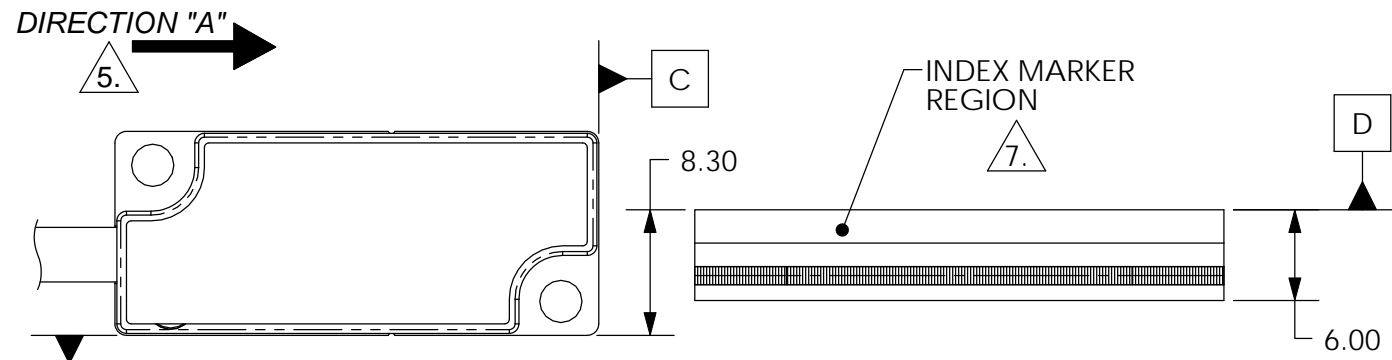
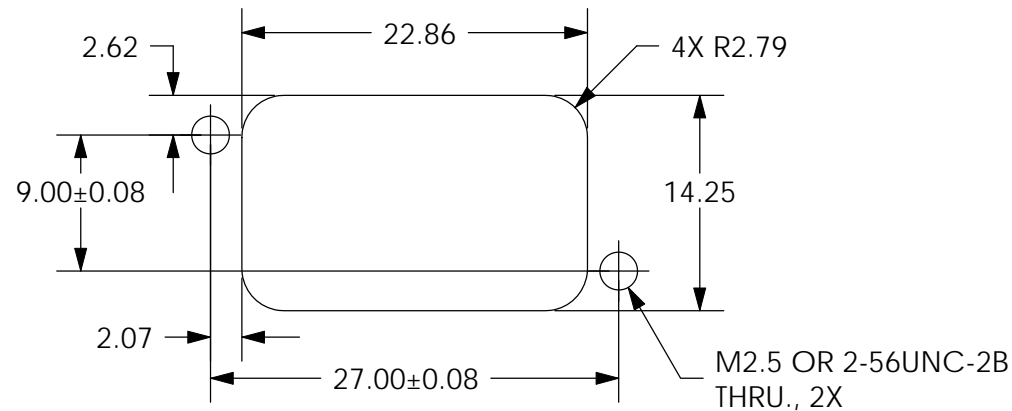


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REVISIONS				
LTR	ECO	DESCRIPTION	DATE	APPROVED
A		RELEASE TO PRODUCTION	7/16/10	SB



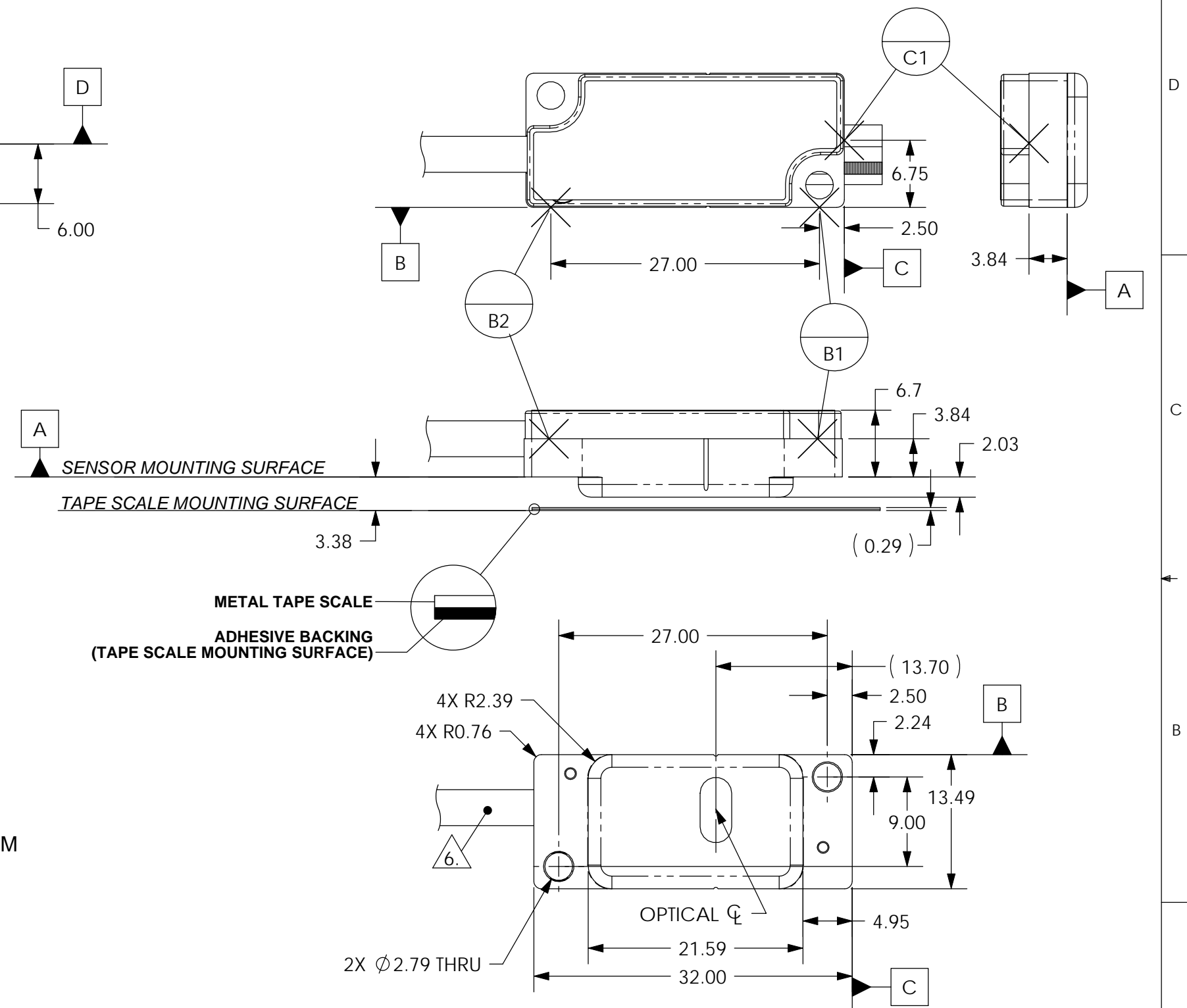
**TAPE SCALE SHOWN IN THIS VIEW TRANSLATED IN X-AXIS OUT OF OPERATING RANGE FOR CLARITY**



**SENSOR MOUNTING PLATE RECOMMENDATION**

- NOTES:**
1. RECOMMENDED MOUNTING HARDWARE:  
2-56 OR M2.5 SCREWS.
  2. IF BENCHING PINS ARE TO BE USED, PINS MUST BE PLACED ALONG DATUM EDGES OF SENSOR FOR PROPER ALIGNMENT. (REFERENCE DATUMS B1, B2, AND C1).
  3. HEIGHT OF SENSOR BENCHING PINS MUST BE A MINIMUM OF 4.06mm IN HEIGHT FROM DATUM A.
  4. RECOMMENDED SENSOR MOUNTING PLATE THICKNESS:  
MINIMUM: 4 SCREW THREADS  
MAXIMUM: ALLOW CLEARANCE TO SCALE AND SCALE MOUNTING HARDWARE (BENCHING SURFACES, TRENCHES, ETC.)

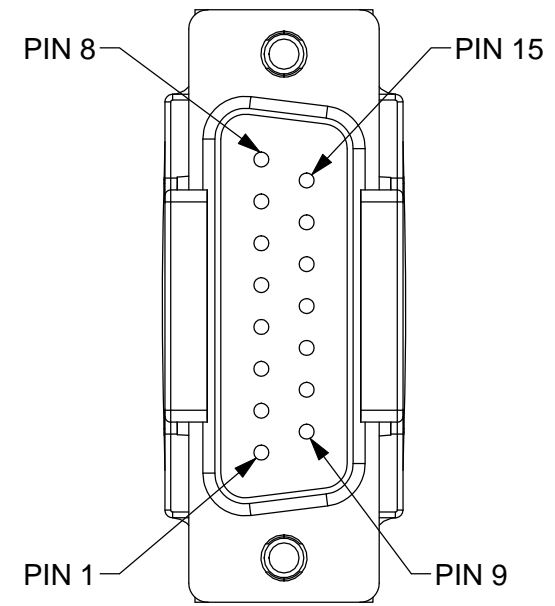
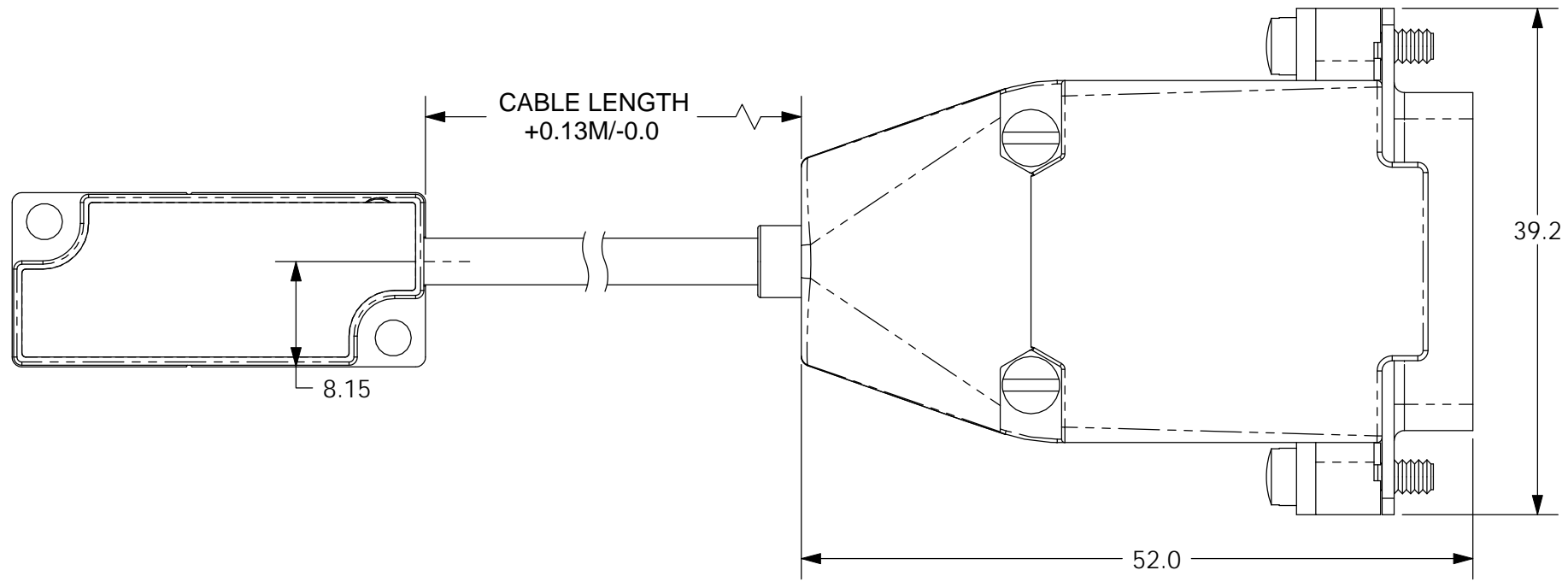
5. WHEN SCALES MOVES IN DIRECTION "A" WITH RESPECT TO A STATIONARY SENSOR, OUTPUT SIGNAL SIN+ (PIN 9) LEADS OUTPUT SIGNAL COS+ (PIN 10).
6. SEE PAGE 2 FOR CABLE CONNECTORS, PIN FUNCTIONS AND LENGTHS.
7. SEE PAGE 3 FOR DIMENSIONS FOR LOCATIONS OF INDEX MARKERS.



UNLESS OTHERWISE SPECIFIED ALL DIMENSIONS ARE IN MILLIMETERS DIM. APPLY AFTER PROCESSING INTERPRET ALL GEOMETRIC TOLS. PER ANSI Y14.5M-1994  TOLERANCES ARE: DECIMALS: .X ± 0.25 .XX ± 0.13	APPROVALS DRAWN V. BUCK CHECKED	DATE 06/03/10	MicroE Systems Division of GSI Group 125 Middlesex Tpk. Bedford, MA 01730	
	ENGRG. A.GOLDMAN MFG ENG D.McLOUGHLIN QA A.VILLARROEL	DATE 7/13/10 7/15/10 7/15/10		DESCRIPTION: <b>INTERFACE, ENCODER, 20um,          TAPE SCALE w/INDEX MARKERS,          MERCURY II 1900 SENSOR</b>
	SIZE B	DWG. NO. <b>ID-00376</b>		REV. A
	SCALE: 2:1	CAD FILE:		SHEET 1 OF 4

UNITS: mm

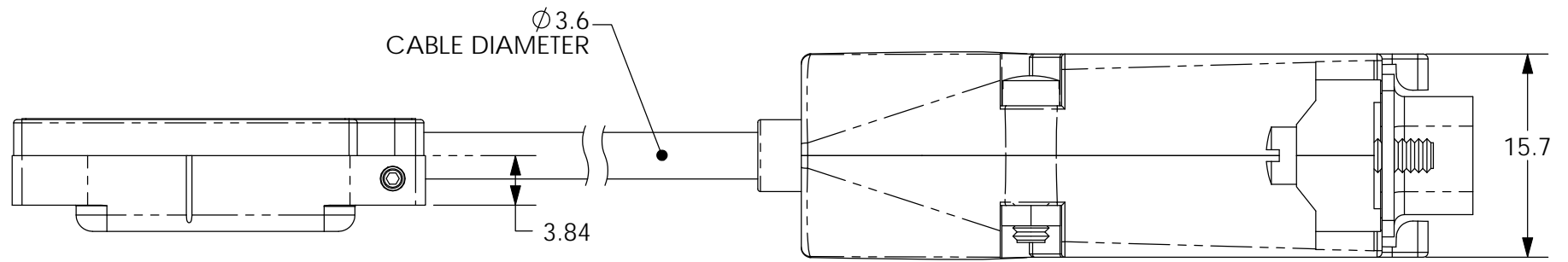
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SEE TABLE 2. FOR PIN FUNCTIONS

TABLE 2.

Mercury II 1900 15-Plug		
Pin	Wire color	Function
1	Yellow	SIN-
2	Blue	COS-
3	Orange	IW+
4	Red	5V
5	Red	5V
6	-	Do Not Connect
7	-	Do Not Connect
8	-	Do Not Connect
9	Green	SIN+
10	Violet	COS+
11	Brown	IW-
12	Black	GND
13	Black	GND
14	-	Do Not Connect
15	-	Do Not Connect



NOTES:  
 1. HIGHLIGHTED PINS ARE INTERNALLY CONNECTED INSIDE D-SUB WITH JUMPER WIRES.

TABLE 1.

Cable Lengths
1 Meter
3 Meter
5 Meter
Custom

UNITS: mm

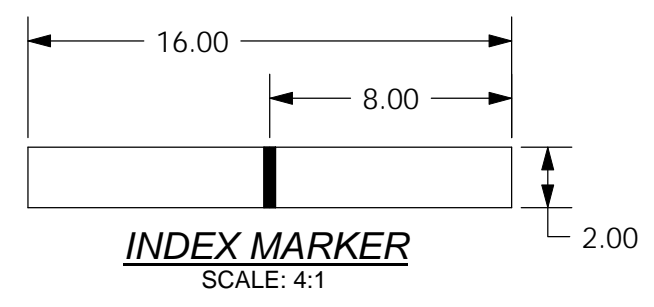
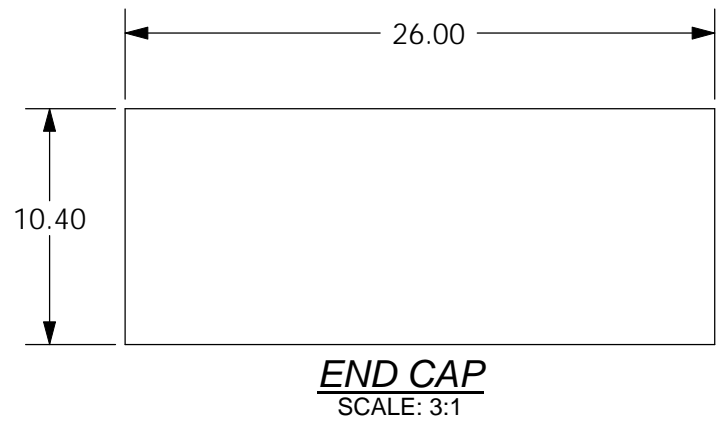
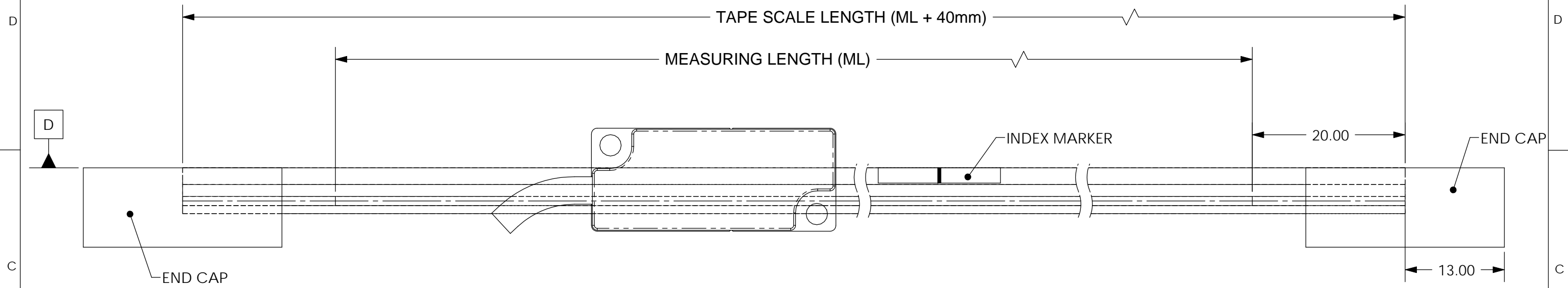
**GSI** MicroE Systems  
 MicroE Systems  
 Division of GSI Group  
 125 Middlesex Tpk.  
 Bedford, MA 01730

DESCRIPTION:  
 INTERFACE, ENCODER, 20um,  
 TAPE SCALE w/INDEX MARKERS,  
 MERCURY II 1900 SENSOR

SIZE	DWG. NO.	REV.
B	ID-00376	A

SCALE: NONE CAD FILE: 3RD ANGLE PROJECTION SHEET 2 OF 4

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- NOTES:**
- BEFORE PLACING INDEX MARKERS AND END CAPS, REMOVE BLUE PROTECTIVE FILM FROM TAPE SCALE.
  - NOTE DATUM EDGE OF TAPE SCALE AND INDEX MARKER REGION BEFORE APPLYING MARKERS.
  - END CAPS AND INDEX MARKERS ARE OPTIONAL (SEE INSTALLATION MANUAL).
  - END CAPS AND INDEX MARKERS SHALL NOT OVERLAP (MAY CAUSE INTERFERENCE WITH SENSOR).
  - FOR LONGER OR SHORTER LENGTHS OF INDEX MARKERS CALL MICROE SYSTEMS FOR DETAILS.

UNITS: mm

**GSI** MicroE Systems  
Division of GSI Group  
125 Middlesex Tpk.  
Bedford, MA 01730

DESCRIPTION:  
**INTERFACE, ENCODER, 20um,  
TAPE SCALE w/INDEX MARKERS,  
MERCURY II 1900 SENSOR**

SIZE B	DWG. NO. <b>ID-00376</b>	REV. <b>A</b>
SCALE: 2:1	CAD FILE:	3rd ANGLE PROJECTION SHEET 3 OF 4

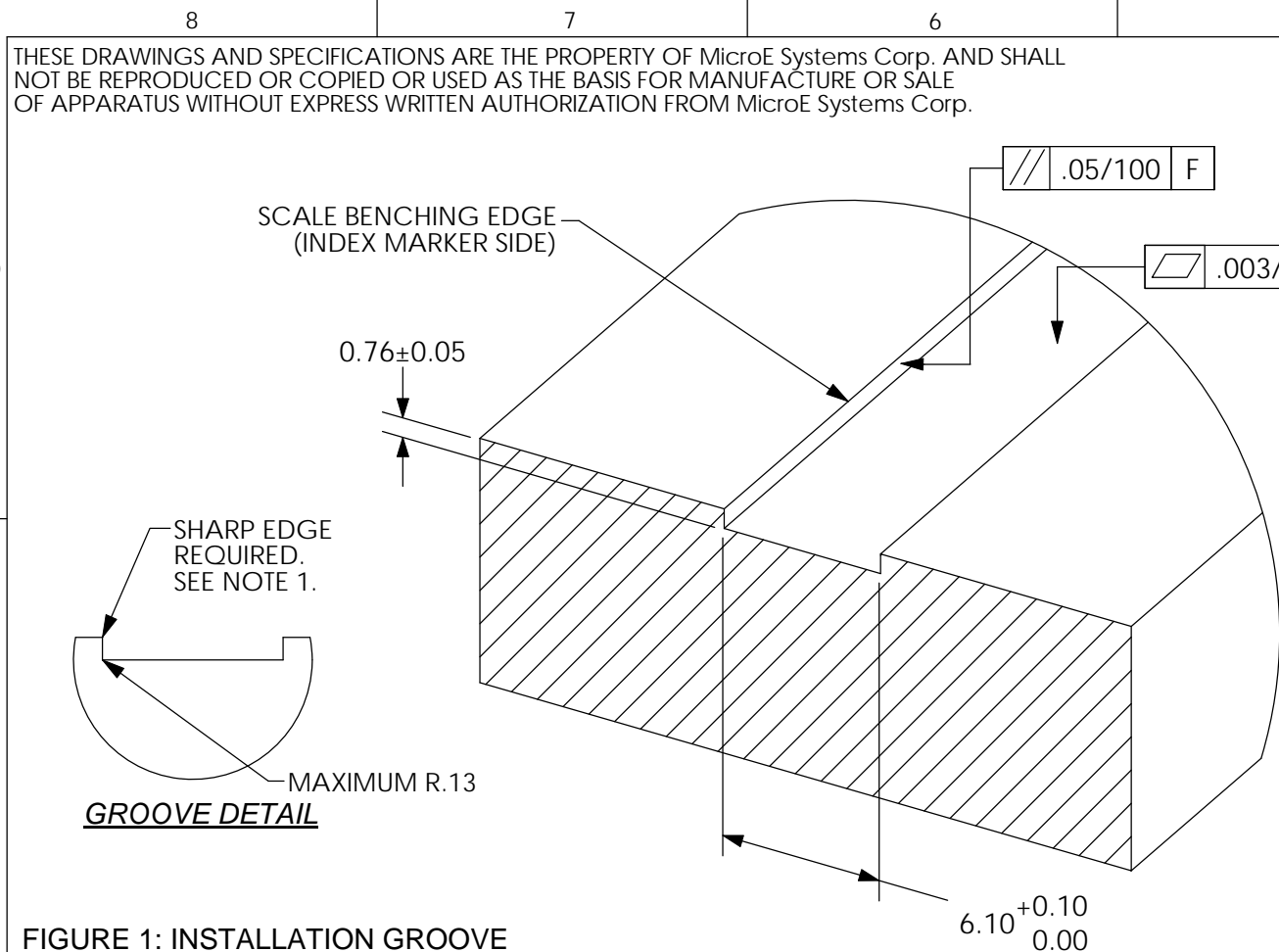


FIGURE 1: INSTALLATION GROOVE  
HAND APPLICATION ONLY  
F = MACHINE GUIDEWAY

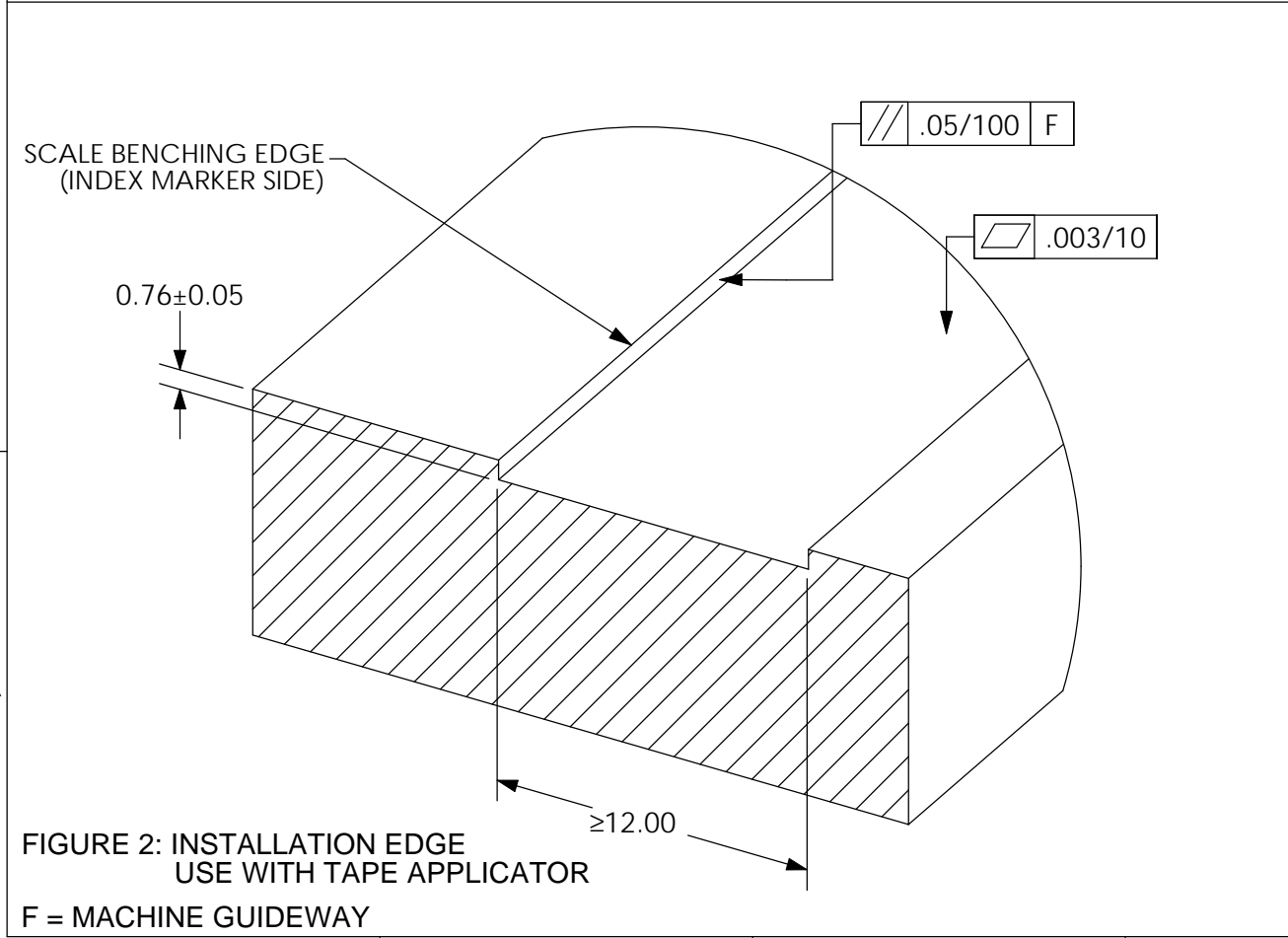


FIGURE 2: INSTALLATION EDGE  
USE WITH TAPE APPLICATOR  
F = MACHINE GUIDEWAY

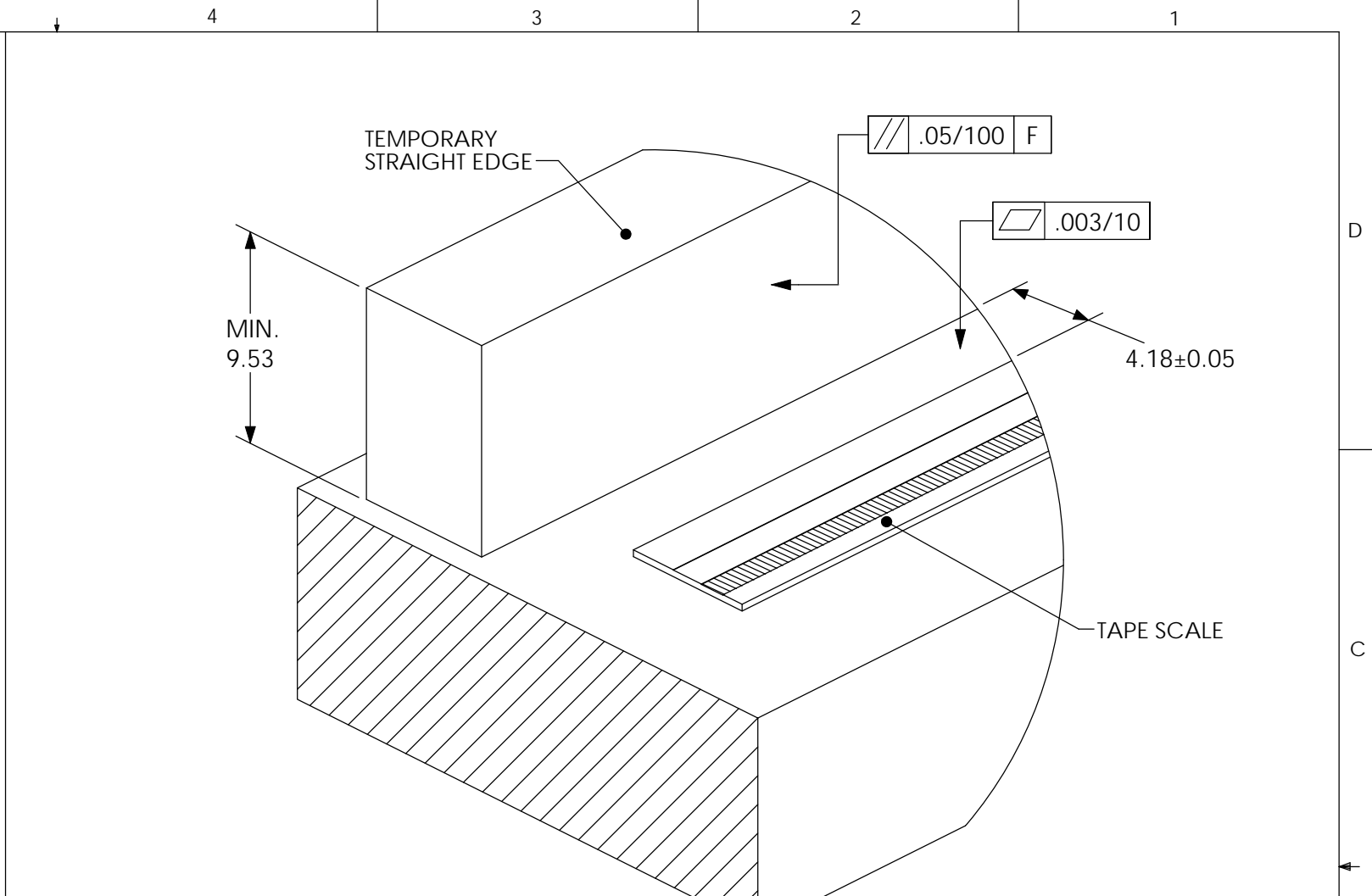


FIGURE 3: INSTALLATION STRAIGHT EDGE  
USE WITH TAPE APPLICATOR  
F = MACHINE GUIDEWAY

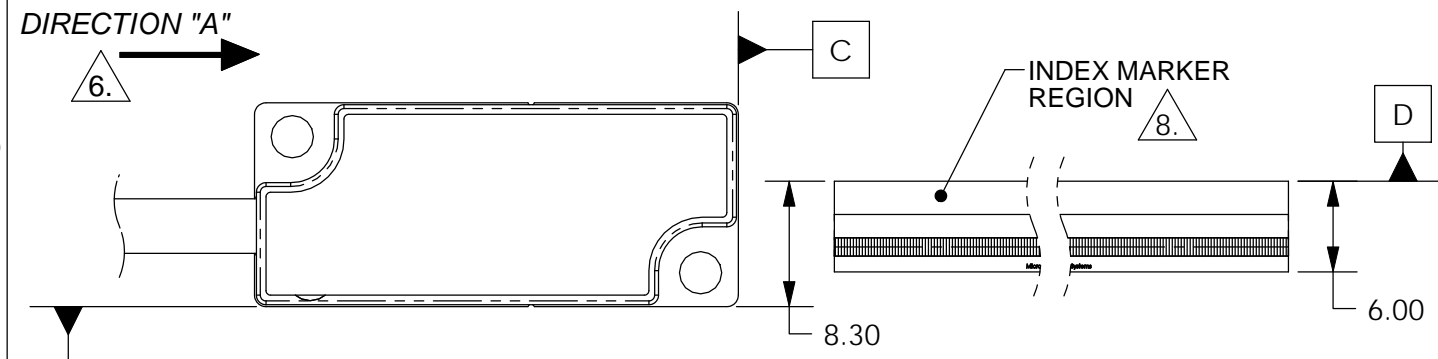
**NOTES:**

1. MICROE SYSTEMS RECOMMENDS UTILIZING AN EDGE AS A GUIDE IN ORDER TO MAINTAIN STRAIGHTNESS OF THE SCALE DURING MOUNTING. THIS EDGE MAY BE TEMPORARY OR PERMANENT AND SHOULD FOLLOW THE APPLICATION GUIDELINES IN FIGURES 1-3.
2. THE TAPE SCALE APPLICATOR TOOL IS RECOMMENDED FOR INSTALLATION OF SCALES AND, IN PARTICULAR, THOSE LONGER THAN 250 MILLIMETERS. SHORTER SCALES MAY BE APPLIED EITHER BY HAND OR WITH APPLICATOR TOOL. PLEASE SEE INSTRUCTION MANUAL FOR DETAILS.
3. THE INSTALLATION METHOD SHOWN IN FIGURE 1 SHOULD INVOLVE HAND INSTALLATIONS ONLY. THE APPLICATOR TOOL IS NOT COMPATIBLE WITH THIS METHOD. IN ADDITION END CAPS CANNOT BE USED WITH THIS METHOD.
4. FOR APPLICATIONS WHERE MACHINING THE MOUNTING SURFACE IS NOT DESIRED, A TEMPORARY STRAIGHTEDGE CAN BE USED. A STAINLESS STEEL RULE MAY BE USED AS IN FIGURE 2 IF THE RULE MEETS THE THICKNESS REQUIREMENT. OTHERWISE, THE TEMPORARY STRAIGHTEDGE MAY BE USED AS SHOWN IN FIGURE 3.
5. IN FIGURE 3, THE OUTSIDE REFERENCE SURFACE OF THE TOOL SLIDES AGAINST THE TEMPORARY EDGE, AND THE TAPE SCALE IS THEREFORE OFFSET FROM THE EDGE AS SHOWN. IF THIS OFFSET IS TOO SMALL FOR THE APPLICATION, THE CUSTOMER MAY DESIRE TO CREATE A SPACER THAT CAN ATTACH TO THE OUTSIDE SURFACE OF THE TOOL. PLEASE SEE INSTRUCTION MANUAL FOR DETAILS.
6. IN FIGURES 1 AND 2, THE SCALE BENCHING EDGE IS INTENDED TO AID THE INSTALLATION OF INDEX MARKERS. FOR APPLICATIONS SUCH AS IN FIGURE 3, THE CUSTOMER MAY USE A TEMPORARY BENCHING SURFACE TO INSURE THE PROPER INSTALLATION OF THE INDEX MARKERS. PLEASE SEE INSTRUCTION MANUAL FOR DETAILS. THE EDGE OF THE GROOVE OR STRAIGHTEDGE MUST BE SHARP ON BENCHING SIDE IN ORDER FOR APPLICATOR TO USE AS A GUIDE. IN ORDER FOR THE TAPE SCALE TO MOUNT CLOSE TO THIS EDGE, A MAXIMUM RADIUS OF .13 SHOULD BE USED WHERE THE EDGE MEETS THE BOTTOM OF THE MOUNTING SURFACE.

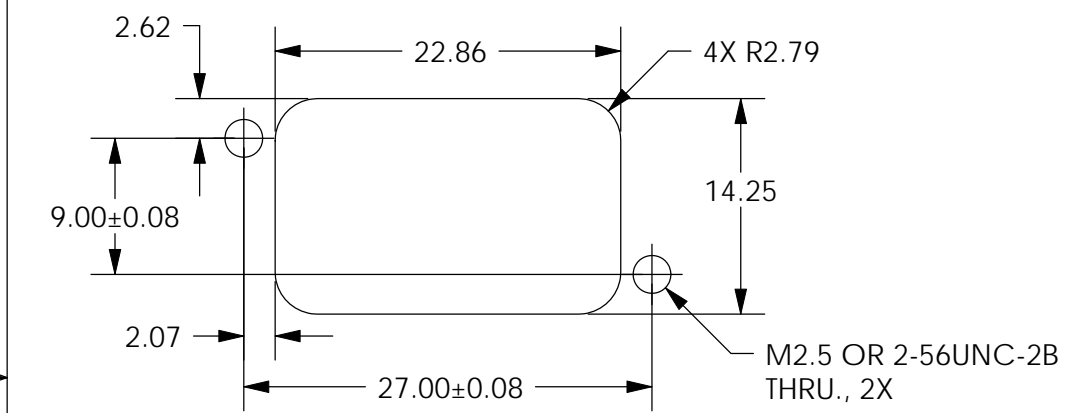
<b>GSI</b>		MicroE Systems Division of GSI Group	
		125 Middlesex Tpk. Bedford, MA 01730	
DESCRIPTION: <b>INTERFACE, ENCODER, 20um, TAPE SCALE w/INDEX MARKERS, MERCURY II 1900 SENSOR</b>			
SIZE B	DWG. NO. <b>ID-00376</b>	REV. <b>A</b>	
SCALE: 4:1	CAD FILE:	3RD ANGLE PROJECTION SHEET 4 OF 4	

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REVISIONS				
LTR	ECO	DESCRIPTION	DATE	APPROVED
A	----	RELEASE TO PRODUCTION	7/16/10	SB



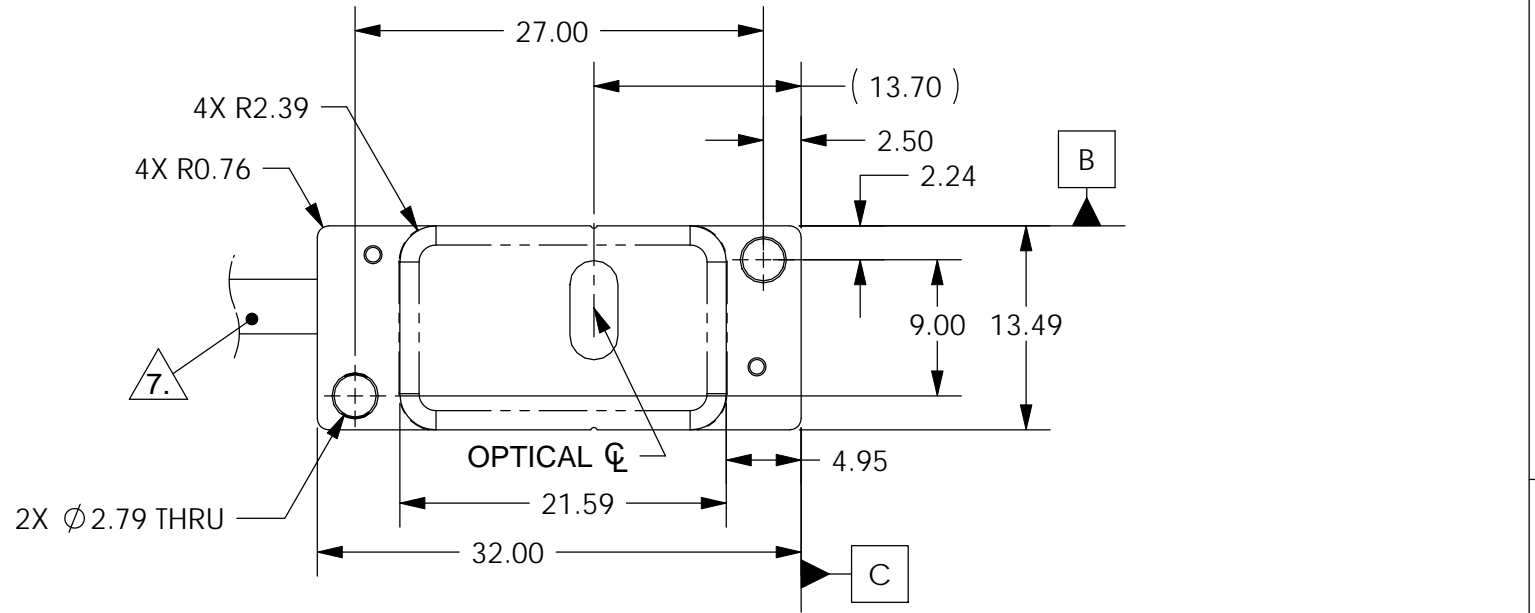
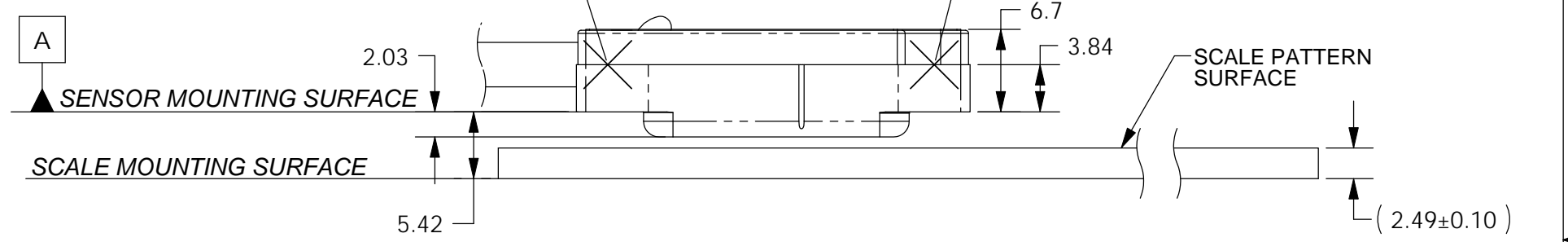
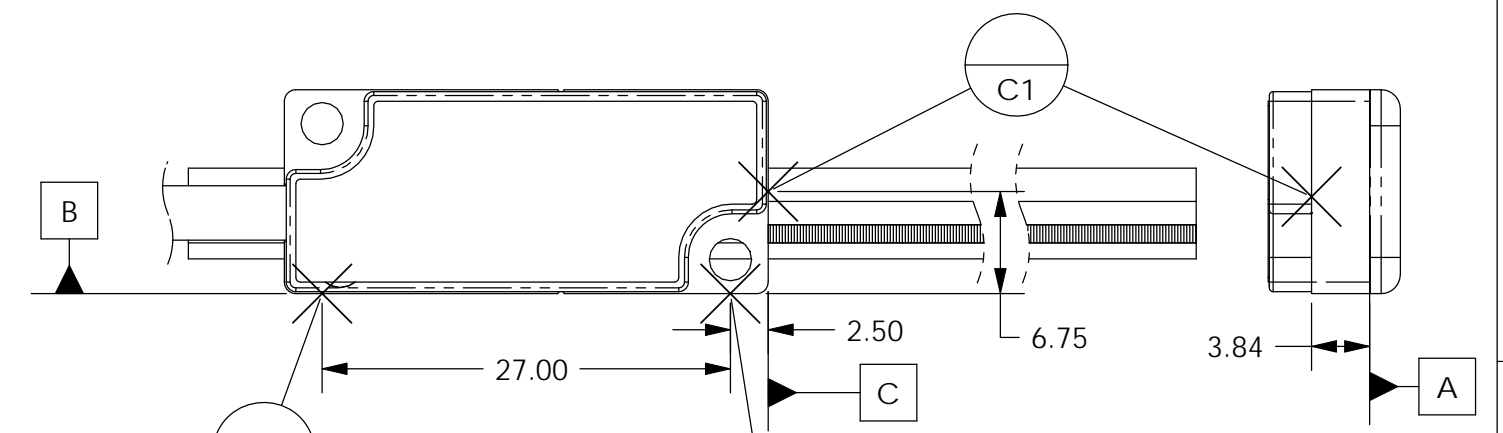
LINEAR SCALE SHOWN IN THIS VIEW TRANSLATED IN X-AXIS OUT OF OPERATING RANGE FOR CLARITY



SENSOR MOUNTING PLATE RECOMMENDATION

- NOTES:
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  3. HEIGHT OF SENSOR BENCHING PINS MUST BE A MINIMUM OF 4.06mm IN HEIGHT FROM DATUM A.
  4. HEIGHT OF SCALE BENCHING PINS NOT TO EXCEED THE THICKNESS OF THE SCALE.
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MINIMUM: 4 SCREW THREADS  
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6. WHEN SCALES MOVES IN DIRECTION "A" WITH RESPECT TO A STATIONARY SENSOR, OUTPUT SIGNAL SIN+ (PIN 9) LEADS OUTPUT SIGNAL COS+ (PIN 10).
7. SEE PAGE 2 FOR CABLE CONNECTORS, PIN FUNCTIONS AND LENGTHS.
8. SEE PAGE 3 FOR DIMENSIONS FOR LOCATIONS OF INDEX MARKERS.



UNLESS OTHERWISE SPECIFIED ALL DIMENSIONS ARE IN MILLIMETERS DIM. APPLY AFTER PROCESSING INTERPRET ALL GEOMETRIC TOLS. PER ANSI Y14.5M-1994  TOLERANCES ARE: DECIMALS: .X ± 0.25 .XX ± 0.13 ANGULAR: ±30 MIN.	APPROVALS	DATE	MicroE Systems Division of GSI Group 125 Middlesex Tpk. Bedford, MA 01730  DESCRIPTION: INTERFACE, ENCODER, 20um, SHORT LINEAR SCALE w/INDEX MARKERS, MERCURY II 1900 SENSOR
	DRAWN V. BUCK	06/03/10	
	CHECKED		
	ENGRG. A. GOLDMAN	7/13/10	
	MFG ENG D. McLOUGHLIN	7/15/10	
	QA A. VILLARROEL	7/15/10	
SIZE B	DWG. NO. ID-00377	REV. A	
SCALE: 2:1	CAD FILE:	3RD ANGLE PROJECTION	SHEET 1 OF 3

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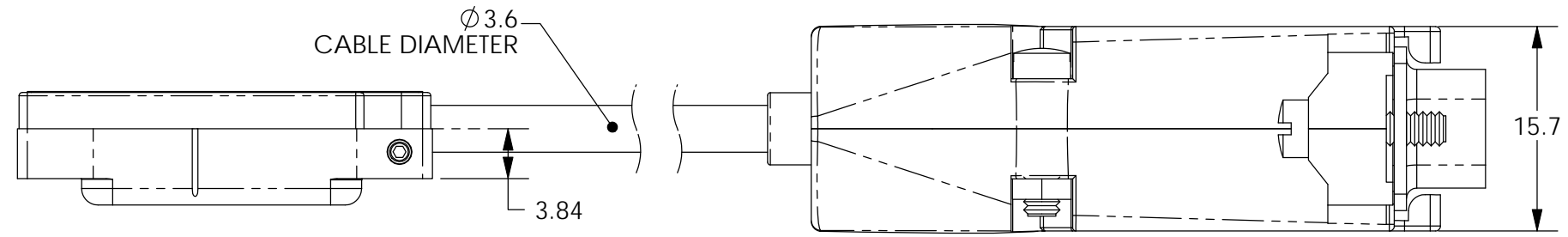
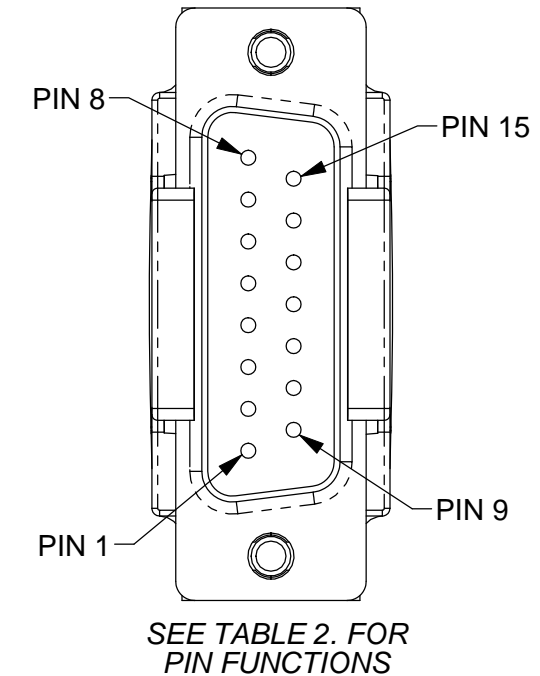
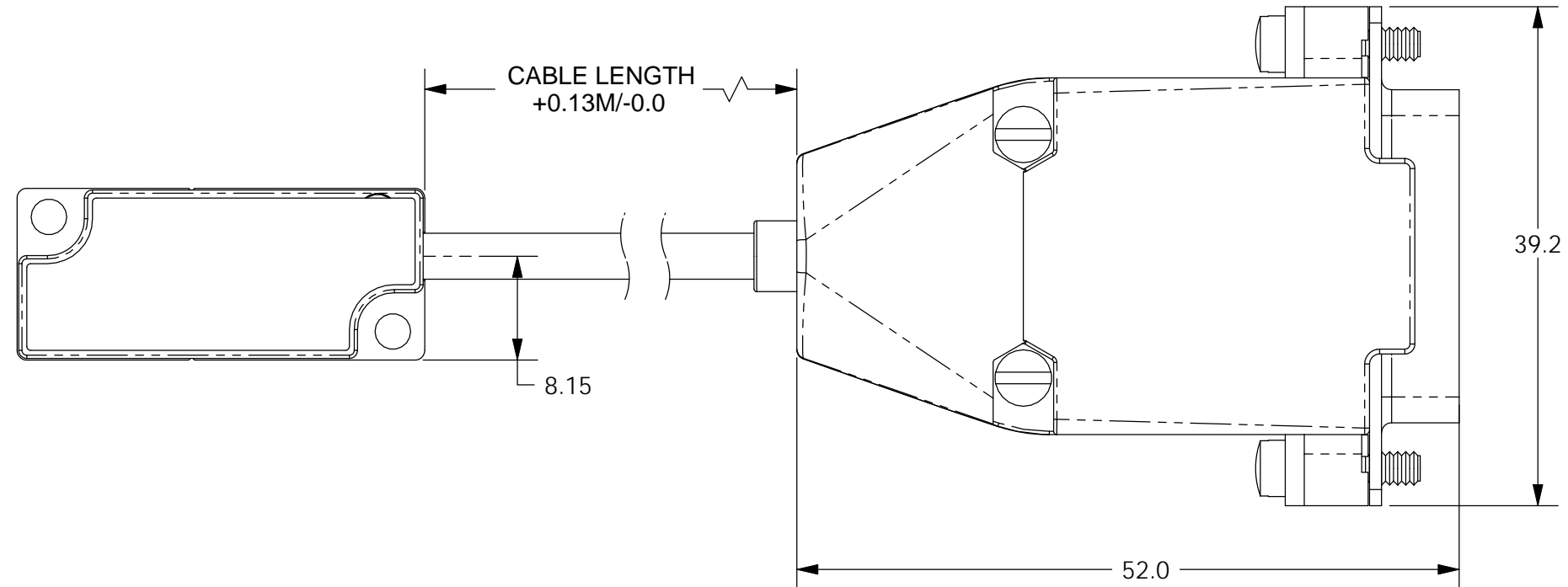


TABLE 2.

<b>Mercury II 1900 15-Plug</b>		
Pin	Wire color	Function
1	Yellow	SIN-
2	Blue	COS-
3	Orange	IW+
4	Red	5V
5	Red	5V
6	-	Do Not Connect
7	-	Do Not Connect
8	-	Do Not Connect
9	Green	SIN+
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11	Brown	IW-
12	Black	GND
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<b>Cable Lengths</b>	
1 Meter	
3 Meter	
5 Meter	
Custom	

NOTES:  
 1. HIGHLIGHTED PINS ARE INTERNALLY CONNECTED INSIDE D-SUB WITH JUMPER WIRES.

UNITS: mm

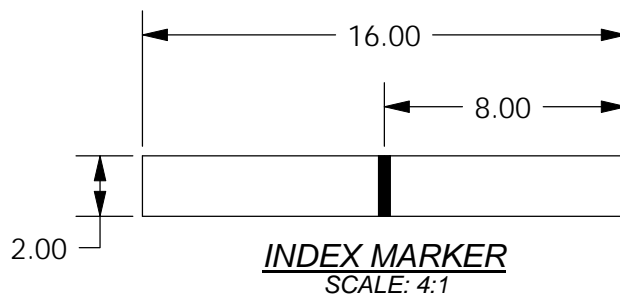
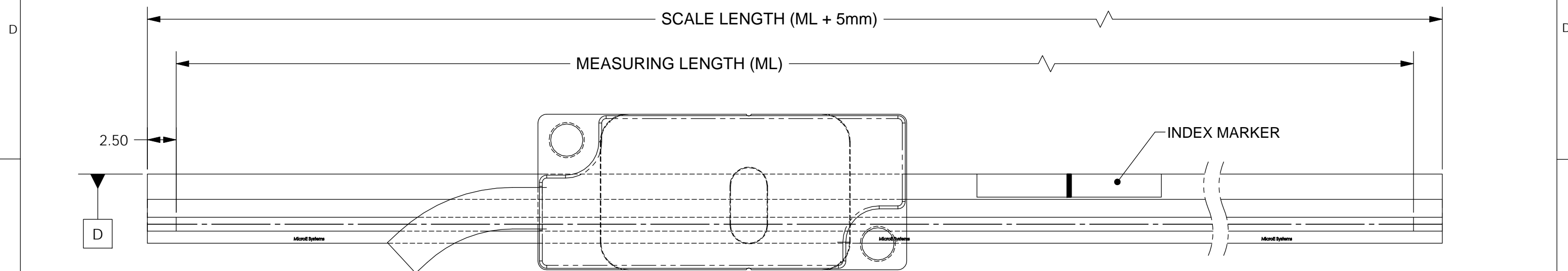
**MicroE Systems**  
 Division of GSI Group  
 125 Middlesex Tpk.  
 Bedford, MA 01730

DESCRIPTION: INTERFACE, ENCODER, 20um, SHORT LINEAR SCALE w/INDEX MARKERS, MERCURY II 1900 SENSOR

SIZE	DWG. NO.	REV.
B	ID-00377	A

SCALE: CAD FILE: 3RD ANGLE PROJECTION SHEET 2 OF 3

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**NOTES:**

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3. INDEX MARKERS SHALL NOT OVERLAP (MAY CAUSE INTERFERENCE WITH SENSOR).
4. FOR LONGER OR SHORTER LENGTHS OF INDEX MARKERS CONTACT MICROE SYSTEMS FOR DETAILS.
5. FOR SHORTER LENGTHS OF LINEAR GLASS THAN 70mm CONTACT MICROE SYSTEMS FOR REQUIREMENTS.

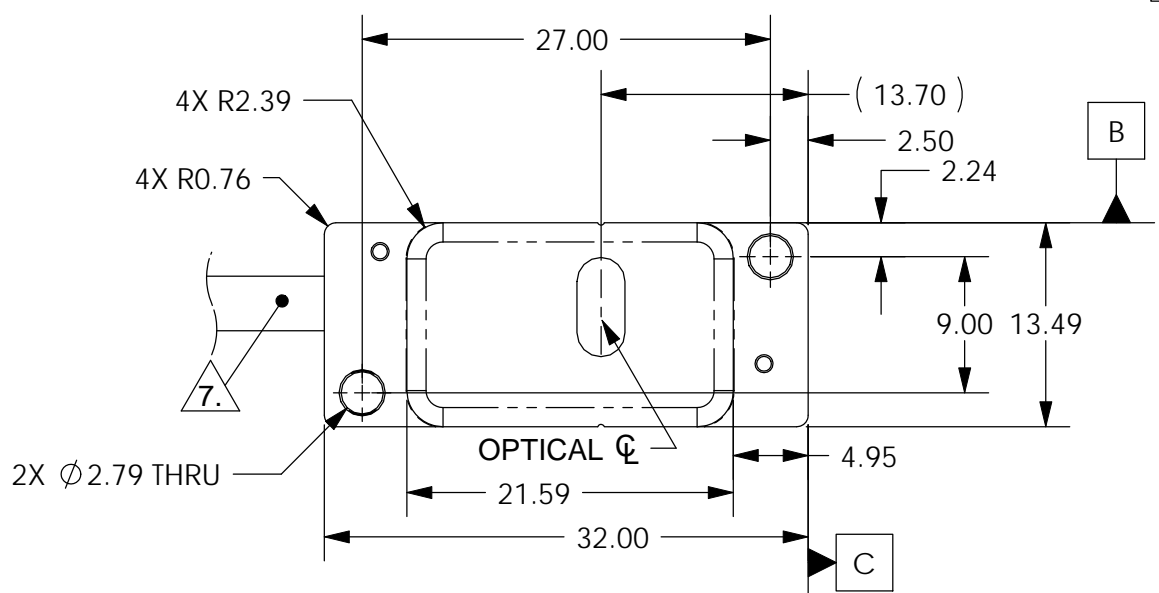
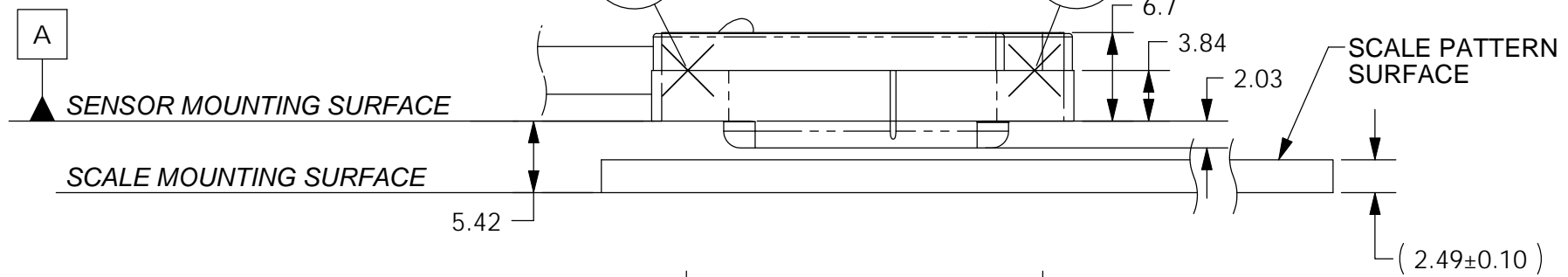
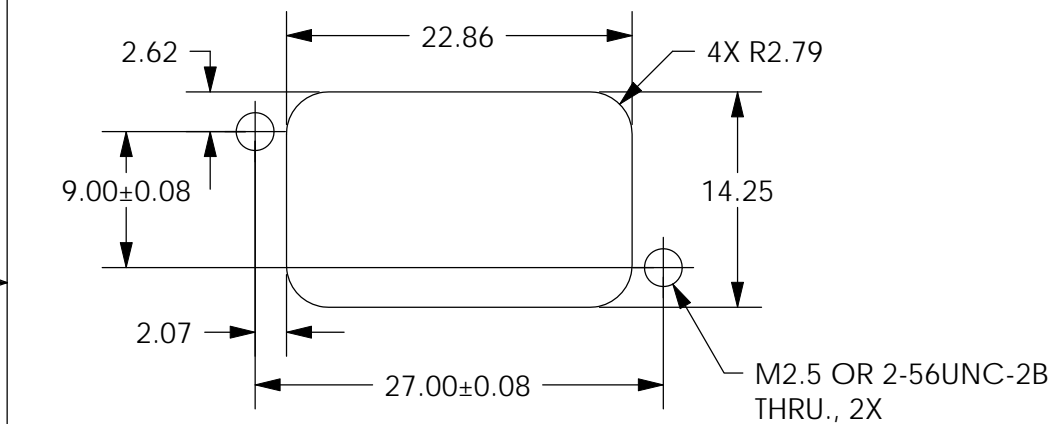
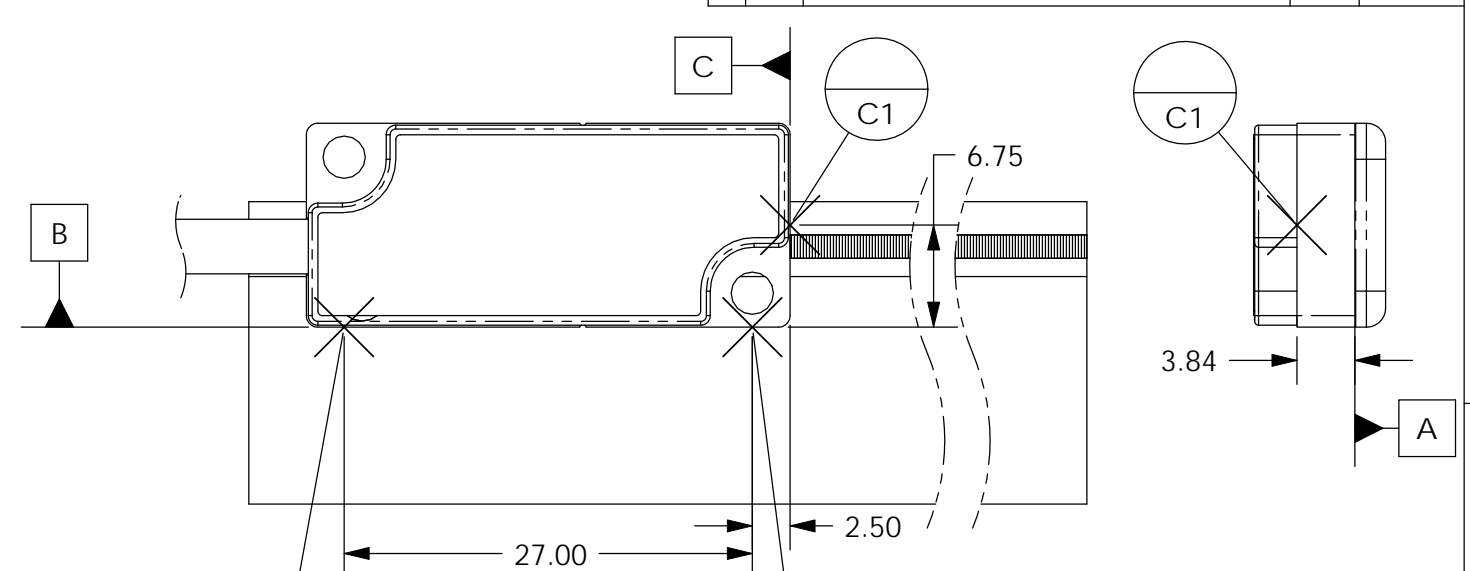
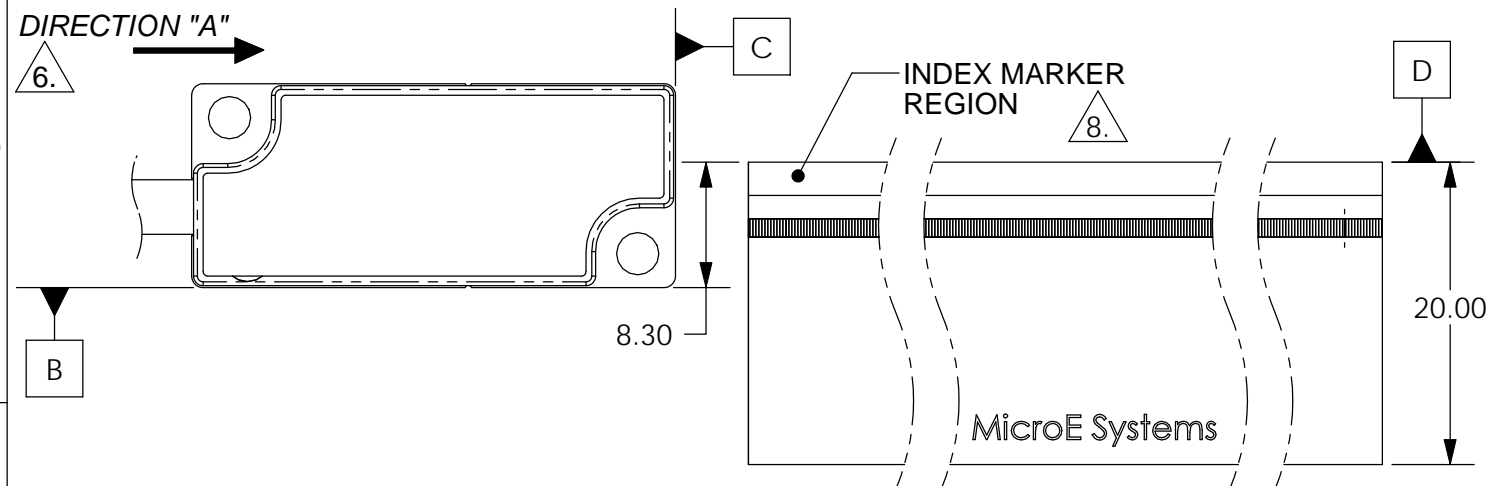
**SCALE IDENTIFICATION AND SIZE**

Scale Identification	Measuring Length (ML)	Scale Length
MII $XXX$	$XXX\text{mm} - 5\text{mm}$	$XXX\text{mm}$
(Min.) MII L70	$70\text{mm} - 5\text{mm} = 65\text{mm}$	70mm
(Max.) MII L130	$130\text{mm} - 5\text{mm} = 125\text{mm}$	130mm

		<b>MicroE Systems</b> Division of GSI Group 125 Middlesex Tpk. Bedford, MA 01730
DESCRIPTION: INTERFACE, ENCODER, 20 $\mu\text{m}$ , SHORT LINEAR SCALE w/INDEX MARKERS, MERCURY II 1900 SENSOR		
SIZE B	DWG. NO. ID-00377	REV. A
SCALE: 3:1	CAD FILE:	SHEET 3 OF 3

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REVISIONS				
LTR	ECO	DESCRIPTION	DATE	APPROVED
A	----	RELEASE TO PRODUCTION	7/16/10	SB



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ANGULAR: ±30 MIN.

APPROVALS		DATE
DRAWN V. BUCK	CHECKED	06/03/10
ENGRG. A. GOLDMAN	MFG ENG D. McLOUGHLIN	7/13/10
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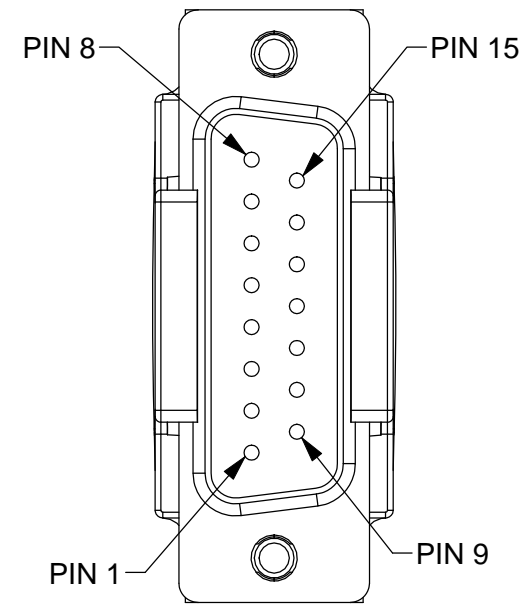
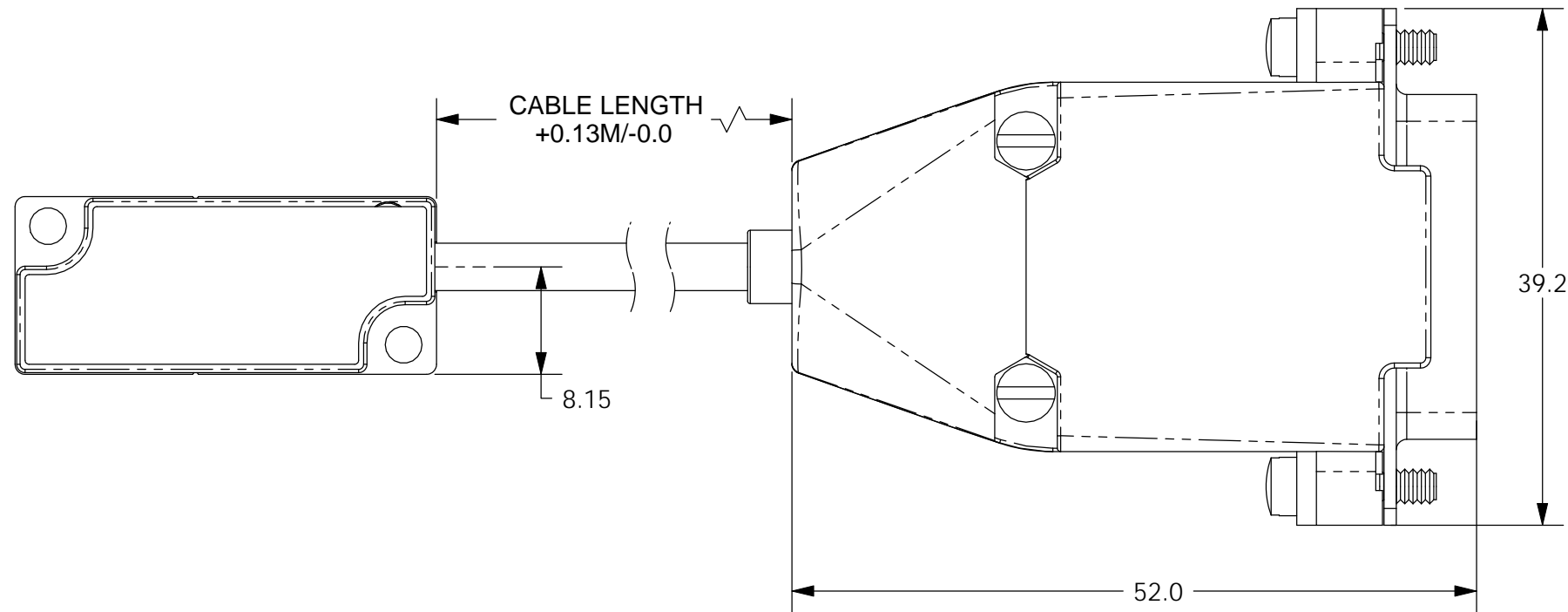
MicroE Systems  
Division of GSI Group  
125 Middlesex Tpk.  
Bedford, MA 01730

DESCRIPTION: INTERFACE, ENCODER, 20um, LONG LINEAR SCALE w/INDEX MARKERS, MERCURY II 1900 SENSOR

SIZE: B DWG. NO: ID-00378 REV. A  
SCALE: NONE CAD FILE: 3RD ANGLE PROJECTION SHEET 1 OF 3

UNITS: mm

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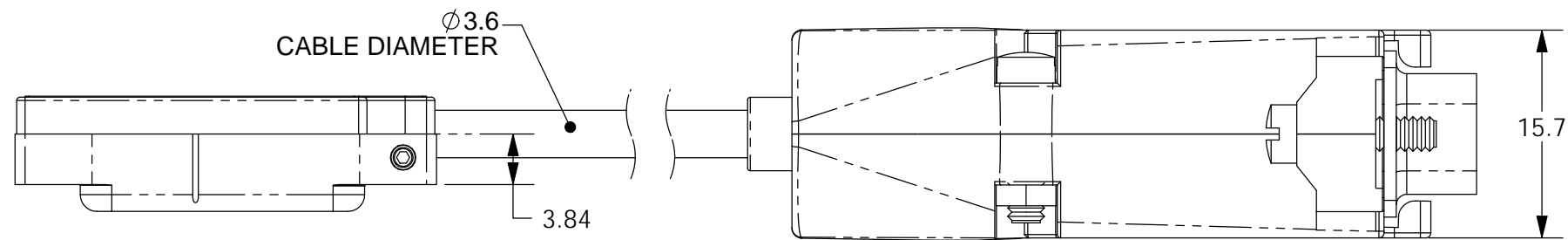


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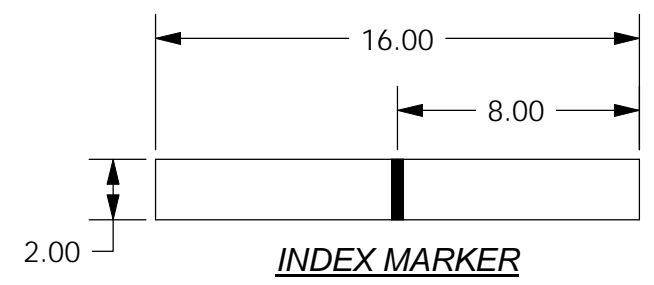
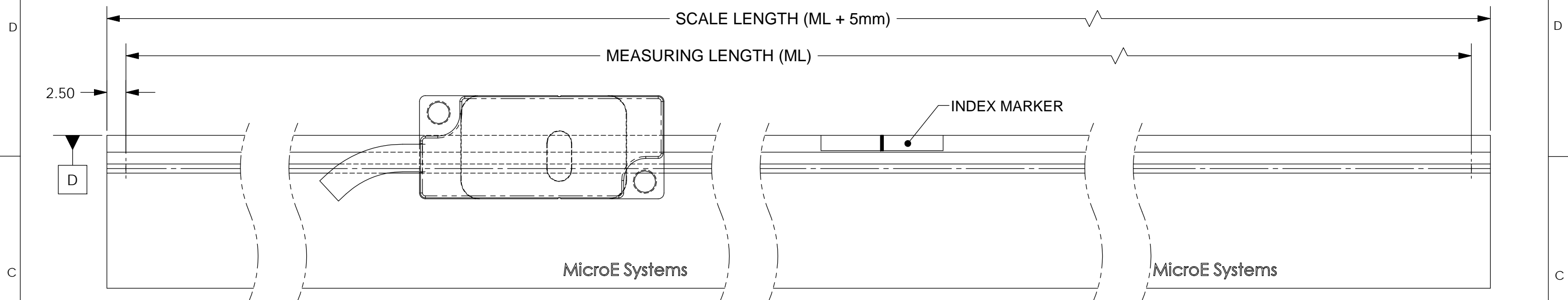
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Cable Lengths	
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5 Meter	
Custom	

UNITS: mm

	MicroE Systems Division of GSI Group	
	125 Middlesex Tpk. Bedford, MA 01730	
DESCRIPTION: INTERFACE, ENCODER, 20um, LONG LINEAR SCALE w/INDEX MARKERS, MERCURY II 1900 SENSOR		
SIZE	DWG. NO.	REV.
B	ID-00378	A
SCALE: 2:1	CAD FILE:	3RD ANGLE PROJECTION SHEET 2 OF 3

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**SCALE IDENTIFICATION AND SIZE**

Scale Identification	Measuring Length (ML)	Scale Length
MII LXXX	XXXmm - 5mm	XXXmm
(Min.) MIIL135	135mm - 5mm = 130mm	135mm
(Max.) MIIL1000	1000mm - 5mm = 995mm	1000mm

UNITS: mm

**GSI** **MicroE Systems**  
Division of GSI Group

125 Middlesex Tpk.  
Bedford, MA 01730

DESCRIPTION: INTERFACE, ENCODER, 20um,  
LONG LINEAR SCALE  
w/INDEX MARKERS,  
MERCURY II 1900 SENSOR

SIZE	DWG. NO.	REV.
B	ID-00378	A

SCALE: CAD FILE: SHEET 3 OF 3