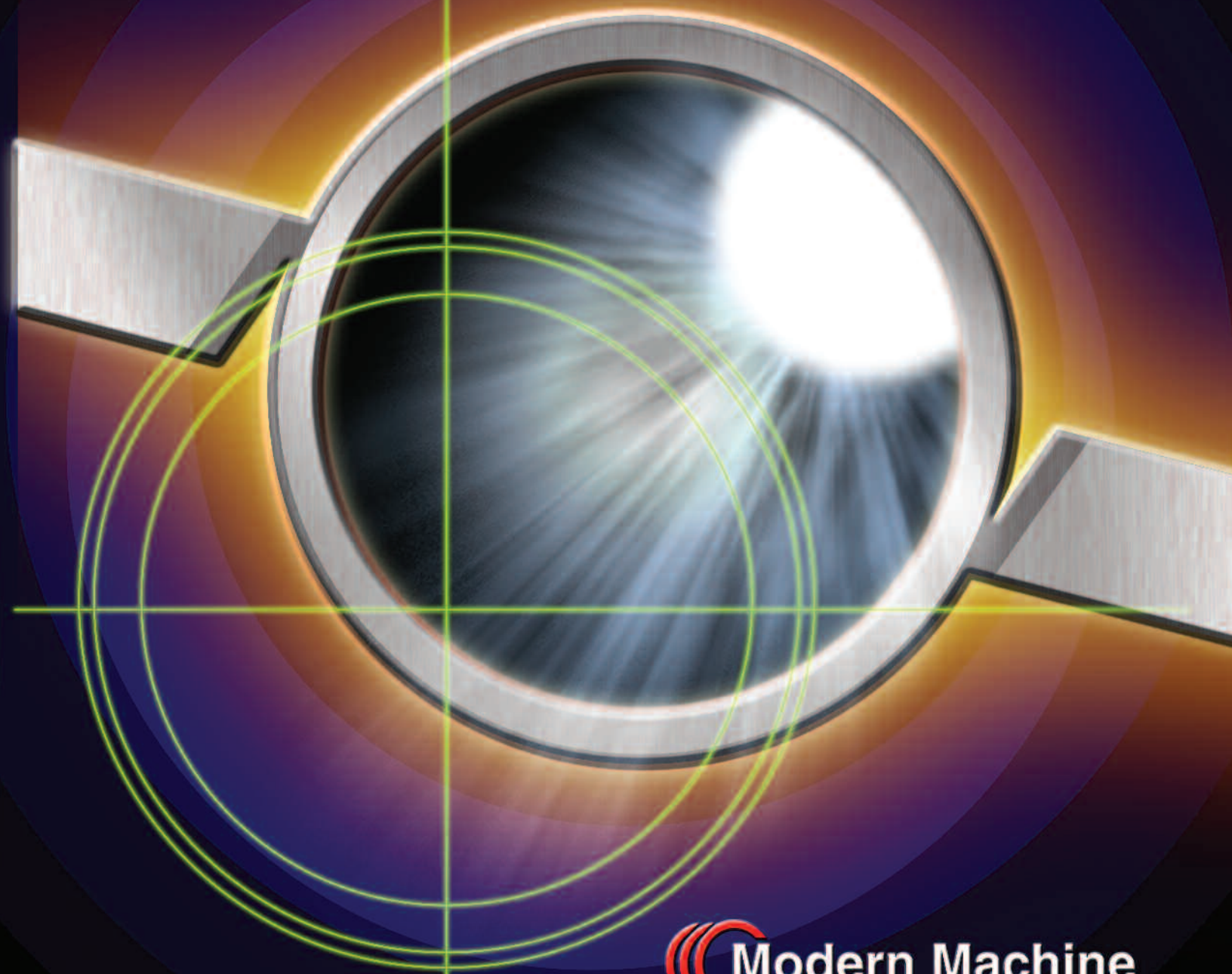
AUTOMATIC CUTOFF LATHES & FEEDERS

Quickly and accurately cut-to-length and machine round tube, pipe and bar stock – creating finished parts in one continuous cycle.



Modern Machine Tool Company

SINCE 1916

Deburring • Chamfering • Grooving • Turning • Flanging •
Form Cutting • Boring • Threading • Facing • Drilling •

MODERN AUTOMATIC CUTOFF LATHES

Drawing on our long experience in cutoff technology and utilizing the latest in digital electronics, the engineers at Modern Machine Tool Company have developed a complete line of lathe cutoff machines and systems to meet the demanding requirements of today's industrial manufacturers.

Our versatile machines are capable of cutting cylindrical tube, pipe and solid bar stock to length while simultaneously performing a variety of machining operations including: deburring, chamfering, grooving, turning, flanging, tapering, plunge forming, form cutting, boring, threading, facing, drilling, centering, rolling and recessing.

Add a Modern Automatic Bar Feeder and a specially engineered unload system and you can produce complete parts on a single machine in one continuous cycle!

SPECIFIC

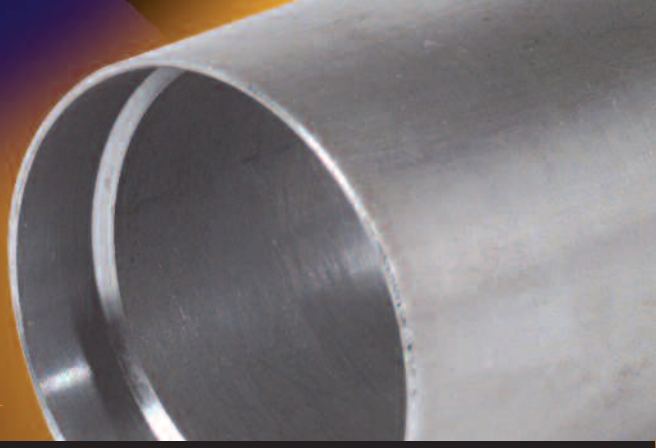
SERVO-SLIDE (S) CUTOFF MACHINES

(Maximum Wall 1-5/8" • Maximum Solid Bar 3-3/4")

Model	2S	3S	4S	6S	8S
Capacity	1/4"–2-1/4"OD	1/4"–3-1/4"OD	3/4"–4-3/4"OD	1"–7"OD	1"–8"OD
Main Drive Motors	15HP	15HP	30HP	30HP	30HP
Programmable Speeds	100 to 3100	100 to 2100	90 to 1400	70 to 1000	70 to 1000
Feed & Coolant Pump Motors	1/2HP	1/2HP	1HP	1HP	1HP
Machine Base	42"x82-1/2"	42"x82-1/2"	42"x82-1/2"	42"x82-1/2"	42"x82-1/2"
Weight (Approx.)	4950	4950	5800	5900	5900

• Tapering • Plunge Forming

• Centering • Rolling • Recessing



BASIC OPERATION

(HOW THESE CUTOFF SYSTEMS WORK)

Modern's hopper-type automatic feeder stores large bundles of round tube, pipe or rod stock in any length. The feeder loads one tube at a time into the machine, adjusting quickly to varying stock diameters, trimming the end of each new tube and ejecting remnant ends.

Live feed rolls move the stock through the lathe's spindle to an adjustable stop which precisely gages the part's cut length. Then, securely held by a collet, the entire tube is rotated while tools mounted on multiple cross slides perform a variety of machining operations on both ends while cutting the part to length.

We offer two basic types of cutoff lathes: Servo-Slide (S) Machines and Conventional (LD) Machines. While the sequence of the LD and S machines is similar, our "S" Series has a programmable spindle drive and tool slides, allowing quick setup and higher production rates with constant surface footage and improved tool life. Our "LD" Series machines operate at a constant RPM and provide cost-effective high production rates.

A T I O N S

CONVENTIONAL (LD) CUTOFF MACHINES

(Maximum Wall 1-1/2" • Maximum Solid Bar 3")

Model	2LD	3LD	4LD	6LD	8LD
Capacity	1/4"–2-1/4"OD	1/4"–3-1/4""OD	3/4"–4-3/4""OD	1"–7"OD	1"–8"OD
Main Drive Motors	10HP	10HP	15HP	15HP	15HP
16 Spindle Speeds	196 to 3027	130 to 2012	94 to 1410	61 to 932	61 to 932
Feed & Coolant Pump Motors	1/2HP	1/2HP	1HP	1HP	1HP
Machine Base	34"x82-1/2"	34"x82-1/2"	34"x82-1/2"	34"x82-1/2"	34"x82-1/2"
Weight (Approx.)	4750	4750	5600	5700	5900

CHECK THESE ADVANTAGES

LOW COST – Quick payback. Inexpensive quick change tooling.

VERSATILE – Five different models can handle a wide range of diameters in bars and tubes.

DOUBLE-END FINISHING – Can be accomplished optionally as an in-line process.

NO SECONDARY MACHINING REQUIRED – In many cases simple parts can be machined in one operation.

ACCURACY – Length, chamfers, forms and grooves can be accurately held.

LOW COST TOOLING – In most cases standard insert tooling can be used for cut-off, chamfering, and forming operations.

MULTIPLE OPERATIONS – Parts can be cut to length while simultaneously being chamfered, formed, knurled, grooved, etc – all in one continuous step.

MINIMUM MATERIAL HANDLING – From bundles of raw material to cut parts in one handling.

VOLUME PRODUCTION CAPACITY – With easy programming and quick changeover, you can easily produce moderate to high volumes of parts.

RIGID, SIMPLE CONSTRUCTION – All moving parts are attached to a heavy head-stock casting which is bolted solidly to a fabricated base.

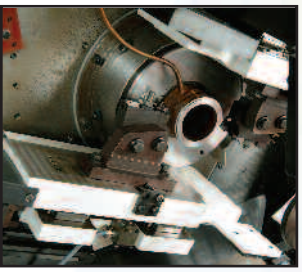
QUICK, EASY PROGRAMMING – Menu driven, fill-in-the-blanks programming makes set-up a breeze. Training takes minutes.

EASY TO MAINTAIN AND SERVICE – Machines utilize common, commercially available components. Our experienced cutoff technicians offer prompt technical support and on-site service. Ninety-six percent of all parts and tooling items are shipped within two days.

EQUIPMENT & FEATURES — SERVO-SLIDE CUTOFF LATHES

Cross Slides

Our Servo-Slide Lathes are equipped with linear guideway slides with preloaded bearing packs. A grey iron slide base and tool carrier provides rigidity and dampening. Precision ground ball screws are fully supported with preloaded thrust bearings. Multiple-slide options are available for special applications.

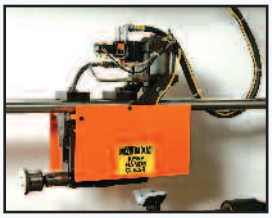


Coolant

An integral flood recirculating coolant system, with precise directional discharge programmed for flow only during the cutting cycle, minimizes coolant loss.

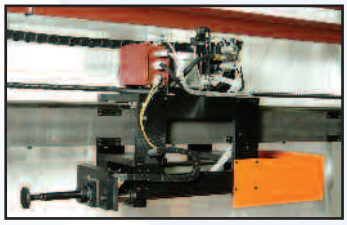
Chip Removal

A large chip pan for swarf containment is easily removed for cleaning. Optional chip conveyors for automatic removal of swarf are available.



Stock Stops

Two types of stock stops are available. Our **Standard Stock Stop** is manually adjustable along ground shafts. Fine adjustment is made by micrometer screw settings. This pneumatically actuated stop retracts from its positive gauging location for part clearance during cut-off, allowing completed parts to be removed from the cutting area. Standard stops are available to cut any length parts up to 144”.



Our **Heavy-Duty Stock Stop**, with power clamping and ball screw positioning, is mounted on a rigid beam assembly for part length accuracy. This stop moves on ground linear rails, with preloaded bearing packs. It can be positioned either by a manually operated ball screw, with digital readout of the part length, or by an encoded ball screw with programmable servo positioning for length. Heavy Duty Stops handle part lengths up to 144”.

Automatic Lubrication

A central recirculating system lubricates spindle bearings. The oil is metered through sight gauges for flow verification. The ball screws and nuts are lubricated by a metered forced oil system, with status checks at the operator display

Spindle Drives

Our Spindle Drives are linked to the Programmable Logic Controller via Ethernet Communications for optimum spindle speed response time. This connection eliminates the need for traditional hardwired I/O control wiring and the possibility of loss of control due to loose hardwire connections. Full diagnostics of the spindle drive are available to the machine operator at the operator’s control panel. Our spindle drives can be programmed for Constant Surface Footage Speed Control (CSS) to improve production, tool life and changeover time. We offer spindle horsepower ranges from 15hp to 40hp, depending on the machine capacity and the customer’s requirements.

Tool Slide Programming

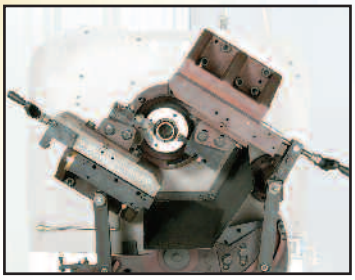
Our Tooling Slides Cycle Sequence Programming was designed with the machine operator in mind. Machines can be equipped with one to three tooling slides. Each tool slide is completely independent from the others and can be programmed in any sequence which best serves the customers finished part requirements. The Tool Slides automatically run in Constant Surface Footage Mode (CSF) to maintain constant tool pressure, extend tool life and maximize chip control. Each Tool Slide is programmed via a user- friendly menu system. The operator is responsible for programming only four variables for each slide, (Negative Rapid Position, Feed Depth Position, Feed Velocity Speed, and Positive Rapid Position). Our machines are factory-set with default Rapid Velocity Speeds and Axis Home Positions, but if necessary the operator does have access to alter these settings.

Guarding

Safety interlocked guarding protects personnel from all pinch points. This guarding assures coolant containment and permits easy access for changeover, maintenance and convenient discharge of completed parts.

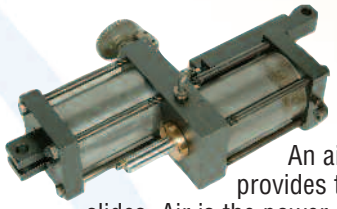
EQUIPMENT & FEATURES — CONVENTIONAL (LD) CUTOFF LATHES

Our Conventional Cutoff Machines differ from our Servo-Slide Machines mainly in their Cross Slide mechanisms. (All other features shown for "S" Machines also apply to our "LD" Machines.)



Cross Slides for LD Machines

Our Conventional Machines are equipped with two cross slides, bolted directly to the main body casting. They are hand-scraped and fitted close-grain cast iron, with rigidity for heavy chamfering and plunge forming. Cams that are actuated by an air/hydraulic cylinder feed the cross slides. When cutting heavy wall tubing or solid bar stock, both slides can be used for cutting-off for increased production.



Air Hydraulic Cylinder for LD Machines

An air-over-oil cylinder assembly provides the feeding action for the cross slides. Air is the power source, while oil regulates the feed rate. A regulating needle valve controls oil flow to provide precise control of feed rate. This system permits rapid approach of the tools to the work, controlled feed during the cut and quick return after completion.

PRODUCTION RATES FOR "S" (SERVO-SLIDE) MACHINES

O.D. of Pipe or Tubing	Wall Thickness of Pipe or Tubing													Solid Rounds	
	0.049	0.065	0.109	0.125	0.156	0.187	0.250	0.375	0.500	0.625	0.750	1.000	1.250	Dia.	
1/4"	1,760	1,760												1/4"	1,690
1/2"	1,680	1,600	1,510	1,490										3/8"	1,600
3/4"	1,600	1,510	1,360	1,305	1,240	1,185								1/2"	1,400
1"	1,495	1,250	1,215	1,160	1,065	1,015	910							3/4"	1,050
1-1/2"	1,350	1,230	1,030	960	865	775	690	550						1"	775
2"	1,230	1,105	870	810	710	640	530	415	350					1-1/4"	575
2-1/2"	1,130	1,025	770	700	610	545	440	340	275	245				1-1/2"	440
3"	1,105	990	670	620	530	470	385	285	230	195	175			2"	270
3-1/2"	960	830	600	550	475	410	330	245	195	165	150	105		2-1/2"	210
4"	880	750	545	505	425	370	295	210	170	130	120	100		3"	135
4-1/2"	840	710	505	455	385	335	265	190	150	125	110	90	75	3-1/4"	110
5"	775	670	450	420	355	305	240	170	135	110	95	75	70		
6"	695	585	400	360	305	260	205	145	110	90	80	65	55		
7"	640	530	355	320	265	225	175	125	105	80	70	50	45		
8"	580	470	320	285	235	200	155	110	85	70	55	45	35		

These rates are based on 1010-1026 carbon steel, with cut pieces 6" or less in length, at a spindle speed of 450 surface feet per minute (at a constant RPM), and a feed rate of .004. Cutting longer pieces (between 6" and 24") will decrease production rates by 10%.

PRODUCTION RATES FOR "LD" (CONVENTIONAL) MACHINES

O.D. of Pipe or Tubing	Wall Thickness of Pipe or Tubing													Solid Rounds	
	0.049	0.065	0.109	0.125	0.156	0.187	0.250	0.375	0.500	0.625	0.750	1.000	1.250	Dia.	
1/4"	1,610	1,520												1/4"	1,150
1/2"	1,350	1,280	1,100	1,055										3/8"	1,120
3/4"	1,280	1,200	1,025	970	880	810								1/2"	840
1"	1,100	1,020	760	710	632	570	470							3/4"	590
1-1/2"	860	770	600	560	490	440	355	260						1"	305
2"	750	665	510	470	410	360	295	215	170					1-1/4"	200
2-1/2"	590	520	390	355	305	270	215	155	120	100				1-1/2"	145
3"	515	450	330	305	260	225	180	130	100	85	70			2"	98
3-1/2"	450	385	280	260	220	190	150	110	85	70	60	45		2-1/2"	54
4"	425	370	265	245	205	180	145	100	80	65	55	42		3"	40
4-1/2"	385	335	240	220	185	160	130	90	70	60	50	36	30	3-1/4"	37
5"	370	315	230	210	175	150	120	85	65	55	45	35	28		
6"	330	285	205	185	160	135	108	75	60	48	40	31	25		
7"	285	240	170	155	130	115	90	62	48	39	33	25	20		
8"	245	210	150	135	110	96	76	53	41	33	28	22	18		

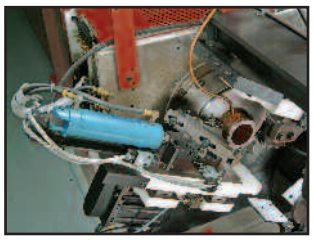
These rates are based on 1010-1026 carbon steel, with cut pieces 6" or less in length, at a spindle speed of 350 surface feet per minute (at a constant RPM), and a feed rate of .003. Cutting longer pieces (between 6" and 24") will decrease production rates by 10%.

OPTIONAL EQUIPMENT — SERVO-SLIDE & CONVENTIONAL (LD) CUTOFF LATHES

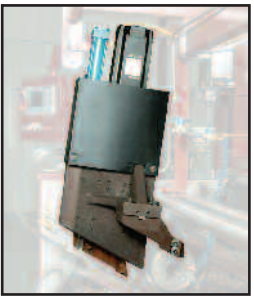
Swing Position Steady Rest and Ejector

Swing Position Steady Rest and Ejector "V's" support stock during cut-off. When the cut is completed, the "V's" retract away from the spindle and rotate to the side, ejecting the cut part down an incline. The steady rest can be programmed to eject the completed part to either side of the machine, with the remnant end sent to the opposite side. Units are available with part length capacities from 4" to 120".

Combination Tool Holder & ID Chamfer Attachment



For chamfering or deburring the I.D. of one end only, this attachment mounts on the front cross slide and incorporates a tool holder for cut-off. After cut-off is completed, the chamfering arm swings in to deburr or chamfer the I.D.

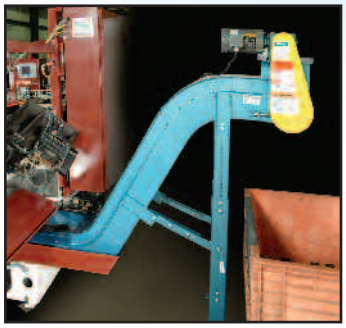


Third Cross Slide

A Third Cross Slide is available to add an additional tool position for chamfering, forming or cut-off. This slide is available as a servo-operated ball screw driven option on our "S" series machines. On our conventional "LD" machines, the third slide is available with an independently operated air-over-oil cylinder system. In either version, the operation sequence of this slide can be programmed to operate before, after or simultaneously with the operation of the other two slides.

Work Light

A halogen work light is available for illumination of the cutting area. This aids in set-up and viewing the machine operation.

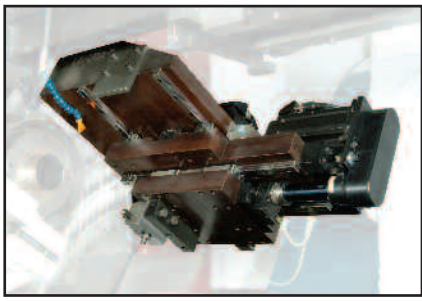


Chip Conveyor

For automatic chip removal with coolant separation. Includes a quick electrical disconnect for cleanout and maintenance, and a reversing starter.

Two-Axis Programmable Slide

A programmable two-axis slide is available for simple turning, boring and plunge-forming operations on one end of a part. This slide replaces the standard single-axis rear slide.

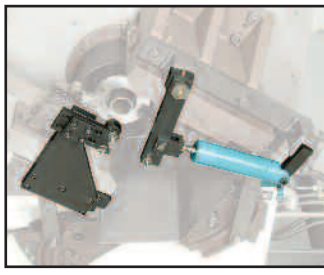


Roller Cutter

For high production cut-off, where square faced ends are not required. The roller cutter accommodates a 7" roller cut-off wheel.

Roller Steady Rest

Cut-off lengths over 5" are supported by the roller steady rest when grooving or forming to improve part rigidity. This attachment can also be used to minimize cut-off tips.



Special Cross Slides

Special Cross Slides are available for turning, boring, grooving, flange forming, and plunge forming.

End-Finishing Stations

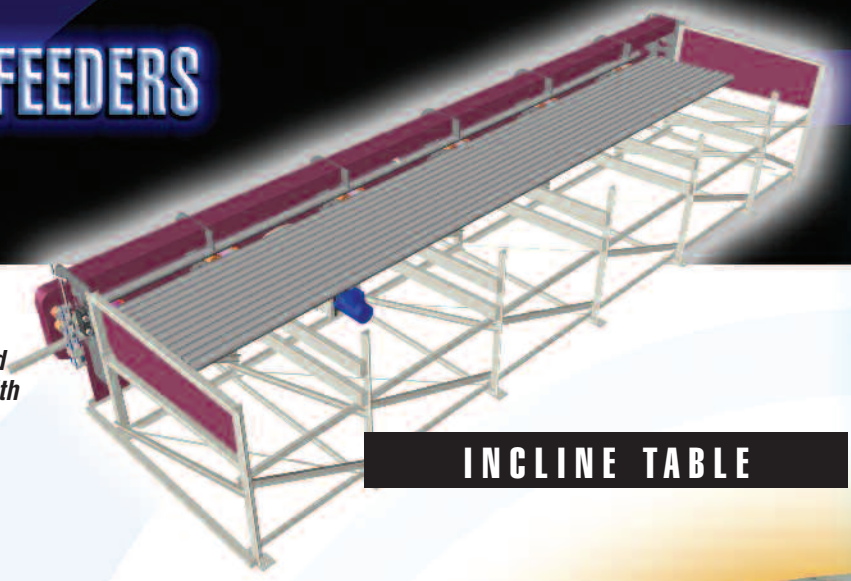
Our single and double end chamfer or end-finishing machines are engineered to operate independently or as an inline station with the cutoff machine. These units are custom designed to suit each individual application.

SERVO-SLIDE & CONVENTIONAL

CUTOFF LATHES

Modern Machine Tool Company

MODERN AUTOMATIC BARFEEDERS



INCLINE TABLE

Designed for fully automatic loading of cylindrical tubing, pipe and bar stock, these versatile barfeeders can be used not only with Modern Automatic Cut-off Lathes but also with any other machines requiring feeding of random length round tubes and bars.

- Holds up to 10,000 pounds of stock to be cut.
- Handles random lengths from 6 feet to 60 feet .
- Upon demand, automatically loads one bar at a time into the machine.
- Provides the control function for automatic trim of the beginning end of each bar and ejection of the remnant end.
- Changeover is a quick crank adjustment. Power adjustment available as an option.
- Servo-positioning of the bars for adjustable and accurate trim ends.

Adding a Modern Automatic Barfeeder to your Modern Cutoff Lathe creates a system that will automatically produce cut, chamfered and machined parts — from loading of material to completion — enabling an operator to run more than one machine.

Automatic barfeeders are available for all models of Modern Automatic Cut-off Machines. They can handle any stock length up to 60 feet as standard. We offer two basic configurations: 1) The smaller barfeeder handles 3/8" to 3-1/4" diameters and is supplied with our 2 and 3 series machines. 2) The larger feeder handles 1" to 8" diameters and is supplied with our 4, 6, and 8 series machines. Random lengths, with up to 20 feet in variance between the longest and the shortest, can be handled without positioning the ends.

With these automatic barfeeders, manual operations such as loading and positioning individual lengths of material and remnant end location are eliminated. The barfeeder pusher system and material advance is operated by an encoded feed motor with a variable drive frequency, allowing a rapid change of trim lengths and precisely controlled feed rates for various size materials.

There are two types of stock storage available: 1) An **INCLINE TABLE FEEDER** is used where the stock is of small diameter (5/8" and under). Stock can be loaded onto the table bed one-deep, where it rolls on the incline to the loading position. It is loaded one bar at a time to the feed trough for advancement into the machine. The width of a standard storage table is 60" and it can accept diameters to the maximum capacity of the barfeeder.

2) Our second type of barfeeder is the **HOPPER STYLE FEEDER**. It will accept bundles of material many rows deep, automatically unscrambling the stock. Elevating fingers raise the bars to loading position, where cams load them into the feed troughs for advancement into the machine. The hopper holds up to 10,000 pounds of material. A combination of these types of barfeeders can also be provided. With the quick removal of channels, an incline table for use with small diameter, is converted to a hopper style for larger diameters.

Barfeeders for use with Series 2 and 3 Modern Automatic Cutoff Machines are equipped with a feed trough consisting of a combination of roller supports and V-troughs to handle both large and small diameter stock.

HOPPER STYLE

Roller supports consist of sets of two turning rolls mounted at right angles to the stock, forming a "V" on which the larger diameter stock rotates while being cut off. Each set is accompanied by a single V-shaped roll mounted lengthwise of the stock. This roll helps support the stock when it is loaded onto the turning rolls and also lifts it off the turning rolls when it is being fed forward. These lifting rolls lower to clear the stock when it is rotating while being cut-off. The sets of rollers are mounted on a T-rail at approximately four-foot centers.

For smaller diameter stock that is too light to rotate the turning rolls and which would deflect and whip between the roller supports, V-troughs are mounted on the T-rail between the sets of roller supports. Thus the larger diameter stock is supported with a minimum amount of friction, both when turning and when being fed forward. The smaller diameter stock is supported in the V-troughs to give it the added support it needs over the full length of the stock. Since roller supports and V-troughs are mounted on the same T-rail, they adjust together for various stock diameters and do not require individual adjustments.

Barfeeders for Series 4, 6 and 8 Cutoff Machines are furnished with roller supports consisting of two turning rolls at right angles to the stock and a lifting roll parallel to the stock. These rolls operate the same as the support rolls on barfeeders for Series 2 and 3 Machines. When these larger machines are occasionally used for stock diameters under 1", auxiliary V-supports for smaller stock are available as an option. The barfeeders will perform efficiently on all stock within commercial straightness tolerances. For small diameters or material that has some camber, cylinder actuated holddowns can be provided to prevent whipping.

Our service technicians provide set-up, training, maintenance and repair. With well stocked service vans, Modern can provide a quick response to keep you productive.

Call, write, fax or email us for more information and prices on any of our growing family of standard or customized machines including:

- Conventional Cutoff Lathes
- Servo-Slide Cutoff Lathes
- Laser and Plasma Cutoff Lathes
- Automatic Tube Feeders

Special applications will be quoted on request.

Ask for our FREE VIDEOS showing these machines in operation.

ISO 9001 REGISTERED

Modern Machine Tool Company

Manufacturing Tube Cutoff Machines Exclusively Since 1916

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