

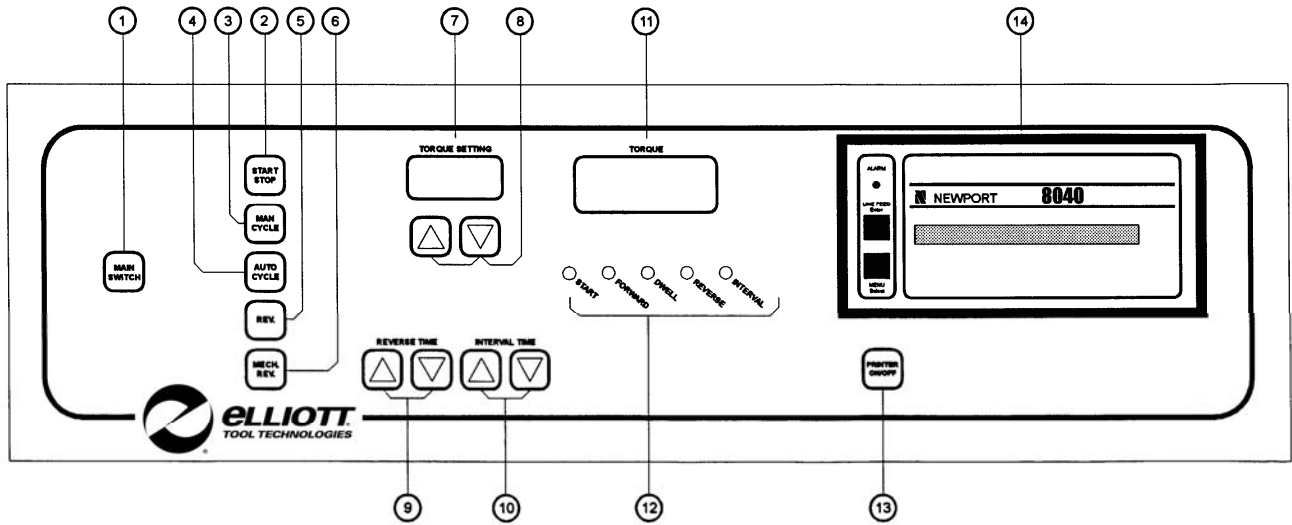


# Operating Manual

## Control Unit

### 220 volt 3 Ph. 50/60 Hz.

### Model # 38-CU-02-A0220-5



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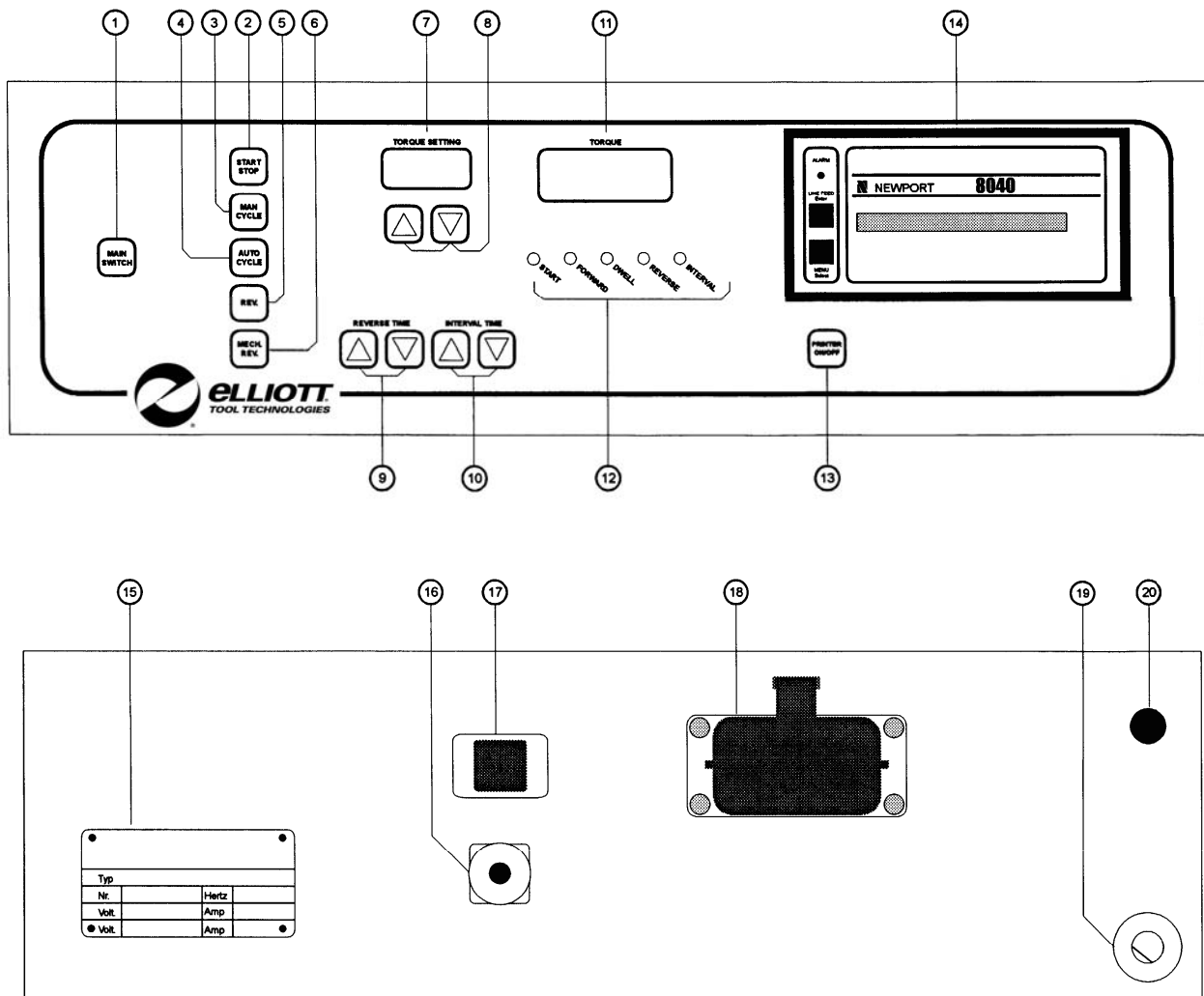
# Control Unit 220 volt 3Ph. 50 or 60 Hz.

## General Description.

The control unit is constructed using modern electronic components (A/D converter/microprocessorboard) with a high accuracy. The unit provides an accurate means of controlling the amount of power (in watts) supplied to the rolling motor/mandrel of the expander so that the torque can be regulated.

The control unit will switch off the rolling motor even at the lowest torque settings.

The control unit operates both as semi- and fully automatic and will check and store in its memory the input in watts that the rolling motors need for idling input power (the difference between input and output power) for the rolling motor.



## Front Panel.

- Pos. 1 = Main power switch.
- Pos. 2 = Start-stop switch for rolling motors.
- Pos. 3 = Switch for manual cycle program.
- Pos. 4 = Switch for auto cycle program.
- Pos. 5 = Pre-selection switch for reverse running drive rolling motor.
- Pos. 6 = Pre-selection switch for mechanical reverse running.  
**( Not working on the three phase units ).**
- Pos. 7 = Digital display reading for Torque setting, RPM, Reverse time and Interval time
- Pos. 8 = Torque adjuster digital reading from 1 to maximum torque setting of motor type in watt
- Pos. 9 = Reverse time adjuster digital reading (0.5 - 60 sec.) in steps of 0.1 Sec.
- Pos.10 = Interval time adjuster digital reading (0.5 - 60 sec.) in steps of 0.1 Sec.
- Pos.11 = Digital display reading from 1 to maximum in watt.
- Pos.12 = Signal LED's for program running.
- Pos.13 = Switch for printer (Optional)
- Pos.14 = Printer (Optional)

## Rear Panel.

- Pos.15 = Tag for serial no. and type.
- Pos.16 = Socket for RS - 232 connector to Personal Computer
- Pos.17 = Socket for foot switch plug.
- Pos.18 = Socket for rolling motor plug
- Pos.19 = Supply cable 415 volt 3 Ph. 50 or 60 Hz.
- Pos.20 = Fuse. (10 amp. slow, 6x32mm).

## General description of Pos. No. 1-12.

**NOTE: ONLY CHANGE SETTINGS OR PROGRAM WHEN MOTOR IS NOT RUNNING.**

Pos. 1 = Mains power switch (1), this switch will flash during start-up.

Pos. 2 = START-STOP switch (2) for the rolling motor.

Pos. 3 = Switch for manual cycle expanding program.

Pos. 4 = Switch for auto cycle expanding program.

Pos. 5 = Switch for reverse (anti clockwise rotation) selection. This program is used when the operator has to reverse the direction of the rolling motor before the rolling program is completed.

Pos. 6 = Switch for mechanical reverse (anti clockwise rotation),  
**( Not working on the three phase units ).**

Pos. 7 = Digital display reading for Torque setting, Reverse time and Interval time

Pos. 8 = Torque adjuster reading from 1 to maximum torque setting of motor type in WATTS. It is possible to set with accuracy the point at which the rolling motor switches off.

Pos. 9 = Reverse time adjuster digital reading (0.5 - 60 sec.) in steps of 0.1 Sec. The direction of rotation is altered by rephasing the current, enabling the operator to remove the expander without difficulty. REVERSE TIME is adjustable from 0.5 to 60 seconds.

Pos.10 = Interval time adjuster digital reading (0.5 - 60 sec.) in steps of 0.1 Sec. To allow re-positioning of the expander for the next expansion, and also to operate the step by step collar, when using step by step expanders. This interval time is adjustable from min 0.5 to max. 60 seconds.

**WARNING:** *Set sufficient time to stop the anti clockwise rotation of the rolling motor completely, before it starts its clockwise rotation (auto cycle program) to avoid severe damage to the rolling motor.*

Pos.11 = Digital display, reading the pre-set torque setting in Watts.  
(1 - maximum torque setting of motor type)

Pos.12 = Five signal LED's, showing the following programs.

Start = During that time (1.5 sec.) the control system will not work, to avoid the high starting consumption of the rolling motor.

Forward = Rolling motor is running, control system is working

Dwell = The mains power supply to the rolling motor is cut off for 1.5 second the current is automatically rephased when the signal LED DWELL TIME flashes on, after 1.5 seconds the signal LED REVERSE TIME flashes on.

Reverse = The direction of rotation is altered by rephasing. Enabling the operator to remove the expander without difficulty.

Reverse time is adjustable from 0.5 to 60 seconds.

You only need a short time, to allow the operator to back the expander out of the tube. Start with a reverse time period 4 to 5 seconds.

Switch (9) Reverse time setting.

Interval= This signal LED shows the time period for repositioning the expander for the next expansion, and also operation of the step by step collar when using step by step expanders.

This interval time is adjustable by switch (10) from 0.5 - 60 seconds

**WARNING:** Set sufficient time to stop the anti clockwise rotation of the rolling motor completely, before it starts clockwise rotation (Auto cycle program (4)) to avoid severe damage to the rolling motors.

## General operating instructions.

The control system is based on measuring the effective output in WATTS, supplied to the mandrel of the expander. The control system will check and store in its memory the power in WATTS, that the rolling motor needs for idling (difference between INPUT and OUTPUT in WATTS).

The control system protects the rolling motor against overload, when overload occurs the display will show dots between the figures.

For Example : **1.2.3.4.**

The selection of the rolling motor type is defined by the presence of certain JUMPERS in the CEE plug on the rolling motor.

BY ABSENCE of the jumpers the CONTROL-SYSTEM will NOT function.

Display shows: **err NoJu.**

## Operation Sequence

NOTE: ONLY CHANGE SETTINGS OR PROGRAM WHEN MOTOR IS NOT RUNNING.

1. Before connecting the control unit to the main power supply, check for correct voltage.
2. Connect the rolling motor CEE plug to socket No. (18) lock the socket.
3. Connect the foot switch plug (if available) to socket No. (17) lock this socket.
4. Select the right speed for the job
5. Switch on the main power Pos. (1) The main switch will flash for approx. 30 Sec., program is loaded, then the torque display shows: **Strt**
6. Select switch (3) for Manual or switch (4) for auto cycle.
7. Mount the telescopic shaft on rolling motor (when telescopic shaft is available)
8. Set torque adjuster (8) at approx. 50 Watt or higher.
9. Set reverse time (9) at 4 to 5 sec.
10. Set interval time (10) at 4 to 5 sec.
11. Start rolling motor by pressing in start switch on rolling motor, or by start-stop switch on the control unit (2) or if available by means of the foot switch.

The display will show the input WATTS for idling

For Example: **.3.4.9.**

The rolling motor will run for 16 seconds, then STOPS. The dwell time is flashed on LED display. After 1 second it clears and the display shows: **0**

## **Start rolling motor again and let it run for approx. 5 min. to reach its working temperature (IMPORTANT).**

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Stop rolling motor and switch off the main power. (1)

Switch on the main power again and repeat instruction No. 11 to find the NEW INPUT for idling.

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### **OR PRESS SWITCH REV. (5) AND AT THE SAME TIME SWITCH START/STOP (2)**

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IMPORTANT. Also repeat operation No. 11, when changing speed of the rolling motor. (each speed takes a different amount of power input to reach idle point).

### **YOU CAN NOW START THE ROLLING OPERATION**

It is essential, before commencing with the rolling operation that at least 10 tubes and their respective sheet holes are measured accurately and calculated for the new inside diameter.

This group of tubes is used as a control group for the torque setting and the initial torque setting (8) is in the region of 100-500 WATTS for all rolling motors.

Should the tube new ID not have reached the required expansion with the first trial, the torque adjuster (8) is gradually increased until the desired result is obtained.

12. Place the mandrel of the expander in Quick change chuck.

Start rolling motor by means of start switch.

Insert the tube expander into the tube up to the stopcollar, apply pressure, and the expander will begin to expand.

As the tube is expanded, the WATTS consumption shown on the display will rise rapidly until the set amount is reached.

The dwell time LED flashes and the current is shut off for 1.5 second, The current is rephased the reverse time LED flashes and the rolling motor reverses rotation, allowing the operator to back the expander out of the tube. The rolling motor will stop (Manual program). Using the Auto cycle program the interval (pause) time LED flashes, to indicate the expander to be re-positioned for the next expansion.

When the LED for interval (pause) time stops the rolling motor will start again for the next expansion.

**CORRECT setting of the reverse & interval (pause) time can reduce the expanding time to obtain the best results.**

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