

## PRODUCT CHANGE NOTIFICATION

PCN No: PCN-1026 Issue Date: 3/6/2024

| Parts Affected | OR1-10.0-RED-F4P     | Old Rev. | A | New Rev. | В |
|----------------|----------------------|----------|---|----------|---|
|                | OR1-10.0-RED-F4P-2   |          | A |          | В |
|                | OR1-10.0-RED-F4P-4   |          | A |          | В |
|                | OR1-10.0-RED-F4P-5   |          | A |          | В |
|                | OR1-10.0-RED-F4P-6   |          | A |          | В |
|                | OR1-10.0-RED-F4P-9   |          | A |          | В |
|                | OR2-6.0-RED-F6PD67PR |          | A |          | В |
|                | OR2-6.0-RED-F6PZ67PR |          | A |          | В |
|                | OR2-6.0-YLW-F6PD67PR |          | A |          | В |
|                | OR2-6.0-YLW-F6PZ67PR |          | A |          | В |
|                | OR3-6.0-RED-F6PD67PR |          | A |          | В |
|                | OR3-6.0-RED-F6PZ67PR |          | A |          | В |
|                | OR3-6.0-RED-F9PD67PR |          | A |          | В |
|                | OR3-6.0-RED-F9PZ67PR |          | A |          | В |
|                | OR3-6.0-YLW-F6PD67PR |          | A |          | В |
|                | OR3-6.0-YLW-F6PZ67PR |          | A |          | В |
|                | OR3-6.0-YLW-F9PD67PR |          | A |          | В |
|                | OR3-6.0-YLW-F9PZ67PR |          | A |          | В |
|                | ORFLP1-RED           |          | В |          | С |
|                | ORFLP1-YLW           |          | В |          | С |
|                | ORFLP2-RED           |          | В |          | С |
|                | ORFLP2-YLW           |          | В |          | С |
|                | ORFLP3-RED           |          | A |          | В |
|                | ORFLP3-YLW           |          | A |          | В |
|                | R13-10.0-RED         |          | Е |          | F |
|                | R13-8.0-RED          |          | Е |          | F |
|                | R1R-1.2-RED-ASSEMBLY |          | С |          | D |
|                | R2F-12.0-RED         |          | С |          | D |
|                | R2F-20.0-RED         |          | С |          | D |

These changes have been reviewed and approved by Bivar management per Bivar Procedure: Engineering Change Order and Part Change Notification, SOP-040, SOP-ENG-045

Please contact Bivar Inc. at www.bivar.com/contact or speak to a Bivar representative for any questions or support requirements within 30 days of issue date.



## PRODUCT CHANGE NOTIFICATION

PCN No: PCN-1026 Issue Date: 3/6/2024

| Parts Affected | R2F-24.0-RED | Old Rev. | С | New Rev. | D |
|----------------|--------------|----------|---|----------|---|
|                | R2F-4.0-RED  |          | С |          | D |
|                | R2F-8.0-RED  |          | С |          | D |
|                | R2LC-1.4-RED |          | С |          | D |
|                | R2LC-1.4-YLW |          | С |          | D |
|                | R2LC-1.5-RED |          | С |          | D |

Change Will Affect: LED optical, electrical and mechanical characteristics.

**Description of change:** Changes on LEDs are reflected in Red as shown in the table below. The current part numbers are being discontinued in accordance with *EOL-1003*.

|         | Part Number   | Forward<br>Voltage | Abs. Power<br>Dissipation | Abs. Forward<br>Current | Wave Solder Temp   | Forward<br>Current (Typ) | Dominant<br>Wavelength | Luminous Intensity  | View Angle<br>2θ 1/2 (deg) |
|---------|---------------|--------------------|---------------------------|-------------------------|--------------------|--------------------------|------------------------|---------------------|----------------------------|
| New     | R20GRN-V-0025 | 2.6 ~ 3.4Vdc       | 120 mW                    | 20 mA                   | 260°C Max - 3 Sec  | 10-20mA                  | 517 ~ 527 nm           | 20,000 ~ 40,000 mcd | 25                         |
| Current | R20GRN-V-3045 | 3.0 ~ 3.8Vdc       | 220 mW                    | 50 mA                   | 260°C Max, < 5 Sec | 20 mA                    | 516 ~ 526 nm           | 6,000 ~ 8,000 mcd   | 30/45                      |
| New     | R50RED-4-0030 | 1.8 ~ 2.4Vdc       | 60 mW                     | 30 mA                   | 260°C Max - 3 Sec  | 10-20mA                  | 617 ~ 627 nm           | 2,500 ~ 3,000 mcd   | 30                         |
| Current | R50RED-4-0045 | 1.8 ~ 2.6Vdc       | 140mW                     | 80 mA                   | 260°C Max, < 5 Sec | 50 mA                    | 620 ~ 635 nm           | 12,000 ~ 18,000 mcd | 45                         |
| New     | R50RED-F-0120 | 1.8 ~ 2.4Vdc       | 60 mW                     | 30 mA                   | 260°C Max - 3 Sec  | 10-20mA                  | 617 ~ 627 nm           | 400 ~ 600 mcd       | 120                        |
| Current | R50RED-F-0160 | 1.8 ~ 2.6Vdc       | 140mW                     | 80 mA                   | 260°C Max, < 5 Sec | 50 mA                    | 620 ~ 635 nm           | 500 ~ 1,000 mcd     | 160                        |
| New     | R50RED-V-0025 | 1.8 ~ 2.4Vdc       | 120 mW                    | 50 mA                   | 260°C Max - 3 Sec  | 50mA Max                 | 617 ~ 627 nm           | 15,000 ~ 30,000 mcd | 25                         |
| Current | R50RED-V-3045 | 1.8 ~ 2.6Vdc       | 140mW                     | 80 mA                   | 260°C Max, < 5 Sec | 50 mA                    | 620 ~ 635 nm           | 6,000 ~ 10,000 mcd  | 30/45                      |
| New     | R50YLW-4-0030 | 1.8 ~ 2.4Vdc       | 60 mW                     | 30 mA                   | 260°C Max - 3 Sec  | 10-20mA                  | 588 ~ 596 nm           | 3,000 ~ 4,000 mcd   | 30                         |
| Current | R50YLW-4-0045 | 1.8 ~ 2.6Vdc       | 140mW                     | 80 mA                   | 260°C Max, < 5 Sec | 50 mA                    | 588 ~ 596 nm           | 12,000 ~ 18,000 mcd | 45                         |
| New     | R50YLW-5-0090 | 1.8 ~ 2.4Vdc       | 60 mW                     | 30 mA                   | 260°C Max - 3 Sec  | 10-20mA                  | 588 ~ 596 nm           | 1,500 ~ 2,000 mcd   | 90                         |
| Current | R50YLW-5-0080 | 1.8 ~ 2.6Vdc       | 140mW                     | 80 mA                   | 260°C Max, < 5 Sec | 50 mA                    | 588 ~ 596 nm           | 1,500 ~ 3,000 mcd   | 80                         |
| New     | R50YLW-F-0120 | 1.8 ~ 2.4Vdc       | 60 mW                     | 30 mA                   | 260°C Max - 3 Sec  | 10-20mA                  | 588 ~ 596 nm           | 400 ~ 600 mcd       | 120                        |
| Current | R50YLW-F-0160 | 1.8 ~ 2.6Vdc       | 140mW                     | 80 mA                   | 260°C Max, < 5 Sec | 50 mA                    | 588 ~ 596 nm           | 800 ~ 1,000 mcd     | 160                        |
| New     | R50YLW-V-0025 | 1.8 ~ 2.4Vdc       | 120 mW                    | 50 mA                   | 260°C Max - 3 Sec  | 50mA Max                 | 588 ~ 596 nm           | 15,000 ~ 30,000 mcd | 25                         |
| Current | R50YLW-V-3045 | 1.8 ~ 2.6Vdc       | 140mW                     | 80 mA                   | 260°C Max, < 5 Sec | 50 mA                    | 588 ~ 596 nm           | 4,000 ~ 6,000 mcd   | 30/45                      |

Effective Date of Change: March 6, 2024.

**Reason for Change:** New chips are being used due to chip obsolescence.

These changes have been reviewed and approved by Bivar management per Bivar Procedure: Engineering Change Order and Part Change Notification, SOP-040, SOP-ENG-045

Please contact Bivar Inc. at www.bivar.com/contact or speak to a Bivar representative for any questions or support requirements within 30 days of issue date.



## PRODUCT CHANGE NOTIFICATION

PCN No: PCN-1026 Issue Date: 3/6/2024

## **Appendix:**

Changes on LEDs will be reflected on the assembly items below. Changes on assembly items are the same as their component item. Please refer to the changes highlighted in red in the table above.

| OR2-6.0-RED-F6PZ67PR         R50RED-4-0045         R50RED-4-0030           OR3-6.0-RED-F6PZ67PR         R50RED-4-0045         R50RED-4-0030           OR3-6.0-RED-F6PZ67PR         R50RED-4-0045         R50RED-4-0030           OR3-6.0-RED-F9PZ67PR         R50RED-4-0045         R50RED-4-0030           OR3-6.0-RED-F9PZ67PR         R50RED-4-0045         R50RED-4-0030           OR4-6.0-RED-F9PZ67PR         R50RED-4-0045         R50RED-4-0030           OR4-6.0-RED-F9PZ67PR         R50RED-4-0045         R50RED-4-0030           OR4-6.0-RED-F9PZ67PR         R50RED-4-0045         R50RED-4-0030           OR4-6.0-RED-F9PZ67PR         R50RED-4-0045         R50RED-4-0030           OR4-2-RED         R50RED-4-0045         R50RED-4-0030           OR4-2-RED         R50RED-4-0045         R50RED-4-0030           OR4-2-RED         R50RED-4-0045         R50RED-4-0030           R13-10.0-RED         R50RED-4-0045         R50RED-4-0030           R13-8.0-RED         R50RED-4-0045         R50RED-4-0030           R2F-12.0-RED         R50RED-4-0045         R50RED-4-0030           R2F-12.0-RED         R50RED-4-0045         R50RED-4-0030           R2F-24.0-RED         R50RED-4-0045         R50RED-4-0030           R2F-4.0-RED         R50RED-4-0045         R50RED-4-0030<  | Assembly Item        | Obsolete Component Item | New Component Item |  |  |
|--|----------------------|-------------------------|--------------------|--|--|
| OR3-6.0-RED-F6PD67PR         R50RED-4-0045         R50RED-4-0030           OR3-6.0-RED-F6PZ67PR         R50RED-4-0045         R50RED-4-0030           OR3-6.0-RED-F9PZ67PR         R50RED-4-0045         R50RED-4-0030           OR3-6.0-RED-F9PZ67PR         R50RED-4-0045         R50RED-4-0030           OR4-6.0-RED-F9PZ67PR         R50RED-4-0045         R50RED-4-0030           OR4-6.0-RED-F9PZ67PR         R50RED-4-0045         R50RED-4-0030           ORFLP1-RED         R50RED-4-0045         R50RED-4-0030           ORFLP2-RED         R50RED-4-0045         R50RED-4-0030           ORFLP3-RED         R50RED-4-0045         R50RED-4-0030           ORFLP3-RED         R50RED-4-0045         R50RED-4-0030           R13-10-RED         R50RED-4-0045         R50RED-4-0030           R13-10-RED         R50RED-4-0045         R50RED-4-0030           R13-10-RED         R50RED-4-0045         R50RED-4-0030           R13-10-RED         R50RED-4-0045         R50RED-4-0030           R2F-12-RED         R50RED-4-0045         R50RED-4-0030           R2F-12-RED         R50RED-4-0045         R50RED-4-0030           R2F-24-RED         R50RED-4-0045         R50RED-4-0030           R2F-24-RED         R50RED-4-0045         R50RED-4-0030           R  | OR2-6.0-RED-F6PD67PR | R50RED-4-0045           | R50RED-4-0030      |  |  |
| OR3-6.0-RED-F6PZ67PR         R50RED-4-0045         R50RED-4-0030           OR3-6.0-RED-F9PD67PR         R50RED-4-0045         R50RED-4-0030           OR3-6.0-RED-F9PZ67PR         R50RED-4-0045         R50RED-4-0030           OR4-6.0-RED-F9PZ67PR         R50RED-4-0045         R50RED-4-0030           OR4-6.0-RED-F9PZ67PR         R50RED-4-0045         R50RED-4-0030           ORFLP1-RED         R50RED-4-0045         R50RED-4-0030           ORFLP2-RED         R50RED-4-0045         R50RED-4-0030           ORFLP3-RED         R50RED-4-0045         R50RED-4-0030           ORFLP3-RED         R50RED-4-0045         R50RED-4-0030           R13-10.0-RED         R50RED-4-0045         R50RED-4-0030           R13-8.0-RED         R50RED-4-0045         R50RED-4-0030           R13-8.0-RED         R50RED-4-0045         R50RED-4-0030           R27-12.0-RED         R50RED-4-0045         R50RED-4-0030           R27-12.0-RED         R50RED-4-0045         R50RED-4-0030           R27-20-RED         R50RED-4-0045         R50RED-4-0030           R27-24.0-RED         R50RED-4-0045         R50RED-4-0030           R27-4.0-RED         R50RED-4-0045         R50RED-4-0030           R27-4.0-RED         R50RED-4-0045         R50RED-4-0030 <td< td=""><td>OR2-6.0-RED-F6PZ67PR</td><td>R50RED-4-0045</td><td>R50RED-4-0030</td></td<>   | OR2-6.0-RED-F6PZ67PR | R50RED-4-0045           | R50RED-4-0030      |  |  |
| OR3-6.0-RED-F9PD67PR         R50RED-4-0045         R50RED-4-0030           OR3-6.0-RED-F9PZ67PR         R50RED-4-0045         R50RED-4-0030           OR4-6.0-RED-F9PZ67PR         R50RED-4-0045         R50RED-4-0030           OR4-6.0-RED-F9PZ67PR         R50RED-4-0045         R50RED-4-0030           ORFLP1-RED         R50RED-4-0045         R50RED-4-0030           ORFLP2-RED         R50RED-4-0045         R50RED-4-0030           ORFLP3-RED         R50RED-4-0045         R50RED-4-0030           R13-10.0-RED         R50RED-4-0045         R50RED-4-0030           R13-8.0-RED         R50RED-4-0045         R50RED-4-0030           R2F-12.0-RED         R50RED-4-0045         R50RED-4-0030           R2F-12.0-RED         R50RED-4-0045         R50RED-4-0030           R2F-20.0-RED         R50RED-4-0045         R50RED-4-0030           R2F-20-RED         R50RED-4-0045         R50RED-4-0030           R2F-24-0-RED         R50RED-4-0045         R50RED-4-0030           R2F-3-0-RED         R50RED-4-0045         R50RED-4-0030           R2F-8.0-RED         R50RED-4-0045         R50RED-4-0030           R21-1-3-RED         R50RED-4-0045         R50RED-4-0030           R21-1-3-RED         R50RED-4-0045         R50RED-4-0030           R21-8-  | OR3-6.0-RED-F6PD67PR | R50RED-4-0045           | R50RED-4-0030      |  |  |
| OR3-6.0-RED-F9PZ67PR         R50RED-4-0045         R50RED-4-0030           OR4-6.0-RED-F9PD67PR         R50RED-4-0045         R50RED-4-0030           OR4-6.0-RED-F9PZ67PR         R50RED-4-0045         R50RED-4-0030           ORFLP1-RED         R50RED-4-0045         R50RED-4-0030           ORFLP2-RED         R50RED-4-0045         R50RED-4-0030           ORFLP3-RED         R50RED-4-0045         R50RED-4-0030           ORFL93-RED         R50RED-4-0045         R50RED-4-0030           R13-10.0-RED         R50RED-4-0045         R50RED-4-0030           R13-8.0-RED         R50RED-4-0045         R50RED-4-0030           R2F-12.0-RED         R50RED-4-0045         R50RED-4-0030           R2F-20.0-RED         R50RED-4-0045         R50RED-4-0030           R2F-20.0-RED         R50RED-4-0045         R50RED-4-0030           R2F-20.0-RED         R50RED-4-0045         R50RED-4-0030           R2F-24.0-RED         R50RED-4-0045         R50RED-4-0030           R2F-38.0-RED         R50RED-4-0045         R50RED-4-0030           R2F-4.0-RED         R50RED-4-0045         R50RED-4-0030           R2LC-1.4-RED         R50RED-4-0045         R50RED-4-0030           R2LC-1.5-RED         R50RED-4-0045         R50RED-4-0030           R2LC-1.5-RE  | OR3-6.0-RED-F6PZ67PR | R50RED-4-0045           | R50RED-4-0030      |  |  |
| OR4-6.0-RED-F9PD67PR         R50RED-4-0045         R50RED-4-0030           OR4-6.0-RED-F9PZ67PR         R50RED-4-0045         R50RED-4-0030           ORFLP1-RED         R50RED-4-0045         R50RED-4-0030           ORFLP2-RED         R50RED-4-0045         R50RED-4-0030           ORFLP3-RED         R50RED-4-0045         R50RED-4-0030           R13-10.0-RED         R50RED-4-0045         R50RED-4-0030           R13-8.0-RED         R50RED-4-0045         R50RED-4-0030           R13-8.0-RED         R50RED-4-0045         R50RED-4-0030           R2F-12.0-RED         R50RED-4-0045         R50RED-4-0030           R2F-12.0-RED         R50RED-4-0045         R50RED-4-0030           R2F-20.0-RED         R50RED-4-0045         R50RED-4-0030           R2F-24.0-RED         R50RED-4-0045         R50RED-4-0030           R2F-4.0-RED         R50RED-4-0045         R50RED-4-0030           R2F-8.0-RED         R50RED-4-0045         R50RED-4-0030           R2F-8.0-RED         R50RED-4-0045         R50RED-4-0030           R2LC-1.4-RED         R50RED-4-0045         R50RED-4-0030           R2LC-1.5-RED         R50RED-4-0045         R50RED-4-0030           R2LC-1.5-RED         R50RED-4-0045         R50RED-4-0030           R2LC-1.5-RED  | OR3-6.0-RED-F9PD67PR | R50RED-4-0045           | R50RED-4-0030      |  |  |
| OR4-6.0-RED-F9PZ67PR         R50RED-4-0045         R50RED-4-0030           ORFLP1-RED         R50RED-4-0045         R50RED-4-0030           ORFLP2-RED         R50RED-4-0045         R50RED-4-0030           ORFLP3-RED         R50RED-4-0045         R50RED-4-0030           R13-10.0-RED         R50RED-4-0045         R50RED-4-0030           R13-8.0-RED         R50RED-4-0045         R50RED-4-0030           R2F-12.0-RED         R50RED-4-0045         R50RED-4-0030           R2F-20.0-RED         R50RED-4-0045         R50RED-4-0030           R2F-20.0-RED         R50RED-4-0045         R50RED-4-0030           R2F-24.0-RED         R50RED-4-0045         R50RED-4-0030           R2F-8.0-RED         R50RED-4-0045         R50RED-4-0030           R2F-8.0-RED         R50RED-4-0045         R50RED-4-0030           R2F-8.0-RED         R50RED-4-0045         R50RED-4-0030           R2F-8.0-RED         R50RED-4-0045         R50RED-4-0030           R2LC-1.4-RED         R50RED-4-0045         R50RED-4-0030           R2LC-1.5-RED         R50RED-4-0045         R50RED-4-0030           R2-6.0-YLW-F6PD67PR         R50YLW-4-0045         R50YLW-4-0030           OR2-6.0-YLW-F6PD67PR         R50YLW-4-0045         R50YLW-4-0030           OR3-6.0-YLW-F  | OR3-6.0-RED-F9PZ67PR | R50RED-4-0045           | R50RED-4-0030      |  |  |
| ORFLP1-RED         R50RED-4-0045         R50RED-4-0030           ORFLP2-RED         R50RED-4-0045         R50RED-4-0030           ORFLP3-RED         R50RED-4-0045         R50RED-4-0030           R13-10.0-RED         R50RED-4-0045         R50RED-4-0030           R13-8.0-RED         R50RED-4-0045         R50RED-4-0030           R2F-12.0-RED         R50RED-4-0045         R50RED-4-0030           R2F-20.0-RED         R50RED-4-0045         R50RED-4-0030           R2F-24.0-RED         R50RED-4-0045         R50RED-4-0030           R2F-4.0-RED         R50RED-4-0045         R50RED-4-0030           R2F-8.0-RED         R50RED-4-0045         R50RED-4-0030           R2F-8.0-RED         R50RED-4-0045         R50RED-4-0030           R2LC-1.4-RED         R50RED-4-0045         R50RED-4-0030           R2LC-1.5-RED         R50RED-4-0045         R50RED-4-0030           R2LC-1.5-RED         R50RED-4-0045         R50RED-4-0030           R2-6.0-YLW-F6PD67PR         R50YLW-4-0045         R50YLW-4-0030           OR2-6.0-YLW-F6PD67PR         R50YLW-4-0045         R50YLW-4-0030           OR3-6.0-YLW-F6PD67PR         R50YLW-4-0045         R50YLW-4-0030           OR3-6.0-YLW-F9PD67PR         R50YLW-4-0045         R50YLW-4-0030           OR4-  | OR4-6.0-RED-F9PD67PR | R50RED-4-0045           | R50RED-4-0030      |  |  |
| ORFLP2-RED         R50RED-4-0045         R50RED-4-0030           ORFLP3-RED         R50RED-4-0045         R50RED-4-0030           R13-10.0-RED         R50RED-4-0045         R50RED-4-0030           R13-8.0-RED         R50RED-4-0045         R50RED-4-0030           R2F-12.0-RED         R50RED-4-0045         R50RED-4-0030           R2F-20.0-RED         R50RED-4-0045         R50RED-4-0030           R2F-24.0-RED         R50RED-4-0045         R50RED-4-0030           R2F-4.0-RED         R50RED-4-0045         R50RED-4-0030           R2F-8.0-RED         R50RED-4-0045         R50RED-4-0030           R2F-8.0-RED         R50RED-4-0045         R50RED-4-0030           R2LC-1.4-RED         R50RED-4-0045         R50RED-4-0030           R2LC-1.5-RED         R50RED-4-0045         R50RED-4-0030           R2LC-1.5-RED         R50RED-4-0045         R50RED-4-0030           R2-6.0-YLW-F6PD67PR         R50YLW-4-0045         R50YLW-4-0030           R2-6.0-YLW-F6PZ67PR         R50YLW-4-0045         R50YLW-4-0030           R3-6.0-YLW-F6PZ67PR         R50YLW-4-0045         R50YLW-4-0030           R3-6.0-YLW-F9PZ67PR         R50YLW-4-0045         R50YLW-4-0030           R3-6.0-YLW-F9PZ67PR         R50YLW-4-0045         R50YLW-4-0030 <t< td=""><td>OR4-6.0-RED-F9PZ67PR</td><td>R50RED-4-0045</td><td>R50RED-4-0030</td></t<>  | OR4-6.0-RED-F9PZ67PR | R50RED-4-0045           | R50RED-4-0030      |  |  |
| ORFLP3-RED         R50RED-4-0045         R50RED-4-0030           R13-10.0-RED         R50RED-4-0045         R50RED-4-0030           R13-8.0-RED         R50RED-4-0045         R50RED-4-0030           R2F-12.0-RED         R50RED-4-0045         R50RED-4-0030           R2F-20.0-RED         R50RED-4-0045         R50RED-4-0030           R2F-24.0-RED         R50RED-4-0045         R50RED-4-0030           R2F-4.0-RED         R50RED-4-0045         R50RED-4-0030           R2F-8.0-RED         R50RED-4-0045         R50RED-4-0030           R2LC-1.4-RED         R50RED-4-0045         R50RED-4-0030           R2LC-1.5-RED         R50RED-4-0045         R50RED-4-0030           R2LC-1.5-RED         R50RED-4-0045         R50RED-4-0030           R2-6.0-YLW-F6PD67PR         R50YLW-4-0045         R50YLW-4-0030           OR2-6.0-YLW-F6PD67PR         R50YLW-4-0045         R50YLW-4-0030           OR3-6.0-YLW-F6PD67PR         R50YLW-4-0045         R50YLW-4-0030           OR3-6.0-YLW-F9PD67PR         R50YLW-4-0045         R50YLW-4-0030           OR3-6.0-YLW-F9PD67PR         R50YLW-4-0045         R50YLW-4-0030           OR3-6.0-YLW-F9PZ67PR         R50YLW-4-0045         R50YLW-4-0030           OR4-6.0-YLW-F9PZ67PR         R50YLW-4-0045         R50YLW-4-0030 </td <td>ORFLP1-RED</td> <td>R50RED-4-0045</td> <td>R50RED-4-0030</td>   | ORFLP1-RED           | R50RED-4-0045           | R50RED-4-0030      |  |  |
| R13-10.0-RED R50RED-4-0045 R50RED-4-0030 R13-8.0-RED R50RED-4-0045 R50RED-4-0030 R2F-12.0-RED R50RED-4-0045 R50RED-4-0030 R2F-20.0-RED R50RED-4-0045 R50RED-4-0030 R2F-24.0-RED R50RED-4-0045 R50RED-4-0030 R2F-24.0-RED R50RED-4-0045 R50RED-4-0030 R2F-4.0-RED R50RED-4-0045 R50RED-4-0030 R2F-4.0-RED R50RED-4-0045 R50RED-4-0030 R2F-8.0-RED R50RED-4-0045 R50RED-4-0030 R2LC-1.4-RED R50RED-4-0045 R50RED-4-0030 R2LC-1.5-RED R50RED-4-0045 R50RED-4-0030 R2LC-1.5-RED R50RED-4-0045 R50RED-4-0030 R2-6.0-YLW-F6PD67PR R50YLW-4-0045 R50YLW-4-0030 R3-6.0-YLW-F6PD67PR R50YLW-4-0045 R50YLW-4-0030 R3-6.0-YLW-F6PD67PR R50YLW-4-0045 R50YLW-4-0030 R3-6.0-YLW-F6PD67PR R50YLW-4-0045 R50YLW-4-0030 R3-6.0-YLW-F9PD67PR R50YLW-4-0045 R50YLW-4-0030 R3-6.0-YLW-F9PZ67PR R50YLW-4-0045 R50YLW-4-0030 R3-6.0-YLW-F9PZ67PR R50YLW-4-0045 R50YLW-4-0030 R3-6.0-YLW-F9PZ67PR R50YLW-4-0045 R50YLW-4-0030 R6-6.0-YLW-F9PZ67PR R50YLW-4-0045 R50YLW-4-0030 R7-6.0-YLW-F9PZ67PR R5 | ORFLP2-RED           | R50RED-4-0045           | R50RED-4-0030      |  |  |
| R13-8.0-RED       R50RED-4-0045       R50RED-4-0030         R2F-12.0-RED       R50RED-4-0045       R50RED-4-0030         R2F-20.0-RED       R50RED-4-0045       R50RED-4-0030         R2F-24.0-RED       R50RED-4-0045       R50RED-4-0030         R2F-4.0-RED       R50RED-4-0045       R50RED-4-0030         R2F-8.0-RED       R50RED-4-0045       R50RED-4-0030         R2LC-1.4-RED       R50RED-4-0045       R50RED-4-0030         R2LC-1.5-RED       R50RED-4-0045       R50RED-4-0030         0R2-6.0-YLW-F6PD67PR       R50YLW-4-0045       R50YLW-4-0030         0R2-6.0-YLW-F6PZ67PR       R50YLW-4-0045       R50YLW-4-0030         0R3-6.0-YLW-F6PD67PR       R50YLW-4-0045       R50YLW-4-0030         0R3-6.0-YLW-F9PD67PR       R50YLW-4-0045       R50YLW-4-0030         0R3-6.0-YLW-F9PD67PR       R50YLW-4-0045       R50YLW-4-0030         0R3-6.0-YLW-F9PD67PR       R50YLW-4-0045       R50YLW-4-0030         0R4-6.0-YLW-F9PZ67PR       R50YLW-4-0045       R50YLW-4-0030         0R4-6.0-YLW-F9PZ67PR       R50YLW-4-0045       R50YLW-4-0030         0RFLP1-YLW       R50YLW-4-0045       R50YLW-4-0030         0RFLP2-YLW       R50YLW-4-0045       R50YLW-4-0030         0RFLP3-YLW       R50YLW-4-0045       R50YLW-4-0030  | ORFLP3-RED           | R50RED-4-0045           | R50RED-4-0030      |  |  |
| R2F-12.0-RED         R50RED-4-0045         R50RED-4-0030           R2F-20.0-RED         R50RED-4-0045         R50RED-4-0030           R2F-24.0-RED         R50RED-4-0045         R50RED-4-0030           R2F-4.0-RED         R50RED-4-0045         R50RED-4-0030           R2F-8.0-RED         R50RED-4-0045         R50RED-4-0030           R2LC-1.4-RED         R50RED-4-0045         R50RED-4-0030           R2LC-1.5-RED         R50RED-4-0045         R50RED-4-0030           OR2-6.0-YLW-F6PD67PR         R50YLW-4-0045         R50YLW-4-0030           OR2-6.0-YLW-F6PZ67PR         R50YLW-4-0045         R50YLW-4-0030           OR3-6.0-YLW-F6PZ67PR         R50YLW-4-0045         R50YLW-4-0030           OR3-6.0-YLW-F6PZ67PR         R50YLW-4-0045         R50YLW-4-0030           OR3-6.0-YLW-F9PZ67PR         R50YLW-4-0045         R50YLW-4-0030           OR3-6.0-YLW-F9PZ67PR         R50YLW-4-0045         R50YLW-4-0030           OR4-6.0-YLW-F9PZ67PR         R50YLW-4-0045         R50YLW-4-0030           OR4-6.0-YLW-F9PZ67PR         R50YLW-4-0045         R50YLW-4-0030           ORFLP1-YLW         R50YLW-4-0045         R50YLW-4-0030           ORFLP2-YLW         R50YLW-4-0045         R50YLW-4-0030           ORFLP3-YLW         R50YLW-4-0045         R50YLW-4-0030  | R13-10.0-RED         | R50RED-4-0045           | R50RED-4-0030      |  |  |
| R2F-20.0-RED         R50RED-4-0045         R50RED-4-0030           R2F-24.0-RED         R50RED-4-0045         R50RED-4-0030           R2F-4.0-RED         R50RED-4-0045         R50RED-4-0030           R2F-8.0-RED         R50RED-4-0045         R50RED-4-0030           R2LC-1.4-RED         R50RED-4-0045         R50RED-4-0030           R2LC-1.5-RED         R50RED-4-0045         R50RED-4-0030           OR2-6.0-YLW-F6PD67PR         R50YLW-4-0045         R50YLW-4-0030           OR2-6.0-YLW-F6PZ67PR         R50YLW-4-0045         R50YLW-4-0030           OR3-6.0-YLW-F6PD67PR         R50YLW-4-0045         R50YLW-4-0030           OR3-6.0-YLW-F9PZ67PR         R50YLW-4-0045         R50YLW-4-0030           OR3-6.0-YLW-F9PZ67PR         R50YLW-4-0045         R50YLW-4-0030           OR3-6.0-YLW-F9PZ67PR         R50YLW-4-0045         R50YLW-4-0030           OR4-6.0-YLW-F9PZ67PR         R50YLW-4-0045         R50YLW-4-0030           OR4-6.0-YLW-F9PZ67PR         R50YLW-4-0045         R50YLW-4-0030           OR4-6.0-YLW-F9PZ67PR         R50YLW-4-0045         R50YLW-4-0030           ORFLP1-YLW         R50YLW-4-0045         R50YLW-4-0030           ORFLP2-YLW         R50YLW-4-0045         R50YLW-4-0030           ORFLP3-YLW         R50YLW-4-0045         R50YLW-4-00  | R13-8.0-RED          | R50RED-4-0045           | R50RED-4-0030      |  |  |
| R2F-24.0-RED R50RED-4-0045 R50RED-4-0030 R2F-4.0-RED R50RED-4-0045 R50RED-4-0030 R2F-8.0-RED R50RED-4-0045 R50RED-4-0030 R2LC-1.4-RED R50RED-4-0045 R50RED-4-0030 R2LC-1.5-RED R50RED-4-0045 R50RED-4-0030 R2LC-1.5-RED R50RED-4-0045 R50RED-4-0030 OR2-6.0-YLW-F6PD67PR R50YLW-4-0045 R50YLW-4-0030 OR3-6.0-YLW-F6PZ67PR R50YLW-4-0045 R50YLW-4-0030 OR3-6.0-YLW-F6PZ67PR R50YLW-4-0045 R50YLW-4-0030 OR3-6.0-YLW-F6PZ67PR R50YLW-4-0045 R50YLW-4-0030 OR3-6.0-YLW-F9PD67PR R50YLW-4-0045 R50YLW-4-0030 OR3-6.0-YLW-F9PD67PR R50YLW-4-0045 R50YLW-4-0030 OR3-6.0-YLW-F9PZ67PR R50YLW-4-0045 R50YLW-4-0030 OR3-6.0-YLW-F9PZ67PR R50YLW-4-0045 R50YLW-4-0030 OR3-6.0-YLW-F9PZ67PR R50YLW-4-0045 R50YLW-4-0030 OR4-6.0-YLW-F9PZ67PR R50YLW-4-0045 R50YLW-4-0030 OR4-6.0-YLW-F9PZ67PR R50YLW-4-0045 R50YLW-4-0030 ORFLP1-YLW R50YLW-4-0045 R50YLW-4-0030 ORFLP1-YLW R50YLW-4-0045 R50YLW-4-0030 ORFLP2-YLW R50YLW-4-0045 R50YLW-4-0030 ORFLP3-YLW R50YLW-4-0045 R50YLW-4-0030   | R2F-12.0-RED         | R50RED-4-0045           | R50RED-4-0030      |  |  |
| R2F-4.0-RED         R50RED-4-0045         R50RED-4-0030           R2F-8.0-RED         R50RED-4-0045         R50RED-4-0030           R2LC-1.4-RED         R50RED-4-0045         R50RED-4-0030           R2LC-1.5-RED         R50RED-4-0045         R50RED-4-0030           OR2-6.0-YLW-F6PD67PR         R50YLW-4-0045         R50YLW-4-0030           OR2-6.0-YLW-F6PZ67PR         R50YLW-4-0045         R50YLW-4-0030           OR3-6.0-YLW-F6PD67PR         R50YLW-4-0045         R50YLW-4-0030           OR3-6.0-YLW-F6PZ67PR         R50YLW-4-0045         R50YLW-4-0030           OR3-6.0-YLW-F9PD67PR         R50YLW-4-0045         R50YLW-4-0030           OR3-6.0-YLW-F9PZ67PR         R50YLW-4-0045         R50YLW-4-0030           OR4-6.0-YLW-F9PZ67PR         R50YLW-4-0045         R50YLW-4-0030           OR4-6.0-YLW-F9PZ67PR         R50YLW-4-0045         R50YLW-4-0030           ORFLP1-YLW         R50YLW-4-0045         R50YLW-4-0030           ORFLP2-YLW         R50YLW-4-0045         R50YLW-4-0030           ORFLP3-YLW         R50YLW-4-0045         R50YLW-4-0030   | R2F-20.0-RED         | R50RED-4-0045           | R50RED-4-0030      |  |  |
| R2F-8.0-RED       R50RED-4-0045       R50RED-4-0030         R2LC-1.4-RED       R50RED-4-0045       R50RED-4-0030         R2LC-1.5-RED       R50RED-4-0045       R50RED-4-0030         OR2-6.0-YLW-F6PD67PR       R50YLW-4-0045       R50YLW-4-0030         OR2-6.0-YLW-F6PZ67PR       R50YLW-4-0045       R50YLW-4-0030         OR3-6.0-YLW-F6PD67PR       R50YLW-4-0045       R50YLW-4-0030         OR3-6.0-YLW-F6PZ67PR       R50YLW-4-0045       R50YLW-4-0030         OR3-6.0-YLW-F9PD67PR       R50YLW-4-0045       R50YLW-4-0030         OR3-6.0-YLW-F9PZ67PR       R50YLW-4-0045       R50YLW-4-0030         OR4-6.0-YLW-F9PD67PR       R50YLW-4-0045       R50YLW-4-0030         OR4-6.0-YLW-F9PZ67PR       R50YLW-4-0045       R50YLW-4-0030         OR4-6.0-YLW-F9PZ67PR       R50YLW-4-0045       R50YLW-4-0030         ORFLP1-YLW       R50YLW-4-0045       R50YLW-4-0030         ORFLP2-YLW       R50YLW-4-0045       R50YLW-4-0030         ORFLP3-YLW       R50YLW-4-0045       R50YLW-4-0030  | R2F-24.0-RED         | R50RED-4-0045           | R50RED-4-0030      |  |  |
| R2LC-1.4-RED R50RED-4-0045 R50RED-4-0030 R2LC-1.5-RED R50RED-4-0045 R50RED-4-0030 OR2-6.0-YLW-F6PD67PR R50YLW-4-0045 R50YLW-4-0030 OR2-6.0-YLW-F6PZ67PR R50YLW-4-0045 R50YLW-4-0030 OR3-6.0-YLW-F6PD67PR R50YLW-4-0045 R50YLW-4-0030 OR3-6.0-YLW-F6PZ67PR R50YLW-4-0045 R50YLW-4-0030 OR3-6.0-YLW-F6PZ67PR R50YLW-4-0045 R50YLW-4-0030 OR3-6.0-YLW-F9PD67PR R50YLW-4-0045 R50YLW-4-0030 OR3-6.0-YLW-F9PZ67PR R50YLW-4-0045 R50YLW-4-0030 OR3-6.0-YLW-F9PZ67PR R50YLW-4-0045 R50YLW-4-0030 OR4-6.0-YLW-F9PD67PR R50YLW-4-0045 R50YLW-4-0030 OR4-6.0-YLW-F9PZ67PR R50YLW-4-0045 R50YLW-4-0030 OR4-6.0-YLW-F9PZ67PR R50YLW-4-0045 R50YLW-4-0030 ORFLP1-YLW R50YLW-4-0045 R50YLW-4-0030 ORFLP2-YLW R50YLW-4-0045 R50YLW-4-0030 ORFLP3-YLW R50YLW-4-0045 R50YLW-4-0030  | R2F-4.0-RED          | R50RED-4-0045           | R50RED-4-0030      |  |  |
| R2LC-1.5-RED       R50RED-4-0045       R50RED-4-0030         OR2-6.0-YLW-F6PD67PR       R50YLW-4-0045       R50YLW-4-0030         OR2-6.0-YLW-F6PZ67PR       R50YLW-4-0045       R50YLW-4-0030         OR3-6.0-YLW-F6PD67PR       R50YLW-4-0045       R50YLW-4-0030         OR3-6.0-YLW-F6PZ67PR       R50YLW-4-0045       R50YLW-4-0030         OR3-6.0-YLW-F9PD67PR       R50YLW-4-0045       R50YLW-4-0030         OR3-6.0-YLW-F9PZ67PR       R50YLW-4-0045       R50YLW-4-0030         OR4-6.0-YLW-F9PD67PR       R50YLW-4-0045       R50YLW-4-0030         OR4-6.0-YLW-F9PZ67PR       R50YLW-4-0045       R50YLW-4-0030         ORFLP1-YLW       R50YLW-4-0045       R50YLW-4-0030         ORFLP2-YLW       R50YLW-4-0045       R50YLW-4-0030         ORFLP3-YLW       R50YLW-4-0045       R50YLW-4-0030  | R2F-8.0-RED          | R50RED-4-0045           | R50RED-4-0030      |  |  |
| OR2-6.0-YLW-F6PD67PR         R50YLW-4-0045         R50YLW-4-0030           OR2-6.0-YLW-F6PZ67PR         R50YLW-4-0045         R50YLW-4-0030           OR3-6.0-YLW-F6PD67PR         R50YLW-4-0045         R50YLW-4-0030           OR3-6.0-YLW-F6PZ67PR         R50YLW-4-0045         R50YLW-4-0030           OR3-6.0-YLW-F9PD67PR         R50YLW-4-0045         R50YLW-4-0030           OR3-6.0-YLW-F9PZ67PR         R50YLW-4-0045         R50YLW-4-0030           OR4-6.0-YLW-F9PD67PR         R50YLW-4-0045         R50YLW-4-0030           OR4-6.0-YLW-F9PZ67PR         R50YLW-4-0045         R50YLW-4-0030           ORFLP1-YLW         R50YLW-4-0045         R50YLW-4-0030           ORFLP2-YLW         R50YLW-4-0045         R50YLW-4-0030           ORFLP3-YLW         R50YLW-4-0045         R50YLW-4-0030   | R2LC-1.4-RED         | R50RED-4-0045           | R50RED-4-0030      |  |  |
| OR2-6.0-YLW-F6PZ67PR         R50YLW-4-0045         R50YLW-4-0030           OR3-6.0-YLW-F6PD67PR         R50YLW-4-0045         R50YLW-4-0030           OR3-6.0-YLW-F6PZ67PR         R50YLW-4-0045         R50YLW-4-0030           OR3-6.0-YLW-F9PD67PR         R50YLW-4-0045         R50YLW-4-0030           OR4-6.0-YLW-F9PZ67PR         R50YLW-4-0045         R50YLW-4-0030           OR4-6.0-YLW-F9PD67PR         R50YLW-4-0045         R50YLW-4-0030           ORFLP1-YLW         R50YLW-4-0045         R50YLW-4-0030           ORFLP2-YLW         R50YLW-4-0045         R50YLW-4-0030           ORFLP3-YLW         R50YLW-4-0045         R50YLW-4-0030           ORFLP3-YLW         R50YLW-4-0045         R50YLW-4-0030  | R2LC-1.5-RED         | R50RED-4-0045           | R50RED-4-0030      |  |  |
| OR3-6.0-YLW-F6PD67PR         R50YLW-4-0045         R50YLW-4-0030           OR3-6.0-YLW-F6PZ67PR         R50YLW-4-0045         R50YLW-4-0030           OR3-6.0-YLW-F9PD67PR         R50YLW-4-0045         R50YLW-4-0030           OR3-6.0-YLW-F9PZ67PR         R50YLW-4-0045         R50YLW-4-0030           OR4-6.0-YLW-F9PD67PR         R50YLW-4-0045         R50YLW-4-0030           OR4-6.0-YLW-F9PZ67PR         R50YLW-4-0045         R50YLW-4-0030           ORFLP1-YLW         R50YLW-4-0045         R50YLW-4-0030           ORFLP2-YLW         R50YLW-4-0045         R50YLW-4-0030           ORFLP3-YLW         R50YLW-4-0045         R50YLW-4-0030   | OR2-6.0-YLW-F6PD67PR | R50YLW-4-0045           | R50YLW-4-0030      |  |  |
| OR3-6.0-YLW-F6PZ67PR         R50YLW-4-0045         R50YLW-4-0030           OR3-6.0-YLW-F9PD67PR         R50YLW-4-0045         R50YLW-4-0030           OR3-6.0-YLW-F9PZ67PR         R50YLW-4-0045         R50YLW-4-0030           OR4-6.0-YLW-F9PD67PR         R50YLW-4-0045         R50YLW-4-0030           OR4-6.0-YLW-F9PZ67PR         R50YLW-4-0045         R50YLW-4-0030           ORFLP1-YLW         R50YLW-4-0045         R50YLW-4-0030           ORFLP2-YLW         R50YLW-4-0045         R50YLW-4-0030           ORFLP3-YLW         R50YLW-4-0045         R50YLW-4-0030  | OR2-6.0-YLW-F6PZ67PR | R50YLW-4-0045           | R50YLW-4-0030      |  |  |
| OR3-6.0-YLW-F9PD67PR         R50YLW-4-0045         R50YLW-4-0030           OR3-6.0-YLW-F9PZ67PR         R50YLW-4-0045         R50YLW-4-0030           OR4-6.0-YLW-F9PD67PR         R50YLW-4-0045         R50YLW-4-0030           OR4-6.0-YLW-F9PZ67PR         R50YLW-4-0045         R50YLW-4-0030           ORFLP1-YLW         R50YLW-4-0045         R50YLW-4-0030           ORFLP2-YLW         R50YLW-4-0045         R50YLW-4-0030           ORFLP3-YLW         R50YLW-4-0045         R50YLW-4-0030   | OR3-6.0-YLW-F6PD67PR | R50YLW-4-0045           | R50YLW-4-0030      |  |  |
| OR3-6.0-YLW-F9PZ67PR         R50YLW-4-0045         R50YLW-4-0030           OR4-6.0-YLW-F9PD67PR         R50YLW-4-0045         R50YLW-4-0030           OR4-6.0-YLW-F9PZ67PR         R50YLW-4-0045         R50YLW-4-0030           ORFLP1-YLW         R50YLW-4-0045         R50YLW-4-0030           ORFLP2-YLW         R50YLW-4-0045         R50YLW-4-0030           ORFLP3-YLW         R50YLW-4-0045         R50YLW-4-0030  | OR3-6.0-YLW-F6PZ67PR | R50YLW-4-0045           | R50YLW-4-0030      |  |  |
| OR4-6.0-YLW-F9PD67PR         R50YLW-4-0045         R50YLW-4-0030           OR4-6.0-YLW-F9PZ67PR         R50YLW-4-0045         R50YLW-4-0030           ORFLP1-YLW         R50YLW-4-0045         R50YLW-4-0030           ORFLP2-YLW         R50YLW-4-0045         R50YLW-4-0030           ORFLP3-YLW         R50YLW-4-0045         R50YLW-4-0030   | OR3-6.0-YLW-F9PD67PR | R50YLW-4-0045           | R50YLW-4-0030      |  |  |
| OR4-6.0-YLW-F9PZ67PR         R50YLW-4-0045         R50YLW-4-0030           ORFLP1-YLW         R50YLW-4-0045         R50YLW-4-0030           ORFLP2-YLW         R50YLW-4-0045         R50YLW-4-0030           ORFLP3-YLW         R50YLW-4-0045         R50YLW-4-0030  | OR3-6.0-YLW-F9PZ67PR | R50YLW-4-0045           | R50YLW-4-0030      |  |  |
| ORFLP1-YLW         R50YLW-4-0045         R50YLW-4-0030           ORFLP2-YLW         R50YLW-4-0045         R50YLW-4-0030           ORFLP3-YLW         R50YLW-4-0045         R50YLW-4-0030   | OR4-6.0-YLW-F9PD67PR | R50YLW-4-0045           | R50YLW-4-0030      |  |  |
| ORFLP2-YLW R50YLW-4-0045 R50YLW-4-0030 ORFLP3-YLW R50YLW-4-0045 R50YLW-4-0030  | OR4-6.0-YLW-F9PZ67PR | R50YLW-4-0045           | R50YLW-4-0030      |  |  |
| ORFLP3-YLW R50YLW-4-0045 R50YLW-4-0030   | ORFLP1-YLW           | R50YLW-4-0045           | R50YLW-4-0030      |  |  |
|  | ORFLP2-YLW           | R50YLW-4-0045           | R50YLW-4-0030      |  |  |
| R2LC-1.4-YLW R50YLW-4-0045 R50YLW-4-0030   | ORFLP3-YLW           | R50YLW-4-0045           | R50YLW-4-0030      |  |  |
|  | R2LC-1.4-YLW         | R50YLW-4-0045           | R50YLW-4-0030      |  |  |

These changes have been reviewed and approved by Bivar management per Bivar Procedure: Engineering Change Order and Part Change Notification, SOP-040, SOP-ENG-045

Please contact Bivar Inc. at www.bivar.com/contact or speak to a Bivar representative for any questions or support requirements within 30 days of issue date.