be lower than the max time. Select the program through UP/DOWN keys and push OK to save it or ESC to exit without saving.
consente di inserire il tempo minimo di avvitatura. Se l'avvitatore arriverà in coppia in un
- 4) Tmax: to set the maximum fastening time. Reaching the torque over the max time will result in error. In this case the screwdriver will stop and the operator will be advised on the display and with 3 beep sounds. The max time must be higher than the min time.
Select the program through UP/DOWN keys and push OK to save it or ESC to exit without saving.

- 5) RESET: if active, at the end of each program, push OK to start a new program. If not active, the new program will start automatically. The end of the cycle will result on the display and in a beep sound. Select the program through UP/DOWN keys and push OK to save it or ESC to exit without saving.
- 6) Password: you can select a new password instead of the default 0000. Push OK and digit the numbers through UP/DOWN, then push OK to save each value.
- 7) Sequence YES/NO: if YES, you can activate the sequence or a functioning sequence of the pres-set programs (see § 8).
 - Push OK to enter
 - Through UP/DOWN keys, select “YES” to set the sequence or “NO” to remain in single program
 - Push OK to confirm

Once you set the sequence, you can modify only the number of the screws, the min and the max time but not the number of program you are in.

- 8) Sequence: you can set a sequence up to 4 programs. Each program can be repeated:
 - Push OK to enter
 - Set the number of cycle per program (2, 3, 4) through UP/DOWN and push O
 - Set each single program through UP/DOWN and push OKOnce set the last program, the unit will save automatically the data. The sequence will be shown on the display.
- 9) Statistic:
 - Screws OK
 - Screw NOT-OK
 - Cycles done
 - Sequences done correctly

Functioning:

- Push OK to enter
- All the datas are visualized, then push OK to go on
- RESET ALL?: select YES through UP/DOWN to reset all the datas or NO
- PRINT ALL: select YES through UP/DOWN to print all the datas or NO

5.Connectors

Warning: a wrong connection may cause irreversible damage to this device, ensure that tensions and connections are made by skilled technicians.

Read the operating instructions before connecting external systems and ensure that tensions and external signals are within the limits of the device.

Any tampering or damage caused by improper use of the device are not covered by warranty.

On the back panel, there are 2 connectors:

- A) In/Out screwdriver
 - B) Output signals
 - C) Connection to external keyboard for a remote control
 - D) Remote suspension of cycle
- A) To be connected to the control unit:
- 1) Stop motor: Segnale di disabilitazione avvitatore
 - 2) Lever: start signal (lever pressed)
 - 3) Torque: torque signal
 - 4) 0 GND: common signal

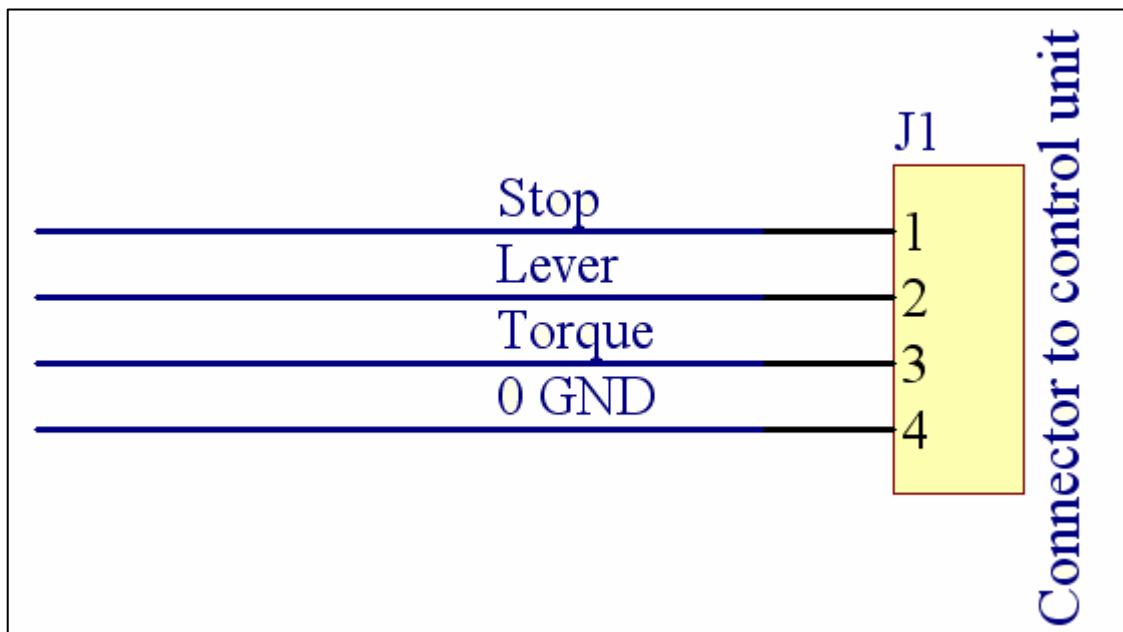


Fig. 5.0 J1 connector to Kolver control units

B) Pins 1 to 4 send out the signals of OK/NOT-OK screws and CYLE/SEQUENCE END. It features 2 relays to be used with up to 250VAC contacts: ideal to send for the signals to external devices located in the medium-long distances or to light signals.

Pins are:

- 1) GND Output
- 2) OK Screw
- 3) NOK Screw
- 4) CYLE/SEQUENCE END

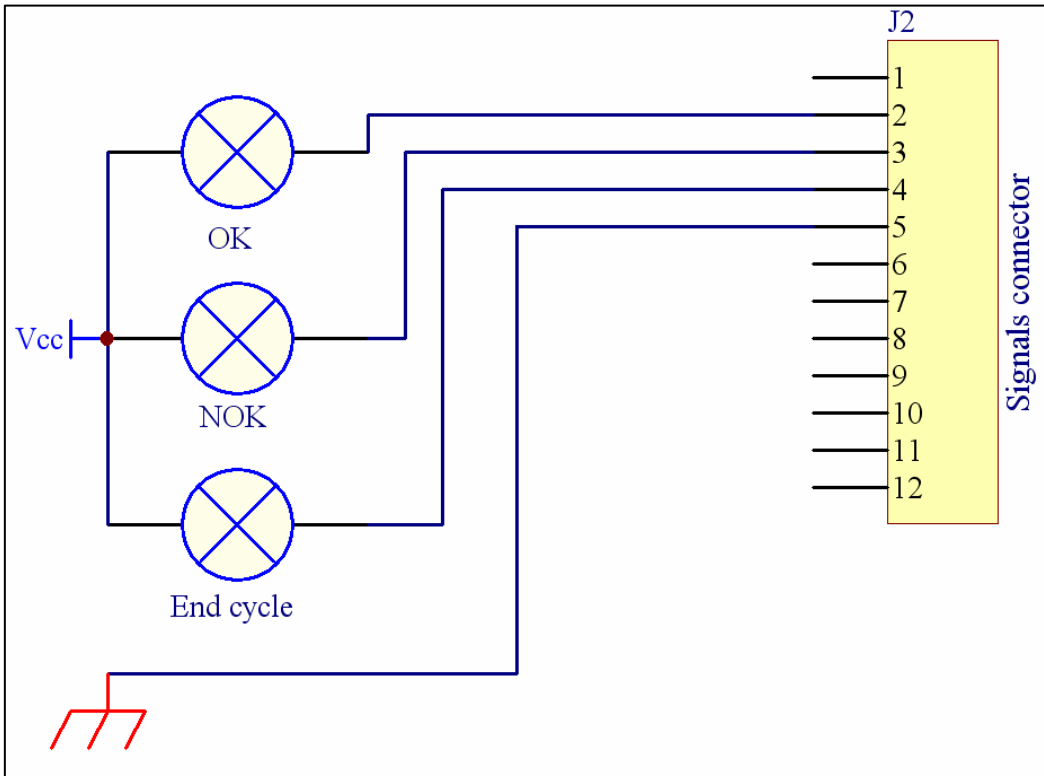


Fig 5.1 Signal connectors

CONTACT DATA			
Contact Arrangement	1A,1C		
Initial Contact Resistance Max.	70mΩ (at 1A 24VDC)		
Contact Material	AgNi		
Contact Rating (Res. Load)	1A		1C
	Standard	Sensitive	Standard
	5A 250VAC		3A 250VAC
	5A 30VDC		3A 30VDC
Max. switching voltage	250VAC/30VDC		
Max. switching current	5A		
Max. switching power	1250VA/150W		
Mechanical life	1 x 10 ⁶ OPS		
Electrical life	1 x 10 ⁵ OPS		

Fig. 5.2 Signal connectors: features

C) Keyboard connections allow the ACE screw counter functions through remote controls parallel to those on the screw counter itself, UP/DOWN not included useful only in the setting. The keyboard has also a “part present”: when active, it disables the screwdriver and it also available on your assembly line for a better control of the production cycle.

Controls are:

- 0 VDC
- OK
- ESC
- RESET
- Part present

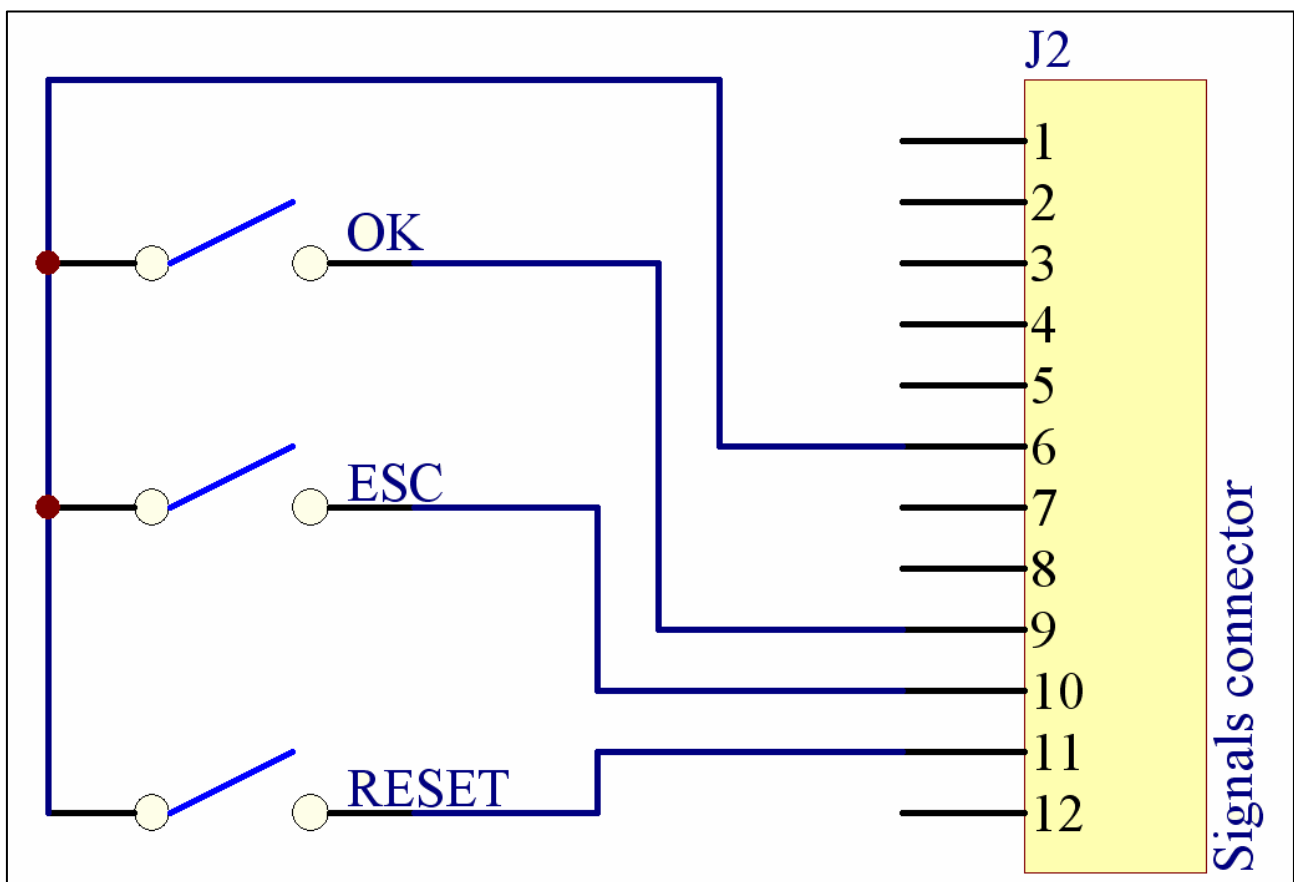


Fig. 5.2 Signal connectors on the keyboard

Warning: Do not connect buttons or other systems (for example remote systems such as PLC) with external voltage and/or earth. Refer only to the figure 5.2
Any tampering or damage caused by improper use of the device are not covered by warranty.

It's possible to stop by remote the fastening cycle through a contact available on the back panel. Closing this contact, the cycle is blocked and also the screwdriver. Useful as a part present on your assembly line.

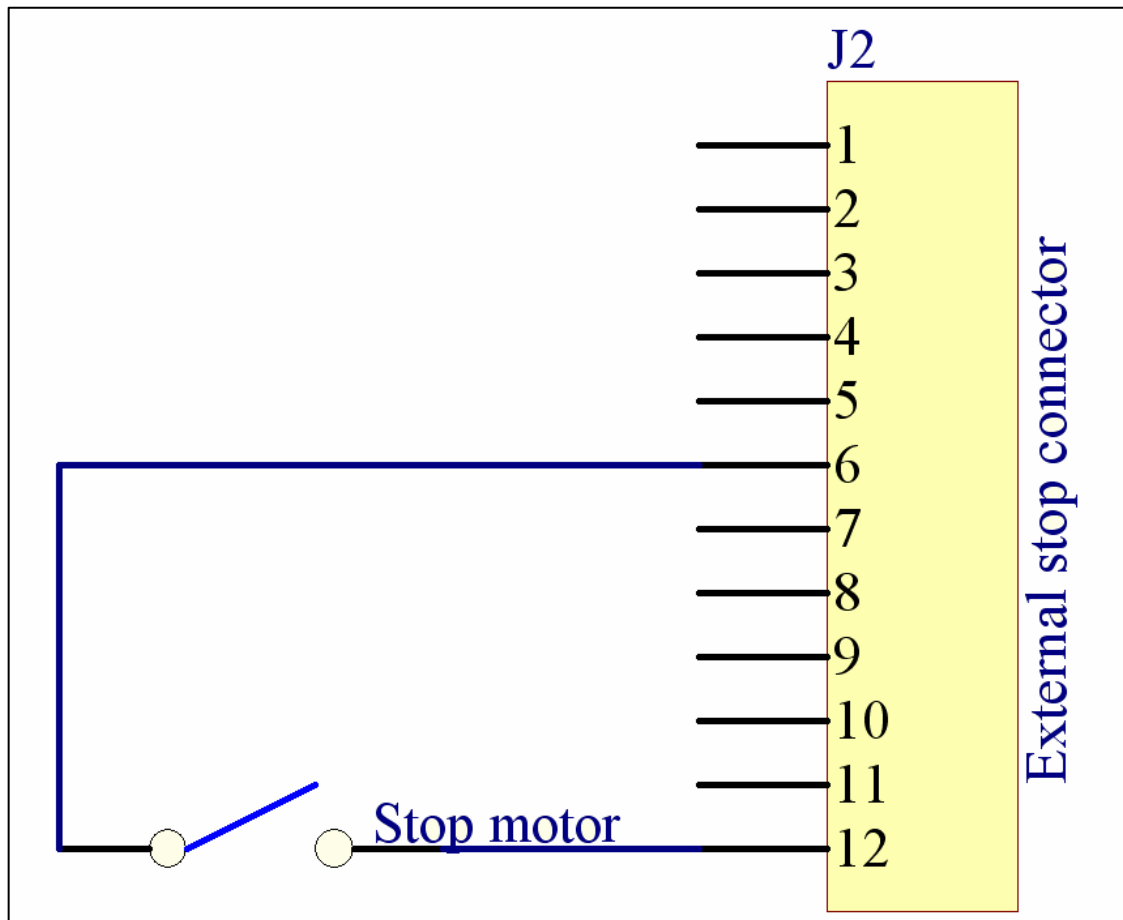


Fig. 5.3 Connection keyboard – part present

Technical features:

Transformer	12VDC 200mA
Nominal current	230mA
Max current	500mA

Keyboard Relay:

Nominal voltage	Pick-up Voltage VDC	Drop-out Voltage VDC	Max. allowable Voltage VDC(at 20)
24	18.0	1.20	31.2