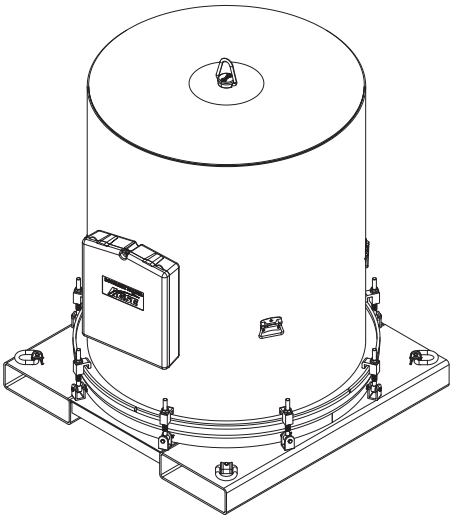
AGSE-C012-G01

MODULE 2
SHIPPING CONTAINER

For CFM56-7B Engines



ORIGINAL MANUAL DATED 10/5/2023

LATEST MANUAL REVISION LEVEL . . . . . 10/5/2023 (REV NC)

ADVANCED GROUND SYSTEMS ENGINEERING LLC

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NOTICE

1. Alteration, Modification, Reengineering, or Reproduction of Equipment

The alteration, modification, reengineering, or reproduction of AGSE equipment and/or parts is not permitted without prior written authorization from AGSE.

These modifications include but are not limited to:

- Structural changes to AGSE-supplied parts
- Substitution of AGSE-supplied parts, including hardware, with an alternate source or supplier
- Reverse engineering of AGSE equipment and parts.

Requests for modifications should be submitted to AGSE for review – please send modification requests to **support@agsecorp.com**.

Once reviewed by our Engineering team, a Customer Support Letter (Subject: No Technical Objection) will be issued for any approved modifications.

NOTE

Modifications executed without prior authorization by AGSE may result in a non-compliant product that is unsafe for operation.

Unauthorized modifications void AGSE's and the OEM's (Engine and/or Airframer) approval and authority to use the product for its intended application.

INDEX

1.0 – Revisions

The following is an itemized record of all changes from previous revision.

PAGE	REV	DESCRIPTION OF CHANGE	DATE
		NEW	10/5/2023

2.0 – Illustration

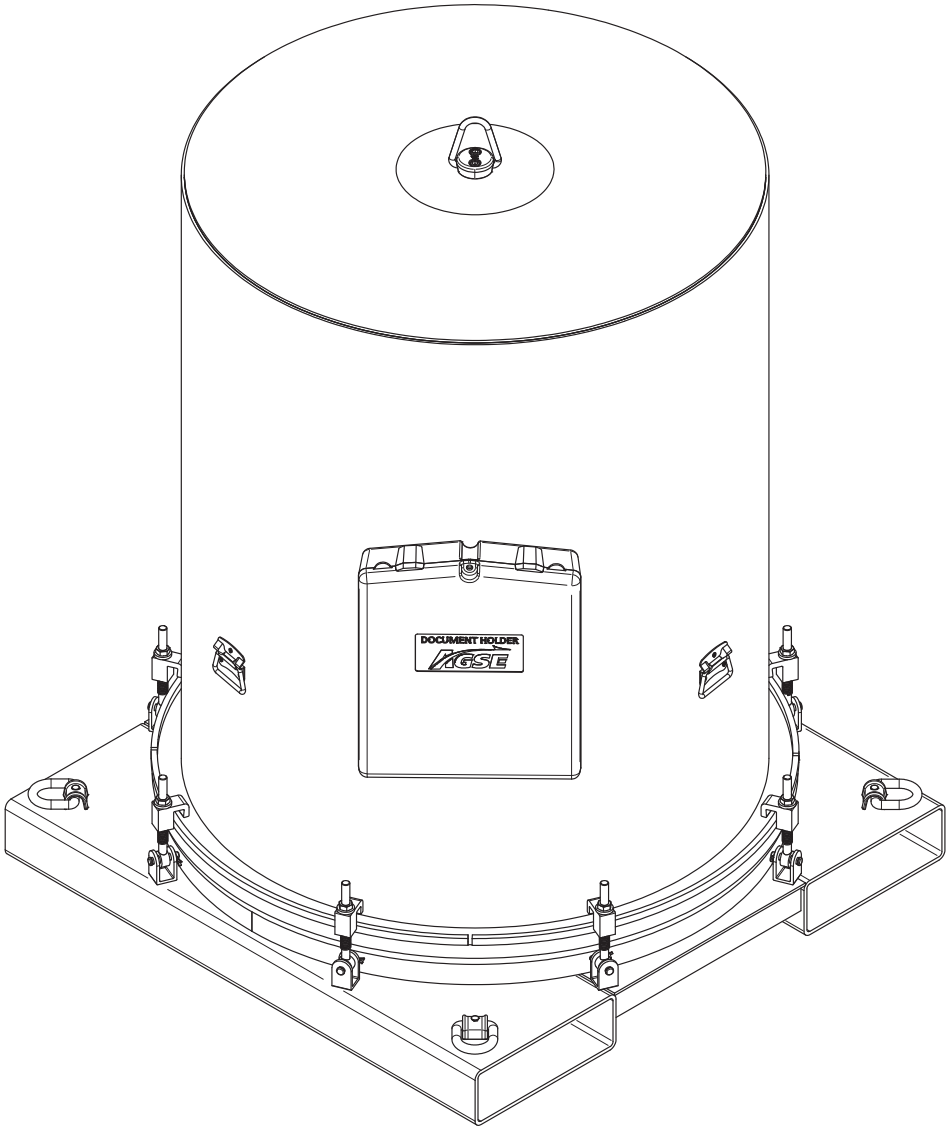


Figure 2.0-1 AGSE-C012-G01 Module 2 Container Assembly

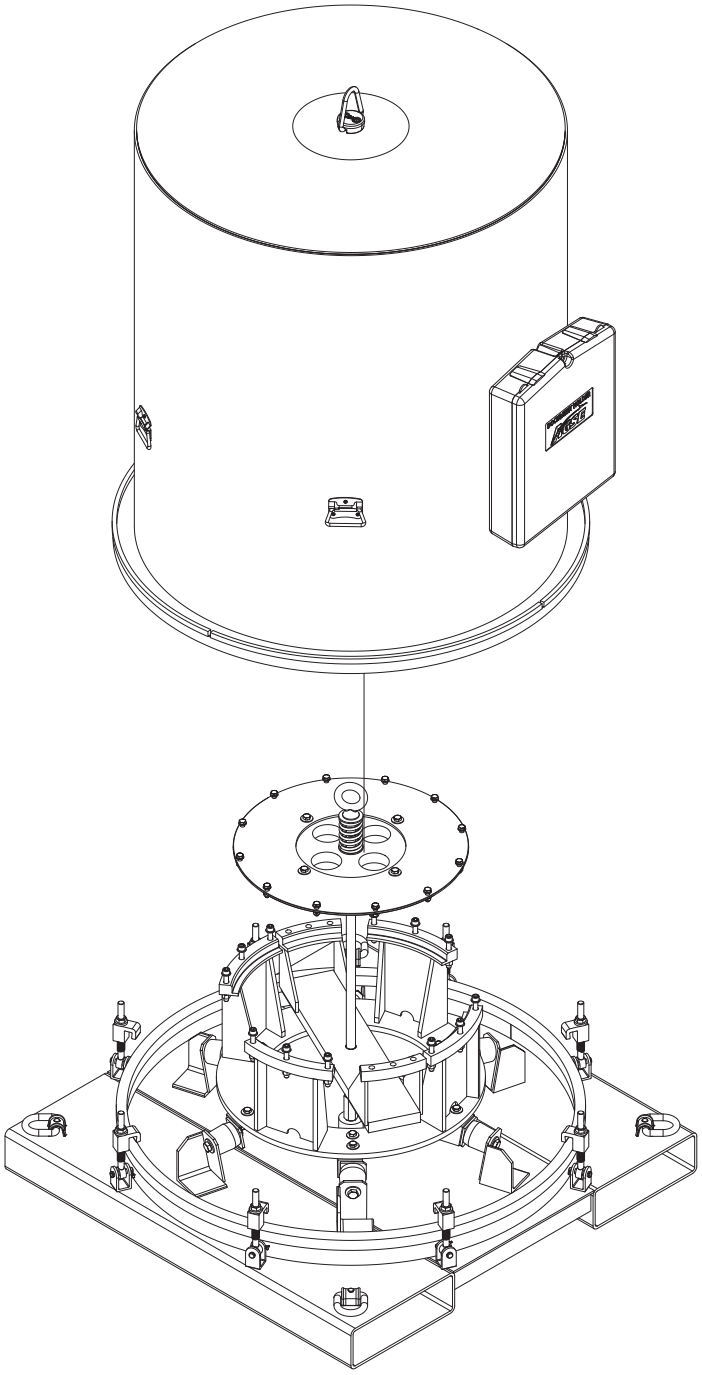


Figure 2.0-2 AGSE-C012-G01 Module 2 Container Assembly

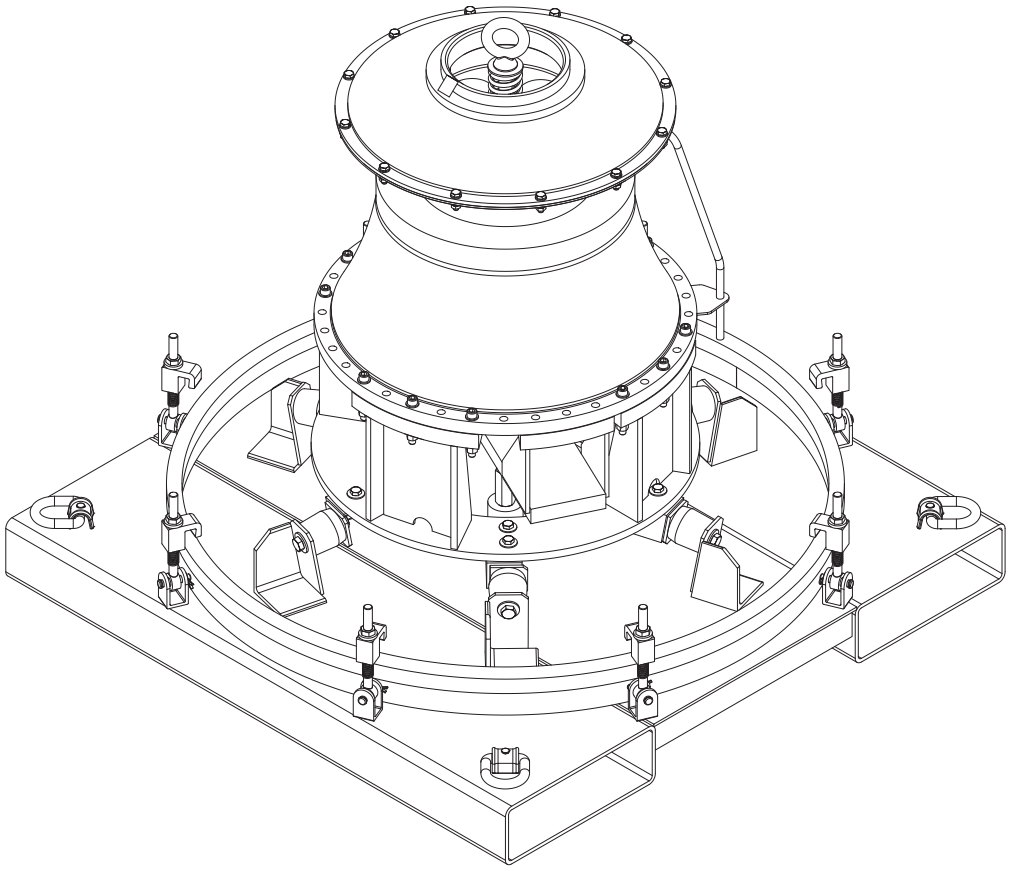


Figure 2.0-3 AGSE-C012-G01 Loaded View

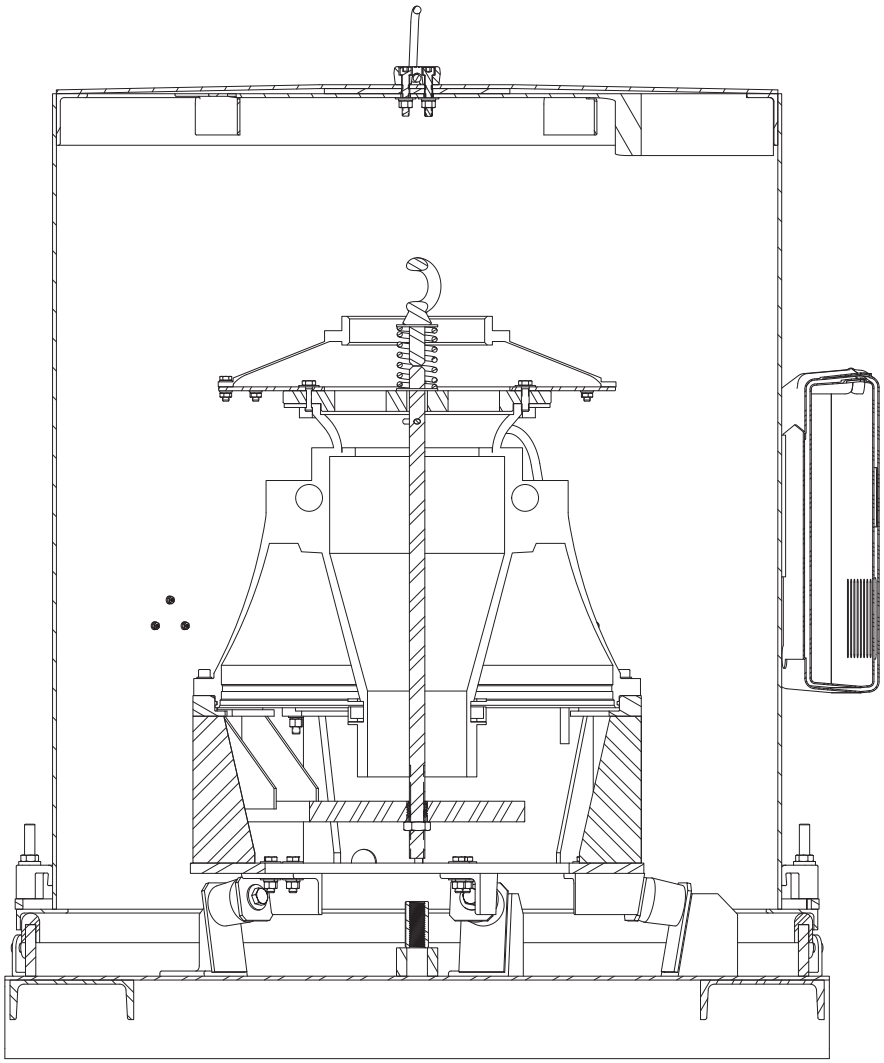


Figure 2.0-4 AGSE-C012-G01 Container Cut-Section

3.0 – Specification

3.1 General

AGSE-C012-G01 Module 2 Shipping Container is designed to transport and/or store the CFM International CFM56-7B 1&2 Bearing. The cover is made of aluminum and fastens to the welded steel base with standard clamp assemblies. The container has integral shock mounts to protect the 1 & 2 Bearing from shipping vibrations and rough handling. The 1 & 2 Bearing is shipped with the axis vertical and the forward end down. A document container is provided on the outside of the cover.

3.2 Mobility

Shipping container is skid mounted and can be lifted by a forklift from two sides at the base. The fork pockets are 3.5 x 11.5 (inside dimensions).

3.3 Design

This shipping container consists of a welded steel shock mounted support base with a Supporting frame that centers the 1 & 2 Bearing in the container. A aluminum. cover with rubber gasket, and rain lip provides protection from outside conditions.

3.4 Fabrication and Finish

The system is fabricated from structural steel shapes conforming to ASTM A500, A513, and A36 materials. All bolted connections use A325 structural bolts or SAE Grade 5 commercial hardware. Unit is primed and painted with high-grade, Skydrol resistant enamel, with color optional. Pins and miscellaneous hardware are manufactured from corrosion resistant materials, or plated as required.

3.5 Characteristics

Empty Container

Height (IN.)..... 51.6

Diameter (IN.).....40

Weight (Lbs.) 596

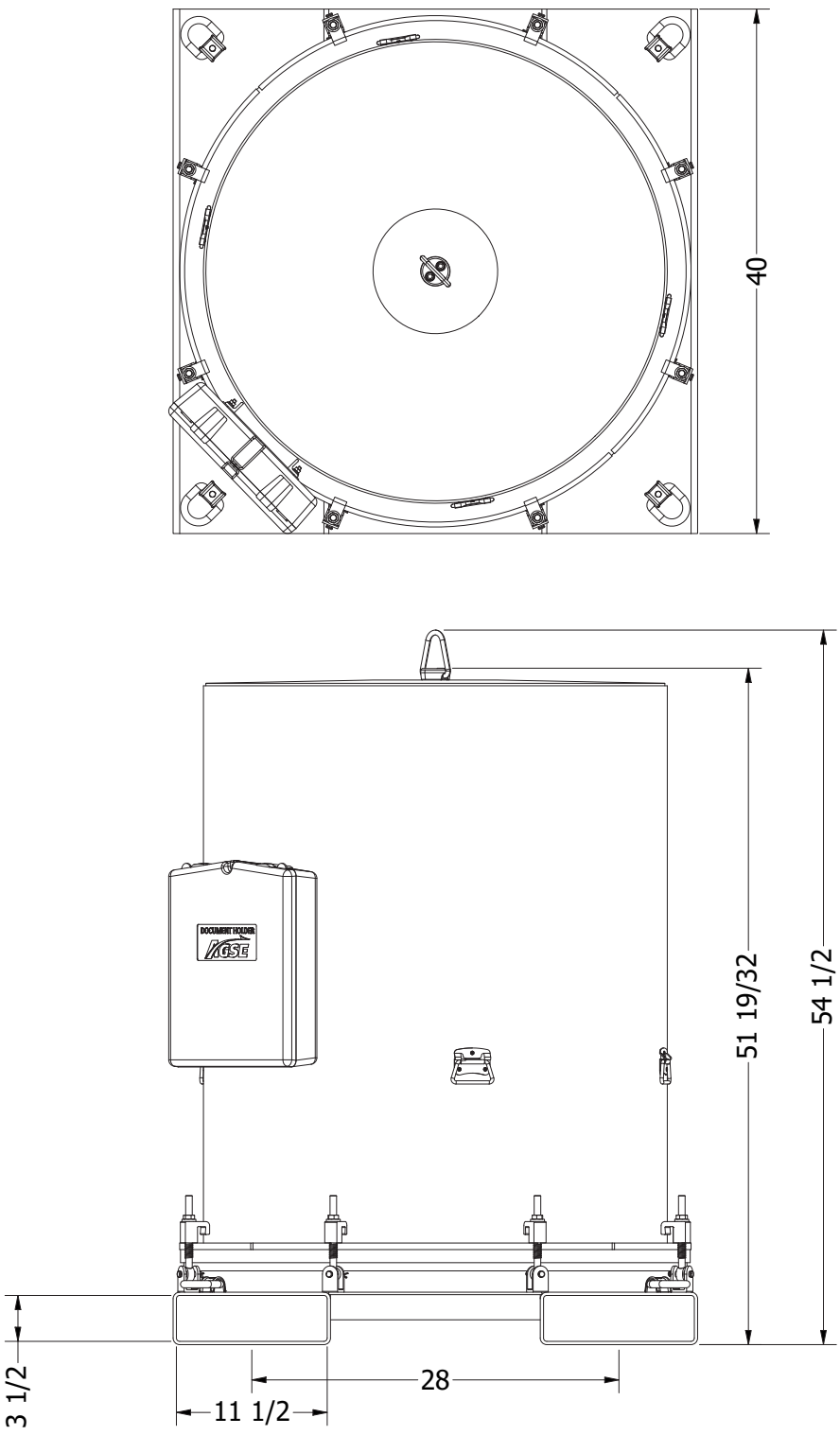


Figure 3.5-1. AGSE-C012-G01- Dimensions

4.0 – Maintenance and Inspection

4.1 General

Life expectancy of this equipment can be extended if it is properly maintained. By design, there is only minimal periodic servicing required. Annual inspections for damage, weld cracks, or corrosion are recommended. Prior to each use, this equipment should be inspected for obvious signs of abuse or shipping damage. Observed damage should require complete inspection of the affected area to ensure structural integrity is not compromised.

4.2 Cleaning and Painting

This equipment should be cleaned periodically with a soap and water solution and rinsed thoroughly. Damaged paint should be touched-up with Skydrol resistant high-grade enamel paint. Superficial scratches are expected during normal usage and will not affect function.

4.3 Scheduled Service

All non-painted machined surfaces should be coated with a light grade oil spray every 90 days. Spray with rust inhibitor LPS-3 (MIL-C-16173D, Gr. 2) or equivalent.

4.4 Scheduled Inspection

CAUTION

Prior to each use, the stand should be inspected for obvious signs of abuse or shipping damage. Observed damage should require complete inspection of the affected area to ensure stand integrity is not compromised.

Annual inspections of machined surfaces, pins, fasteners structure and shock mounts are recommended. The machined mounting surfaces are to be visually inspected for signs of wear or corrosion. Action is to be taken immediately if areas are determined to be potentially dangerous to operating personnel, or a detriment to the equipment. Pins and fasteners are to be visually inspected for cracks, damage, or corrosion. Loose fasteners must be tightened. The structure is to be visually inspected for damage, weld cracks, or corrosion.

Regular inspection of the Upper Bearing Clamp Plate, Bearing Cap Plate Support, Bearing Support and Components Shipping Container should also specifically include:

- a check of pins and latches
- a check of cushion material for tears
- a check of cover seal for damage

CAUTION

AGSE recommends that shock mounts be replaced every five (5) years. Additionally, periodic inspections should be performed and any of the following conditions are proper cause for replacement of the shock mounts prior to their expiration:

1. **Visible evidence of cracks.**
2. **Discoloration: visible damage caused by solvents.**
3. **Permanent deformation.**
4. **Mount does not flex during engine loading/unloading.**
5. **Significant corrosion on shock attach-plate.**

The following exposures can reduce the life of shock mounts and it is recommended to avoid them where possible.

- High humidity and/or salty air
- Direct sunlight
- Solvent, corrosive liquids, and fumes
- Oils, jet fuel, or Skydrol hydraulic fluid
- Extreme temperatures
- Ozone or engine exhaust

5.0 – Operation

WARNING

Care must be taken when working near suspended loads.

WARNING

Personnel should never stand beneath the suspended load.

Care must be taken when working near suspended loads.
Personnel should never stand beneath the suspended load.

5.1 Positioning and Set - Up

1. Position the AGSE-C012-G01 Module 2 Shipping Container on a smooth level surface
2. Release the cover clamps (8) and remove cover (126 lbs.) using hoisting system connected to the designated hoist rings on the top of the cover. (Figure 5.1-1). The cover can manually be lifted by two persons using the lifting handles (Figure 5.1-2). Set the container cover aside.

5.2 1 & 2 Bearing Installation

1) Remove the securing cap assembly by unscrewing the tension rod from the AGSE-C01201-P01, Bearing Support Base, with lifting eye.

2) Remove the hex nut and washer retaining the (AGSE-C01204-P01) Bearing lower clamp support, rest the support on the, (AGSE-C01201-P01) bearing support. Set the securing cap assembly aside.

3) Remove twelve (12) socket head screws, twelve (12) hex nuts and twenty four (24) flat washers from the bearing support (Figure 5.2-1).

4) Install the #1 Bearing aligning bolt holes with (AGSE-C01201-P01) Bearing Support, Positioning the bearing tube between the (AGSE-C01001-P01) Bearing Support, and (AGSE-C01204-P02) Bearing lower clamp support.

5) Raise the (AGSE-C01204-P01) Bearing lower clamp support to contact the Module 2 #1 Bearing flange by threading the support up with the securing cap shaft eyebolt. Secure with Item #21 hex nut. (IPB 8.1-1)

6) Secure bearing by compressing the spring approcimately 15/16-inch (23.8 mm). Lift the bearing module into the container with the securing cap lifting eye, to align bolt holes with (AGSE-C01201-P0) Bearing Support.

7) Install item #24 bolts, #16 washers, and #24 lock nuts. (IPB 8.1-1)

8) Remove twelve (12) hex head screw, twelve (12) hex nut and twenty four (24) washers from (AGSE-C01204-P03) #2 Bearing housing support (Figure 5.2-1)

9) Install #2 Bearing housing aligning bolt holes with (AGSE-C01204-P03) Bearing Support.

10) Install item #10 bolts, #15 washers, and #22 lock nuts. (IPB 8.1-1)

8) Install the container cover and secure by tightening the eight (8) container clamps.

9) 1 & 2 Bearing support is now ready for shipping or handling.

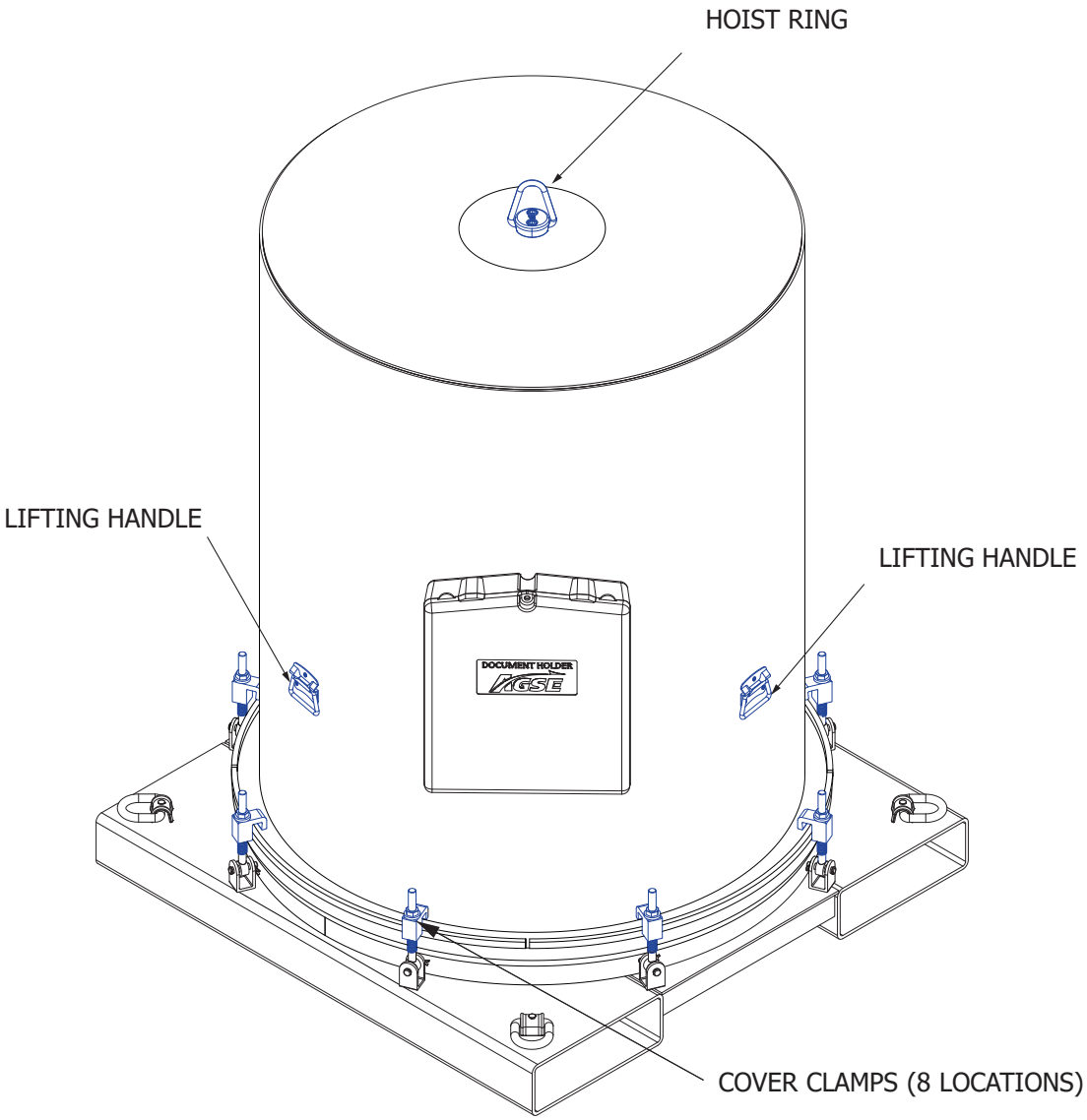


Figure 5.1-1. Hoist & Lift Handle

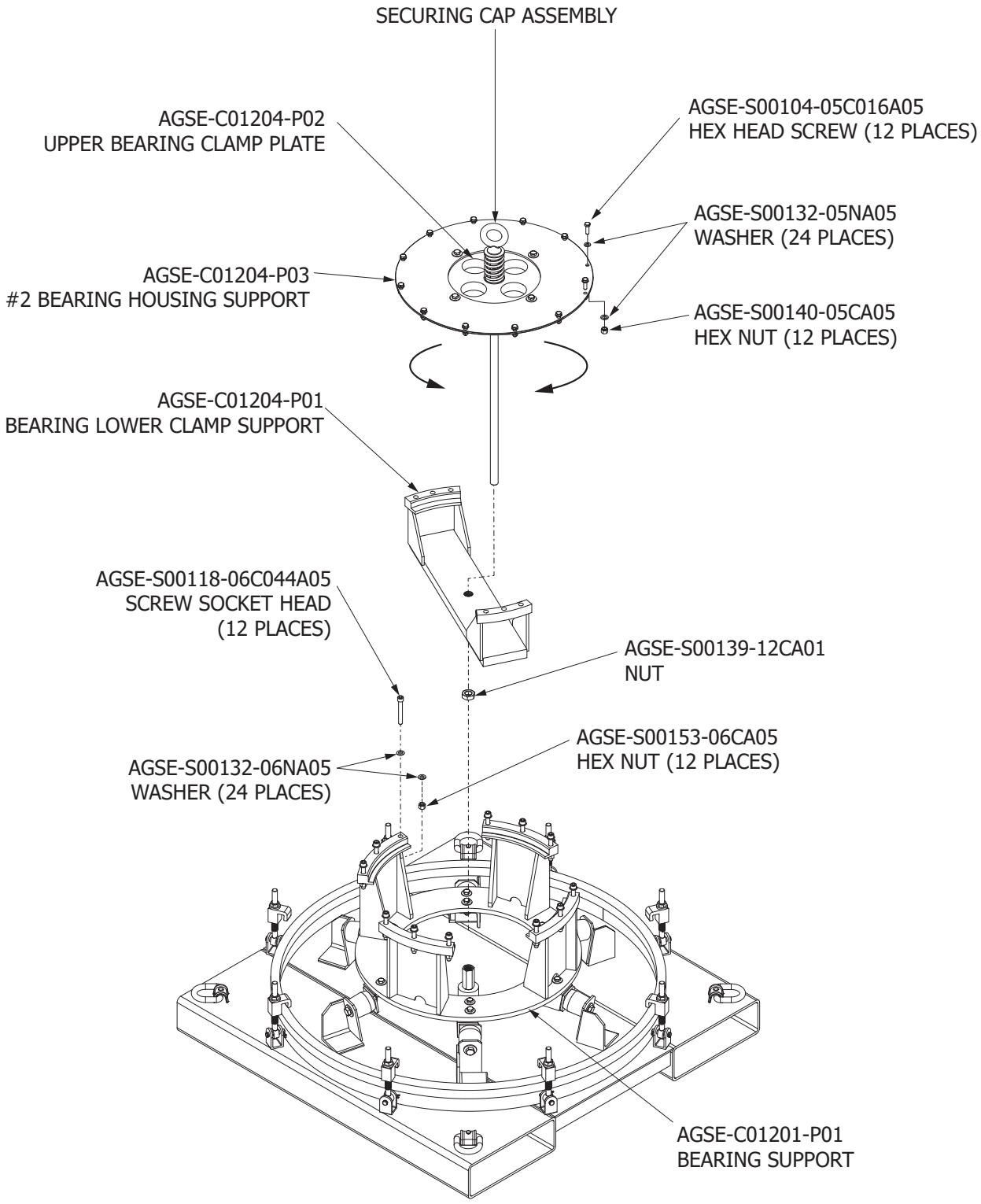


Figure 5.2-1. Bearing Cap Plate Support and Securing Cap Removal

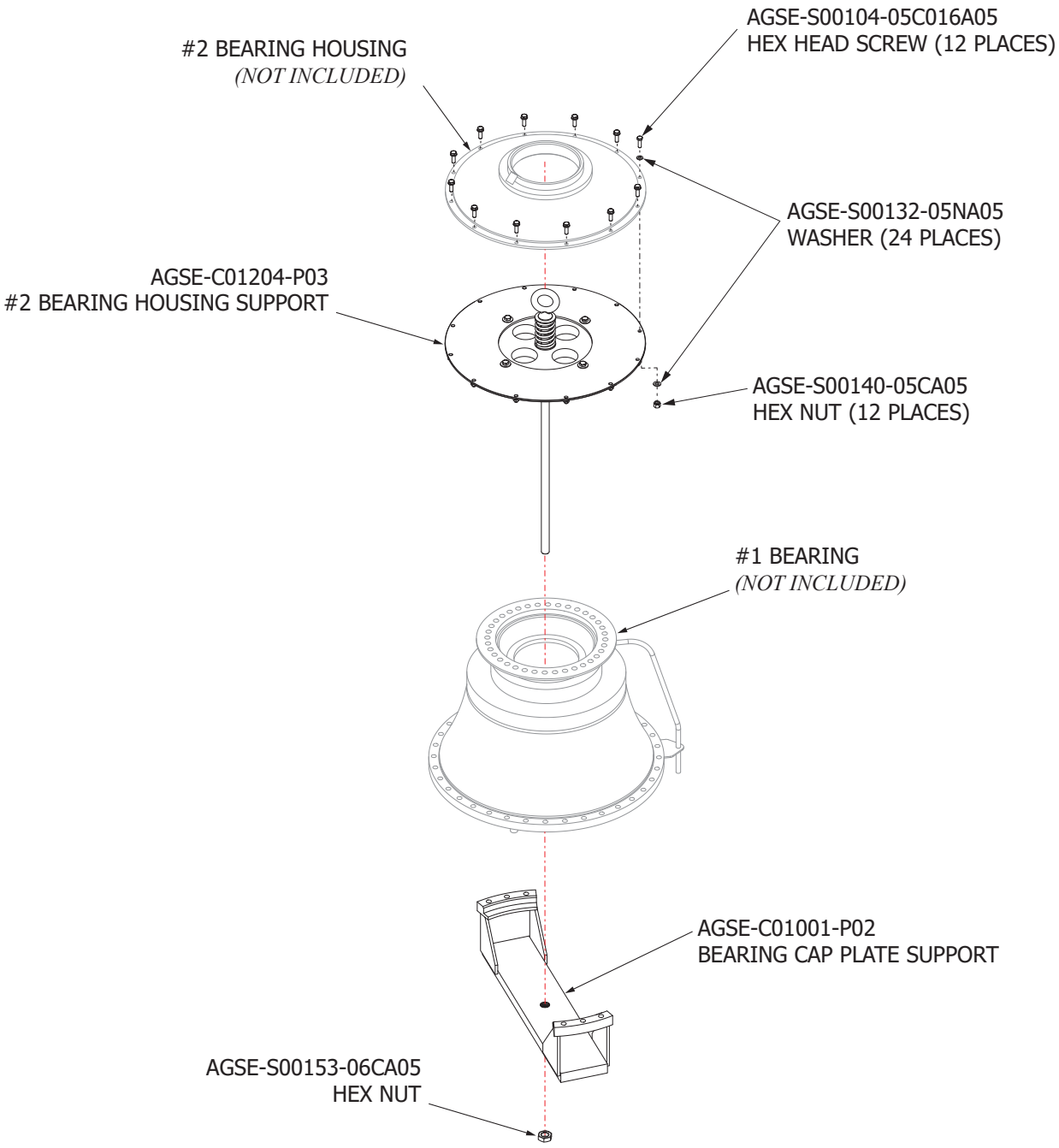

#2 BEARING HOUSING
(NOT INCLUDED)
AGSE-S00104-05C016A05
HEX HEAD SCREW (12 PLACES)
AGSE-S00132-05NA05
WASHER (24 PLACES)
AGSE-C01204-P03
#2 BEARING HOUSING SUPPORT
AGSE-S00140-05CA05
HEX NUT (12 PLACES)
#1 BEARING
(NOT INCLUDED)
AGSE-C01001-P02
BEARING CAP PLATE SUPPORT
AGSE-S00153-06CA05
HEX NUT

Figure 5.2-2.

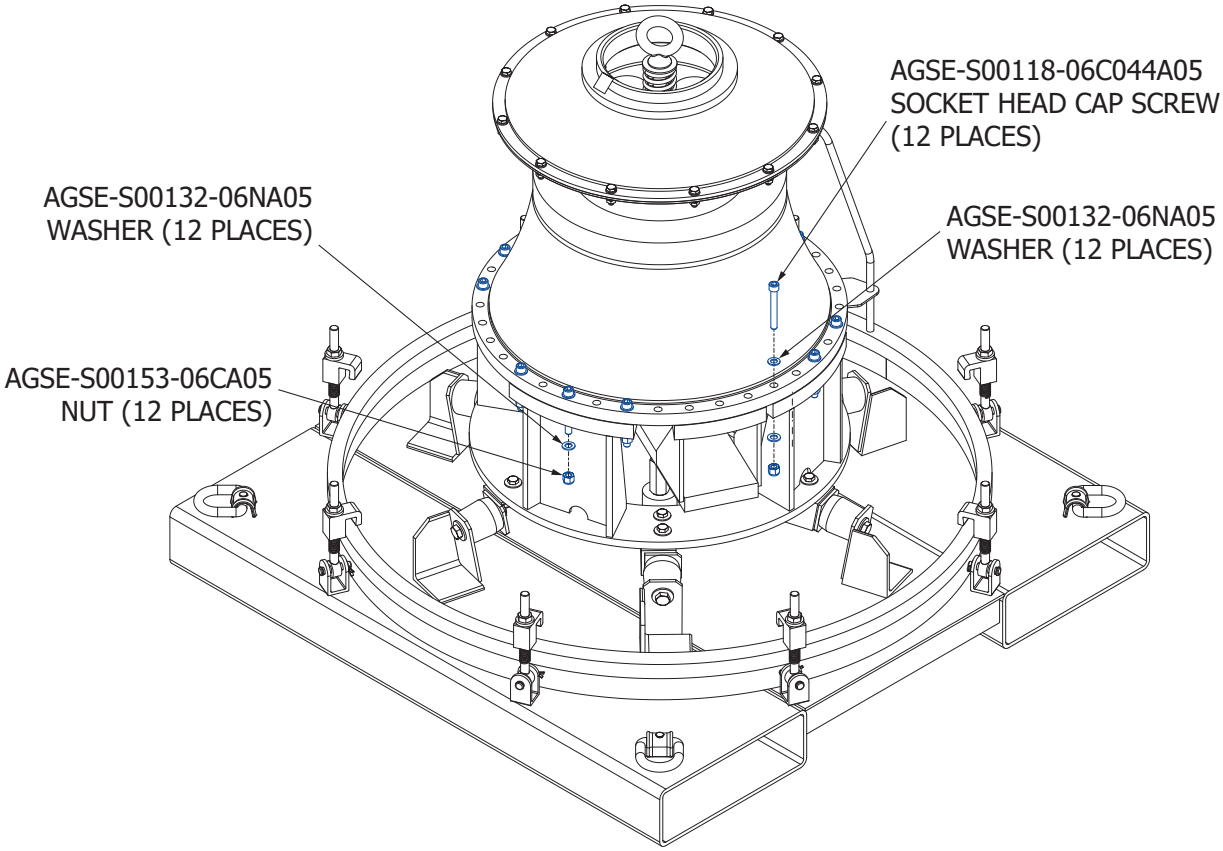

AGSE-S00118-06C044A05
SOCKET HEAD CAP SCREW
(12 PLACES)
AGSE-S00132-06NA05
WASHER (12 PLACES)
AGSE-S00132-06NA05
WASHER (12 PLACES)
AGSE-S00153-06CA05
NUT (12 PLACES)

Figure 5.2-3

CAUTION

Remove all pooling water on cover before lifting cover exces weight can cause bowing and may damage cover.

5.4 Shipping Preparation of the AGSE-C012-G01 container:

1. Install cover using a hoisting system by the hoist ring on top of the cover or manually lifted by two persons using the lifting handles (Figure 5.1-1), secure by tightening the hex nuts on the eight (8) container clamps. (Figure 5.1-1)
2. Module 2 shipping container is now ready for shipping.

CAUTION

Do not over tighten the clamps - May damage cover sealing edge.

5.5 1 & 2 Bearing Removal From Container

1) Remove container cover assembly by loosening eight (8) hex nuts of the container clamps. The cover can be lifted using a hoisting system by the hoist rings on top of the cover or manually lifted by two persons using the lifting handles (Figure 5.1-1).Set the cover aside.
2) Remove twelve (12) hex head screw, twelve (12) hex nut and twenty four (24) washers from (AGSE-C01204-P03) #2 Bearing housing support (Figure 5.2-2)
3) Using a hoisting system remove #2 Bearing housing from container.
4) Install item #10 bolts, #15 washers, and #22 lock nuts. (IPB 8.1-1)
5) Remove twelve (12) socket head screws, twelve (12) hex nuts and twenty four (24) flat washers from the bearing support (Figure 5.2-1). that secure #1 Bearing to (AGSE-C01201-P01) bearing support.
6) Using a hoisting system remove #1 Bearing from container.
7) Remove the securing cap by removing washer and hex nut from the bottom of the bearing lower clamp support (Figure 5.2-2), remove the securin cap turning counter clockwise from plate support.
4) Install the securing cap on to bearing cap plate support followed by flat washer and hex nut from the bottom of the bearing cap plate support (Figure 5.2-2).
5) Install the securing cap and bearing cap plate support to the core bearing support turning securing cap clockwise untill set.
7) Install the container cover and secure by tightening the hex nuts on the eight (8) container clamps. (Figure 5.1-1)
8) The Module 2 shipping container is now ready for storage.

6.0 – SAFETY

6.1 Stress

Design stress safety factors are compliant with industry standards.

6.2 General

Most accidents are the result of violating standard safety rules in operation or improper servicing and maintenance of equipment.

Many safety features have been incorporated into the design to assist in safe operation of this equipment. These items do not fool-proof the equipment nor do they replace the operator's responsibility to operate the equipment in a safe manner.

CAUTION

Any deficiency revealed through inspection must be reported to supervisory personnel. A determination must be made prior to resuming operation, as to whether the deficiency constitutes a safety hazard to personnel or equipment.

It is the operator's responsibility to report any deficiencies, unusual noises, or operating conditions to supervisory personnel. It is also the responsibility of the user of this equipment to discontinue use until they are assured that the deficiency has been corrected.

6.3 Prevention

A good preventative maintenance program should include periodic lubrication, adjustment, and immediate correction of defects revealed through inspections. Preventive maintenance will not only contribute to safe operation, but will also extend useful service life as well.

7.0 – Warranty

7.1 Statement of Warranty

Advanced Ground Systems Engineering LLC (AGSE) warrants to original purchasers that it's products will be free of defects in material and workmanship under normal use and conditions for claims received within a period of one year from date of purchase (final billing date), and to the extent that if any AGSE product fails in operation because of such defect, the company will replace or repair, at its option, the defective article. Prior to the repair or replacement of any defective product, the company shall be notified in writing as to the nature of the defect. The company shall assume no liability for freight, disassembly, removal, refitting and installation charges on any article returned unless such charge(s) is approved by AGSE in writing prior to the return. On component items purchased by AGSE for incorporation into an AGSE manufactured product, only the component manufacturer's warranty (if any) shall apply to that component. Said manufacturers warranty shall be passed on to AGSE's customer to the extent permitted. This warranty is applicable only when AGSE products are operated for intended purposes within the recommended procedures, load limits, properly maintained, not damaged or abused, etc., including as indicated in company manuals, catalogs, and drawings. All warranty claims must be applied for within sixty days from when the defect becomes known. The foregoing warranty is in lieu of all other warranties, or liabilities, either expressed or implied, and AGSE expressly excludes all implied warranties of merchantability and fitness for a particular purpose and all non-infringement warranties as well as disclaims all liabilities to third parties. In no event shall AGSE be liable for any amounts in excess of the purchase price of the product.

NOTICE

Failure to conduct periodic inspections, routine maintenance, or improper operation will result in the voiding of the warranty.

8.0 – Parts Breakdown

8.1 General

The following pages can be used in the identification of components used in the product described in this manual. Parts Lists are broken down by “ITEM,” “PART NUMBER,” “QTY,” and “DESCRIPTION.”

NOTICE

“ITEM” numbers are for reference to the Illustrated Parts Breakdown (IPB) only. Do not order replacement parts by “ITEM” number. Order parts by “PART NUMBER” only.

8.2 Illustrated Parts Breakdown

IPB Figure 1 – AGSE-C012-G01
Module 2 Shipping Container

ITEM	PART NUMBER	QTY	PART DESCRIPTION
	AGSE-C012-G01	-	Module 2 Shipping Container (Figure 8.1-1 - 8.1-3)
1	AGSE-S00284-P03	1	Edge Bumper 119-Inches
2	AGSE-C01002-P02	6	Shock Mount Adapter Weldement
3	AGSE-C01003-P01	1	Base Frame Weldment
4	AGSE-C01201-P01	1	BearingSupport
5	AGSE-C01203-P01	1	Modified Eyebolt Weldment
6	AGSE-C01204-P01	1	#1 Bearing Lower Clamp Support
7	AGSE-C01204-P02	1	Upper Bearing Clamp Plate
8	AGSE-C01204-P03	1	#2 Bearing Housing Support
9	AGSE-C01206-S01	1	Aluminum Cover Assembly
10	AGSE-S00104-05C016A05	12	Screw, Hex Head
11	AGSE-S00104-06C024A01	12	Screw, Hex Head
12	AGSE-S00105-06C020A01	4	Screw, Hex Head
13	AGSE-S00105-08C012A01	12	Screw, Hex Head
14	AGSE-S00118-06C044A05	12	Screw, Socket Head
15	AGSE-S00132-05NA05	24	Washer
16	AGSE-S00132-06NA05	24	Washer
17	AGSE-S00132-06RA17	28	Washer
18	AGSE-S00132-08RA17	12	Washer
19	AGSE-S00132-12RA17	2	Washer
20	AGSE-S00135-06A17	12	Washer, Locking

IPB Figure 1 – AGSE-C012-G01
Module 2 Shipping Container

ITEM	PART NUMBER	QTY	PART DESCRIPTION
21	AGSE-S00139-12CA01	1	Nut, Hex
22	AGSE-S00140-05CA05	12	Nut, Locking
23	AGSE-S00150-06CA01	12	Nut, Hex
24	AGSE-S00153-06CA05	12	Nut, Locking
25	AM-2177-600	8	Clamp Assembly
26	AGSE-S00304-P06	6	Shock Mount
27	AGSE-S00209-P01	1	Threaded Insert
28	AGSE-S00238-P04	1	Compression Spring
29	AGSE-S00168-P01	1	Dowel Pin

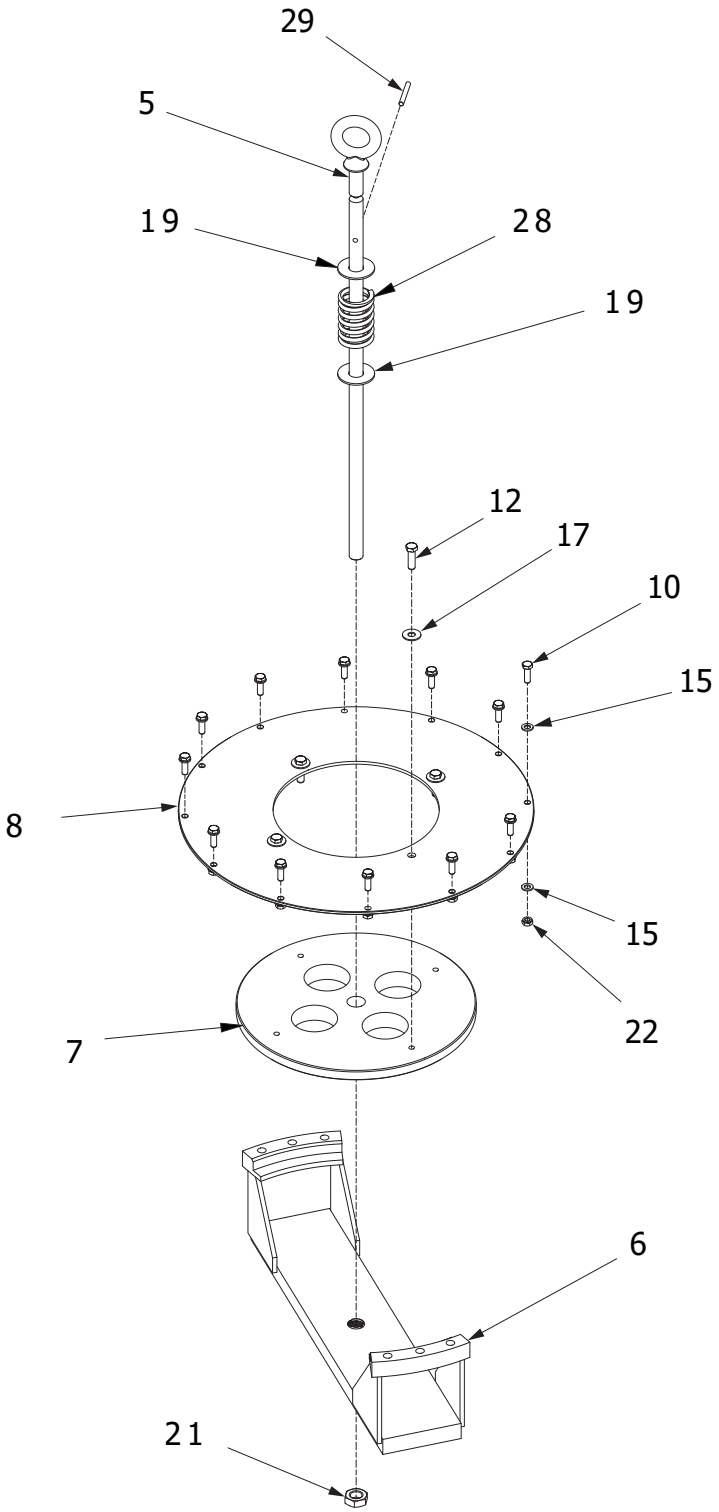


Figure 8.1-1 Fan & Booster Container

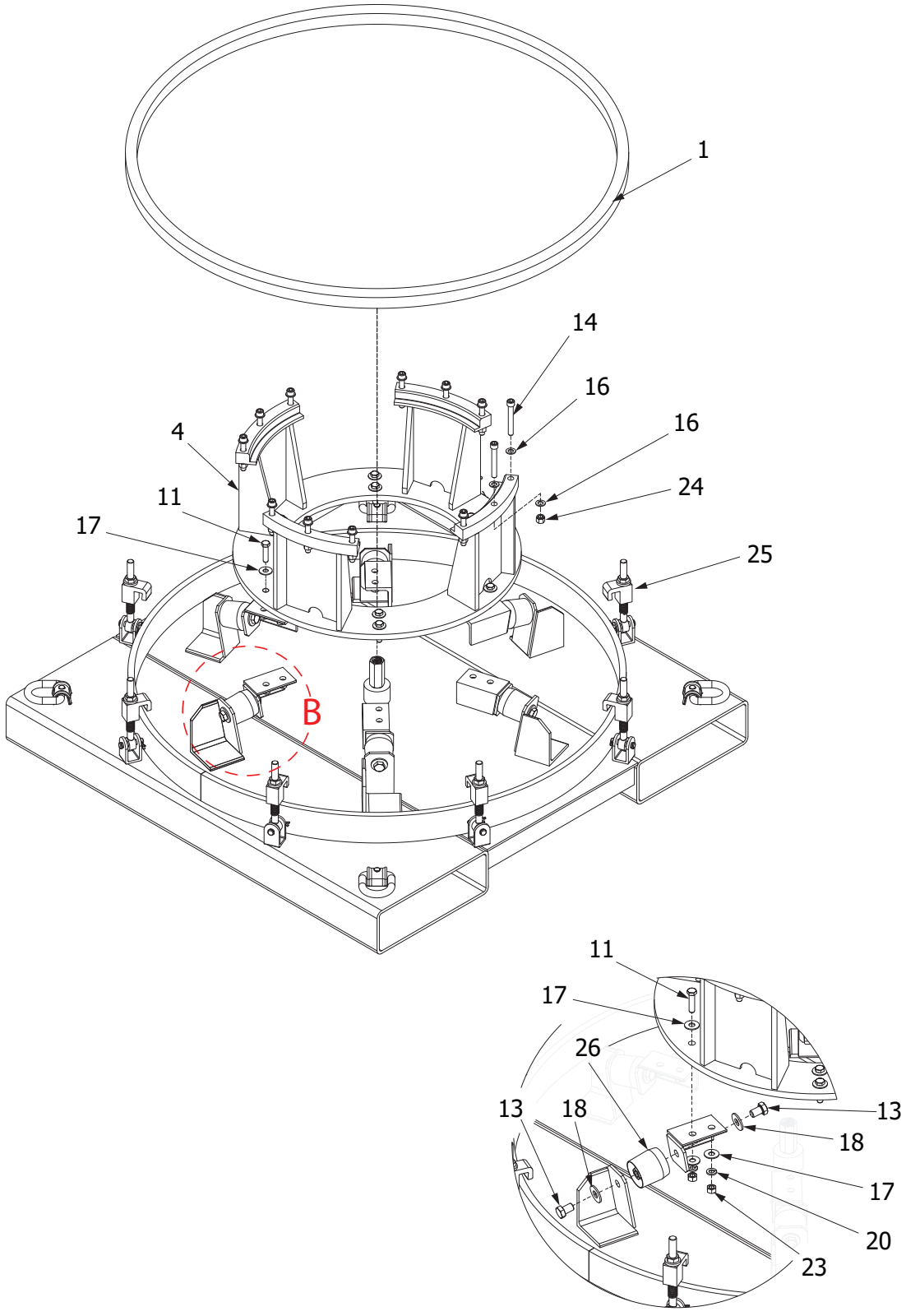


Figure 8.1-2 Fan & Booster Container

IPB Figure 2 – AGSE-C01206-P01
Aluminum Cover Assembly

ITEM	PART NUMBER	QTY	PART DESCRIPTION
	AGSE-C01206-P01	-	Aluminum Cover Assy (Figure 8.2-1)
1	AGSE-C01205-P01	1	Aluminum Cover Weldment
2	AGSE-V164-S01	1	Document Box
3	AGSE-S00118-06C032A07	2	Screw, Socket Head
4	AGSE-S00128-N06C010A05	12	Screw, Flat Head
5	AGSE-S00131-04A17	8	Washer
6	AGSE-S00135-N06A05	12	Washer
7	AGSE-S00132-06RA17	2	Washer
8	AGSE-S00135-04A17	4	Washer, Locking
9	AGSE-S00135-06A17	2	Washer, Locking
10	AGSE-S00135-N06A05	12	Washer, Locking
11	AGSE-S00150-04CA01	4	Nut, Hex
12	AGSE-S00150-06CA01	2	Nut, Hex
13	AGSE-S00150-N06CA05	12	Nut, Hex
14	AGSE-S00104-04C016A01	4	Screw, Hex Head
15	CL-25-HR	1	Hoist Ring
16	1647A31	4	Handle w/Mounting Plate

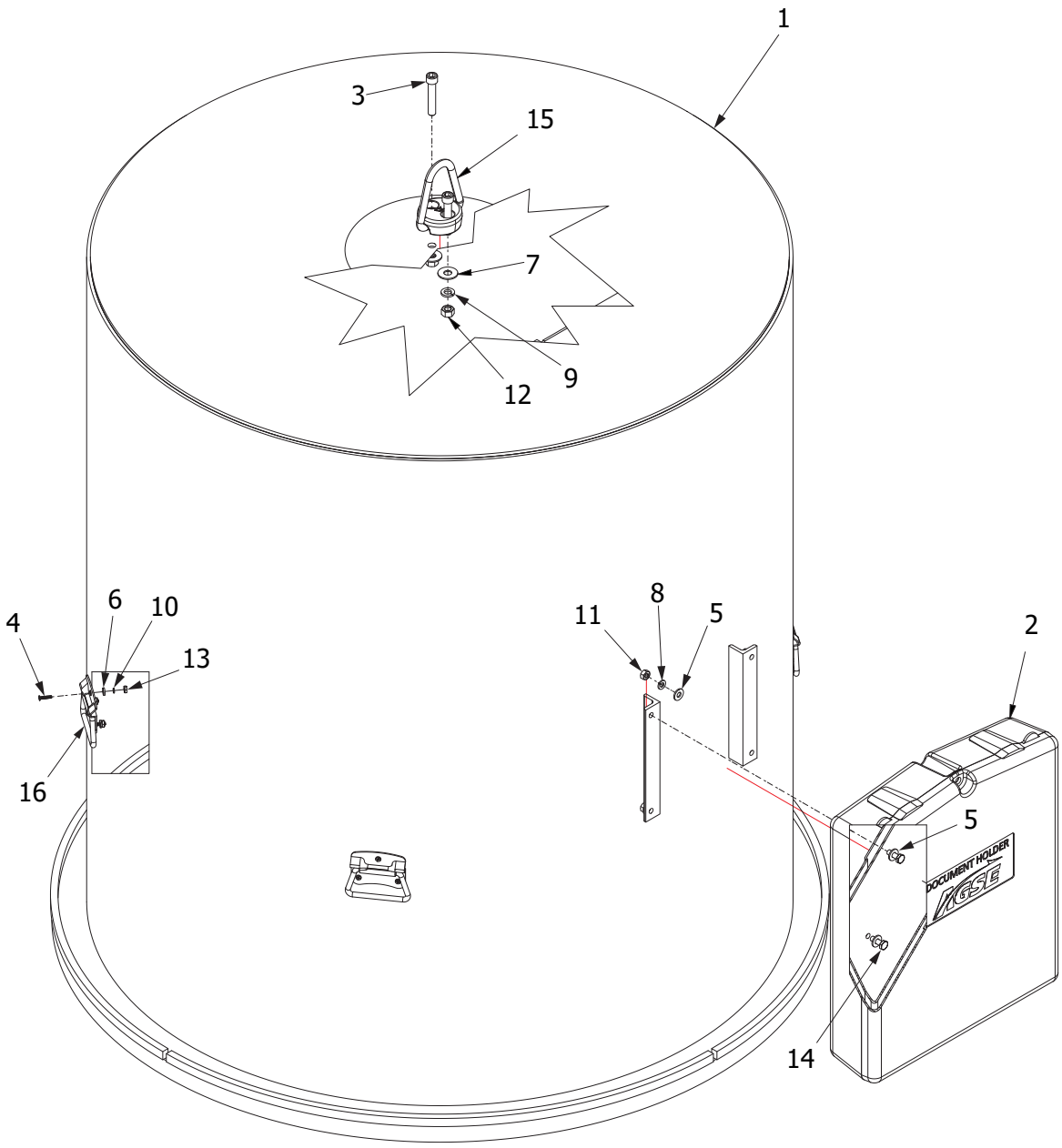


Figure 8.2-1 Fan Blade Platform Storage Box

9.0 – Stencils, Decals and Placards

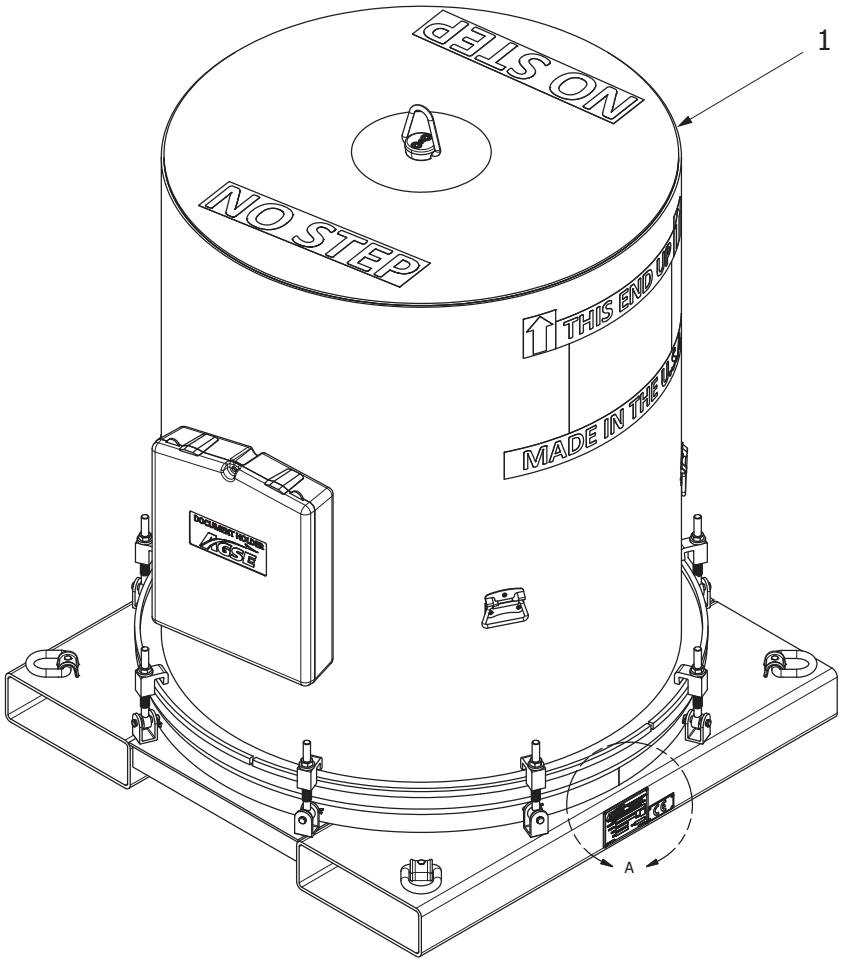
9.1 General

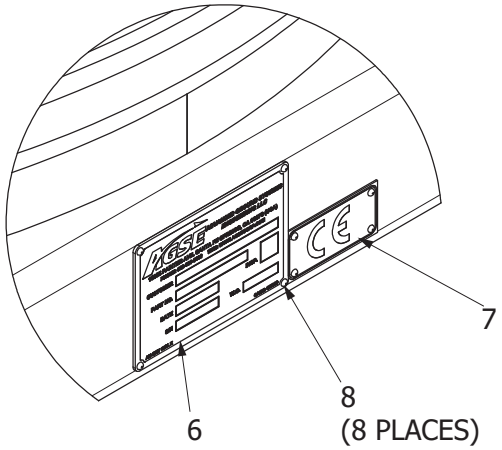
Various stencils, decals, and placards are added to the equipment to provide warnings, cautions, and general information. These items should be reviewed and understood by maintenance and user personnel.

9.1 Stencils and Placards

ITEM	PART NUMBER		PART DESCRIPTION
	AGSE-C01202		Stencil Kit (Figure 9.1-1 - 9.1-2)
1	AGSE-C01202-P01		Stencil Kit - Aluminum cover
2	AGSE-C01202-P02		Stencil Kit - Bearing Support
3	AGSE-C01202-P03		Stencil Kit - Lower Bearing Support
4	AGSE-C01202-P04		Stencil Kit - Upper Bearing Clamp Plate
5	AGSE-C01202-P05		Stencil Kit - #2 Upper Bearing Support
6	AM-2207	1	AGSE Placard
7	AGSE-S00302-P01	1	CE Placard
8	AGSE-S00125-P01	8	Rivet
	AGSE-C01202-P01	-	ALUMINUM COVER STENCIL KIT (Fig. 9.1-3)
-01	AGSE-C01202-01	1	ARROW
-02	AGSE-C01202-02	1	AGSE-C01205-P01
-03	AGSE-C01202-03	1	CUSTOMER'S NAME/LOGO
-04	AGSE-C01202-04	1	CONTAINER INFORMATION
-05	AGSE-C01202-05	1	THIS END UP
-06	AGSE-C01202-06	2	NO STEP
-07	AGSE-C01202-07	1	MADE IN THE U.S.A.
-08	AGSE-C01202-08	1	MADE IN THE USA
-09	AGSE-C01202-09	1	CUP AND UMBRELLA
-10	AGSE-C01202-10	1	HANDLE WITH CARE REUSABLE CONTAINER

	AGSE-C01202-P02	-	BEARING SUPPORT STENCIL KIT *(Fig. 9.1-4)*
-12	AGSE-C01202-12	2	AGSE-C01201-P01
-20	AGSE-C01202-20	2	HOUSING SUPPORT
	AGSE-C01202-P03	-	LOWER BEARING SUPPORT STENCIL KIT *(Fig. 9.1-5)*
-11	AGSE-C01202-11	2	Stencil Kit - Lower Bearing Support
-13	AGSE-C01202-13	1	AGSE-C01204-P01
-19	AGSE-C01202-19	4	ARROW
	AGSE-C01202-P04	-	UPPER BEARING CLAMP PLATE STENCIL KIT *(Fig. 9.1-6)*
-14	AGSE-C01202-14	1	STEP POINTING DOWN
-15	AGSE-C01202-15	1	HOUSING BEARING #1 SUPPORT
-16	AGSE-C01202-16	1	ARROW
	AGSE-C01202-P05	-	#2 UPPER BEARING SUPPORT STENCIL KIT *(Fig. 9.1-7)*
-17	AGSE-C01202-17	1	THIS SIDE SHOWN
-18	AGSE-C01202-18	1	BEARING HOUSING SUPPORT #2





DETAIL A

Figure 9.1-1 Stencil Kit

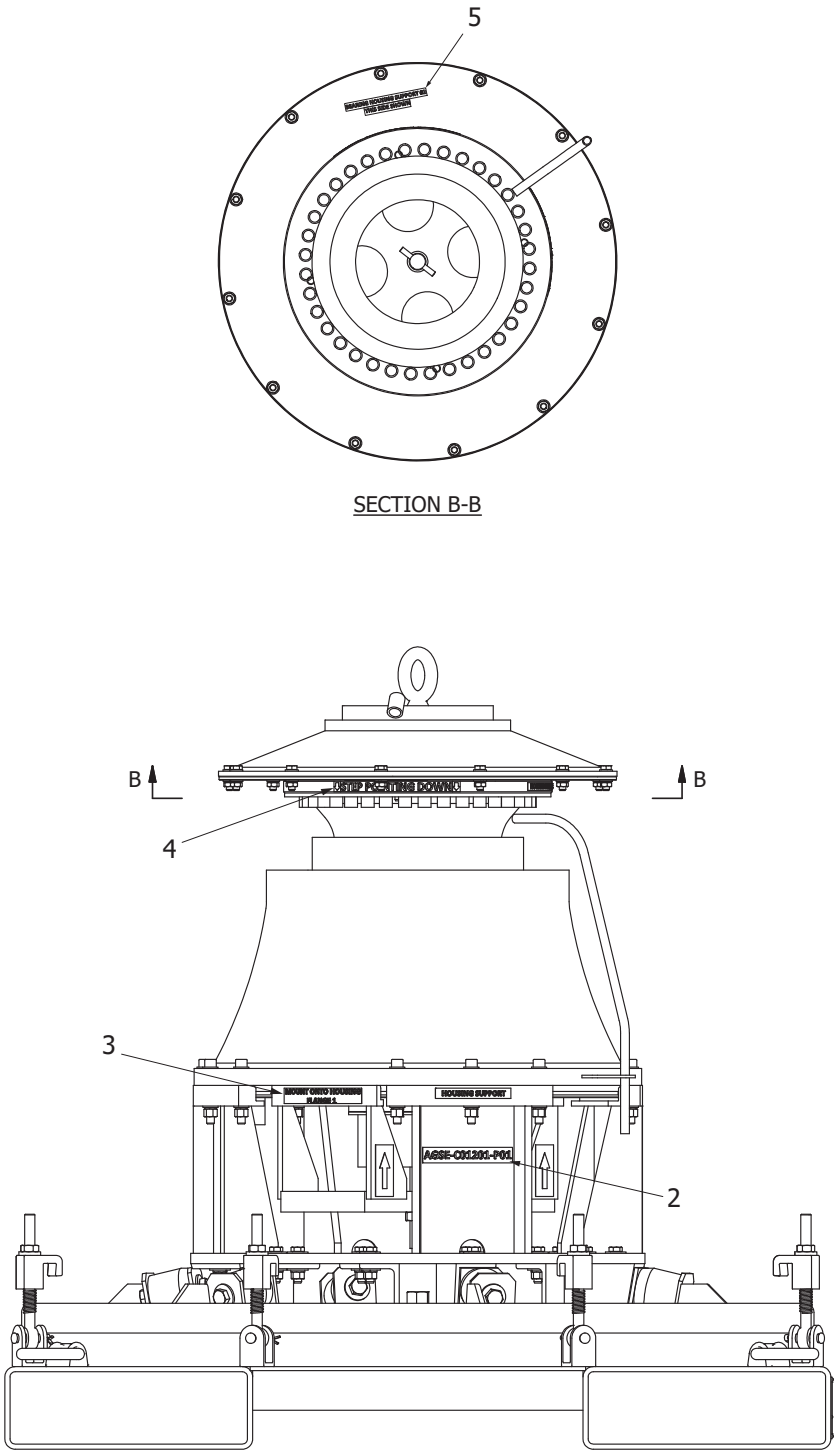


Figure 9.1-2 Fan Blade Platform Storage Box

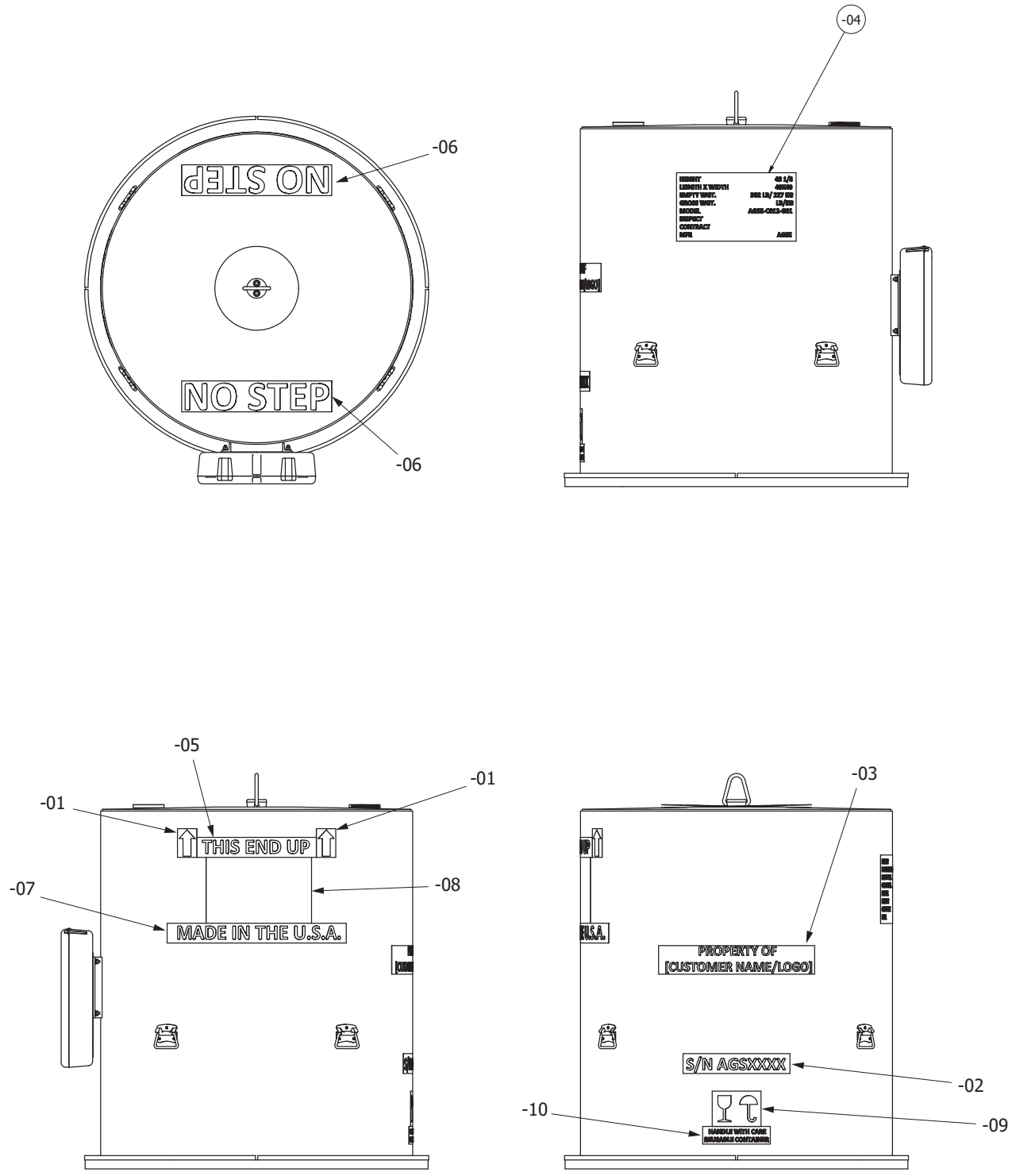


Figure 9.1-3 - Aluminum Cover Stencil

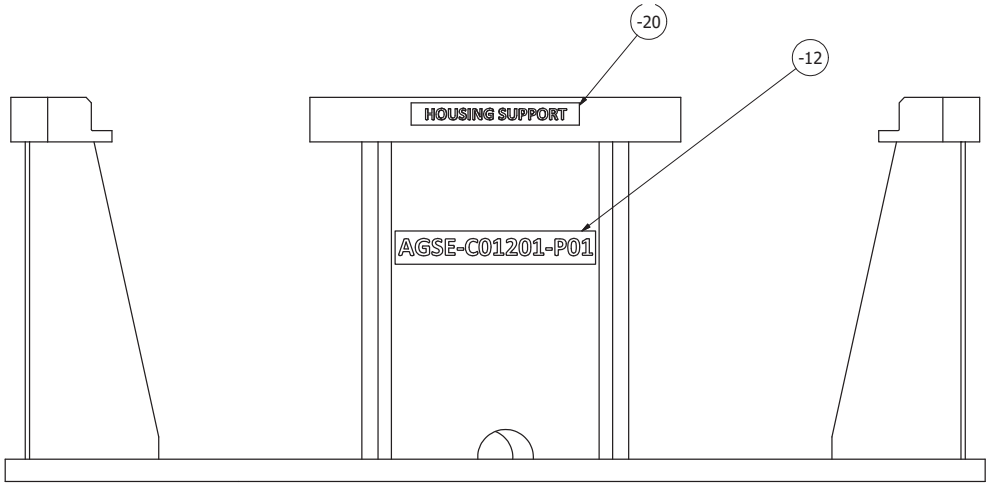


Figure 9.1-4 - Bearing Support Stencil

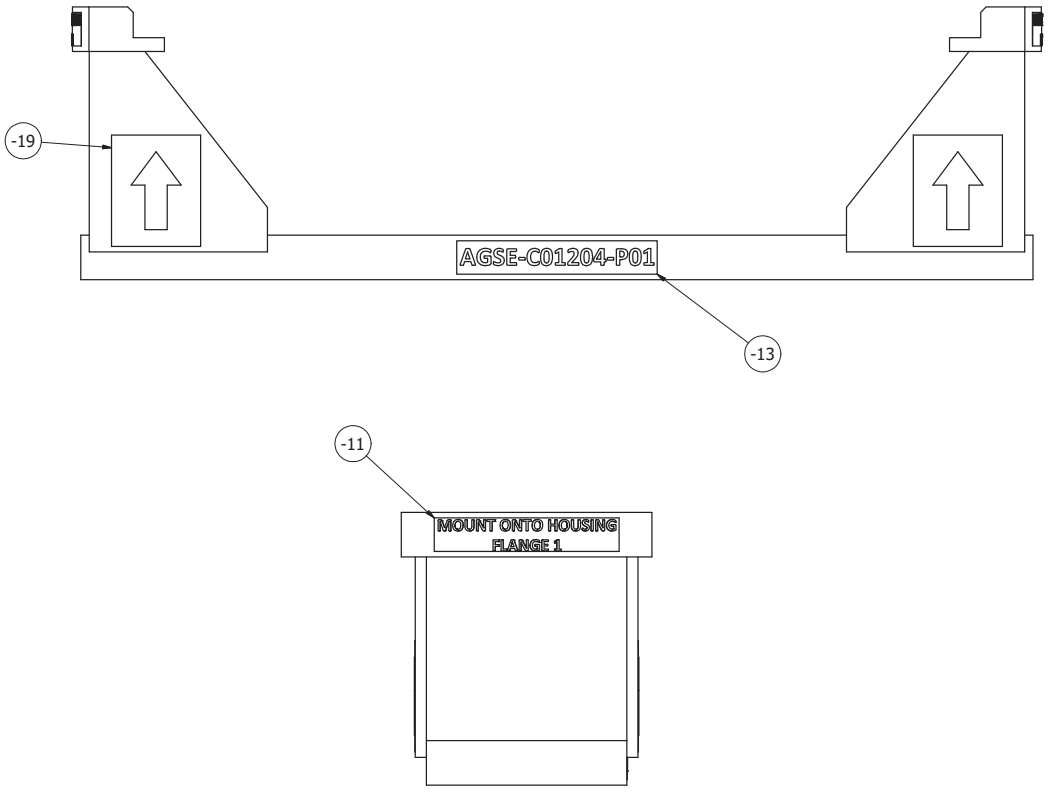


Figure 9.1-5 - Lower Bearing Support Stencil

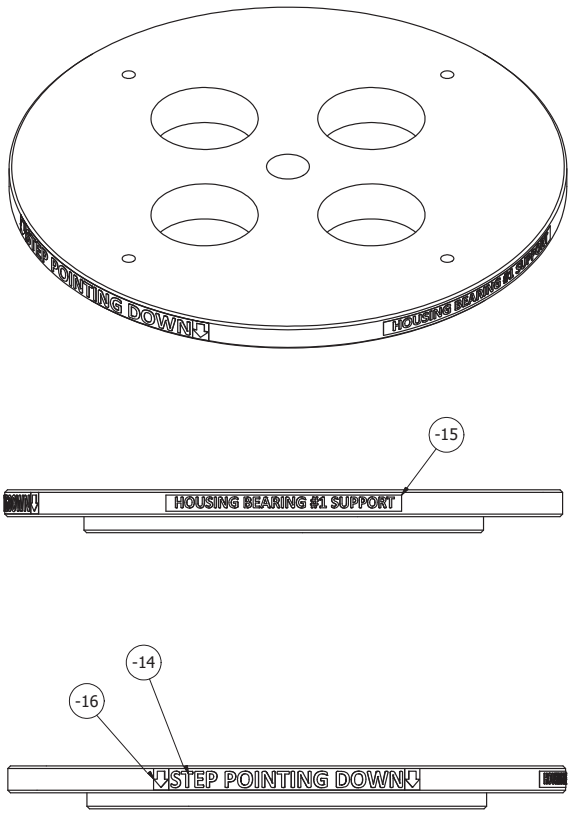


Figure 9.1-6 - Upper Bearing Clamp Plate Stencil

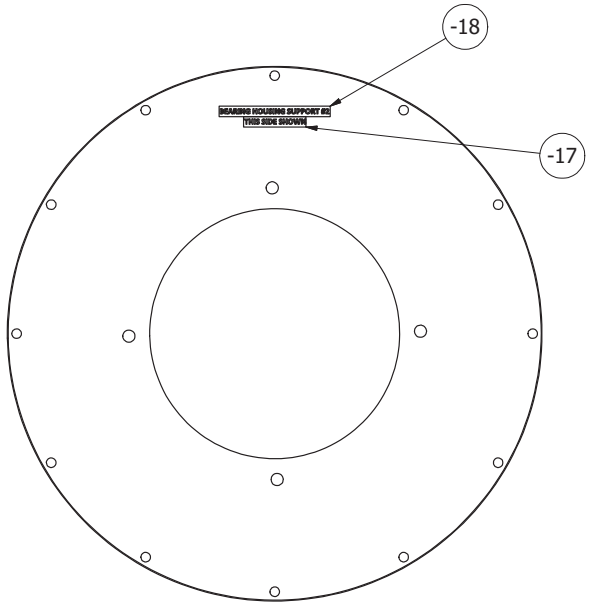


Figure 9.1-7 - #2 Upper Bearing Support Stencil