

NOTICE TO BIDDERS

The Grand Prairie Independent School District will receive sealed bids and proposals until:

2:00 P.M. – March 30, 2009
at which time all responses will be publicly opened
FOR:
Auto Tech Programs / Trainers

Prospective bidders may secure further information and specifications at 2602 South Belt Line Road OR
http://www.gpisd.org/departments/business/purchasing/current_bids.html
The school district reserves the right to reject any and/or all bids and to waive all formalities and irregularities in bidding.

BID ENVELOPE MUST BE ADDRESSED TO:

Grand Prairie ISD
Purchasing Department
2602 South Belt Line Road
Grand Prairie, TX 75052

and

PLAINLY MARKED:

BID NO. 09-37

Any bid received later than the specified time, whether delivered in person or mailed, shall be disqualified and will remain unopened. Failure to respond to this invitation will remove your name from the bid list. If you cannot bid at this time and desire to remain on the bid list, please submit a **NO BID** on the bid form and return.

GRAND PRAIRIE INDEPENDENT SCHOOL DISTRICT

PROCEDURES FOR SEALED BIDS OR PROPOSALS

1.0.0 GENERAL CONDITIONS

- 1.1.0 APPLICABILITY - These conditions are applicable and form a part of the contract documents in each equipment and/or service contract and a part of the terms of each purchase order for items of equipment and/or service included in the specifications and bid forms issued herewith.
- 1.2.0 WITHDRAWAL OF BIDS - Any bid may be withdrawn by the bidder prior to the scheduled time for opening. Any request by a bidder to withdraw a bid must be in person or in writing and submitted to the Director of Purchasing prior to the scheduled time for opening bids. Any bid that is received after the time specified shall not be considered and may be returned unopened to the bidder.
- 1.3.0 BIDS SHALL BE SUBMITTED ON THESE FORMS - Deviations to the General Conditions and/or Specifications shall be **conspicuously noted in writing** by the bidder and shall be included in the bid.
- 1.4.0 BIDDERS WHO DO NOT BID are requested to notify the Grand Prairie Independent School District (GPISD) Purchasing Department in writing if they wish to receive future bids. Failure to do so **will** result in their being deleted from our bidder list.
- 1.5.0 GPISD reserves the right to waive any or all bid irregularities, formalities, or other technicalities; to be the sole and independent judge of quality and suitability of any products offered; and may accept or reject any bid in its entirety, or may reject any part of any bid without affecting the remainder of that bid, and may award the individual items on this bid in any combination or in any way to best serve the interests of GPISD as it perceived those interests to be in its sole discretion.
- 1.6.0 GPISD will enter into contractual relationships only with those bidders who have, through word and action, affirmed that they comply with all applicable existing laws or executive orders to insure equal employment opportunities, without regard to race, creed, color, sex, or national origin. Minority owned or HUB companies are encouraged to compete in providing goods and services to the district. GPISD does not operate under a set-aside program.
- 1.7.0 Quantities shown are estimates only, based on prior usage. GPISD reserves the right to increase or decrease quantities with the selected supplier, both at the time of acceptance of this quotation offer as so modified, and subsequent thereto. GPISD will purchase

supplies and materials during the bid period as-needed.

1.8.0 DELIVERIES required in this bid shall be freight prepaid, F.O.B. actual destination detailed in specifications, between 7:00 a.m. and 2:00 p.m., inside delivery. Bid prices shall include all freight and delivery charges. Delivery requirements will make it mandatory that the successful bidder schedule an appointment with the Director of Purchasing, or their designee, prior to the shipping any materials.

2.0.0 SPECIFICATIONS may be those developed by the Using Department or by the Manufacturer to represent items of regularly manufactured products, materials, or equipment.

2.1.0 DISTRICT SPECIFICATIONS have been developed by the Using Department to show minimal standards as to the usage, materials, and contents based on their needs.

2.2.0 MANUFACTURER'S SPECIFICATIONS (Design Guide), when used by the District, are to give the bidder information as to the type and kind requested. Proposals on any reputable manufacturer's regularly produced product of such items similar and substantially equivalent will be considered.

2.3.0 Whenever an article or material is defined by describing a proprietary product or by using the name of a manufacturer or brand name, the term "*or equal*" if not inserted *shall be implied*. The specified article or material shall be understood as indicating the type, function; minimum standard of design, efficiency and quality desired and shall not be construed as to exclude other manufactured products of comparable quality, design and efficiency. GPISD reserves the right to make final decisions as comparable items. Be very certain that items upon which you bid and deliver are equal to items listed. Materials, which are not equal, will be returned to the bidder, transportation charges collect. Bidder will reimburse GPISD for items returned at invoice cost within 30 days.

2.4.0 WARRANTY CONDITIONS for all supplies and/or equipment shall be considered manufacturer's minimum standard warranty unless otherwise agreed to in writing. Bidder shall be an authorized dealer, distributor or manufacturer for the product. Seller shall not limit or exclude any implied warranties, any attempt to do so shall render this contract void at the option of the Buyer.

2.5.0 GPISD, any of its departments, divisions or campus, is one user and reserves the right to select products and/or supplies from any bid, cooperative agreement such as the General Services Administration or the Department of Information Resources.

3.0.0 EVALUATION OF BIDS, in accordance with Article 2368a.3, Section 5, takes into account the following considerations:

3.0.1 Price;

3.0.2 Quality - meets or exceeds specifications;

3.0.2.1 SAMPLES, *when called for*, shall be submitted with the bid unless stated otherwise. *Samples shall be clearly tagged to show the bidder's name, address, bid title and bid item number for which the sample is proposed. Samples will not be considered unless identified as requested.* Sample items from the successful bidder may be retained to determine that the quality and workmanship of the delivered items are comparable to the sample. ADDITIONAL SAMPLES needed for a bid to be evaluated properly shall be delivered within five (5) working days from the time the bidder is notified by the District.

3.0.3 All chemicals must be certified lead free, non-toxic and will require a MSD sheet (chemicals defined as paints, lacquers, thinners, caulks, fillers, etc.). This documentation must be provided at time of purchase, before payment is approved. All other supply items should be comparable in quality and intended use. **Suitability for intended use:** (paints, pastes, inks, chemicals, markers, etc.) MSD sheet should clearly indicate item number.

3.0.4 Probability of continuous availability;

3.0.5 Bidder's service and date of proposed delivery and placement.

3.0.6 Review of bid is subject to the evaluation of the user department and subsequent recommendation.

3.1.0 PREFERENTIAL REQUIREMENT - GPISD, as a governmental agency of the State of Texas, may not award a contract for general construction, improvements, services or public works projects or purchases of supplies, materials, or equipment to a nonresident bidder unless the nonresident's bid is lower than the lowest bid submitted by a responsible Texas resident bidder by the same amount that a Texas resident bidder would be required to underbid a nonresident bidder to obtain a comparable contract in the state in which the nonresident's principal place of business is located (Article 601g V.T.C.S.).

3.2.0 IDENTICAL BIDS - In cases where bidding is required for proposed contracts, and more than one bidder submitted the lowest and best bids (identical bids), the bidder who is a resident of the district shall be selected by the governing body. If two or more bidders submitting the lowest and best bids are residents of the district, one of the resident bidders shall be selected by the casting of lots.

3.3.0 AWARD of BID; BID SUMMARY: The GPISD reserves the right to award a separate contract to more than one bidder for each item/group/service or to award on contract for the entire bid. All bidders will receive a statement of bid award. Tabulations will be posted on the district Purchasing webpage.

http://www.gpisd.org/departments/business/purchasing/bids_proposals.htm

4.0.0 CONTRACTS

4.1.0 CONTRACTS FOR PURCHASE will be put into effect by means of a purchase order(s) executed by the Purchasing Department after bids have been awarded.

4.2.0 ALL CONTRACTS AND AGREEMENTS between bidders and the GPISD shall strictly adhere to the statutes as set forth in the Uniform Commercial Code as last amended in 1977 by the American Law Institute in the National Conference of Commissioners on uniform state laws.

4.3.0 Buyer's obligation is payable only and solely from the funds available for the purpose of this purchase. Lack of funds shall render this contract null and void to the extent funds are not available and any delivered but unpaid for goods will be returned to the Seller by the Buyer. Do not include Federal Excise, State or City Sales Tax. Entity shall furnish exemption certificate.

5.0.0 DISCLOSURES - By signing this bid, a bidder affirms that he/she has not given, offered to give, nor intends to give at any time hereafter any economic opportunity, future employment, gift, loan, gratuity, special discount, trip, favor or service to a public servant in connection with the bid submitted, and

5.1.0 affirms that, to the best of his/her knowledge, the bid has been arrived at independently, and is submitted without collusion with anyone to obtain information or gain any favoritism that would in any way limit competition or give them an unfair advantage over other bidders in the award of this bid. (See NON-COLLUSION STATEMENT)

5.2.0 Upon notification of potential selections for award, the person or entity submitting this bid must give notice to the district if the person or an owner or operator of the business entity has been convicted of a felony. The notice must include a general description of the conduct resulting in this conviction of a felony (See FELONY CONVICTION NOTICE).

5.3.0 BIDDER SHALL NOTE any and all relationships that might be a conflict of interest and include such information with the bid. A list of current board members and the superintendent may be reviewed at

<http://www.gpisd.org/gpisd/trustees/index.htm>

5.4.0 The price to be paid by the Buyer shall be that contained in Seller's bid which Seller warrants to be no higher than Seller's current prices on orders by others for products of the kind and specification covered by this agreement for similar quantities under similar or like conditions and methods of purchase. In the event Seller breaches this warranty, the prices of the items shall be reduced to the Seller's current prices on orders by others and overpricing refunded within 30 days to GPISD, or in the alternative, Buyer may cancel this contract without liability to Seller for breach or Seller's actual expense.

5.5.0 In the event of a price decrease to the general trade during the full term of the contract, such decrease must be allowed the District for all configurations and components included in this contract.

6.0.0 CONDUCT WHILE ON DISTRICT PREMISES

6.1.0 Successful bidder or contractor, and all employees, will be required to comply with the same standards applicable to the employees of the GPISD with regard to procedure 18 of the Auxiliary Employee Handbook.

7.0.0 STATEMENT OF QUALIFICATIONS, when required, must include a description of organizational experience, references and capabilities.

7.1.0 *Organizational Experience:* Bidder must describe their qualifications and experience to perform the work described in this invitation.

7.2.0 *References:* Proposals must include at least three references, preferably state and local government organizations where the bidder currently provides the type of services and/or products requested. Reference listings must include organization names, addresses, and contact person and telephone number.

SECTION 8.0.0 – 10.0.0 (SECURITY; BID SECURITY; PAYMENT BONDS; AND INSURANCE) do not apply to this bid.

11.0.0 PRESENTATION OF BIDS: All bids/proposals must be received at the Purchasing Office in a sealed document. No oral, telegraphic, telephonic, or facsimile bids will be accepted. ALL correspondence, including freight bills, packing slips, invoices and statements must reference the district purchase order assigned as a result of this bid.

12.0.0 INTERLOCAL AGREEMENT

The Grand Prairie ISD participates in the Educational Purchasing Cooperative of North Texas (EPCNT) There are several governmental entities which utilize this organization for potential purchases. A complete list may be viewed at

http://www.epcnt.com/Current_members.htm

Governmental entities utilizing Internal Governmental contracts with the EPCNT will be eligible, but not obligated, to purchase materials/services under the contract(s) awarded as a result of this solicitation. All purchases by governmental entity other than Grand Prairie ISD will be billed directly to that governmental entity and paid by that governmental entity. Grand Prairie ISD will not be responsible for another governmental entity's debts. Each governmental entity will order material/service as needed and issue the appropriate purchasing documents/contracts.

TIME LINE

All equipment and peripheral items associated with this bid are to be delivered and installed at the designated sight no earlier than Monday 20th July and complete by end of day July 30, 2009, with demonstrations and punch lists being conducted on July 31, 2009.

Questions regarding the intended use of equipment and/or the specifications herein should be directed to Jim Ziegler at jim.ziegler@gpisd.org

EQUIPMENT SPECIFICATIONS

Information regarding these trainers has been provided as a minimum standard of expectations for each module. Approved equals may be submitted.

See attachments

- A Drum/Disc Brake Trainer
- B Suspension and Steering System
- C Starting System
- D Charging System
- E Lighting System
- F Powertrain (OBD II)
- G Electronic Ignition
- H Air Condition
- I Power Windows

BIDDER'S CERTIFICATE

This bidder, the below named firm, hereby submits bid prices as shown for furnishing the items listed herein, delivered in the quality and dimensions specified, and subject to the conditions listed under "Bid Specifications and Conditions." Bid prices shown are net and include all charges. Descriptive and illustrative material, including specifications and data sheets, and all other proposals accompanying this bid are considered to be an integral part of this bid offer.

FIRM'S NAME

ADDRESS

CITY & STATE

ZIP CODE

EMAIL

TELEPHONE

FAX

AUTHORIZED SIGNATURE

DATE

POSITION WITH COMPANY

INTERLOCAL AGREEMENT

Should the governmental, referenced above, elect to participate in this contract, would you, (the contractor) agree that all terms, conditions, specifications, and pricing would apply? YES NO

Our price of _____ includes all charges, i.e. freight, installation, training, literature, and support; and encompasses the following modules:

A	Drum/Disc Brake Trainer	YES	NO
B	Suspension and Steering System	YES	NO
C	Starting System	YES	NO
D	Charging System	YES	NO
E	Lighting System	YES	NO
F	Powertrain (OBD II)	YES	NO
G	Electronic Ignition	YES	NO
H	Air Condition	YES	NO
I	Power Windows	YES	NO

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Non-Collusion Statement

This is to certify that the undersigned bidder has neither directly nor indirectly, entered into any agreement, participated in any collusion or otherwise taken any action in restraint of free competitive bidding in connection with this proposal.

It is agreed by the undersigned bidder that the signed delivery of this bid/proposal represents the bidder's acceptance of the terms and conditions of this invitation to bid/offer a proposal including all specifications and special provisions.

Note: Signature of the authorized representative **MUST** be of an individual who legally may enter his/her organization into a formal contract with the Grand Prairie Independent School District.

FIRM'S NAME

NAME OF AUTHORIZED INDIVIDUAL (printed or typed)

AUTHORIZED SIGNATURE

DATE

POSITION WITH COMPANY

RETURN THIS PAGE

Felony Conviction Notification

State of Texas Legislative Senate Bill No. 1, Section 44.034, Notification of Criminal History, Subsection (a), states “a person or business entity that enters into a contract with a school district must give advance notice to the district if the person or an owner or operator of the business entity has been convicted of a felony. The notice must include a general description of the conduct resulting in the conviction of a felony.”

Subsection (b) states “a school district may terminate a contract with a person or business entity if the district determines that the person or business entity failed to give notice as required by Subsection (a) or misrepresented the conduct resulting in the conviction. The district must compensate the person or business entity for services performed before the termination contract.”

This Notice Is Not Required of a Publicly Held Corporation

(I) (We), the undersigned agent for the firm named below, certify that the information concerning notification of felony convictions has been reviewed by me and the following information furnished is true to the best of my knowledge.

COMPANY NAME: _____

Check the appropriate box and sign the form.

- My firm is a publicly held corporation; therefore, this reporting requirement is not applicable.

AUTHORIZED SIGNATURE: _____

- My firm is not owned nor operated by anyone who has been convicted of a felony.

AUTHORIZED SIGNATURE: _____

- My firm is owned or operated by the following individual(s) who has/have been convicted of a felony.

Name of Felony: _____

Details of Conviction(s):

AUTHORIZED SIGNATURE: _____

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CONFLICT OF INTEREST QUESTIONNAIRE

FORM CIQ

For vendor or other person doing business with local governmental entity

OFFICE USE ONLY

Date Received

This questionnaire is being filed in accordance with chapter 176 of the Local Government Code by a person doing business with the governmental entity. By law this questionnaire must be filed with the records administrator of the local government not later than the 7th business day after the date the person becomes aware of facts that require the statement to be filed. See Section 176.006, Local Government Code. A person commits an offense if the person violates Section 176.006, Local Government Code. An offense under this section is a Class C misdemeanor.

1 Name of person doing business with local governmental entity.

2

Check this box if you are filing an update to a previously filed questionnaire.

(The law requires that you file an updated completed questionnaire with the appropriate filing authority not later than September 1 of the year for which an activity described in Section 176.006(a), Local Government Code, is pending and not later than the 7th business day after the date the originally filed questionnaire becomes incomplete or inaccurate.)

3 Describe each affiliation or business relationship with an employee or contractor of the local governmental entity who makes recommendations to a local government officer of the local governmental entity with respect to expenditure of money.

4 Describe each affiliation or business relationship with a person who is a local government officer and who appoints or employs a local government officer of the local governmental entity that is the subject of this questionnaire.

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CONFLICT OF INTEREST QUESTIONNAIRE FORM
For vendor or other person doing business with local governmental entity

CIQ Page 2

5 Name of local government officer with whom filer has affiliation or business relationship. (Complete this section only if the answer to A, B, or C is YES.)

This section, item 5 including subparts A, B, C & D, must be completed for each officer with whom the filer has affiliation or business relationship. Attach additional pages to this Form CIQ as necessary.

A. Is the local government officer named in this section receiving or likely to receive taxable income from the filer of the questionnaire?

Yes No

B. Is the filer of the questionnaire receiving or likely to receive taxable income from or at the direction of the local government officer named in this section AND the taxable income is not from the local governmental entity?

Yes No

C. Is the filer of this questionnaire affiliated with a corporation or other business entity that the local government officer serves as an officer or director, or holds an ownership of 10 percent or more?

Yes No

D. Describe each affiliation or business relationship.

6 Describe any other affiliation or business relationship that might cause a conflict of interest.

7

Signature of person doing business with the governmental entity

Date

SPECIFICATION “A”

DRUM/DISC BRAKE TRAINER (2 WHEEL)(MODEL 400-2W)

This trainer to be part of a Brake Systems program to present the live operation and study of Hydraulic Brake Systems. The program to provide courseware (Model 405) for use by students and instructors.

CONSTRUCTION

The trainer frame to be constructed of 2” x 2” square steel tubing. The trainer to be bench mountable.

COMPONENTS

The trainer to use actual new and “recycled” vehicle components.

To Include:

- Rear Drum Brake Assembly (1)
- Front Disc Brake Assembly (1)
- Master Cylinder
- Vacuum Booster
- Combination Valve
- Parking Brake Cable
- Brake Switch
- Brake Warning Light
- Stop Light
- Pressure Gauges (2)
- Power Supply Posts
- Parking Brake Switch

TRAINER OPERATION

The trainer to feature actual front and rear brake operation, including power brakes (vacuum boost) and parking brake. The trainer to feature operational Brake Warning Light and Stop Light. The trainer to include hydraulic pressure gauges to monitor front and rear hydraulic fluid pressure.

SYSTEM DIAGNOSTICS

The trainer to provide an advanced level of instruction by duplicating actual on-vehicle troubleshooting procedures. The trainer to be capable of actual service manual test procedures, including:

- Bleeding Brakes
- Hydraulic Pressure Tests
- Inspection of Brake Components
- Removal and Replacement of Brake Components
- Assembly and Disassembly of Brake Components

POWER REQUIREMENTS

To include a 3Amp, single phase, 60HZ power supply. To be a filtered and regulated power source with fused protection. To have a power cord for a North America (Nema 5-15) 110VAC/15Amp electrical outlet. Current Draw = .5 Amps.

Optional 220VAC/50Hz configuration available.

OPERATIONS MANUAL

To provide instructor with Trainer Orientation, Start-up Procedures, Equipment Operation, Maintenance and Service Information.

DRUM/DISC BRAKE COURSEWARE (MODEL 405)

All items to be a complete courseware package and to include a photocopy site license to allow distribution of student manual. Courseware presented in Adobe PDF file format on CD-Rom.

STUDENT MANUAL

The courseware to include a Student Manual containing worksheets written specifically for use with the ATech Brake System Trainer, Reference Book, and Service Manual Information.

The units of instruction to be based on NATEF tasks. The Brake Program Activities to include:

- | | |
|---|--------------------------------------|
| 1. Program Overview
Components | 11. Disc Brake Operation & |
| 2. Hydraulics Theory & Operation | 12. Disc Brake Inspection & Service |
| 3. Master Cylinder | 13. Caliper Assemblies |
| 4. Brake Fluid, Lines and Hoses
Problems | 14. Troubleshooting Disc Brake |
| 5. Hydraulic Valves | 15. Power Assist Units |
| 6. Bleeding Brakes | 16. Power Booster Diagnosis & Repair |
| 7. Drum Brake Operation & Components | 17. Wheel Bearings |
| 8. Drum Brake Inspection & Service | 18. Parking Brake Service |
| 9. Wheel Cylinder Service | 19. Electrical Component Service |
| 10. Troubleshooting Drum Brake Problems | |

NATEF TASK RECORD KEEPING SHEETS

The courseware to include NATEF Task Record Keeping Sheets to facilitate the instructor in recording the progress of each student as NATEF tasks are completed.

INSTRUCTOR GUIDE

The courseware to include an Instructor Guide to assist in management of the program material. The Instructor Guide to provide product information and answers.

SERVICE MANUAL INFORMATION

The courseware to include the appropriate manufacturer's Service Manual Information. The Service Manual Information to be used during student activities and system diagnosis.

SPECIFICATION “B”

SUSPENSION AND STEERING SYSTEM (MODEL 500)

This trainer to be part of a Suspension and Steering System Training Program to present the live operation and study of steering, suspension, and tire service. The program to provide courseware (Model 505) for use by students and instructors.

CONSTRUCTION

The trainer frame to be constructed of 2” x 2” square steel tubing. The trainer to be portable with rolling casters. The entire steering wheel and column assembly can be pivoted inward for easy storage.

COMPONENTS

The trainer to use actual late-model, low mileage, vehicle components.

To Include:

- Steering Rack & Pinion w/Power Assist
- Tilt Steering Wheel & Column Assembly
- Power Steering Pump
- McPherson Struts (2)
- Front Wheel Assemblies (2)
- Front Wheels & Tires (2)
- Hydraulic Pistons (2)
- Hydraulic Control Levers (2)
- Electric Motor & Drive Belt

TRAINER OPERATION

The trainer to feature actual steering and suspension system operation, including the following:

- Steering – Fully operational steering wheel, tilt column, and rack and pinion assembly. Fully operational power steering pump driven by electric motor and drive belt.
- Suspension – Fully operational strut towers. Hydraulic pistons are provided to compress and expand each strut. Hydraulic pressure is provided by on-board power steering pump and controlled by levers. Strut operation does not interfere with wheel rotation allowing for wheel alignment service.
- Tires – Front tire and alignment service.

SYSTEM DIAGNOSTICS

The trainer to provide an advanced level of instruction by duplicating actual on-vehicle troubleshooting and service procedures.

POWER REQUIREMENTS

To include a 1HP electrical motor (115VAC/13.2Amp, single phase, 60HZ). To have a power cord for a North America (Nema 5-15) 110VAC/15Amp electrical outlet.

Current Draw = 8.3 Amps.

Optional 220VAC/50Hz configuration available.

OPERATIONS MANUAL

To provide instructor with Trainer Orientation, Start-up Procedures, Equipment Operation, Maintenance and Service Information.

SUSPENSION AND STEERING SYSTEM COURSEWARE (MODEL 505)

All items to be a complete courseware package and to include a photocopy site license to allow distribution of student manual. Courseware presented in Adobe PDF file format on CD-Rom.

STUDENT MANUAL

The courseware to include a Student Manual containing worksheets written specifically for use with the ATech Suspension and Steering System Trainer, Reference Book and Service Manual Information.

The units of instruction to be based on NATEF tasks. The Suspension and Steering Program Activities to include:

- | | |
|----------------------------------|----------------------------|
| 1. Program Overview | 8. Rear Suspension Systems |
| 2. Steering Wheel & Column | 9. Shock Absorbers |
| 3. Hydraulic Principals | 10. Wheels |
| 4. Power Steering Pumps | 11. Tires |
| 5. Rack and Pinion Steering Gear | 12. Wheel Alignment |
| 6. Steering Linkages | 13. Wheel and Tire Balance |
| 7. Front Suspension Systems | |

NATEF TASK RECORD KEEPING SHEET

The courseware to include NATEF Task Record Keeping Sheet to facilitate the instructor in recording the progress of each student as NATEF tasks are completed.

INSTRUCTOR GUIDE

The courseware to include an Instructor Guide to assist in management of the program material. The Instructor Guide to provide product information and answers.

SERVICE MANUAL INFORMATION

The courseware to include the appropriate manufacturer's Service Manual Information. The Service Manual Information to be used during student activities and system diagnosis.

SPECIFICATION "C"

STARTING SYSTEM TRAINER – FAULTED (MODEL 811F)

This trainer to be part of an electrical systems program to present the live operation and study of Starter Motor Systems. The program to provide courseware (Model 815) for use by students and instructors.

CONSTRUCTION

The trainer to be constructed of laminated plywood. The front panel to be lexan with 2nd surface graphics. The supporting legs to be made from square steel tubing.

COMPONENTS

The trainer to use actual new-model vehicle components and connectors.

To Include:

- Starter Motor
- Starter Solenoid
- Neutral Safety Switch
- Starter Relay
- Ignition Switch
- Wiring Harness
- Power Supply Post

TRAINER OPERATION

The trainer to feature actual Starting System operation.

SYSTEM DIAGNOSTICS

The trainer to provide an advanced level of instruction by duplicating actual on-vehicle troubleshooting procedures. The trainer to use actual vehicle wire colors to be compatible with wiring diagrams. The trainer to be capable of actual service manual test procedures.

FAULT INSERTION

Faults to be inserted via manual switches, local computer or or ATech Network System (ANS).

Software interface allows hard and intermittent faults to be entered by selecting faults from a pictorial schematic. Software interface faults to be entered randomly or as specified by instructor.

Faults:

Fault #	Description	Fault	CKT# or Circuit#	Wire Color
1	Starter Relay High Resistance	High Resistance	032	RED/LT BLU
2	Ignition Switch Start Circuit	Open	033	WHT/PNK
3	Ignition Switch Power	Open	037	YEL
4	Starter Relay Power	Open	032	RED/LT BLU

FAULT INSERTION VIA MANUAL SWITCHES

A series of manual switches to be included for inserting realistic faults into the system. The manual switches to be located in back of trainer and mounted in plastic enclosure.

FAULT INSERTION VIA LOCAL COMPUTER

Faults to be entered via the serial communications port of a single computer. Faults to be entered using a software interface (installed on the computer hard drive). Includes proprietary serial cable to connect to computer.

FAULT INSERTION VIA ATECH NETWORK SYSTEM (ANS)

Connection to the LAN is achieved with an optional ANS (ATech Network System). The ANS is a 16-port Serial Hub with standard CAT5 cable. Requires an Ethernet connection from the serial hub to the LAN. Software interface to be installed on any LAN computer.

POWER REQUIREMENTS

Requires 12VDC automotive battery (not included).

To include an externally mounted power supply. Input voltage to the power supply is 115VAC/60Hz. To be a filtered and regulated power source with fused protection. To have a power cord for a North American (Nema 5-15) 100VAC/15Amp electrical outlet. A power switch with indicator light to control the power supply. Current Draw = .5 Amps.

Optional 220VAC/50Hz configuration available.

OPERATIONS MANUAL

To provide instructor with Trainer Orientation, Start-up Procedures, Equipment Operation, Maintenance and Service Information.

BATTERY/STARTING/CHARGING COURSEWARE (MODEL 815)

All items to be a complete courseware package and to include a photocopy site license to allow distribution of student manual. Courseware presented in Adobe PDF file format on CD-Rom.

6.1 STUDENT MANUAL

The courseware to include a Student Manual containing worksheets written specifically for use with the ATech Charging System Trainer, Reference Book, and Service Manual Information.

The units of instruction to be based on NATEF tasks. The Battery, Starting, and Charging Activities to include:

1. Program Overview
2. Battery Description
3. Battery Diagnosis and Testing
4. Battery Drain Testing
5. Battery Charging/Jump Starting
6. Battery Maintenance
7. Starting System Description & Operation
8. Starting System Diagnosis & Repair
9. Starter Bench Tests/Removal & Installation
10. Charging System Description &
Operation
11. Charging System Diagnosis & Repair
12. Generator Bench Tests
13. Generator Service

6.2 NATEF TASK RECORD KEEPING SHEET

The courseware to include a NATEF Task Record Keeping Sheet to facilitate the instructor in recording the progress of each student as NATEF tasks are completed.

6.3 INSTRUCTOR GUIDE

The courseware to include an Instructor Guide to assist in management of the program material. The Instructor Guide to provide product information and answers.

6.4 SERVICE MANUAL INFORMATION

The courseware to include the appropriate manufacturer's Service Manual Information. The Service Manual Information to be used during student activities and system diagnosis.

The trainer to have an approximate shipping weight of 60 lbs. Size to be approximately 27"W x 27"D x 14"H. Cartons are made from 100% recycled paper.

SPECIFICATION "D"

1.0 CHARGING SYSTEM TRAINER – FAULTED (MODEL 812F)

This trainer to be part of an electrical systems program to present the live operation and study of Charging Systems. The program to provide courseware (Model 815) for use by students and instructors.

CONSTRUCTION

The trainer to be constructed of laminated plywood. The front panel to be lexan with 2nd surface graphics. The supporting legs to be made from square steel tubing.

COMPONENTS

The trainer to use actual new-model vehicle components and connectors.

To Include:

- Alternator
- Regulator Assembly
- System Fusible Links
- Ignition Switch
- 1½ HP Motor w/Belt/Pulleys
- Charging Indicator Light
- Wiring Harness
- Power Supply Posts

TRAINER OPERATION

The trainer to feature actual Charging System operation. The trainer to be capable of connecting to and charging a 12VDC automotive battery (not included).

SYSTEM DIAGNOSTICS

The trainer to provide an advanced level of instruction by duplicating actual on-vehicle troubleshooting procedures. The trainer to use actual vehicle wire colors to be compatible with wiring diagrams. The trainer to be capable of actual service manual test procedures.

FAULT INSERTION

Faults to be inserted via manual switches, local computer or ATech Network System (ANS). Software interface allows hard and intermittent faults to be entered by selecting faults from a pictorial schematic. Software interface faults to be entered randomly or as specified by instructor.

Faults:

Fault #	Description	Fault	CKT# or Circuit#	Wire Color
1	Alternator High Resistance	High Resistance	036	YEL/WHT
2	Battery Indicator Open	Open	904	LT GRN/RED
3	Ignition Switch Power	Open	037	YEL
4	Alternator Open	Open	036	YEL/WHT

3.1 FAULT INSERTION VIA MANUAL SWITCHES

A series of manual switches to be included for inserting realistic faults into the system. The manual switches to be located in back of trainer and mounted in plastic enclosure.

FAULT INSERTION VIA LOCAL COMPUTER

Faults to be entered via the serial communications port of a single computer. Faults to be entered using a software interface (installed on the computer hard drive). Includes proprietary serial cable to connect to computer.

FAULT INSERTION VIA ATECH NETWORK SYSTEM (ANS)

Connection to the LAN is achieved with an optional ANS (ATech Network System). The ANS is a 16-port Serial Hub with standard CAT5 cable. Requires an Ethernet connection from the serial hub to the LAN. Software interface to be installed on any LAN computer.

POWER REQUIREMENTS

To include a 1 1/2HP electrical motor (115VAC/18Amp, single phase, 60HZ). To have a power cord for a North America (Nema 5-15) 110VAC/15Amp electrical outlet. Requires 12VDC automotive battery (not included).

To include an externally mounted power supply. Input voltage to the power supply is 115VAC/60Hz. To be a filtered and regulated power source with fused protection. To have a power cord for a North American (Nema 5-15) 100VAC/15Amp electrical outlet. A power switch with indicator light to control the power supply. Current Draw = 13.5 Amps.

Optional 220VAC/50Hz configuration available.

BATTERY/STARTING/CHARGING COURSEWARE (MODEL 815)

All items to be a complete courseware package and to include a photocopy site license to allow distribution of student manual. Courseware presented in Adobe PDF file format on CD-Rom.

STUDENT MANUAL

The courseware to include a Student Manual containing worksheets written specifically for use with the ATech Charging System Trainer, Reference Book, and Service Manual Information.

The units of instruction to be based on NATEF tasks. The Battery, Starting, and Charging Activities to include:

1. Program Overview
2. Battery Description
3. Battery Diagnosis and Testing
4. Battery Drain Testing
5. Battery Charging/Jump Starting
6. Battery Maintenance
7. Starting System Description & Operation
8. Starting System Diagnosis & Repair
9. Starter Bench Tests/Removal & Installation
10. Charging System Description & Operation
11. Charging System Diagnosis & Repair
12. Generator Bench Tests
13. Generator Service

NATEF TASK RECORD KEEPING SHEET

The courseware to include a NATEF Task Record Keeping Sheet to facilitate the instructor in recording the progress of each student as NATEF tasks are completed.

INSTRUCTOR GUIDE

The courseware to include an Instructor Guide to assist in management of the program material. The Instructor Guide to provide product information and answers.

SERVICE MANUAL INFORMATION

The courseware to include the appropriate manufacturer's Service Manual Information. The Service Manual Information to be used during student activities and system diagnosis.

SPECIFICATION "E"

LIGHTING SYSTEM TRAINER – FAULTED (MODEL 821F)

This trainer to be part of an electrical systems program to present the live operation and study of Lighting Systems. The program to provide courseware (Model 825) for use by students and instructors.

CONSTRUCTION

The trainer to be constructed of laminated plywood. The front panel to be lexan with 2nd surface graphics. The supporting legs to be made from square steel tubing.

COMPONENTS

The trainer to use actual new-model vehicle components and connectors.

To Include:

- Brake Light Switch
- Head Lights
- Parking Lights
- License Plate Light
- Headlamp Switch
- Turn Signal Lights/Flasher
- Side Marker Lights
- Hazard Lights/Flasher
- High/Low Beam Switch
- Fuse Block
- Wiring Harness
- Power Supply Posts
- Back Up Lights
- Tail Stop Lights

TRAINER OPERATION

The trainer to feature actual Lighting System operation. The trainer to be capable of connecting to a 12VDC automotive battery (not included) or power supply (not included).

SYSTEM DIAGNOSTICS

The trainer to provide an advanced level of instruction by duplicating actual on-vehicle troubleshooting procedures. The trainer to use actual vehicle wire colors to be compatible with wiring diagrams. The trainer to be capable of actual service manual test procedures.

FAULT INSERTION

Faults to be inserted via manual switches, local computer or ATech Network System (ANS). Software interface allows hard and intermittent faults to be entered by selecting faults from a pictorial schematic. Software interface faults to be entered randomly or as specified by instructor.

Faults:

Fault #	Description	Fault	CKT# or Circuit#	Wire Color
1	Headlamp Power	Open	640	ORN
2	Power from Ignition Switch	Open	004	RED
3	Power from Headlight Switch	Open	109	BRN
4	Left Turn Inoperable	Open	014	LT BLU
5	Turn Flasher Power	Open	075	DK BLU
6	RH Tail/Stop Turn Light Inoperable	Open	019	DK GRN

FAULT INSERTION VIA MANUAL SWITCHES

A series of manual switches to be included for inserting realistic faults into the system. The manual switches to be located in back of trainer and mounted in plastic enclosure.

FAULT INSERTION VIA LOCAL COMPUTER

Faults to be entered via the serial communications port of a single computer. Faults to be entered using a software interface (installed on the computer hard drive). Includes proprietary serial cable to connect to computer.

FAULT INSERTION VIA ATECH NETWORK SYSTEM (ANS)

Connection to the LAN is achieved with an optional ANS (ATech Network System). The ANS is a 16-port Serial Hub with standard CAT5 cable. Requires an Ethernet connection from the serial hub to the LAN. Software interface to be installed on any LAN computer.

POWER REQUIREMENTS

Requires 12VDC automotive battery (not included) or 12VDC/25Amp power supply (not included).

To include an externally mounted power supply. To be a filtered and regulated power source with fused protection. To have a power cord for a North America (Nema 5-15) 110VAC/15Amp electrical outlet. A power switch with indicator light to control the power supply. Current Draw = .5 Amps.

Optional 220VAC/50Hz configuration available.

OPERATIONS MANUAL

To provide instructor with Trainer Orientation, Start-up Procedures, Equipment Operation, Maintenance and Service Information.

LIGHTING/INSTRUMENT PANEL COURSEWARE (MODEL 825)

All items to be a complete courseware package and to include a photocopy site license to allow distribution of student manual. Courseware presented in Adobe PDF file format on CD-Rom.

STUDENT MANUAL

The courseware to include a Student Manual containing worksheets written specifically for use with the ATech Lighting and Instrumentation Trainers and Service Manual Information.

The units of instruction to be based on NATEF tasks. The Lighting and Instrumentation Program Activities to include:

1. Program Overview
2. Exterior Lighting System
3. Headlight System Diagnosis
4. Headlight Aiming
5. Halogen Bulb Replacement
6. Exterior Light Systems Diagnosis
7. Back-Up Lights
8. Instrument Panel
9. Instrument Panel Diagnosis – Circuit ID
10. Instrument Panel Diagnosis – System Tests
11. Instrument Panel On-Vehicle Service

NATEF TASK RECORD KEEPING SHEET

The courseware to include a NATEF Task Record Keeping Sheet to facilitate the instructor in recording the progress of each student as NATEF tasks are completed.

INSTRUCTOR GUIDE

The courseware to include an Instructor Guide to assist in management of the program material. The Instructor Guide to provide product information and answers.

SERVICE MANUAL INFORMATION

The courseware to include the appropriate manufacturer's Service Manual Information. The Service Manual Information to be used during student activities and system diagnosis.

SPECIFICATION “F”

GM OBD II SYSTEM TRAINER (MODEL 2651/60)

This trainer to be part of a complete program to present the “real world” operation and study of GM OBD II Systems. The trainer to present an actual OBD II Powertrain Control System used on new model GM vehicles. The program to provide courseware (Model 2655) for use by students and instructors.

CONSTRUCTION

The trainer cabinet to be constructed of laminated plywood. The front panel to be lexan with 2nd surface graphics.

COMPONENTS

Note: On-trainer component labeling reflects new industry standardization according to SAE specification J1930.

The trainer to use actual vehicle components and connectors.

To Include:

- Powertrain Control Module (PCM) Light
- Coolant Temperature Sensor (ECT) w/Selection Knob Light
- Intake Air Temperature (IAT) Sensor w/Selection Knob Mo
- Throttle Body
- Throttle Position (TP) Sensor
- Upstream Heated Oxygen Sensor (HO2S11)
- Downstream Heated Oxygen Sensor (HO2S12)
- Manual Fuel Trim Pot Light
- Mass Air Flow (MAF) Sensor w/Engine Load Knob w/Indicator Light
- Manifold Pressure Sensor
- Knock Sensor (KS) w/Knock Signal Switch
- Ignition Switch w/LED Indicator
- Transaxle Range Switch
- Brake On/Off Switch w/LED Indicator
- A/C Request Switch w/LED Indicator
- A/C Pressure Switch
- Oil Pressure Switch
- Fuel Pump
- Fuel Pump Relay w/Indicator Light
- Fuel Pump Test connector
- Fuel Injectors
- Fuel Rail
- Transparent Fuel Tank Up)
- Idle Air Control (IAC) Valve (DLC)
- MPH/KPH Switch
- Canister Purge Solenoid (EVAP) & Indicator Light
- EVAP Vent Solenoid & Indicator Light
- Ignition Control (IC) w/Module & IC Indicators
- Transaxle Solenoids TCC PWM, TCC, SHIFT A, SHIFT B, (Indicator Lights)
- EGR Solenoid w/Indicator Light
- A/C Clutch Relay w/Indicator Light
- High Cooling Fan Relay w/Indicator Light
- Low Cooling Fan Relay
- Malfunction Indicator (MIL) Light
- Hot Light
- Generator Light
- Low Oil Light
- Change Oil Light
- Upstream HEGO LED Bar-graph
- Downstream HEGO LED Bar-graph
- Digital Vehicle Speed Display
- Digital RPM Display
- Fuse Block
- System Ground
- BAT Positive Jack
- System Power Switch w/LED Indicator
- Cigarette Lighter (For Scan Tool Hook-Up)
- OBD II Standard Data Link Connector

All automotive components to be new stock purchased directly from a manufacturer authorized dealer.

TRAINER OPERATION

The trainer to use an actual “out of vehicle” OBD II Powertrain Control Module which responds and operates as in the automobile. The OBD II Powertrain Control Demonstration Board to be capable of:

Transaxle Control:

- Realistic electronic control of shift solenoids
- Realistic up-shifting based on vehicle speed, gear selection, & throttle position
- Realistic Torque Converter Clutch solenoid operation including apply/release & rate control solenoids
- Downshift during Full Throttle
- Realistic manual downshifting
- Realistic coast-down downshift

Engine Control:

- Actual emission control operation based on sensor inputs
- Actual sequential injector operation
- Actual fuel pump operation
- Actual fuel delivery
- Flooded engine clearing during start-up
- RPM increase during A/C Demand
- Knock retard of spark (observable on scan tool)
- Low temperature “choke” action
- Actual engine load operation
- High speed injector cut-out
- Fuel Trim Control

OBD II DEMONSTRATIONS

- Perform GM OBD II Drive Cycle
- Normal Catalytic Converter Monitoring System Operation
- Failed Catalytic Converter Monitoring System Operation
- Normal Closed Loop Fuel Control Oxygen Sensor Operation
- Slow Response Rate Fuel Control Oxygen Sensor Operation
- Normal Oxygen Sensor Warm-up Operation
- Normal Oxygen Sensor Heater Monitor Operation
- Shift in A/T Ratio Control Point
- Normal Short Term/Long Term Fuel Trim Operation
- Normal EGR Monitor Operation
- No Feedback EGR Operation
- Type “A” CAT Converter Damage Misfire
- Normal Comprehensive Component Monitoring
- Selected failure of Comprehensive Component Monitoring
- Normal Evaporative System Monitor Operation
- Catalytic Converter “Warm-up” Operation
- Catalytic Converter “Punch Through” Operation

SYSTEM DIAGNOSTICS

To provide an advanced level of instruction by duplicating actual on-vehicle problems. Students are offered a realistic troubleshooting experience.

FAULT BOARD

A series of fault switches to be included for inserting realistic faults into the system. The fault board to be constructed of lexan with 2nd surface graphics. The fault switches to be located behind a lockable door accessible by the instructor.

Faults:

- ECT Incorrect Resistance
- IAT Sensor Open
- IAT Harness Short
- HO2S #11 Shorted
- HO2S #11 Open Harness
- HO2S #11 Slow Response
- CAT Monitor #12 Fast Response
- CAT Damage Misfire On
- EGR Harness Open No Feedback

Engine Protection Demo
Over Rev Inj Shutoff

TEST PROCEDURES

The procedures used to diagnose trainer faults to be the same as performed on a vehicle. Students can make use of manufacturer diagnostic charts and other information presented in service manuals.

The system controller to perform self-diagnosis and display trouble codes. The trainer to be capable of being studied and tested using actual service test equipment such as digital meters, breakout boxes, oscilloscopes and OBD II standard scan tools including those having bi-directional and snap shot functions.

DRY OPTION

This ATech Option provides a completely operational Powertrain Control Module engine trainer without the mess and expense of a “wet” system. The trainer may be purchased as a “dry” unit.

A simulation board replaces the fuel tank, fuel rail, fuel pump, fuel pressure regulator, and fuel injectors. The “dry” system features effective demonstration of sequential injector operation, visual pump operation indicator, actual fuel injector signals available for back probing, visual indication of injector pulse width, allows for faster setup and teardown, and easy conversion to “wet” system if desired later.

IGNITION INTERFACE

The trainer to be capable of connecting to an approved Computer Controlled Ignition (C3I) System Trainer. To offer a realistic study of powertrain control with a fully operational ignition system and to provide accurate probing of ignition circuits. The trainer to provide realistic RPM control of the ignition system based on changes of throttle position.

POWER REQUIREMENTS

To include an internally mounted switching power supply. Input voltage to the power supply is switchable between 115VAC/60Hz and 230VAC/50Hz via a slider switch located on the power supply. To be a filtered and regulated power source with fused protection. To have a power cord for a North America (Nema 5-15) 110VAC/15Amp electrical outlet. A power switch with indicator light to control the power supply. Current Draw = 1.7 Amps.

Optional 220VAC/50Hz configuration available.

OPERATIONS MANUAL

To provide instructor with Trainer Orientation, Start-Up Procedures, Equipment Operation, Maintenance and Service Information.

GM OBD II SYSTEM COURSEWARE (MODEL 2655)

All items to be a complete courseware package and to include a photocopy site license to allow distribution of student manual. Courseware presented in Adobe PDF file format on CD-Rom.

STUDENT MANUAL

The courseware to include a Student Manual containing worksheets written specifically for use with the ATech GM OBD II Trainer and Service Manual Information.

The units of instruction to be based on NATEF tasks. The GM OBD II Program Activities to include:

- | | |
|-------------------------------------|---|
| 1. Program Overview | 16. Idle Air Control (IAC) |
| 2. Using Service Information | 17. Ignition Control Module |
| 3. Scan Tool Usage | 18. Exhaust Gas Recirculation (EGR) |
| 4. Crank & Cam Sensors | 19. Evaporative Emission Control (EVAP) |
| 5. Mass Air Flow (MAF) Sensor | 20. Air Conditioning/Cooling Fans |
| 6. Oxygen Sensors | 21. Transaxle Control |
| 7. Temperature Sensors | 22. On Board Diagnostics II - Part 1 |
| 8. Pressure Sensor | 23. On Board Diagnostics II - Part 2 |
| 9. Position Sensors | 24. On Board Diagnostics II - Part 3 |
| 10. Knock Sensors | 25. Comprehensive Component Monitor |
| 11. Vehicle Speed Sensor | 26. Heated Oxygen Sensor (HO2S) Monitor |
| 12. Input Switches | 27. Catalyst Monitor |
| 13. Miscellaneous Inputs | 28. Misfire Monitor |
| 14. Powertrain Control Module (PCM) | 29. Fuel Trim Monitor |
| 15. Fuel Supply & Delivery | 30. Exhaust Gas Recirculation (EGR) Monitor |
| | 31. Evaporative System (EVAP) Monitor |

NATEF TASK RECORD KEEPING SHEETS

The courseware to include NATEF Task Record Keeping Sheets to facilitate the instructor in recording the progress of each student as NATEF tasks are completed.

INSTRUCTOR GUIDE

The courseware to include an Instructor Guide to assist in management of the program material. The Instructor Guide to include product information and answers.

SERVICE MANUAL INFORMATION

The courseware to include the appropriate manufacturer's Service Manual Information. The Service Manual Information to be used during student activities and system diagnosis.

ACCESSORIES

To Include:

- Heavy duty custom fitted vinyl cover, providing trainer protection when not in use
- Calibration test fluid, 1 gallon

SPECIFICATION "G"

GM COMPUTER CONTROLLED COIL IGNITION (C3I) SYSTEM TRAINER – FAULTED (MODEL 1771F)

This trainer to be part of a program to present the live operation and study of Electronic Ignition (EI) "Distributorless" Systems. The trainer to present Computer Controlled Coil Ignition (C3I) Systems as used on many GM vehicles. The program to provide courseware (Model 1775) and optional diagnostic equipment (Model 1781) for use by students and instructors.

CONSTRUCTION

The trainer cabinet is constructed of laminated plywood. The front panel is lexan with 2nd surface graphics.

The Artwork to Include:

- Color Coded Component Identification
- Connector Views
- Circuit Identification with Probe Points

COMPONENTS

Note: On-trainer component labeling reflects new industry standardization according to SAE specification J1930.

The trainer to use selected actual vehicle components and connectors.

To Include:

- Electronic Ignition (EI) Module
- Coil Pack
- Cam Position (CMP) Sensor
- Cam Sprocket
- Dual Crank Position (CKP) Sensor
- 3X and 18X Crank Interrupter Rings
- Off Vehicle C3I System Harness
- Correct Wire Color Coding
- Spark Plugs
- 8mm Plug Wires
- Power Switch/Indicator LED
- RPM Control Knob
- Circuit Test Points – B+, GRD, CAM, FUEL CTRL, SPARK REF, BYPASS, IC
- Built in 12 Volt Power Supply

All automotive components to be new stock purchased directly from a manufacturer authorized dealer.

TRAINER OPERATION

The trainer to provide actual computer controlled coil ignition system operation.

The Trainer to Feature:

- Observable Spark Plug Operation
- Adjustable Shutter Wheel Speed (0 – 3000 RPM)
- Fast Start Operation (3X vs 18X)
- Option to view control signals using an oscilloscope
- Option to display spark timing using an inductive timing light

SAFETY SHIELD

To be a clear acrylic shield covering all high voltage (secondary) components and reluctor.

To provide safe operation of the trainer.

SYSTEM DIAGNOSTICS

To provide an advanced level of instruction by duplicating actual on-vehicle troubleshooting procedures. Students are offered a realistic diagnostic experience:

FAULT INSERTION

Faults to be inserted via manual switches, local computer or ATech Network System (ANS). Software interface allows hard and intermittent faults to be entered by selecting faults from a pictorial schematic. Software interface faults to be entered randomly or as specified by instructor.

Faults:

Fault #	Description	Fault	CKT# or Circuit#	Wire Color
1	ICM Power	Open	839	PNK
2	CAM/Crank Ground	Open	664	WHT/BLK
3	18X Signal	Open	573	YEL
4	Sync Signal	Short To Ground	800	LT BLU/WHT
5	18X Signal	Short To Voltage	573	YEL
6	CAM Signal	Open	633	BRN/WHT

FAULT INSERTION VIA MANUAL SWITCHES

A series of manual switches to be included for inserting realistic faults into the system. The manual switches to be located in back of trainer and mounted in plastic enclosure.

FAULT INSERTION VIA LOCAL COMPUTER

Faults to be entered via the serial communications port of a single computer. Faults to be entered using a software interface (installed on the computer hard drive). Includes proprietary serial cable to connect to computer.

FAULT INSERTION VIA ATECH NETWORK SYSTEM (ANS)

Connection to the LAN is achieved with an optional ANS (ATech Network System). The ANS is a 16-port Serial Hub with standard CAT5 cable. Requires an Ethernet connection from the serial hub to the LAN. Software interface to be installed on any LAN computer.

POWERTRAIN INTERFACE

The trainer to be capable of connecting to an approved Powertrain Control System Trainer.
To offer a realistic study of ignition operation as part of powertrain control.

The trainer to be capable of realistic RPM speed based on throttle position when connected to the Powertrain Control System Trainer.

POWER REQUIREMENTS

To include an internally mounted switching power supply. Input voltage to the power supply is switchable between 115VAC/60Hz and 230VAC/50Hz via a slider switch located on the power supply. To be a filtered and regulated power source with fused protection. To have a power cord for a North America (Nema 5-15) 110VAC/15Amp electrical outlet. A power switch with indicator light to control the power supply. Current Draw = 1.5 Amps.

Optional 220VAC/50Hz configuration available.

OPERATIONS MANUAL

To provide instructor with Trainer Orientation, Start-up Procedures, Equipment Operation, Maintenance and Service Information.

*GM COMPUTER CONTROLLED COIL IGNITION (C3I) SYSTEM COURSEWARE
(MODEL 1775)*

All items to be a complete courseware package and to include a photocopy site license to allow distribution of student manual. Courseware presented in Adobe PDF file format on CD-Rom.

STUDENT MANUAL

The courseware to include a Student Manual containing worksheets written specifically for use with the ATech GM C3I Trainer, Reference Book, and Service Manual Information.

The units of instruction to be based on NATEF tasks. The C3I Program Activities to include:

- | | |
|--|--|
| 1. Program Overview | 8. Using the Service Manual |
| 2. Secondary System | 9. Sensor Adjustment |
| 3. Primary Control | 10. Ignition System Schematics |
| 4. Triggering System-Magnetic Sensor/Reluctor Type | 11. Component Resistance Measurements |
| 5. Triggering System - Hall Effect Type | 12. System Voltage Measurements |
| 6. C3I - Fast Start | 13. Misfire Diagnosis |
| 7. Module/ECM Interface | 14. Powertrain Control & C3I Operation |

NATEF TASK RECORD KEEPING SHEETS

The courseware to include NATEF Task Record Keeping Sheets to facilitate the instructor in recording the progress of each student as NATEF tasks are completed.

INSTRUCTOR GUIDE

The courseware to include an Instructor Guide to assist in management of the program material. The Instructor Guide to provide product information and answers.

SERVICE MANUAL INFORMATION

The courseware to include the appropriate manufacturer's Service Manual Information. The Service Manual Information to be used during student activities and system diagnosis.

SPECIFICATION “H”

AIR CONDITIONING W/AUTOMATIC CLIMATE CONTROL TRAINER (R-134a) (MODEL 1351)

This trainer to be part of a climate control program to present the live operation of a R-134a Air Conditioning System with Automatic Electronic Dual Zone Climate Controls (L26). The program to provide courseware for use by students and instructors.

CONSTRUCTION

The trainer frame to be constructed of square tubing. The trainer to be portable with rolling casters. To include safety shields over electric motor pulley, belt, electric cooling fans, and blower inlet. Other components are presented as typically found on an actual vehicle.

COMPONENTS

The trainer to use actual new model vehicle components and other necessary hardware.

To Include:

- A/C Lines & Fittings
- Compressor
- Condenser w/ Internal Filter/Dryer
- Evaporator
- Liquid Line Valve
- Blower Motor
- Blower Motor Processor
- OBD II Standard DLC
- Electric Cooling Fans
- Fuse Block
- HVAC Control Module
- HVAC Plenum Assembly
- Ignition Switch/Indicator
- In-car Temp Sensor Select Switch
- Power on Indicator
- System Switches & Relays
- System Wiring Harness
- Test Points
- Ambient Temp Sensor
- In-car Temp Sensor
- Lower Left Air Temp Sensor
- Lower Right Air Temp Sensor
- Outside Air Temp Sensor
- Sunload Sensor Assembly
- Upper Left Air Temp Sensor
- Upper Right Air Temp Sensor
- Left Air Temp Actuator
- Mode Actuator
- Recirculation Actuator
- Right Air Temp Actuator

TRAINER OPERATION

The trainer capable of fully automatic dual zone climate control system operation. The automatic climate control system determines the appropriate air intake, discharge, locations, fan speed, and discharge air temperature according to the driver or passenger-selected temperature and information provided by system sensors.

The in-car air temp sensor capable of being overridden via a temperature select switch, allowing change in sensor input.

The trainer to be capable of:

Refrigeration:

- System Recovery, Recycling & Recharging
- Refrigeration System Diagnosis & Testing
- Realistic Component Service

Air Management:

- Actuator Tests
- Mode and Temp Door Operation
- Sensor Tests
- Electronic HVAC Control Tests
- Blower Motor Tests

Engine Cooling:

- Cooling Fan Diagnosis

Diagnostics:

- A Tech 2 scan tool, when connected, will read HVAC-related DTCs and Data and give Bi-Directional HVAC output control.

SYSTEM DIAGNOSTICS

The trainer to provide an advanced level of instruction by duplicating actual on-vehicle faults and troubleshooting procedures. The trainer to use actual vehicle wire colors to be compatible with wiring diagrams. The trainer to be capable of actual service manual test procedures.

FAULT INSERTION

To Include:

Refrigeration Faults:

- To use a liquid line refrigerant control valve. To provide normal operation, and to demonstrate the effects of refrigerant flow restriction or blockage.

Electrical Faults:

- To be inserted via keypad, local computer, or ATech Network System (ANS). Software interface allows hard and intermittent faults to be entered by selecting faults from a pictorial schematic. Software interface faults to be entered randomly or as specified by instructor.

Electrical Faults:

Fault #	Description	Fault	CKT# or Circuit#	Wire Color
01	R. Upper Air Temp Sensor	Open	517	TN
02	L. Cooling Fan Power	High Resistance	504	WH
03	Blower Motor Power	Open	65	PU
04	Inside Air Temp Sensor	Short to Ground	734	D-GN
05	R. Cooling Fan Power	Open	409	L-BU
06	L. Cooling Fan Power	Short to Voltage	504	WH

FAULT INSERTION VIA KEYPAD

Realistic faults can be inserted via the keypad to provide troubleshooting practice.

FAULT INSERTION VIA LOCAL COMPUTER

Faults to be entered via the serial communications port of a single computer. Faults to be entered using a software interface (installed on the computer hard drive). Includes proprietary serial cable to connect to computer.

FAULT INSERTION VIA ATECH NETWORK SYSTEM (ANS)

Connection to the LAN is achieved with an optional ANS (ATech Network System). The ANS is a 16-port Serial Hub with standard CAT5 cable. Requires an Ethernet connection from the serial hub to the LAN. Software interface to be installed on any LAN computer.

POWER REQUIREMENTS

To include 220VAC/20Amp, single phase, 60HZ electric 5HP motor to drive compressor. To have a power cord for a North America (Nema 5-15) 220VAC/20Amp electrical outlet. Requires 12VDC automotive battery (not included). Current Draw = 19.6 Amps.

Optional 220VAC/50Hz configuration available.

OPERATIONS MANUAL

To provide instructor with Trainer Orientation, Start-up Procedures, Equipment Operation, Maintenance and Service Information.

AIR CONDITIONING/ELECTRONIC CLIMATE CONTROL COURSEWARE (MODEL 1351)

All items to be a complete courseware package and to include a photocopy site license to allow distribution of student manual. Courseware presented in Adobe PDF file format on CD-Rom.

STUDENT MANUAL

The courseware to include a Student Manual containing worksheets written specifically for use with the ATech Air Conditioning with Automatic Climate Control System Trainer, Reference Book, and Service Manual Information.

The units of instruction to be based on NATEF tasks. The Air Conditioning Program Activities to include:

- | | |
|---|---|
| 1. Program Overview | 11. Refrigerant System Recovery, Recycling & Recharging |
| 2. System Overview | 12. Cooling Fan Operation |
| 3. Principles of Refrigeration | 13. Cooling Fan Diagnosis |
| 4. Basic Refrigerant Cycle | 14. Air Distribution Overview |
| 5. Compressor & Control Components | 15. Air Distribution Controls |
| 6. Condenser and Evaporator | 16. Blower Controls |
| 7. Receiver Dryer/Accumulator Metering Components | 17. Automatic Climate Control Operation |
| 8. Safety Precautions & Environmental Concerns | 18. Automatic Climate Control Diagnosis |
| 9. Refrigerant System Tests | 19. Strategy Based Diagnosis |
| 10. Leak Detection | |

6.2 NATEF TASK RECORD KEEPING SHEET

The courseware to include a NATEF Task Record Keeping Sheet to facilitate the instructor in recording the progress of each student as NATEF tasks are completed.

INSTRUCTOR GUIDE

The courseware to include an Instructor Guide to assist in management of the program material. The Instructor Guide to provide product information and answers.

SERVICE MANUAL INFORMATION

The courseware to include the appropriate manufacturer's Service Manual Information. The Service Manual Information to be used during student activities and system diagnosis.

Note: The unit will be shipped with no refrigerant (outside the US). R-134a refrigerant must be acquired locally.

SPECIFICATION “I”

POWER WINDOWS TRAINER – FAULTED (MODEL 840F)

This trainer to be part of an electrical systems program to present the live operation and study of Power Windows Systems. The program to provide courseware (Model 865) for use by students and instructors.

CONSTRUCTION

The trainer to be constructed of laminated plywood. The front panel to be lexan with 2nd surface graphics. The supporting legs to be made from square steel tubing.

COMPONENTS

The trainer to use actual new-model vehicle components and connectors.

To Include:

- Window Motors (2)
- Master Switch
- Control Module
- Power Supply Posts
- 30 Amp Circuit Breaker
- Wiring Harness
- Passenger Side Switch

TRAINER OPERATION

The trainer to feature actual Power Windows Motor operation. The trainer to be capable of connecting to a 12VDC automotive battery (not included) or power supply (not included).

SYSTEM DIAGNOSTICS

The trainer to provide an advanced level of instruction by duplicating actual on-vehicle troubleshooting procedures. The trainer to use actual vehicle wire colors to be compatible with wiring diagrams. The trainer to be capable of actual service manual test procedures.

FAULT INSERTION

Faults to be inserted via manual switches, local computer or ATech Network System (ANS). Software interface allows hard and intermittent faults to be entered by selecting faults from a pictorial schematic. Software interface faults to be entered randomly or as specified by instructor.

Faults:

Fault #	Description	Fault	CKT or Circuit #	Wire Color
1	Master Switch Assembly Ground	Open	151	BLK
2	Master Switch LH Window Control	Open	136	BRN/WHT
3	Module Timer	Open	264	DK BLU
4	RH Front Switch Power	Open	376	PNK
5	RH Front Motor	Open	168	TAN
6	Circuit Breaker	Open	076	PNK

FAULT INSERTION VIA MANUAL SWITCHES

A series of manual switches to be included for inserting realistic faults into the system. The manual switches to be located in back of trainer and mounted in plastic enclosure.

FAULT INSERTION VIA LOCAL COMPUTER

Faults to be entered via the serial communications port of a single computer. Faults to be entered using a software interface (installed on the computer hard drive). Includes proprietary serial cable to connect to computer.

FAULT INSERTION VIA ATECH NETWORK SYSTEM (ANS)

Connection to the LAN is achieved with an optional ANS (ATech Network System). The ANS is a 16-port Serial Hub with standard CAT5 cable. Requires an Ethernet connection from the serial hub to the LAN. Software interface to be installed on any LAN computer.

POWER REQUIREMENTS

Requires 12VDC automotive battery (not included) or 12VDC/20Amp power supply (not included).

To include an externally mounted power supply. To be a filtered and regulated power source with fused protection. To have a power cord for a North America (Nema 5-15) 110VAC/15Amp electrical outlet. A power switch with indicator light to control the power supply.

Current Draw = .5 Amps.

Optional 220VAC/50Hz configuration available.

OPERATIONS MANUAL

To provide instructor with Trainer Orientation, Start-up Procedures, Equipment Operation, Maintenance and Service Information.

POWER ACCESSORIES COURSEWARE (MODEL 865)

All items to be a complete courseware package and to include a photocopy site license to allow distribution of student manual. Courseware presented in Adobe PDF file format on CD-Rom.

STUDENT MANUAL

The courseware to include a Student Manual containing worksheets written specifically for use with the ATech Power Windows, Power Door Locks and Power Seat Trainers, Reference Book, and Service Manual Information.

The units of instruction to be based on NATEF tasks. The Power Accessory Program Activities to include:

1. Program Overview
2. Electrical Diagnosis & Troubleshooting
3. Power Window - Description & Operation
4. Power Window - System Diagnosis & Testing
5. Power Window - Removal & Installation
6. Power Seat - Description & Operation
7. Power Seat - System Diagnosis & Testing
8. Power Seat - Removal & Installation
9. Power Locks - Description & Operation
10. Power Locks - System Diagnosis & Testing
11. Power Locks - Removal & Installation

NATEF TASK RECORD KEEPING SHEET

The courseware to include a NATEF Task Record Keeping Sheet to facilitate the instructor in recording the progress of each student as NATEF tasks are completed.

INSTRUCTOR GUIDE

The courseware to include an Instructor Guide to assist in management of the program material. The Instructor Guide to provide product information and answers.

SERVICE MANUAL INFORMATION

The courseware to include the appropriate manufacturer's Service Manual Information. The Service Manual Information to be used during student activities and system diagnosis.