



# TES1000SM

## Digital Tube Expansion System

# TES1000SM Highlights

KRAIST Tube Expanders newly developed new digital Tube Expanding System features a range of powerful and efficient servo motors. Variable Speed and Torque repeatability +/- 1% are a few of the advantages of this system. Created for the demanding customer, this system ensures uniform tube expansion over a wide range of tube diameters and materials, greater efficiency and accuracy combined with ease of use make this system, simple, affordable and extremely fast.

## BASIC PARAMETERS

Power supply: 230/400V 50/60Hz

For tubes: 1/2" – 1 1/2"

Control unit weight: 14 kg

Footswitch weight: 5 kg

Dimensions: 800 x 200 x 900 mm



- ▶ Purely digital and modular system.
- ▶ High tech servo drive and motor assure accuracy, high quality and repeatability of the results and efficient work.
- ▶ Extremely easy and user friendly interface on 7" touch screen.
- ▶ Supported languages: English, Korean, German, Spanish, Portuguese, Chinese, Polish. *Is your language not listed? Contact us to make it available!*
- ▶ USB Flash Drive available to dump expanding log files (48 MB of internal storage space for the log files)
- ▶ Easy software upgrade with USB flash memory
- ▶ CE compliant. In full accordance with RoHS compliance.
- ▶ Motor equipped with EnDat encoder.

### DISPLAY & USER INTERFACE – “head”

User friendly, extremely easy to setup interface base on 7” TFT display featured by high reliable industrial analog resistive touch panel; high touch accuracy. With high hardness and long lifetime.

Color	65536
Resolution (W x H)	800 x 480
Back Light	LED
Processor	32bit RISC CPU 400 MHz
Touch Panel Type	4 wires resistive type
Storage	128 MB Flash
RAM (RAM)	64 MB
USB Host	USB 1.1 – software updates, dump the log files
CE	Complies with EN 55022:2006, Class A, EN 61000-3-2:2006, EN 61000-3-3:1995 + A1:2001 + A2:2005 standards
UL	E248297
Protection Structure	IP65 front panel
Storage Temperature	-20°~60°C (-4°~140°F)
Operating Temperature	0°~50°C (32°~122°F)
Operation Humidity	10-90% RH (non-condense)

### MOTOR – “does the work”

Comfortable and save cable connectors and rotection IP56.

### SERVO DRIVE – “heart”

Reliable, brushless, maintenance free servo motors supplied by an OEM within the automation industry, are ideally suited to tube expanding when combined with our custom gear packages. Servo drive is controlled by 32-bit RISC processor. Equipped EnDat encoder and thermistor motor protection.



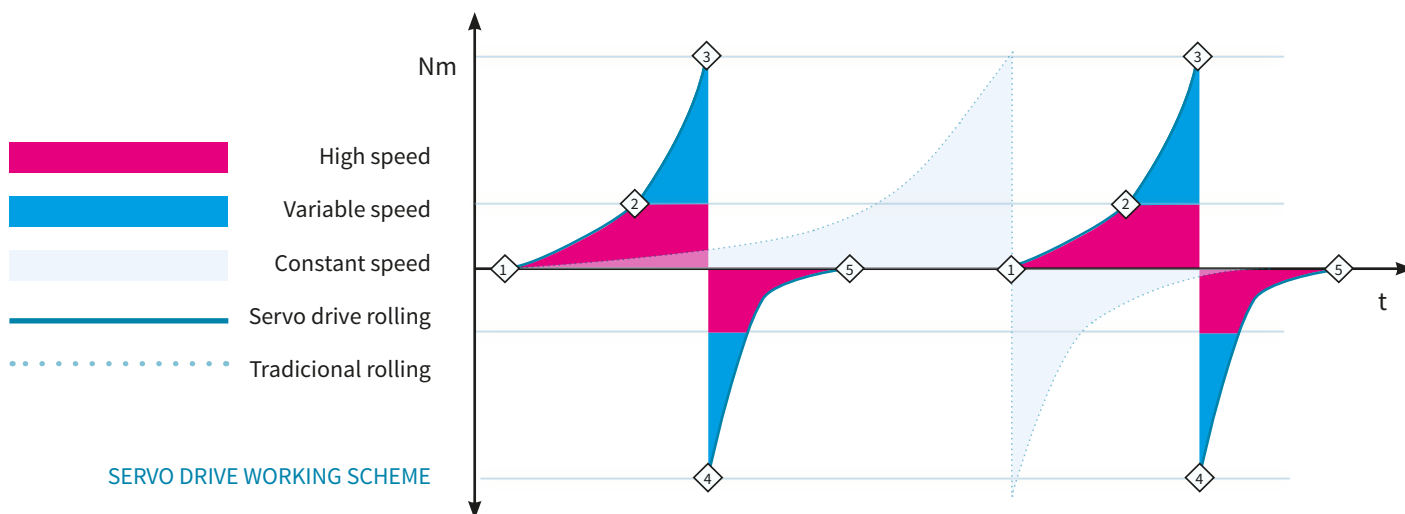
TES1000M is equipped with top quality connectors



Adjustable legs for easy work in every position.



USB host for easy software upgrade to latest version.



# TES1000SM Software

Central unit with user friendly interface and 7" touch screen allows to configure different motor types with their pre-defined min/max values and to set up required expanding parameters.

## TORQUE WIZZARD feature:

Torque Wizard helps to calculate torque settings based on: %wl reduct, Feed Angle, Mandrel taper, Tube Diameter, Tube Yield (Ultimate tensile strength), Wall Thickness (Gauge, Expansion Length)

## 3 operating modes available:

MANUAL: Single expansion, SEMIAUTO: Single expansion with autorevers, AUTO: Expansion with autorevers in endless loop until operator stops

## Configurable expanding timers:

reverse rolling time, time between expanding cycles (to move expander from one to another tube), time to expand with maximum RPM in the initial expanding phase

## Other features:

Expanding counter, Color status lamps, Metric and imperial units available, Translated to many languages.



Motors **TES1000SM**

Small and Big size motors, each equipped with one of 5 of the gear boxes.



*S1-S5 Servo Motors*



*B1-B5 Servo Motors*

Motor	Protection level	Weight	Max RPM	Torque min/max	
				[Nm]	[Ft-lbs]
B1	IP56	8 kg	300	8,5 / 116	6,27 / 85,56
B2	IP56	8 kg	400	6,6 / 90	4,87 / 66,38
B3	IP56	8 kg	736	3,6 / 50	2,66 / 36,88
B4	IP56	8 kg	1000	2,5 / 35	1,84 / 25,81
B5	IP56	8 kg	1454	1,83 / 25	1,35 / 18,44
S1	IP56	5 kg	600	1,76 / 26	1,30 / 19,18
S2	IP56	5 kg	800	1,24 / 20	0,91 / 14,75
S3	IP56	5 kg	1090	0,95 / 14,6	0,70 / 10,77
S4	IP56	5 kg	1500	0,7 / 10,6	0,52 / 7,82
S5	IP56	5 kg	1660	0,64 / 9,5	0,47 / 7,01

*S1-S5 Servo Motors on FLEXHolder*



*B1-B5 Servo Motors on FLEXHolder*



*TwinExpander drive for air coolers are available on request!*

# TES1000SM FlexHolder

The **FLEXHolder** articulated arm **supports the weight and absorbs the torque** of the rolling motor using a pneumatic counterbalance, which allows the operator to **effortlessly move the rolling motor** into position.

- › Positive tool holding system virtually **eliminates the chance for operator error.**
- › **Increases expander life** up to three times compared to conventional tube rolling.
- › **Extends tool life** by using the lubricated air from rolling motor's exhaust for cooling the rolls & mandrels, significantly reducing tooling cost.
- › **No electrical power source** required for the operation. Column can be easily removed from the base for the transportation purposes

**FLEXHolder** supports the weight and absorbs the torque from KRAIS Tube Expanders proven electric tube rolling systems, pneumatic tube rolling motors as well as the MiniMill bevelling machines for tube end facing and weld removal.

Standard model **features 1,5 m vertical and 1,5 m horizontal reach** (models with increased vertical and horizontal capacity are available upon request).

## FLEXHolder supports TES1000SM motors



**S1-S5 Servo Motors** (synchronous) operated by new TES1000. Speed range 600-1660 rpm. Torque range 1,8-24 Nm

**B1-B5 Servo Motors** (synchronous) operated by new TES1000. Speed range 300-1450 rpm. Torque range 25-120 Nm



### FlexHolder basics

Vertical movement	150 cm	59"
Horizontal movement	150 cm	59"
Minimum Lift Capacity	5 kg	10 lbs
Lif Capacity	30 kg	37 Lbs
Allowable Torque	170 Nm	125 FtLbs



The FlexHolder truck has a built-in compartment. Large capacity allows you to maintain order in the workplace.



**EB-1 Rolling Motors** operated by TES100. Speed range 200-800 rpm. Torque range up to 160 Nm



**E-1 Rolling Motors** operated by TES100. Speed range 600-1100 rpm. Torque range up to 55 Nm



**Auto K50 Series rolling motors.** Fully automatic rolling machine. Push to start and with auto reverse. Speed range 200-1250 rpm. Torque range 1,58 to 50 Nm.

## FlexColumn **TES1000SM**



**FlexHolder** can be supplied as **FlexColumn** without trolley which can be fixed to the floor, your own trolley or any other preferred way.

## Accessories **TES1000SM**



### TES-TRO

**TES-TRO** - easy to move mobile trolley mounted on 4" wheels with brakes. Superior solution to suspending the rolling motor with rotating bracket and telescopic Shaft. Equipped with compartment to store your expanders, lube-a-tube or other Hand tools. Motor with rotated bracket and telescopic shaft will assure Convenience during the tube rolling operation.

*This is only example of trolley and the delivered one may varies.*

### The telescopic shaft

**The telescopic shaft** is applied to the rolling motors with universals joint. The balancing is obtained directly from the rolling motor. The rotated parts are protected and guarantee operator's safety. The spindle has a wide radius of the operation of 60 degree arc.







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