The Linde Electronic Governor Type EG-103 is a modified, self-contained governor for 115-volt, 50 to 60-cycle service. All the material in Form 9161 applies to Governor Type EG-103 with the exception of the following:

1. Governor Type EG-103 includes a relay to interrupt the motor armature circuit. The relay is operated by a remote control "On-Off" switch.

2. Governor Type EG-103 has two receptacles for leads entering the cabinet.

3. The speed indicator on Governor Type EG-103 is equipped with a "Hi-Lo" switch.

These differences are explained in detail below.

**Relay Circuit**

Refer to Figure 1 below. Notice that the contacts of the Carriage Drive Relay (CDR) are connected in series with the motor armature. This relay permits "On-Off" control of the motor by means of a switch ("external control switch"). The external control switch is conveniently mounted on auxiliary apparatus.

**Male and Female Receptacles**

All incoming leads on the basic governor described in Form 9161 are connected to a terminal strip. All incoming leads on Governor Type EG-103 enter the cabinet through two receptacles, one male and one female. These receptacles accommodate cable plugs from the associated apparatus, as indicated on the circuit diagram at the back of this appendix.

**Speed Indicator "Hi-Lo" Switch**

Refer to Figure 3, Form 9161. Notice that a single resistor (R-107) is in series with the speed indicator. Now refer to Figure 1 below. Either resistor R-107 or resistor R-108 can be put in series with the indicator depending upon the position of the "Hi-Lo" switch, SW-104.

The purpose of this arrangement is to improve the readability of the speed indicator at low speed settings. As outlined in Form 9161, the speed indicator shows full-scale deflection when the motor is run at top speed. But for many applications, you may never operate the motor at high speeds. A speed of less than a quarter of "top-speed" is sometimes "full-speed" for an operation. With the "Hi-Lo" switch, you can "expand" the lower quarter of the indicator scale when you operate at low speeds. This permits more accurate speed settings.

When the switch is in the "Hi" position, resistor (R-107) is in series with the indicator. The value of R-107 is such that the indicator shows full scale deflection for top motor speed (200 ipm).

When the switch is in the "Lo" position, a lesser resistance (R-108) is in series with the speed indicator. With the lower resistance, more current can flow through the indicator -- giving greater deflection -- for a given motor speed. Top motor speed would now give four times full scale deflection if the needle could travel that far. (Since the "Lo" range should be used only at speeds less than 50 ipm, there should be no reason for the needle actually going off scale.)

On "Hi," then, you get full scale deflection for a carriage speed of 200 ipm. On "Lo," you get full scale deflection for a carriage speed of 50 ipm; this enables you to make low speed settings with greater precision.

*FIG. 1 – Schematic Diagram Revisions*
Replacement Parts
FOR
ELECTRONIC GOVERNOR ASSEMBLY, PART NO. 25V05

HOW TO ORDER REPLACEMENT PARTS

1. Replacement parts can be identified on the keyed illustrations which follow this parts list. Each part bears a name and a number. The majority of parts also show in parentheses, the symbol number (R-101, C-103) which identifies the part on the circuit diagram. When ordering parts from LINDE, order by part number and part name as given on the illustrations, DO NOT ORDER BY PART NUMBER ALONE, OR BY A SYMBOL NUMBER.

2. Be sure that your order specifies the quantity of each part needed.

3. Always state the series or serial number of the governor on which the part is to be used. When available, list the governor symbol also. (This information appears on the governor nameplate.)

4. Indicate any special shipping instructions.

5. When ordering parts from LINDE, use the LINDE district office nearest you.

IMPORTANT: Almost all parts used in this governor are standard commercial parts. In an emergency you can order them from LINDE. However, it will save you time and money to purchase these parts from a local electronics outlet, or directly from the manufacturer. (Full descriptions of the parts are given in the list below.) When ordering, use the manufacturer's part number or designations. The LINDE part number is for use only when ordering from LINDE.

<table>
<thead>
<tr>
<th>PART NO.</th>
<th>SYMBOL</th>
<th>DESCRIPTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>04N33</td>
<td></td>
<td>Chassis</td>
</tr>
<tr>
<td>04N34</td>
<td></td>
<td>Terminal Strip Mounting Plate</td>
</tr>
<tr>
<td>04N46</td>
<td></td>
<td>Governor Guard</td>
</tr>
<tr>
<td>04N98</td>
<td></td>
<td>Cabinet</td>
</tr>
<tr>
<td>04N90</td>
<td></td>
<td>Front Panel</td>
</tr>
<tr>
<td>04N95</td>
<td></td>
<td>Base Plate</td>
</tr>
<tr>
<td>04N97</td>
<td></td>
<td>Receptacle Plate</td>
</tr>
<tr>
<td>80W85</td>
<td></td>
<td>Grommet - 3/8-in. S.A.E. Std. Rubber</td>
</tr>
<tr>
<td>88W70</td>
<td></td>
<td>Connector - Steel City Electric Cat. 522 (2 used)</td>
</tr>
<tr>
<td>90W10</td>
<td></td>
<td>Fuse Mount - Bussman Mfg. Co. - &quot;Buss&quot; H.K.P. (2 used)</td>
</tr>
<tr>
<td>90W30</td>
<td>SW104</td>
<td>Switch - Double Pole, Double Throw, Cat. No. 8373 (15/32-in. Bushing) Cutler-Hammer</td>
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<tr>
<td>90W30</td>
<td></td>
<td>Receptacle Housing - Pyle National Co. Cat. No. RAPP-1510 (2 used)</td>
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<tr>
<td>90W81</td>
<td></td>
<td>4-pole Male Contact Unit - Pyle National Co. Cat. #PA-415</td>
</tr>
<tr>
<td>90W82</td>
<td></td>
<td>4-pole Female Contact Unit - Pyle National Co. Cat. #RA-415</td>
</tr>
<tr>
<td>92W28</td>
<td>TR101</td>
<td>Transformer - Standard Transformer Co. Cat. No. P-3024</td>
</tr>
<tr>
<td>92W29</td>
<td>C103, C104, C105</td>
<td>Condenser - Mallory Cat. No. DP-357</td>
</tr>
<tr>
<td>92W28</td>
<td>TR102</td>
<td>Transformer - United Transformer Co. No. FT-2</td>
</tr>
<tr>
<td>92W29</td>
<td></td>
<td>Socket - American Phenolic Corp. No. 78RS8 (2 used)</td>
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<tr>
<td>92W30</td>
<td></td>
<td>Socket - Johnson No. 123-209B</td>
</tr>
<tr>
<td>92W31</td>
<td></td>
<td>Tube Clip - National Radio Products Type 12</td>
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<tr>
<td>92W32</td>
<td>SR101</td>
<td>Rectifier - Federal Selenium Rectifier No. 439D4200 500 MA</td>
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<tr>
<td>92W33</td>
<td></td>
<td>Bias Battery - Battery - EVEREADY 4-1/2 V No. 781</td>
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<tr>
<td>92W34</td>
<td>R101</td>
<td>Resistor - BTA 56,000 Ohms, International Resistance Co.</td>
</tr>
<tr>
<td>92W35</td>
<td>R104</td>
<td>Resistor - BTA 510,000 Ohms, International Resistance Co.</td>
</tr>
<tr>
<td>92W36</td>
<td>R103</td>
<td>Resistor - BTA 1,800 Ohms, International Resistance Co.</td>
</tr>
<tr>
<td>92W37</td>
<td>R105</td>
<td>Resistor - BTA 2,100 Ohms, International Resistance Co.</td>
</tr>
<tr>
<td>92W38</td>
<td>R102</td>
<td>Resistor - Ohmite &quot;Brown Devil&quot; - 10 Watt, 1 Ohm</td>
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<tr>
<td>92W39</td>
<td>C102</td>
<td>Condenser - Dubler PTE 6D5 0.005 MFD 600 WD</td>
</tr>
<tr>
<td>92W40</td>
<td>C101</td>
<td>Condenser - Dubler PTE 6S5 0.05 MFD 600 WVL</td>
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<td>Terminal Plate - Miller Mfg. Co. No. 450</td>
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<td>92W42</td>
<td>TD101</td>
<td>Time Delay Relay - Amperite Co. No. 2N030</td>
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<td>92W43</td>
<td>T102</td>
<td>Voltage Regulator Tube - RCA No. 0C3VR105</td>
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<td>92W44</td>
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<td>Battery Clamp - Weston Part No. EL-C3J</td>
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<td>92W45</td>
<td>F101,F102</td>
<td>Fuse - 2 Amp. No. 3 AG &quot;Sio-Blo&quot; Littlefuse Co. Cat. No. 313002</td>
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<tr>
<td>92W46</td>
<td>T101</td>
<td>Thyatron Tube - No. EL C3J</td>
</tr>
<tr>
<td>92W47</td>
<td></td>
<td>Terminal Strip - H. B. Jones Co. No. 12-140</td>
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<tr>
<td>92W57</td>
<td></td>
<td>Grommet</td>
</tr>
<tr>
<td>92W62</td>
<td></td>
<td>Carriage Drive Relay - Allied Control Co. Type BO 6A110 Double Pole, Double Throw</td>
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<tr>
<td></td>
<td></td>
<td>Relay - 110 V. 60 Cycle</td>
</tr>
<tr>
<td>92W63</td>
<td></td>
<td>Dial Plate - Mallory No. 369</td>
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<tr>
<td>92W64</td>
<td>P101</td>
<td>Potentiometer - Mallory, Type B100MP, 100,000 Ohms</td>
</tr>
<tr>
<td>92W65</td>
<td></td>
<td>Knob - Mallory No. 369</td>
</tr>
<tr>
<td>92W76</td>
<td>SW102</td>
<td>Reversing Switch - Cutler Hammer Inc. No. 7612-K3, Complete with Dust Cap</td>
</tr>
<tr>
<td>93W31</td>
<td></td>
<td>Condenser Socket</td>
</tr>
<tr>
<td>93W33</td>
<td></td>
<td>Meter</td>
</tr>
<tr>
<td>93W34</td>
<td>R108</td>
<td>Resistor - BTA 27,000 Ohms, International Resistance Co.</td>
</tr>
<tr>
<td>93W35</td>
<td>R107</td>
<td>Resistor - BTA 100,000 Ohms, International Resistance Co.</td>
</tr>
</tbody>
</table>

All circuit wire is No. 16 AWG stranded type SWR wire except for filament supply of tube T101, which is type TW No. 12 stranded building code wire.

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FIG. 2 – Front View

FIG. 3 – Bottom View with Base Plate Removed
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PUROX Welding and Cutting Apparatus

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Acetylene Generators

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SPECIAL EQUIPMENT
LINDE Jet-Piercing Equipment
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equipment
Steel-Conditioning Machines
Sub-Zero Cold Treatment Equipment

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Pressure-Welding Machines

OXYGEN THERAPY SUPPLIES
LINDE Oxygen U.S.P.
Oxygen Therapy Regulators
Oxygen Therapy Manifolds and Valves

SYNTHETIC CRYSTALS
LINDE Synthetic Sapphire, Ruby, Spinel, and Titania
Synthetic Calcium- and Cadmium Tungstates
Fine Alumina Abrasive

ORGANOSILICONS
LINDE Silane Monomers
Polysiloxane Polymers and Resins

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