



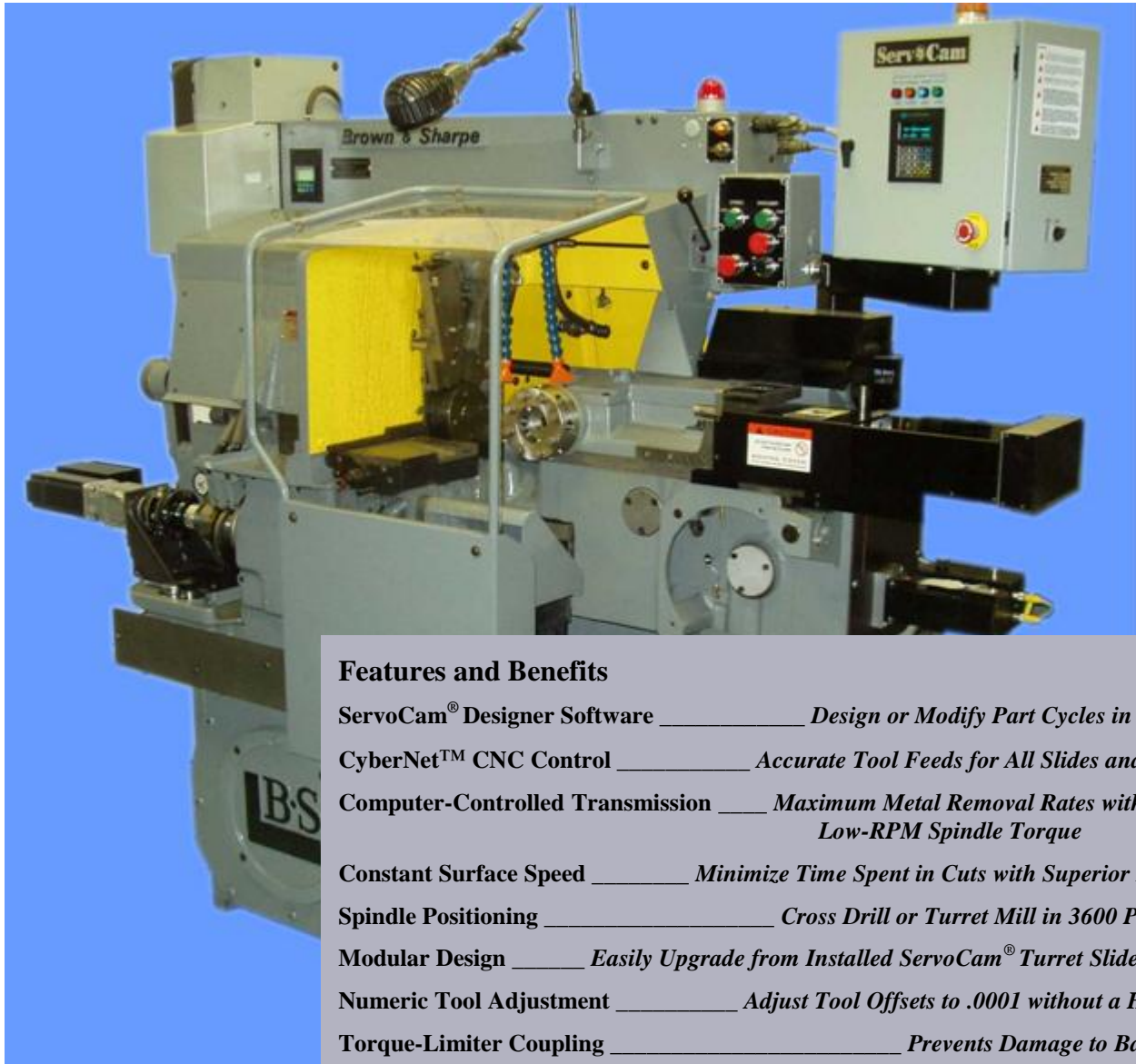
SERVOCAM

UltraTurn™ CL

For any #2 or #3 Brown & Sharpe Ultramatic Screw Machines

AMT's UltraTurn™ CL System Provides Total CNC Control

An UltraTurn™ CL CNC turning machine cuts parts faster than a cam automatic. And it sets up in minutes. The UltraTurn™ CL machine is a CNC screw machine at about half the cost of new iron. Built on the highly evolved platform of any Brown & Sharpe #2 or #3 Ultramatic and mated with a state-of-the-art CyberNet™ CNC control system, the UltraTurn™ system is the ultimate in productivity.



Features and Benefits

- ServoCam® Designer Software _____ *Design or Modify Part Cycles in Minutes*
- CyberNet™ CNC Control _____ *Accurate Tool Feeds for All Slides and Spindle*
- Computer-Controlled Transmission _____ *Maximum Metal Removal Rates with Massive Low-RPM Spindle Torque*
- Constant Surface Speed _____ *Minimize Time Spent in Cuts with Superior Finishes*
- Spindle Positioning _____ *Cross Drill or Turret Mill in 3600 Positions*
- Modular Design _____ *Easily Upgrade from Installed ServoCam® Turret Slide Models*
- Numeric Tool Adjustment _____ *Adjust Tool Offsets to .0001 without a Hammer*
- Torque-Limiter Coupling _____ *Prevents Damage to Ball Screw*
- No Cams/Trip Dogs to Change or Time _____ *Reduces Setup Time and Required Skills*
- Servo Drives on All Axes _____ *No Gears to Change, Infinitely Variable Speeds & Feeds*



AMT Machine Systems
INNOVATING MOTION SOLUTIONS

How Does it Work?

UltraTurn™ CL

The System

The UltraTurn™ CL system builds on AMT Machine System's patented and proven ServoCam® turret-slide upgrade, already installed on over 400 Brownies. Customers report dramatic quality improvements using the turret-slide upgrade, with Cpk's three to five times better than conventional cam-operated machines.

The new CyberNet™ CNC control system has one master controller and as many slave controllers and servomotors as needed. Installing a new axis is as simple as adding a slave controller and servomotor. This allows new features such as two-axis cross slides, pick-off attachments, and live tooling to be added modularly as your needs change, at a fraction of the cost of new machines.

Brushless servomotors actuate the cross-slides through the robust and proven Brown & Sharpe CNC Turning Machine drive-mechanism design. The cross-slide drives provide up to 4,000 pounds of tool force, as is necessary to bump-roll large-diameter threads. Any combination of front and rear slides can be overlapped, except for the two vertical slides. Our customers have doubled their Cpk measurements, while significantly improving surface finishes from the cross slides.

A brushless AC servomotor provides the spindle with up to 12 horsepower for metal cutting. The CNC-controlled transmission provides massive spindle torque. With a 4-ratio transmission, the UltraTurn™ spindle drive can generate up to 254 foot-pounds of spindle torque. Spindle positioning and constant surface footage provide versatility and increased metal removal rates.

Installation

AMT Machine Systems (AMT) offers a variety of options to meet our customers' needs:

- AMT can provide a remanufactured or reconditioned Brown and Sharpe #2 or #3 Ultramatic machine, delivered with the ServoCam® UltraTurn™ CL system installed, ready to make parts.
- Or, customers can upgrade Brown and Sharpe #2 or #3 Ultramatic machines that are in good running order or that have been reconditioned in house. Installation of AMT's UltraTurn™ CL system can occur either at AMT or on the customer's floor.

CNC Transmission

A multi-ratio transmission works as a programmable torque multiplier, enabling superior metal removal rates. The UltraTurn™ CL system incorporates the transmission from the Brown & Sharpe #2 or #3 Ultramatic screw machine, and supports either a 2- or 4-ratio transmission. The fully synchronized spindle-transmission control greatly reduces clutch heating and wear, thus minimizing the maintenance issues normally associated with the clutches.

With its multi-ratio transmission, the CL system overcomes the torque limitations of ordinary single-ratio CNC lathes. For example, it can tap a pipe thread in 17-4 PH stainless with power to spare. Superior metal removal rates are obtained at low spindle speeds, giving production rates easily exceeding even those of conventional screw machines. Our customers deserve nothing less.

Required Torque Example

The torque required to overlap aggressive feed rates from the cross slides and the turret slide can be very high. For example, turning 1.5" diameter 12L14 steel while overlapping two 3/4-inch form tools (.0015/rev) and a 1" drill (.008/rev) requires 105 foot-pounds of spindle torque at 535 RPM. Although this is less than 11 Hp, most CNC lathes with similar bar capacity simply cannot provide the required cutting torque.

Support and Maintenance

All ServoCam® systems carry a two-year, limited warranty. The system is designed for easy diagnosis and servicing. Just email AMT the runtime datalogs captured by the CyberNet™ controls, and our engineers can diagnose problems quickly over the phone. Replacement modules can be sent via overnight delivery. All modules are user replaceable within one hour.

Maintenance of your ServoCam® system is very simple. Grease the ball screw annually. Lube the spindle motor bearings annually. Replenish the oil in the air filter as needed.

Specifications

UltraTurn™ CL

SPINDLE-DRIVE SPECIFICATIONS * (all machine models)	
Motor type	10.3 Hp / 7.68kW (continuous) brushless AC servomotor
Peak cutting power	12 Hp / 9.0 kW
Peak acceleration power	24 Hp / 18.0 kW
Transmission	Computer-controlled 2- or 4-ratio B&S transmission, fixed gear-set
Spindle speed control	Infinitely variable, electronically controlled motor speed
Spindle positioning	0.1 degree position resolution

TURRET-INDEXER SPECIFICATIONS	
Index time	0.28 seconds
Reset time	0.32 seconds
Actuation	Backshaft / Geneva
Control	Software / pneumatic

The ServoCam® UltraTurn™ CL system can be installed on any Brown & Sharpe CNC Turning Machine.



SPINDLE-DRIVE SPECIFICATIONS * (2-ratio transmissions)				
Spindle capacity	Transmission ratio	Max speed (RPM)	Max acceleration (RPM/sec)	Max torque (ft-lbf) **
1.25"	High	3500	1479	31
	Low	1912	1174	54
1.625"	High	3000	1250	37
	Low	1639	992	63
2.375"	High	2500	1164	43
	Low	1329	926	77

SPINDLE-DRIVE SPECIFICATIONS * (4-ratio transmissions)				
Spindle capacity	Transmission ratio	Max speed (RPM)	Max acceleration (RPM/sec)	Max torque (ft-lbf) **
1.25"	1st	3500	2243	31
	2nd	1923	3674	57
	3rd	988	916	104
	4th	544	1221	189
1.625"	1st	3000	1804	37
	2nd	1648	3714	67
	3rd	847	677	123
	4th	466	1203	223
2.375"	1st	2500	2119	43
	2nd	1373	2864	79
	3rd	728	820	140
	4th	400	1012	254

TOOL-SLIDE DRIVE SPECIFICATIONS							
Slide	Servomotor	Rapid Traverse (inches/min)	Max force (lbf)	Repeatability (inches)	Max throw (inches)	Micrometer adjustment range (inches)	Crash protection
Turret slide	1.3 Hp / 1.0 kW brushless DC	360	1400	0.0001	6.8	N/A	Torque-limiter coupling, self-resetting
Front cross slide	1.6 Hp / 1.2 kW brushless AC	360	4000	0.0001	1.7	1.0	Servo-power foldback
Front vertical slide		360	4000	0.0001	2.9	N/A	
Rear cross slide	1.6 Hp / 1.2 kW brushless AC	180	4000	0.0001	1.7	1.0	Servo-power foldback
Rear vertical slide		180	4000	0.0001	2.9	N/A	

Specifications subject to change without notice

* 240 +/- 10% 3-phase line voltage. Capabilities reduced at lower voltages

** Spindle clutch and collet adjustments may limit workpiece torque

Results

AMT Machine Systems has focused on increased customer productivity since its inception. However, we quickly came to appreciate the axiom that “you can't improve what you don't measure”. Customers measure results with a series of tools created by AMT. Documented results show net production increases averaging over 40%. Some have even doubled their productivity!

And while doubling their net production, these same customers experienced increased tool life, doubled and tripled their Cpk measurements, cut scrap by 80%, and most importantly gained the crucial buy-in and acceptance from their employees in our very successful Departmental Upgrade Program (contact AMT for information on this valuable program).

AMT has transformed from a supplier of CNC controls into a provider of solutions that help our customers remain globally competitive. In today's world, it is not enough to just provide a great product; we must seamlessly integrate our products at customer sites and ensure the highest return on investment for our customers.

AMT Machine Systems, Ltd.



AMT Machine Systems, Ltd. (AMT) is the leading supplier of CNC upgrades for Brown and Sharpe screw machines. AMT was created in 1996 specifically to service this market segment, and to continuously improve and expand its product line. Our market dominance is due to superior product features and functionality, along with outstanding service and support, and, most importantly, the results that our customers achieve. AMT's customers experience immediate results: their first job is up and running within hours of installation. Payback time is measured in months, not years.

AMT employs highly qualified engineers for product development and customer support, complemented by former screw machine shop owners and managers that have the real-world screw machine knowledge to guide our product development process. Our product line is based on patented ServoCam[®] technology (US Patent No. 5,808,893). We have enjoyed rapid growth due to the results that our customers achieve, and to our dedication to Total Customer Satisfaction. AMT currently has over four hundred (500) systems installed in the USA and Canada.

Trust AMT to provide state-of-the-art upgrades for your Brown and Sharpe screw machines.

