

HTES-9000

Hybrid Digital Controlled
Pneumatic Expansion System



Design for critical applications.

Build-in accuracy and repeatability.

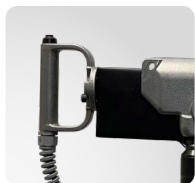
HTES-9000

PATENT PENDING

Pneumatic Expansion System With Strain Gauge Sensor

HTES-9000 is the most precise system from the pneumatically driven KRAIS tube rolling machines. The machine has an integrated strain gauge sensor controlled by an electric torque control transducer. Thanks to modern solutions, HTES-9000 is measuring torque directly from the driven spindle with superb precision. For the highest accuracy and repeatability, every machine is carefully calibrated with certified Electronic Torque Tester. HTES-9000 is the first choice expansion tool for all who need to roll tubes with quality above industry-accepted standards offered by regular pneumatic tube expanding machines.

HTES-9000 system is resistant to air pressure and volume fluctuations - expansion is precise regardless of unstable air supply as long as the motor is still able to generate enough power. The system monitors torque throughout every expansion cycle, constantly provides the most precise wall reductions for every expanded tube. The system rolls to the targeted wall reduction each time, eliminating a lot of wasteful re-rolling.



H50 AND H60 SEMI-AUTOMATIC MODE

After pushing the H50/H60 trigger, the machine starts and execute just one, complete expanding cycle and will stop till the next startup. The semi-automatic mode can be enabled on the HTES-9000 control panel.

MAIN HTES-9000 FEATURES

- 】 Pneumatic drives with built-in strain gauge sensor and 12V torque control transducer assure the highest accuracy of measurement
- 】 Easy, user-friendly interface on a 7" touch screen.
- 】 Supported languages: English, Korean, German, Spanish, Portuguese, Chinese and Polish.
- 】 USB flash drive available to dump expanding log files (48 MB of internal storage space for the log files)
- 】 CE compliant, in full accordance with RoHS compliance.

BASIC PARAMETERS

- For tubes: 1/2" – 1"
- Control unit weight: 8,5 kg
- Dimensions: 350 x 260 x 260 mm

POWER SUPPLY BOX:

- 230/110V

POWER SUPPLY MOTOR:

- 12V (via box)

AIR SUPPLY MOTOR:

- 6,2 bar, 1300 l/min
- 90 Psi, 55 cfm



FLEXHOLDER

To work with HTES-9000 controllers we recommend arm FlexHolder. This connection allows you to create a mobile workstation with an above average performance!



H50/H60 DRIVES

HTES-9000 rolling system uses drives based on our well-known K50 and K60 tube rolling motors. We replace the mechanical clutch, instead of which we control torque electronically. The handling of new motors is almost identical to using regular K50/K60.



H50 SERIES

H60 SERIES

H50/H60 are tube rolling motors with a fully automatic reverse system. The machines automatically:

- startup rotating in the forward direction;
- reverse the revolution to the left once determine the setup torque;
- thanks to the adjustable delay timer, the machine automatically runs in a forwarding direction after a defined period from the end of a previous expansion.

Automatic tube expander lubrication "L" is available optionally.

New motors options are coming soon .

	TUBE OD		FREE SPEED	MIN TORQUE		MAX TORQUE		WEIGHT		LENGTH		AIR USE		ELECTRIC	CHUCKS	
	[INCH]	[MM]	[RPM]	[FT.LBS]	[NM]	[FT.LBS]	[NM]	[LBS]	[KG]	[INCH]	[MM]	[CFM]	[L/MIN]		STD.	OPT.
H50-1250	3/4"	19	1250	1,17	1,58	9,0	12,20	18	8,2	19,6	500	60	1700	12V	3/8"	1/2"
H50-600	1"	25,4	485	1,84	2,49	16,1	21,81	18	8,2	19,6	500	60	1700	12V	3/8"	1/2"
H50-400	1 1/4"	31,7	400	3,69	5,00	26,6	36,00	18	8,2	19,6	500	60	1700	12V	3/8"	1/2"
H60-1200	1"	25,4	1200	3,80	5,15	18,5	25,00	27	12,25	20	510	70	2000	12V	3/8, 1/2	-
H60-900	1-1/2"	38,1	756	4,72	6,40	30,7	41,60	27	12,25	20	510	70	2000	12V	3/8, 1/2	-

The capacity, speed and torque of the machine depend on the work environment. Due to continuous work on improving the machine, all parameters are subject to change.

Tube outer diameter: 1/2 in (0.500 mm)
 Wall thickness: 10 (0.134 mm)
 Yield strength: Stainless Steel (276 MPa)
 Expansion Length: 1 in
 Tube wall reduction: 5 %

Torque calc:

Motor: H50 Gearbox: 600
 Speed: 485 Torque: 2.5 - 21.8

Motor and Gear selection:

In Progress: 0
 Mode: Auto
 Speed: 485 RPM Torque: 2.5 Nm
 Last result: 0.0

KRAIS HTES-9000

Backward time: 1.0 s
 Mode and times settings:

HTES-9000 SOFTWARE

- ▶ The system has a friendly interface and a large touch screen. The primary function is to configure motor types with predefined values and to set up required expanding parameters.
- ▶ The Torque Wizard helps to calculate torque settings based on % wall reduction, feed angle, mandrel taper, tube diameter, tube yield (ultimate tensile strength), wall thickness (gauge) and expansion length.
- ▶ HTES-9000 software offers two operating modes:
 SEMIAUTO - single expansion with auto reverse,
 AUTO - expansions with auto reverse in a loop, until operator stops.
- ▶ Other features are expandings counter, colour status lamps, metric and imperial units available. Software is translated into many languages.

HTES-9000

Coming soon: more options and features!

BALANCER

Another optional addition to work with HTES-9000 controllers is a whole range of balancers. Easy way to build your workstation.



OTHER ROLLING SYSTEMS AND MACHINES

SWIFTROLL X1

Fully automatic Robot-Setup for tube expansion, facing, tube cutting and orbital tube to tube sheet welding. Based on 6 axis FANUC robot, a special version of TES3000 for CNC – digital controller for speed and expansion managing and KRAIS dual function, dual-gear, 3 KW servo drive. All works under Fanuc R30iB system. SwiftRoll has an overload system in the event of a collision to prevent damages. SwiftRoll X1 is delivered with built-in HMI software and PC laptop with custom CAM software for easy tube sheet programming. SwiftRoll X1 is installed on the convenient steel platform.

As optional we can furnish the robot with: automatic referencing function, vision system and force sensors allow robots to detect force and torque. SwiftRoll can be built with a bigger robot that provides double capacity: bigger reach radius and lifting.



TES-3000

This 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.



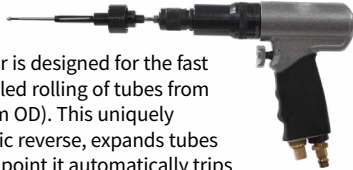
TES MINI 2

TES Mini 2 is a semi automatic torque controller for the precise expansion of ferrous, non-ferrous and alloy tubing. The second generation TES Mini has been designed with direct input from our customers and utilizes the latest electronic components. As a direct result of these new technologies, gains in precision and energy efficiency have been realized from an already accurate system ($\pm 1\%$). The redesigned control panel is simpler to navigate and incorporates a built in card reader for detailed work reports.



K20 SERIES

K20 pneumatic rolling motor is designed for the fast and accurate torque controlled rolling of tubes from 1/4" – 1/2" OD (6.3 - 12.7 mm OD). This uniquely designed tool with automatic reverse, expands tubes to a preset torque, at which point it automatically trips over to its reverse rotation, backing itself out of the tube ready for the next expansion.



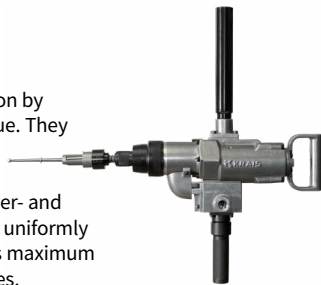
PUSH&PULL K50 SERIES

K50 series pneumatic motors has been specifically engineered to ensure uniform tube to tube sheet expansions, thereby preventing the under and over rolling of tubes. This pneumatic tool features an aluminum body, weighing in at only 10.5 lbs (4.76 Kgs) with an ergonomically correct push/pull throttle. Automatically stops tube expansion at defined settings.



K60 SERIES

K60 rolling motors control expansion by the accurate measurement of torque. They automatically stop expanding according to a predetermined setting. Torque control prevents over- and under- expansion of tubes, assures uniformly tightened tube joints, and provides maximum holding strength for individual tubes.



K70 RIGHT ANGLE SERIES

K70 Torque Controlled Rolling Motors have been designed for the Boiler Tube Industry. Tools have a unique head design which features a fully enclosed bearing design for long and trouble free life. All models are equipped with a roll throttle as standard, a lever throttle is optional.



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KRAIS tools
in action!

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