

TAPER MANUFACTURING STATION (TMS)

From 3SAE Technologies

The production-ready Taper Manufacturing Station (TMS) with optional cleaving package is designed for use in the manufacturing of optical fiber tapers, bundles and couplers.

The TMS features 3SAE's patent pending Thermally Stabilized Plasma™ and is the industry's only dedicated fiber tapering system that provides easy fiber access, unparalleled heating source control, stiction-free pulling results in the highest quality, lowest loss and best repeatability in the industry.



The TMS operates in partial vacuum which is advantageous in producing adiabatic -ber tapers. Operating 3SAE's patent pending Thermally Stabilized Plasma™ in partial vacuum allows the width of the plasma field to expand up to 10x along the axis of fiber. Heat sources with a wider heat profile are better for tapering and bundling of fibers because the pull distance per unit time is distributed over the molten region in accordance with the profile. Narrow profiles create modulations and stress concentrations that induce losses. Our wider plasma field flattens and reduces the frequency of modulations resulting in losses of less than 1% in tapers.

An additional benefit of operating in partial vacuum is oxidation of the electrodes is minimized during the tapering process, resulting in virtually debris free tapers. Our new blunt electrode design increases life expectancy by > 10x while increasing throughput power capabilities for high power laser systems. High power testing confirms that TMS does not contaminate the glass surface, eliminating the need for etching and reducing the cost of production and rework.

The TMS features three customizable tapering modes, single direction tapering, bi-directional tapering and table based tapering. Single direction tapering automatically calculates linear taper ratio based on the cross sectional diameter over length and is well suited for tapering fibers with small taper ratios (< 50%).

In bi-directional tapering, the left and right stages are pulling outward at the same time while the Ring of Fire® (ROF) sweeps along the length to create an exponential taper. This allows for unlimited taper ratios with very low insertion loss.

Table based tapering method allows the flexibility of a syntax based software program to create a custom taper program while using a simplified Lab VIEW based GUI. Alternately, programs such as "Math Lab" or Microsoft Excel can be utilized to develop the tapering program

Key Features

- Utilizes 3SAE's patent pending Thermally Stabilized Plasma™ in partial vacuum, resulting in the highest quality, lowest loss and best repeatability in the industry
- Three customizable tapering modes, single direction tapering, bi-directional tapering and table based tapering
- Ultra low contamination for high power applications
- New blunt electrode design increases life expectancy by > 10x

Technical Specification

Dimensions: 75 (W) x 31 (D) x 28 (H) cm

Weight: 44 kg

Power Source: (2) 24V 200W

Control / Operation: Each system ships with PC system with Windows Operating System, Serial communication to 3SAE Taper Manufacturing Station mother board, and a 23" 1920 x 1080 High res wide screen monitor.

Flow: 126 L/min (4.5 ft³/min)

Pressure: 0.4-0.6 MPa (~60-90psi)



Product	Part Number	Qty
Taper Manufacturing Station	TMS-01-0400	
Standard Package		
Electrodes (Sold Individually)	SPT-10-1638	3
6 mm Hose	N/A	1
24V Power Supply	ACC-01-0147	2
Optional Components		
TMS Integrated Piezo LDF Cleaving System	TMS-01-0309	