

INLAND MOTOR DIVISION KOLLMORGEN CORPORATION
TEST PROCEDURE FOR EM19-60150, 60100, 60090, 60050 A AND B

WRITTEN BY: MASH DATE: 02-09-90
 APPROVED BY: B.P. DATE: 02-09-90

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EM19-60003-B03 DRIVER SERIAL NO. 96F1642 DATE 11-4-97
 EM19-60150-B03 SERIAL NUMBER - 94F1644 TESTER TI
 JOB NUMBER R27868

FAN COOL MODELS WITHOUT FANS

KEEP PIN 9 SWITCH AT DISABLE POSITION ON ALL MODELS EXCEPT -XX1
 KEEP PIN 1 SWITCH AT DISABLE POSITION ON ALL MODELS EXCEPT -XX3

| 1. QUIESCENT CURRENT / OFFSET VOLTAGE TEST | LIMITS | RESULTS |
|---|--|-------------------------------------|
| CONNECT AMPLIFIER IN VOLTAGE MODE. SHORT INPUT TERMINALS 4 AND 7 TO GROUND. APPLY 60 VDC TO PIN 18. ON "A" MODELS ALSO APPLY -15 VDC TO PIN 1. | B MODELS + 90mA A MODELS + 65mA - 45mA | <u>65.4</u> <u>-</u> <u>-</u> |
| | Vo MAX 100mv | <u>0.019</u> |
| 2. VOLTAGE GAIN TEST SET INPUT COMMAND (PIN 4) TO 3.0 VPK, 60 HZ SQUARE WAVE. APPLY POWER TO AMPLIFIER. | Vo pk - pk MIN 100 | <u>118.5</u> ✓ |
| 3. VOLTAGE GAIN / POWER TEST CONNECT A 1.75 Ω LOAD BETWEEN OUTPUT TERMINALS 11 AND 20. APPLY 3.0 VPK, 60 HZ SQUARE WAVE TO TERMINAL 4. APPLY POWER TO AMPLIFIER. CHECK OUTPUT FOR RIPPLE. | Vo pk - pk MAX 110 MIN 90 | <u>95.2</u> <u>-</u> |
| 4. TTL INHIBIT TEST - MODELS -XX1, -XX3 ONLY MODEL -XX1 PIN 9 SWITCH MODEL -XX3 PIN 1 SWITCH WITH SAME CONDITIONS AS PREVIOUS TEST, FLIP APPROPRIATE SWITCH. | Vo pk max .1 v (✓) | <u>✓</u> |
| 5. CURRENT GAIN TEST CONNECT AMPLIFIER IN CURRENT MODE. WITH A 2.0 OHM LOAD BETWEEN TERMINALS 11 AND 20: A. SET INPUT TO +7.0 VDC B. SET INPUT TO -7.0 VDC | Io DC MAX 27 A MIN 22 A | <u>+ 23.0</u> <u>- 23.0</u> |
| 6. ISOLATED GROUND TEST - MODELS -XX2, -XX3 DISCONNECT AMPLIFIER FROM TEST SETUP. MEASURE RESISTANCE BETWEEN PINS 9 AND 13. | MIN OHMS 100K Ω (✓) | <u>✓</u> |

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EM19-60003- B03 DRIVER SERIAL NO. 95C4537 DATE 11-4-97
 EM19-60150 - B03 SERIAL NUMBER - 95C4537 TESTER TI
 JOB NUMBER R27868

FAN COOL MODELS WITHOUT FANS
 KEEP PIN 9 SWITCH AT DISABLE POSITION ON ALL MODELS EXCEPT -XX1
 KEEP PIN 1 SWITCH AT DISABLE POSITION ON ALL MODELS EXCEPT -XX3

| 1. QUIESCENT CURRENT / OFFSET VOLTAGE TEST | LIMITS | RESULTS |
|---|------------------|-----------------|
| CONNECT AMPLIFIER IN VOLTAGE MODE. SHORT INPUT TERMINALS 4 AND 7 TO GROUND. APPLY 60 VDC TO PIN 18. ON "A" MODELS ALSO APPLY -15 VDC TO PIN 1. | B MODELS + 90mA | <u>65.4</u> |
| | A MODELS + 65mA | <u> </u> |
| | - 45mA | <u> </u> |
| | Vo MAX | <u> </u> |
| | 100mv | <u>0.000</u> |
| 2. VOLTAGE GAIN TEST SET INPUT COMMAND (PIN 4) TO 3.0 VPK, 60 HZ SQUARE WAVE. APPLY POWER TO AMPLIFIER. | Vo pk - pk | <u> </u> |
| | MIN 100 | <u>119. ✓</u> |
| 3. VOLTAGE GAIN / POWER TEST CONNECT A 1.75 Ω LOAD BETWEEN OUTPUT TERMINALS 11 AND 20. APPLY 3.0 VPK, 60 HZ SQUARE WAVE TO TERMINAL 4. APPLY POWER TO AMPLIFIER. CHECK OUTPUT FOR RIPPLE. | Vo pk - pk | <u> </u> |
| | MAX 110 | <u>95.0</u> |
| | MIN 90 | <u> </u> |
| | MAX RIPPLE 500mv | <u>✓</u> |
| 4. TTL INHIBIT TEST - MODELS -XX1, -XX3 ONLY MODEL -XX1 PIN 9 SWITCH MODEL -XX3 PIN 1 SWITCH WITH SAME CONDITIONS AS PREVIOUS TEST, FLIP APPROPRIATE SWITCH. | Vo pk | <u> </u> |
| | max .1 v (✓) | <u>✓</u> |
| 5. CURRENT GAIN TEST CONNECT AMPLIFIER IN CURRENT MODE. WITH A 2.0 OHM LOAD BETWEEN TERMINALS 11 AND 20: A. SET INPUT TO +7.0 VDC B. SET INPUT TO -7.0 VDC | Io DC | <u> </u> |
| | MAX 27 A | <u> </u> |
| | MIN 22 A | <u> </u> |
| | | <u>+ 23.0</u> |
| | | <u>- 23.0</u> |
| 6. ISOLATED GROUND TEST - MODELS -XX2, -XX3 DISCONNECT AMPLIFIER FROM TEST SETUP. MEASURE RESISTANCE BETWEEN PINS 9 AND 13. | MIN OHMS | <u> </u> |
| | 100K Ω (✓) | <u>✓</u> |

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EM19-60003-803 DRIVER SERIAL NO. 95C4534 DATE 11-4-97
 EM19-60150 -803 SERIAL NUMBER - 95C4549 TESTER TI
 JOB NUMBER R27868



FAN COOL MODELS WITHOUT FANS
 KEEP PIN 9 SWITCH AT DISABLE POSITION ON ALL MODELS EXCEPT -XX1
 KEEP PIN 1 SWITCH AT DISABLE POSITION ON ALL MODELS EXCEPT -XX3

| 1. QUIESCENT CURRENT / OFFSET VOLTAGE TEST | LIMITS | RESULTS |
|--|---|---|
| CONNECT AMPLIFIER IN VOLTAGE MODE. SHORT INPUT TERMINALS 4 AND 7 TO GROUND. APPLY 60 VDC TO PIN 18. ON "A" MODELS ALSO APPLY -15 VDC TO PIN 1. | B MODELS + 90mA A MODELS + 65mA - 45mA Vo MAX 100mv | <u>65.2</u> <u>-</u> <u>-</u> <u>0.021</u> |
| 2. VOLTAGE GAIN TEST SET INPUT COMMAND (PIN 4) TO 3.0 VPK, 60 HZ SQUARE WAVE. APPLY POWER TO AMPLIFIER. | Vo pk - pk MIN 100 | <u>118.4</u> ✓ |
| 3. VOLTAGE GAIN / POWER TEST CONNECT A 1.75 Ω LOAD BETWEEN OUTPUT TERMINALS 11 AND 20. APPLY 3.0 VPK, 60 HZ SQUARE WAVE TO TERMINAL 4. APPLY POWER TO AMPLIFIER. CHECK OUTPUT FOR RIPPLE. | Vo pk - pk MAX 110 MIN 90 MAX RIPPLE 500mv | <u>95.4</u> <u>-</u> <u>-</u> ✓ |
| 4. TTL INHIBIT TEST - MODELS -XX1, -XX3 ONLY MODEL -XX1 PIN 9 SWITCH MODEL -XX3 PIN 1 SWITCH WITH SAME CONDITIONS AS PREVIOUS TEST, FLIP APPROPRIATE SWITCH. | Vo pk max .1 v (✓) | ✓ |
| 5. CURRENT GAIN TEST CONNECT AMPLIFIER IN CURRENT MODE. WITH A 2.0 OHM LOAD BETWEEN TERMINALS 11 AND 20: A. SET INPUT TO +7.0 VDC B. SET INPUT TO -7.0 VDC | Io DC MAX 27 A MIN 22 A | + <u>23.5</u> - <u>23.0</u> |
| 6. ISOLATED GROUND TEST - MODELS -XX2, -XX3 DISCONNECT AMPLIFIER FROM TEST SETUP. MEASURE RESISTANCE BETWEEN PINS 9 AND 13. | MIN OHMS 100K Ω (✓) | ✓ |

INLAND MOTOR DIVISION KOLLMORGEN CORPORATION
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WRITTEN BY: MASH DATE: 02-09-90
 APPROVED BY: B.P. DATE: 02-09-90

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EM19-60003-B03 DRIVER SERIAL NO. 95C4535 DATE 11-4-97
 EM19-60150 - B03 SERIAL NUMBER - 95C4550 TESTER TI
 JOB NUMBER R27868



FAN COOL MODELS WITHOUT FANS
 KEEP PIN 9 SWITCH AT DISABLE POSITION ON ALL MODELS EXCEPT -XX1
 KEEP PIN 1 SWITCH AT DISABLE POSITION ON ALL MODELS EXCEPT -XX3

| 1. QUIESCENT CURRENT / OFFSET VOLTAGE TEST | LIMITS | RESULTS |
|--|---|--|
| CONNECT AMPLIFIER IN VOLTAGE MODE. SHORT INPUT TERMINALS 4 AND 7 TO GROUND. APPLY 60 VDC TO PIN 18. ON "A" MODELS ALSO APPLY -15 VDC TO PIN 1. | B MODELS + 90mA A MODELS + 65mA - 45mA Vo MAX 100mv | <u>65.6</u> <u>-</u> <u>-</u> <u>-0.005</u> |
| 2. VOLTAGE GAIN TEST SET INPUT COMMAND (PIN 4) TO 3.0 VPK, 60 HZ SQUARE WAVE. APPLY POWER TO AMPLIFIER. | Vo pk - pk MIN 100 | <u>✓ 119</u> |
| 3. VOLTAGE GAIN / POWER TEST CONNECT A 1.75 Ω LOAD BETWEEN OUTPUT TERMINALS 11 AND 20. APPLY 3.0 VPK, 60 HZ SQUARE WAVE TO TERMINAL 4. APPLY POWER TO AMPLIFIER. CHECK OUTPUT FOR RIPPLE. | Vo pk - pk MAX 110 MIN 90 MAX RIPPLE 500mv | <u>95.0</u> <u>✓</u> |
| 4. TTL INHIBIT TEST - MODELS -XX1, -XX3 ONLY MODEL -XX1 PIN 9 SWITCH MODEL -XX3 PIN 1 SWITCH WITH SAME CONDITIONS AS PREVIOUS TEST, FLIP APPROPRIATE SWITCH. | Vo pk max .1 v (✓) | <u>✓</u> |
| 5. CURRENT GAIN TEST CONNECT AMPLIFIER IN CURRENT MODE. WITH A 2.0 OHM LOAD BETWEEN TERMINALS 11 AND 20: A. SET INPUT TO +7.0 VDC B. SET INPUT TO -7.0 VDC | Io DC MAX 27 A MIN 22 A | + <u>23.0</u> - <u>23.0</u> |
| 6. ISOLATED GROUND TEST - MODELS -XX2, -XX3 DISCONNECT AMPLIFIER FROM TEST SETUP. MEASURE RESISTANCE BETWEEN PINS 9 AND 13. | MIN OHMS 100K Ω (✓) | <u>✓</u> |

INLAND MOTOR DIVISION KOLLMORGEN CORPORATION
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WRITTEN BY: MASH
 APPROVED BY: B.P.

DATE: 02-09-90
 DATE: 02-09-90

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EM19-60003- B03 DRIVER SERIAL NO. 96K26886 DATE 8-14-97
 EM19-60150 - B03 SERIAL NUMBER - 95C4547 TESTER [Signature]
 JOB NUMBER R27645



FAN COOL MODELS WITHOUT FANS
 KEEP PIN 9 SWITCH AT DISABLE POSITION ON ALL MODELS EXCEPT -XX1
 KEEP PIN 1 SWITCH AT DISABLE POSITION ON ALL MODELS EXCEPT -XX3

| 1. QUIESCENT CURRENT / OFFSET VOLTAGE TEST | LIMITS | RESULTS |
|--|---|---|
| CONNECT AMPLIFIER IN VOLTAGE MODE. SHORT INPUT TERMINALS 4 AND 7 TO GROUND. APPLY 60 VDC TO PIN 18. ON "A" MODELS ALSO APPLY -15 VDC TO PIN 1. | B MODELS + 90mA A MODELS + 65mA - 45mA Vo MAX 100mv | <u>65.3mA</u> <u>-</u> <u>-</u> <u>1.0mV</u> |
| 2. VOLTAGE GAIN TEST SET INPUT COMMAND (PIN 4) TO 3.0 VPK, 60 HZ SQUARE WAVE. APPLY POWER TO AMPLIFIER. | Vo pk - pk MIN 100 | <u>118.0V_{pk}</u> |
| 3. VOLTAGE GAIN / POWER TEST CONNECT A 1.75 Ω LOAD BETWEEN OUTPUT TERMINALS 11 AND 20. APPLY 3.0 VPK, 60 HZ SQUARE WAVE TO TERMINAL 4. APPLY POWER TO AMPLIFIER. CHECK OUTPUT FOR RIPPLE. | Vo pk - pk MAX 110 MIN 90 MAX RIPPLE 500mv | <u>94.0V_{pk}</u> <u>-</u> <u>✓</u> |
| 4. TTL INHIBIT TEST - MODELS -XX1, -XX3 ONLY MODEL -XX1 PIN 9 SWITCH MODEL -XX3 PIN 1 SWITCH WITH SAME CONDITIONS AS PREVIOUS TEST, FLIP APPROPRIATE SWITCH. | Vo pk max .1 v (✓) | <u>✓</u> |
| 5. CURRENT GAIN TEST CONNECT AMPLIFIER IN CURRENT MODE. WITH A 2.0 OHM LOAD BETWEEN TERMINALS 11 AND 20: A. SET INPUT TO +7.0 VDC B. SET INPUT TO -7.0 VDC | Io DC MAX 27 A MIN 22 A | <u>+ 23A</u> <u>- 23A</u> |
| 6. ISOLATED GROUND TEST - MODELS -XX2, -XX3 DISCONNECT AMPLIFIER FROM TEST SETUP. MEASURE RESISTANCE BETWEEN PINS 9 AND 13. | MIN OHMS 100K Ω (✓) | <u>✓</u> |

*This is the amp that went up in flames.
 This page came with the repaired amp.*