

TO ALL HOLDERS OF PACIFIC SCIENTIFIC HTL/KIN-TECH DIVISION  
COMPONENT MAINTENANCE MANUAL ATA 25-11-59

DATED MAY 15/04

THIS SHEET TRANSMITS REVISION NO. 3

DATED DEC 15/04

HIGHLIGHTS

We reprinted this manual in its entirety. Please replace all of the pages of your manual with this revision. We made many general format and layout changes in addition to technical changes.

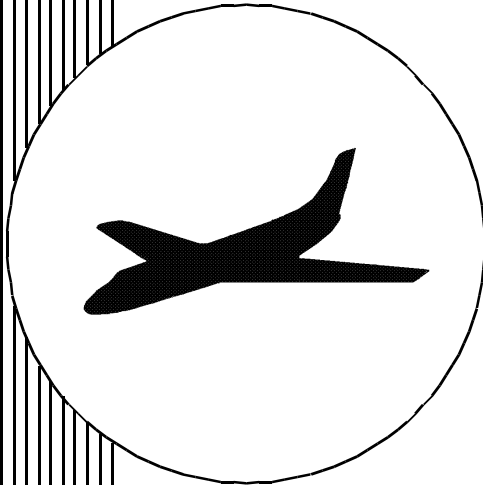
Chapter/Section and Page No.	Description of Change
Title Page, T-2	Listed the revision date and revised CONFIDENTIALITY NOTICE, CRITICALITY NOTICE, PMA PARTS USAGE statements.
Record of Revisions	Listed the revision number and date.
List of Effective Pages	Revised dates and updated the List of Effective Pages..
Introduction	Revised addresses for Product Support Services and revised verification dates.
Check, 502	Revised Table 501.

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*HTL/Kin-Tech Division*

**Component Maintenance Manual  
with  
Illustrated Parts List**



**RESTRAINT SYSTEMS**

**25-11-59**

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Dec 15/04

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## **INTRODUCTION**

### 1. Scope

- A. This Component Maintenance Manual (CMM) contains the maintenance instructions for the Restraint System. The Restraint System is manufactured by Pacific Scientific Company, HTL/Kin-Tech Division, Duarte, California.

### 2. Usage Guide

- A. Refer to the Table of Contents to locate particular information and procedures. This manual is written to ATA 100, Revision 30 and AECMA Simplified English guidelines.
- (1) **Description and Operation** gives the function, primary components, and technical properties of the Restraint System.
  - (2) **Testing and Fault Isolation** contains the test and fault isolation procedures.
  - (3) **Disassembly** contains procedures to disassemble the Restraint System before cleaning or part replacement.
  - (4) **Cleaning** contains the procedures to clean the Restraint System.
  - (5) **Check** contains the procedures to check for excessive wear and other damage.
  - (6) **Repair** contains the repair procedures.
  - (7) **Assembly (Including Storage)** contains the procedures to reassemble and store the Restraint System.
  - (8) **Fits and Clearances** - not applicable.
  - (9) **Special Tools, Fixtures, and Equipment** lists the recommended special tools, fixtures, and equipment.
  - (10) **Illustrated Parts List** contains the introduction to the detailed parts list. The corresponding Supplement contains an exploded-view drawing and a detailed parts list. The information in the Supplement is used identify and to order spare parts, if any.
- B. The recommended tools and materials are given in each section. Equivalent items can be used.

### 3. Product Support Services

- A. Product support services for the Restraint System are available from Pacific Scientific Company.
- B. For technical documentation, please contact:

PACIFIC SCIENTIFIC COMPANY	Telephone:	(305) 477-4711
11700 N.W. 102nd Road Suite 6	FAX:	(305) 477-9799
Miami, Florida 33178 U.S.A.	SITA:	MIAPSD

C. For repair and overhaul, please contact:

PACIFIC SCIENTIFIC COMPANY 11700 N.W. 102nd Road Suite 6 Miami, Florida 33178 U.S.A.	Telephone: (305) 477-4711 FAX: (305) 477-9799 SITA: MIAPSDX
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PACIFIC SCIENTIFIC COMPANY 2156 W. Northwest Highway Suite 314 Dallas, Texas 75220 U.S.A.	Telephone: (214) 574-4200 FAX: (214) 574-4210
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PACIFIC SCIENTIFIC LIMITED Howarth Road Maidenhead Berkshire SL6 1AP, United Kingdom	Telephone: 44 (1628) 682200 FAX: 44 (1628) 682250 AOG: 44 (7836) 228480 SITA: LHRPSCR
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PACIFIC SCIENTIFIC AVIATION SERVICES COMPANY	
Unit 6 Hagen-Park Miramstrasse 74 34123 Kassel Germany	Telephone: 49 (0) 561 5798 10 FAX: 49 (0) 561 5798 125

4. Verification Dates

<u>Procedure</u>	<u>Date</u>
Testing/Fault Isolation	Oct 15/04
Disassembly	Oct 15/04
Assembly	Oct 15/04

5. Revision Service

A. Revised pages will be issued when necessary throughout the service life of the Restraint System. The revised part of the page will be identified by a change bar or capital **R** in the left margin.

6. Abbreviations and Unit Symbols

Abbreviations and unit symbols used in this manual are defined below. All weights and measurements are given first in English standard units followed by the SI equivalent in parentheses.

Assy - Assembly	kPag - Kilo Pascal gauge (1 kPa = 0.145 psi)
ATA - Air Transport Association	LH - Left-Hand
CAGE - Commercial and Government Entity	NHA - Next Higher Assembly
CMM - Component Maintenance Manual	P/N - Part Number
EFF - Effectivity	psig - pounds per square inch gauge
Fig. - Figure	RF - Reference
G - Gravity (32.2 feet/s <sup>2</sup> or 9.81 meter/s <sup>2</sup> )	RH - Right-Hand
IPL - Illustrated Parts List	

## **DESCRIPTION AND OPERATION**

### **1. Purpose**

- A. The restraint system assembly is designed to keep seat occupants safely seated during takeoff and landing, as well as in flight. The restraint system may consist of a lap belt, a rotary buckle, two shoulder straps, emergency locking retractors, and a plug-in connector adjuster.

### **2. Description**

- A. The restraint system primary components (Figure 1) may include:
  - (1) Lap Belt
  - (2) Rotary Buckle (Left Hand, Right Hand, or Crotch Fixed)
  - (3) Shoulder Straps
  - (4) Crotch Strap
  - (5) Reel Assembly
  - (6) Emergency Locking Retractors
  - (7) Plug-in Connector Adjustor
  - (8) Control Cable (Control Handle, Shielded Cable, and a Fitting)
- B. The reel assembly mounts to the upper portion of the aircraft seat, opposite the side of the occupant. The crotch strap (if applicable) attaches to the bottom portion of the seat, in the front of the occupant. The attachment of the lap belt is completed by fastening the end fittings to both sides of the seat frame.
- C. The reel assembly pays out and retracts the shoulder straps for normal operation allowing personnel to move freely in the seat without restriction. The reel assembly locks when the straps are pulled at typically 1.5Gs. (See Table 1, Leading Particulars, of the specific Supplement.) The reel remains locked until the force is removed.
- D. The control cable assembly (if applicable) consists of a control handle, a shielded cable, and a fitting that attaches to a spring-loaded shaft running across the back of both reel assemblies. The control handle has two positions, AUTOMATIC and MANUAL. In the automatic position, the reel assembly operates automatically as described above in paragraph B. In the manual position, the reel assemblies lock to prevent any further extension of the shoulder straps. Returning the control handle back to the automatic position will allow free movement in the seat, except for any strap acceleration outside the 1.5G range described above. (See Table 1, Leading Particulars, of the specific Supplement.)
- E. The crotch strap, two lap belt assemblies, and the two shoulder straps are connected to the single rotary buckle assembly. Turning the buckle releases all of the straps or belts except the left-hand (LH), right-hand (RH) lap belt, or crotch strap, depending on configuration. [See Table 2 (if applicable) of the specific Supplement.]

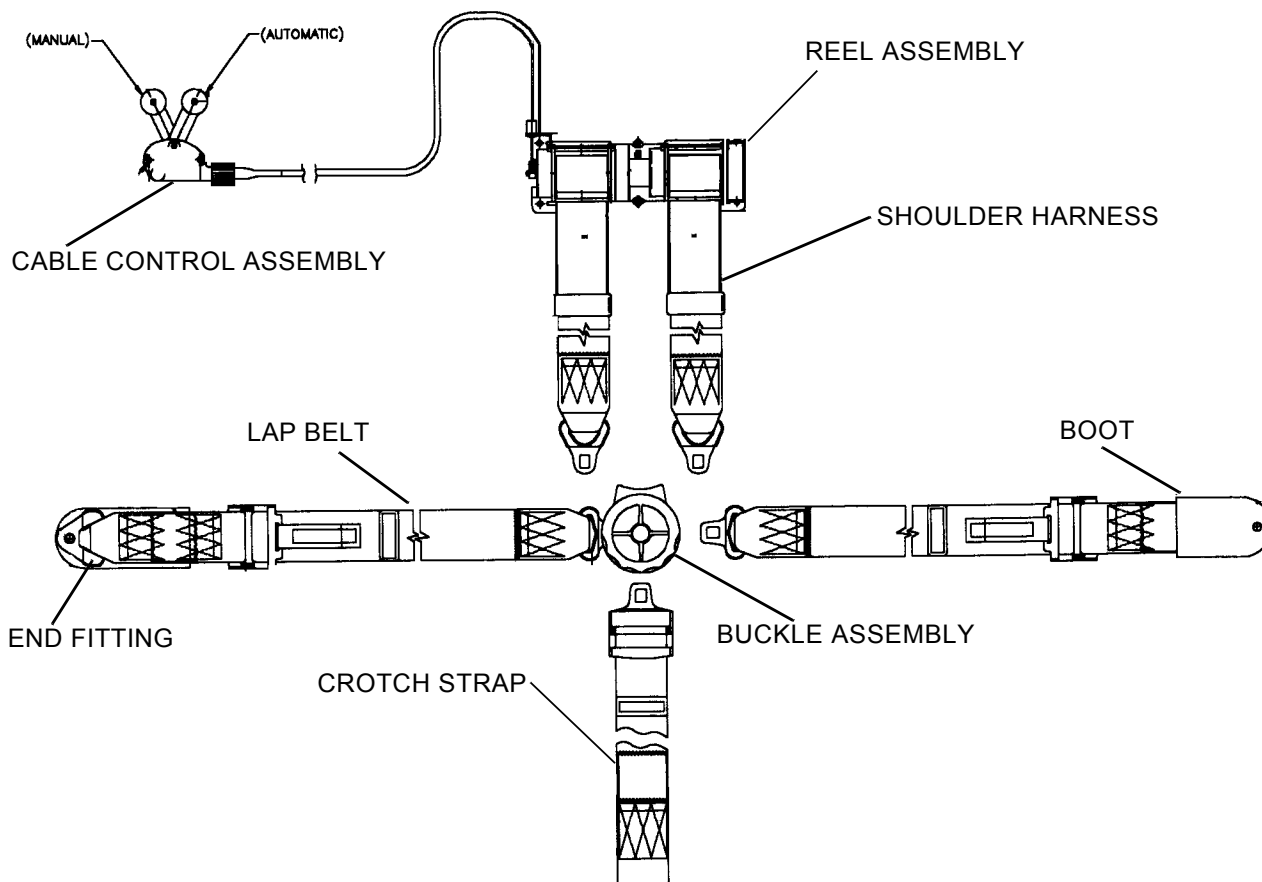


Figure 1. Typical Restraint System Assembly

### 3. Operation

- A. The dual reel assembly pays out and retracts the shoulder harness assembly during normal operation, allowing passengers to move freely in their seats without restriction while the harness is still fastened. When the strap assembly is accelerated at typically 1.5Gs, the reel assembly locks and remains locked until the force on the harness is released. (See Table 1, Leading Particulars, of the specific Supplement.) When the force is released, the reel assembly unlocks and again permits unrestricted movement of the harness.
- B. Restriction of the shoulder harness is performed by means of a spring loaded spool assembly contained in the reel assembly. The locking action is accomplished by means of a special inertia mechanism incorporated in the reel assembly. When the shoulder harness is relieved of the acceleration force, the locking action of the inertia mechanism is released and unrestricted movement within the seat is once again permitted.
- C. Turn the rotary vane on the buckle 30° - 40° in either direction to release all straps and belts except at the fixed position. Lift the harness release plate at the top of the buckle to release only the shoulder straps. The straps and belts are adjustable for a comfortable fit.

- D. Move the control handle to the AUTOMATIC position for automatic operation of the shoulder straps. In this mode, the shoulder straps will pay out and retract, and will lock only when accelerated at typically 1.5Gs. (See Table 1, Leading Particulars, of the specific Supplement.) The reel will automatically unlock to permit unrestricted movement when the force is released (Figure 2).
- E. Move the control handle to the MANUAL position to lock the shoulder straps. The control handle must be moved to the AUTOMATIC position to release the straps (Figure 2).

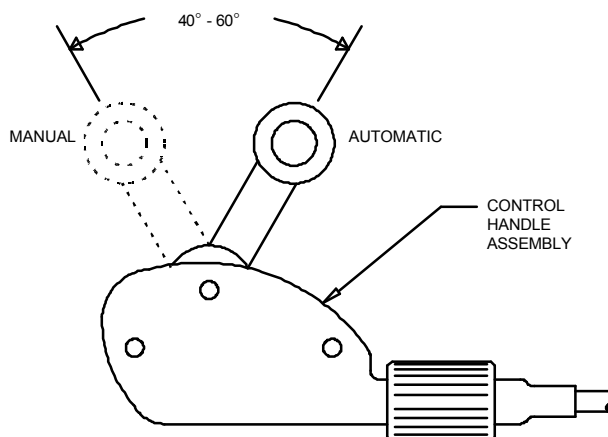


Figure 2. Control Handle Operation

#### 4. Technical Properties

- A. The technical properties of the Restraint System are contained in Table 1 of the 25-11-59 Supplements.

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## **TESTING AND FAULT ISOLATION**

### **1. General**

- A. This section contains testing and fault isolation procedures. Perform the tests before disassembly to identify damaged parts and after reassembly to verify performance.

### **2. Restraint System Inspection**

- A. Inspect the restraint system and webbing of the restraint system for any strap fraying, wear, or damage. Refer to **CHECK** section if wear, fraying, or damage is discovered.

### **3. Buckle Assembly Test**

**NOTE:** This test provides a quick functional check of the buckle assembly. Refer to **CHECK** section if any deviations are noted during the functional check requirements.

- A. Verify the action of the buckle by releasing the handle and connecting the buckle to the restraint system.

**REQUIREMENT:** A SLIGHT CLICK SHOULD BE HEARD/FELT WHEN INSERTING, CONNECTING OR RELEASING THE BUCKLE.

### **4. Harness Retractor Test**

**NOTE:** This test provides a quick functional check of the harness assembly. The restraint can be tested as installed on the seat or in the repair shop. Refer to **CHECK** section if any deviations are noted during the functional check requirements.

- A. Slowly pull the shoulder harness assembly to the fully extended position, then allow the harness to retract.

**REQUIREMENT:** THE HARNESS RETRACTS SMOOTHLY AND FULLY WITHOUT BINDING OR STICKING.

- B. Repeat step A, above, for three cycles minimum.

### **5. Control Handle Test**

**NOTE:** This test provides a quick functional check of the harness assembly. The restraint can be tested as installed on the seat or in the repair shop.

- A. Move the control handle to the MANUAL position.

**REQUIREMENT:** THE REEL ASSEMBLY MUST LOCK WITH THE SHOULDER STRAP IN ANY POSITION, EXTENDED OR RETRACTED.

**REQUIREMENT:** THE SHOULDER STRAPS MUST BE LOCKED SECURELY AND NO MOVEMENT SHALL BE EVIDENT WHEN STRAPS ARE PULLED.

- B. Move the control handle to the AUTOMATIC position.

**REQUIREMENT:** THE SHOULDER STRAPS MUST EXTEND AND RETRACT FREELY. LOCKING OF THE STRAPS ONLY OCCUR IF THE STRAP IS PULLED SHARPLY (TYPICALLY IN EXCESS OF 1.5GS). (SEE TABLE 1, LEADING PARTICULARS, OF THE SPECIFIC SUPPLEMENT.)

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## **DISASSEMBLY**

### **1. General**

**NOTE:** Refer to **TESTING AND FAULT ISOLATION** to establish the condition of the restraint system or most probable cause of its malfunction. This is to determine the extent of disassembly required without completely tearing down and rebuilding the component.

- A. Disassemble only to the extent necessary for cleaning or replacement of defective components.

### **2. Disassembly of Restraint System**

- A. Separate the lap belt assembly and crotch strap assembly (unless fixed) (see specific Supplement) by rotating the buckle assembly.
  - (1) Remove boot covers (see the specific Supplement), if necessary.
  - (2) If the lap belts are attached to the aircraft seat or structure, disengage end fitting from seat or structure.
- B. If the shoulder strap and reel assembly is attached to the aircraft seat or structure, disengage end fitting from seat or structure (see the specific Supplement).

### **3. Disassembly of Cable Assembly**

- A. Disconnect the cable assembly from the reel assembly (see the specific Supplement), as follows:
  - (1) Remove the reel cover, if necessary.
  - (2) Unscrew the cable assembly from the reel assembly.
  - (3) If necessary, unscrew the control handle from the cable assembly.

### **4. Disassembly of Fixed Strap of the Lap Belt Assembly**

- A. Disconnect the fixed strap of the lap belt assembly from the rotary buckle, (see the specific Supplement) as follows:
  - (1) Insert a piece of thin metal stock into the slot of the rotary buckle and push inward between the fitting and the buckle locking mechanism (Figure 301).
  - (2) Pull the strap from the buckle.
  - (3) Remove the buckle pad from the buckle, if necessary.

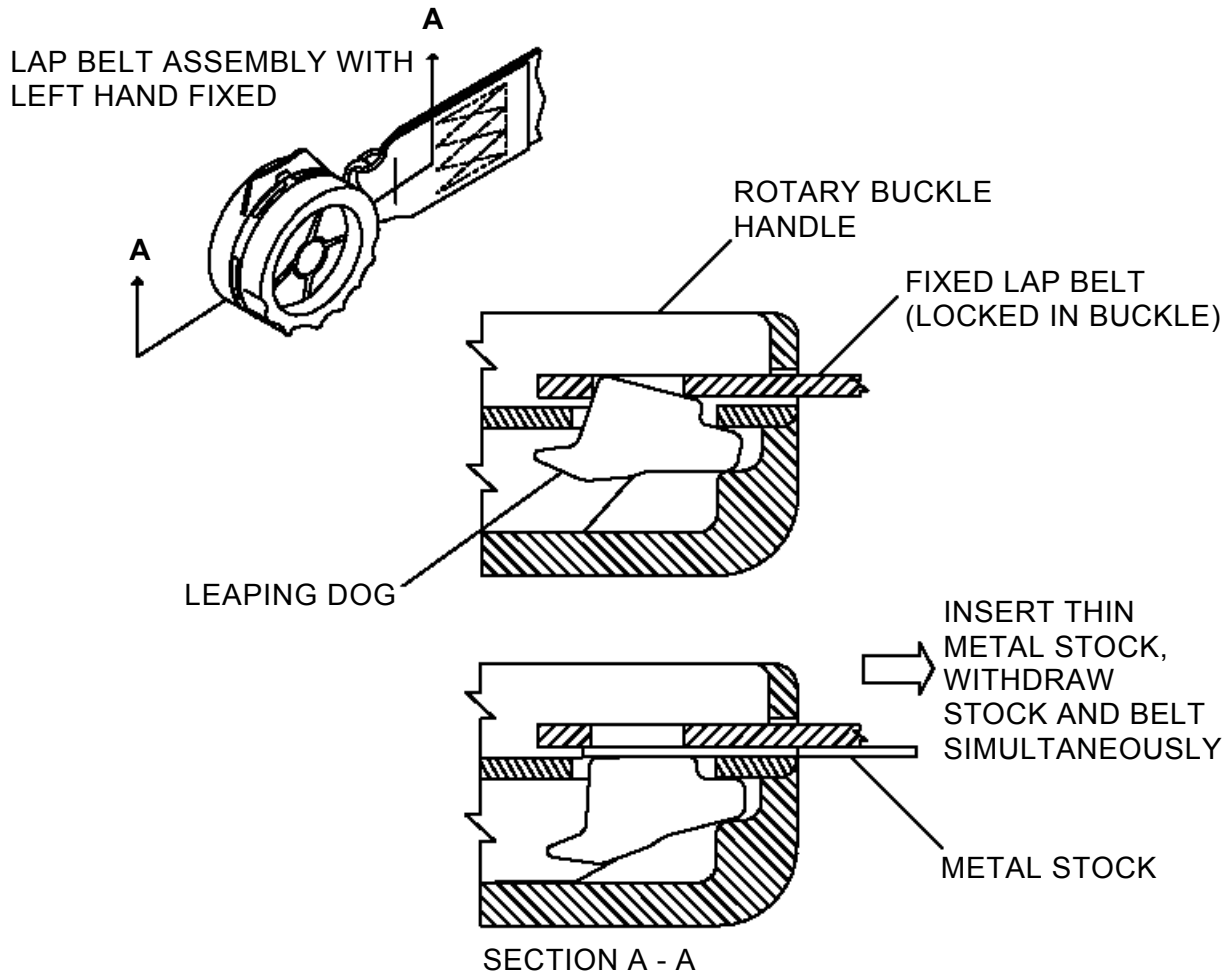


Figure 301. Disassembly of Fixed Strap

## CLEANING

### 1. Cleaning Materials

A. The recommended cleaning materials are given in Table 401.

**NOTE:** Equivalent items can be used.

Table 401. Cleaning Materials

Nomenclature	Part Number or Specification	Source
Bag	Plastic	Commercially available
Brush	Stiff-bristle, Nonmetallic	Commercially available
Cloth	Lint-free	Commercially available
Compressed Air Tank	20 psig (138 kPag)	Commercially available
Goggles	Safety	Commercially available
Solvent	Stoddard	Commercially available
Soap	Mild (Non-alkaline)	Commercially available

### B. Cleaning Instructions

**WARNING:** CLEANING SOLVENTS ARE EXTREMELY FLAMMABLE AND AN IRRITANT TO THE EYES AND NOSE. USE THE SOLVENTS ONLY IN WELL VENTILATED AREAS AWAY FROM OPEN FLAMES. FLUSH IRRITATED EYES WITH WATER.

**CAUTION:** DO NOT IMMERSE THE ROTARY BUCKLE, REEL ASSEMBLY, OR ANY WEBBING IN THE SOLVENT.

**CAUTION:** DO NOT DRY CLEAN OR USE DRY CLEANING FLUID ON THE PLASTIC COMPONENTS OF REEL ASSEMBLY, SHOULDER STRAPS, OR BUCKLE.

- (1) Clean all metal parts with solvent (Table 401). Use a nonmetallic stiff brush (Table 401) to dislodge any accumulations which are not removable by cloth wipe only. Pay particular attention to cavities, grooves, mating surfaces and threads.
- (2) Ensure working surfaces of mechanisms on lap belt are clean.
- (3) Clean plastic components with a clean, lint-free cloth (Table 401), moistened with mild soap (Table 401) and water.

**WARNING:** WEAR SAFETY GOGGLES OR OTHER EYE PROTECTION WHEN USING COMPRESSED AIR. DIRECT THE AIR STREAM AWAY FROM OTHER PEOPLE.

- (4) Dry the parts with clean, lint-free cloth (Table 401) or filtered shop air at less than 20 psig (138 kPag) pressure.
- (5) The webbing may be spot cleaned with a mild soap solution (Table 401).

- (6) Following a hand wash, allow webbing to air dry in a well ventilated area. Avoid prolonged exposure of webbing to direct sunlight.
- (7) Store parts in clean plastic bags (Table 401) or on lint-free cloths (Table 401) until ready for check and assembly.

## CHECK

### 1. General

A. Procedures to check restraint system components are given in Table 501. Use bright light and magnification of 5 power or greater to aid visual inspections.

Table 501. General Inspection Guidelines (Minimum Criteria)

Inspection	Check For	Acceptable Limits	Corrective Action
Stitching	Broken or missing stitches.	No more than three or more broken or missing stitches per pattern.	Return restraint to Pacific Scientific Customer Support for repair.
Webbing	Excessive fraying.  Cuts deeper than 1/16 inch.  Linear curvature due to wear or hardware interface (including aircraft seat).  Excessive stiffening or soiling.	Fraying cannot exceed a six inch area.  Cuts less than 1/16 inch deep.  No linear curvature is allowed.  No excessive stiffening or soiling is permitted.	Return restraint to Pacific Scientific Customer Support for repair.  Return restraint to Pacific Scientific Customer Support for repair.  Return restraint to Pacific Scientific Customer Support for repair.  Return restraint to Pacific Scientific Customer Support for repair.
All Metal Parts	Deformation, nicks, burrs, scoring, or uneven wear. Pay particular attention to holes, cavities, and wear surfaces.	No damage allowed.	Return restraint to Pacific Scientific Customer Support for repair.
End Fittings for Shoulder Harness and Lap Belt	Uneven or excessive wear. Overall appearance and any evidence of deformation.	No damage or wear allowed.	Return restraint to Pacific Scientific Customer Support for repair.

Table 501. General Inspection Guidelines (Minimum Criteria) (Continued)

Inspection	Check For	Acceptable Limits	Corrective Action
Identification Labels	Legibility and attachment of identification labels.	For units installed under TSO authorization or PMA approval, the labels must be permanent and legible, and attached to the unit per the FAA approved Type Design. Acceptable limits are to ensure the information on the label complies with 14 CFR, Part 21.607 (TSO) and 14 CFR, Part 45.14 (PMA).	Return restraint to Pacific Scientific Customer Support for correction.
Buckle Assembly	<p>External damage.</p> <p>Overall appearance or any evidence of deformation.</p> <p>Locking engagement of lap belts and shoulder harness when they are engaged with the buckle assembly.</p> <p>Lap belts and shoulder harness release freely when buckle assembly handle is rotated.</p>	<p>No damage allowed.</p> <p>No damaged or worn through plating allowed.</p> <p>Buckle shall lock when lap belts and shoulder harnesses are engaged with buckle assembly.</p> <p>No damage allowed.</p>	<p>Replace buckle assembly.</p> <p>Replace buckle assembly.</p> <p>Replace buckle assembly.</p> <p>Replace buckle assembly.</p>

Table 501. General Inspection Guidelines (Minimum Criteria) (Continued)

Inspection	Check For	Acceptable Limits	Corrective Action
Control Cable Assembly	Bent lever, cracked or dented case; smooth lever action from automatic to manual positions.	No damage allowed. Lever shall operate without bind.	Replace control cable assembly.
	Broken cable wire or damaged conduit; loose or damaged end fittings.	No damage allowed. The internal cable must slide freely in the conduit without sticking or binding while the cable is bent 90° on a 3.0 inch (7.6 cm) radius. With the cable horizontal and the conduit restrained, the cable must slide full stroke with a maximum pull force of 0.50 lb. (2.22 N). Internal cable travel shall be between 0.80 inch (2.03 cm) and 1.29 inches (3.28 cm).	Replace control cable assembly.

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## **REPAIR**

### **1. General**

- A. Repair of the restraint system is limited to removal and replacement of the lap belts, shoulder harness, buckle, and control cable assembly. For parts operating under TSO approval, webbing / fitting configurations, marking, and stitching patterns are integral to the approval status of the part or assembly. Pacific Scientific expressly prohibits replacement or re-webbing of such parts by third parties. For all other repairs, return the restraint system to:

PACIFIC SCIENTIFIC COMPANY  
11700 N.W. 102nd Road Suite 6  
Miami, Florida 33178 U.S.A.

Telephone: (305) 477-4711  
FAX: (305) 477-9799  
EMAIL: [www.pacscimiami.com](http://www.pacscimiami.com)

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## ASSEMBLY (INCLUDING STORAGE)

### 1. General

- A. Assemble the restraint system in accordance with the following procedures. The extent of assembly required depends on the extent of disassembly that was necessary.

### 2. Assembly of Restraint System

- A. Attach the end fittings of the shoulder straps and control cable assembly (see the specific Supplement) to the seat or the structure, as applicable.
- B. Attach the end fittings of the lap belt assembly (see the specific Supplement) to the reel assembly. Attach the reel assembly to the structure, as applicable.
- C. Connect the lap belt assembly, shoulder strap, or crotch strap assembly (see the specific Supplement) to buckle assembly, as applicable.
- D. Test to make sure the shoulder straps retract correctly, as applicable.
- E. Test to make sure the buckle assembly locks and unlocks properly.

### 3. Storage

#### A. Storage Materials

- (1) Materials recommended for storage of the restraint system are given in Table 701.

**NOTE:** Equivalent items can be used.

Table 701. Storage Materials

Nomenclature	Part Number of Specification	Source
Barrier Material	Grade A	Commercially available
Box	Corrugated Paper	Commercially available
Desiccant	---	Commercially available
Identification Tag	---	Commercially available
Paper	Brown Kraft	Commercially available
Tape	Shipping	Commercially available

**CAUTION:** RESTRAINT SYSTEM IS TO BE PROTECTED FROM DAMPNESS, DIRECT SUNLIGHT, CONTAMINATION, AND CHEMICALS.

#### B. Storage Instructions

- (1) Write the maintenance date on identification tag (Table 701). Attach the tag to the restraint system.
- (2) Overwrap the restraint system in barrier material (Table 701).
- (3) Place the restraint system in a corrugated paper box (Table 701).

- (4) Fill all voids with wadding or brown kraft paper (Table 701).
- (5) Add desiccant (Table 701) and seal box with shipping tape (Table 701).
- (6) Write the unit's nomenclature, part number, and maintenance date on the box.
- (7) Restraint systems that have been stored for more than two years must be inspected prior to their installation.

## **FITS AND CLEARANCES**

### **1. General**

A. Not applicable.

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## **SPECIAL TOOLS, FIXTURES, AND TEST EQUIPMENT**

### **1. Special Tools, Fixtures, and Equipment**

A. The special tools, fixtures, and test equipment recommended for maintenance of the Restraint System are given in Table 901.

**NOTE:** Equivalent items can be used.

Table 901. Special Tools, Fixtures, and Equipment

Nomenclature	Specification	Source	Use
Brush	Stiff-bristle, Nonmetallic	Commercially available	Cleaning
Cloth	Lint-free	Commercially available	Cleaning
Compressed Air Tank	20 psig (138 kPag)	Commercially available	Cleaning
Goggles	Safety	Commercially available	Cleaning

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## ILLUSTRATED PARTS LIST

### 1. Introduction

#### A. Purpose

- (1) This IPL illustrates and lists the spare parts with attaching hardware.
- (2) The *actual exploded-view and detailed spare parts listing* can be found in the **26-11-59 Supplements**.

#### B. Guide to use of the IPL

- (1) If the part number is not known:
  - (a) Find the part in the illustration for the IPL Figure.
  - (b) Note the item number assigned to the part.
  - (c) Refer to the parts list and find the item number in the **Fig & Item** column.
- (2) If the part number is known:
  - (a) Refer to the numerical index or parts list and find the part in the **Part Number** column.
  - (b) Note the figure number and item number assigned to the part.
  - (c) Refer to the illustration to find attaching hardware and related assembly parts.

### 2. Manufacturer Names and Address

- A. The CAGE codes for the manufacturers of the parts, materials, special tools, and test equipment which may be referenced in this CMM are given below. The codes are taken from Cataloging Handbook H4/H8. The absence of a code in the **Nomenclature** column of the Detail Parts List means the part is manufactured or modified by the HTL/Kin-Tech Division of Pacific Scientific Company.

<u>Code</u>	<u>Name and Address</u>
1B1HG	PACIFIC SCIENTIFIC HTL/Kin-Tech Division 11700 N.W. 102nd Road Suite 6 Miami, FL 33178 Telephone: 305-477-4711 FAX: 305-477-9799 EMAIL: www.pacscimiami.com

### 3. Explanation of Numerical Index Entries

- A. The Numerical Index is provided to help find parts in the Detail Parts List by part number. The figure number, item number, and total quantity required are given for each entry.
- B. The part numbers are arranged from left to right, one character at a time. The order of precedence is: (1) dash, (2) letter A through Z, and (3) numerals 0 through 9.

#### 4. Explanation of Detail Parts List Entries

A. The Detail Parts List is arranged in general sequence of disassembly. The parts are illustrated in an exploded-view illustration and listed in the related parts list.

##### (1) **Fig & Item** Column

- (a) The first number at the top of each **Fig & Item** column is the figure number of the corresponding illustration. The number given opposite each part number is the item number assigned to the part in the illustration.
- (b) A dash (-) in front of an item number means the part is not illustrated.
- (c) Alpha-variants A through Z (except I and O) are assigned to item numbers, when necessary to identify:
  - Added parts
  - Alternate parts
  - Service bulletin modified parts

##### (2) **Part Number** Column

- (a) This column contains the manufacturer's part number for each part, as modified to meet the requirements of ATA 200/2000. These modifications can include:
  - 1 Removal of blank spaces and special characters, with the possible exception of dashes. Dashes are permitted only between numeric characters.
  - 2 Insertion of a reference part number compatible with ATA 200/2000 if the manufacturer's part number exceeds 15 characters. In these cases, the manufacturer's part number is given in the **Nomenclature** column.

##### (3) **Nomenclature** Column

- (a) This column contains descriptive nomenclature for each part, the manufacturer's CAGE code (if the part is not manufactured by Pacific Scientific Company, HTL/Kin-Tech Division), part number (if longer than 15 characters or modified per ATA 200/2000), service bulletins affecting the part, and obsolete part numbers.
- (b) The indenture system used in the **Nomenclature** column indicates the relationship of one part to another, as follows:

```

1 2 3
End Item or Major Assembly
ATTACHING PARTS
Attaching Parts for End Item or Major Assembly
* * *

. Detail Parts for End Item or Major Assembly
. Subassemblies
ATTACHING PARTS
. Attaching Parts for Subassemblies
* * *

. . Detail Parts for Subassemblies
ATTACHING PARTS
. . Attaching Parts for Detail Parts
* * *
  
```

- (c) Assemblies, subassemblies, and detail parts subject to modification, deletion, addition, or replacement by an issued service bulletin, are annotated to indicate both pre- and post-service bulletin configurations. The term (PRE SB XXXX) in the **Nomenclature** column designates the original configuration, and the term (POST SB XXXX) identifies assemblies and parts after the modification has been completed.
- (d) The terms defined below are used when applicable to indicate the interchangeability of parts.

Term	Abbreviation	Definition
Alternate	ALT	The listed part is alternate to, and interchangeable with, other parts within the same item number variant group or other item numbers if designated.
Superseded By	SUPSD BY	The part is replaced by and is not interchangeable with the item number designated in the notation.
Supersedes	SUPSDS	The part replaces and is not interchangeable with the item number designated in the notation.
Replaced By	REPLD BY	The part is replaced by and is interchangeable with the item number designated in the notation.
Replaces	REPLS	The part replaces and is interchangeable with the item number designated in the notation.

(4) **Eff Code** (Effectivity Code) Column

- (a) This column contains effectivity codes (A, B, etc) to indicate the alternate models or configurations of the end item to which the parts apply. This column is left blank when the parts apply to all models or configurations, included in the parts list.

(5) **UPA** (Units Per Assembly) Column

- (a) The quantity shown in this column represents the units required for one NHA (next higher assembly) or, when referring to attaching parts, the quantity to attach one such item. The abbreviation RF (reference) indicates that the end item assembly is listed for reference purposes.

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