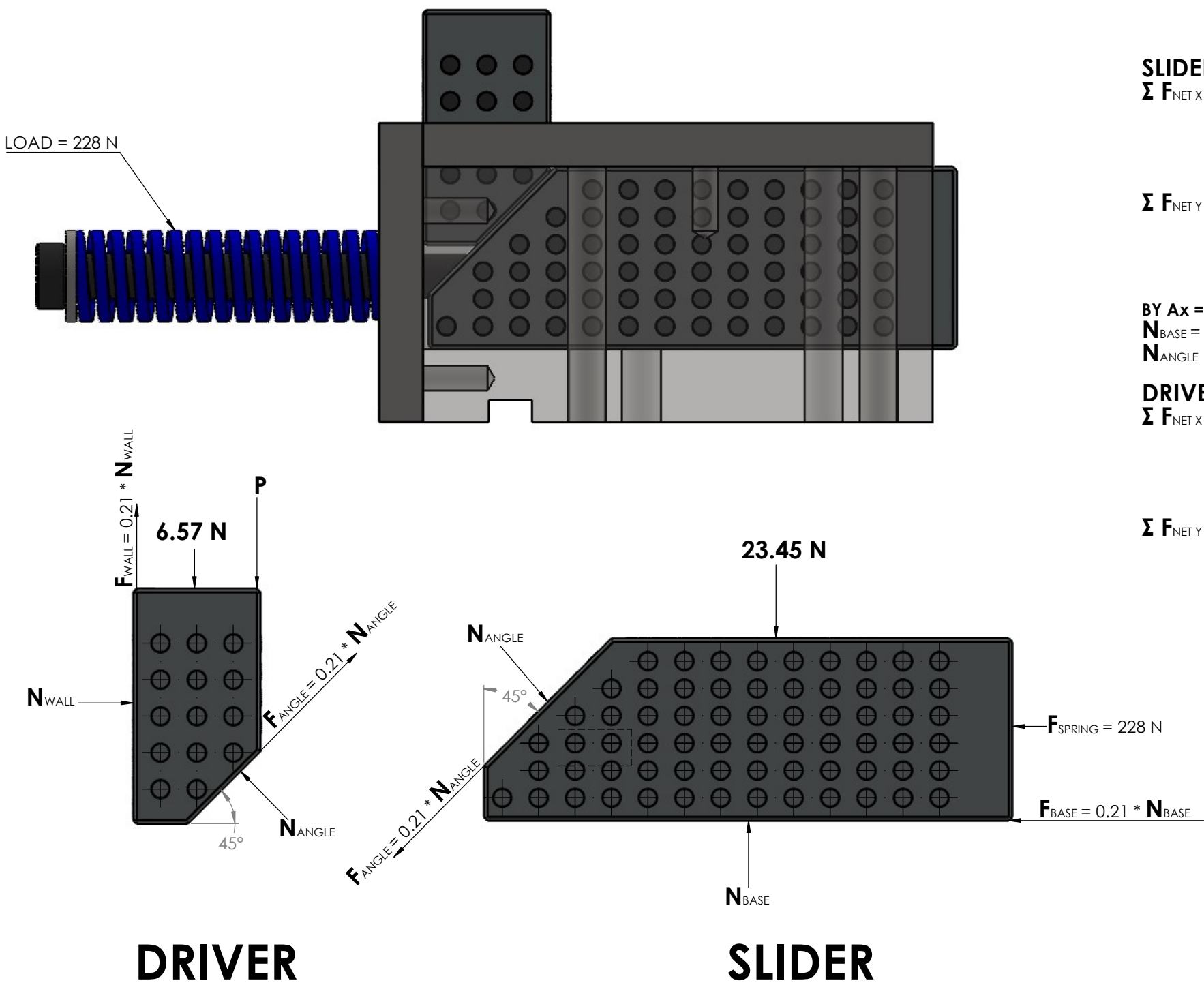


MINIMUM FORCE "P" REQUIRED TO START MOVING THE SLIDER



SLIDER

$$\begin{aligned}\Sigma F_{NET X} &= 0 \\ &= -228 - 0.21 * N_{BASE} - 0.21 * N_{ANGLE} * \cos(45^\circ) + N_{ANGLE} * \cos(45^\circ) \\ &= -228 - 0.21 * N_{BASE} + 0.559 * N_{ANGLE} \\ &\Rightarrow 0.21 * N_{BASE} - 0.559 * N_{ANGLE} = -228\end{aligned}$$

$$\begin{aligned}\Sigma F_{NET Y} &= 0 \\ &= -23.45 + N_{BASE} - 0.21 * N_{ANGLE} * \sin(45^\circ) - N_{ANGLE} * \sin(45^\circ) \\ &= -23.45 + N_{BASE} - 0.856 * N_{ANGLE} \\ &\Rightarrow -N_{BASE} + 0.856 * N_{ANGLE} = -23.45\end{aligned}$$

BY $A_x = b$:

$$\begin{aligned}N_{BASE} &= 549.1946 \text{ N} \\ N_{ANGLE} &= 614.1876 \text{ N}\end{aligned}$$

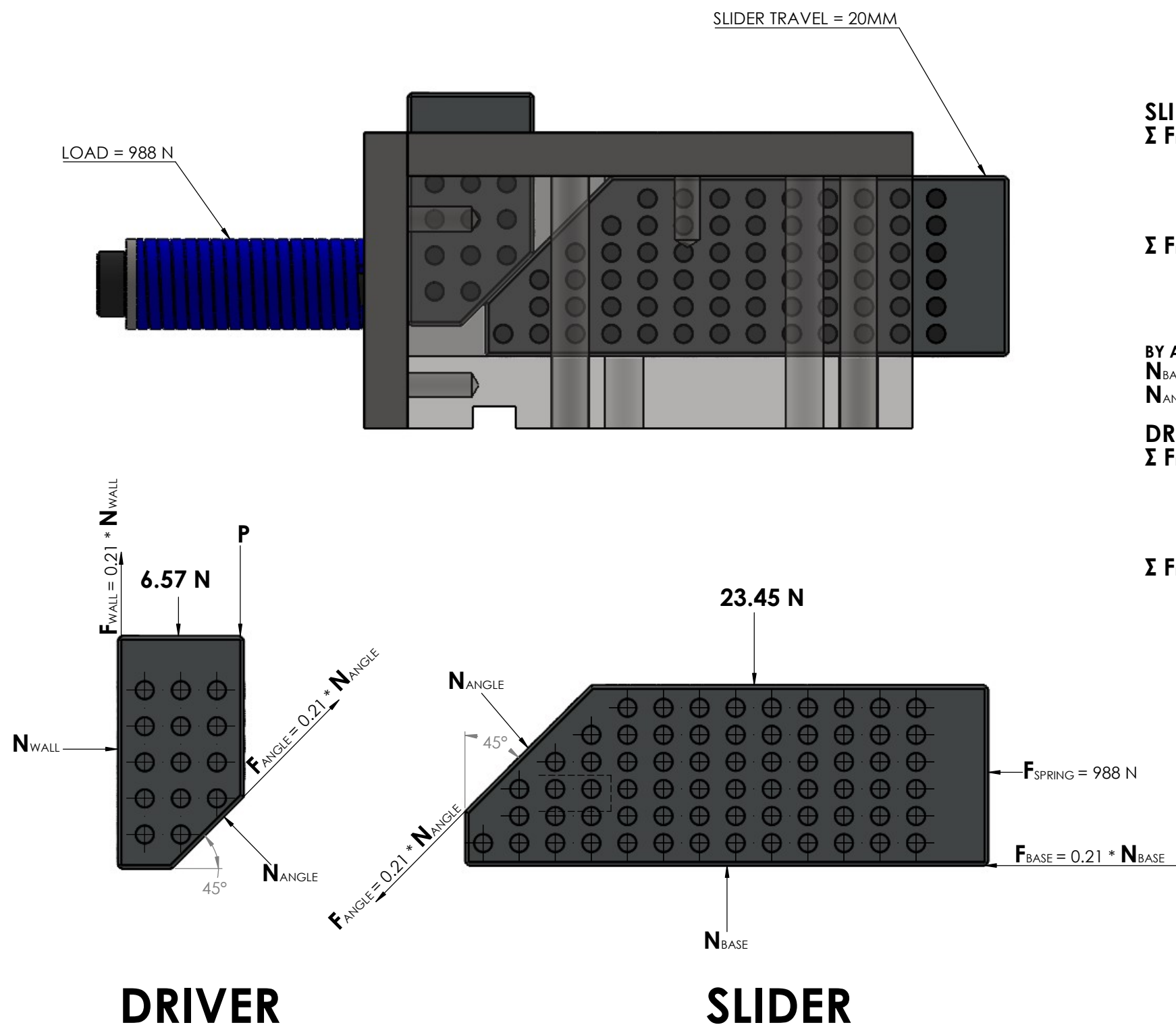
DRIVER

$$\begin{aligned}\Sigma F_{NET X} &= 0 \\ &= N_{WALL} - N_{ANGLE} * \cos(45^\circ) + 0.21 * N_{ANGLE} * \cos(45^\circ) \\ &= N_{WALL} - 343.094 \\ &\Rightarrow N_{WALL} = 343.094 \text{ N}\end{aligned}$$

$$\begin{aligned}\Sigma F_{NET Y} &= 0 \\ &= -P - 6.57 + 0.21 * N_{WALL} + N_{ANGLE} * \sin(45^\circ) + 0.21 * N_{ANGLE} * \sin(45^\circ) \\ &= -P + 590.978 \\ &\Rightarrow P = 590.978 \text{ N}\end{aligned}$$

UNLESS OTHERWISE SPECIFIED: DIMENSIONS ARE IN MILLIMETERS SURFACE FINISH: TOLERANCES: LINEAR: ANGULAR:							FINISH:		DEBURR AND BREAK SHARP EDGES			DO NOT SCALE DRAWING			REVISION				
															TITLE:				
DRAWN		NAME		SIGNATURE		DATE													
CHK'D																			
APP'VD																			
MFG																			
Q.A.																			
							MATERIAL:							DWG NO.					
														Box Side Cam					
														A2					
							WEIGHT:							SCALE:1:1					
															SHEET 1 OF 3				

MAXIMUM FORCE "P" REQUIRED TO FULLY EXTEND THE SLIDER



SLIDER

$$\begin{aligned}\Sigma F_{NET\ X} &= 0 \\ &= -988 - 0.21 * N_{BASE} - 0.21 * N_{ANGLE} * \cos(45^\circ) + N_{ANGLE} * \cos(45^\circ) \\ &= -988 - 0.21 * N_{BASE} + 0.559 * N_{ANGLE} \\ &\Rightarrow 0.21 * N_{BASE} - 0.559 * N_{ANGLE} = -988\end{aligned}$$

$$\begin{aligned}\Sigma F_{NET\ Y} &= 0 \\ &= -23.45 + N_{BASE} - 0.21 * N_{ANGLE} * \sin(45^\circ) - N_{ANGLE} * \sin(45^\circ) \\ &= -23.45 + N_{BASE} - 0.856 * N_{ANGLE} \\ &\Rightarrow -N_{BASE} + 0.856 * N_{ANGLE} = -23.45\end{aligned}$$

BY $Ax = b$:

$$N_{BASE} = 2264.6\text{ N}$$

$$N_{ANGLE} = 2618.2\text{ N}$$

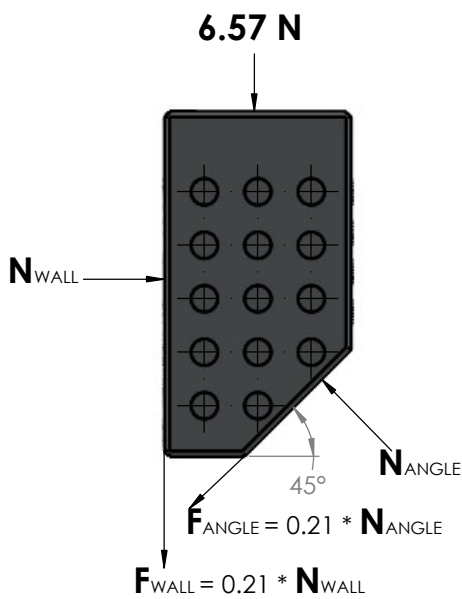
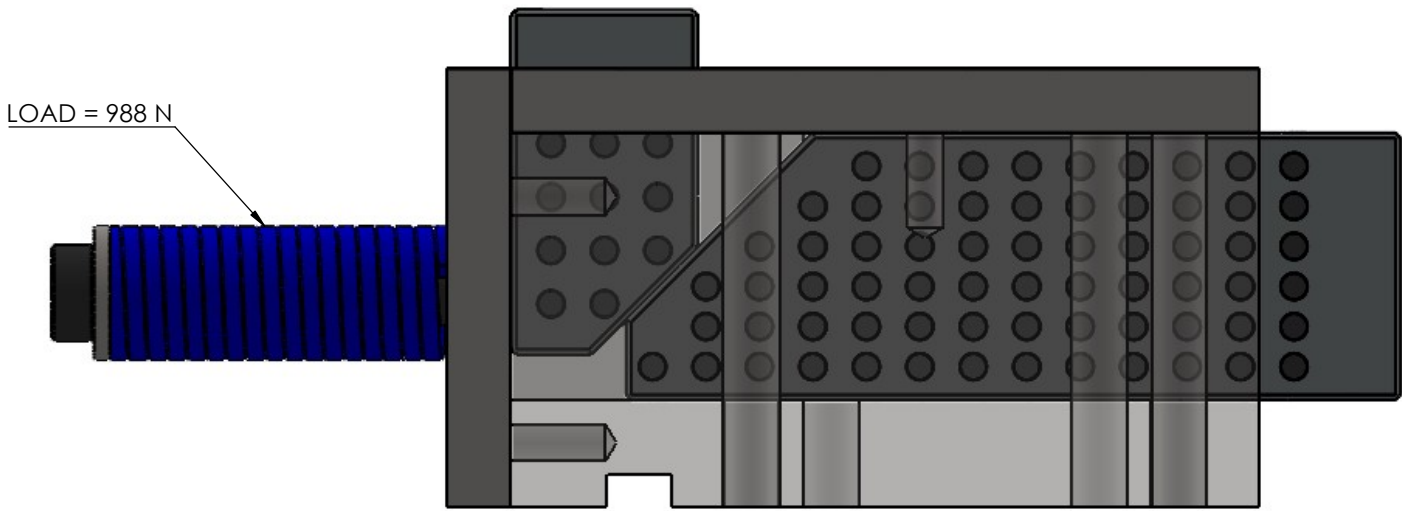
DRIVER

$$\begin{aligned}\Sigma F_{NET\ X} &= 0 \\ &= N_{WALL} - N_{ANGLE} * \cos(45^\circ) + 0.21 * N_{ANGLE} * \cos(45^\circ) \\ &= N_{WALL} - 1462.564 \\ &\Rightarrow N_{WALL} = 1462.564\text{ N}\end{aligned}$$

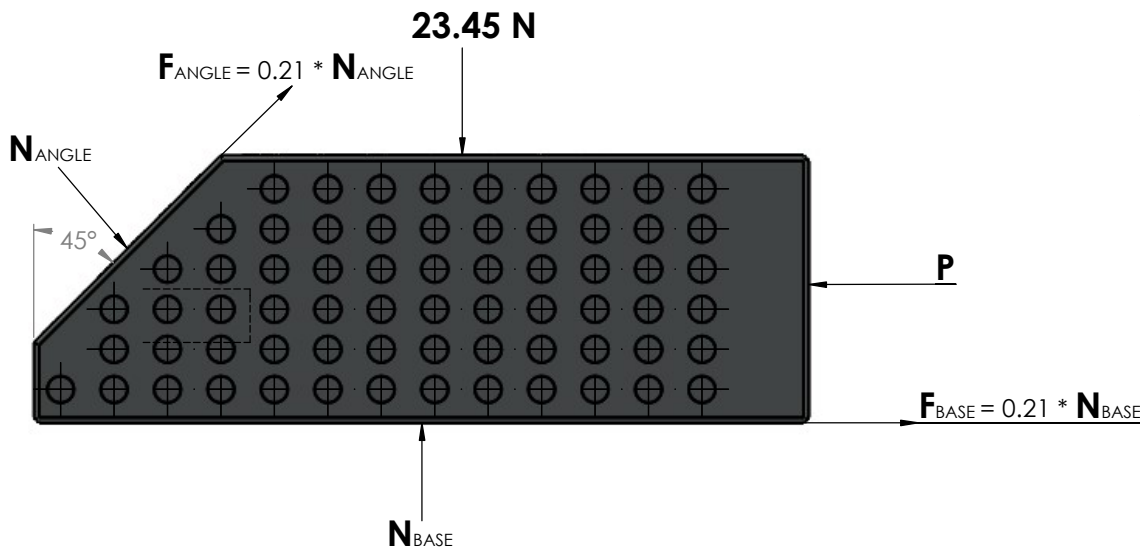
$$\begin{aligned}\Sigma F_{NET\ Y} &= 0 \\ &= -P - 6.57 + 0.21 * N_{WALL} + N_{ANGLE} * \sin(45^\circ) + 0.21 * N_{ANGLE} * \sin(45^\circ) \\ &= -P + 2540.698 \\ &\Rightarrow P = 2540.698\end{aligned}$$

UNLESS OTHERWISE SPECIFIED: DIMENSIONS ARE IN MILLIMETERS SURFACE FINISH: TOLERANCES: LINEAR: ANGULAR:						FINISH:		DEBURR AND BREAK SHARP EDGES		DO NOT SCALE DRAWING			REVISION		
DRAWN		NAME		SIGNATURE		DATE				TITLE:					
CHK'D															
APPV'D															
MFG															
Q.A															
						MATERIAL:				DWG NO. Box Side Cam					A2
						WEIGHT:				SCALE:1:1				SHEET 2 OF 3	

MINIMUM FORCE "P" REQUIRED TO START LIFTING THE DRIVER
EXCLUDES THE SPRING IN THE CALCULATION



DRIVER



SLIDER

DRIVER

$\Sigma F_{NET X} = 0$
 $= N_{WALL} - N_{ANGLE} * \cos(45^\circ) - 0.21 * N_{ANGLE} * \cos(45^\circ)$
 $= N_{WALL} - 0.707 * N_{ANGLE} - 0.149 * N_{ANGLE}$
 $= N_{WALL} - 0.856 * N_{ANGLE}$
 $\Rightarrow N_{WALL} = 0.856 * N_{ANGLE}$

$\Sigma F_{NET Y} = 0$
 $= -0.21 * N_{WALL} - 6.57 + N_{ANGLE} * \sin(45^\circ) - 0.21 * N_{ANGLE} * \sin(45^\circ)$
 $= -0.21 * N_{WALL} - 6.57 + 0.707 * N_{ANGLE} - 0.149 * N_{ANGLE}$
 $= -0.21 * N_{WALL} - 6.57 + 0.559 * N_{ANGLE}$
 $\Rightarrow N_{ANGLE} = (0.21 * N_{WALL} + 6.57) / 0.559$
 $= 0.376 * N_{WALL} + 11.753$

BY $A_x = b$:
 $N_{WALL} = 14.8294 \text{ N}$
 $N_{ANGLE} = 17.3241 \text{ N}$

SLIDER

$\Sigma F_{NET X} = 0$
 $= N_{ANGLE} * \cos(45^\circ) + 0.21 * N_{ANGLE} * \cos(45^\circ) + 0.21 * N_{BASE} - P$
 $= 21.780 - P$
 $\Rightarrow P = -21.780 \text{ N}$

$\Sigma F_{NET Y} = 0$
 $= -N_{ANGLE} * \sin(45^\circ) - 23.45 + 0.21 * N_{ANGLE} * \sin(45^\circ) + N_{BASE}$
 $= -33.128 + N_{BASE}$
 $\Rightarrow N_{BASE} = 33.128 \text{ N}$

UNLESS OTHERWISE SPECIFIED: DIMENSIONS ARE IN MILLIMETERS SURFACE FINISH: TOLERANCES: LINEAR: ANGULAR:				FINISH:		DEBURR AND BREAK SHARP EDGES	DO NOT SCALE DRAWING		REVISION		
	NAME	SIGNATURE	DATE				TITLE:				
DRAWN											
CHK'D											
APPV'D											
MFG							DWG NO. <div>Box Side Cam</div>				
Q.A											
							SCALE:1:1				
WEIGHT:											