# TABLE OF CONTENTS

<table>
<thead>
<tr>
<th>Section</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>FRONT END WIRING - DOMINATOR (99903390)</td>
<td>5</td>
</tr>
<tr>
<td>CHASSIS WIRING - COMMANDER IV (99903160)</td>
<td>6</td>
</tr>
<tr>
<td>EFM INSTALLATION KIT (51717388)</td>
<td>7</td>
</tr>
<tr>
<td>ENGINE FUNCTION MODULE (EFM) (70146433-1)</td>
<td>7</td>
</tr>
<tr>
<td>ENGINE FUNCTION MODULE (EFM) (70146433-2)</td>
<td>8</td>
</tr>
<tr>
<td>CAT SERIES EFM (99903392-1)</td>
<td>9</td>
</tr>
<tr>
<td>CAT SERIES EFM (99903392-2)</td>
<td>10</td>
</tr>
<tr>
<td>CUMMINS &amp; PACCAR SERIES EFM (2011 TO PRESENT) (99904944-1)</td>
<td>11</td>
</tr>
<tr>
<td>CUMMINS &amp; PACCAR SERIES EFM (2011 TO PRESENT) (99904944-2)</td>
<td>12</td>
</tr>
<tr>
<td>CUMMINS &amp; PACCAR SERIES EFM (2008 TO 2010) (99904245-1)</td>
<td>13</td>
</tr>
<tr>
<td>CUMMINS ISB ISC ISM SERIES EFM (2008 TO 2010) (99904245-2)</td>
<td>14</td>
</tr>
<tr>
<td>CUMMINS ISB, ISC, ISL &amp; ISM SERIES EFM (2004-2007) (99903584-1)</td>
<td>15</td>
</tr>
<tr>
<td>CUMMINS ISB, ISC, ISL &amp; ISM SERIES EFM (2004-2007) (99903584-2)</td>
<td>16</td>
</tr>
<tr>
<td>CUMMINS ISM SERIES EFM (99903394-1)</td>
<td>19</td>
</tr>
<tr>
<td>CUMMINS ISM SERIES EFM (99903394-2)</td>
<td>20</td>
</tr>
<tr>
<td>2001 FORD SUPER-DUTY AUTO. TRANSMISSION EFM (99903395-1)</td>
<td>21</td>
</tr>
<tr>
<td>2001 FORD SUPER-DUTY AUTO. TRANSMISSION EFM (99903395-2)</td>
<td>22</td>
</tr>
<tr>
<td>2001 FORD SUPER-DUTY MANUAL TRANSMISSION EFM (99903396-1)</td>
<td>23</td>
</tr>
<tr>
<td>2001 FORD SUPER-DUTY MANUAL TRANSMISSION EFM (99903396-2)</td>
<td>24</td>
</tr>
<tr>
<td>FORD SUPER-DUTY- 2002 TO 2004</td>
<td>25</td>
</tr>
<tr>
<td>AUTOMATIC TRANSMISSION EFM (99903553-1)</td>
<td>25</td>
</tr>
<tr>
<td>FORD SUPER-DUTY- 2002 TO 2004 - AUTOMATIC TRANSMISSION EFM (99903553-2)</td>
<td>26</td>
</tr>
<tr>
<td>FORD SUPER-DUTY- 2002 TO 2004 - MANUAL TRANSMISSION EFM (99903554-1)</td>
<td>27</td>
</tr>
<tr>
<td>FORD SUPER-DUTY- 2002 TO 2004 - MANUAL TRANSMISSION EFM (99903554-2)</td>
<td>28</td>
</tr>
<tr>
<td>FORD SUPER-DUTY- 2005 TO 2007 - AUTO TRANS W/ SWITCHES (99903648-1)</td>
<td>29</td>
</tr>
<tr>
<td>FORD SUPER-DUTY- 2005 TO 2007 - AUTO TRANS W/O SWITCHES (99903648-2)</td>
<td>30</td>
</tr>
<tr>
<td>FORD SUPER-DUTY- 2005 TO 2007 -MANUAL TRANSMISSION (99903648-3)</td>
<td>31</td>
</tr>
<tr>
<td>FORD SUPER-DUTY- 2005 TO 2007 - V10 GAS AUTO TRANSMISSION (99903648-4)</td>
<td>32</td>
</tr>
<tr>
<td>FORD SUPER-DUTY- 2005 TO 2007 -INSTALLATION PHOTOS (99903648-5)</td>
<td>33</td>
</tr>
<tr>
<td>FORD SUPER-DUTY- 2008 TO 2010 - AUTO TRANS W/ SWITCHES (99904249-1)</td>
<td>34</td>
</tr>
<tr>
<td>FORD SUPER-DUTY- 2008 TO 2010 - AUTO TRANS W/O SWITCHES (99904249-2)</td>
<td>35</td>
</tr>
<tr>
<td>FORD SUPER-DUTY- 2008 TO 2010 -MANUAL TRANSMISSION (99904249-3)</td>
<td>36</td>
</tr>
<tr>
<td>FORD SUPER-DUTY- 2008 TO 2010 - V10 GAS AUTO (99904249-4)</td>
<td>37</td>
</tr>
<tr>
<td>FORD SUPER-DUTY- 2008 TO 2010-INSTALLATION PHOTOS (99904249-5)</td>
<td>38</td>
</tr>
<tr>
<td>FORD SUPER-DUTY- 2011-PRESENT - DIESEL AUTOMATIC W/ SWITCHES (99904889-1)</td>
<td>39</td>
</tr>
<tr>
<td>FORD SUPER-DUTY- 2011-PRES-DIESEL AUTOMATIC W/O SWITCHES (99904889-2)</td>
<td>40</td>
</tr>
<tr>
<td>FORD SUPER-DUTY- 2011-PRESENT - V10 GAS WITH SWITCHES (99904889-3)</td>
<td>41</td>
</tr>
<tr>
<td>FORD SUPER-DUTY- 2011-PRESENT - V10 GAS WITHOUT SWITCHES (99904889-4)</td>
<td>42</td>
</tr>
<tr>
<td>FORD SUPER-DUTY- 2011-PRESENT - INSTALLATION PHOTOS (99904889-5)</td>
<td>43</td>
</tr>
<tr>
<td>ELECTRICAL WIRING &amp; NOTES - CHELSEA PTO (99903356)</td>
<td>44</td>
</tr>
<tr>
<td>HINO 338 EFM- 2008 - PRESENT (99904847-1)</td>
<td>45</td>
</tr>
<tr>
<td>HINO 338 EFM- 2008 - PRESENT (99904847-2)</td>
<td>46</td>
</tr>
<tr>
<td>HINO 338 ENGINE EFM- 2008 - 2/22/10 (999044777-1)</td>
<td>47</td>
</tr>
<tr>
<td>HINO 338 ENGINE EFM- 2008 - 2/22/10 (999044777-2)</td>
<td>48</td>
</tr>
<tr>
<td>INPOWER DIRECT INSTALLATION GUIDE (99903454)</td>
<td>49</td>
</tr>
</tbody>
</table>
# TABLE OF CONTENTS, CONTINUED

<table>
<thead>
<tr>
<th>Topic</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>INTERNATIONAL EFM- DT530 &amp; DT466 2001-2004 (99903397-1)</td>
<td>50</td>
</tr>
<tr>
<td>INTERNATIONAL EFM- DT530 &amp; DT466 2001-2004 (99903397-2)</td>
<td>51</td>
</tr>
<tr>
<td>INTERNATIONAL EFM- DT530 &amp; DT466 2001-2004 (99903397-3)</td>
<td>52</td>
</tr>
<tr>
<td>INTERNATIONAL EFM- VT365 &amp; DT466 2005-PRESENT (99903607-1)</td>
<td>53</td>
</tr>
<tr>
<td>INTERNATIONAL EFM- VT365 &amp; DT466 2005-PRESENT (99903607-2)</td>
<td>54</td>
</tr>
<tr>
<td>INTERNATIONAL EFM- VT365 &amp; DT466 2005-PRESENT (99903607-3)</td>
<td>55</td>
</tr>
<tr>
<td>MERCEDES SERIES EFM (99903482-1)</td>
<td>56</td>
</tr>
<tr>
<td>MERCEDES SERIES EFM (99903482-2)</td>
<td>57</td>
</tr>
<tr>
<td>PTO INSTALLATION - CHEVY 4500/5500 SERIES (99903579-1)</td>
<td>58</td>
</tr>
<tr>
<td>PTO INSTALLATION - CHEVY 4500/5500 SERIES (99903579-2)</td>
<td>59</td>
</tr>
<tr>
<td>EFM INSTALLATION - CHEVY 4500/5500 SERIES (99903587-1)</td>
<td>60</td>
</tr>
<tr>
<td>EFM INSTALLATION - CHEVY 4500/5500 SERIES (99903587-2)</td>
<td>61</td>
</tr>
<tr>
<td>PTO INSTALLATION - 65 75 DURAMAX 7.8 L ENGINE (99903649-1)</td>
<td>62</td>
</tr>
<tr>
<td>PTO INSTALLATION - 65 75 DURAMAX 7.8 L ENGINE (99903649-2)</td>
<td>63</td>
</tr>
<tr>
<td>PTO INSTALLATION - MEDIUM DUTY ELECTRICAL DIAGRAMS (99903649)</td>
<td>64</td>
</tr>
<tr>
<td>PTO INSTALLATION - 65 75 DURAMAX 7.8 L ENGINE (99903649-3)</td>
<td>65</td>
</tr>
<tr>
<td>PTO INSTALLATION - 65 75 DURAMAX 7.8 L ENGINE (99903649-4)</td>
<td>66</td>
</tr>
<tr>
<td>PTO INSTALLATION - 2007 TO PRESENT 4500 5500 DURAMAX 6.6 L ENGINE (99904414)</td>
<td>67</td>
</tr>
<tr>
<td>2008 TO PRES DODGE 4500 5500 AND STERLING BULLET (EFM-AUT TRANS)</td>
<td>68</td>
</tr>
<tr>
<td>2008 TO PRES DODGE 4500-5500 AND STERLING (SCHEM-AUTO TRANS)</td>
<td>69</td>
</tr>
<tr>
<td>2008 TO PRES DODGE 4500-5500 AND STERLING (PHOTOS-AUTO TRANS)</td>
<td>70</td>
</tr>
<tr>
<td>2008 TO PRES DODGE 4500-5500 AND STERLING (EFM-2WD MANUAL)</td>
<td>71</td>
</tr>
<tr>
<td>2008 TO PRES DODGE 4500-5500 AND STERLING (SCHEMATIC - 2WD MANUAL)</td>
<td>72</td>
</tr>
<tr>
<td>2008 TO PRES DODGE 4500-5500 AND STERLING (EFM - 4WD MANUAL)</td>
<td>73</td>
</tr>
<tr>
<td>2008 TO PRES DODGE 4500-5500 AND STERLING (SCHEMATIC - 4WD MANUAL)</td>
<td>74</td>
</tr>
<tr>
<td>2008 TO PRESENT DODGE 4500-5500 AND STERLING (PICTURES - MANUAL)</td>
<td>75</td>
</tr>
<tr>
<td>2008 TO PRESENT DODGE 4500-5500 AND STERLING (EFM - PREDATORS)</td>
<td>76</td>
</tr>
<tr>
<td>2008 TO PRESENT DODGE 4500-5500 AND STERLING (SCHEMAT - PREDATORS)</td>
<td>77</td>
</tr>
<tr>
<td>2008 TO PRESENT DODGE 4500-5500 AND STERLING (TAIL LIGHT WIRING)</td>
<td>78</td>
</tr>
<tr>
<td>2011 TO PRESENT DODGE 4500 5500 AUTOMATIC TRANSMISSION</td>
<td>79</td>
</tr>
<tr>
<td>DATE</td>
<td>LOCATION</td>
</tr>
<tr>
<td>------------</td>
<td>----------</td>
</tr>
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<td>4</td>
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</tr>
<tr>
<td>4-22-02</td>
<td>12,14</td>
</tr>
<tr>
<td>5-14-02</td>
<td>6</td>
</tr>
<tr>
<td></td>
<td>13,15</td>
</tr>
<tr>
<td>8-30-02</td>
<td>10,12,13,15-17</td>
</tr>
<tr>
<td>11-4-02</td>
<td>22-23</td>
</tr>
<tr>
<td>2-10-03</td>
<td>21</td>
</tr>
<tr>
<td></td>
<td>5</td>
</tr>
<tr>
<td>5-5-03</td>
<td>21</td>
</tr>
<tr>
<td>7-7-03</td>
<td>13-21</td>
</tr>
<tr>
<td>10-1-03</td>
<td>7</td>
</tr>
<tr>
<td>11-3-03</td>
<td>9-10</td>
</tr>
<tr>
<td>4-22-04</td>
<td>1,2,5,30-33</td>
</tr>
<tr>
<td>5-20-04</td>
<td>3,4</td>
</tr>
<tr>
<td>8-30-04</td>
<td>19-22</td>
</tr>
<tr>
<td>9-20-04</td>
<td>7-8</td>
</tr>
<tr>
<td></td>
<td>30-31</td>
</tr>
<tr>
<td>9-30-04</td>
<td>26-31</td>
</tr>
<tr>
<td>12-8-04</td>
<td>6,20-23</td>
</tr>
<tr>
<td></td>
<td>10-15</td>
</tr>
<tr>
<td>4-13-05</td>
<td>38-40</td>
</tr>
<tr>
<td></td>
<td>36</td>
</tr>
<tr>
<td>9-26-05</td>
<td>24-28</td>
</tr>
<tr>
<td></td>
<td>34-36</td>
</tr>
<tr>
<td></td>
<td>46</td>
</tr>
<tr>
<td>20060313</td>
<td>43-47</td>
</tr>
<tr>
<td>20060720</td>
<td>6,35</td>
</tr>
<tr>
<td>20070329</td>
<td>COVER</td>
</tr>
<tr>
<td>20070522</td>
<td>10-14</td>
</tr>
<tr>
<td></td>
<td>28-35</td>
</tr>
<tr>
<td>20071012</td>
<td>10-11</td>
</tr>
<tr>
<td>20080515</td>
<td>55</td>
</tr>
<tr>
<td>20080605</td>
<td>44</td>
</tr>
<tr>
<td>20100302</td>
<td>37-40</td>
</tr>
<tr>
<td></td>
<td>60-71</td>
</tr>
<tr>
<td>20100507</td>
<td>36-40</td>
</tr>
<tr>
<td>20100519</td>
<td>36-40</td>
</tr>
<tr>
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<td>11-12</td>
</tr>
</tbody>
</table>
FRONT END WIRING - DOMINATOR
(99903390)

1. 77044635 FUSE-MAXI 20 AMP 3
   (WAS 77044747)
2. 77441110 CABLE POWER RED #6 X 16 8
   (WAS 77040060)
3. 72060835 SCR-SELF-TAP #8-18X3/4 HHZINC 4
   (WAS 72061099)
4. 77044939 HARNESS-CTRL BOX POWER 1
5. 77044556 DIODE 2.2 AMP 1
6. 70145421 HEAT SHRINK 3/16 DUAL WALL 8"
7. 77044728 FUSE-ATC 2 AMP 1
8. 77044764 FUSE HOLDER 1
9. 77044636 FUSE-MAXI 30 AMP 1
   (WAS 60250624)
10. 72061739 SCR-TEK #12-14 X 100 HWH 2
11. 60251088 BRKT-RELAY & MAXI FUSE BLK 1
    (WAS 77041553)
12. 51717388 EFM KIT (WAS 99903391) 1
13. 77041678 FUSE BLOCK 1
<table>
<thead>
<tr>
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</tr>
</thead>
<tbody>
<tr>
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</tr>
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<td>(WAS 77040049)</td>
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<td>1</td>
</tr>
<tr>
<td>8.</td>
<td>77044691 FUSE HOLDER</td>
<td>1</td>
</tr>
<tr>
<td>9.</td>
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<td>6</td>
</tr>
<tr>
<td>10.</td>
<td>51717388 KIT-EFM</td>
<td>1</td>
</tr>
<tr>
<td>11.</td>
<td>70145421 HEAT SHRINK (NOT SHOWN)</td>
<td>12&quot;</td>
</tr>
<tr>
<td></td>
<td>(WAS 60250624)</td>
<td></td>
</tr>
<tr>
<td>12.</td>
<td>77044915 HARNESS</td>
<td>1</td>
</tr>
<tr>
<td>13.</td>
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<td>2</td>
</tr>
<tr>
<td></td>
<td>(RMV 77041615)</td>
<td></td>
</tr>
</tbody>
</table>

**Diagram:**
- Battery
- Ignition Power
- Strobe Light Switch
- Search Light Switch
- E.F.M. Module
- See EFM Kit for Installation Instructions Per Engine
- Brake Engage Options
- Low Pressure Switch in Air Brake Line
- Air Brakes
- Manual Emergency Brake
- "Fuse Block Installation" (13/15)

**Note:** The circuits are labeled on their appropriate wire in the harness.
ENGINE FUNCTION MODULE (EFM)
(70146433-1)
ENGINE FUNCTION MODULE (EFM)

**IGNITION POWER (RED)**

**GROUND BLACK**

**14 GA [POWER & GROUND]**

**NOTES:**

IGNITION POWER IS FUSED INSIDE THE EFM.

### Relay Connections

<table>
<thead>
<tr>
<th>RELAY #1</th>
<th>RELAY #2</th>
<th>RELAY #3</th>
<th>RELAY #4</th>
<th>E-BRAKE</th>
</tr>
</thead>
<tbody>
<tr>
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### Connector Information

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</tr>
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<td>12124580</td>
<td>12015323</td>
<td>E GRN</td>
<td>16</td>
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<td>85</td>
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<td>F</td>
<td>-</td>
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<td>16</td>
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<td>E-BRAKE</td>
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**LOCATOR CODE: IL-CJ301**  **WEATHER PACK 12015717**

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<tr>
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<td>16</td>
<td>-</td>
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<td>RELAY #4</td>
<td>87</td>
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<tr>
<td>12124582</td>
<td>12015323</td>
<td>C RED</td>
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<td>-</td>
<td>TO</td>
<td>RELAY #4</td>
<td>86</td>
<td></td>
</tr>
</tbody>
</table>
FOR: 2001 TO PRESENT CAT 3126E, C7, C10, C12, C15, AND C16

NOTES:

1. ENGINE START NOT USED ON PREDATOR.

2. PLUG ALL UNUSED CAVITIES WITH PACKARD PLUG #12010300
IMT #77044893. CAP ALL UNUSED CONNECTORS ON EFM.

3. WIRES TO PIN 3 AND 56 ON CAT ECM MAY HAVE TO BE INSTALLED.
THERE MAY ALSO BE EXISTING WIRES IN PIN 3 AND 56. IF SO USE
THE REMOVAL TOOL TO EXTRACT THESE WIRES AND REINSTALL NEW
WIRES FROM THE KIT.

4. GMC 6500 / 7500 WITH CAT ENGINE USES CHASSIS GROUND IN PLACE
OF PIN 3 ON ECM. THE GM DASH SWITCH IS NOT USED.

--- Diagram 

- E-BRAKE RELAY #5
- ENGINE SPEED RELAY #4
- ENGINE STOP RELAY #3
- ENGINE START RELAY #2
- 6 CAVITY TOWER [MALE]
- 2 CAVITY TOWER [MALE]
- 3 CAVITY TOWER [MALE]
- 1 CAVITY TOWER [MALE]
- [NOT USED]
- SEE NOTE 2

--- Instructions 

- ENGINE START (INT HARNESS)
- TO (A) SIDE OF STARTER SOLENOID

- WIRE FROM PIN 70 ON ECM

- ENGINE START (INT HARNESS)

- WIRE FROM ECM/GROUND

- WIRE FROM ECM/GROUND

- WIRE FROM ECM/GROUND

- PIN 3 FROM ECM/GROUND

- PIN 56 FROM ECM

- ENGINE SPEED (INT HARNESS)

- TO E-BRAKE GROUND

- CUT EXISTING WIRE FROM PIN 70 ON CAT ECM. CONNECT ONE HALF TO EACH
  WIRE. WIRES MAY HAVE TO BE EXTENDED
Caterpillar Electronic Control Module

Vehicle Harness Connector J1/P1

Engine Harness Connector J2/P2

1L-CP301-A — To Pin #3/GROUND
(See note 4 on page)

HARNESS SIDE

1L-CP301-B — To Pin #56

Engine Speed Circuitry

Vehicle Harness Connector P1

1L-CJ300-A —

Engine Kill Circuitry

1L-CJ300-B — To Pin #70

STARTER SOLENOID

ATTACH WIRE FROM 1L-CP200-A TO THE (+) SIDE OF THE STARTER SOLENOID COIL.

BE SURE TO GET THE (+) SIDE OF THE STARTER SOLENOID. USE A MULTIMETER TO CHECK IF UNSURE.

USING MPSI PRO-LINK 9000 OR CAT ET SOFTWARE, CHANGE TO THE FOLLOWING PARAMETERS IN THE ECM.

PTO CONFIGURATION REMOTE SWITCHES
PTO TOP ENGINE LIMIT: [END USER TO DETERMINE] *
PTO ENGINE RPM SET SPEED: [END USER TO DETERMINE] *
PTO TO SET SPEED: YES
PTO CAB THROTTLE RPM LIMIT: TEL
IDLE/PTO RPM RAMP RATE: 500 RPM/SEC
IDLE/PTO RPM SUMP RATE: 500 RPM

* MUST BE THE SAME VALUE

CUT AIR LINE THAT DOES NOT HAVE AIR SUPPLY TO THE PARKING BRAKE

IF TRUCK IS EQUIPED WITH AIR BRAKES

TO 1L-CJ300-A PARKING BRAKE GROUND
NOTES:
1. Engine start not used on Predator.
FOR:
2011 TO CURRENT
CUMMINS/PACCAR ENGINES.

OEM PORT
(60 PIN CONNECTOR ON ECM)
CONNECTOR VIEW IS FROM
THE BACK SIDE OR WIRE
INSERTION SIDE OF THE
CONNECTORS

CUT EXISTING WIRE RUNNING TO
PIN #3 IN TWO AND CONNECT TO
ENGINE FUNCTION MODULE

USE A PC EQUIPPED WITH CUMMINS "INSITE" SOFTWARE OR CONTACT A CUMMINS
DEALER TO CONFIGURE ECM PARAMETERS, INTERFACE HARDWARE BETWEEN THE PC AND
THE ECM MUST BE ABLE TO COMMUNICATE USING J-1939 CAN PROTOCOL.
NOTES:
1. Engine start not used on Predator.
2008 TO CURRENT CUMMINS ISB, ISC, ISL, AND ISM. THIS ALSO INCLUDES PACCAR 6 AND 8 ENGINES.

OEM PORT

(60 PIN CONNECTOR ON ECM)

CONNECTOR VIEW IS FROM THE BACK SIDE OR WIRE INSERTION SIDE OF THE CONNECTORS

1L-CJ300-A
CUT EXISTING WIRE RUNNING TO PIN #45 IN TWO AND CONNECT TO ENGINE FUNCTION MODULE

1L-CJ300-B

ENGINE PORT

(60 PIN)

OEM PORT

(60 PIN)

USE A PC EQUIPPED WITH CUMMINS "INSITE" SOFTWARE OR CONTACT A CUMMINS DEALER TO CONFIGURE ECM PARAMETERS. INTERFACE HARDWARE BETWEEN THE PC AND THE ECM MUST BE ABLE TO COMMUNICATE USING J-1939 CAN PROTOCOL.
FOR: 2004 TO 2007 CUMMINS ISB, ISC, ISL AND ISM ENGINES.

NOTE:
1. ENGINE START NOT USED ON PREDATOR.
2. PLUG ALL UNUSED CAVITIES WITH #77044893.
   CAP ALL UNUSED CONNECTORS.
Use a PC equipped with Cummins Insite software or contact a Cummins dealer to configure ECM parameters to the following:

- Select "Features & Options" under "Adjustments" menu.
- Select "PTO Options", verify that "PTO/Remote Box is Enabled".
- Enter the desired engine speed in the "Remote PTO Speed" field.
- This value is determined by the end user.
- Ensure that "Shutdown in PTO Enabled" is set to off.

CUT AIR LINE THAT DOES NOT HAVE AIR SUPPLY TO THE PARKING BRAKE.

TO IL-CJ300-A PARKING BRAKE GROUND

IF TRUCK IS EQUIPED WITH AIR BRAKES

GROUND
FOR: 1998 TO 2003 CUMMINS ISB & ISC ENGINES

NOTES:
1. Engine start not used on Predator.
USE A PC EQUIPPED WITH CUMMINS 'INSITE' SOFTWARE OR CONTACT A CUMMINS DEALER TO CONFIGURE ECM PARAMETERS TO THE FOLLOWING:

SELECT 'FEATURES & OPTIONS' UNDER 'ADJUSTMENTS' MENU.
SELECT 'PTO OPTIONS', VERIFY THAT 'PTO/REMOTE BOX IS ENABLED.
ENTER THE DESIRED ENGINE SPEED IN THE 'REMOTE PTO SPEED' FIELD.
***THIS VALUE IS DETERMINED BY THE END USER***
SELECT 'VEHICLE PERFORMANCE 2' TAB.
ENSURE THAT 'SHUTDOWN IN PTO ENABLED' IS SET TO OFF.

CONNECTOR VIEW IS FROM THE BACK SIDE OR HARNESS SIDE OF THE CONNECTORS

CUT EXISTING WIRE RUNNING TO PIN #5 IN TWO AND CONNECT TO ENGINE FUNCTION MODULE

IF TRUCK IS EQUIPED WITH AIR BRAKES

CUT AIR LINE THAT DOES NOT HAVE AIR SUPPLY TO THE PARKING BRAKE

GROUND
FOR: 1998 TO 2003 CUMMINS ISM ENGINE

NOTES:
1. Engine start not used on Predator.

CUT EXISTING WIRE FROM PIN 38 ON ECM. CONNECT ONE HALF TO EACH WIRE. WIRE MAY HAVE TO BE EXTENDED.
USE A PC EQUIPPED WITH CUMMINS "INSITE" SOFTWARE OR CONTACT A CUMMINS DEALER TO CONFIGURE ECM PARAMETERS TO THE FOLLOWING:

SELECT "FEATURES AND PARAMETER 2" UNDER "ADJUSTMENTS" MENU.
SELECT "PTO 1" TAB, VERIFY THAT "PTO ENABLED" BOX IS CHECKED.
SET THE APPROPRIATE VALUES FOR "PTO MAXIMUM ENGINE SPEED", "PTO MINIMUM ENGINE SPEED", "PTO SET SWITCH ENGINE SPEED", AND "PTO RESUME SWITCH ENGINE SPEED".

***(THESE VALUES ARE DETERMINED BY THE END USER)
SELECT "PTO 2" TAB. BE SURE TO SET "PTO ACCELERATOR OVERRIDE" THE SAME AS "PTO SET SWITCH ENGINE SPEED", AND SET "PTO SWITCH RAMP RATE" TO 500.

1L-CP301-A ➔ TO PIN #34
1L-CP301-B ➔ TO PIN #20
1L-CJ300-B ➔ TO PIN #38

CONNECTOR VIEW IS FROM THE BACK SIDE, "WIRE SIDE" OF THE CONNECTORS

CUT AIR LINE THAT DOES NOT HAVE AIR SUPPLY TO THE PARKING BRAKE

IF TRUCK IS EQUIPED WITH AIR BRAKES

GROUND
FOR: 2001 FORD SUPER-DUTY WITH AUTOMATIC TRANSMISSION

NOTES:
1. Engine start not used on Predator.
2. Plug all unused cavities with Packard plug #12010300 (IMT # 77044893). Cap all unused connectors on EFM.
3. Engine speed on Ford automatic transmission vehicles is controlled by the Ford APC module.
4. PTO switch is interlocked with the parking brake. If the parking brake is disengaged, the PTO will disengage.

CUT WIRE AND CONNECT ONE HALF TO THE A & B CONNECTION. WIRE MAY HAVE TO BE EXTENDED
1. The Control Junction Box (CJB) is located behind the modesty panel below the steering wheel. Access to the engine kill and engine start wires are behind the CJB. Remove four bolts anchoring the CJB for access.

2. For engine start, splice into the tan/red wire (circuit 1093) in location shown.

3. For engine kill, cut the red/lime green wire (circuit 16) in location shown and splice.

4. The PTO switch has a light blue/yellow wire that hooks directly up to the Ford-supplied light blue/yellow (cir. 322).

5. The Ford-supplied 12V PTO power source (cir. 294) is located here.
For: 2001 Ford Super-Duty with Manual Transmission

Notes:
1. Engine start not used on Predator.
2. Plug all unused cavities with Packard plug #12010300 (IMT # 77044893). Cap all unused connectors on EFM.
3. Engine speed on Ford Super Duty is controlled by the inpower direct speed control module.

Cut wire and connect one half to the A & B connection. Wire may have to be extended.
1. The Control Junction Box (CJB) is located behind the modesty panel below the steering wheel. Access to the engine kill and engine start wires are behind the CJB. Remove four bolts anchoring the CJB for access.

2. For engine start, splice into the tan/red wire (circuit 1093) in location shown.

3. For engine kill, cut the red/lt. green wire (circuit 16) in location shown and splice.

NOTE:
SEE 99903454 FOR INPOWER DIRECT SPEED CONTROL MODULE.
FORD SUPER-DUTY- 2002 TO 2004 AUTOMATIC TRANSMISSION EFM (99903553-1)

FOR: 2002 TO 2004 FORD SUPER-DUTY WITH AUTOMATIC TRANSMISSION

NOTES:
1. Engine start not used on Predator.
2. Plug all unused cavities with Packard plug #12010300 (IMT # 77044893). Cap all unused connectors on EFM.
3. Engine speed and PTO activation on Ford Super Duty with automatic transmission are controlled by the Ford APC module.
4. PTO switch is interlocked with the parking brake. If the parking brake is disengaged, the PTO will disengage.
5. Ford circuit 322 is not shown on this drawing, but should be connected to the Chelsea PTO harness according to Chelsea’s installation instructions, shown on 99903556.
The CJB is located behind the modesty panel below the steering wheel. Access to the engine kill and engine start wires are behind the CJB. Remove the four bolts holding the CJB for access.

For engine start, splice into circuit 1093 (tan / red) in the location shown.

For engine kill, cut circuit 16 (white / yellow) in the location shown and splice.

The PTO switch has a lt. blue / yellow wire that hooks up directly to the Ford-supplied circuit 322 (lt. blue / yellow).

The Ford-supplied 12 volt PTO power source, circuit 294 (white / lt. blue) is located here.
FOR: 2002 TO 2004 FORD SUPER-DUTY WITH MANUAL TRANSMISSION

NOTES:
1. Engine start not used on Predator.
2. Plug all unused cavities with Packard plug #12010300 (IMT # 77044893). Cap all unused connectors on EFM.
3. Engine speed on Ford Super Duty is controlled by the Ford Inpower Direct speed control module.
4. Ford circuit 322 does not need to be energized during PTO operation on Ford Superduty with 6.0L diesel engine with 6-speed manual transmission.
THE CJB IS LOCATED BEHIND THE MODESTY PANEL BELOW THE STEERING WHEEL. ACCESS TO THE ENGINE KILL AND ENGINE START WIRES ARE BEHIND THE CJB. REMOVE THE FOUR BOLTS HOLDING THE CJB FOR ACCESS.

FOR ENGINE START, SPLICE INTO CIR. 1093 (THE TAN / RED WIRE) IN THE LOCATION SHOWN.

FOR ENGINE KILL, CUT CIR. 16 (WHITE / YELLOW) IN THE LOCATION SHOWN AND SPLICE.

See 99903454 for Inpower Direct speed control installation.
FOR:
2005 TO 2007 FORD SUPER DUTY WITH AUTOMATIC TRANSMISSION AND OPTIONAL UFITTER SWITCHES.

NOTED:
1. ENGINE START NOT USED ON PTO.
2. USE ALL UNLIT CAVITIES WITH POSITIVE POLARITY PRE-HIPO RATING.
3. PTO SWITCH IS INTERFACED WITH THE PARKING BRAKE. IF THE PARKING BRAKE IS DEACTIVATED, THE PTO WILL DISCONNECT.
4. SEE PAGE 5 FOR FORD CONNECTOR "F" LOCATION AND WIRED LOCATIONS.
5. FOR GROUND CONNECTION TO PTO, USE CHASSIS GROUND ONLY.

CHICAGO 2004 PTO HARNESS
CTA 04 PTO PRESS SWITCH

CIR 1935 (ORANGE/LT BLUE)
10A FUSED OUTPUT FROM AUX 4 SWITC, FUSE #5 ON PDJB (SEE FORD OWNER'S MANUAL)

PTO GROUND (MT HARNESS, PREDATOR ONLY)

PRECURSOR ONLY PTO GROUND WIRING

TO GND

PTO GROUND (MT HARNESS, PREDATOR ONLY)

DEF MODULE: 99903412: PAGE - 29 REV. B 20050926
FOR:

2008 TO CURRENT FORD SUPER DUTY
WITH AUTOMATIC TRANSMISSION AND
OPTIONAL UPTIFTER SWITCHES.

NOTES:
1. ENGINE START RELAY IS VACANT ON PREDATOR.
2. POLE ALL UNEEDED DIODES WITH WAVE CIRCUIT PEG 3300 A2 14 (PART # 444069) CAP ALL UNEEDED CONNECTION ON CIR.
3. PTO SWITCH IS INTERLOCKED WITH THE PARKING BRAKE, IF THE PARKING BRAKE IS ENGAGED, THE PTO WILL BE INOPERABLE.
4. SEE PAGE 5 FOR FORD CONNECTOR CDS LOCATION AND VANE LOCATION.
5. FOR GROUND CONNECTION TO MPA-454, USE CHASSIS GROUND ONLY.
6. START WIRE (#6 OF #8 GND) IS IN THE HARNESS THAT OES OUT TO THE FIREWALL SPICE AND HIS WIRE FOR THE START FUNCTION.
1. Loosen screws under steering column.
2. Reach behind the steering column cover to find C250.

C250 LOCATION

STEERING COLUMN COVER

C250 PIN 9 (BLUE/RED) ENGINE KILL

C250 PIN 10 (GAS) (BLUE/WHITE) ENGINE START

PTO CIRCUITS:
- PTO (YELLOW/GREEN)
- PTO-VREF (WHITE/BROWN)
- PTO RPM (GREEN)
- PTO ENGAGE (ORANGE/WHITE)
- NEUTRAL SIGNAL (GREEN/WHITE)
- IGNITION (VIOLET)
NOTES:

1. ENGINE START NOT USED ON PREDATOR
2. PLUG ALL UNUSED CAVITIES WITH PACKARD PLUG #12010300 (IMT # 77044893). CAP ALL UNUSED CONNECTORS ON EFM.
3. PTO SWITCH IS INTERLOCKED WITH THE PARKING BRAKE. IF THE PARKING BRAKE IS DISENGAGED, THE PTO WILL DISENGAGE.
4. SEE SHEET 99904249-5 FOR PICTURES OF FORD CONNECTOR C250 LOCATION AND WIRE LOCATIONS.
5. FOR GROUND CONNECTION TO 77045925, USE CHASSIS GROUND ONLY.
6. ENGINE MUST BE AT LEAST 120 DEGREES BEFORE SPEED CONTROL WILL WORK.
7. TRANSMISSION OIL MUST BE AT LEAST 20 DEGREES BEFORE SPEED CONTROL WILL WORK.
8. IF ANY DRIVE CONTROLS, INCLUDING PARKING BRAKE, ARE ACTIVATED WHILE IN SEIC MODE, THE ENGINE MUST BE SHUT OFF AND RESTARTED FOR SEIC TO WORK AGAIN.
NOTES:
1. ENGINE START NOT USED ON PREDATOR
2. PLUG ALL UNUSED CAVITIES WITH PACKARD PLUG #12010300 (IMT # 77044893). CAP ALL UNUSED CONNECTORS ON EFM.
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8. IF ANY DRIVE CONTROLS, INCLUDING PARKING BRAKE, ARE ACTIVATED WHILE IN SEIC MODE, THE ENGINE MUST BE SHUT OFF AND RESTARTED FOR SEIC TO WORK AGAIN.
FORD SUPER-DUTY- 2011-PRESENT -V10 GAS WITHOUT SWITCHES (99904889-4)

FOR: FORD SUPER-DUTY MODEL YEAR 2011

NOTES:
1. ENGINE START NOT USED ON PREDATOR
2. PLUG ALL UNUSED CAVITIES WITH PACKARD PLUG #12010300 (IMT # 77044893). CAP ALL UNUSED CONNECTORS ON EFM.
3. PTO SWITCH IS INTERLOCKED WITH THE PARKING BRAKE. IF THE PARKING BRAKE IS DISENGAGED, THE PTO WILL DISENGAGE.
4. SEE SHEET 99904249-5 FOR PICTURES OF FORD CONNECTOR C250 LOCATION AND WIRE LOCATIONS.
5. FOR GROUND CONNECTION TO 77045925, USE CHASSIS GROUND ONLY.
6. ENGINE MUST BE AT LEAST 120 DEGREES BEFORE SPEED CONTROL WILL WORK.
7. TRANSMISSION OIL MUST BE AT LEAST 20 DEGREES BEFORE SPEED CONTROL WILL WORK.
8. IF ANY DRIVE CONTROLS, INCLUDING PARKING BRAKE, ARE ACTIVATED WHILE IN SEIC MODE, THE ENGINE MUST BE SHUT OFF AND RESTARTED FOR SEIC TO WORK AGAIN.
1. LOOSEN SCREWS UNDER STEERING COLUMN.

2. C250 IS LOCATED ON THE LEFT SIDE OF THE STEERING COLUMN.
NOTES:

1. Speed control and PTO actuation for 2003 Ford Super Duty chassis with automatic transmission are controlled by the Ford APCM.
2. The APCM must be configured to have RPM control and PTO control in "linked" mode.
3. The Ford APCM's yellow wire provides 12V when the RPM control and PTO control are active. This 12V signal is used by the EFM to engage the PTO.
4. 2002 model year chassis can be wired per 1999 installation instructions with the following exceptions:
   a. Ford Super Duty wiring color and circuit number for 12V ignition power changed from circuit 295 (light blue w/pink) to circuit 294 (white w/light blue) for 2002 model year.
   b. Ford Super Duty wiring color for engine kill (circuit 16) changed from red/light green to white/yellow for 2002 model year.
NOTES:
1. ENGINE START NOT USED ON PREDATOR
2. PLUG ALL UNUSED CAVITIES WITH PACKARD PLUG #12010300 (IMT #77044893). CAP ALL UNUSED CONNECTORS ON EFM.
3. SEE SHEET 99904847-2 FOR PICTURES.
4. FOLLOW WIRING SCHEMATIC AS SHOWN TO INSURE PROPER FUNCTION. FAILURE TO DO SO WILL RESULT IN SYSTEM FAILURE AND POSSIBLE ENGINE ERROR CODE GENERATION.
5. BATTERY CABLES (NEGATIVE FIRST, THEN POSITIVE) MUST BE DISCONNECTED BEFORE DOING ANY WIRING ON VEHICLE.
6. ECM PROGRAMMING, BY IMT OR A HINO DEALER, IS NECESSARY FOR PROPER SPEED AND PTO OPERATIONS.

SEE NOTE 3

HINO UPFITTER WIRE D (RED/BLUE) ———<—— ENGINE SPEED (IMT HARNESS)
HINO UPFITTER WIRE K (WHITE/BLACK) ———<—— ENGINE SPEED (IMT HARNESS)
TO HINO UPFITTER WIRE M (PINK) ———<—— ENGINE KILL (IMT HARNESS)
1. Remove panel beneath center instrument panel.
2. Locate upfitter wires.
3. Follow wiring instructions.
NOTES:
1. ENGINE START NOT USED ON PREDATOR
2. PLUG ALL UNUSED CAVITIES WITH PACKARD PLUG #12010300 (IMT # 77044893). CAP ALL UNUSED CONNECTORS ON EFM.
3. USE IMT #77041348 POTENTIOMETER TO SET SPEED. REFER TO FIGURE 1 FOR WIRING SCHEMATIC.
4. SEE 99904477-2 FOR PICTURES.
5. FOLLOW WIRING SCHEMATIC AS SHOWN TO INSURE PROPER FUNCTION. FAILURE TO DO SO WILL RESULT IN SYSTEM FAILURE AND POSSIBLE ENGINE ERROR CODE GENERATION.
6. BATTERY CABLES (NEGATIVE FIRST, THEN POSITIVE) MUST BE DISCONNECTED BEFORE DOING ANY WIRING ON VEHICLE.
NOTES:
1. DIFFERENT CHASSIS MAY HAVE DIFFERENT CODES FOR THE TCM WIRE NUMBERS.
2. TCM FOR FREIGHTLINER IS BEHIND THE DASH ON THE PASSENGER SIDE OF THE CAB. SPLICE INTO APPROPRIATE WIRES AT THAT LOCATION.
3. 2007 & NEWER GM TRANSMISSION CONNECTOR: (LOCATED NEAR THE GM UFPFITTER CONNECTOR IN THE ENGINE COMPARTMENT ON THE RIGHT SIDE)
   - PIN 45 = PIN A
   - PIN 17 = PIN B
   - PIN 3 = PIN J

1. Remove panel beneath center instrument panel.
2. Locate upfitter wires.
3. Follow wiring instructions.
INPOWER DIRECT INSTALLATION GUIDE
(99903454)

OPERATION

When the vehicle is parked and Chassis Conditions for Proper Operation are satisfied the engine idle speed may be controlled by selecting one of the two available modes (Preset1 and Preset2). The preset RPM modes may be adjusted by the user via two calibration potentiometers on the top of the ETM30 unit.

Chassis Conditions for Proper Operation
1. Parking brake is set.
2. For automatic transmission, gear shift lever is in "PARK."
3. For manual transmission, foot is off clutch pedal.
4. Foot is off service brake.
5. Foot is off accelerator pedal.
6. Vehicle is stationary.
7. Engine is started and idling.

Modes of Operation

A. Two Preset RM High Idle Modes:
Function: Increase idle to a preset RPM value.
Terminals: RPM1, RPM2
Activation: Apply ground to terminal
Range of Calibration: 1200 to 2600 rpm
Type of Adjustment: Internal potentiometers
RPM1 Adjustment: Potentiometer
RPM2 Adjustment: Potentiometer

B. Mode Priorities
RPM1 Highest - Will override RPM2 mode
RPM2 Lowest - Will only work if RPM1 if off

Status Indicators
A five-segment LED provides status and problem detection information. Refer to the following table for coding of these functions.

<table>
<thead>
<tr>
<th>LED</th>
<th>Status</th>
<th>Indication</th>
</tr>
</thead>
<tbody>
<tr>
<td>ON/OFF On Solid</td>
<td>Module ON and functioning</td>
<td></td>
</tr>
<tr>
<td>ON/OFF Flashing</td>
<td>Module ON, but a problem was detected</td>
<td></td>
</tr>
<tr>
<td>GEAR On Solid</td>
<td>Vehicle Gear = Park, Park Brake set</td>
<td></td>
</tr>
<tr>
<td>GEAR Flashing</td>
<td>Park Brake not set or Foot Brake on</td>
<td></td>
</tr>
<tr>
<td>RPM1 On Solid</td>
<td>RPM1 terminal grounded, engine at RPM1</td>
<td></td>
</tr>
<tr>
<td>RPM1 Flashing</td>
<td>RPM1 terminal grounded, engine at Low Idle</td>
<td></td>
</tr>
<tr>
<td>RPM2 On Solid</td>
<td>RPM2 terminal grounded, engine at RPM2</td>
<td></td>
</tr>
<tr>
<td>RPM2 Flashing</td>
<td>RPM2 terminal grounded, engine at Low Idle</td>
<td></td>
</tr>
</tbody>
</table>

Installation
The ETM30 is usually mounted inside the cab under the dashboard. A five foot cable is supplied that connects to the Ford wiring harness’ four-pin connector. The mode activation connections are supplied by the user and are 1/4” Faston terminals. (See wiring diagram.)

Setup and Calibration
The only calibration required is to select each of the two preset modes (RPM1 and RPM2) and adjust the two respective potentiometers on the ETM30 to the desired RPM.

Specifications

Electrical
Input Voltage (+12V Terminal): 8 to 16 volts
Input Current (+12V Terminal): 37 mA
Standby Current: 28 mA
Input Current (on/off terminal): 1 mA
Control Current: 1 mA

Mechanical:
Weight: 0.164 lb
Connections: Faston 1/4" terminals
Case Material: Cyolac thermoplastic (UL 94VO)
Encapsulation Mat’l: Epoxy potting compound, resistant to most fuels, oils, acids, and cleaning agents.
2001 TO 2004 INTERNATIONAL DT466, 2001 TO PRESENT INTERNATIONAL DT530 WITH MANUAL TRANSMISSION.

NOTES:

1. ENGINE START NOT USED ON PREDATOR.

2. PLUG ALL UNUSED CAVITIES WITH PACKARD PLUG #12010300 (MT #77044893). CAP ALL UNUSED CONNECTORS ON EFM.

3. DIODE TO BE AT LEAST 2.2 AMP, MT #77044556.

4. IF BODY BUILDER OPTION 12VVW IS NOT ORDERED, NO WIRES WILL BE PRESENT IN ECM PIN 37 & 32. IT IS HIGHLY RECOMMENDED THAT THESE PINS BE INSTALLED AT A DEALER. IF NOT USE CONNECTORS SUPPLIED (#20) IN ECM.

NOTES:

1. ENGINE START NOT USED ON PREDATOR.

2. PLUG ALL UNUSED CAVITIES WITH PACKARD PLUG #12010300
   [IMT #77044893]. CAP ALL UNUSED CONNECTORS ON EFM.

3. IF BODY BUILDER OPTION 12VVV IS NOT ORDERED, NO WIRES WILL BE
   PRESENT IN ECM PIN 37 & 32. IT IS HIGHLY RECOMMENDED THAT
   THESE PINS BE INSTALLED AT A DEALER. IF NOT USE CONNECTORS
   SUPPLIED (#20) IN ECM.

4. J17 IS LOCATED UNDER THE FUSE/RELAY PANEL ABOVE
   THE DRIVERS SIDE WHEEL WELL. THE FUSE/RELAY PANEL CAN BE
   REMOVED FROM IT'S ENCLOSEMENT AND J17 LOCATED. SPLICE INTO THE
   WIRE WHERE CONVENIENT.
USING MPSI PRO-LINC 9000, CHANGE THE FOLLOWING PARAMETERS IN THE ECM:

- **PTO MODE:** IN CAB AND REMOTE
- **IN-CAB PTO MODE:** PRESET
- **DISABLE CAB CONTROLS:** YES
- **SET SWITCH SPEED:** USER TO DETERMINE RPM
- **RESUME SWITCH SPEED:** SAME AS SET SWITCH SPEED
- **ENGINE RAMP RATE:** 500 RPM/SEC

FUSE/RELAY PANEL ABOVE DRIVER’S SIDE WHEEL WELL.

WIRE J17 AND J17S ARE LOCATED UNDER FUSE/RELAY PANEL. REMOVE PANEL AFTER DISCONNECTING MAIN POWER FEED. FIND WIRES J17 AND J17S AND SPLICE ACCORDINGLY.

PIN LOCATIONS ARE FOR CONNECTOR 6007, LOCATED ON LOWER LH SIDE OF ENGINE.

1) USE 1/4” RATCHET (NO SOCKET) TO REMOVE CONNECTOR.
2) USE SMALL PHILLIPS SCREWDRIVER TO REMOVE CAP FROM CONNECTOR.
3) REMOVE CONNECTOR FROM CONNECTOR HOUSING.
4) REMOVE RED PLUG THAT SURROUNDS PIN LOCATIONS. INSTALL P/N 77045001 INTO PIN LOCATIONS 32 AND 37.
   - PIN 32 SHOULD HAVE GREEN WIRE SPLICED TO P/N 77045001.
   - PIN 37 SHOULD HAVE BLACK WIRE SPLICED TO P/N 77045001.

NOTE: VISUALLY VERIFY THAT PINS ARE COMPLETELY SEATED IN CONNECTOR BEFORE PROCEEDING.

5) REPLACE RED PLUG, CONNECTOR HOUSING, AND CONNECTOR CAP BEFORE REPLACING CONNECTOR. USE 1/4” RATCHET (NO SOCKET) TO FASTEN CONNECTOR.
FOR:
2004 TO PRESENT INTERNATIONAL VT365
AND 2005 TO PRESENT DT-466 WITH
MANUAL TRANSMISSION.

NOTES:
1. ENGINE START NOT USED ON PREDATOR.
2. Plug all unused cavities with Packard plug #12010300
   (JMT #77044893). Cap all unused connectors on ECM.
3. Wires A17 and A13C are located in the pass-through
   harness located near the driver's left leg (under the
   steering wheel).
4. A13DD can be found on the back of the ignition switch.
5. Use P/N 77045924 for international ECM connections.
INTERNATIONAL EFM- VT365 & DT466 2005-PRESENT (99903607-2)

FOR:
2004 TO PRESENT INTERNATIONAL VT365
AND 2005 TO PRESENT DT-466 WITH AUTOMATIC TRANSMISSION.

NOTES:
1. ENGINE START NOT USED ON PREDATOR.
2. PLUG ALL UNUSED CAVITIES WITH PACKARD PLUG #12010300
   (MT #7044893). CAP ALL UNUSED CONNECTORS ON EFM.
3. IF BODY BUILDER OPTION 12VYC IS NOT ORDERED, NO WIRES WILL BE
   PRESENT IN ECM PIN 19 AND 21. IT IS HIGHLY RECOMMENDED THAT
   THESE PINS BE INSTALLED AT A DEALER. IF NOT PREVIOUSLY INSTALLED
   CONNECTORS MAY BE ORDERED FROM MT (P/N 77045001 2 REQUIRED).
4. A17 IS LOCATED UNDER THE FUSE/RELAY PANEL ABOVE
   THE DRIVERS SIDE WHEEL WELL. THE FUSE/RELAY PANEL CAN BE
   REMOVED FROM ITS ENCLOSURE AND J17 LOCATED. SPLICE INTO THE
   WIRE WHERE CONVENIENT.
5. USE P/N 77045924 FOR INTERNATIONAL ECM CONNECTIONS.
NOTES:

1. WIRES K46B AND K97CB MAY BE ACCESSIBLE FROM THE BODY BUILDER'S BLUNT CUT WIRES IF THE CHASSIS IS ORDERED WITH OPTION 12VYC (SEE FIGURE 1).

2. IF THE CHASSIS IS NOT ORDERED WITH OPTION 12VYC, MAKE THE CONNECTIONS AS SHOWN TO THE ECM X3 CONNECTOR USING P/N 77045924. THE CONNECTOR DOES NOT NEED TO BE TAKEN APART. THERE IS A LOCK IN THE MIDDLE OF THE CONNECTOR THAT MUST BE RELEASED BY DEPRESSING WITH A SMALL SCREWDRIVER. THE LOCK TAB WILL SNAP WHEN UNLOCKED AND PROTRUDE APPROXIMATELY 1/8 INCH FROM THE CONNECTOR. ALLOWING TERMINALS TO BE INSTALLED OR REMOVED. BE CAREFUL AFTER UNLOCKING THE CONNECTOR AS ALL TERMINALS WILL BE RELEASED. WHEN DONE SNAP THE LOCK BACK INTO THE CONNECTOR SO IT IS FLUSH WITH THE CONNECTOR BODY.

3. USING MPSI PRO-LINK 9000, CHANGE THE FOLLOWING PARAMETERS IN THE ECM.

- PTG MODE: IN CAB AND REMOTE
- IN-CAB PTG MODE: PRESET
- DISABLE CAB CONTROLS: YES
- SET SWITCH SPEED: ** USER TO DETERMINE RPM
- RESUME SWITCH SPEED: ** SAME AS SET SWITCH SPEED
- ENGINE RAMP RATE: 500 RPM/SEC

4. USE P/N 77045924 FOR INTERNATIONAL ECM CONNECTIONS.


FIGURE 1: IF 12VYC IS ORDERED, FIND K46B AND K97CB AND WIRE AS FOLLOWS:

- K46B → TO IL-CP301-B
- K97CB → TO IL-CP301-B

FIGURE 2: IF 12VYC IS NOT ORDERED, FIND K46B AND K97CB ON THE X3 ECM CONNECTOR AND WIRE AS FOLLOWS:

- TO ECM 6-CARD A (4-pin only)
- TO ECM 6-CARD B (2-pin only)
- RES W/ 1000 Ω FUSE (2-pin only)

EXISTING WIRE IN PIN 21, IF PRESENT

* TO EFM IL-CP301-B

TO IL-CJ100-A

PARKING BRAKE GROUND

IF TRUCK IS EQUIPPED WITH AIR BRAKES

CUT AIR LINE THAT DOES NOT HAVE AIR SUPPLY TO THE PARKING BRAKE
FOR:
2003 TO PRESENT MERCEDES BENZ MBE900E

NOTES:

1. ENGINE START NOT USED ON PREDATOR.

2. PLUG ALL UNUSED CAVITIES WITH PACKARD PLUG #12010300 [IMT #77044893]. CAP ALL UNUSED CONNECTORS ON EFM.

3a. WIRE TO PIN 10 ON 2007 AND OLDER VCU3 ON MBE900 VCU MAY HAVE TO BE INSTALLED.

3b. WIRE TO PIN 9 ON 2008 AND NEWER VCU3 ON MBE900 VCU MAY HAVE TO BE INSTALLED.

IF SO USE IMT P/N 77441059 AND APPROPRIATE GAUGE WIRE.

4. THE VCU MAY BE FOUND UNDER THE DASH ON THE PASSENGER’S SIDE OF THE VEHICLE. THE CONNECTORS ARE COLOR CODED.

VCU1 = BROWN CONNECTOR
VCU3 = GRAY CONNECTOR
VCU4 = VIOLET CONNECTOR.

[NOT USED] SEE NOTE 2

CUT EXISTING WIRE FROM PIN 2 ON VCU1 (CKT. 439A ON BROWN CONNECTOR). CONNECT ONE HALF TO EACH WIRE. WIRE MAY NEED TO BE EXTENDED.
### Remote PTO Parameters

<table>
<thead>
<tr>
<th>Parameter</th>
<th>New Values</th>
<th>Available Range / Options</th>
<th>Default</th>
</tr>
</thead>
<tbody>
<tr>
<td>PTO Function Enable / Disable</td>
<td>1</td>
<td>0 - Disabled, 1 - Enabled</td>
<td>0</td>
</tr>
<tr>
<td>Number of Remote PTO Speeds</td>
<td>1</td>
<td>1, 2, or 3</td>
<td>1</td>
</tr>
<tr>
<td>Maximum Speed - PTO #1</td>
<td>1250 RPM*</td>
<td>500 - 3000 RPM</td>
<td>950 RPM</td>
</tr>
<tr>
<td>Maximum Speed - PTO #2</td>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
</tr>
<tr>
<td>Maximum Speed - PTO #3</td>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
</tr>
<tr>
<td>Remote Accelerator Enable</td>
<td>0</td>
<td>0 - Disabled, 1 - Enabled</td>
<td>0</td>
</tr>
</tbody>
</table>

*Final value to be determined by end user.*

All PTO parameter settings can be reprogrammed with ServiLink 2.2 or higher.
PTO INSTALLATION - CHEVY 4500/5500 SERIES (99903579-1)

NOTES:
1. FOR SINGLE PTO APPLICATIONS WITH ALLISON 1000P TRANSMISSIONS (DIAGRAM 1), THE PTO SWITCH ON THE 4500 / 5500 DASH WILL ENABLE SPEED CONTROL AND ACTIVATE THE PTO. THE PTO MANUFACTURER’S SWITCH IS NOT USED.

2. FOR DUAL PTO APPLICATIONS WITH ALLISON 1000P TRANSMISSIONS (DIAGRAM 2), THE PTO SWITCH ON THE 4500 / 5500 DASH WILL ENABLE SPEED CONTROL AND ALLOW THE MANUFACTURER’S PTO SWITCHES TO BE ACTIVE. NORMAL OPERATION OF THE PTO WILL BE:
   A. ACTIVATION OF CHEVROLET DASH SWITCH TO ENABLE PTO SWITCHES / SPEED CONTROL.
   B. ACTIVATION OF ONE OR BOTH PTO SWITCHES TO ACTIVATE PTO(S).

3. FOR SINGLE PTO APPLICATIONS WITH ZED-F S6-650 TRANSMISSIONS (DIAGRAM 3), THE PTO SWITCH ON THE 4500/5500 DASH WILL NOT BE USED. ELEVATED IDLE WILL BE CONTROLLED BY COMPRESSOR AND/OR SWITCH ON IMT CRANE HANDSET.

4. FOR BOTH SINGLE AND DOUBLE PTO APPLICATIONS, REGARDLESS OF TRANSMISSION, PROPER PROGRAMMING OF THE DURAMAX ECM MAY BE REQUIRED FOR CORRECT IDLE SETTINGS (SEE FIG. 1).

5. FUSES ARE TO BE SIZED ACCORDING PTO MANUFACTURER’S RECOMMENDATIONS. MUNCIE RECOMMENDS 10 AMP FUSES, CHELSEA RECOMMENDS 9 AMP FUSES.

6. THE 10 WAY UPFITTER PTO CONNECTOR IS LOCATED IN THE ENGINE COMPARTMENT ON THE PASSENGER’S SIDE NEAR THE FIREWALL (SEE FIG. 2). CONNECTIONS TO THE PTO CONNECTOR CAN BE MADE USING IMT P/N 77044565 AND 70394069 TERMINAL AND SEAL. THESE ARE INCLUDED IN EFM KIT 51717388.


---

**FIG. 1**
DURAMAX ENGINE PARAMETERS FOR PTO OPERATION

<table>
<thead>
<tr>
<th>PARAMETER</th>
<th>PROGRAMMED VALUE</th>
<th>FORMULA (SEE NOTE)</th>
</tr>
</thead>
<tbody>
<tr>
<td>PTO FAST IDLE OPTION</td>
<td>PRESET</td>
<td>N/A</td>
</tr>
<tr>
<td>PTO MAX ENGINE SPEED</td>
<td>1450</td>
<td>PTO RPM + 200</td>
</tr>
<tr>
<td>PTO STANDBY SPEED</td>
<td>1250</td>
<td>PTO RPM</td>
</tr>
<tr>
<td>PTO SET SPEED</td>
<td>1250</td>
<td>PTO RPM</td>
</tr>
<tr>
<td>PTO RESUME SPEED</td>
<td>1250</td>
<td>PTO RPM</td>
</tr>
<tr>
<td>PTO MAX ENGAGE SPEED</td>
<td>1050</td>
<td>PTO RPM - 200</td>
</tr>
<tr>
<td>ENGINE SHUTDOWN</td>
<td>NO</td>
<td>N/A</td>
</tr>
<tr>
<td>PTO ENGAGE RELAY</td>
<td>YES</td>
<td>N/A</td>
</tr>
<tr>
<td>PTO FEEDBACK</td>
<td>YES</td>
<td>N/A</td>
</tr>
</tbody>
</table>

PROGRAMMED VALUES ARE LISTED FOR A DESIRED ENGINE SPEED OF 1250 RPM DURING PTO OPERATION. FOR SETTINGS OTHER THAN 1250, USE THE FORMULA COLUMN.

PTO RPM = DESIRED ENGINE SPEED DURING PTO OPERATION.

PTO FEEDBACK SET TO "YES" WILL FORCE ELEVATED IDLE ONLY WHEN PIN "G" IN PTO UPFITTER CONNECTOR IS PROVIDED WITH CONSTANT 12V. THE GM DASH PTO SWITCH MUST BE ACTIVATED IN ORDER FOR ELEVATED IDLE TO OCCUR.

PTO FEEDBACK SET TO "NO" WILL FORCE ELEVATED IDLE WITH SWITCH ACTIVATION. INPUT TO PIN "G" IN PTO UPFITTER CONNECTOR IS NOT REQUIRED.

---

**FIG. 2**
10 WAY UPFITTER PTO CONNECTOR

<table>
<thead>
<tr>
<th>PIN</th>
<th>WIRE</th>
<th>FUNCTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>N/C</td>
<td>-</td>
</tr>
<tr>
<td>B</td>
<td>494</td>
<td>LIGHT BLUE</td>
</tr>
<tr>
<td>C</td>
<td>488</td>
<td>LIGHT GREEN</td>
</tr>
<tr>
<td>D</td>
<td>250</td>
<td>BLACK</td>
</tr>
<tr>
<td>E</td>
<td>2663</td>
<td>PURPLE</td>
</tr>
<tr>
<td>F</td>
<td>488</td>
<td>LIGHT GREEN</td>
</tr>
<tr>
<td>G</td>
<td>2522</td>
<td>YELLOW</td>
</tr>
<tr>
<td>H</td>
<td>2561</td>
<td>WHITE</td>
</tr>
<tr>
<td>J</td>
<td>2664</td>
<td>TAN</td>
</tr>
<tr>
<td>K</td>
<td>N/C</td>
<td>-</td>
</tr>
</tbody>
</table>
NOTE: REFER TO 99903587 FOR ADDITIONAL EFM WIRING INFORMATION, INCLUDING WIRING DIAGRAMS FOR PTO GROUND, ENGINE START, AND ENGINE STOP.

DIAGRAM 1:
CHEVROLET / GM / GMC DURAMAX
SINGLE PTO (MUNCIE / CHELSEA)
ALLISON 1000P TRANSMISSION

DIAGRAM 2:
CHEVROLET / GM / GMC DURAMAX
DUAL PTO (MUNCIE ONLY)
ALLISON 1000P TRANSMISSION

DIAGRAM 3:
CHEVROLET / GM / GMC DURAMAX
SINGLE PTO (MUNCIE / CHELSEA)
ZED-F S6-650 TRANSMISSION
2002 TO CURRENT GMC 4500 / 5500 WITH 6.6L / 7.8L DURAMAX ENGINE

NOTES:
1. ENGINE START NOT USED ON PREDATOR.
2. PLUG ALL UNUSED CAVITIES WITH PACKARD PLUG #12010300 [IMT #77044893]. CAP ALL UNUSED CONNECTORS ON EFM.
3. SEE PAGE 2 FOR DESCRIPTION OF WIRES IN GMC’S UNDERHOOD DISTRIBUTION CENTER (UDC)
4. GMC CKT 2522 (YELLOW), 2561 (WHITE), AND 250 (BLACK) CAN BE FOUND IN GMC PTO UPFITTER CONNECTOR. THIS CONNECTOR IS LOCATED IN THE ENGINE COMPARTMENT JUST ABOVE THE CURB SIDE WHEEL WELL. SEE 99903579 FOR DETAILS.
5. ENGINE KILL AND ENGINE START CIRCUITS CAN BE FOUND IN THE UNDERHOOD DISTRIBUTION CENTER ON THE PASSENGER’S SIDE FIREWALL. ENGINE KILL WIRE IS PINK AND FOUND AT LOCATION G6. ENGINE START WIRE IS PURPLE AND FOUND AT LOCATION A7 (PIN 85 ON START RELAY). SEE PAGE 2 FOR DETAILS. NOTE: THERE ARE TWO PURPLE WIRES ON THE START RELAY. LOCATION A7 IS THE SMALLER GAUGE OF THE TWO WIRES.
6. FOR BOTH SINGLE AND DUAL PTO APPLICATIONS, THE DURAMAX ENGINE MAY NEED TO BE PROGRAMMED. SEE 99903579 FOR PARAMETERS AND SETTINGS.
7. FOR TRANSMISSION-SPECIFIC PTO WIRING SCHEMATICS, SEE 99903579.

[Diagram of wiring connections and instructions]
EFM INSTALLATION - CHEVY 4500/5500 SERIES (99903587-2)

FIGURE 3
UNDERHOOD DISTRIBUTION CENTER (UDC) - GMC 6.6L / 7.8L DURAMAX

FUEL PUMP    IGN B
HORN     IGN A
STARTER
PTO

A7 (PURPLE) FOR ENGINE START
NOTE: THERE ARE 2 PURPLE WIRES UNDER THIS RELAY, A7 IS THE SMALLER GAUGE WIRE.

B9 (YELLOW) FOR ENGINE START
RELAY GROUND (USED ONLY IN MANUAL TRANSMISSION APPLICATIONS)

36 (PINK) FOR ENGINE KILL
NOTES:
1. For single PTO applications with Allison MD transmissions (Diagram 1), the PTO switch on the 6500/7500 dash will enable the PTO. The PTO manufacturer’s switch is not used. Elevated idle will be controlled by compressor and/or speed switch on the IMT crane handset. See Table 1.

2. For single PTO applications with manual transmissions (Diagram 2), the PTO switch on the 6500/7500 dash will not be used. Elevated idle will be controlled by compressor and/or speed switch on the IMT crane handset. See Table 1.

3. For dual PTO applications with Allison MD transmissions (Diagram 3), the PTO switch on the 6500/7500 dash will enable the manufacturer’s PTO switches to be active. Normal operation of the PTO will be:
   a. Activation of GM dash switch to enable PTO manufacturer’s switches.
   b. Activation of one or both PTO switches to activate PTO(s).
Elevated idle will be controlled by compressor and/or speed switch on the IMT crane handset.

4. For both single and double PTO applications, regardless of transmission, proper programming of the Duramax 7.8L EFM may be required for correct idle settings. See Table 1.

5. Fuses are to be sized according to PTO manufacturer’s recommendations. Muncie recommends 10 amp fuses; Chelsea recommends 9 amp fuses.

6. The 10-way upfitter PTO connection is located in the engine compartment on the passenger side near the firewall. Connections to the PTO connector can be made using IMT part numbers 77044565 and 70394069 terminal and seal.

7. The transmission connector is located in the engine compartment on the passenger side near the transmission control module (TCM), or typically, just ahead of the 10-way upfitter PTO connector. Connections to the PTO connector can be made using IMT part numbers 77044565 and 70394069 terminal and seal.

**TABLE 1: DURAMAX 7.8L ENGINE PARAMETERS FOR PTO OPERATION**

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</tr>
<tr>
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<td>NO</td>
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</tr>
<tr>
<td>PTO ENGAGE RELAY</td>
<td>YES</td>
<td>N/A</td>
</tr>
<tr>
<td>PTO FEEDBACK</td>
<td>YES</td>
<td>N/A</td>
</tr>
</tbody>
</table>

NOTES:
Programmed values listed are for a desired engine speed of 1250 RPM during PTO operation. For settings other than 1250 RPM, use the formula column.

PTO RPM = Desired engine speed during PTO operation

PTO feedback set to “YES” will force elevated idle when pin “G” in PTO upfitter connector is provided with constant 12V. Once elevated idle occurs, it is latched on by the GM ECM. Base idle will occur if speed control inputs are disabled and:

1. The PTO switch is toggled off, then on.
2. The remote stop switch resets the PTO switch. By “bumping” the engine kill switch, the speed drops to idle without killing the engine.

The GM dash switch must be activated in order for elevated idle to occur.
PTO INSTALLATION - 65 75 DURAMAX 7.8 L ENGINE (99903649-2)

DIAGRAM 1:
CHEVROLET / GM / GMC DURAMAX 7.8L
SINGLE PTO (MUNCIE / CHELSEA)
ALLISON MD (3000 / 4000) SERIES TRANSMISSION

DIAGRAM 2:
CHEVROLET / GM / GMC DURAMAX 7.8L
SINGLE PTO (MUNCIE / CHELSEA)
MANUAL TRANSMISSION
For reference: 2003 and 2004 Medium Duty series C electrical page B-1 (Electrical Component Legend) and page C-28 through C-31 (10-way upfitter PTO connector and 10-way transmission connector).
PTO INSTALLATION - 65 75 DURAMAX 7.8 L ENGINE (99903649-3)

DIAGRAM 3:
CHEVROLET / GM / GMC DURAMAX 7.8L
DUAL PTO (MUNCIE ONLY)
ALLISON MD (3000 / 4000) SERIES TRANSMISSION

RELAY #4 (EFM)

ENGINE SPEED (IMT HARNESS)

PTO ENGAGE (IMT HARNESS)

ONLY PTO GROUND WIRING FOR UNITS WITH REMOTE ENGINE START
PTO INSTALLATION - 65 75 DURAMAX 7.8 L ENGINE (99903649-4)

For use with Chevrolet / GM / GMC Duramax 7.8L single PTO (Muncie / Chelsea) or Allison MD (3000 / 4000) series transmissions on Dominator II bodies built after 4-15-2005.

NOTE: 77041701 will engage the PTO and provide a ground signal to the IMT chassis electrical wiring when the switch is active. This allows engine start to function if the pressure switch on the PTO opens (after engine kill occurs, for instance).
FOR: 2007 TO PRESENT GMC 4500 5500 WITH 6.6 L DURAMAX ENGINE, ALLISON 1000 TRANSMISSION, AND INPOWER SPEED CONTROL

NOTES:
1. Engine start not used on Predator.
2. Plug all unused cavities with plug #77044893. Cap unused connectors.
3. The GMC wire used for engine start is located in the underhood distribution center (UDC) on the passenger side firewall. The engine start wire is purple and found at location a7 (pin 85) on the start relay. See figure 1 for details. Note: There are two purple wires on the start relay. Location A7 is the smaller gauge of the two wires.
2008 TO PRESENT DODGE 4500 5500 AND STERLING BULLET (EFM-AUT TRANS)  
(99904296-1)

NOTES:
1. ENGINE START NOT USED ON PREDATOR
2. PLUG ALL UNUSED CAVITIES WITH PACKARD PLUG #12010300 (IMT # 77044893). CAP ALL UNUSED CONNECTORS ON EFM.
3. SEE SHEET 99904296-2 FOR DODGE STEERING COLUMN WIRING.
4. SEE SHEET 99904296-3 FOR PICTURES.
5. FOLLOW WIRING SCHEMATIC AS SHOWN TO INSURE PROPER FUNCTION. FAILURE TO DO SO WILL RESULT IN SYSTEM FAILURE AND POSSIBLE ENGINE ERROR CODE GENERATION.
6. BATTERY CABLES (NEGATIVE FIRST, THEN POSITIVE) MUST BE DISCONNECTED BEFORE DOING ANY WIRING ON VEHICLE.
NOTES:
1. REMOVE PANEL BENEATH STEERING COLUMN.
2. LOCATE HARD MOUNTED CONNECTOR ON THE LEFT SIDE OF THE STEERING COLUMN. IT WILL BE JUST INSIDE THE COLUMN COVER.
3. REMOVE CONNECTOR AND IMT HARNESS 77441271 AS SHOWN ON 99904296-2.
4. WIRING CONNECTOR TO THE KEY SWITCH IS HARD MOUNTED.
5. WIRING TO THE INSTRUMENT PANEL IS ON THE FREE HARNESS SIDE.
NOTES:
1. ENGINE START NOT USED ON PREDATOR
2. PLUG ALL UNUSED CAVITIES WITH PACKARD PLUG #12010300 (IMT # 77044893). CAP ALL UNUSED CONNECTORS ON EFM.
3. SEE SHEET 99904296-2 FOR DODGE STEERING COLUMN WIRING.
4. SEE SHEET 99904296-3 FOR PICTURES.
5. FOLLOW WIRING SCHEMATIC AS SHOWN TO INSURE PROPER FUNCTION. FAILURE TO DO SO WILL RESULT IN SYSTEM FAILURE AND POSSIBLE ENGINE ERROR CODE GENERATION.
6. BATTERY CABLES (NEGATIVE FIRST, THEN POSITIVE) MUST BE DISCONNECTED BEFORE DOING ANY WIRING ON VEHICLE.
WARNING: DISCONNECT BATTERY CABLES (NEGATIVE FIRST, THEN POSITIVE) BEFORE DOING ANY ELECTRICAL WORK.
NOTES:
1. ENGINE START NOT USED ON PREDATOR
2. PLUG ALL UNUSED CAVITIES WITH PACKARD PLUG #12010300 (IMT # 77044893). CAP ALL UNUSED CONNECTORS ON EFM.
3. SEE SHEET 99904296-2 FOR DODGE STEERING COLUMN WIRING.
4. SEE SHEET 99904296-3 FOR PICTURES.
5. FOLLOW WIRING SCHEMATIC AS SHOWN TO INSURE PROPER FUNCTION. FAILURE TO DO SO WILL RESULT IN SYSTEM FAILURE AND POSSIBLE ENGINE ERROR CODE GENERATION.
6. BATTERY CABLES (NEGATIVE FIRST, THEN POSITIVE) MUST BE DISCONNECTED BEFORE DOING ANY WIRING ON VEHICLE.

WARNING: DISCONNECT BATTERY CABLES (NEGATIVE FIRST, THEN POSITIVE) BEFORE DOING ANY ELECTRICAL WORK.
WARNING: DISCONNECT BATTERY CABLES (NEGATIVE FIRST, THEN POSITIVE) BEFORE DOING ANY ELECTRICAL WORK.
I/P AND KEY SWITCH

AS MARKED ON CONNECTOR

CAVITY ONE (BATTERY)

CAVITY FOUR (IGNITION)

CAVITY FIVE (RUN / IGN SENSE)

CAVITY SIX (GROUND)

CONNECTOR LOCATION

CLUTCH UPSTOP SWITCH

GREEN / ORANGE BLACK WIRE LOCATION

BLACK WIRE LOCATION

CLUTCH PEDAL SWITCH

PEDAL SWITCH

BLACK WIRE LOCATION
NOTES:
1. ENGINE START NOT USED ON PREDATOR
2. PLUG ALL UNUSED CAVITIES WITH PACKARD PLUG #12010300 (IMT # 77044893). CAP ALL UNUSED CONNECTORS ON EFM.
3. SEE SHEET 99904296-2 FOR DODGE STEERING COLUMN WIRING.
4. SEE SHEET 99904296-3 FOR PICTURES.
5. FOLLOW WIRING SCHEMATIC AS SHOWN TO INSURE PROPER FUNCTION. FAILURE TO DO SO WILL RESULT IN SYSTEM FAILURE AND POSSIBLE ENGINE ERROR CODE GENERATION.
6. BATTERY CABLES (NEGATIVE FIRST, THEN POSITIVE) MUST BE DISCONNECTED BEFORE DOING ANY WIRING ON VEHICLE.

WARNING: DISCONNECT BATTERY CABLES (NEGATIVE FIRST, THEN POSITIVE) BEFORE DOING ANY ELECTRICAL WORK.
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WARNING: DISCONNECT BATTERY CABLES (NEGATIVE FIRST, THEN POSITIVE) BEFORE DOING ANY ELECTRICAL WORK.

LEFT TAIL LIGHT ASSEMBLY
(NOTE: REMOTE WHITE/LIGHT GREEN AND WHITE/DARK GREEN WIRES FROM 4-POSITION CONNECTOR)

RIGHT TAIL LIGHT ASSEMBLY
(NOTE: REMOTE WHITE/GRAY AND WHITE/YELLOW WIRES FROM 4-POSITION CONNECTOR)

COMPLETED CONNECTOR
A-WHITE/GRAY WIRE (MARKER)
B-WHITE/LIGHT GREEN (LEFT TURN)
C-WHITE/DARK GREEN (BACK UP)
D-WHITE/YELLOW (RIGHT TURN)

NOTE: THIS IS THE CONNECTOR THAT PLUGS INTO THE IMT HARNESS.
2011 TO PRESENT DODGE 4500 5500 AUTOMATIC TRANSMISSION (99904929)

FOR 2011 TO PRESENT DODGE 4500/5500 4 X 2
WITH 6.7 L CUMMINS ENGINE AND AUTOMATIC TRANSMISSION.

NOTES:
1. PTO CONNECTOR (UNDER-DASH WHITE CONNECTOR) - THE MATING CONNECTOR COMES IN THE DODGE UPFITTER KIT.
2. BLUNT CUT WIRE WITH HEAT SHRINK IS LOCATED NEAR THE AUX. BOX IN THE ENGINE COMPARTMENT.
3. PLEASE WAIT 10 SECONDS BETWEEN ENGINE START AND ENGINE STOP.
4. REFER TO THE DODGE BODYBUILDER WEBSITE FOR PROGRAMMING ENGINE START/STOP AND ENGINE SPEED FUNCTIONS.
WWW.DODGE.COM/BODYBUILDER/YEAR.PDF