

# BLUE SEAL SPECIFICATIONS FOR IBM SERVICE PARTS

## SPECIFICATIONS FOR FIELD REPLACEABLE SERVICE PARTS REPAIRED OR PROCURED FOR IBM

### SERVICE PARTS SOLUTIONS SOURCE SELECTION AND QUALIFICATION DEPT 3JRA EW MATEO

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# **BLUE SEAL SPECIFICATIONS FOR IBM SERVICE PARTS**

## **CONTENTS**

1.0 OBJECTIVE	3
2.0 GENERAL REPAIR REQUIREMENTS	3
3.0 OPEN MARKET BUY VALIDATION PROCESS	4
3.1 Parts shipped from the vendor facility	
3.2 Parts drop shipped from a vendor's Down Stream Supplier	
3.3 Process for minimizing the incidence of Counterfeit Parts	
4.0 GENERAL COSMETIC REQUIREMENTS	6
4.1 Exterior Surfaces of Assemblies	
4.2 Exterior Surfaces of Elements	
5.0 MINIMUM FUNCTIONALITY TESTING REQUIREMENTS	7
5.1 Functionality Requirements	
5.2 Sub Assembly Tear Downs	
5.3 System Assemblies	
5.4 Hard Drives	
5.5 Power Supplies	
5.6 Printers	
5.7 Monitors	
6.0 GENERAL SAFETY REQUIREMENTS	15
6.1 NRTL Listed Products	
6.2 Motors	
6.3 Other Electrical Products	
6.4 Plastics	
6.5 All OEM Products	
6.6 Engineering Changes Requirements	
7.0 ENVIRONMENTAL REQUIREMENTS	20
7.1 Regulated Materials Considerations	
7.2 Vermont Mercury Law	
7.3 RoHS Parts	
8.0 SHIP GROUP REQUIREMENTS	21
9.0 WARRANTY TRACKING REQUIREMENTS	21
10.0 QUALITY MANAGEMENT REQUIREMENTS	22
11.0 FRU LABELING REQUIREMENTS	23
11.1 52S FRU Labeling Requirements	
11.2 Certified Reutilized Part Labeling Requirements	
12.0 GENERAL PACKAGING AND LABELING REQUIREMENTS	24
12.1 All Products	
12.2 Packaging Monitors	
12.3 Quality Seal Tape	

# **BLUE SEAL SPECIFICATIONS FOR IBM SERVICE PARTS**

## **1.0 OBJECTIVE**

The objective of this document is to establish a minimum set of specifications for the consistent repair, testing, cosmetic validation, barcoding and packaging of parts being prepared under contract for the IBM Corporation world wide.

**Note:** The meaning of "PARTS" in this document refers to both single elements (e.g. boards, print heads, fusers, power supplies, drives) and complete assemblies (e.g. Printers, monitors). Thus, an element is a part of an assembly. Products and parts as well as elements and FRU's (field return units) may be used interchangeably.

These parts, which can be new or used, are strictly for service use. The quality and reliability of all used or repaired parts must be equivalent to new.

*This document applies to all parts; IBM Logo and Non Logo (MVS), procured by IBM from:*

- A) Regular Repair Vendors CSP (Certified Service Part)
- B) Directly from IBM Open Market Buy Suppliers (brokers)
- C) Indirectly from a broker's Down Stream Supplier (DSS).

## **2.0 GENERAL REPAIR REQUIREMENTS**

The Supplier can generally define the process to ensure parts conformance as they see suitable. However, the CSP process for all parts to be shipped to IBM must include, at a minimum:

- a. Receiving Inspection / Sorting
  - b. Correct Assembly and FRU number (IBM P/N, OEM P/N & Model#, OEM Name)
  - c. Cosmetic inspection
  - d. Failure Analysis
  - e. Repair and refurbishment as necessary
  - f. Functionality Testing / Box Test
  - g. Cleaning/detailing
  - h. FRU Labeling; "52S" RID label, "Certified Reutilized Part" Label
  - i. Packaging
- The repair required includes repair and replacement of all worn out components to bring the part performance to the functionality equivalency of a new product. Authorization to use the Safety Agency Report (UL/CSA) for the parts under consideration is required prior to performing electrical repairs which involve modifications, unless specifically exempted as defined in Section 6.0 Safety Requirements.
  - The repair vendor must repair the defect described on the IBM Parts Return Form (PRF). If the PRF is missing or a failure description is not included, the vendor must test the product to the IBM or the OEM (Original Equipment Manufacturer) specifications, or the functional

## **BLUE SEAL SPECIFICATIONS FOR IBM SERVICE PARTS**

requirements of the part which can be box tested. If the defect cannot be determined and the part functions per IBM and its OEM specifications, then the part is No Defect Found (NDF) and may be returned to IBM (first time through) provided that the vendor has ensured the part meets the remainder of the requirements (e.g., Appearance, Safety, Functionality) described in this document. Supplier should contact the IBM Buyer regarding disposition for second time failures and NDF procedures.

- The vendor may use new parts, or reclaimed parts (used) to facilitate repairs. The selection of spare parts is left up to the discretion of the vendor provided that the part to be used as a replacement is identical (same manufacturer, electrical and physical characteristics) to the part being replaced and that it meets all of the warranty, quality and product safety requirements described in Section 6.0 in this document. Any deviation from the Identical Part must be approved in writing by IBM.
- Burn-in of repaired parts is not mandatory but should be considered for products where early life failure is a concern (e.g., displays, power supply replacement). Method and duration of burn-in is left up to the vendor, provided it meets the IBM or the OEM specifications.
- The repair vendor shall maintain a NEW DEFECTIVE (NEWD) rate of less than two percent (2%) of all parts upon their usage or installation under the terms of this agreement.

### **3.0 OPEN MARKET BUY VALIDATION PROCESS**

The supplier shall develop and document a generic, “before delivery to IBM” process procedure covering all part numbers and or assembly types being provided. This “parts quality validation” procedure will include at a minimum, the following validations steps:

#### **3.1 Written Process Procedure for Parts Shipped from a Parts Broker Facility:**

- a. Reutilization Process (Dismantle procedure for removing and testing parts from assembly)
- b. Functionality Testing (Commodities; ie. Laptops, PCB's, PWS, LCD's, HDD's, Modems)
- c. Cosmetic Validation Acceptance Criteria (for assemblies; ie. monitors, printers, covers)
- d. Check List for Visual Inspection of parts before delivery (See Checklist on page 5 below)
- e. Evidence of on Going Down Stream Suppliers Quality Management (Per Section 10.0)
- f. Counterfeit or Misbranded Parts prevention precautions
- g. ESD Controls Documentation, including operators training and test logs of periodic checks
- h. Test Equipment Preventive Maintenance Program, including record keeping
- i. Packaging Instructions per IBM requirements
- j. Labeling Instructions per IBM requirements

It is recommended that the supplier generates a checklist to ensure all parts to be shipped to IBM are consistently inspected using this check list as a guide. The check list should address to a minimum the following process validation steps, for all parts before shipment to IBM takes place:

# BLUE SEAL SPECIFICATIONS FOR IBM SERVICE PARTS

## “Inspection Process (Checklist) for Parts Shipped from a Parts Broker Facility”

COMPANY NAME: \_\_\_\_\_

DATE: \_\_\_\_\_

PO# \_\_\_\_\_

- 1- Check for Correct IBM Part Number
- 2- Check for Correct Part Description
- 3- Check for Correct Part Manufacturer Name
- 4- Check for Correct Part MFG Model Number
- 5- Check for Correct MFG Part Number
- 6 – Check Product Authenticity Measures to ensure that the part is not a counterfeited one
- 7- Check Cosmetic Conditions to ensure cleanliness and no broken or missing components
- 8- Check if a Functionality Test is required and if so, ensure that it is done and passed it.
- 9- Check if the Part requires BIO's or firmware upgrade
- 10- Check if the Part is ESD sensitive and if it is, that it is in its required anti-static bag
- 11- Check if the “52S Barcode” was applied to the part
- 12- Check if the “Certified Reutilized Part” Label was applied to the part
- 13- Check that the box has a Unit Box Package Label and a Certified Reutilized Part label
- 14- Check if an IBM approved Quality Seal or Quality Tape will be used to close the box

### 3.2 Process For Parts Drop Shipped from a Vendor’s Down Stream Supplier

In addition to the steps in Section 3.1 above, the supplier should also ensure that the following quality actions are taken;

- a. Verify that part at DSS is of correct part#, model# and OEM
- b. Verify that part at DSS meets IBM cosmetic requirements
- c. Verify that part at DSS has been functionally box tested
- d. Verify that DSS will place a “52S” RID barcode label on the part and on the box
- e. Verify that DSS will package part per doc# GA21-9261-11

### 3.3 Process for Minimizing the Incidence of Shipping Counterfeit Parts to IBM

Counterfeit parts can have detrimental effects on system functionality and reliability, they may also result in serious customer issues and additional warranty and service costs. This issue is even more critical when dealing with IBM logo parts. Therefore, IBM parts suppliers shall develop a counterfeit mitigation process with a clear list of conformance checks to be validated before shipment to IBM takes place. This is to ensure that due diligence is applied consistently for a careful product authentication. When in doubt, and if dealing with IBM logo parts; before shipment to IBM takes place, suppliers should contact their local country Reutilization Engineer and ask for help to validate that the information printed on the 11S barcode label affixed to the part meets the IBM requirements of the BOM (Bill of Materials), Serial Number, Header Codes, AVL, etc. In general, it is ultimately the supplier’s responsibility to ensure that parts to be shipped to IBM conform to the Original Manufacturer’s standards.

# BLUE SEAL SPECIFICATIONS FOR IBM SERVICE PARTS

## 4.0 GENERAL COSMETIC REQUIREMENTS

### 4.1 Exterior Surfaces of Assemblies

- Using normal lighting (equivalent to cool white fluorescence of 800 to 1000 lux or 75 to 90 foot candles), each assembly must be visually inspected at a distance of 500 mm (approximately 20 inches). The surface at this distance should be uniform in appearance and free of imperfections such as:

- |                  |             |
|------------------|-------------|
| . Paint blisters | . Scratches |
| . Dents          | . Stains    |
| . Bulges         | . Dirt      |

- Cosmetically the unit should be cleaned with a safe household cleaning solution and a rag. Never spray the cleaner solution over the unit. Instead, spray the rag being used.

- Minor scratches, dents or other blemishes, are acceptable on the bottom or rear of an assembly if these areas are not visible to the user.

- Knobs, labels, feet, etc. which are broken, cracked or missing must be replaced. All operator panels, knobs, levers, paper guides etc., must be free of dirt, stains, ink or "excessive" wear (e.g. switch designation not readable). Labels which are not part of the OEM markings should be removed.

- Damaged or missing OEM labels/Logos, UL/CSA markings, must be restored.

- Inspect all cables and connectors. Inspect for chemical or mechanical damages such as yellow stains, ink stains, damages caused by cuts, bent, broken or shortened pins in the connector. Also inspect for bent metal connector shell, bent or missing thumbscrews, cracks, tears, holes or chafing on the cable insulation.

### 4.2 Exterior Surfaces of Elements

- Using normal lighting, each FRU must be visually inspected at a distance of 500 mm. The surface of the element must be free of dirt, excess oil and grease, ink residue, etc.

- Scratches, minor chips or dents are acceptable in elements as long as these imperfections do not impede the normal operations of the FRU and are not visible to the user.

# BLUE SEAL SPECIFICATIONS FOR IBM SERVICE PARTS

## 5.0 MINIMUM FUNCTIONALITY TESTING REQUIREMENTS

### 5.1 Functionality Requirements

- Each assembly (e.g., printer, terminal) and Subassembly (Card, Power Supply, etc) must meet the functional requirements of IBM and its OEM. Some parts will require special specifications according to their usage application which may include, for example; OEM options, switch settings, firmware and jumper installation, etc. When required, IBM will provide documentation and IBM Word Drawings describing these unique configurations to which the product must conform.
- The guidelines below are generic, not for a specific part. Refer to the manufacturer manual to ensure set up and test procedures reflect the unit under test.

### 5.2 Sub Assembly Tear Downs

The vendor may use new parts, reclaimed parts (tear downs) or refurbished parts to satisfy the IBM order, provided that they are "OEM ORIGINAL" and that they also meet the OEM functionality requirements and the IBM warranty, cosmetic and quality requirements described in this document. Suppliers ARE NOT to bid using OEM EQUIVALENT or GREY MARKET PARTS, unless agreed and specifically approved in writing by the IBM Buyer.

Also, the vendor must ensure that the product safety listing certification granted to the OEM by the NCB (National Certification Body) listed on the back of the part, has not been violated.

**Note:** Tear Down Fuser assemblies are not acceptable for IBM field use, unless they are fully refurbished first (all worn components are replaced, including upper and lower rollers, new felt wand, cleaned, lubricated, tested etc.).

**Note:** Used Batteries are not acceptable for IBM field use. Thus, all batteries to be shipped to IBM under the Open Market Buys program must be new, in its sealed container, from its OEM and with at least 1 year of useful life as indicated by its expiration date.

Parts taken from Tear Downs (PCB's, Planar, Modems, Drives, print heads, fans) should be functionally tested in the assembly they are installed. If the main assembly fails self test, the part should be fully tested in a similar assembly (test bed) known to be in good working conditions:

- |                          |                 |
|--------------------------|-----------------|
| . Printed Circuit Boards | . CD Drives     |
| . Modems                 | . Floppy Drives |
| . Networking Devices     | . Media Drives  |
| . Hard Drives            | . Cooling Fans  |
| . Printhead assemblies   | . Scanners      |

# BLUE SEAL SPECIFICATIONS FOR IBM SERVICE PARTS

## \* Minimum Testing Requirements Procedure:

- Install the unit to be tested to the appropriate test bed.
- Load the required, drivers and applicable diagnostic software for unit under test
- For network devices, use appropriate network interface and attach test bed to server
- Ensure there is proper communication between test bed and server
- For print heads, a matrix printer must be used as test bed. Printout quality is per oem
- For scanners, a laser printer must be used as test bed. Printout quality is per oem specs
- Run self diagnostics, if the test bed has this capability
- Observe any messages which may indicate failures or any problems
- If unit under test functions properly a Test Completed message should be displayed
- Reject the unit under test if it fails any one test
- Reject any drives with bad sectors
- Place each good part in an antistatic bag, if required

## 5.3 System Assemblies

. Laptops

. Desktops

## \* Minimum Testing Requirements Procedure:

- Power up the system under test and ensure it boots up properly
- Load the required, drivers and applicable diagnostic software for unit under test
- Run self diagnostics
- Test all ports and options (floppy, cd-rom, video, keyboard, memory, HDD, battery)
- Perform modem test and PCMCIA test
- Observe any messages which may indicate failures or any problems
- Reformat the hard drive to make sure it does not contain any previous user data
- If unit under test functions properly a Test Completed message will be displayed
- Reject the unit under test if it fails test
- Burn in. Run loop diagnostics for 8 hours
- Ensure battery holds charge by inserting it on a good machine
- Battery must power the machine for duration listed in its assembly manual
- Must include power cord, external cables and all options specified in svce manual

## 5.4 Hard Drives

### \* Minimum Testing Requirements Procedure:

- Visual Inspection
- PC Doctor complete test
- Run diagnostic tests and verify all hard drive parameters (read, write, capacity, RPM)
- Run hard drive formatting utilities to ensure drive is free of previous user data
- Boot up test
- Acoustic noise evaluation (reject drives which are noisier than normal)
- Reject all drives which fail due to bad sectors, wrong capacity or diagnostic test failures
- Maintain a test log recording, with drive serial number and IBM P/N

# BLUE SEAL SPECIFICATIONS FOR IBM SERVICE PARTS

## 5.5 Power Supplies

### \* Minimum Testing Requirements Procedure:

- Remove the PWS from main assembly and clean with compressed air
- Inspect the boards components and exterior surfaces for signs of burns or damages
- Install PWS on test bed (same as the one it was designed to work on)
- Allow the PWS to burn in with applied load for 24 hours
- Perform Hi-POT test
- Discard PWS if it failed any of the tests above
- Record results and maintain records for at least 5 years

## 5.6 Printers, Fusers, Printheads and Rollers

### \* Minimum Testing Requirements Procedure:

- Ensure printer's paper tray contains paper and necessary fonts
  - If printer has two or more paper tray positions, start test with top tray position first
  - All tests conducted below must be performed with paper tray at each position
  - Turn on the unit under test and run self test (print out 5 pages at least)
  - Test duplex action (if printer is capable) per OEM manual
  - Reset the printer to its factory default settings
  - Verify the message being displayed on O. Panel is readable, no missing characters
  - Attach printer to a suitable test bed, ensure all ports and options are tested
  - Print out 5 windows test pages, ensure print out quality, meets OEM manual specs
  - If printer has Network capabilities, test its functionality
  - Insert an appropriate network interface card and necessary drivers
  - Attach printer and test bed to a network server
  - Ensure there is proper communication between printer and server
  - Download and print 5 windows test pages from the server, ensure print out quality
  - Reject unit if any failure occurs, paper jams occur, or for poor print out quality
- Prices submitted for all printers and for any other Laser printer in this RFQ, must include a completely refurbished fuser assembly, if the fuser is attached to the body of the printer.

### - Fuser Refurbishment Requirements:

All fuser assemblies in this RFQ must be brand new, or completely refurbished to equal to new conditions. It is up to the supplier to decide on what components to replace and their replacement frequency in order to maintain New Defectives below the maximum allowable 2% Defect Rate. Thus, the following components; if contained inside a fuser, must be inspected thoroughly and if they exhibit sign of wear or damage, must be replaced 100% of times with brand new ones: bushings, bearings, gears, picker fingers, exit rollers, heat lamp, fuser lamp, thermister, thermal switch, upper and lower rollers, hot fuser roller, pressure roller, backup fuser roller, and felt wiper pad. The entire unit must be cleaned, lubricated and functionally tested in the printer for which it was designed. It should run safely, smoothly, without paper jams, noise, or printing imperfections. Under no circumstances, should the supplier provide IBM a used fuser which comes from a used printer, or a tear down printer, without completely refurbishing the fuser as outlined in this

## BLUE SEAL SPECIFICATIONS FOR IBM SERVICE PARTS

paragraph. To prevent flat spots on the fuser rollers, all fusers units must have installed a fuser spacer, to keep the hot roll and the backup roll separated during shipping and storage.

- Prices submitted for all Dot Matrix Printers must include a brand new or a completely refurbished printhead which will meet the quality requirements in the printhead paragraph below.

- Printhead Requirements:

Quality requirements of printheads involve inspection of all elements of the unit. Replacement of damaged wires/pins, worn nosecone, heat sink, connectors, jewel, guides, and coils, etc. Missing dots, light prints, smudges, paper wrinkles or any other printing defects are not acceptable. Printout test must be conducted, it must pass the manufacturer's specifications and it should be included and shipped with each unit. Printheads can also be tested using a clout test or any other electromechanical testing method by which their functionality can be validated.

- Rubberized Parts Replacement Requirements

All printers and subassemblies which contain rubberized rollers (like fuser assemblies), cork materials (like paper trays, paper pick up assemblies, and other moving parts subjected to wear), must be visually inspected to ensure at least 6 months or more of usage performance and reliability. Thus, all rollers, rubberized surfaces of rollers and paper separation pads on printers and fusers which exhibit signs of wear, must be replaced 100% of times with new ones. Under no circumstance should any one of these components be replaced with used parts taken from old, tear down printers.

- After functionality testing has been completed, supplier should reset all dip switches to their factory defaults before shipment to IBM takes place.

### 5.7 Monitors

NOTE: All monitors and terminals to be sold to IBM, must conform to the following acceptance criteria:

#### 5.7-1 VISUAL INSPECTION

\* Cosmetics:

- Perform inspection under normal lighting conditions and at about 24" from the surface:
- The front, the sides, the top of the unit and any other surface that can be seen while the unit's CRT faces the inspector shall be examined.

The following defects are not acceptable:

- . A damaged plastic, i.e., dents, scratches, nicks, breaks
- . Loose or missing screws or any other safety fastening devices
- . Paint defects, i.e., scratches, blemishes, faded color
- . Unit has un-acceptable bezel to CRT gap (should be < 0.8mm)
- . Unit has unacceptable bezel to cover gap
- . Mis-alignment of rear case to bezel

## BLUE SEAL SPECIFICATIONS FOR IBM SERVICE PARTS

- . Labels which are not part of the OEM markings
- . Damaged or missing OEM labels/Logos, UL/CSA markings
- . Labels and logos that are not of uniform stroke width or of consistent print quality
- . PCB which is Burn/Blackened
- . PCB which is delaminated

### \* Cables:

- Inspect all cables and connectors. Inspect for chemical or mechanical damages such as yellow stains, ink stains, damages caused by cuts, bent, broken or shortened pins in the connector. Also inspect for bent metal connector shell, bent or missing thumbscrews, cracks, tears, holes or chafing on the cable insulation.

### \* Swivel Stand:

- The pedestal should not exhibit any sign of squeaking or binding. It should move uniformly and secured in such a way that it holds the monitor unit in the desired position.
- Pedestal should not have any missing feet.

### \* User Controls Door Assembly:

- Ensure door closes properly, no binding is present, all hinges are in good operating conditions and that the door assembly is clean inside and outside.

## 5.7-3 CRT INSPECTION CRITERIA

### \* The following CRT defects are not acceptable:

- . Screen images that can be distinguished while the power is off
- . Distinct and readable text or patterns anywhere on the CRT display area that may be distinguished with the power on and against a white background.
- . Scratches on the CRT face that are visible with either a white or black background and interfere with the normal viewing area

\* Shadowing; when viewed from a 24" distance, shadowing causing reflections on the characters or graphics are not acceptable.

\* Purity; the screen should have a uniform color through the entire surface.

# BLUE SEAL SPECIFICATIONS FOR IBM SERVICE PARTS

## 5.7-4 FUNCTIONALITY TESTING

### \* Perform Power Up Test:

- Connect the unit under test to a personal computer
- Select either Windows Desktop, Excel or Word for display
- Examine video for defects
- Observe the pattern and reject the unit under test for any of these display defects, observable from 12 inches:
  - . Jitters or Swim
  - . Flag waving
  - . Horizontal or vertical bars
  - . Video noise
  - . Audible noise
  - . Incorrectly formed or flickering characters

**Note:** The following items must be verified during functional test with contrast control at maximum and brightness control at 50%:

### \* Geometry:

- Using a crosshatch pattern, check the following for all modes:
  - Vertical Size
  - Horizontal Size
  - Linearity
  - Pincushion / Trapezoid
  - Tilt

**Note:** Vendor procedure should clearly identify the accept/reject criteria for each parameter above.

### \* Convergence:

- Using a white crosshatch pattern, verify that the white lines appear as one line (not two or three colors)

### \* White Balance:

- Using a gray scale pattern, verify a consistent tracking from black to white.

**Note:** If using a color analyzer, vendor procedure should identify the accept/reject criteria for white balance (e.g.,  $X = 0.297 \pm 10$ ,  $Y = 0.320 \pm 10$ )

### \* Brightness:

- With brightness control at 50% and contrast at maximum, the back raster must not be visible. Vendor procedure should identify how the technician will determine the accept/reject criteria for brightness. The procedure must be specific enough to ensure a consistent brightness setting for each monitor.

## BLUE SEAL SPECIFICATIONS FOR IBM SERVICE PARTS

- \* Purity:
  - Using a full white screen, vendor must ensure no blemishes or discoloration is present and that a uniform “white” is present across the entire screen.
  
- \* Focus:
  - Vendor procedure must identify the method (and pattern) used for Optimizing the focus. A windows application (e.g., Excel spreadsheet) must be used to verify the focus prior to shipment.
  
- \* Test Video Cable:
  - Twist and wiggle video cable in various locations and observe video for any of the above listed defects. Reject unit if any of the above defects is present
  
- \* Test User Controls Operation:
  - Adjust user brightness and contrast controls
  - Test that both controls increase screen brightness with clockwise rotation
  - Test controls for free rotation. Reject for stuck, broken, or unresponsive user controls
  
- \* Test and Adjust:
  - Test and adjust for different resolutions 640 x 480, 800 x 600, 1024 x 768
  - Check monitor specs in reference manual if monitor can do higher resolution and test accordingly. Adjustment can be done in front panel or by pots inside monitor.
  
- \* Perform Slap Test:
  - Adjust user brightness control and contrast to maximum
  - While observing the windows desktop, excel or word program display, slap the unit under test once on the left side, once on the right side, then once on top. Look for tearing, rolling, size changes, flickering of the image that indicate loose or intermittent electrical connections.
  - Reject the unit under test for any slap test failure.

**Note:** The slap test must be performed with enough force to create dark waves in the picture, a result of CRT aperture grille vibration. This vibration is normal.

- \* Perform Loop Back Test (Required only when the Monitor is also a Terminal):
  - All terminals must be tested per the corresponding Manufacturer’s User’s Manual.
  - All communications must be tested (serial, parallel, Ethernet, etc.).
  - If required, the terminal under test should be connected to a known good terminal and communications verified. In some cases, wrap plug testing may not be sufficient.
  - Vendor procedures must detail the entire test procedure for each different model terminal.

### 5.7-5 SAFETY TESTS

NOTE: At the time of testing, unit will be fully assembled, in the condition that it will be shipped.

# BLUE SEAL SPECIFICATIONS FOR IBM SERVICE PARTS

## \* Burn - in Test

- Locate a Test Bed with a compatible video driver for unit under test (i.e. VGA, SVGA)
- Connect the unit under test to the test bed
- The unit will be placed in burn-in and powered with an image applied for at least 12hrs
- During burn in, verify that no degradation of display quality occurs, specially:
  - . Color changes
  - . Display size
  - . Loss of video signal
  - . Loss of focus
  - . Loss of power
- After completion of test, disconnect unit under test from test bed.

## \* Hi-Pot Test / Ground Continuity Test

- Every monitor and terminal must pass a hipot/ground continuity test prior to shipment
- All testing equipment used to conduct hipot and ground integrity, must be subjected to a maintenance/calibration schedule. The results must be maintained and available for inspection as deemed necessary by IBM
- Vendor procedure must provide the testing method and equipment used.

**Note:** Log in the serial number, description, model number, OEM, date and operator initials for all units that pass ground continuity and hi-pot tests. Supplier shall maintain a log book to record all units tested for at least two years from last entry.

## 5.7-6 CLEANING PROCEDURES

- All user added stickers and labels should be removed
- All units will be subject to a Chemical "WIPE DOWN" using non hazardous, household approved chemicals and paper tissue.
- Clean CRT glass with an approved glass cleaner
- Never spray the unit directly; instead spray the tissue and wipe unit with the moist tissue
- The unit should be reasonably clean and free of marks, pay special attention to front bezel

## 5.7-7 MONITOR TEST PROCEDURE

- Must be developed by Supplier based on above recommendations and approved by IBM

## 5.7-8 MONITOR INPECTION FLOW CHART

- Must be developed by Supplier based on above recommendations and approved by IBM

## 5.7-9 MONITOR INSPECTION CHECK LIST

- Must be developed by Supplier based on above recommendations and approved by IBM

# BLUE SEAL SPECIFICATIONS FOR IBM SERVICE PARTS

## **6.0 GENERAL SAFETY REQUIREMENTS**

All service parts must appear/function, as originally intended/designed by the manufacturer of the product, before the product is returned to IBM.

### **6.1 NRTL (Nationally Recognized Testing Laboratory) Listed OEM Products**

1. The following guidelines must be used as a basis for repairs on those parts with input voltages greater than 42.4 VAC peak or 60 VDC (e.g., power supplies, monitors, printers, servers, computers, etc.) used by IBM service organizations. These guidelines are used to help maintain the safety of the finished products and are in addition to any other existing repair guidelines or specifications where they exist.
2. All suppliers performing work for IBM/OEM products under the repair standards herein must have in their possession and fully understand the latest copy of the ANSI-UL (American National Standards Institute - Under Writers Laboratory) safety standards of the products sold to IBM or repaired for IBM. Additionally, all suppliers must be knowledgeable concerning agency/safety/quality manufacturing requirements. Proof of this knowledge can be in the form of an OEM certification, or an agency recognition of the manufacturing/repair facility, UL, CSA (Canadian Standards Association) category, training records, etc.
3. All OEM products being repaired which are listed by a (NRTL) must meet or exceed all listing requirements as published in the applicable ANSI/UL standard under which the product was originally listed.
4. All repair actions contracted by or for IBM, must be conducted using OEM original, identical or approved alternate components as defined in the notes below. The supplier/repair vendor must never alter/change the design or otherwise do anything which can violate/void the NRTL certification granted to the original manufacturer of the product. However, if the repair vendor must perform a given engineering change, the repair vendor must obtain written permission from the OEM of the equipment to be changed, a copy of the NRTL listing report and the NRTL recertification for each product affected.
5. NOTES:
  - CLEANING in this section is limited to dry brushes, rags, compressed air, etc; in areas where electrical insulation systems can be adversely affected by cleaning solvents. Under no circumstances are electrical components to be chemically or detergent dipped and/or oven dried, or painted where painting could contact electrical insulation.
  - SIMILAR COMPONENTS as used herein means same or alternate manufacturer, but external dimension, markings, etc., are not IDENTICAL to those of the originally approved component or approved ALTERNATE.

## **BLUE SEAL SPECIFICATIONS FOR IBM SERVICE PARTS**

- **SUBSTITUTE COMPONENTS** as used herein refers to similar components. Each **SIMILAR** component must be approved by the product's RE and the NRTL's involved in recertifying the part.
- **IDENTICAL COMPONENTS** means the same manufacturer, part or model number, electrical/thermal ratings and agency approvals. Repair vendors must exercise every avenue possible to conduct repairs using identical components.
- **APPROVED ALTERNATE COMPONENTS** are those components with identical electrical/thermal, mechanical, physical, compositional and performance characteristics as the component to be substituted, but that due to unforeseen market conditions are only available from a different manufacturer. When the identical component is not available, the repair vendor can have an alternate component approved by submitting to IBM any one of the following written proofs to demonstrate that both parts can safely be interchanged:
  - Notification from the OEM of the product.
  - Listed on the Product Safety Agency Listing Report (NRTL)
  - Certification from one of the NRTL's on the product
  - Verification by using a commercially available cross-reference listing from a parts' manufacturer or parts' dealer, and the new part bears at least one of the NRTL's seals if originally NRTL.
  - If none of the above proofs are available, the repair vendor may conduct an analysis at its facilities, or have a licensed test house conduct it for their company to compare all electrical, physical mechanical, compositional and performance characteristics of the new component to the original one. (IBM must be present to validate test.) If original part is NRTL/MFG sensitive, it must be approved by at least one of the NRTL's or its manufacturer.

“REPAIR VENDORS MUST INFORM THE IBM REUTILIZATION ENGINEER (RE) OF ALL INTENDED SPECIFIC REPAIR ACTIONS AND SUBCONTRACTORS PERFORMING SAID ACTIONS WHICH INVOLVE THE USE OF ALTERNATE COMPONENTS. REPAIR ACTIONS INVOLVING SUBSTITUTE COMPONENTS NOT SPECIFICALLY APPROVED BY IBM IN WRITING ARE FORBIDDEN.”

### **Safety Considerations for Repairs Involving the Replacement of Electrical Parts/Components:**

- 1 **ELECTRICAL PARTS** (when the OEM is the repair vendor). When economically feasible, parts (of input voltage greater than 42.4 V AC peak or 60 V DC) shall be returned to the original manufacturer or its certified vendors for repair. All safety/agency requirements applicable to new-build parts remain in effect for the rework and/or repair activity. Vendor responsibilities are the same as “new build”.
- 2 **ELECTRICAL PARTS** (when OEM assistance is not available, repairs are of low complexity with **IDENTICAL** components). Parts' repairs (input voltage greater than 42.4 V AC peak, 60 V DC) limited to functionally checking, cosmetic/cleaning operation and/or repair operations limited to pluggable components (e.g., no soldering, drilling), where the

## **BLUE SEAL SPECIFICATIONS FOR IBM SERVICE PARTS**

replacement pluggable component is limited to IDENTICAL components, may be returned to IBM without external agency involvement after completion of the repair activities.

- 3 ELECTRICAL PARTS (when OEM assistance is not available, repairs are of low complexity with approved ALTERNATE components). Parts' repairs (input voltage greater than 42.4 V AC peak, 60 VDC) limited to functionally checking, cosmetic/cleaning operation and/or repair operations limited to pluggable components (e.g., no soldering, drilling), where the replacement pluggable component is an approved ALTERNATE, may be returned to field stock without external agency involvement after completion of the repair activities and the following safety requirements have been met;
  - Minimum safety tests include: 100% hipot, polarity and ground integrity.
  - Vendor documentation is to include IBM part number (P/N), date code, repair actions and markings to identify the parts as repaired/tested (hipot, ground, date, etc.) and proof of personnel/facility technical qualifications.
  
- 4 ELECTRICAL PARTS (when OEM assistance is not available, repairs are of high complexity with IDENTICAL or approved ALTERNATE components). Parts' repairs (input voltage greater than 4.2 V AC peak or 60 V DC) of increased complexity (e.g., soldering, unsoldering components, drilling rivets) must meet or exceed the following minimum requirements in order to avoid agency recertification prior to being returned to IBM.
  - Failing components must be replaced with only IDENTICAL or approved ALTERNATE components.
  - Repairs involving soldering, drilling, etc., must be performed by qualified technicians who understand the safety implications of their actions (e.g., metal shavings, maintaining creepage and clearance requirements at solder points, detrimental effect of heat on insulation systems, heat generated by defective solder joint, etc.).
  - Vendor must be able to provide objective evidence of qualifications satisfactory to IBM.
  - Minimum safety tests include: 100% hipot, polarity, ground integrity, and functional test.
  - Vendor documentation is to include IBM P/N, date code, repair actions and markings to identify the parts as repaired/tested (hipot, ground, date, etc.) and proof of personnel/facility technical qualifications.
  
- 5 ELECTRICAL PARTS (when OEM assistance is not available, repairs involve changing the design of the product). Parts' repairs which require changes to the design of non-IBM products will not be allowed by IBM regardless of the electrical rating unless it is undertaken by the OEM. In cases where replacement parts are not available (IDENTICAL or an approved ALTERNATE), the product will be sent back to its OEM for repair. If the OEM no longer supports the product, or it is not available, the product will be deemed non-repairable. The IBM RE must be notified for proper disposition
  
- 6 ELECTRICAL PARTS (when OEM assistance is available, repair involves the use of other than the IDENTICAL or approved ALTERNATE component, or when Engineering Changes to the design are required). Parts' repair of this type, regardless of the electrical rating, must meet or exceed the following minimum requirements AND have the part recertified by the NRTL agency (if originally certified) prior to being returned to IBM. The Product Safety Engineer (PSE), the RE and the NRTL (where the part is NRTL approved) must approve each similar/substitute component selection or engineering changes. This approval will

## **BLUE SEAL SPECIFICATIONS FOR IBM SERVICE PARTS**

include a review of the product NRTL's listing report and a verification of critical safety design aspects (e.g., transformer construction, insulation, thermal ratings, line-to-line/line-bypass caps, creepage and clearance, etc.). The product RE must be informed of all intended specific repair actions and subcontractors performing said actions. Repair actions using substitute components and/or subcontractors not specifically approved by the OEM, the RE, or the NRTL of the product are forbidden.

- The product is to be re-labeled according to the OEM and NRTL requirements.
- Repairs involving soldering, drilling, etc., must be performed by qualified technicians who understand the safety implication of their actions (e.g., metal shavings, maintaining creepage and clearance requirements at solder points, detrimental effect of heat on insulation systems, heat generated by defective solder joint, etc.).
- Vendor must be able to provide objective evidence of qualifications satisfactory to IBM.
- Minimum safety tests include: 100% hipot, polarity, ground integrity, and functional test.
- Vendor documentation is to include a copy of the product NRTL listing report, and/or other markings as required by agency recertification activity, IBM P/N, date code, repair actions and markings to identify the parts as repaired/tested (hipot, ground, date, etc.), and proof of personnel/facility technical qualifications.

### 6.2 Motors (All)

- Repairs are limited to bearing replacement, cosmetic cleaning and replacing damaged external wiring or insulation tubing. Tests for motors rated >42.4 V AC peak, or 60 V DC, include 100% hipot and ground continuity.
- Cleaning is limited to compressed air, dry brushes/rags. Motor external housings may be cleaned with solvent-impregnated rags or cloths. Under no circumstances are motors to be chemically dipped or subjected to cleaning baths followed by oven drying operations where insulation systems are concerned (includes windings, wiring, etc.). Paint shall not be applied unless insulation systems are protected from the paint application.
- Damaged or broken external wire leads may be repaired or replaced only if the repair can be made easily using agency approved wire joiners; crimping tools, etc., sized appropriately for the wire being repaired. Agency approved insulation tubing is to be provided over the repaired area to limit exposure conductive surfaces.
- Damaged, broken, or replacement insulation tubing must be of the same type and rating as original (agency approved, same temperature, and voltage rating).
- After reassembly, motors must be subjected to hipot and ground continuity test if rated > 42.4 V AC peak, or 60 V DC.
- Marking to include hipot, ground continuity, and other marking identifying part as being repaired or rebuilt (e.g., date code, vendor, etc.).
- Documentation to include hipot, ground continuity test results, number of motors by IBM P/N and date, nature of repairs, and proof of vendor's technical qualifications.

# BLUE SEAL SPECIFICATIONS FOR IBM SERVICE PARTS

## 6.3 Other Electrical Products

Electrical components other than those mentioned above, or assemblies containing electrical components, must have the electrical components replaced with IDENTICAL or approved ALTERNATE components. This includes, but is not limited to the following electrical components: switches, circuit breakers, circuit protectors, fuses, fuse holders, wires, cable assemblies, relays, line filters, filter capacitors, bulk capacitors, light assemblies (including fuser lamps, laser diodes, LED's, etc.), interlock switch assemblies, line cords, thermal controls/limiters, motors, fans, etc.

## 6.4 Plastics

Replacement plastic parts shall be manufactured from materials that have agency recognition and a minimum flame rating of 94V-1. Exceptions must have the approval of the product RE.

## 6.5 All OEM Products

- All manufacturer labels (e.g., caution, warning, descriptive, instructional) must be in place and legible, not painted over, peeled, smudged, etc. If a label is missing or not legible, the label must be replaced with the same type of label and located in the same area as the original.
- All protective guards, shields and protective covers, internal and external, must be securely mounted in place as originally designed. If any guards, shields or protective covers are missing, they must be replaced and perform as effectively as the original.
- All fuses must be clearly labeled to identify the fuse rating. All installed fuses must be of the correct type and rating as specified by the manufacturer.
- Power cords must not show any signs of cracking, chafing, wearing, or in any way be "unsafe". If any of these conditions or any other unsafe conditions exist, the power cord must be replaced with a new power cord of the same length, size gauge wire, and the proper strain relief or grommet must be used.
- Ground continuity of all units must be measured from the ground pin on the power cord (if any) to unit frame or covers (if metal). The resistance measurement must be less than 0.1 ohms. If the measurement is greater than 0.1 ohms, check all safety ground points for a clean, tight connection and correct as necessary.
- Repaired units must not show any sign of fire, burned or charred components. If any of these conditions exist, the IBM RE must be notified, and the unit must be failure analyzed and the cause identified. Units which display evidence of fire, burning, charring, etc., must be returned to IBM as scrap.
- If tamper resistant fasteners were installed by the OEM, the same type fasteners must be installed after the repair is completed.

# **BLUE SEAL SPECIFICATIONS FOR IBM SERVICE PARTS**

- Burn-in of used parts is mandatory for products where early life failures are a concern (e.g. displays, power supply replacement). Method and duration of burn-in is left up-to the vendor, provided it meets the IBM or the OEM specifications; but may be subject to modifications by IBM as new failure data is obtained.

## **6.6 Engineering Change (EC) Requirements**

All IBM required Engineering Changes (EC's) must remain in place or be replaced, if missing. All IBM EC's must be as effective as originally intended (i.e., a missing "caution" label must be replaced by the same type of label and must be located in the same position as originally specified).

- Documentation for all required EC's on IBM manufactured products will be made available to the repair vendor.

- Engineering changes which have been developed by OEM's, if obtained, may be installed by the repair vendor, per Section 6.0 above. However, repair vendors are not required to implement EC's on OEM products unless specifically requested in writing by IBM.

- If due to the installation of such EC's, additional documentation, new micro code diskettes, etc., are required to install the element or FRU, the vendor shall include such items with every part to be shipped, and IBM must be notified of the planned actions.

## **7.0 ENVIRONMENTAL REQUIREMENTS**

### **7.1 REGULATED MATERIALS CONSIDERATIONS:**

In general, all used parts, components, assemblies and products resulting during the course of the repair of IBM products and which contain regulated materials (i.e. PCB's, Lead, Mercury, Solvents, Batteries, Lamps) shall not be thrown away in the regular trash and as such, should be handled, transported and disposed in accordance with IBM, Federal, country and local government environmental and transportation laws, applicable to the suppliers' activities. Supplier must notify the IBM engineer / buyer in writing of these items, along with their hazardous or non hazardous nature. Suppliers must indemnify IBM if it fails to do so. Suppliers are required to extend these environmental terms and conditions to any subcontractors they may utilize in the performance of a contract for IBM.

### **7.2 VERMONT MERCURY LAW:**

All suppliers of products to IBM are required to comply with the requirements stated in the URL below which outlines labeling requirements for mercury-added products.

<http://www.leg.state.vt.us/statutes/fullsection.cfm?Title=10&Chapter=164&Section=07106>

# BLUE SEAL SPECIFICATIONS FOR IBM SERVICE PARTS

Note: This is not limited to shipments to Vermont. Since any shipment sent to IBM could later be sent to Vermont, all parts containing mercury must be labeled regardless of the ship to address on the IBM purchase order.

## 7.3 RoHS PARTS

Parts under contract with IBM must adhere to the RoHS regulation. As such, parts that are identified as RoHS compliant, must not be contaminated with any of the banned substances, i.e. lead solder

## 8.0 SHIP GROUP REQUIREMENTS

Unless otherwise specified, the completed parts ship group must include all items that normally are part of the product when sold new by the OEM (i.e., paper guides, noise reduction, safety instructions/covers, pedestal, power cables, signal cables, etc.) Which are normally supplied by the original manufacturer in their new parts ship group.

## 9.0 WARRANTY TRACKING REQUIREMENTS

- The supplier shall maintain a NEW DEFECTIVE (NEWD) rate of less than two percent (2%) of all parts upon their usage or installation under the terms of this agreement. All parts, new or used are expected to carry at least a 180 days warranty
- Warranty tracking is the responsibility of the Supplier. IBM shall return warranty parts to the supplier for credit or replacement and reserves the right to audit the vendor records at any time.
- A warranty report containing the information below must be filled out for each product or device that has been received under warranty. This report should be sent to IBM on a monthly basis. The format of the report is as follows:

**-I-**

DATE: beginning of month - throughout - end of month

Page \_\_\_ of \_\_\_

"MONTHLY WARRANTY ANALYSIS REPORT FOR IBM SERVICE PARTS"

(Supplier Name)

IBMP/N	DESCRIPTION	BARCODE	ACTUAL FINDINGS	CORRECTIVE ACTIONS	CODE
=====	=====	=====	=====	=====	=====
_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____

# BLUE SEAL SPECIFICATIONS FOR IBM SERVICE PARTS

## -II-

On the last page of the report make a summary of the failures as follows:

EXPT CODE	MEANING OF EACH EXCEPTION CODE	COUNT	%
CODE 03	(USED/WARRANTY EXPIRED)	_____	_____
CODE 04	(MISSORT/WRONG VENDOR)	_____	_____
CODE 07	(CANNIBALIZED)	_____	_____
CODE 08	(NEW / WARRANTY ACCEPTED)	_____	_____
CODE 09	(PHYSICAL DAMAGE)	_____	_____
CODE 10	(NDF / WARRANTY ACCEPTED)	_____	_____
CODE 11	(OTHER)	_____	_____
	TOTAL	_____	100%

Total units repaired for the month: \_\_\_\_\_

Total warranty claims received: \_\_\_\_\_

Actual warranty accepted: \_\_\_\_\_

Warranty %: \_\_\_\_\_

## -III-

HIGH FLYERS:

=====

CORRECTIVE ACTION PLAN:

BENEFIT DATE:

## 10.0 QUALITY MANAGEMENT REQUIREMENTS

- All parts received by the supplier shall be inspected for cosmetics, packaging and functionality per sections 2.0, 3.0, 4.0 and 5.0 of this document.

### DOWN STREAM SUPPLIERS QUALITY MANAGEMENT:

- The supplier shall maintain an "Incoming Inspection History Report" resulting from audits performed on products received from Down Stream Suppliers for stocking orders. This report should include at a minimum, the date, DSS name, part description, OEM name, OEM p/n, Qty received, Qty inspected, Qty rejected, reason for rejection and action taken.

- Supplier must provide IBM evidence that its down stream suppliers reviewed, understand and are committed to meet IBM quality requirements.

- The supplier should only drop ship parts to IBM or its customers from DSS whose quality record has been proven and recorded historically in the Incoming Inspection History Report above and who understand and is committed to meet IBM quality requirements.

# BLUE SEAL SPECIFICATIONS FOR IBM SERVICE PARTS

- Under no circumstance should a supplier drop ship parts to IBM from a DSS whose quality and reliability are unknown
- A copy of the quality report above is required monthly from parts resellers, who participate in the IBM Emergency Orders Program and which will need to depend on down stream suppliers to ship parts directly to IBM or IBM customers. The format of the report is as follows:

DATE: beginning of month - throughout - end of month

Page \_\_\_ of \_\_\_

"MONTHLY DOWN STREAM SUPPLIERS INCOMING PARTS QUALITY REPORT"

(Supplier Name)

DSS NAME	QTY ORDERED	QTY RCVD	QTY DEFECTIVE	% COMPLIANCE
_____	_____	_____	_____	_____
_____	_____	_____	_____	_____

## **11.0 FRU LABELING REQUIREMENTS**

### **11.1 52S FRU LABELING REQUIREMENTS:**

- All parts should have affixed on their bodies and on the outside of their packages, a unique barcode label ("52S RID Label) which contains each unique IBM Part Number, Supplier Country of Residence, Supplier Code, Date Code, Part Status and a Sequence Number.
- Barcoding requirements are identified in the "Specifications for Field Replaceable Units (FRU) Barcode Labeling" which is listed in the URL link below:

<http://www-03.ibm.com/procurement/proweb.nsf/ContentDocsByTitle/United+States~Global+labeling+guides?OpenDocument&Parent=Information+for+suppliers>

- Follow on by clicking on "Volume 9 - Global RID Barcode Label Specifications" " ITS 52S BARCODE LABEL LINK "

**Below is a sample of the 52S barcode which is to be applied on the body of all parts shipments:**



# **BLUE SEAL SPECIFICATIONS FOR IBM SERVICE PARTS**

Where:

- 52S = Barcode Data Identifier (3 Characters)
- 40J4498 = Seven Digit IBM FRU Part Number
- US = "Country Code" where the supplier resides, in this case it is the USA
- BO = Is the "Supplier Code" assigned to each supplier
- 0929 = Is the Year and the Week on which the part was shipped to IBM (YYWW)
- L = Use "L" for a Multi Vendor/OEM CSP Part or "C" for IBM CSP Part
- 206 = Sequence Number (in this case, the part shown is the 206th part for week 29)

- Barcode labels must be made of destructible paper, of white background with black letters and black barcode characters and permanent adhesive.

- Labels should be printed using a thermal printer or equivalent. Dot matrix printers are not acceptable for this task

- Labels should be sized according to part size and should not be obtrusive

## **11.2 CERTIFIED REUTILIZED PART LABELING REQUIREMENTS:**

- All parts should have affixed on their bodies and on the outside of their packages, a "Certified Reutilized Part Label" (PN 45D3078 and P/N 45D3080) per Corporate Standard C-S 0-5103-007. For additional information please see Volumes 6 and 8 in the link below;



From Supplier DuraTech; Contact: Marilou Burke; (608) 779-3256; marilou.burke@duratech.com

<http://www-03.ibm.com/procurement/proweb.nsf/ContentDocsByTitle/United+States~Global+labeling+guides?OpenDocument&Parent=Information+for+suppliers>

## **12.0 GENERAL PACKAGING AND LABELING REQUIREMENTS**

### **12.1 ALL PRODUCTS:**

- Repackage and re-label each assembly/element in its own shippable carton using only new OEM generic packaging, according to the IBM Packaging and Labeling Guidelines; which are found in the IBM Web site. To enter please type:

[http://www-03.ibm.com/procurement/proweb.nsf/objectdocswebview/fileibm+packaging+requirements+manual/\\$file/ga21-9261-11b+3115345+ec+g48655+2006-08-14.pdf](http://www-03.ibm.com/procurement/proweb.nsf/objectdocswebview/fileibm+packaging+requirements+manual/$file/ga21-9261-11b+3115345+ec+g48655+2006-08-14.pdf)

## BLUE SEAL SPECIFICATIONS FOR IBM SERVICE PARTS

- Two package labels will be applied to the outside of the box on opposite sides as shown in Fig 6, in the packaging link above.

**Below is an example of the “Unit Box Package” label which should be applied to all IBM and Multi Vendor parts shipments:**

(P) FRU P/N: 40J4498	Date: 2009-07-20
	Qty.: 1
(4L) Origin: CN	PO #: 78011602
	
Made in China <i>(expansion area for the 'made in' statement)</i>	
(52S) RID: 40J4498USBO0929L206	
	

- Carton size is to be appropriate for the product and consistent from order to order
- Where necessary, appropriate Electronic Discharge protection and labeling is to be utilized.
- Individual carton is to be marked with IBM part number, purchase order number, date and the country of origin.
- Over pack/shipping carton is to be marked with IBM part number, purchase order number and quantity within.
- Heavy symbol is required for all packages with weights greater than 26 lbs (12Kg)
- Ensure country of origin on part matches country of origin on outside package
- No vendor labels and/or markings are to be affixed to any units, or their packages
- Ensure ship group requirements is per the IBM Word Drawings

### 12.2 PACKAGING MONITORS

**Note:** These requirements are in addition to the requirements in section 12.0 above;  
Procedure:

- Insert the monitor unit inside a plastic bag
- Ensure power cord, video cable and pedestal are enclosed

## BLUE SEAL SPECIFICATIONS FOR IBM SERVICE PARTS

- Monitors should be packaged sitting in the same orientation as placed on the desk
- If pedestal is easily detachable (i.e., not screwed in), remove it and package in the box
- Select box of proper size for unit, allow at least 2 inches cushion protection all around
- Box should be constructed of heavy duty, double wall Kraft carton
- Box should have handles or cut out holes for handling
- Foam in place (FIP) density is 0.80 Lbs/Cubic inch or higher. Designed for 36" drop
- Do not create a jigsaw puzzle, the less FIP pillows, the better. Two piece set is ideal
- Ensure Heavy Labels are affixed to the box

### 12.3 QUALITY SEAL TAPE

- All packages must be sealed with a "QUALITY SEAL TAPE" When quality tape is not available; or for small parts, individual "QUALITY SEALS" can also be used.
- The IBM part numbers for the approved Security "Q Tapes" are as follows;
  - a) 46D2114 and 46D2115 for Poly Security Q Tape. These are both 3M Brand 375 Box Sealing Tape in Tan Floodcoat with the blue IBM security logo. These "Q Tapes" can be procured around the globe from Supply Technologies: <http://www.supplytechnologies.com>
  - b) 46D2116 for Paper or Kraft Water-based adhesive, reinforced carton sealing tape. This "Security Tape" is only available from Xpedx at [brad.hronek@ipaper.com](mailto:brad.hronek@ipaper.com)

This is how the tape looks:



# BLUE SEAL SPECIFICATIONS FOR IBM SERVICE PARTS

Below is a Summary of the applicability of each one of the labels described above

CONDITION	REMARKS	SEAL TAPE	CRP LABEL		52S BARCODE	
		BOX	BOX	PART	BOX	PART
New, Directly from OEM or OEM Distributor	Sealed OEM Original Packaging	No	No	No	Yes	No
New, from a General Parts Broker	Sealed OEM Original Packaging	No	No	No	Yes	No
New, from a General Parts Broker	Generic / Unsealed OEM Packaging	Yes	No	No	Yes	Yes
New, Pulled from a machine never installed	Dismantled from a Brand New Machine	Yes	No	No	Yes	Yes
Refurbished / Pulled from a Used Machine	CSP / Dismantled from a Used Machine	Yes	Yes	Yes	Yes	Yes

