Signal Systems

- 8-20.3(14)
- 8-20.3(14)a signal controllers
- 8-20.3(14)b signal heads
- 9-29.13 traffic signal controllers
- 9-29.15 flashing beacon control
- 9-29.16 vehicular signal heads
- 9-29.17 signal head mounting brackets…
- 9-29.19 pedestrian push buttons
- 9-29.20 pedestrian signals
Controller Cabinet (Back)
Controller (Front) and Police Door
Type “E” Service to the Left
Controller Cabinet and Transformer
Good House Keeping Helps
Seal Under Cabinet

J-6c
Note 3
Aerial Signal Hanger
Temp Span System

J-6g
Signal Pole, Pedestrian Heads
Side of Pole Mounts

Side Mount
Type B – Ped
Type K - Vehicle

J-6f
5 Section Head and Sign
ADA Requires Wheel Chair Access

Good

Bad
Ped Pole With “D” Mount

J-6f
Ped Pole
With “C”
Mount
Three Heads Three Types of Mounts
LED Red Arrow
Is Failing
4 Section Head

“M” Mount

8-20.3(14)B
4 and 5 section stacks
mount between second
and third display

9-29.16
NW Region Specials
Vented backplates
mounted with SS hardware
Two LT Lanes One RT Lane

Sign Required
GEOMETRICALLY PROGRAMMED LOUVER INSTALLATION INSTRUCTIONS

Please read these instructions carefully before proceeding with installation of the GPL.

I. Components
II. Installation Tools
III. Preparation of the GPL
IV. Preparation of the Signal Visor
V. Installation of the GPL in the Signal Visor
   A. Inserting
   B. Aiming
   C. Fastening

I. COMPONENTS

The GPL GL-1001 is completely assembled and ready for installation. Do not disassemble.

It is constructed of a Housing (2 halves) surrounding and enclosing the Baffles. Two Neoprene O-Rings encircle the GPL and seal it against the signal visor. (Fig. 1)

Six #10 thread forming screws are included with each assembly. Only four are required for fastening the GPL to the visor. (2 spares)

II. INSTALLATION TOOLS

An Installation Kit is recommended for installing the GPL in the signal visor.

The basic GL-2001 Installation Kit includes all of the necessary tools to install the GPL in a signal visor. The Optional GL-2002 Installation Kit includes all of the items in the basic GL-2001 and in addition includes a Cordless Makita Screw Gun with battery, battery charger, magnetic socket and larger tool box. See enclosed Tool Kit Bulletin #2007 for details.

III. PREPARATION OF THE GPL

Each plastic shipping bag contains one GPL and a bag containing 6 each #10-16 x 3/4" Slotted Hex Head Screws.

1. Remove GPL from shipping bag and locate the label. (Fig. 2) Place the GPL down on a flat surface (Fig. 3) with arrow pointing up.

As viewed from through lane. Green arrow programmed out on right side.
GPL
VIEW ANGLE ADJUSTMENTS

<table>
<thead>
<tr>
<th>ITEM</th>
<th>DESCRIPTION</th>
<th>PART NO.</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>SET OF 8 GPL COMBS, Stainless Steel</td>
<td>GL-1008</td>
</tr>
<tr>
<td>2</td>
<td>GPL COMB, 7&quot;</td>
<td>GL-0109</td>
</tr>
<tr>
<td>3</td>
<td>GPL COMB, 8&quot;</td>
<td>GL-0110</td>
</tr>
<tr>
<td>4</td>
<td>GPL COMB, 9&quot;</td>
<td>GL-0111</td>
</tr>
<tr>
<td>5</td>
<td>GPL COMB, 11&quot;</td>
<td>GL-0112</td>
</tr>
<tr>
<td>6</td>
<td>GPL COMB, 13&quot;</td>
<td>GL-0113</td>
</tr>
<tr>
<td>7</td>
<td>GPL COMB, 15&quot;</td>
<td>GL-0114</td>
</tr>
<tr>
<td>8</td>
<td>GPL COMB, 23⅛&quot;</td>
<td>GL-0115</td>
</tr>
<tr>
<td>9</td>
<td>GPL COMB, 42&quot;</td>
<td>GL-0116</td>
</tr>
</tbody>
</table>

**Programmable Visors**

DISTANCE (FEET)

<table>
<thead>
<tr>
<th>VIEW ANGLE (DEGREES)</th>
<th>40'</th>
<th>50'</th>
<th>60'</th>
<th>70'</th>
<th>80'</th>
<th>90'</th>
<th>100'</th>
<th>120'</th>
<th>150'</th>
<th>200'</th>
</tr>
</thead>
<tbody>
<tr>
<td>7°</td>
<td>4.0'</td>
<td>6.1'</td>
<td>7.2'</td>
<td>8.3'</td>
<td>9.5'</td>
<td>10.6'</td>
<td>11.8'</td>
<td>12.9'</td>
<td>14.1'</td>
<td>15.2'</td>
</tr>
<tr>
<td>8°</td>
<td>5.0'</td>
<td>7.1'</td>
<td>8.2'</td>
<td>9.3'</td>
<td>10.5'</td>
<td>11.6'</td>
<td>12.7'</td>
<td>13.9'</td>
<td>15.1'</td>
<td>16.2'</td>
</tr>
<tr>
<td>9°</td>
<td>6.0'</td>
<td>8.1'</td>
<td>9.2'</td>
<td>10.3'</td>
<td>11.4'</td>
<td>12.5'</td>
<td>13.7'</td>
<td>14.8'</td>
<td>15.9'</td>
<td>17.0'</td>
</tr>
<tr>
<td>11°</td>
<td>7.7'</td>
<td>9.8'</td>
<td>11.8'</td>
<td>13.8'</td>
<td>15.8'</td>
<td>17.8'</td>
<td>19.8'</td>
<td>21.8'</td>
<td>23.8'</td>
<td>25.8'</td>
</tr>
<tr>
<td>13°</td>
<td>9.1'</td>
<td>10.9'</td>
<td>12.7'</td>
<td>14.5'</td>
<td>16.3'</td>
<td>18.1'</td>
<td>19.9'</td>
<td>21.7'</td>
<td>23.5'</td>
<td>25.3'</td>
</tr>
<tr>
<td>15°</td>
<td>10.5'</td>
<td>13.2'</td>
<td>15.9'</td>
<td>18.6'</td>
<td>21.3'</td>
<td>24.0'</td>
<td>26.7'</td>
<td>29.4'</td>
<td>32.1'</td>
<td>34.8'</td>
</tr>
<tr>
<td>23⅛°</td>
<td>16.6'</td>
<td>20.5'</td>
<td>24.4'</td>
<td>28.3'</td>
<td>32.2'</td>
<td>36.1'</td>
<td>39.9'</td>
<td>43.8'</td>
<td>47.7'</td>
<td>51.6'</td>
</tr>
<tr>
<td>42°</td>
<td>30.7'</td>
<td>38.4'</td>
<td>46.1'</td>
<td>53.7'</td>
<td>61.4'</td>
<td>69.1'</td>
<td>76.8'</td>
<td>84.5'</td>
<td>92.1'</td>
<td>99.8'</td>
</tr>
</tbody>
</table>

**NOTE:**
- O DENOTES FACTORY SET BAFFLE POSITION FOR B.

**VIEW ANGLE**

<table>
<thead>
<tr>
<th>BAFFLE LOCATIONS</th>
<th>PART NO.</th>
</tr>
</thead>
<tbody>
<tr>
<td>7°</td>
<td>Move &quot;G&quot; Baffle to #11 position</td>
</tr>
<tr>
<td>8°</td>
<td>With all Baffles in factory set position (1,2,3,4,5,7,10)</td>
</tr>
<tr>
<td>9°</td>
<td>Move &quot;G&quot; Baffle to #8 position</td>
</tr>
<tr>
<td>11°</td>
<td>Move &quot;G&quot; Baffle to #6 position</td>
</tr>
<tr>
<td>13°</td>
<td>Omit &quot;G&quot; Baffle completely</td>
</tr>
<tr>
<td>15°</td>
<td>Omit &quot;G&quot; Baffle completely &amp; move &quot;F&quot; Baffle to #6 position</td>
</tr>
<tr>
<td>23⅛°</td>
<td>Omit &quot;F&quot;, &amp; &quot;G&quot; Baffle completely</td>
</tr>
<tr>
<td>42°</td>
<td>Omit &quot;E&quot;, &quot;F&quot;, &amp; &quot;G&quot; Baffle completely</td>
</tr>
</tbody>
</table>
Aiming of the GPL requires two people. One person located at the signal for making adjustments to the GPL, the other person on the ground to view the signal’s projection and to give instructions where to aim by adjusting the GPL within the visor.

FOR LANE CONTROL:

BAFFLES REMAIN VERTICAL

FOR LIMITING SIGHT DISTANCE:

ROTATE GPL 90°
BAFFLES HORIZONTAL

NOTE: Sight Distance application is limited to a maximum of 125’ from signal.
## Cone of Vision

<table>
<thead>
<tr>
<th>Distance from stop bar</th>
<th>Clearance above Rd.</th>
<th>Clearance above Rd.</th>
<th>Clearance above Rd.</th>
</tr>
</thead>
<tbody>
<tr>
<td>3 section head</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>40-feet</td>
<td>16.5 Ft.</td>
<td>17.3 FT.</td>
<td>16.5 Ft.</td>
</tr>
<tr>
<td>45-feet</td>
<td>16.5 Ft.</td>
<td>19.1 FT.</td>
<td>16.5 Ft.</td>
</tr>
<tr>
<td>50-feet</td>
<td>16.5 Ft.</td>
<td>20.9 FT.</td>
<td>16.5 Ft.</td>
</tr>
<tr>
<td>53-150-feet</td>
<td>16.5 Ft.</td>
<td>21.9 FT.</td>
<td>16.5 Ft.</td>
</tr>
</tbody>
</table>

5 Section Cluster is the Same Height as 3 Section Head

Link to Design Manual Page 448
Terminal Can
Maintain Ten Foot of Clearance from ALL Power Lines
Flow Control Signal
Design Manual – Signals page 850-28a

One Through Lane
With Permissive Left Turn

- Approx. 4 ft
- 8 ft min.

Center Stripe

Lane

R
Y
G
R
Y
G
Two Through Lanes With Permissive Left Turn
Two Through Lanes and One Left Turn Storage Lane
With Permissive Left Turn
One Through Lane With Protected Left Turn Phasing
Two Through Lanes With Split Phasing for Protected Left Turns
(Left turn and through movements terminate together.)
One Through Lane, a Dual Purpose (Left or Through) Lane and One Left Turn Storage Lane With Split Phasing for Protected Left Turns (Left turn and through movements terminate together.)
One Through Lane and One Left Turn Storage Lane With Protected Left Turn Phasing

(Left turn and through movements terminate independently.)
Two Through Lanes and One Left Turn Storage Lane
With Protected Left Turn Phasing

(Left turn and through movements terminate independently.)
One Through Lane With Protected / Permissive Left Turn Phasing
One Through Lane and One Left Turn Storage Lane With Protected / Permissive Left Turn Phasing
Two Through Lanes and One Left Turn Storage Lane
With Protected / Permissive Left Turn Phasing
One Through Lane and Two Left Turn Storage Lanes With Protected Left Turn Phasing

(Left Turn and Through Movements Terminate Independently.)
Two Through Lanes and Two Left Turn Storage Lanes
With Protected Left Turn Phasing

(Left turn and through movements terminate independently.)