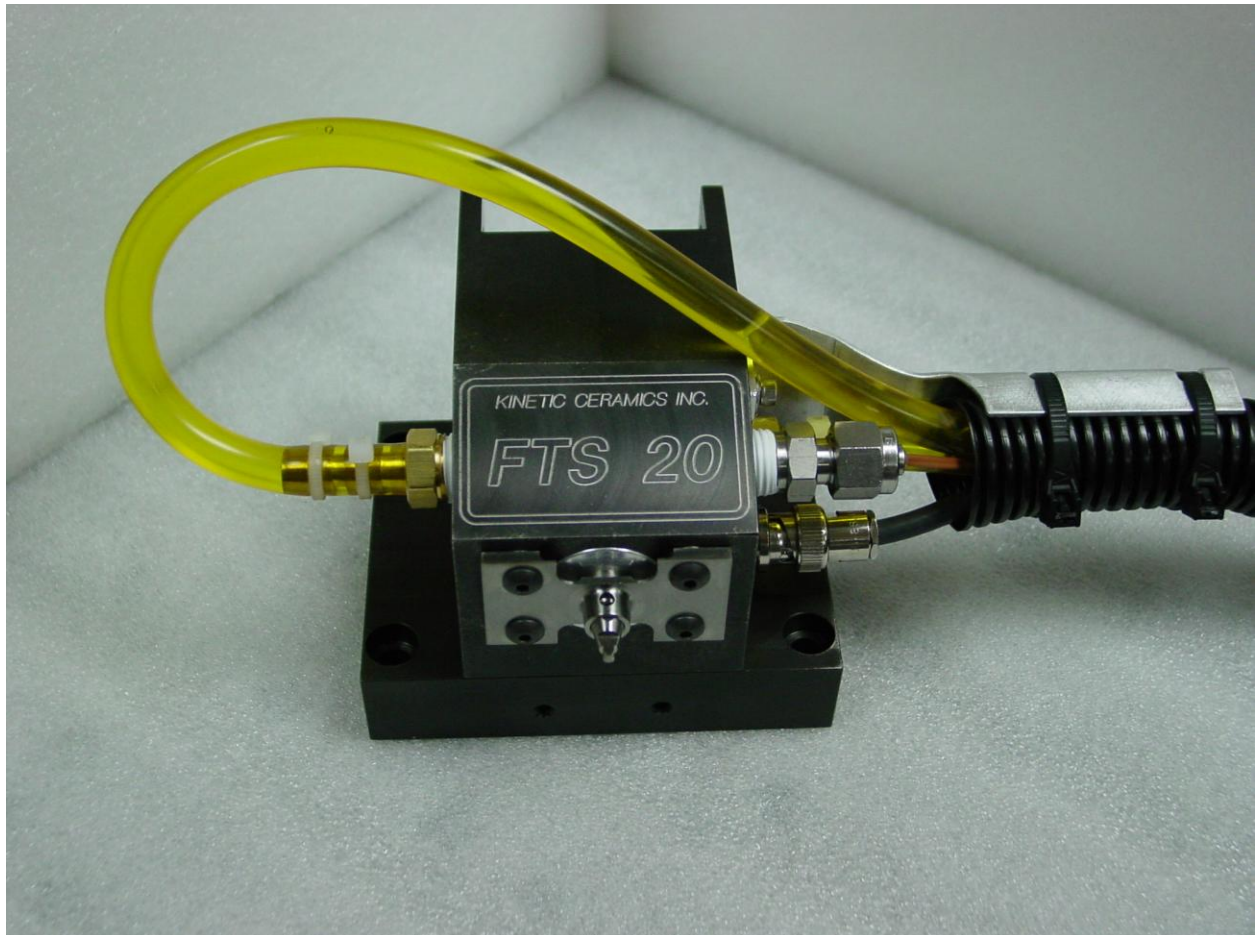


Kinetic Ceramics Inc.
Hayward CA.

FTS 20

Linear Cutting Module for Precision Lathe





FTS 20 Module

System Description

The Kinetic Ceramics FTS 20 utilizes piezoelectric actuation to produce high frequency motion of a lightweight single crystal diamond cutting tool. The actuator is preloaded inside a sealed housing containing a cooling fluid to control the temperature of the high performance piezoelectric driving elements. The housing also contains a temperature sensor to monitor the cooling fluid temperature as it exits the tool head. A temperature indicator is mounted in the top position of the control cabinet. Coolant lines permit circulation of the cooling fluid between the head and the pump and reservoir mounted in the control cabinet. The tool holder is integral with a flexure that has very high rigidity in the vertical and horizontal axes. Axial motion of the cutting tool is unrestricted by the flexure. A light weight Tool Carrier mounts in the Tool Holder. The Tool Carrier facilitates mounting a single crystal diamond cutting tool.

A high bandwidth amplifier drives the piezoelectric actuation mechanism. An externally generated synthesized sinusoidal drive signal must be provided to the amplifier. The allowable frequency range is 2.0 kHz to 20.0 kHz. An Enable signal allows tool motion to begin.

The mounting is fully compatible with the FTS-400 and FTS-600 machines, but FTS20 may also be base mounted.

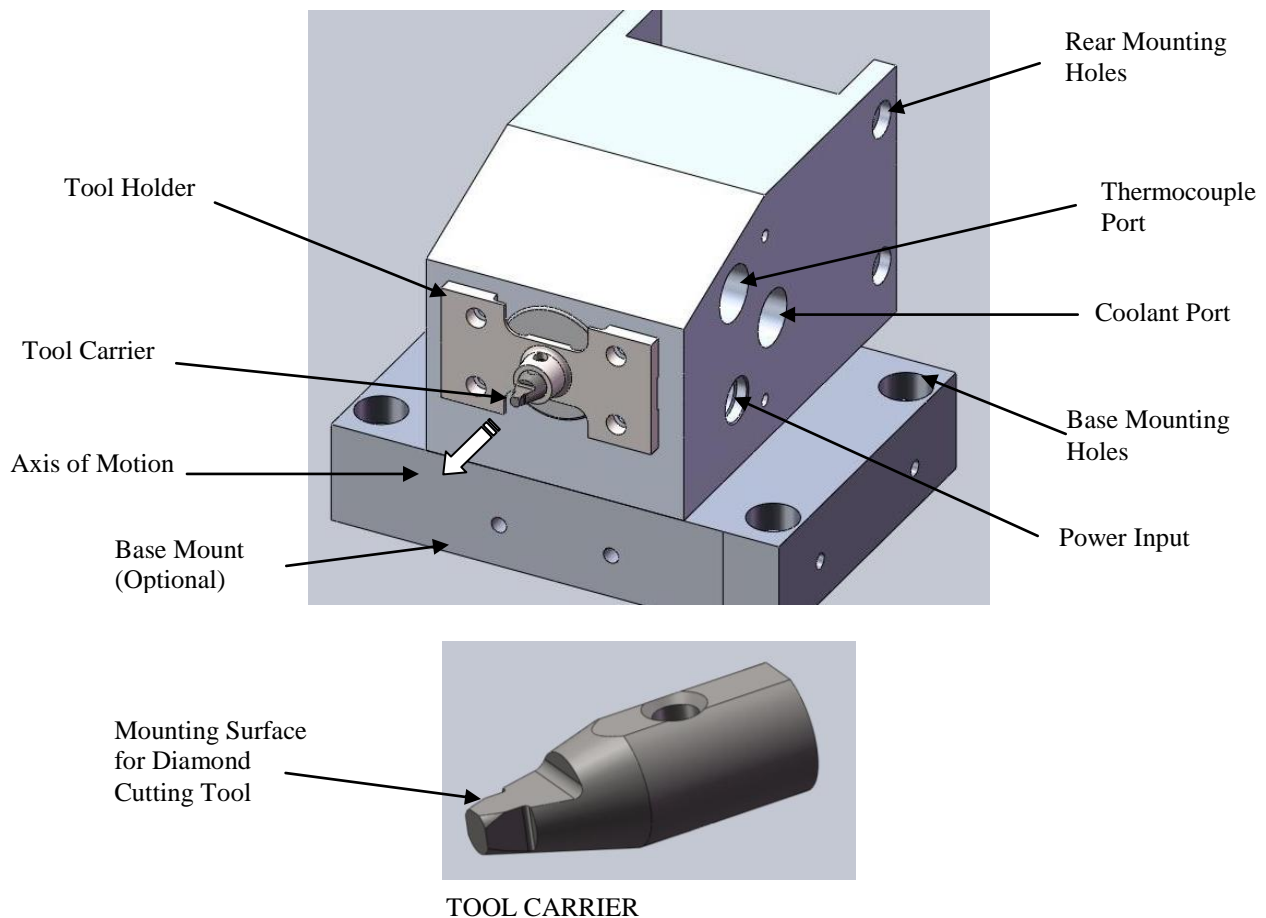
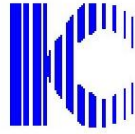


Figure 1 FTS-20 Parts Identification



KC FTS-20 System Specifications

Tool Travel :	Linear. ± 5 Microns (10 μ m total travel) at tool cutting surface. In and out motion perpendicular to the cutting surface at 20kHz.
Bandwidth :	2.0kHz to 20.0 kHz
Environment:	
Operating Temperature	10°C to 30°C
Storage and Transport Temperature	-20°C to 45°C
Relative Humidity	10% to 65 % (non-condensing)
Tool Head weight	2.5 kg
Tool Holder mass (with single crystal diamond cutting tool).	1.4g
Temperature Monitor	Coolant outlet temperature from the FTS 20 Tool Head monitored.
Conduit between Head and Control Chassis	Flexible x 25 mm diameter containing Power Cable, Cooling lines and thermocouple leads.
Input Power	90-120 VAC 50 – 60 Hz, 2.0kVA
Input Power Protection	Circuit Breaker
Control Cabinet Dimensions:	22”W x 31”D x 41”H. This cabinet contains the drive electronics (2 x 19”rack mount boxes) , temperature monitor and cooling pump. DIN strip mounted connector block for chassis power and distribution connections.
Weight:	130kg

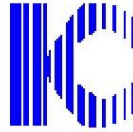


FRONT

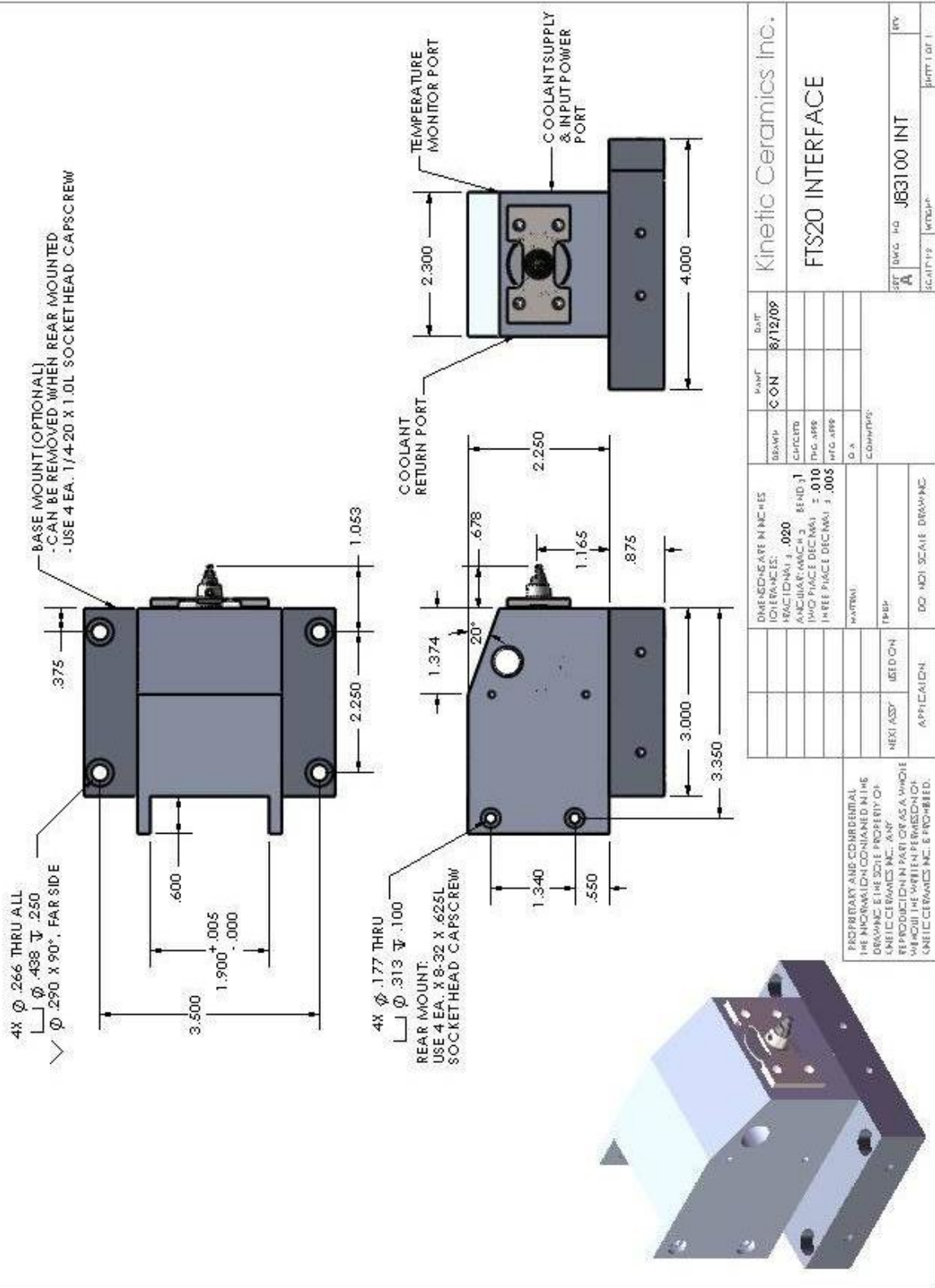


REAR

Control Cabinet



FTS 20 Module



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