NOTES:

A. GENERAL:

1. COMPLIANCY TO THIS DOCUMENT:

F5 E7

a) USCAR COMPLIANCE MAY BE CLAIMED BY MEETING THE REQUIREMENTS IN THIS SPECIFICATION WITH THE DEVIATION IDENTIFIED AND MAY BE REFERENCED IN OTHER DOCUMENTS (DRAWINGS, DVP&R, ETC.)AS "CONFORMS TO EWCAP-001 REV. X.X"
b) PRODUCTS DESIGNED AFTER THE DATE OF RELEASE OF THIS DOCUMENT SHALL BE COMPLIANT TO THE CURRENT REVISION OF THIS DOCUMENT.
c) PRODUCTS THAT HAVE MET PREVIOUS REVISION(S) OF THIS DOCUMENT SPECIFICATION SHALL STILL BE CONSIDERED "USCAR COMPLIANT" TO THOSE REVISIONS AND DO NOT NEED TO BE RE-VALIDATED.

2. DEVIATIONS TO THIS DOCUMENT ARE ALLOWABLE UNDER THE FOLLOWING CONDITIONS:

a) ALL DEVIATIONS SHOULD SHOW EQUAL OR BETTER PERFORMANCE (ELECTRICAL/MECHANICAL) AS REQUIRED BY VALIDATION SPECIFICATION.
b) EXCEPTIONS ARE CLEARLY IDENTIFIED ON THE COMPONENT DOCUMENT.
c) ALL DEVIATIONS ARE APPROVED BY PERSON WHO HAS INTERFACE RESPONSIBILITY.
d) ALL RECORDS OF DEVIATION APPROVALS BE INCLUDED WITH CHANGE NOTICE DOCUMENTATION.

3. OBJECTIVE(S)OF THIS DOCUMENT:
THE SPECIFICATION CONTAINED IS INTENDED FOR APPLICATIONS:

a) VALIDATED TO:
1. SAE/USCAR-2
2. FIELD CORRELATED LIFE TEST, SAE/USCAR-20
3. RESTRICTED AND REPORTABLE CHEMICALS AS DEFINED IN IMDS.
b) WHICH PROVIDE MINIMUM CURRENT RATING AS DEFINED BY THE EWCAP "RECOMMENDED PIN SIZES AND CURRENT CAPACITY" GUIDELINE.

B. DESIGN:

1. DESIGN - GEOMETRY:

a) THIS IS A 100% CAD GENERATED PART. THE RELEASED DRAWING IS THE MASTER FOR DIMENSIONAL OR ANY INFORMATION NOT SHOWN ON THIS DRAWING. ANALYZE THE CAD MODEL.
b) UNLESS OTHERWISE SPECIFIED, TOLERANCES ARE AS FOLLOWS:
1. LINEAR:
0 TO 20 +/- 0.10
2. ANGULAR:
0 TO 5 +/- 1
>5 +/- 3
c) PARTS MUST BE FREE FROM IMPERFECTIONS THAT AFFECT FIT AND FUNCTION.

2. MATERIALS FOR INTERFACE:
U3 NOTE: MATERIAL CONDUCTIVITY MUST BE NOTED ON THE COMPONENT DRAWING. USE OF MATERIAL OTHER THAN SPECIFIED REQUIRES OEM APPROVAL.

a) 0.50MM, 0.64MM, 1.2MM & 1.5MM BLADES:
1. BASE MATERIAL: COPPER ALLOY; CONDUCTIVITY >= 28% IACS AT 20*C; TENSILE STRENGTH >= 410N/mm2
2. PLATING TYPE: AS NOTED
H4 b) 2.8MM, 6.30MM BLADES:
1. BASE MATERIAL: COPPER ALLOY; CONDUCTIVITY >= 40% IACS AT 20*C; TENSILE STRENGTH >= 475N/mm2
2. PLATING TYPE: AS NOTED
c) 9.5MM BLADES:
D1 U4 1. BASE MATERIAL: COPPER ALLOY WITH CONDUCTIVITY 60% IACS MIN. AT 20*C; TENSILE STRENGTH >=280 N/mm2 U2

3. PLATING:

a) AREAS CALLED OUT AS PLATED MUST BE PLATED PER THE SPECIFICATIONS CONTAINED IN THE PLATING CHART. ALL QUANTITATIVE AND QUALITATIVE PLATING MEASUREMENTS ARE THEN TAKEN IN THIS AREA.
b) Zn-BEARING ALLOYS >= 5% (SUCH AS CA260) REQUIRE A BARRIER PLATING BETWEEN THE BASE MATERIAL AND TOP COAT.
c) RECOMMEND A BARRIER PLATING BETWEEN SUBSTRATE AND Sn TO HELP MITIGATE WHISKER GROWTH.
d) SILVER PLATING ON TERMINALS MUST STOP A MINUMUM OF 1MM BEFORE THE HEADER FLOOR.

4. DESIGN - MANUFACTURING:

M4 K a) ANY PROCESS LUBRICANT REMAINING ON THE TERMINAL MUST NOT VARNISH OR DEGRADE ITS ELECTRICAL PERFORMANCE UP TO A MAXIMUM CLASS AMBIENT TEMPERATURE PER SAE USCAR-2 FOR 1008 HOURS. PROCESS LUBRICANTS SHOULD BE APPROVED BY PERSON WHO HAS INTERFACE RESPONSIBILITY.
<PARA >b) WHEN CHOOSING A PLATING THICKNESS OR TYPE THE SUPPLIER SHOULD KEEP IN MIND THE EFFECT THE PLATING WILL HAVE ON THE MATING HARNESS CONNECTOR. CONSULT USCAR-2 & USCAR-25 FOR CONNECTOR INSERTION EFFORTS.

J3 H5 EWCAP STANDARD PINS & BLADES HAVE THE FOLLOWING TYPICAL MAXIMUM CURRENT CARRYING CAPACITY.
MAXIMUM CURRENT LOAD MAY BE MORE OR LESS DEPENDING ON THE SPECIFIC APPLICATION AND MATERIALS USED.
USE THE METHODS DESCRIBED IN SAE/USCAR-2 SPECIFICATION FOR AUTOMOTIVE ELECTRICAL CONNECTON SYSTEMS TO DETERMINE THE SPECIFIC CURRENT CARRYING CAPABILITY OF THE TERMINAL AND CONNECTION SYSTEM.

J2

H3

Pin / Blade Size	Current Capacity	Typ. Max Wire Size
0.5mm	3	0.35mm2
0.64mm	8	0.75mm2
1.2mm	13	1.0mm2
1.5mm	15	1.0mm2
2.8mm	23	3.0mm2
6.3mm	40	4.0mm2
9.5mm	60	10.0mm2

U1 NOTICE:
This drawing, or portions of it are controlled by the Electrical Wiring Components Application Partnership(EWCAP) a subgroup of the United States Council for Automotive Research LLC (USCAR LLC).

USCAR is an LLC consisting of members from FCA US LLC, Ford Motor Company and GM Corporation.

Any change to a EWCAP controlled portion of this drawing, including a revision record change must be approved, in writing, by the responsible EWCAP representative from each USCAR member company. Each EWCAP representative authorized to sign for his or her member company is responsible for obtaining all necessary approvals within that company prior to signing for the approval of the change.

EWCAP expressly prohibits any party from changing either any EWCAP controlled portion of this drawing or any associated tooling before receiving approval, signed by the authorized representatives, of the USCAR member companies. Reference to the signed change notice must be entered in the drawing control column.

U1

CHANGE SERIAL NUMBER	LET	REVISION RECORD	DATE	DWN	CHK
149	U4	REMOVED CONDUCTIVITY NOTE	180119	RCB	RCB
	U3	ADDED NOTE	180119	RCB	RCB
	U2	ADDED TENSILE STRENGTH	180119	RCB	RCB
	U1	RELOCATED NOTICE	180118	RCB	RCB
137	T	CORRECT DATUM A, ADD USCAR-2 REF.	161206	RCB	RCB
134	S1	REVISED BLADE WIDTH NOTE			
	S	REDRAWN FOR CLARITY	161004	RCB	RCB
122	R	WAS 1.00 ±0.10	160414	RCB	RCB
119	P	ADDED MISSING NOTES FOR 064	160317	RCB	RCB
117	N	WAS 4X 0.50 +/- 0.03 X 45	160209	RCB	RCB
114	M4	ADDED NOTE 3D RELATED TO SILVER			
	M3	REMOVED SAME AS & ADDED DIMS.			
	M2	WAS (120-001)			
	M1	ADDED (2XR 0.856)			
		REDRAWN AFTER REVISION L 160114 DAP	RCB		
109	L2	ADDED MIN PLATING DISTANCE T050			
	L1	REVISED 120-T001 DIMENSION SCHEME	150722	CLS	SAF
106	K	REMOVED NOTE 3D	150113	SAF	SE
100	J3	REMOVED NOTE 5			
	J2	REVISED CURRENT CAPACITY NOTES AND CHART			
	J1	REVISED PLATING CHART	140414	SAF	SE
096	H5	ADDED NOTE 5			
	H4	ADDED 0.50MM TO NOTES			
	H3	ADDED TABLE AND NOTES			
	H2	PREFERRED WAS OPTIONAL			
	H1	OPTIONAL WAS PREFERRED	120817	SAF	SE
085	G	ADDED 050-T TERMINAL BLADE	101018	DCS	SAF
072	F8	ADDED CONTACT SURFACE ORIENTATION DIAGRAM			
	F7	0.30/0.10 WAS .40/.20 (3) PLACES			
	F6	ADDED 950-T001 TERMINAL BLADE			
	F5	REVISED NOTES			
	F4	REVISED PLATING CHART			
	F3	ADDED 120-T001 TERMINAL BLADE			
	F2	ADDED END VIEW (2) PLACES			
	F1	ADDED SHEET 2 & RELOCATED VIEWS	080717	DCS	SAF
060 REV 5	E7	REVISED NOTES			
	E6	REMOVED NOTES (4) PLACES			
	E5	ADDED VIEW			
	E4	0.64/0.61 WAS 0.64 +/-0.03			
	E3	ADDED "WIDTH" & "THICKNESS" NOTES			
	E2	MADE THE BLADE WIDTH FOR IN-LINE CONNECTORS REFERENCE (3) PLACES			
	E1	MODIFIED PLATING CHART	060427	SAF	RLH
048-1	D2	ADDED NOTES TO CLARIFY THE LOCATION OF THE REQUIRED PLATING (4) PLACES			
	D1	MODIFIED ELECTRICAL CONDUCTIVITY NOTE	041124	SAF	RLH
040	C	MODIFIED PLATING CHART AND NOTES	040519	SAF	CLS
033	B5	DEFAULT TOLERANCE 0.13 WAS 0.10			
	B4	"NO BURRS" WAS "BOTH EDGES COINED ON SIDE OPPOSITE DIRECTION OF PUNCH, ENTIRE LENGTH." (3) PLACES			
	B3	REMOVED NOTICE NOTE			
	B2	REMOVED "EWCAP" FROM TITLE BLOCK			
	B1	MODIFIED PLATING NOTES	040108	SAF	CLS
–	A	INITIAL RELEASE	020912	SAF	SAF

TOLERANCES (UNLESS OTHERWISE SPECIFIED)
DIMENSIONS ARE IN MILLIMETERS

THIRD ANGLE PROJECTION

USCAR-EWCAP

SCALE	DRAWN BY	CHECKED BY	DATE
NONE	DARYL PATRICK	R C BURDICK	1/14/2016

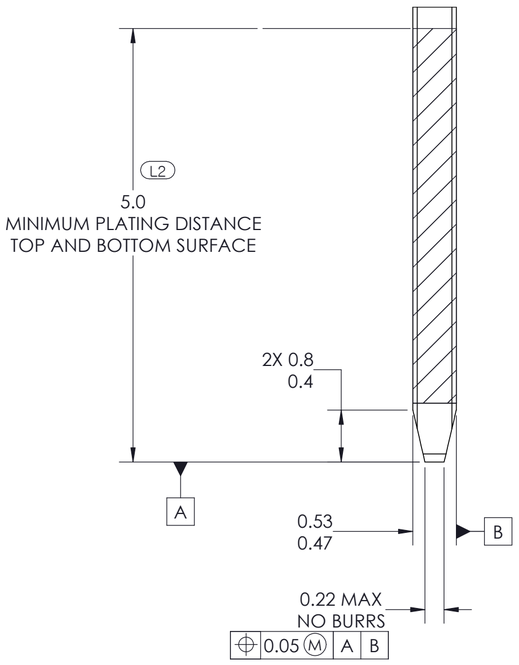
TITLE

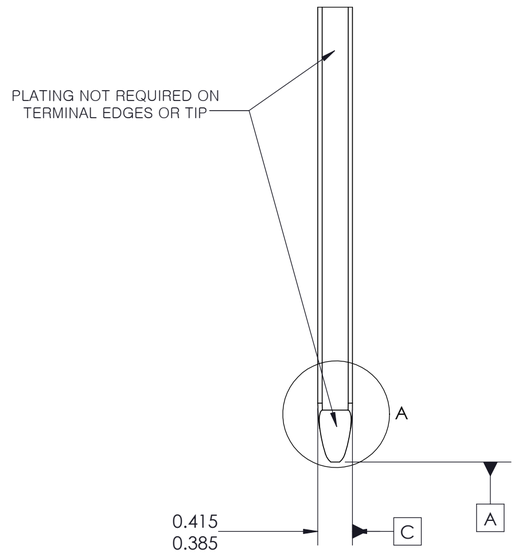
TERMINAL BLADE DETAIL

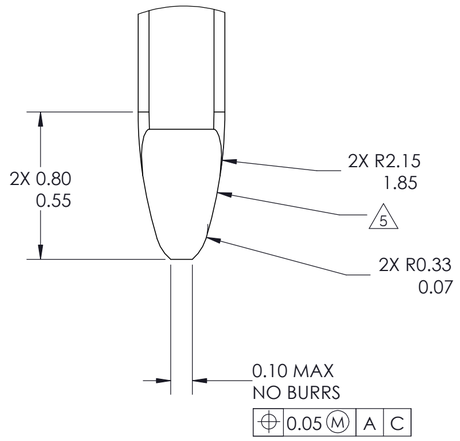
SHEET	DRAWING NUMBER	SIZE		REVISION LEVEL
1 of 8	EWCAP-001	A2	DO NOT SCALE DRAWING COMPUTER AIDED DRAWING	U

050-T001

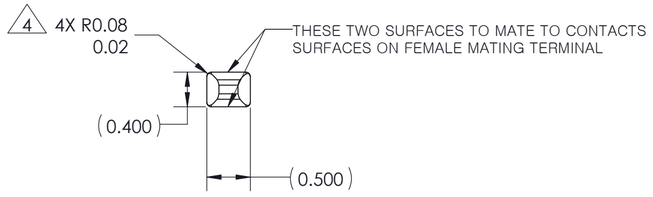
0.50 TERMINAL BLADE CONFIGURATION
SCALE = 20:1







DETAIL A
SCALE 50 : 1



1. NO BURRS ON TIP OR PIN EDGES
2. ALL PIN DIMENSIONS INCLUDE PLATING IF APPLICABLE
3. BASE MATERIAL: COPPER ALLOY: CONDUCTIVITY >= 28% IACS AT 20°C

(N) 4. ALTERNATELY, 4X 0.05±0.03X45° CHAMFER CAN BE USED

5. BLEND RADIUS

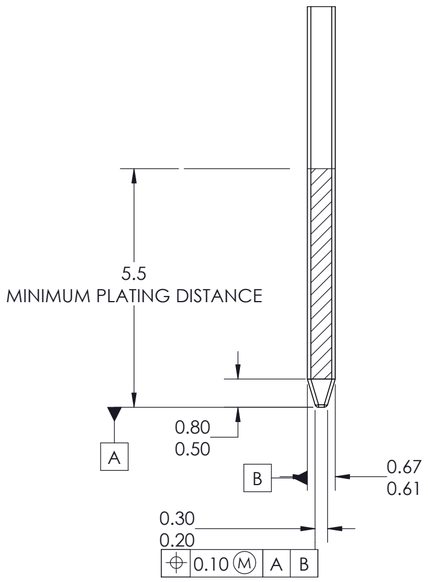
TOLERANCES (UNLESS OTHERWISE SPECIFIED) DIMENSIONS ARE IN MILLIMETERS			THIRD ANGLE PROJECTION
USCAR-EWCAP			
SCALE: NONE	DRAWN BY: DARYL PATRICK	CHECKED BY: R C BURDICK	DATE: 1/14/2016
TITLE: TERMINAL BLADE DETAIL			
SHEET: 2 of 8	DRAWING NUMBER: EWCAP-001	SIZE: A2	DO NOT SCALE DRAWING COMPUTER AIDED DRAWING
			REVISION LEVEL: U

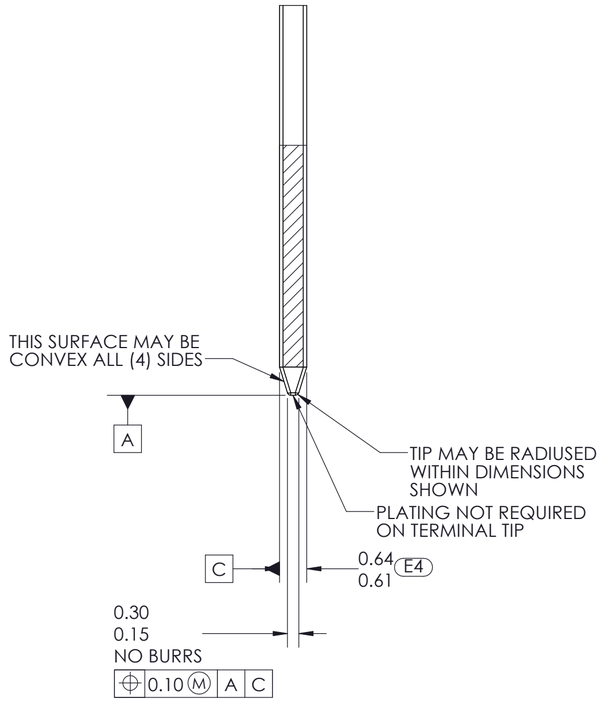
064-T

0.64 TERMINAL BLADE CONFIGURATION
SCALE = 10:1

064-T001 - 2 BEAM APPLICATIONS

(2 BEAM REFERS TO FEMALE TERM W/2 CONTACT SURFACES)

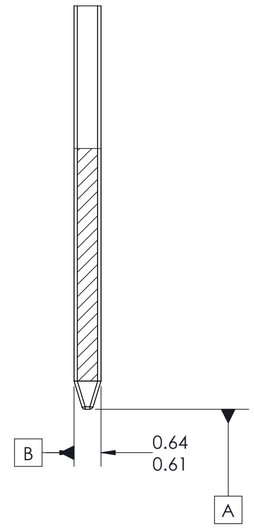




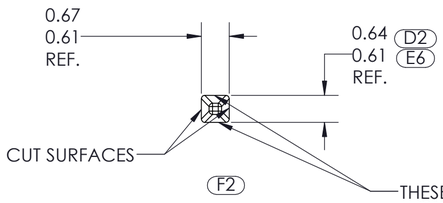
E3
THICKNESS
(COMMON FOR 2 AND 4 BEAM APPLICATIONS)

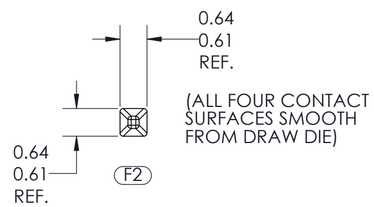
064-T002 - 2 OR 4 BEAM APPLICATIONS

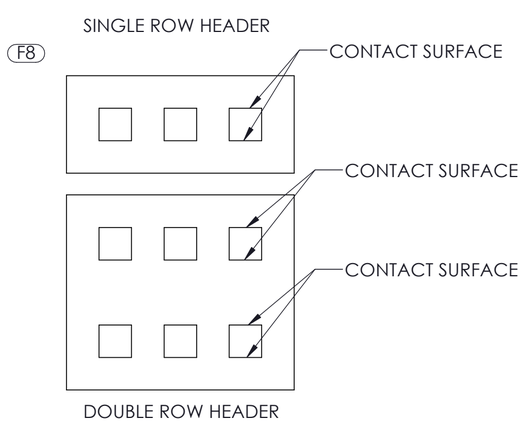
(SAME AS 2 BEAM APPLICATIONS EXCEPT FOR SHOWN DIMENSIONS)
(4 BEAM REFERS TO FEMALE TERM W/ 4 CONTACT SURFACES)



E5 WIDTH
(DRAWN WIRE)







1. PIN MUST BE SYMMETRICAL WITHIN TOLERANCE SHOWN
2. (P) ALL TIP OR PIN EDGES MAY BE RADIUSED - R0.08 MAX
3. NO BURRS ON TIP OR PIN EDGES
4. ALL PIN DIMENSIONS INCLUDE PLATING IF APPLICABLE
5. 064-T002: 0.64 MM X 0.64 MM SQUARE PINS MUST HAVE PLATING ON ALL SIDES

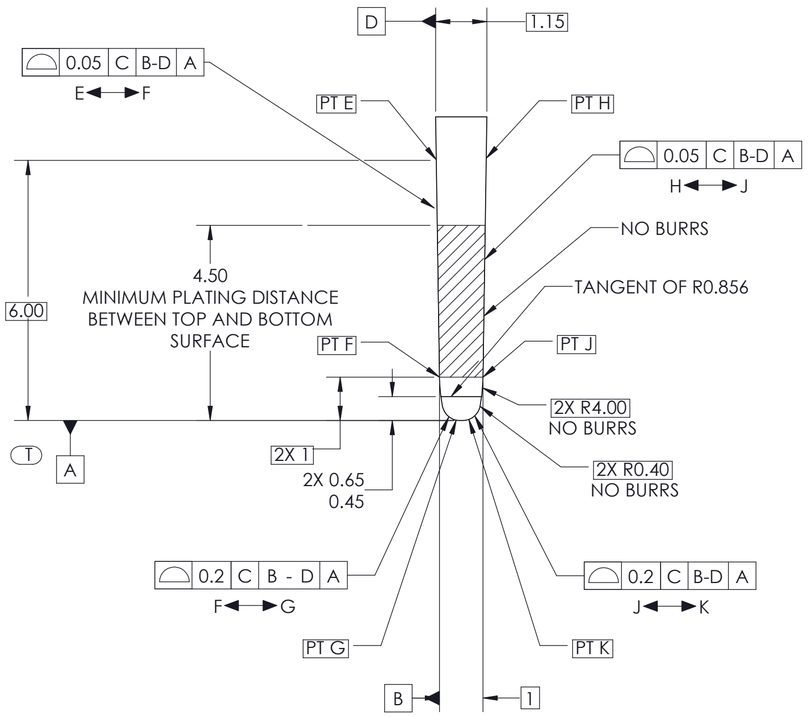
FOR ABS CONTROLLER APPLICATIONS, REFER TO THE ABS FOOTPRINTS SHOWN ON THE USCAR WEBSITE BECAUSE THEY SPECIFY A WIDTH AND THICKNESS THAT DEVIATE FROM THIS DRAWING.

TOLERANCES (UNLESS OTHERWISE SPECIFIED) DIMENSIONS ARE IN MILLIMETERS			THIRD ANGLE PROJECTION
USCAR-EWCAP			
SCALE NONE	DRAWN BY DARYL PATRICK	CHECKED BY R C BURDICK	DATE 1/14/2016
TITLE: TERMINAL BLADE DETAIL			
SHEET 3 of 8	DRAWING NUMBER EWCAP-001	SIZE A2	DO NOT SCALE DRAWING COMPUTER AIDED DRAWING	REVISION LEVEL U

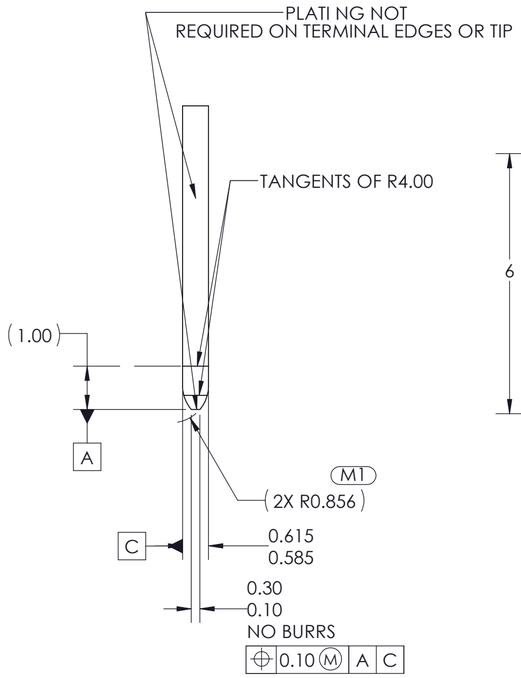
120-T

1.20 TERMINAL BLADE CONFIGURATION
SCALE = 10:1

120-T001 TAPERED BLADE



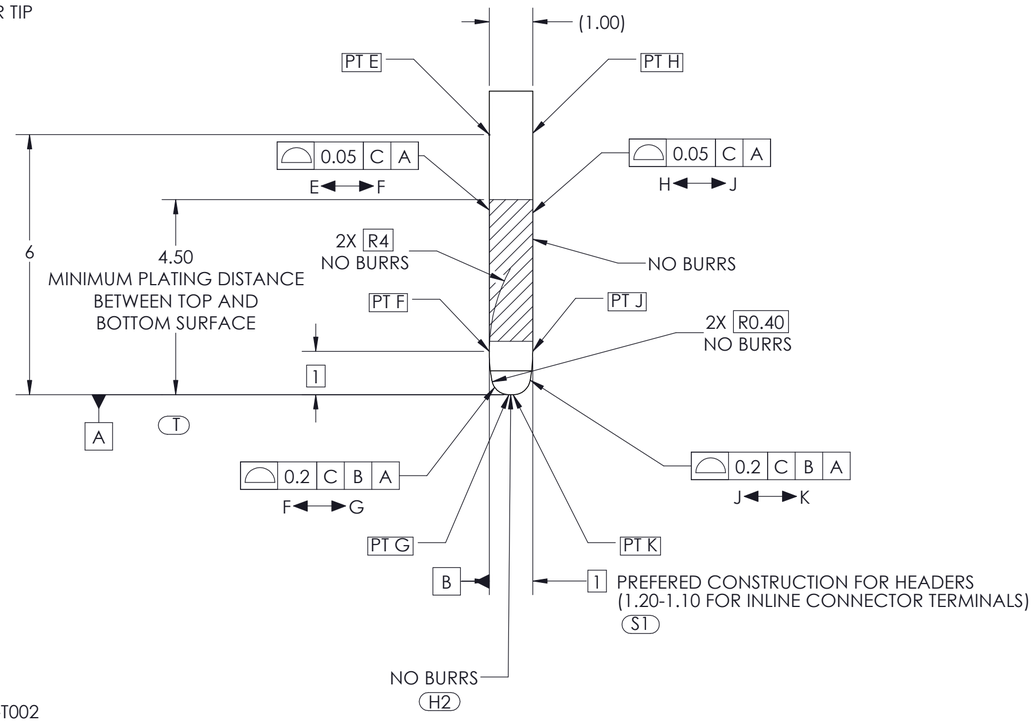
OPTIONAL CONSTRUCTION
FOR HEADERS
(L1) (H1)



THICKNESS COMMON FOR 120-T001 AND 120-T002

120-T002 STRAIGHT BLADE

M3



PLEASE NOTE THAT ON EXISTING DEVICES COMING FROM EUROPE (i.e. SENSORS AND SWITCHES) MAY HAVE MALE BLADES THAT DEVIATE FROM OUR PREFERED CONSTRUCTION (120-T002) AND HAVE THE FOLLOWING DIMENSIONS: WIDTH: 1.20/0.95 mm & THICKNESS: 0.63/0.57 mm. CAUTION SHOULD BE TAKEN THAT MAKE TO FEMALE INTERFACES STILL MEET INSERTON EFFORTS AND ELECTRICAL REQUIREMENTS AS SPECIFIED IN THE PERFORMANCE TEST SPECIFICATIONS.

M2

TOLERANCES (UNLESS OTHERWISE SPECIFIED)
DIMENSIONS ARE IN MILLIMETERS

THIRD ANGLE PROJECTION

USCAR-EWCAP

SCALE	DRAWN BY	CHECKED BY	DATE
NONE	DARYL PATRICK	R C BURDICK	1/14/2016

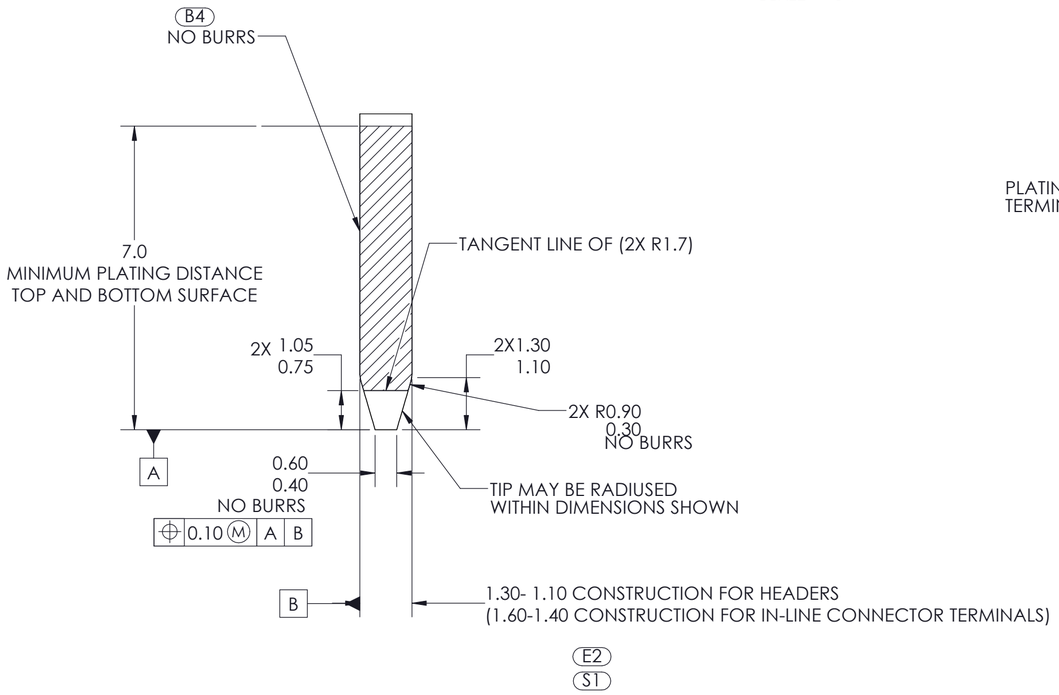
TITLE

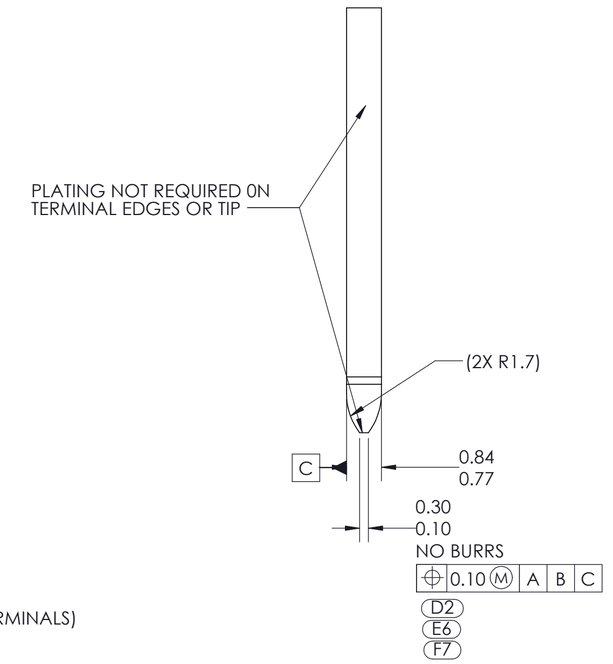
TERMINAL BLADE DETAIL

SHEET	DRAWING NUMBER	SIZE	DO NOT SCALE DRAWING	REVISION LEVEL
4 of 8	EWCAP-001	A2	COMPUTER AIDED DRAWING	U

150-T001

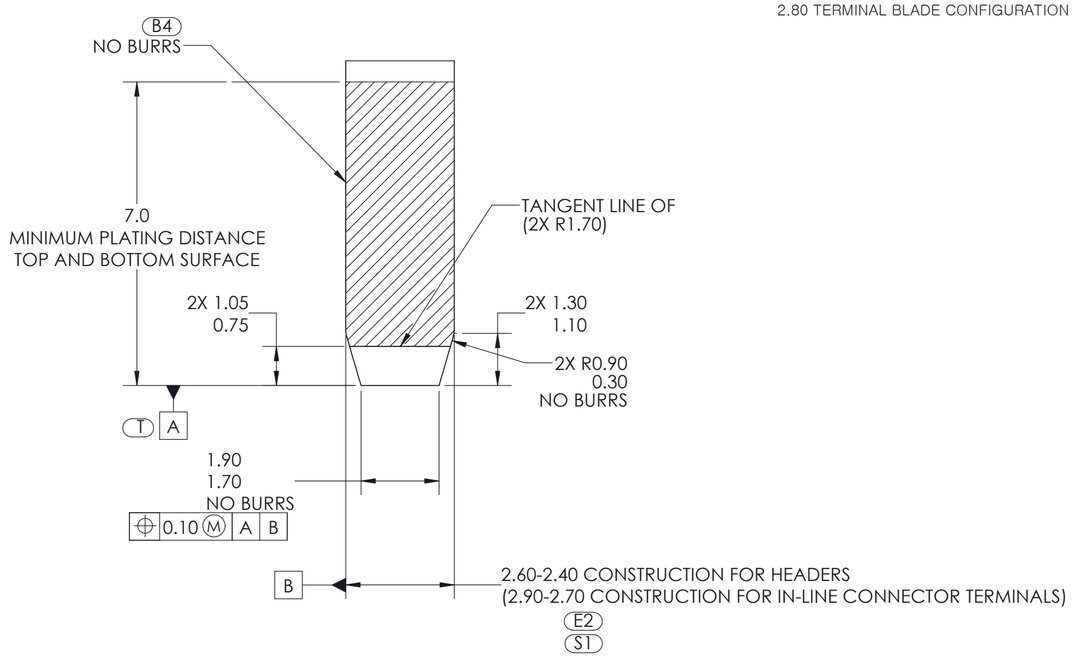
1.50 TERMINAL BLADE CONFIGURATION
SCALE = 10:1

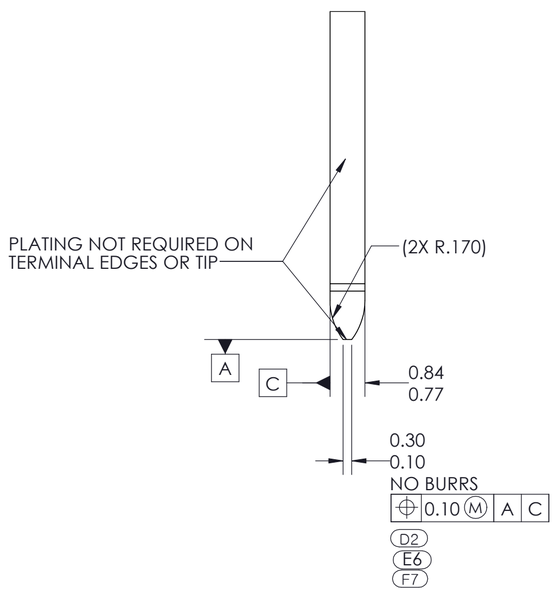




280-T001

2.80 TERMINAL BLADE CONFIGURATION





TOLERANCES (UNLESS OTHERWISE SPECIFIED)
DIMENSIONS ARE IN MILLIMETERS

THIRD ANGLE PROJECTION

USCAR-EWCAP

SCALE	DRAWN BY	CHECKED BY	DATE
NONE	DARYL PATRICK	R C BURDICK	1/14/2016

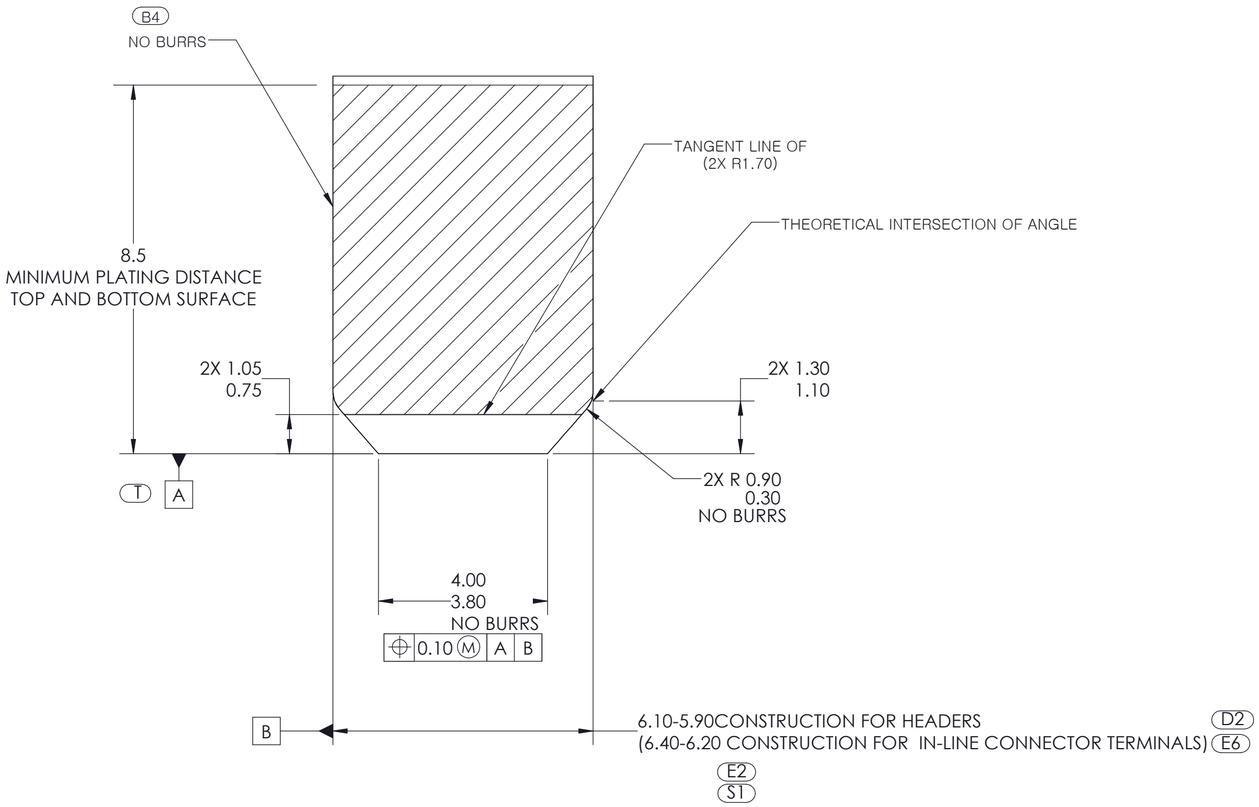
TITLE

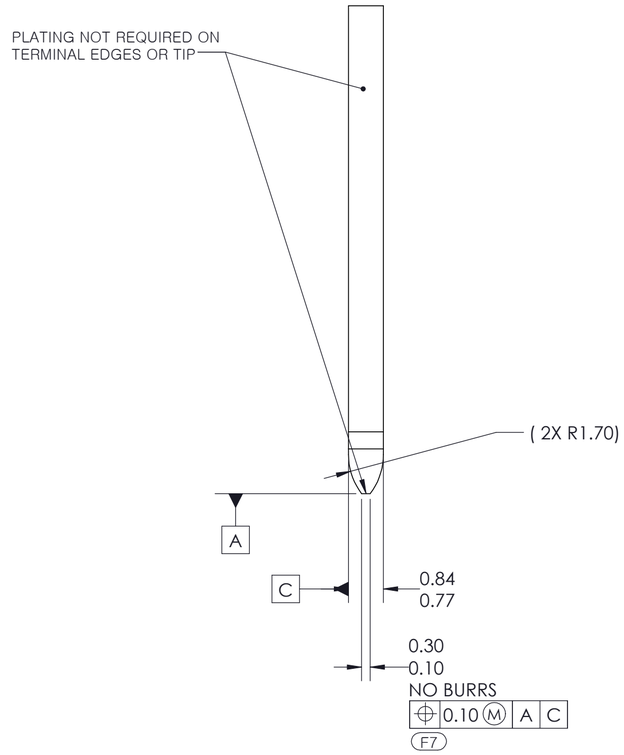
TERMINAL BLADE DETAIL

SHEET	DRAWING NUMBER	SIZE		REVISION LEVEL
5 of 8	EWCAP-001	A2	DO NOT SCALE DRAWING COMPUTER AIDED DRAWING	U

630-T001

6.30 TERMINAL BLADE CONFIGURATION
SCALE 10:1





TOLERANCES (UNLESS OTHERWISE SPECIFIED)
DIMENSIONS ARE IN MILLIMETERS

THIRD ANGLE PROJECTION

USCAR-EWCAP

SCALE	DRAWN BY	CHECKED BY	DATE
NONE	DARYL PATRICK	R C BURDICK	1/14/2016

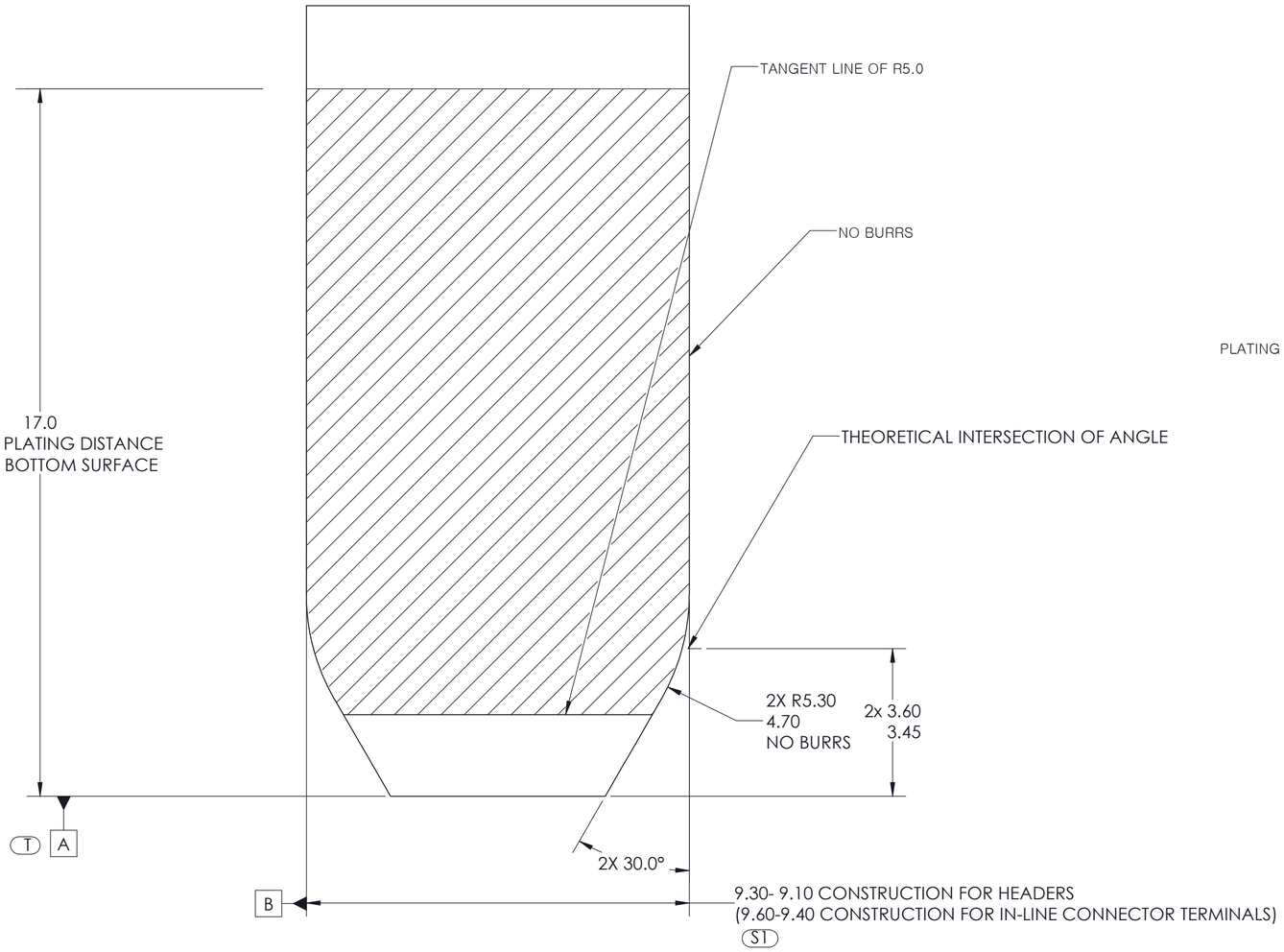
TITLE

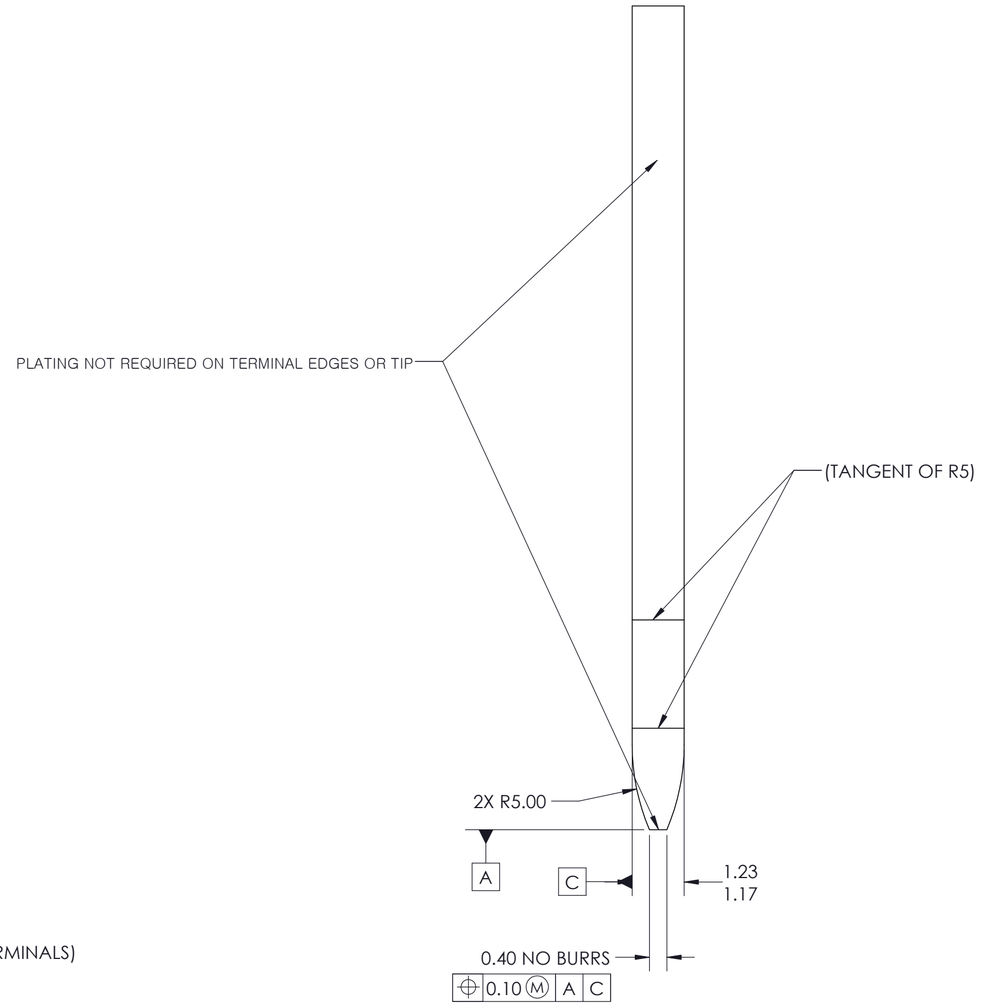
TERMINAL BLADE DETAIL

SHEET	DRAWING NUMBER	SIZE	DO NOT SCALE DRAWING	REVISION LEVEL
6 of 8	EWCAP-001	A2	COMPUTER AIDED DRAWING	U

950-T001

9.50 TERMINAL BLADE CONFIGURATION
SCALE = 10:1





TOLERANCES (UNLESS OTHERWISE SPECIFIED) DIMENSIONS ARE IN MILLIMETERS			THIRD ANGLE PROJECTION
USCAR-EWCAP			
SCALE NONE	DRAWN BY DARYL PATRICK	CHECKED BY R C BURDICK	DATE 1/14/2016
TITLE TERMINAL BLADE DETAIL			
SHEET 7 of 8	DRAWING NUMBER EWCAP-001	SIZE A2	DO NOT SCALE DRAWING COMPUTER AIDED DRAWING REVISION LEVEL U

USCAR Device Side Male Blade PlatingChart

Plating Process	Temp Class max.	Vibe Class max.	Layer	Material & Thickness
Tin (Hot Dip) HALT	II	1	Top Plating	0.76 to 2.5 µm Tin (No Lead). Base Material >= 5% Zinc Content
	III	1	Top Plating	0.76 to 2.5 µm Tin (No Lead). Base Material < 5% Zinc Content
Tin (Electrodeposited)	III	2	Underplate	0.5 to 2.0 µm Nickel or Copper. Base Material is >= 5% Zinc Content . See Note 1
			Top Plating	0.76 to 1.5 µm Tin (No Lead) (Reflow)
	III	2	Top Plating	0.76 to 1.5 µm Tin (No Lead) (Reflow) Base Material < 5% Zinc Content
	III	2	Underplate	0.76 to 2.0 µm Nickel . See Note 1
			Top Plating	1.0 to 2.5 µm Tin (No Lead)
Sliver (Electodeposited)	IV	3	Underplate	1.0 to 2.0 µm Nickel. See Note 1
			Top Plating	1.0 to 3.0 µm Silver with Anti-Tarnish Coating (Thiol or Equiv.) Purity of Silver is 99.9% min. and the Finish is Semi-Bright Hardness = 90-130 HK (No Chromates)
		4	Underplate	1.0 to 2.0 µm Nickel . See Note 1
			Top Plating	4.0 to 6.0 µm Silver with Anti-Tarnish Coating (Thiol or Equiv.) Purity of Silver is 99.9% min. and the Finish is Semi-Bright Hardness = 90-130 HK (No Chromates)
Tin/Silver (Hot Dip)	IV	2	Top Plating	1.0 to 3.0 µm (Silver Range 3.7% to 5.5%) No Anti-Tarnish Coating Required
Tin/Silver (Electrodeposited)	In Development Need Performance Data		Underplate	0.5 to 2.0 µm Nickel or Copper
			Top Plating	1.0 to 3.0 µm (Silver Range 3.7% to 5.5%) No Anti-Tarnish Coating Required
Gold (Electrodeposited)	IV	3	Underplate	1.0 to 2.0 µm Nickel . See Note 1
			Top Plating	0.76 to 2.0 µm Hard Gold. Purity of Gold is 99.7% min. Hardness = 130-200 HK
Note 1 - Nickel Deposit < 8,000 psi internal stress (ie. Sulfamate)				
Note 2 - Refer to USCAR-2 for details regarding temperature class and vibration proflies.				

TOLERANCES (UNLESS OTHERWISE SPECIFIED)
DIMENSIONS ARE IN MILLIMETERS

THIRD ANGLE PROJECTION

USCAR-EWCAP

SCALE	DRAWN BY	CHECKED BY	DATE
NONE	DARYL PATRICK	R C BURDICK	1/14/2016

TITLE

TERMINAL BLADE DETAIL

SHEET	DRAWING NUMBER	SIZE	DO NOT SCALE DRAWING	REVISION LEVEL
8 of 8	EWCAP-001	A2	COMPUTER AIDED DRAWING	U