

CHAPTER

22

AUTO FLIGHT



737-600/700/800/900
ILLUSTRATED TOOL AND EQUIPMENT MANUAL

CHAPTER 22
AUTO FLIGHT

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CHAPTER 22
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<u>SUBJECT</u>	<u>TITLE</u>	<u>PART NO.</u>
22	AUTO FLIGHT	
22-10-01	TEST BOX - INERTIAL REFERENCE SYSTEM (IRS) MASTER CAUTION MODULE	C22001
22-10-02	BREAKOUT BOX, MULTIPURPOSE, 100/124 PIN	C22005-1, -22, -25, -32, -4, -5, -6
22-30-01	TEST EQUIPMENT - AUTOTHROTTLE, GEARBOX, BRAKE	J22004-156, -157, -67, -68
22-30-02	RIGGING EQUIPMENT - AUTOTHROTTLE BRAKE	A22008-25, -42
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PART NUMBER: C22001

NAME: TEST BOX - INERTIAL REFERENCE SYSTEM (IRS) MASTER CAUTION
MODULE

AIRPLANE MAINTENANCE: NO

COMPONENT MAINTENANCE: YES

CMM 21-52-74, CMM 22-10-56

USAGE & DESCRIPTION: C22001 drawing has been transferred to BAE Systems and will no longer be revised by Boeing. C22001 inclusion in the 737 ITEM is for information and historical purposes only.

C22001 is used on all 737 airplanes equipped with IRS part numbers:
69-37399-1, -7, -9; 69-73636, 69-51813-9 and 69-37399-8, -10, -12.
Usage is not limited to the listed assemblies only. Consult the component
maintenance manual.

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PART NUMBER: C22005-1, -4, -5, -6, -22, -25, -32

NAME: BREAKOUT BOX, MULTIPURPOSE, 100/124 PIN

AIRPLANE MAINTENANCE: YES

AMM 22-11-00, AMM 34-21-00, AMM 34-21-00

COMPONENT MAINTENANCE: YES

CMM 21-61-01, CMM 31-11-27, CMM 33-11-05, CMM 52-10-10, CMM 52-10-15, CMM 22-12-93

USAGE & DESCRIPTION: The C22005-1 breakout box assembly is used on 737-300 thru -900 airplanes.

The C22005-1 breakout box equipment consists of a C22005-2, 100 pin breakout box assembly in a storage box. C22005-1 is used to test many 737-300 through -900 components and systems. See the usage table on the C22005 drawing.

The C22005-22 is used on 737-300 thru -900 airplanes.

The C22005-22 breakout box equipment consists of a C22005-23, 124 pin breakout box assembly in a storage box. C22005-22 is used to test many 737-300 through -900 components and systems as C22005-1 but is also suitable for testing assemblies which connect to the 285A1780 integrated handset controller (IHC) backplane and other applications requiring up to 124 pins.

The C22005-4 cable assembly is used with either C22005-2 or -23 breakout box to test "J5" on the 4051600 flight control computer on 737-300 thru -500 airplanes.

The C22005-5 cable assembly is used with either C22005-2 or -23 breakout box assembly to test "J6" on the 4051600 flight control computer on 737-300 thru -900 airplanes.

The C22005-6 cable assembly is used with either C22005-2 or -23 breakout box assembly to test "J7" on the 4051600 flight control computer on 737-300 thru -900 airplanes.

The C22005-25 cable assembly is used to test "P1" on the 285A17XX series and must be used with the C22005-23 breakout box assembly.

The C22005-32 cable assembly is used to test "J3" on the 822-1604-101 flight control computer (FCC-730) on 737-600 thru -900 airplanes and must be used with the C22005-23 breakout box assembly.

C22005 is used to test components or systems by accessing contacts of connectors. C22005 may be used either during line or component maintenance.

All cables must be ordered separately. See the Cable Usage Table on the C22005 drawing.

WEIGHT: 5 lbs (2.3 kg)

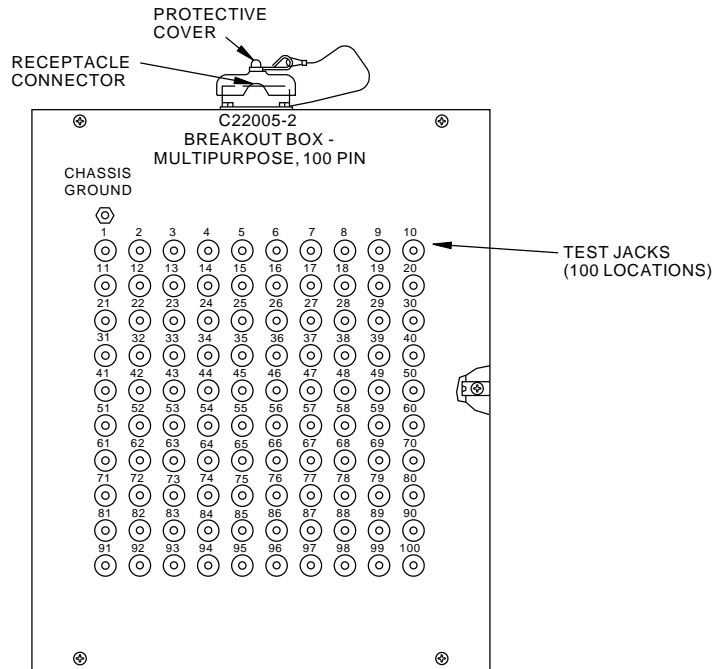
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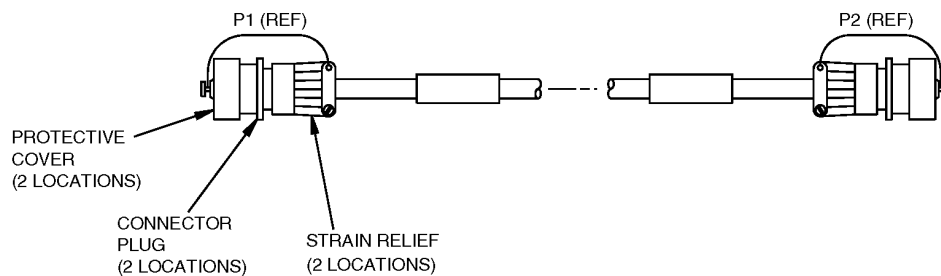
DIMENSIONS: 16 x 10 x 5 inches (40 x 25 x 13 mm)

NOTE: C22005-22 replaces C22005-1 for future procurement



**100 Pin Breakout Box Assembly
Figure 1**

W78324 S0006831429_V2

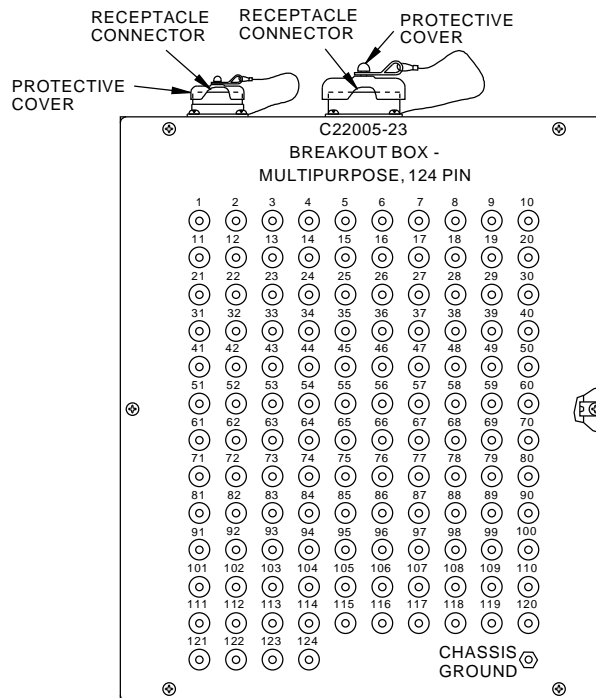


**Typical Cable Assembly
Figure 2**

22-10-02



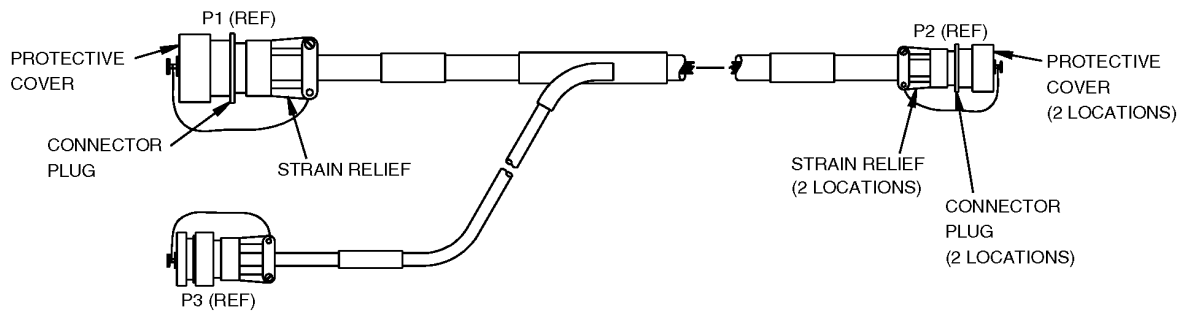
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W78813 S0006831431_V2

124 Pin Breakout Box Assembly

Figure 3



124 Pin Cable Assembly

Figure 4

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PART NUMBER: J22004-67, -68, -156, -157

NAME: TEST EQUIPMENT - AUTOTHROTTLE, GEARBOX, BRAKE

AIRPLANE MAINTENANCE: NO

COMPONENT MAINTENANCE: YES

CMM 22-35-03, CMM 27-44-03

USAGE & DESCRIPTION: The J22004-67, -68, -156 (preferred) or -157 (preferred) test equipment is used during component maintenance on all 737-600 thru -900 airplanes.

J22004-67 and -156 uses 230 VAC and 50 HZ power.

J22004-68 and -157 uses 110 VAC and 60 HZ power.

J22004 is used to perform the run-in and acceptance test procedures for the 254A1141 autothrottle brake and the 251A4115 stabilizer trim forward mechanism assembly.

Refer to the current J22004 drawing, CMM 22-35-03 and CMM 27-44-03 for complete usage instructions. J22004 is used on other components from other airplanes, all of the J22004 tool part numbers are not used on 737 airplanes.

J22004-67, -68, -156 and -157 consist of:

J22004-67		
QUANTITY	NOMENCLATURE	PART NUMBER
1	ADAPTER-A	J22004-10
1	ADAPTER-B	J22004-11
1	SQUARE SHAFT	J22004-12
1	SPLINE SHAFT-A	J22004-13
1	SPLINE SHAFT-B	J22004-14
1	SPLINE SHAFT-C	J22004-15
1	ADAPTER ASSEMBLY	J22004-58
1	TEST BOX ASSEMBLY (50 HZ)	J22004-69
1	TEST UNIT ASSEMBLY (50 HZ)	J22004-71
1	TRANSDUCER ASSEMBLY	J22004-83
4	WASHER	AN960-10L ^{*[1]}
2	SCREW	MS35206-228 ^{*[2]}
2	SCREW	MS35206-261 ^{*[1]}
2	SCREW	MS35206-267 ^{*[1]}
1	WASHER	MS15795-848
1	SCREW	MS35206-268
3	SCREW	MS35206-277
2	SCREW	MS35206-265

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J22004-67		
QUANTITY	NOMENCLATURE	PART NUMBER
3	WASHER	NAS1149G0432H
1	STORAGE BOX	

*[1] STOWED ON J22004-71.

*[2] STOWED ON J22004-11.

J22004-68		
QUANTITY	NOMENCLATURE	PART NUMBER
1	ADAPTER-A	J22004-10
1	ADAPTER-B	J22004-11
1	SQUARE SHAFT	J22004-12
1	SPLINE SHAFT-A	J22004-13
1	SPLINE SHAFT-B	J22004-14
1	SPLINE SHAFT-C	J22004-15
1	ADAPTER ASSEMBLY	J22004-58
1	TEST BOX ASSEMBLY (60 HZ)	J22004-70
1	TEST UNIT ASSEMBLY (60 HZ)	J22004-72
1	TRANSDUCER ASSEMBLY	J22004-83
4	WASHER	AN960-10L *[1]
2	SCREW	MS35206-228 *[2]
2	SCREW	MS35206-261 *[1]
2	SCREW	MS35206-267 *[1]
1	WASHER	MS15795-848
1	SCREW	MS35206-268
3	SCREW	MS35206-277
2	SCREW	MS35206-265
3	WASHER	NAS1149G0432H
1	STORAGE BOX	

*[1] STOWED ON J22004-72.

*[2] STOWED ON J22004-11.

J22004-156		
QUANTITY	NOMENCLATURE	PART NUMBER
1	ADAPTER-A	J22004-10
1	ADAPTER-B	J22004-11
1	SQUARE SHAFT	J22004-12
1	SPLINE SHAFT-A	J22004-13
1	SPLINE SHAFT-B	J22004-14
1	SPLINE SHAFT-C	J22004-15

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J22004-156		
QUANTITY	NOMENCLATURE	PART NUMBER
1	ADAPTER ASSEMBLY	J22004-58
1	TEST BOX ASSEMBLY (50 HZ)	J22004-69
1	TEST UNIT ASSEMBLY (50 HZ)	J22004-158
1	TRANSDUCER ASSEMBLY	J22004-83
1	STANDOFF	J22004-163 ^{*[1]}
1	STANDOFF	J22004-164 ^{*[1]}
4	WASHER	AN960-10L ^{*[1]}
2	SCREW	MS35206-228 ^{*[2]}
2	SCREW	MS35206-261 ^{*[1]}
2	SCREW	MS35206-267 ^{*[1]}
1	WASHER	MS15795-848
1	SCREW	MS35206-268
3	SCREW	MS35206-277
2	SCREW	MS35206-265
1	SCREW	MS51957-45 ^{*[1]}
1	SCREW	MS51957-46 ^{*[1]}
1	SCREW	MS51957-64 ^{*[1]}
3	WASHER	NAS1149G0432H
1	WASHER	NAS1149CN832R ^{*[1]}
1	WASHER	NAS1149DN832K ^{*[1]}
1	WASHER	NAS1149C0332R ^{*[1]}
2	WASHER	NAS1149D0463K ^{*[1]}
1	SHOULDER SCREW	94035A57B
1	STORAGE BOX	

^{*[1]} STOWED ON J22004-158.

^{*[2]} STOWED ON J22004-11.

J22004-157		
QUANTITY	NOMENCLATURE	PART NUMBER
1	ADAPTER-A	J22004-10
1	ADAPTER-B	J22004-11
1	SQUARE SHAFT	J22004-12
1	SPLINE SHAFT-A	J22004-13
1	SPLINE SHAFT-B	J22004-14
1	SPLINE SHAFT-C	J22004-15
1	ADAPTER ASSEMBLY	J22004-58
1	TEST BOX ASSEMBLY (60 HZ)	J22004-70

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J22004-157		
QUANTITY	NOMENCLATURE	PART NUMBER
1	TEST UNIT ASSEMBLY (60 HZ)	J22004-159
1	TRANSDUCER ASSEMBLY	J22004-83
1	STANDOFF	J22004-163 ^{*[1]}
1	STANDOFF	J22004-164 ^{*[1]}
4	WASHER	AN960-10L ^{*[1]}
2	SCREW	MS35206-228 ^{*[2]}
2	SCREW	MS35206-261 ^{*[1]}
2	SCREW	MS35206-267 ^{*[1]}
1	WASHER	MS15795-848
1	SCREW	MS35206-268
3	SCREW	MS35206-277
2	SCREW	MS35206-265
1	SCREW	MS51957-45 ^{*[1]}
1	SCREW	MS51957-46 ^{*[1]}
1	SCREW	MS51957-64 ^{*[1]}
3	WASHER	NAS1149G0432H
1	WASHER	NAS1149CN832R ^{*[1]}
1	WASHER	NAS1149DN832K ^{*[1]}
1	WASHER	NAS1149C0332R ^{*[1]}
2	WASHER	NAS1149D0463K ^{*[1]}
1	SHOULDER SCREW	94035A57B
1	STORAGE BOX	

^{*[1]} STOWED ON J22004-159.

^{*[2]} STOWED ON J22004-11.

WEIGHT: 105 lbs (48 kg)

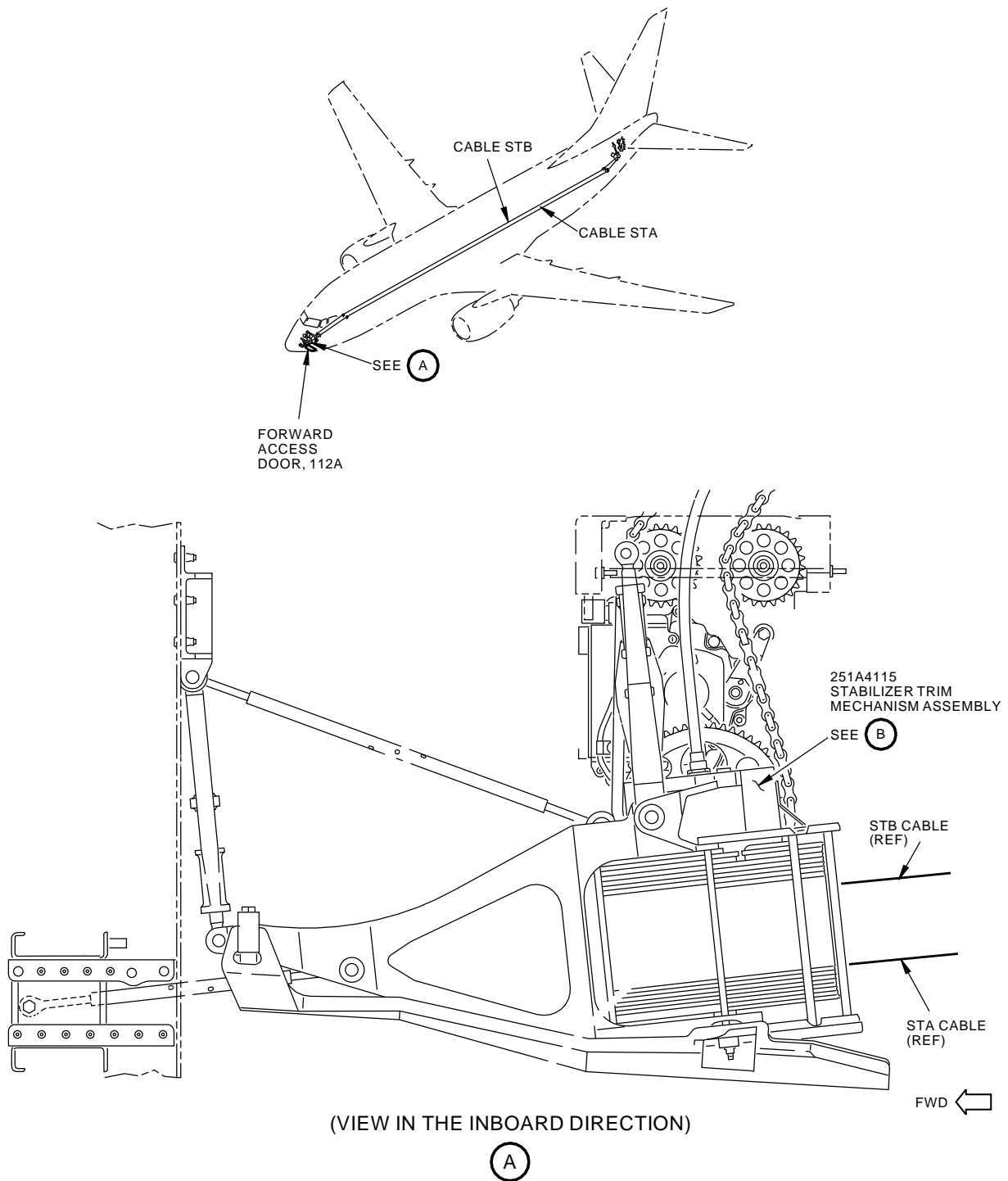
DIMENSIONS: 15 x 19 x 24 inches (381 x 483 x 610 mm)

NOTE: J22004-67 supersedes J22004-54 and J22004-1.
J22004-68 supersedes J22004-55 and J22004-2.
J22004-156 replaces J22004-67 for future procurement.
J22004-157 replaces J22004-68 for future procurement.

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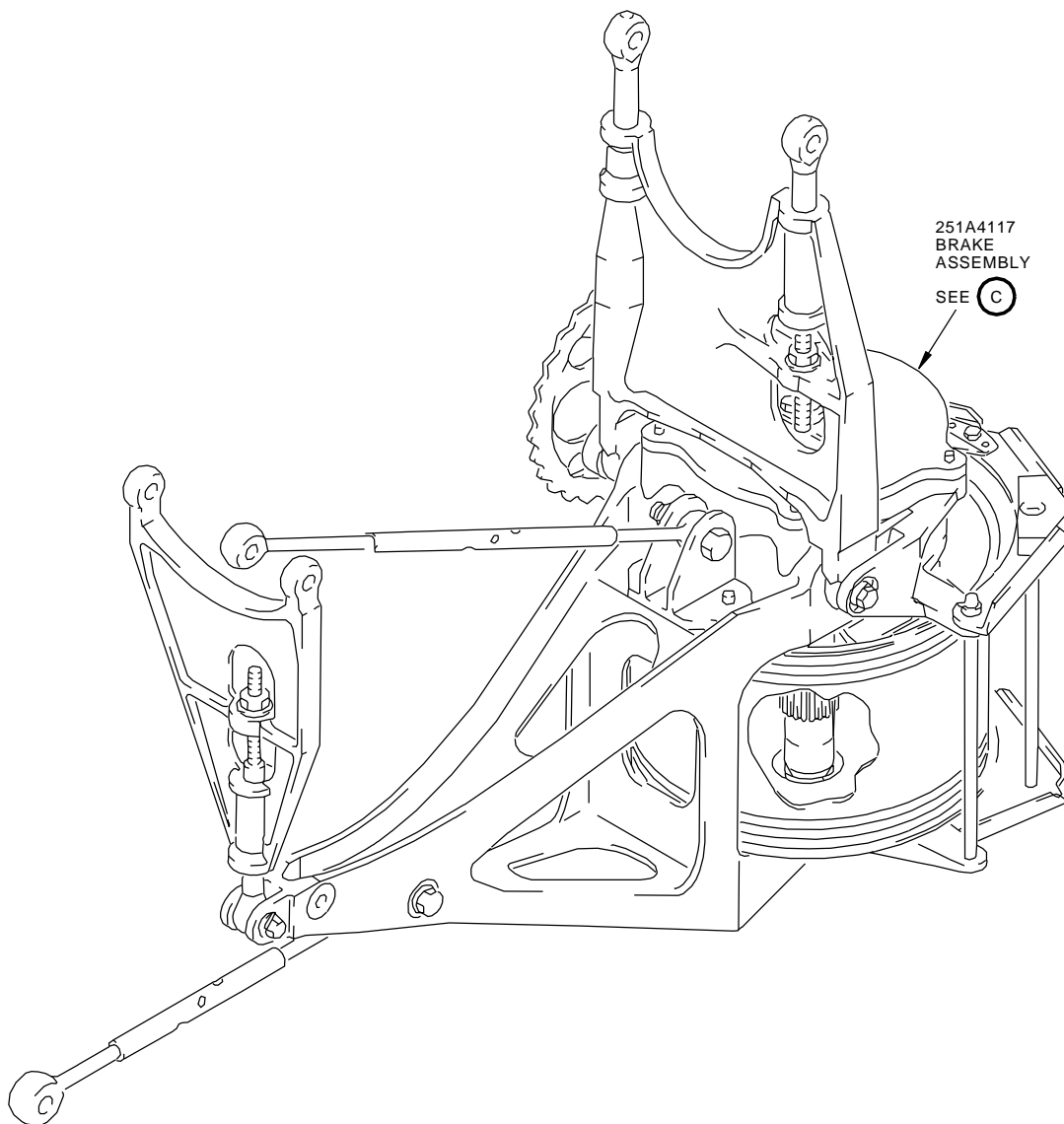
1565058 S0000290350_V1

251A4115 Stabilizer Trim Forward Mechanism
Figure 1 (Sheet 1 of 3)

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251A4115
STABILIZER TRIM MECHANISM ASSEMBLY

(B)

1565060 S0000290351_V1

251A4115 Stabilizer Trim Forward Mechanism
Figure 1 (Sheet 2 of 3)

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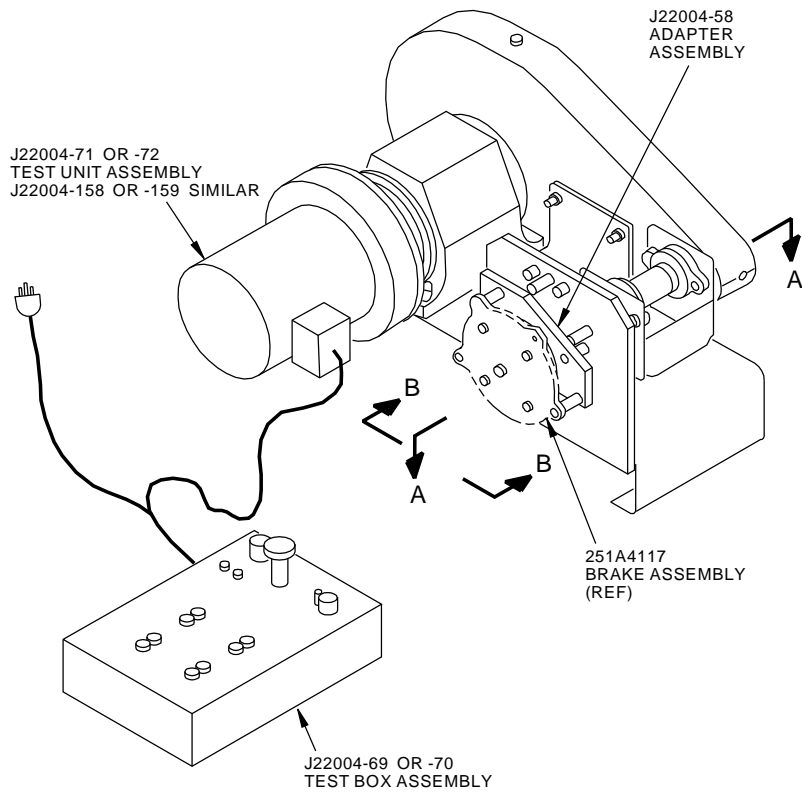
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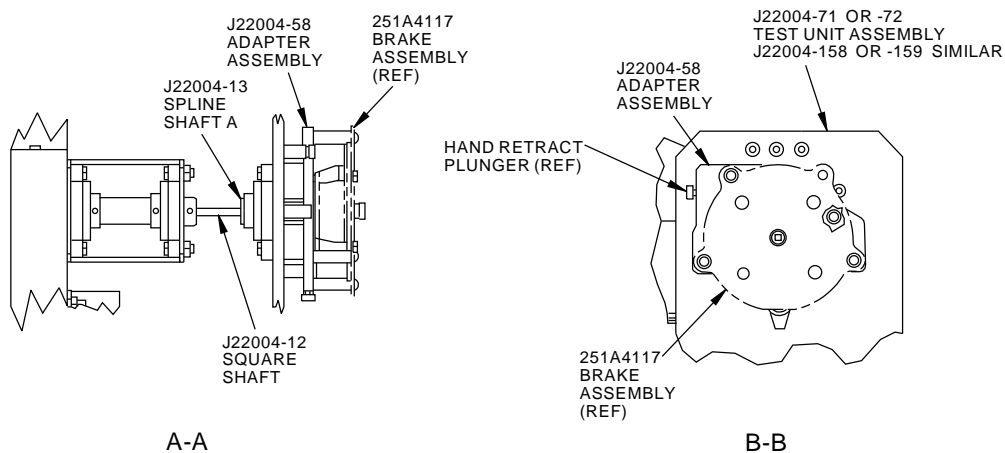
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(C)



H51573 S0006831435_V4

251A4115 Stabilizer Trim Forward Mechanism
Figure 1 (Sheet 3 of 3)

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**737-600/700/800/900
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PART NUMBER: A22008-25, -42

NAME: RIGGING EQUIPMENT - AUTOTHROTTLE BRAKE

AIRPLANE MAINTENANCE: NO

COMPONENT MAINTENANCE: YES

CMM 22-35-03

USAGE & DESCRIPTION: The A22008-25 or -42 (preferred) autothrottle brake rigging equipment is used on all 737-600/-700/-800/-900 airplanes.

A22008 is used to assemble and house the autothrottle housing accessories by compressing the spring with an end cap and installing or removing the autothrottle nut. Refer to the current A22008 tool drawing and CMM 22-35-03 for complete usage instructions.

The A22008-25 and -42 autothrottle brake rigging equipment consists of:

A22008-25		
QUANTITY	NOMENCLATURE	PART NUMBER
1	BASE ASSEMBLY	A22008-27
1	SPANNER WRENCH ASSEMBLY	A22008-28
1	BLOCK	A22008-31 ^{*[1]}
1	NUT	MS51968-23 ^{*[1]}
1	STORAGE BOX	

^{*[1]} PARTS STOWED ON A22008-27.

A22008-42		
QUANTITY	NOMENCLATURE	PART NUMBER
1	SPACER	A22008-3 ^{*[1]}
1	SOCKET	A22008-4
1	WASHER	A22008-5 ^{*[1]}
2	THREADED PAD	A22008-22 ^{*[1]}
1	THICK WASHER	A22008-23 ^{*[1]}
1	SPANNER WRENCH ASSEMBLY	A22008-28
1	BLOCK	A22008-31 ^{*[1]}
1	THREADED PIN	A22008-33 ^{*[1]}
1	THREADED PIN	A22008-34 ^{*[1]}
1	NUT	A22008-41 ^{*[1]}
1	BASE ASSEMBLY	A22008-43
1	THREADED PIN	A22008-47 ^{*[1]}
1	THREADED PIN	A22008-48 ^{*[1]}
1	SPACER	A22008-49 ^{*[1]}

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A22008-42		
QUANTITY	NOMENCLATURE	PART NUMBER
1	STORAGE BOX	

*[1] PARTS STOWED ON A22008-43.

WEIGHT: A22008-25 - 20 lbs (9 kg)
A22008-42 - 23 lbs (10 kg)

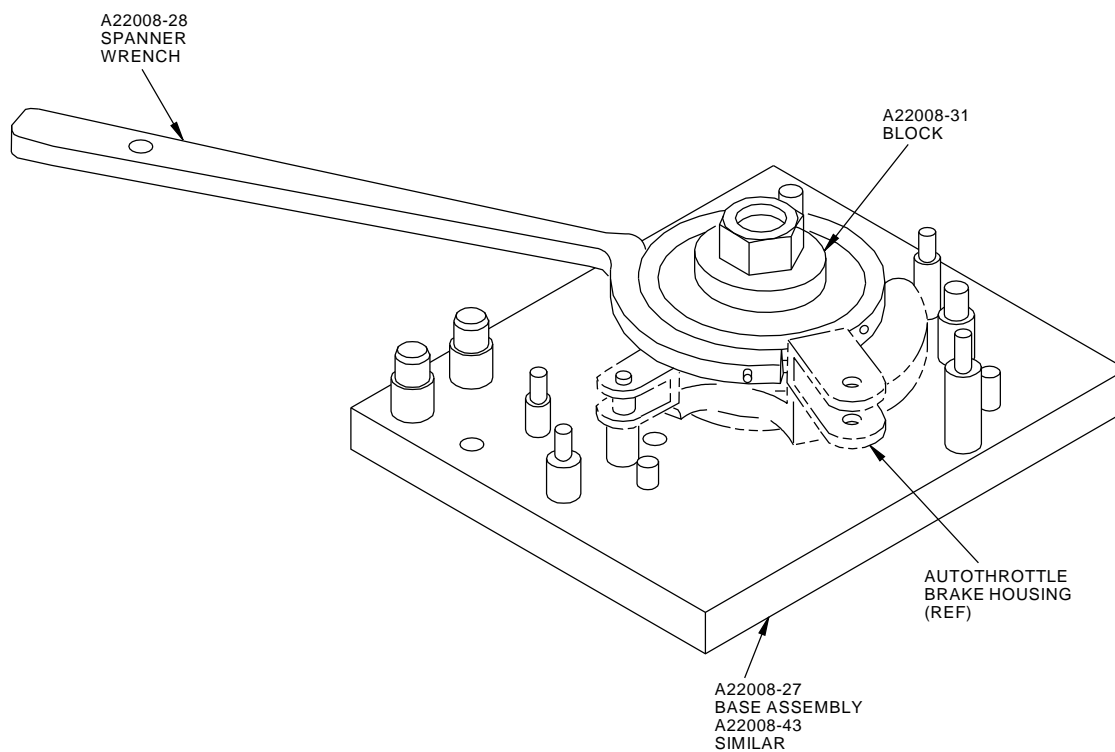
DIMENSIONS: A22008-25 or -42 - 7 x 13 x 4 inches (178 x 330 x 102 mm)

NOTE: A22008-42 replaces A22008-25 for future procurement.

22-30-02



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A22008-25
AUTOTHROTTLE BRAKE RIGGING EQUIPMENT SHOWN
A22008-42 SIMILAR

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Autothrottle Brake Rigging Equipment
Figure 1

22-30-02

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PART NUMBER: A22004-1

NAME: CHECKING FIXTURE - AUTOTHROTTLE GEARBOX

AIRPLANE MAINTENANCE: NO

COMPONENT MAINTENANCE: YES

CMM 22-35-02

USAGE & DESCRIPTION: The A22004-1 checking fixture is used during component maintenance on 737-600 thru -800 airplanes.

A22004 is used to determine the shim thickness required to establish the proper mounting distance during assembly of the 254A1147 autothrottle gearbox.

Refer to CMM 22-35-02 and the current A22004 drawing for complete usage instructions.

A22004-1 consists of:

A22004-1		
QUANTITY	NOMENCLATURE	PART NUMBER
1	GAUGE ASSEMBLY	A22004-2
1	BAR	A22004-3
1	STORAGE BOX	

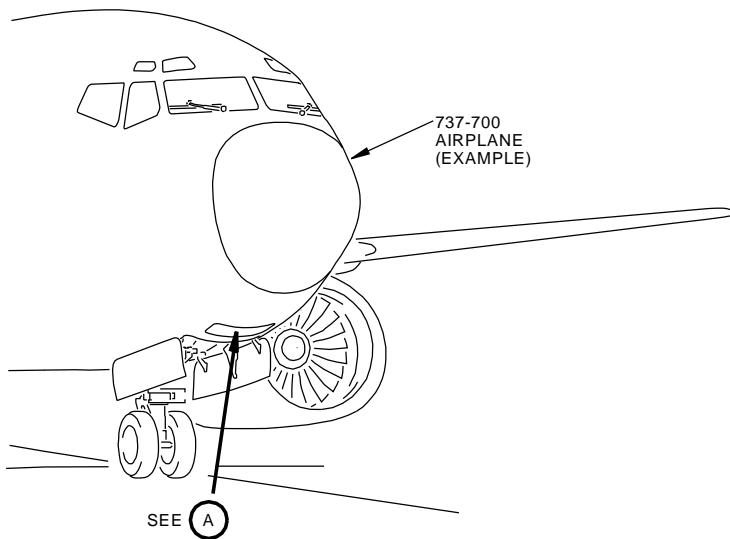
WEIGHT: 1.5 lbs (0.68 kg)

DIMENSIONS: 2 x 6 inches (51 x 152 mm)

22-30-03

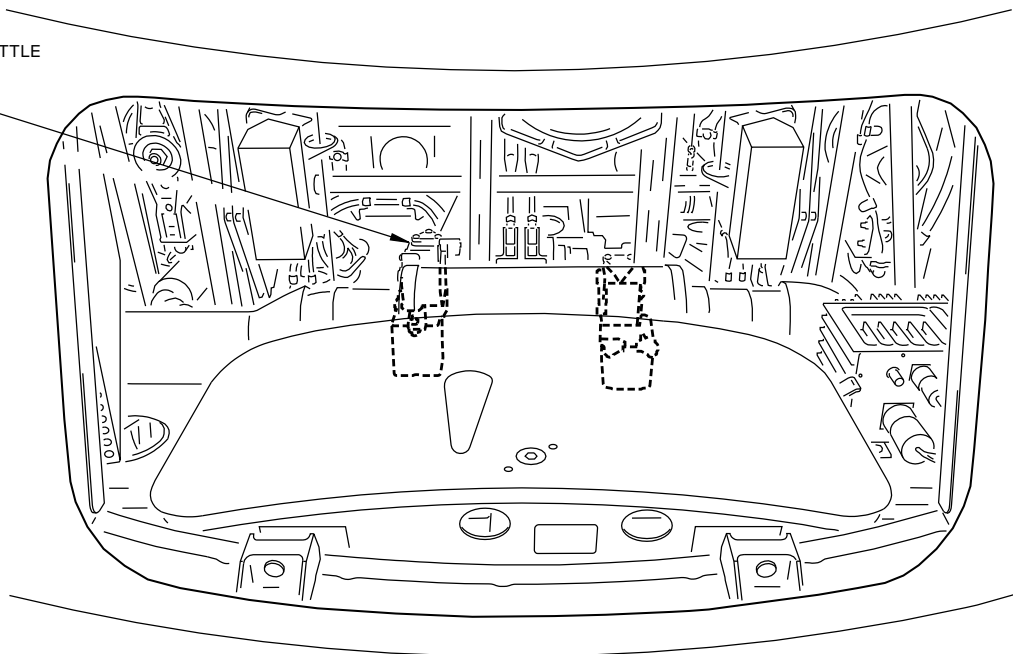


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254A1147
AUTOTHROTTLE
GEARBOX

SEE **(B)**



FWD
↑

FORWARD ACCESS DOOR

(A)

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Gearbox Checking Fixture
Figure 1 (Sheet 1 of 2)

22-30-03

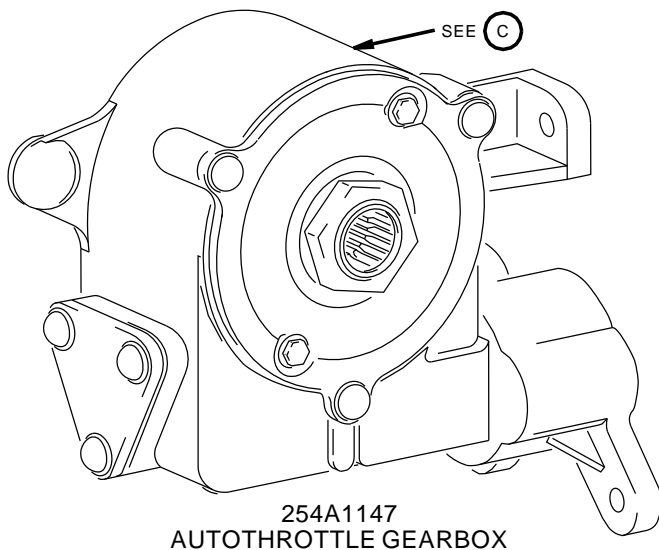
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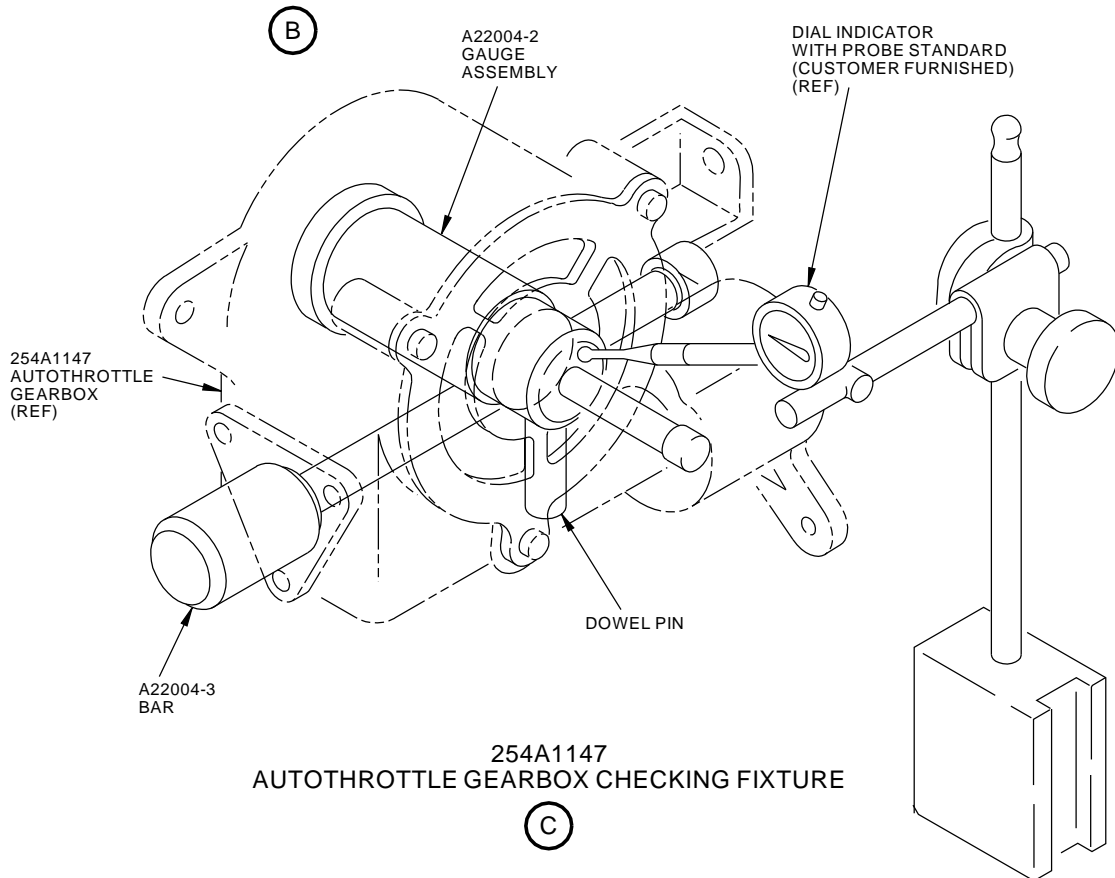
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254A1147
AUTOTHROTTLE GEARBOX



254A1147
AUTOTHROTTLE GEARBOX CHECKING FIXTURE

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Gearbox Checking Fixture
Figure 1 (Sheet 2 of 2)

22-30-03



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PART NUMBER: J22002-1

NAME: SPLINE WRENCH - GEARBOX, AUTOTHROTTLE CONTROL STAND

AIRPLANE MAINTENANCE: NO

COMPONENT MAINTENANCE: YES

CMM 22-35-02

USAGE & DESCRIPTION: The J22002-1 spline wrench is used during component maintenance on 737-600 thru -800 airplanes.

J22002 is used with a customer-furnished A22004 checking fixture and a 3/8-inch square drive torque wrench. J22002 is used to secure the worm gear during assembly or disassembly of the 254A1147 autothrottle gearbox.

Refer to CMM 22-35-02 and the current J22002 drawing for complete usage instructions.

J22002-1 consists of:

J22002-1		
QUANTITY	NOMENCLATURE	PART NUMBER
1	SPLINE WRENCH	J22002-2
1	STORAGE BOX	

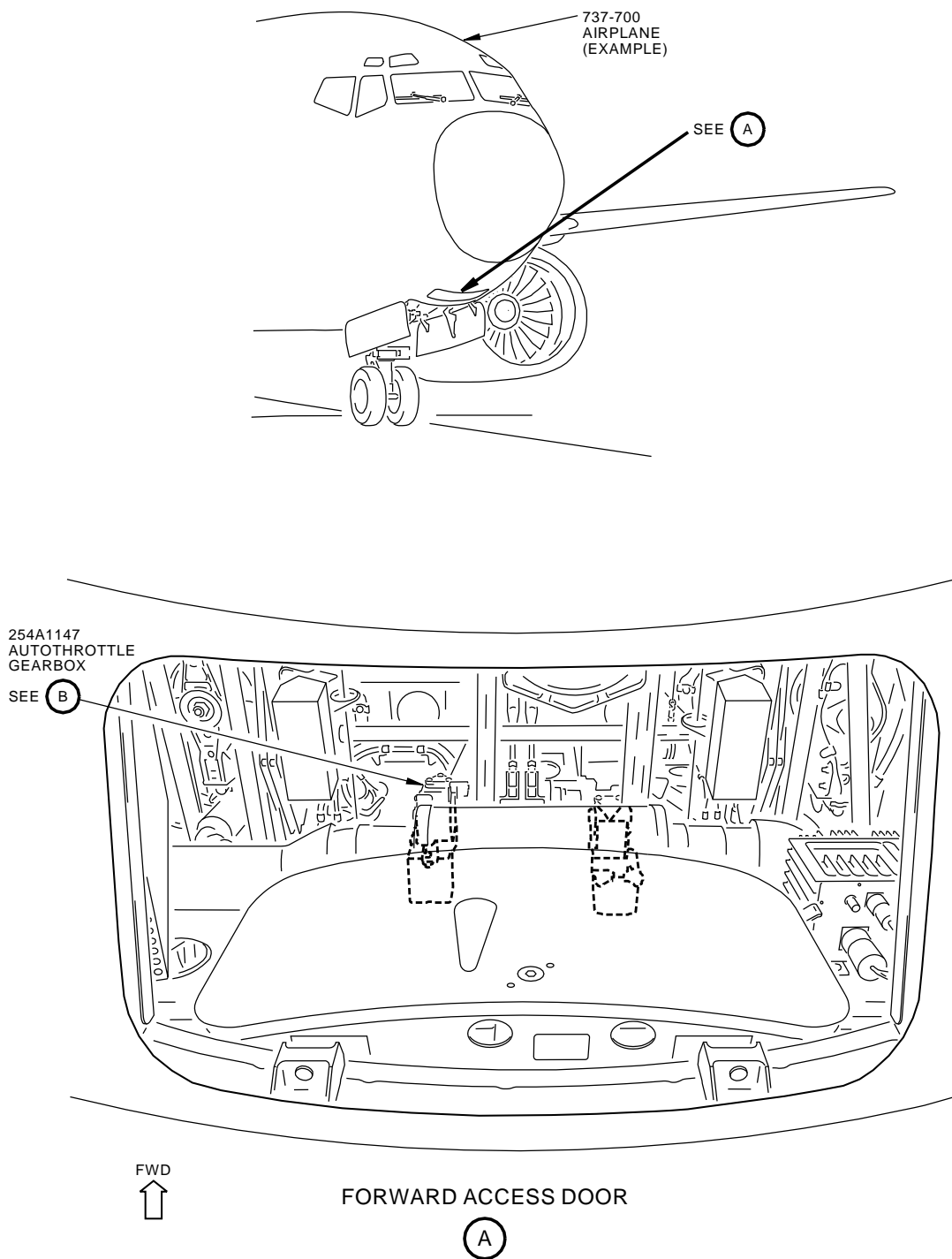
WEIGHT: 0.25 lb (0.1 kg)

DIMENSIONS: 1 x 1 x 2 inches (25 x 25 x 50 mm)

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Spline Wrench Details
Figure 1 (Sheet 1 of 2)

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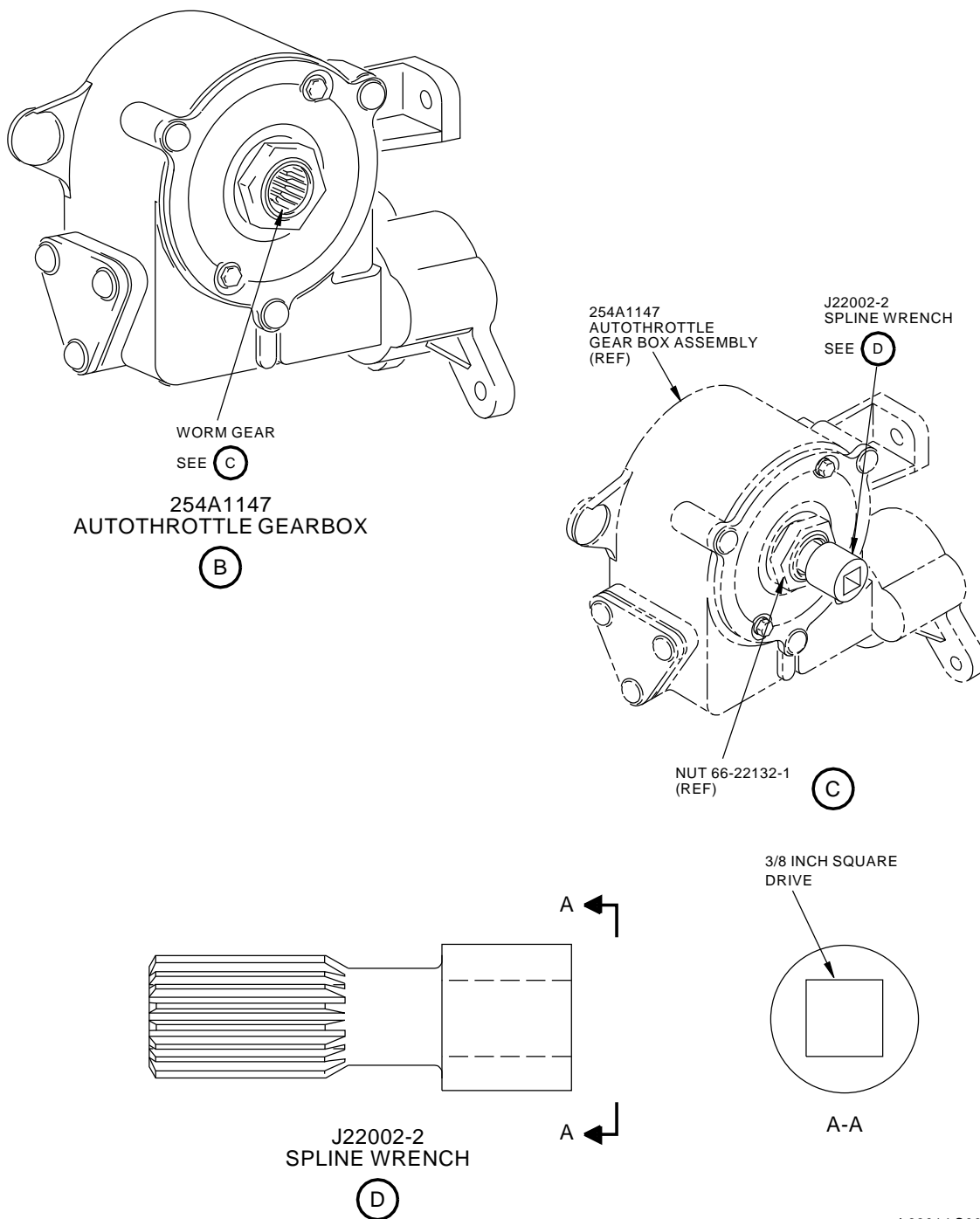
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Spline Wrench Details
Figure 1 (Sheet 2 of 2)

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