



## Xcalibur Servo

### Servo-Driven Precision Filament Extrusion

The Xcalibur Servo is Noztek's most advanced desktop extruder, engineered for demanding research and industrial applications requiring exceptional torque, thermal precision, and long-run reliability.

Powered by an industrial servo motor and precision planetary gearbox, it delivers the torque and control authority to process highly filled composites, engineering-grade thermoplastics, and metal-polymer blends that are beyond the reach of conventional desktop extruders.

**45 Nm**

Continuous Torque

**135 Nm**

Peak Torque

**600°C**

Max Temperature

**2 kg/hr**

Output Capacity

## DRIVE SYSTEM

<b>Motor</b>	DSY-RS750L2B2-M17S Industrial AC Servo Motor
<b>Gearbox</b>	TG90-G20 Precision Planetary Gearbox
<b>Continuous Torque</b>	45 Nm
<b>Peak Torque</b>	135 Nm (3× continuous)
<b>Speed Range</b>	Variable, fully programmable via touchscreen
<b>Control Mode</b>	Closed-loop servo with real-time feedback

## HEATING SYSTEM

<b>Heater Bands</b>	3 × independent, individually PID-controlled zones
<b>Standard Max Temperature</b>	600°C
<b>Optional Max Temperature</b>	750°C (on request)
<b>Control</b>	ExcaliburMCU PID — independent set points per zone

<b>Warm-Up Time</b>	~25 minutes to operating temperature
<b>Sensor Monitoring</b>	Thermocouple anomaly detection with alert notifications

## SCREW & BARREL

<b>Screw Material</b>	Stainless steel (hardened bimetallic available on request)
<b>L:D Ratio</b>	24:1
<b>Compression Ratio</b>	2.3:1
<b>Feed Zone</b>	30% of total screw length
<b>Compression Zone</b>	40% of total screw length
<b>Metering Zone</b>	30% of total screw length
<b>Nozzle Sizes</b>	1.75 mm and 3 mm (custom sizes available on request)
<b>Barrel Wear Option</b>	Wear-resistant barrel recommended for abrasive/filled materials

## CONTROL & CONNECTIVITY

<b>Interface</b>	7" Capacitive Touchscreen — full manual control of temperature, RPM, and timers
<b>Control Software</b>	Noztek Control Hub — PC-based real-time monitoring and data logging
<b>Data Visualisation</b>	Live temperature and RPM charts with per-zone trend display
<b>Data Export</b>	CSV export of full run data via USB connectivity
<b>Program Memory</b>	Retains last-used temperature, speed, and timer settings on restart
<b>USB Connectivity</b>	USB port for PC integration and data export
<b>PCB</b>	Bespoke Noztek control PCB for optimised signal integrity
<b>Safety</b>	Emergency stop, motor block detection, sensor anomaly alerts

## OUTPUT & PERFORMANCE

<b>Extrusion Rate (with Tolerance Puller)</b>	6–8 metres per minute
<b>Production Output</b>	Up to 360–480 metres or 2 kg of filament per hour
<b>Hopper Capacity</b>	50 g minimum / 5 L maximum
<b>Compatible Materials</b>	ABS, PLA, PET, PP, HDPE, PEEK, PBI, recycled plastics, composites,

metal-polymer blends, filled materials

## PHYSICAL & ELECTRICAL

<b>Dimensions (L × W × H)</b>	112 cm × 18 cm × 54 cm
<b>Weight</b>	32 kg (approximate; servo variant may vary)
<b>Chassis / Hopper Finish</b>	Stainless steel or black powder coat (specify on order)
<b>Power Supply</b>	220 VAC or 110 VAC (specify on order)
<b>Power Rating</b>	25 A
<b>Frequency</b>	50 Hz / 60 Hz
<b>Certification</b>	CE, RoHS, WEEE
<b>EORI (Export)</b>	GB221742634000 — full export documentation available

## OPTIONAL ACCESSORIES & UPGRADES

<b>Tolerance Puller</b>	Active haul-off with closed-loop diameter control — essential for consistent filament diameter
<b>Filament Winder 2.0</b>	Motorised spooling system for continuous production runs
<b>Roller Conveyor</b>	Extended cooling run for high-temperature materials
<b>750°C Heater Upgrade</b>	Extended temperature capability for specialist polymers (PEEK, PBI, PPS)
<b>Hardened Screw/Barrel</b>	Bimetallic wear-resistant upgrade — recommended for metal-filled, abrasive, or highly loaded composites
<b>Custom Nozzle Diameter</b>	Non-standard extrusion nozzles available to order

### Enquiries & Orders

Contact our technical team to discuss your application requirements, request a formal quotation, and confirm lead time.

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