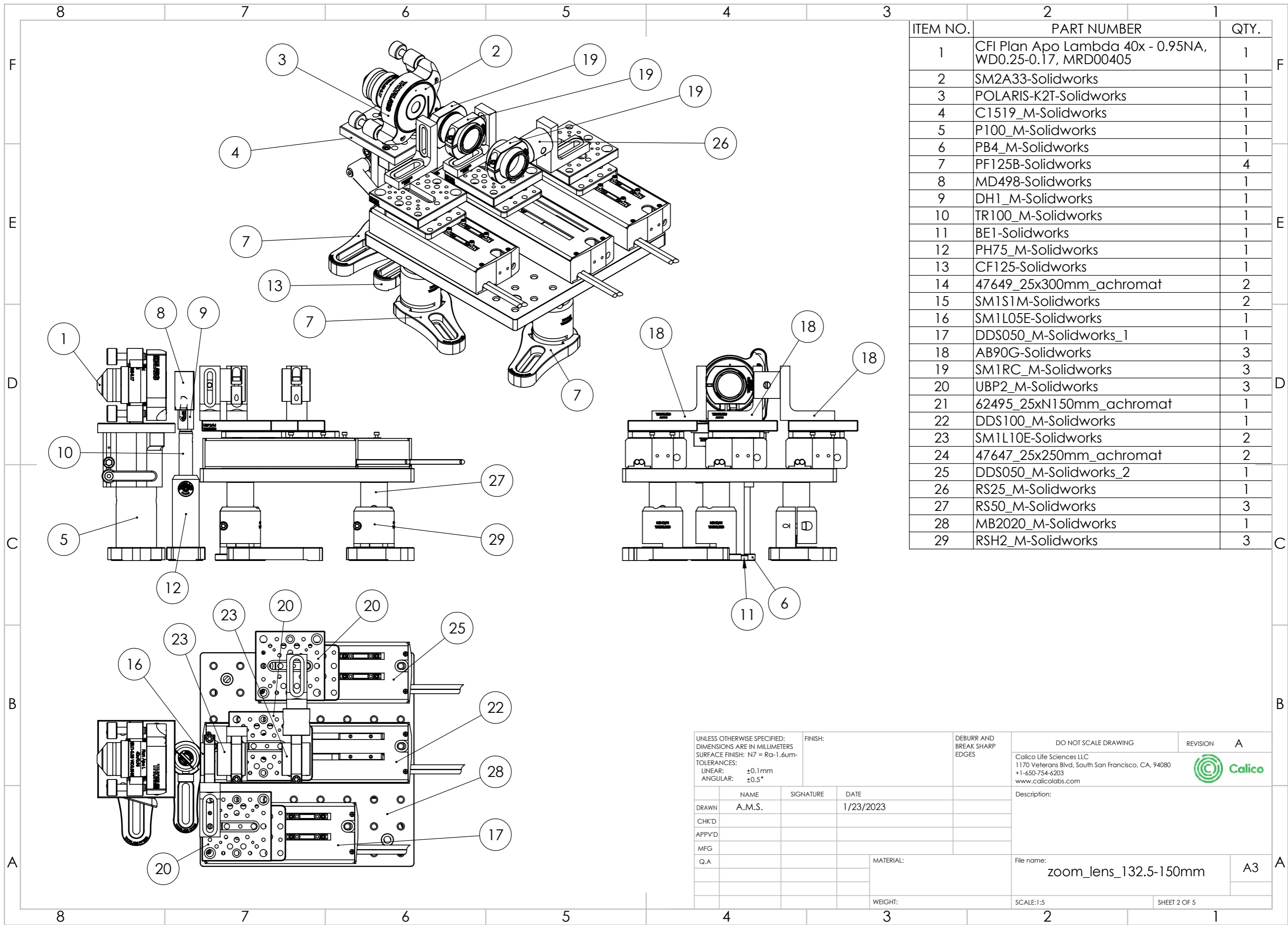


(EFL = effective focal length)

UNLESS OTHERWISE SPECIFIED: DIMENSIONS ARE IN MILLIMETERS SURFACE FINISH: N7 = Ra-1.6um TOLERANCES: LINEAR: ±0.1mm ANGULAR: ±0.5°		FINISH:	DEBURR AND BREAK SHARP EDGES	DO NOT SCALE DRAWING	REVISION A
DRAWN A.M.S.		SIGNATURE	DATE 1/23/2023	Calico Life Sciences LLC 1170 Veterans Blvd, South San Francisco, CA, 94080 +1-650-754-6203 www.calicolabs.com	
CHK'D				Description:	
APP'VD				File name:	zoom_lens_132.5-150mm
MFG				SCALE:1:5	A3
Q.A				WEIGHT:	SHEET 1 OF 5



ITEM NO.	PART NUMBER	QTY.
1	CFI Plan Apo Lambda 40x - 0.95NA, WD0.25-0.17, MRD00405	1
2	SM2A33-Solidworks	1
3	POLARIS-K2T-Solidworks	1
4	C1519_M-Solidworks	1
5	P100_M-Solidworks	1
6	PB4_M-Solidworks	1
7	PF125B-Solidworks	4
8	MD498-Solidworks	1
9	DH1_M-Solidworks	1
10	TR100_M-Solidworks	1
11	BE1-Solidworks	1
12	PH75_M-Solidworks	1
13	CF125-Solidworks	1
14	47649_25x300mm_achromat	2
15	SM1S1M-Solidworks	2
16	SM1L05E-Solidworks	1
17	DDS050_M-Solidworks_1	1
18	AB90G-Solidworks	3
19	SM1RC_M-Solidworks	3
20	UBP2_M-Solidworks	3
21	62495_25xN150mm_achromat	1
22	DDS100_M-Solidworks	1
23	SM1L10E-Solidworks	2
24	47647_25x250mm_achromat	2
25	DDS050_M-Solidworks_2	1
26	RS25_M-Solidworks	1
27	RS50_M-Solidworks	3
28	MB2020_M-Solidworks	1
29	RSH2_M-Solidworks	3

UNLESS OTHERWISE SPECIFIED:
 DIMENSIONS ARE IN MILLIMETERS
 SURFACE FINISH: N7 = Ra-1.6um
 TOLERANCES:
 LINEAR: ±0.1mm
 ANGULAR: ±0.5°

FINISH:

DEBURR AND BREAK SHARP EDGES

DO NOT SCALE DRAWING

REVISION A

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 www.calicolabs.com

Description:

NAME	SIGNATURE	DATE
A.M.S.		1/23/2023
CHK'D		
APP'VD		
MFG		
Q.A		

MATERIAL:

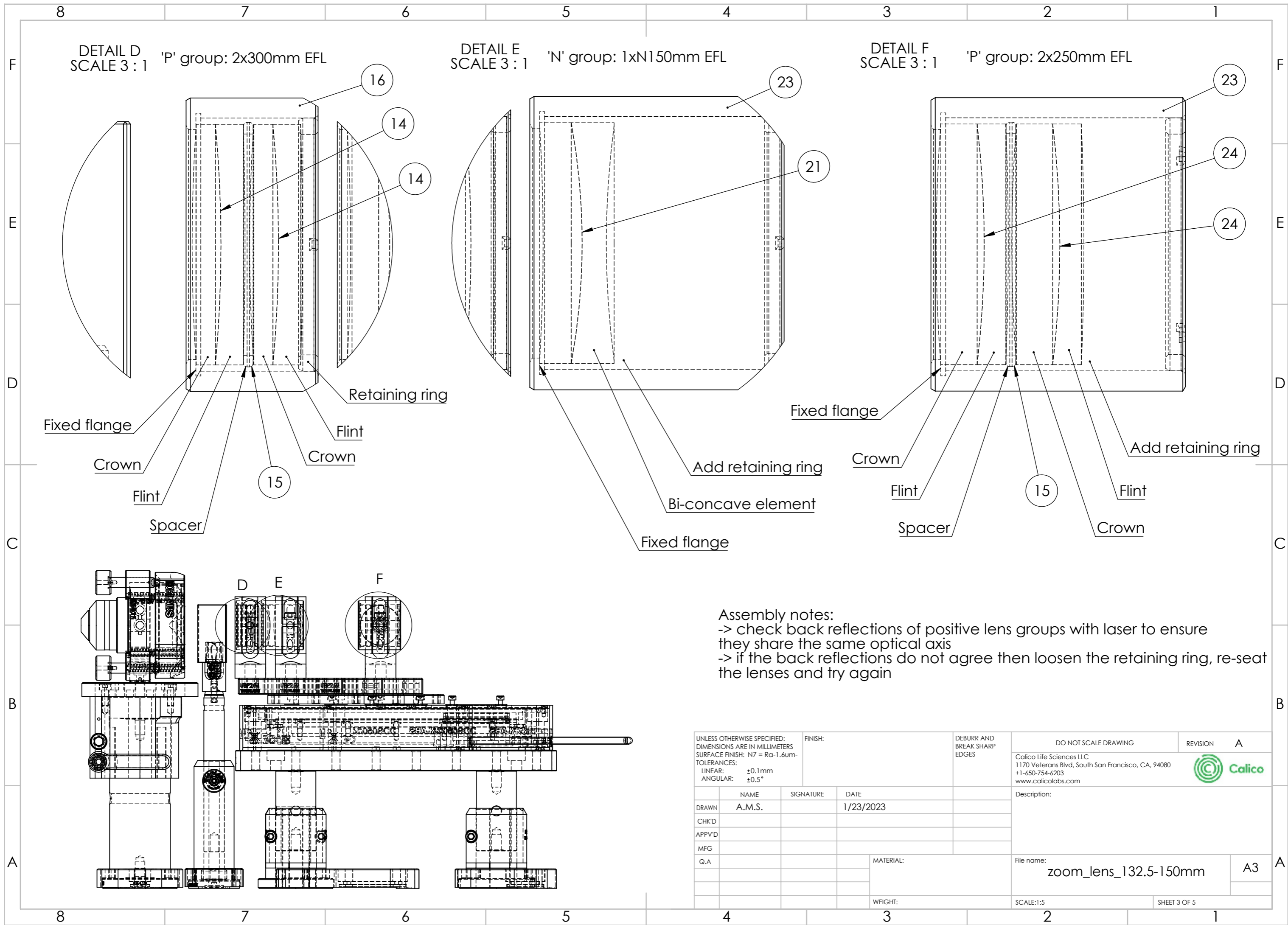
File name: zoom_lens_132.5-150mm

WEIGHT:

SCALE:1:5

SHEET 2 OF 5

A3




DETAIL D
SCALE 3 : 1
'P' group: 2x300mm EFL

DETAIL E
SCALE 3 : 1
'N' group: 1xN150mm EFL

DETAIL F
SCALE 3 : 1
'P' group: 2x250mm EFL

Assembly notes:
 -> check back reflections of positive lens groups with laser to ensure they share the same optical axis
 -> if the back reflections do not agree then loosen the retaining ring, re-seat the lenses and try again

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CHK'D	APPV'D	MFG	Q.A	Description:	
MATERIAL:			WEIGHT:	File name: zoom_lens_132.5-150mm	A3
				SCALE:1:5	SHEET 3 OF 5

Assembly notes:
 -> power and home stages
 -> drive stage 1 to +50mm
 -> drive stage 2 to +75mm
 -> driver stage 3 to +50mm
 -> this will correspond to 132.5mm EFL
 when the assembly is complete

zoom stage 2
 -> 100mm range

negative element
 -> N150mm

Bolt here

Zero position

cables

zoom stage 3
 -> 50mm range

positive group
 -> 2x 250mm

cables

Zero position

cables

Zero position

Bolt here

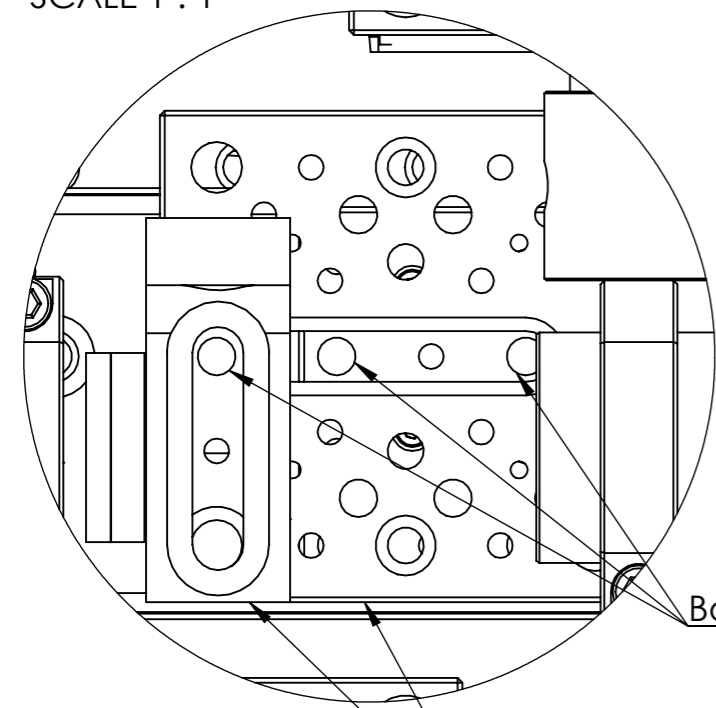
positive group
 -> 2x 300mm

zoom stage 1
 -> 50mm range

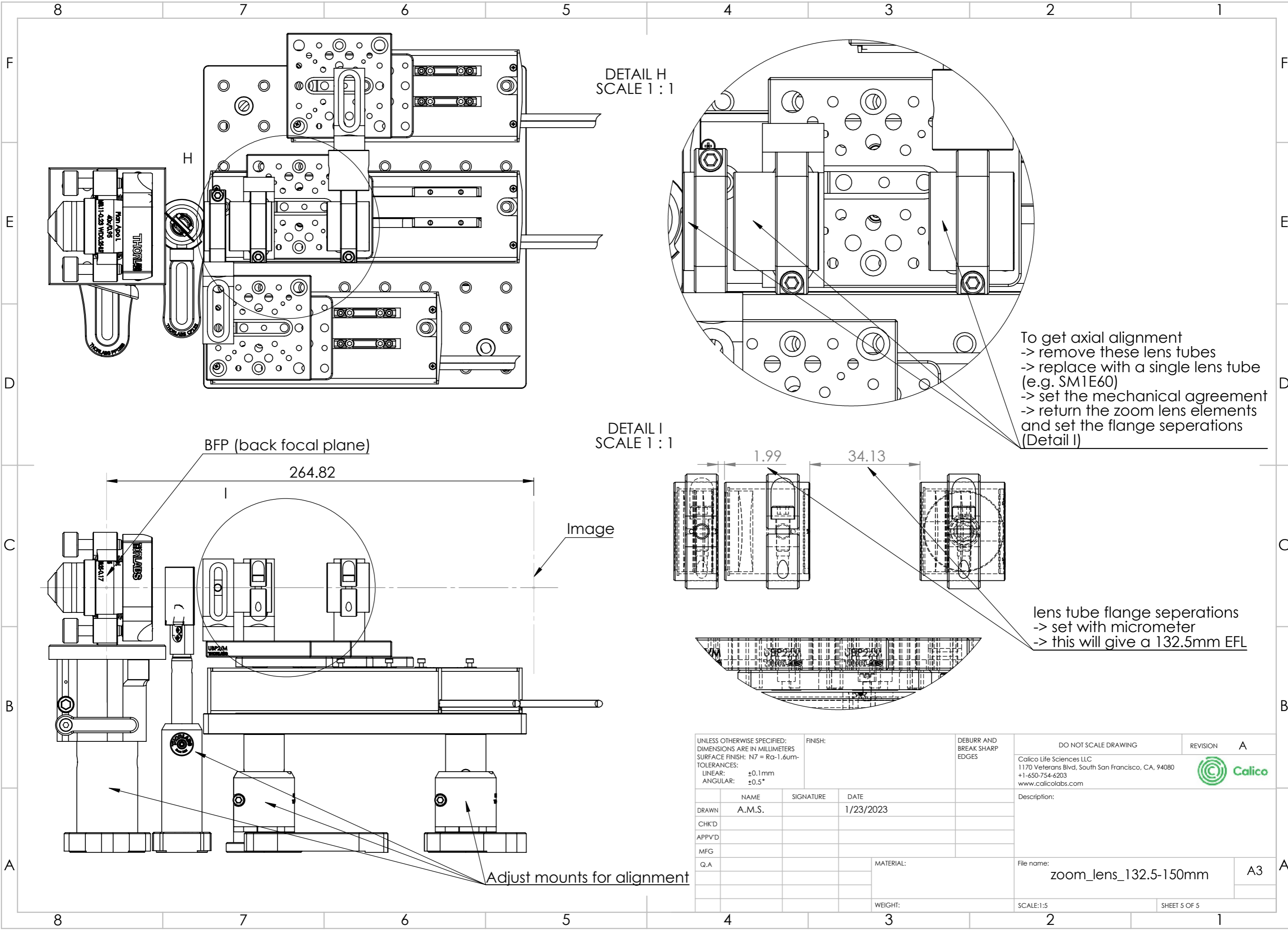
Bolt here

Set these edges flush
 -> This will avoid collisions between the 3 stages!
 (since it also fixes the relative positions of the other mounts)

DETAIL G
 SCALE 1 : 1



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DRAWN A.M.S.		SIGNATURE	DATE 1/23/2023	Calico Life Sciences LLC 1170 Veterans Blvd, South San Francisco, CA, 94080 +1-650-754-6203 www.calicolabs.com	
CHK'D				Description:	
APPV'D				File name:	zoom_lens_132.5-150mm
MFG				SCALE:1:5	A3
Q.A				WEIGHT:	SHEET 4 OF 5



DETAIL H
SCALE 1 : 1

DETAIL I
SCALE 1 : 1

To get axial alignment
 -> remove these lens tubes
 -> replace with a single lens tube (e.g. SM1E60)
 -> set the mechanical agreement
 -> return the zoom lens elements and set the flange separations (Detail I)

lens tube flange separations
 -> set with micrometer
 -> this will give a 132.5mm EFL

BFP (back focal plane)

Image

Adjust mounts for alignment

UNLESS OTHERWISE SPECIFIED: DIMENSIONS ARE IN MILLIMETERS SURFACE FINISH: N7 = Ra-1.6um TOLERANCES: LINEAR: ±0.1mm ANGULAR: ±0.5°		FINISH:	DEBURR AND BREAK SHARP EDGES	DO NOT SCALE DRAWING	REVISION A
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CHK'D				Description:	
APPV'D				File name:	zoom_lens_132.5-150mm
MFG				SCALE:1:5	A3
Q.A				WEIGHT:	SHEET 5 OF 5