

**Example:**  
FOV = 1"  
WD = 14"  
**Best Lens:**  
50 mm plus  
5 mm Extension Tube

**Directions:**

1. Determine field-of-view (FOV) in inches.
2. Determine working distance (WD) in inches.
3. Locate FOV in the first column of the table at right.
4. Scan across the row to the working distance closest to desired application.
5. Use the lens size and extension tube indicated for that row.

**Definitions:**

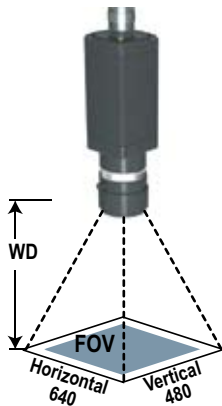
**Field-of-View (FOV):**

The area of the inspection to be captured by the sensor.

**Working Distance (WD):** The distance between the front of the sensor and the target object.

**Extension Tubes:**

Spacers between the lens and the sensor that allow the lens to focus at closer working distances.



Horizontal x Vertical FOV (in)	Working Distance in Inches (+ Extension Tube in Millimeters)							
	Lens Choices							
	4 mm	6.5 mm	8 mm	12 mm	16 mm	25 mm	50 mm	75 mm
0.10 X 0.08								
0.20 X 0.15								
0.30 X 0.23							7.7 (30)*	11.4 (40)*
0.40 X 0.30							8.7 (20)*	12.8 (25)*
0.50 X 0.38						3.9 (7.0)*	9.7 (15)*	14.2 (20)*
1.0 X 0.80					4.3 (4.0)*	6.5 (3.0)*	14.8 (5.0)*	21.4 (5.0)*
1.5 X 1.1				4.3 (2.0)*	6.0 (4.0)*	9.1 (2.0)*	19.9 (5.0)*	28.5 (1.0)*
2.0 X 1.5		5.0 (0.5)*	5.0 (0.5)*	5.6 (2.0)*	7.7 (2.0)*	11.8 (2.0)*	25.0	35.7
2.5 X 1.9		5.6 (0.5)*	5.7 (0.25)*	6.9 (0.5)*	9.4 (2.0)*	14.4 (2.0)*	30.1	42.8
3.0 X 2.3		6.2 (0.25)*	6.5	8.1 (0.5)*	11.1 (2.0)*	17.0	35.2	50.0
3.5 X 2.6		6.8 (0.25)*	7.2	9.4 (0.5)*	12.8 (2.0)*	19.6	40.3	57.1
4.0 X 3.0			8.0	10.6 (0.5)*	14.5 (2.0)*	22.2	45.4	64.3
4.5 X 3.4			8.8	11.9 (0.5)*	16.3 (2.0)*	24.8	50.5	71.4
5.0 X 3.8			9.5	13.2	18.0	27.5	55.6	78.6
5.5 X 4.1			10.3	14.4	19.7	30.1	60.7	85.7
6.0 X 4.5			11.1	15.7	21.4	32.7	65.8	92.9
6.5 X 4.9			11.8	17.0	23.1	35.3	70.9	100.0
7.0 X 5.3			12.6	18.2	24.8	37.9	76.0	107.2
7.5 X 5.6	5.0		13.4	19.5	26.5	40.5	81.1	114.3
8.0 X 6.0	5.4	11.9	14.1	20.8	28.2	43.1	86.2	121.5
8.5 X 6.4	5.7	12.5	14.9	22.0	29.9	45.8	91.3	128.6
9.0 X 6.8	6.1	13.1	15.7	23.3	31.6	48.4	96.4	135.8
9.5 X 7.1	6.5	13.7	16.4	24.6	33.4	51.0	101.5	142.9
10.0 X 7.5	6.9	14.2	17.2	25.8	35.1	53.6	106.6	150.1
10.5 X 7.9	7.3	14.8	18.0	27.1	36.8	56.2	111.7	157.2
11.0 X 8.3	7.7	15.4	18.7	28.4	38.5	58.8	116.8	164.4
11.5 X 8.6	8.1	16.0	19.5	29.6	40.2	61.4	121.9	171.5
12.0 X 9.0	8.5	16.5	20.3	30.9	41.9	64.1	127.0	178.7
12.5 X 9.4	8.9	17.1	21.0	32.2	43.6	66.7	132.1	185.8
13.0 X 9.8	9.3	17.7	21.8	33.4	45.3	69.3	137.2	193.0
13.5 X 10.1	9.7	18.3	22.5	34.7	47.0	71.9	142.3	200.1
14.0 X 10.5	10.1	18.8	23.3	35.9	48.7	74.5	147.4	207.3
14.5 X 10.9	10.4	19.4	24.1	37.2	50.5	77.1	152.5	214.4
15.0 X 11.3	10.8	20.0	24.8	38.5	52.2	79.8	157.6	221.6
15.5 X 11.6	11.2	20.6	25.6	39.7	53.9	82.4	162.7	228.7
16.0 X 12.0	11.6	21.1	26.4	41.0	55.6	85.0	167.8	235.9
16.5 X 12.4	12.0	21.7	27.1	42.3	57.3	87.6	172.9	243.0
17.0 X 12.8	12.4	22.3	27.9	43.5	59.0	90.2	178.0	250.2
17.5 X 13.1	12.8	22.9	28.7	44.8	60.7	92.8	183.1	257.3
18.0 X 13.5	13.2	23.4	29.4	46.1	62.4	95.4	188.2	264.5
18.5 X 13.9	13.6	24.0	30.2	47.3	64.1	98.1	193.3	271.6
19.0 X 14.3	14.0	24.6	31.0	48.6	65.8	100.7	198.4	278.8
19.5 X 14.6	14.4	25.2	31.7	49.9	67.6	103.3	203.5	285.9
20.0 X 15.0	14.8	25.7	32.5	51.1	69.3	105.9	208.6	293.1

\* Use Lens Extension Kit (LEKS) (0.25 and 0.5 mm) and/or LEK (0.5, 1.0, 5.0, 10, 20 and 40 mm)

**Example:**  
FOV = 30 mm  
WD = 420 mm  
**Best Lens:**  
50 mm plus  
5 mm Extension Tube

**Directions:**

1. Determine field-of-view (FOV) in millimeters.
2. Determine working distance (WD) in millimeters.
3. Locate FOV in the first column of the table at right.
4. Scan across the row to the working distance closest to desired application.
5. Use the lens size and extension tube indicated for that row.

**Definitions:**

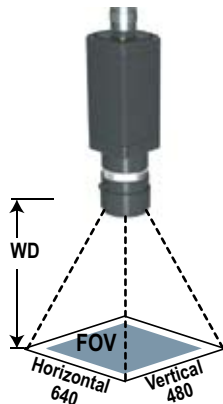
**Field-of-View (FOV):**

The area of the inspection to be captured by the sensor.

**Working Distance (WD):** The distance between the front of the sensor and the target object.

**Extension Tubes:**

Spacers between the lens and the sensor that allow the lens to focus at closer working distances.



Horizontal x Vertical FOV (mm)	Working Distance in Millimeters (+ Extension Tube in Millimeters)							
	Lens Choices							
	4 mm	6.5 mm	8 mm	12 mm	16 mm	25 mm	50 mm	75 mm
5 X 4							168 (4.0)*	
10 X 8							219 (2.0)*	324 (2.5)*
15 X 11						113 (5.0)*	270 (1.0)*	396 (2.0)*
20 X 15						140 (5.0)*	321 (5.0)*	467 (1.0)*
25 X 19						166 (3.0)*	372 (5.0)*	539 (5.0)*
30 X 23					125 (4.0)*	192 (2.0)*	423 (5.0)*	610 (5.0)*
40 X 30				116 (2.0)*	159 (3.0)*	244 (2.0)*	525 (5.0)*	753
50 X 38		127 (0.5)*	125 (0.5)*	142 (2.0)*	193 (2.0)*	296 (2.0)*	627	896
60 X 45		142 (0.5)*	140 (1.0)*	167 (0.5)*	227 (1.0)*	349 (2.0)*	729	1039
70 X 53			156	192 (0.5)*	261 (1.0)*	401 (2.0)*	831	1182
80 X 60		157 (0.25)*	171	218 (0.5)*	296 (0.5)*	453	933	1325
90 X 68		173 (0.25)*	186	243 (0.5)*	330 (0.5)*	506	1035	1468
100 X 75			202	268 (0.5)*	364 (0.5)*	558	1137	1611
110 X 83			217	293 (0.5)*	398 (0.5)*	610	1239	1754
120 X 90			232	319	432	663	1341	1897
130 X 98			248	344	467	715	1443	2040
140 X 105			263	369	501	767	1545	2183
150 X 113			278	395	535	819	1647	2326
160 X 120	102		293	420	569	872	1749	2469
170 X 128	110		309	445	603	924	1851	2612
180 X 135	117		324	471	638	976	1953	2755
190 X 143	125		339	496	672	1029	2055	2898
200 X 150	133		355	521	706	1081	2157	3041
210 X 158	141	311	370	546	740	1133	2259	3184
220 X 165	149	322	385	572	774	1186	2361	3327
230 X 173	157	334	401	597	809	1238	2463	3470
240 X 180	164	345	416	622	843	1290	2565	3613
250 X 188	172	357	431	648	877	1342	2667	3756
260 X 195	180	368	446	673	911	1395	2769	3899
270 X 203	188	380	462	698	945	1447	2871	4042
280 X 210	196	391	477	724	980	1499	2973	4185
290 X 218	204	403	492	749	1014	1552	3075	4328
300 X 225	212	414	508	774	1048	1604	3177	4471
310 X 233	219	426	523	799	1082	1656	3279	4614
320 X 240	227	437	538	825	1116	1709	3381	4757
330 X 248	235	449	554	850	1151	1761	3483	4900
340 X 255	243	460	569	875	1185	1813	3585	5043
350 X 263	251	472	584	901	1219	1865	3687	5186
360 X 270	259	483	599	926	1253	1918	3789	5329
370 X 278	266	495	615	951	1287	1970	3891	5472
380 X 285	274	506	630	977	1322	2022	3993	5615
390 X 293	282	518	645	1002	1356	2075	4095	5758
400 X 300	290	529	661	1027	1390	2127	4197	5901

\* Use Lens Extension Kit (LEKS) (0.25 and 0.5 mm) and/or LEK (0.5, 1.0, 5.0, 10, 20 and 40 mm)

**Example:**  
FOV = 0.5"  
WD. = 13"  
**Best Lens:**  
50 mm plus  
5 mm Extension Tube

**Directions:**

1. Determine field-of-view (FOV) in inches.
2. Determine working distance (WD) in inches.
3. Locate FOV in the first column of the table at right.
4. Scan across the row to the working distance closest to desired application.
5. Use the lens size and extension tube indicated for that row.

**Definitions:**

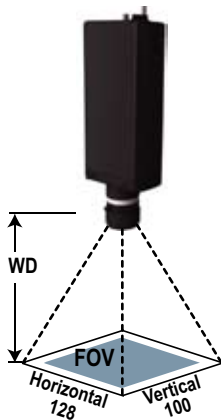
**Field-of-View (FOV):**

The area of the inspection to be captured by the sensor.

**Working Distance (WD):** The distance between the front of the sensor and the target object.

**Extension Tubes:**

Spacers between the lens and the sensor that allow the lens to focus at closer working distances.



Horizontal x Vertical FOV (in)	Working Distance in Inches (+ Extension Tube in Millimeters)							
	Lens Choices							
	4 mm	6.5 mm	8 mm	12 mm	16 mm	25 mm	50 mm	75 mm
0.10 X 0.08								
0.20 X 0.16							8.6 (20)*	12.3 (30)*
0.30 X 0.23							10.3 (10)*	14.8 (20)*
0.40 X 0.31						5.1 (5.0)*	12.1 (5.0)*	17.2 (10)*
0.50 X 0.39						6.0 (4.0)*	13.9 (5.0)*	19.6 (5.0)*
1.0 X 0.78				5.3 (2.0)*	7.1 (2.0)*	10.9 (2.0)*	22.8	31.8
1.5 X 1.2			5.4 (0.5)*	7.7 (0.5)*	10.4 (0.5)*	15.8 (2.0)*	31.7	44.0
2.0 X 1.6			7.0	10.0 (0.5)*	13.6 (0.5)*	20.7	40.6	56.2
2.5 X 2.0			8.6	12.3	16.8 (0.5)*	25.6	49.5	68.4
3.0 X 2.3	5.2		10.2	14.7	20.1	30.5	58.4	80.6
3.5 X 2.7	5.9		11.8	17.0	23.3	35.3	67.3	92.8
4.0 X 3.1	6.7		13.3	19.3	26.6	40.2	76.2	105.0
4.5 X 3.5	7.5	12.4	14.9	21.7	29.8	45.1	85.1	117.2
5.0 X 3.9	8.3	13.7	16.5	24.0	33.0	50.0	94.0	129.4
5.5 X 4.3	9.1	15.0	18.1	26.3	36.3	54.9	102.9	141.6
6.0 X 4.7	9.9	16.3	19.7	28.7	39.5	59.8	111.8	153.8
6.5 X 5.1	10.7	17.5	21.3	31.0	42.8	64.7	120.7	166.0
7.0 X 5.5	11.5	18.8	22.9	33.3	46.0	69.5	129.6	178.2
7.5 X 5.9	12.3	20.1	24.5	35.7	49.2	74.4	138.5	190.4
8.0 X 6.2	13.1	21.4	26.1	38.0	52.5	79.3	147.4	202.6
8.5 X 6.6	13.8	22.7	27.7	40.3	55.7	84.2	156.3	214.8
9.0 X 7.0	14.6	23.9	29.2	42.7	59.0	89.1	165.2	227.0
9.5 X 7.4	15.4	25.2	30.8	45.0	62.2	94.0	174.1	239.2
10.0 X 7.8	16.2	26.5	32.4	47.3	65.4	98.9	183.0	251.4
10.5 X 8.2	17.0	27.8	34.0	49.7	68.7	103.7	191.9	263.6
11.0 X 8.6	17.8	29.1	35.6	52.0	71.9	108.6	200.8	275.8
11.5 X 9.0	18.6	30.3	37.2	54.4	75.2	113.5	209.7	288.0
12.0 X 9.4	19.4	31.6	38.8	56.7	78.4	118.4	218.6	300.2
12.5 X 9.8	20.2	32.9	40.4	59.0	81.6	123.3	227.5	312.4
13.0 X 10.1	21.0	34.2	42.0	61.4	84.9	128.2	236.4	324.6
13.5 X 10.5	21.7	35.5	43.6	63.7	88.1	133.0	245.3	336.8
14.0 X 10.9	22.5	36.7	45.1	66.0	91.4	137.9	254.2	349.0
14.5 X 11.3	23.3	38.0	46.7	68.4	94.6	142.8	263.1	361.2
15.0 X 11.7	24.1	39.3	48.3	70.7	97.8	147.7	272.0	373.4
15.5 X 12.1	24.9	40.6	49.9	73.0	101.1	152.6	280.9	385.6
16.0 X 12.5	25.7	41.9	51.5	75.4	104.3	157.5	289.8	397.8
16.5 X 12.9	26.5	43.1	53.1	77.7	107.6	162.4	298.7	410.0
17.0 X 13.3	27.3	44.4	54.7	80.0	110.8	167.2	307.6	422.2
17.5 X 13.7	28.1	45.7	56.3	82.4	114.0	172.1	316.5	434.4
18.0 X 14.0	28.9	47.0	57.9	84.7	117.3	177.0	325.4	446.6
18.5 X 14.4	29.6	48.3	59.5	87.0	120.5	181.9	334.3	458.8
19.0 X 14.8	30.4	49.5	61.0	89.4	123.8	186.8	343.2	471.0
19.5 X 15.2	31.2	50.8	62.6	91.7	127.0	191.7	352.1	483.2
20.0 X 15.6	32.0	52.1	64.2	94.0	130.2	196.6	361.0	495.4

\* Use Lens Extension Kit (LEKS) (0.25 and 0.5 mm) and/or LEK (0.5, 1.0, 5.0, 10, 20 and 40 mm)

**Example:**  
FOV = 25 mm  
WD = 570 mm  
**Best Lens:**  
50 mm plus  
5 mm Extension Tube

**Directions:**

1. Determine field-of-view (FOV) in millimeters.
2. Determine working distance (WD) in millimeters.
3. Locate FOV in the first column of the table at right.
4. Scan across the row to the working distance closest to desired application.
5. Use the lens size and extension tube indicated for that row.

**Definitions:**

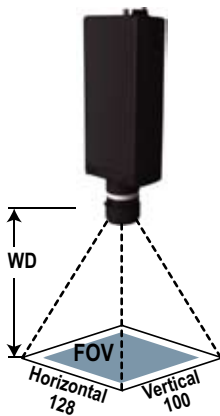
**Field-of-View (FOV):**

The area of the inspection to be captured by the sensor.

**Working Distance (WD):** The distance between the front of the sensor and the target object.

**Extension Tubes:**

Spacers between the lens and the sensor that allow the lens to focus at closer working distances.



Horizontal x Vertical FOV (mm)	Working Distance in Millimeters (+ Extension Tube in Millimeters)							
	Lens Choices							
	4 mm	6.5 mm	8 mm	12 mm	16 mm	25 mm	50 mm	75 mm
5 X 4							216 (20)*	311 (30)*
10 X 8						127 (5.0)*	305 (10)*	433 (10)*
15 X 12						176 (3.0)*	394 (5.0)*	555 (5.0)*
20 X 16					146 (3.0)*	225 (2.0)*	483 (5.0)*	677 (5.0)*
25 X 20				133 (2.0)*	178 (2.0)*	274 (2.0)*	572 (2.0)*	799
30 X 23			111 (0.5)*	157 (0.5)*	211 (2.0)*	322 (2.0)*	661	921
40 X 31			143 (0.3)*	203 (0.5)*	275 (0.5)*	420 (2.0)*	839	1165
50 X 39			175	250 (0.5)*	340 (0.5)*	518	1017	1409
60 X 47	105		207	297 (0.5)*	405 (0.5)*	616	1195	1653
70 X 55	121		239	343	470	713	1373	1879
80 X 62	137		270	390	535	811	1551	2141
90 X 70	153		302	437	599	909	1729	2385
100 X 78	169		334	484	664	1006	1907	2629
110 X 86	184	305	366	530	729	1104	2085	2873
120 X 94	200	330	398	577	794	1202	2263	3117
130 X 101	216	356	429	624	859	1299	2441	3361
140 X 109	232	381	461	670	923	1397	2619	3605
150 X 117	248	407	493	717	988	1495	2797	3849
160 X 125	263	433	525	764	1053	1593	2975	4093
170 X 133	279	458	557	810	1118	1690	3153	4337
180 X 140	295	484	588	857	1183	1788	3331	4581
190 X 148	311	509	620	904	1247	1886	3509	4825
200 X 156	327	535	652	951	1213	1983	3687	5069
210 X 164	342	561	684	997	1377	2081	3865	5313
220 X 172	358	586	716	1044	1442	2179	4043	5557
230 X 179	374	612	747	1091	1507	2276	4221	5801
240 X 187	390	637	779	1137	1571	2374	4399	6045
250 X 195	406	663	811	1184	1636	2472	4577	6289
260 X 203	421	689	843	1231	1701	2570	4755	6533
270 X 211	437	714	875	1277	1766	2667	4933	6777
280 X 218	453	740	906	1324	1831	2765	5111	7021
290 X 226	469	765	938	1371	1895	2863	5289	7265
300 X 234	485	791	970	1418	1960	2960	5467	7509
310 X 242	500	817	1002	1464	2025	3058	5645	7753
320 X 250	516	842	1034	1511	2090	3156	5823	7997
330 X 257	532	868	1065	1558	2155	3253	6001	8241
340 X 265	548	893	1097	1604	2219	3351	6179	8485
350 X 273	564	919	1129	1651	2284	3449	6357	8729
360 X 281	579	945	1161	1698	2349	3547	6535	8973
370 X 289	595	970	1193	1744	2414	3644	6713	9217
380 X 296	611	996	1224	1791	2479	3742	6891	9461
390 X 304	627	1021	1256	1838	2543	3840	7069	9705
400 X 312	643	1047	1288	1884	2608	3938	7247	9949

\* Use Lens Extension Kit (LEKS) (0.25 and 0.5 mm) and/or LEK (0.5, 1.0, 5.0, 10, 20 and 40 mm)

**Example:**  
FOV = 1"  
WD = 10"  
**Best Lens:**  
50 mm plus  
12 mm Extension Tube

**Directions:**

1. Determine field-of-view (FOV) in inches.
2. Determine working distance (WD) in inches.
3. Locate FOV in the first column of the table at right.
4. Scan across the row to the working distance closest to desired application.
5. Use the lens size and extension tube indicated for that row.

**Definitions:**

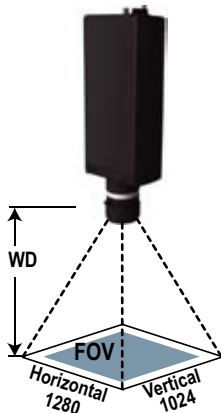
**Field-of-View (FOV):**

The area of the inspection to be captured by the sensor.

**Working Distance (WD):** The distance between the front of the sensor and the target object.

**Extension Tubes:**

Spacers between the lens and the sensor that allow the lens to focus at closer working distances.



Horizontal x Vertical FOV (in)	Working Distance in Inches (+ Extension Tube in Millimeters)						
	Lens Choices						
	8 mm	12 mm	16 mm	25 mm	35 mm	50 mm	75 mm
0.10 X 0.08							
0.20 X 0.16							
0.30 X 0.24							
0.40 X 0.32							10.5 (45)*
0.50 X 0.4					3.9 (2.0)*	7.5 (30)*	11.1 (35)*
1.0 X 0.8			2.8 (5.0)*	4.2 (5.0)*	5.9 (7.0)*	10.3 (12)*	14.2 (12)*
1.5 X 1.2	2.0 (0.75)*		3.8 (2.0)*	5.6 (2.0)*	7.0 (5.0)*	12.5 (8.0)*	18.2 (5.0)*
2.0 X 1.6	2.5 (0.25)*	3.2 (1.0)*	4.6 (1.25)*	6.8 (0.75)*	9.5 (2.0)*	15.3 (5.0)*	22.6
2.5 X 2.0	3.1	3.8 (0.5)*	5.4 (0.75)*	8.3	11.4 (1.25)*	18.3 (2.75)*	26.7
3.0 X 2.4	3.6	4.5	6.7 (0.25)*	9.8	13.2 (0.25)*	21.6 (2.0)*	30.8
3.5 X 2.8	4.1	5.3	7.3	11.3	15.4	23.8 (1.25)*	34.9
4.0 X 3.2	4.6	6.0	8.3	12.7	17.3	28.2 (0.5)*	39.1
4.5 X 3.6	5.1	6.8	9.2	14.2	19.3	29.4	43.2
5.0 X 4.0	5.6	7.5	10.1	15.7	21.3	32.5	47.3
5.5 X 4.4	6.1	8.3	11.1	17.1	23.2	35.6	51.5
6.0 X 4.8	6.6	9.0	12.0	18.6	25.2	38.7	55.6
6.5 X 5.2	7.1	9.8	12.9	20.1	27.1	41.7	59.7
7.0 X 5.6	7.6	10.5	13.9	21.5	29.1	44.8	63.8
7.5 X 6.0	8.1	11.3	14.8	23.0	31.0	47.9	68.0
8.0 X 6.4	8.6	12.0	15.7	24.5	33.0	51.0	72.1
8.5 X 6.8	9.1	12.8	16.7	25.9	35.0	54.1	76.2
9.0 X 7.2	9.6	13.5	17.6	27.4	36.9	57.2	80.4
9.5 X 7.6	10.1	14.3	18.5	28.9	38.9	60.3	84.5
10.0 X 8.0	10.6	15.0	19.5	30.3	40.8	63.4	88.6
10.5 X 8.4	11.1	15.8	20.4	31.8	42.8	66.5	92.8
11.0 X 8.8	11.6	16.5	21.3	33.2	44.8	69.6	96.9
11.5 X 9.2	12.1	17.3	22.3	34.7	46.7	72.7	101.0
12.0 X 9.6	12.6	18.0	23.2	36.2	48.7	75.8	105.1
12.5 X 10.0	13.1	18.8	24.1	37.6	50.6	78.9	109.3
13.0 X 10.4	13.6	19.5	25.0	39.1	52.6	82.0	113.4
13.5 X 10.8	14.1	20.3	26.0	40.6	54.5	85.1	117.5
14.0 X 11.2	14.6	21.0	26.9	42.0	56.5	88.2	121.7
14.5 X 11.6	15.1	21.8	27.8	43.5	58.5	91.3	125.8
15.0 X 12.0	15.6	22.5	28.8	45.0	60.4	94.3	129.9
15.5 X 12.4	16.1	23.3	29.7	46.4	62.4	97.4	134.0
16.0 X 12.8	16.6	24.0	30.6	47.9	64.3	100.5	138.2
16.5 X 13.2	17.1	24.8	31.6	49.4	66.3	103.6	142.3
17.0 X 13.6	17.6	25.5	32.5	50.8	68.3	106.7	146.4
17.5 X 14.0	18.1	26.3	33.4	52.3	70.2	109.8	150.6
18.0 X 14.4	18.6	27.0	34.4	53.8	72.2	112.9	154.7
18.5 X 14.8	19.1	27.8	35.3	55.2	74.1	116.0	158.8
19.0 X 15.2	19.6	28.6	36.2	56.7	76.1	119.1	162.9
19.5 X 15.6	20.1	29.3	37.2	58.1	78.0	122.2	167.1
20.0 X 16.0	20.6	30.1	38.1	59.6	80.0	125.3	171.2

\* Use Lens Extension Kit (LEKS) (0.25 and 0.5 mm) and/or LEK (0.5, 1.0, 5.0, 10, 20 and 40 mm)

**Example:**  
FOV = 30 mm  
WD = 280 mm  
**Best Lens:**  
50 mm plus  
10 mm Extension Tube

**Directions:**

1. Determine field-of-view (FOV) in millimeters.
2. Determine working distance (WD) in millimeters.
3. Locate FOV in the first column of the table at right.
4. Scan across the row to the working distance closest to desired application.
5. Use the lens size and extension tube indicated for that row.

**Definitions:**

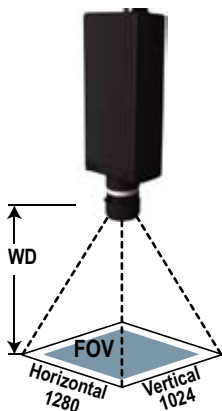
**Field-of-View (FOV):**

The area of the inspection to be captured by the sensor.

**Working Distance (WD):** The distance between the front of the sensor and the target object.

**Extension Tubes:**

Spacers between the lens and the sensor that allow the lens to focus at closer working distances.



Horizontal x Vertical FOV (mm)	Working Distance in Millimeters (+ Extension Tube in Millimeters)						
	Lens Choices						
	8 mm	12 mm	16 mm	25 mm	35 mm	50 mm	75 mm
5 X 4							
10 X 8							267 (45)*
15 X 12					107 (15)*		289 (30)*
20 X 16					127 (10)*		318 (20)*
25 X 20					147 (7.0)*		360 (12)*
30 X 24	47 (1.0)*		71 (5.0)*		159 (6.0)*	282 (10)*	384 (10)*
40 X 32	53 (0.75)*		97 (2.0)*	141 (2.0)*	187 (5.0)*	381 (7.0)*	510 (2.0)*
50 X 40	65 (0.25)*	81 (1.0)*	117 (1.25)*	174 (0.75)*	267 (2.0)*	381 (5.0)*	566
60 X 48	76	98 (0.5)*	136 (0.75)*	194 (0.25)*	294 (1.0)*	465 (3.0)*	649
70 X 56	86	111 (0.25)*	150 (0.5)*	231	342 (0.5)*	495 (2.0)*	732
80 X 64	96	121	169 (0.25)*	260	356	587 (2.0)*	814
90 X 72	106	136	189	290	395	604 (1.0)*	897
100 X 80	116	151	207	319	434	672 (0.75)*	979
110 X 88	126	166	226	348	473	745 (0.25)*	1062
120 X 96	136	181	244	378	512	781	1144
130 X 104	146	196	263	407	552	843	1227
140 X 112	156	211	282	436	591	905	1310
150 X 120	166	226	300	465	630	967	1392
160 X 128	176	241	319	495	669	1029	1475
170 X 136	186	256	338	524	708	1091	1557
180 X 144	196	271	356	533	747	1153	1640
190 X 152	206	286	375	583	787	1214	1723
200 X 160	216	301	394	612	826	1276	1805
210 X 168	226	316	412	641	865	1338	1888
220 X 176	236	331	431	670	904	1400	1970
230 X 184	246	346	449	700	943	1462	2053
240 X 192	256	361	468	729	982	1524	2135
250 X 200	266	376	487	758	1022	1586	2218
260 X 208	276	391	505	788	1061	1648	2301
270 X 216	286	406	524	817	1100	1709	2383
280 X 224	296	421	543	846	1139	1771	2466
290 X 232	306	436	561	876	1178	1833	2548
300 X 240	316	451	580	905	1217	1895	2631
310 X 248	326	466	599	934	1257	1957	2713
320 X 256	336	481	617	963	1296	2019	2796
330 X 264	346	496	636	993	1335	2081	2879
340 X 272	356	511	654	1022	1374	2143	2961
350 X 280	366	526	673	1051	1413	2205	3044
360 X 288	376	541	692	1081	1452	2266	3126
370 X 296	386	556	710	1110	1492	2328	3209
380 X 304	396	571	729	1139	1531	2390	3291
390 X 312	406	586	748	1168	1570	2452	3374
400 X 320	416	601	766	1198	1609	2514	3457

\* Use Lens Extension Kit (LEKS) (0.25 and 0.5 mm) and/or LEK (0.5, 1.0, 5.0, 10, 20 and 40 mm)

# Supplemental Information

**Lens Selection for a 1/3" Imager**  
(P4 COLOR and Pro COLOR)

Units in Inches

**Example:**  
FOV = 0.3"  
WD = 3.4"  
**Best Lens:**  
25 mm plus  
15 mm Extension Tube

**Directions:**

1. Determine field-of-view (FOV) in inches.
2. Determine working distance (WD) in inches.
3. Locate FOV in the first column of the table at right.
4. Scan across the row to the working distance closest to desired application.
5. Use the lens size and extension tube indicated for that row.

**Definitions:**

**Field-of-View (FOV):**

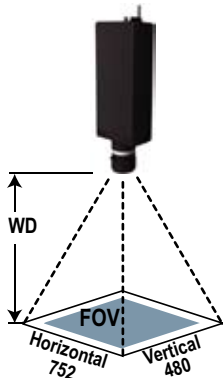
The area of the inspection to be captured by the sensor.

**Working Distance (WD):**

The distance between the front of the sensor and the target object.

**Extension Tubes:**

Spacers between the lens and the sensor that allow the lens to focus at closer working distances.



Horizontal x Vertical FOV (in)	Working Distance in Inches (+ Extension Tube in Millimeters)									
	Lens Choices									
	3.5 mm	4 mm	6.5 mm	8 mm	12 mm	16 mm	25 mm	35 mm	50 mm	75 mm
0.1 X 0.06								4.1 (55)*	7.6 (80)*	11.8 (130)*
0.2 X 0.13							2.9 (20)*	3.9 (30)*	7.25 (40)*	10.6 (60)*
0.3 X 0.19							3.2 (15)*	4.3 (20)*	7.6 (26.5)*	11.8 (35)*
0.4 X 0.26						2.4 (5.75)*	3.7 (10)*	4.8 (15)*	8.6 (20)*	12.6 (20)*
0.5 X 0.32				1.7 (1.5)*	1.9 (5.0)*	2.7 (5.0)*	4 (6.0)*	5.3 (10)*	9.5 (15)*	14.1 (15)*
1 X 0.64	1.9 (0.25)*	1.1 (0.75)*	2.3 (1.25)*	2.6 (0.5)*	3.25 (1.0)*	4.4 (1.75)*	6.6 (1.25)*	8.9 (3.0)*	15.1 (7.0)*	21.3 (0.75)*
1.5 X 0.96	2.4	1.5 (0.75)*	3.0 (1.0)*	3.3	4.5 (0.5)*	6.1 (0.75)*	9.4	12.6 (0.75)*	19.6 (5.0)*	29.7
2 X 1.3	2.8	1.9 (0.5)*	3.7 0.75*	4.2	5.8 (0.25)*	7.8 (0.25)*	12.1	16.3	25.3 (1.25)*	37.6
2.5 X 1.6	3.1	2.3 (0.5)*	4.4 (0.5)*	5.2	7.2	9.6	14.8	20.1	30.9 (0.5)*	45.6
3 X 1.9	3.4	2.7 (0.5)*	5.2 (0.5)*	6.1	8.5	11.3	17.6	23.9	36.5	53.5
3.5 X 2.2	3.8	3.1 (0.5)*	5.9 (0.5)*	7.0	9.8	13.0	20.3	27.6	42.1	61.4
4 X 2.6	4.1	3.4 (0.5)*	6.6 (0.5)*	7.9	11.2	14.8	23.1	31.4	47.8	69.4
4.5 X 2.9	4.4	3.8 (0.5)*	7.3 (0.5)*	8.8	12.5	16.5	25.8	35.1	53.4	77.3
5 X 3.2	4.8	4.2 (0.5)*	8.0 (0.5)*	9.7	13.8	18.2	28.5	38.9	59.0	85.3
5.5 X 3.5	5.1	4.6 (0.5)*	8.8 (0.5)*	10.6	15.2	20.0	31.3	42.6	64.6	93.2
6 X 3.8	5.5	5.0 (0.5)*	9.5 (0.5)*	11.5	16.5	21.7	34.0	46.4	70.2	101.1
6.5 X 4.2	5.8	5.4 (0.5)*	10.2 (0.5)*	12.4	17.8	23.4	36.8	50.2	75.8	109.1
7 X 4.5	6.1	5.8 (0.5)*	10.9 (0.5)*	13.3	19.2	25.2	39.5	53.9	81.5	117.0
7.5 X 4.8	6.5	6.2 (0.5)*	11.6 (0.5)*	14.2	20.5	26.9	42.3	57.7	87.1	124.9
8 X 5.1	6.8	6.5 (0.5)*	12.4 (0.5)*	15.2	21.8	28.7	45.0	61.4	92.7	132.9
8.5 X 5.4	7.1	6.9 (0.5)*	13.1 (0.5)*	16.1	23.2	30.4	47.7	65.2	98.3	140.8
9 X 5.8	7.5	7.3 (0.5)*	13.8 (0.5)*	17.0	24.5	32.1	50.5	68.9	103.9	148.7
9.5 X 6.1	7.8	7.7 (0.5)*	14.5 (0.5)*	17.9	25.8	33.9	53.2	72.7	109.6	156.7
10 X 6.4	8.1	8.1 (0.5)*	15.2 (0.5)*	18.8	27.2	35.6	56.0	76.4	115.2	164.6
10.5 X 6.7	8.5	8.5 (0.5)*	16.0 (0.5)*	19.7	28.5	37.3	58.7	80.2	120.8	172.6
11 X 7.0	8.8	8.9 (0.5)*	16.7 (0.5)*	20.6	29.8	39.1	61.4	84.0	126.4	180.5
11.5 X 7.4	9.2	9.3 (0.5)*	17.4 (0.5)*	21.5	31.2	40.8	64.2	87.7	132.0	188.4
12 X 7.7	9.5	9.6 (0.5)*	18.1 (0.5)*	22.4	32.5	42.5	66.9	91.5	137.6	196.4
12.5 X 8.0	9.8	10.0 (0.5)*	18.8 (0.5)*	23.3	33.8	44.3	69.7	95.2	143.3	204.3
13 X 8.3	10.2	10.4 (0.5)*	19.5 (0.5)*	24.3	35.2	46.0	72.4	99.0	148.9	212.2
13.5 X 8.6	10.5	10.8 (0.5)*	20.3 (0.5)*	25.2	36.5	47.7	75.1	102.7	154.5	220.2
14 X 9.0	10.8	11.2 (0.5)*	21.0 (0.5)*	26.1	37.8	49.5	77.9	106.5	160.1	228.1
14.5 X 9.3	11.2	11.6 (0.5)*	21.7 (0.5)*	27.0	39.2	51.2	80.6	110.3	165.7	236.0
15 X 9.6	11.5	12.0 (0.5)*	22.4 (0.5)*	27.9	40.5	52.9	83.4	114.0	171.4	244.0
15.5 X 9.9	11.8	12.4 (0.5)*	23.1 (0.5)*	28.8	41.8	54.7	86.1	117.8	177.0	251.9
16 X 10.2	12.2	12.7 (0.5)*	23.9 (0.5)*	29.7	43.2	56.4	88.9	121.5	182.6	259.9
16.5 X 10.6	12.5	13.1 (0.5)*	24.6 (0.5)*	30.6	44.5	58.1	91.6	125.3	188.2	267.8
17 X 10.9	12.8	13.5 (0.5)*	25.3 (0.5)*	31.5	45.8	59.9	94.3	129.0	193.8	275.7
17.5 X 11.2	13.2	13.9 (0.5)*	26.0 (0.5)*	32.4	47.1	61.6	97.1	132.8	199.4	283.7
18 X 11.5	13.5	14.3 (0.5)*	26.7 (0.5)*	33.3	48.5	63.4	99.8	136.6	205.1	291.6
18.5 X 11.8	13.9	14.7 (0.5)*	27.5 (0.5)*	34.3	49.8	65.1	102.6	140.3	210.7	299.5
19 X 12.2	14.2	15.1 (0.5)*	28.2 (0.5)*	35.2	51.1	66.8	105.3	144.1	216.3	307.5
19.5 X 12.5	14.5	15.5 (0.5)*	28.9 (0.5)*	36.1	52.5	68.6	108.0	147.8	221.9	315.4
20 X 12.8	14.9	15.8 (0.5)*	29.6 (0.5)*	37.0	53.8	70.3	110.8	151.6	227.5	323.3

\* Use Lens Extension Kit (LEKS) (0.25 and 0.5 mm) and/or LEK (0.5, 1.0, 5.0, 10, 20 and 40 mm)

# Supplemental Information

**Lens Selection for a 1/3" Imager  
(P4 COLOR and Pro COLOR)**

Units in Millimeters

**Example:**  
FOV = 15 mm  
WD = 80 mm  
**Best Lens:**  
16 mm plus  
5 mm Extension Tube

**Directions:**

1. Determine field-of-view (FOV) in millimeters.
2. Determine working distance (WD) in millimeters.
3. Locate FOV in the first column of the table at right.
4. Scan across the row to the working distance closest to desired application.
5. Use the lens size and extension tube indicated for that row.

**Definitions:**

**Field-of-View (FOV):**

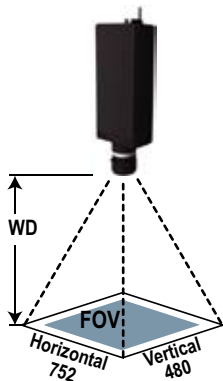
The area of the inspection to be captured by the sensor.

**Working Distance (WD):**

The distance between the front of the sensor and the target object.

**Extension Tubes:**

Spacers between the lens and the sensor that allow the lens to focus at closer working distances.



Horizontal x Vertical FOV (mm)	Working Distance in Millimeters (+ Extension Tube in Millimeters)									
	Lens Choices									
	3.5 mm	4 mm	6.5 mm	8 mm	12 mm	16 mm	25 mm	35 mm	50 mm	75 mm
5 X 3							74 (20)*	99 (30)*	184 (40)*	269 (60)*
10 X 6						61 (5.75)*	94 (10)*	122 (15)*	218 (20)*	320 (20)*
15 X 10						77 (5.0)*	102 (6.0)*	149 (7.0)*	268 (15)*	389 (17)*
20 X 13						90 (2.0)*	138 (3.0)*	187 (5.0)*	321 (10)*	473 (5.0)*
25 X 16	48 (0.25)*	28 (0.75)*	58 (1.25)*	66 (0.5)*	83 (1.0)*	112 (1.75)*	168 (1.25)*	226 (3.0)*	384 (7.0)*	541 (0.75)*
30 X 19	56	32 (0.75)*	74 (1.25)*	70 (0.5)*	99 (0.75)*	126 (1.25)*	193	257 (2.0)*	425 (6.0)*	622
40 X 26	63	40 (0.75)*	76 (1.0)*	88	114 (0.5)*	155 (0.75)*	248	320 (0.75)*	498 (5.0)*	784
50 X 32	70	48 (0.75)*	94 (0.75)*	106	147 (0.25)*	198 (0.25)*	303	414	642 (1.25)*	943
60 X 38	76	55 (0.5)*	120 (0.5)*	125	173	231	358	484	785 (0.5)*	1102
70 X 45	83	63 (0.5)*	122 (0.5)*	143	200	266	413	559	886 (0.25)*	1261
80 X 51	90	71 (0.5)*	137 (0.5)*	161	226	300	467	634	970	1419
90 X 58	97	79 (0.5)*	151 (0.5)*	179	253	335	522	710	1083	1578
100 X 64	103	86 (0.5)*	165 (0.5)*	197	280	370	577	785	1195	1737
110 X 70	110	94 (0.5)*	180 (0.5)*	216	306	404	632	860	1307	1896
120 X 77	117	102 (0.5)*	194 (0.5)*	234	333	439	687	935	1420	2054
130 X 83	124	110 (0.5)*	209 (0.5)*	252	360	474	742	1010	1532	2213
140 X 90	130	117 (0.5)*	223 (0.5)*	270	386	508	796	1085	1645	2372
150 X 96	137	125 (0.5)*	237 (0.5)*	288	413	543	851	1160	1757	2531
160 X 102	144	133 (0.5)*	252 (0.5)*	306	439	578	906	1236	1869	2689
170 X 109	150	141 (0.5)*	266 (0.5)*	325	466	613	961	1311	1982	2848
180 X 115	157	148 (0.5)*	280 (0.5)*	343	493	647	1016	1386	2094	3007
190 X 122	164	156 (0.5)*	295 (0.5)*	361	519	682	1070	1461	2206	3165
200 X 128	171	164 (0.5)*	309 (0.5)*	379	546	717	1125	1536	2319	3324
210 X 134	177	172 (0.5)*	324 (0.5)*	397	573	751	1180	1611	2431	3483
220 X 141	184	179 (0.5)*	338 (0.5)*	416	599	786	1235	1686	2543	3642
230 X 147	191	187 (0.5)*	352 (0.5)*	434	626	821	1290	1761	2656	3800
240 X 154	197	195 (0.5)*	367 (0.5)*	452	653	855	1345	1837	2768	3959
250 X 160	204	203 (0.5)*	381 (0.5)*	470	679	890	1399	1912	2881	4118
260 X 166	211	210 (0.5)*	396 (0.5)*	488	706	925	1454	1987	2993	4277
270 X 173	218	218 (0.5)*	410 (0.5)*	506	733	960	1509	2062	3105	4435
280 X 179	224	226 (0.5)*	424 (0.5)*	525	759	994	1564	2137	3218	4594
290 X 186	231	234 (0.5)*	439 (0.5)*	543	786	1029	1619	2212	3330	4753
300 X 192	238	241 (0.5)*	453 (0.5)*	561	813	1064	1674	2287	3442	4911
310 X 198	244	249 (0.5)*	467 (0.5)*	579	839	1098	1728	2363	3555	5070
320 X 205	251	257 (0.5)*	482 (0.5)*	597	866	1133	1783	2438	3667	5229
330 X 211	258	265 (0.5)*	496 (0.5)*	616	892	1168	1838	2513	3779	5388
340 X 218	265	272 (0.5)*	511 (0.5)*	634	919	1202	1893	2588	3892	5546
350 X 224	271	280 (0.5)*	525 (0.5)*	652	946	1237	1948	2663	4004	5705
360 X 230	278	288 (0.5)*	539 (0.5)*	670	972	1272	2002	2738	4116	5864
370 X 237	285	296 (0.5)*	554 (0.5)*	688	999	1307	2057	2813	4229	6023
380 X 243	291	303 (0.5)*	568 (0.5)*	707	1026	1341	2112	2888	4341	6181
390 X 250	298	311 (0.5)*	583 (0.5)*	725	1052	1376	2167	2964	4454	6340
400 X 256	305	319 (0.5)*	597 (0.5)*	743	1079	1411	2222	3039	4566	6499

\* Use Lens Extension Kit (LEKS) (0.25 and 0.5 mm) and/or LEK (0.5, 1.0, 5.0, 10, 20 and 40 mm)