



BLM GROUP

USA

**BLM GROUP
USA Corporation**

tube & wire bending
endforming
lasertube
sawing



TS72

CNC Tube Sawing System

BUDGETARY QUOTATION 2022

Prepared for:

Customer
Address
City, State, Zip

October 4, 2022



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About BLM GROUP

For over 60 years, BLM GROUP has been making state-of-the-art systems for processing tubes, special sections and bars to make production simpler, more innovative and more effective **for our customers**. Tube processing is our strength: laser cutting, bending, saw cutting and end-forming.

We offer a comprehensive range of solutions for a wide variety of applications focused on the **direct, material benefit for our customers**.

Headquartered in Italy with a network of subsidiaries, our factory trained staff provide pre- and post sales support, training, spare parts and service to customers worldwide. The North American market is served by BLM GROUP USA, based in Novi, Michigan.

BLM GROUP Global Presence



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Description

Machine overview

The model TS72 is a fully automatic CNC sawing system for production cutting of tube and solid bar. The quick, fully automated changeover ensures that the TS72 is equally efficient for both short and long production applications. Using the latest technology from Siemens the CNC control manages all cutting parameters and critical machine settings, guaranteeing the highest level of productivity, machine utilization, and unparalleled accuracy. All functions are constantly maintained without dependency on operator expertise. Virtually all of the machine adjustments are automatic, including the part changeover adjustments, length setting, all blade speeds and feeds, material feed and deceleration, blade stroke, vice settings, discharge locations, etc.

The TS72 automatically makes all of the saw adjustments in seconds. The CNC control has enough memory to store literally thousands of part programs which include all of the saw set up specifications including blade requirement and cutting parameters.

The preload facility for the next material length to be cut and the exceptionally fast high torque drive of the Vulkalon feed rollers provide nearly instantaneous feed of the next stock length following the final cut of the previous piece.

From the bundle loader through to the three discharge locations all adjustments are automatic and managed by the Siemens CNC control. Changing from one job to another is accomplished in the time it takes you to enter the part program number. The operator has no need to leave the control to change from job to job. There are no manual changeover settings. There is no need for special tools or the requirement to make trial cuts.

Versatility

In today's highly competitive manufacturing environment, being capable of processing a wide range of materials and parts, especially in terms of shape and material type has become more important than ever before. The BLM Adige model TS72 provides that wide range of application fulfillment.

The model TS72 will provide tube cutting of round, square, and rectangle sections without compromise. In addition to tube, the saw will cut a wide range of solid bar stock up to 1.57" OD or diagonal.



The availability of down flow integration of in line brush de-burring, air blow cleaning, washing and drying and a variety of collecting systems are available on all Adige automatic cutting systems.

High Reliability and Low Maintenance

All BLM Adige saws are built to last. Our 50 plus years of saw manufacturing has provided us an exceptional opportunity to know what works well. All Adige saws are designed, built, and supported the BLM Group worldwide.

The model TS72 is made from the highest quality materials and components. The critical components, the cutting head and vice clamp system are robust. The cutting head utilizes hardened and precision ground helix gears equipped with an anti-backlash compensation system. Productivity and accuracy are ensured by the rigidity of the cutting assembly, incorporating a double-cylinder vice clamp, on both sides of the saw blade and a slide way mounted cutting head. This massive construction substantially reduces vibration which increases blade life, reduces noise and generates the best cut quality on all materials and sections.

Quick and Easy Setup

The TS72 automatic cutting system provides the optimal cutting parameters for the operator. The Siemens CNC control will select the optimum working parameters for the best possible machine performance from a complete and proven technological database. These parameters cover blade speeds and feeds for differing materials, saw blade selection and material feed rates, according to blade type, material type and section shape. The control also provides programming of cut quantities, trim length (or no trim cut), stock deceleration, 'dwell' time against the length stop, graphic display of selected "nesting" arrangement of up to 4 different component lengths and the selection of part discharge positions, front, rear or onto the central conveyor.

Material Feed System

Each part is accurately advanced by a combination of encoder, photocell, and positive target stop devices. The photocell determines the end of the tube until the tube is deposited beneath the pressing rollers push the material into the four large Vulkalon feed rolls. The feed rolls power the material on thru to the cutting zone to the target stop as the pressing wheel mounted encoder monitors its exact position.

The acceleration of the material continues until the encoder signals the feed to decelerate once the end of the material nears contact to the target stop, which instantaneously closes a proximity switch. At this precise moment, the vice jaws clamp, the cut begins, as the stop pulls clear.

The material feed system and vice geometry are designed to assure the most positive clamping of the material during the cutting cycle whether the material is thin wall delicate tube or tough thick wall high strength tube. The independently operated hydraulic material clamps on either side of the saw blade, with adjustable pressure ensure positive clamping of the work piece that ensures the highest cut accuracy.

Length Stop

The BLM Adige model TS72 CNC saw utilizes a high speed precision end stop system driven by a brushless servo motor and rack and pinion. This system provides near instantaneous repositioning when successive cuts are of different lengths. The positioning is absolute. The heavy duty target stop is rugged and automatically retracts once the vice jaws clamp the material. The target retracts preventing the material from binding as the part is directed to the selected discharge location

High precision and quality linear guides are used on the high speed stop system. This superior linear motion guides insure many years of trouble free production.

The end stop retracts away at the moment the jaws clamp and the saw blade begins its cut. This allows the cut piece to slide unrestricted as it is directed to one of the four programmed discharge locations.

A brief blast of air on the length target surface helps maintain the integrity of the work piece length accuracy and repeatability.

Cutting Head

The heavy duty cutting head is suitable for cutting thick or thin wall tubing. Composed of helical gears with anti-backlash compensation and 7.4 hp heavy duty motor with frequency inverter provide virtually an infinite combination of speeds and feeds. The robust cutting head construction is unmatched in the saw industry. The most efficient and accepted method of cutting square or rectangle shapes is from one corner diagonally to the opposite corner, reducing cut time and unnecessary burden on the blade.

All Adige saws incorporate this preferred cutting process by utilizing a slide way mounted cutting head that maximizes efficiency and blade life as well as increasing productivity by as much as 30% over other cutting processes.

Full access to the saw blade is provided at the rear of the unit and the push button retraction of the cutting head makes blade changing quick and simple.

The CNC control manages this cut process by varying both the cut speed and the blade feed rate based on the part geometry, increasing productivity and reducing blade wear.

Blade condition is constantly monitored and displayed on the Siemens CNC control preventing the saw blade from overheating and subsequent damage.

Optional systems like the Adilube Micro-jet blade lubrication system which sprays a mixture of air and mineral oil to the side of the blade. Adilube is specifically designed for cutting steel, brass, light alloy and copper tube material.

Turbo Refrigeration is a BLM Adige exclusive process that forces ambient air through a venturi nozzle reducing the exit air temperature well below zero as it blasts each passing tooth.

Blade life is greatly enhanced by retracting the material from the blade, prior to the return stroke of the cutting head, preventing the material rubbing against and wearing of the blade.

Loading

The Bundle Loading system with the standard 5 support structures can accommodate tube diameters of 3/8" - 4", square section tubes from 3/8" to 3 1/8", rectangle sections up to 3 1/8" x 4" and solid bar to 1 9/16" OD in stock lengths of 6'6" to as much as 15', depending on model. As an option, 2 additional supports are available for supporting smaller diameter tubes. The bundle loader can handle a weight load of 8800 lbs. and includes an unscrambling system to assure that only one piece is selected. The material transferring system uses non-metallic materials to prevent marking. All adjustments are fully automated and controlled by the Siemens CNC control without any operator intervention.

Safety

The BLM model TS72 saw is fully compliant with all CE safety and guarding standards which provide full safety guarding and electrical interlocks. Each machine is supplied with an Operation, Maintenance and Safety manual that provides assistance in proper and safe use of the saw. In addition, during the "Programming and Operations" training provided by the BLM Technical Representative, the proper and safe usage of the saw will be reviewed at length.

Options

Deburring System (Optional)

ADIGE ST662 automatic wire brush deburring machine linked to the output of the ADIGE TS72 sawing machine, to deburr both ends of cut tubes.

Main features:

- Solid and robust structure to minimize vibrations.
- O.D and I.D. de-burring of different shaped tubes (round, square, rectangular, oval etc.)
- Brush wear compensation
- Available with air blower device to expel chips

Tube Collection (Optional)

RT711 Automatic tube collector directly linkable to TS72 saw. Tubes are automatically collected and stacked into either open or closed bins. Provides dramatic noise reduction. Tube surface and ends are preserved from scratches or nicks.

Tube Measurement (Optional)

MT200 Tube Length Measurement System, measures each tube's length to insure consistent parts. Tubes measured to be out of acceptable range are segregated to a separate discharge location.

Data collection for off-line analysis.

Technical Specifications

Cut Capacity: Round Tube	.39" - 4.02"	10-102 mm
Square Tube	.39" - 3.15"	10x10 - 80x80 mm
Rectangle Tube	3.94" x 3.15"	100x80 mm
Solid bar	1.58" OD	40 mm
Length Stops: Programmable	1	
Blade Diameter:	7.87" -- 13.78"	200-350 mm
Maximum Cut Length (choice):	59"-118"-177"	1500-3000-4500 mm
Minimum Cut Length:	.79"	20 mm
Trim Cut Length:	Programmable or Excludable	
Bundle Loader Capacity:		
Length (choice)	21' - 28' - 41'	6500-8500-12500 mm
Minimum	78"	2000 mm
Weight Limit	8800 lbs.	4000 kg
Material Feed Speed (max):	803.8 ft/min	245 M/Min
Cutting Head (w/ inverter):	7.4 hp	5.5 kW
Machine Weight (L=3000)	7480 lbs	3400 kg
Floor Space, approximate (L=3000):	387.5 sq ft (8'7" x 43'7")	34.6 sq mm
Machine Height:	73"	1854 mm
Electrical Requirements:	480v/3ph/60	

Standard Features

- The Bundle Loader Anti Overlap system automatically unscrambles tube and feeds one tube at a time to the feed rollers without operator intervention.
- Bundle loader has an 8800 pound material capacity.
- Bundle loader can be loaded without disrupting current production.
- Superior guarding and totally enclosed soundproofing is provided including bundle loader.
- Surface protection to reducing both material marking and noise.
- During the material feed process, the material is lifted away from the vice bed and vice jaws to assure the tube will be free of surface scratches and marks.
- All cutting parameters are automatically set correctly according to the material type, material dimension and blade type.
- The ultra high speed repositioning of the end stop is accomplished by a brushless motor driving a rack and pinion.
- Material is fed to the length stop by a series of six (6) opposed, large diameter “presser” and Vulkalon covered feed rolls driven by a powerful hydraulic motor at exacting speeds controlled through proportional valves and managed by the CNC control.
- The material feed system and vice geometry assures positive clamping of all sections through the cutting cycle.
- Four (4) quick change vice jaw variations are available to cover all typical sections
- A combination of precision encoder and photocell technologies closely monitor material flow through the entire feed system.
- The cutting head is equipped with a frequency inverter that provides infinite combinations of blade speeds and feed rates managed by the Siemens CNC control
- The sliding cutting head action provides square or rectangular material to be cut from corner to corner, eliminating unnecessary blade ware and substantially increases productivity.
- All sections can be processed including round, square, rectangular and shaped tube or solid.
- Adilube Micro lubrication and Turbo Refrigeration substantially increases blade life even under the most demanding conditions.
- Immersion (flood) coolant is a mixture of water and oil, continually filtered and re-circulated that greatly reduces process temperature and flushes away chip.
- Cut pieces are directed to any of the three programmable discharge locations, front, rear or central conveyor presenting cut product at the right end of the saw.
- No manual settings, use of special tools required for a less than two minute changeover.
- Full system safety guarding with electrical interlocks.
- The model TS72 is provided with full EU declaration of conformity.

Training

Programming and Operations (Customer's Facility)

Training for up to five (5) students is included in the purchase price of the machine. The standard training course is conducted at the customer's facility after the machine has been installed and tested. The course length is two (2) days. Topics covered include machine operation, programming, and routine daily maintenance.

It is recommended attendees of the 'Programming and Operations' training class be proficient in basic computer skills, have the ability to read and interpret drawings and understand basic manufacturing nomenclature. Ideally the trainees should have a minimum of one (1) year of programming experience or one (1) year of experience in CNC machine tools.

Training for additional students is available if required. Contact the training department for pricing and availability.

Pricing

BLM GROUP TS72 CNC Cold Saw including:

- 9068020004 - TS72 CNC cold saw capable of cutting up to four different programmable part lengths from the same bar with unloading in up to four different positions. The saw can process tubes ranging from 10mm to 102mm (.393" - 4.0") diameter. Finished part lengths are from 20 mm to 1500 mm (.75" - 59") long. Saw blades are not included in the machine sale. Saw blade selection is application dependent. All saw blades are to be purchased separately.
- 9168010600 - Safety guards for TS72
- 9168010700 – Electrical modifications for 480V/60Hz
- TELESER – First year service contract for remote troubleshooting and repair
- Packing, Duty, and Freight to port of entry included

Cutting Head

- 9168020164 – Type "P" Cutting Head with 5.5 kW motor

Saw Configuration

- 9168010064 – 6.5m Bundle Loader (base unit)
- 9168010074 – 8.5m Bundle Loader Extension, minimum tube diameter for loading: 14mm
- 9168020020 - 3.0m Cut Length, increase finished part length capacity up 3.0m (118")
- 9168030902 – ADILUBE MIX microjet saw blade lubrication system with combined use of air-oil and air-emulsion mists. 1.2 L oil tank and 2.2 L emulsion tank with minimum level control.
- 7262000007 – ADILUBE PLUS non-toxic lubricating oil, 10 L
- 9168010370 - Prismatic jaw set for tubes 10 - 24 mm (.39" - .95") diameter
- 9168010380 - Prismatic jaw set for tubes 15 - 34 mm (.59" - 1.34") diameter
- 9168000390 - Prismatic jaw set for tubes 34 - 85 mm (1.34" - 3.35") diameter
- 9168000400 - Prismatic jaw set for tubes 85 -102 mm (3.35" - 4.00") diameter
- 9168010150 - Adjustable pressure regulator for main vice cylinders
- 9168010050 - Automatic swarf conveyor

Budgetary Total: \$246,500

Available Options (not included in this quote)

Loading Options

9168010064 - 6.5m Bundle Loader	-\$8,390
9168010084 - 12.5 Bundle Loader, minimum tube diameter for loading: 20mm	\$20,000

Unloading Options

9168020030 – 4.5m Cut Length, increase finished part length capacity up 4.5m (177")	\$11,300
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Brush De-burring Options

9066030014 - ST662 Automatic wire brush de-burring system for parts up to 3.0m length. Includes air blow chip evacuation unit with dust collector (wire brushes not included).	\$115,500
9066030024 - ST662 Automatic wire brush de-burring system for parts up to 4.5m length. Includes air blow chip evacuation unit with dust collector (wire brushes not included).	\$119,000
5992300472 – Wire Brushes - .20 mm high tensile steel wire for steel tubes. Brush dimensions: 300 mm diameter, 460 mm length. (Qty. 2)	\$3,700
5992300471 - Wire Brushes - .35 mm high tensile steel wire for steel tubes. Brush dimensions: 300 mm diameter, 460 mm length. (Qty. 2)	\$2,600
5992300462 - Wire Brushes - .20 mm stainless steel wire for stainless (up to 1.5 mm) and aluminum tubes. (Qty. 2)	\$5,650
5992300463 - Wire Brushes - .35 mm stainless steel wire for stainless (above 1.5 mm) tubes. (Qty. 2)	\$5,800
5992300466 - Wire Brushes - .50 mm stainless steel wire for stainless (above 2.5 mm) tubes. (Qty. 2)	\$4,100
9166030005 – Intermediate support for long and flexible tubes. Minimum length that can be brushed with support: 250 mm	\$8,200

Tube Measurement Options

9066120014 - MT200 system to measure the length of cut and brushed parts up to 3.0m length	\$41,000
9066120024 - MT200 system to measure the length of cut and brushed parts up to 4.5m length	\$43,000
9166110010 - Support for long and flexible tubes for MT200	\$3,100

Tube Collection Options

9071015024 - RT711 Bridge style tube collection system used to neatly deposit in a cradle round, square and rectangular section tubes of the same dimension up to 3.0m length	\$19,000
9071015034 - RT711 Bridge style tube collection system used to neatly deposit in a cradle round, square and rectangular section tubes of the same dimension up to 4.5m length	\$20,000

Motor Upgrade Options

9168020174 – New Cutting Head with 7KW Motor – Useful for TCT blade and Hard Metal	\$10,360
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Shell Jaws Option

91680110XX - Shell jaws for vice and material feed clamps, suitable for thin walled tube. Diameter from 10 to 85 mm. Diameter to be defined before order acceptance.	\$2,750
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Installation and Commissioning

BLM GROUP USA will provide labor to assemble, start-up, and commission the machine. Installation is scheduled to occur during a normal eight-hour work day. Technicians travel to the customer site starting Monday morning and return on Fridays. Overtime hours worked at the customer's request will be billed at prevailing rates.

Installation, commissioning, and training are usually completed within four (4) working days, provided utilities and other necessary services are available when required by the installer. Purchaser is responsible for floor preparations, electrical, gas, air and water supply, rigging and related labor.

A 'Preinstallation Manual' and 'Checklist' describing the scope of preparations are provided prior to a Purchase Order. Purchaser is required to complete a "Preinstallation Checklist" form prior to an installer being dispatched. A 'Preinstallation Kick Off Meeting' will be held to review the proposed installation site and to review the necessary preparations and timing for a successful installation.

Machine Acceptance

Once the machine has been installed and is operational the technician will perform the Standard Factory Acceptance Test. The test is comprised of one part from customer supplied material. The part specifications must be defined at time of order. The blade to cut the material must be supplied by BLM GROUP USA for this test part. After the successful completion of the test the customer will be required to sign the Machine Installation Certificate verifying that the machine has been installed, commissioned, and operating per specifications

Customer Responsibilities

The customer is required to provide the following:

Facilities:	Concrete pad at least 4" thick for support of the Saw. Purchaser to supply and install ½" thick steel support plates as specified on the installation drawing.
Utilities:	480Volt, 60Hz, 3Phase, 3 Conductor Delta configuration electrical power, and compressed air dropped to the system connection points.
Unloading and Rigging:	The machine will arrive on a flatbed truck. It is the customer's responsibility to uncrate and rig into final location on their factory floor. Purchaser's riggers are to place all other system components within a few feet of their final integrated location. Dispose of all crating and packing materials.
Support Personnel:	Assistance from the customer is required during the installation process. The purchaser shall provide a dedicated support person, typically someone from the maintenance department, to assist our field service engineer for the duration of the installation.

Detailed specifications are available in a separate "Pre-Installation Manual".

Commercial Terms

Shipment:	Standard Delivery will occur within 6 - 8 months after P.O. Delivery times are based on our current production schedule. Selected options may increase delivery times. A firm delivery schedule will be provided after acceptance or order.
Payment Terms:	30% deposit, 60% before shipping, 10% after delivery
Payment Method:	Payment to be made via wire transfer or check. Credit cards are not accepted for machine purchase.
Warranty:	The machine described in this proposal is warranted against defects in material and workmanship for 1 year from the date of delivery at customer facility when operated in accordance with factory guidelines and operated by BLM GROUP trained operator. All replacement parts covered under warranty will ship F.O.B. Novi, MI provided the customer has notified us of the defect and established that machine is maintained and operated within its normal rated limits. The BLM GROUP USA is not responsible for any taxes or duties or regulatory fees. During the warranty period BLM GROUP service technicians will be made available, at no charge, to assist the customer in replacing complex assemblies that have failed. Customers are expected to perform simple repairs under the direction of BLM. When necessary the customer is to furnish, at no cost to BLM GROUP, the labor or necessary services to assist in repairs. Consumables are excluded from the warranty; these include for example: lens, tips, tube gripper jaws and rollers; capacitance sensors, mirrors and optical components, RF tubes, belts and all other consumable materials not specified here. Unauthorized modifications to the machine will void the warranty. If the purchaser requires warranty repairs to be performed outside of normal business hours; on weekends, and/or holidays, the purchaser will be responsible for paying overtime rates.
Transfer of Title:	Title transfers upon departure from port of entry or Novi, MI.
Shipping Terms:	FCA U.S. port of Baltimore, MD. Freight charges are not included and will be prepaid and added to final invoice.
Duty:	US Import Duty included in price.
Validity:	Budgetary Quotation Only
Compliance:	The machine is designed to comply to CE standards. The customer is responsible for all fees and costs applicable to compliance with local, state or provincial codes or inspections such as, but not limited to; UL, CSA, Provincial Hydro, ESA or PSR inspections.
Taxes:	Import Duty is included. All other Country, State, Provincial and local sales and use tax are not included in the price. If applicable, these taxes are to be applied to the Purchaser's account. Customer to provide State Tax Exempt Certificate at the time of order.

Any purchase order based on this quotation is subject to the BLM GROUP USA Standard Terms and Conditions of Sale.

Terms and conditions pertaining to this order/proposal

The quotation and any resulting sale by BLM GROUP USA Corporation or its parent company BLM S.P.A. (hereinafter "Seller") to Purchaser is expressly conditional upon the terms and conditions set forth below. Any additional or different terms or conditions submitted by Purchaser shall be deemed objected to by Seller and shall be of no effect nor in any circumstance binding upon Seller unless specifically accepted by Seller in writing. Purchaser should advise Seller of anything herein, which Purchaser objects to as a term or condition governing the transaction covered herein. Said objection shall be deemed proposals for different terms and conditions and may be accepted only in writing by an authorized representative of Seller.

A. PRICES:

1. Prices quoted are for prompt acceptance and are subject to change without notice at any time prior to receipt by Seller of a formal purchase order from Purchaser unless otherwise stated.
2. Freight charges are to be prepaid by the Purchaser unless otherwise stated.
3. Purchaser is responsible for insuring the machine after title transfers pursuant to G.5 of these Terms and Conditions.

B. TERMS OF PAYMENT:

Unless otherwise stated, terms are 30% down with order, 60% prior to shipment, 10% net 30 days after shipment, parts are 100% net 30 days from shipment, subject to Seller's prior approval of credit. Interest will be charged beginning the 31st day at the applicable legal rate under local laws on all unpaid amounts.

C. GRANT OF SECURITY INTEREST:

Purchaser hereby grants to Seller a security interest in and to the products sold hereunder together with all proceeds thereof, to secure Purchaser's performances and payment of all amounts due on this sale. Purchaser appoints Seller as its attorney-in-fact with authority, at Seller's option, to take actions as Seller deems reasonable in the circumstance to perfect the above security interest in any one or more jurisdictions, and Purchaser shall pay all applicable filing fees. BLM GROUP USA Corporation will not be responsible for any import taxes or duties imposed by other governments or governmental agencies.

D. TAXES:

The prices provided for herein are exclusive of any Federal, State, or local sales, use, excise, transportation, occupational or similar taxes. Purchaser agrees to pay any such taxes applicable to the sale or use of the goods described herein. Purchaser will promptly reimburse Seller for any such tax advanced, imposed upon, or paid by Seller with respect to such products or this sale.

E. RETURNS:

No items to be returned without prior authorization. Please email or call factory for instructions. Unauthorized shipments will be returned to sender freight collect. A 15% restocking fee is applied to all returned parts.

CREDITS: PARTS

NO CREDIT ALLOWED ON ANY PARTS RETURNED AFTER THIRTY DAYS FROM DATE OF INVOICE WITHOUT FACTORY APPROVAL.

F. WARRANTY:

1. MACHINE

The machine described in this proposal/order is warranted by Seller against any defect in material and workmanship while owned by the Purchaser for the periods specified on the quotation from date of shipment when owned by Purchaser, provided it is installed and set up for operation in accordance with Seller's recommendations and operated under normal conditions. Whenever, under the warranty, it is necessary to replace parts, we will furnish such parts free of charge, F.O.B. Novi, MI using transportation of Seller's choice, provided Purchaser promptly sends Seller notice of the defect and establishes that the machine has been properly installed, maintained and operated within the limits rated in normal usage.

During the service warranty period, the BLM GROUP USA Service Representatives, with customer assistance, will replace complex assemblies, which have failed under warranty. Labor to assist and/or necessary services are expected to be furnished by the customer at no cost to BLM GROUP USA or its distributor. This warranty shall not be valid for equipment which has been abused, altered, changed, misused in application, improperly maintained or repaired, or operated in a manner that is not in accordance with Seller's operating instructions.

2. PARTS AND TOOLING

Unless otherwise stated herein all goods described in this proposal (or furnished under this contract in case of an order) are warranted by Seller against any defect in material and workmanship for a period of 30 days from date of shipment, when installed or used in accordance with Seller's recommendation, if any, and operated under normal conditions. All claims concerning defective parts must be presented to use no later than 15 days following expiration of the warranty period. We reserve the sole right to determine if returned goods are, in fact, defective and if so, to repair or replace them in accordance with the warranty.

3. THE ABOVE WARRANTIES IN RESPECT TO THE MACHINE AND THE REPAIR OR REPLACEMENT OF DEFECTIVE PARTS AND ANY SUCH ADDITIONAL WARRANTY OR REPRESENTATION EXPRESSLY MADE A PART HEREOF ARE IN LIEU OF ALL OTHER WARRANTIES EXPRESS OR IMPLIED, INCLUDING ANY IMPLIED WARRANTY OF MERCHANTABILITY OR FITNESS FOR PURPOSE.

If Purchaser is a distributor, financing company or similar entity acting for or on behalf of the initial user of the goods, the warranty is transferable to the initial user only. In all other cases the warranty is limited to Purchaser and is not transferable.

G. SHIPMENT:

1. ANY DELIVERY OR SHIPMENT DATES PROVIDED TO BUYER ARE ESTIMATED DATES ONLY, AND SUCH ESTIMATED DATES MAY BE MODIFIED FROM TIME TO TIME AT THE DISCRETION OF SELLER. The shipment promised is contingent on Seller's receipt at the time of order, of all information necessary to design, manufacture and ship the order.
2. We will use reasonable efforts to comply with Purchaser's shipping instructions. If we cannot comply with stated shipping instructions, we will advise Purchaser before shipment of goods. We will not be held liable for shipping performances, which fails to meet normal shipping instructions.
3. Seller's inability to ship any (of the goods) sold due to any factor beyond Seller's reasonable control, including but not limited to strike, labor difficulty, riot, fire, civil commotion, war, insurrection, shipwreck, governmental action, the elements, accident, delay by a carrier and the like shall relieve Seller, at Seller's option, from any performance agreed to, and in no event shall we be considered in breach by reason of such inability or relief.
4. FCA US Port of Entry or FCA BLM GROUP USA unless otherwise stated in writing.
5. Title and risk of loss or damage pass to Purchaser upon delivery of these goods by Seller to the carrier or delivery service unless otherwise stated in writing.

H. INSPECTION

All products or machines delivered by Seller shall be inspected upon tender to Purchaser. Purchaser's failure to make a written claim for shortages or defective products on or before the day that is ten (10) days from and including the day on which Seller tenders such products to Purchaser shall constitute a waiver of Purchaser's right to inspect such products and shall constitute Purchaser's acceptance of such products and agreement that such products constitute "conforming goods" (as such term is defined in the Uniform Commercial Code as enacted in the State of Michigan (the "Code")) and are otherwise in conformity with these Terms. In no event may any products be returned to Seller without Seller's prior written consent.

I. DAMAGE DISCLAIMER

Notwithstanding any other provision of the Terms and Conditions, in no event shall the Seller or its suppliers be liable, whether arising under contract, tort (including negligence), strict liability, or otherwise, for loss of anticipated profits, loss by reason of plant shutdown, non-operation or increased expense of operation, service interruption, cost of purchased or replacement power, claims of customers, cost of money, loss of use of capital or revenue, or for any special, incidental or consequential loss or damage of any nature arising at any time or from any cause whatsoever even if the same were reasonably foreseeable. Further, in no event shall the Purchaser or any third party be entitled to damages, direct or consequential, for personal injury arising from the installation, or operation of the use of the goods furnished hereunder, and Purchaser agrees to assist Seller to hold Seller harmless in effectuation of this provision.

J. LIMITATION OF LIABILITY

The Seller's maximum liability arising from any cause whatsoever, including but not limited to breach of contract, tort (including negligence), strict liability, or otherwise shall not exceed the Contract Price. In applying this limitation, any damages paid or payable to the Purchaser by the Seller as well as any expense incurred by the Seller, under the Patent Indemnity or Warranty provisions shall be credited against the Seller's maximum liability.

K. CANCELLATION:

We shall have the absolute right to cancel and refuse to complete work hereunder if at any time Purchaser does not strictly comply with all terms and conditions hereunder (including any requirement of progress payments) or if at any time Purchaser becomes bankrupt or insolvent. In the event of Seller's cancellation as above set forth or of receipt by Seller of a request by Purchaser to stop work or to cancel the whole or any part thereof, Purchaser shall pay Seller an amount, determined by Seller, which shall be the same percentage of the total price hereunder as the percentage of the work completed.

L. CONFIDENTIALITY:

Drawings, machine specifications, software or production methods furnished herein or herewith constitute Seller's confidential information. Their receipt or possession does not convey any right to use, license, reproduce or disclose the information nor any part hereof without Seller's consent.

M. MACHINE SPECIFICATIONS:

All working drawings or other materials provided by Seller are for general information purposes only. Any specifications contained herein are not binding on Seller except as expressly so stated. We reserve the right to make, at any time, such changes in detailed design or construction as shall in Seller's sole judgment constitute an improvement over former practice. Production data, where given, is based on Seller's analysis and understanding of the production methods and facilities to be used, but is nonetheless an estimate only and is not guaranteed or warranted. In no event shall we be responsible for performance figures supplied by Seller's suppliers or other cooperating parties.

N. PATENT INDEMNITY:

Purchaser warrants that any design or instructions furnished or given by it shall not cause Seller to infringe any intellectual property rights in the performance of Seller's obligations under the Contract and Purchaser shall indemnify Seller against all reasonable costs and damages which Seller may incur as a result of any breach of such warranty. Purchaser shall give Seller prompt written notice of receipt of a claim or institution of a suit or proceeding against Purchaser if such be based on the assertion that the goods furnished hereunder in themselves constitute an infringement of any presently existing patent. Purchaser shall grant and furnish Seller with all the necessary authority, information, and reasonable assistance in order to enable Seller to settle or defend, at Seller's option, such claim, suit or proceeding made without Seller's express written consent. Purchaser agrees to hold Seller harmless against any claims, costs, or damages under claims for infringement arising out of Purchaser's conversion of any of the goods in the operation of any process; or any infringement arising out of Seller's compliance with Purchaser's specification. If Purchaser is a distributor, financing company or similar entity acting for Seller or on behalf of the original user of the equipment, this patent indemnity shall inure to the benefit of such initial user.

O. GENERAL:

1. There are no understandings, agreements or representations expressed or implied, not specified herein, respecting this sale and this instrument constitutes the entire agreement between Seller. It may be modified or rescinded only by writing signed by Seller and Purchaser or Purchaser's duly authorized agents.
2. The transaction described herein shall be governed by the internal laws of the State of Michigan, and the Convention of International Sales of Goods (CISG) shall not apply. All actions and proceedings relating to this quotation shall be maintained in a court located in Oakland County, Michigan or the USDC Eastern District of Michigan, and the parties hereto consent to the jurisdiction and venue in said court and waive any objections to such venue.
3. No agent, salesman, or distributor has any authority to obligate Seller by any important terms, stipulations or conditions not herein expressed.
4. In the event Purchaser's Personnel or Representatives have the occasion to be present at a Seller's facility for training or otherwise, Purchaser agrees that:
 - a. Purchaser shall, at its sole expense, indemnify, defend and hold harmless Seller, its Affiliates and their respective employees, directors, officers, successors, and assigns (collectively, the "Seller Indemnitees") from and against any and all claims, proceedings, damages, injuries, liabilities, losses, costs, and expenses (including reasonable attorneys' fees and litigation expenses), except for any claims caused by Seller's gross negligence.
 - b. Purchaser will have in effect at such time worker's compensation insurance at statutory limits as required by law in respect to such personnel, and general liability insurance with a minimum per occurrence limit of \$1,000,000.
5. Purchaser shall not assign or delegate any of Purchaser's duties or obligations hereunder without Seller's prior written consent.
6. Seller reserves the right to correct any stenographic or clerical errors or omissions, including errors in mathematical computation, that may exist in the Agreement.

P. FAIR LABOR STANDARDS:

The goods and/or services covered by this invoice were produced in compliance with all applicable requirements of Section 6, 7, and 12 of the Fair Labor Standards Act of 1938 as amended and all other applicable regulations and orders of the United States Department of Labor.