



REQUEST FOR BID

For

MECHANICAL DRIVES LEARNING SYSTEM

RFB Due Date:

Thursday, January 3, 2019

At

2:00 P.M.

Mail or Deliver RFB Responses to:

*Solano Community College District
Handel Malone, Buyer
4000 Suisun Valley Road
Fairfield, Ca. 94534*

RFB 19-005
Mechanical Drives Learning System
Solano Community College District



General RFB Scope of Work Plan

This RFB will be for the procurement of “Amatrol” (or equal) mechanical drives training system for the Advance Manufacturing & Robotics department within the Solano Community College District’s Fairfield campus. The intent of this RFB is to purchase four (4) MT 130 mechanical power systems for instructional purposes. The intent is to award this RFB to the lowest bidder.

Notice to Bidders

NOTICE IS HEREBY GIVEN that the Governing Board of the Solano Community College District (“District”) is inviting sealed bids for Mechanical Drives Learning System, RFB# 19-005.

Sealed bids are due by **2:00 pm on, Thursday, January 3, 2019**

Please submit Bids to: Handel Malone, Buyer

Solano Community College District

4000 Suisun Valley Road

Fairfield, CA 94535

Building 600 (Denis Honeychurch Board Room) if attending bid opening

Building 600 (Room 628) if submitting prior to deadline

(Mailed bids shall follow instructions described in ‘Instruction to Bidders’)

Bid documents may be viewed and/or downloaded by visiting the District’s website at:
<http://www.solano.edu/purchasing/rfp.php>.

Instruction to Bidders

1. Preparation and Submittal of Bid Proposal.

- 1.1 Bid Proposal Preparation.** All information required by the bid forms must be completely and accurately provided. Numbers shall be stated in both words and figures where so indicated in the bid forms; conflicts between a number stated in words and in figures are governed by the words. Partially completed Bid Proposals or Bid Proposals submitted on other than the bid forms included herein are non-responsive and will be rejected. Bid Proposals not conforming to these Instructions for Bidders may be deemed non-responsive and rejected.
- 1.2 Bid Proposal Submittal.** Bid Proposals shall be submitted at the place designated in sealed envelopes bearing on the outside the Bidder's name and address along with an identification of the Work for which the Bid Proposal is submitted. Bidders are solely responsible for timely submission of Bid Proposals to the District at the place designated.

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- 1.3 Date and Time of Bid Proposal Submittal.** The District will place a date/time stamp machine in a conspicuous location at the place designated for submittal of Bid Proposals. A Bid Proposal is submitted only if the outer envelope containing the Bid Proposal is stamped by the District's date/time stamp machine; Bid Proposals not so stamped as timely submitted will be rejected and returned to the Bidder unopened. The date/time stamp is controlling and determinative as to the date and time of the Bidder's submittal of its Bid Proposal. The foregoing notwithstanding, whether or not Bid Proposals are opened exactly at the time, no Bid Proposals shall be received or considered by the District after it has commenced the public opening and reading of Bid Proposals; Bid Proposals submitted after such time are non-responsive and will be returned to the Bidder unopened.
- 2. Documents Accompanying Bid Proposal; Signatures.** The Bid Proposal must be submitted with the Non-Collusion Affidavit. The Bid Proposal and the Non-Collusion Affidavit shall be executed by an individual duly authorized to execute the same on behalf of the Bidder.
- 3. Modifications.** Changes to the bid forms which are not specifically called for or permitted may result in the District's rejection of the Bid Proposal as being non-responsive. No oral or telephonic modification of any submitted Bid Proposal will be considered. A written modification may be considered only if actually received by the District prior to the scheduled closing time for receipt of Bid Proposals and the public opening thereof.
- 4. Erasures; Inconsistent or Illegible Bid Proposals.** Bid Proposals must not contain any erasures, interlineations or other corrections unless the same are suitably authenticated by affixing in the margin immediately opposite such erasure, interlineation or correction the surname(s) of the person(s) signing the Bid Proposal. Any Bid Proposal not conforming with the foregoing may be deemed by the District to be non-responsive. If any Bid Proposal or portions thereof, is determined by the District to be illegible, ambiguous or inconsistent, whether by virtue of any erasures, interlineations, corrections or otherwise, the District may reject such a Bid Proposal as being non-responsive.
- 5. Withdrawal of Bid Proposal.** Any Bidder may withdraw its Bid Proposal by of written request actually received by the District prior to the scheduled closing time for the receipt of Bid Proposals and the District's public opening and reading of Bid Proposals. A written notice of withdrawal of a submitted Bid Proposal received after the scheduled closing time for receipt of Bid Proposals or the District's public opening and reading of Bid Proposals shall not be considered by the District, nor effective to withdraw such Bid Proposal.
- 6. Interpretation of Specifications.** Any Bidder in doubt as to the true meaning of any part of the Bid Documents; finds discrepancies, errors or omissions therein; or finds variances in any of the Bid Documents with applicable rules, regulations, ordinances

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and/or laws, a written request for an interpretation or correction thereof may be submitted to the District. It is the sole and exclusive responsibility of the Bidder to submit such request not less than seven (7) days prior to the scheduled closing date for the receipt of Bid Proposals. Interpretations or corrections of the Bid Documents will be by written addendum issued by the District. No person is authorized to render an oral interpretation or correction of any portion of the Bid Documents to any Bidder, and no Bidder is authorized to rely on any such oral interpretation or correction. Failure to request interpretation or clarification of any portion of the Bid Documents pursuant to the foregoing is a waiver of any discrepancy, defect or conflict therein.

7. **Non-Collusion Affidavit.** The form of Non-Collusion Affidavit included in the Bid Documents must be completed and duly executed on behalf of the Bidder; failure of a Bidder to submit a completed and executed Non-Collusion Affidavit with its Bid Proposal will render the Bid Proposal non-responsive.
8. **Award of Contract.**
 - 8.1 **Waiver of Irregularities or Informalities.** The District reserves the right to reject any and all Bid Proposals or to waive any irregularities or informalities in any Bid Proposal or in the bidding.
 - 8.2 **Award to Lowest Responsive Responsible Bidder.** The award, if made by the District through action of its Board of Trustees, will be to the responsible Bidder submitting the lowest responsive Bid Proposal on the basis of the Bid Proposal.
 - 8.3 **Responsive Bid Proposal.** A responsive Bid Proposal shall mean a Bid Proposal which conforms, in all material respects, to the Bid Documents.
 - 8.4 **Responsible Bidder.** A responsible Bidder is a Bidder who has the capability in all respects, to perform fully the requirements of the Bid Documents and the moral and business integrity and reliability which will assure good faith performance. In determining responsibility, the following criteria will be considered: (i) the ability, capacity and skill of the Bidder to provide the equipment listed in the Bid Documents; (ii) whether the Bidder can provide the equipment promptly and within the time specified, without delay or interference; (iii) the character, integrity, reputation, judgement, experience and efficiency of the Bidder; (iv) the quality of performance of the Bidder on previous purchases.
9. **Anti-Discrimination.** It is the policy of the District that there be no discrimination against any prospective or active employee engaged in the Work because of race, color, ancestry, national origin, religious creed, sex, age or marital status. All Bidders agree to comply with the District's anti-discrimination policy and all applicable Federal and California anti-discrimination laws including but not limited to the California Fair Employment & Housing Act beginning with California Government Code 12940 et seq. and California Labor Code 1735. In addition, all Bidders agree to require like compliance by any Subcontractor employed by them on the Work of the Contract.

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- 10. Public Records.** Bid Proposals and other documents responding to the Request for Bid become the exclusive property of the District upon submittal to the District. At such time as the District issues the award, all Bid Proposals and other documents submitted in response to the Request for Bids become a matter of public record and shall be thereupon be considered public records, except for information contained in such Bid Proposals deemed to be Trade Secrets (as defined in California Civil Code 3426.1) and information provided in response. A Bidder that indiscriminately marks all or most of its Bid Proposal as exempt from disclosure as a public record, whether by the notations of "Trade Secret," "Confidential," "Proprietary," or otherwise, may result render the Bid Proposal non-responsive and rejected. The District is not liable or responsible for the disclosure of such records, including those exempt from disclosure if disclosure is deemed required by law, by an order of Court, or which occurs through inadvertence, mistake or negligence on the part of the District or its officers, employees or agents. At such time as Bid Proposals are deemed a matter of public record, pursuant to the above, any Bidder or other party shall be afforded access for inspection and/or copying of such Bid Proposals, by request made to the District in conformity with the California Access to Public Records Act, California Government Code 6250, et. seq. If the District is required to defend or otherwise respond to any action or proceeding wherein request is made for the disclosure of the contents of any portion of a Bid Proposal deemed exempt from disclosure hereunder, the Bidder submitting the materials sought by such action or proceeding agrees to defend, indemnify and hold harmless the District in any action or proceeding from and against any liability, including without limitation attorneys' fees arising therefrom. The party submitting materials sought by any other party shall be solely responsible for the cost and defense in any action or proceeding seeking to compel disclosure of such materials; the District's sole involvement in any such action shall be that of a stakeholder, retaining the requested materials until otherwise ordered by a court of competent jurisdiction.
- 11. Compliance with Immigration Reform and Control Act of 1986.** The Bidder is solely and exclusively responsible for employment of individuals for the Work of the Contract in conformity with the Immigration Reform and Control Act of 1986, 8 USC 1101 et seq. (the IRCA); the successful Bidder shall also require that any person or entity employing labor in connection with any of the Work of the Contract shall so similarly comply with the IRCA.

Specification and Details

Item 970-ME1

MECHANICAL DRIVES 1 LEARNING SYSTEM

Shall include the following components: mobile workstation with motor control unit, base motor package, bearing / prony brake package, shaft/standoff package, rotary power component package, fastener package, alignment package level 1, gauging package level 1, auxiliary hardware package, student curriculum, and instructor's guide. These components shall meet the following minimum specifications:

Mobile Workstation

The mobile workstation shall be constructed of welded tubular steel with minimum dimensions of 30-in. W x 40-in. H x 48-in. L. This unit shall be supplied with (4) casters, at least two of which are locking. It shall

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have at least three (3) sliding drawers mounted on rollers located below the worksurface for storage of component trays and parts. It shall have (2) guards that are electrically interlocked to switch off motor operation if they are removed. The trays with components should be stored in the pullout drawers permitting easy access for student activities. The worksurface shall be constructed of (2) modular plates which are made of Aluminum Tooling Plate. These tooling plates shall measure 30-in. W x 20-in. L x 0.375-in. thick. Each plate shall be drilled with a grid pattern of slots and holes for mounting mechanical drive setups that are directly referenced in the curriculum. The workstation shall have a lower mounting shelf for location of the storage drawer unit.

Motor Control Unit

This unit shall provide control of a variable speed electric motor via a VFD. The VFD has provisions to monitor the performance of the drive system. The enclosure has minimum dimensions of 17.5-in. L x 10-in. T x 0.1-in. deep. The enclosure shall be built of stainless steel and silkscreened with labels of components. The components shall include a "main power" switch/circuit breaker with lockout/tagout device, power on indicator lamp, a "power on" pushbutton, a motor "start" pushbutton, a motor "stop" pushbutton, a "emergency stop" mushroom button, a "constant speed" or "variable speed" selector switch, and a "VFD" (variable frequency drive) for controlling the motor. The unit shall have a main power cord, which plugs into a wall outlet and supplies power to all items in the motor control unit. Two plug-in connectors shall be mounted to the side of the unit to enable connection of the motor and guard interlocks to the control unit.

The drawer unit shall be constructed from heavy-duty gauge steel, welded and painted. It shall have 4 sliding drawers mounted on rollers, measuring 20.5-in. L x 15-in. H x 9-in. W.

Base Motor Package

This package shall include the following items: electric motor, adjustable motor base, mounting bolt package. These components shall meet the following minimum specifications:

Adjustable Motor Base

This unit shall be designed to position the electric motor in such a way that permits tensioning of a v-belt or chain drive system. This unit shall be designed with heavy-duty steel construction that uses a pivoting base driven by a lead screw to position and lock the motor in place.

Electric Motor

Shall be a .38 hp, variable frequency drive (VFD) controlled, 5-8-in. diameter shaft, 230VAC/60 Hz, 3 phase. It shall have a power cable with plug-in cable to motor control unit.

Bearing / Prony Brake Package

The tray shall be constructed of vacuum formed plastic with a cavity and label of each component. The minimum dimensions shall be 20-in. W x 17.5-in. mm L x 2-in. T. The tray will be stored below the worksurface in one of the (3) sliding drawers. The plastic tray shall have cavities to house the following components for easy visual identification and storage.

It shall include the following items:

- (2)-Pillow block bearing, 1-in. bore, set screw
- (6)-Pillow block bearing, 5/8-in. bore, set screw
- (1)-Prony brake tensioner, adjustable from 0-14 kg (0-30 lbs.)
- (1)-Chain puller
- (1)-Prony brake drum assembly

The following additional items shall be supplied and shall be stored in the drawer unit:

- (1)-Prony brake belt
- (1)-Retainer pin for prony brake

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Shaft / Standoff Package

The tray shall be constructed of vacuum formed plastic with a cavity and label of each component. The minimum dimensions shall be 20-in. W x 17.5-in. mm L x 2-in. T. The tray will be stored below the worksurface in one of the (3) sliding drawers. The plastic tray shall have cavities to house the following components for easy visual identification and storage.

It shall include the following items:

- (1)-Shaft, 5/8-in. dia., 12-in. L
- (1)-Shaft, 5/8-in. dia., 8-in. L
- (1)-Shaft, 5/8-in. dia., 12-in. L (3 keyways)
- (1)-Shaft, 1-in. dia., 12-in. L
- (12)-Pillow block bearing standoff, 1 3/4-in. dia. X 2.57-in. L
- (4)- Pillow block bearing standoff, 1 3/4-in. dia. X 2.29-in. L
- (1)-Hub jaw coupling, 5/8-in. bore with jaw coupling spider
- (1)-Sleeve coupling, 5/8-in. bore
- (4)-Motor standoff, 1.5-in. dia., 1.25-in. L
- (1)-Motor standoff, 1.5-in. dia., 1.237-in. L

Rotary Power Component Package

The tray shall be constructed of vacuum formed plastic with a cavity and label of each component. The minimum dimensions shall be 20-in. W x 17.5-in. L x 2-in. T. The tray will be stored below the worksurface in one of the (3) sliding drawers. The plastic tray shall have cavities to house the following components for easy visual identification and storage.

It shall include the following items:

- (1)-Sheave, FHP, 5/8-in. bore, 2-in. PD
- (1)- Sheave, FHP, 5/8-in. bore, 3-in. PD
- (1)- Sheave, FHP, 5/8-in. bore, 4-in. PD
- (1)-Sprocket, 5/8-in. bore, 12 teeth
- (1)-Sprocket, 5/8-in. bore, 16 teeth
- (1)-Sprocket, 5/8-in. bore, 24 teeth
- (1)-Spur gear, 5/8-in. bore, 24 teeth
- (2)-Spur gear, 5/8-in. bore, 36 teeth
- (1)-Spur gear, 5/8-in. bore, 48 teeth
- (1)-Spur gear, 5/8-in. bore, 24 teeth
- (1)-Spur gear, 5/8-in. bore, 60 teeth

Fastener Package

Shall include grade 5 or above bolts, plain washers, lock washers, and nuts of various sizes. Fasteners shall be stored in (2) partitioned cases for easy identification and organization. The cases shall be stored in the drawer unit.

Alignment Package Level 1

A package of tools and devices shall be supplied that enables the student to perform alignment and measurement of mechanical drives. These items shall be stored in the drawer unit.

It shall include the following items:

- (1)-Thickness Gauge, 26 leaves
- (1)-3 3/8-in. Level
- (1)-36-in. Straight Edge
- (1)-9-in. Magnetic Torpedo Level
- (1)-Combination Square, 4-in.

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Gauging Package Level 1

This package shall be used to perform precision motor leveling and with added components precision shaft alignment. These items shall be stored in the drawer unit.

It shall include the following items:

- (1)-Dial indicator
- (1)-Magnetic base with clamps and attachment rods for the dial indicator
- (1)-Magnetic base mounting with fastening knobs and hardware
- (1)-Needle indicator contact point
- (1)-Belt tension checker
- (1)-Sheave gauge set
- (1)-Involute gear tooth gauge
- (20)-Stainless steel shim, 2-in. X 2-in. X 0.003-in.
- (20)-Stainless steel shim, 2-in. X 2-in. X 0.005-in.
- (20)-Stainless steel shim, 2-in. X 2-in. X 0.010-in.
- (20)-Stainless steel shim, 2-in. X 2-in. X 0.020-in.
- (8)-Stainless steel shim, 2-in. X 2-in. X 0.050-in.

Auxiliary hardware package

This package shall be used to supplement the other packages above to enable to the student to perform the skills in the curriculum.

It shall include the following items:

- (1)-Industrial grade digital tachometer, handheld laser type with LCD display
- (1)-Water bottle for adding water to prony brake drum for cooling
- (1)-V-belt, SPA section
- (1)-Roller chain, 0.5-in. pitch
- (1)-Master link
- (1)-Canvas zipper pouch for chain storage
- (24)-Keystock, 3/16-in.
- (1)-Reflective tape, 23-in. L x 0.6-in. W
- (1)-Teflon lubricant, aerosol can for easy application
- (1)-4 drawer storage unit, heavy gauge steel construction
- (1)-Lockout / tagout kit consisting of (2) locks and (5) tags

Student Curriculum -The student curriculum shall consist of one (1) interactive multimedia course of seven (7) modules with forty-four (44) industry tasks. Topics shall include: Introduction to Mechanical Drive Systems, Key Fasteners, Power Transmission Systems, Introduction to V-Belt Drives, Introduction to Chain Drives, Spur Gear Drives, and Multiple Shaft Drives.

The student curriculum shall be designed in a skill-based format that focuses on teaching industry-relevant tasks. The objectives shall be accomplished by organizing the learning material into a series of modules, which are further subdivided into three or more segments per module. All learning material needed shall be contained in the modules including text material, laboratory equipment activities, and multimedia directions. No external text sources shall be required. The specific cognitive skills taught by each text passage shall be identified next to the passage. Each lab activity shall be identified by the industrial task taught. All activities shall be highly detailed with step-by-step instructions to facilitate a self-directed learning environment. A combination of step-by-step enabling activities and creative, problem-solving activities shall be provided. A self-review of five to ten questions shall be provided after each segment. The curriculum must be capable of both self-directed and instructor directed study. All activities must correlate directly to the hardware supplied, with detailed illustrations and diagrams.

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Teacher's Assessment/ Portfolio Guides

A teacher's guide shall be provided. It shall contain student data sheets, data sheet solutions, self-review answers, quizzes, quiz answers, student skill record sheets, and authentic assessment. A quiz shall be provided for each packet. A question shall be provided in each quiz for each cognitive objective taught. All tasks listed in the packet shall be listed on personalized student record sheets. The Teacher's Assessment/ Portfolio Guide shall include directions for authentic skill assessment.

Amatrol Model No. 970-ME1 or equal

Item No. 41227

HAND TOOL PACKAGE – BASIC HAND TOOL PACKAGE – MECHANICAL DRIVES

This product adds to the following Mechanical Learning Systems: 970-ME1 and 97-ME2. This product shall include the following:

- 12-piece 3/8-in. Drive Chrome Finish Socket Set
- 3/8-in. Drive Micro-Clicker Torque Wrench
- 11-piece, 1/4-in. to 13/16-in., 12 Point Combination Wrench Set
- 8-piece Slotted/Phillips Screwdriver Set
- 6-in. Ruler
- 13-piece SAE Black Oxide Hex Key Set
- Corrosion Inhibiting Wrap
- 0-in. – 6-in. Dial Caliper, 0.001-in. Graduation, 0.1-in. Revolution
- Feeler Gauge Set, Economy, .0015-in. to .015-in.
- Dead Blow Hammer, 16-oz.
- Leather Palm Gloves with Cuff
- Light Duty Wax Crayon
- Pocket Magnifier, 4x
- Nylon String
- Oil, 3-in-1, 8-oz.
- Keyway Punch
- Rubber Gloves
- 0-oz. – 72-oz. Scale
- Tape Measure, 10-ft.
- Tool Box, 3-Drawer
- Utility Knife
- Wax Crayon with Aluminum Holder
- Wire Brush, Toothbrush-Style
- Masking Tape, 3/4-in.
- Scissors, 8-in.
- Hex Bit Socket, 3/16-in.
- Hex Bit Socket, 1/8-in.
- Thread-locking Adhesive

Amatrol Model No. 41227 or equal

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Item No. 97-ME2

MECHANICAL DRIVES 2 LEARNING SYSTEM

This learning system is an expansion for the Mechanical Drives 1 Learning System (970-ME1). This learning system shall provide study of heavy duty belt drives, heavy duty chain drives, bushings, lubrication, and a variety of coupling types. Also covered shall be maintenance, troubleshooting, and selection of mechanical drives. Components shall include:

Drawer Assembly

Consists of a right side panel, a left side panel, and two (2) drawer shelves added under the three drawers of the 970-ME1. The Drawer Assembly supports the two (2) molded parts storage trays that are added with the Mechanical Drives 2 system. This assembly also includes a Belt Storage Panel that adds to the end of the 970-ME1 frame.

Coupling/Sprocket Package

This mechanical drives package contains components used to transmit power to the various systems used with the mechanical drives system. Components include:

- Part Storage Tray
- Grid Coupling Hub, 5/8-in. bore (2)
- Grid Cover and Grid
- Gear Coupling Hub, 5/8-in. bore (2)
- Gear Coupling Sleeve
- Gear Coupling Accessory Kit
- Flange Coupling Hub, Recessed Half
- Flange Coupling Hub, Ring Half
- Elastomer Coupling Hub (2)
- Elastomer Coupling Sleeve
- Chain Coupling Assembly with Chain and Cover
- 17 tooth Silent Chain Sprocket (2)
- 23 tooth Double Row Roller Chain Sprocket 15 tooth Double Row Roller Chain Sprocket
- 1610 Taper Lock Bushing, 5/8-in. bore
- 1008 Taper Lock Bushing, 5/8-in. bore
- Chain Breaker
- Tension Assembly
- Motor Standoffs (4)

Belt Drive Component Package

This mechanical drives package contains components used to transmit power to the various systems used with the mechanical drives system. Components include:

- Part Storage Tray
- 3.4-in. pitch diameter "B" Section Sheave
- 4.4-in. pitch diameter "B" Section Sheave
- 5/8-in. bore "SH" Style QD Bushing (2)
- 3.4-in. pitch diameter Two Groove Sheave
- 4.9-in. pitch diameter Two Groove Sheave
- 5/8-in. bore Split Taper Bushing (2)
- 2.6-in. pitch diameter "3V" Section Taper Lock Sheave
- 5/8-in. bore 1108 Taper Lock Bushing
- 4.45-in. pitch diameter "3V" Section Taper Lock Sheave
- 5/8-in. bore 1610 Taper Lock Bushing
- 16 tooth Timing Belt Pulley (2)
- 24 tooth HTD Sprocket

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- 30 tooth HTD Sprocket
- 5/8-in. bore "JA" Type Bushing (2)
- 5/8-in. bore Variable Pitch Sheave
- 3.25-in. OD Idler

Power Transmission Belt Package

This mechanical drives package contains components used to transmit power to the various systems used with the mechanical drives system. Components include:

- "B" Section V-Belt, 43-in. L (2)
- "B" Section Cogged V-Belt, 43-in. L
- Timing Belt, 34.5-in. pitch length
- HTD Belt, 8-mm pitch X 20-mm W X 960-mm pitch length
- "A" Section V-Belt, 60in. L
- "3V" Section Cogged V-Belt, 40-in. L

Power Transmission Chain Package

This mechanical drives package contains components used to transmit power to the various systems used with the mechanical drives system. Components include:

- Single Row #40 chain, 10' box
- Double Row #40 Power Transmission Chain
- Double Row #40 Master Link
- Zipper Pouch (2)
- Silent Chain Assembly, 3-ft.

Lubrication Package

This package contains lubricating accessories to be used to lubricate the various drive systems that are used with the mechanical drives system.

- Grease Gun with Grease Cartridge
- Safety Data Sheets, 1 Package

Viscometer (Optional)

The Viscometer is an optional component that can be used to measure the viscosity of various oils.

Level 2 Indicator Package

This package contains indicator tools used in the mechanical drives system.

- Dial Indicator, 0 – 0.2-in.
- Shaft Clamp Attachment (2)
- Indicator Attachment Rod, 4-in. L (2)
- Swivel Clamp, 1/4-in. to 5/16 (2)
- Swivel Clamp, 1/4 to 1/4
- Indicator Mounting Lug
- Inspection Mirror
- 90 Degree Indicator Attachment
- Swivel Clamp, 1/4-in. x 3/8-in.

Fastener Kit

The Fastener Kit contains fasteners used in the various systems that are assembled in the mechanical drives system.

- 5/16-18 X 5-in. L Hex Bolt (4)
- 3/8-16 X 7-in. L Hex Bolt (4)
- 3/18-16 X 1 1/2-in. L Hex Bolt (2)

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Student Curriculum

The multimedia student curriculum shall be designed in a skill-based format that focuses on teaching industry-relevant tasks. The objectives shall be accomplished by organizing the learning material into a series of multimedia modules, which are further subdivided into three or more segments per module. This multimedia mechanical drives course shall include seven (7) modules with at least forty-six (46) skills. Major topics include heavy-duty V-belt drives, V-belt selection and maintenance, synchronous belt drives, lubrication concepts, precision shaft alignment, couplings, and heavy-duty chain drives.

All learning material needed shall be contained in the modules including text material, laboratory equipment activities, and multimedia directions. No external text sources shall be required. The specific cognitive skills taught by each text passage shall be identified next to the passage. Each lab activity shall be identified by the industrial task taught. All activities shall be highly detailed with step-by-step instructions to facilitate a self-directed learning environment. A combination of step-by-step enabling activities and creative, problem-solving activities shall be provided. A self-review of five to ten questions shall be provided after each segment. The curriculum must be capable of both self-directed and instructor directed study. All activities must correlate directly to the hardware supplied, with detailed illustrations and diagrams.

Instructor's Resource Guide and Resource CD

An instructor's guide shall be provided. It shall contain student data sheets, data sheet solutions, self-review answers, quizzes, quiz answers, student skill record sheets, and authentic assessment. A quiz shall be provided for each packet. A question shall be provided in each quiz for each cognitive objective taught. All tasks listed in the packet shall be listed on personalized student record sheets. The Instructor's Package shall include directions for authentic skill assessment. This also includes an Instructor's Resource Print CD, which includes digital versions of the instructor's guide, hands-on skills packet, and installation guide.

Amatrol Model No. 95-ME2 or equal

Item No. 18588

Viscosity Comparator

Shall include: One Model #2 Viscage pocket viscosity comparator. Scale range for this model is 0 to 2000 SUS @100 degrees F. The recommended range for readings is approximately 40 to 800 SUS.

Amatrol Model No. 18588 or equal

Item No. 97-ME3

MECHANICAL DRIVES SYSTEM 3

This system shall add to the mechanical drives system 1 to provide study of operation, installation, maintenance, troubleshooting, identification, and selection of plain bearings, ball bearings, roller bearings, angular contact bearings, bearing lubrication, bearing seals, mechanical seals, gaskets, right angle gears, worm gears, and gearboxes. The system shall include the following components: Storage drawer assembly, Bearing parts package, shaft / sleeve package, bearings and seals package, bearing, seal and shim package, fastener package, gearbox package, consumables / bearing housings / toolbox / tool package, student curriculum, instructor's guide, installation guide, instructors guide, and print CD. These components shall meet the following minimum specifications:

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Storage Drawer Assembly

The assembly shall be constructed of 16 gauge stainless steel to match the mobile workstation assembly and previously installed drawers. It includes (2) side panels, (2) drawers, and hardware to mount side panels to mobile workstation. After assembly, drawers will add (2) additional pullout drawers to the workstation. These shall house the **Bearing Parts Package** and **Shaft / Sleeve Package**.

Bearing Parts Package

The tray shall be constructed of vacuum formed plastic with a cavity and label of each component. The minimum dimensions shall be 20-in. W x 17.5-in. L x 2-in. T. The tray will be stored below the worksurface in one of the (2) additional pullout drawers. The plastic tray shall have cavities to house the following components for easy visual identification and storage.

It shall include the following items:

- Bearing retainer, cup follower type (1)
- Mechanical seal cap (1)
- Plain bearing housings, steel, press-type bore, 1.0-in W x 2.06-in H x 5-in L (2)
- Plain bearings, sleeve type, bronze, and .625-in bore (2)
- Plain bearings, sleeve type, bronze, .625-in bore, and type 1 oil groove (2)
- Bearing retainer plates with seal mounts (2)
- Angular contact bearing seal cap (1)
- Bearing heating mandrel (.97-in OD)
- Bearing heating mandrel (.75-in OD)
- Oil cups (2)
- Bearing press kit (1)
- Thrust washers, bronze (2)
- Lock collars, split type, for shaft (2)
- Bearing spacer for tandem bearing mounting
- Bearing spacer for floating bearing housing
- End plate retainer cap screws with holes for safety wire (3)
- Bearing end plate retainer

Shaft / Sleeve Package

The tray shall be constructed of vacuum formed plastic with a cavity and label of each component. The minimum dimensions shall be 20-in. W x 17.5-in. L x 2-in. T. The tray will be stored below the work surface in one of the (2) additional pullout drawers. The plastic tray shall have cavities to house the following components for easy visual identification and storage.

It shall include the following items:

- Stub shaft for bearing mounting training
- Bearing installation sleeve #1, steel tubing, 4.25-in L x 1.25-in OD, 12 ga wall thickness
- Bearing installation sleeve #2, steel tubing, 4.25-in L x 1.5-in OD, .12-in wall thickness
- Bearing installation sleeve #3, steel tubing, 4.25-in L x 1.88-in OD, .16 ga wall thickness
- Seal removal sleeve #4, steel tubing, 4.25-in L x 1.5-in OD, .16 ga wall thickness
- Bearing lock washer, Fafnir type
- Bearing lock nut, Fafnir type
- Bearing lock nut, Bearhug type
- Bearing lock nut, Taperline type
- Spindle drive shaft, single end drive, stainless steel, threaded for lock nuts, keyed on one end for coupling attachment, drilled and tapped holes on one end for end plate attachment, chamfered on both ends for seal assembly, min 10-in L x 1.125-in dia.

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- Spindle drive shaft, double end drive, stainless steel, threaded for lock nuts, keyed for coupling attachment, chamfered for seal assembly, min 13-in L x 1.125-in dia.
- Stub shaft for bearing mounting training
- Helical Gear, 12 DP, 10 Teeth, .625-in bore “right hand”
- Helical Gear, 12 DP, 10 Teeth, .625-in bore “left hand”
- Miter Gear, 12 DP, 18 Teeth, .625-in bore (2)
- Insertion/Extraction tool for plain bearings

Bearings, Seals, and Shim Package

Shall include components to permit study of:

- Ball bearings in various mounting configuration. These include, fixed, floating, single, and double.
- Tapered roller bearings in various mounting configuration including direct, indirect, fixed, floating, single, and double
- Angular contact bearings in tandem and single mountings
- Various sizes and types of seals which, are designed to install into the bearing housings and seal the spindle shaft for use with lubrication

It shall include the following:

- Deep groove ball bearing, single row
- Ball bearings, sealed, Conrad type (2)
- Tapered roller bearings with cup and cone (4)
- Tapered roller bearing, single roller with cup and cone
- Tapered roller bearing, double roller with one cup and two cones
- Angular contact bearings (2)
- Self-aligning ball bearing
- Gasket material, 8-in x 10-in
- Shaft seal, Lip type CRW 1 (2)
- Shaft seal, retention/exclusion, type 1
- Mechanical shaft seal
- O-ring shaft seal, 1.875-in ID x 2.0-in OD (2)
- O-ring shaft seal, 2.125-in ID x 2.125-in OD (2)
- Cup follower shims, .005-in (3)
- Cup follower shims, .007-in (3)

Mounting Bolt Package

Shall include bolts, plain washers, lock washers, and nuts of various sizes.

Gearbox Unit

Shall include:

- Gearbox, worm gear type, 20:1, 377 in-lbs. Output torque for .63 Hp and 1750 RPM input
- Worm adjustment shims
- Carrier adjustment shims
- Gearbox mounting plate
- Fasteners to mount gearbox to mounting plate

Consumables / Bearing Housings / Toolbox / Tool Package

Shall include the following:

- Fixed Bearing Housings, stainless steel, 1.5-in W x 5.4-in H x 5-in L, with lubrication ports and seal mounts (2)
- Floating Bearing Housing, stainless steel, 1.5-in W x 5.4-in H x 5-in L, with lubrication ports and seal mounts (2)

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- 1/8-in square keystone 6-in long
- Bearing heater, ceramic type, 5-in x 5-in surface, heat shield, 25-360°C temperature adjustment range.
- Temperature resistant, leather gloves
- External bearing puller 4 7/8-in reach
- Internal bearing puller
- Bearing separator
- Rust preventive paper, 1 package
- Temperature Indicating Crayon, 150° F
- Temperature Indicating Crayon, 250° F
- Safety wire .023-in dia., spool
- Lithium grease, 1lb.
- Hole punch, .281-in
- 4 drawer storage unit, heavy gauge steel construction

Student Curriculum

The student curriculum shall consist of one (1) interactive multimedia course of seven (7) modules with 30 industry tasks. Topics shall include operation, installation, maintenance, troubleshooting, identification, and selection of plain bearings, ball bearings, roller bearings, bearing arrangements (fixed, floating, direct, and indirect), angular contact bearings, thrust bearings, bearing lubrication, bearing seals, mechanical seals, gaskets, right angle gears, worm gears, and gearboxes.

The student curriculum shall be designed in a skill-based format that focuses on teaching industry-relevant tasks. The objectives shall be accomplished by organizing the learning material into a series of modules, which are further subdivided into three or more segments per module. All learning material needed shall be contained in the modules; including text material, laboratory equipment activities, and multimedia directions. No external text sources shall be required. The specific cognitive skills taught by each text passage shall be identified next to the passage. Each lab activity shall be identified by the industrial task taught. All activities shall be highly detailed with step-by-step instructions to facilitate a self-directed learning environment. A combination of step-by-step enabling activities and creative, problem-solving activities shall be provided. A self-review of five to ten questions shall be provided after each segment. The curriculum must be capable of both self-directed and instructor directed study. All activities must correlate directly to the hardware supplied, with detailed illustrations and diagrams.

Teacher's Assessment/ Portfolio Guides

A teacher's guide shall be provided. It shall contain student data sheets, data sheet solutions, self-review answers, quizzes, quiz answers, student skill record sheets, and authentic assessment. A quiz shall be provided for each packet. A question shall be provided in each quiz for each cognitive objective taught. All tasks listed in the packet shall be listed on personalized student record sheets. The Instructor's Package shall include directions for authentic skill assessment.

Amatrol Model No. 97-ME3 or equal

Item No.97-ME4D

FLOOR-STANDING BELT CONVEYOR LEARNING SYSTEM

This unit shall add to a separately specified mechanical drives workstation to permit study of flat belt conveyor systems. The system shall include industrial grade flat belt conveyor and student curriculum. These components shall meet the following minimum specifications:

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Conveyor

This conveyor shall be fully assembled, primed and painted. It shall be ready for operation, except for the legs, which will be separately stored for shipment. It shall consist of the following minimum features and components:

- Endless flat belt, horizontal design
- Steel frame construction
- Adjustable tension control
- Adjustable tracking control
- Crown pulley design
- Belt width: 12-in
- Overall length: 70-in
- Overall height: 27-29-in adjustable
- Electric motor drive, .33Hp, 115/130 VAC, 1phase, 50/60 Hz
- Start/stop control interface cable
- Safety guards
- Freestanding legs, adjustable in height

Student Curriculum

The curriculum must be capable of both self-directed and instructor directed study. It shall be designed in a skill-based format that focuses on teaching industry-relevant tasks. The objectives shall be accomplished by organizing the learning material into a series of learning activity packets. Included shall be (1) Learning Activity Packet containing at least four (4) skills. Topics covered shall include belt installation and operation, belt adjustment, belt maintenance and troubleshooting, inspection, belt length calculations, conveyor speed calculations.

Teacher's guide materials shall be provided in a separately specified teacher's guide. It shall contain student data sheets, data sheet solutions, self-review answers, quizzes, quiz answers, student skill record sheets, and authentic assessment. A quiz shall be provided for each packet. A question shall be provided in each quiz for each cognitive objective taught. All tasks listed in the packet shall be listed on personalized student record sheets. The Instructor's Package shall include directions for authentic skill assessment.

Amatrol Model No. 97-ME4D or equal

Item No. 97-ME5A

VIBRATION ANALYSIS TRAINING SYSTEM

This system shall add to the mechanical drives system 1 to provide study of setup, operation and application of vibration analysis to a variety of industrial applications. The system shall include an industrial quality vibration monitoring unit, devices to create various industrially realistic vibration scenarios, student curriculum, instructor's guide, installation guide, student reference and print CD. These components shall meet the following minimum specifications:

1 - Vibration Monitoring Unit

Shall be an industrial, portable data collector/meter:

- Measures vibration in units of velocity and acceleration
- Displays English or Metric units
- Remote vibration sensor with 1.2m cable
- Acceleration readings up to 656 ft/s²
- Velocity readings up to 7.87 in/s

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- LCD display with backlight
- Hand-held, lightweight, portable
- Battery powered with battery status indicator
- Can store and recall 99 measurement readings manually
- Datalogger function with up to 20 million readings written to included SD card
- Datalogger date/time stamps and stores readings in Excel format for easy review
- Auto range
- Carrying Case
- Accelerometer

1 - Vibration Generator System / Resonance Simulator

- Mounting base constructed of heavy gauge steel ; 230v/3ph motor, .08 Hp, speed range 0-3600 rpm at no load, .5 full load amps, flywheel with offset weight for repeatable vibration generation, and integrated magnetic sensor location.
- Motor utilizes same power connection as mechanical drives 1 system via power cable
- Motor is controlled via VFD for precise operation and repeatability
- Spring Motor Mounts (4)
- Solid Motor Mounts (4)
- Dampening Motor Mounts (4)

1 - Vibration Modification Components

- Isolation Motor Mounts (4)
- Flywheel with balancing adjustment components
- Bearing Housing, Slip Fit Type
- Roller Bearing, operational
- Roller Bearing, defective
- Attachment to simulate defective v-belt
- Vibration Sensor Bearing Mounts (2)
- Vibration sensor auxiliary motor mount
- Mounting Hardware

Student Curriculum

The curriculum must be capable of both self-directed and instructor directed study. It shall be designed in a skill-based format that focuses on teaching industry- relevant tasks. The objectives shall be accomplished by organizing the learning material into a series of learning activity packets. Included shall be (1) Learning Activity Packet.

Teacher's guide materials shall be provided in a separately specified teacher's guide. It shall contain student data sheets, data sheet solutions, self review answers, quizzes, quiz answers, student skill record sheets, and authentic assessment. A quiz shall be provided for each packet. A question shall be provided in each quiz for each cognitive objective taught. All tasks listed in the packet shall be listed on personalized student record sheets. The Instructor's Package shall include directions for authentic skill assessment.

Amatrol Model No. 95-ME5-A or equal

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Bid Form
Unit Pricing

Bidder Name: _____

Description	Qty	Unit Price	Total Price
Item No. 970-ME1	4		
MECHANICAL DRIVES 1 LEARNING SYSTEM			
Item No. 41227	4		
HAND TOOL PACKAGE 1 - MECHANICAL			
- Adds to 970-ME1			
Item No. 97-ME2	4		
MECHANICAL DRIVES 2 LEARNING SYSTEM			
Item No. 18588	2		
VISCOSIMETER (Saybolt University Second)			
- Required for 97-ME2			
Item No. 97-ME3	4		
MECHANICAL DRIVES 3 LEARNING SYSTEM			
Item No. 97-ME4D	4		
FLOOR-STANDING BELT CONVEYOR LEARNING SYSTEM			
- Adds to 970-ME1			
Item No. 97-ME5A	2		
PREDICTIVE MAINTENANCE VIBRATION ANALYSIS LEARNING SYSTEM			
- Adds to 970-ME1			
Item No. INST2	1		
ON SITE INSTALLATION			

BID TOTAL: \$ _____

Written in Words: _____

DELIVERY SCHEDULE: _____

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SIGNATURE AND BID CERTIFICATION

The undersigned Bidder agrees to provide the equipment, materials and related installation required for the bid described as: RFB 19-005 Mechanical Drives Learning System, Solano Community College District in the amount listed on the Bid Form. The bid amounts are exclusive of any State of California or local sales or use tax. The Bidder confirms that it has checked all of the above figures and understands that neither the District nor any of its agents, employees or representatives shall be responsible for any errors or omissions on the part of the undersigned Bidder in preparing and submitting this Bid.

Documents Accompanying Bid. The Bidder has submitted with this Bid the following Bid Form, Unit Price Form, Signature and Bid Certification and Non-Collusion Affidavit. The Bidder acknowledges that if this Bid and the foregoing documents are not fully in compliance with applicable requirements set forth in the bid documents and specification, the Bid may be rejected as non-responsive.

The undersigned certifies that our firm (check one) IS or IS NOT currently debarred, suspended or proposed for debarment by any federal or state entity. The undersigned agrees to notify the Solano Community College District of any change in this status, should one occur, until such time as an award has been made under this solicitation action.

In compliance with the Request for Bids, Mechanical Drives Learning System and after carefully reviewing all the terms, conditions and requirements contained therein, the undersigned agrees to furnish such equipment in accordance with the specification/scope of work.

(Firm name)

(Street address)

(City, state, zip)

(Phone number)

(E-mail address)

BY: _____
Signature

Name & Title

Date



NON-COLLUSION AFFIDAVIT

STATE OF CALIFORNIA

COUNTY OF (_____)

I, _____, being first duly sworn, deposes and says that I am
(Typed or Printed Name)
the _____ of _____, the party submitting
(Title) (Bidder Name)
the foregoing Bid Proposal (“the Bidder”). In connection with the foregoing Bid Proposal, the undersigned declares, states and certifies that:

1. The Bid Proposal is not made in the interest of, or on behalf of, any undisclosed person, partnership, company, association, organization or corporation.
2. The Bid Proposal is genuine and not collusive or sham.
3. The bidder has not directly or indirectly induced or solicited any other bidder to put in a false or sham bid, and has not directly or indirectly colluded, conspired, connived, or agreed with any other bidder or anyone else to put in sham bid, or to refrain from bidding.
4. The bidder has not in any manner, directly or indirectly, sought by agreement, communication, or conference with anyone to fix the bid price, or that of any other bidder, or to fix any overhead, profit or cost element of the bid price or that of any other bidder, or to secure any advantage against the public body awarding the contract or of anyone interested in the proposed contract.
5. All statements contained in the Bid Proposal and related documents are true.
6. The bidder has not, directly or indirectly, submitted the bid price or any breakdown thereof, or the contents thereof, or divulged information or data relative thereto, or paid, and will not pay, any fee to any person, corporation, partnership, company, association, organization, bid depository, or to any member or agent thereof to effectuate a collusive or sham bid.

Executed this ____ day of _____, 2019 at _____.
(City, County and State)

I declare under penalty of perjury under the laws of the State of California that the foregoing is true and correct.

Signature

(Address)

Name Printed or Typed

(City, County and State)

(_____) _____
(Area Code and Telephone Number)