Systems Operation

Connection Diagrams: SR4 and SR4B Generators, Voltage Regulators, Options
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Systems Operation Section

SR4 and SR4B Generators for All Engines Except SR4B for 3500 Engines

General Information (All Except SR4B for 3500 Engines)

SMCS Code: 4450

Introduction

The diagrams that follow apply to the SR4 Generators and the SR4B Generators (except for the SR4B used with 3500 Engines).

Note: Diagrams for the SR4B used with 3500 Engines appear later in this manual.
Main Stator and Voltage Sensing Lead Connections (All Except SR4B for 3500 Engines)

SMCS Code: 4453

12 Lead, Wye and Delta Connection

WYE CONNECTION

<table>
<thead>
<tr>
<th>VOLTAGE</th>
<th>L1</th>
<th>L2</th>
<th>L3</th>
<th>N</th>
<th>TIE TOGETHER</th>
<th>20</th>
<th>21</th>
<th>22</th>
</tr>
</thead>
<tbody>
<tr>
<td>LOW</td>
<td>T2</td>
<td>T3</td>
<td>T3</td>
<td>T2</td>
<td>(T1,T7)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>HIGH</td>
<td>T1</td>
<td>T2</td>
<td>T3</td>
<td>T3</td>
<td>(T10,T11,T12)</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

DELTA CONNECTION

<table>
<thead>
<tr>
<th>L1</th>
<th>L2</th>
<th>L3</th>
<th>TIE TOGETHER</th>
<th>20</th>
<th>21</th>
<th>22</th>
</tr>
</thead>
<tbody>
<tr>
<td>T1</td>
<td>T2</td>
<td>T3</td>
<td>(T4,T7)</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
10 Lead Wye Connection

<table>
<thead>
<tr>
<th>VOLTAGE</th>
<th>L1 U</th>
<th>L2 V</th>
<th>L3 W</th>
<th>N</th>
<th>TIE TOether</th>
</tr>
</thead>
<tbody>
<tr>
<td>LOW</td>
<td>(T1,T7)</td>
<td>(T2,T8)</td>
<td>(T3,T9)</td>
<td>(T4,T5,T6,T0)</td>
<td></td>
</tr>
<tr>
<td>HIGH</td>
<td>T1</td>
<td>T2</td>
<td>T3</td>
<td>T0</td>
<td>(T4,T7)</td>
</tr>
</tbody>
</table>

Illustration 2  
g00700304

6 Lead Wye Connection

<table>
<thead>
<tr>
<th>WYE CONNECTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>L1 U</td>
</tr>
<tr>
<td>T1</td>
</tr>
</tbody>
</table>

Illustration 3  
g00700317

NOTE: REGULATOR SENSING LEADS MAY NOT BE INSTALLED ON MEDIUM VOLTAGE GENERATORS.
6 Lead Delta Connection

![Diagram of 6 Lead Delta Connection](image)

<table>
<thead>
<tr>
<th>DELTA CONNECTION</th>
<th>REGULATOR SENSING</th>
</tr>
</thead>
<tbody>
<tr>
<td>L1 U L2 V L3 W</td>
<td>20 22 24</td>
</tr>
<tr>
<td>(T1,T6) (T2,T4) (T3,T5)</td>
<td>T3 T1 T2</td>
</tr>
</tbody>
</table>

**NOTE:**
Regulator sensing leads may not be installed on medium voltage generators.

Illustration 4

4 Lead Wye Connection

![Diagram of 4 Lead Wye Connection](image)

<table>
<thead>
<tr>
<th>WYE CONNECTION</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>L1 L2 L3 N</td>
<td></td>
</tr>
<tr>
<td>U V W</td>
<td></td>
</tr>
<tr>
<td>T1 T2 T3 T0</td>
<td></td>
</tr>
</tbody>
</table>

**NOTE:**
Regulator sensing leads may not be installed on medium voltage generators.

Illustration 5
12 Lead, Single Phase Connection

<table>
<thead>
<tr>
<th>GENERATOR CONNECTION</th>
<th>CONNECT TOGETHER</th>
<th>REG SENSE LEADS</th>
</tr>
</thead>
<tbody>
<tr>
<td>L1  L2  N  W</td>
<td></td>
<td></td>
</tr>
<tr>
<td>L1  L2  N  W</td>
<td></td>
<td></td>
</tr>
<tr>
<td>(T2,T8)  (T1,T7)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>(T4,T6,T10,T12)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

NOTE: FOR PARALLEL OPERATION, T8 LEAD GOES THROUGH WINDOW OF DROOP TRANSFORMER

WITH VR-3 VOLTAGE REGULATOR, CONNECT JUMPER WIRE BETWEEN VOLTAGE REGULATOR TERMINALS 20 AND 28.

WITH VR-4 VOLTAGE REGULATOR, JUMPER WIRE IS NOT REQUIRED.
Main Revolving Field Connections (All Except SR4B for 3500 Engines)

SMCS Code: 4457

Diode Block

Diode Block and Surge Suppressor
Two Diode Blocks and Surge Suppressor

Illustration 9

Three Diode Blocks and Surge Suppressor

Illustration 10
Six Diodes and Two Surge Suppressors

![Diagram of diodes and surge suppressors]

L3 REVOLVING FIELD
L2 EXCITER ARMATURE

Selection Guide for Voltage Regulator (All Except SR4B for 3500 Engines)

SMCS Code: 4467

![Flowchart for voltage regulator selection]

NOTE: Voltages shown are 60 Hz equivalents
VR3 Voltage Regulator Connections (All Except SR4B for 3500 Engines)

SMCS Code: 4467

Self Excited with Direct Connection to Generator
Self Excited with Power Transformer 4/6 Lead Generator

NOTE:
DROOP TRANSFORMER CT1 AND DROOP RHEOSTAT R1 MAY OR MAY NOT BE SUPPLIED

L1 EXCITER FIELD
R1 DROOP RHEOSTAT
R2 REMOTE LEVEL RHEOSTAT
CT1 DROOP TRANSFORMER

PT2 POWER TRANSFORMER
○ TERMINAL NUMBERS
□ WIRE NUMBERS
■ POLARITY
Self Excited with Power and Sensing Isolation Transformer

Illustration 15

NOTE:
DROOP TRANSFORMER CT1 AND DROOP RHEOSTAT R1 MAY OR MAY NOT BE SUPPLIED

L1 EXCITER FIELD
R1 DROOP RHEOSTAT
R2 REMOTE LEVEL RHEOSTAT
ISOL ISOLATION TRANSFORMER

CT1 DROOP TRANSFORMER
PT2 POWER TRANSFORMER
PT3, PT4 SENSING TRANSFORMER

TERMINAL NUMBERS
WIRE NUMBERS
POLARITY
Permanent Magnet Excitation with Direct Connection to Generator

Illustration 16
Permanent Magnet Excitation with Connections to Metering Potential Transformers

REGULATOR SENSING
CONNECT TO 120 VOLT SECONDARY METERING POTENTIAL TRANSFORMER
CONNECT 22 TO PT ON GEN T1
CONNECT 24 TO PT ON GEN T2
CONNECT 20 TO PT ON GEN T3
PHASE RELATION WITH DROOP TRANSFORMER CTI IS IMPORTANT

NOTE: DROOP TRANSFORMER CTI AND DROOP RHEOSTAT R1 MAY OR MAY NOT BE SUPPLIED
L1 EXCITER FIELD
L5 PM EXCITER STATOR
R1 DROOP RHEOSTAT
R2 REMOTE LEVEL RHEOSTAT

PT (CUSTOMER) METERING POTENTIAL TRANSFORMER
CTI DROOP TRANSFORMER

TERMINAL NUMBERS
WIRE NUMBERS
POLARITY
Permanent Magnet Excitation with Connections to an Isolation Transformer
The physical differences between the VR3 and the VR3F are minor. The hole for Gain adjustment is eliminated and another terminal is added to the upper row (terminal 10) on the VR3F.

All VR3F connections to the generator or external options are identical to the VR3. The additional wiring for the VR3F is shown in the previous diagram.

The following information is applicable to both VR3F designs: Self-Excited and Permanent Magnet Excited.

- In order to determine the knee frequency, install a jumper from terminal 6 to terminal 10 on the regulator if the generator is operating at 60 Hz. If the generator is operating at 50 Hz, remove the jumper.

- In order to determine the underfrequency slope selection, install a jumper from terminal 6 to terminal 8 on the regulator if a 1:1 Volts/Hertz underfrequency slope is desired. Remove the jumper if a 2:1 Volts/Hertz underfrequency slope is needed.
Typical Permanent Magnet Excited VR3F

CR1-6 ROTATING RECTIFIERS
CR7.8 SURGE SUPPRESSION DIODES
E1 POSITIVE HEAT SINK
E2 NEGATIVE HEAT SINK
L1 EXCITER FIELD (STATOR)
L2 EXCITER ARMATURE (ROTOR)
L3 ROTATING FIELD (MAIN ROTOR)
L4 STATOR (MAIN STATOR)
CR1-POLARITY MARKING

L5 PM EXCITER STATOR
M ROTATING PERMANENT MAGNET
R1 VOLTAGE DROOP RHEOSTAT (SEE NOTE 1)
R2 REMOTE LEVEL RHEOSTAT
R5 SUPPRESSION RESISTOR
RFA REVOLVING FIELD ASS'Y
T1 VOLTAGE DROOP TRANSFORMER (SEE NOTE 1)
PT2 POWER TRANSFORMER ASSEMBLY
○ TERMINAL BOARD NUMBER
□ WIRE NUMBER

SR-4 GENERATOR SCHEMATIC (4/6 LEAD PERMANENT MAGNET EXCITED W/ 2 PM FUSES)
NOTE: GENERATOR STATOR LEADS TERMINALS T4, T5, AND T6 CAN BE CONNECTED TO FORM THE NEUTRAL LEAD (TO) ON SIX LEAD GENERATORS.

NOTE:
Typical Self Excited VR3F

NOTE 1:
DROOP TRANSFORMER AND DROOP RHEOSTAT MAY OR MAY NOT BE SUPPLIED

REMOTE LEVEL IF FITTED (REMOTE LINK 4-7)

REMOVE LINK 6-10 FOR 50 Hz OPERATION

REMOVE LINK 6-8 FOR 2 x V/Hz SLOPE

CR1-6 ROTATING RECTIFIERS
CR7.8 SURGE SUPPRESSION DIODES
E1 POSITIVE HEAT SINK
E2 NEGATIVE HEAT SINK
L1 EXCITING FIELD
L2 EXCITING ARMATURE
L3 ROTATING FIELD
L4 STATOR
\[ \text{POLARITY MARKING} \]

R1 VOLTAGE DROOP RHEOSTAT (SEE NOTE 1)
R2 REMOTE LEVEL RHEOSTAT
R5 SUPPRESSION RESISTOR
RFA REVOLVING FIELD ASS'Y
T1 VOLTAGE DROOP TRANSFORMER (SEE NOTE 1)
PT2 POWER TRANSFORMER ASSEMBLY
\[ \text{TERMINAL BOARD NUMBER} \]
\[ \text{WIRE NUMBER} \]

SR-4 GENERATOR SCHEMATIC (4/6 LEAD, SELF-EXCITED W/POWER TRANSFORMER)

NOTE: GENERATOR STATOR LEADS TERMINALS T4, T5, AND T6 WILL BE INTERNALLY CONNECTED TO FORM THE NEUTRAL LEAD (TO) ON FOUR LEAD GENERATORS.
VR4 Voltage Regulator Connections (All Except SR4B for 3500 Engines)

SMCS Code: 4467

Self Excited with Direct Connection to Generator
Digital Voltage Regulator Connections (All Except SR4B for 3500 Engines)

SMCS Code: 4467
10/12 Lead with Direct Connection to Generator

NOTE 1: GENERATOR STATOR LEADS T10, T11, & T12 WILL BE INTERNALLY CONNECTED ON 10 LEAD GENERATORS TO FORM ONE LEAD TO.

NOTE 2: HEAT SINK NEEDS TO BE EARTH GROUNDED

CR1-6 ROTATING RECTIFIERS
CR7,8 SURGE SUPPRESSION DIODES
E1 POSITIVE HEAT SINK
E2 NEGATIVE HEAT SINK
L1 EXCITOR FIELD (STATOR)
L2 EXCITER ARMATURE(ROTOR)
L3 REVOLVING FIELD(MAIN ROTOR)
L4 MAIN STATOR
L5 PM EXCITOR STATOR

M ROTATING PERMANENT MAGNET
R1 VOLTAGE DROOP BURDEN RESISTOR (SEE NOTE 3)
R5 SUPPRESSION RESISTOR
RFA REVOLVING FIELD ASS’Y
T1 VOLTAGE DROOP TRANSFORMER (SEE NOTE 3)

NOTE 3: DROOP TRANSFORMER AND DROOP BURDEN RESISTOR MAY OR MAY NOT BE SUPPLIED

NOTE 4: R1 TO BE MOUNTED WITHIN 3 METERS (10 FEET) OF THE REGULATOR
10/12 Lead with Sensing Isolation Transformer

NOTE 1: GENERATOR STATOR LEADS T10, T11, & T12 WILL BE INTERNALLY CONNECTED ON 10 LEAD GENERATORS TO FORM ONE LEAD, TO.

NOTE 2: HEAT SINK NEEDS TO BE EARTH GROUNDED

CR1-6 ROTATING RECTIFIERS
CR7,8 SURGE SUPPRESSION DIODES
E1 POSITIVE HEAT SINK
E2 NEGATIVE HEAT SINK
L1 EXCITER FIELD (STATOR)
L2 EXCITER ARMATURE (ROTOR)
L3 REVOLVING FIELD (MAIN ROTOR)
L4 MAIN STATOR
L5 PM EXCITOR STATOR

M ROTATING PERMANENT MAGNET
R1 VOLTAGE DROOP BURDEN RESISTOR (SEE NOTE 3)
R5 SUPPRESSION RESISTOR
RFA REVOLVING FIELD ASS’Y
T1 VOLTAGE DROOP TRANSFORMER (SEE NOTE 3)
PT2, PT3 SENSING ISOLATION TRANSFORMERS
□ WIRE NUMBER
Ο TERMINAL BOARD NUMBER
■ POLARITY MARKING

NOTE 3: DROOP TRANSFORMER AND DROOP BURDEN RESISTOR MAY OR MAY NOT BE SUPPLIED
NOTE 4: R1 TO BE MOUNTED WITHIN 3 METERS (10 FEET) OF THE REGULATOR
4/6 Lead with Direct Connection to Generator

**NOTE 1:** GENERATOR STATOR LEADS T4, T5, & T6 WILL BE CONNECTED ON 4 LEAD GENERATORS TO FORM ONE LEAD, T0.

**NOTE 2:** HEAT SINK NEEDS TO BE EARTH GROUNDED

---

**CR1-6 ROTATING RECTIFIERS**  
**CR7,8 SURGE SUPPRESSION DIODES**  
**E1 POSITIVE HEAT SINK**  
**E2 NEGATIVE HEAT SINK**  
**L1 EXCITER FIELD (STATOR)**  
**L2 EXCITER ARMATURE (ROTOR)**  
**L3 REVOLVING FIELD (MAIN ROTOR)**  
**L4 MAIN STATOR**  
**L5 PM EXCITER STATOR**  

**NOTE 3:** DROOP TRANSFORMER AND DROOP BURDEN RESISTOR MAY OR MAY NOT BE SUPPLIED

**M ROTATING PERMANENT MAGNET**  
**R1 VOLTAGE DROOP BURDEN RESISTOR (SEE NOTE 3)**  
**R5 SUPPRESSION RESISTOR**  
**RFA REVOLVING FIELD ASS'Y**  
**T1 VOLTAGE DROOP TRANSFORMER (SEE NOTE 3)**

- **WIRE NUMBER**
- **TERMINAL BOARD NUMBER**
- **POLARITY MARKING**

**NOTE 4:** R1 TO BE MOUNTED WITHIN 3 METERS (10 FEET) OF THE REGULATOR
4/6 Lead with Sensing Isolation Transformer

CR1–6 ROTATING RECTIFIERS
CR7,8 SURGE SUPPRESSION DIODES
E1 POSITIVE HEAT SINK
E2 NEGATIVE HEAT SINK
L2 EXCITER ARMATURE (ROTOR)
L3 REVOLVING FIELD (MAIN ROTOR)
L4 MAIN STATOR

NOTE 2: DROOP TRANSFORMER AND DROOP BURDEN RESISTOR MAY OR MAY NOT BE SUPPLIED

PT2, PT3 SENSING/ISOLATION TRANSFORMERS
M ROTATING PERMANENT MAGNET
R1 VOLTAGE DROOP BURDEN RESISTOR (SEE NOTE 2)
R5 SUPPRESSION RESISTOR
RFA REVOLVING FIELD ASS'Y
T1 VOLTAGE DROOP TRANSFORMER (SEE NOTE 2)

NOTE 3: R1 TO BE MOUNTED WITHIN 3 METERS (10 FEET) OF THE REGULATOR

NOTE 1: HEAT SINK NEEDS TO BE EARTH GROUNDED

Illustration 26
Options (All Except SR4B for 3500 Engines)

SMCS Code: 4450

Manual Control with Self Excitation
Manual Control with Power Transformer
Manual Control with Permanent Magnet Exciter

Diagram showing connections for manual control with permanent magnet exciter.
Radio Interference Filter

SENSING LEADS FROM GENERATOR

20 GEN

22 GEN

24 GEN

20 GENERATOR

RFI

22 REGULATOR

24 REGULATOR

TO REGULATOR

RFI RADIO INTERFERENCE SUPPRESSOR
Series Boost with VR3 Voltage Regulator

NOTE:
REMOVE LINK 6-7 FOR 50 HZ OPERATION

L1 EXCITER FIELD
SBT SERIES BOOST TRANSFORMER

TERMINAL NUMBERS
WIRE NUMBERS
Series Boost with VR4 Voltage Regulator

NOTE:
REMOVE LINK 6-7 FOR 50 HZ OPERATION

L1 EXCITER FIELD
SBT SERIES BOOST TRANSFORMER

TERMINAL NUMBERS
WIRE NUMBERS
Manual Control and Series Boost with Self Excitor

NOTE:
REMOVE LINK 6-7 FOR 50 HZ OPERATION
L1 EXCITER FIELD
SBT SERIES BOOST TRANSFORMER
Remote Voltage Adjust Rheostat
Connections

Connection when remote voltage adjust rheostat is provided

Connection with no remote voltage adjust rheostat

Note E: Jumper must be installed if remote voltage adjust rheostat is not provided.
Digital Voltage Regulator with Manual Control
Digital Voltage Regulator with Remote Voltage Adjust Rheostat

NOTE F: IF EMCP EXISTS, HARNESS AS 120-0830 IS REQUIRED TO PROVIDE POWER. IF NO EMCP IS PRESENT, MATCH WIRE IDENTITIES USING P3FO-T102 FOR B+ AND P4FO-T102 FOR B– ON GAS ENGINES. DIESEL ENGINES USE 40KOHM FOR B+ AND 40KOHM FOR B–. IF NO EMCP AND NO WIRING HARNESS IS PROVIDED USE 120-3592 HARNESS FOR DIGITAL VOLTAGE REGULATOR BATTERY POWER.

NOTE G: OPTIONAL REMOTE VOLTAGE ADJUST RHEOSTAT IS LOCATED IN THE CONTROL PANEL, IF PROVIDED.
Digital Voltage Regulator Customer Options

NOTE A: CONNECT SHIELD DRAIN WIRE(S) TO TERMINAL 45. INSULATE SHIELD DRAIN WIRE(S) AT RHEOSTAT END. DO NOT CONNECT SHIELD DRAIN WIRE(S) TO CHASSIS GROUND.
Digital Voltage Regulator Remote Communications Connections

NOTE D
RS485 DEVICE

TRANSMIT (+)
TRANSMIT (-)

RECEIVE (+)
RECEIVE (-)

COMMON

NOTE B
DB9 CONNECTOR

NOTE C
DB25 CONNECTOR FOR RS232 COMMUNICATIONS TO PC OR MODEM

J1 CONNECTOR IS LOCATED ON FRONT OF DVR.

NOTE A: POWER SUPPLY TOLERANCE IS ±15/-5% AND MUST BE ABLE TO SUPPLY 100 MA MINIMUM.

NOTE B: DATA CABLE SHIELDS SHOULD BE GROUNDED AT ONE END OF THE CABLE ONLY.

NOTE C: COMMON FOR THE RS485 DEVICE AND THE REGULATED POWER SUPPLY MUST NOT BE CONNECTED TO THE GENERATOR NEUTRAL.

NOTE D: RS485 DATA IS NEEDED TO CONVERT RS485 DATA TO RS232 FOR COMMUNICATIONS TO CUSTOMER PC OR MODEM.
Oil Field Generator Connections (SR4)

SMCS Code: 4450

Excitor Field Connection (Series or Parallel) and Voltage Sensing Leads
SR4B Generators for 3500 Engines

General Information (SR4B for 3500 Engines)

SMCS Code: 4450

Introduction

The Diagrams that follow apply to the SR4B Generators used with 3500 Engines.

Note: Diagrams for the SR4 and other SR4B Generators appear at the beginning of this manual.

Main Stator and Voltage Sensing Lead Connections (SR4B for 3500 Engines)

SMCS Code: 4453

6 Lead Wye Connection

![Diagram of 6 Lead Wye Connection]

<table>
<thead>
<tr>
<th>WYE CONNECTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>L1  L2  L3    N</td>
</tr>
<tr>
<td>U   V   W</td>
</tr>
<tr>
<td>T1  T2  T3    (T4, T5, T6)</td>
</tr>
</tbody>
</table>
6 Lead Delta Connection

<table>
<thead>
<tr>
<th>DELTA CONNECTION</th>
<th>REGULATOR SENSING</th>
</tr>
</thead>
<tbody>
<tr>
<td>L1</td>
<td>20</td>
</tr>
<tr>
<td>U</td>
<td>22</td>
</tr>
<tr>
<td>L2</td>
<td>24</td>
</tr>
<tr>
<td>L3</td>
<td></td>
</tr>
<tr>
<td>V</td>
<td></td>
</tr>
<tr>
<td>W</td>
<td></td>
</tr>
<tr>
<td>(T1, T6)</td>
<td>T3</td>
</tr>
<tr>
<td>(T2, T4)</td>
<td>T1</td>
</tr>
<tr>
<td>(T3, T5)</td>
<td>T2</td>
</tr>
</tbody>
</table>
Main Revolving Field Connections (SR4B for 3500 Engines)

SMCS Code: 4457

Two Diode Blocks and Surge Suppressor

![Diagram of two diode blocks and surge suppressor]

Legend:
- L2: Exiter Armature
- L3: Revolving Field
- R1: Static Discharge Resistor
- CR1-6: Rectifiers
- CR8: Surge Suppressor
Selection Guide for Voltage Regulator (SR4B for 3500 Engines)

SMCS Code: 4467

Selection Chart for SR4B Voltage Regulator

NOTE: VOLTAGES SHOWN ARE 60 Hz EQUIVALENTS

VR3 Voltage Regulator Connections (SR4B for 3500 Engines)

SMCS Code: 4467
Self Excited with Direct Connection to Generator

Illustration 44
Permanent Magnet Excitation
with Connections to an Isolation Transformer
VR3F Voltage Regulator Connections (SR4B for 3500 Engines)

SMCS Code: 4467

Knee Frequency Selection and Underfrequency Slope Selection

Illustration 46
Self Excited with Direct Connection to Generator
NOTE A: CONNECTIONS ARE MADE DIRECTLY TO THE GENERATOR SIDE OF THE POWER BUS BAR.
NOTE B: CONNECT T4, T5, & T6 TO THE 10 POWER BUS BAR.
NOTE C: CURRENT TRANSFORMER IS TO BE INSTALLED ON THE GENERATOR SIDE OF THE T2 POWER BUS BAR. POLARITY MARK MUST BE ON THE SIDE OPPOSITE THE GLASSIC BOARD.
NOTE D: DROOP MODULE
NOTE E: SENDING TRANSFORMERS (T(X1, T(X2) HAVE UNIQUE WIRE COLORS AND LABELS. SEE INDIVIDUAL TRANSFORMER DRAWINGS FOR DETAILS.
Digital Voltage Regulator Connections (SR4B for 3500 Engines)

SMCS Code: 4467
Illustration 49

Permanent Magnet Excitation with Connections to Isolation Transformers

NOTE A: CONNECTIONS ARE MADE DIRECTLY TO THE GENERATOR SIDE OF THE POWER BUSS BARS.

NOTE B: CONNECT T4, T5, & T6 TO THE T6 POWER BUSS BAR.

NOTE C: CURRENT TRANSFORMER IS TO BE INSTALLED ON THE GENERATOR SIDE OF THE T2 POWER BUSS BAR. POLARITY MARK MUST BE ON THE SIDE OPPOSITE THE GLASS BOARD. CONNECT WHITE WIRE MARKED 6 TO CONNECTOR WITH WHITE POLARITY MARKER ON THE CURRENT TRANSFORMER.

NOTE D: PLUG-IN MODULE REQUIRED TO BE USED WITH DIGITAL VOLTAGE REGULATOR INSTALLED IN MAIN TERMINAL STRIP.

NOTE E: SENDING TRANSFORMERS (T1, T2) HAVE UNIQUE WIRE COLORS AND LABELS. SEE INDIVIDUAL TRANSFORMER DRAWINGS FOR DETAILS.
Options (SR4B for 3500 Engines)

SMCS Code: 4450
VR3 with Manual Voltage Control and Self Excitation
VR3 Manual Control with Permanent Magnet Excitation
VR3 with Radio Interference Filter with Self Excitation
VR3 with Radio Interference and Permanent Magnet Excitation
Remote Voltage Adjust Rheostat
Connections

Connection when remote voltage adjust rheostat is provided
Connection with no remote voltage adjust rheostat

Note E: Jumper must be installed if remote voltage adjust rheostat is not provided.
VR3F with Manual Voltage Control and Self Excitation
VR3F with Manual Control and Permanent Magnet Excitation
VR3F with Radio Interference Filter and Self Excitation
VR3F with Radio Interference Filter and Permanent Magnet Excitation
Digital Voltage Regulator with Manual Control
Digital Voltage Regulator with Remote VAR

NOTE F: IF EMCP EXISTS, HARNESS AS 120-0300 IS REQUIRED TO PROVIDE POWER. IF NO EMCP IS PRESENT, MATCH WIRE IDENTITIES USING P350-T102 FOR B+ AND P600-T102 FOR B- ON GAS ENGINES. DIESEL ENGINES USE 40KJ100K FOR B+ AND 40KJ100K FOR B-. IF NO EMCP AND NO WIRING HARNESS IS PROVIDED USE 120-3592 HARNESS FOR DIGITAL VOLTAGE REGULATOR BATTERY POWER.

NOTE G: OPTIONAL REMOTE VOLTAGE ADJUST RHEOSTAT IS LOCATED IN THE CONTROL PANEL, IF PROVIDED.
Digital voltage Regulator Customer Options

NOTE A: CONNECT SHIELD DRAIN WIRE(S) TO TERMINAL 45. INSULATE SHIELD DRAIN WIRE(S) AT RHEOSTAT END. DO NOT CONNECT SHIELD DRAIN WIRE(S) TO CHASSIS GROUND.
Digital Voltage Regulator Remote Communications Connections

J1 connector is located on front of DVR.

NOTE A: Power supply tolerance is ±15/-5% and must be able to supply 100 mA minimum.

NOTE B: Data cable shields should be grounded at one end of the cable only.

NOTE C: Common for the RS485 device and the regulated power supply must not be connected to the generator neutral.

NOTE D: RS485 data is needed to convert RS485 data to RS232 for communications to customer PC or modem.
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