

Servo-Torq® Ultra extrusion rotary cutter

Ultra version - with integral caterpillar infeeder

Data Sheet

08—2002



The Servo-Torq **Ultra version** is our premier cutting machine. The advanced AC servo rotary cutting system is combined with an integral caterpillar in-feeder & a high level Siemens touch-screen operator panel with PLC control.

The main benefits to the user are:

- Advanced 3-axis servo drive with a true digital control interface
- Two AC brushless servo motors on the infeeder; one driving each belt
- High resolution SinCos encoder with 8.3 million pulses/revolution giving cut length accuracy down to ± 0.1 mm.
- Ultra high speed blade for improved cut quality & squareness.
- A powerful cut thanks to the three times rated motor torque available when cutting through the extrusion.
- Easy-to-use touch-screen Siemens control panel.

Mode of Operation

Servo-Torq Ultra rotary cutter with integral Accra-Feed caterpillar infeeder/haul-off

The Servo-Torq uses a rotary 'flying knife' method to cut through the extrudate. The ultra-thin knife blade is rotated at high speed through 360°. During part of this rotation the blade slices through the extrudate as it is feed forward by the integral caterpillar infeeder. Inlet & outlet bushes guide the blade & the extrudate during the cutting operation.

On receipt of a signal to cut, the AC servo motor accelerates from rest to full speed. When the blade hits the material it is travelling at 2000 rpm. The ability of the blade to cut through the extrudate is assisted by the way the servo motor can apply three times it's rated torque for the fraction of a second it takes to cut through the material. After the cut has been completed, the knife blade decelerates to a stop and awaits the next cut signal.

A second AC servo motor drives the belts of the integral caterpillar infeeder. The extrudate is measured as it passed through the belts to a resolution of 0.025 mm. A twin-axis controller then compares the measured length to the required cut length and then activates the cutting action.

The whole machine is controlled via the latest Siemens touch-screen control panel. Gillard have configured the software to create a very user friendly operator interface.

Further details are on the rear of this data sheet.



The latest Siemens touch-screen is now fitted as standard.



The infeed belt can work in both parallel and nip modes. The distance from the belt to blade is 40 mm.

Servo-Torq Range - Ultra version - with caterpillar infeeder

Model - Rotary cutter & infeeder	Capacity (mm)	Motor (Nm)	Torque (Nm)	Infeed belt size W x L (mm)
ST Ultra 20A + Accra-Feed UA50	20	3.6	12.7	50 x 250
ST Ultra 50B + Accra-Feed UA75	50	6.7	23.6	75 x 550
ST Ultra HD + Accra-Feed UA95	50 or 100	9.5	33.2	100 x 600 (800)

Specification - Servo-Torq[®] extrusion rotary cutter - Ultra version - Combination base¹

- Mechanical specification**
- 1000 mm ± 50 mm line height. Alternatives available
 - Right-to-left product feed. Left-to-right available
 - Cast aluminium cutter bush holder with mild steel cutter guide bushes (stainless steel bushes as option)
 - Heavy-duty knife shaft assembly with aluminium blade holder fitted with hardened steel pins
 - Slide-away cutter head for easy line start-up
 - Poly-vee caterpillar belt covered in heavy-duty neoprene
 - Adjustment of both belts around centre-line
 - Robust fabricated steel base fitted with 75 mm diameter plastic swivel castors and plated steel floor locks

- Blade & caterpillar infeed control method**
- Brushless AC servo motors with integral resolver feedback control
 - Fully digital servo amplifiers with on-board EMC filters
 - Twin axis servo positioning controller for stop-start blade operation relative to caterpillar feed of material
 - Low inertia servo motors for dynamic performance
 - Three times peak torque available for extra cutting power. IP 65 protected motor enclosure
 - Temperature sensors fitted into motor windings for protection against over-heating
 - Quick release EMC connectors on motors

- Cutting speed & modes**
- Adjustable blade speed from 375 to 2,000 rpm
 - 2,000 cuts/minute maximum cut rate
 - Five cutting modes selectable; on-demand (stop-start), Cam, SpeedCut, remote sensor & time.

- Operator control panel**
- Siemens TP170 touch-screen control panel
 - Robust IP65 protected front panel
 - Backlit display 116 x 87 mm
 - Power connected indicator lamp (white)
 - Cutter & caterpillar motor on/off push buttons with orange indicator lamps
 - Test cut push button
 - Icon identification of control functions

- Software & PLC**
- Windows CE standard operating software
 - Siemens S-7 226 PLC
 - 256 Kbytes flash memory with external EPROM/battery back-up
 - Communication facilities via Siemens MPI & Profibus.

- Encoder type**
- Bi-directional encoder with length measuring resolution of 0.025 mm increments
 - Located on rear of infeed servo motor for maximum protection

- Safety guarding**
- Class 3 coded magnetic interlocks on clam-shell cutter lid, outlet guide bush & caterpillar access door. All IP 65 protected
 - Inlet and outlet safety tunnel guards
 - Internal safety relay with external re-set push button
 - Two emergency stop push buttons
 - Guards painted RAL 2004 bright orange
 - In compliance with EN292 parts 1 & 2 and EN294
 - Fitted with a CE plate and provided with a Certificate of Conformity or Certificate of Incorporation²

- Tooling & blades**
- One pair mild steel cutter guide bushes - un-bored
 - Two straight edged knife blades 0.46 & 0.6 mm thick
 - Blade spring steel coated with Titanium Nitride

- Physical specification**
- Approximately 1600 mm long x 835 mm deep x 1460 mm high (based on 1000 mm line height)
 - Approximately 450 Kgs without options fitted

- Power**
- 400V three phase 50 Hz supply with neutral and earth lines. 25 Amp supply. Alternatives available

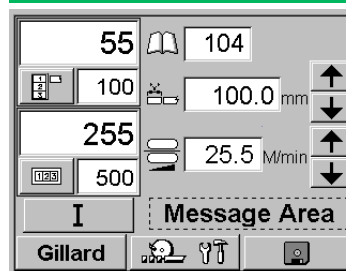
- Support**
- One year parts warranty with express delivery during warranty period. Consumables excluded

Touch-screen control screens



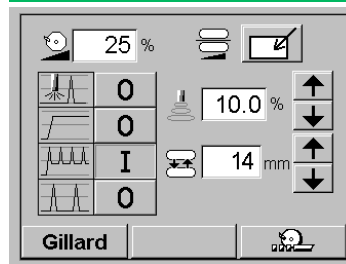
The Start-up Screen - from here you can access:

- The **diagnostic screen** for help with fault finding
- The **control screen** for all normal machine operations
- The **set-up screen** for access to various calibration functions



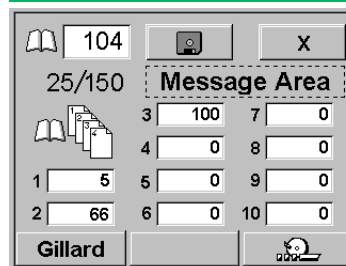
The Control Screen - for entry of normal machine instructions:

- Batch & total cuts counters with re-set & stop-start button
- Cut length & linespeed, with toggle switches for fine adjustment. Lengths from 1.0 to 100,000.0 mm can be entered
- Current part number display



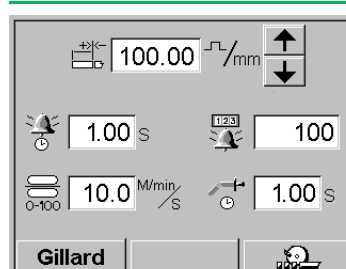
The Cutter Screen - for adjustment of cutter performance:

- Blade speed adjustment from 10% to 100% of full speed
- Cut mode selection (on-demand, Cam, Speedcut, sensor & time)
- Caterpillar local/remote speed control selection



The Parts Screen - for saving parts & setting cascades:

- Up to 100 parts can be saved within the standard memory
- Each part can contain cut length, linespeed, batch & total quantity & blade speed
- A cascade of up to 10 consecutive parts can be set-up



The Set-up Screen - for changing the machine settings:

- Calibration of encoder pulses for each mm of cut length. This fine-tunes the measured length to the actual cut length
- Alarm output duration and batch complete pre-warning
- Caterpillar ramp-up speed
- Broken blade timer (option)

Many options are available. Please contact us for details.

¹ Specifications subject to change without notice. Please consult the factory for details of any changes.
² Which Certificate will depend upon the exact configuration of the machine and the way it is installed.
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