ELECTRIC TUBE EXPANSION SYSTEMS

"WATTAGE" BASED TORQUE CONTROLLERS

Why a "Wattage" Based Torque Controller is Right and a "Current" Based Torque Controller is Wrong.

A) Tube expansion can best be done by expanding tubes at a set torque value. Torque is nothing but a rotary force acting on the tubes. For a given drive, the 'RPM' being constant, torque becomes proportional to the drive power.

Hence, if the drive power is controlled for tube expansion, the results will be excellent. All tubes will be expanded equally. Supply voltage fluctuations which are very common, do not affect the performance of a wattage based controller as the controller will trip at a set wattage irrespective of the supply voltage.

B) In case of a current based tube expansion torque controller, the drive current can become proportional to the torque if & only if the supply voltage is absolutely constant. This is never the case. Practically, the supply voltages vary as much as 20% to 25%. This directly affects the expansion results as the drive trips at a set current. That means for a 20% higher supply voltage, the tubes will be effectively expanded by 20% more torque than the required one. Hence tubes will be over-expanded. For supply voltages less than normal, tubes will be under expanded proportionately.

Since, the supply voltages fluctuate quite often, the expansion results of current based controllers will be unpredictable. They will have no consistency.

It is our experience that a seasoned operator will more consistently expand tubes with just a drive than if he is to use a current based Torque Controller. Of course if he were to use a Wattage based torque controller, he would achieve near perfect tube expansions all the time.

POWERMASTER is the only company in the world to offer you a choice of 2 Wattage based Torque Controllers. CE

PR-2000 - BUILT IN PRINTER

PR-2000 - EXTERNAL PRINTER

1. **PR-2000 Series**, with microprocessor control, built in printer and computer connectivity to download and study expansion values. Ability to generate 10 report formats for quality control of expanded joints. Operates with a remote control.

2. **TCW Series**, which is a less expensive alternate to the above but has features like a 'slow start' for the drives, automatic recognition of connected drives and automatic setting of max trip values for each drive.

PR-2000 TORQUE CONTROLLER

CE

Features :

1) Microcontroller base, PC compatible Electronic Torque Controller uses the latest “State of the art” technology.
2) Setting of torque on a digital display in pure numbers.
3) Fully automatic operation.
4) Adjustable reverse and pause times.
5) Smooth start enables connection of any make of drive to the controller, improves brush life and enables re-expansion of tubes.
6) The auto-repeat feature with programmed acceleration allows you to estimate the exact expansion time.
7) Manual reverse operation provided.
8) Easy to set up and use, no special skill required .
9) Number keys are provided - enable direct entry of required parameter value.
   The Torque Controller data can be transferred to PC through a separate connector which has been provided on the remote handset. The data of torque values of expansions can be stored on a disc through the PC. This data can be further processed and analysed for quality checks through the PC.
10) Plugin type PCB’s - Easy for servicing.
11) Rugged and reliable design.
12) Built -in printer or external printer-both options available. Print out possible of trip setting plus minimum, maximum and average of trips. Upto 950 expansions can be stored in memory.
13) Statistical print outs of under/over expanded tubes with specific tube numbers makes quality control of expanded tubes easier and faster.
14) Initial slow speed up of drive programmed in the controller, increases life of drives.
15) Key pad provided on a remote hand set gives following advantages.
   A) Change of set values by authorised person only.
   B) Set values are tamper proof.
   C) Data stored in controller memory can be loaded to PC for further processing via the hand set. Controller need not be taken to the PC.
16) Line Voltage can be easily seen on controller display.
17) On connecting a drive, controller automatically sets the maximum trip wattage and indicates drive model.
18) Drive’s reverse speed can be fixed at slow or fast.
19) 16 character 2 line alpha numeric LCD display guides the operator.
20) Display of adjusted reverse and pause times. Real time clock enables automatic printing of date & time of starting of job.

Microprocessor used	:	89C55WD (8 bit)
Clock Frequency	:	12 Mhz
Programme Memory	:	built in
Data Storage Memory (E2PROM)	:	1 K
Real Power Measurement upto	:	2 KW
Voltage, Current sampling rate	:	50 times/sec.
No. of values that can be stored	:	950
Printer	:	Inbuilt / External

Model No.	Voltage Single Phase 50/60 Hz	Weight (kg) With Printer	Weight (kg) Without Printer
PR-2000-110	110 V	19.0	9.0
PR-2000-230	230 V	19.0	9.0

Note : Refer to Pg. 23 & 24 for Drive Units, Voltage Stabilizers for use with PR-2000 torque controllers.
All PR-2000 torque controllers are supplied with operation manuals.