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MANUAL, SUPPLIER WORKMANSHIP		
ORIGINATOR		DATE:
Size	Doc. #	Rev.
A	04-9000167-01	A

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Purpose

- This manual outlines the “minimal acceptable” standards to be followed by the suppliers of OCR Omron Microscan Systems, Inc.
- The requirements outlined in this manual are intended to establish, though not to limit the appearance and form, fit, and function of the products manufactured for OCR Omron Microscan Systems, Inc.
- This manual is intended to be used in conjunction with Engineering drawings. In the event of conflict between this manual and engineering drawings, the criteria laid out in engineering drawing overrule the criteria in this manual
- Compliance to Regulated substance specifications see Procedure 04-9000018-01

Scope

N/A

References

- IPC-A-600
- IPC-A-610
- IPC/WHMA-A-620
- ATSM-D3359
- MIL-PRF-13830B
- IPC-6012D
- IPC/JEDEC J-STD-609
- 04-9000018-01

See Agile Relationship tab.

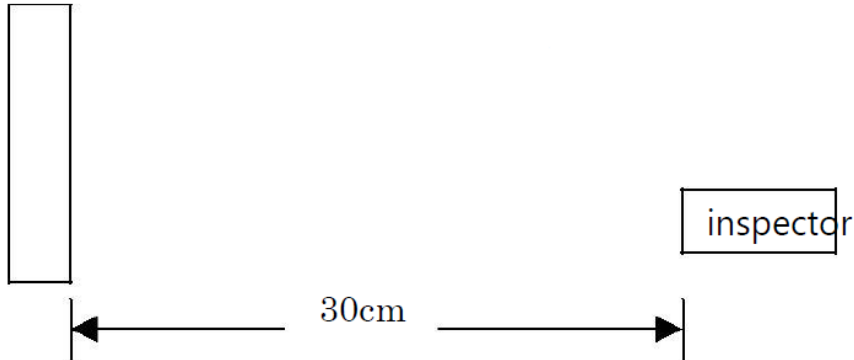
Procedure

04-9000167-01

Section 1.0: Cosmetic Surface specification and inspection

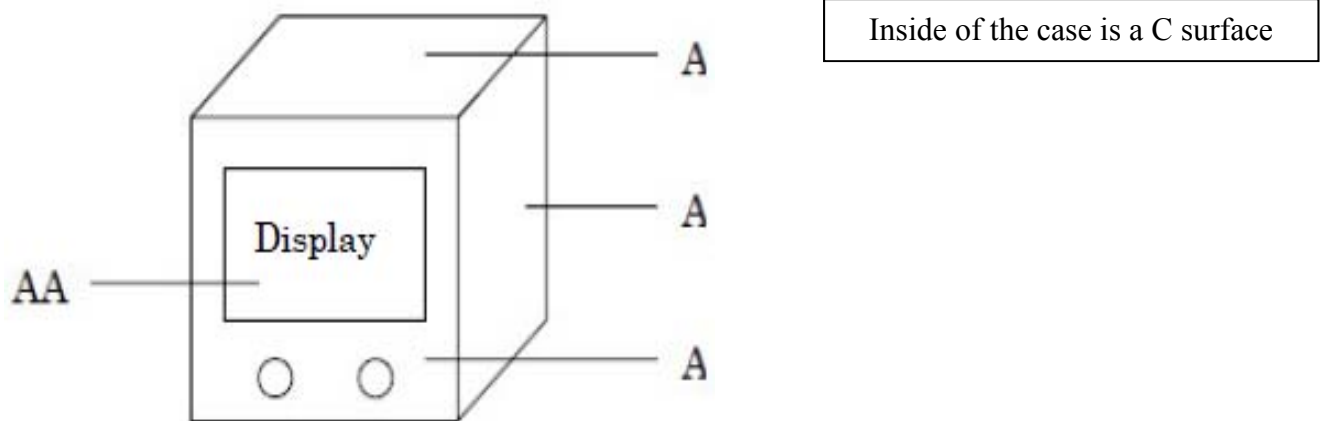
1.1 Viewing conditions

- Brightness of surface must be 500 LX or more



1.2 Surface Definition

Surface Type	Definition
AA	The surface is visible to the customer during use of the product
A	This surface is not visible to the customer during use but can be visible upon inspection
C	This surface is not visible during customer use and it typically not visible during final inspection (may be visible during assembly).



1.3 General Rejection Criteria

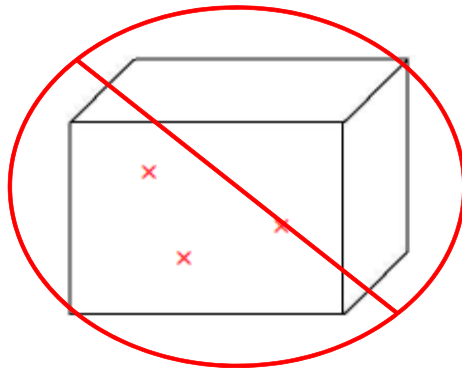
- Dot

Surface Type	Maximum Allowable Size
AA	Ø.62 mm ²
A	Ø.8 mm ²
C	Ø2.25 mm ²

- Line

width(mm)	Line-based (length mm)											
	1	3	5	7	10	20	30	40	50	100	200 <	
AA	<0.1											
	0.1		Pass									
	0.3											
A	0.5								failure			
	0.7											
C	<0.1											
	0.3		Pass									
	0.5											
	0.7											
	1.0								failure			
	1.5											
	2.0											

- If 3 or more defects regardless of size exist on the same surface, reject the product



Section 2.0 Manufactured Components

2.1 Sheet Metal (machining, cutting, folding, welding)

2.1.1 Defects generated during part processing

Non-conforming Content	Criteria
Deburring (Surface)	No burrs in location where human can touch
Spot welding marks (Surface)	Not allowed
Welding trace debris attached	No weld splatter allowed
Bending	No crack, fracture in bend area

2.1.2 Sheet Metal Part Flatness Specification (unless specified on drawing)

	< 3 “	3 to <10 in.	10 to <24 in.	24 to <48 in.	48 in. and over
Flatness Specification	.008”	.015”	.020”	.030”	.050”

2.2 Cast, extruded, machined, and molded metal parts

2.2.1 Defects generated during part processing

Non-Conformity	Criteria
Burrs	No burrs in location a human can touch
Burns Marks	See cosmetic Sec.1
Chatter	See cosmetic Sec.1
Surface accuracy (Machined parts)	32 micro inches or better
Gas porosity	No visible porosity
Pouring defects (cold shot, misruns)	Not allowed
Hot Tears/ Hot spots	Not allowed
Surface Cracking	Not allowed
Internal cracking	Not allowed
Pipe flow pattern	See cosmetic Sec.1
Surface lines	See cosmetic Sec.1
Flow lines	See cosmetic Sec.1
Vacuum Voids	Not allowed
Short shots	Not allowed
Delamination	Not allowed
Gates	0.5 mm Max
Warping	Must meet Drawing tolerances
Flash	0.3 mm Max
Sink Marks	.13 mm Max

2.3 Secondary operation, Finish

2.3.1 Plating

Non-Conforming Content	Criteria
Plating peeling	Peeling strength conform to ATSM-D3359 standard
Rust	Not allowed
Dripping (color unevenness)	With no noticeable sag
Gloss	Must meet drawing specifications
Dirt (stains, small particles, lint)	See cosmetic table Sec. 1.3
Air Pockets (flow lines)	See cosmetic table Sec. 1.3
Racking Marks (anodize, nickel, etc..)	Apply Type AA cosmetic Section 1.3
Scratches (to base metal)	Not allowed

Dents, Scuffs (to base metal)	Apply Type AA cosmetic Section 1
Dents, scuffs, scratches (not to base metal)	Apply type A cosmetic sec. 1

2.3.2 Printing (silkscreen, pad printing)

Non-conforming Content	Criteria
Pinhole	See cosmetic Sec.1
Doubling (misprint, underprint, overprint)	Less than 0.1 mm
Shift (Placement)	Less than 0.1 mm
Stains (conveyor, blanket)	Less than 0.1 mm
Registration (gap in colors)	0.1 mm
Scratches, Dents, scuffs (must not reach base metal)	See cosmetic Sec.1

2.3.3 Painting

Non-Conforming Content	Criteria
Paint peeling	adherence strength conforms to ASTM-D3359 class 3 standard
Rust	Not allowed
Deformation	Not allowed
Orange peel	See cosmetic Sec.1
Color unevenness	See cosmetic Sec.1
Pinhole (spot)	See cosmetic Sec.1
Gloss (fading)	See cosmetic Sec.1
Dirt (stains, small particles, lint)	See cosmetic Sec.1
Bubbles (float)	See cosmetic Sec.1
Paint sag (wrinkles)	See cosmetic Sec.1
Racking Marks	Apply Type AA cosmetic sec. 1
Scratches (to base metal)	Not allowed
Dents, Scuffs (to base metal)	Apply Type AA cosmetic sec. 1
Dents, scuffs, scratches (not to base metal)	Apply type A cosmetic sec. 1

2.4 Injection Molded, Machined and Bending of Plastic parts

Non-Conforming Content	Criteria
Flow lines	See cosmetic Sec.1
Sink Marks	See cosmetic Sec.1
Delamination	Not allowed
Vacuum Voids	Not allowed
Short shots	Without it
Warping	Must meet drawing tolerance

Burn Marks	See cosmetic Sec.1
Gates	0.5 mm Max
Flashing	0.2 mm Max
Cracking	0.2 mm Max
Burrs	0.2 mm Max
Chatter	See cosmetic Sec.1
Bending	No crack, fracture in bend area
Bubbles	See cosmetic Sec.1

2.4.1 Criteria Optical Surface plastic injection molded parts

- Parts must conform to MIL-PRF-13830B specifications for scratch and dig. See table below.
- Note: unless otherwise specified on drawing below are the minimum allowable requirements for Optical surface

Surface type	Max allowable Size	
	<i>Scratch Width & Length</i>	<i>Digs width & total</i>
CA /Clear Aperture	0.06 mm width & $L \leq \varnothing/4$	0.3 mm \varnothing & $N = \varnothing/20$
AA /Remaining optical surface	0.1 mm width & $L \leq \varnothing/4$	0.6 mm \varnothing & $N = \varnothing/20$

- Scratches: The sum of all scratch length will not exceed one fourth of the diameter of the optical surface $\sum < \varnothing/4$
- Digs: The total number of allowable maximum size digs (n) will not exceed the diameter divided by twenty $N = \varnothing/20$
- Optical surface must be free of any air bubbles

2.5 Criteria finished optical components glass windows, mirrors, lens, filters

- Parts must conform to MIL-PRF-13830B specifications.
- Note: Unless otherwise specified on drawing below are the minimum allowable scratch and dig requirements for optical components.

Surface type	Max allowable Size	
	<i>Scratch Width & Length</i>	<i>Digs Width & Total</i>
CA /Clear Aperture	0.06 mm width & $L \leq \varnothing/4$	0.3 mm \varnothing & $N = \varnothing/20$
AA /Entire optical surface	0.1 mm width & $L \leq \varnothing/4$	0.6 mm \varnothing & $N = \varnothing/20$

- Scratches: The sum of all scratch length will not exceed one fourth of the diameter of the optical surface $\sum < \text{Ø}/4$
- Digs: The total number of allowable maximum size digs (n) will not exceed the diameter divided by twenty $N = \text{Ø}/20$

2.6 Printed circuit boards (PCB) and Printed circuit board assemblies (PCBA)

2.6.1 Printed circuit boards

- Printed circuit boards are to be manufactured to IPC-6012 “Qualification and Performance specifications for rigid printed boards”, class 2, with the following exceptions.
 - Annular ring on all supported holes shall meet IPC-6012 class 3 requirements (section 3.4.3).
 - Tooling holes shall be void of any plating
 - Component legend marking ink used on PCB shall comply with IPC- 6012 section 3.2.11.
 - Silkscreen component legends shall not overlap onto any portion of the exposed terminal area.
 - Break all edges and sand burrs flush
 - IPC-A-600 will be used to inspect minimum acceptability requirements.
- Omron Microscan systems Inc. does not allow for “Repair” of PCB damage, even when the repair meets IPC guidelines. The following items list what is and is not acceptable.
 - Conductor/ Land damage (lifted pads/ lands) – No pad or land repair allowed even if they are within IPC class 1, 2, and 3.
 - Barrel damage (pulled) – No barrel repair is allowed
 - Solder resist coating (voids and blisters)-
 - Void size equal to or less than 0.125” can be reworked. Use appropriate masking material and cure, color may not exactly match.
 - Void size between .125” to .250” will need Omron Microscan engineering evaluation.
 - Void size greater than .250” repair is not allowed.

2.6.2 Printed circuit board assemblies (PCBA)

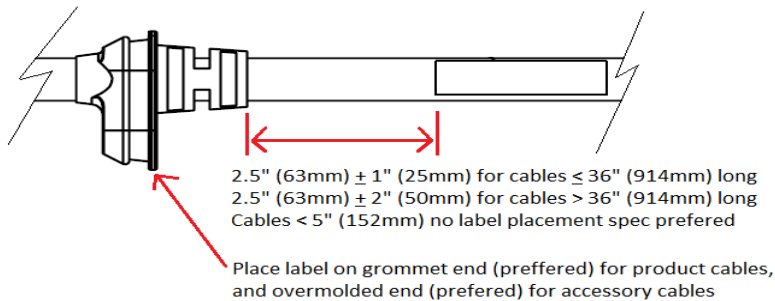
- Printed circuit board assemblies shall be manufactured to IPC-A-610 “Acceptability of Electronic Assemblies”, Class 2.
- Mark upper level assembly dash number (-XX), Revision, and lot number on PCB at locations provided using either ESD safe label or indelible ink. Exceptions may be given due to size of location on PCB.
- PCBA’s must be marked per J-STD-609 standard for RoHS/WEEE Directive (EU) 2015/863 restrict 4 new Phthalates : DEHP, BBP, DBP, and DIBP . The marking order sequence shall be the following: PCB material, Reflow/ Wave solder finish, and hand solder material.

“PCB Material”	“Reflow/ wave solder”	e1
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PCB material callout is only necessary when PCB material is halogen free (HF). PCBA assembly house shall mark the finished PCBA with either white silk screen or ESD safe label. A barcode label containing the marking information may also be used. Marking shall be placed on the bottom side of PCBA in any available area.

2.7 Cable Assemblies

- Cable assemblies are to be manufactured and inspected to IPC/WHMA-A-620 “Requirements and acceptance for cables and wire harness assemblies”, Class 2. Any exception to be noted on drawing, or the following list:
 - All cables to be 100% functionally tested using cable tester (Cirris cable tester 1000R+ or equivalent).
 - All cables to be ID labeled with Omron Microscan part number, Revision, and date of manufacturer.
 - Cable assemblies to be free from adhesives or glues from ID label.
 - Unless otherwise specified cable ID labels should be placed in accordance with below specification:



- No nicks or cuts are allowed on the insulation of the wires and cable jacket.
- Cable over molds gates, flash shall not exceed .3mm Max height

2.7.1 Cable Assembly Packaging

- All cables to be packaged in individual heat sealed RoHS & REACH compliant LDPE bag. Heat seal to be approximately 1" parallel from top of bag. Ensure bag is not over inflated.
- Cable shall be wound to the bag edges with no zip or wire ties. Unless otherwise specified on drawing, bag size to be consistent with the following table:

Cable size	> 1 ft (12 in)	1 ft to 3 ft	3 ft to 15 ft	Greater than 15 ft
Bag size	5" x 7"	8" x 10"	9" x 12"	14" x 16"

- Packaging label artwork requirements specified on B.O.M label drawing. Location to be controlled as specified on drawing template.

- Ink smudges and incomplete text are not allowed on labels.

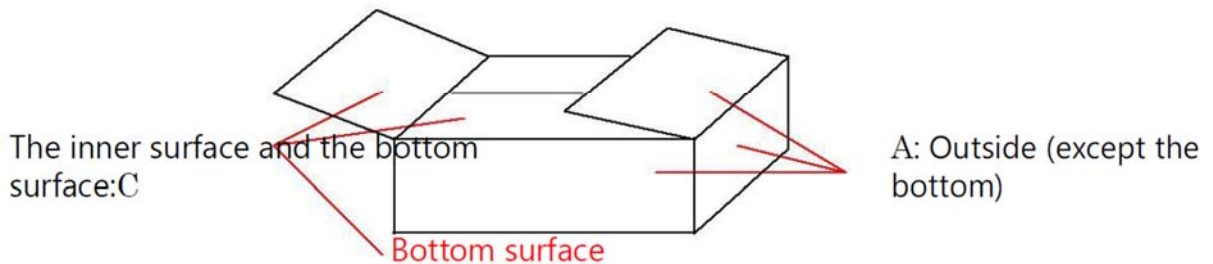
2.8 Labels

- Label artwork shall meet the minimum requirements as specified in sec. 2.3.2 “Printing (silkscreen, pad print), unless otherwise specified on drawing.
- No adhesive or glue residue is allowed on visible surface.
- Each label must be verified according to drawing
- Certificates of conformance required with each shipment

3.0 Packaging

- Unless otherwise specified on drawing, packaging is required which protects each part from damage in shipping and storage. Part specific packaging requirements may be specified on drawing notes or purchase order including package type, quantity per package and/ or outer package.
- Part marking shall be in accordance with packaging label drawing specification under B.O.M. At minimum, parts are to be marked with a label including: Part number, part number bar code, part description, part revision, manufacturing date and/ or serial number, and any regulatory requirements symbols as required on label drawing template.
- Packaging Box/ Case
 - Class AA Surface Outside of box (primary display)
 - Class A surface Outside of box (except for bottom)
 - Class C surface Inside of box and bottom surface

Non-conforming Content	Criteria
Cracking (shall not pierce surface)	See table below
Stain	See table below
Torn	See table below
Scratches	See table below



(1) Criteria

A	Those that can be easily identified	4mm ²		
	Φ2.25mm □2.00mm	---	Width × length = 4mm ²	
C	Those conspicuous	8 mm ²		
	Φ3.19mm □2.83mm	---	Width × length = 8mm ²	

note 1: There is no crack, tear, scratch reaching the center

Responsibilities

As defined above

Definitions

N/A

Records

Sign-offs are recorded per ECN in Agile.

Appendix A

N/A