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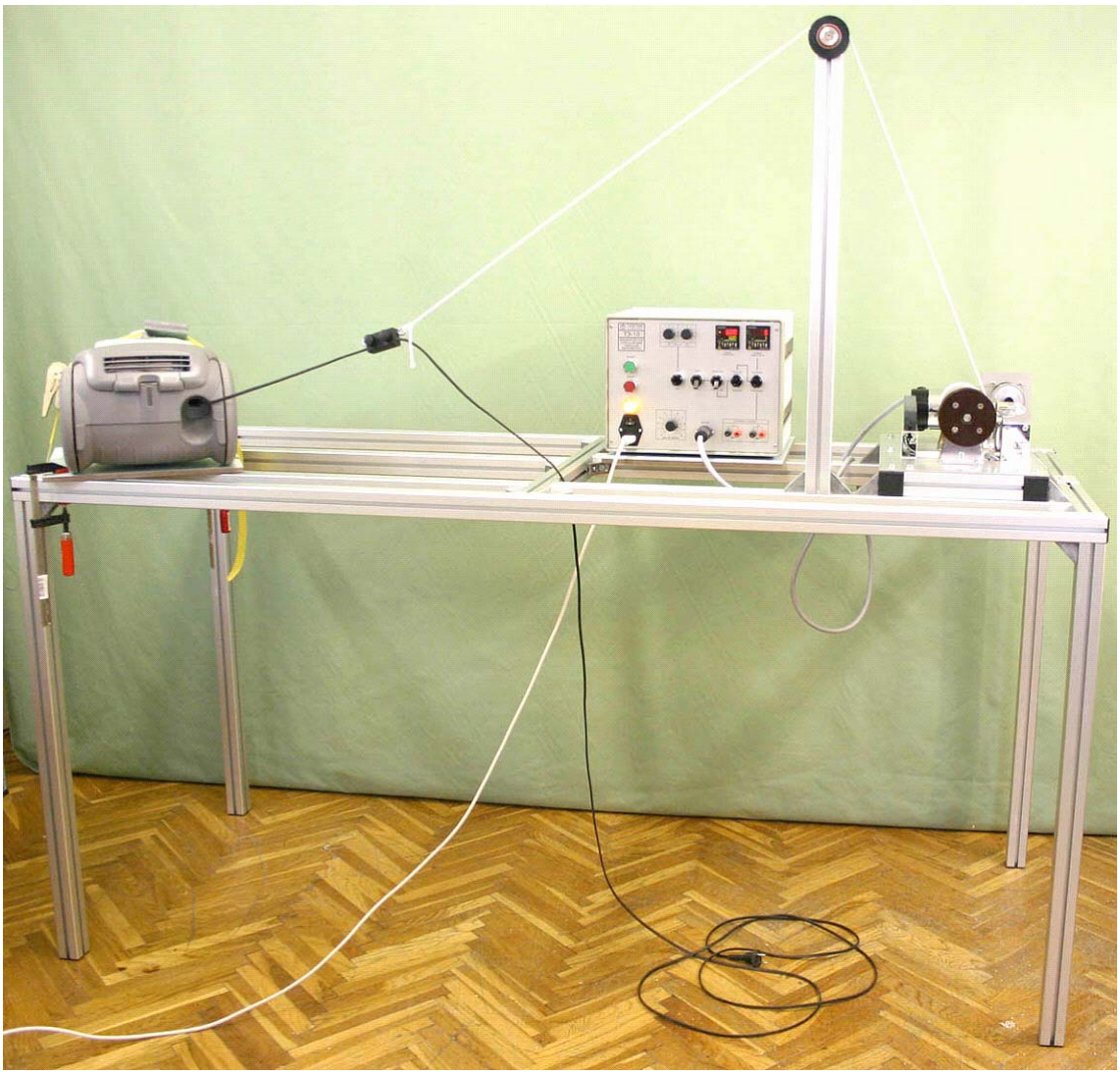
TESTING
L J U B L J A N A



T3-15

APPARATUS FOR AUTOMATIC REEL CORD TESTING

T3-15 is intended for automatic reel cord testing according to IEC 335-1.

T3-15 consists of T3-10 as a drive, and of skeleton with a couple of pulleys, and holder of vacuum cleaner.

T3-10 should be attached on the modular desk. Vacuum cleaner shall be attached to the modular desk and the button for automatic reel cord recoiling shall be pressed and blocked. The driving pulley shall be mounted in the drill head and the line shall be stretched over additional pulley and tied on the cable clamp, which shall be mounted to appropriate location (2/3) on the cable (see the photo on the front page).

1. Release the nut (**7** on T3-10) of left shutter (**6** on T3-10). Adjust left shutter plate so that its sensor is activated (and the LED turns on at the back of it). Tighten the triggering plate again.
2. Set “3” keys on the counter “TURNS PER CYCLE” and reset it.
3. Set “6000” on the main counter and reset it.
4. Set all switches into the following position:

Switches:

ON	LEFT	ANGULAR	CYCLING	INTERNAL
↓	↑	↓	↑	↑
OFF	RIGHT	CIRCULAR	TURNING	EXTERNAL

We also suggest that you turn the delay on and adjust it to the desired value, to prevent overheating of tested sample. Set speed to 9 (or less).

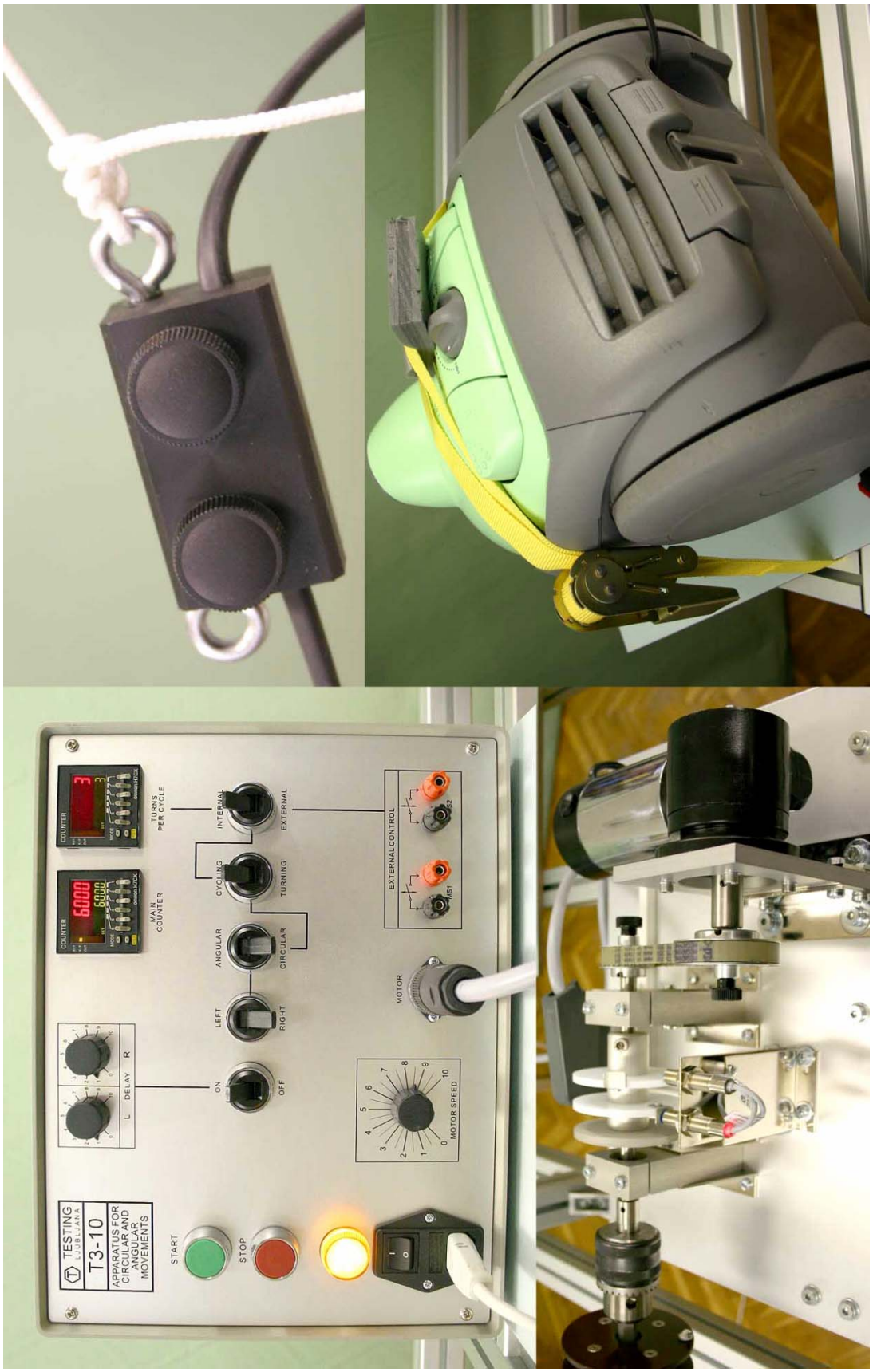
Press START push button.

If you stop the test for any reason, you shall always repeat steps 1 – 4.

You can always first start with slow speed to check that everything is ok and increase it gradually to required speed.

Due to many possible shapes of tested samples sometimes improvisation is necessary. The complete mechanical desk is modular, so that you can attach additional profiles or move the additional pulley in any required position.

You can see some of the described procedures on the following photos.


TESTING
LJUBLJANA
T3-10
APPARATUS FOR CIRCULAR AND ANGULAR MOVEMENTS
START
STOP
ON
OFF
LEFT
RIGHT
ANGULAR
CIRCULAR
CYCLING
TURNING
INTERVAL
EXTERNAL
EXTERNAL CONTROL
MOTOR
MOTOR SPEED
TURNS PER CYCLE
MAIN COUNTER
L
DELAY
R

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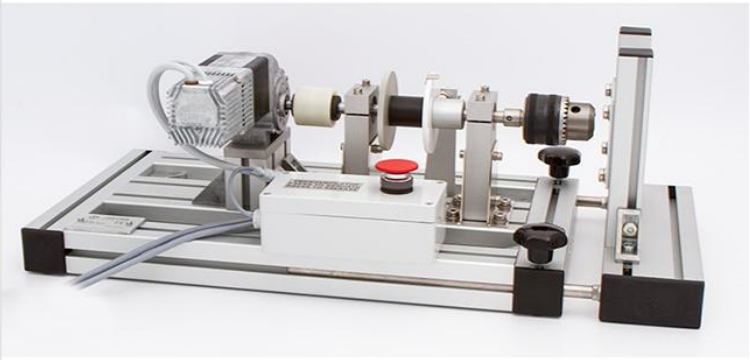
TESTING EUROPE



T3-10

APPARATUS FOR CIRCULAR AND ANGULAR MOVEMENTS

TECHNICAL SPECIFICATIONS

Line voltage	230V (110 V), 50Hz (60 Hz)
Power consumption	120 VA
Motor	Crouzet 24VDC with integrated microcontroller
Reduction gear	Transmission factor i=31
Rotation speed on main shaft:	120turn/min
System controller:	Siemens Logo 24 RC
Supplying voltage	24 V DC
Counter: number of digits	6 (0 - 999999)
Delay	0.1 - 10 s adjustable
Clamping head	DIA. 3 to 16 mm
Angular mode:	angle adjustments: 20 – 360 deg
Circular mode:	999999 cycles, 999999 turns
Turning mode:	max. 999999 turns
External inputs:	24V DC , 6mA

Dimensions

Mechanical unit

Width	470 mm
Depth	360 mm
Height	205 mm

Electrical unit

Width	360 mm
Depth	300 mm
Height	310 mm

DESIGN

Table top apparatus, two units:

CONTROL UNIT

Solid case, Non-sensitive, scratch-resistant surfaces through powder-coating, side panels, Al extrusion, RAL 7016, Frame, Al die-cast, RAL 7016, Base and cover, Al, 1.5 mm, RAL 9006, with GND/earthing connection, case feet with anti-slip protection, front plate and rear panel anodized aluminum 2,5 mm.

Internal and external dimensions in accordance with: IEC 60297-3. Type of protection IP 20 in accordance with IEC 60529, Protective GND/earthing connections in accordance with: IEC 61010, DIN EN 50178 / VDE 0160, DIN EN 60950 / VDE 0805, DIN EN 61010-1 / VDE 0411 part 1, DIN EN 61010-1A2 / VDE 0411 part 1/A1.

MECHANICAL UNIT

The framework is made of aluminum extruded profiles, Al Mg Si 0.5 F 25, Tolerances (straightness and flatness) according to DIN EN 12020 Part 2. The aluminum profiles are natural (C0) anodized and are therefore permanently resistant to scratching and corrosion. Surface with matt finish (E 6), anodized and compressed oxidation. Minimum layer thickness 10 µm, layer hardness 250 - 350 HV.

All parts of mechanism are nickel plated, anodized aluminum or made of stainless steel (AISI 304, DIN W. No. 1.4301 X5CrNi18-10) or (AISI 316 , DIN W. No. 1.4401 X5CrNiMo17-12-2) http://en.wikipedia.org/wiki/Stainless_steel.

DESCRIPTION

Apparatus consists of control unit and mechanical unit. Both units are connected with cable and connector that enables their separation and easier setting and transportation.

ELECTRICAL UNIT

Consists of motor controlling and switching elements. Complete circuit is supplied with protective voltage 24 VDC. Electromotor is supplied with 36 VDC. Electrical unit and mechanical unit are connected with cable through connector on mechanical unit.

MECHANICAL UNIT

It is mounted on base plate that is mounted on solid sectional aluminum profiles, that enables heavy duty mounting and fastening of apparatus in all positions (e.g., in vertical position). Usually it should be fastened on a solid table or stand by clamps or other suitable fasteners.

We also manufacture solid laboratory tables, that are intended for performing mechanical tests. Working surface of such table is made of many rectangular aluminum profiles. On these profiles all elements (e.g. pneumatic cylinders, motor drives, ...) needed for mechanical tests can be fastened by means of clamps or special fastening blocks so that many different arrangements can be set.

Motor with reduction gear drives the clamping head that is mounted on main shaft.

It is also possible to attach coordinate holder **31** on mechanical unit. It enables the small samples to be precisely positioned. That is esp. necessary when tested samples should be positioned exactly in the center of clamping head (and test tool). On this coordinate holder sample can be positioned in all three directions (X, Y and Z). Coordinate holder can be removed by unscrewing handle screws **32**. Sample mounting plates of coordinate holder can be made of different materials. Its size should depend of tested sample. When the sample is supplied by line voltage, insulating material is recommended.

WHAT CAN BE TESTED WITH T3-10?

Since there are many, many tests that can be executed with this apparatus only a couple of typical will be described here. Usually it is used as mechanical drive, for performing lifting, lowering, stretching, pushing, reeling, unreeling, flexing, bending, moving, turning, ...

- In angular mode can be tested all kinds of rotary switches, push buttons, potentiometers, cables (flexing and bending tests), telephone cables, hand tools, irons...
- In circular mode can be tested automatic reel cord (vacuum cleaners), electric hair comb, stretching of cables, lifting and lowering variable height lamps,....

Some tests require mounting of sample in front of clamping head **30** on the sample mounting plate of coordinate holder. For other tests this coordinate holder is not needed, additional devices/tools (e.g. rope or belt pulleys) should be mounted in clamping head.

The success of testing with this apparatus greatly depends on different supplementary equipment that can be manufactured in your laboratory/workshop (different pulleys, actuating members,… depending on the sample design), the ingenuity of staff in the laboratory and different clamping and fastening supports that will have to be manufactured for tested samples in your laboratory.

In case of any problems in the beginning of testing of actual specific samples you can fax your problem to our sales department (fax. No.: + 386 1 421 03 66, or e-mail to mail@testing.si). Our construction dept. will send you our proposal how to perform required test.

INSTRUCTIONS FOR USE

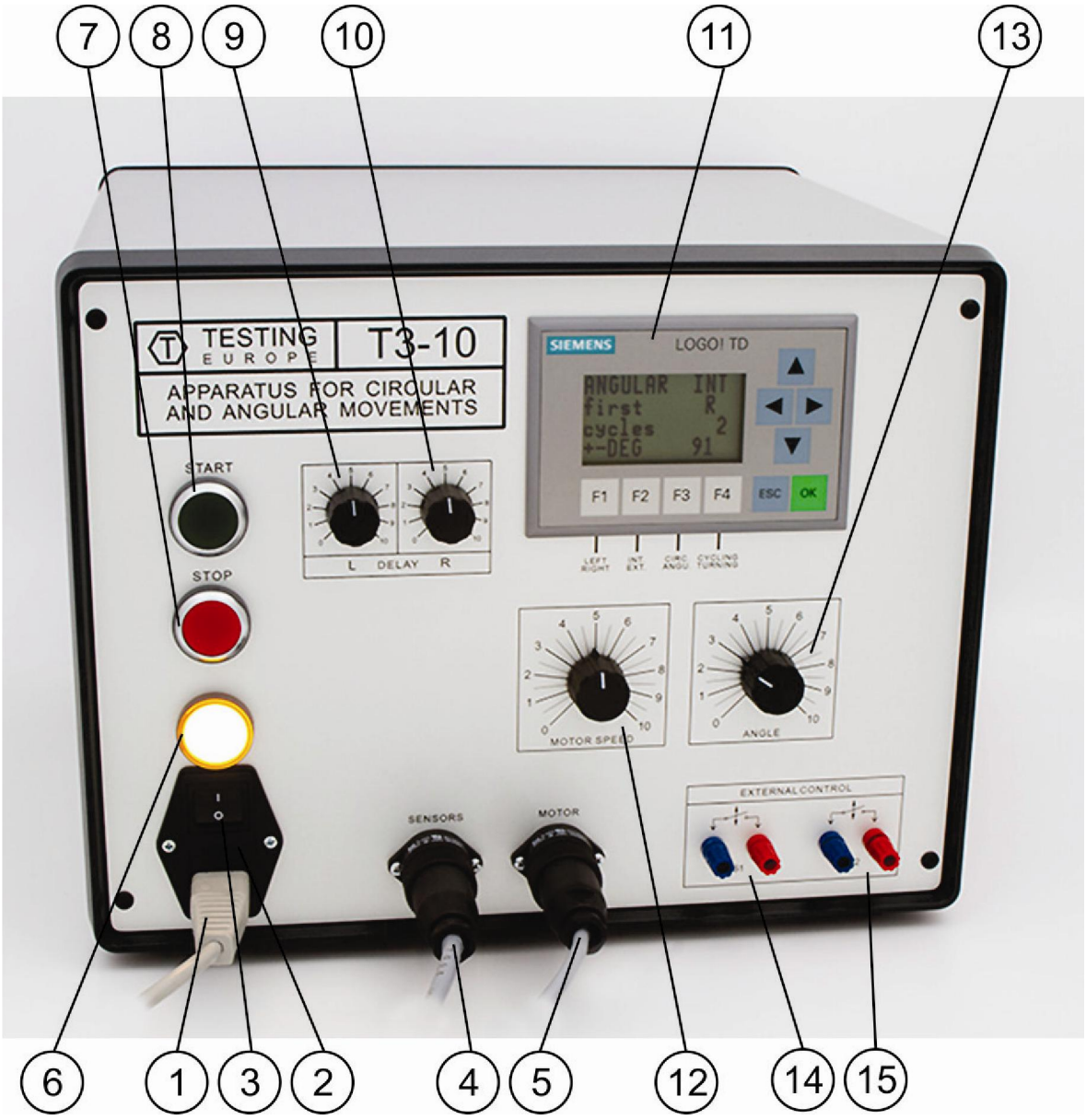


Fig 1. CONTROL UNIT

Legend with Fig. 1

1. Mains appliance coupler
2. Mains fuse
3. Mains switch
4. Cable with connector for connecting sensor of mechanical unit
5. Cable with connector for connecting motor of mechanical unit
6. Mains indicator
7. Push button STOP
8. Push button START
9. Knob for adjustment of DELAY after turning Left
10. Knob for adjustment of DELAY after turning Right
11. SIEMENS LOGO microcontroller
12. Motor speed regulation knob
13. Angle adjustment knob
14. Terminal sockets for external triggering after turning left
15. Terminal sockets for external triggering after turning right

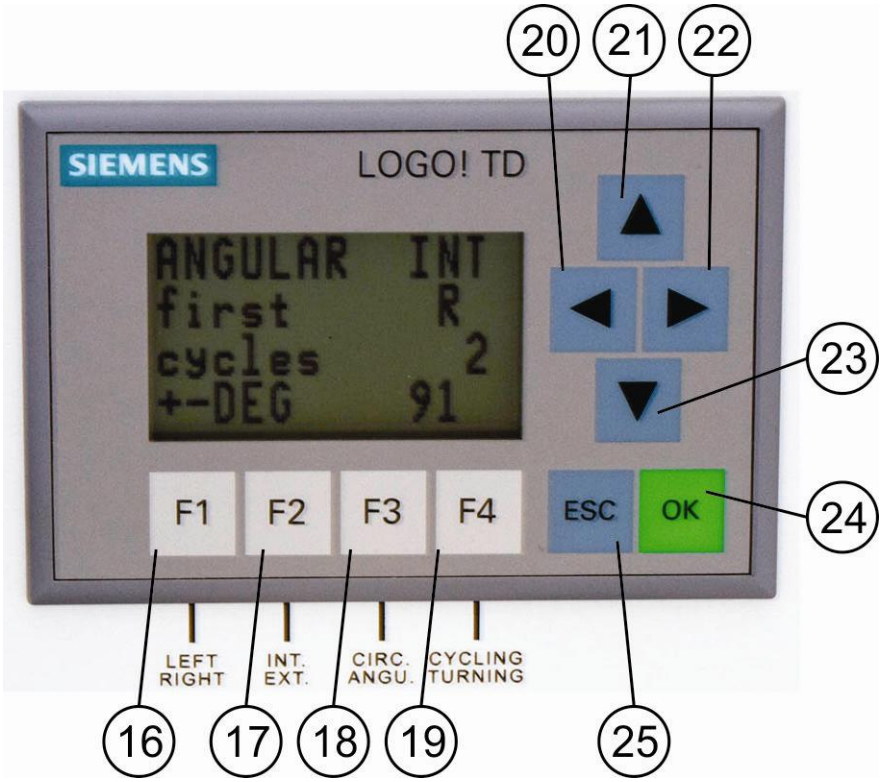


Fig. 2, SIEMENS LOGO CONTROLLER

16. Key F1 for adjustment LEFT/RIGHT start of first move
17. Key F2 for adjustment INTERNAL/EXTERNAL triggering of change of direction
18. Key F3 for adjustment CIRCULAR/ANGULAR mode of operation
19. Key F4 for adjustment CYCLING/TURNING mode of operation
20. Key LEFT – positioning the cursor to required position, also to reach second page
21. Key UP – to change parameter value or to change page/menu level
22. Key RIGHT– positioning the cursor to required position, also to reach second page
23. Key DOWN – to change parameter value or to change page/menu level
24. Key OK – for confirmation
25. Key ESCape – change menu level

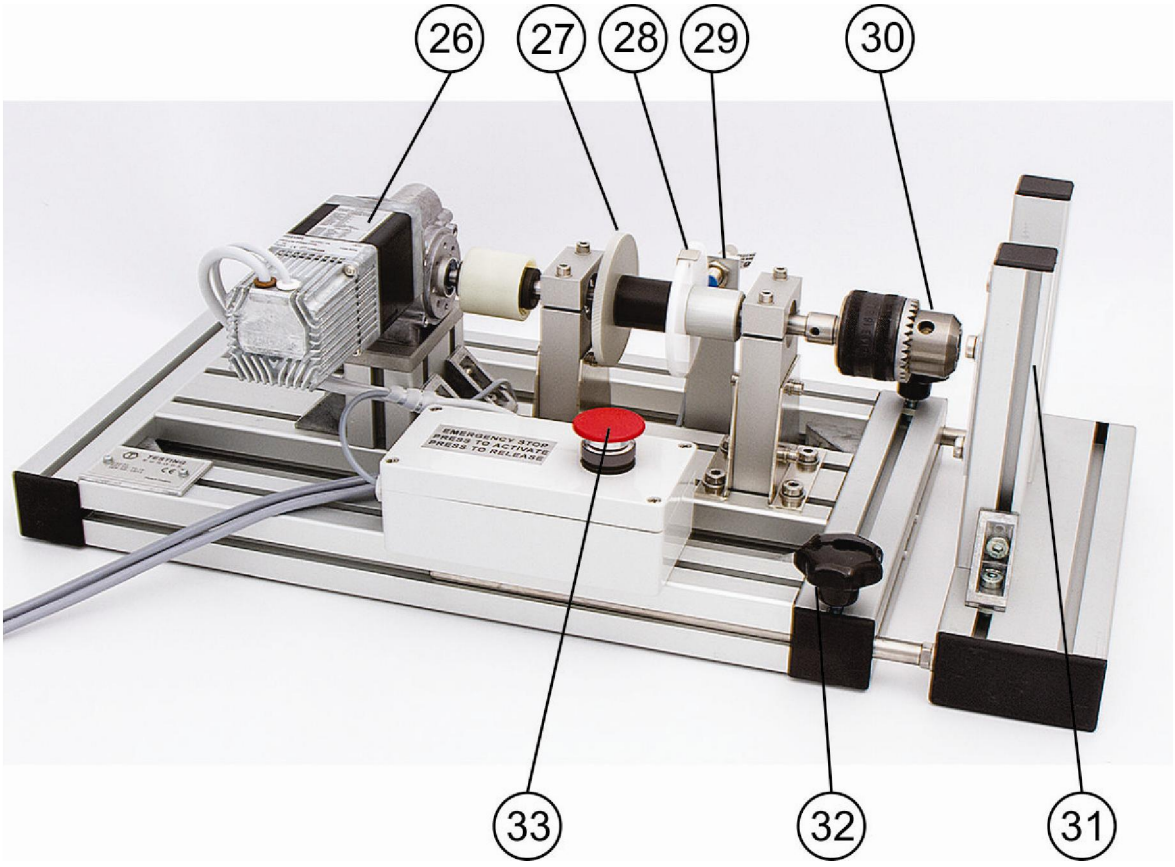


Fig. 3, MECHANICAL UNIT

26. Motor
27. Nut for fixing/Releasing the trigger plate
28. Trigger plate
29. Inductive sensor
30. Clamping head
31. Sample mounting plate of coordinate holder
32. Thumb-screws for removing/adjustment of coordinate holder
33. Emergency STOP push button

SELECTING THE MODE

There are three basic modes of movement:

ANGULAR: it rotates in both directions for set number of degrees (20 to 360)
CYCLING: 0 to 999999 cycles, each containing 0 to 999999 turns
TURNING: 0 to 999999 turns

For each type it can be selected direction or first move (to the LEFT or to the RIGHT) by pressing F1 key.

Type of angle control can also be set to INTERNAL (sensors in the motor) or EXTERNAL in case of use of external end switches for detecting end positions or changing directions. This is achieved via F2 key.

Pauses (DELAYs in end positions) can also be inserted into the test sequence in few different ways.

Typical information on the display: (note that numbers are just meant as an example)

1. row: CYCLING EXT : type of movement (TURNING / CYCLING) and type of angle control (INTERNAL / EXTERNAL)
2. row: first turn L: direction of first move (LEFT or RIGHT)
3. row: cycles 1000 : number of remaining cycles
4. row: angle +-90 : angle of movement

Selecting type of the movement is done by four function buttons F1 – F4:

Button F1 - first turn LEFT/RIGHT
Button F2 - type of angle control INTERNAL / EXTERNAL
Button F3 – type of movement: ANGULAR / CIRCULAR
Button F4 – type of circular movement: TURNING / CYCLING

Note that F3 has higher priority than F4. For selection of turning or cycling mode press F4 to leave angular mode and one of circular movement will be offered. If necessary press F4 again to set another circular mode (e.g. cycling). To switch to angular mode just press F3.