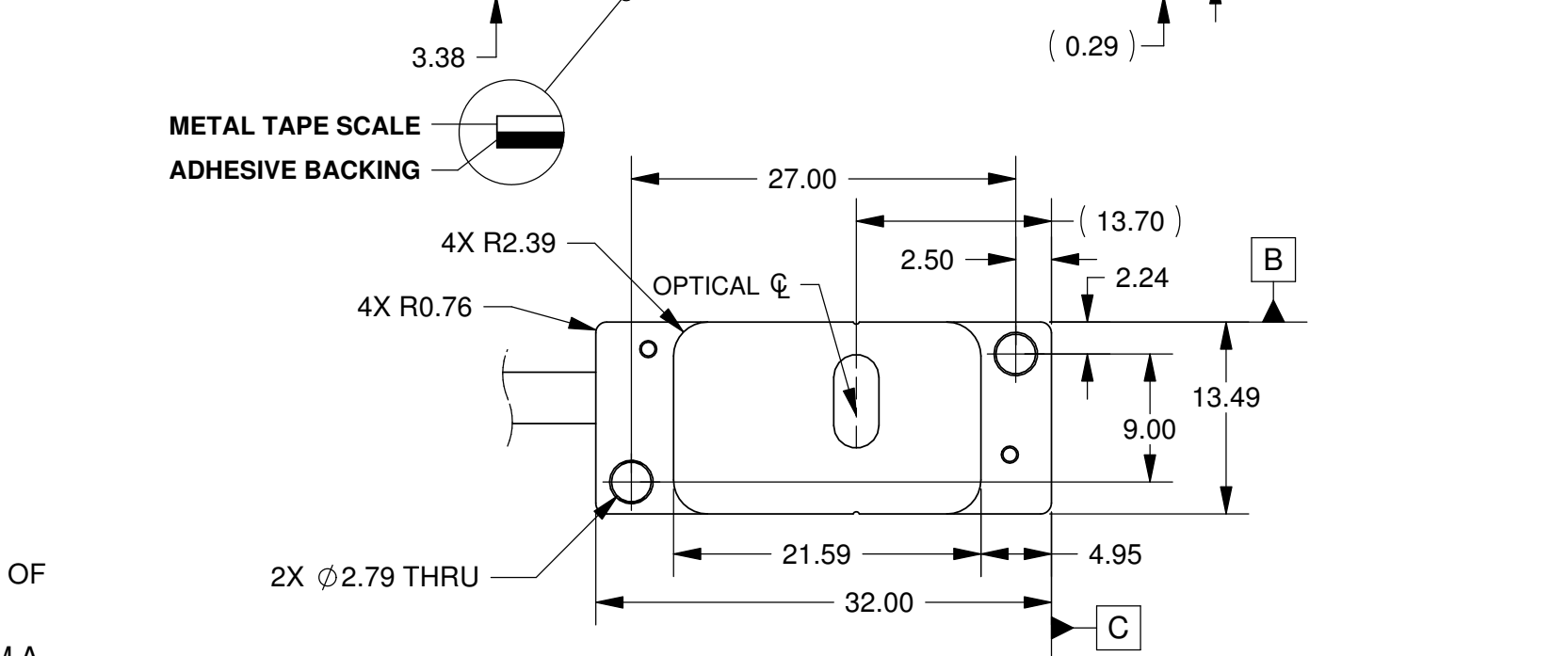
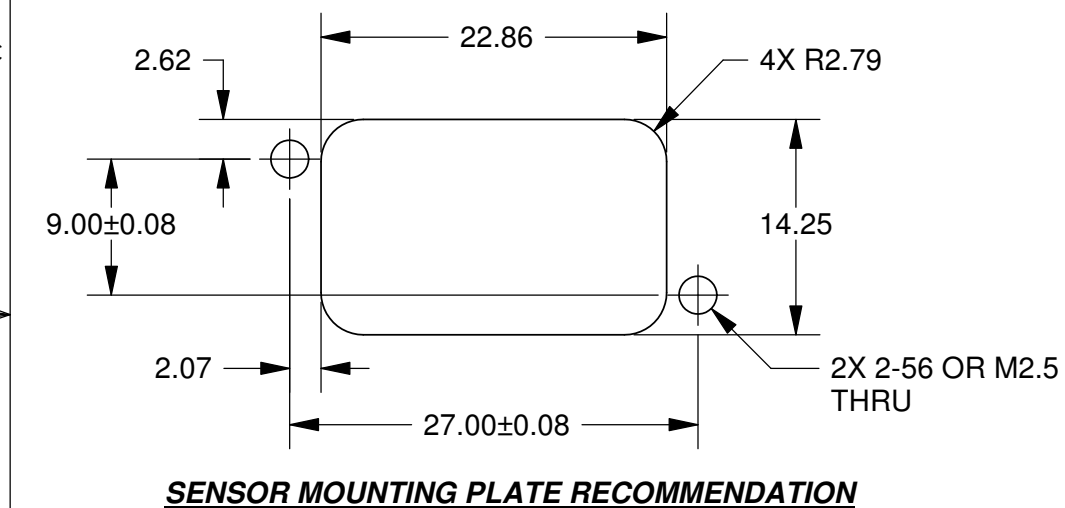
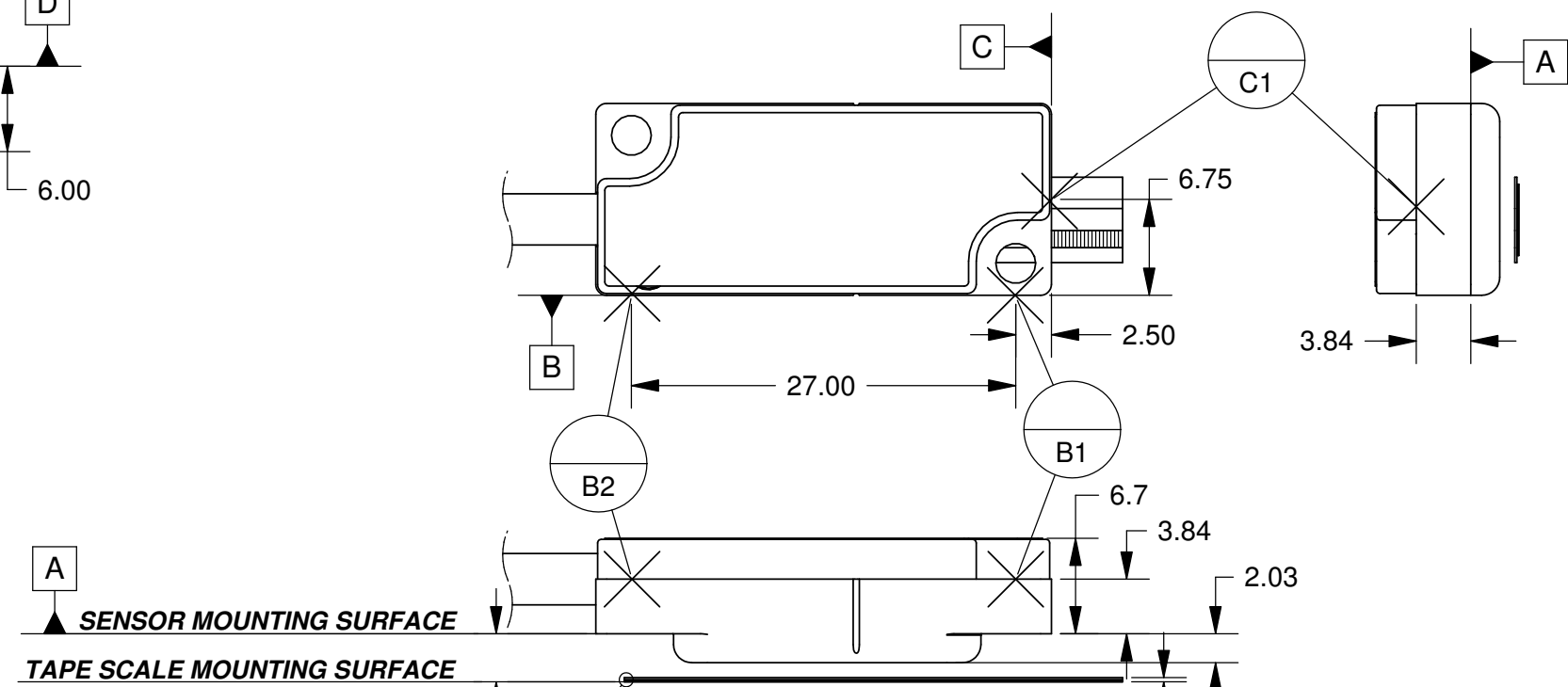
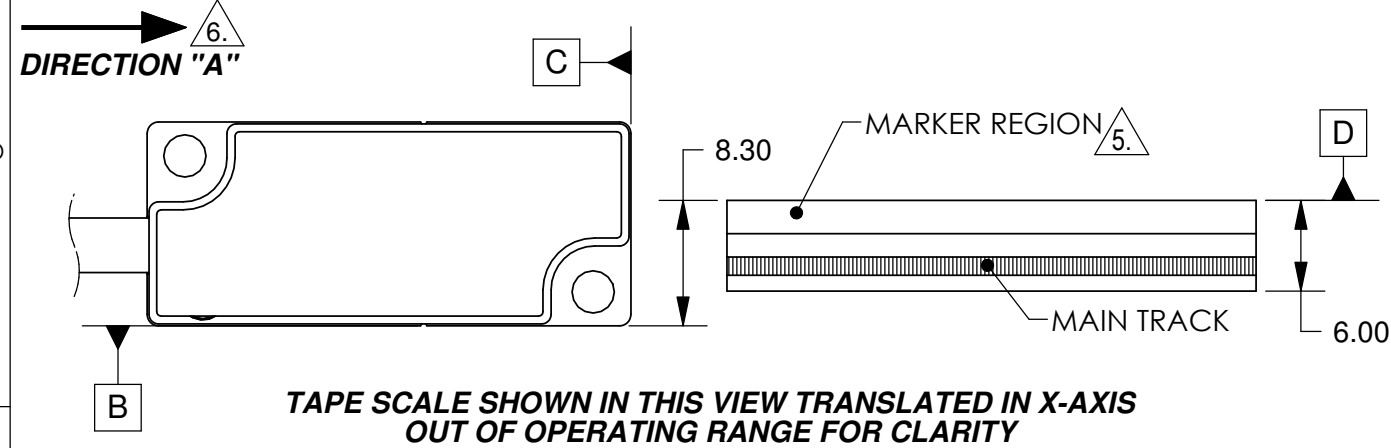


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REVISIONS				
LTR	ECO	DESCRIPTION	DATE	APPROVED
A		RELEASE TO PRODUCTION	7/16/10	S. B.
B	2357	ADD MII 1600 PIN FUNCTION TABLE. ADD MARKER TAPE SCALE & NOTES. REMOVE LIMIT MARKERS & UPDATE TAPESCALE INDEX MARKERS/MEASURING LENGTH & NOTES. REMOVE FIGURES 1, 2, 3 & INSTALLATION NOTES (PREVIOUSLY ON PAGE 4). CHANGE DRAWING DESCRIPTION. ID-00376 REPLACES ID-00375.	6/27/11	S. B.
C	2514	FIXED TOLERANCE ERROR ON MOUNTING PLATE RECOMMENDATION. 9.00±.08 WAS ±.80. REVISED VIEWS. SEE ECO	11/30/12	VB



- NOTES:
1. RECOMMENDED MOUNTING HARDWARE:
2-56 OR M2.5 SOCKET HEAD CAP 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 4.06 mm FROM DATUM A.
 4. RECOMMENDED SENSOR MOUNTING PLATE THICKNESS:
MINIMUM: 4 SCREW THREADS.
MAXIMUM: ALLOW FOR CLEARANCE TO SCALE AND SCALE MOUNTING HARDWARE (BENCHING SURFACE, TRENCHES, ETC).
5. SEE SHEETS 3 AND 4 FOR DIMENSIONS AND LOCATIONS OF MARKERS.
6. WHEN SCALE MOVES IN DIRECTION "A" WITH RESPECT TO A STATIONARY SENSOR, OUTPUT SIGNAL A+/SIN+ (PIN 14/PIN 9) LEADS OUTPUT SIGNAL B+/COS+ (PIN 13/PIN 10).

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 ±.25 .XX ±.13
ANGULAR: ±30 MIN.

APPROVALS	DATE
DRAWN: V. BUCK	6/03/10
CHECKED:	
ENGRG: A. GOLDMAN	7/13/10
MFG ENG: D. McLOUGHLIN	7/15/10
QA: A. VILLARROEL	7/15/10

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

DESCRIPTION:
INTERFACE, ENCODER, 20 um
TAPE/MARKER TAPE SCALES,
MERCURY II 1600/1900 SENSOR

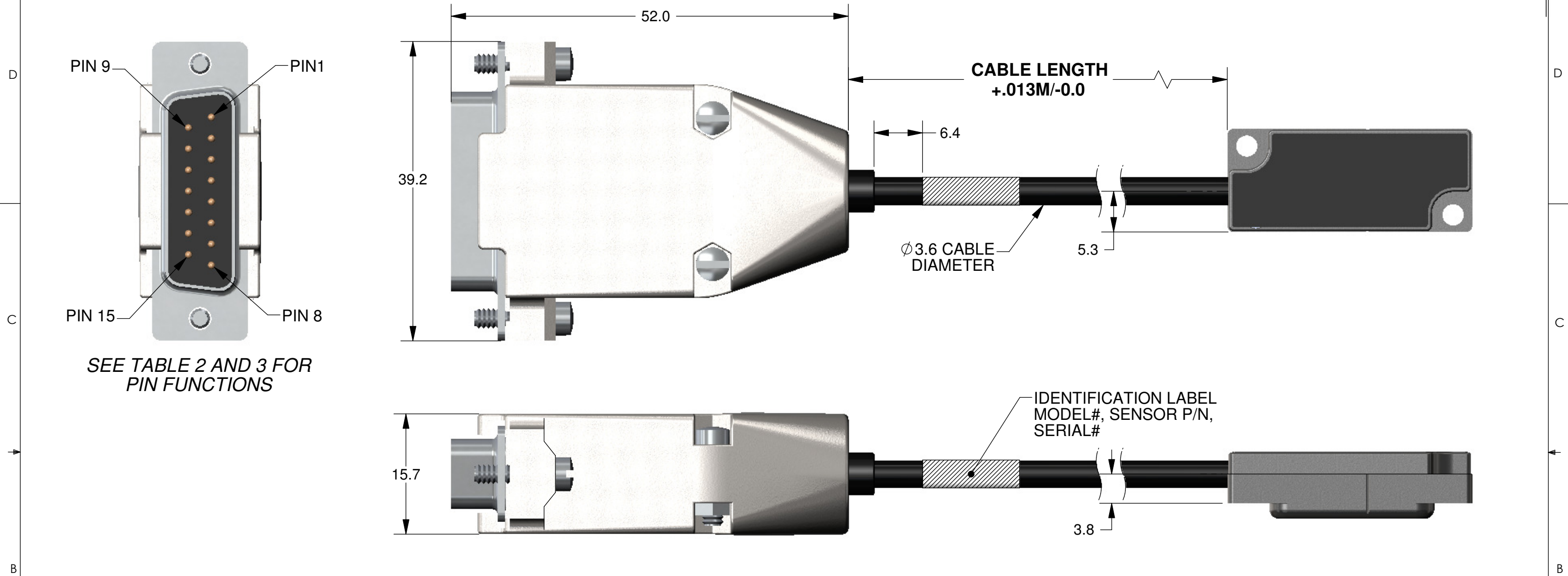
SIZE: B DWG. NO. ID-00376 REV. C

SUBJECT TO CHANGE WITHOUT NOTIFICATION

SCALE: CAD FILE: 3RD ANGLE PROJECTION SHEET 1 OF 4

UNITS: mm

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SEE TABLE 2 AND 3 FOR PIN FUNCTIONS

TABLE 2.

Mercury II 1600 15-Plug		
Pin	Wire color	Function
1	-	Do Not Connect
2	Black	GND
3	-	Do Not Connect
4	Brown	IW-
5	Blue	B-
6	Yellow	A-
7	Red	5V
8	Red	5V
9	Black	GND
10	White	COS+
11	Gray	SIN+
12	Orange	IW+
13	Violet	B+
14	Green	A+
15	-	Do Not Connect

TABLE 3.

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

NOTE: GND AND INNER SHIELD ARE INTERNALLY CONNECTED.

TABLE 1.
Cable Lengths

1 Meter
3 Meter
5 Meter
Custom

UNITS: mm

GSI MicroE Systems
Division of GSI Group

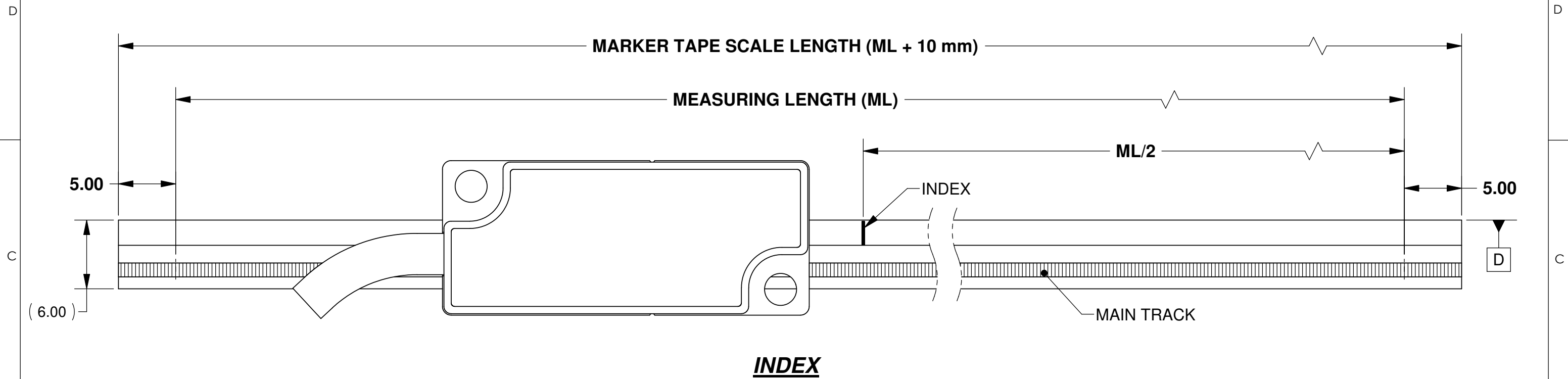
125 Middlesex Tpk.
Bedford, MA 01730

DESCRIPTION:
INTERFACE, ENCODER, 20 um
TAPE/MARKER TAPE SCALES,
MERCURY II 1600/1900 SENSOR

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

SCALE: 3RD ANGLE PROJECTION SHEET 2 OF 4

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NOTES:

1. MARKER TAPE SCALES CAN BE SUPPLIED IN INDIVIDUAL PIECES OR IN CONTINUOUS FORM.
2. END CAPS ARE OPTIONAL. IF USED, ADDITIONAL TAPE LENGTH MAY BE REQUIRED BASED ON APPLICATION (SEE SHEET 4).
3. REFERENCE MARKERS (STICK-ONS) CANNOT BE USED ON MARKER TAPE.
4. FOR ALTERNATE MARKER LOCATIONS OR LENGTHS, MULTIPLE INDEXES OR ADDITIONAL FEATURES, CONTACT MICROE SYSTEMS.
5. FOR MOUNTING REQUIREMENTS IN TAPE SCALE APPLICATIONS, REFERENCE INTERFACE DRAWING ID-00379.

UNITS: mm

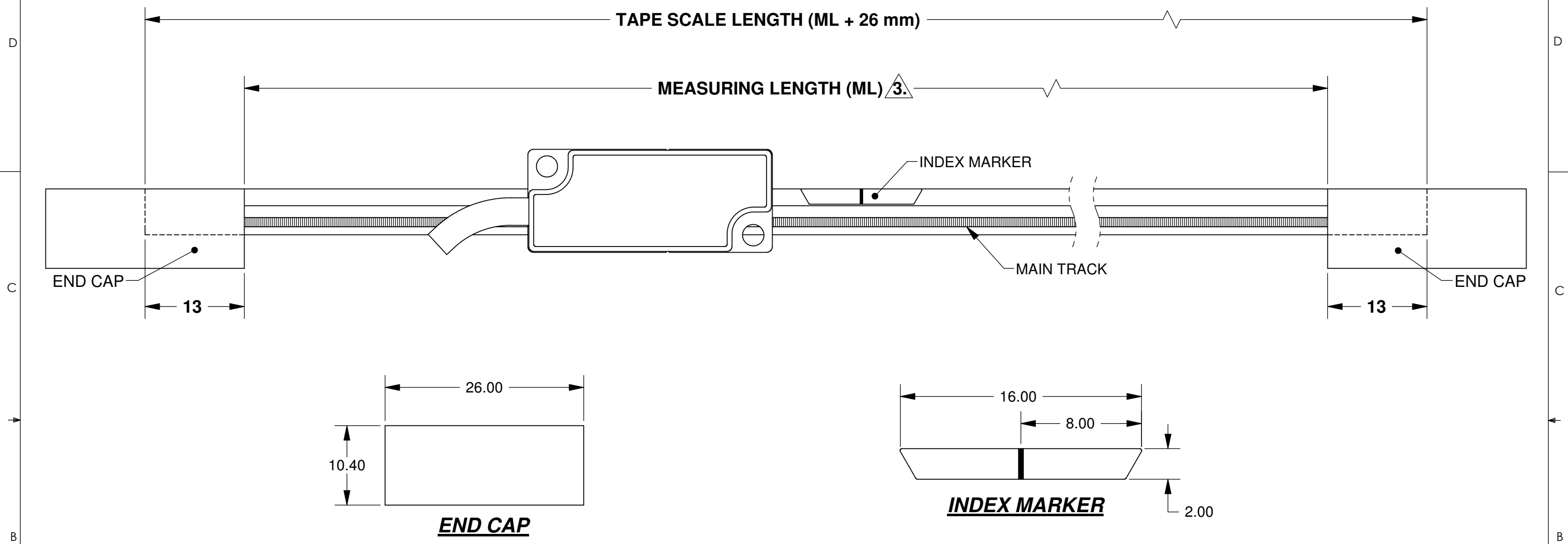
GSI *MicroE Systems*
Division of GSI Group

125 Middlesex Tpk.
Bedford, MA 01730

DESCRIPTION:
INTERFACE, ENCODER, 20 μ m
TAPE/MARKER TAPE SCALES,
MERCURY II 1600/1900 SENSOR

SIZE B	DWG. NO. ID-00376	REV. C
SCALE:	CAD FILE:	3RD ANGLE PROJECTION SHEET 3 OF 4

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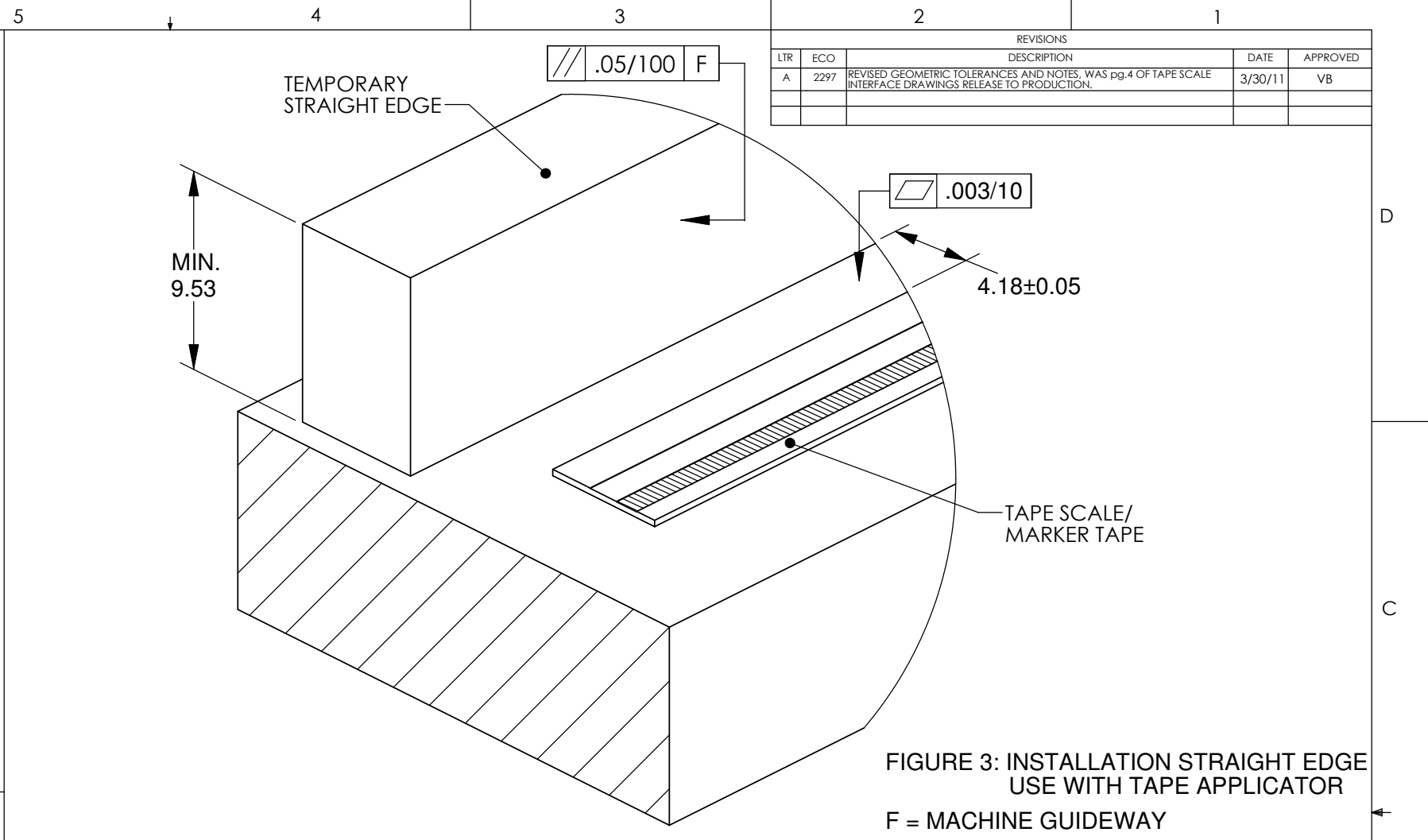
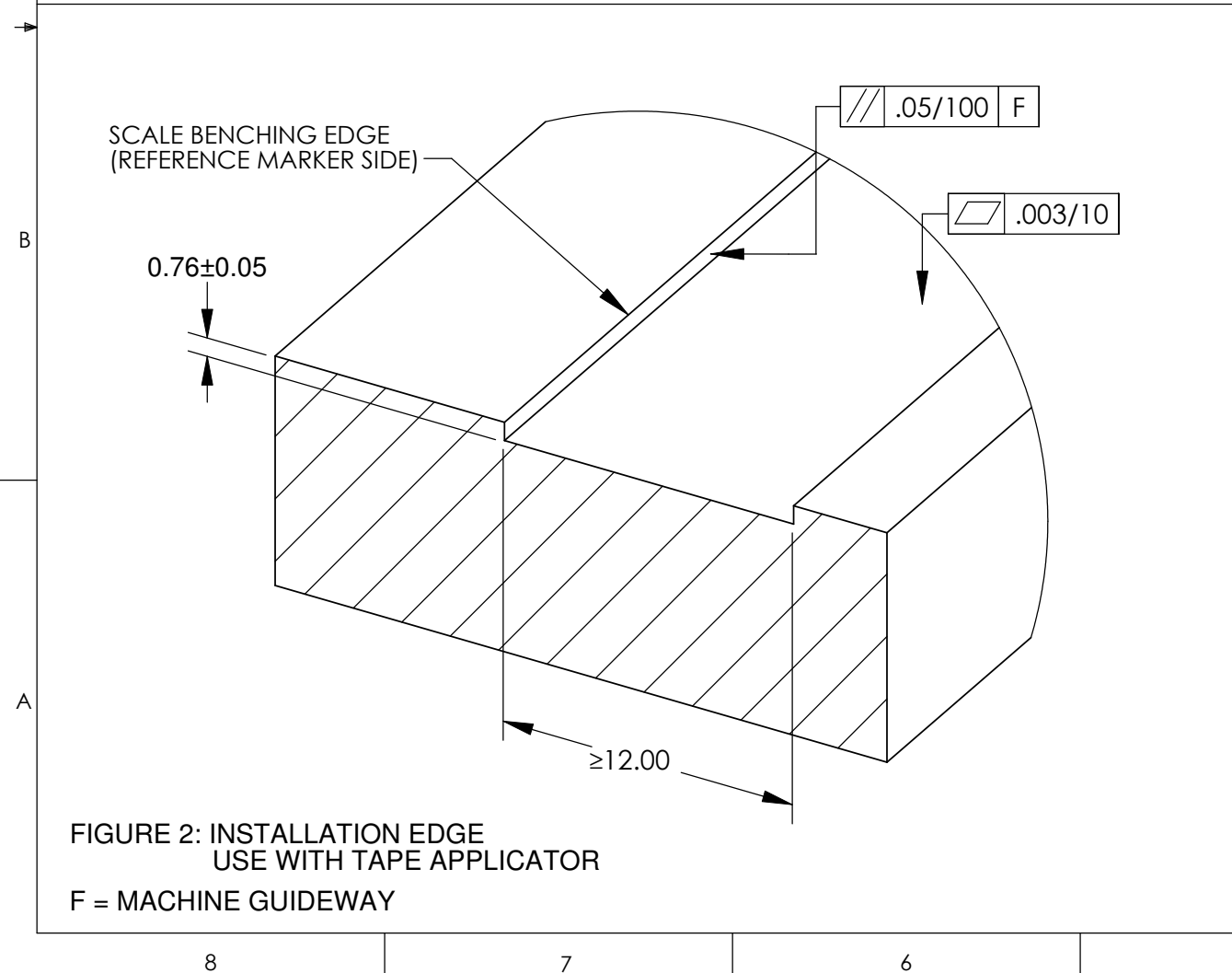
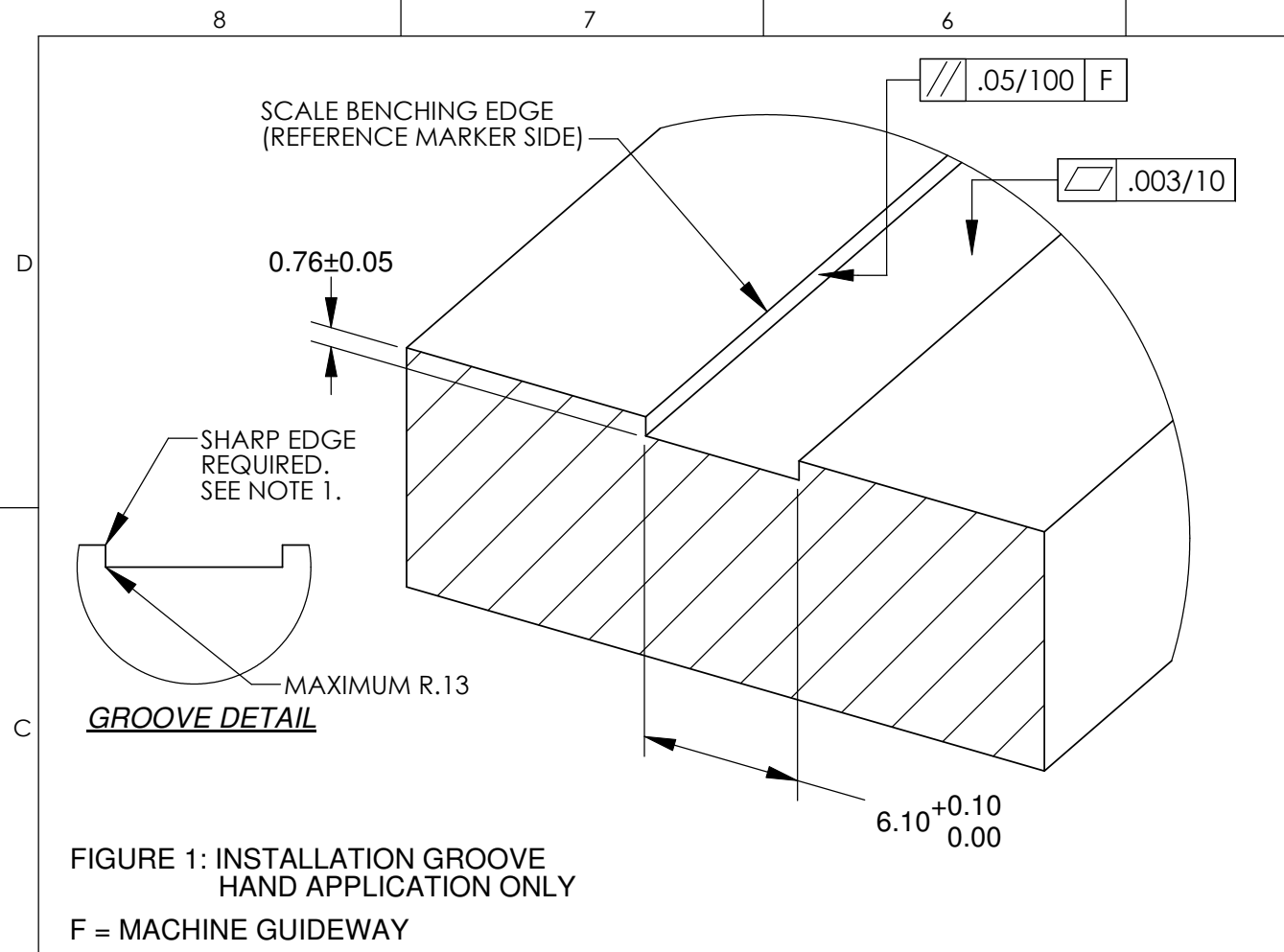
- NOTES:
- BEFORE PLACING INDEX MARKERS AND END CAPS, REMOVE PROTECTIVE FILM FROM TAPE SCALE.
 - NOTE DATUM EDGE OF TAPE SCALE AND REFERENCE MARKER REGION BEFORE APPLYING INDEX MARKERS.
 - MINIMUM MEASURING LENGTH SHOWN. ACTUAL MEASURING LENGTH MAY BE GREATER.
 - END CAPS AND INDEX MARKER ARE OPTIONAL (SEE INSTALLATION MANUAL). WHEN NO END CAPS ARE USED, RECOMMENDED TAPE SCALE LENGTH = MEASURING LENGTH + 10 mm.
 - END CAPS AND INDEX MARKER SHALL NOT OVERLAP EACH OTHER (WILL CAUSE INTERFERENCE WITH SENSOR).
 - FOR OTHER LENGTHS OF REFERENCE MARKERS, CONTACT MICROE SYSTEMS.
 - FOR MOUNTING REQUIREMENTS IN TAPE SCALE APPLICATIONS, REFERENCE INTERFACE DRAWING ID-00379.

UNITS: mm

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

DESCRIPTION:
INTERFACE, ENCODER, 20 μm
TAPE/MARKER TAPE SCALES,
MERCURY II 1600/1900 SENSOR

SIZE B	DWG. NO. ID-00376	REV. C
SCALE:	CAD FILE:	3rd ANGLE PROJECTION SHEET 4 OF 4



REVISIONS				
LTR	ECO	DESCRIPTION	DATE	APPROVED
A	2297	REVISED GEOMETRIC TOLERANCES AND NOTES. WAS pg.4 OF TAPE SCALE INTERFACE DRAWINGS RELEASE TO PRODUCTION.	3/30/11	VB

NOTES:

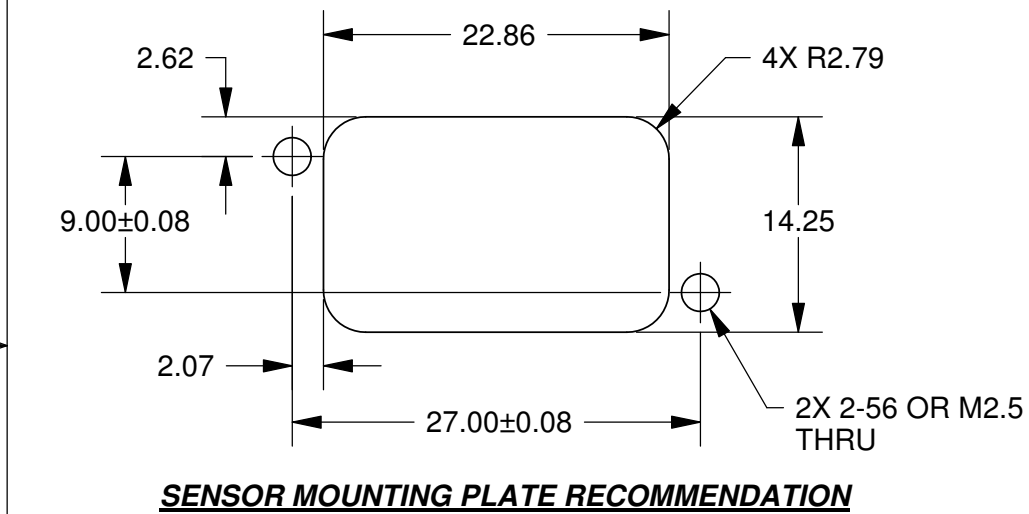
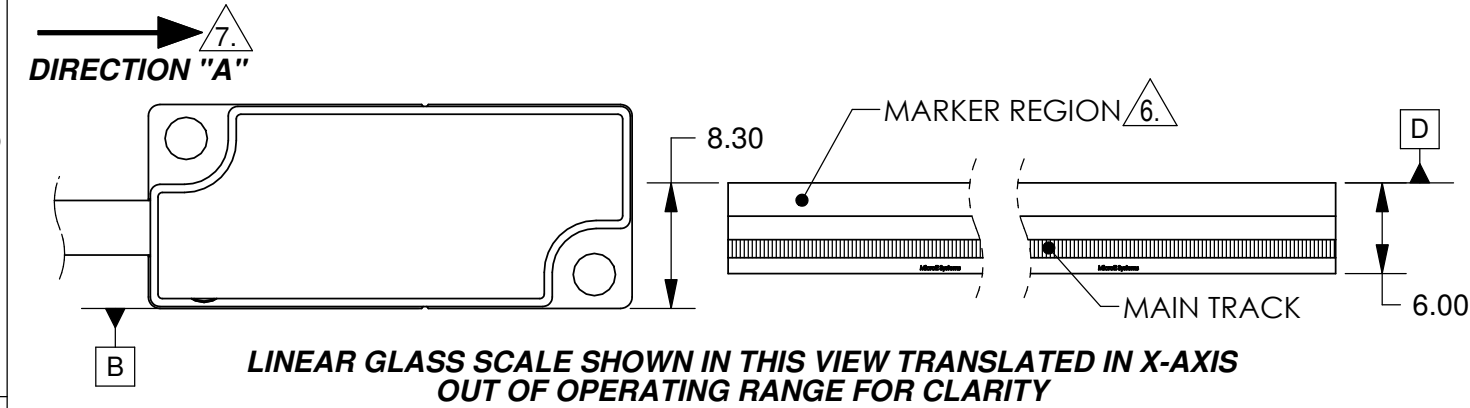
1. MICROE SYSTEMS RECOMMENDS UTILIZING AN EDGE AS A GUIDE IN ORDER TO MAINTAIN STRAIGHTNESS OF THE SCALE DURING MOUNTING. THIS EDGE MAY BE TEMPORARY OR PERMANENT AND SHOULD FOLLOW THE APPLICATION GUIDELINES IN FIGURES 1-3.
2. THE TAPE SCALE APPLICATOR TOOL IS RECOMMENDED FOR INSTALLATION OF SCALES AND, 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 REFERENCE MARKERS. FOR APPLICATIONS SUCH AS IN FIGURE 3, THE CUSTOMER MAY USE A TEMPORARY BENCHING SURFACE TO INSURE THE PROPER INSTALLATION OF THE REFERENCE 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.

UNLESS OTHERWISE SPECIFIED ALL DIMENSIONS ARE IN MILLIMETERS DIM. APPLY AFTER PROCESSING INTERPRET ALL GEOMETRIC TOLS. PER ANSI Y14.5M-1994		APPROVALS	DATE	 MicroE Systems Division of GSI Group 125 Middlesex Tpk. Bedford, MA 01730
DRAWN	S.BUTURLIA	3/17/11		
CHECKED				
ENGRG.	A.GOLDMAN	3/28/11		
MPFG ENG	D.McLOUGHLIN	3/28/11		
QA	A.VILLARROEL	3/29/11		

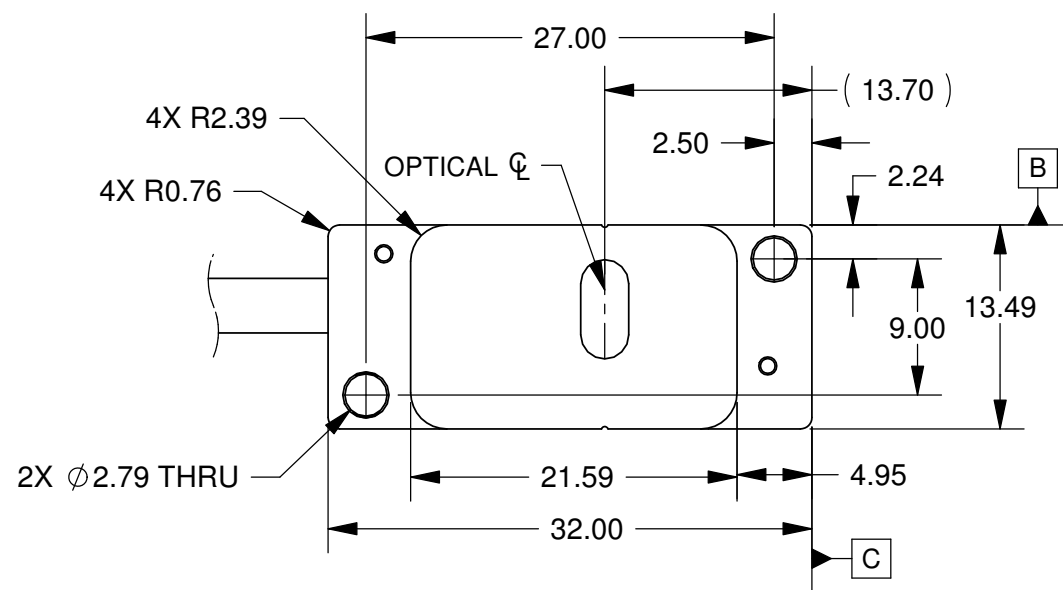
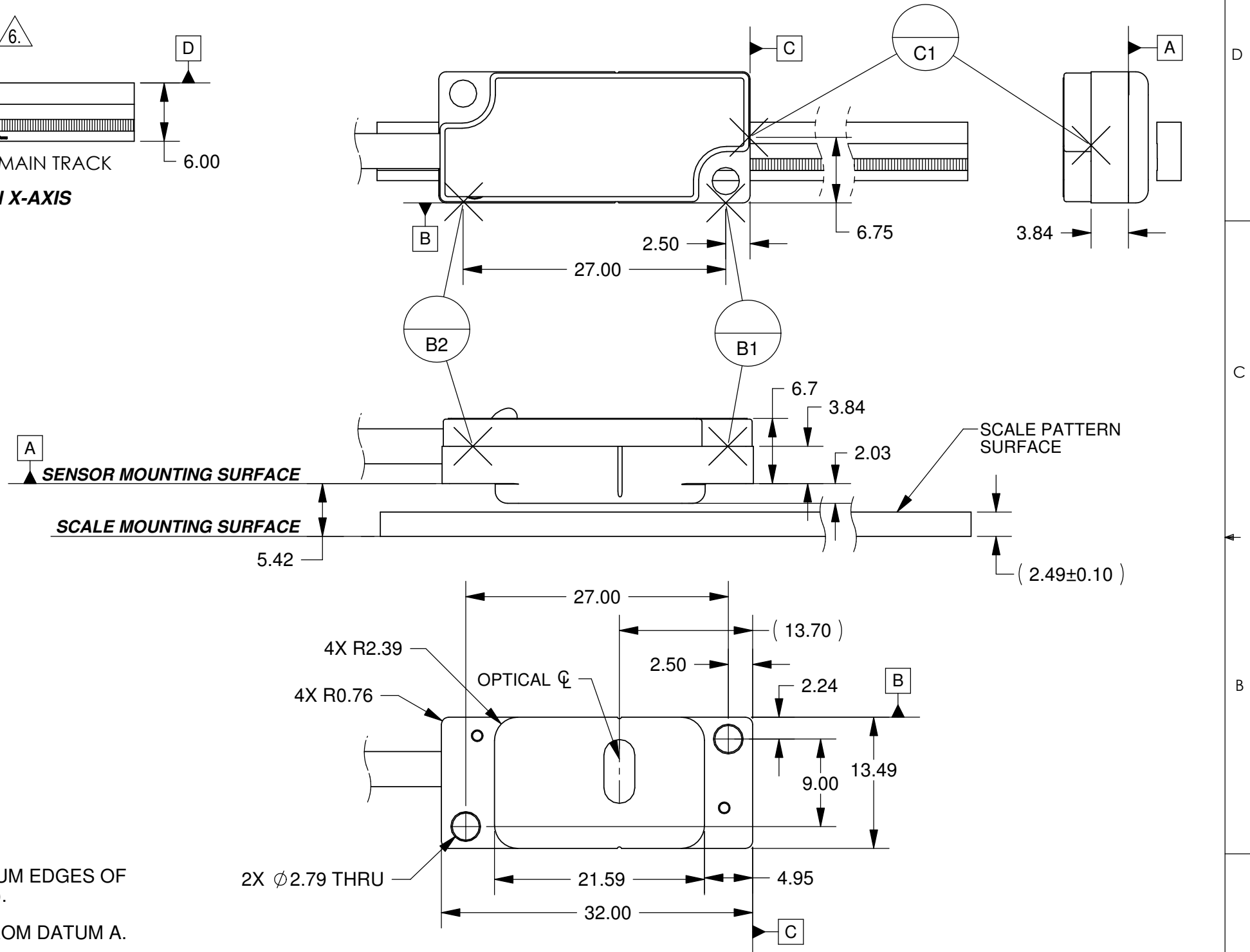
DESCRIPTION:	INTERFACE, MOUNTING REQUIREMENTS, TAPE SCALE APPLICATIONS	
SIZE	DWG. NO.	REV.
B	ID-00379	A
SCALE:	CAD FILE:	SHEET 1 OF 1

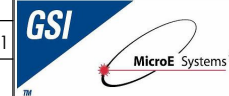
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REVISIONS				
LTR	ECO	DESCRIPTION	DATE	APPROVED
A		RELEASE TO PRODUCTION	7/16/10	S.B.
B	2357	ADD MIL 1600 PIN FUNCTIONS TABLE. UPDATE INDEX MARKER/MEASURING LENGTH & NOTES. CHANGE DRAWING DESCRIPTION.	6/27/11	S.B.
C	2514	FIXED TOLERANCE ERROR ON MOUNTING RECOMMENDATION, 9.00±.08 WAS ±.80. REVISED VIEWS. SEE ECO	11/30/12	VB



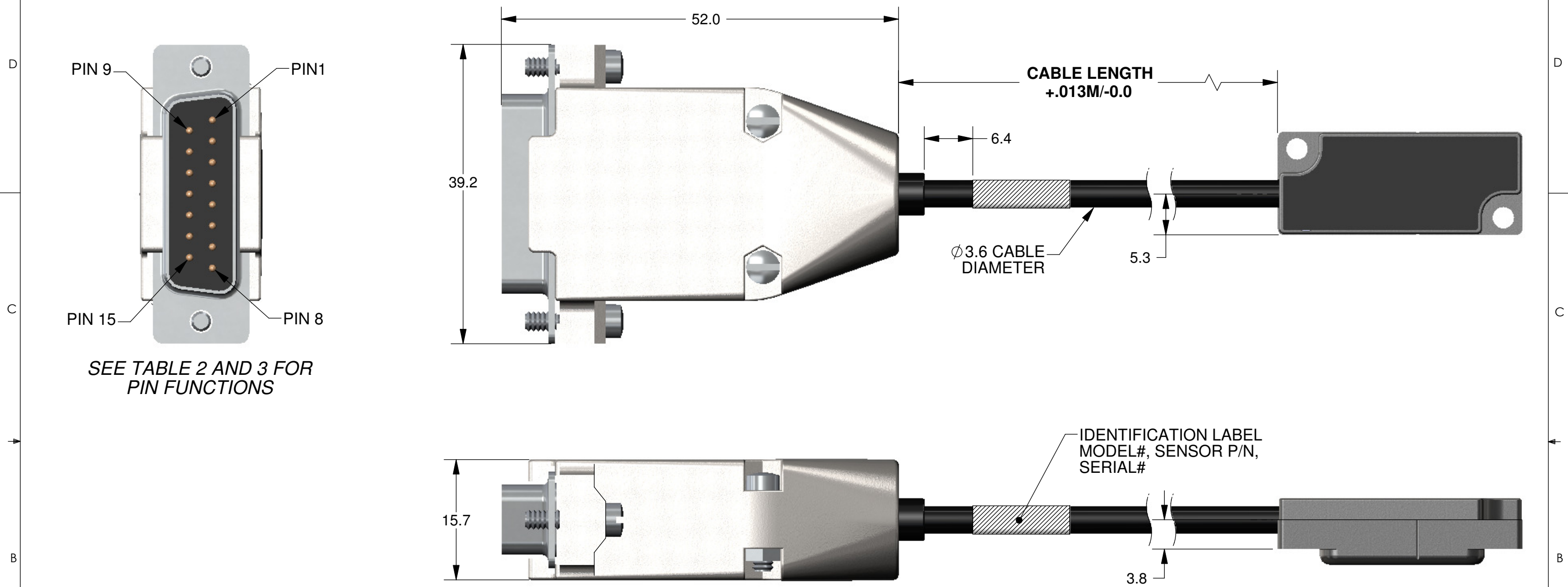
- NOTES:
1. RECOMMENDED MOUNTING HARDWARE:
2-56 OR M2.5 SOCKET HEAD CAP SCREWS.
 2. IF BENCHING PINS ARE TO BE USED, PINS MUST BE PLACED ALONG DATUM EDGES OF SENSOR FOR PROPER ALIGNMENT (REFERENCE DATUMS B1, B2 AND C1).
 3. HEIGHT OF SENSOR BENCHING PINS MUST BE A MINIMUM OF 4.06 mm FROM DATUM A.
 4. HEIGHT OF SCALE BENCHING PINS NOT TO EXCEED THE THICKNESS OF THE SCALE.
 5. RECOMMENDED SENSOR MOUNTING PLATE THICKNESS:
MINIMUM: 4 SCREW THREADS.
MAXIMUM: ALLOW FOR CLEARANCE TO SCALE AND SCALE MOUNTING HARDWARE (BENCHING SURFACE, TRENCHES, ETC).
 6. SEE SHEET 3 FOR DIMENSIONS AND LOCATIONS OF REFERENCE MARKERS.
 7. WHEN SCALE MOVES IN DIRECTION "A" WITH RESPECT TO A STATIONARY SENSOR, OUTPUT SIGNAL A+/SIN+ (PIN 14/PIN 9) LEADS OUTPUT SIGNAL B+/COS+ (PIN 13/PIN10).



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 ±.25 ANGULAR: ±30 MIN. .XX ±.13	APPROVALS	DATE	 MicroE Systems Division of GSI Group 125 Middlesex Tpk. Bedford, MA 01730
	DRAWN V. BUCK	06/03/11	
	CHECKED		
	ENGRG. A.GOLDMAN	7/13/10	
MFG ENG D.McLOUGHLIN	7/15/10	DESCRIPTION:	INTERFACE, ENCODER, 20 um SHORT LINEAR SCALE w/STICK-ON INDEX, MERCURY II 1600/1900 SENSOR
QA A.VILLARROEL	7/15/10	SIZE	B
SUBJECT TO CHANGE WITHOUT NOTIFICATION			DWG. NO. ID-00377
SCALE:		CAD FILE:	3RD ANGLE PROJECTION SHEET 1 OF 3

UNITS: mm

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SEE TABLE 2 AND 3 FOR PIN FUNCTIONS

TABLE 2.

Mercury II 1600 15-Plug		
Pin	Wire color	Function
1	-	Do Not Connect
2	Black	GND
3	-	Do Not Connect
4	Brown	IW-
5	Blue	B-
6	Yellow	A-
7	Red	5V
8	Red	5V
9	Black	GND
10	White	COS+
11	Gray	SIN+
12	Orange	IW+
13	Violet	B+
14	Green	A+
15	-	Do Not Connect

TABLE 3.

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

NOTE: GND AND INNER SHIELD ARE INTERNALLY CONNECTED.

TABLE 1.
Cable Lengths

1 Meter
3 Meter
5 Meter
Custom

UNITS: mm

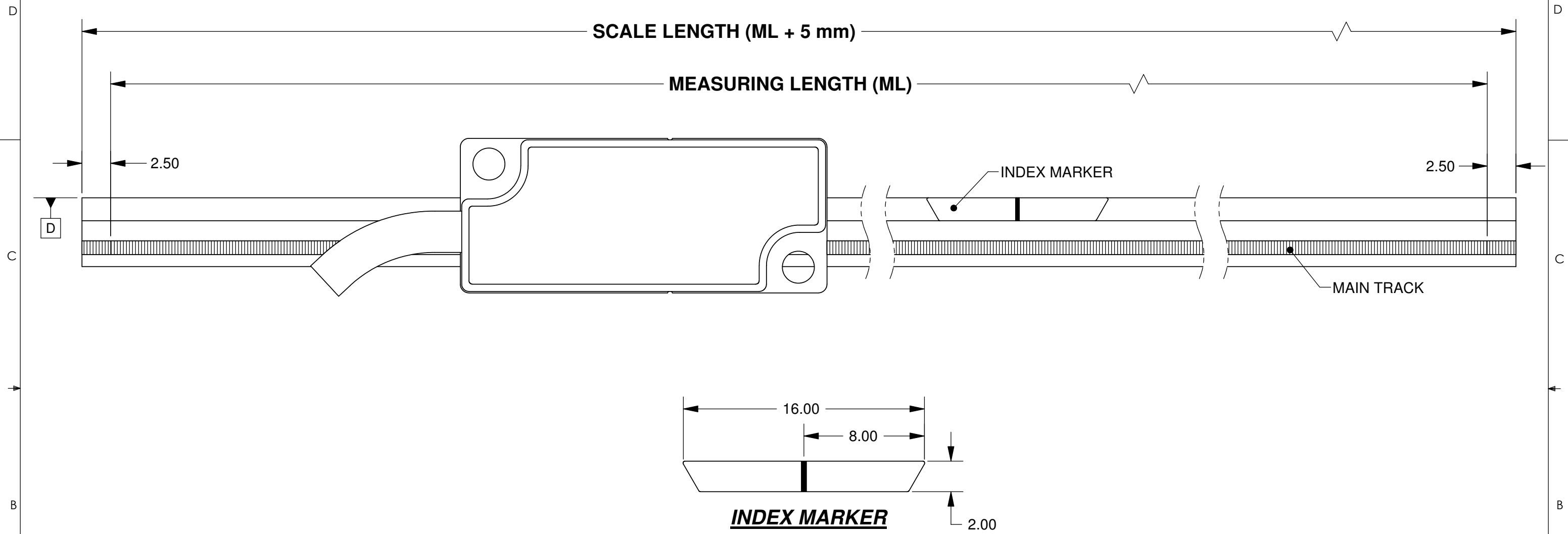
MicroE Systems
Division of GSI Group

125 Middlesex Tpk.
Bedford, MA 01730

DESCRIPTION: INTERFACE, ENCODER, 20 um SHORT LINEAR SCALE w/STICK-ON INDEX, MERCURY II 1600/1900 SENSOR

SIZE: B	DWG. NO.: ID-00377	REV.: C
SCALE:	CAD FILE:	3RD ANGLE PROJECTION SHEET 2 OF 3

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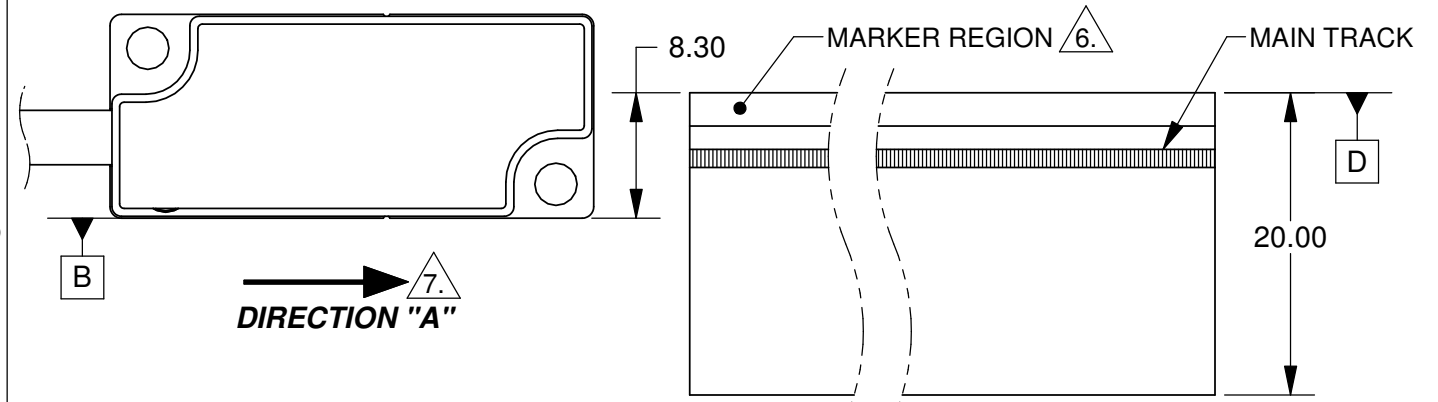
NOTES:

1. APPLICABLE LINEAR GLASS SCALE LENGTHS 70-130 mm. FOR SCALE LENGTHS SHORTER THAN 70 mm, CONTACT MICROE SYSTEMS.
2. NOTE DATUM EDGE OF GLASS SCALE AND REFERENCE MARKER REGION BEFORE APPLYING INDEX MARKERS.
3. INDEX MARKERS SHALL NOT OVERLAP EACH OTHER (WILL CAUSE INTERFERENCE WITH SENSOR).
4. FOR OTHER LENGTHS OF INDEX MARKERS, CONTACT MICROE SYSTEMS.
5. INDEX MARKER MAY BE PRINTED ON GLASS SCALES AT LOCATION SPECIFIED BY THE CUSTOMER. CONTACT MICROE SYSTEMS FOR DETAILS.

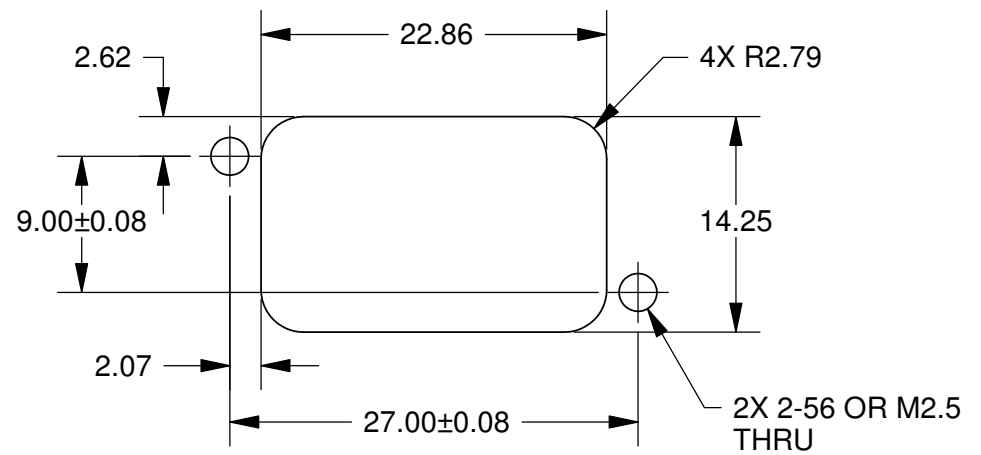
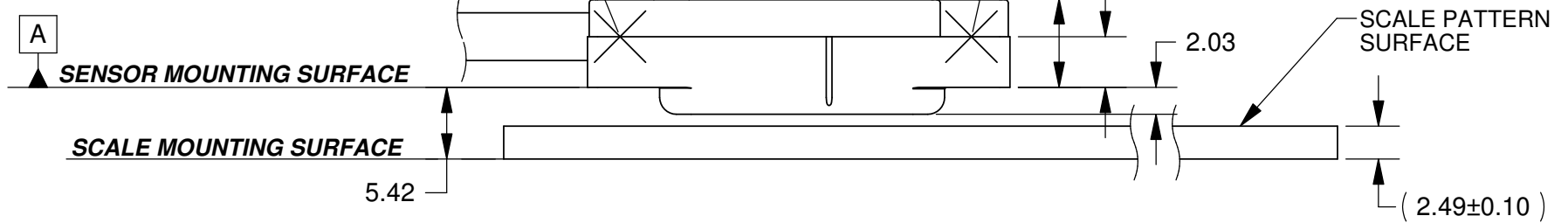
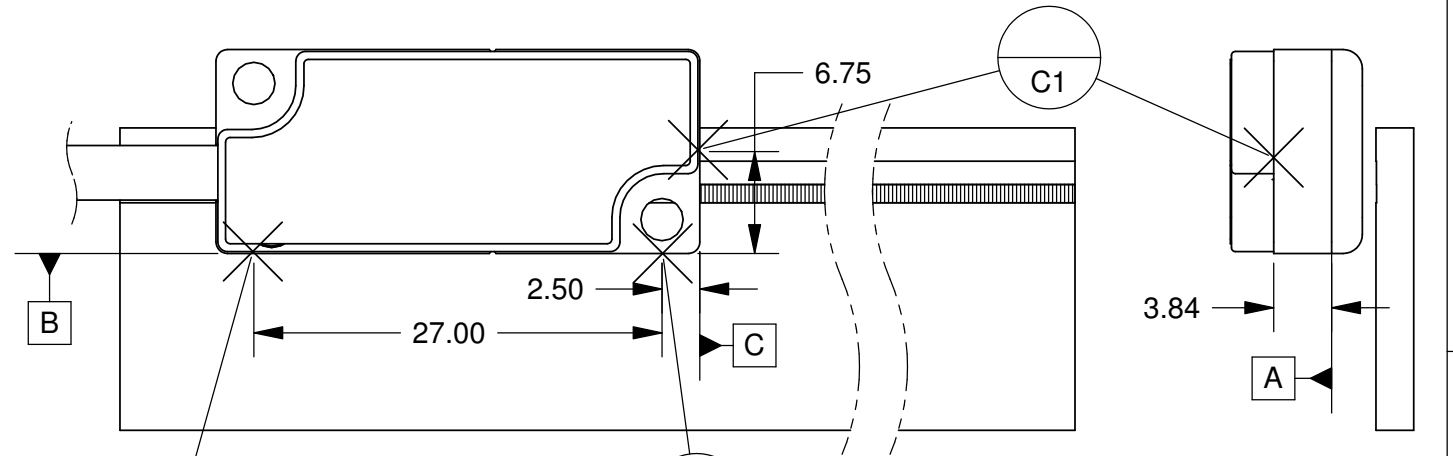
UNITS: mm

		MicroE Systems Division of GSI Group 125 Middlesex Tpk. Bedford, MA 01730
DESCRIPTION: INTERFACE, ENCODER, 20 um SHORT LINEAR SCALE w/STICK-ON INDEX, MERCURY II 1600/1900 SENSOR		
SIZE B	DWG. NO. ID-00377	REV. C
SCALE:	CAD FILE:	3rd ANGLE PROJECTION SHEET 3 OF 3

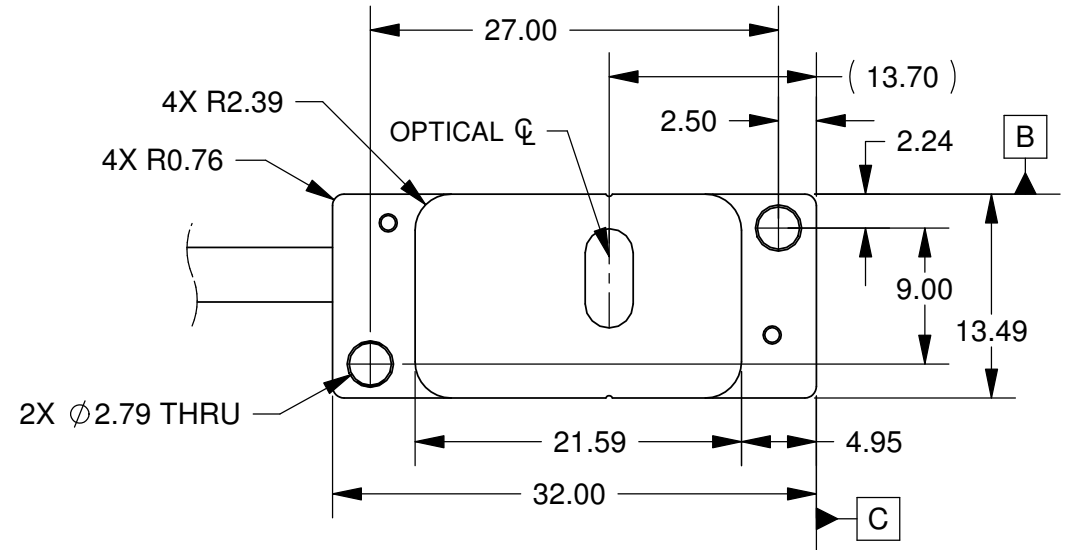
REVISIONS				
LTR	ECO	DESCRIPTION	DATE	APPROVED
A	2350	RELEASE TO PRODUCTION	7/16/10	S.B.
B	2357	ADD MIL 1600 PIN FUNCTIONS TABLE. UPDATE INDEX MARKER/MEASURING LENGTH & NOTES. CHANGE DRAWING DESCRIPTION	6/27/11	S.B.
C	2514	FIXED TOLERANCE ERROR ON MOUNTING RECOMMENDATION, 9.00±.08 WAS ±.80. REVISED VIEWS/DETAILS. SEE ECO	11/30/12	VB



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



SENSOR MOUNTING PLATE RECOMMENDATION

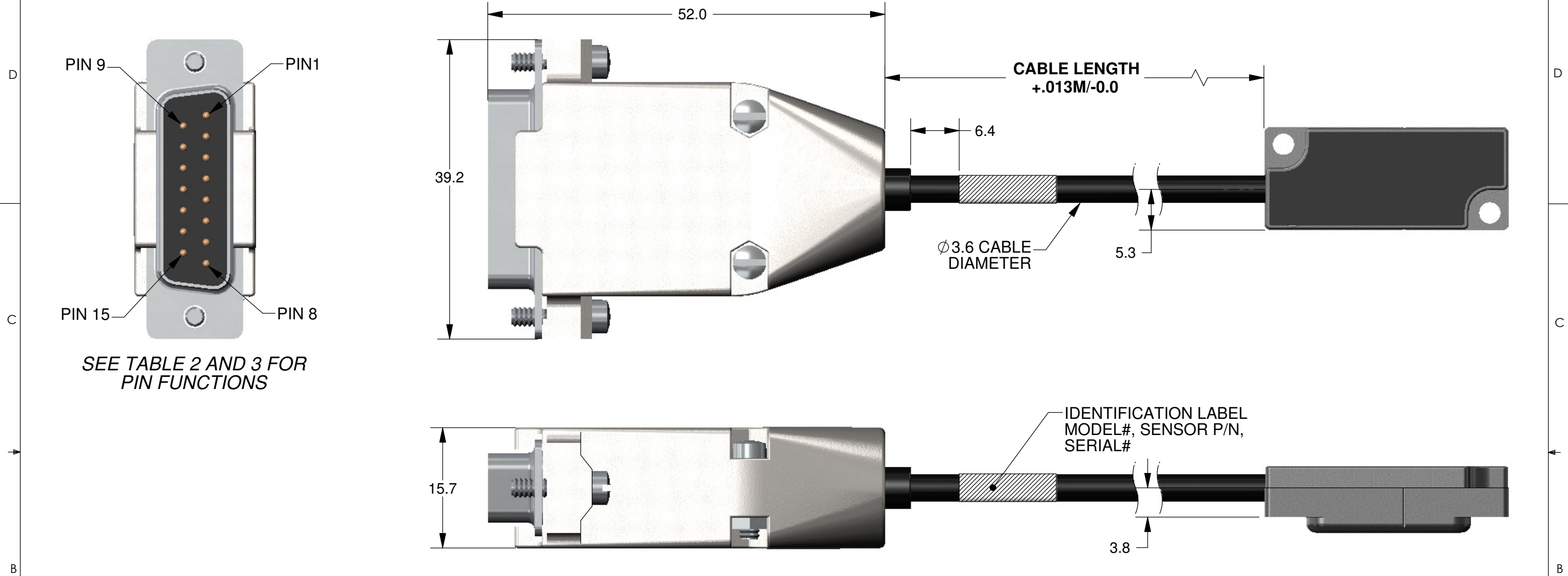


- NOTES:
- RECOMMENDED MOUNTING HARDWARE:
2-56 OR M2.5 SOCKET HEAD CAP SCREWS.
 - IF BENCHING PINS ARE TO BE USED, PINS MUST BE PLACED ALONG DATUM EDGES OF SENSOR FOR PROPER ALIGNMENT (REFERENCE DATUMS B1, B2 AND C1).
 - HEIGHT OF SENSOR BENCHING PINS MUST BE A MINIMUM OF 4.06 mm FROM DATUM A.
 - HEIGHT OF SCALE BENCHING PINS NOT TO EXCEED THE THICKNESS OF THE SCALE.
 - RECOMMENDED SENSOR MOUNTING PLATE THICKNESS:
MINIMUM: 4 SCREW THREADS.
MAXIMUM: ALLOW FOR CLEARANCE TO SCALE AND SCALE MOUNTING HARDWARE (BENCHING SURFACE, TRENCHES, ETC).
6. SEE SHEET 3 FOR DIMENSIONS AND LOCATIONS OF REFERENCE MARKERS.
7. WHEN SCALE MOVES IN DIRECTION "A" WITH RESPECT TO A STATIONARY SENSOR, OUTPUT SIGNAL A+/SIN+ (PIN 14/PIN 9) LEADS OUTPUT SIGNAL B+/COS+ (PIN 13/PIN10).

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 ±.25 .XX ±.13 ANGULAR: ±30 MIN.	APPROVALS	DATE	 MicroE Systems Division of GSI Group 125 Middlesex Tpk. Bedford, MA 01730
	DRAWN V. BUCK	06/03/10	
	CHECKED		
	ENGRG. A. GOLDMAN	7/13/10	
MFG ENG D. McLOUGHLIN	7/15/10		DESCRIPTION: INTERFACE, ENCODER, 20 um LONG LINEAR SCALE w/STICK-ON INDEX, MERCURY II 1600/1900 SENSOR
QA A. VILLARROEL	7/15/10		
SUBJECT TO CHANGE WITHOUT NOTIFICATION			SIZE B DWG. NO. ID-00378 REV. C
SCALE:	CAD FILE:	3rd ANGLE PROJECTION	SHEET 1 OF 3

UNITS: mm

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SEE TABLE 2 AND 3 FOR PIN FUNCTIONS

TABLE 2.

<i>Mercury II 1600 15-Plug</i>		
Pin	Wire color	Function
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3	-	Do Not Connect
4	Brown	IW-
5	Blue	B-
6	Yellow	A-
7	Red	5V
8	Red	5V
9	Black	GND
10	White	COS+
11	Gray	SIN+
12	Orange	IW+
13	Violet	B+
14	Green	A+
15	-	Do Not Connect

TABLE 3.

<i>Mercury II 1900 15-Plug</i>		
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

NOTE: GND AND INNER SHIELD ARE INTERNALLY CONNECTED.

TABLE 1.
Cable Lengths

1 Meter
3 Meter
5 Meter
Custom

UNITS: mm

GSI *MicroE Systems*
Division of GSI Group

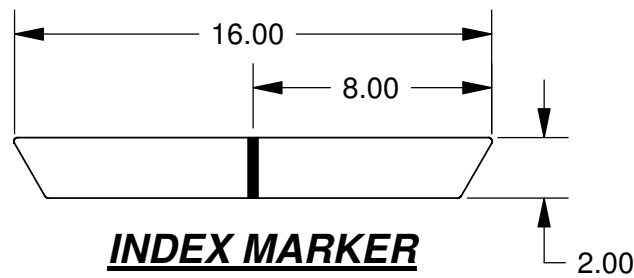
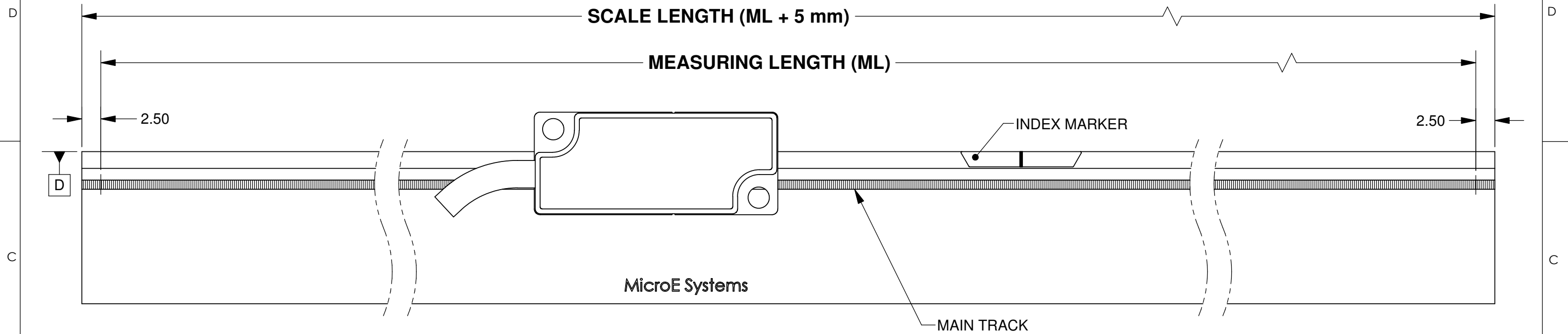
125 Middlesex Tpk.
Bedford, MA 01730

DESCRIPTION: INTERFACE, ENCODER, 20 um
LONG LINEAR SCALE
w/STICK-ON INDEX,
MERCURY II 1600/1900 SENSOR

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

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

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NOTES:

1. APPLICABLE LINEAR GLASS SCALE LENGTHS 131-1000 mm. FOR SCALE LENGTHS LONGER THAN 1000 mm, CONTACT MICROE SYSTEMS.
2. NOTE DATUM EDGE OF GLASS SCALE AND REFERENCE MARKER REGION BEFORE APPLYING INDEX MARKERS.
3. INDEX MARKERS SHALL NOT OVERLAP EACH OTHER (WILL CAUSE INTERFERENCE WITH SENSOR).
4. FOR OTHER LENGTHS OF INDEX MARKERS, CONTACT MICROE SYSTEMS.
5. INDEX MARKER MAY BE PRINTED ON GLASS SCALES AT LOCATION SPECIFIED BY THE CUSTOMER. CONTACT MICROE SYSTEMS FOR DETAILS.

UNITS: mm

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