

CHAPTER 3

SECTIONS 3.38 – 3.40

NAVIGATION AND SPECIAL EQUIPMENT

3.38 Gyrocompasses

3.38.1 Receipt Inspection Requirements

a. Packaged Equipment. Inspect packaged equipment containers for presence and legibility of markings (see subparagraph 3.38.3d); for obvious signs of damage, deterioration, and/or distortion; for correct preservation-packaging; for proper blocking and bracing; and for pink or white humidity indicators (if applicable). Report all damage, insufficient preservation-packaging, insufficient packing, and pink or white humidity indicators to the applicable MATREP or Inventory Manager. Remark, represerve or repack, as required.

b. Unpacked Equipment or Equipment Packed in Open Crates or Boxes. Inspect unpackaged equipment for obvious signs of damage, deterioration, distortion, and lack of anchoring hardware, blocks and braces, and any other protective devices necessary to prevent damage to equipment during handling and storage. Inspect equipment for the presence of damage to the preservation-packaging. See subparagraph 3.38.3a. Unpackaged equipment must be secured to pallet, box or crate to avoid damage during handling. Report all damage, insufficient preservation-packaging, insufficient packing; and pink or white humidity indicators to the applicable MATREP or Inventory Manager. Remark, represerve or repack, as required.

3.38.2 Periodic Inspection

a. Periodicity. Inspect gyrocompass assemblies annually.

b. Procedure. Inspect containers for obvious signs of damage, deterioration, or distortion and for proper blocking and bracing. See subparagraph 3.38.3. Make a note of any the damage and its location.

Check humidity indicators. Continue this inspection procedure for equipment packaged to method 50 only if the indicators are found to be pink or white. Continue the procedure for all other equipments.

Carefully remove packing and packaging as required to provide access to the equipment. As the packing and packaging must be reused, take care not to damage it.

Inspect equipment and preservation for obvious signs of damage, deterioration, or distortion (e.g., corrosion, cracks, gouges, bent and distorted surfaces, etc.). Closely inspect all exposed machine and working surfaces. Make a note of the location and damage, if any.

If the equipment is damaged, report the damage to the MATREP or Inventory Manager. If possible, effect repairs required to return to RFI condition.

If the preservation is damaged, represerve using detailed instructions specified herein.

Repair the packaging and packing as required to return to the requirements of subparagraph 3.38.3.

Replace desiccant and humidity indicators as required.

3.38.3 Packaging/Preparation for Delivery

a. Preservation-Packaging. Gyrocompass equipment requires Level A protection. Preservation/packaging will be in accordance with MIL-E-17555 and MIL-STD-2073-1, Method 50. Gyrocompasses should always be packaged in special reusable containers. If equipment is turned in not packaged in the special containers, the equipment should be packed with desiccants and sealed in a water vapor proof barrier material (MIL-PRF-131, Type I).

b. Responsibility. The shipper shall be responsible for providing the correct preservation-packaging and packing. If that activity is unable to comply with these requirements, it shall turn in the item through the base supply activity, which will then bear the responsibility for proper preservation and packing. Incorrect or damaged preservation-packaging or packing will be reported per subparagraph 3.38.1.

c. Packing. Packing shall be in accordance with MIL-E-17555, Level A.

d. Marking.

(1) Normal. Nomenclature and identification will be stenciled on the exterior of special containers in accordance with MIL-STD-129 and MIL-E-17555. Nameplate data should be on a stamped metal plate, in accordance with MIL-STD-130, and permanently affixed to the equipment. See Chapter 2, subparagraph 2.2.6 for container markings.

(2) Special. Special markings used on containers of packaged gyrocompasses (as applicable) are:

(a) Desiccant Materials. The following marking should be affixed adjacent to specified method markings on all Method 50 containers: "CAUTION - REMOVE PACKAGING, TAPE, DESICCANT, AND HUMIDITY INDICATOR FROM EQUIPMENT PRIOR TO OPERATION".

(b) Method 50 Marking. Marking for equipment packaged Method 50 will be in accordance with MIL-STD-129 and have the following precaution affixed to the container: "METHOD 50 PACKAGE - DO NOT OPEN UNTIL READY FOR USE".

(c) Unpacking Instructions. Stencil adjacent to the identification markings: "CAUTION - THIS EQUIPMENT MAY BE SERIOUSLY DAMAGED UNLESS UNPACKING INSTRUCTIONS ARE FOLLOWED CAREFULLY. UNPACKING INSTRUCTIONS ARE LOCATED (include location)".

(d) Multiple-Trip Containers. Multiple-trip containers will be marked "REUSABLE," and instructions will be provided for container disassembly and content removal. These will be secured to the outside of the container in a protected location.

(e) Container Orientation. The words "THIS END UP", together with an arrow indicating the top of the container, should be stenciled on all sides of the container.

(f) Fragile. Fragile equipment is marked in accordance with MIL-STD-129. Containers containing delicate or fragile items shall be marked by means of a "FRAGILE" label.

(g) Technical Manuals. The location of technical manuals should be marked on the packing list and the shipping container.

3.38.4 Handling

a. Special Handling Equipment and Tools. Use pallets and spreader bars to prevent damage to equipment. **DO NOT** use wire slings attached to or around equipment itself.

b. Special Handling Procedures. Use extra care while lifting. **DO NOT** bump or jar.

c. Safety Requirements. No unusual requirements.

3.38.5 Storage

a. Environment.

Controlled Humidity Warehouse	Heated Warehouse	Unheated Warehouse	Open Covered Storage	Open Storage
a		b		

a - Store gyrocompasses which should be packaged Method 50, but are not, in a controlled humidity area. This includes non-RFI gyrocompasses. **DO NOT** store this equipment outside.

b - Store gyrocompasses, which are correctly packaged Method 50, in an unheated warehouses. **DO NOT** remove desiccant. Leave humidity indicators accessible for periodic checks.

NOTE

If equipment cannot be stored as required, store in an area that affords the next best level of protection and inform the Inventory Manager.

b. Segregation. No unusual requirements.

c. Shelf Life. Generally, gyrocompasses are considered non-deteriorative, but may contain materials or components that can degrade during extended storage. Maintain periodic inspections per subparagraph 3.38.2. Consult cognizant MATREP, Inventory Manager or technical manual for detailed requirements.

d. Special Storage Requirements. DO NOT superimpose loads.

3.38.6 Transportation

a. General. Any mode of transportation can be used to transport gyrocompasses. However, the fragility and sensitivity of the equipment requires special features. Any unique or unusual requirements should be referred to the appropriate Transportation Officer. Unpacked equipment and equipment packed in open crates or boxes that will be exposed to the environment during transit shall be secured and covered with a waterproof shroud or cover.

b. Special. Requires shock mitigated and hermetically controlled equipment in transit.

c. Loading. No unusual requirements.

d. Carriers.

(1) Over the Road. Requires special shock mitigated equipment.

(2) Rail. Requires special air cushioned rail cars.

(3) Water. Not normally shipped by water.

(4) Air. Use special care in blocking and bracing.

3.39 Rodmeters

3.39.1 Receipt Inspection Requirements

a. Packaged Equipment. Inspect packaged equipment containers for presence and legibility of markings (see subparagraph 3.39.3d); for obvious signs of damage, deterioration, and/or distortion; for correct preservation-packaging; for proper blocking and bracing; and for pink or white humidity indicators (if applicable). Report all damage, insufficient preservation-packaging, insufficient packing, and pink or white humidity indicators to the applicable MATREP or Inventory Manager. Remark, represerve or repack, as required.

b. Unpacked Equipment or Equipment Packed in Open Crates or Boxes. Inspect unpackaged equipment for obvious signs of damage, deterioration, distortion, and lack of anchoring hardware, blocks and braces, and any other protective devices necessary to prevent damage to equipment during handling and storage. Inspect equipment for the presence of or damage to the preservation-packaging. See subparagraph 3.39.3a. Unpackaged equipment must be secured to pallet, box, or crate to avoid damage during handling. Report all damage, insufficient preservation-packaging, insufficient packing, and pink or white humidity indicators to the applicable MATREP or Inventory Manager. Remark, represerve, or repack as required in the appropriate paragraph.

3.39.2 Periodic Inspection

a. Periodicity. Inspect rodimeters annually. Rotate rodimeter tubes every 90 days.

b. Procedure. Inspect containers for obvious signs of damage, deterioration, or distortion and for proper blocking and bracing. See subparagraph 3.39.3. Make a note of any damage and its location.

Check humidity indicators. Continue this inspection procedure for equipment packaged to method 50 only if the indicators are found to be pink or white. Continue the procedure for all other equipments.

Carefully remove packing and packaging as required to provide access to the equipment. As the packing and packaging must be reused, take care*not to damage it.

Inspect equipment and preservation for obvious signs of damage, deterioration, or distortion (e.g., corrosion, cracks, gouges, bent and distorted surfaces, etc.). Closely inspect all exposed machine and working surfaces. Make a note of the damage, if any and its location.

If the equipment is damaged, report the damage to the MATREP or Inventory Manager. If possible, effect repairs required to return to RFI condition.

If the preservation is damaged, represerve using detailed instructions specified herein.

Repair the packaging and packing as required to return to the requirements of paragraph 3.39.3.

Replace desiccant and humidity indicators as required.

3.39.3 Packaging/Preparation for Delivery

a. Preservation-Packaging. Equipment requires Level A protection. Preservation/packaging is in accordance with MIL-E-17555 and MIL-STD-2073-1, Methods 30 and 50.

b. Responsibility. The shipper shall be responsible for providing the correct preservation-packaging and packing. If that activity is unable to comply with these requirements, it shall turn in the item through the base supply activity, which will then bear the responsibility for proper preservation and packing. Incorrect or damaged preservation-packaging or packing will be reported per subparagraph 3.39.1.

c. Packing. Packing shall be in accordance with MIL-E-17555, Level A.

d. Marking.

(1) Normal. Nomenclature and identification are marked in accordance with MIL-STD-129 and MIL-E-17555.

(2) Special. Special markings to be used on containers (as applicable) are:

(a) Desiccant Materials. For Method 50 packaged equipment the following marking should be affixed adjacent to specified method markings: "CAUTION - REMOVE PACKAGING, TAPE, DESICCANT, AND HUMIDITY INDICATOR FROM EQUIPMENT PRIOR TO OPERATION".

(b) Method 50 Marking. Marking will be in accordance with MIL-STD-129. The following precautionary marking will be affixed to the equipment container when equipment is packaged Method 50: "METHOD 50 PACKAGE - DO NOT OPEN UNTIL READY FOR USE".

(c) Unpacking Instructions. Stencil adjacent to the identification markings: "CAUTION - THIS EQUIPMENT MAY BE SERIOUSLY DAMAGED UNLESS UNPACKING INSTRUCTIONS ARE FOLLOWED CAREFULLY. UNPACKING INSTRUCTIONS ARE LOCATED (include location)".

(c) Magnetic Materials. When magnetic material is packed, affix red labels with "MAGNETIC MATERIAL" in white letters on two opposite sides of the container.

(d) Technical Manuals. The location of technical manuals should be marked on the packing list and the shipping container.

(e) Container Orientation. The words "THIS END UP" together with an arrow indicating the container top should be stenciled on all sides of the container.

(f) Fragile. Fragile equipment will be marked in accordance with MIL-STD-129. Containers containing delicate or fragile items shall be marked by means of a "FRAGILE" label.

(g) Multiple-Trip Containers. Multiple-trip containers will be marked "REUSABLE," and instructions will be provided for container disassembly and content removal. These will be secured to the outside of the container in a protected location.

3.39.4 Handling

- a. Special Handling Equipment and Tools. None required.
- b. Special Handling Procedures. None required.
- c. Safety Requirements. No personnel safety hazard is associated with this equipment.

3.39.5 Storage

- a. Environment.

Controlled Humidity Warehouse	Heated Warehouse	Unheated Warehouse	Open Covered Storage	Open Storage
a	b	c		

a - Store equipment which should be packaged Method 50, but is not, in a controlled humidity area. This includes non-RFI equipment.

b - Store equipment which should be packaged Method 30, but is not, in a heated warehouse. This includes non-RFI equipment.

c - Equipment that is correctly packaged Method 30 or 50 can be stored in an unheated warehouse. **DO NOT** remove desiccant from Method 50 packaged equipment. Leave humidity indicators accessible for periodic checks.

NOTE

If equipment cannot be stored as required, store in an area that affords the next best level of protection and inform the Inventory Manager. **DO NOT** store equipment outside that should have Method 30 or 50 protection, but that does not.

b. Segregation. No unusual requirements.

c. Shelf Life. Generally, rodmeters are considered non-deteriorative but they may contain materials or components that can degrade during extended storage. Maintain periodic inspections per subparagraph 3.39.2. Consult cognizant MATREP, Inventory Manager or technical manual for detailed requirements.

d. Special Storage Requirements. Rotate tubes every 90 days. Store flat. **DO NOT** superimpose loads.

3.39.6 Transportation

a. General. Any mode of transportation can be used to ship this material; however, fragility can be a factor. Special cushioning will be required, and shock mitigated transportation will be necessary. Unpacked equipment and equipment packed in open crates or boxes that will be exposed to the environment during transit shall be secured and covered with a waterproof shroud or cover.

b. Special. Unique or unusual requirements should be referred to the appropriate Transportation Officer.

c. Loading. Lift equipment at special lift points only.

d. Carriers.

(1) Over the Road. Use special shock-mitigated, van-type equipment if possible.

(2) Rail. Use special air cushioned rail cars.

(3) Water. **DO NOT** deck stow.

(4) Air. Use special care in blocking and bracing.

SECTION 3.40

3.40 Ship Inertial Navigation System (SINS) and Compass Equipment

3.40.1 Receipt Inspection Requirements

a. Packaged Equipment. Inspect packaged equipment containers for presence and legibility of markings (see subparagraph 3.40.3d); for obvious signs of damage, deterioration, and/or distortion; for correct preservation-packaging; for proper blocking and bracing; and for pink or white humidity indicators (if applicable). Report all damage, insufficient preservation/packaging, insufficient packing, and pink or white humidity indicators to the applicable MATREP or Inventory Manager. Remark, represerve or repack, as required.

b. Unpacked Equipment or Equipment Packed in Open Crates or Boxes. Inspect unpackaged equipment for obvious signs of damage, deterioration, distortion, and lack of anchoring hardware, blocks and braces, and any other protective devices necessary to prevent damage to equipment during handling and storage. Inspect equipment for the presence of damage to the preservation-packaging. See subparagraph 3.40.3a. Unpackaged equipment must be secured to pallet, box, or crate to avoid damage during handling. Report all damage, insufficient preservation-packaging, insufficient packing, and pink or white humidity indicators to the applicable MATREP or Inventory Manager. Remark, represerve or repack, as required.

3.40.2 Periodic Inspection

a. Periodicity. Inspect ship inertial navigation equipment and compass equipment every six (6) months.

b. Procedure. Inspect containers for obvious signs of damage, deterioration, or distortion and for proper blocking and bracing. See subparagraph 3.40.3. Make a note of any damage and the location.

Check humidity indicators. Continue this inspection procedure for equipment packaged to method 50 only if the indicators are found to be pink or white. Continue the procedure for all other equipments.

Carefully remove packing and packaging as required to provide access to the equipment. As the packing and packaging must be reused, take care not to damage it.

Inspect equipment and preservation for obvious signs of damage, deterioration, or distortion (e.g., corrosion, cracks, gouges, bent and distorted surfaces, etc.). Closely inspect all exposed machine and working surfaces. Make a note of any damage and the location.

If the equipment is damaged, report the damage to the MATREP or Inventory Manager. If possible, effect repairs required to return to RFI condition.

If the preservation is damaged, represerve using the detailed instructions specified herein.

Repair the packaging and packing as required to return to the requirements of subparagraph 3.40.3.

Replace desiccant and humidity indicators as required.

3.40.3 Packaging/Preparation for Delivery

a. Preservation-Packaging. SINS equipment requires Level A protection. Preservation/packaging is in accordance with MIL-E-17555 and MIL-STD-2073-1, Methods 20 and 50. Special packing requirements should be included when shipping classified material.

NOTE: SINS gyroscopes require special protection in addition to that afforded by Method 50 procedures. Special containers are used to provide such protection during shipment and during storage periods. These containers are designed to protect against impact damage and are equipped with a power supply and oven to protect against deterioration that could result from improper temperature and humidity conditions. Manufactures' and other shipping activities' special instructions for the care of gyroscopes should be affixed to the container.

b. Responsibility. The shipper shall be responsible for providing the correct preservation-packaging and packing. If that activity is unable to comply with these requirements, it shall turn in the item through the base supply activity, which will then bear the responsibility for proper preservation and packing. Incorrect or damaged preservation-packaging or packing will be reported per subparagraph 3.40.1.

c. Packing. Packing shall be in accordance with MIL-E-17555, Level A. SINS gyroscopes are packed in special containers that are equipped with a power supply and oven to maintain proper temperature and humidity conditions.

NOTE: Classified material shall be packed in shipping containers that completely conceal the container contents. All boxes, crates, or cartons containing classified material shall be sealed in such a manner that the container contents cannot be exposed without displaying visual evidence of forcible opening. All containers used for classified material, except certified mail packages of classified material, shall be reinforced with steel strapping or pressure-sensitive, reinforced, filament tape. Steel strapping shall only be used on wood, plywood, or wood-cleated containers and steel strapping shall be applied perpendicular and parallel to the container length. The

intersection of the steel strapping shall be joined and sealed with a strapping seal or clamp, preferably of the pressure-clamp type. The clamp shall be of a type that will not be damaged through transit or stacking of containers. The seal or clamp shall be so constructed that tampering will cause mutilation readily detected by inspection.

d. Marking.

(1) Normal. All containers and packages shall be marked with nomenclature and identification in accordance with MIL-STD-129 and MIL-E-17555. Nameplate data should be on stamped metal plates permanently affixed to the equipment in accordance with MIL-STD-130. See Chapter 2, subparagraph 2.2.6 for container markings.

(2) Special. Special container markings used on containers (as applicable) are:

(a) Electrical Connections. Permanent markings that cite the requirement for an electrical source to operate the container heater shall be affixed to the special containers.

(b) Desiccant Materials. The following marking should be affixed adjacent to specified method markings on all Method 50 containers, except the special gyroscope container: "CAUTION - REMOVE PACKAGING, TAPE, DESICCANT, AND HUMIDITY INDICATOR FROM EQUIPMENT PRIOR TO OPERATION".

(c) Method 50 Marking. Marking will be in accordance with MIL-STD-129. When equipment is packaged Method 50, the following precaution will be affixed to the container: "METHOD 50 PACKAGE - DO NOT OPEN UNTIL READY FOR USE".

(d) Unpacking Instructions. Stencil adjacent to the identification markings: "CAUTION - THIS EQUIPMENT MAY BE SERIOUSLY DAMAGED UNLESS UNPACKING INSTRUCTIONS ARE FOLLOWED CAREFULLY. UNPACKING INSTRUCTIONS ARE LOCATED (include location)".

(e) Technical Manuals. The location of technical manuals should be marked on the packing list and the shipping container.

(f) Classified Shipments. Do not affix packing lists to the outside of the container for classified material. Forward in accordance with Department of Defense Regulations.

(g) Magnetic Materials. When magnetic material is packed, affix red labels with "MAGNETIC MATERIAL" in white letters on two opposite sides of the container.

(h) Fragile. Fragile equipment will be marked per MIL-STD-129. Containers containing delicate or fragile items shall be marked with a "FRAGILE" label.

(i) Structural or Handling. Mark on the exterior of the shipping container: "CENTER OF BALANCE" with vertical lines indicating the center of balance, and "SLING HERE." Mark load-bearing areas and lift points.

(j) Container Orientation. The words "THIS END UP", together with an arrow indicating the container top, should be stenciled on all sides of the container.

(k) Dimensions. Mark outside dimensions for all containers having any dimensions of 72 inches or greater.

3.40.4 Handling

- a. Special Handling Equipment and Tools. No special requirements.
- b. Special Handling Procedures. Handle with care. Equipment is fragile.
- c. Safely Requirements. Observe normal safety precautions for handling heavy, delicate electronic/electrical equipment.

3.40.5 Storage

- a. Environment.

Controlled Humidity Warehouse	Heated Warehouse	Unheated Warehouse	Open Covered Storage	Open Storage
a	b	c		

a - Store equipment which should be packaged Method 50, but is not, in a controlled humidity area. This includes non-RFI equipment.

b - Store equipment, which should be packaged Method 20, but is not, in a heated warehouse. This includes non-RFI equipment.

c - Equipment that is correctly packaged Method 20 or 50 can be stored in an unheated warehouse. **DO NOT** remove desiccant from Method 50 packaged equipment. Leave indicators accessible for periodic checks.

NOTE

If equipment cannot be stored as required, store in an area that affords the next best level of protection and inform the Inventory Manager. **DO NOT** store equipment outside that should have Method 20 or 50 protection, but that does not.

b. Segregation.

(1) Gyroscopes. SINS gyroscopes are shipped and stored separately in containers that have electrically heated ovens and monitor alarm circuits (visual and audible). The alarm circuit is activated when container temperature is not within the allowed tolerance. Check SINS gyroscope containers periodically each day to ensure correct oven temperature as specified in the instructions accompanying the gyroscope,

(2) Other Equipment. Segregate as necessary to conform with the storage criteria for security of classified material.

c. Shelf Life. Generally, ship inertial navigation system and compass equipment are considered non-deteriorative, but may contain materials or components that can degrade during extended storage. Maintain periodic inspections per subparagraph 3.40.2. Consult cognizant MATREP, Inventory Manager or technical manual for detailed requirements.

d. Special Storage Requirements. **DO NOT** remove desiccant. Leave humidity indicators accessible for periodic checks.

3.40.6 Transportation

a. General. Any mode of transportation can be used to transport this equipment; however, the fragility of the equipment requires that special shock-mitigated vehicles be used in moving this equipment. Unpacked equipment and equipment packed in open crates or boxes that will be exposed to the environment during transit shall be secured and covered with a waterproof shroud or cover.

b. Special. Ship classified materials in accordance with Department of Defense regulations. Shipping documents must include instructions adequate for informing the air carrier and other in-transit personnel of the requirement for monitoring the container oven alarm. Where air transportation is deemed mandatory, contact the appropriate Transportation Officer.

c. Loading. Handle with care. Protect from elements.

d. Carriers.

(1) Over the Road. Use closed van type trailers or vehicles only. Protect from elements at all times. Monitor the container oven alarm during transit.

(2) Rail. Monitor the container oven alarm during transit.

(3) Water. Use water transportation that allows the containers to be monitored at all times.

(4) Air. Conform to carrier requirements when shipping electronic equipment by air.