1.2 MCA 6068GL
Air Heater
User Manual

For Service and Support Inquiries Call

John Kosina
Service Manager
715.428.2000 ext. 1207

Multitek North America, LLC
375 Progress Street, Pretice
Wisconsin 54556

CONTACT

AEROTECH HERMAN NELSON INTERNATIONAL INC.

MULTITEK

***John Kosina* - Service Manager**
Phone: (715) 428-4000 ext. 1207

***Mike Dunlavy* - Engineer**
Phone: (715) 428-2000
Fax: (715) 428-2700
Cell: (715) 401-9749
Toll Free: 1-800-243-5438

Table of Contents

INTRODUCTION
Getting to know your 1.2 MCA Air Heater
Safety Precautions

PRODUCT OVERVIEW
1.1 External Features
1.2 Internal Features
1.3 Control Panel
1.4 Engine Service
1.5 Fueling
1.6 Caution Information

SAFETY INFORMATION
2.1 General Operator Safety Procedures
2.2 Unit Safety Features

OPERATING PROCEDURES
3.1 Preoperational Checklist
3.2 Startup/ Shutdown Procedure

TRANSPORTATION
4.1 Vehicle Requirements (minimum)
4.2 Towing

MAINTENANCE
5.1 General Maintenance

STORAGE
6.1 Storage Checklist

WARRANTY INFORMATION
7.1 Warranty Service Information
7.2 Pre-Delivery Inspection Checklist (PDI)

APPENDIX A - Technical Specifications

APPENDIX B - Abbreviations

APPENDIX C - Maintenance Log

APPENDIX D – Notes

APPENDIX E – Consumable and Common Parts

Multitek North America, LLC has put its 30+ years of experience as a leader in the manufacturing of industrial equipment to work developing an advanced line of Industrial Flameless Heaters. These technologically advanced heaters are capable of heating both air and liquid with a market leading efficiency of over 90%.

Our Flameless Air heaters are designed to create and deliver a higher volume of clean dry air than other heaters can to the targeted environment. No smelly or dangerous fumes are allowed into the air stream making them ideal for most any application. Because it's flameless, the heat produced has little to no moisture making it ideal for different application of heating areas such as well sites, building construction, killing bed bugs, drying flooded buildings, new construction, or drying agricultural products.

Safety Precautions

BEFORE STARTING UP YOUR UNIT PLEASE READ ALL INSTRUCTION!!

The following warning, caution and danger signs may appear throughout the user manual. Below you will find a description of them as well as an example. Please read and understand the definitions, failure to comply with these notifications may result in severe bodily injury or damage to the equipment.

DANGER : Operating procedures, practices, or conditions ***will*** result in personal injury / death or damage to the unit if instruction is not carefully observed or followed.

WARNING : Operating procedures, practices, or conditions ***may*** result in personal injury / death or damage to the unit if instruction is not carefully observed or followed.

CAUTION : Operating procedures, practices, or conditions ***can*** result in personal injury / death or damage to the unit if instruction is not carefully observed or followed.

Note: Additional information may follow notifications of potential bodily harm or damage to the unit or property. These instructions are to be followed to avoid unwanted harm, death or damage.

1.1 External Features

This is the left side of the unit. Some features you will find are as follows in the of order of back to trailer hitch.

In the middle to right side is the emergency stop button

DANGER ·Please read the ***important*** sticker above failure to do so could result in damage to the unit or personal injury.

On the bottom is the Air Outlet Assembly

CAUTION EXTREME HEAT ·Please use caution as this portal is a source of extreme heat and is labeled as such.

The sight glass and start up / shut down procedures can be found on the right rear door.

WARNING ·Failure to adhere to proper procedure may result in damage to the unit or personal injury

On the bottom of the Right Front Door of the unit, fuel type has been identified, the label also doubles as a location for the fueling station located inside on the body of the unit.

Located in the front of the unit is the adjustable air louver which allows the air movement to be modified with a lever.

Proper towing instruction can be found on the body of the air louver.

WARNING **Failure to adhere to set guidelines may result in personal injury or damage to the unit.**

Also found on the body of the air louver is the California Proposition 65 warning.

At the rear of the unit the Air unit can be found.
This area of the unit will get extremely hot and extreme caution should be used while operating near or around this part of the unit.

On the top of the unit, as seen in the above left photo, is the exhaust outlet / rain cap. This should not be tampered with unless damage has occurred and needs replacement. If this occurs the unit should not be running and should be allowed to cool before replacement.

This is the right side of the unit. Some features you will find are as follows in the order of the trailer hitch to the back of the unit.

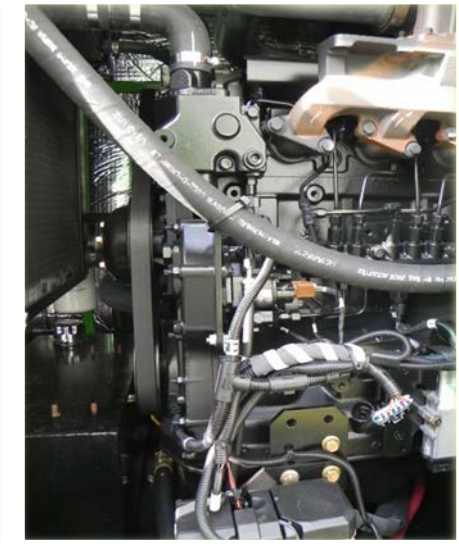
Located on the top of the unit you can see the air intake. This is the black dome located towards the front of the unit.

Located below both access doors is a warning stating the machine should not be operated with the doors open. Failure to adhere to this warning could result in bodily injury as well as damage to the unit

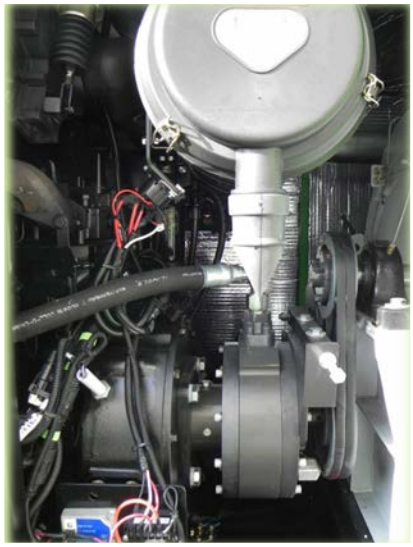
WARNING

Below the doors on the left side you will find the vehicle identification number and the manufacturer information, serial number, model number and type of unit.
To the right of the identification information is the heat reservoir drain port, Webasto heater exhaust and the engine oil drain. These ports should be kept clear from debris and damage. Intended purpose could become restricted if not properly cared for.

1.2 Internal Features



Interior from the Right Side of the Unit Rear Door



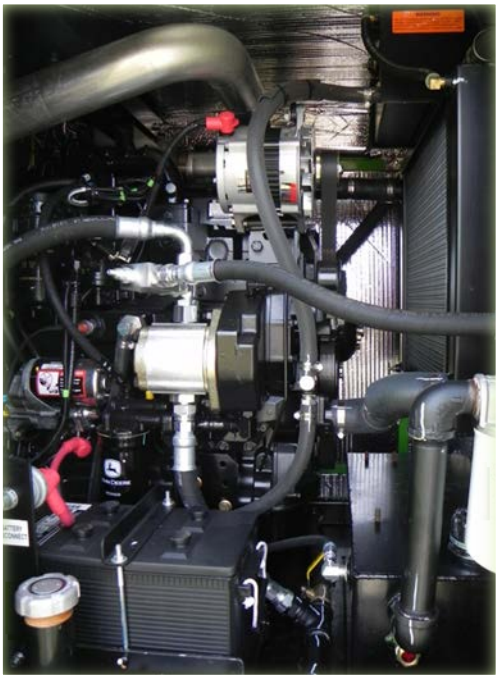
Interior from the Right Side of the Unit Front Door

Rear Door

1. Radiator
2. Fuel Tank

Front Door

1. Air Cleaner
2. Circuit Breaker



Interior from the Left Side of the Unit

Left Side Interior

1. Filling Station

2. Battery

3. Radiator

4. Oil Filter

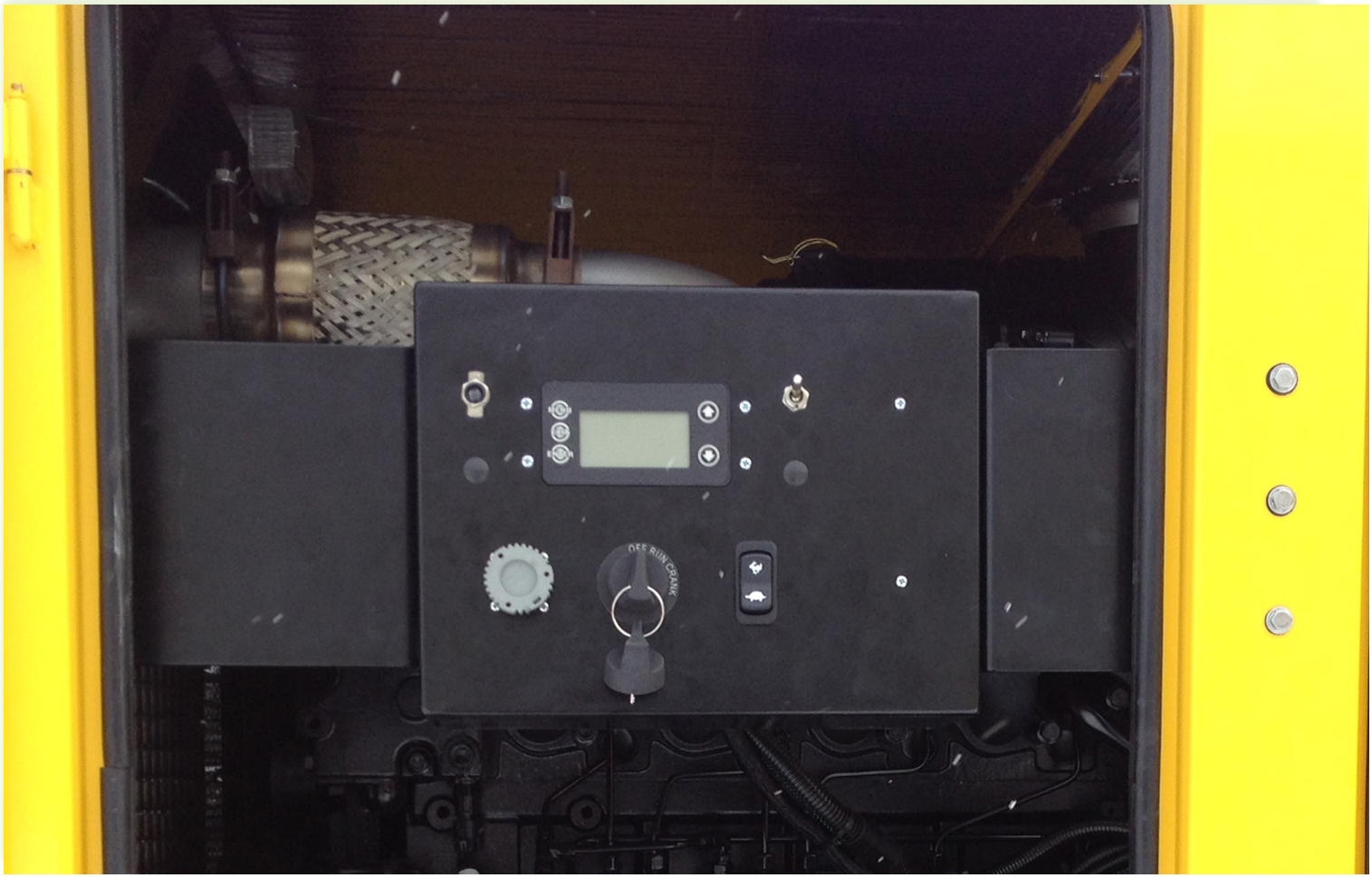
5. Alternator

Air cleaner and filter assembly located

Heating fluid overflow (LRF) accessible from the right side of unit. Open front door and overflow is located to the right on the back wall of the unit.

Please note there is a inside compartment body drain located on the front of the unit. This is the upper plug NOT the lower plug!! The lower plug is the fuel tank drain!!

1.3 Control Panel



The control panel is located on the right side of the unit and can be seen through the sight glass on the rear door. To access the control panel open the right rear door. The control panel is used to start the unit and regulate specifications set by the operator. You will also find the Webasto TSL 17 heater switch located on the control panel. Directly across from the Webasto TSL 17 toggle switch it the interior dome light switch.

For complete care and instruction, please read the owner's manual included in your owner's packet. The included manuals will address specific questions for your Webasto TSL 17 and basic troubleshooting solutions for the unit. Please read through provided information to prevent damage to unit.

Basic start up and shut down procedures have been included in this manual. See section 3 "Operating Procedures" in this manual however this information does not replace or override the information in the owner's manual provided for specific elements of the unit.

Please take note if dome light is left on while the unit is not running, it will drain the battery completely, even if the battery disconnect switch is in the off position.

1.4 Engine Service

Daily Maintenance

1. Check engine oil level
2. Check primary fuel filter
3. Check coolant level
4. Check air cleaner restriction
5. Lubricate PTO release bearing
6. Check PTO clutch adjustment (Refer to PTO inspection plate)

Maintenance Every 100 Hours

1. Lubricate PTO main and operating shaft bearings

Maintenance Every 250 Hours

1. Change engine oil and filter
2. Service battery

Maintenance Every 500 Hours

1. Replace primary and secondary fuel filters
2. Coolant systems analysis (if no coolant filter is used)

Maintenance Every 2000 Hours

1. Replace coolant filter if applicable
2. Coolant system analysis

Engine care information tag is located on the inside panel of the right side rear door

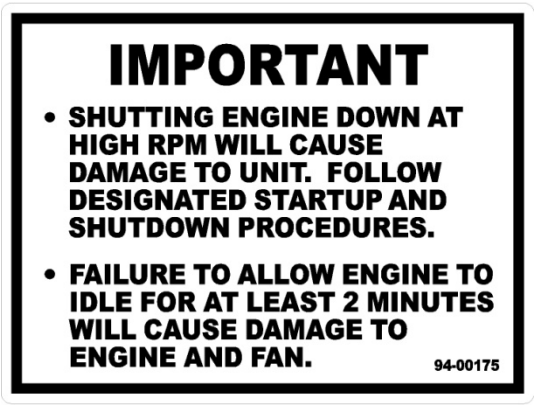
On the right side of the unit you will find the bottom of the front door has a label specifying "DIESEL FUEL." This not only acts as type of fuel it also locates the filling station for the unit.

Upon opening the front right door, you will see in the lower left corner the fuel filling station. Caution is to be exercised when fueling unit. No smoking due to flammable fumes and do not fuel while unit is running. Damage to the unit or personal injury can occur.

fueling instruction must be followed to avoid bodily Injury or damage to the unit. Absolutely NO SMOKING while you are refueling the unit!!

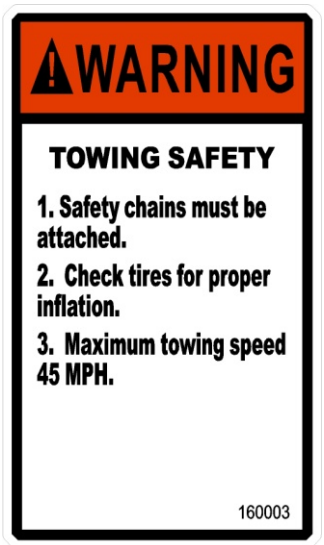
1.6 Caution Information

Located on both sides of unit below the doors, failure to adhere to warning could result in serious personal injury or overheating of engine.



Located above the emergency shut off button on the right side of the unit. If shut down is not done properly damage will cause damage to the unit.

Located on the right side of the unit on the air outlet assembly. Use caution when working near this label. Personal injury will occur if contact is made.



Towing instructions located on the air louver at the front of the unit. Do not disregard warning as damage to the unit or personal injury may occur.

2.1 General Operator Safety Instructions

To ensure a safe working environment the following are safety guidelines while the equipment is in operation. Failure to maintain these guidelines can result it great bodily harm, potential death and or damage to the unit.

1. *Stop engine and put the key in your pocket when adjusting any part of the machine, unless the procedure is approved by Multitek.*
2. *Make sure machine is operating on a level operating surface.*
3. *Do not operate in a small or confined area as this unit produces carbon monoxide*
4. *Store fuel away from flammable materials*
5. *Keep all observers at a safe distance from work areas.*
6. *Keep all children and minors away from equipment while in operation.*
7. *Do not wear baggy or loose clothing around machinery. Parts are moving at a high rate of rotation and loose articles may become entangled in the drive components or engine.*
8. *Long hair should be tied back securely due to the potential of becoming entangled in the drive components and engine causing serious bodily harm.*
9. *Wear personal protective equipment (PPE) approved by CSA or ANSI. Examples of needed PPE for this piece of equipment would be hearing protection, eye protection, and gloves as the unit is very hot while in operation.*
10. *If operation of the unit is not normal follow the shut down instructions immediately. Emergency shutdown procedures can be found in section 3.6 in this manual.*
11. *Keep hands, feet and clothing away from power-driven parts and be aware of coworkers' locations. Failure to avoid moving or extremely hot surfaces could result in serious bodily harm if not death.*
12. *Do not operate unit while intoxicated or under the influence of any drugs or alcohol.*
13. *Do not smoke near the unit or while refilling the unit with fuel.*
14. *Do not place unit or refill unit by or near an open flame. If you need to see into the unit use a flashlight or alternate light source with no flame.*
15. *Make sure all safety guards are in place and in proper working order. Do not operate unit without guards in place, to do so may result in serious bodily harm, death or damage to the unit.*
16. *A carbon monoxide detector is highly recommended while using this unit to heat an enclosed area.*

WARNING

All guidelines put forth must be adhered to. If any guideline is ignored the potential for serious bodily harm, death or damage to the unit is very likely. When this unit is in operation it has many fast moving parts and becomes very hot. Extreme caution should be taken.

2.2 Unit Safety Features

For a complete list of unit safety features make sure to read all manuals provided in your owner operators packet. Some features include:

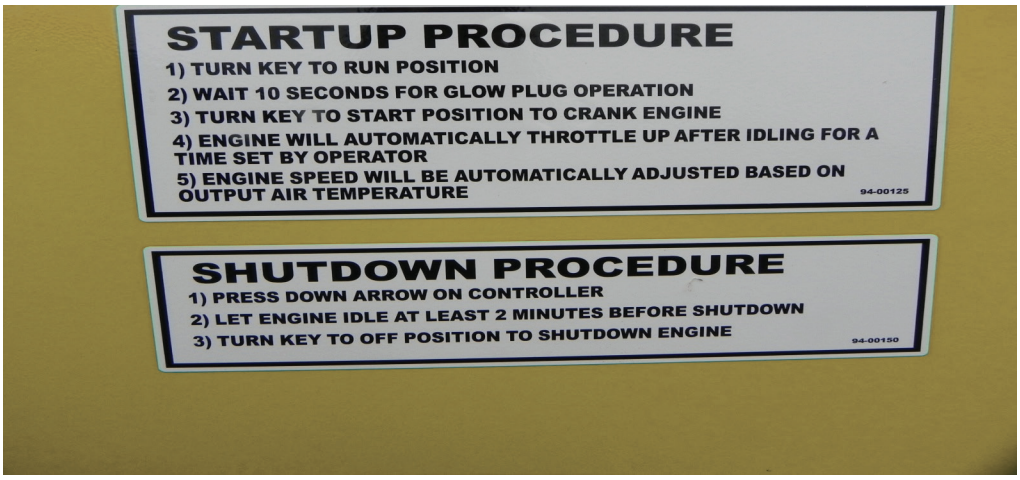
1. Low engine oil pressure shutdown
2. High engine temp shutdown
3. High ATF temp shutdown
4. Low fuel warning
5. Air intake shutdown
6. Electronically controlled engine
7. Overspeed shutdown
8. Air inlet louvers to protect the radiator
9. Computerized temp control

Be sure to read and understand all owner's manuals before operating this unit, as some safety features are unique to specific components and best illustrated by their own manuals.

3.1 Preoperational Checklist

- ☐ *Check engine oil. Add if require per specifications named in engine operators manual*
- ☐ *Check coolant level while engine is still cold. Coolant should not exceed the bottom of the filler neck. If required add to the radiator and check coolant system for leaks.*
- ☐ *Check fuel filter for water or debris. Drain filters as needed.*
- ☐ *If the air cleaner is fitted with and automatic dust unloader valve, squeeze valve to clear away any dust away.*
- ☐ *If air intake is equipped with an air intake restriction indicator gauge check to see if service is needed.*
- ☐ *Inspect all engine compartments while engine not in operation. Look for oil, coolant leaks, worn fan and accessory drive belts, loose connections and trash build-up. Remove trash buildup and have repairs made as needed.*
- ☐ *Inspect radiator for leaks or debris. Have service done prior to use of unit.*
- ☐ *Check air intake hoses and connections for loose connections and cracks. Have service done prior to use of unit.*
- ☐ *Check all belts for cracks or damage. Have service done prior to use of unit.*
- ☐ *Check engine mounts for any broke or cracked mounts. Have service done prior to use of unit.*
- ☐ *Check for fire extinguisher and perform an inspection.*

3.2 Startup and shutdown procedures.



Basic startup and shutdown procedures are position below the sight glass on the right rear door. Please read the operators guide for both your John Deere engine and control panel.

Startup Procedure

1. *Turn key to run position*
2. *Wait 10 seconds for glow plug operation*
3. *Turn key to start position to crank engine*
4. *Engine will automatically throttle up after idling for a time set by operator*
5. *Engine speed will be automatically adjusted based on output air temperature.*

Shutdown Procedure

1. *Press down arrow on controller.*
2. *Let engine idle at least two minutes before shutting down.*
3. *Turn key to off position to shutdown engine.*

Transportation

4.1 Vehicle Requirements:

- **5/16" ball and hitch rated to tow 6000#'s**
- **Tongue weight rating of 500#'s**
- **Electric brake controller**

4.2 Towing Instructions:

- **Lower and secure unit to tow vehicle using coupler lock pin.**
- **Pull jack pin and swivel to towing position. Reinstall pin to secure jack, loss of jack may occur without pin.**
- **Connect safety chains, break away safety switch cable, and wiring plug.**
- **Check operation of lights.**
- **Check all doors are closed and secured.**
- **Abide by the 45mph max towing speed.**
- **Periodic check of lug nuts to 90ft lbs is recommended.**

General Maintenance

	Lubrication and maintenance service intervals				
Item	**Daily**	**Every Two Weeks**	**500 Hours / 12 Months**	**2000 Hour / 24 Months**	**As Required**
Check engine oil and coolant levels	▪	▪			
Check fuel filter / water bowl	▪	▪			
Check air cleaner dust unloader valve and restriction indicator gauge	▪	▪			
Visual walk around inspection	▪	▪			
Operate engine at rated speed and 50%-70% load a minimum of 30 minutes		▪			
Service fire extinguisher			▪		
Check engine mounts			▪		
Service batteries			▪		
Change engine oil and replace oil filter			▪		
Check crankcase cent system			▪		
Check air intake hoses connections and system			▪		
Replace fuel filter elements			▪		
Check automatic belt tensioner and belt wear			▪		
Check engine electrical ground connection			▪		
Check cooling system			▪		
Coolant solution analysis-add SCA's as required			▪		
Pressure test cooling system			▪		
Check engine speeds			▪		
Check crankshaft vibration damper				▪	
Flush and refill cooling system				▪	
Test thermostats				▪	
Check and adjust engine valve clearance				▪	
Add coolant					▪
Replace air cleaner elements					▪
Replace fan and alternator belts					▪
Check fuses					▪
Bleed fuel system					▪

Storage information

PLEASE READ ALL OPERATORS MANUALS FOR ADDITIONAL STORAGE INFORMATION

1. **Turn key onto the off position and remove. Engage the emergency stop button**
2. **Complete preoperational checklist and make sure all services needed are completed**
3. **Complete all maintenance per suggested maintenance schedule**
4. **Disconnect battery and store in a cool dry place. Charge battery monthly to maintain battery's life and integrity**
5. **Secure doors and vents in a closed position**
6. **Make sure all openings are covered or in a closed position**
7. **Reference engine manual for additional storage requirements / preparation.**
8. **Touch up any damaged areas with paint or sealant to prevent rust from occurring**
9. **Drain any excess fluids if necessary**
10. **Store unit in a covered location to protect unit from the elements**

7.1 Warranty Information

WARRANTY

MULTITEK NORTH AMERICA LLC
LIMITED WARRANTY TO ORIGINAL PURCHASER

Multitek hereby warrants to the original purchaser its products from defects in material and workmanship for a period of one year (365 days) or 1000 hours whichever occurs first from the date of delivery to the original purchaser. For units and accessories in dealer's stock, warranty start date shall be no later than one year (365 days) from the date of shipment from Multitek or 100 hours whichever occurs first for a period of one year (365 days) or 1000 hours whichever occurs first. This warranty does not apply to items such as parts, components and other accessories not manufactured by Multitek; such items are covered by individual warranties of the manufacturers of such equipment, terms of which may vary.

Within the warranty time period, Multitek will, at its sole and exclusive option, and at no charge to the purchaser, either repair, replace f.o.b. its factory, or allow credit at the then current dealer net price for any part manufactured by Multitek that shall be proved to be defective in workmanship or material, provided that, upon receipt of written request from Multitek, all parts claimed defective be properly identified and returned to the factory within thirty (30) days of such request with all charges prepaid. No repairs shall be made, however, without prior written consent and approval of an authorized agent of Multitek. Multitek will not accept any charges for labor and/or parts incidental to the removal and remounting of parts repaired or replaced under this warranty.

This warranty covers only new equipment in the original owner's possession which, after shipment from Multitek, has not been manufactured or altered in any manner whatsoever without the written consent of Multitek. The express warranty herein furthermore shall not apply to any equipment defect caused, either directly or indirectly, or in part, by the neglect, misuse, abuse or operation of said equipment under conditions other than those specified by Multitek. Request for warranty will be accepted on service parts that fail due to defects and workmanship within 90 days from date of purchase.

THE EXPRESS WARRANTY SET FORTH HEREIN IS IN LIEU OF ALL OTHER WARRANTIES, EXPRESS OR IMPLIED, INCLUDING SPECIFICALLY, BUT NOT EXCLUSIVELY, ANY WARRANTIES OF MERCHANTABILITY OR FITNESS OR PARTICULAR PURPOSE SET FORTH IN THE UNIFORM COMMERCIAL CODE. ANY AND ALL SUCH WARRANTIES, TO THE EXTENT PERMITTED BY LAW, ARE HEREBY EXPRESSLY DISCLAIMED AND EXCLUDED, ANY LIMITED WARRANTIES WHICH ARE NOT EXCLUDED HEREBY DUE TO OPERATION OF LAW ARE SPECIFICALLY LIMITED IN DURATION TO THE PERIOD OF THE EXPRESS WARRANTY PROVIDED HEREIN.

THE REMEDIES SET FORTH HEREIN ARE SOLE AND EXCLUSIVE REMEDIES OF THE ORIGINAL PURCHASER HEREUNDER, AND MULTITEK SHALL NOT BE LIABLE FOR ANY FURTHER LOSS, DAMAGES OR EXPENSES, INCLUDING INCIDENTAL OR CONSEQUENTIAL DAMAGES, ARISING DIRECTLY, INDIRECTLY OR IN PART FROM THE USE, INSTALLATION, MAINTENANCE AND SERVICING OF ITS PRODUCTS.

Some states do not allow limitations on how long an implied warranty lasts, so the above limitation on the duration of any implied warranties not excluded hereby due to operation of law may not apply to you. Some states do not allow the exclusion or limitation of incidental or consequential damages, so the above exclusion of incidental or consequential damages may not apply to you. This warranty gives you specific legal rights, and you may also have other rights which vary from state to state.

The warranty registration form must be returned to Multitek to validate the warranty.

To make a claim under this Limited Warranty, contact your dealer in writing at the address below.

Provide as to said claim the following information:

(a) Your name, address and telephone number.
(b) A description of the product which is the subject of the claim, including:
    (1) Model name and year; and
    (2) Serial number.
(c) Date of purchase of product.
(d) Name and address of the dealer from whom said product was purchased.
(e) Nature of the product failure.

For further information regarding this Limited Warranty, contact Multitek at the address stated below.

MULTITEK NORTH AMERICA LLC. PO BOX 170 375 PROGRESS ST PRENTICE WI 54556

JOHN DEERE NEW OFF-HIGHWAY ENGINE WARRANTY

Warranty Duration

Unless otherwise provided in writing, John Deere* makes the following warranty to the first retail purchaser and each subsequent purchaser (if purchase is made prior to expiration of applicable warranty) of each John Deere new off-highway engine marketed as part of a product manufactured by a company other than John Deere or its affiliates and on each John Deere engine used in an off-highway repower application:

- 12 months, unlimited hours of use, or
- **24 months and prior to the accumulation of 2000 hours of use**

Note: In the absence of a functional hour meter, hours of use will be determined on the basis of 12 hours of use per calendar day.

Warranty Coverage

This warranty applies to the engine and to integral components and accessories sold by John Deere, and delivered to the first retail purchaser on or after 1 January 2007.

All John Deere-warranted parts and components of John Deere engines which, as delivered to the purchaser, are defective in materials and/or workmanship will be repaired or replaced, as John Deere elects, without charge for parts or engine repair labor, including reasonable costs of labor to remove and reinstall non-engine parts or components of the equipment in which the engine is installed, and, when required, reasonable costs of labor for engine removal and reinstallation, if such defect appears within the warranty period as measured from the date of delivery to the first retail purchaser.

Emissions Warranties

Emissions warranties appear in the operation and maintenance instructions furnished with the engine/machine.

Obtaining Warranty Service

Warranty service must be requested of the nearest authorized John Deere engine service outlet before the expiration of the warranty. An *authorized* service outlet is a John Deere engine distributor, a John Deere engine service dealer, or a John Deere equipment dealer selling and servicing equipment with an engine of the type covered by this warranty.

Authorized service outlets will use only new or remanufactured parts or components furnished or approved by John Deere.

Authorized service locations and the name of the John Deere division or subsidiary making this warranty are listed in the *Parts and Service Directory for John Deere Engines*.

At the time of requesting warranty service, the purchaser must be prepared to present evidence of the engine's delivery date.

John Deere reimburses authorized service outlets for limited travel expenses incurred in making warranty service repairs in non-John Deere applications when travel is actually performed. The limit, as of the date of publication of this statement, is US$400.00 (US$500.00 if engine is marine) or equivalent. If distances and travel times are greater than reimbursed by John Deere, the service outlet will charge the purchaser for the difference.

* "John Deere" means John Deere Power Systems with respect to users in the United States, John Deere Limited with respect to users in Canada, and Deere & Company or its subsidiary responsible for marketing John Deere equipment in other countries where the user is located. DF2369E (4-07)

Purchaser's Responsibilities

The cost of normal maintenance and depreciation.

Consequences of negligence, misuse, or accident involving the engine, or improper application, installation, or storage of the engine.

Consequences of service performed by someone other than a party authorized to perform warranty service, if such service, in John Deere's judgment, has adversely affected the performance or reliability of the engine.

Consequences of any modification or alteration of the engine not approved by John Deere, including, but not limited to, tampering with fuel and air delivery systems.

The effects of cooling system neglect as manifested in cylinder liner or block cavitation ("pitting", "erosion", "electrolysis").

Any premium for overtime labor requested by the purchaser.

Costs of transporting the engine or the equipment in which it is installed to and from the location at which the warranty service is performed, if such costs are in excess of the maximum amount payable to the service location were the warranty service performed at the engine's location.

Costs incurred in gaining access to the engine; i.e., overcoming physical barriers such as walls, fences, floors, decks or similar structures impeding access to the engine, rental of cranes or similar, or construction of ramps or lifts or protective structures for engine removal and reinstallation.

Incidental travel costs including tolls, meals, lodging, and similar.

Service outlet costs incurred in solving or attempting to solve non-warrantable problems.

Services performed by a party other than an authorized John Deere engine service dealer, unless required by law.

Charges by dealers for initial engine start-up and inspection, deemed unnecessary by John Deere when operation and maintenance instructions supplied with the engine are followed.

Costs of interpretation or translation services.

No Representations or Implied Warranty

Where permitted by law, neither John Deere nor any company affiliated with it makes any guaranties, warranties, conditions, representations or promises, express or implied, oral or written, as to the nonoccurrence of any defect or the quality or performance of its engines other than those set forth herein, and DOES NOT MAKE ANY IMPLIED WARRANTY OR CONDITIONS OF MERCHANTABILITY OR FITNESS otherwise provided for in the Uniform Commercial Code or required by any Sale of Goods Act or any other statute. This exclusion includes fundamental terms. In no event will a John Deere engine distributor or engine service dealer, John Deere equipment dealer, John Deere or any company affiliated with John Deere be liable for incidental or consequential damages or injuries including, but not limited to, loss of profits, loss of crops, rental of substitute equipment or other commercial loss, damage to the equipment in which the engine is installed or for damage suffered by purchaser as a result of fundamental breaches of contract or breach of fundamental terms, unless such damages or injuries are caused by the gross negligence or intentional acts of the foregoing parties.

Remedy Limitation

The remedies set forth in this warranty are the purchaser's exclusive remedies in connection with the performance of, or any breach of guaranty, condition, or warranty in respect of new John Deere engines. In the event the above warranty fails to correct purchaser's performance problems caused by defects in workmanship and/or materials, purchaser's exclusive remedy shall be limited to payment by John Deere of actual damages in an amount not to exceed the cost of the engine.

No Seller's Warranty

No person or entity, other than John Deere, who sells the engine or product in which the engine has been installed makes any guaranty or warranty of its own on any engine warranted by John Deere unless it delivers to the purchaser a separate written guaranty certificate specifically guaranteeing the engine, in which case John Deere shall have no obligation to the purchaser. Neither original equipment manufacturers, engine or equipment distributors, engine or equipment dealers, nor any other person or entity, has any authority to make any representation or promise on behalf of John Deere or to modify the terms or limitations of this warranty in any way.

Additional Information

For additional information concerning the John Deere New Off-Highway Engine Warranty, see booklet *Engine Owner's Warranty – Worldwide*. DF2369E (4-07)

7.2 Pre-delivery Inspection Checklist

- ☐ Confirm unit has a serial number, model number and vehicle identification number attached in the front lower left side of unit.
- ☐ Confirm operator's packet has been delivered with the unit.
- ☐ Has all the safety decals have been identified and are in a functional state.
- ☐ Identify all external features and their function. Insure that all openings are now clear before starting unit.
- ☐ Check all fluid levels are at their proper levels.
- ☐ Confirm unit initial startup and pump is operational.
- ☐ Review all startup and shutdown procedures to ensure proper steps are taken.
- ☐ Review basic personal safety and unit safety procedures.
- ☐ Review warranty information provided with operators manuals.
- ☐ Verification that unit was delivered, basic features and safety were discussed.
- ☐ Register your unit.

Appendix A - Technical Specifications

Dimensions/Inputs/Outputs	Value
Overall Length	187.1″
Overall Width	81.4″
Overall Height	98.1″
Shipping Dimensions	Fully assembled with the same dimensions as the overall dimensions
Weight with LRF	7240 lbs.
LRF Capacity	25 gallons / 94.6352L
Fuel Tank	315 Gal / 1,192.40L

Appendix B – Abbreviations

Abbreviations	Term
AMP	Amperes
BTU	British Thermal Unit
CFM	Cubic Feet per Minute
ECM	Electronic Control Module
°F	Degrees Fahrenheit
FT	Feet
Gal	Gallons
GFI	Ground Fault Interrupter
GPH	Gallons Per Hour
HP	Horsepower
IGN	Ignition
LRF	Low Range Fluid (Heat Transfer Fluid)
HZ	Hertz
IPO	Initial Parts Order
LB	Pound
OCS	Operator Control Systems
PDI	Pre-Delivery Inspection
PSI	Pounds Per Square Inch
RPM	Revolutions Per Minute

Abbreviations	Association
ANSI	American National Standards Institute
CSA	Canadian Standards Association
NHTSA	National Highway Traffic Safety Administration

Appendix C – Maintenance Log

1.2M **Maintenance Log**

Customer	**Customer ID#**
Address	
City	**State/Province**
Zip Code / Postal Code	**Phone #**
Engine S/N	**VIN #**
Dealer	**Dealer #**

Date	Hours	Describe Service Performed	Authorization

Appendix - D

NOTES

4 Diagnostic Trouble Codes (DTC) and Engine Protection

4.1 DTC List

Diagnostic Trouble Codes (DTC or Fault or Service Codes) are supplied to give info on ECU, engine, injection pump, and sensor status. Codes are set up according to SAE Standard J1939 and are shown below for the OEM Industrial Application. To inform about level of Diagnostic Trouble Code (level of concern), lamp status will be communicated via J1939 message DM1 or DM2. Hardware lamps driven by the ECU will not be used in this application.

Fault codes have been divided up into groupings for Vehicle Specific and Application Specific. Vehicle Specific Faults are faults that will be custom per application. These will revolve around vehicle integration items such as throttles, vehicle to engine communication, and optional sensors. The Application Specific Faults are generic Tier III faults that are specific to the engine. The far right columns indicate which faults are associated with a given level controller. The numbers in the column point to the appropriate snapshot buffer (X means not defined).

Associated Lamp Key	Color
Malfunction	Fuscia
Stop	Red
Protect	Blue
Warning	Yellow
No Light	No Color

4.1.1 Vehicle Specific Fault List

Vehicle Specific Fault List					
SPN.FMI	J1939 Lamp	Suspect Parameter	Condition Which Causes The Fault	Likely Causes	SI
28.03	W	Percent Accelerator Position #3	Throttle #3 Voltage OOR High	Sensor shorted to 5V.	0
28.04	W	Percent Accelerator Position #3	Throttle #3 Voltage OOR Low	Sensor open or shorted to ground.	0
29.03	W	Percent Accelerator Position #2	Throttle #2 Voltage OOR High	Sensor shorted to 5V.	0
29.04	W	Percent Accelerator Position #2	Throttle #2 Voltage OOR Low	Sensor open or shorted to ground.	0
91.03	W	Accelerator Pedal Position	Throttle Voltage OOR High	Sensor shorted to 5V.	0
91.04	W	Accelerator Pedal Position	Throttle Voltage OOR Low	Sensor open or shorted to ground.	0
107.31	W	Air Filter Restriction Switch	Condition Exists or Not Available	Air filter restricted. Change filter. See Engine Protection for derate information.	0
111.01	S	Coolant Level	Coolant Level Low – Most Severe Level	Loss of coolant detected in the overflow. Add coolant and check for leaks. See Engine Protection for derate information.	0
190.00	S	Engine Speed	Engine Speed High – Most Severe Level	Engine has exceeded the backup over-speed threshold value.	0
190.16	S	Engine Speed	Engine Speed High – Most Severe Level	Engine has exceeded the over-speed threshold value.	0
627.18	W	Power Supply	Battery Voltage Below Normal- Moderately Severe Level	Bad battery / power supply connection. Supply set below required voltage.	0
676.03	W	Glow Plug Relay	Glow Plug Relay Output High When Relay Not Active.	Glow Plug relay output is high when the relay is not energized by the ECU. Short to battery or relay is stuck on	0
676.05	W	Glow Plug Relay	Glow Plug Relay Output Low When Relay Active.	Glow Plug relay output is low when the relay is energized by the ECU. Open circuit or failed relay	0
898.09	S	Requested Speed / Speed Limit	TSC1 Message Not Received or Timeout	Message missing or not received due to TMC or CAN Bus failure.	0
970.31	W	Auxiliary Engine Shutdown Switch	Not Available or Condition Exists	The External Shutdown Switch has been activated.	0
971.31	W	Auxiliary Engine Protection Switch	Not Available or Condition Exists	The External Engine Protection Request Switch (External Derate Switch) has been activated. See Engine Protection for derate information.	0

Vehicle Specific Fault List					
SPN.FMI	J1939 Lamp	Suspect Parameter	Condition Which Causes The Fault	Likely Causes	SI
1109.31	W	Engine Protection System Approaching Shutdown	Engine Not Available or Condition Exists	Engine is approaching shutdown due to shutdown command received from the ECU. Shutdown will commence when the shutdown timer reaches 0.	0
1110.31	W	Engine Protection System has Shutdown	Engine Not Available or Condition Exists	Engine has been shutdown due to shutdown command received from the ECU.	0

Return to DTC Home

NOTE: The faults in this table are associated with vehicle applications, therefore all faults listed here should be setup with a Harness Diagnostics Factory Mode Inhibit.

4.1.2 Application Fault List

Application Fault List								
SPN.FMI	J1939 Lamp	Suspect Parameter	Condition Which Causes The Fault	Likely Causes	ECU Level			
					14	15	16	18
94.03	W	Fuel Delivery Pressure	Fuel Pressure Voltage OOR High	An open in the ground circuit of the low-pressure fuel system. Short in the harness to high voltage or sensor failure.	0	0		
94.04	W	Fuel Delivery Pressure	Fuel Pressure Voltage OOR Low	Low-pressure fuel system sensor not connected or open in the signal line. Low-pressure sensor supply connection open. Harness shorted to ground. Low-pressure sensor failure.	0	0		
94.17	W	Fuel Delivery Pressure	Fuel Pressure Low – Least Severe Level	Low pressure in the fuel supply pump circuit. Restriction in the low pressure system due to a plugged screen or pump failure.	0	0	0	
97.03	W	Water In Fuel Indicator	Water In Fuel Voltage OOR High	Open circuit in the harness, either signal or ground. Water in fuel sensor failure.	0	0	0	X
97.04	W	Water In Fuel Indicator	Water In Fuel Voltage OOR Low	Water in fuel sensor signal shorted to ground. Water in fuel sensor failed.	0	0	0	X
97.16	S	Water In Fuel Indicator	Water In Fuel Detected	Water has been detected in the separator bowl. See Engine Protection for derate information.	1	1	1	X
100.01	S	Engine Oil Pressure	Oil Pressure Low - Most Severe Level	Oil pressure low due to low or no oil present. See Engine Protection for derate and threshold information.	1	1	1	X
100.03	W	Engine Oil Pressure	Oil Pressure Voltage OOR High	Open circuit in the harness, either signal or ground. Oil Pressure sensor failure.	0	0	0	X
100.04	W	Engine Oil Pressure	Oil Pressure Voltage OOR Low	Oil Pressure sensor signal shorted to ground. Oil Pressure sensor failed.	0	0	0	X
100.18	W	Engine Oil Pressure	Oil Pressure Low – Moderately Severe Level	Oil pressure low due to low or no oil present. See Engine Protection for derate & threshold information.	1	1	1	X
100.31	W	Engine Oil Pressure	Oil Pressure Detected At Zero Engine Speed	Oil pressure detected at zero engine speed due to open ground in the sensor circuit.	0	0	0	X
102.02	W	Boost Pressure	Boost Pressure Model / Measurement Mismatch	Boost pressure invalid due to an in-range failure of the Boost Pressure sensor or Turbo Speed sensor. Model computation does not agree with MAP reading.	3	3		
102.03	W	Boost Pressure	Boost Pressure Voltage OOR High	Open circuit in the harness, either signal or ground. Boost Pressure sensor failure.	0	0		
102.04	W	Boost Pressure	Boost Pressure Voltage OOR Low	Boost Pressure sensor signal shorted to ground. Boost Pressure sensor failed.	0	0		
103.00	W	Turbocharger 1 Speed	Turbo Speed High – Most Severe Level	Due to high altitude or erratic VTG operation. See Engine Protection for derate information.	2	2		
103.05	W	Turbocharger 1 Speed	Turbo Speed Diagnostics	Harness diagnostic fault only. Open circuit detected in turbo speed signal.	0	0		
103.06	W	Turbocharger 1 Speed	Turbo Speed Diagnostics	Harness diagnostic fault only. Short to ground detected in turbo speed signal.	0	0		
103.08	W	Turbocharger 1 Speed	Turbo Speed Data Incorrect	Turbo speed is invalid, in range failure. Likely caused by noise or plausibility fault conditions.	0	0		
103.31	W	Turbocharger 1 Speed	Turbocharger Speed Missing	Intermittent harness or connector problem.	0	0		

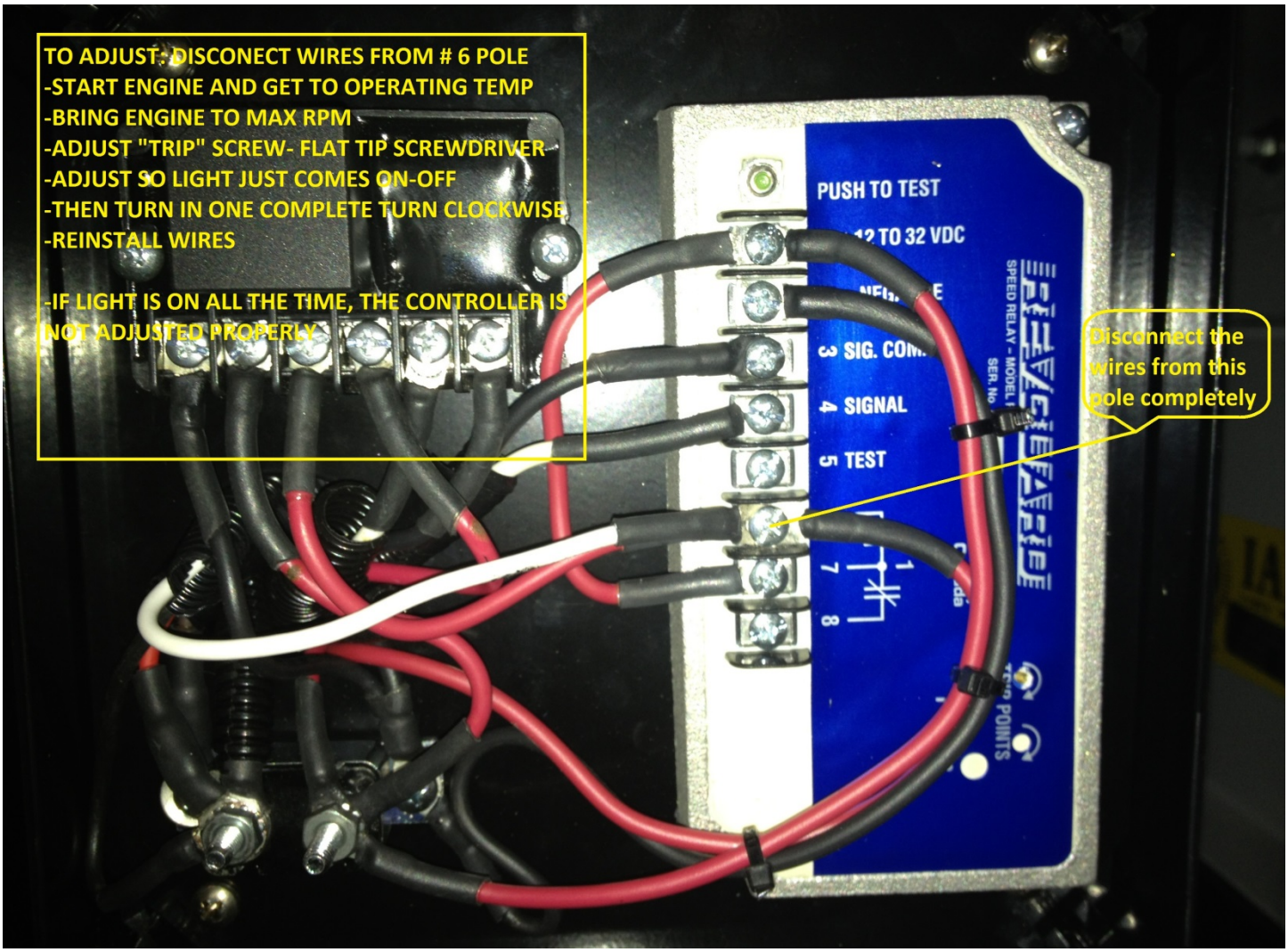
Application Fault List								
SPN.FMI	J1939 Lamp	Suspect Parameter	Condition Which Causes The Fault	Likely Causes	ECU Level			
					14	15	16	18
105.00	S	Manifold Air Temperature	Manifold Air Temperature High - Most Severe Level	Cooling system performance has degraded or failed. See Engine Protection for derate information. Power Tech Plus Engines: 123°C - Refers to Mixed temperature. Power Tech Engines: 91°C.	1	1	1	X
105.03	W	Manifold Air Temperature	Manifold Air Temperature Voltage OOR High	Open circuit in the harness, either signal or ground. Manifold air temperature sensor failure.	0	0	0	X
105.04	W	Manifold Air Temperature	Manifold Air Temperature Voltage OOR Low	Manifold air temperature sensor signal shorted to ground. Manifold air temperature sensor failed.	0	0	0	X
105.15	W	Manifold Air Temperature	Manifold Air Temperature High - Least Severe Level	Cooling system performance has degraded or failed. Power Tech Plus Engines: 120°C - Refers to Mixed temperature. Power Tech Engines: 88°C.	0	0	0	X
105.16	W	Manifold Air Temperature	Manifold Air Temperature High - Moderately Severe Level	Cooling system performance has degraded or failed. See Engine Protection for derate information. Power Tech Plus Engines: 121°C - Refers to Mixed temperature. Power Tech Engines: 89.5°C.	1	1	1	X
108.02	W	Barometric Pressure	Barometric Pressure Invalid	Sensor is in range but incorrect based on MAP and Exhaust Pressure calculations.	0	0		
110.00	S	Engine Coolant Temperature	Coolant Temperature High - Most Severe Level	Cooling system performance has degraded or failed. See Engine Protection for derate information. -Threshold for peak power levels of ≥75% of maximum power envelope: Power Tech Plus Engines: 350S & 450S - 113°C; 650S - 108°C. Power Tech Engines: 250S & 350S - 113°C. -Threshold for peak power levels of <75% of maximum power envelope: Power Tech Plus Engines: 350S & 450S - 116°C; 650S - 111°C. Power Tech Engines: 250S & 350S - 116°C.	1	1	1	X
110.03	W	Engine Coolant Temperature	Coolant Temperature Voltage OOR High	Open circuit in the harness, either signal or ground. Coolant temperature sensor failure.	0	0	0	X
110.04	W	Engine Coolant Temperature	Coolant Temperature Voltage OOR Low	Coolant temperature sensor signal shorted to ground. Coolant temperature sensor failed.	0	0	0	X
110.15	W	Engine Coolant Temperature	Coolant Temperature High - Least Severe Level	Cooling system performance has degraded or failed. Threshold for peak power levels of ≥75% of maximum power envelope: Power Tech Plus Engines: 350S & 450S - 110°C; 650S - 105°C. Power Tech Engines: 250S & 350S - 110°C. Threshold for peak power levels of <75% of maximum power envelope: Power Tech Plus Engines: 350S & 450S -113 °C; 650S - 108°C. Power Tech Engines: 250S & 350S - 113°C.	0	0	0	X
110.16	W	Engine Coolant Temperature	Coolant Temperature High - Moderately Severe Level	Cooling system performance has degraded or failed. See Engine Protection for derate information. Threshold for peak power levels of ≥75% of maximum power envelope: Power Tech Plus Engines: 350S & 450S - 111°C; 650S - 106°C. Power Tech Engines: 250S & 350S - 111°C. Threshold for peak power levels of <75% of maximum power envelope: Power Tech Plus Engines: 350S & 450S - 114°C; 650S - 109°C. Power Tech Engines: 250S & 350S - 114°C.	1	1	1	X
110.17	W	Engine Coolant Temperature	Coolant Temperature Low – Least Severe Level	Engine temperature has not risen into the normal operating range under operating conditions. Likely due to stuck open thermostat. Engine is likely operating in an AECD state.	0	0		
157.01	S	Injector Metering Rail Pressure #1 Pressure	Fuel Pressure Low – Most Severe Level	Fuel pressure is below 300kPa due to a plugged fuel filter or loss of prime in the fuel system. See Engine Protection for derate information.		5		
157.03	S	Injector Metering Rail Pressure #1 Pressure	Rail Pressure Voltage OOR High	An open in the ground circuit of the rail pressure sensor. Short in the harness to high voltage. Rail pressure sensor failure. See Engine Protection for derate information.	5		5	
	W		Fuel Pressure Voltage OOR High	An open in the ground circuit of the fuel pressure system. Short in the harness to high voltage or sensor failure.		0		
157.04	S	Injector Metering Rail Pressure #1 Pressure	Rail Pressure Voltage OOR Low	Rail pressure sensor not connected or open in the signal line. Rail pressure sensor supply connection open. Harness shorted to ground. Rail pressure sensor failure. See Engine Protection for derate information.	5		5	

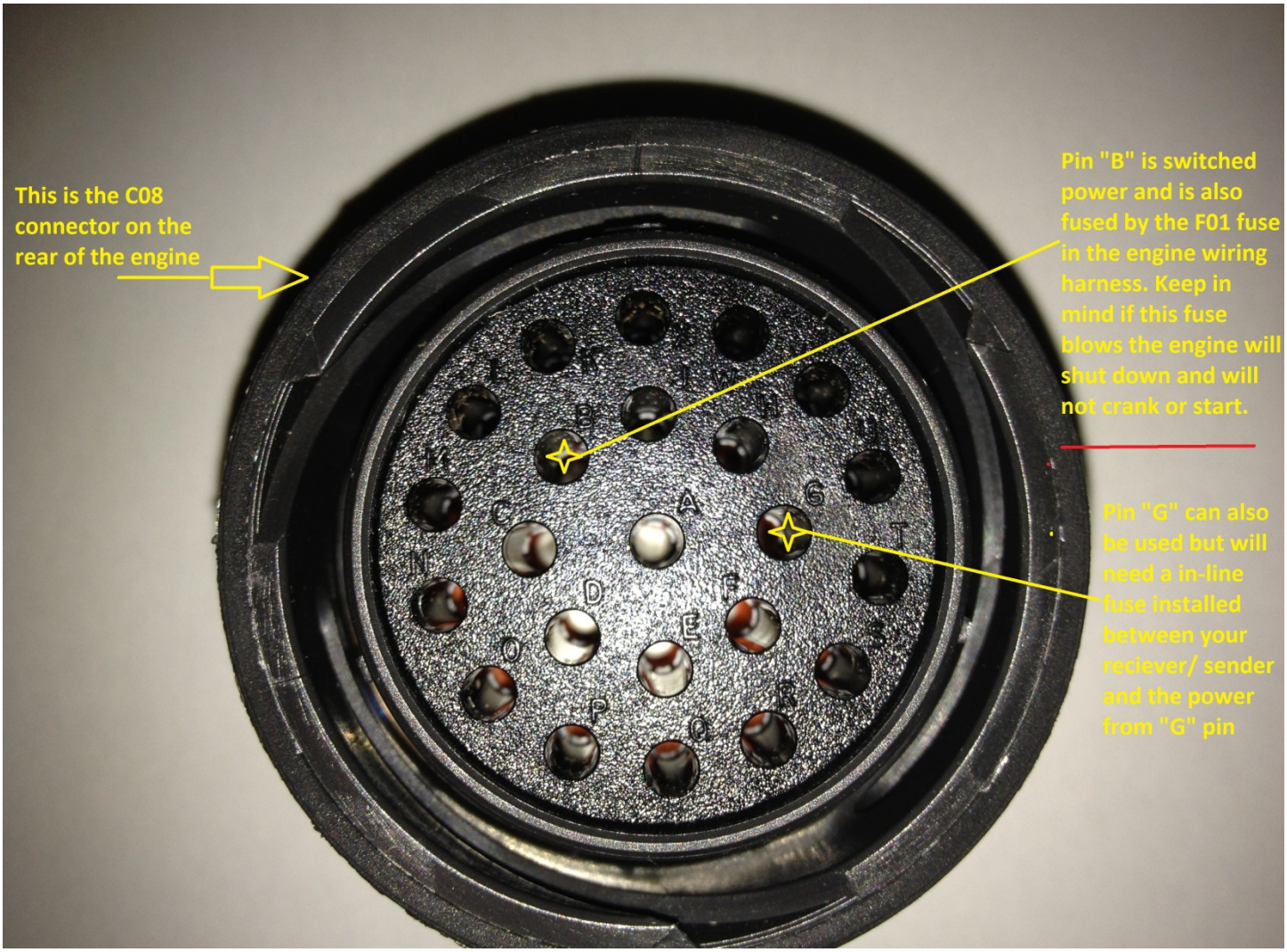
Application Fault List								
SPN.FMI	J1939 Lamp	Suspect Parameter	Condition Which Causes The Fault	Likely Causes	ECU Level			
					14	15	16	18
	W		Fuel Pressure Voltage OOR Low	Fuel pressure sensor not connected or open in the signal line. Pressure sensor supply connection open. Harness shorted to ground. Pressure sensor failure.		0		
157.10	W	Injector Metering Rail Pressure #1 Pressure	Rail Pressure Drops Too Fast	When the engine is motoring and the high-pressure pump is off rail pressure decays too fast. High-pressure leak in the fuel system.	5		5	
157.16	W	Injector Metering Rail Pressure #1 Pressure	Fuel Pressure High – Moderately Severe Level	Faulty pressure regulating valve or sensor. Plugged internal housing screen.		5		
157.17	W	Injector Metering Rail Pressure #1 Pressure	Rail Pressure Not Developed During Cranking	During start, the engine is not able to develop starting rail pressure setpoint. Fuel system is not primed properly. Fuel is not being supplied to the engine.	5		5	
157.18	W	Injector Metering Rail Pressure #1 Pressure	Fuel Pressure Low – Moderately Severe Level	Fuel pressure is below 400kPa due to a plugged fuel filter or loss of prime in the fuel system.		5		
158.17	W	Battery Potential (Voltage), Switched	ECU Cannot Power Down	Switched voltage does not go to 0V.	0	5	5	
174.00	S	Fuel / Return Fuel Temperature	Fuel Temperature High - Most Severe Level	Cooling system performance has degraded or failed. L14 & L16: 100°C. L15: 120°C.	1	1	1	
174.03	W	Fuel / Return Fuel Temperature	Fuel Temperature Voltage OOR High	Open circuit in the harness, either signal or ground. Fuel temperature sensor failure	0	0	0	
174.04	W	Fuel / Return Fuel Temperature	Fuel Temperature Voltage OOR Low	Fuel temperature sensor signal shorted to ground. Fuel temperature sensor failed.	0	0	0	
174.16	W	Fuel / Return Fuel Temperature	Fuel Temperature High - Moderately Severe Level	Cooling system performance has degraded or failed. L14 & L16: 95°C. L15: 110°C.	0	0	0	
189.00	S	Rated Engine Speed	A condition exists which is causing the engine to derate.	One of the speed derate conditions exists on the engine.	0	0	0	X
412.00	S	Exhaust Gas Recirculation Temperature	EGR Temperature High - Most Severe Level	* High loads with poor EGR cooling. Occurs at 299°C on Level 14 and TBD°C on Level 15. See Engine Protection for derate information.	3	3		
412.03	W	Exhaust Gas Recirculation Temperature	EGR Temperature Voltage OOR High	Open circuit in the harness, either signal or ground. EGR temperature sensor failure.	0	0		
412.04	W	Exhaust Gas Recirculation Temperature	EGR Temperature Voltage OOR Low	EGR temperature sensor signal shorted to ground. EGR temperature sensor failed.	0	0		
412.15	W	Exhaust Gas Recirculation Temperature	EGR Temperature High - Least Severe Level	* High loads with poor EGR cooling. Occurs at 280°C on Level 14 and TBD°C on Level 15. See Engine Protection for derate information.	3	3		
412.16	S	Exhaust Gas Recirculation Temperature	EGR Temperature High - Moderately Severe Level	* High loads with poor EGR cooling. Occurs at 290°C on Level 14 and TBD°C on Level 15. See Engine Protection for derate information.	3	3		
611.03	S	Injector Wiring	Short to battery on the injector lines	The injector drive circuit has detected a short to battery on the injector wires.	5	5	5	
611.04	S	Injector Wiring	Short to ground on the injector lines	The injector drive circuit has detected a short to ground on the injector wires.	5	5	5	
627.01	W	Power Supply	Injector Pull In Current Too Low or Hold Current Incorrect	All injector currents are out of specification for various reasons. The initial pull in current is too low or the hold current is incorrect. The battery supply to the ECU is unusually low. The ECU has failed.	5	5	5	
629.13	S	Controller #1	ECU Failure	ECU is locked in the boot block due to resets or programming failure.	0	0	0	X
636.02	W	Engine Position Sensor	Engine Position Sensor Noise Detected	Noise is being detected on the engine position sensor. The connections to the sensor or the sensor has an intermittent failure The sensing target is damaged	4	4	4	X
636.05	W	Engine Position Sensor (Cam)	Engine Position Sensor Current Below Normal Or Open Circuit	Open or intermittent harness or connector problem. Detected in Harness Diagnostics Mode.	0	0	0	X

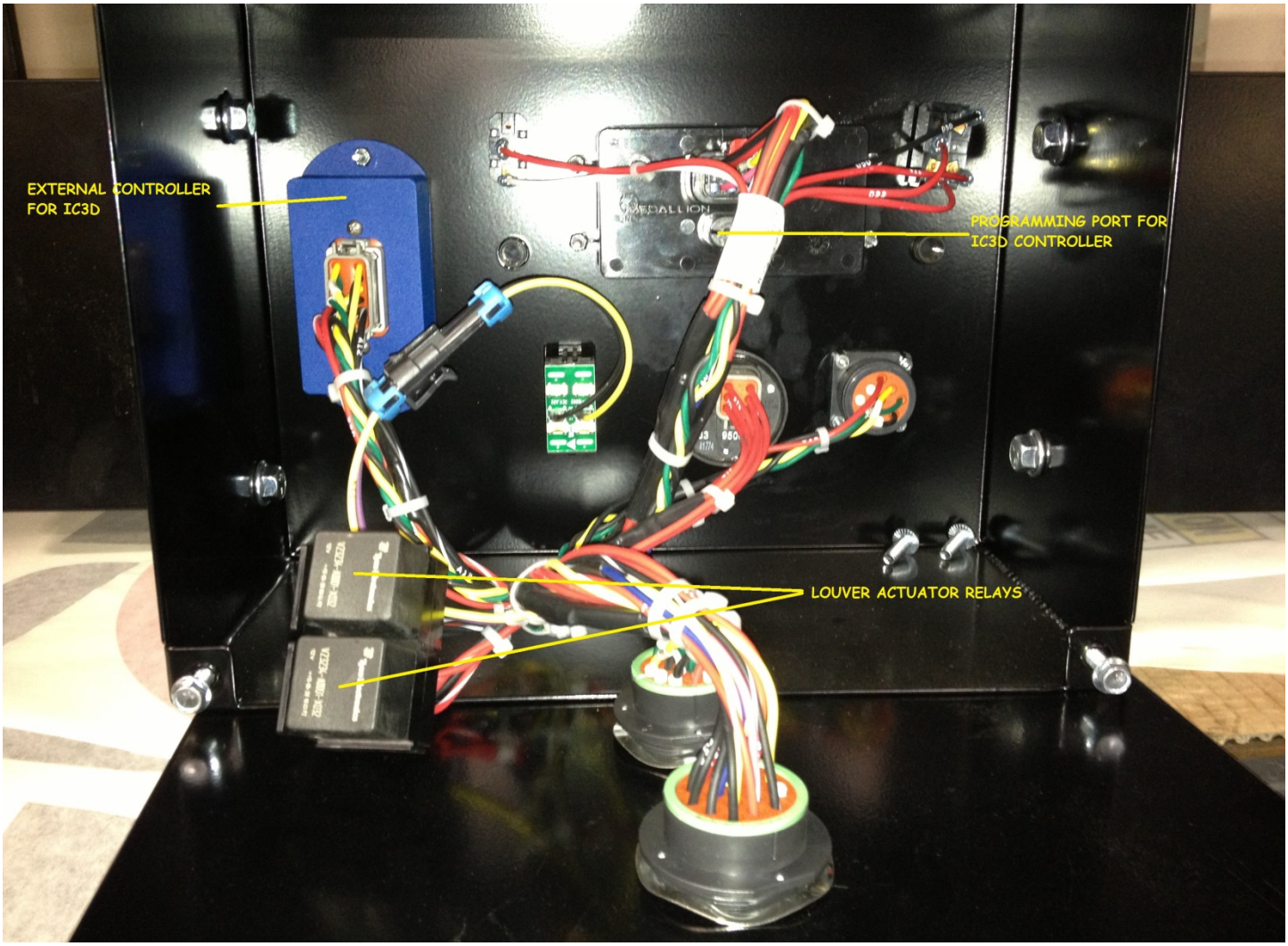
Application Fault List								
SPN.FMI	J1939 Lamp	Suspect Parameter	Condition Which Causes The Fault	Likely Causes	ECU Level			
					14	15	16	18
636.06	W	Engine Position Sensor (Cam)	Engine Position Sensor Current Above Normal Or Grounded Circuit	The harness is shorted to ground. Detected in Harness Diagnostics Mode.	0	0	0	X
636.08	W	Engine Position Sensor (Cam)	Engine Position Sensor Signal Missing	The signal from the engine position sensor is missing. The connections to the sensor are open circuit. The sensor has failed.	4	4	4	X
636.10	W	Engine Position Sensor (Cam)	Engine Position Sensor Pattern Error Detected	The signal from the engine position sensor does not have the proper pulse pattern. The sensing target is damaged. The sensor is improperly installed.	4	4	4	X
637.02	W	Timing Sensor (Crank)	Timing Sensor Noise Detected	Noise is being detected on the engine position sensor on the crankshaft. The intermittent failure of the connections to the sensor or the sensor itself. The sensing target is damaged. See Engine Protection for derate information.	4	4	4	X
637.05	W	Timing Sensor (Crank)	Timing Sensor Current Below Normal Or Open Circuit	Open or intermittent harness or connector problem. Detected in Harness Diagnostics Mode.	0	0	0	X
637.06	W	Timing Sensor (Crank)	Timing Sensor Current Above Normal Or Grounded Circuit	The harness is shorted to ground. Detected in Harness Diagnostics Mode.	0	0	0	X
637.07	W	Timing Sensor (Crank)	Timing Sensor / Engine Position Sensor Mismatch	The relationship between the two engine position signals is not correct. The signal polarity is incorrect possibly due to miss wiring. Improper mounting of the high pressure pump on L14 systems.	4	4	4	X
637.08	W	Timing Sensor (Crank)	Timing Sensor Signal Missing	The signal from the engine position sensor on the crankshaft is missing. The connections to the sensor are open circuit. The sensor has failed. See Engine Protection for derate information.	4	4	4	X
637.10	W	Timing Sensor (Crank)	Timing Sensor Pattern Error Detected	The signal from the engine position sensor on the crankshaft does not have the proper pulse pattern. The sensing target is damaged. The sensor is improperly installed. See Engine Protection for derate information.	4	4	4	X
641.04	W	Variable Geometry Turbocharger Actuator #1	VGT Actuator Disabled	VGT Actuator has been disabled after numerous attempts to power or learn.	2	2		
641.12	W	Variable Geometry Turbocharger Actuator #1	VGT Actuator Bad Intelligent Device or Component	Loss of communication between ECU and VGT Controller.	0	0		
641.13	W	Variable Geometry Turbocharger Actuator #1	VGT Learn Error	Previous learned values not cleared in ECU after valve changed. Obstruction to open or close valve completely.	2	2		
641.16	W	Variable Geometry Turbocharger Actuator #1	VGT Temperature High – Moderately Severe Level	VGT actuator temperature high due to restricted airflow or excessive EGR. See Engine Protection for derate information.	0	0		
65x.00	W	Injector Cylinder #X	Injector limited by max pulse duration on Cylinder #X	Invalid learn – Re-run manual calibration. Could be caused by rail pressure mismatch, fluctuating loads on engine, or injector out of specifications.			2	
65x.01	W	Injector Cylinder #X	Injector limited by min pulse duration on Cylinder #X	Invalid learn – Re-run manual calibration. Could be caused by rail pressure mismatch, fluctuating loads on engine, or injector out of specifications.			2	
65x.02	S	Injector Cylinder #X	Injector #X Part Number is Invalid	The injector part number entered is not valid.	0		0	
65x.05	W	Injector Cylinder #X	The current to the injector in cylinder #X is less than expected	Open circuit in the injector wiring, on either connection. Injector solenoid failure.	5	5	5	X
65x.06	W	Injector Cylinder #X	The current to the injector in cylinder #X increases too rapidly	Injector solenoid failure. Short across the injector wires.	5	5	5	X
65x.07	W	Injector Cylinder #X	The injector fuel flow at Cylinder #X is lower than expected.	Injector is not working. Injector flow limiter is closed.	5		5	
65x.13	W	Injector Cylinder #X	Injector #X QR Code string error	The injector part number is correct, but the QR/Calibration string formed is not what is expected.	0	0	0	X
1075.05	W	Electric Lift Pump for Fuel Supply	Racor Fuel Pump Current Below Normal Or Open Circuit	ECU cannot power lift pump due to a harness or connection problem. Harness Diagnostic Mode Only.	0	0		

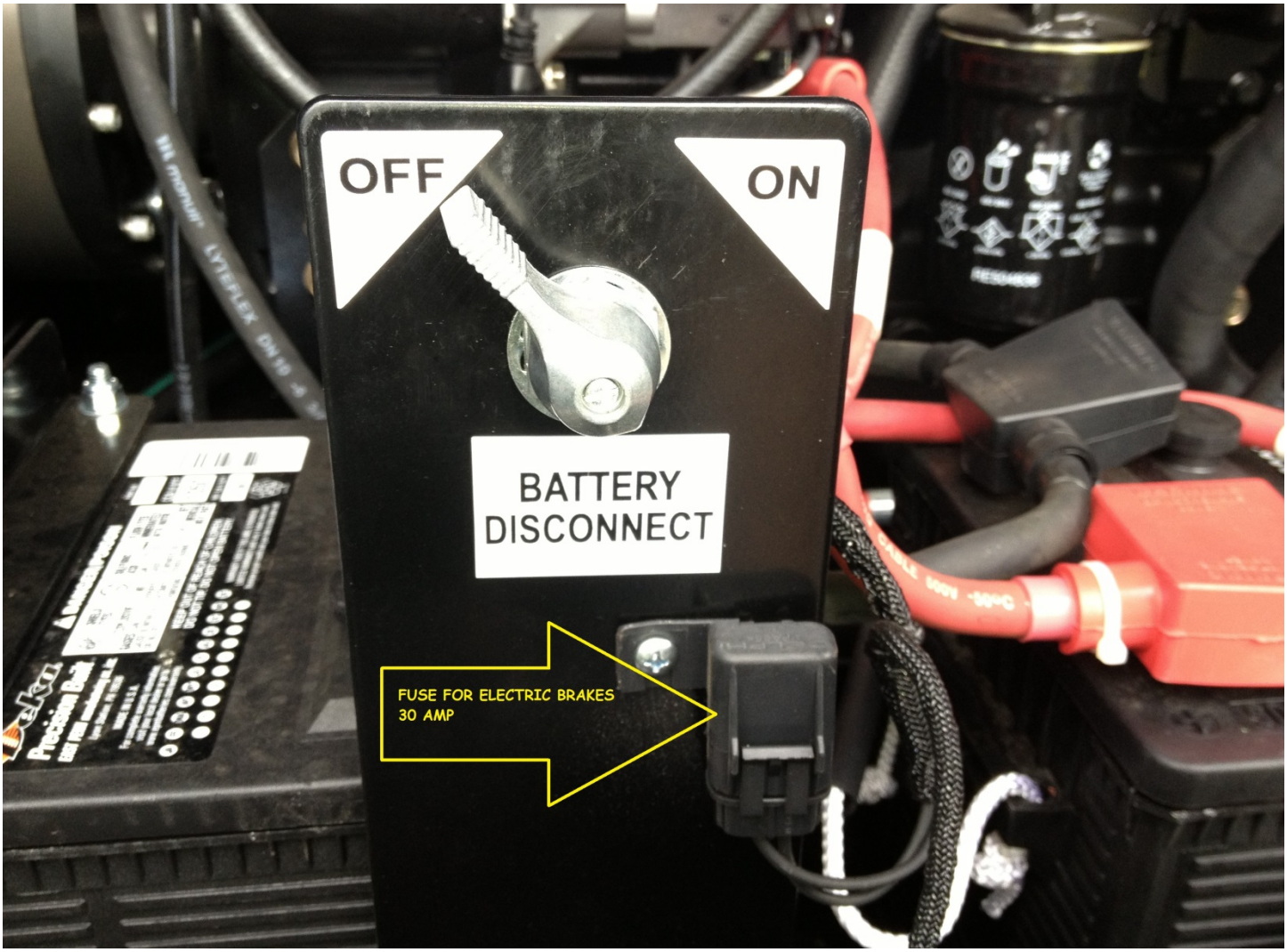
Application Fault List								
SPN.FMI	J1939 Lamp	Suspect Parameter	Condition Which Causes The Fault	Likely Causes	ECU Level			
					14	15	16	18
1075.06	W	Electric Lift Pump for Fuel Supply	Racor Fuel Pump Current Above Normal or Grounded Circuit.	ECU cannot power up lift pump due to a harness or connection problem. Harness Diagnostic Mode Only.	0	0		
1075.12	W	Electric Lift Pump for Fuel Supply	Racor Fuel Pump Bad Intelligent Device or Component	Internal failure of Racor fuel pump.	0	0		
1136.00	S	Engine ECU Temperature	ECU Temperature High – Most Severe Level	Inadequate cooling of the area around the ECU. Occurs at 135°C. See Engine Protection for derate information.	1	1	1	
1136.16	W	Engine ECU Temperature	ECU Temperature High – Moderately Severe Level	Inadequate cooling of the area around the ECU. Occurs at 125°C.	0	0		
1172.03	W	Turbocharger 1 Compressor Inlet Temperature	Compressor Inlet Sensor Voltage OOR High	Open circuit in the harness, either signal or ground. Temperature sensor failure.	0	0		
1172.04	W	Turbocharger 1 Compressor Inlet Temperature	Compressor Inlet Sensor Voltage OOR Low	Sensor signal shorted to ground. Temperature sensor failed.	0	0		
1180.00	S	Turbocharger 1 Turbine Inlet Temperature	Turbine Inlet Temperature High – Most Severe Level	Fuel to Air ratio is too high. Occurs at 750°C. See Engine Protection for derate information.	1	1		
1180.16	W	Turbocharger 1 Turbine Inlet Temperature	Turbine Inlet Temperature High – Moderately Severe Level	Fuel to Air ratio is too high. Occurs at 730°C. See Engine Protection for derate information.	1	1		
1347.03	S	Fuel Pump Pressurizing Assembly #1	Sensor Voltage OOR High	Rail pressure solenoid is forced closed due to a short to a high source. Detected only during harness diagnostics.	5		5	
1347.05	S	Fuel Pump Pressurizing Assembly #1	The circuit to pump solenoid #1 is open, shorted to ground, or overloaded	A wiring connection to pump solenoid #1 is open. Wiring to pump solenoid #1 is shorted to ground. Pump solenoid #1 has failed.	5		5	
1347.07	W	Fuel Pump Pressurizing Assembly #1	Rail pressure control is unable to match the required rail pressure. It may be either too high or too low	The fuel filter is plugged or there is some other fuel restriction is present. The high pressure pump has failed.	5		5	
1569.31	W	Engine Protection Derate	A condition exists which is causing the engine to derate.	One of the derate conditions exists on the engine.	0	0	5	X
2630.00	S	Charge Air Cooler Outlet Temperature	Charge Air Cooler Temperature High – Most Severe Level	Air cooler is plugged or radiator needs to be cleaned. Occurs at 91°C. See Engine Protection for derate information. Refers to Fresh Air Temperature.	1	1		
2630.03	W	Charge Air Cooler Outlet Temperature	Charge Air Cooler Sensor Voltage OOR High	Open circuit in the harness, either signal or ground. Temperature sensor failure.	0	0		
2630.04	W	Charge Air Cooler Outlet Temperature	Charge Air Cooler Sensor Voltage OOR Low	Temperature sensor signal shorted to ground. Sensor failed.	0	0		
2630.15	W	Charge Air Cooler Outlet Temperature	Charge Air Cooler Temperature High – Least Severe Level	Air cooler is plugged or radiator needs to be cleaned. Occurs at 88°C. Refers to Fresh Air Temperature.	0	0		
2630.16	W	Charge Air Cooler Outlet Temperature	Charge Air Cooler Temperature High – Moderately Severe Level	Air cooler is plugged or radiator needs to be cleaned. Occurs at 89.5°C. See Engine Protection for derate information. Refers to Fresh Air Temperature.	1	1		
2659.02	W	EGR Mass Flow Rate	EGR Flow/Temperature Mismatch	EGR model mismatch between delta temperature and/or delta pressure. EGR will run Open-Loop.	3	3		
2659.15	W	EGR Mass Flow Rate	EGR Flow Higher Than Expected – Least Severe Level	EGR flow detected with valve closed. EGR will run Open-Loop.	3	3		
2659.17	W	EGR Mass Flow Rate	EGR Flow Lower Than Expected – Least Severe Level	No EGR flow detected with valve open. Most likely caused by clogged cooler or broken valve shaft. EGR will run Open-Loop. See Engine Protection for derate information.	3	3		
2790.16	W	Turbocharger Compressor Outlet Temperature	Compressor Outlet Temperature High – Moderately Severe Level	High compressor outlet temperature due to high ambient temperatures or intercooler restriction. Occurs at 260°C with an AI Turbo and TBD°C with a Cast Iron Turbo. See Engine Protection for derate information.	2	2		

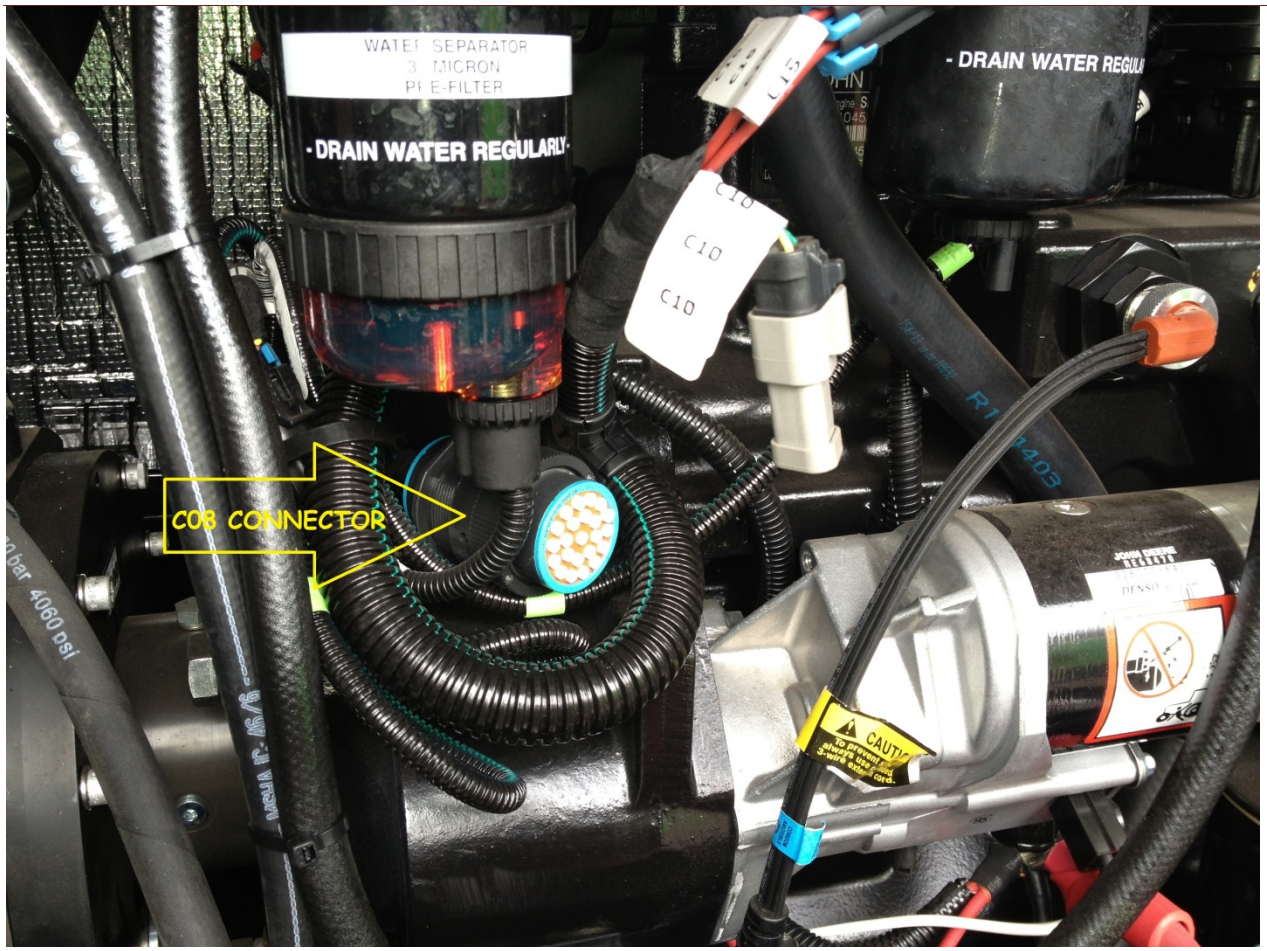
Application Fault List								
SPN.FMI	J1939 Lamp	Suspect Parameter	Condition Which Causes The Fault	Likely Causes	ECU Level			
					14	15	16	18
2791.02	W	Exhaust Gas Recirculation (EGR) Valve Control	EGR Valve Sensor Voltage Mismatch	Unable to achieve desired EGR position based on actual position. Run Harness Diagnostics to determine root cause. EGR will run Open-Loop. This is the Front EGR valve on the 13.5L Engine. See Engine Protection for derate information.	3	3		
2791.03	W	Exhaust Gas Recirculation (EGR) Valve Control	EGR Valve Sensor Voltage OOR High	Open circuit in the harness, either signal or ground. Sensor failure. EGR will run Open-Loop. This is the Front EGR valve on the 13.5L Engine.	0	0		
2791.04	W	Exhaust Gas Recirculation (EGR) Valve Control	EGR Valve Sensor Voltage OOR Low	Sensor signal shorted to ground. Sensor failed. EGR will run Open-Loop. This is the Front EGR valve on the 13.5L Engine.	0	0		
2791.07	W	Exhaust Gas Recirculation (EGR) Valve Control	EGR Valve Not Responding or Out of Adjustment	EGR Valve control has been degraded due to a failure to learn a valid Open, Close, or Delta Position over 15 learn cycles. EGR will run Open-Loop. This is the Front EGR valve on the 13.5L Engine.	3	3		
2791.13	W	Exhaust Gas Recirculation (EGR) Valve Control	EGR Valve Out of Calibration	EGR Valve has an invalid position signal. Valve position has exceeded Fully Open or Fully Closed limits. Limit values have shifted significantly from learned limits over a short period of time. A new valve has been installed without clearing the stops. This is the Front EGR valve on the 13.5L Engine. See Engine Protection for derate information.	3	3		
2791.31	W	Exhaust Gas Recirculation (EGR) Valve Control	EGR Valve Position Error	Previous learned values not cleared in ECU after valve changed. Obstruction to open or close valve completely. Position values changing over a long period due to extensive valve wear. This is the Front EGR valve on the 13.5L Engine.	3	3		
2795.07	W	VGT 1 Actuator Position	VGT Actuator Not Responding or Out of Adjustment	Vane position feedback and desired vane position mismatch. See Engine Protection for derate information.	2	2		
3509.03	S	Sensor Supply Voltage 1	Sensor Supply Voltage OOR High	The rail pressure sensor supply connection is shorted to a higher voltage. ECU pin information follows: L14: J3-G1 (+5V) to J3-G2 (Rtn). L16: J1-D4 (+5V) to J1-D3 (Rtn).	0		0	
3509.04	S	Sensor Supply Voltage 1	Sensor Supply Voltage OOR Low	The rail pressure sensor supply connection is shorted to ground. ECU pin information follows: L14: J3-G1 (+5V) to J3-G2 (Rtn). L16: J1-D4 (+5V) to J1-D3 (Rtn).	0		0	
3510.03	W	Sensor Supply Voltage 2	Sensor Supply Voltage OOR High	5V Supply shorted to a higher voltage. ECU pin information follows: L14 & L15: J3-H4 & J1-A3 (+5V) to J3-H3 & J1-B2 (Rtn). L16: J1-F3 (+5V) to J1-F2 (Rtn). L18: J1-D3 & J2-A3 (+5V) to J1-E2 & J2-C3 (Rtn).	0	0	0	X
3510.04	W	Sensor Supply Voltage 2	Sensor Supply Voltage OOR Low	5V Supply shorted to ground. ECU pin information follows: L14 & L15: J3-H4 & J1-A3 (+5V) to J3-H3 & J1-B2 (Rtn). L16: J1-F3 (+5V) to J1-F2 (Rtn). L18: J1-D3 & J2-A3 (+5V) to J1-E2 & J2-C3 (Rtn).	0	0	0	X
3511.03	W	Sensor Supply Voltage 3	Sensor Supply Voltage OOR High	The sensor supply connection is shorted to a higher voltage. ECU pin information follows: L14 & L15: J2-A3 (+5V) to J2-C3 (Rtn). L16: J2-A3 (+5V) to J2-C3 (Rtn). L18: J1-F3 & J2-G2 (+5V) to J1-D2 & J2-G3 (Rtn).	0	0	0	X
3511.04	W	Sensor Supply Voltage 3	Sensor Supply Voltage OOR Low	The sensor supply connection is shorted to ground. ECU pin information follows: L14 & L15: J2-A3 (+5V) to J2-C3 (Rtn). L16: J2-A3 (+5V) to J2-C3 (Rtn). L18: J1-F3 & J2-G2 (+5V) to J1-D2 & J2-G3 (Rtn).	0	0	0	X
3512.03	W	Sensor Supply Voltage 4	Sensor Supply Voltage OOR High	The sensor supply connection is shorted to a higher voltage. ECU pin information follows: L14 & L15: J2-G2 (+5V) to J2-G3 (Rtn).	0	0		
3512.04	W	Sensor Supply Voltage 4	Sensor Supply Voltage OOR Low	The sensor supply connection is shorted to ground. ECU pin information follows: L14 & L15: J2-G2 (+5V) to J2-G3 (Rtn).	0	0		
3513.03	W	Sensor Supply Voltage 5	Sensor Supply Voltage OOR High	The sensor supply connection is shorted to a higher voltage. ECU pin information follows: L14 & L15: J3-A2 (+5V) to J3-A3 (Rtn).	0	0		


TO ADJUST: DISCONECT WIRES FROM # 6 POLE
-START ENGINE AND GET TO OPERATING TEMP
-BRING ENGINE TO MAX RPM
-ADJUST "TRIP" SCREW- FLAT TIP SCREWDRIVER
-ADJUST SO LIGHT JUST COMES ON-OFF
-THEN TURN IN ONE COMPLETE TURN CLOCKWISE
-REINSTALL WIRES
-IF LIGHT IS ON ALL THE TIME, THE CONTROLLER IS NOT ADJUSTED PROPERLY
PUSH TO TEST
12 TO 32 VDC
3 SIG. COM
4 SIGNAL
5 TEST
SPEED RELAY – MODEL
SER. No
POINTS
Disconnect the wires from this pole completely

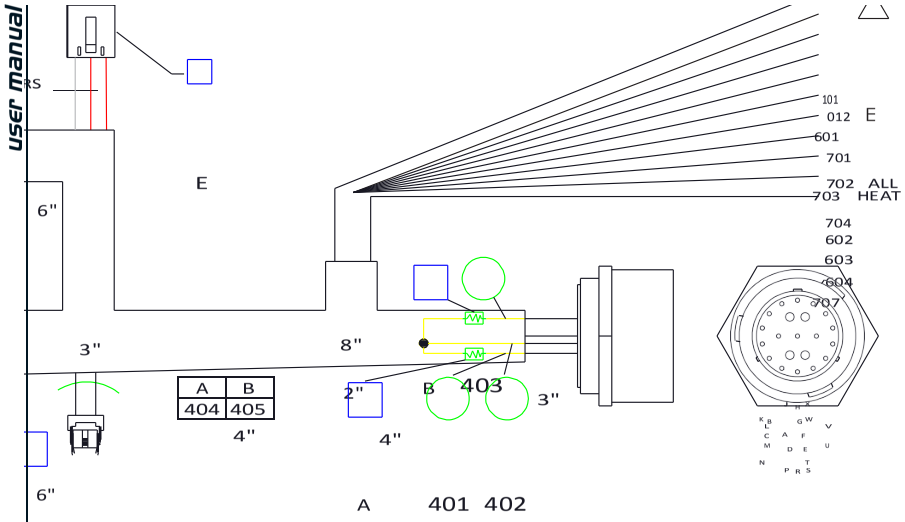

This is the C08 connector on the rear of the engine
Pin "B" is switched power and is also fused by the F01 fuse in the engine wiring harness. Keep in mind if this fuse blows the engine will shut down and will not crank or start.
Pin "G" can also be used but will need a in-line fuse installed between your reciever/ sender and the power from "G" pin


EXTERNAL CONTROLLER FOR IC3D
PROGRAMMING PORT FOR IC3D CONTROLLER
LOUVER ACTUATOR RELAYS


OFF
ON
BATTERY
DISCONNECT
FUSE FOR ELECTRIC BRAKES
30 AMP


WATER SEPARATOR
3 MICRON
PRE-FILTER
- DRAIN WATER REGULARLY -
- DRAIN WATER REGUL
C10
C10
C10
C08 CONNECTOR
0 bar 4060 psi
DENSO


FUSES FOR JOHN
DEERE HARNESS
F01=30 AMP
F02=20 AMP



A	B
404	405

HDP24-24-21PN CONNECTOR	
PIN #	CIRC. #
B	022
C	401
D	422
E	101
F	101
G	012
J	103
L	402
M	403
R	404
S	405
U	107
V	108

12052641 CONNECTOR
C 12048074 FEMALE TERMINALS
15324973 CABLE SEALS
12052634 TPA

*HDP24-24-21PN

IRC. #	CIRC. COLOR	WIRE GA
401	YEL	16
402	ORG	16
403	BRN	16
404	VIO	16
405	YEL	16
122	WHT	14

** 4700 OHM RES. BETWEEN 403 & 402
** 510 OHM RES. BETWEEN 401 & 402

NOTES:
1. NUMBERS DENOTE WIRES.
2. LETTERS DENOTE CONNECTORS.
3. HEAT SHRINK ALL CONNECTORS WHERE APPLICABLE.
4. PRINT ALL WIRES WITH WIRE NUMBER AND DESCRIPTION.
5. PLACE PART NUMBER LABEL ON PART.
6. USE NON-SLIT CORRUGATED LOOMING MATERIAL WITH LOOM CONNECTORS.
7. MATING VIEWS SHOWN UNLESS OTHERWISE SPECIFIED.

BILL OF MATERIALS (CONNECTORS)		
P/N	DESCRIPTION	QTY.

SUPERIOR DIESEL
ENGINE LOGISTICS CENTER
JOHN DEERE
RHINELANDER, WI (715)365-0500
SEVILLE, OH (330)769-1850

4	108	YEL*	16	CAN HI
5	107	GRN*	16	CAN LOW
6	601	BRN	16	INPUT -1 SHORT TO BATTERY
7	701	BLU	16	VTD SCREEN
8	702	ORG	16	WAKE UP INPUT
9	703	YEL	16	FREQ INPUT
10	704	GRN	16	RTD ANALOG INPUT
11	602	BRN	16	INPUT -2 SHORT TO BATTERY
12	603	BLU	16	INPUT -3 SHORT TO BATTERY
13	604	ORG	16	INPUT -4 SHORT TO BATTERY
14	707	YEL	16	SOURCING OUTPUT
15	212	YEL	16	DIGITAL OUTPUT -1
16	211	GRN	16	DIGITAL OUTPUT -2

B	-	RESISTOR, 4700 OHM, 1/4W	1
C	***	METRI-PAK 150 SERIES CONNECTOR	1
D	33472-1606	33472-1606 MOLEX CONNECTOR 16 POSITION	1
E	DT06-6S	6 POS DEUTSCH PLUG	1
F	W6S	6 SOCKET DEUTSCH WEDGE	1
G	-	-	-
H	46033	ATO/ATC FUSE HOLDER W/CAP	2
I	47003	ATO/ATC 32V 3 AMP FUSE	2
J	-	FEMALE DISCONNECT .250 X .032 16-14GA FULLY INSULATED NYLON	3
K	-	RESISTOR, 120OHM, 1/4W	1

TOLERANCE ON DIMENSIONS UNLESS OTHERWISE NOTED		DRAWN TPS	DATE 2/28/11	TITLE WIRE HARNESS IC3D CONTROLLER
FRACTIONS	±1/32	CHECKED -	DATE -	
DECIMALS	.0 = ±.060 .00 = ±.030 .000= ±.010	MODELS -		DRAWING NO 5-0053
ANGLES	±1°	MATERIAL	WEIGHT	REV. F

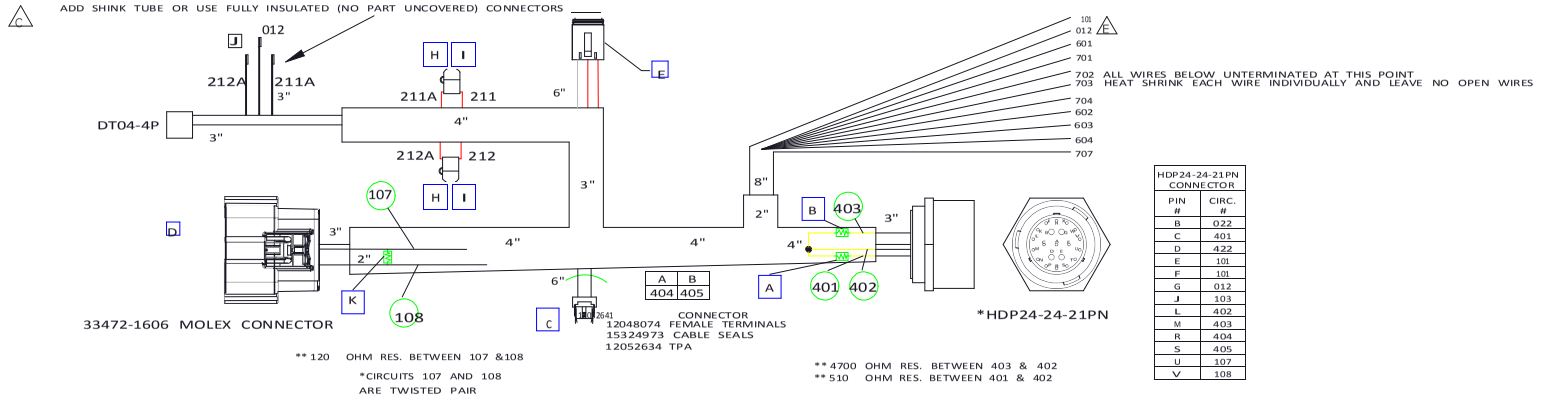
CONSUMABLE AND COMMON PARTS

ENGINE OIL FILTER	RE504836
FUEL FILTER PRIMARY	RE529643
FUEL FILTER SECONDARY	RE522878
AIR CLEANER OUTER- DONALDSON	P537876
AIR CLEANER INNER - DONALDSON	P537877
HYD OIL FILTER-HEAT GEN	P550251
ALTERNATOR 12V 185AMP	85C2290V
ALTERNATOR BELT - SERPINTINE - JD	T240080 / 28591
AIR BLOWER BELTS QTY 2	BP48 2611/565045/B61 GATES
FUEL CAP - VELVAC	600184
LOUVER ACTUATOR - THOMPSON SP12-17A8-04	559614
TEMP SENDER - AIR	ES2T-250/300-1/2
RELIEF VALVE - SUN	559146
RELIEF CARTRIDGE - SUN	CP200-0-E-C
IGNITION SWITCH	95060-04
WEATHER STRIPPING	175091
DOOR HINGES	560202
RAIN CAP	P270539
REV-GUARD SPEED CONTROL	1510-001
FUEL SENDING UNIT - 11 INCH	2SSL-17.5
GASKET FOR SENDER	8512K63
BATTERY (2) 12V 904D	100010
RES FILLER CAP - 10 MICRON	200005
RES SIGHT GLASS	210043
TIRES WITH RIMS - 16 INCH WHITE SPOKE	540170
JACK- TONGUE	175148
IC3D PROGRAMMING CABLE	73-00725
IC3D DISPLAY/CONTROLLER	2-0010
RABBIT/TURTLE ROCKER SWITCH	RE192470
EDGE PROTECTOR	175091
DOOR T-HANDLE LATCH	559331
TRAILER JACK MOUNT TUBE	560012
INSTRUMENT PANEL WINDOW	559335

REVISIONS				
ECN#	REV.	DESCRIPTION	DATE	APPROVED
	A	FIXING HARNESS DWG ERRORS	3/1/11	TPS
	B	CHG KEYSW CONN, ADD 120 OHM RES, CHG MOLEX 14-16 OUTPUT	3/24/11	TPS
	C	REMOVE ITEM G(390 OHM RESISTOR), CHG NOTE FULLY INSULATED	9/29/11	TPS
	D	ADDED NOTE THAT ALL UNTERM WIRES TO BE HEATSHRUNK	11/21/11	TPS
	E	ADDED SWITCHED POWER WIRE TO I/O BREAKOUT	2/8/2013	TOB
	F	CHANGEDWIRE GA CALLOUT FROM 14TO 16	7/5/2013	TOB

DT04-4P CONNECTOR				
PIN #	CIRC. #	CIRC. COLOR	WIRE GA	CIRCUIT DESCRIPTION
1	211A	RED	14	FEED REVERSE
2	212A	RED	14	FEED FORWARD
3	101	BLK	14	GROUND
4	101	BLK	14	GROUND

DT06-6S CONNECTOR				
PIN #	CIRC. #	CIRC. COLOR	WIRE GA	CIRCUIT DESCRIPTION
1	022	RED	16	BATTERY
2	422	WHT	16	START
3	103	VLT	16	ACCESSORY
4	012	RED	16	IGNITION
5	012	RED	16	IGNITION
6	022	RED	16	BATTERY



HDP24-24-21PN CONNECTOR	
PIN #	CIRC. #
B	022
C	401
D	422
E	101
F	101
G	012
J	103
L	402
M	403
R	404
S	405
U	107
V	108

CIRC. #	CIRC. COLOR	WIRE GA
401	YEL	16
402	ORG	16
403	BRN	16
404	VIO	16
405	YEL	16
422	WHT	14

NOTES:
1. NUMBERS DENOTE WIRES.
2. LETTERS DENOTE CONNECTORS.
3. HEAT SHRINK ALL CONNECTORS WHERE APPLICABLE.
4. PRINT ALL WIRES WITH WIRE NUMBER AND DESCRIPTION.
5. PLACE PART NUMBER LABEL ON PART.
6. USE NON-SLIT CORRUGATED LOOMING MATERIAL WITH LOOM CONNECTORS.
7. MATING VIEWS SHOWN UNLESS OTHERWISE SPECIFIED.

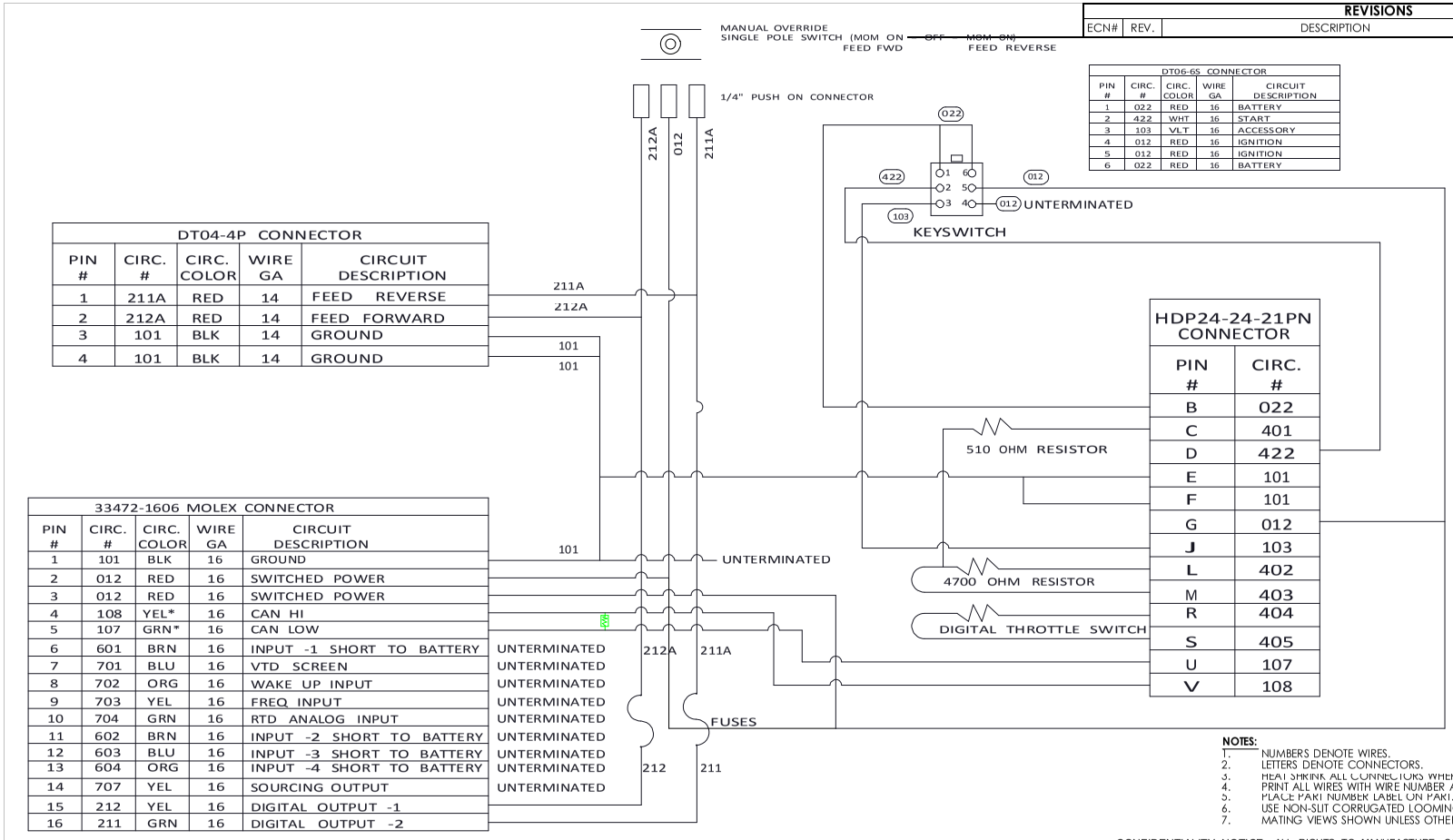
33472-1606 MOLEX CONNECTOR				
PIN #	CIRC. #	CIRC. COLOR	WIRE GA	CIRCUIT DESCRIPTION
1	101	BLK	16	GROUND
2	012	RED	16	SWITCHED POWER
3	012	RED	16	SWITCHED POWER
4	108	YEL*	16	CAN HI
5	107	GRN*	16	CAN LOW
6	601	BRN	16	INPUT -1 SHORT TO BATTERY
7	701	BLU	16	VTD SCREEN
8	702	ORG	16	WAKE UP INPUT
9	703	YEL	16	FREQ INPUT
10	704	GRN	16	RTD ANALOG INPUT
11	602	BRN	16	INPUT -2 SHORT TO BATTERY
12	603	BLU	16	INPUT -3 SHORT TO BATTERY
13	604	ORG	16	INPUT -4 SHORT TO BATTERY
14	707	YEL	16	SOURCING OUTPUT
15	212	YEL	16	DIGITAL OUTPUT -1
16	211	GRN	16	DIGITAL OUTPUT -2

BILL OF MATERIALS (CONNECTORS)			
#	P/N	DESCRIPTION	QTY.
A	-	RESISTOR, 510 OHM, 1/4W	1
B	-	RESISTOR, 4700 OHM, 1/4W	1
C	***	METRI-PAK 150 SERIES CONNECTOR	1
D	33472-1606	33472-1606 MOLEX CONNECTOR 16 POSITION	1
E	DT06-6S	6 POS DEUTSCH PLUG	1
F	W6S	6 SOCKET DEUTSCH WEDGE	1
G	-	-	-
H	46033	ATO/ATC FUSE HOLDER W/CAP	2
I	47003	ATO/ATC 32V 3 AMP FUSE	2
J	-	FEMALE DISCONNECT .250 X .032 16-14GA FULLY INSULATED NYLON	3
K	-	RESISTOR, 120OHM, 1/4W	1

SUPERIOR DIESEL™ ENGINE JOHN DEERE RHINELANDER, WI (715)365-0500
LOGISTICS CENTER SEVILLE, OH (330)769-1850

TOLERANCE ON DIMENSIONS UNLESS OTHERWISE NOTED		DRAWN TPS	DATE 2/28/11	TITLE WIRE HARNESS IC3D CONTROLLER
FRACTIONS	±1/32	CHECKED -	DATE -	
DECIMALS	.0 = ±.060 .00 = ±.030 .000= ±.010	MODELS -		DRAWING NO 5-0053
ANGLES	±1°	MATERIAL		WEIGHT / REV. F

REVISIONS				
ECN#	REV.	DESCRIPTION	DATE	APPROVED



DT06-6S CONNECTOR

PIN #	CIRC. #	CIRC. COLOR	WIRE GA.	CIRCUIT DESCRIPTION
1	022	RED	16	BATTERY
2	422	WHT	16	START
3	103	VLT	16	ACCESSORY
4	012	RED	16	IGNITION
5	012	RED	16	IGNITION
6	022	RED	16	BATTERY

DT04-4P CONNECTOR

PIN #	CIRC. #	CIRC. COLOR	WIRE GA	CIRCUIT DESCRIPTION
1	211A	RED	14	FEED REVERSE
2	212A	RED	14	FEED FORWARD
3	101	BLK	14	GROUND
4	101	BLK	14	GROUND

HDP24-24-21PN CONNECTOR

PIN #	CIRC. #
B	022
C	401
D	422
E	101
F	101
G	012
J	103
L	402
M	403
R	404
S	405
U	107
V	108

33472-1606 MOLEX CONNECTOR

PIN #	CIRC. #	CIRC. COLOR	WIRE GA	CIRCUIT DESCRIPTION
1	101	BLK	16	GROUND
2	012	RED	16	SWITCHED POWER
3	012	RED	16	SWITCHED POWER
4	108	YEL*	16	CAN HI
5	107	GRN*	16	CAN LOW
6	601	BRN	16	INPUT -1 SHORT TO BATTERY
7	701	BLU	16	VTD SCREEN
8	702	ORG	16	WAKE UP INPUT
9	703	YEL	16	FREQ INPUT
10	704	GRN	16	RTD ANALOG INPUT
11	602	BRN	16	INPUT -2 SHORT TO BATTERY
12	603	BLU	16	INPUT -3 SHORT TO BATTERY
13	604	ORG	16	INPUT -4 SHORT TO BATTERY
14	707	YEL	16	SOURCING OUTPUT
15	212	YEL	16	DIGITAL OUTPUT -1
16	211	GRN	16	DIGITAL OUTPUT -2

NOTES:
1. NUMBERS DENOTE WIRES.
2. LETTERS DENOTE CONNECTORS.
3. HEAT SHRINK ALL CONNECTORS WHERE APPLICABLE.
4. PRINT ALL WIRES WITH WIRE NUMBER AND DESCRIPTION.
5. PLACE PART NUMBER LABEL ON PART.
6. USE NON-SLIT CORRUGATED LOOMING MATERIAL WITH LOOM CONNECTORS.
7. MATING VIEWS SHOWN UNLESS OTHERWISE SPECIFIED.

SUPERIOR ENGINE CENTER — RHINELANDER, WI — SEVILLE, OH

TOLERANCE ON DIMENSIONS UNLESS OTHERWISE NOTED		DRAWN TPS	DATE 2/28/11	TITLE WIRE HARNESS IC3D CONTROLLER
FRACTIONS	±1/32	CHECKED -	DATE -	
DECIMALS	.0 = ±.060 .00 = ±.030 .000= ±.010	MODELS -		DRAWING NO 5-0053
ANGLES	±1°	MATERIAL	WEIGHT	REV. F

REVISIONS				
ECN#	REV.	DESCRIPTION	DATE	APPROVED
-	-	-	-	-

DT06-6S 6-SOCKET DEUTSCH CONNECTOR			
PIN	WIRE #	DESCRIPTION	COLOR
1	032	UNSWITCHED POWER	RED
2	422	START SIGNAL	RED
3	412	ALTERNATOR EXCITE	RED
4	012	SWITCHED POWER(ENGINE)	RED
5	022	SWITCHED POWER(INSTRUMENTS)	RED
6	032	UNSWITCHED POWER	RED

AUTO MODE SWITCH			
WIRE	WIRE #	DESCRIPTION	COLOR
1	A22	AUTO MODE SIGNAL	BLUE/WHITE
2	050	GROUND	BLACK

33472-1606 IC3D DISPLAY			
PIN	WIRE #	DESCRIPTION	COLOR
1	050	GROUND	BLACK
2	022	SWITCHED POWER	RED
3	022	SWITCHED POWER	RED
4	904	CAN HIGH	YELLOW
5	905	CAN LOW	GREEN
6	A08	LIQUID TEMP SENSOR	YELLOW
10	A10	FUEL LEVEL	PINK/WHITE
13	A07	AIR TEMP SENSOR	BLUE

HDP24-24-16PN 16-PIN DEUTSCH CONNECTOR			
PIN	WIRE #	DESCRIPTION	COLOR
A	A10	FUEL LEVEL	PINK/WHITE
B	022	SWITCHED POWER(INSTRUMENTS)	RED
C	A02	LOUVER POT SIGNAL	YELLOW/WHITE
D	A07	AIR TEMP SENSOR	BLUE
E	A08	LIQUID TEMP SENSOR	YELLOW
F	B11	LOUVER MTR+	RED/WHITE
G	B12	LOUVER MTR-	BLACK/WHITE
H	F22	FLOW SWITCH	GREEN/WHITE
J	413	+5V TO LOUVER POT	YELLOW
K	W22	WEBASTO SIGNAL	RED
L	CL22	CABINET LIGHTS	WHITE
M	022	SWITCHED POWER(INSTRUMENTS)	RED N
050		GROUND	BLACK
P	050	GROUND	BLACK
R	050	GROUND	BLACK
S	050	GROUND	BLACK

WEBASTO HEATER SWITCH			
WIRE	WIRE #	DESCRIPTION	COLOR
1	W22	WEBASTO HEATER SIGNAL	RED
2	W22	WEBASTO HEATER SIGNAL	RED
3	050	GROUND	BLACK
4	022	SWITCHED POWER(INSTRUMENTS)	RED

CABINET LIGHT SWITCH			
WIRE	WIRE #	DESCRIPTION	COLOR
1	CL22	CABINET LIGHTS	RED
2	022	SWITCHED POWER(INSTRUMENTS)	RED

HD10-9-1939P			
PIN	WIRE#	DESCRIPTION	COLOR
A	050	GROUND	Black
B	012	SWITCHED POWER	Red
C	904	CAN HIGH	Yellow
D	905	CAN LOW	DK_Green
E	020	CAN SHIELD	Black

LOUVER MTR +	
PIN	WIRE #
85	A11
86	050
87	022
87A	050
30	B11

LOUVER MTR -	
PIN	WIRE #
85	A12
86	050
87	022
87A	050
30	B12

***			
WIRE	WIRE #	DESCRIPTION	COLOR
A	947	THROTTLE SWITCH	PURPLE
B	714	SENSOR RETURN	YELLOW

HDP24-24-21PN 21-PIN DEUTSCH CONNECTOR			
PIN	WIRE #	DESCRIPTION	COLOR
B	032	UNSWITCHED BATTERY +	RED
C	814	SENSOR RETURN	NO WIRE
D	422	STARTERRELAYSOLENOID	RED
E	050	SINGLE POINT GROUND	BLACK
F	020	CAN SHIELD	BLACK
G	012	SWITCHED POWER	RED
J	412	ALTERNATOR IGNITION	RED
L	915	ANALOG THROTTLE	NO WIRE
M	616	SENSOR EXCITATION(+5V)	NO WIRE
R	947	THROTTLE SWITCH	PURPLE
S	714	SENSOR RETURN	YELLOW
U	905	CAN LOW	DK_GREEN
V	904	CAN HIGH	YELLOW

DT06-12SA AXIOMATIC CONTROLLER			
PIN	WIRE #	DESCRIPTION	COLOR
1	A11	LOUVER MTR+	RED/WHITE
2	050	GROUND	BLACK
3	022	SWITCHED POWER	RED
4	020	CAN SHIELD	BLACK
5	905	CAN LOW	GREEN
6	904	CAN HIGH	YELLOW
7	413	+5V TO LOUVER POT	YELLOW
8	050	GROUND	BLACK
9	A02	LOUVER POT SIGNAL	YELLOW/WHITE
10	050	GROUND	BLACK
11	050	GROUND	BLACK
12	A12	LOUVER MTR-	BLACK/WHITE

#	P/N	DESCRIPTION	QTY.
A	HDP24-24-14PN	16-PIN DEUTSCH CONNECTOR W/ PINS AND JAM NUT	1
B	HDP24-24-21PN	21-PIN DEUTSCH CONNECTOR W/PINS AND JAM NUT	1
C	DT06-6S	6-PIN DEUTSCH DT SERIES PLUG CONNECTOR W/ SOCKETS	1
D	W6S	6 POS DEUTCH WEDGE LOCK	1
F	DT06-12SA	12 POS DT SERIES DEUTSCH PLUG, A KEYED	1
F	33472-1606	PLUG, MOLEX 16 SOCKET	1
G	W12S	DT SERIES 12 POSITION WEDGELOCK	3
H	HD10-9-1939P	9 PIN DEUTSCH CONNECTOR	1
I	***	METRIPACK 150 SERIES CONNECTOR	1
J	31213	FEMALE DISCONNECT 250 X .032 16 AGA NYLON W/ EXTRA SLEEVE	8
K	-	RESISTOR, 120 OHM, 1/4W	1
L	3-334-485-008	BOSCH RELAY, CONNECTOR W/ MOUNT	2
M	0-332-209-137	BOSCH 12V, HIGH CAPACITY, SPDT RELAY	2
n	-	RESISTOR, 1K OHM, 1/4W	2

DT06-6S
AUTO MODE SWITCH
33472-1606 IC3D DISPLAY
WEBASTO HEATER SWITCH
CABINET LIGHT SWITCH
16 PIN DEUTSCH CONNECTOR
21 PIN DEUTSCH CONNECTOR
DT06-12SA AXIOMATIC CONTROLLER
HD10-9-1939P
RESISTORS
SPLICE 120OHM RESISTOR BTWEEN WIRES 904 AND 905
WIRE#904
WIRE#905
A07
413
A08
N
5"
4"
2.5"
3"
2"
8"
7"
12052641 CONNECTOR
12048074 FEMALE TERMINALS
15324973 CABLE SEALS
12052634 TPA

NOTES:
1. NUMBERS DENOTE WIRES.
2. LETTERS DENOTE CONNECTORS.
3. HEAT SHRINK ALL CONNECTORS WHERE APPLICABLE.
4. PRINT ALL WIRES WITH RESPECTIVE WIRE NUMBER AND DESCRIPTION.
5. PLACE PART NUMBER LABEL ON PART.
6. WIRES 904 AND 905 ARE TWISTED PAIR.
7. ALL WIRES ARE 16 GAGE
8. PLUG ALL UNUSED POSITIONS IN CONNECTORS.
9. USE GLUE FILLED HEAT SHRINK ON RESISTORS AND DIODES

SUPERIOR DIESEL | JOHN DEERE ENGINE LOGISTICS CENTER | RHINELANDER, WI (715)365-0500 | SEVILLE, OH (330)769-1850

TOLERANCE ON DIMENSIONS UNLESS OTHERWISE NOTED		DRAWN TOB	DATE 04/15/13	TITLE HARNESS, INSTRUMENT MULTITEK HEATER IC3D
FRACTIONS	±1/32	CHECKED -	DATE -	
DECIMALS	.0 = ±.060 .00 = ±.030 .000= ±.010	MODELS -		DRAWING NO 73-01425
ANGLES	±1°	MATERIAL -		WEIGHT - REV. -