TECHNICAL DATA SHEET

Polytevo Series 3D Printing Filament Extrusion Line

Laboratory 3D printing filament extrusion line · Ø1.75 mm filament · Ø20 mm screw · zones 1/2/3 RT to 380°C, die head 380°C · laser diameter measurement



Polytevo Series 3D Printing Filament Extrusion Line (ACS-7008DP) — representative configuration

The Polytevo Series 3D Printing Filament Extrusion Line (ACS-7008DP) is a laboratory line with an extruder, cooling and shaping unit, laser diameter measurement and a traction and winding unit for Ø1.75 mm filament. Image shown for reference; final configuration is confirmed in the quotation.

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Revision Date **11/13/2026**

SECTION I

Product Overview

Polytevo Series 3D Printing Filament Extrusion Line (ACS-7008DP) is a laboratory filament extrusion line for Ø1.75 mm 3D printing filament with a Ø20 mm screw (L/D 28:1), heating zones 1/2/3 at RT to 380°C (die head: 380°C), laser diameter measurement and a diameter tolerance of ±0.03 mm.

The ACS-7008DP comprises a high-temperature extrusion unit, a cooling and shaping unit, a diameter measurement unit and a traction and collection unit. Extrusion temperature and screw speed are controlled from a touch screen that displays real-time changes in temperature, speed and pressure during extrusion. The measured diameter controls the traction speed to extrude filament of Ø1.75 mm.

SECTION II

Core Advantages

— **Four-unit filament line** High-temperature extrusion unit, cooling and shaping unit, diameter measurement unit, and traction and collection unit.

— **High-temperature extrusion** Zones 1/2/3: RT to 380°C (die head: 380°C); four SSR temperature control zones plus one temperature measurement zone.

— **Automatic winding** Traction line speed 0–20 m/min; winding and traversing are synchronized automatically with traction; 30 N tension sensor with automatic PID tension adjustment.

— **7-inch touch screen** Operates the extrusion, diameter measurement, traction and winding systems; displays temperature, pressure and diameter curves and fault alarm records.

— **Closed-loop diameter control** A laser diameter measurement system (range 0.1–25 mm, resolution 0.001 mm) forms a closed loop with the traction assembly; diameter tolerance ±0.03 mm.

— **Wire die** A Ø1.7 mm wire die, hard chrome plated and mirror polished on the inner surface, for Ø1.75 mm product.

— **Servo-driven auxiliary machine** Traction (0.4 kW), traversing (0.4 kW) and winding (0.75 kW) are each driven by a dedicated servo motor and servo drive.

— **Standard spool** Universal 3D printing filament spool with a 55 mm inner diameter.

SECTION III

Specifications

Technical data — ACS-7008DP

Specifications	
Parameter	**Specification**
Brand	Polytevo Series by ACS Material
Product Name	Polytevo Series 3D Printing Filament Extrusion Line
Model	ACS-7008DP
SKU #	ERP7FEX1
Product type	Laboratory 3D printing filament extrusion line
Screw diameter	Ø20 mm
Screw L/D	28:1 (standard)
Screw compression ratio	2.4:1 (standard)
Screw material	38CrMoAlA, high-grade nitrided ultra-high-strength alloy steel
Screw speed	Rated 0.1–100 rpm (limit 130 rpm)
Temperature range	Zones 1/2/3: RT to 380°C (die head: 380°C)
Heating method	4 SSR temperature control zones + 1 temperature measurement zone
Melt pressure range	0–70 MPa
Main motor power	1.5 kW (servo motor)
Transmission	1:16 planetary reducer + synchronous belt
Cooling device	Ball-bearing insert cooling fan
Total power of heating zones	4.5 kW

Technical data — ACS-7008DP (continued)

Specifications	
Parameter	**Specification**
Main power supply	AC 380 V ±10%, 6 kW, three-phase five-wire (3P+N+E)
Output	Approx. 3 kg/h
Extruder dimensions (L × W × H)	1050 × 570 × 1390 mm
Extruder weight	Approx. 300 kg

Wire die

Wire die	
Parameter	**Specification**
Wire die	Ø1.7 mm
Die treatment	Hard chrome plating and mirror polishing of the inner surface
Product specification	Ø1.75 mm

Filament auxiliary machine

Filament auxiliary machine	
Parameter	**Specification**
Traction line speed	0–20 m/min (winding and traversing automatically synchronized with traction)
Filament diameter	1.75 mm
Diameter tolerance	±0.03 mm
Laser diameter measurement	Measuring range 0.1–25 mm, resolution 0.001 mm; closed-loop diameter control together with the traction assembly
Spool	Inner diameter 55 mm, universal 3D printing filament spool
Traction assembly	Gravity pressing mechanism; 0.4 kW servo motor with dedicated servo drive and reducer
Tension winding	30 N tension sensor, automatic PID tension adjustment
Traversing assembly	0.4 kW dedicated servo motor, servo drive and high-precision limit sensors
Winding assembly	0.75 kW winding servo motor, servo drive and reducer
Operation system	7-inch touch screen: extrusion, diameter measurement, traction and winding operation; temperature, pressure and diameter curves; fault alarm records
Control system	PLC and HMI operation system showing temperature, pressure, speed and process control parameters graphically

Scope of delivery

— **Standard configuration:** single screw extruder, cooling water tank with water blowing system, and 3D printing filament auxiliary machine (1 set each).

— **Scope of supply** — final accessories and scope of supply are confirmed in the quotation.

SECTION IV

Applications

For laboratory extrusion of 3D printing filament with a diameter of 1.75 mm, with closed-loop diameter control and automatic winding.

Product value: a complete Ø1.75 mm filament line with a Ø20 mm extruder (zones 1/2/3 RT to 380℃, die head 380℃), laser diameter measurement and servo traction and winding.

Revision Date: 11/13/2026

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