

Leaded Series
2 mm & 4 mm
High Performance Contactors



Maintenance and Inspection

Guide

The Right Contacts®

Johnstech™

Johnstech Mission Statement

To Provide

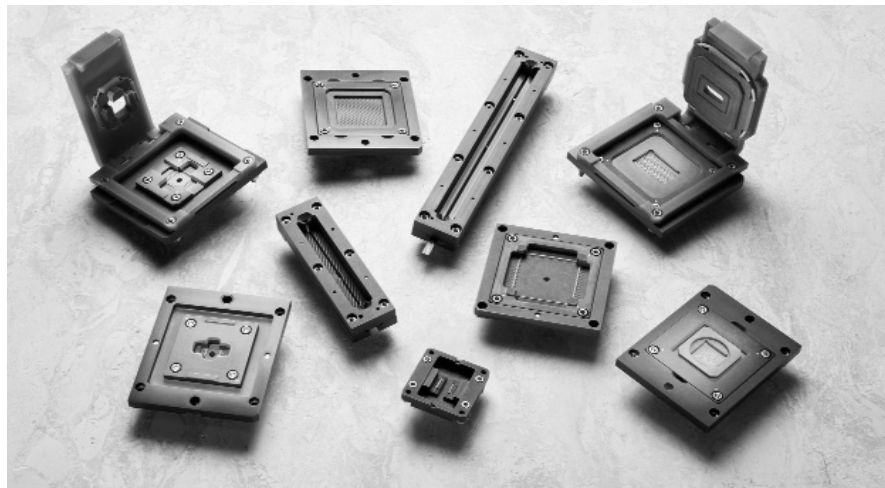
The worldwide market with superior micro-contact interfacing solutions by providing customers with high value results through the development, introduction, and enhancement of advanced technologies.

To Be

An employer of choice by providing a challenging and fulfilling work experience to our employees, while recognizing and rewarding excellence.

To Continue

To develop an organization that ensures sustainable, consistent results and optimum growth.



About Johnstech

Johnstech International is a leading provider of interconnect solutions for semiconductor manufacturers. Our unique approach to semiconductor test and test interfaces has proven to be an important asset to semiconductor manufacturers requiring higher first pass yields and lower cost of test in this rapidly changing industry.

Johnstech's high performance test contactors are based on our patented technology and provide superior electrical and mechanical performance. Solutions are available for DIMM, BGA/CSP, QFP/SO/SOIC, and other packages. Johnstech also partners with handler, tester, and load board manufacturers to ensure appropriate interfaces. Johnstech provides service and support worldwide.

Founded in 1990, the company's patented technology was introduced to the market in 1992.

Johnstech is headquartered in Minneapolis, Minnesota. It has sales and support offices in the U.S., Europe, Japan, Korea, Taiwan, and Southeast Asia (Singapore, Malaysia, Thailand, Philippines).

Table of Contents

Leaded Series

Contactor Layout	4
Contactor Identification	5
Cleaning and Maintenance Frequency	6
Recommended Service & Maintenance Schedule	7
Recommended Tools	7
Contactor Inspection	8
Periodic Maintenance	8
Alignment Plate Verification	9
Lead Group Opening Verification	9
Contactor Registration Verification	9
Device Side Contact Tips Inspection	10
Load Board Side Contact Tips Inspection	10
Elastomer Inspection	11
Signs of Visible Compression	11
Cuts or Tears	11
Proper Elastomer Configuration	11
Contact Replacement	12
Contact Removal	12
Contact Replacement	12
Elastomer Installation	13
Correct Elastomer Installation	13
Elastomer Seam Orientation	13
Elastomer Replacement	14
Device Side Elastomer Replacement	14
Cutting Bulk Elastomers	14
Load Board Side Elastomer Replacement	15
Cleaning Procedures	16
Cleaning Schedule	16
Automated Handler Cleaning	16
Solder Oxide Buildup	16
Solder Oxide Removal	16
Cleaning with Compressed Air	17
Cleaning with Ultrasonic Cleaner	17
Load Board Inspection	18
Fasteners Torque Value	18
Load Board Inspection	18
Nest & Leadbacker Inspection	19

Johnstech International Corporation
1210 New Brighton Boulevard
Minneapolis, MN 55413-1641 USA
Tel 612.378.2020 Fax 612.378.2030
www.johnstech.com
©2001 Johnstech International Corporation
all rights reserved

Leaded Series

Most Johnstech Leaded Series contactors have four standard parts that comprise the contactor housing assembly:

- Contactor Housing
- Contacts
- Elastomers
- Alignment plate*

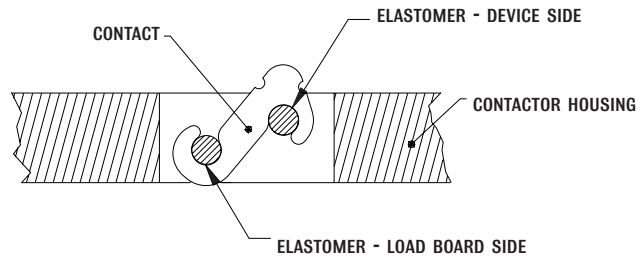
For short run testing and characterization, the Manual Actuator Assembly includes:

- Cover with latch
- Frame
- Leadbacker with elastomer retainer
- Alignment plate*

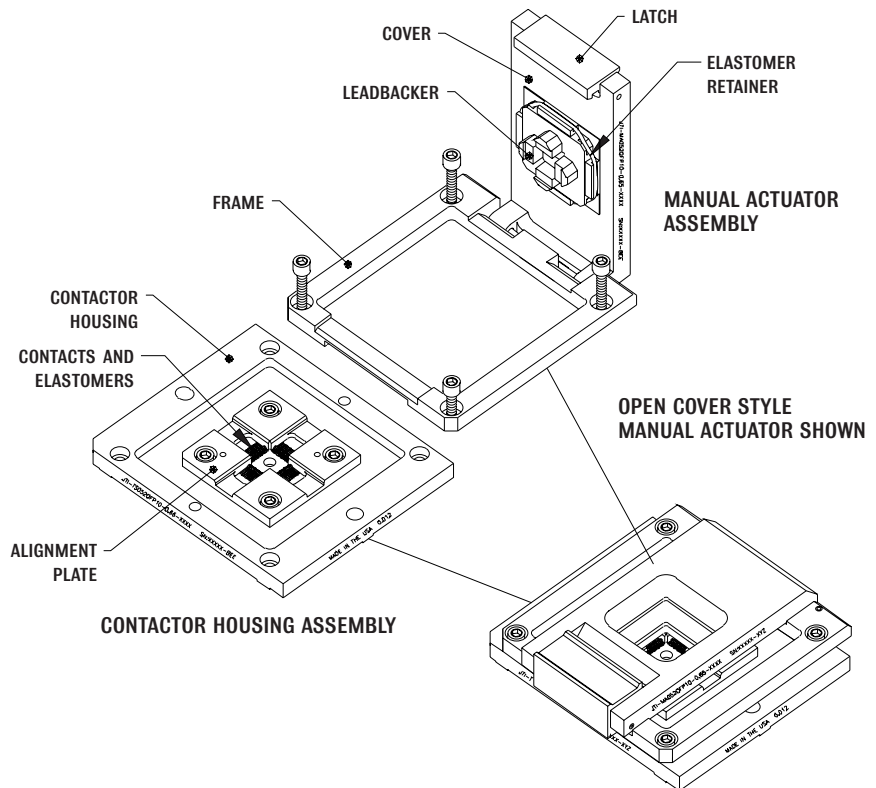
*An alignment plate is included with the contactor housing for all designs utilizing an alignment plate during automated test operation. All other designs include the alignment plate as part of the manual actuator assembly. Leadbackers and alignment plates are designed as a matched set. A change in either of these may necessitate a change to both pieces.

Contactor Layout

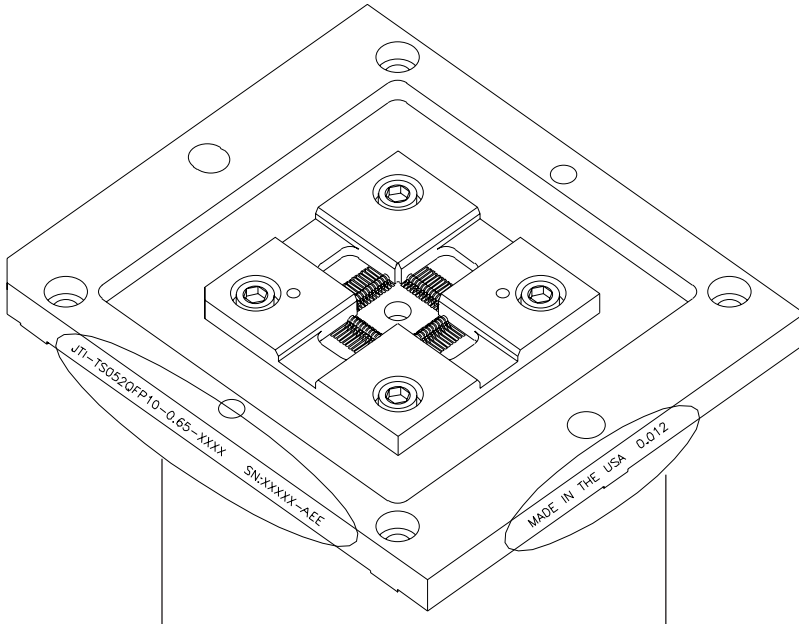
Leaded Series 4 mm Profile Shown



Contactor Components



Contactor Identification



JTI - TS 052 QFP 10 - 0.65 - XXXX SN:XXXX - AEE MADE IN THE USA 0.012
 1. 2. 3. 4. 5. 6. 7. 8. 9. 10.

Leaded Series

Johnstech engraves three identification numbers - part number, serial number, and contact thickness number - onto each contactor. The identification system is designed to provide you with the technical information you need to identify the contactor, its attributes, and its design-specific data sheet.

Here is how to identify your contactor:

1. JTI - identifies the contactor as a Johnstech International contactor
2. Assembly Type
 TS: Test Socket
 MA: Manual Actuator
 IA: Interface Analyzer
3. Device Lead Count
4. Device Package Type
 SO, QFP, PLCC, Etc.
5. Device Package Body Size (SO packages in inches)
6. Device Lead Pitch (in mm)
7. Johnstech's Design Number
8. Serial Number
9. Manufacturing Date Code
10. MADE IN THE USA X.XXX - (contact width in inches)

The identification numbers shown are for complete assemblies. Individual parts such as alignment plates and leadbackers may also include designates to indicate individual part numbers or interface reference information.

Johnstech International Corporation
 1210 New Brighton Boulevard
 Minneapolis, MN 55413-1641 USA
 Tel 612.378.2020 Fax 612.378.2030
 www.johnstech.com
 ©2001 Johnstech International Corporation
 all rights reserved

Due to the wide range of variables, each user needs to determine the optimal solution for maintenance intervals through an effective use of Statistical Process Control. By carefully monitoring and recording yield rates and following good test floor troubleshooting procedures, you will be able to clearly differentiate between alignment problems and maintenance problems. An effective maintenance cleaning cycle can be established to match each test floor's needs.

Handler Design and Setup

Handlers vary by test plane configurations, device transportation methods, plunge mechanisms, and accessories. Each has its own unique attributes. Handler setups that are not optimized can increase the required maintenance frequency by contributing to problems like contactor and premature elastomer wear as well as solder buildup on the contacts. Working with Johnstech and your handler supplier, you can identify those attributes of the handler that can best be used to maximize maintenance intervals.

Correct Plunge Depth and Device Placement

Incorrect plunge depth reduces the effectiveness of the solder shedding contact profile and may cause or increase the amount of solder buildup on the contacts. Incorrect plunge depth may adversely affect the elastomer life by creating tears, cuts, or permanent deformation (compression set) in the elastomer. (Plunge depth is specified on the Johnstech data sheet.)

Package Variations

Variations in packages can affect your maintenance schedule. Different package vendors or even different lots of devices may show varying amounts of package mold flash that can increase wear on the contactor and/or alter device placement. Variations or changes in device trim and form may affect contactor performance.

Lead Plating Variations

The method used for plating of the leads can affect your maintenance schedule. Leads that have been solder dipped rather than solder plated generally tend to possess a more uneven surface. There also may be variations in the tolerances and/or the tin-lead content. All of this can vary the rate of solder buildup and debris, and consequently vary the required interval between cleanings.

Device Pitch

The smaller the pitch, the greater the probability that accumulation of contaminants (such as solder flake, solder oxide, and mold flash) will contribute to continuity failures during the test process.

General Test Floor Maintenance Activities

Frequency of handler maintenance also affects contactor cleaning. For example, how often the handler and handler test areas are blown free of debris has an impact on the effectiveness of the contactor. Contactors exposed to increased levels of foreign debris from other sources are likely to require more frequent maintenance and cleaning.

Cleaning & Maintenance Frequency

Leaded Series

Recommended Service & Maintenance Schedule

		Schedule Frequency (Thousands of Insertions)																					
Service & Maintenance	Note	5	20	50	100	150	200	250	300	350	400	450	500	550	600	650	700	750	800	850	900	950	1000
Clean/Remove Debris	1	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Inspect Contacts	2		X						X							X			X			X	
Replace Contacts													X										X
Inspect Elastomers	3	X			X		X			X				X			X			X		X	
Replace Elastomers								X					X					X					X
Inspect Alignment Plate	4	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Inspect Housing	5			X			X			X				X							X		X
Inspect Alignment Inserts	6		X				X			X							X				X		
Replace Alignment Inserts													X										X
Check/Adjust Handler	7	X			X		X		X		X		X		X		X		X		X		X
Check/Clean Load Board	8				X		X		X		X		X		X		X		X		X		X

Recommended Tools

Depending on what inspection, maintenance, or cleaning your contactors need, Johnstech recommends the tools listed in this section.

NOTE: Any tools that will be used directly on the contacts must be non-metallic. Metal tools may scratch the contacts, causing signal degradation. Johnstech recommends that you do not touch the contacts with your bare hands; use finger cots to prevent contaminating the contacts.

Johnstech offers a Maintenance & Inspection Kit that contains the tools you need for complete maintenance and inspection. The tools are specifically designed for Johnstech high performance contactors. Please contact your Johnstech representative for more information. The Kit includes:

Hex Drivers or small allen wrenches for removing the contactor from the load board

Elastomer Tool used to remove and replace worn contacts and elastomers correctly; non-metallic tool prevents damage to elastomers and contact slots (Johnstech #500365-0002)

Zirconia Tipped Tweezers non-metallic tweezers for handling contacts

Pen Light aids in elastomer and contact inspection

Nylon Brush and Replacement Tip for cleaning contacts; allows removal of solder oxide contamination on the contacts without damaging elastomers or contacts

10x Machinist Scope for elastomer and contact inspection

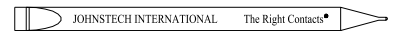
Vampire Tool With Attachments an anti-static tool for picking up devices, eliminating damage and contamination to leads

A Micro Tweezers/Scissors for cutting elastomers to length

Maintenance Notes:

1. Ultrasonic clean in Alcohol/DI Water bath for 10 minutes.
2. Contacts must be free to move in slots.
3. Elastomers must be free of cracks, nicks, gouges, and abrasions.
4. The alignment plate must be intact and free of gouges along the inner perimeter (opening) where it contacts the module.
5. Housing slot webs must be intact and must not break through into the adjacent slot.
6. Alignment insert(s) must be secure in the housing.
7. Check and adjust handler to handler specifications.
8. Check and clean load board pads using a lint free cloth or cotton applicator.

For additional information contact Johnstech International.



JOHNSTECH ELASTOMER TOOL #500365-0002

Johnstech International Corporation
 1210 New Brighton Boulevard
 Minneapolis, MN 55413-1641 USA
 Tel 612.378.2020 Fax 612.378.2030
 www.johnstech.com
 ©2001 Johnstech International Corporation
 all rights reserved

Leaded Series

Periodic Maintenance

During periodic maintenance of the contactor, perform this inspection: Before you remove the contactor from the load board, use a minimum of 10x magnification to inspect the contactor, contacts, and elastomers for signs of the following:

- Correct contact orientation - both 2 mm and 4 mm contacts should have the notched end of the contact oriented on the DUT side of the contactor
- Damaged, missing, or excessively worn contacts
- Solder and mold flash trapped between contacts
- Fatigue, i.e., cracks or chipping, on the contactor housing or the alignment plate
- Worn alignment plate, usually due to the device or nest/workpress rubbing on alignment plate walls
- Worn handler alignment pin holes (contact Johnstech for bushings to reduce wear on the contactor)

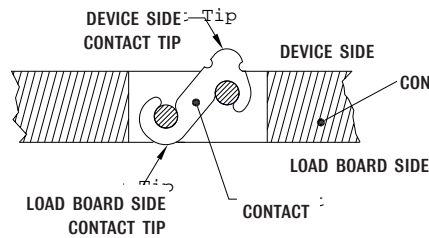
CAUTION: Please use special care while inspecting. The elastomer and contact slots are fragile and excessive force can fracture the slot walls.

If you notice significant wear or cracking in the contactor housing, please contact Johnstech's Applications Engineering Department.

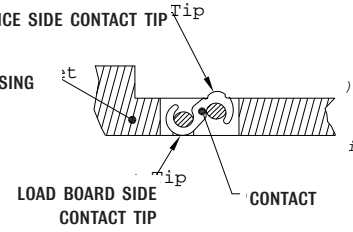
NOTE: Refer to page 7 for a description of recommended tools. Johnstech offers a complete Maintenance & Inspection Kit which provides you with all recommended tools.

Contactor Inspection

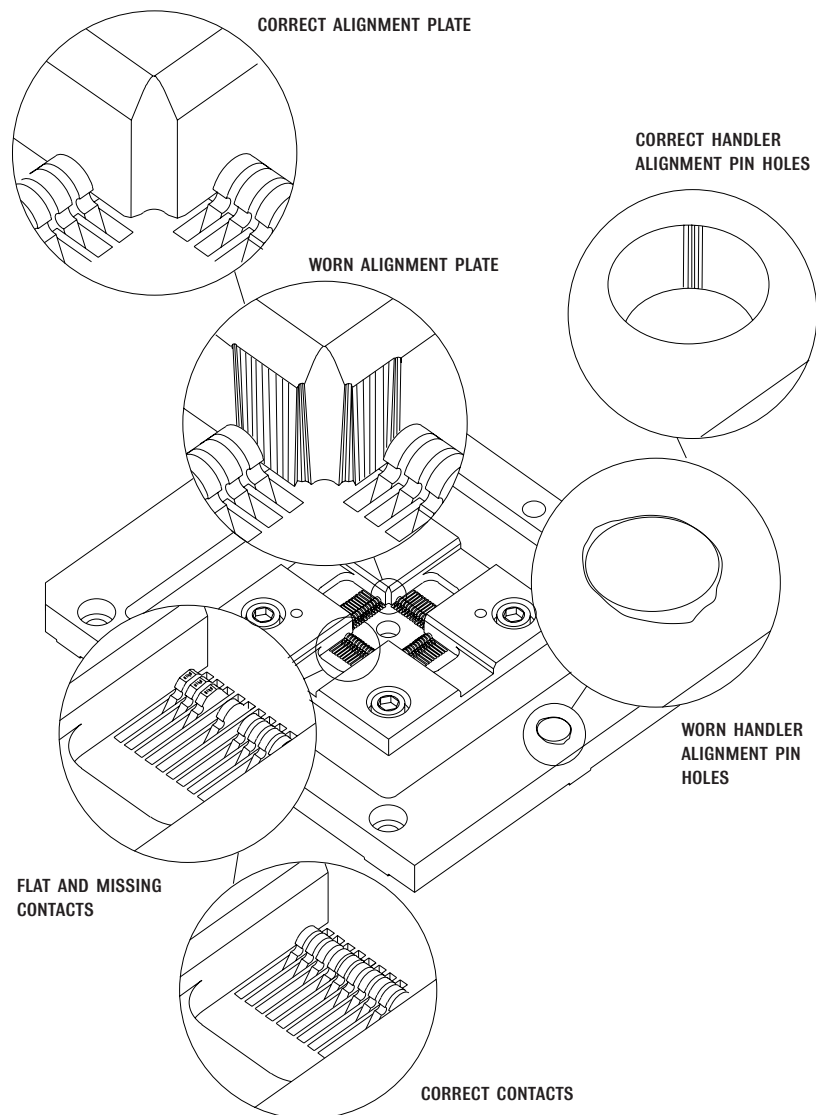
Leaded Series 4 mm



Leaded Series 2 mm



Inspection of Contactor



Johnstech International Corporation
1210 New Brighton Boulevard
Minneapolis, MN 55413-1641 USA
Tel 612.378.2020 Fax 612.378.2030
www.johnstech.com

©2001 Johnstech International Corporation
all rights reserved

Contactors Inspection

Verification Examples

DESIGN DATA SHEET EXAMPLE

Johnstech HIGH PERFORMANCE CONTACTOR
DATA SHEET: JTI-TS048QFP07-0.50-2077 PAGE 1 of 4

SPECIFICATIONS FOR DEVICE TYPE:
QFP 48 PIN
0.50 PITCH
2.0 SF.

ELECTRICAL:
Contact Inductance: <2 nH

MECHANICAL:
Replaceable Contacts
Open Cover Manual Actuator
English Fasteners
Body Ground Contacts
Alignment Plate Device
MSP of Lead Group
ACTIVATOR

TOP VIEW

BOTTOM VIEW

MATERIALS:

ITEM NUMBER	QTY	DESCRIPTION
1 JTI-TS048QFP07-0.50-2077	1	HIGH PERFORMANCE CONTACTOR
2 JTI-TS048QFP07-0.50-2077	1	MANUAL ACTIVATOR
3 JTI-TS048QFP07-0.50-2077	1	DEVICE ALIGNMENT PLATE

SPARE PARTS:

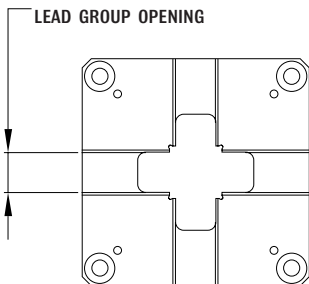
ITEM NUMBER	QTY	DESCRIPTION
4 JTI-TS048QFP07-0.50-2077	1	CONTACT KIT-0.50 (10 mm)
5 JTI-TS048QFP07-0.50-2077	1	CONTACT KIT-0.50 (100 mm)
6 JTI-TS048QFP07-0.50-2077	1	CONTACT KIT-0.50 (1000 mm)

NOTES:
1. CONTACT KIT-0.50 (10 mm)
2. CONTACT KIT-0.50 (100 mm)
3. CONTACT KIT-0.50 (1000 mm)
4. CONTACT KIT-0.50 (10 mm)
5. CONTACT KIT-0.50 (100 mm)
6. CONTACT KIT-0.50 (1000 mm)

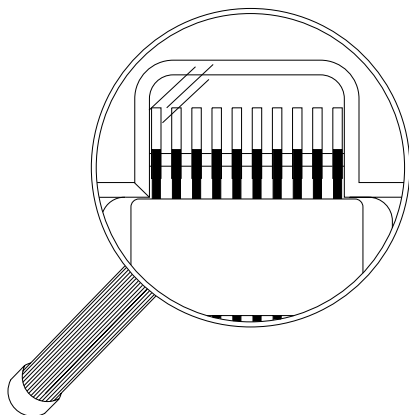
DISPOSITION SUBJECT TO SPECIFICATION CHANGES FOR REVISIONS.

051207788
02-11-99

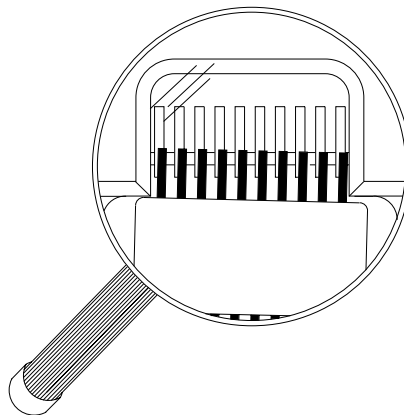
Johnstech International Corporation, 1210 New Brighton Boulevard, Minneapolis, MN 55413-1641 USA TEL: (612) 378-2020 FAX: (612) 378-2030



PROPERLY ALIGNED LEADS



MISALIGNED LEADS



Leaded Series

Alignment Plate Verification

Check the design data sheet to ensure that the proper alignment plate is being used for the current testing application.

The use of different package vendors or a change in handlers may require a change in alignment plates. If the same design uses different alignment plates for various testing situations, the design data sheet denotes which alignment plate is appropriate for which application. If applicable, it also denotes any special engraving that may appear on the alignment plate.

Lead Group Opening Verification

Compare the lead group opening dimension on the alignment plate with the lead group openings specified on the design data sheet. Opening sizes that vary from the specified size by more than $\pm 0.025\text{mm}$ could be an indication that the wrong alignment plate for the design is being used.

Contactors Registration Verification

Inspect the contactor for fit and alignment with the device being tested. Inspect for registration between the device leads and the contacts. It is very important that every device lead touch the assigned contact. There should not be any likelihood that a device lead can miss an assigned contact or touch an adjacent contact. Skewing of the device may indicate a change in trim and form of the device, a misapplication of a contactor and/or alignment plate, or a worn alignment plate.

Johnstech International Corporation
1210 New Brighton Boulevard
Minneapolis, MN 55413-1641 USA
Tel 612.378.2020 Fax 612.378.2030
www.johnstech.com
©2001 Johnstech International Corporation
all rights reserved

Leaded Series

Contactors Inspection

Inspect Device Side Contact Tips

Inspect the device side of the contact tips for flattening, deformation, solder buildup, or wearing through of the outer gold surface into the nickel. If any of these conditions exist, the contacts must be replaced.

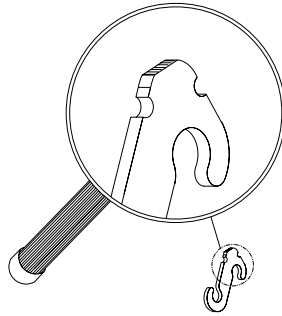
NOTE: A premature occurrence of these conditions could be the result of excessive overtravel. Your contact compression setup should be examined for compliance with design requirements.

Inspect Load Board Side Contact Tips

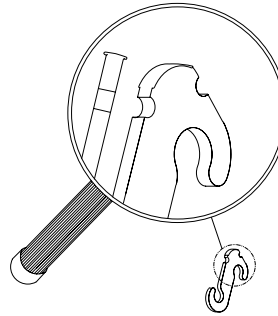
Inspect the load board side of the contact tips for damage such as flattening, or wearing through the gold on the surface of the contact into the nickel. If any excessive wear or damage is apparent on the load board side of the contact tips, the contacts must be replaced immediately.

Device Side Contact Tips

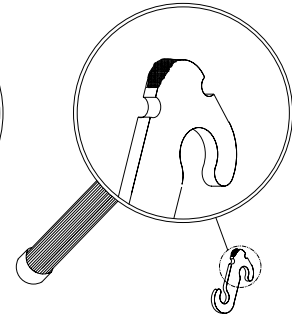
FLATTENING



DEFORMATION

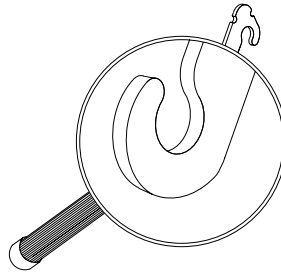


SOLDER OXIDE BUILDUP

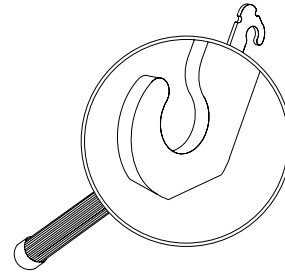


Load Board Side Contact Tips

ACCEPTABLE:
NO CONTACT DAMAGE VISIBLE



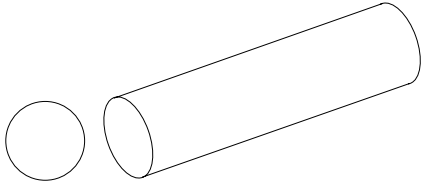
REPLACE:
FLATTENING OF CONTACT VISIBLE



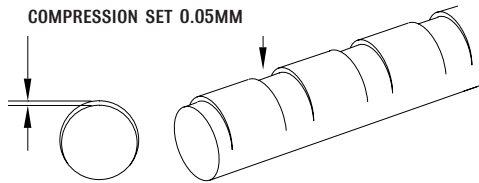
Elastomer Inspection

Signs of Visible Compression

ACCEPTABLE:
NO COMPRESSION VISIBLE IN THE ELASTOMER



REPLACE:
EXCESSIVE COMPRESSION SET IN THE ELASTOMER



Cuts or Tears

ACCEPTABLE:
NO CUTS OR TEARS IN THE ELASTOMER



REPLACE:
CUTS OR TEARS VISIBLE IN THE ELASTOMER



Leaded Series

Signs of Visible Compression

When compression set of the elastomer is visible, measure to ensure that it does not exceed the application's maximum allowable value based upon the specified deflection values. This value may vary depending upon the specific design and application requirements. In general, compression set on elastomers should not exceed 0.05mm (0.002in.)

Cuts or Tears

Check for cuts or tears in the elastomer. If you see cuts or tears, replace the elastomer immediately.

If elastomers are cut or have excessive compression set, they must be replaced. Frequent elastomer replacement (<50,000 - 100,000 insertions) may be an indication of excessive overtravel. If this is occurring, please contact Johnstech's Applications Engineering Department for assistance.

Proper Elastomer Configuration

Refer to your design specific data sheet to ensure proper elastomer combination and location.

Leaded Series

Contact Replacement

Contact Removal

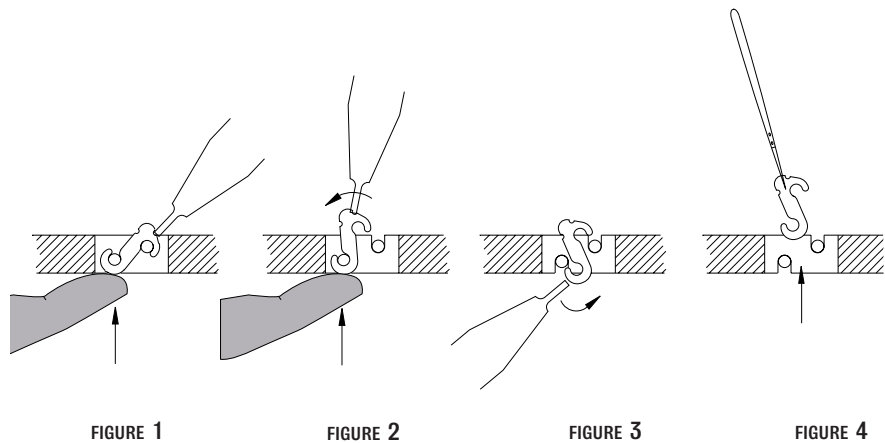
1. Remove the contactor from the load board.
2. Remove the alignment plate from the contactor.
3. Holding the contactor in your hand, apply pressure on the load board side contact tip, FIGURE 1.
4. Use the Johnstech Elastomer Tool #500365-0002 or a similar nonmetallic tool to gently unhook and move the contacts away from the device side elastomer, FIGURE 2.
5. Slide the load board side of the contact away from the load board side elastomer, FIGURE 3.
6. Remove the contact from the slot with non-metallic tipped tweezers, FIGURE 4.
7. Remove the remaining contacts.

Contact Replacement

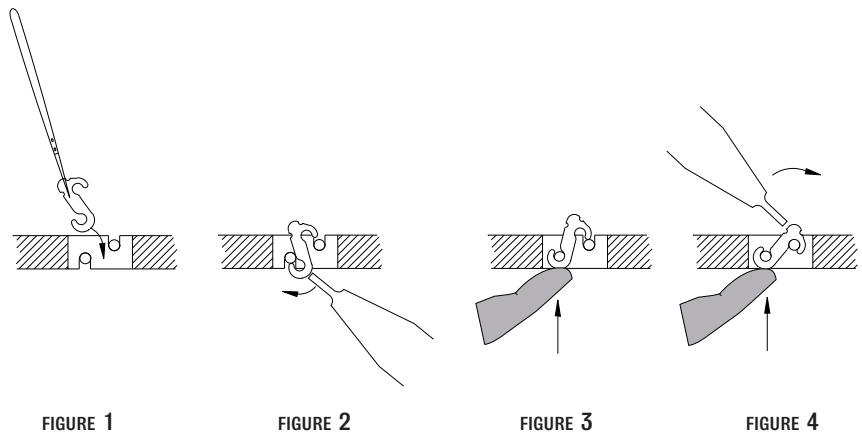
1. To replace the contacts, reverse the process.
2. Using non-metallic tipped tweezers, place the contact in the slot, FIGURE 1.
3. Slide the load board side of the contact over the load board side elastomer, FIGURE 2.
4. Apply an upward pressure on the load board side contact tip with your finger, FIGURE 3.
5. Use the Johnstech Elastomer Tool #500365-0002 or a similar nonmetallic tool to move the contact gently over the device side elastomer, FIGURE 4.
6. Install remaining contacts.

NOTE: Refer to page 7 for a description of recommended tools. Johnstech offers a complete Maintenance & Inspection Kit that provides you with all recommended tools.

Contact Removal

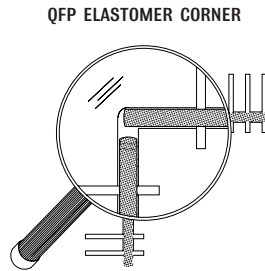
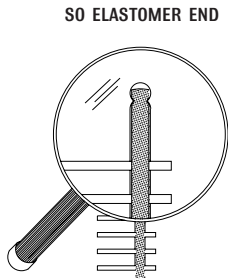


Contact Replacement



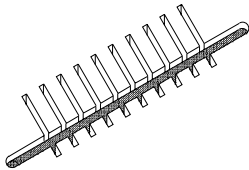
Elastomer Installation

Elastomers Cut to Proper Length

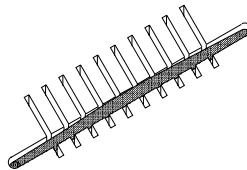
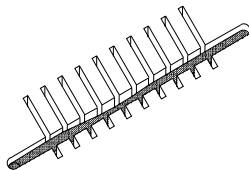


Elastomers Correctly Seated

CORRECT
ELASTOMER LAYS EVEN IN THE SLOT

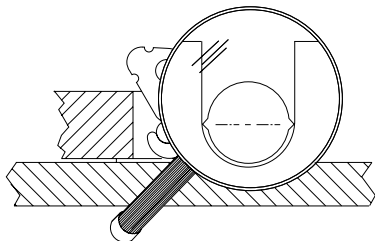


AVOID
ELASTOMER BUNCHES AT THE END AND IN THE MIDDLE

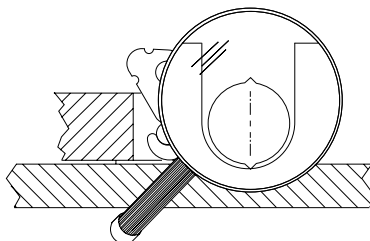


Elastomer Seam Orientation

CORRECT
ELASTOMER SEAM IS PARALLEL TO THE LOAD BOARD



AVOID
ELASTOMER SEAM IS NOT PARALLEL TO THE LOAD BOARD



Leaded Series

Correct Elastomer Installation

- Ensure that the elastomer is the proper length for the slot in which it is to be placed. Install the elastomers in the slot as close to the end of the slot as possible without bunching in the end radius.
- Elastomers that meet in the corner of a slot should have one elastomer installed as close to the center of the corner radius as possible. The end of the second elastomer should be placed as close as possible, without touching, to the first elastomer.
- The elastomer must not be bunched at the ends or in the middle. Run the Elastomer Tool gently across the elastomer so that it is smooth in the slot.

CAUTION: Avoid stretching the elastomer, as this could lead to fatigue and a shortened life cycle for the elastomer.

Elastomer Seam Orientation

Elastomer seams should be positioned to the contacts sides and not beneath the contact; they should rest horizontally, or parallel to the load board.

Leaded Series

Elastomer Replacement

Device Side Elastomer Replacement

1. Leave the contactor mounted to the load board and remove the alignment plate.
2. Refer to your design specific Johnstech data sheets to ensure proper elastomer combination and location.
3. Use Johnstech's Elastomer Tool #500365-0002, or a similar non-metallic tool to gently unhook and move the contacts away from the device side elastomer, FIGURE 1.
4. With all the contacts in the row rolled back, use the Johnstech Elastomer Tool to carefully remove the existing elastomer, FIGURE 2.
5. If the new elastomer is still in a continuous O-ring, cut it into a long strand.
6. Find the seam on the elastomer and make sure that the elastomer is oriented in the slot correctly - horizontal to the bottom; see page 13.

CAUTION: Avoid stretching the elastomer, as this could lead to fatigue and a shortened life cycle for the elastomer.

7. Beginning at one end of the slot, tuck the elastomer into the slot. Work down the slot, tucking in the elastomer with the Johnstech Elastomer Tool, FIGURE 3.
8. When the elastomer is almost completely in the elastomer slot, cut the elastomer as close to the end of the slot as possible. Do not cut the elastomer so it is too long and hangs out of the slot, see page 13.
9. Use the elastomer tool or a similar nonmetallic tool to move the contact gently over the device side elastomer, FIGURE 4.

Device Side Elastomer Replacement

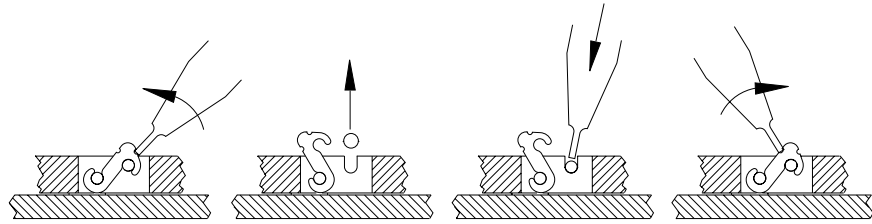


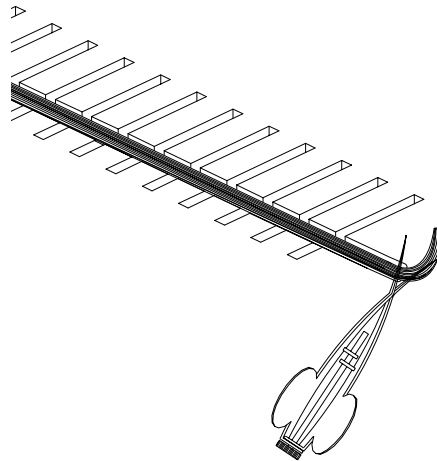
FIGURE 1

FIGURE 2

FIGURE 3

FIGURE 4

Cutting the Elastomer



Elastomer Replacement

Load Board Side Elastomer Replacement

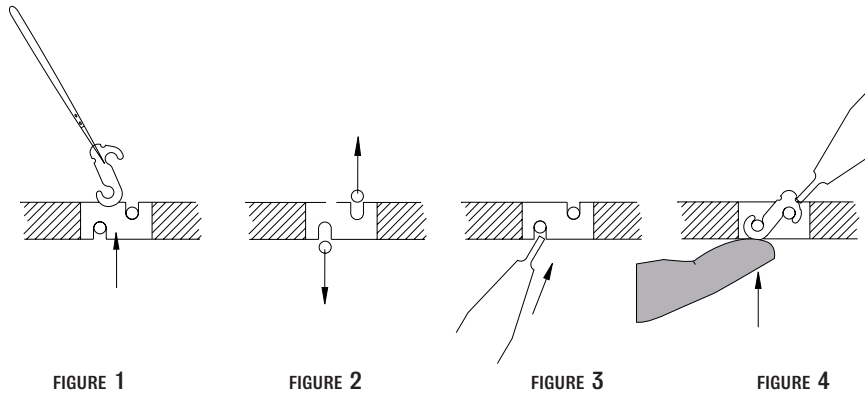


FIGURE 1

FIGURE 2

FIGURE 3

FIGURE 4

Leaded Series

Load Board Side Elastomer Replacement

1. Remove the contactor from the load board and remove the alignment plate.
2. Use dry, clean compressed air to blow away debris.
3. Remove all contacts, following the procedure on page 12, FIGURE 1.
4. Use the Johnstech Elastomer Tool to carefully remove the existing elastomer, FIGURE 2.
5. If the new elastomer is still in a continuous O-ring, cut it into a long strand.
6. Find the seam on the elastomer and make sure that the elastomer is oriented in the slot correctly - horizontal to the bottom; see page 13.

CAUTION: Avoid stretching the elastomer, as this could lead to fatigue and a shortened life cycle for the elastomer.

7. Beginning at one end of the slot, tuck the elastomer into the slot. Work down the slot, tucking in the elastomer with the Johnstech Elastomer Tool, FIGURE 3.
8. When the elastomer is almost completely in the elastomer slot, cut the elastomer as close to the end of the slot as possible. Do not cut the elastomer so it is too long and hangs out of the slot, see page 13.
9. Replace the contacts, following the instruction on page 12, FIGURE 4.

NOTE: Refer to page 7 for a description of recommended tools. Johnstech offers a complete Maintenance & Inspection Kit that provides you with all recommended tools.

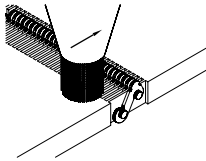
Johnstech International Corporation
1210 New Brighton Boulevard
Minneapolis, MN 55413-1641 USA
Tel 612.378.2020 Fax 612.378.2030
www.johnstech.com
©2001 Johnstech International Corporation
all rights reserved

Leaded Series

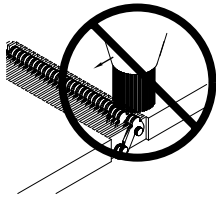
Cleaning Procedures

Brushing Techniques

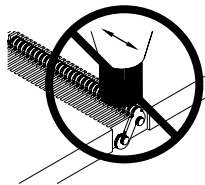
CORRECT
BRUSH FROM OUTSIDE-IN



AVOID
BRUSH FROM INSIDE OUTWARD



AVOID
BRUSH FROM SIDE TO SIDE



Cleaning Schedule

To maintain proper operation and ensure long life, Johnstech contactors require regularly scheduled cleaning according to the maintenance and cleaning schedule you have established. Please refer to the Maintenance and Cleaning Frequency Section on pages 6-7 to determine the best schedule for your test floor.

Automated Handler Cleaning

The handler needs to be inspected and cleaned per manufacturer's recommendations.

Solder Oxide Buildup

The rotating wipe action of the contacts is designed to greatly reduce the amount of solder oxide buildup; however, some buildup may become visible on the device side contact tips over time. While some solder oxide buildup is normal, it is advisable to try to remove the oxidation that accompanies the solder. If the contact has a significant amount of solder buildup, please check all components of the testing process to be sure that everything is properly aligned and contact compression is within specification.

CAUTION: Johnstech does not endorse any method for full removal of solder buildup from the contacts. Attempts to fully remove the solder can cause damage to the contacts that can adversely affect operation of the contactor and/or possibly create degradation in signal quality.

Solder Oxide Removal

Brush the contacts on the device side from the outside or load board elastomer side inward. Johnstech recommends using a telescopic nylon brush that will not scratch the contacts. With the contactor mounted to the load board and the alignment plate removed, extend the bristles of the brush approximately 3-6mm. Lightly brush over just the tips of the contacts. **Only brush the contacts from the outside-in.** After brushing, blow the contactor free of debris with clean, dry air.

CAUTION: Brushing in the wrong direction can cause the contacts to become unhooked from the elastomer or cause possible damage to elastomers and contact slots in the housing. Brushing the contacts too hard or with a brush that is too stiff can result in damage to the elastomers, contactor housing, and the gold plating on the contacts. If you suspect any of these occurrences, inspect and take the appropriate actions before proceeding any further with this cleaning procedure.

Cleaning Procedures

Leaded Series

Cleaning with Compressed Air

Use dry, clean compressed air to blow free any loose debris that may be on the contactor. If any debris or foreign matter still remains, use an ultrasonic cleaner. If no loose debris remains on the contactor, the contactor may be remounted to the load board.

WARNING:

- *Always use protective eye wear when using compressed air and cleaning solvents.*
- *All cleaning procedures should be performed in a well-ventilated area. The use of an exhaust hood during the cleaning process is required.*
- *Always wear lint free gloves when cleaning and handling.*

Cleaning with Ultrasonic Cleaner

If necessary, clean the contactor assembly in an ultrasonic cleaner (500 W. max power).

1. Fully immerse the contactor and alignment plate into an ultrasonic cleaner bath of diluted isopropyl, or denatured alcohol (70/30 alcohol/water), or a heated (50° C max) mild acidic (7.0 > ph > 3.0) solution. The ultrasonic tank should have a catch basket to prevent the contactor from touching the tank bottom where it can contact settled debris.
2. Turn the ultrasonic cleaner on for a 10-minute cycle. Remove the contactor assembly from the bath after cleaning. Rinse the contactor in a deionized water bath after cleaning in the alcohol bath.
3. Freon or petroleum based solvents will leave a residue, which can cause resistance problems, and may swell the contactor elastomers. Water based cleaning may also swell the elastomers. To evaporate the solvent, place the socket in a 100°C (212°F) controlled environment for approximately 1 hour for water based solvents, or 15 minutes for freon or petroleum based solvents.
4. To ensure dryness, carefully pat the parts with a lint-free cloth. Re-inspect the contactor and alignment plate for debris, damage, or excess moisture. Remove any moisture or debris with an air source free of moisture and oil, such as nitrogen. Do not exceed 40 psi. Oxidation may occur if any moisture is left remaining on the contacts.

NOTE: *Always follow the manufacturer's recommendations and instructions regarding the proper operation of your ultrasonic cleaner.*

Leaded Series

Fasteners Torque Value

When mounting the contactor to the load board, tighten the fasteners to a torque value between 4.5 and 5.2in./lb. (0.50 and 0.59Nm.)

Load Board Inspection

Inspect the load board and clean, per manufacturer's recommendations.

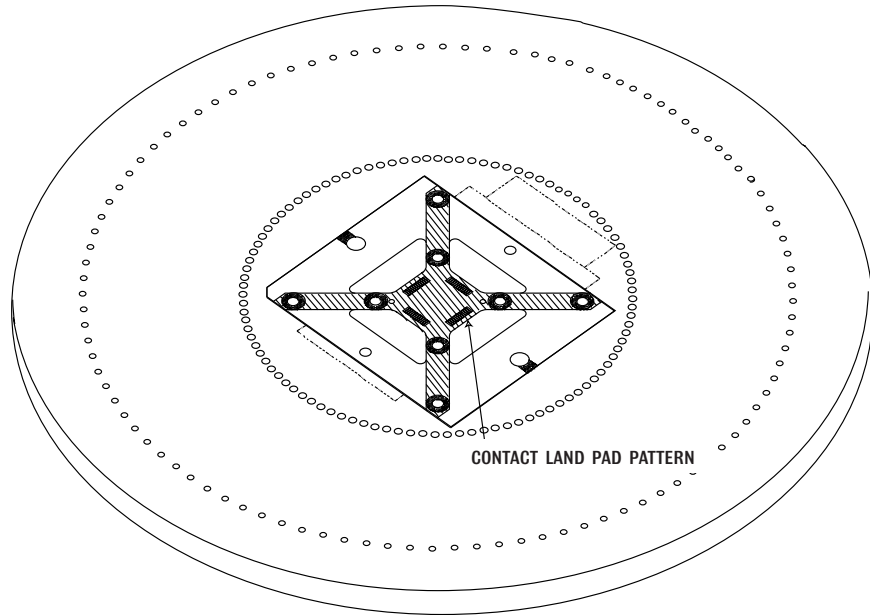
- Examine the contact land pad pattern for signs of wear on the gold.
- A board with visible signs of nickel showing on the contact land pad pattern should be thoroughly inspected before returning it to service. It is acceptable to utilize the nickel surface during testing; however, continued wear that extends deeper than the nickel surface can cause damage to the contacts and elastomers, as well as cause signal degradation.
- Load boards with wear that extends deeper than the nickel surface should be replaced.

NOTE: Excessive load board wear is caused by excessive nest overtravel.

- Ensure that no debris is present in the contactor to load board interface area. If necessary, use compressed air and a clean lint free cloth to carefully wipe clean the bottom of the contactor and the surface of the load board before remounting the contactor to the load board.
- For more detailed information regarding load board interface requirements, please refer to Johnstech International Lit 1009, "Contactor Load Board Interface Application Note."

Load Board Inspection

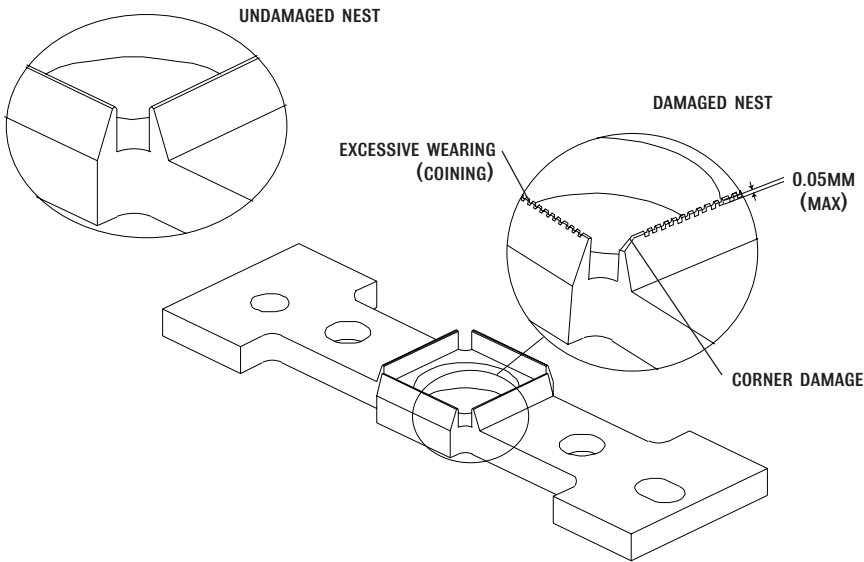
Load Board



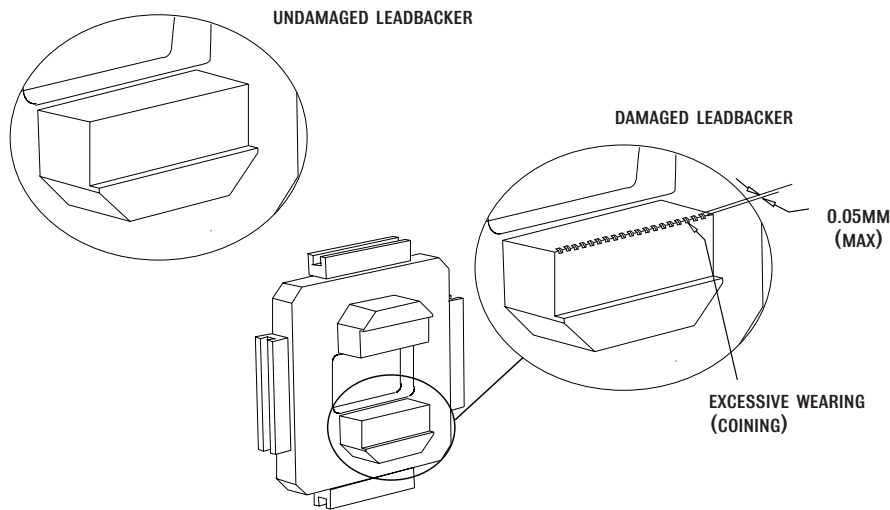
Nest and Leadbacker Inspection

Leaded Series

Undamaged and Damaged Nest



Undamaged and Damaged Backer



Excessively worn (coined) nests and leadbackers must be replaced. Check the nest and leadbacker for wear and/or coining (denting).

Excessive coining of $\geq 0.05\text{mm}$ (.002in.) reduces contact force and wipe to the extent that continuity may no longer be possible. A leadbacker or nest that is worn or damaged to a point where lead compression is excessively altered must be repaired or replaced.

Worldwide Headquarters

JOHNSTECH INTERNATIONAL CORPORATION

1210 New Brighton Boulevard
Minneapolis, MN 55413-1641 USA
Tel 612.378.2020
Fax 612.378.2030
E-mail: sales@johnstech.com
Web Site: www.johnstech.com

California

JOHNSTECH INTERNATIONAL CORPORATION

2450 Scott Boulevard
Santa Clara, CA 95050-2504 USA
Tel 408.448.2020
Fax 408.448.2030

Europe/United Kingdom

JOHNSTECH INTERCONNECT, LTD

1-2 Usk Street
Newport NP19 7BE
Wales, U.K.
Tel 44 (0) 1633 674452
Fax 44 (0) 1633 674453

All statements, technical information and recommendations related to the Seller's products are based on information believed to be reliable, but the accuracy or completeness thereof is not guaranteed. Before utilizing the product, the user shall determine the suitability of the product for its intended use. The user assumes all risks and liability whatsoever in connection with such use. Any statements or recommendations of the Seller which are not contained in the Seller's current publications shall have no force or effect unless contained in an agreement signed by an authorized officer of the Seller. The statements contained herein are made in lieu of all warranties expressed or implied, including but not limited to the implied merchantability and fitness for a particular purpose which warranties are hereby expressly disclaimed. Seller shall not be liable to the user or any other person under any legal theory, including but not limited to negligence or strict liability, for any injury or for any direct or consequential damages sustained or incurred by reason of the use of any of Seller's products or services that were defective.

Copyright 2001, Johnstech International Corporation,
Specifications subject to change.

No part of this book may be reproduced in any form or by any means, electronic or mechanical, including photocopying, recording or by any information storage or retrieval system, without permission in writing from the publisher.

Johnstech International, the Johnstech logo, "The Right Contacts®" are registered trademarks, and the Family logo is a trademark of Johnstech International Corporation. All other trademarks are the property of their respective owners.

LIT 1052 2/01
Printed in the USA

The logo consists of the word "Johnstech" in a white, bold, sans-serif font, with a small "TM" trademark symbol to the upper right of the "h". The text is centered within a solid red rectangular background.

JOHNSTECH INTERNATIONAL CORPORATION

1210 New Brighton Boulevard
Minneapolis, MN 55413-1641 USA
Tel 612.378.2020 **Fax** 612.378.2030
www.johnstech.com