



State of West Virginia
 Department of Administration
 Purchasing Division
 2019 Washington Street East
 Post Office Box 50130
 Charleston, WV 25305-0130

Request for Quotation

RFQ NUMBER
708EC006

PAGE
1

ADDRESS CORRESPONDENCE TO ATTENTION OF
**MICHAEL AUSTIN
 304-558-2402**

VENDOR

Company TRAFCON INDUSTRIES INC
 Address BL TEXACO RD
 City MECHANICSBURG State PA

SHIP TO

DIVISION OF HIGHWAYS
 EQUIPMENT DIVISION
 ROUTE 33
 BRUSHY FORK ROAD
 BUCKHANNON, WV
 26201 304-472-1750

DATE PRINTED	TERMS OF SALE	SHIP VIA	FOB	FREIGHT TERMS
10/31/2007	NET 30	OUR TRUCK	DEST.	PAID
BID OPENING DATE: 11/21/2007		BID OPENING TIME 01:30PM		

LINE	QUANTITY	UOP	CAT NO	ITEM NUMBER	UNIT PRICE	AMOUNT
0001	1	EA		550-96	3960.00	3960.00
<p>TRAILER MOUNTED SOLAR POWERED ELECTRIC ARROWBOARD</p> <p>OPEN END CONTRACT</p> <p>PROVIDE TRAILER MOUNTED SOLAR POWERED ELECTRIC ARROWBOARD PER THE ATTACHED SPECIFICATIONS.</p> <p>A MANDATORY PRE-BID CONFERENCE SHALL BE HELD AT THE PURCHASING DIVISION'S CONFERENCE ROOM, 2019 WASHINGTON STREET, EAST, CHARLESTON, WV 25305, ON 11/14/07 AT 10:00 A.M. FAILURE TO ATTEND THE PRE-BID CONFERENCE WILL RESULT IN BID DISQUALIFICATION.</p> <p>EXHIBIT 2</p> <p>LIFE OF CONTRACT: THIS CONTRACT BECOMES EFFECTIVE ON AND EXTENDS FOR A PERIOD OF ONE (1) YEAR OR UNTIL SUCH "REASONABLE TIME" THEREAFTER AS IS NECESSARY TO OBTAIN A NEW CONTRACT OR RENEW THE ORIGINAL CONTRACT. THE "REASONABLE TIME" PERIOD SHALL NOT EXCEED TWELVE (12) MONTHS. DURING THIS "REASONABLE TIME" THE VENDOR MAY TERMINATE THIS CONTRACT FOR ANY REASON UPON GIVING THE DIRECTOR OF PURCHASING THIRTY (30) DAYS WRITTEN NOTICE.</p> <p>UNLESS SPECIFIC PROVISIONS ARE STIPULATED IN THIS CONTRACT DOCUMENT, THE TERMS, CONDITIONS, AND PRICING SET HEREIN ARE FIRM FOR THE LIFE OF THE CONTRACT.</p> <p>RENEWAL: THIS CONTRACT MAY BE RENEWED UPON THE MUTUAL WRITTEN CONSENT OF THE SPENDING UNIT AND VENDOR,</p>						

SEE REVERSE SIDE FOR TERMS AND CONDITIONS

SIGNATURE [Signature] TELEPHONE 717 691 8007 DATE 11/17/07

TITLE President FEIN 23-2289978 ADDRESS CHANGES TO BE NOTED ABOVE

WHEN RESPONDING TO RFQ, INSERT NAME AND ADDRESS IN SPACE ABOVE LABELED 'VENDOR'

**GENERAL TERMS & CONDITIONS
REQUEST FOR QUOTATION (RFQ) AND REQUEST FOR PROPOSAL (RFP)**

1. Awards will be made in the best interest of the State of West Virginia.
2. The State may accept or reject in part, or in whole, any bid.
3. All quotations are governed by the *West Virginia Code* and the *Legislative Rules* of the Purchasing Division.
4. Prior to any award, the apparent successful vendor must be properly registered with the Purchasing Division and have paid the required \$125.00 registration fee.
5. All services performed or goods delivered under State Purchase Orders/Contracts are to be continued for the term of the Purchase Order/Contract, contingent upon funds being appropriated by the Legislature or otherwise being made available. In the event funds are not appropriated or otherwise available for these services or goods, this Purchase Order/Contract becomes void and of no effect after June 30.
6. Payment may only be made after the delivery and acceptance of goods or services.
7. Interest may be paid for late payment in accordance with the *West Virginia Code*.
8. Vendor preference will be granted upon written request in accordance with the *West Virginia Code*.
9. The State of West Virginia is exempt from federal and state taxes and will not pay or reimburse such taxes.
10. The Director of Purchasing may cancel any Purchase Order/Contract upon 30 days written notice to the seller.
11. The laws of the State of West Virginia and the *Legislative Rules* of the Purchasing Division shall govern all rights and duties under the Contract, including without limitation the validity of this Purchase Order/Contract.
12. Any reference to automatic renewal is hereby deleted. The Contract may be renewed only upon mutual written agreement of the parties.
13. **BANKRUPTCY:** In the event the vendor/contractor files for bankruptcy protection, this Contract may be deemed null and void, and terminated without further order.
14. **HIPAA Business Associate Addendum** - The West Virginia State Government HIPAA Business Associate Addendum (BAA), approved by the Attorney General, and available online at the Purchasing Division's web site (<http://www.state.wv.us/admin/purchase/vrc/hipaa.htm>) is hereby made part of the agreement. Provided that, the Agency meets the definition of a Covered Entity (45 CFR §160.103) and will be disclosing Protected Health Information (45 CFR §160.103) to the vendor.

INSTRUCTIONS TO BIDDERS

1. Use the quotation forms provided by the Purchasing Division.
2. **SPECIFICATIONS:** Items offered must be in compliance with the specifications. Any deviation from the specifications must be clearly indicated by the bidder. Alternates offered by the bidder as **EQUAL** to the specifications must be clearly defined. A bidder offering an alternate should attach complete specifications and literature to the bid. The Purchasing Division may waive minor deviations to specifications.
3. Complete all sections of the quotation form.
4. Unit prices shall prevail in cases of discrepancy.
5. All quotations are considered F.O.B. destination unless alternate shipping terms are clearly identified in the quotation.
6. **BID SUBMISSION:** All quotations must be delivered by the bidder to the office listed below prior to the date and time of the bid opening. Failure of the bidder to deliver the quotations on time will result in bid disqualifications.

SIGNED BID TO:

Department of Administration
Purchasing Division
2019 Washington Street East
Post Office Box 50130
Charleston, WV 25305-0130



State of West Virginia
 Department of Administration
 Purchasing Division
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ADDRESS CORRESPONDENCE TO ATTENTION OF
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 304-558-2402**

RFQ COPY
 TYPE NAME/ADDRESS HERE

**DIVISION OF HIGHWAYS
 EQUIPMENT DIVISION
 ROUTE 33
 BRUSHY FORK ROAD
 BUCKHANNON, WV
 26201 304-472-1750**

DATE PRINTED	TERMS OF SALE	SHIP VIA	FOB	FREIGHT TERMS
10/31/2007				

BID OPENING DATE: **11/27/2007** BID OPENING TIME **01:30PM**

LINE	QUANTITY	UOP	CAT NO	ITEM NUMBER	UNIT PRICE	AMOUNT
<p>SUBMITTED TO THE DIRECTOR OF PURCHASING THIRTY (30) DAYS PRIOR TO THE EXPIRATION DATE. SUCH RENEWAL SHALL BE IN ACCORDANCE WITH THE TERMS AND CONDITIONS OF THE ORIGINAL CONTRACT AND SHALL BE LIMITED TO TWO (2) ONE (1) YEAR PERIODS.</p> <p>CANCELLATION: THE DIRECTOR OF PURCHASING RESERVES THE RIGHT TO CANCEL THIS CONTRACT IMMEDIATELY UPON WRITTEN NOTICE TO THE VENDOR IF THE COMMODITIES AND/OR SERVICES SUPPLIED ARE OF AN INFERIOR QUALITY OR DO NOT CONFORM WITH THE SPECIFICATIONS OF THE BID AND CONTRACT HEREIN.</p> <p>OPEN MARKET CLAUSE: THE DIRECTOR OF PURCHASING MAY AUTHORIZE A SPENDING UNIT TO PURCHASE ON THE OPEN MARKET, WITHOUT THE FILING OF A REQUISITION OR COST ESTIMATE, ITEMS SPECIFIED ON THIS CONTRACT FOR IMMEDIATE DELIVERY IN EMERGENCIES DUE TO UNFORESEEN CAUSES (INCLUDING BUT NOT LIMITED TO DELAYS IN TRANSPORTATION OR AN UNANTICIPATED INCREASE IN THE VOLUME OF WORK).</p> <p>QUANTITIES: QUANTITIES LISTED IN THE REQUISITION ARE APPROXIMATIONS ONLY, BASED ON ESTIMATES SUPPLIES BY THE STATE SPENDING UNIT. IT IS UNDERSTOOD AND AGREED THAT THE CONTRACT SHALL COVER THE QUANTITIES ACTUALLY ORDERED FOR DELIVERY DURING THE TERM OF CONTRACT, WHETHER MORE OR LESS THAN THE QUANTITIES SHOWN.</p> <p>ORDERING PROCEDURE: SPENDING UNIT(S) SHALL ISSUE A WRITTEN EQUIPMENT CONTRACT ORDER (FORM NUMBER WV-35) FOR COMMODITIES COVERED BY THIS CONTRACT. THE ORIGINAL WV-35 MUST BE SENT TO THE PURCHASING DIVISION OF THE DEPARTMENT OF ADMINISTRATION. AFTER APPROVAL AND ENCUMBRANCE, ONE COPY OF THE PURCHASE ORDER WILL BE RETURNED TO THE SPENDING UNIT AND ONE COPY FORWARDED TO THE VENDOR AS AUTHORIZATION FOR SHIPMENT. NO ORDER IS VALID UNLESS APPROVED AND ENCUMBERED</p>						

SEE REVERSE SIDE FOR TERMS AND CONDITIONS

SIGNATURE <i>[Signature]</i>	TELEPHONE 717 691 8007	DATE 11/11/07
TITLE PRES	FEIN 23-2289978	ADDRESS CHANGES TO BE NOTED ABOVE

WHEN RESPONDING TO RFQ, INSERT NAME AND ADDRESS IN SPACE ABOVE LABELED 'VENDOR'



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PURCHASER

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<p>BY THE PURCHASING DIVISION.</p> <p>BANKRUPTCY: IN THE EVENT THE VENDOR/CONTRACTOR FILES FOR BANKRUPTCY PROTECTION, THIS CONTRACT IS AUTOMATICALLY NULL AND VOID, AND IS TERMINATED WITHOUT FURTHER ORDER.</p> <p>REV. 9/98</p> <p>EXHIBIT 6</p> <p>PRICE ADJUSTMENT PROVISION: THE STATE OF WEST VIRGINIA WILL CONSIDER BIDS THAT CONTAIN PROVISIONS FOR PRICE ADJUSTMENTS PRIOR TO THE ORIGINAL EXPIRATION OF THE CONTRACT, PROVIDED THAT SUCH PRICE ADJUSTMENT COVERS BOTH UPWARD AND DOWNWARD MOVEMENT OF THE COMMODITY PRICE, AND THAT ADJUSTMENT IS BASED ON THE "PASS THROUGH" INCREASE OR DECREASE OF RAW MATERIALS AND/OR LABOR, WHICH MAKE UP ALL OR A SUBSTANTIAL PART OF A PRODUCT. ADJUSTMENTS ARE TO BE BASED UPON AN ACTUAL DOLLAR FIGURE, NOT A PERCENTAGE. ALL PRICE ADJUSTMENT REQUESTS MUST BE SUBSTANTIATED IN A MANNER ACCEPTABLE TO THE DIRECTOR PURCHASING, E.G. GOVERNMENTAL BENCH MARKS, GENERAL MARKET INCREASE, PUBLISHED PRICE LISTS. SUCH REQUESTS FOR AN INCREASE SHOULD BE RECEIVED IN WRITING BY THE DIRECTOR OF PURCHASING AT LEAST 30 DAYS IN ADVANCE OF THE EFFECTIVE DATE OF THE INCREASE. ANY TIME THE VENDOR REQUESTS A PRICE ADJUSTMENT, THE PURCHASING DIVISION MAY EITHER ACCEPT THE PRICE ADJUSTMENT AND AMEND THE CONTRACT ACCORDINGLY OR REJECT THE ADJUSTMENT IN ITS ENTIRETY AND CANCEL THE CONTRACT.</p> <p>EXHIBIT 10</p> <p style="text-align: right;">REQUISITION NO.: 708EC006</p>						

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BID OPENING DATE: 11/27/2007 BID OPENING TIME 01:30PM

LINE	QUANTITY	UOP	CAT NO	ITEM NUMBER	UNIT PRICE	AMOUNT
<p>ADDENDUM ACKNOWLEDGEMENT</p> <p>I HEREBY ACKNOWLEDGE RECEIPT OF THE FOLLOWING CHECKED ADDENDUM(S) AND HAVE MADE THE NECESSARY REVISIONS TO MY PROPOSAL, PLANS AND/OR SPECIFICATION, ETC.</p> <p>ADDENDUM NO.'S:</p> <p>NO. 1 X</p> <p>NO. 2</p> <p>NO. 3</p> <p>NO. 4</p> <p>NO. 5</p> <p>I UNDERSTAND THAT FAILURE TO CONFIRM THE RECEIPT OF THE ADDENDUM(S) MAY BE CAUSE FOR REJECTION OF BIDS.</p> <p>VENDOR MUST CLEARLY UNDERSTAND THAT ANY VERBAL REPRESENTATION MADE OR ASSUMED TO BE MADE DURING ANY ORAL DISCUSSION HELD BETWEEN VENDOR'S REPRESENTATIVES AND ANY STATE PERSONNEL IS NOT BINDING. ONLY THE INFORMATION ISSUED IN WRITING AND ADDED TO THE SPECIFICATIONS BY AN OFFICIAL ADDENDUM IS BINDING.</p> <p>..... SIGNATURE Trafcon Ind. Inc. COMPANY</p>						

SEE REVERSE SIDE FOR TERMS AND CONDITIONS			
SIGNATURE	TELEPHONE	DATE	
<i>[Signature]</i>	717 691 8007	11/11/07	
TITLE	FEIN	ADDRESS CHANGES TO BE NOTED ABOVE	
PRES	23-2289978		

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LINE	QUANTITY	UOP	CAT NO	ITEM NUMBER	UNIT PRICE	AMOUNT
					11/11/07 DATE	
					REV. 11/96	
					VENDOR PREFERENCE CERTIFICATE	
					CERTIFICATION AND APPLICATION* IS HEREBY MADE FOR PREFERENCE IN ACCORDANCE WITH WEST VIRGINIA CODE, 5A-3-37 (DOES NOT APPLY TO CONSTRUCTION CONTRACTS).	
					A. APPLICATION IS MADE FOR 2.5% PREFERENCE FOR THE REASON CHECKED:	
					() BIDDER IS AN INDIVIDUAL RESIDENT VENDOR AND HAS RESIDED CONTINUOUSLY IN WEST VIRGINIA FOR FOUR (4) YEARS IMMEDIATELY PRECEDING THE DATE OF THIS CERTIFICATION; OR	
					() BIDDER IS A PARTNERSHIP, ASSOCIATION OR CORPORATION RESIDENT VENDOR AND HAS MAINTAINED ITS HEAD-QUARTERS OR PRINCIPAL PLACE OF BUSINESS CONTINUOUSLY IN WEST VIRGINIA FOR FOUR (4) YEARS IMMEDIATELY PRECEDING THE DATE OF THIS CERTIFICATION; OR 80% OF THE OWNERSHIP INTEREST OF BIDDER IS HELD BY ANOTHER INDIVIDUAL, PARTNERSHIP, ASSOCIATION OR CORPORATION RESIDENT VENDOR WHO HAS MAINTAINED ITS HEADQUARTERS OR PRINCIPAL PLACE OF BUSINESS CONTINUOUSLY IN WEST VIRGINIA FOR FOUR (4) YEARS IMMEDIATELY PRECEDING THE DATE OF THIS CERTIFICATION; OR	
					() BIDDER IS A CORPORATION NONRESIDENT VENDOR WHICH HAS AN AFFILIATE OR SUBSIDIARY WHICH EMPLOYS A MINIMUM OF ONE HUNDRED STATE RESIDENTS AND WHICH HAS MAINTAINED ITS HEADQUARTERS OR PRINCIPAL PLACE OF	

SEE REVERSE SIDE FOR TERMS AND CONDITIONS

SIGNATURE <i>[Signature]</i>	TELEPHONE 717 691 8007	DATE 11/11/07
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10/31/2007				
BID OPENING DATE: 11/27/2007		BID OPENING TIME 01:30PM		

LINE	QUANTITY	UOP	QAT NO	ITEM NUMBER	UNIT PRICE	AMOUNT
<p>BUSINESS WITHIN WEST VIRGINIA CONTINUOUSLY FOR THE FOUR (4) YEARS IMMEDIATELY PRECEDING THE DATE OF THIS CERTIFICATION.</p> <p>B. APPLICATION IS MADE FOR 2.5% PREFERENCE FOR THE REASON CHECKED:</p> <p>() BIDDER IS A RESIDENT VENDOR WHO CERTIFIES THAT, DURING THE LIFE OF THE CONTRACT, ON AVERAGE AT LEAST 75% OF THE EMPLOYEES WORKING ON THE PROJECT BEING BID ARE RESIDENTS OF WEST VIRGINIA WHO HAVE RESIDED IN THE STATE CONTINUOUSLY FOR THE TWO YEARS IMMEDIATELY PRECEDING SUBMISSION OF THIS BID;</p> <p>OR</p> <p>() BIDDER IS A NONRESIDENT VENDOR EMPLOYING A MINIMUM OF ONE HUNDRED STATE RESIDENTS OR IS A NONRESIDENT VENDOR WITH AN AFFILIATE OR SUBSIDIARY WHICH MAINTAINS ITS HEADQUARTERS OR PRINCIPAL PLACE OF BUSINESS WITHIN WEST VIRGINIA EMPLOYING A MINIMUM OF ONE HUNDRED STATE RESIDENTS WHO CERTIFIES THAT, DURING THE LIFE OF THE CONTRACT, ON AVERAGE AT LEAST 75% OF THE EMPLOYEES OR BIDDERS' AFFILIATE'S OR SUBSIDIARY'S EMPLOYEES ARE RESIDENTS OF WEST VIRGINIA WHO HAVE RESIDED IN THE STATE CONTINUOUSLY FOR THE TWO YEARS IMMEDIATELY PRECEDING SUBMISSION OF THIS BID.</p> <p>BIDDER UNDERSTANDS IF THE SECRETARY OF TAX & REVENUE DETERMINES THAT A BIDDER RECEIVING PREFERENCE HAS FAILED TO CONTINUE TO MEET THE REQUIREMENTS FOR SUCH PREFERENCE, THE SECRETARY MAY ORDER THE DIRECTOR OF PURCHASING TO: (A) RESCIND THE CONTRACT OR PURCHASE ORDER ISSUED; OR (B) ASSESS A PENALTY AGAINST SUCH BIDDER IN AN AMOUNT NOT TO EXCEED 5% OF THE BID AMOUNT AND THAT SUCH PENALTY WILL BE PAID TO THE CONTRACTING AGENCY OR DEDUCTED FROM ANY UNPAID BALANCE ON THE CONTRACT OR PURCHASE ORDER.</p>						

SEE REVERSE SIDE FOR TERMS AND CONDITIONS

SIGNATURE TELEPHONE 717 691 8007 DATE 11/11/07
 TITLE PRES FEIN 23-2289978 ADDRESS CHANGES TO BE NOTED ABOVE

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PURCHASING

SHIP TO

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EQUIPMENT DIVISION
ROUTE 33
BRUSHY FORK ROAD
BUCKHANNON, WV
26201 **304-472-1750**

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<p>BY SUBMISSION OF THIS CERTIFICATE, BIDDER AGREES TO DISCLOSE ANY REASONABLY REQUESTED INFORMATION TO THE PURCHASING DIVISION AND AUTHORIZES THE DEPARTMENT OF TAX AND REVENUE TO DISCLOSE TO THE DIRECTOR OF PURCHASING APPROPRIATE INFORMATION VERIFYING THAT BIDDER HAS PAID THE REQUIRED BUSINESS TAXES, PROVIDED THAT SUCH INFORMATION DOES NOT CONTAIN THE AMOUNTS OF TAXES PAID NOR ANY OTHER INFORMATION DEEMED BY THE TAX COMMISSIONER TO BE CONFIDENTIAL.</p> <p>UNDER PENALTY OF LAW FOR FALSE SWEARING (WEST VIRGINIA CODE 61-5-3), BIDDER HEREBY CERTIFIES THAT THIS CERTIFICATE IS TRUE AND ACCURATE IN ALL RESPECTS; AND THAT IF A CONTRACT IS ISSUED TO BIDDER AND IF ANYTHING CONTAINED WITHIN THIS CERTIFICATE CHANGES DURING THE TERM OF THE CONTRACT, BIDDER WILL NOTIFY THE PURCHASING DIVISION IN WRITING IMMEDIATELY.</p> <p>BIDDER: -----</p> <p>DATE: -----</p> <p>SIGNED: -----</p> <p>TITLE: -----</p> <p>* CHECK ANY COMBINATION OF PREFERENCE CONSIDERATION(S) IN EITHER "A" OR "B", OR BOTH "A" AND "B" WHICH YOU ARE ENTITLED TO RECEIVE. YOU MAY REQUEST UP TO THE MAXIMUM 5% PREFERENCE FOR BOTH "A" AND "B". (REV. 12/00)</p>						

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<p>NOTICE</p> <p>A SIGNED BID MUST BE SUBMITTED TO:</p> <p>DEPARTMENT OF ADMINISTRATION PURCHASING DIVISION BUILDING 15 2019 WASHINGTON STREET, EAST CHARLESTON, WV 25305-0130</p> <p>THE BID SHOULD CONTAIN THIS INFORMATION ON THE FACE OF THE ENVELOPE OR THE BID MAY NOT BE CONSIDERED:</p> <p>SEALED BID</p> <p>BUYER: 33</p> <p>RFQ. NO.: 708EC006</p> <p>BID OPENING DATE: 11/27/2007</p> <p>BID OPENING TIME: 1:30 PM</p> <p>PLEASE PROVIDE A FAX NUMBER IN CASE IT IS NECESSARY TO CONTACT YOU REGARDING YOUR BID:</p> <p style="text-align: center;">----- 717 697 0813 -----</p> <p>CONTACT PERSON (PLEASE PRINT CLEARLY): ----- SHAWN M. GALLAGHER -----</p>						

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SIGNATURE <i>[Signature]</i>	TELEPHONE 717 691 8007	DATE 11/11/07
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LINE	QUANTITY	UOP	CAT NO	ITEM NUMBER	UNIT PRICE	AMOUNT
***** THIS IS THE END OF RFQ 708EC006 ***** TOTAL:						<u>3960.00</u>

SEE REVERSE SIDE FOR TERMS AND CONDITIONS

SIGNATURE: *[Signature]* TELEPHONE: **717 691 8007** DATE: **11/17/07**
 TITLE: **president** FEIN: **23-2289978** ADDRESS CHANGES TO BE NOTED ABOVE

WHEN RESPONDING TO RFQ, INSERT NAME AND ADDRESS IN SPACE ABOVE LABELED 'VENDOR'

WEST VIRGINIA DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS
EQUIPMENT DIVISION

10

PROCUREMENT SPECIFICATIONS
NO. 839-1-K

OPEN END CONTRACT
TRAILER MOUNTED, SOLAR POWERED ELECTRIC ARROWBOARD

1.0 PURPOSE

It is the purpose of these specifications to describe a Trailer Mounted, Solar Powered Electric Arrowboard (hereinafter referred to as a "unit") to be purchased for use by the West Virginia Division of Highways (DOH) on an Open End Contract basis.

2.0 BIDDING PROCEDURES

The current purchasing procedures regarding bidding as established by the Department of Administration, Purchasing Division, shall apply. Failure to submit the "Request for Quotation" forms, complete in its entirety and according to directions indicated, may subject the bidder to disqualification. Each bid submitted shall also be accompanied by a Bidder's Evaluation Report completed in detail. Addendums in order, along with exception sheets, should be with Bidder's Evaluation Report. FAILURE TO SUBMIT THE BIDDER'S EVALUATION REPORT, COMPLETE IN ITS ENTIRETY, MAY RESULT IN AUTOMATIC DISQUALIFICATION.

3.0 SPECIFICATIONS

The specifications named herein, mandatory and non-mandatory, establish the acceptable level of quality only and are not intended to reflect a preference or favor any particular brand or vendor.

3.1 EXCEPTIONS TO NON-MANDATORY SPECIFICATIONS

Exception to a non-mandatory unit specification may be made by the bidder, providing the exception is not available from the manufacturer. **Any such exception must be noted on the bidder's evaluation report and should be accompanied by supporting documentation/literature from the manufacturer. Any exception must be indicated on a separate attachment to the bidder's evaluation report and labeled as "Exception to Specifications"** The state reserves the right to determine whether the stated exception does or does not reduce the quality and performance of the unit. Failure to provide information for any exceptions may be grounds for rejection of the bid. The state reserves the right to waive minor irregularities in bids or specifications in accordance with §148-1-4(f) of the WV Legislative Rules and Regulations.

3.2 MANDATORY SPECIFICATIONS

All specifications preceded by "shall and/or must" or are stated as a "minimum and/or maximum" are mandatory. Any bid failing to meet any mandatory item shall be immediately disqualified. Failure to respond in the appropriate evaluation section may also be grounds for immediate disqualification at the discretion of the State.

A mandatory pre-bid conference is scheduled for this equipment purchase as stated in the RFQ. Vendors having products with variations or exceptions in specified mandatory items are expected to address any such variations or exceptions during the pre-bid conference. **The State shall review and consider any such variation or exception, and may at its sole discretion, issue an addendum to change mandatory specifications deemed to be in the State's best interest. Bids from any vendor failing to attend the mandatory pre-bid shall be disqualified. Bids containing any variation or exception to a mandatory specification that was not addressed during the pre-bid conference and accepted by the issuance of an Addendum shall be disqualified.**

4.0 REPRESENTATIVE UNIT FOR TEST

The successful vendor must (if specified) provide DOH one (1) completed representative unit to be observed and evaluated on each order to insure compliance with specification. If requested, the time period for testing and evaluation shall be seven (7) working days following receipt of the unit. DOH will incur no obligation for deterioration of surfaces, finishes, seals, and mechanical or electrical parts on the unit resulting from operation and testing within the limits of these specifications; nor will DOH incur obligation for damage to the unit resulting from failure to meet specifications when due care and attention is given by DOH and testing is done within the limits of these specifications. Failure of the pilot unit to satisfactorily meet specifications as bid shall be cause for cancellation of the purchase order, and return of the delivered unit along with all associated equipment to the vendor at the vendor's expense.

4.1 CONDITION OF UNIT(S) UPON DELIVERY

All units must arrive at the prescribed delivery point having been completely preserviced with oil, lubricants, and coolant. All prescribed precautions pertaining to first operations and break-in of the unit are to be posted conspicuously on the unit for ready observance by the operator.

4.2 DELIVERY

Delivery point of the completely assembled representative unit will be the DOH, Equipment Division, Route 33 at Brushy Fork Road, Buckhannon, West Virginia (26201).

The vendor is responsible for guaranteeing delivery of the completed units within the time specified and agreed to by the State. Delivery is preferred within 35 days after receipt of purchase agreement. The vendor is responsible for establishing and coordinating delivery terms with allied manufacturers or suppliers. **Delivery terms shall be stated in the bid and the State reserves the right to accept or negotiate such terms. Failure to reach an agreement may result in rejection of the bid. The successful bidder shall provide their manufacturer's confirmation of the order to the WVDOH**

contact person within seven (7) working days after receiving the approved purchase order.

A completed pilot model for inspection must be provided within 20 calendar days after receipt of the purchase agreement by the successful vendor.

Delivery is an integral part of this specification and failure to comply will be cause to initiate a D.O.T. Administrative Form WV-82, Vendor Performance Form. The WV-82 Form will provide a means of officially notifying the Purchasing Division and the vendor of unsatisfactory performance; such as late deliveries, poor service, inadequate parts supplies, etc.

The decision to initiate subject Form will be at the sole discretion of the D.O.H. Commissioner's established Equipment Review Board.

Issuance of the WV-82 Vendor Complaint Form on unsatisfactory delivery against any vendor will be cause to refuse to consider similar items from those vendors on future Request For Quotations.

(NOTE: Delivery time could be altered due to labor strikes, severe inclement weather conditions, etc.)

5.0 AWARD CRITERIA

- 5.1 DOH will recommend the award in accordance with the RFQ evaluation criteria described in the requisition. **The award shall be made to the lowest unit cost vendor that meets or exceeds the specifications.**

Prices for the units shall be in quantities of 1-10, 11-20, and 21 and over. However, for evaluation purposes, we will use quantities 1-10. DOH reserves the right to place multiple orders in any quantity.

6.0 SPECIFICATIONS AND GUIDELINES - GENERAL

6.1 IDENTIFICATION OF THE UNIT BEING PROPOSED

The bidder must identify the unit by manufacturer, model, series, and year of manufacture, in the bid to enable identification by DOH in the manufacturer's specifications of the proposed unit. The bidder will submit complete descriptive literature of the proposed unit, to establish that the bid is the manufacturer's most current model, including latest engineering improvements, which have been, or will imminently be, regularly advertised and sold on the open market. The unit specified herein and offered to be manufactured after January 1, 2007 and be clearly identified and marked with date of manufacture.

6.2 OPERATING AND SERVICE MANUALS AND PARTS LISTS

An operator's manual must be included with each unit upon delivery. A "line sheet" (if applicable) and Equipment Preventative Maintenance Questionnaire (as shown in X6.2 of the Bidder's Evaluation Report) must be with pilot unit upon delivery. In addition, there must be 12 service, shop, or maintenance manuals; ten (10) to be distributed to the Districts and two (2) for the Equipment Division. Also,

there must be 14 parts manuals; ten (10) to be distributed to the Districts and four (4) for Equipment Division use. CD ROM is preferred in lieu of parts manuals.

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* **NOTE: MANUALS SHALL BE DELIVERED UPON COMPLETION OF DELIVERY OF TOTAL UNITS. FAILURE TO DO SO WILL DELAY PAYMENT.**

6.3 TRAINING:

Manufacturers and/or dealers will be required to stage a thorough seminar on the subjects of Preventative Maintenance, Operator and Mechanic Training. In order to keep the operators and mechanics updated, the successful vendor shall conduct training with each purchase order against this open end contract. Training is preferred within 2 working days after delivery of the pilot unit on the individual purchase order.

Manufacturers and/or dealers shall be required to furnish the Training Academy with one (1) Operator's Manual to be shipped direct to Letha Lamb, WVDOH Training Academy, Post Office Box 610, Buckhannon, West Virginia 26201 prior to delivery of the pilot.

The seminar to be held at the W. Va. Division of Highways, Equipment Division, Buckhannon, West Virginia.

6.4 PREVENTIVE MAINTENANCE AND OPERATOR PROCEDURES:

Manufacturers and/or dealers will be required to submit to the Equipment Division, in addition to the operating and service manuals, booklets and pamphlets explaining the Preventive Maintenance and Operator Procedures to be used by the operators of this equipment, and must include such things as daily prestart inspection procedure, service schedule, and routine maintenance required, safety precautions, etc.

The successful vendor shall furnish all training aids; i.e., videos, projectors, etc. required in conducting the training.

6.5 WARRANTY AND SERVICE POLICY

The Manufacturers warranty or service policy is to apply to the unit. Such warranty or service policy is to be recognized at any authorized unit dealer, representing manufacturer of proposed unit throughout the State of West Virginia. The applicable warranty or service policy will not be contingent upon obtaining routine service, lubrication, and servicing of the unit from factory authorized agencies. It will be the responsibility of the bidder to have available labor to repair or replace any defective replacement parts, components and materials, and to have available those replacement parts, components, and/or materials found to be defective during the terms of the warranty period. The bidder should state the labor rates, locations where parts will be stocked, availability of parts, and discounts offered for parts, when terms of the warranty offer a pro-rated cost for parts and labor. In addition, the successful bidder should offer field work to repair or replace defective parts, components, and materials found to be defective during the terms of the warranty and should provide mechanic's travel rates, mileage charges, field mechanic rates, and any surcharge for miscellaneous items, if applicable, for field work during the warranty period. Submit to Division of Highways any technical or engineering improvements during the term of the warranty. **The unit**

must be accompanied upon delivery by the unit's manufacturer's executed warranty or service policy.

A mandatory minimum two (2) year bumper to bumper basic parts and labor warranty is required for this unit.

THE "WARRANTY AND SERVICE POLICY QUESTIONNAIRE" ATTACHED IN THE BIDDER'S EVALUATION REPORT MUST BE COMPLETED IN ITS ENTIRETY BY THE SUCCESSFUL BIDDER OR MANUFACTURER PRIOR TO DELIVERY OF THE PILOT MODEL. (SEE SECTION X6.5 OF BIDDER'S EVALUATION REPORT).

6.6 EVALUATION COMMITTEE REQUIREMENTS

Detailed component specifications, product literature, component models, required for specification compliance determination by the Evaluation Committee should be provided with each bid. Any information supplied that is contrary to/or conflicting with the specifications and/or attached Bidders Evaluation Report may be sufficient cause for rejection of bid.

6.7 UNSPECIFIED ACCESSORIES & FEATURES

All parts, equipment, accessories, material, design and performance characteristics not specified herein, but which are necessary to provide a complete unit, must be furnished with each unit and required to conform to strength, quality of material, and quality of workmanship to those which are advertised and provided to the market in general by the unit industry.

All parts and accessories advertised and regularly supplied as standard shall be included, except those which would represent duplication of these specified, and except those which, by specification, are not to be furnished. All standard safety features, required by Federal and State Law, shall be included.

7.0 SPECIFICATIONS OF THE QUOTED UNIT ARE AS FOLLOWS:

Unit shall have built in auxiliary battery charger which would enable the batteries to be hooked up to an AC power source at the storage yard or off of a generator in the field so that the batteries could be fully charged. Charge time and charger version shall be based on the manufacturers battery configuration.

7.1 Arrowboard:

- 7.1.1 The arrowboard to be a weather-tight panel approximately 48 inches high by 96 inches wide.
- 7.1.2 The height from the bottom of the panel to the roadway should be seven (7) feet above the roadway.
- 7.1.3 The face of the panel should be flat back with 15 hooded lamps.
- 7.1.3.1 **Lamp shall be five (5) inch amber LED with minimum angularity of 33 degrees.**
- 7.1.4 The unit to have the capability of the following modes of operations:
 - 7.1.4.1 Right Arrow - ten (10) lamps flashing in unison.
 - 7.1.4.2 Left Arrow - ten (10) lamps flashing in unison.
 - 7.1.4.3 Double Arrow - five (5) lamps in each arrowhead and three (3) lamps in shaft, all flashing in unison.
 - 7.1.4.4 Warning Bar - seven (7) horizontal lamps flashing in unison.
 - 7.1.4.5 Four Point Caution - four (4) outermost corner lamps flashing in unison.
 - 7.1.4.6 Indicator Lights on back of panel.
- 7.1.5 The flash rate should be 30 fpm and the flash cycle time to be two (2) seconds with 50 percent on time.
- 7.1.6 The unit should reduce lamp brightness when the ambient light level drops below five (5) foot candles, plus or minus one (1) foot candle, **and shall increase lamp brightness when the ambient light level increases to five (5) foot candles, plus or minus one (1) foot candle.**
- 7.1.7 **Unit should have minimum legibility distance of one (1) mile.**

7.2 Electrical System:

- 7.2.1 **The solar generator shall incorporate a 12 Volt DC Photovoltaic Solar Panel mounted on a self-erecting, automatic positioning device located above the unit.**
- 7.2.2 **The battery bank shall be of sufficient size and capacity to power the unit for 30 days with no solar assist.**
- 7.2.3 The batteries to be protected to prevent damaged due to overcharging or discharging too deeply at any temperature.
- 7.2.4 The unit to have an external warning light, or other device to indicate when the unit is in need of auxiliary charging prior to arrow shutoff.
- 7.2.5 The battery compartment should be vented, protected by a special acid-resistant finish, and lockable.
- 7.2.6 **The arrowboard controller shall be housed in a weatherproof, lockable enclosure.**
- 7.2.7 **Unit shall be safe guarded from any unwanted outside RF interference which would include but not be limited to VHF/FM receiver, 2-way radio receiver, cell phones, etc.**
- 7.2.8 The unit to be equipped with an hour meter.

7.3 Trailer:

- 7.3.1 The trailer to be equipped with the following:
- 7.3.1.1 2,000 lb. axle with leaf springs.
- 7.3.1.2 Tubeless, standard tread tires and wheels.
- 7.3.1.3 Heavy duty pintle eye hitch
- 7.3.1.4 Adjustable jack stand on trailer tongue.
- 7.3.1.5 Adjustable jack stands to stabilize unit while in operation.
- 7.3.1.6 Approved lighting and safety chains for highway use.
- 7.3.1.7 Heavy duty light wiring for towing of unit with quick disconnect plug Cole Hersee Part Number 12081 male or equal.
- 7.3.1.8 License plate brackets.
- 7.3.1.9 Wheel fenders.
- 7.3.1.10 The arrowboard to be raised and lowered using a hand operating winch (or hydraulic pump and ram) and locked into place using latches of steel pins with keeper chains permanently attached to the unit.

- 7.4 Paint:
- 7.4.1 The unit to be painted the manufacturers standard color except that the arrowboard will be painted flat black.
- 7.5 **Vendor must certify that the arrowboard offered will meet or exceed the "Occupational Safety and Health Act of 1970" or subsequent changes that are in effect at time of manufacture of the unit.**
- 7.6 Advertising: No visible decals or nameplates or painted on names representing the manufacturer or model number or trademark should appear on the exterior surfaces of the unit. Such logos created through the stamping or casting process of manufacture are accepted.
- 7.7 All other features considered as standard equipment but not specifically addressed above.
- 7.8 Preventive Maintenance & Operator's Training School:

Manufacturers and/or dealers will be required to stage a thorough seminar on each order on the subjects Preventive Maintenance and Operator Training. The seminar should be held at the Equipment Division.

In addition to the operating and service manuals, booklets and pamphlets explaining the Preventive Maintenance and Operator Training procedures to be used by the operators of this equipment are also required. Must include such things as daily prestart inspection procedure, service schedule and routing maintenance required, safety precautions, etc.

Bidder to attach a copy of the proposed program with his bid, state the time required to perform the program, and briefly describe his program.

The successful vendor to furnish all training aids; i.e. videos, projectors, etc., required in conducting the training.

WEST VIRGINIA DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS
EQUIPMENT DIVISION

NOTE: Vendor should type
Bidder's Evaluation Report

BIDDER'S EVALUATION REPORT

PROCUREMENT SPECIFICATIONS FOR OPEN END CONTRACT
NO. 839-1-K

OPEN END CONTRACT
TRAILER MOUNTED, SOLAR POWERED ELECTRIC ARROWBOARD

NOTE TO BIDDER: Procurement Specification No. 839-1-K, Paragraph 2.0 recommends the completion and submittal of this Report with your bid. Purpose of this Report is to enable the West Virginia Division of Highways Evaluation Committee to make full and fair evaluation of the bid. Addendums in order, along with exception sheets, should be with Bidder's Evaluation Report.
FAILURE TO SUBMIT THIS REPORT, COMPLETE IN ITS ENTIRETY, MAY SUBJECT THE BIDDER TO DISQUALIFICATION.

Reference Requisition No.: 708EC006

Bidder's Name: TRAFCON

Address: 81 Texaco Road Mechanicsburg PA 17050

Telephone Number: 717-691-8007

Years Bidder has been registered to do business with the State of West Virginia: 0 YRS.

Years Company has been an authorized dealer for proposed unit: 25 YRS.

X3.2 Have you complied with all mandatory specifications? YES NO

X4.2 DELIVERY:

X4.2.1 Delivery date of completed representative unit: 20 Calendar Days After
Receipt of Purchase Agreement

X4.2.2 Delivery date of balance of completed units: 60 Calendar Days After Receipt of
Purchase Agreement

X5.0 AWARD CRITERIA;

X5.1 Prices for unit in quantities of

1-10	<u>3960.00</u>	per unit
11-20	<u>3880.00</u>	per unit
21 and over	<u>3880.00</u>	per unit

X6.0 SPECIFICATIONS - GENERAL

X6.1 Manufacturer, model, series, and date of manufacture of proposed unit:

Trafcon, TC1-15s, TC1, Current model year of order

Is descriptive literature, fully describing proposed unit attached to your bid? YES NO

If not, why? Litature depicts standard unit, bid unit modified to fully comply with RFQ specification

X6.2 Will the required number of service manuals, and complete parts list be delivered to the Equipment Division at Buckhannon upon completion of delivery of total units?

YES NO

Will the required Equipment Preventive Maintenance Form (Section X6.2 of Bidders Evaluation Report) be provided upon inspection of the pilot unit? YES NO

EQUIPMENT PREVENTATIVE MAINTENANCE QUESTIONNAIRE

THIS FORM MUST BE COMPLETED IN ITS ENTIRETY BY SUCCESSFUL BIDDER OR MANUFACTURER'S TECHNICAL REPRESENTATIVE PRIOR TO DELIVERY OF PILOT MODEL TO THE WVDOH.

DESCRIPTION: _____ MAKE: _____

MODEL: _____ YEAR: _____ PURCHASE AMOUNT: _____

ENGINE: MAKE: _____ MODEL: _____ FUEL TYPE: _____

HORSEPOWER: _____ CYLINDER: _____ ENGINE SERIAL: _____

COOLING SYSTEM CAPACITY: _____

BELTS: DESCRIPTION: _____ PART NUMBERS: _____

GVW: _____ AXLE CAPACITY: FRONT: _____ REAR: _____

TIRES: FRONT MAKE & SIZE: _____

REAR MAKE & SIZE: _____

DIMENSIONS OF UNIT: LENGTH: _____ WIDTH: _____ LENGTH: _____

VENDOR CONTACT PERSON: _____ PHONE: _____

PARTS:

BATTERY MAKE: _____ MODEL: _____ CCA: _____

TOP OR SIDE POST: _____ DIMENSIONS: LENGTH _____ WIDTH _____ HEIGHT _____

SPARK PLUGS OR FUEL INJECTORS MAKE: _____ PART # _____

FUEL PUMP OR INJECTION PUMP MAKE: _____ MODEL: _____

ALTERNATOR MAKE: _____ PART #: _____

STARTER MAKE: _____ PART #: _____

TURBO CHARGER MAKE: _____ PART #: _____

TRANS. MAKE: _____ MODEL: _____ AUTO/MANUAL: _____

HYDRAULIC PUMP MAKE: _____ MODEL: _____

FILTERS	MAKE	PART NO.	LUBRICANT	MANUFACTURER TYPE
---------	------	----------	-----------	-------------------

OIL	_____		ENGINE	_____
AIR INNER	_____		TRANSMISSION	_____
AIR OUTER	_____		POWER STEERING	_____
FUEL PRIMARY	_____		HYDRAULIC	_____
FUEL SECONDARY	_____		DIFFERENTIALS	_____
COOLANT	_____		BRAKE FLUID	_____
HYDRAULIC	_____		COOLANT	_____
OTHER	_____		OTHER	_____

X6.3 TRAINING:

Will training seminar be conducted on Preventive Maintenance, Operator and Mechanic Training YES ___ NO

Will you conduct training with each purchase order against this open end contract? YES ___ NO

Will training be conducted within 2 working days from the delivery of the pilot unit on the individual purchase order? YES ___ NO

If NO, explain time frame _____

Will an Operator's Manual be furnished directly to Letha Lamb, Training Academy prior to the delivery of the pilot? YES ___ NO

X6.4 If you are the successful vendor, will you furnish all training aids, i.e., videos, projectors, required in conducting the training? ___ YES ___ NO

X6.4.1 Will all manuals, booklets, etc. explaining preventive maintenance, operator procedures, and service schedule be delivered with each unit? YES ___ NO
If NO, explain _____

X6.5 WARRANTY AND SERVICE POLICY

Will the warranty and service you provide comply with all areas as stated in Section 6.5 of specifications ___ YES ___ NO

Is warranty literature attached? ___ YES ___ NO

Is a minimum two (2) year bumper to bumper basic parts and labor warranty included? ___ YES ___ NO

Describe:

X6.5 WARRANTY AND SERVICE POLICY QUESTIONNAIRE

THIS FORM MUST BE COMPLETED IN ITS ENTIRETY BY THE SUCCESSFUL BIDDER OR MANUFACTURERS TECHNICAL REPRESENTATIVE PRIOR TO DELIVERY OF PILOT MODEL TO THE WVDOH (If additional lines are needed, make copies of form.)

1. Define the terms of the standard warranty. If not offered, so state. (Attach copy)

2 years, see attached warranty statement

2. Define warranty service to be performed at DOH facilities and warranty service to be performed at manufacturer's representative facility. List name and location of manufacturer's representative.

All warranty work to be performed at mfg. representative:
LH Jones Equip. Co. 1825 Earl Core Dr. Morgantown WV 26505

3. List locations for parts inventories that are within the State of West Virginia. Also, list availability levels, if known.

LH Jones Equip Co. 1825 Earl Core Dr. Morgantown WV 26505
avail: presently unknown

4. During the term of warranty, list the guarantee discount to manufacturer's published list price for parts that bidder will sell the parts to owner.

A. Terms: Net 30 Manufacturer's published list price less: 0 % discount
B. Terms: Net 60 Manufacturer's published list price less: 0 % discount
C. Terms: Net 90 Manufacturer's published list price less: 0 % discount

5. During the term of warranty, will all manufacturers or engineering improvements be submitted to Division of Highways? X YES ___ NO

6. During the term of warranty, list the guaranteed rates charged for repair to the unit.

A. Shop Rate \$ 75.00 per mechanic hour

B. Travel Time Charge \$ 75.00 per mechanic hour
(Specify if one-way) _____; port to port X

C. Mileage Charge \$ 1.85 per vehicle mile
(Specify if one-way) _____; port to port ✓

D. Field Mechanic Rate \$ 75.00 per mechanic hour

E. Specify period of time that prices are in effect: 2 years

F. Surcharge for miscellaneous items: Net Cost of %
air / expedited Freight Charges

X6.6 EVALUATION COMMITTEE REQUIREMENTS

Is all component specifications, product literature, component models provided for Evaluation Committee bid determination? YES NO

X6.7 Will all parts, equipment, accessories, material, design and performance characteristics not specified herein, but which are necessary to provide a complete unit, be furnished with the unit and conform in strength, quality of material, and quality of workmanship to those which are advertised and provided to the market in general by the unit industry?

YES NO

X6.7.1 Are all parts and accessories adequate and regularly supplied as standard to be included except those which may be duplications of specifications herein, and except these by specification are not to be furnished?

YES NO

X6.7.2 Are all standard safety features that are required by Federal and State statutes of law included?

YES NO

X7.0 SPECIFICATIONS OF THE QUOTED UNIT

The bidder should complete the following schedule in order for the Division to compare the actual bid unit to the specifications. Should the bidder except a requirement, then such exception may be only on the basis that such feature is not offered by the manufacturer. The Division will have the sole discretion as to whether the bidder's substitution meets the requirements of the specifications.

Does unit have built in auxiliary battery charger which would enable batteries to be hooked up to an AC power source at the storage yard or off of a generator in the field

YES NO

Is charge time and charger version based on manufacturer's battery configuration

YES NO

Describe: (4) 6V GC2 Batteries 12VDC output. 30 AMP CHARGER, RECHARGE IN 24 HRS

Manufacturer: IOTA **Model:** DSL-30

X7.1 Arrowboard:

X7.1.1 Is the arrowboard panel weather-tight: YES NO

Describe weather-tight design and materials used:

Panel sealed to frame w/ adhesive then riveted

Arrow Board panel dimensions: 48 inches high x 96 inches wide

X7.1.2 Height from bottom of panel to roadway 7 feet above roadway

X7.1.3 Is the face of the panel flat black, with fifteen (15) hooded lamps?
 YES NO

X7.1.3.1 Does lamp have five (5) inch amber LED with minimum angularity of 33 degrees
 YES NO

X7.1.4 Modes of operation capability:

X7.1.4.1 Right arrow – 10 lamps flashing in unison YES NO

X7.1.4.2 Left arrow – 10 lamps flashing in unison YES NO

X7.1.4.3 Double arrow – 5 lamps in each arrowhead and 3 lamps in shaft, all flashing in unison
 YES NO

X7.1.4.4 Warning bar – 7 horizontal lamps flashing in unison YES NO

X7.1.4.5 Four Point Caution – 4 outermost corner lamps flashing in unison
 YES NO

X7.1.4.6 Indicator lights on back of panel YES NO

X7.1.5 Is the unit flash rate 30 flashes per minute with a flash cycle time of two (2) seconds with 50 percent on time?
 YES NO

X7.1.6 Will the unit reduce lamp brightness when the ambient light level drops below five (5) foot candles, plus or minus one (1) foot candle, and increase lamp brightness when the ambient light level increases to five (5) foot candles, plus or minus one (1) foot candle?
 YES NO

X7.1.7 Unit's minimum distance of legibility: / mile(s)

X7.2 Electrical System:

- X7.2.1 Does the solar generator incorporate a 12 Volt DC photovoltaic solar panel mounted on a self-erecting automatic positioning device located above the unit?
 YES NO
- X7.2.2 Is the battery bank of sufficient size and capacity to power the unit for 30 days without solar assist?
 YES NO
- X7.2.3 Are the batteries protected in a manner that will prevent damage due to overcharging or discharging to deeply at any temperature?
 YES NO
- X7.2.4 Does the unit have an external warning light, or other warning signal device, to indicate when the unit is in need of auxiliary charging prior to arrow shutoff?
 YES NO
- X7.2.5 Is the battery compartment vented, protected by an acid-resistant finish, and lockable?
 YES NO
- X7.2.6 Is the arrowboard controller housed in a lockable weatherproof enclosure?
 YES NO
- X7.2.7 Is unit safe guarded from any unwanted outside RF interference which would include but not be limited to VHF/FM receiver, 2-way radio receiver, cell phones, etc.
 YES NO
- X7.2.8 Is the unit equipped with an operational hour meter?
 YES NO

X7.3 Trailer:

- X7.3.1 Is the trailer equipped with the following:
- X7.3.1.1 2,000 lb. axle with leaf springs YES NO
- X7.3.1.2 Tubeless standard tread tires and wheels YES NO
- X7.3.1.3 Heavy duty pintle eye hitch YES NO
- X7.3.1.4 Adjustable jack stand on trailer tongue YES NO
- X7.3.1.5 Adjustable jack stands to stabilize unit while in operation
 YES NO
- X7.3.1.6 Approved lighting and safety chains for highway use YES NO

- X7.3.1.7 Heavy duty light wiring for towing of unit with quick disconnect plug Cole Hersee Part Number 12081 male or equal YES NO
- X7.3.1.8 License plate brackets YES NO
- X7.3.1.9 Wheel fenders YES NO
- X7.3.1.10 Arrowboard raised and lowered using a hand operating winch (or hydraulic pump/ram) locked into place using latches of steel pins with keeper chains permanently attached to the unit YES NO

X7.4 Paint:

X7.4.1 Describe proposed method of painting the unit: All metals w/ phosphate steam. Automotive primer sealer applied w/ electrostatic sprayer. Top coat with Acrylic Enamel w/ urethane additive using electrostatic spray.

X7.5 Does the proposed unit meet or exceed the "Occupational Safety and Health Act of 1970" requirements and/or any subsequent changes at the time manufactured?

YES NO

X7.6 Does the unit conform to advertising guidelines?

YES NO

X7.7 List all other standard features considered as standard equipment but not specifically addressed in the specifications:

X7.8 Preventive Maintenance and Operator's Training School:

Will a preventative maintenance and operator's training seminar be provided with each order?
 YES NO

If you are the successful vendor, will you furnish all training aids, i.e., videos, projectors, required in conducting the training?
 YES NO

Will all manuals, booklets, etc. preventive maintenance, operator procedures, and service schedule be delivered with each unit?
 YES NO

If NO, explain _____

Have you attached a copy of the proposed program with your bid, stating the time required to perform the program and brief description of program YES NO

STATE OF WEST VIRGINIA
Purchasing Division

PURCHASING AFFIDAVIT

West Virginia Code §5A-3-10a states: No contract or renewal of any contract may be awarded by the state or any of its political subdivisions to any vendor or prospective vendor when the vendor or prospective vendor or a related party to the vendor or prospective vendor is a debtor and the debt owed is an amount greater than one thousand dollars in the aggregate

DEFINITIONS:

"Debt" means any assessment, premium, penalty, fine, tax or other amount of money owed to the state or any of its political subdivisions because of a judgment, fine, permit violation, license assessment, defaulted workers' compensation premium, penalty or other assessment presently delinquent or due and required to be paid to the state or any of its political subdivisions, including any interest or additional penalties accrued thereon.

"Debtor" means any individual, corporation, partnership, association, limited liability company or any other form or business association owing a debt to the state or any of its political subdivisions. "Political subdivision" means any county commission; municipality; county board of education; any instrumentality established by a county or municipality; any separate corporation or instrumentality established by one or more counties or municipalities, as permitted by law; or any public body charged by law with the performance of a government function or whose jurisdiction is coextensive with one or more counties or municipalities. "Related party" means a party, whether an individual, corporation, partnership, association, limited liability company or any other form or business association or other entity whatsoever, related to any vendor by blood, marriage, ownership or contract through which the party has a relationship of ownership or other interest with the vendor so that the party will actually or by effect receive or control a portion of the benefit, profit or other consideration from performance of a vendor contract with the party receiving an amount that meets or exceed five percent of the total contract amount.


EXCEPTION: The prohibition of this section does not apply where a vendor has contested any tax administered pursuant to chapter eleven of this code, workers' compensation premium, permit fee or environmental fee or assessment and the matter has not become final or where the vendor has entered into a payment plan or agreement and the vendor is not in default of any of the provisions of such plan or agreement.

LICENSING: Vendors must be licensed and in good standing in accordance with any and all state and local laws and requirements by any state or local agency of West Virginia, including, but not limited to, the West Virginia Secretary of State's Office, the West Virginia Tax Department, West Virginia Insurance Commission, or any other state agencies or political subdivision. Furthermore, the vendor must provide all necessary releases to obtain information to enable the Director or spending unit to verify that the vendor is licensed and in good standing with the above entities.

CONFIDENTIALITY: The vendor agrees that he or she will not disclose to anyone, directly or indirectly, any such personally identifiable information or other confidential information gained from the agency, unless the individual who is the subject of the information consents to the disclosure in writing or the disclosure is made pursuant to the agency's policies, procedures and rules. Vendors should visit www.state.wv.us/admin/purchase/privacy for the Notice of Agency Confidentiality Policies.

Under penalty of law for false swearing (West Virginia Code, §61-5-3), it is hereby certified that the vendor acknowledges the information in this said affidavit and are in compliance with the requirements as stated.

Vendor's Name: Tratcon Industries Inc.

Authorized Signature:  Date: 11/11/07



State of West Virginia
 Department of Administration
 Purchasing Division
 2019 Washington Street East
 Post Office Box 50130
 Charleston, WV 25305-0130

Request for Quotation

RFQ NUMBER
708EC006

PAGE
1

ADDRESS CORRESPONDENCE TO ATTENTION OF
MICHAEL AUSTIN
304-558-2402

RFQ COPY

TYPE NAME/ADDRESS HERE

SHIP TO

DIVISION OF HIGHWAYS
 EQUIPMENT DIVISION
 ROUTE 33
 BRUSHY FORK ROAD
 BUCKHANNON, WV
 26201 304-472-1750

DATE PRINTED	TERMS OF SALE	SHIP VIA	FOB	FREIGHT TERMS
11/01/2007				

BID OPENING DATE: **11/27/2007** BID OPENING TIME **01:30PM**

LINE	QUANTITY	UOP	CAT NO	ITEM NUMBER	UNIT PRICE	AMOUNT
ADDENDUM NO. 1						
MANDATORY PRE-BID CONFERENCE DATE CHANGED						
FROM: 11/14/07 AT 10:00 A.M.						
TO: 11/16/07 AT 10:00 A.M.						
NO OTHER CHANGES.						
0001	1	EA		550-96	3960.00	3960.00
TRAILER MOUNTED SOLAR POWERED ELECTRIC ARROWBOARD						
***** THIS IS THE END OF RFQ 708EC006 ***** TOTAL:						3960.00

SEE REVERSE SIDE FOR TERMS AND CONDITIONS

SIGNATURE <i>[Signature]</i>	TELEPHONE 717 691 8007	DATE 11/17/07
TITLE President	FEIN 23-2289978	ADDRESS CHANGES TO BE NOTED ABOVE

WHEN RESPONDING TO RFQ, INSERT NAME AND ADDRESS IN SPACE ABOVE LABELED 'VENDOR'



INDUSTRIES INC.

81 TEXACO ROAD
MECHANICSBURG, PA 17055-2623
(717) 691-8007

TRAINING OUTLINE

TRAFCON TC SERIES, ARROWBOARD TRAILERS

1. INTRODUCTION

2. TRAILER SET UP AND OPERATION

A. TRAILER/VEHICLE CONNECTION

B. TRAILER SET UP

3. TRAILER MAINTENANCE

A. VISUAL INSPECTION

1. CHECK TRAILER

2. CHECK WHEELS & TIRES

B. CHECKING & MAINTENANCE OF BATTERIES

4. TROUBLE SHOOTING

A. LAMP REPLACEMENT

B. CONTROLLER FAILURE

5. PARTS & SERVICE

TOTAL ESTIMATED TRAINING TIME: 29 MINUTES

TRAFCON INDUSTRIES, INC.

MANUFACTURER'S WARRANTY

LIMITED WARRANTY POLICY

Trafcon Industries, Inc. (Trafcon) hereby warrants to the original purchaser (customer), sold directly or through an authorized dealer, the product(s) listed for the time period(s) listed, from the date of purchase. Trafcon warrants the product(s) against defects in material and workmanship provided the products are installed and maintained properly, and operated under normal conditions. This warranty does not apply to product(s) that have been improperly applied, installed or maintained. The customer will be responsible for removing any defective item(s) from the product and returning the item(s), or the entire product, transportation costs prepaid, to Trafcon 81 Texaco Rd, Mechanicsburg, PA 17050. The customer will be responsible for reinstallation of item(s) upon return. All returns must have a Return Material Authorization (RMA) number prior to shipping. RMA numbers can be obtained by contacting Trafcon at 717-691-8007, or on the Internet at www.Trafcon.com. Proof of purchase will be required to obtain the RMA. Trafcon will, at its option, repair or replace defective product(s) or component part(s). Such item(s) will be returned by Trafcon, transportation costs paid (normal ground delivery), within the United States. Repaired or replaced product(s) or component part(s) will carry the remainder of their respective original warranty term(s).

Exclusions from this warranty are: unauthorized sale outside the United States, the finish, tires, incandescent lamps, any condition(s) caused by abnormal use or service, negligent operation, act of God, and product specific limitations, if any, listed below.

THE LOSS OF USE OF THE PRODUCT, LOSS OF TIME, INCONVENIENCE, COMMERCIAL LOSS OR CONSEQUENTIAL DAMAGES ARE NOT COVERED. TRAFCON RESERVES THE RIGHT TO CHANGE THE DESIGN OF ANY PRODUCT WITHOUT ASSUMING ANY OBLIGATION TO MODIFY ANY PRODUCT PREVIOUSLY MANUFACTURED.

This warranty gives you specific legal rights and you may have other rights, which may vary from state to state.

THERE ARE NO WARRANTIES, EXPRESSED OR IMPLIED, INCLUDING ANY IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS, WHICH EXTEND BEYOND THIS WARRANTY PERIOD. THERE ARE NO WARRANTIES THAT EXTEND BEYOND THE FACE HEREOF. SELLER DISCLAIMS IMPLIED WARRANTY OF MERCHANTABILITY.

THE WARRANTY SHALL NOT APPLY TO ANY TRAFCON PRODUCT WHICH HAS BEEN MODIFIED, IMPROPERLY INSTALLED, IMPROPERLY MAINTAINED OR IMPROPERLY USED.

The product(s) and time period(s) under this warranty are as follows:

**1. FLASHING ARROW BOARDS, TRAILER MOUNTED, SOLAR (TC1)
LIMITED 2 YEAR WARRANTY**

Limited 1 year warranty on these Trafcon products. Trafcon warrants each new unit against factory defects in material and workmanship for a 1 year period from the original date of purchase.

EXCEPTIONS: Solar modules- 5 years*, Batteries- 18 months*, Controller-2years*, LED Lamps- 5years*.

THIS WARRANTY DOES NOT COVER THE FOLLOWING: Tires, Finish.

**2. FLASHING ARROW BOARDS, TRAILER MOUNTED, DIESEL (TC3)
LIMITED 2 YEAR WARRANTY**

Limited 1 year warranty on these Trafcon products. Trafcon warrants each new unit against factory defects in material and workmanship for a 1 year period from the original date of purchase.

EXCEPTIONS: Batteries- 60 months (pro-rated)*.

THIS WARRANTY DOES NOT COVER THE FOLLOWING: Tires, Finish, Incandescent lamps.

3. FLASHING ARROW BOARDS-VEHICLE MOUNTED (MB & TM)

LIMITED 2 YEAR WARRANTY

Limited 1 year warranty on these Trafcon products. Trafcon warrants each new unit against factory defects in material and workmanship for a 1 year period from the original date of purchase.

THIS WARRANTY DOES NOT COVER THE FOLLOWING: Finish, Incandescent lamps.

4. ARROW DYNAMIC SIGNS-TRAILER MOUNTED (TC-ADS)

LIMITED 2 YEAR WARRANTY

Limited 1 year warranty on these Trafcon products. Trafcon warrants each new unit against factory defects in material and workmanship for a 1 year period from the original date of purchase.

EXCEPTIONS: Solar modules- 10 years*, Batteries- 18 months*.

THIS WARRANTY DOES NOT COVER THE FOLLOWING: Tires, Finish.

5. ARROW DYNAMIC SIGNS- VEHICLE MOUNTED (MB-ADS)

LIMITED 2 YEAR WARRANTY

Limited 1 year warranty on these Trafcon products. Trafcon warrants each new unit against factory defects in material and workmanship for a 1 year period from the original date of purchase.

THIS WARRANTY DOES NOT COVER THE FOLLOWING; Finish.

6. SPEED DISPLAY SIGNS- STATIONARY, VEHICLE & TRAILER MOUNTED (SST)

LIMITED 2 YEAR WARRANTY

Limited 1 year warranty on these Trafcon products. Trafcon warrants each new unit against factory defects in material and workmanship for a 1 year period from the original date of purchase.

EXCEPTIONS: Solar modules- 10 years*, Batteries- 18 months*.

THIS WARRANTY DOES NOT COVER THE FOLLOWING: Tires, Finish.

7. WORK ZONE RADIOS- STATIONARY, VEHICLE & TRAILER MOUNTED (WIZARD)

LIMITED 5 YEAR WARRANTY

Limited 1 year warranty on these Trafcon products. Trafcon warrants each new unit against factory defects in material and workmanship for a 1 year period from the original date of purchase.

EXCEPTIONS: Solar modules- 10 years*, Batteries- 18 months*.

THIS WARRANTY DOES NOT COVER THE FOLLOWING: Tires, Finish.

7. PORTABLE EQUIPMENT PLATFORMS (PEP)

LIMITED 2 YEAR WARRANTY

Limited 1 year warranty on these Trafcon products. Trafcon warrants each new unit against factory defects in material and workmanship for a 1 year period from the original date of purchase.

EXCEPTIONS: Solar modules- 10 years*, Batteries- 18 months*.

THIS WARRANTY DOES NOT COVER THE FOLLOWING: Tires, Finish.

RIGHTS RESERVED

Trafcon reserves the right to make changes in design, materials and specifications or to make product changes as deemed necessary without prior notice. Obligations or liabilities will not be assumed with respect to similar products previously advertised or produced.

PRINTING ERRORS

Every effort has been made to avoid printing errors in our printed literature and on our website. Should there have been any specification or application errors, we must disclaim responsibility.

OMISSIONS

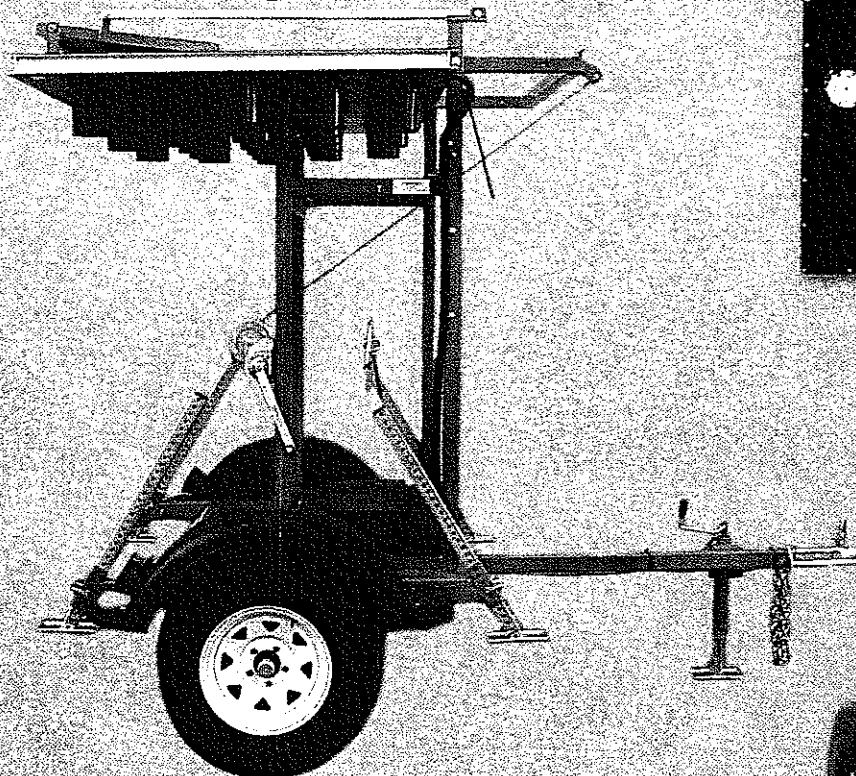
Any product(s) or component(s) not specifically covered or excluded herein, will be covered for a 1 year period from date of purchase or by the Original Equipment Manufacturer's warranty, whichever is greater.

* Solar module and battery warranties are of the suppliers of these respective products. All claims are subject to the terms and conditions of the suppliers of these products.

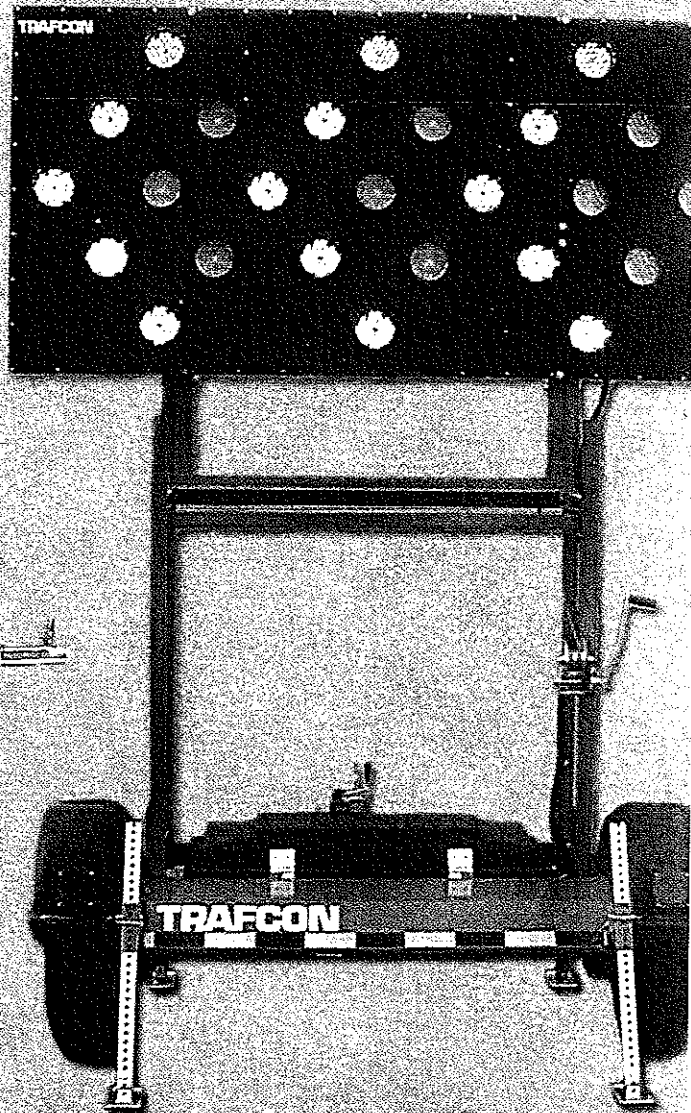
TRAFCON

TC1 SERIES

**Solar Trailer Mounted
Advance Warning Panels**



TC1 Models come in your choice of a base model, or an upgraded version. Please call your sales associate for details.
Available in 15 or 25 light configurations.



APPROVED

**FCC WIRELESS REMOTE
AVAILABLE REMOTE PROVIDES
ULTIMATE OPERATOR SAFETY**



TRAFCON INDUSTRIES INC.

81 TEXACO ROAD, MECHANICSBURG, PA 17050 • 717-691-8007 • FAX 717-697-0813 • WWW.TRAFCON.COM

TC1 SERIES

Solar Trailer Mounted Advance Warning Panels

STANDARD SPECIFICATIONS

TRAILER

Length.....	112"
Width	96" (including sign panel)
Width across fenders..	83"
Tongue	3" x 4.1 lb. structural channel (A-Frame)
Frame.....	2" x 3" x 1/8" tubing (sides) 3" x 4.1 lb. structural channel (front and rear)
Superstructure.....	2" x 2" x 1/8" tubing
Sign Panel support	2" x 2" x 1/8" tubing
Battery enclosure	Low density thermoplastic with lockable full lid
Fenders	Low density thermoplastic with splash shields
Safety chain	24" x 1/4" proof coil plated chain with hooks welded to tongue
Leveling jacks.....	Drop jacks four corner, 32 degree angle
Trailer hitch	2" ball or pintle ring
Axle	2000 lb. capacity
Springs.....	3 leaf, double eye
Track width	71"
Height	132" operating (up) position - 92" traveling (down) position
Weight	1150 lbs.
Paint	Highway Orange

SIGN PANEL

Construction.....	sandwich type
Material	Aluminum
	• Front and back panels 48" x 96" x .063" sheet
	• Framework - 2" x 1" x .125" extruded channel (welded)
Lamps	PAR 46, amber, LED
Lamp hoods	360 degree high impact plastic
Lifting mechanism	1000 lbs.

CONTROL SYSTEM AND CIRCUITRY

Voltage.....	12V nominal (supply)
Circuitry	solid state microprocessor
Protection	short circuit/reverse polarity
Dimming.....	automatic

SOLAR CHARGING SYSTEM

- 50-watt single solar panel (**80-watt - upgraded model*)
- Continuous intensity feature - constant lamp intensity to cutoff
- Low battery cutoff - 11V
- Solid State Charge Controller
- Battery condition indicator LED bar graph
- Solar panel mounting - continuous horizontal positioning

POWER SUPPLY/BATTERY

Batteries...4 group GC-2, 6 V Deep cycle
<i>(* 6 group GC-2, 6V deep cycle - upgraded model)</i>
225 amp hours each
Voltage12V DC
Capacity ...900 amp/hour (<i>*1350 - upgraded model</i>)
Charging...(<i>on-board 30 AMP charger with upgraded model</i>)

FEATURES

ARROWBOARD

- Long lasting LED lamps
- LED full matrix mode display on controller and LED bar graph voltmeter
- Wide wheel base for towing stability
- Microprocessor based controller
- "HFM" technology for extended lamp life
- Fully automatic battery charger
- 14" automotive wheels and tires
- Quick-change battery compartment for your convenience
- Multi stage electrostatic paint process
- Rugged polyethelene low density battery box and fenders
- A-Frame draw bar design
- 1 screw jack on tongue and 4 corner drop jacks

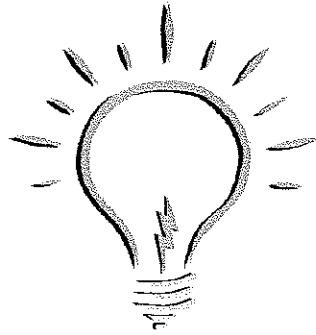
SOLAR PANEL

- Panels can maintain horizontal position in operating and trailering modes
- Solar panels are mounted at the top of the sign for vandal resistance.
- Constant horizontal solar panel positioning

**Specifications subject to change without notice*

TRAFCON PRODUCTS
DISTRIBUTED BY

SMARTFLASH II



SmartFlash II Arrowboard Controller Installation & Operation Manual



INDUSTRIES, INC.

81 Texaco Road
Mechanicsburg, PA 17050
717-691-8007
717-697-0813 FAX
www.trafcon.com

Set up and operation

Trailer

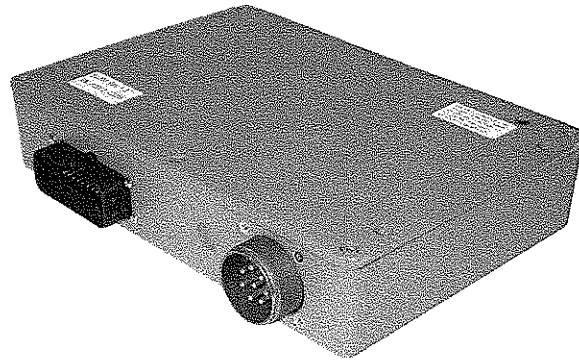
1. Disconnect trailer from towing vehicle
2. Aim rear of trailer toward oncoming traffic
3. Lower and pin rear drop jacks, raise tongue screw jack until rear drop jacks are firmly touching ground.
4. Lower and pin front drop jacks, raise tongue screw jack until the trailer is resting on all 4 drop jacks. Note: trailer is most stable with weight on all 4 drop jacks.
5. Loosen tension on sign lifting hand winch.
6. Remove (2) ½” keeper pins on lift arms.
7. Crank winch, retracting cable, until lift arms are vertical and keeper pin holes align.
8. Insert keeper pins in lift arm and trailer support.
9. Do not attempt to move trailer with drop jacks down. Lower *and* replace keeper pins in arrowboard frame prior to transport.

Main Features

- Advanced solid state technology
- LCD graphic display with backlight
- Soft touch keypad with audible confirmation
- Text description of arrow patterns displayed
- Powers up in a “safe” default caution mode
- Automatic short and open circuit protection
- Polarity protected circuitry
- Ability to “hot-swap” controls and plugs
- Automatic dimming
- Manual dimming
- Alarm detection and notification
- Built in diagnostics
- Low battery warnings, automatic switchover to default caution and power down
- Convenient bulb intensity and battery level displays
- Hour meter with user hours that can be reset.

The control system consists of two parts:

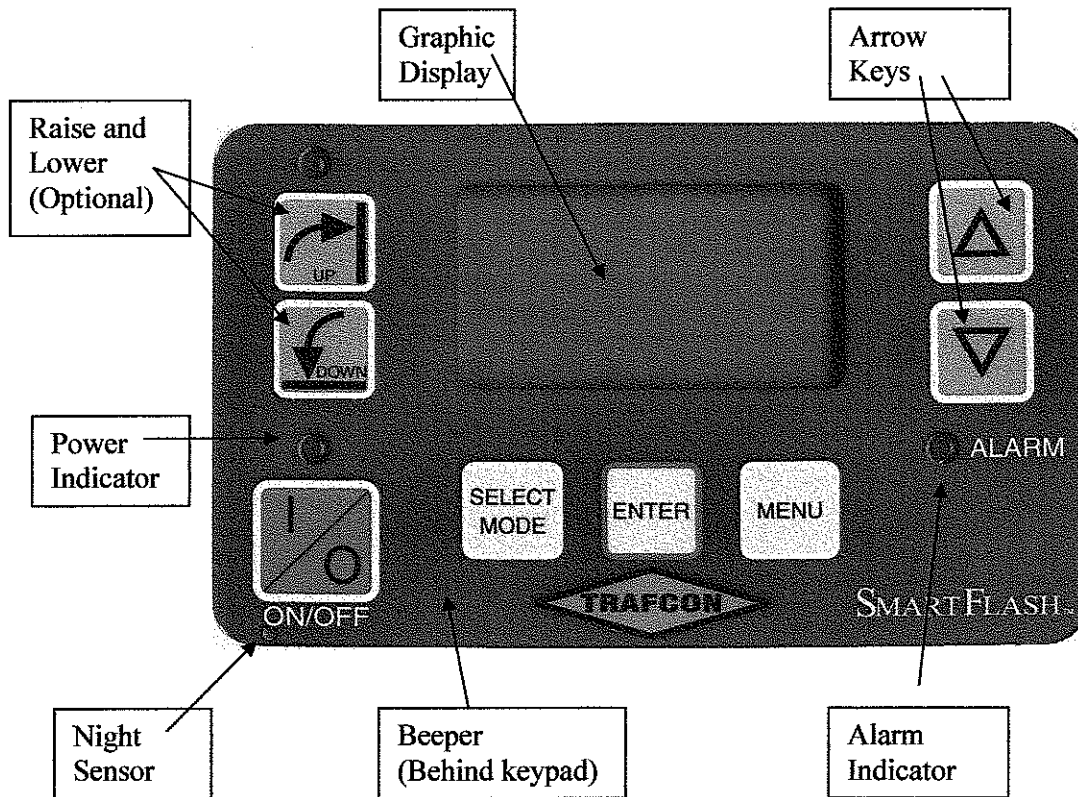
1. Most of the electronics are housed in the **Main Controller** enclosure, which is mounted in the arrowboard.



2. The **Remote** houses a keypad and a graphic display for monitoring & entering data. It is either hardwired or wireless RF linked to the main controller.



Remote Layout & Functions



Power Indicator

This red indicator lights solidly when the remote is "on."

NIGHT SENSOR

This is an ambient light sensor that can be used to automatically illuminate the remote at night.

Alarm Indicator

This red indicator flashes when there is any alarm condition present. It is off if there is no alarm conditions present

Beeper

The beeper (Not visible but hidden just below the keypad) emits a short high-pitched chirp each time a key is pressed. The beeper also emits a longer and lower pitched chirp periodically when any alarm condition is present.

1/0 Button

This button turns the remote and the controller on or off simultaneously.

Note that the controller always returns to its “default” safety pattern every time the main controller is turned “on”, or has its power interrupted and reapplied. This non-directional pattern is meant to warn drivers of a possible situation ahead without unintentionally indicating an incorrect direction. After each power on event, the user is required to select the desired arrow mode for safety reasons.

Also note that in the case of a Wireless RF system, the remote may not be within range of the main controller to send the on or off signal. In this case the remote on/off status might not match the main controller on/off status. To correct this, simply move the remote within range and press the “1/0” key as necessary to correct.

SELECT MODE Button

Pressing this button switches to the mode where the user may select the desired arrow pattern. Pressing this button repeatedly switches through the available arrow patterns.

ENTER Button

This button is used to confirm selections in the menus.

MENU Button

This button calls up the menu of option functions. Within each option function is a sub-menu.

ARROW Buttons

These buttons are used to step through arrow patterns, menu items or increase & decrease data values. The exact function depends on the item selected on the display at the time.

RAISE and LOWER Buttons (Optional)

These buttons are used to initiate sign raise and lower movements. They operate any time the system is ON.

STATUS Display

This is the default display mode for normal operation. If the user does not press any keys for a period of time, the remote always returns to the STATUS display. Elements of the status display are as follows:

1. The main area of the status display reflects the arrow pattern currently being displayed on the arrowboard. This area is also used to indicate problems with individual lamps or circuits on the arrowboard.
Round dot = Normal operation for this circuit
Letter "X" = Open circuit detected at this lamp
Letter "s" = Short circuit detected at this lamp
2. The bar graph at the left shows the voltage reading of the main controller battery. The range is 10 to 14 volts. Voltage readings are taken under loaded conditions and may read slightly lower than an unloaded battery.
3. The bar graph at the right shows the current lamp intensity from 0-100% of the maximum allowable intensity. This is usually automatically set by the ambient light sensor, but some models allow manual intensity setting via the menus.
4. The title line displays the NAME of the arrow pattern currently being displayed on the arrowboard. Because the user may not always be facing the remote in the same way that traffic sees the arrowboard, the name can be useful in avoiding right/left confusion.
5. The alarm line displays any alarms currently detected. If the line is blank, then no alarms are detected. Possible alarm messages are as follows:

LOW BATTERY WARNING!
LOW BATTERY CAUTION!
LOW BATTERY SHUTOFF!
SHORTED CONNECTIONS!
BULBS BURNED OUT!
COMMON WIRE SHORTED!

SELECT MODE Display

Press the "SELECT MODE" button to change the arrow pattern.

The display changes to show the currently displayed arrow pattern and title only. The pattern is displayed with hollow dots instead of solid dots, and the pattern flashes at twice the actual rate to indicate that this is the selection mode rather than the status mode.

Continue pressing the "SELECT MODE" key to advance through all allowable patterns, or use the up and down arrows to browse back and forth through the allowable patterns.

To send the selected pattern to the arrowboard lamps press ENTER. The arrowboard will not change until you press ENTER.

To exit without changing the arrowboard, press "MENU" or simply let the SELECT MODE function time out on its own. Remember, changes will not show on the arrowboard unless you press ENTER.

MENU Display

Press the "MENU" button to access the menu of internal options. Once in the menu, use up & down arrows to select the desired menu item with the arrow at the left, and then press ENTER.

Alternatively, press "MENU" again to exit menu mode, or simply let the menu mode time out and the remote will return to the status display.

Menu mode choices are as follows:

SIGN BRIGHTNESS
SIGN INFO
REMOTE POWER SETUP
REMOTE OPTIONS
DIAGNOSTICS

SIGN BRIGHTNESS Mode

Sign Brightness settings are as follows:

AUTO OR MANUAL?
MANUAL SETTING =
MANUAL TIMEOUT =

Use the up and down keys to select the item you wish to modify by moving the arrow at the left. Press the ENTER key to select that item and modify that value. The item value will then

flash and may be adjusted with the up and down buttons. Press ENTER again to save the new value & return to the item selection arrow.

AUTO OR MANUAL? May be set to either "AUTO" or "MANUAL"

Note that each time power is turned off & back on, the arrowboard always returns to "AUTO." This is a safety feature. Some models do not allow "MANUAL."

MANUAL SETTING = May be set from 0 to 100. This is the bulb intensity setting to be displayed in manual.

MANUAL TIMEOUT = May be set from 0 to 24 hours. Some models may not allow a zero setting or may allow less than 24 hours.

A zero setting allows the manual intensity to stay in effect indefinitely until the arrowboard is powered off.

A setting of 1 to 24 hours means that the intensity will remain at the manual setting for this period of time, and then automatically switch back to AUTO. The time begins when intensity is set to MANUAL or the time is modified.

SIGN INFO Mode

Sign Info settings are as follows:

CFG = Shows one of the following lamp configurations of the main controller.

13 LAMP STANDARD
13 LAMP WIG-WAG
15 LAMP STANDARD
15 LAMP WIG-WAG
25 LAMP STANDARD
25 LAMP WIG-WAG

*This setting is NOT user changeable and MUST be configured at the factory.

SERIAL NO.: shows the serial number of the main controller. This is an 8 digit number. It is not changeable by the user.

CONTROL VERSION: shows the software version in the main controller. It may or may not be the same version as the software in the remote. The version of the software in the remote can be seen in the upper right corner of the display just after the remote is turned on.

TOTAL HOURS: shows the total number of "on" hours that the unit has been in service. Hours accumulate only when the arrowboard is displaying a pattern. This number is not changeable by the user.

USER HOURS: shows another hour meter, but this one is resettable by the user. It can be used as a job or service hourmeter as the user desires.

ZERO USER HOURS? Is used to zero the user hourmeter. Use the up or down arrow keys to change the "N" to a "Y", and then press "ENTER" to zero the user hourmeter.

REMOTE POWER SETUP Mode

Use the up and down keys to select the item you wish to modify by moving the arrow at the left. Press the ENTER key to select that item and modify that value. The item value will then flash and may be adjusted with the up and down buttons. Press ENTER again to save the new value & return to the item selection arrow.

Remote power setup settings are as follows:

WIRING: DIRECT WIRED or RADIO LINK. This should only be set to the actual type of system in use.

NEVER AUTO SHUTOFF
OFF 5 MIN INACTIVE
OFF 2 MIN INACTIVE
OFF 1 MIN INACTIVE
OFF WHEN SIGN IS OFF

These settings are used to save power in the remote. They are primarily of use in a radio linked system where conservation of the remote battery is an issue. NEVER AUTO SHUTOFF is most appropriate for a direct wired system.

REMOTE BATTERY = displays the voltage detected at the remote battery. This is only of any interest in a wireless RF linked system, where the remote & main controller uses different batteries.

REMOTE OPTIONS Mode

This mode makes internal settings in the remote and does not affect the main controller operation in any way. These options are primarily for operator convenience and power saving.

Use the up and down keys to select the item you wish to modify by moving the arrow at the left. Press the ENTER key to select that item and modify that value. The item value will then flash and may be adjusted with the up and down buttons. Press ENTER again to save the new value & return to the item selection arrow.

REMOTE OPTIONS items are as follows:

KEY BEEP
ALARM BEEP
CONTRAST
BACKLIGHT
KEY LIGHTING
LIGHTING TIMEOUT
NIGHT SENSOR

KEY BEEP may be set to ON or OFF as desired. ON will give a short chirp as each key is pressed, OFF will give no beep.

ALARM BEEP may be set to ON or OFF as desired. ON will allow a short beep when an alarm is present, OFF will not.

CONTRAST sets the contrast of the LCD display. It may be set from 1-100, but practical values are about 1-10.

BACKLIGHT may be set from 0 to 100. This sets the intensity percentage of the LCD backlight. It is normally set to 100. Setting to 0 will result in no backlight and can be used to save significant power in a radio linked remote. The user can set to intermediate values to suit personal preference.

LIGHTING TIMEOUT may be set to NONE, 5s, 10s, 30s or 60s. This is the amount of time that the backlight and key illumination will remain on after the last key press. Setting to NONE means that the lighting will always stay on. Setting to a numeric value can be used to save power in a radio linked remote, or can be used to darken the remote when not in use if the user so prefers.

NIGHT SENSOR can be set to OFF or ON. Default is OFF. If set to ON, then the key illumination and LCD backlight will not be illuminated unless a low ambient light condition is detected at the sensor just below the 1/0 key. This can be useful in vehicle cab mounted applications to automatically illuminate the remote only at night. It also can save power in a radio linked remote by only using the illumination power at night.

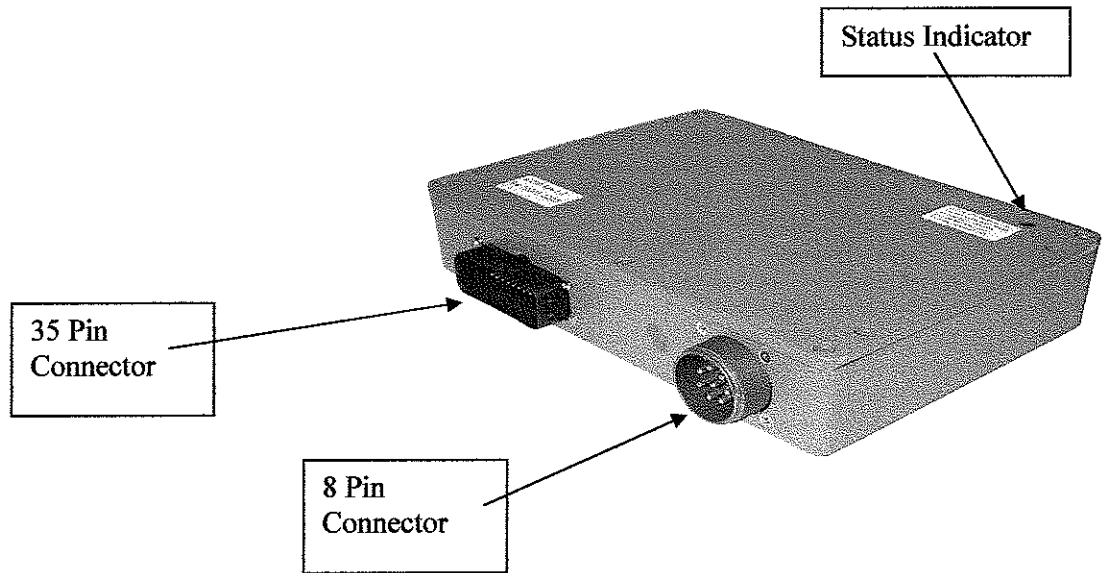
DIAGNOSTICS Mode

Diagnostics mode displays the following values:

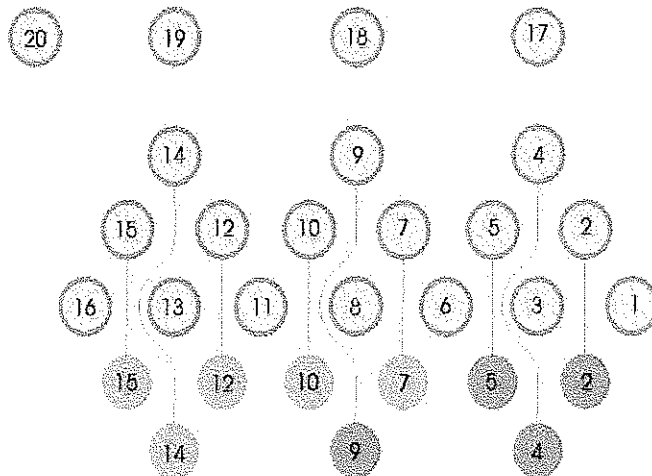
AMBIENT NOW
AMBIENT PERCENT
CONTROLLER BATT
TEMPERATURE

This information is of no real use in ordinary circumstances, but Trafcon service personnel may ask for these readings to assist in troubleshooting.

Connections & Wiring



Lamp Circuit Wiring for Standard Setup

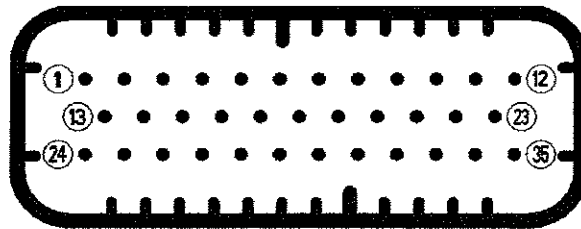


- Lamp circuits 1-20 have a specified Colored 18 gauge wire provided to each lamp. The “Negative” connection will switch on and off causing the lamp to flash.
- Each lamp also has an Orange 14 gauge wire provided for the “Positive Common” lamp connection. The “Positive Common” will turn on with the 1/0 button.

**35 PIN CONTROLLER CONNECTOR TO
LAMP CIRCUIT STANDARD WIRING**

Pin	Wire Color	Gauge	Function	Application
1	Brown	18	Lamp circuit 1	All
13	Red	18	Lamp circuit 2	All
2	Yellow	18	Lamp circuit 3	15,25
14	Green	18	Lamp circuit 4	All
3	Blue	18	Lamp circuit 5	25
15	White	18	Lamp circuit 6	All
4	Gray	18	Lamp circuit 7	25
16	Black	18	Lamp circuit 8	All
5	Brown/White	18	Lamp circuit 9	25
17	Red/White	18	Lamp circuit 10	25
6	Yellow/White	18	Lamp circuit 11	All
18	Green/White	18	Lamp circuit 12	25
7	Blue/White	18	Lamp circuit 13	15,25
19	White/Black	18	Lamp circuit 14	All
8	Gray/White	18	Lamp circuit 15	All
20	Black/White	18	Lamp circuit 16	All
9	Red/Black	18	Mode lamp 17	All except some miniboards
21	Tan	18	Mode lamp 18	All except some miniboards
10	Purple	18	Mode lamp 19	All except some miniboards
22	Pink	18	Low battery lamp 20	Solar models
33	White	18	Data A	Hardwired remote option
27	Green	18	Data B	Hardwired remote option
35	Red	18	+12V to remote	Hardwired remote option
12	Black	18	Ground to remote	Hardwired remote option
30	White/Red	18	Light sensor +	All
23	White/Green	18	Light Sensor -	All
31		18	Power tilt limit	Power tilt limit switch option
11		18	Power tilt limit	Power tilt limit switch option

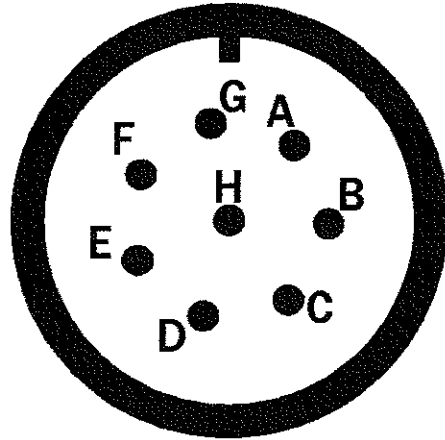
**35 PIN CONTROLLER CONNECTOR
VIEWED FROM WIRE SIDE**



Mating connector housing AMP 776164-1
Mating contact AMP 770520-1
18 AWG wire maximum (0.8mm²)
Wire outer diameter .067" to .106" (1.7-2.7mm)
Wire strip length .200" (5.1mm)

- 1 = LAMP 1
- 2 = LAMP 3
- 3 = LAMP 5
- 4 = LAMP 7
- 5 = LAMP 9
- 6 = LAMP 11
- 7 = LAMP 13
- 8 = LAMP 15
- 9 = LAMP 17
- 10 = LAMP 19
- 11 = Ground (either pin 11 or 12 may be used for RS-232 ground)
- 12 = Ground (either pin 11 or 12 may connect to pin 2 of remote unit)
- 13 = LAMP 2
- 14 = LAMP 4
- 15 = LAMP 6
- 16 = LAMP 8
- 17 = LAMP 10
- 18 = LAMP 12
- 19 = LAMP 14
- 20 = LAMP 16
- 21 = LAMP 18
- 22 = LAMP 20
- 23 = Analog ground for photocell – do not connect to anything else!
- 24 = Not connected
- 25 = Not connected
- 26 = POWER DOWN (connect to ground to turn off & reduce power consumption)
- 27 = DATA B (connect to DATA B of remote unit)
- 28 = RS-232 Receive in (connect to transmit out of configuration computer)
- 29 = RS-232 transmit out (connect to receive in of configuration computer)
- 30 = Photocell positive (photocell connects between pins 30 & 23)
- 31 = Limit switch (for power tilt, optional)
- 32 = IGN (ignition) – (can be used as a power on signal – not currently used)
- 33 = DATA A (connect to DATA A of remote unit)
- 34 = START (can be used to blank sign when engine cranking – not currently used)
- 35 = REMOTE +12V (connect to pin 1 of remote unit)

**8 PIN CONTROLLER CONNECTOR
VIEWED FROM WIRE SIDE**



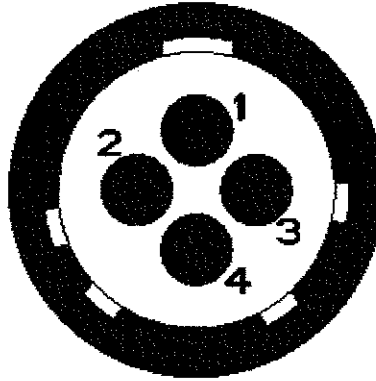
Mating connector ITT-Cannon CA3106E22-23SB
12AWG wire maximum (3.3 mm²)

- A = Power tilt positive
- B = +12V to battery (must connect both terminals B & H to provide adequate current)
- C = Lamp positive common 1
- D = Lamp positive common 2
- E = GROUND to battery (must connect both E & F to provide adequate current)
- F = GROUND to battery (must connect both E & F to provide adequate current)
- G = Power tilt negative
- H = +12V to battery (must connect both terminals B & H to provide adequate current)

**8 PIN CONTROLLER CONNECTOR
STANDARD WIRING**

Pin	Wire Color	Gauge	Function
A	Green/Yellow	12	Actuator – Positive
	or White	12	
B	Red	12	Power – Positive
C	Orange	12	Common to Lamps
D	Orange	12	Common to Lamps
E	Black	12	Ground - Negative
F	Black	12	Ground - Negative
G	Black/Yellow	12	Actuator - Negative
	or Black	12	
H	Red	12	Power – Positive

**4 PIN REMOTE CONNECTOR
VIEWED FROM WIRE SIDE
(HARDWIRED REMOTE OPTION ONLY)**



Mating connector housing AMP 206060-1
Cable clamp AMP 206062-3
Mating contact AMP 66101-4 or 66100-9
18 AWG wire maximum (0.8mm²)
Wire outer diameter .080" to .100" (2.0-2.5mm)
Wire strip length .200" (5.1mm)

1 = +12V battery
2 = Ground
3 = Data A (connect to data A of controller)
4 = Data B (connect to data B of controller)

**4 PIN REMOTE CONNECTOR
STANDARD WIRING**

Circuit	Wire Color	Gauge
1	Red	18
2	Black +Shield	18
3	White	18
4	Green	18

NOTE: Use only shielded cable.

Troubleshooting

Symptom	Possible cause
No display – No backlight	Dead battery Plug(s) not connected Defective controller
No display – Backlight works	No mode selected Plug(s) not connected Defective controller
No dimming	Defective photocell Shorted photocell wires Defective controller
Lamps stay dim	Defective photocell Broken photocell wire Defective controller
Some lamps do not light	Defective lamp(s) Short at lamp Broken wire(s) Defective controller
Power tilt does not work	Broken wire(s) Defective actuator or control Defective controller

MB Series – Smart Flash

Installation of Vehicle Mounted Controllers

1. Connect one 12 gauge Black wire to the Negative terminal of the battery. Do NOT use a smaller wire gauge. **THE BLACK NEGATIVE WIRE MUST BE CONNECTED FIRST.**
* Note if 4412A lamps are used in the sign panel, use the supplied Black 8 gauge wire for the Negative battery connection.
2. Connect the one 12 gauge White wire to the Positive terminal of the battery. Do NOT use a smaller wire gauge.
* Note if 4412A lamps are used in the sign panel, use the supplied Red 8 gauge wire for the Positive battery connection.
3. If fusing is preferred it is recommended that a 35A fuse be installed on the red wire at the battery.
4. Mount the remote control head in a convenient location within the vehicle cab.
5. Route the gray four-conductor cable from the sign panel to the remote control head and connect.
6. Installation is now complete. See Operating Instructions section.
Test all mode and arrow board functions thoroughly before use.

Installation for Wireless Option for Remote Control Head and Arrowboard Panel

1. Locate suitable mounting location for the Smart Flash Remote with Internal RF option. The manufacturer preferred mounting locations are on or above the dash of the vehicle where there is access to a 12VDC power point. Mounting in locations other than these may affect the performance of the internal wireless module.
2. Insert the power plug into a cigarette plug receptacle or a power point of your vehicle. It is recommended that you leave the plug connected at all times. If you prefer to hard wire the remote to a permanent power source, proceed with the following step otherwise proceed to step 6.
3. Cut the power plug off directly behind the plug. Separate the two wires and strip the ends. Terminate the ends with the appropriate terminals for the desired power connection
4. Connect the positive wire to a point that is connected to the positive terminal of a 12volt DC battery.

Alternatively, connecting the positive wire to the ignition switch will only enable arrowboard operation when the ignition is on. This configuration is not normally used.

5. Connect the negative wire to a point that is connected to the negative terminal of a 12volt DC battery.
6. Installation is now complete of the Smart Flash Remote with Internal RF option.
7. Connect and route sign panel power cable per MB Series installation instructions.
8. Turn power on at Remote Control Head and test all modes. If unit tests ok it is now ready to be put in service.

AGENCY NOTICE

Changes or modifications not expressly approved by the manufacturer could void the user's authority to operate the equipment.

TC Series – Smart Flash Solar

Battery Maintenance

Batteries should be carefully inspected on a regular basis; the system can become discharged for a number of reasons, for example:

- Operating conditions during the “winter” months of November through February, when the power provided by the array is reduced.
- Improper maintenance, such as not cleaning the PV array.
- Electrolyte in the battery cells not maintained at the proper level.
- Loose or corroded battery terminal connections.
- Improper position of the system where the PV array is in the shadow of an object, or tilted away from the sun.
- Prolonged cloudy weather where the system is operating.

Maintenance of batteries, especially the proper voltage level, in the above situations should be performed as required. In some instances, it will be necessary to provide multiple recharges from an external source or replace with fresh batteries.

Caution ! It is important to maintain the proper level of electrolyte in the batteries at all times. If the level is too high the electrolyte will “boil” out of the top of the battery during charging and corrode the terminal connections. If the level is too low the battery life will be severely shortened.

Warning ! Charging batteries produce hydrogen, which can explode when proper operating procedures are not followed. To prevent severe personal injury, death, or substantial property damage when working around batteries, be extremely careful. Always use approved eye protection, face shield, rubber gloves, and insulated tools.

Electrolyte levels should be just below the bottom of the vent well, about $\frac{1}{2}$ to $\frac{3}{4}$ inch above the tops of the separators. The electrolyte level should not drop below the top of the plates. See figure 1 for additional information.

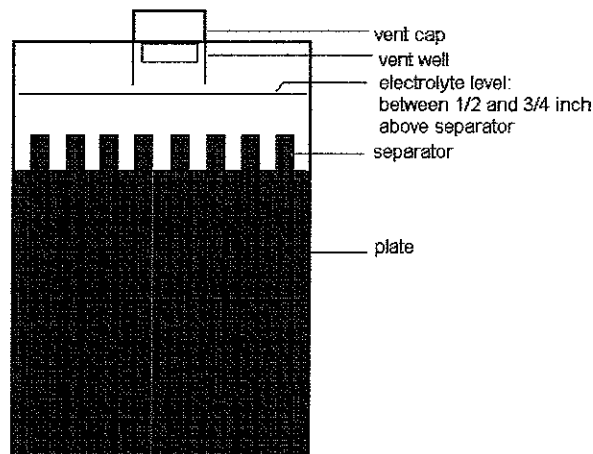


Figure 1. Battery (showing inside elements)

After checking electrolyte, check that all vent caps are tightly in place.

Loose or corroded connections create high resistance that could cause battery bank overcharging or undercharging and possibly damage the battery bank.

Cleaning the terminals, tightening the connections, and applying a thin coat of petroleum jelly (Vaseline) will help to prevent corrosion.

Use the following table to determine the status of each battery in the system:

6-Volt Battery	12-Volt Battery	Specific Gravity	State of Charge
6.36 or more	12.72 or more	1.295 or more	100%
6.15 to 6.36	12.30 to 12.72	1.250 to 1.295	75% to 100%
6.00 to 6.15	12.00 to 12.30	1.200 to 1.250	50% to 75%
5.85 to 6.00	11.70 to 12.00	1.175 to 1.200	25% to 50%
5.70 to 5.85	11.40 to 11.70	1.120 to 1.175	0% to 25%

1. Check the voltage levels with a digital voltmeter and the specific gravity with an approved hydrometer.
2. Before taking any readings, run system on the batteries for a few minutes. This removes any minor surface charge on the battery plates. The surface charge will affect the accuracy of your readings.
3. Service or replace any battery with a specific gravity that is ten percent higher or lower than the average.

Storing and Handling Batteries:

The electrolyte in discharged batteries may freeze if the outside air temperature drops below the freezing point of water: 32°F (0°). When a battery is discharged, the electrolyte solution in the battery is mostly water. The electrolyte in a fully charged battery has a much higher concentration of sulfuric acid and therefore freezes at a much lower temperature.

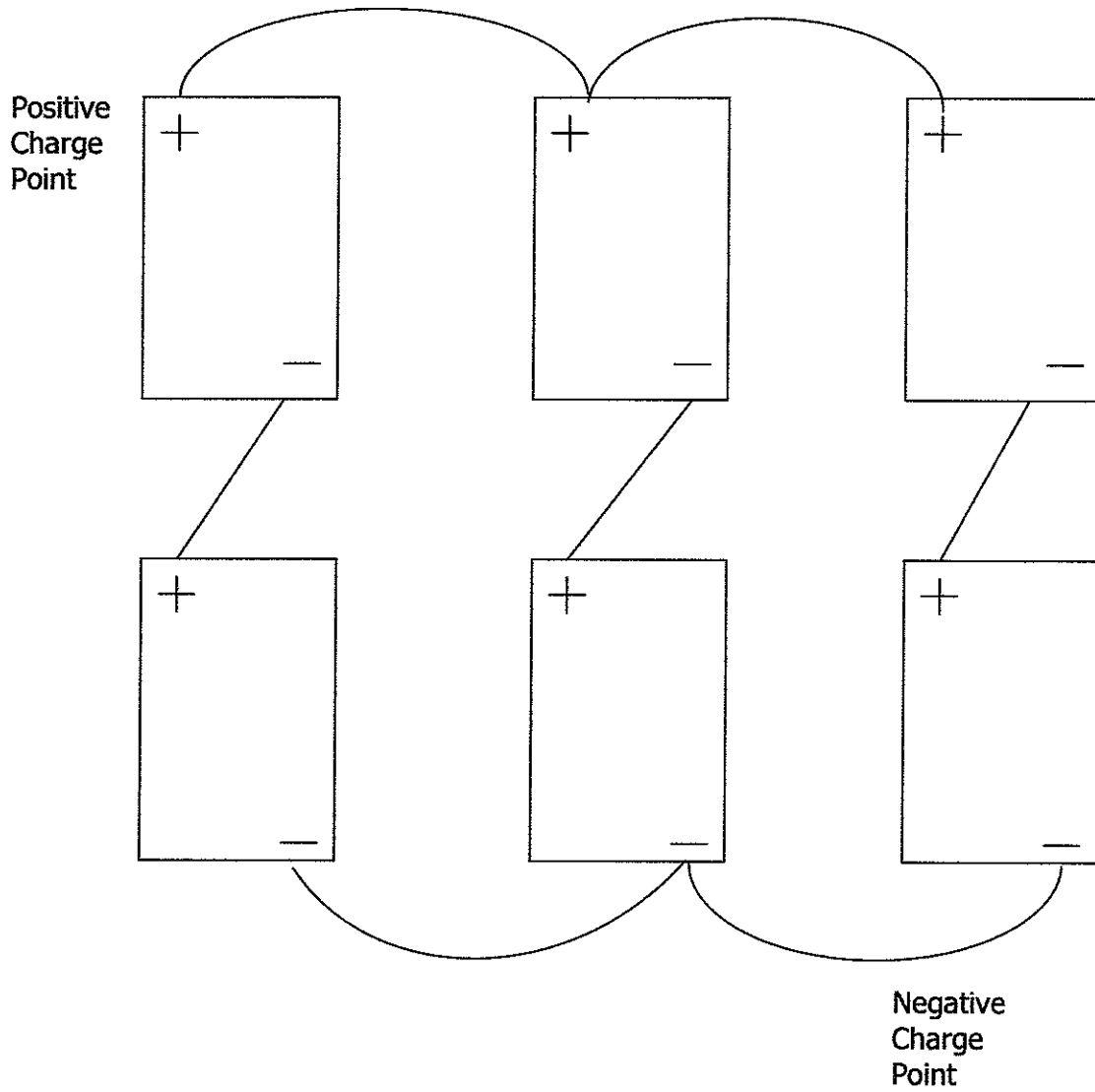
The Specific Gravity/Freeze Temperature chart provides information on specific gravity verses freezing temperature for the batteries used in the system.

Specific Gravity	Freeze Temperature
1.250	-62°F (-52°C)
1.200	-16°F (-27°C)
1.150	5°F (-15°C)
1.100	19°F (-7°C)

Care for batteries that are stored during winter months or slow periods is as follows:

1. Fill battery as required with distilled water.
2. Fully charge to a specific gravity of 1.272.
3. Place in a cool place between the temperatures of 32°F (0°C) and 80°F (38°C). If one battery's voltage differs from the rest of the bank by 5 percent, check its specific gravity.

TC-1 Solar Trailer Battery Wiring Diagram



* The batteries are 6 Volt, Group Size GC2, Deep Cycle Batteries.

TC Series – Smart Flash Diesel

This manual was written to assist the mechanic or technician in troubleshooting the electrical systems of the **Trafcon TC Series** diesel arrowboard.

In order to efficiently troubleshoot these systems, an explanation of each is included in addition to the normal troubleshooting chart. The appropriate section should be read thoroughly prior to an attempt to make repairs.

STARTING

The starting system consists of a toggle switch and a momentary contact starter switch. When the toggle switch is moved to the “on” position, current flows to the electric fuel pump, the alternator voltage regulator and one side of the starter switch. Pushing the starter switch allows current to flow to the starter solenoid and engages the starter.

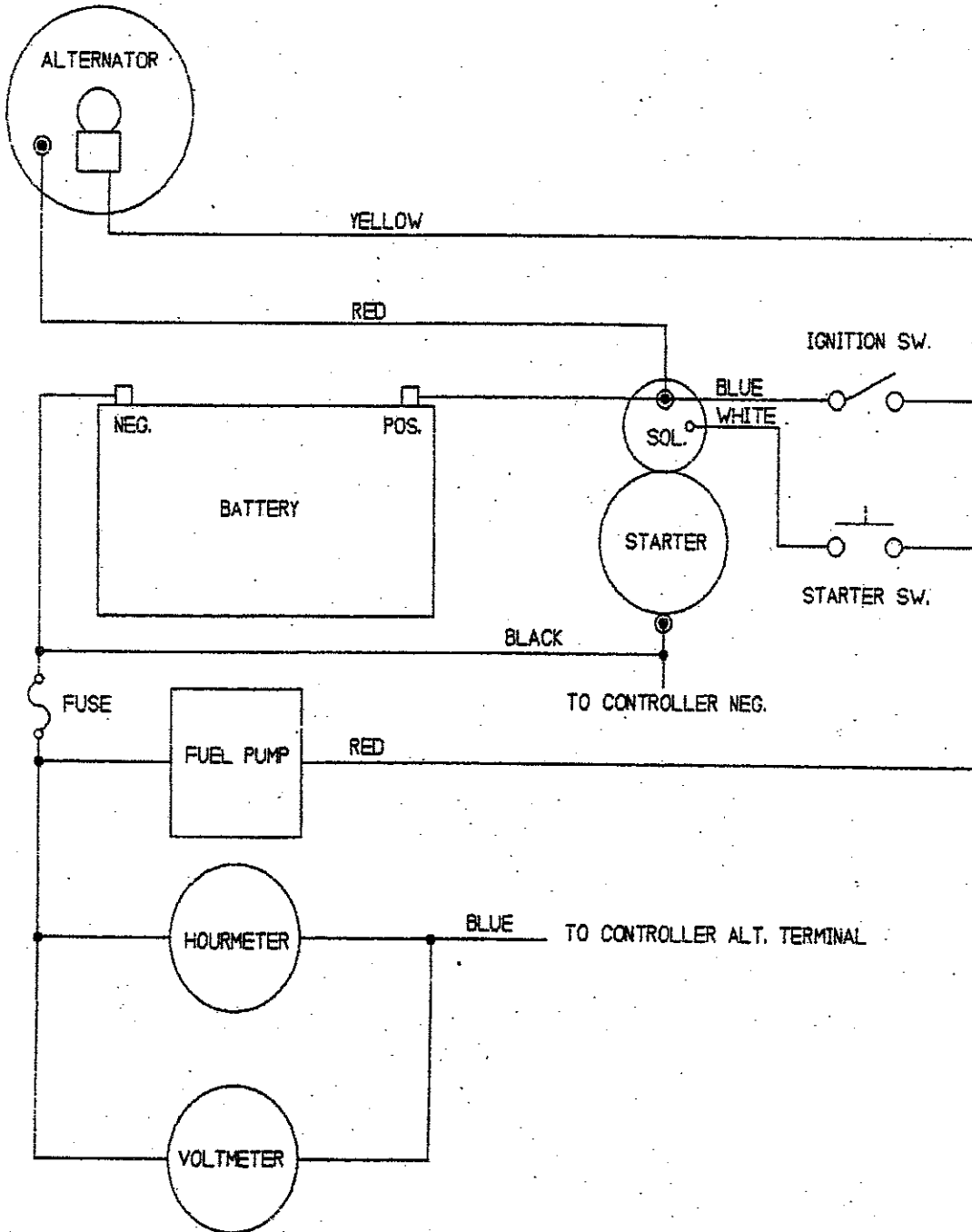
CHARGING

When the toggle switch is in the “on” position, current flows from the battery to the alternator voltage regulator allowing the alternator to charge. The normal charge rate under “no load” conditions is 13.8 – 14.2 volts. When troubleshooting a charging system it is important to check the basics first. The battery connections should be checked, as well as the electrolyte level in the battery. Low electrolyte in only one cell can indicate that the cell is bad. A battery in which all the cells are dry can indicate an overcharging problem and a possible bad battery. If the battery is suspect, check each cell using a hydrometer. Before attempting the check the alternator, allow the engine to run for approximately 15 minutes. This will eliminate false voltmeter readings due to a low battery. This step is absolutely necessary after “jump starting” a unit.

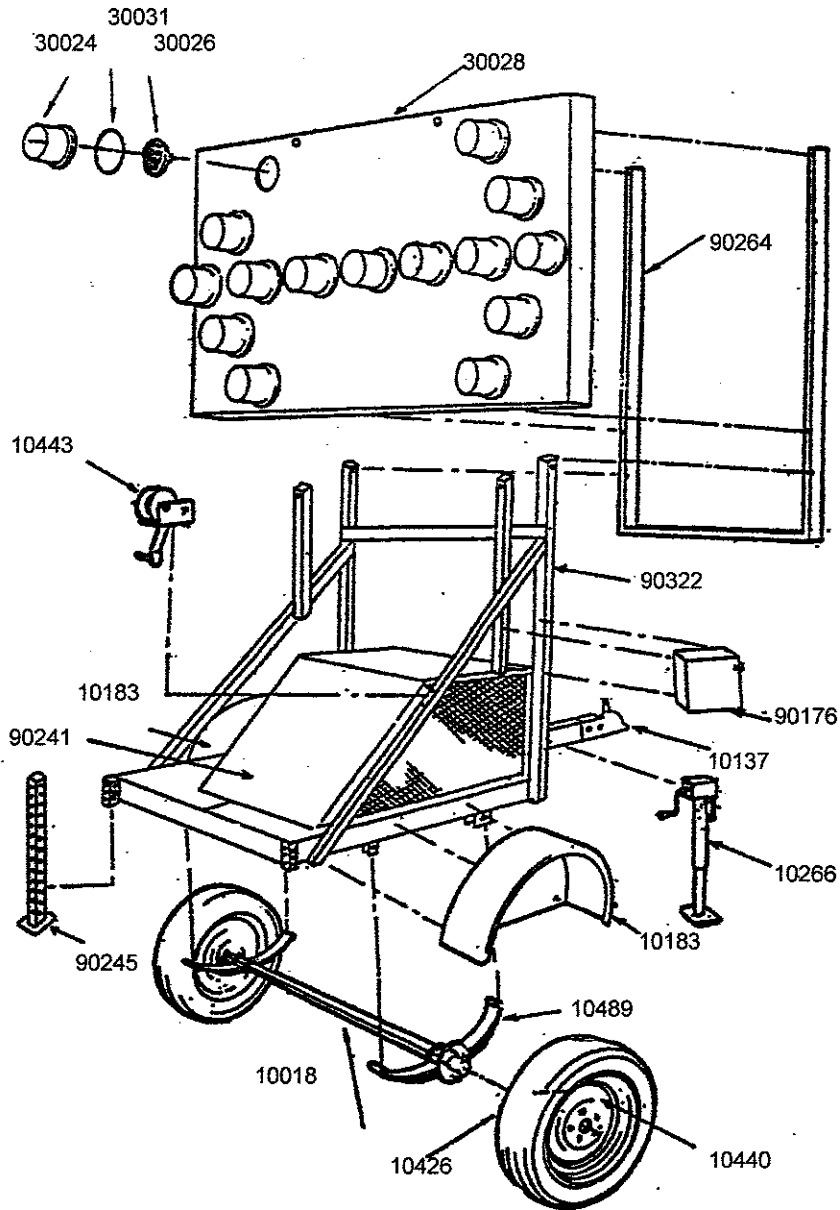
FUEL PUMP

The electric fuel pump is energized when the toggle switch is in the “on” position. When operating normally a steady “clicking” sound can be heard. If the fuel pump does not “click,” check for the presence of voltage with a test light. Also, check the fuse next to the toggle switch.

TC1 SERIES TRAILER WIRING

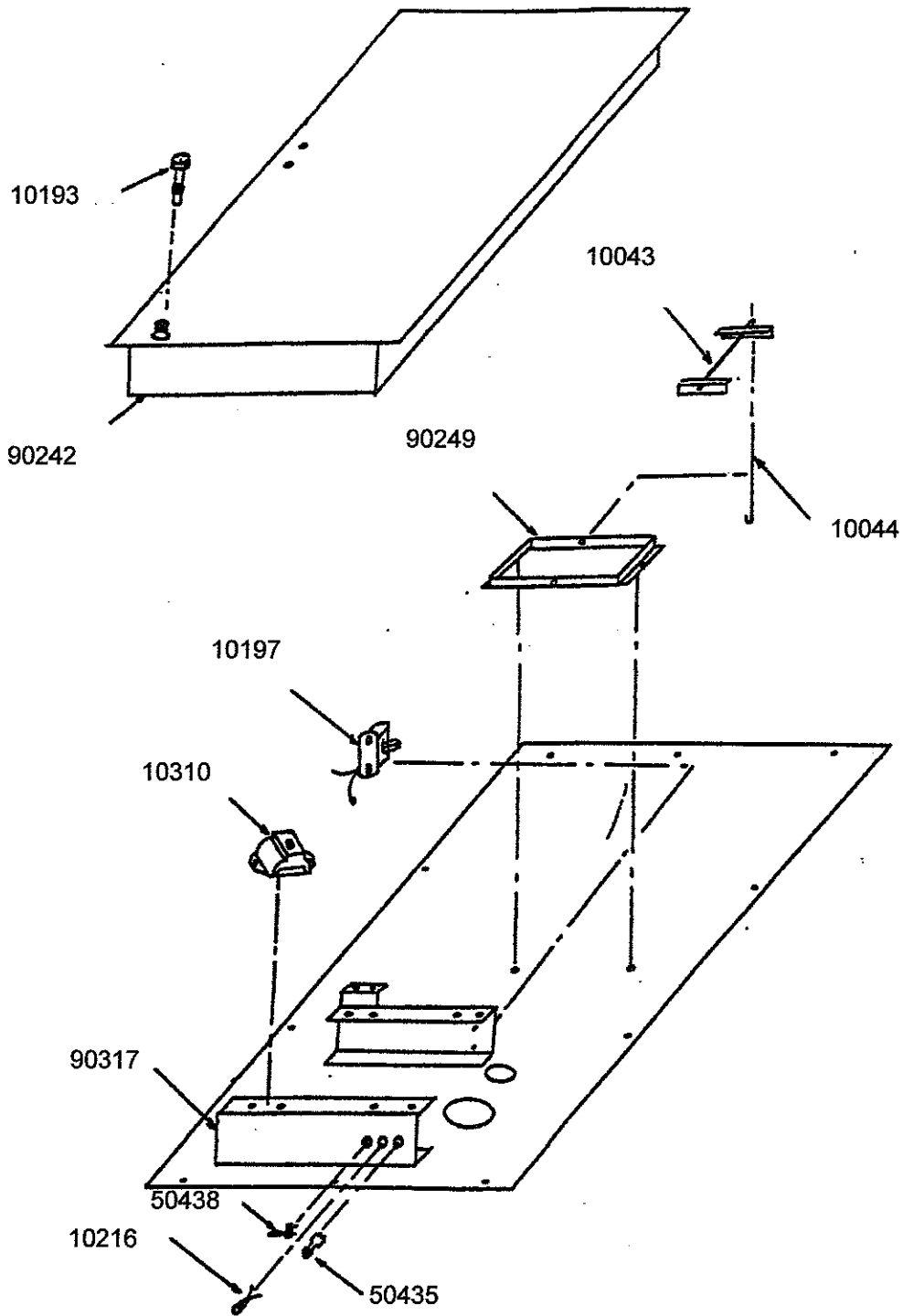


TC1 SERIES TRAILER MOUNTED ADVANCE WARNING PANELS



ARROWBOARD PARTS

FUEL SYSTEM AND ACCESSORIES



TRAFCON INDUSTRIES, INC.

MANUFACTURER'S WARRANTY

LIMITED WARRANTY POLICY

Trafcon Industries, Inc. (Trafcon) hereby warrants to the original purchaser (customer), sold directly or through an authorized dealer, the product(s) listed for the time period(s) listed, from the date of purchase. Trafcon warrants the product(s) against defects in material and workmanship provided the products are installed and maintained properly, and operated under normal conditions. This warranty does not apply to product(s) that have been improperly applied, installed or maintained. The customer will be responsible for removing any defective item(s) from the product and returning the item(s), or the entire product, transportation costs prepaid, to Trafcon 81 Texaco Rd, Mechanicsburg, PA 17050. The customer will be responsible for reinstallation of item(s) upon return. All returns must have a Return Material Authorization (RMA) number prior to shipping. RMA numbers can be obtained by contacting Trafcon at 717-691-8007, or on the Internet at www.Trafcon.com. Proof of purchase will be required to obtain the RMA. Trafcon will, at its option, repair or replace defective product(s) or component part(s). Such item(s) will be returned by Trafcon, transportation costs paid (normal ground delivery), within the United States. Repaired or replaced product(s) or component part(s) will carry the remainder of their respective original warranty term(s).

Exclusions from this warranty are: unauthorized sale outside the United States, the finish, tires, incandescent lamps, any condition(s) caused by abnormal use or service, negligent operation, act of God, and product specific limitations, if any, listed below.

THE LOSS OF USE OF THE PRODUCT, LOSS OF TIME, INCONVENIENCE, COMMERCIAL LOSS OR CONSEQUENTIAL DAMAGES ARE NOT COVERED. TRAFCON RESERVES THE RIGHT TO CHANGE THE DESIGN OF ANY PRODUCT WITHOUT ASSUMING ANY OBLIGATION TO MODIFY ANY PRODUCT PREVIOUSLY MANUFACTURED.

This warranty gives you specific legal rights and you may have other rights, which may vary from state to state.

THERE ARE NO WARRANTIES, EXPRESSED OR IMPLIED, INCLUDING ANY IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS, WHICH EXTEND BEYOND THIS WARRANTY PERIOD. THERE ARE NO WARRANTIES THAT EXTEND BEYOND THE FACE HEREOF. SELLER DISCLAIMS IMPLIED WARRANTY OF MERCHANTABILITY.

THE WARRANTY SHALL NOT APPLY TO ANY TRAFCON PRODUCT WHICH HAS BEEN MODIFIED, IMPROPERLY INSTALLED, IMPROPERLY MAINTAINED OR IMPROPERLY USED.

The product(s) and time period(s) under this warranty are as follows:

**1. FLASHING ARROW BOARDS, TRAILER MOUNTED, SOLAR (TC1)
LIMITED 3 YEAR WARRANTY**

Limited 3 year warranty on these Trafcon products. Trafcon warrants each new unit against factory defects in material and workmanship for a 3 year period from the original date of purchase.

EXCEPTIONS: Batteries- 18 months.

THIS WARRANTY DOES NOT COVER THE FOLLOWING: Tires, Finish.

**2. FLASHING ARROW BOARDS, TRAILER MOUNTED, DIESEL (TC3)
LIMITED 1 YEAR WARRANTY**

Limited 1 year warranty on these Trafcon products. Trafcon warrants each new unit against factory defects in material and workmanship for a 1 year period from the original date of purchase.

EXCEPTIONS: Batteries- 60 months (pro-rated).

THIS WARRANTY DOES NOT COVER THE FOLLOWING: Tires, Finish, Incandescent lamps.

**3. FLASHING ARROW BOARDS-VEHICLE MOUNTED (MB & TM)
LIMITED 1 YEAR WARRANTY**

Limited 1 year warranty on these Trafcon products. Trafcon warrants each new unit against factory defects in material and workmanship for a 1 year period from the original date of purchase.

THIS WARRANTY DOES NOT COVER THE FOLLOWING: Finish, Incandescent lamps.

4. ARROW DYNAMIC SIGNS-TRAILER MOUNTED (TC-ADS)

LIMITED 1 YEAR WARRANTY

Limited 1 year warranty on these Trafcon products. Trafcon warrants each new unit against factory defects in material and workmanship for a 1 year period from the original date of purchase.

EXCEPTIONS: Solar modules- 36 months, Batteries- 18 months.

THIS WARRANTY DOES NOT COVER THE FOLLOWING: Tires, Finish.

5. ARROW DYNAMIC SIGNS- VEHICLE MOUNTED (MB-ADS)

LIMITED 1 YEAR WARRANTY

Limited 1 year warranty on these Trafcon products. Trafcon warrants each new unit against factory defects in material and workmanship for a 1 year period from the original date of purchase.

THIS WARRANTY DOES NOT COVER THE FOLLOWING; Finish.

6. SPEED DISPLAY SIGNS- STATIONARY, VEHICLE & TRAILER MOUNTED (SST)

LIMITED 1 YEAR WARRANTY

Limited 1 year warranty on these Trafcon products. Trafcon warrants each new unit against factory defects in material and workmanship for a 1 year period from the original date of purchase.

EXCEPTIONS: Solar modules- 36 months, Batteries- 18 months.

THIS WARRANTY DOES NOT COVER THE FOLLOWING: Tires, Finish.

7. WORK ZONE RADIOS- STATIONARY, VEHICLE & TRAILER MOUNTED (WIZARD)

LIMITED 1 YEAR WARRANTY

Limited 1 year warranty on these Trafcon products. Trafcon warrants each new unit against factory defects in material and workmanship for a 1 year period from the original date of purchase.

EXCEPTIONS: Solar modules-36 months, Batteries- 18 months.

THIS WARRANTY DOES NOT COVER THE FOLLOWING: Tires, Finish.

7. PORTABLE EQUIPMENT PLATFORMS (PEP)

LIMITED 1 YEAR WARRANTY

Limited 1 year warranty on these Trafcon products. Trafcon warrants each new unit against factory defects in material and workmanship for a 1 year period from the original date of purchase.

EXCEPTIONS: Solar modules- 36 months, Batteries- 18 months.

THIS WARRANTY DOES NOT COVER THE FOLLOWING: Tires, Finish.

RIGHTS RESERVED

Trafcon reserves the right to make changes in design, materials and specifications or to make product changes as deemed necessary without prior notice. Obligations or liabilities will not be assumed with respect to similar products previously advertised or produced.

PRINTING ERRORS

Every effort has been made to avoid printing errors in our printed literature and on our website. Should there have been any specification or application errors, we must disclaim responsibility.

OMISSIONS

Any product(s) or component(s) not specifically covered or excluded herein, will be covered for a 1 year period from date of purchase or by the Original Equipment Manufacturer's warranty, whichever is greater.

NHTSA Notification Statement (CFR 575.6)

If you believe that your vehicle has a defect which could cause a crash or could cause injury or death, you should immediately inform the National Highway Traffic Safety Administration in addition to notifying Trafcon Industries.

If NHTSA receives similar complaints, it may open an investigation, and if it finds that a safety defect exists in a group of vehicles, it may order a recall and remedy campaign. However, NHTSA cannot become involved in individual problems between you, your dealer, or Trafcon Industries.

To contact NHTSA, you may either call the Auto Safety Hotline toll free at 1-800-424-9393 or (202-366-0123) or write to NHTSA, US Department of Transportation, 400 7th Street, SW, NSA-11, Washington, DC 20590. You can also obtain other information about motor vehicle safety from the hotline.

Tire Safety Information

This portion of the User's Manual contains tire safety information as required by 49 CFR 575.6.

Section 2.1 contains "Steps for Determining Correct Load Limit - Trailer".

Section 2.2 contains "Steps for Determining Correct Load Limit – Tow Vehicle".

Section 2.3 contains a Glossary of Tire Terminology, including "cold inflation pressure", "maximum inflation pressure", "recommended inflation pressure", and other non-technical terms.

Section 2.4 contains information from the NHTSA brochure entitled "Tire Safety – Everything Rides On It".

This brochure, as well as the preceding subsections, describes the following items;

- Tire labeling, including a description and explanation of each marking on the tires, and information about the DOT Tire Identification Number (TIN).
- Recommended tire inflation pressure, including a description and explanation of:
 - A. Cold inflation pressure.
 - B. Vehicle Placard and location on the vehicle.
 - C. Adverse safety consequences of under inflation (including tire failure).
 - D. Measuring and adjusting air pressure for proper inflation.
- Tire Care, including maintenance and safety practices.
- Vehicle load limits, including a description and explanation of the following items:
 - A. Locating and understanding the load limit information, total load capacity, and cargo capacity.
 - B. Calculating total and cargo capacities with varying seating configurations including quantitative examples showing / illustrating how the vehicles cargo and luggage capacity decreases as combined number and size of occupants' increases. This item is also discussed in Section 3.
 - C. Determining compatibility of tire and vehicle load capabilities.
 - D. Adverse safety consequences of overloading on handling and stopping on tires.

Steps for Determining Correct Load Limit – Trailer

Determining the load limits of a trailer includes more than understanding the load limits of the tires alone. On all trailers there is a Federal certification/VIN label that is located on the forward half of the left (road) side of the unit. This certification/VIN label will indicate the trailer's Gross Vehicle Weight Rating (GVWR). This is the most weight the fully loaded trailer can weigh. It will also provide the Gross Axle Weight Rating (GAWR). This is the most a particular axle can weigh. If there are multiple axles, the GAWR of each axle will be provided.

If your trailer has a GVWR of 10,000 pounds or less, there is a vehicle placard located in the same location as the certification label described above. This placard provides tire and loading information. In addition, this placard will show a statement regarding maximum

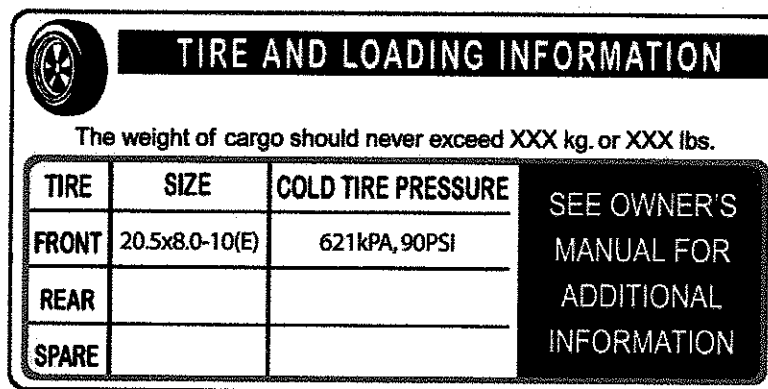
cargo capacity. Cargo can be added to the trailer, up to the maximum weight specified on the placard. The combined weight of the cargo is provided as a single number. In any case, remember: the total weight of a fully loaded trailer can not exceed the stated GVWR.

For trailers with living quarters installed, the weight of water and propane also need to be considered. The weight of fully filled propane containers is considered part of the weight of the trailer before it is loaded with cargo, and is not considered part of the disposable cargo load. Water however, is a disposable cargo weight and is treated as such. If there is a fresh water storage tank of 100 gallons, this tank when filled would weigh about 800 pounds. If more cargo is being transported, water can be off-loaded to keep the total amount of cargo added to the vehicle within the limits of the GVWR so as not to overload the vehicle. Understanding this flexibility will allow you, the owner, to make choices that fit your travel needs.

When loading your cargo, be sure it is distributed evenly to prevent overloading front to back and side to side. Heavy items should be placed low and as close to the axle positions as reasonable. Too many items on one side may overload a tire. The best way to know the actual weight of the vehicle is to weigh it at a public scale. Talk to your dealer to discuss the weighing methods needed to capture the various weights related to the trailer. This would include the weight empty or unloaded, weights per axle, wheel, hitch or king-pin, and total weight.

Excessive loads and/or underinflation cause tire overloading and, as a result, abnormal tire flexing occurs. This situation can generate an excessive amount of heat within the tire. Excessive heat may lead to tire failure. It is the air pressure that enables a tire to support the load, so proper inflation is critical. The proper air pressure may be found on the certification/VIN label and/or on the Tire Placard. This value should never exceed the maximum cold inflation pressure stamped on the tire.

Trailers 10,000 Pounds GVWR or Less



The weight of cargo should never exceed XXX kg. or XXX lbs.

TIRE	SIZE	COLD TIRE PRESSURE
FRONT	20.5x8.0-10(E)	621kPa, 90PSI
REAR		
SPARE		

SEE OWNER'S MANUAL FOR ADDITIONAL INFORMATION

Tire and Loading Information Placard - Figure 1-1

1. Locate the statement, "The weight of cargo should never exceed XXX kg or XXX lbs.," on your vehicle's placard. See figure 1-1.
2. This figure equals the available amount of cargo and luggage load capacity.
3. Determine the combined weight of luggage and cargo being loaded on the vehicle. That weight may not safely exceed the available cargo and luggage load capacity.

The trailer's placard refers to the Tire Information Placard attached adjacent to or near the trailer's VIN (Certification) label at the left front of the trailer.

Trailers Over 10,000 Pounds GVWR (Note: These trailers are not required to have a tire information placard on the vehicle)

1. Determine the empty weight of your trailer by weighing the trailer using a public scale or other means. This step does not have to be repeated.
2. Locate the GVWR (Gross Vehicle Weight Rating) of the trailer on your trailer's VIN (Certification) label.
3. Subtract the empty weight of your trailer from the GVWR stated on the VIN label. That weight is the maximum available cargo capacity of the trailer and may not be safely exceeded.

Steps for Determining Correct Load Limit – Tow Vehicle

1. Locate the statement, "The combined weight of occupants and cargo should never exceed XXX lbs.," on your vehicle's placard.
2. Determine the combined weight of the driver and passengers who will be riding in your vehicle.
3. Subtract the combined weight of the driver and passengers from XXX kilograms or XXX pounds.
4. The resulting figure equals the available amount of cargo and luggage capacity. For example, if the "XXX" amount equals 1400 lbs. and there will be five 150 lb. passengers in your vehicle, the amount of available cargo and luggage capacity is 650 lbs. (1400-750 (5 x 150) = 650 lbs.).
5. Determine the combined weight of luggage and cargo being loaded on the vehicle. That weight may not safely exceed the available cargo and luggage capacity calculated in Step # 4.
6. If your vehicle will be towing a trailer, load from your trailer will be transferred to your vehicle. Consult the tow vehicle's manual to determine how this weight transfer reduces the available cargo and luggage capacity of your vehicle.

Glossary Of Tire Terminology

Accessory weight

The combined weight (in excess of those standard items which may be replaced) of automatic transmission, power steering, power brakes, power windows, power seats, radio and heater, to the extent that these items are available as factory-installed equipment (whether installed or not).

Bead

The part of the tire that is made of steel wires, wrapped or reinforced by ply cords and that is shaped to fit the rim.

Bead separation

This is the breakdown of the bond between components in the bead.

Bias ply tire

A pneumatic tire in which the ply cords that extend to the beads are laid at alternate angles substantially less than 90 degrees to the centerline of the tread.

Carcass

The tire structure, except tread and sidewall rubber which, when inflated, bears the load.

Chunking

The breaking away of pieces of the tread or sidewall.

Cold inflation pressure

The pressure in the tire before you drive.

Cord

The strands forming the plies in the tire.

Cord separation

The parting of cords from adjacent rubber compounds.

Cracking

Any parting within the tread, sidewall, or inner liner of the tire extending to cord material.

CT

A pneumatic tire with an inverted flange tire and rim system in which the rim is designed with rim flanges pointed radially inward and the tire is designed to fit on the underside of the rim in a manner that encloses the rim flanges inside the air cavity of the tire.

Curb weight

The weight of a motor vehicle with standard equipment including the maximum capacity of fuel, oil, and coolant, and, if so equipped, air conditioning and additional weight optional engine.

Extra load tire

A tire designed to operate at higher loads and at higher inflation pressures than the corresponding standard tire.

Groove

The space between two adjacent tread ribs.

Gross Axle Weight Rating

The maximum weight that any axle can support, as published on the Certification / VIN label on the front left side of the trailer. Actual weight determined by weighing each axle on a public scale, with the trailer attached to the towing vehicle.

Gross Vehicle Weight Rating

The maximum weight of the fully loaded trailer, as published on the Certification / VIN label. Actual weight determined by weighing trailer on a public scale, without being attached to the towing vehicle.

Hitch Weight

The downward force exerted on the hitch ball by the trailer coupler.

Innerliner

The layer(s) forming the inside surface of a tubeless tire that contains the inflating medium within the tire.

Innerliner separation

The parting of the innerliner from cord material in the carcass.

Intended outboard sidewall

The sidewall that contains a white-wall, bears white lettering or bears manufacturer, brand, and/or model name molding that is higher or deeper than the same molding on the other sidewall of the tire or the outward facing sidewall of an asymmetrical tire that has a particular side that must always face outward when mounted on a vehicle.

Light truck (LT) tire

A tire designated by its manufacturer as primarily intended for use on lightweight trucks or multipurpose passenger vehicles.

Load rating

The maximum load that a tire is rated to carry for a given inflation pressure.

Maximum load rating

The load rating for a tire at the maximum permissible inflation pressure for that tire.

Maximum permissible inflation pressure

The maximum cold inflation pressure to which a tire may be inflated.

Maximum loaded vehicle weight

The sum of curb weight, accessory weight, vehicle capacity weight, and production options weight.

Measuring rim

The rim on which a tire is fitted for physical dimension requirements.

Pin Weight

The downward force applied to the 5th wheel or gooseneck ball, by the trailer kingpin or gooseneck coupler.

Non-pneumatic rim

A mechanical device which, when a non-pneumatic tire assembly incorporates a wheel, supports the tire, and attaches, either integrally or separably, to the wheel center member and upon which the tire is attached.

Non-pneumatic spare tire assembly

A non-pneumatic tire assembly intended for temporary use in place of one of the pneumatic tires and rims that are fitted to a passenger car in compliance with the requirements of this standard.

Non-pneumatic tire

A mechanical device which transmits, either directly or through a wheel or wheel center member, the vertical load and tractive forces from the roadway to the vehicle,

generates the tractive forces that provide the directional control of the vehicle and does not rely on the containment of any gas or fluid for providing those functions.

Non-pneumatic tire assembly

A non-pneumatic tire, alone or in combination with a wheel or wheel center member, which can be mounted on a vehicle.

Normal occupant weight

This means 68 kilograms (150 lbs.) times the number of occupants specified in the second column of Table I of 49 CFR 571.110.

Occupant distribution

The distribution of occupants in a vehicle as specified in the third column of Table I of 49 CFR 571.110.

Open splice

Any parting at any junction of tread, sidewall, or innerliner that extends to cord material.

Outer diameter

The overall diameter of an inflated new tire.

Overall width

The linear distance between the exteriors of the sidewalls of an inflated tire, including elevations due to labeling, decorations, or protective bands or ribs.

Ply

A layer of rubber-coated parallel cords.

Ply separation

A parting of rubber compound between adjacent plies.

Pneumatic tire

A mechanical device made of rubber, chemicals, fabric and steel or other materials, that, when mounted on an automotive wheel, provides the traction and contains the gas or fluid that sustains the load.

Production options weight

The combined weight of those installed regular production options weighing over 2.3 kilograms (5 lbs.) in excess of those standard items which they replace, not previously considered in curb weight or accessory weight, including heavy duty brakes, ride levelers, roof rack, heavy duty battery, and special trim.

Radial ply tire

A pneumatic tire in which the ply cords that extend to the beads are laid at substantially 90 degrees to the centerline of the tread.

Recommended inflation pressure

This is the inflation pressure provided by the vehicle manufacturer on the Tire Information label and on the Certification / VIN tag.

Reinforced tire

A tire designed to operate at higher loads and at higher inflation pressures than the corresponding standard tire.

Rim

A metal support for a tire or a tire and tube assembly upon which the tire beads are seated.

Rim diameter

This means the nominal diameter of the bead seat.

Rim size designation

This means the rim diameter and width.

Rim type designation

This means the industry of manufacturer's designation for a rim by style or code.

Rim width

This means the nominal distance between rim flanges.

Section width

The linear distance between the exteriors of the sidewalls of an inflated tire, excluding elevations due to labeling, decoration, or protective bands.

Sidewall

That portion of a tire between the tread and bead.

Sidewall separation

The parting of the rubber compound from the cord material in the sidewall.

Special Trailer (ST) tire

The "ST" is an indication the tire is for trailer use only.

Test rim

The rim on which a tire is fitted for testing, and may be any rim listed as appropriate for use with that tire.

Tread

That portion of a tire that comes into contact with the road.

Tread rib

A tread section running circumferentially around a tire.

Tread separation

Pulling away of the tread from the tire carcass.

Treadwear indicators (TWI)

The projections within the principal grooves designed to give a visual indication of the degrees of wear of the tread.

Vehicle capacity weight

The rated cargo and luggage load plus 68 kilograms (150 lbs.) times the vehicle's designated seating capacity.

Vehicle maximum load on the tire

The load on an individual tire that is determined by distributing to each axle its share of the maximum loaded vehicle weight and dividing by two.

Vehicle normal load on the tire

The load on an individual tire that is determined by distributing to each axle its share of the curb weight, accessory weight, and normal occupant weight (distributed in accordance with Table I of CRF 49 571.110) and dividing by 2.

Weather side

The surface area of the rim not covered by the inflated tire.

Wheel center member

In the case of a non-pneumatic tire assembly incorporating a wheel, a mechanical device which attaches, either integrally or separably, to the non-pneumatic rim and provides the connection between the non-pneumatic rim and the vehicle; or, in the case of a non-pneumatic tire assembly not incorporating a wheel, a mechanical device which attaches, either integrally or separably, to the non-pneumatic tire and provides the connection between tire and the vehicle.

Wheel-holding fixture

The fixture used to hold the wheel and tire assembly securely during testing.

Tire Safety - Everything Rides On It

The National Traffic Safety Administration (NHTSA) has published a brochure (DOT HS 809 361) that discusses all aspects of Tire Safety, as required by CFR 575.6. This brochure is reproduced in part below. It can be obtained and downloaded from NHTSA, free of charge, from the following web site:

http://www.nhtsa.dot.gov/cars/rules/TireSafety/ridesonit/tires_index.html

Studies of tire safety show that maintaining proper tire pressure, observing tire and vehicle load limits (not carrying more weight in your vehicle than your tires or vehicle can safely handle), avoiding road hazards, and inspecting tires for cuts, slashes, and other irregularities are the most important things you can do to avoid tire failure, such as tread separation or blowout and flat tires. These actions, along with other care and maintenance activities, can also:

- Improve vehicle handling

- Help protect you and others from avoidable breakdowns and accidents
- Improve fuel economy
- Increase the life of your tires.

This booklet presents a comprehensive overview of tire safety, including information on the following topics:

- Basic tire maintenance
- Uniform Tire Quality Grading System
- Fundamental characteristics of tires
- Tire safety tips.

Use this information to make tire safety a regular part of your vehicle maintenance routine. Recognize that the time you spend is minimal compared with the inconvenience and safety consequences of a flat tire or other tire failure.

Safety First—Basic Tire Maintenance

Properly maintained tires improve the steering, stopping, traction, and load-carrying capability of your vehicle. Underinflated tires and overloaded vehicles are a major cause of tire failure. Therefore, as mentioned above, to avoid flat tires and other types of tire failure, you should maintain proper tire pressure, observe tire and vehicle load limits, avoid road hazards, and regularly inspect your tires.

Finding Your Vehicle's Recommended Tire Pressure and Load Limits

Tire information placards and vehicle certification labels contain information on tires and load limits. These labels indicate the vehicle manufacturer's information including:

- Recommended tire size
- Recommended tire inflation pressure
- Vehicle capacity weight (VCW—the maximum occupant and cargo weight a vehicle is designed to carry)
- Front and rear gross axle weight ratings (GAWR—the maximum weight the axle systems are designed to carry).

Both placards and certification labels are permanently attached to the trailer near the left front.

Understanding Tire Pressure and Load Limits

Tire inflation pressure is the level of air in the tire that provides it with load-carrying capacity and affects the overall performance of the vehicle. The tire inflation pressure is a number that indicates the amount of air pressure—measured in pounds per square inch (psi)—a tire requires to be properly inflated. (You will also find this number on the vehicle information placard expressed in kilopascals (kpa), which is the metric measure used internationally.)

Manufacturers of passenger vehicles and light trucks determine this number based on the vehicle's design load limit, that is, the greatest amount of weight a vehicle can safely carry and the vehicle's tire size. The proper tire pressure for your vehicle is referred to as the

"recommended cold inflation pressure." (As you will read below, it is difficult to obtain the recommended tire pressure if your tires are not cold.)

Because tires are designed to be used on more than one type of vehicle, tire manufacturers list the "maximum permissible inflation pressure" on the tire sidewall. This number is the greatest amount of air pressure that should ever be put in the tire under normal driving conditions.

Checking Tire Pressure

It is important to check your vehicle's tire pressure at least once a month for the following reasons:

- Most tires may naturally lose air over time.
- Tires can lose air suddenly if you drive over a pothole or other object or if you strike the curb when parking.
- With radial tires, it is usually not possible to determine underinflation by visual inspection.

For convenience, purchase a tire pressure gauge to keep in your vehicle. Gauges can be purchased at tire dealerships, auto supply stores, and other retail outlets.

The recommended tire inflation pressure that vehicle manufacturers provide reflects the proper psi when a tire is cold. The term cold does not relate to the outside temperature. Rather, a cold tire is one that has not been driven on for at least three hours. When you drive, your tires get warmer, causing the air pressure within them to increase. Therefore, to get an accurate tire pressure reading, you must measure tire pressure when the tires are cold or compensate for the extra pressure in warm tires.

Steps for Maintaining Proper Tire Pressure

- Step 1: Locate the recommended tire pressure on the vehicle's tire information placard, certification label, or in the owner's manual.
- Step 2: Record the tire pressure of all tires.
- Step 3: If the tire pressure is too high in any of the tires, slowly release air by gently pressing on the tire valve stem with the edge of your tire gauge until you get to the correct pressure.
- Step 4: If the tire pressure is too low, note the difference between the measured tire pressure and the correct tire pressure. These "missing" pounds of pressure are what you will need to add.
- Step 5: At a service station, add the missing pounds of air pressure to each tire that is underinflated.
- Step 6: Check all the tires to make sure they have the same air pressure (except in cases in which the front and rear tires are supposed to have different amounts of pressure).

If you have been driving your vehicle and think that a tire is underinflated, fill it to the recommended cold inflation pressure indicated on your vehicle's tire information placard or certification label. While your tire may still be slightly underinflated due to the extra pounds of pressure in the warm tire, it is safer to drive with air pressure that is slightly lower than the vehicle manufacturer's recommended cold inflation pressure than to drive with a significantly underinflated tire. Since this is a temporary fix, don't forget to recheck and adjust the tire's pressure when you can obtain a cold reading.

Tire Size

To maintain tire safety, purchase new tires that are the same size as the vehicle's original tires or another size recommended by the manufacturer. Look at the tire information placard, the owner's manual, or the sidewall of the tire you are replacing to find this information. If you have any doubt about the correct size to choose, consult with the tire dealer.

Tire Tread

The tire tread provides the gripping action and traction that prevent your vehicle from slipping or sliding, especially when the road is wet or icy. In general, tires are not safe and should be replaced when the tread is worn down to 1/16 of an inch. Tires have built-in treadwear indicators that let you know when it is time to replace your tires. These indicators are raised sections spaced intermittently in the bottom of the tread grooves. When they appear "even" with the outside of the tread, it is time to replace your tires. Another method for checking tread depth is to place a penny in the tread with Lincoln's head upside down and facing you. If you can see the top of Lincoln's head, you are ready for new tires.

Tire Balance and Wheel Alignment

To avoid vibration or shaking of the vehicle when a tire rotates, the tire must be properly balanced. This balance is achieved by positioning weights on the wheel to counterbalance heavy spots on the wheel-and-tire assembly. A wheel alignment adjusts the angles of the wheels so that they are positioned correctly relative to the vehicle's frame. This adjustment maximizes the life of your tires. These adjustments require special equipment and should be performed by a qualified technician.

Tire Repair

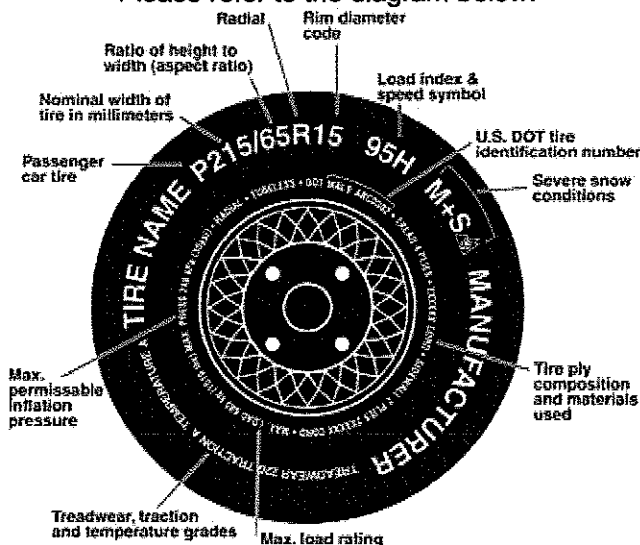
The proper repair of a punctured tire requires a plug for the hole and a patch for the area inside the tire that surrounds the puncture hole. Punctures through the tread can be repaired if they are not too large, but punctures to the sidewall should not be repaired. Tires must be removed from the rim to be properly inspected before being plugged and patched.

Tire Fundamentals

Federal law requires tire manufacturers to place standardized information on the sidewall of all tires. This information identifies and describes the fundamental characteristics of the tire and also provides a tire identification number for safety standard certification and in case of a recall.

Information on Passenger Vehicle Tires

Please refer to the diagram below.



P

The "P" indicates the tire is for passenger vehicles.

Next number

This three-digit number gives the width in millimeters of the tire from sidewall edge to sidewall edge. In general, the larger the number, the wider the tire.

Next number

This two-digit number, known as the aspect ratio, gives the tire's ratio of height to width. Numbers of 70 or lower indicate a short sidewall for improved steering response and better overall handling on dry pavement.

R

The "R" stands for radial. Radial ply construction of tires has been the industry standard for the past 20 years.

Next number

This two-digit number is the wheel or rim diameter in inches. If you change your wheel size, you will have to purchase new tires to match the new wheel diameter.

Next number

This two- or three-digit number is the tire's load index. It is a measurement of how much weight each tire can support. You may find this information in your owner's manual. If not, contact a local tire dealer. Note: You may not find this information on all tires because it is not required by law.

M+S

The "M+S" or "M/S" indicates that the tire has some mud and snow capability. Most radial tires have these markings; hence, they have some mud and snow capability.

Speed Rating

The speed rating denotes the speed at which a tire is designed to be driven for extended periods of time. The ratings range from 99 miles per hour (mph) to 186 mph. These ratings are listed below. Note: You may not find this information on all tires because it is not required by law.

Tire Safety Information

Letter Rating	Speed Rating
Q	99 mph
R	106 mph
S	112 mph
T	118 mph
U	124 mph
H	130 mph
V	149 mph
W	168* mph
Y	186* mph

* For tires with a maximum speed capability over 149 mph, tire manufacturers sometimes use the letters ZR. For those with a maximum speed capability over 186 mph, tire manufacturers always use the letters ZR.

U.S. DOT Tire Identification Number

This begins with the letters "DOT" and indicates that the tire meets all federal standards. The next two numbers or letters are the plant code where it was manufactured, and the last four numbers represent the week and year the tire was built. For example, the numbers 3197 means the 31st week of 1997. The other numbers are marketing codes used at the manufacturer's discretion. This information is used to contact consumers if a tire defect requires a recall.

Tire Ply Composition and Materials Used

The number of plies indicates the number of layers of rubber-coated fabric in the tire. In general, the greater the number of plies, the more weight a tire can support. Tire manufacturers also must indicate the materials in the tire, which include steel, nylon, polyester, and others.

Maximum Load Rating

This number indicates the maximum load in kilograms and pounds that can be carried by the tire.

Maximum Permissible Inflation Pressure

This number is the greatest amount of air pressure that should ever be put in the tire under normal driving conditions.

UTQGS Information

Treadwear Number

This number indicates the tire's wear rate. The higher the treadwear number is, the longer it should take for the tread to wear down. For example, a tire graded 400 should last twice as long as a tire graded 200.

Traction Letter

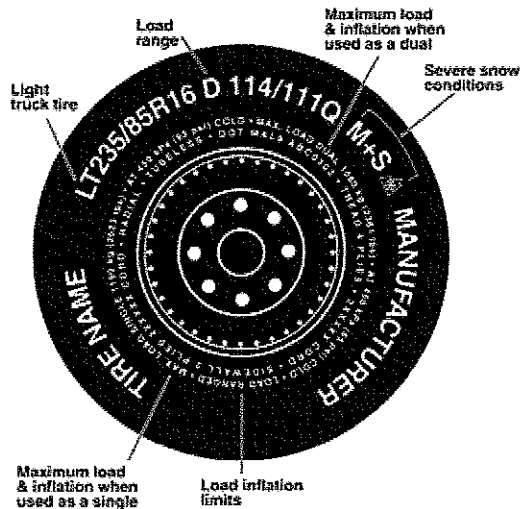
This letter indicates a tire's ability to stop on wet pavement. A higher graded tire should allow you to stop your car on wet roads in a shorter distance than a tire with a lower grade. Traction is graded from highest to lowest as "AA", "A", "B", and "C".

Temperature Letter

This letter indicates a tire's resistance to heat. The temperature grade is for a tire that is inflated properly and not overloaded. Excessive speed, underinflation or excessive loading, either separately or in combination, can cause heat build-up and possible tire failure. From highest to lowest, a tire's resistance to heat is graded as "A", "B", or "C".

Additional Information on Light Truck Tires

Please refer to the following diagram.



Tires for light trucks have other markings besides those found on the sidewalls of passenger tires.

LT

The "LT" indicates the tire is for light trucks or trailers.

ST

An "ST" is an indication the tire is for trailer use only.

Max. Load Dual kg (lbs) at kPa (psi) Cold

This information indicates the maximum load and tire pressure when the tire is used as a dual, that is, when four tires are put on each rear axle (a total of six or more tires on the vehicle).

Max. Load Single kg (lbs) at kPa (psi) Cold

This information indicates the maximum load and tire pressure when the tire is used as a single.

Load Range

This information identifies the tire's load-carrying capabilities and its inflation limits.

Tire Safety Tips

Preventing Tire Damage

- Slow down if you have to go over a pothole or other object in the road.
- Do not run over curbs or other foreign objects in the roadway, and try not to strike the curb when parking.

Tire Safety Checklist

- Check tire pressure regularly (at least once a month), including the spare.

- Inspect tires for uneven wear patterns on the tread, cracks, foreign objects, or other signs of wear or trauma.
- Remove bits of glass and foreign objects wedged in the tread.
- Make sure your tire valves have valve caps.
- Check tire pressure before going on a long trip.
- Do not overload your vehicle. Check the Tire Information and Loading Placard or User's Manual for the maximum recommended load for the vehicle.

Warning Safety Decals

The following are examples of safety warning labels attached to your trailer when you received it. If you repaint the trailer, you will need to replace these labels.

<p>▲ WARNING</p> <p>Uncoupling will cause trailer to come loose from tow vehicle. You must:</p> <ol style="list-style-type: none"> 1. CHECK that ball LOAD RATING is same as or greater than coupler LOAD RATING. 2. CHECK that ball SIZE is same as coupler. 3. CLOSE COUPLER CLAMP on ball. 4. LIFT coupler upwards to test that it will not separate from ball. 5. LOCK coupler clamp with pin or padlock. <p>©2002 NATM</p>	<p>UT0016</p>
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<p>▲ WARNING</p> <p>ALWAYS use safety chains. Chains hold trailer if connection fails. You must:</p> <ol style="list-style-type: none"> 1. CROSS chains underneath coupler. 2. ALLOW slack for trailer to turn. 3. ATTACH chain hooks securely to tow vehicle frame. <p>©2002 NATM</p>	<p>ATTACH HOOKS TO TOW VEHICLE FRAME</p> <p>UT0020</p>
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<p>▲ WARNING</p> <p>Uncoupling will cause trailer to come loose from tow vehicle.</p> <ol style="list-style-type: none"> 1. CHECK that pintle LOAD RATING is same or greater than ring LOAD RATING. 2. LOCK the clamp in place using a pin or lock. <p>©2002 NATM</p>	<p>UT0029</p>
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<p>▲ WARNING</p> <p>Uncoupling will cause trailer to come loose from tow vehicle.</p> <ol style="list-style-type: none"> 1. CHECK that pintle LOAD RATING is same or greater than ring LOAD RATING. 2. LOCK the clamp in place using a pin or lock. <p>©2002 NATM</p>	<p>UT0029</p>
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⚠ WARNING

Tire, wheel or lug nut failure can cause loss of control. Before towing, you must CHECK.

1. Tire pressure and tread.
2. Tires and wheels for damage.
3. Lug nuts for tightness.

For new and remounted wheels, re-tighten lug nuts at the first 10, 25 and 50 miles of driving.

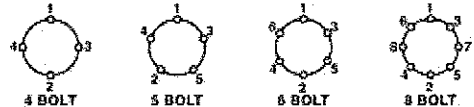


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⚠ WARNING

It is important to maintain proper torque and to provide safe and secure attachment of the wheel to the hub/drum. Be sure to use wheel nuts that are compatible with the nut seat in the wheel. Improperly torqued wheel nuts can cause the wheel to separate from wheel mounting surface during operation. This could result in property damage, serious personal injury, or loss of life.

1. CLEAN mounting surfaces, LUG NUTS & STUDS. DO NOT LUBE lug joint unless specifically instructed in your owner's manual.
2. START NUTS BY HAND to prevent cross threading.
3. TIGHTEN NUTS IN SEQUENCE shown using a CALIBRATED TORQUE WRENCH. DO NOT USE AN IMPACT WRENCH. Wheel nut torque requirements vary depending on the size and manufacturer. ALWAYS use wheel Manufacturer's Recommendations.
4. Wheel NUTS should be TORQUED before FIRST ROAD USE and AFTER EACH WHEEL REMOVAL. Periodically CHECK and RE-TORQUE per Manufacturer's Recommendations.



4 BOLT 5 BOLT 6 BOLT 8 BOLT

UT0056