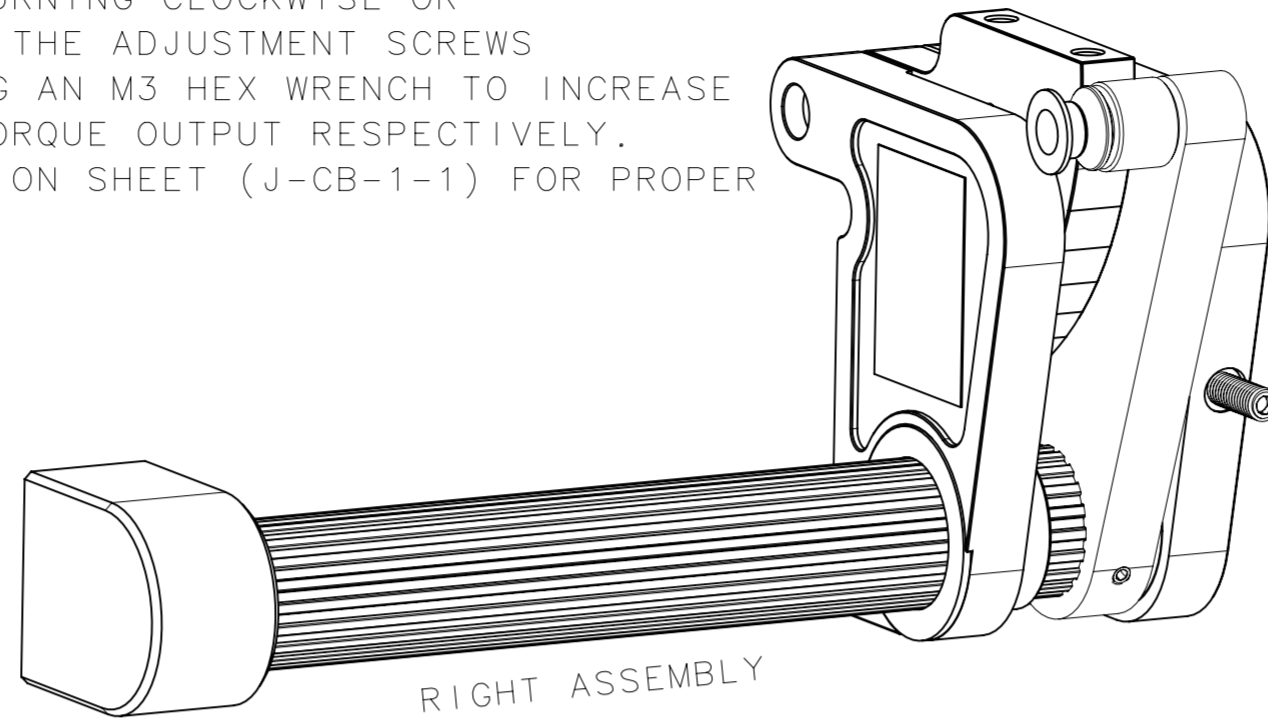
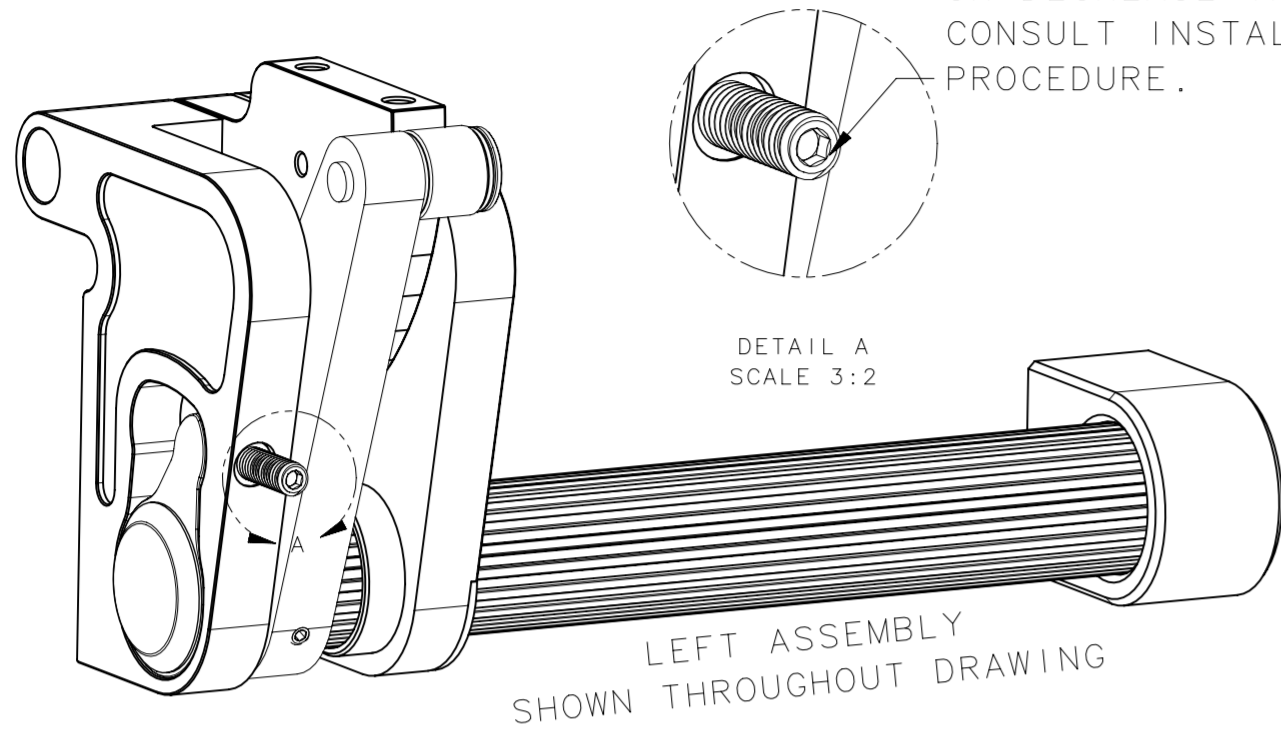


REVISION HISTORY			
REV	DATE	BY	DESCRIPTION
D	25FEB2019	CMG/GSF	PRN: P2020-1261

TORQUE ADJUSTMENT OF THE CB MECHANISM IS PERFORMED BY TURNING CLOCKWISE OR COUNTER-CLOCKWISE THE ADJUSTMENT SCREWS ON EACH UNIT USING AN M3 HEX WRENCH TO INCREASE OR DECREASE THE TORQUE OUTPUT RESPECTIVELY. CONSULT INSTALLATION SHEET (J-CB-1-1) FOR PROPER PROCEDURE.

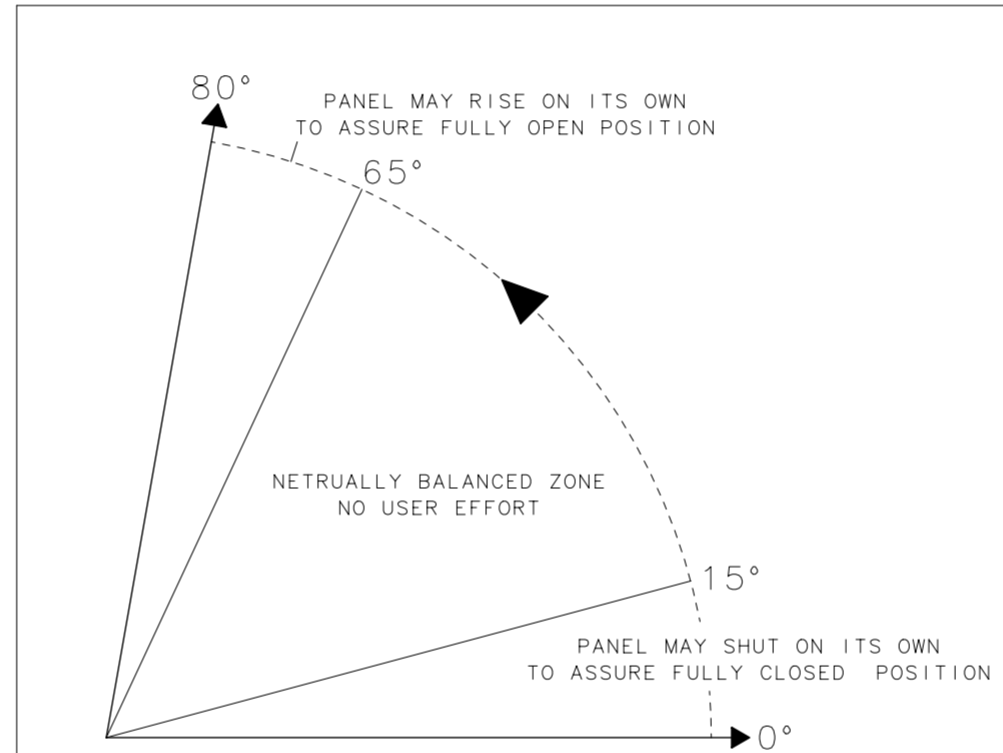


NOTE:

THE CB COUNTERBALANCE HINGE IS DESIGNED TO OPERATE FROM 0° HORIZONTAL AND OPEN TO 80° FROM HORIZONTAL AS WELL AS UNDER THE NOMINAL TORQUE CONDITIONS SPECIFIED IN TABLE 1.1, COLUMN 2 AND AT THE IDEAL CENTER OF GRAVITY IN THE Y-DIRECTION SHOWN BELOW. DEVIATIONS FROM NOMINAL CAN BE MADE WITHIN THE TORQUE LIMITS SPECIFIED IN TABLE 1.1, COLUMNS 3 & 4, HOWEVER PERFORMANCE CHANGES SUCH AS PANEL DRIFT AT THE 0-15° AND 65-80° ANGLES OF ROTATION MAY EXIST.

THE RANGE CHART BELOW REFLECTS THE TOTAL AVAILABLE TORQUE RANGE (LOW TO HIGH) OF EACH AVAILABLE SPRING. NOMINAL CONDITIONS ARE AVAILABLE IN TABLE 1.1, COLUMN 2. PLEASE CONTACT SOUTHCO FOR ASSISTANCE IN DETERMINING THE PERFORMANCE OF YOUR APPLICATION.

PANEL MOTION THROUGH OPENING ANGLE



TORQUE ADJUSTMENT:

PANEL DRIFTS DOWNWARDS IN NEUTRAL BALANCE RANGE  
IF UNDESIRABLE, RAISE PANEL TO VERTICAL POSITION, INCREASE TORQUE BY TURNING ADJUSTMENT SCREW CLOCKWISE. CYCLE AND RECHECK BALANCE. IF ADJUSTMENT SCREW REACHES MAXIMUM POSITIVE TRAVEL AND PANEL CONTINUES TO DRIFT DOWNWARDS, TORQUE SELECTION SHOULD BE REVIEWED.

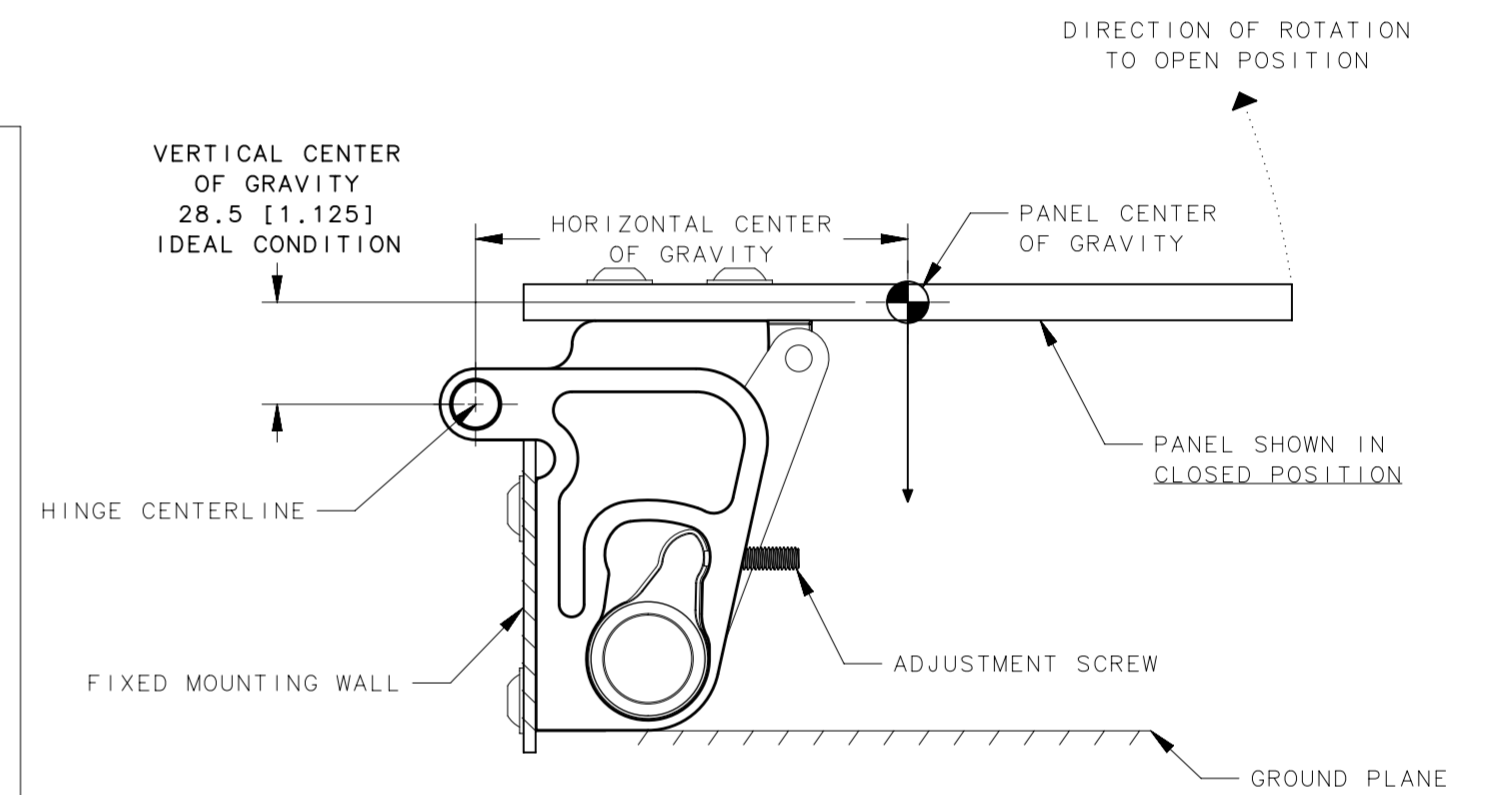
PANEL DRIFTS UPWARDS IN NEUTRAL BALANCE RANGE  
IF UNDESIRABLE, RAISE PANEL TO VERTICAL POSITION, DECREASE TORQUE BY TURNING ADJUSTMENT SCREW COUNTER-CLOCKWISE, CYCLE AND RECHECK BALANCE. IF ADJUSTMENT SCREW REACHES MAXIMUM NEGATIVE TRAVEL AND PANEL CONTINUES TO DRIFT UPWARDS, TORQUE SELECTION SHOULD BE REVIEWED.

PANEL POPS UPWARDS IN 0-15° RANGE  
IF UNDESIRABLE, RAISE PANEL TO VERTICAL POSITION, DECREASE TORQUE BY TURNING ADJUSTMENT SCREW COUNTER-CLOCKWISE, CYCLE AND RECHECK BALANCE. IF ADJUSTMENT SCREW REACHES MAXIMUM NEGATIVE TRAVEL AND PANEL CONTINUES TO POP UPWARDS, TORQUE SELECTION SHOULD BE REVIEWED.

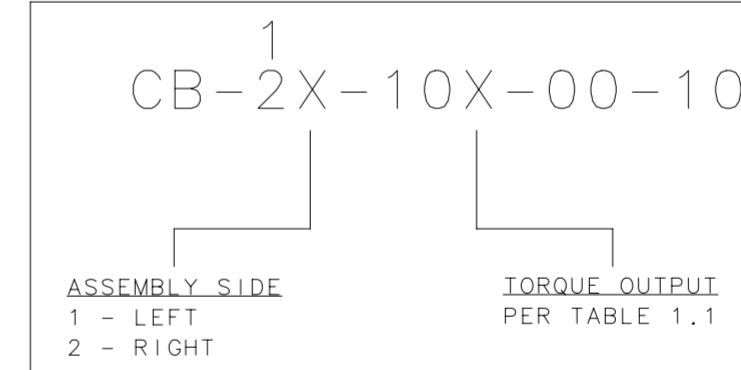
PANEL DRIFTS DOWNWARDS IN 65-80° RANGE  
IF UNDESIRABLE, RAISE PANEL TO VERTICAL POSITION, INCREASE TORQUE BY TURNING ADJUSTMENT SCREW CLOCKWISE, CYCLE AND RECHECK BALANCE. IF ADJUSTMENT SCREW REACHES MAXIMUM POSITIVE TRAVEL AND PANEL CONTINUES TO DRIFT DOWNWARDS, TORQUE SELECTION SHOULD BE REVIEWED.

NOTE:

PER THE FIGURE ABOVE, SOME DRIFT UPWARDS IN THE 65-80° RANGE AND DOWNWARD IN THE 0-15° IS EXPECTED. HAVING DRIFT IN THESE AREAS OF TRAVEL ASSURES THE PANEL STAYS IN POSITIVELY IN THE OPEN AND CLOSED POSITION OVER VARIATIONS IN WEIGHT AND CENTER OF GRAVITY.



ASSEMBLY PART NUMBERING

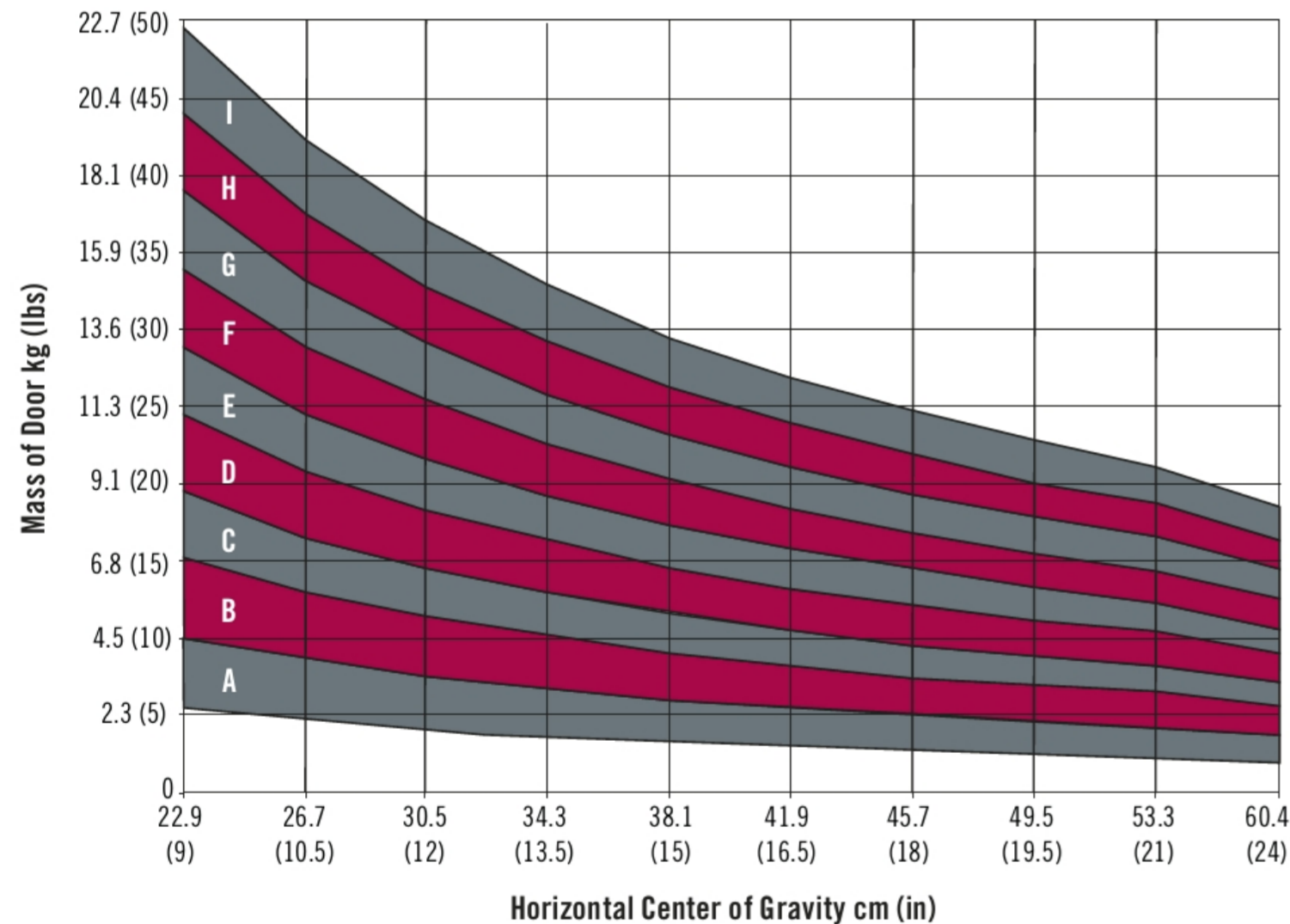


PART NUMBERING EXAMPLE:

PANEL WEIGHT: 26.8LB  
HORIZONTAL CG: 12IN  
TORQUE = PANEL WEIGHT \* CG  
= 321 LBF-IN  
TORQUE PER SIDE = 160.5 LBF-IN

CORRECT LEFT ASSEMBLY: CB-11-103-00-10  
CORRECT RIGHT ASSEMBLY: CB-12-103-00-10

Counterbalance Hinge Selection Guide



SELECTION GUIDE LEGEND			
A	CB-1X-101-00-10	E	CB-2X-101-00-10
B	CB-1X-102-00-10	F	CB-2X-102-00-10
C	CB-1X-103-00-10	G	CB-2X-103-00-10
D	CB-1X-104-00-10	H	CB-2X-104-00-10
		I	CB-2X-105-00-10

-MODEL SELECTION CHART SHOULD BE USED TO SELECT CORRECT UNIT FOR BALANCING PANELS OUTSIDE OF THE NOMINAL TORQUE OUTPUT

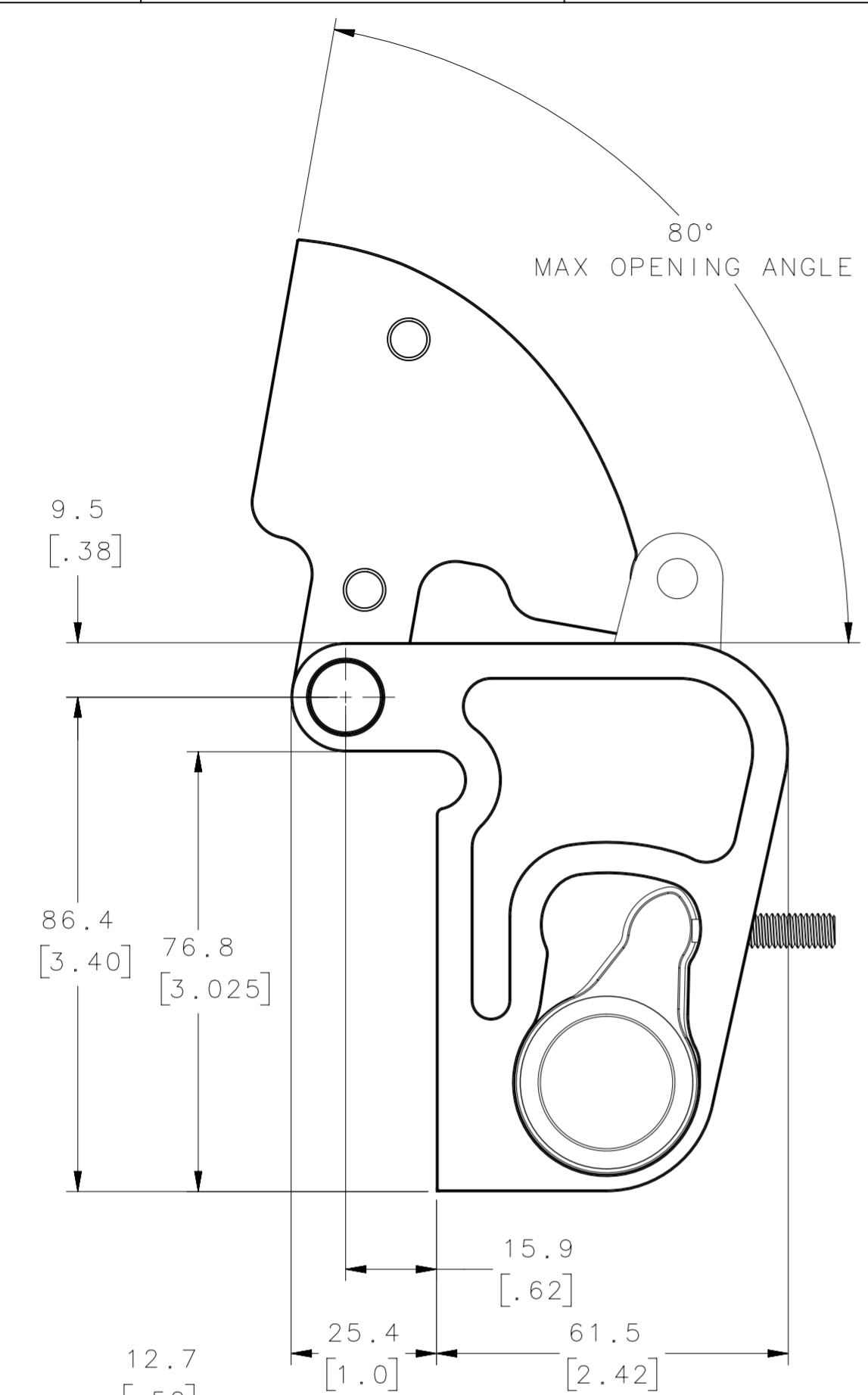
-ALL TORQUE VALUES SHOULD BE CALCULATED USING:  
TORQUE = HORIZONTAL CG \* PANEL WEIGHT

- 'PER HINGE' DESIGNATION INDICATES DUAL ASSEMBLIES WILL OUTPUT 'PER HINGE' TORQUE \* 2

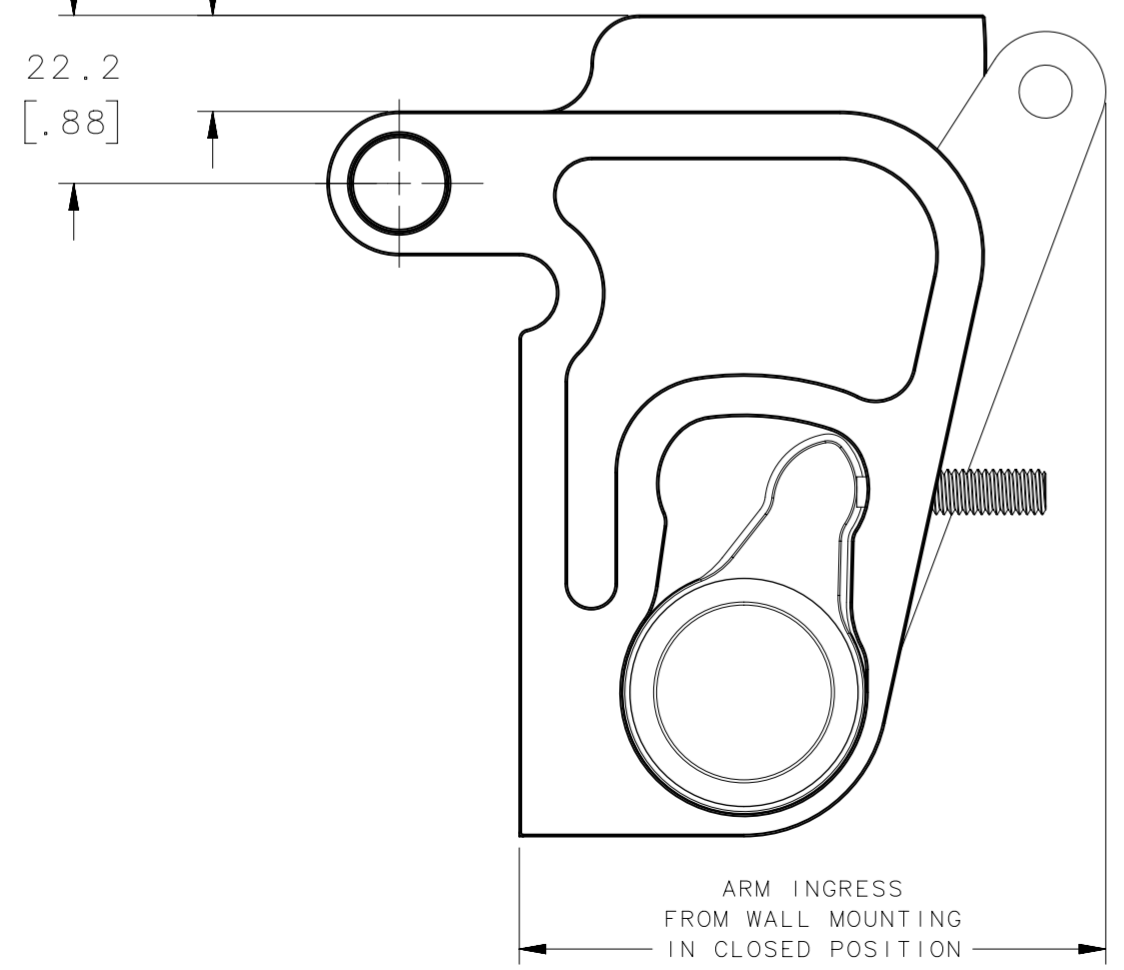
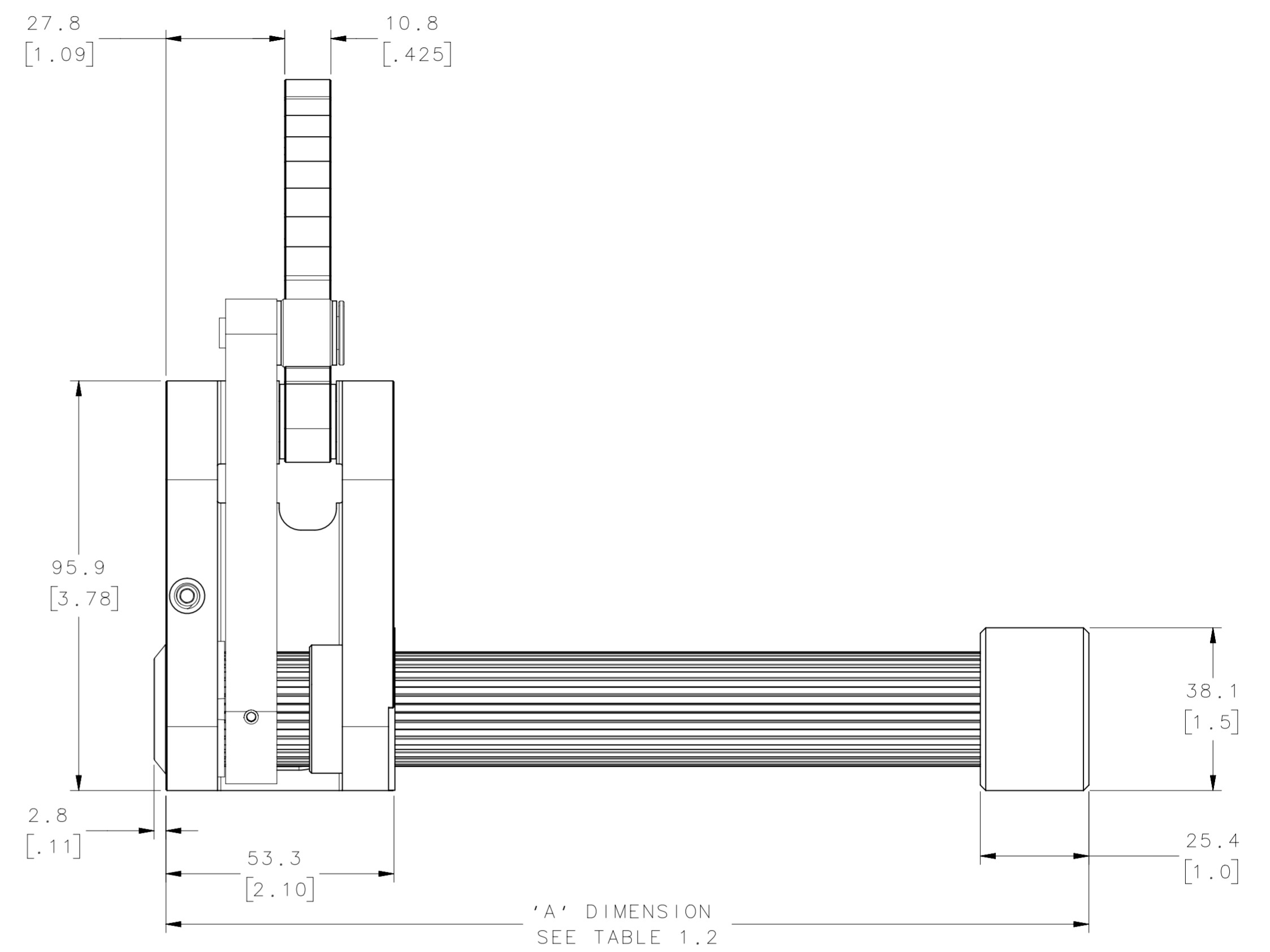
ASSEMBLY	NOMINAL TORQUE OUTPUT PER HINGE (N-M [LBF-IN])	MIN. TORQUE OUTPUT PER HINGE (N-M [LBF-IN])	MAX. TORQUE OUTPUT PER HINGE (N-M [LBF-IN])
CB-1X-101-00-10	8.8 (78)	5.7 (50)	10.2 (90)
CB-1X-102-00-10	13.5 (119)	10.2 (90)	15.5 (137)
CB-1X-103-00-10	18.2 (161)	15.5 (137)	19.8 (175)
CB-1X-104-00-10	22.8 (202)	19.8 (175)	24.9 (220)
CB-2X-101-00-10	27.7 (245)	24.9 (220)	29.4 (260)
CB-2X-102-00-10	32.2 (285)	29.4 (260)	34.5 (305)
CB-2X-103-00-10	37.3 (330)	34.5 (305)	39.5 (350)
CB-2X-104-00-10	42.4 (375)	39.5 (350)	44.6 (395)
CB-2X-105-00-10	47.5 (420)	44.6 (395)	50.3 (445)

CPB NUMBER 2017-0015	THIRD ANGLE PROJECTION	<b>southco</b> CONNECT · CREATE · INNOVATE
	MILLIMETERS [IN]	
	TOLERANCES UNLESS OTHERWISE NOTED	DESCRIPTION COUNTERBALANCE HINGE OVERVIEW
PROPRIETARY ITEM EXCEPT FOR USES EXPRESSLY GRANTED IN WRITING, INFORMATION DISCLOSED HEREON IS CONFIDENTIAL AND ALL RIGHTS, PATENT AND OTHERWISE, ARE RESERVED BY SOUTHCO, INC.	ALL DIMENSIONS WITHOUT TOLERANCES ARE FOR REFERENCE ONLY.	SIZE SYSTEM A2 NX
PER ASME Y14.5M-1994	DWG NO. J-CB-1	DRAWN BY CMG/JDS
	DATE 10OCT2018	SCALE NTS
		SHEET 1 OF 4

REVISION HISTORY			
REV	DATE	BY	DESCRIPTION
D	08JUL2020	GSF/JDS	PRN: P2020-1261



OPEN (SHIPPING & INSTALLATION) POSITION



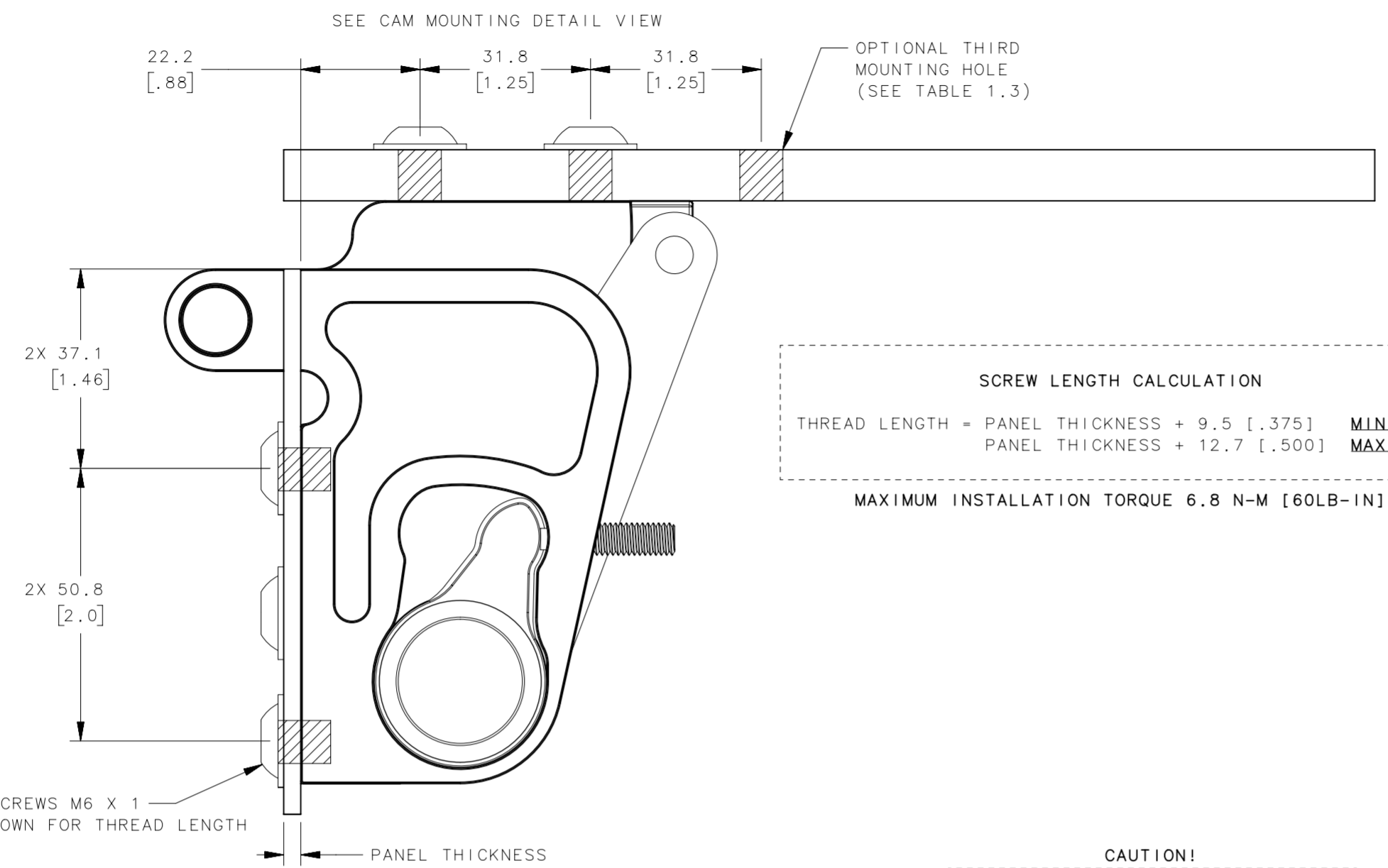
CLOSED POSITION

ONLY LEFT ASSEMBLY SHOWN  
ALL GEOMETRY MIRRORED FOR RIGHT ASSEMBLIES

TABLE 1.2	
ASSEMBLY	A' DIMENSION (CM [IN])
CB-1X-101-00-10	21.6 (8.50)
CB-1X-102-00-10	28.6 (11.13)
CB-1X-103-00-10	34.3 (13.50)
CB-1X-104-00-10	40.0 (15.75)
CB-2X-101-00-10	29.2 (11.50)
CB-2X-102-00-10	30.9 (12.17)
CB-2X-103-00-10	34.1 (13.42)
CB-2X-104-00-10	37.0 (14.54)
CB-2X-105-00-10	40.8 (16.04)

CPB NUMBER 2017-0015	THIRD ANGLE PROJECTION		<b>southco</b> CONNECT · CREATE · INNOVATE
	MILLIMETERS [IN]		
	TOLERANCES UNLESS OTHERWISE NOTED		DESCRIPTION COUNTERBALANCE HINGE SPRING DETAIL
PROPRIETARY ITEM EXCEPT FOR USES EXPRESSLY GRANTED IN WRITING, INFORMATION DISCLOSED HEREON IS CONFIDENTIAL AND ALL RIGHTS, PATENT AND OTHERWISE, ARE RESERVED BY SOUTHCO, INC.	PER ASME Y14.5M-1994	SIZE SYSTEM A2 NX	DWG NO. J-CB-1
		DRAWN BY CMG/JDS	DATE 10OCT2018
		SCALE NTS	SHEET 2 OF 4

REVISION HISTORY			
REV	DATE	BY	DESCRIPTION
D	08JUL2020	GSF/JDS	PRN: P2020-1261



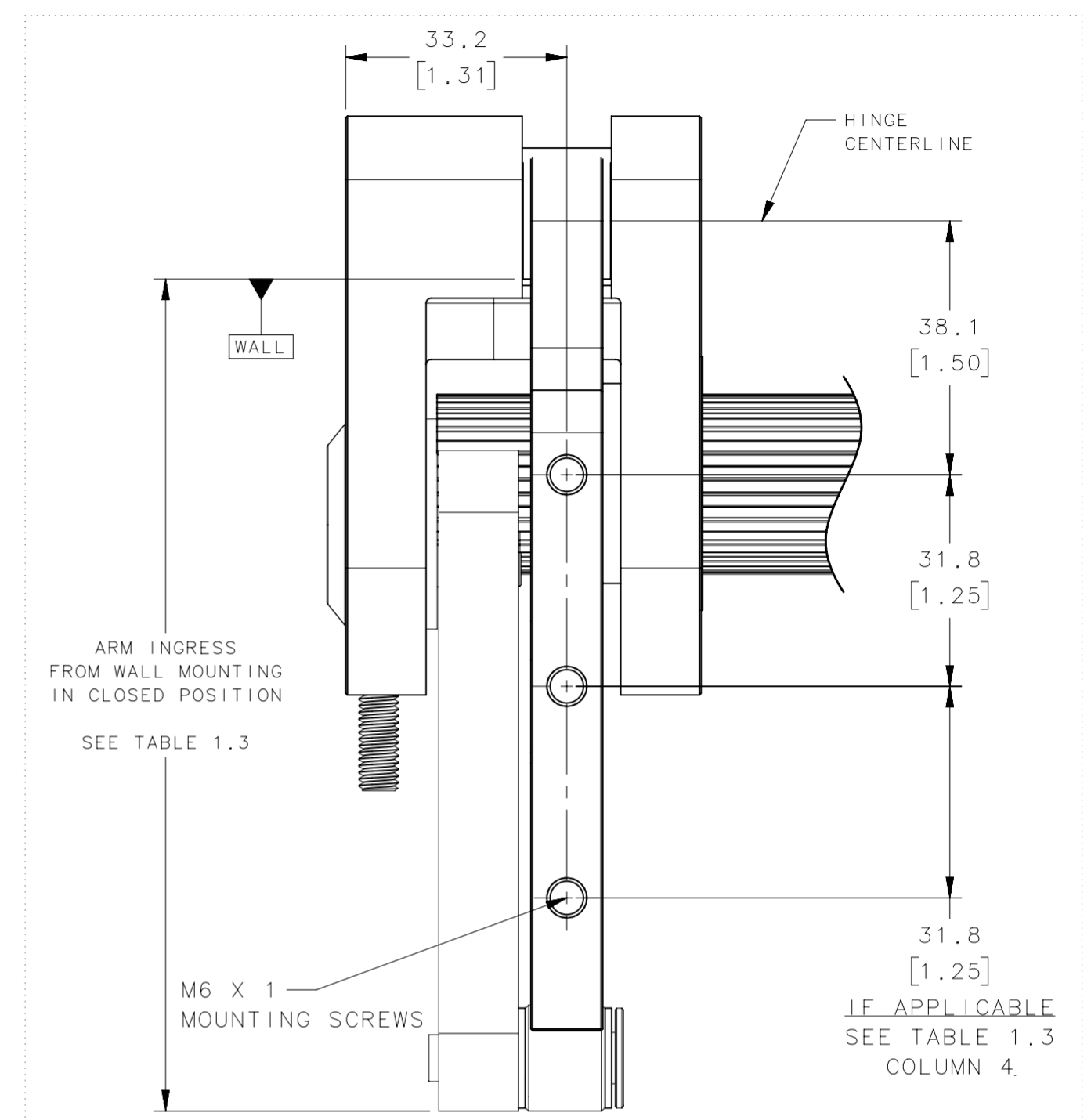
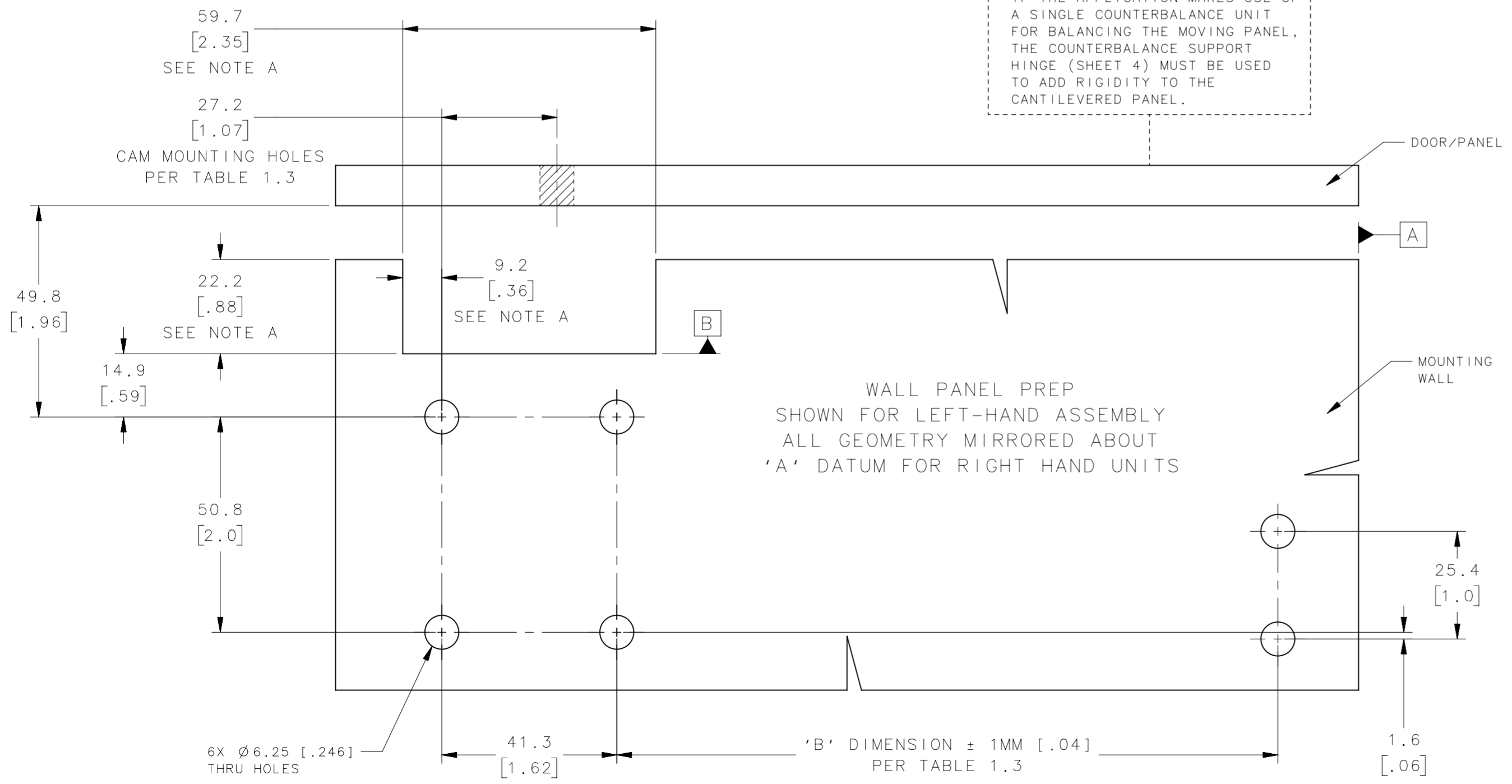
**SCREW LENGTH CALCULATION**

THREAD LENGTH = PANEL THICKNESS + 9.5 [.375] **MINIMUM**  
 PANEL THICKNESS + 12.7 [.500] **MAXIMUM**

MAXIMUM INSTALLATION TORQUE 6.8 N-M [60LB-IN]

**CAUTION!**

IF THE APPLICATION MAKES USE OF A SINGLE COUNTERBALANCE UNIT FOR BALANCING THE MOVING PANEL, THE COUNTERBALANCE SUPPORT HINGE (SHEET 4) MUST BE USED TO ADD RIGIDITY TO THE CANTILEVERED PANEL.



CAM MOUNTING DETAIL

NOTES:

A. CUTOUT GEOMETRY PROVIDED FOR CASES IN WHICH THE REQUIREMENT IS TO CONCEAL THE HOUSING AND FLUSH-MOUNT THE TOP FACE TO ALIGN WITH THE TOP OF THE REAR MOUNTING PANEL. CONCEALMENT IS NOT A REQUIREMENT AND DIMENSIONS CAN BE IGNORED FOR MOUNTING ON REAR PANELS ALONG THE 'B' DATUM.

ASSEMBLY	B' DIMENSION (CM [IN])	ARM INGRESS (CM [IN])	# MOUNTING HOLES
CB-1X-101-00-10	15.59 (6.14)	7.76 (3.05)	2
CB-1X-102-00-10	22.25 (8.76)	9.28 (3.66)	2
CB-1X-103-00-10	28.29 (11.13)	10.31 (4.06)	3
CB-1X-104-00-10	34.00 (13.39)	11.14 (4.39)	3
CB-2X-101-00-10	22.04 (8.68)	8.75 (3.44)	2
CB-2X-102-00-10	24.89 (9.80)	9.45 (3.72)	2
CB-2X-103-00-10	28.07 (11.05)	9.95 (3.92)	2
CB-2X-104-00-10	30.93 (12.18)	10.5 (4.13)	3
CB-2X-105-00-10	34.74 (13.68)	10.96 (4.32)	3

CPB NUMBER 2017-0015

THIRD ANGLE PROJECTION

MILLIMETERS [IN]

TOLERANCES UNLESS OTHERWISE NOTED

ALL DIMENSIONS WITHOUT TOLERANCES ARE FOR REFERENCE ONLY.

PROPRIETARY ITEM EXCEPT FOR USES EXPRESSLY GRANTED IN WRITING. INFORMATION DISCLOSED HEREON IS CONFIDENTIAL AND ALL RIGHTS, PATENT AND OTHERWISE, ARE RESERVED BY SOUTHCO, INC.

PER ASME Y14.5M-1994

DESCRIPTION: COUNTERBALANCE HINGE ATTACHMENT DETAIL

SIZE SYSTEM: A2 NX

DWG NO.: J-CB-1

DRAWN BY: CMG/JDS

DATE: 10OCT2018

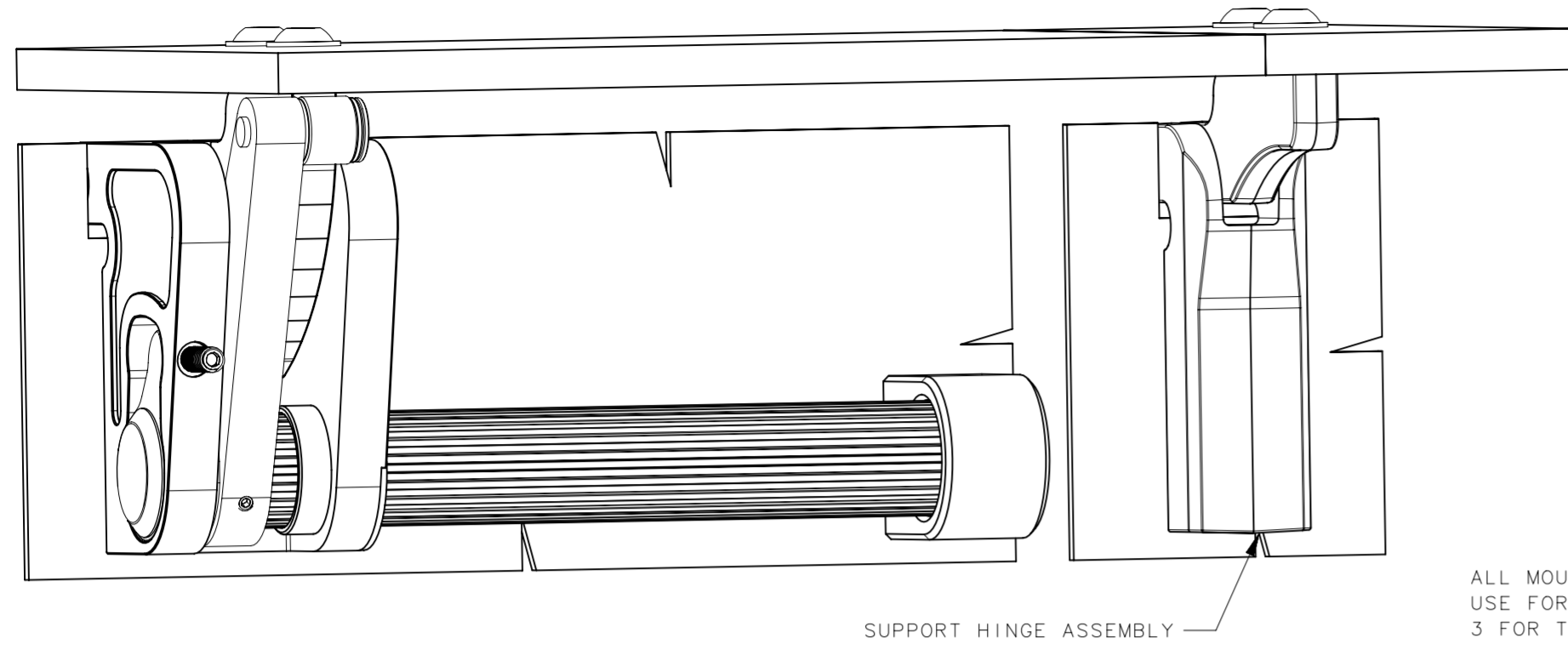
SCALE: NTS

SHEET 3 OF 4

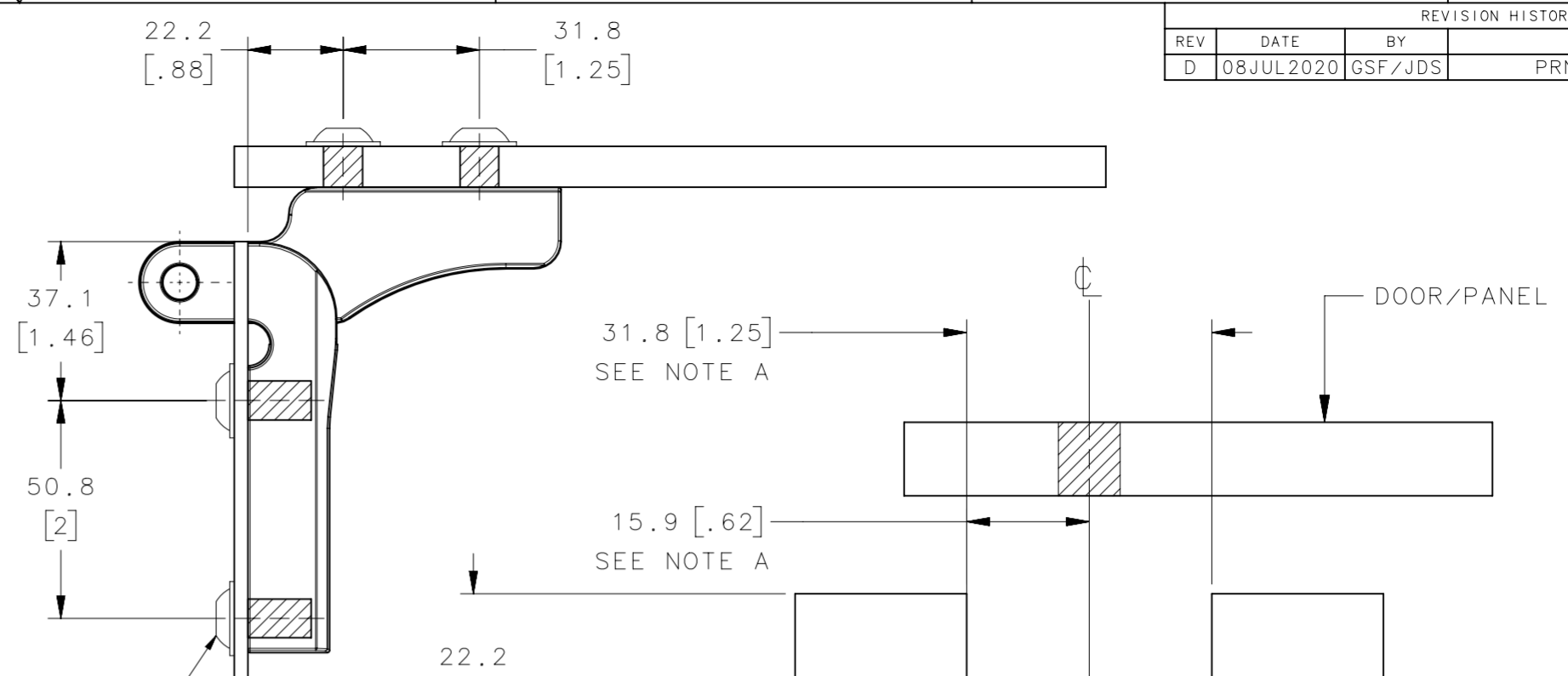
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COUNTERBALANCE SUPPORT HINGE

REVISION HISTORY			
REV	DATE	BY	DESCRIPTION
D	08JUL2020	GSF/JDS	PRN: P2020-1261



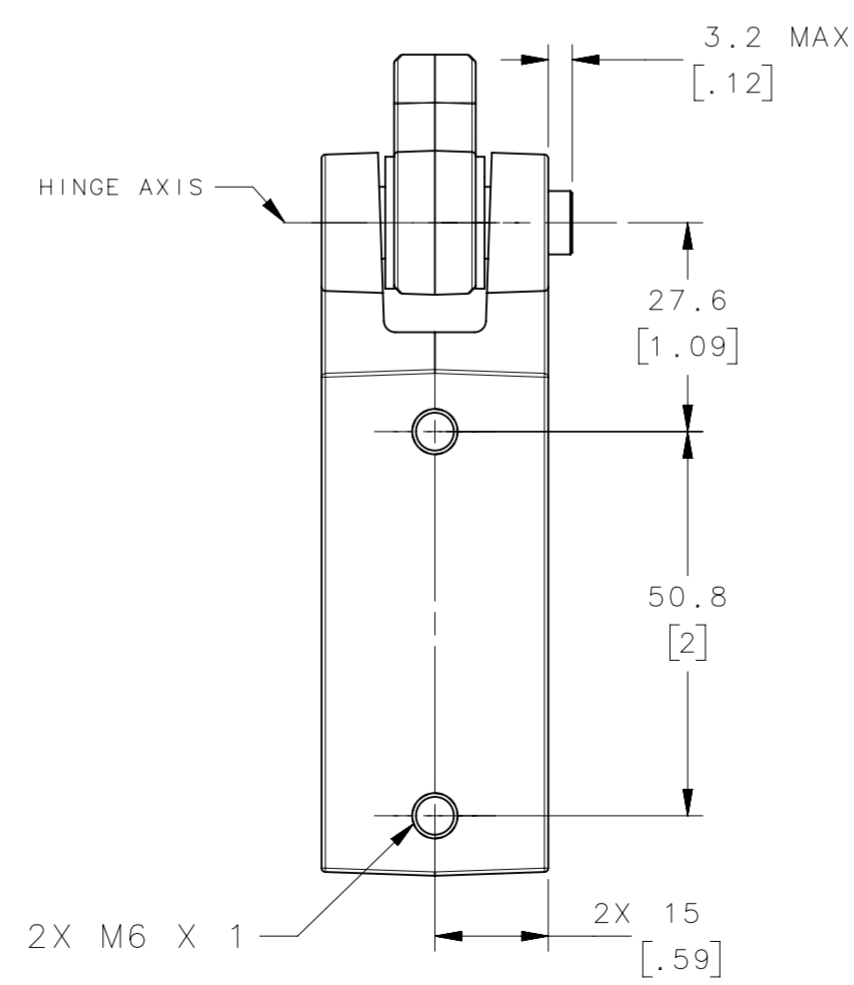
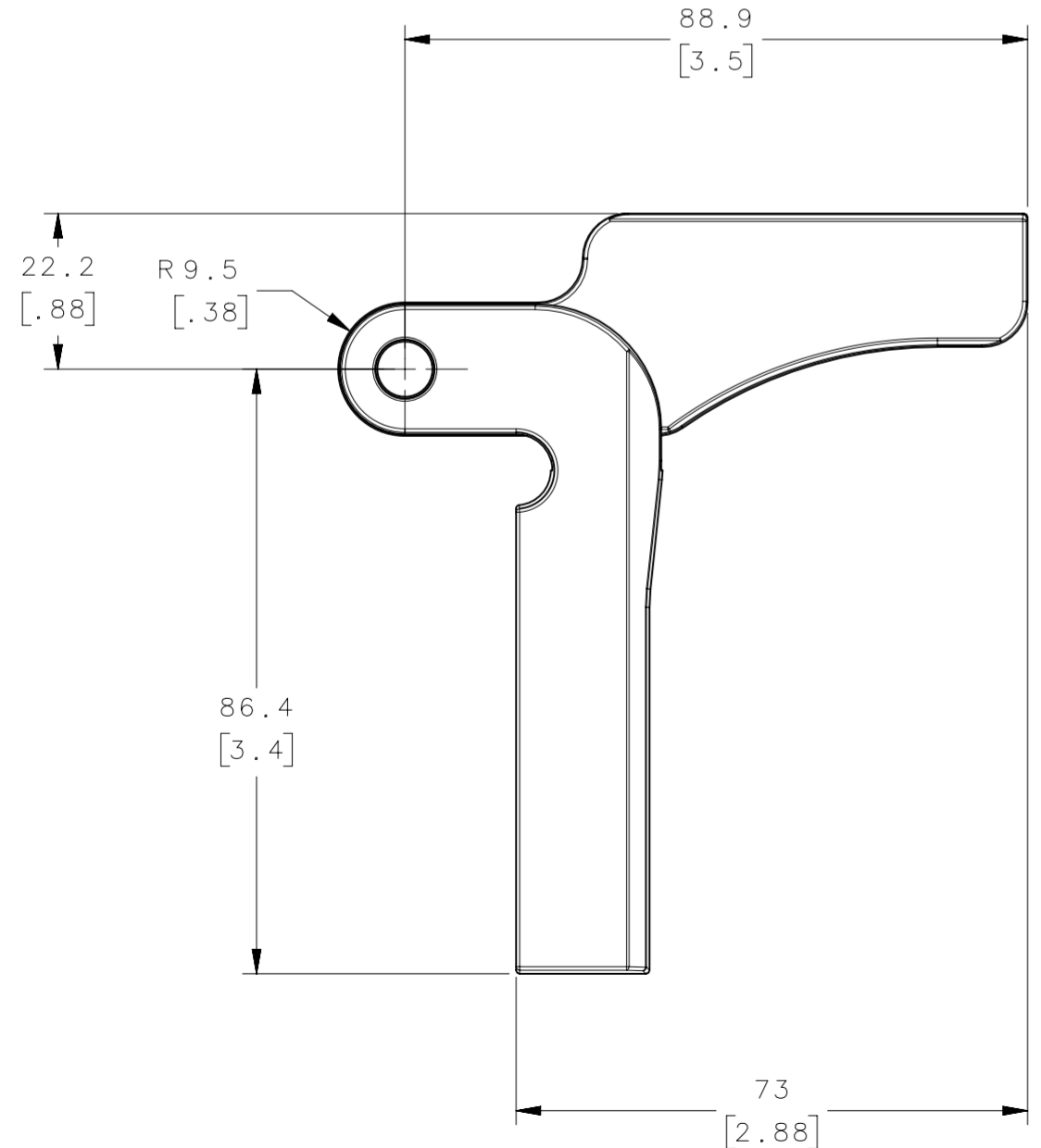
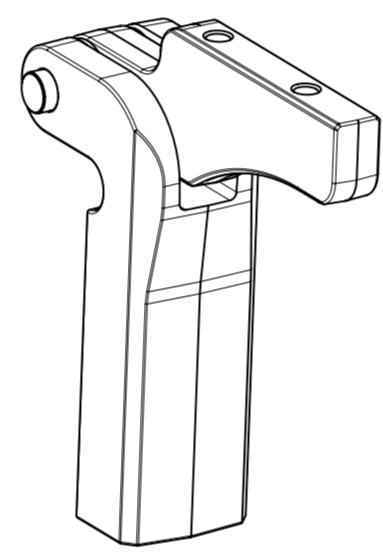
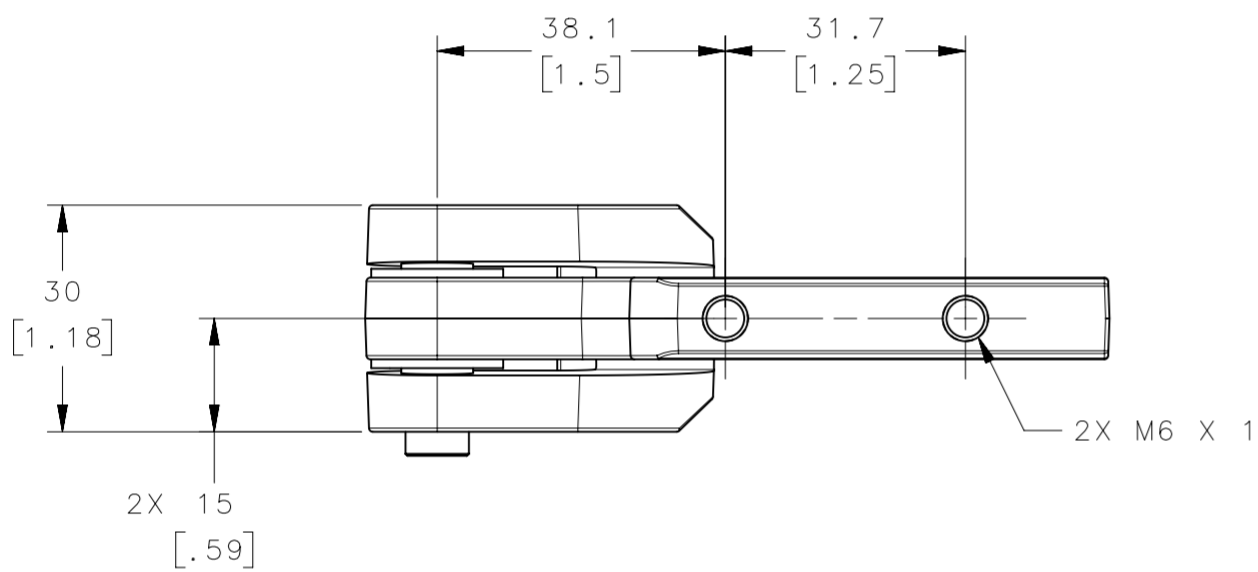
ALL MOUNTING SCREWS M6 X 1  
USE FORMULA SHOWN ON SHEET  
3 FOR THREAD LENGTH



SUPPORT HINGE PANEL PREPARATION

NOTES:

A. CUTOUT GEOMETRY PROVIDED FOR CASES IN WHICH THE REQUIREMENT IS TO CONCEAL THE HOUSING AND FLUSH-MOUNT THE TOP FACE TO ALIGN WITH THE TOP OF THE REAR MOUNTING PANEL. CONCEALMENT IS NOT A REQUIREMENT AND DIMENSIONS CAN BE IGNORED FOR MOUNTING ON REAR PANELS ALONG THE 'B' DATUM.



THE COUNTERBALANCE SUPPORT HINGE IS DESIGNED TO BE USED ON PANELS UTILIZING A SINGLE COUNTERBALANCE HINGE. THE SUPPORT HINGE PROVIDES RIGIDITY TO THE CANTILEVERED END OF THE PANEL TO RESIST TWISTING, BOWING, ETC.

THE SUPPORT HINGE DOES NOT PROVIDE ANY SPRING ASSISTANCE.

TABLE 1.4		
ASSEMBLY PART NUMBER	COLOR/FINISH	ATTACHMENT
CB-10-100-10	BLACK ANODIZE	M6 X 1
CB-10-100-11	CLEAR ANODIZE	M6 X 1
CPB NUMBER 2019-0427	THIRD ANGLE PROJECTION	
	MILLIMETERS [IN]	
SURFACE AREA	TOLERANCES UNLESS OTHERWISE NOTED	
VOLUME	ALL DIMENSIONS WITHOUT TOLERANCES ARE FOR REFERENCE ONLY.	
PROPRIETARY ITEM	EXCEPT FOR USES EXPRESSLY GRANTED IN WRITING, INFORMATION DISCLOSED HEREON IS CONFIDENTIAL AND ALL RIGHTS, PATENT AND OTHERWISE, ARE RESERVED BY SOUTHCO, INC.	
PER ASME Y14.5M-1994		SIZE SYSTEM A2 NX DWG NO. J-CB-1 DRAWN BY CMG/GSF DATE 09JUL2019 SCALE NTS SHEET 4 OF 4

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SUPPORT HINGE DETAIL