



**STATE OF CALIFORNIA  
EXHIBIT 11.31, CLASS A, B, C & E  
BUS, PARATRANSIT QUESTIONNAIRE**

23-19TQ2

NOTES: The bidder shall complete this questionnaire in full for each proposed product and shall submit all questionnaires with the bid. (Bidders will need to make copies of this form if more than one vehicle Class or fuel system is offered.)

Name of bidder: Creative Bus Sales, Inc. Date: Revised 8/17/2016

Name of Bus Manufacturer: Starcraft Bus Bus Manufacturer ISO 9001 (latest) certified:  
 Yes: X No: \_\_\_\_\_  
 Vehicle Class: A: \_\_\_\_\_ B: X C: \_\_\_\_\_ E: \_\_\_\_\_ Fuel Type: CNG: X Diesel: \_\_\_\_\_ Gas: \_\_\_\_\_  
 Bus Year, Make and Model: 2016 Starcraft Allstar Chassis Year, Make & Model: 2016 Ford E-450  
 Bus Model ALTOONA Tested: \_\_\_\_\_ Bus Model Rollover Tested (FMVSS 220):  
 Yes: X No: \_\_\_\_\_ Pending: \_\_\_\_\_ Yes: X No: \_\_\_\_\_

Is Altoona Test report available on Altoona website, Yes: X, No: \_\_\_\_\_ [altoonabusttest.psu.edu/buses/333](http://altoonabusttest.psu.edu/buses/333)

Note: A report from the Federal Transit Administration (FTA) that matches the Make/Model on this questionnaire or a web link to the Altoona testing web site that matches on the Make/Model on this questionnaire shall be included in the bid as Exhibit 11.28, Altoona Bus Testing.

The sections referred to in this questionnaire correspond to specification 2310-3075 (Class A, B, C) and 2310-3082 (Class E) see below:

<b>3.1.</b>		
What is the number of wheelchair positions?	<u>2</u>	each
What is the number of ambulatory passenger (track mounted) seat positions for "rear lift" bus?	<u>12</u>	each
What is the Gross Vehicle Weight Rating (GVWR)?	<u>14,500</u>	pounds
What is the chassis wheelbase?	<u>158</u>	inches
What is the "clear" front entrance door height?	<u>79"</u>	inches
What is the "clear" front entrance door width for bus?	<u>30"</u>	inches
What is the engine HP and Torque?	Horse Power <u>305</u> Torque <u>420</u>	HP lb-ft
<b>3.5</b> Is the Engine certified by CARB to operate on Highway in State of California? Engine family name: <u>FLDRE06.8B10</u> , CARB certificate Should be provided.	Yes <u>X</u>	No _____

<b>3.8</b> Does the ground load rating of the front and rear springs equal or exceed the GVWR of the vehicle? Front: _____ Rear: _____	Yes <input checked="" type="checkbox"/> _____ <u>5,000</u> <u>9,600</u>	No _____ pounds pounds
<b>3.13</b> Is the chassis equipped with seven OEM, steel-belted, radial-ply tires of equal size and rating with the combined load rating of the tires equal or exceeding the GVWR of the vehicle? Tire Size: <u>LT 225/75R16</u> Tire Load _____ Rating: <u>E</u>	Yes <input checked="" type="checkbox"/> _____ 2,680 Single 2,470 Dual	No _____ pounds
<b>3.14</b> Is the chassis equipped with an OEM front bumper? Is the chassis equipped with an energy absorbing rear bumper with a reverse assistance system integrated into the bumper? Bumper Brand/Model: <u>Romeo RIM</u> Reverse Assistance Sys Brand/Model: <u>Intermotive Hawkeye</u> <i>Bidder should submit descriptive literature (unless the reference Brand/Model is bid)</i>	Yes <input checked="" type="checkbox"/> _____ Yes <input checked="" type="checkbox"/> _____ Yes <input checked="" type="checkbox"/> _____	No _____ No _____ No _____
<b>3.15</b> What is the Gross Axle Weight Rating (GAWR)? Front Axle _____ Rear Axle _____	<u>5,000</u> <u>9,600</u>	pounds pounds
<b>3.16</b> Is protective metal guard for drive shaft provided?	Yes <input checked="" type="checkbox"/> _____	No _____
<b>3.18</b> Is the vehicle equipped with two rearview mirrors? What is the brand and model of mirror? <u>Velvac 2020SS</u>	Yes <input checked="" type="checkbox"/> _____	No _____
<b>3.19</b> Is the bus equipped with a 12-volt electrical system compliant to section 3.19?	Yes <input checked="" type="checkbox"/> _____	No _____
<b>3.19.2</b> What is the alternator voltage? Is the bus equipped with a fast idle system? Brand/Model: <u>Intermotive Gateway #505-F</u>	<u>225 Amps / 12</u> Yes <input checked="" type="checkbox"/> _____	volts No _____
<b>3.19.3</b> Is the bus equipped with Light-Emitting Diode (LED) lights compliant to section 3.19.3. Brand/Model: <u>Optronics LED</u>	Yes <input checked="" type="checkbox"/> _____	No _____
<b>3.19.4</b> Is bus equipped with additional lights requirements compliant to section 3.19.4?	Yes <input checked="" type="checkbox"/> _____	No _____
<b>3.19.5</b> Is the bus equipped with two maximum-capacity chassis OEM batteries? Rating #1 <u>750</u> CCA, #2 <u>750</u> CCA	Yes <input checked="" type="checkbox"/> _____	No _____
<b>3.19.6</b> Is the bus equipped with a locking, weather-protected, sliding-type battery tray compliant to section 3.19.6?	Yes <input checked="" type="checkbox"/> _____	No _____
<b>3.20</b> What is the size of the fuel tank? Is fuel tank compliant with CARB standards?	<u>29gge</u> Yes <input checked="" type="checkbox"/> _____	Gallons No _____

<p><b>3.23</b> Is the bus equipped with a back-up alarm compliant to section 3.21 Brand/Model: <u>Ecco 575</u>  <i>Bidder should submit descriptive literature (unless the reference Brand/Model is bid)</i></p>	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>
<p><b>3.26</b> Is the seating compliant to section 3.26?          What is the Make and Name/Number of the vinyl seat material?  <u>Docket 90 Vinyl (Freedman Level 4)</u>  <b>e)</b> What is the hip to knee spacing?  <b>f)</b> What is the aisle spacing?  <b>h)</b> Is the bus equipped with passenger seats in compliance with Section 3.26h.  <i>Bidder should submit descriptive literature (unless the reference Brand/Model is bid)</i></p>	Yes <input checked="" type="checkbox"/>  <u>27" Min</u> <u>16"</u> Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>  inches inches No <input type="checkbox"/>
<p><b>i)</b> Is the bus equipped with a driver seat in compliance with Section 3.26i Brand/Model: <u>RecaroSHS</u>  <i>Bidder should submit descriptive literature (unless the reference Brand/Model is bid)</i></p>	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>
<p><b>3.27</b> What is the thickness of the plywood?          Is the floor surface covered with minimum 2.2 millimeter thick, highly resilient PVC flooring in compliance with section 3.27?          Brand/Model: <u>Altro Transflor</u>  <b>3.27</b> Is the flooring installation and adhesion compliant with Section?  <b>3.27</b> What type of flooring adhesive will be provided on the bus?          Brand/Model: <u>Natcon Spider Glue / Nitro</u>  <i>Bidder should submit descriptive literature (unless the reference Brand/Model is bid)</i></p>	<u>5/8"</u>  Yes <input checked="" type="checkbox"/>  Yes <input checked="" type="checkbox"/>	Inches  No <input type="checkbox"/>  No <input type="checkbox"/>
<p><b>3.28</b> Is the bus equipped with rear emergency window compliant with Section 3.28?</p>	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>
<p><b>3.29</b> Is the bus equipped with an electric front entrance door compliant to section 3.29?          Brand/Model: <u>A&amp;M Systems / Electric</u>  <i>Bidder should submit descriptive literature (unless the reference Brand/Model is bid)</i></p>	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>
<p><b>3.30</b> Is the bus equipped with entry steps compliant to section 3.30?          What are the step dimensions (Step riser height X Depth)?          What is the dimension of the bottom step tread from the ground unloaded?          Are steps vertical? If not, what is the usable step area?</p>	Yes <input checked="" type="checkbox"/> <u>8" x 11.25"</u>  <u>12" Max</u> Yes <input checked="" type="checkbox"/> _____	No <input type="checkbox"/> inches  inches No <input type="checkbox"/> inches

<b>3.31</b> Is the bus equipped with a driver's side running board compliant to section 3.31? What is the depth of the running board?	Yes <input checked="" type="checkbox"/> _____ <u>12"</u>	No _____ inches
<b>3.32</b> What type of material is used to fabricate the handrails? Material What is the length of the handrail?	<u>Stainless Steel</u> <u>30" Min</u>	inches
<b>3.35</b> Is the bus equipped with insulation compliant to section 3.35?	Yes <input checked="" type="checkbox"/> _____	No _____
<b>3.37</b> Is the bus equipped with an exterior front one piece cap compliant to section 3.37?	Yes <input checked="" type="checkbox"/> _____	No _____
<b>3.38</b> Is the bus equipped with an undercoating compliant to section 3.38? Brand/Model: <u>BASF Degacoat</u>	Yes <input checked="" type="checkbox"/> _____	No _____
<b>3.39</b> Is wheel housings made of minimum 14 Gauge galvanized steel or stainless steel compliant to section 3.39?	Yes <input checked="" type="checkbox"/> _____	No _____
<b>3.40</b> Is the bus equipped with an OEM integral front air conditioner and An auxiliary rear air conditioner compliant to section 3.40? What is the auxiliary rear air conditioner output? Make/Model <u>Trans Air TA733 Super 13 / #16 Suction</u> <i>Bidder should submit descriptive literature.</i>	Yes <input checked="" type="checkbox"/> _____ <u>43,367</u>	No _____ SAE BTU
<b>3.41</b> Is the bus equipped with front-mounted, integral high-output heater and a rear floor high-output auxiliary heater mounted behind the rear wheel housing or under a rear fixed seat compliant to section 3.41? Class A auxiliary heater: _____ BTU, Make/Model: _____ Class B and C auxiliary heater : <u>65,000</u> BTU, Make/Model <u>Pro-Air 465</u> Class E Auxiliary Heater: _____ BTU, Make/Model _____ <i>Bidder should submit descriptive literature.</i>	Yes <input checked="" type="checkbox"/> _____	No _____
<b>3.42</b> Is the bus equipped with a mobility aid lift compliant to section 3.42? Brand/Model: <u>Braun Century NCL919FIBHB-2</u> <i>Bidder should submit descriptive literature.</i>	Yes <input checked="" type="checkbox"/> _____	No _____
<b>3.43</b> Is the bus equipped with controls for the lift that interlock with Emergency brakes and transmission compliant to section 3.43? Brand/Model: <u>Intermotive Gateway #505-F</u>	Yes <input checked="" type="checkbox"/> _____	No _____
<b>3.44</b> Is the bus equipped with side lift entry doors compliant to section 3.44?	Yes <input checked="" type="checkbox"/> _____	No _____
<b>3.45</b> Is the bus equipped with a device to prevent starting the vehicle in neutral? Brand/Model: <u>Intermotive PCOM #501B</u> Bidder should submit descriptive literature (unless the reference Brand/Model is bid)	Yes <input checked="" type="checkbox"/> _____	No _____

<b>3.46</b> Is the bus equipped with mobility aid security and occupant restraint systems compliant to section 3.46? Brand/Model: <u>Q'Straint QRT 360</u>	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>
<b>3.47</b> Is web cutter provided compliant to section 3.47a? Is torso pad provided compliant to section 3.47b? Is closeable box provided compliant to section 3.47c1? Is Secured container provided for storage of straps, pads etc. Compliant to section 3.47c2?	Yes <input checked="" type="checkbox"/> Yes <input checked="" type="checkbox"/> Yes <input checked="" type="checkbox"/> Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/> No <input type="checkbox"/> No <input type="checkbox"/> No <input type="checkbox"/>
<b>3.48</b> Is 5 lb fire extinguisher provided compliant to section 3.48a? Is 16-unit First aid kit provided compliant to section 3.48b? Is reflective triangles provided compliant to section 3.48c? Is bus equipped with a passenger viewing mirror compliant to section 3.48d? Brand/Model: <u>Rosco 609</u> <i>Bidder should submit descriptive literature for mirror (unless the Reference Brand/Model is bid).</i> Is bus equipped with a two-way antenna prep compliant to section 3.48e? Is blood borne pathogen kit provided compliant to section 3.48f? Is retractable coat hook provided compliant to section 3.48g?	Yes <input checked="" type="checkbox"/> Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/> No <input type="checkbox"/> No <input type="checkbox"/> No <input type="checkbox"/> No <input type="checkbox"/> No <input type="checkbox"/>
<b>3.50</b> What is the CNG tank capacity (total)? Does fuel tank comply with FMVSS 304 and ANSI NGV2-2007 Manufacturer of CNG conversion: <u>Landi Renzo USA</u> Installer of CNG conversion: <u>GAS / Creative Bus Sales</u> Is CNG conversion system approved by CARB?	<u>29gge</u> Yes <input checked="" type="checkbox"/> Yes <input checked="" type="checkbox"/>	GGE No <input type="checkbox"/> No <input type="checkbox"/>

Pursuant to the authority vested in the Air Resources Board by Health and Safety Code Division 26, Part 5, Chapter 2; and pursuant to the authority vested in the undersigned by Health and Safety Code Sections 39515 and 39516 and Executive Order G-14-012;

**IT IS ORDERED AND RESOLVED:** The engine and emission control systems produced by the manufacturer are certified as described below for use in on-road motor vehicles with a manufacturer's GVWR over 14,000 pounds. Production engines shall be in all material respects the same as those for which certification is granted.

MODEL YEAR	ENGINE FAMILY	ENGINE SIZES (L)	FUEL TYPE <sup>1</sup>	STANDARDS & TEST PROCEDURE	INTENDED SERVICE CLASS	ECS & SPECIAL FEATURES <sup>3</sup>	DIAGNOSTIC <sup>6</sup>
			CNG				
2015	FLDRE06.8B10	6.8		Otto	HOO	SFI, H02S, TVVC, 2AFS	EMO+
PRIMARY ENGINE'S IDL EMISSIONS CONTROL		ADDITIONAL IDLE EMISSIONS CONTROL <sup>5</sup>					
N/A		N/A					
ENGINE (L)	ENGINE MODELS / CODES (rated power, in hp)						
6.8	E450 Incomplete / DE418N05, DE418M05, (224 for all codes)						
<small>* =not applicable; GVWR=gross vehicle weight rating; 13 CCR xyz=Title 13, California Code of Regulations, Section xyz; 40 CFR 86.abc=Title 40, Code of Federal Regulations, Section 86.abc; L=liter; hp=horsepower; kw=kilowatt; hr=hour;  <sup>1</sup> CNG/LNG=compressed/liquefied natural gas; LPG=liquefied petroleum gas; E85=85% ethanol fuel; MF=multi fuel a.k.a. BF=bi fuel; DF=dual fuel; FF=flexible fuel;  <sup>2</sup> UM/H HDD=light/medium/heavy heavy-duty diesel; UB=urban bus; HDO=heavy duty Otto;  <sup>3</sup> ECS=emission control system; TVVC/OC=three-way/oxidizing catalyst; NAC=NOx adsorption catalyst; SCR-U/SCR-N=selective catalytic reduction-urea/- ammonia; WU (prefix)=warm-up catalyst; DPF=diesel particulate filter; PTOX=periodic trap oxidizer; H02S/02S=heated/oxygen sensor; HAFS/AFS=heated/air-fuel-ratio sensor (a.k.a., universal or linear oxygen sensor); TBI=throttle body fuel injection; SFI/MFI=sequential/multi port fuel injection; DGI=direct gasoline injection; GCARB=gaseous carburetor; IDI/DDI=indirect/direct diesel injection; TC/SC=turbo/super charger; CAC=charge air cooler; EGR / EGR-C=exhaust gas recirculation / cooled EGR; PAIR/AIR=pulsed/secondary air injection; SPL=sмоke puff limiter; ECM/PCM=engine/powertrain control module; EM=engine modification; 2 (prefix)=parallel; (2) (suffix)=in series; AMOX : ammonia oxidation catalyst  <sup>5</sup> ESS=engine shutdown system (per 13 CCR 1956.8(a)(6)(A)(1) ); 30g=30 g/hr NOx (per 13 CCR 1956.B(a)(S)(C)); APS =internal combustion auxiliary power system; ALT=alternative method per 13 CCR 1956.B(a)(S)(D); Exempt=exempted per 13 CCR 1956.B(a)(S)(B) or for CNG/LNG fuel systems; N/A=not applicable (e.g., Otto engines and vehicles);                      EMD=engine manufacturer diagnostic system (13 CCR 1971); 0BD(F)/(P)/(S)=full/ partial/ partial with fine/ on-board diagnostic.</small>							

Following are: 1) the FTP exhaust emission standards, or family emission limit(s) as applicable, under 13 CCR 1956.8; 2) the SET and NTE limits under the applicable California exhaust emission standards and test procedures for heavy-duty diesel engines and vehicles (Test Procedures); and 3) the corresponding certification levels, for this engine family. "Diesel" CO, SET and NTE certification compliance may have been demonstrated by the manufacturer as provided under the applicable Test Procedures in lieu of testing. (For flexible- and dual-fueled engines, the CERT values in brackets [ J are those when tested on conventional test fuel. For multi-fueled engines, the STD and CERT values for default operation permitted in 13 CCR 1956.8 are in parentheses.).

in g/bhp-hr	NMHC		NOx		NMHC+NOx		CO		PM		HCHO	
	FTP	SET	FTP	SET	FTP	SET	FTP	SET	FTP	SET	FTP	SET
STD	0.14	*	0.20	*	*	*	14.4	*	0.01	*	0.01	*
CERT	0.003	*	0.08	*	*	*	2.2	*	0.002	*	0.001	*
NTE	*	*	*	*	*	*	*	*	*	*	*	*

\* g/bhp-hr=grams per brake horsepower-hour; FTP=Federal Test Procedure; SET= supplemental emissions testing; NTE= Not-to-Exceed; STD=standard or emission test cap; FEL=family emission limit; CERT=certification level; NMHC/HC=non-methane/hydrocarbon; NOx=oxides of nitrogen; CO=carbon monoxide; PM=particulate matter; HCHO=formaldehyde;

**BE IT FURTHER RESOLVED:** For the listed engine models the manufacturer has submitted the materials to demonstrate certification compliance with 13 CCR 1965 (emission control labels), 13 CCR 1971 (engine manufacturer diagnostic), and 13 CCR 2035 et seq. (emission control warranty).

Engines certified under this Executive Order must conform to all applicable California emission regulations.

The Bureau of Automotive Repair will be notified by copy of this Executive Order.

Executed at El Monte, California on this  /d)Jb.  day of January 2015.

*Qc!Piv|Vvc/*

Annette Hebert, Chief

issions Compliance, Automotive Regulations and Science Division

# CalTrans CLASS B System Components

## TA733 Super 13 #16 Suction

### TA73 Evaporator

P/N 2022072-28



### SMC3L Condenser

P/N 301795-04



### Compressor | Engine Mount & Drive Kit

P/N 512236 13 CID Compressor,  
P/N 4013524-02 Compressor Mount Kit,  
P/N 4012708 Alternator Mount Kit



### Basic II PCB Controls

P/N 5031451



### SAE-J2064 Hose & Fitting System

P/N 5031475 Fitting Kit, P/N 311026 #8 Hose,  
P/N 311027 #10 Hose, P/N 311034 #16 Hose



*School & Commercial Bus Climate Control* Design | Manufacture | Install | Service

Trans/Air Manufacturing Corporation is an ISO 9001 registered firm committed to providing world class climate control products and services to the bus and commercial vehicle markets.



ISO 9001:2008  
FM 39947

# CalTrans CLASS B System Specifications

## TA733 Super 13 #16 Suction

System BTU/hr (without dash): 43K SAE / 68K IMACA

Dash unit: 15K SAE / 24K IMACA

System BTU/hr (with dash): 58K SAE / 92K IMACA

A complete Trans/Air system consisting of (1) TA73 Evaporator, (1) SMC3L Skirt Mount Condenser, and (1) 13 cid Compressor with #16 suction line, installed separately from the OEM chassis compressor & dash evaporator with Basic Controls and a Trans/Air supplied mount kit.

**Quality System:** Trans/Air Manufacturing is registered to ISO 9001:2008 by an accredited auditor.

**Evaporator:** **TA73**  
Capacity: 43,367 (SAE) to 68,449 (IMACA) Btu/hr  
Cooling Coil: Advanced aluminum fins on 3/8" internally enhanced copper tubing  
Expansion Valve: Externally equalized thermostatic type  
Blower Assembly: (2) blowers each with double wheels and dual inlets  
Total Blower Air Flow: 1480 ft<sup>3</sup>/min @ 0 Static (2515 m<sup>3</sup>/hr @ 0 Static)  
Motors: High performance double shaft, permanent magnet  
Amperage: 16.9 A @ 13.5 Vdc / 8.5 A @ 27 Vdc  
Housing: Galvanized steel with aluminum or ABS cover  
Specification: All interior components shall meet FMVSS 302 for fire retardant specifications

**Condenser:** **SMC3L Microchannel** (Skirt Mount)  
Capacity: 71,325 (SAE) to 87,175 (IMACA) Btu/hr  
Condenser Coil: Aluminum microchannel (488 in<sup>2</sup> face area)  
Fan Assembly: (3) low profile, surface mounted 10 in diameter fans  
Motor Type: Closed, permanent magnet w/ball bearings  
Amperage: 31.0 A @ 13.5 Vdc / 15.5 A @ 27 Vdc  
Total Fan Air Flow: 2745 ft<sup>3</sup>/min @ 0 static (4664 m<sup>3</sup>/hr @ 0 Static)  
Filter Drier: 16 in<sup>3</sup>, R-134A compatible  
Sight Glass: At back of coil  
Cond Housing: Powder-coated galvanized steel

**Electrical Controls:** **Basic II**  
Fan Controls: 3 speed rotary switch @ driver  
Temp Controls: Rotary manual switch @ driver  
Protection: Fused main power distribution with individually fused motor.  
Wiring: Color, number and or function coded every six inches in fire retardant loom.  
Specification: All wiring automotive standard per SAE J1292 electrical specifications.

**Hose/Fittings:** **Trans/Air SAE J2064:**  
Fittings: Steel with corrosion resistive coating, (2) grooves, and stainless steel clips.  
Hose: Type C with Butyl cover, Poly-amide barrier, rubber lining.  
Specification: Exceeds SAE J2064 hose fitting integrity specification.

**Compressor:** **13 CID**  
Protection: High/low pressure switches.  
Specification: Mounts shall meet SAE J637 belt alignment specifications.

**Warranty:** **3 years**  
Mileage: Unlimited  
Inception: Date of in-service  
Coverage: All components and installation if installation is provided by Trans/Air.

*School & Commercial Bus Climate Control* Design | Manufacture | Install | Service

Trans/Air Manufacturing Corporation is an ISO 9001 registered firm committed to providing world class climate control products and services to the bus and commercial vehicle markets.



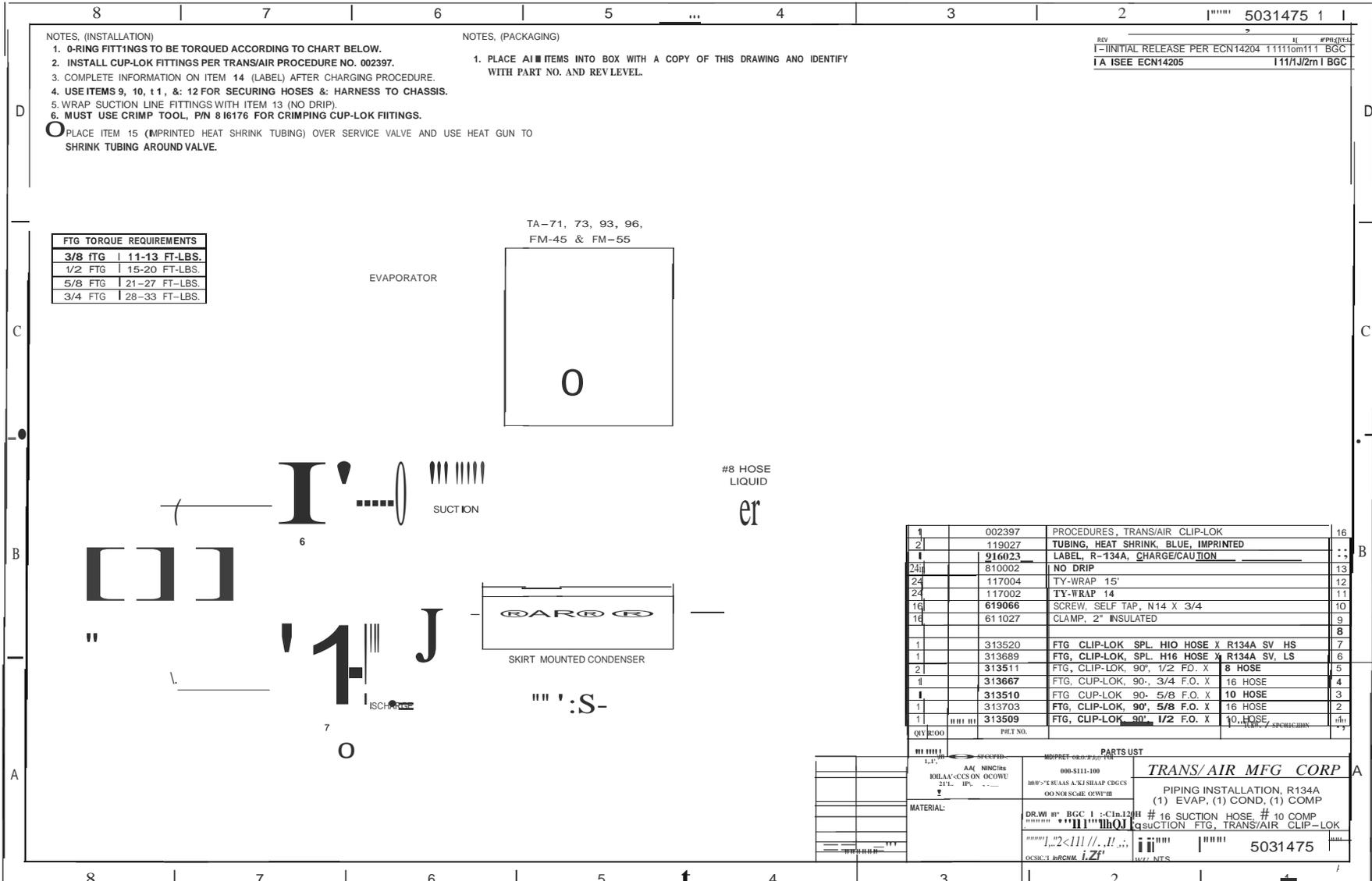
ISO 9001:2008  
FM 39947

# CalTrans CLASS B System Service Parts List

## TA733 Super 13 #16 Suction

<b>Evaporator</b>	<b>2022072-28</b>	<b>Evaporator, TA73 - Lines Left, w/o Heat, Gray</b>
	412032	Blower Assy, 12V
	210042	Expansion Valve, 4 Ton
	2021365	Coil Assembly, Evaporator (includes 210042 Expansion Valve)
	111164	Resistor, .6 Ohm, 3 Tap
	111154	Switch, High Pressure
	111155	Switch, Low Pressure
	915045	Filter, Air Inlet
	413012	Louver
	110043	Fuse, ATC-20, Blade Type
	413015	Deflector, Air
<b>Condenser</b>	<b>301795-04</b>	<b>SMC3L Condenser</b>
	301712	Coil, Condenser, 3-Fan, Micro Channel
	2160088	Fan Assembly, 10" Puller, 12V
	212021	Filter Drier w/Sight Glass
	301799-01	Screen Assy, 3-Fan, Black
	110050-15	Fuse, Mini, 15 Amp
<b>Hose &amp; Fittings</b>	<b>5031475</b>	<b>Piping for #16 hose</b>
	311026	Hose, #8, Refrigerant
	311027	Hose, #10, Refrigerant
	311034	Hose, #16, Refrigerant
	313703	Fitting, Clip-Lok, 90°, 5/8 F.O. x #16 Hose
	313687	Fitting, Clip-Lok, 90°, 3/4 FO x #16Hose
	313689	Fitting, Clip-Lok, Splice, Inline Access, #16Hose
	313511	Fitting, Clip-Lok, 90°, 1/2 FO x #8 Hose
	313520	Fitting, Clip-Lok, Splice Incline Access #10
	313510	Fitting, Clip-Lok, 90°, 5/8 FO x #10Hose
	313509	Fitting, Clip-Lok, 90°, 1/2 FO x #10Hose
<b>Electrical &amp; Cable</b>	<b>5031451</b>	<b>Basic II PCB Electrical</b>
	701567	Relay Board Assembly, Basic II PCB, Mate-N-Lok Connector
	701401	Fuse Holder Assy, MDI, Bolt-On, 40A
	610008	Knob, Black, ABS, Wht Pointer, .250 Spring Index Position 1
	111051	Thermostat, Rotary
	113006	Switch, Rotary, 4 Position
<b>Compressor</b>	<b>512236</b>	<b>Compressor, QP21, 13CID, 127MM, 8 Grv, 12V</b>
<b>Engine Mount &amp; Drive Kit</b>	<b>4013524-02</b>	<b>Mount Kit, 6.8L Ford Cutaway, 13 CID</b>
	7155061360	Belt, Poly-V, 6K Groove, 136.0" OEL
	31987606	Hose, 90°, 5/8 x 3/4 x 25" Lg
	711048	Idler Pulley, 6K Groove, 76MM Pitch
	711041	Idler, Backside, Dia 76MM
	4012675	Mount Bracket, Ford 6.8L Cutaway

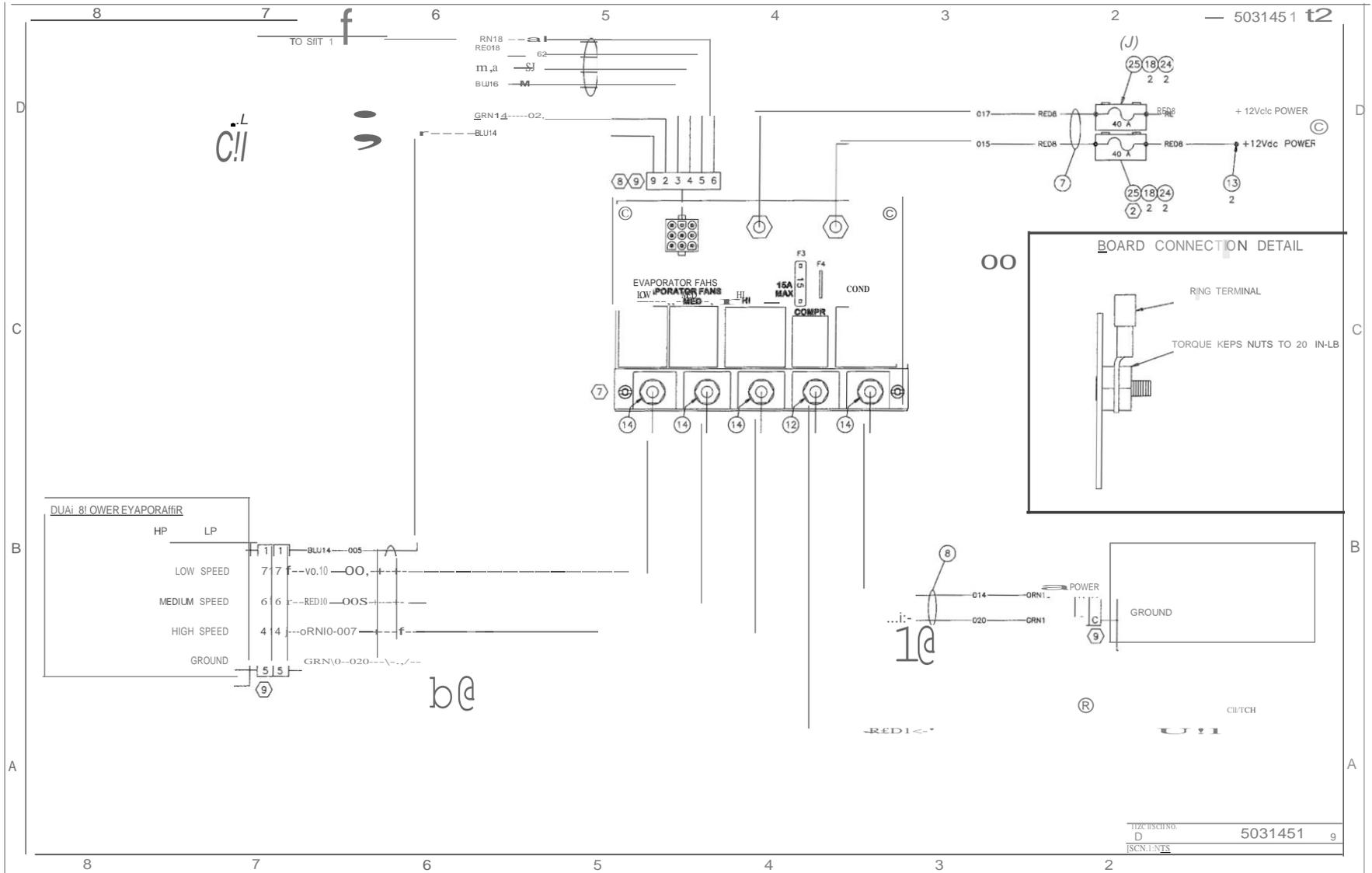
# CalTrans CLASS B Fitting Kit Schematic (1 of 1)







# CalTrans CLASS B Basic II PCB Controls Schematic (2 of 3)

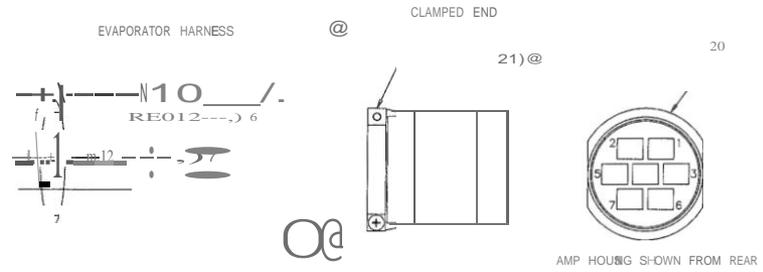


# CalTrans CLASS B Basic II PCB Controls Schematic (3 of 3)

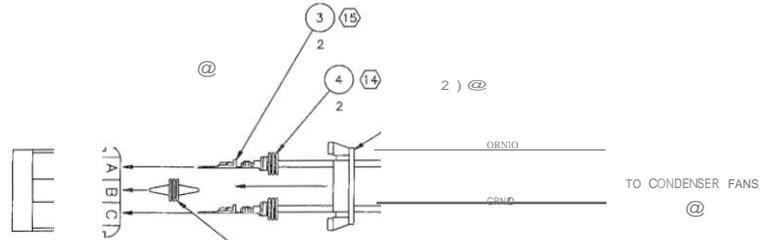
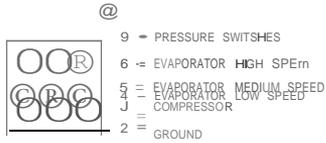
5031451 13

- @ CRIMP MALE TERMINALS TO EVAPORATOR LEADS. USE CRIMP TOOL, AMP P/N HHHT 90384-1 FOR 10 GA, AND AMP P/N 90382-2 FOR 14 GA.
- @ SLIDE CLAMPED END OF TEM 21, CABLE STRAIN RELIEF CLAMP, OVER EVAPORATOR LEADS SO THAT THE THREADS IN PLACE. SCREW TEM 21 TIGHTLY ON TO RECEPTACLE HOUSING THEN TIGHTEN CLAMP AROUND EVAPORATOR LEADS. FACE THE TERMINALS AS SHOWN. INSERT TERMINALS INTO SPECIFIED POSITIONS ON RECEPTACLE HOUSING AND SNAP.
- @ REMOVE CONN CONNECTOR BETWEEN POWER LEADS OF CONDENSER HARNESS TO RELAY BOARD AND
- @ CONNECT FAN HARNESS LEADS TO THE MALE HALF OF THE CONNECTOR AS SHOWN. CONDENSER HARNESS TO FANS, DISCONNECT GROUND LEADS AND REMOVE RING TERMINALS.

- @ INSERT CABLE LEADS THROUGH CABLE SEAL AS SHOWN. KEEP INSULATION FLUSH WITH EDGE OF SEAL.
- @ CRIMP TERMINAL TO STRIPPED LEADS FIRST, THEN CRIMP SEAL RETAINING TABS FOR BEST RESULTS. USE HAND TOOL, P/N 816155 (PURCHASED SEPARATELY) FOR CRIMPING TERMINALS ON CONDENSER HARNESS. USE HAND TOOL, P/N 816158 (PURCHASED SEPARATELY) FOR CRIMPING TERMINALS ON COMPRESSOR HARNESS.
- @ INSERT PLUG INTO CENTER POSITION OF CONNECTOR AS SHOWN.
- @ SLIDE SECONDARY LOCK AROUND CABLE LEADS AS SHOWN AND CLIP ONTO TABS OF CONNECTORS (LABELED LOCKING TABS) SECURELY TO KEEP PLUGS AND TERMINALS IN PLACE.
- @ POSITION NUMBERS OF TE CONNECTIVITY CONNECTOR ON PCS AND CORRESPONDING SIGNALS.



INTERNAL EVAPORATOR HARNESS

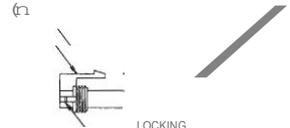


INTERNAL CONDENSER HARNESS

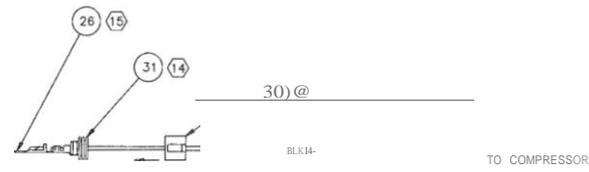
ih301 FROM RELAY BOARD

REDI<sup>4</sup>

@ 31<sup>7</sup>



COMPRESSOR HARNESS



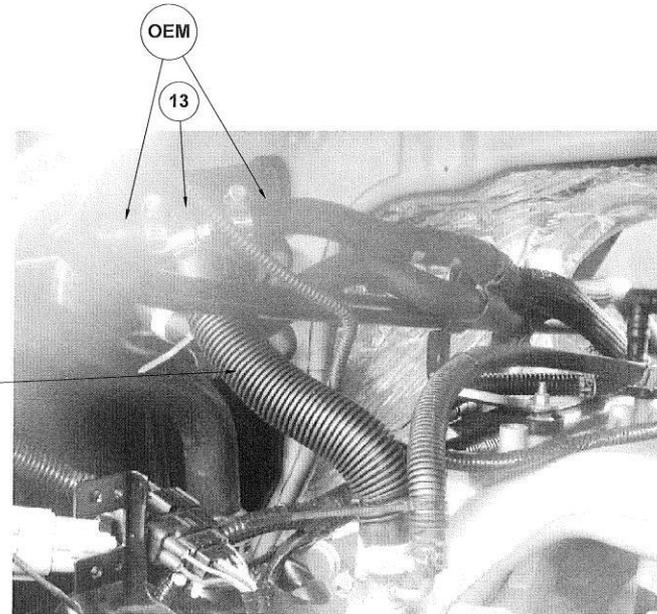
# CalTrans CLASS B Engine Mount & Drive Kit (1 of 2)

DWG NO. **4013524** SHEET **1**

REVISIONS			
REV.	DESCRIPTION	DATE	APPROVED
-	SEE ECR 16167	10/9/2015	DJF
A	ECR 16016	1/19/2016	DJF
B	ECN 16123	3/30/2016	DJF

**NOTES:**

1. DISCONNECT BATTERY.
2. DRAIN RADIATOR.
3. REMOVE AIR CLEANER AND INTAKE HOSE.
4. REMOVE OEM BELT AND OEM ALTERNATOR. SAVE HARDWARE AS IT MAY BE USED FOR NEW ALTERNATOR INSTALLATION.
5. MODIFY HEATER HOSES AS SHOWN WITH SUPPLIED HOSES AND FITTINGS. CUT OUT THE OEM TEE AND REPLACE WITH THE SUPPLIED FITTING. CUT BOTH SUPPLIED HOSES LEAVING APPROXIMATELY 1" OF STRAIGHT HOSE AFTER THE ELBOW. ATTACH WITH SUPPLIED CLAMP.
6. PUT LOOM ON HEATER HOSE AND SECURE WITH TYRAP AS SHOWN.
7. INSTALL GROOVED IDLER USING INDICATED HARDWARE. IF INSTALLING KIT -02, REPLACE OEM IDLER WITH SUPPLIED BACKSIDE IDLER AS SHOWN. USE THREADLOCK.
8. INSTALL MOUNT USING INDICATED BOLTS AND WASHERS. USE THREADLOCK. USE CLAMP PROVIDED TO SECURE ALTERNATOR CABLE TO THE MOUNT TO PREVENT THE CABLE FROM BEING PINCHED BETWEEN THE MOUNT AND ANY ENGINE COMPONENTS AS SHOWN ON SHEET 2.
9. BOLT PLATE AND FITTINGS TO COMPRESSOR USING INDICATED BOLT AND WASHER. USE THREADLOCK. INSTALL SUCTION AND DISCHARGE HOSES.
10. LIGHTLY TAP DOWEL BUSHINGS INTO MOUNT. INSTALL COMPRESSOR USING INDICATED BOLTS AND WASHERS. USE THREADLOCK.
11. INSTALL ALTERNATOR ON MOUNT USING HARDWARE SUPPLIED IN ALTERNATOR MOUNT KIT. USE THREADLOCK.
12. INSTALL BELT IN REAR 6 GROOVES OF COMPRESSOR.
13. REINSTALL AIR CLEANER AND INTAKE HOSE.
14. APPLY BELT ROUTING LABEL TO ENGINE COMPARTMENT. THE SURFACE MUST BE VISIBLE AND FREE OF DIRT AND OIL.



14

OEM

13

TORQUE SPECS	
6mm GR8.8 - 7 ft-lb	
6mm GR10.9 - 9 ft-lb	
8mm GR8.8 - 18 ft-lb	
8mm GR10.9 - 23 ft-lb	
10mm GR8.8 - 30 ft-lb	
10mm GR10.9 - 45 ft-lb	
12mm GR8.8 - 65 ft-lb	
12mm GR10.9 - 75 ft-lb	
12mm GR12.9 - 95 ft-lb	
.375"-16 GR5 - 30 ft-lb	
.375"-16 GR8 - 40 ft-lb	
.438"-14 GR5 - 45 ft-lb	
.438"-14 GR8 - 65 ft-lb	
.500"-20 GR5 - 75 ft-lb	
.500"-20 GR8 - 110 ft-lb	

-01: 10 CID  
-02: 13 CID

3	3	616483	BOLT, HEX HD FLANGE, M8-1.25 X 25MM GR10.9	27
1	1	616442	BOLT, HEX HD FLANGE, M10-1.50 X 50MM, GR10.9	26
3	3	616481	BOLT, HEX HD FLANGE, M10-1.50 X 25MM, GR10.9	25
3	3	616439	BOLT, HEX HD FLANGE, M8 X 1.25P X 100MM, GR 10.9	24
1	1	916178	LABEL, BELT ROUTING, FORD 5.4L	23
1	1	7156061360	BELT, POLY-V, 6K GROOVE, 136.0"	22
1	1	616384	BOLT, HEX HD FLANGE, M8 X 1.25P X 25MM, GR 8.8	21
1	1	618092	NUT, HEX FLANGE, LOCK, M8-1.25	20
1	1	611033	CLAMP, INSULATED, 1 - 1/4" ID	19
1	1	611063	CLAMP, SPRING HOSE, 1 1/16"	18
1	1	711035	BOLT W WASHER, HEX HD, 8MM X 1.25 X 1.41"	17
2	2	911009	THREADLOCK, REMOVABLE	16
4	4	117003	TYRAP, 3.75	15
1ft	1ft	119015	LOOM, PLASTIC, 1.00", SLIT, HIGH TEMP	14
1	1	316111	FITTING, TEE, 5/8 X 5/8 X 5/8 BARB	13
1	1	31987606	HOSE, 90, 5/8" X 3/4" X 25"	12
3	3	611062	CLAMP, SPRING HOSE, 15/16"	11
1	1	711048	IDLER PULLEY, 6K-GROOVE, 76MM PITCH	10
2	1	711041	PULLEY, BACKSIDE, 76MM X 30.9MM WIDE	9
1	1	501262	PLATE, FITTING PAD	8
1	1	313455	FITTING, PAD BLOCK, STR, #10 MIO	7
1	1	313454	FITTING, PAD BLOCK, STR, #8 MIO	6
1	1	616449	BOLT, HEX HD FLANGE, M10-1.50 X 30MM, GR10.9	5
2	2	517068	BUSHING, DOWEL, 8MM X 13MM LONG	4
1	1	4013379	BUSHING, IDLER PULLEY, SINGLE 6303 BEARING	3
				2
1	1	4012675	MOUNT, FORD 5.4L CUTAWAY	1

QTY REQD PER Assy		PART NUMBER		DESCRIPTION		ITEM NO.
PARTS LIST						
UNLESS OTHERWISE SPECIFIED: DIMENSIONS ARE IN INCHES TOLERANCES ON DECIMALS 3PL. ANGLE +.03 ± .010 ± .1"			INTERPRET DRAWING PER ISO-81D-100 REMOVE BURRS AND SHARP EDGES DO NOT SCALE DRAWING			
MATERIAL:		DRAWN BY DJF		DATE 10/9/2015		<b>TRANS/AIR MFG CORP</b>  <b>MOUNT KIT, FORD CUTAWAY</b>
CHECKER JmH		DATE 3/11/16		SIZE D		
DRAWING APPROVAL		SCALE 1:4		DWG NO. 4013524		
DESIGN APPROVAL				REV B		
FINAL		USED ON		APPLICATION		SHEET 1 OF 2

# CalTrans CLASS B Engine Mount & Drive Kit (2 of 2)

