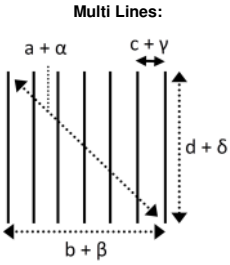
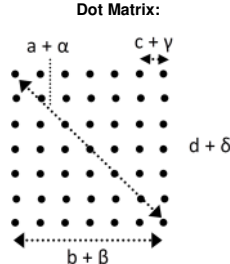
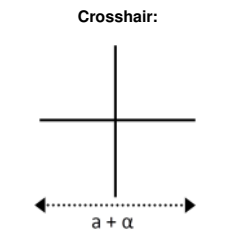
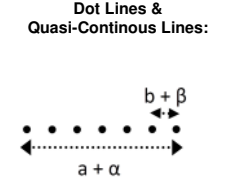
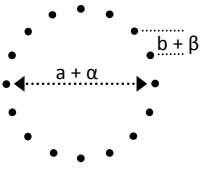
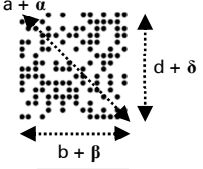


# >> Standard Diffractive Optical Elements (Polymer materials, Ø 8 mm)

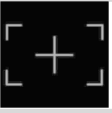
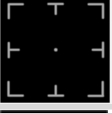

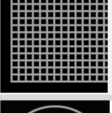
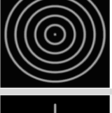
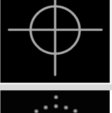
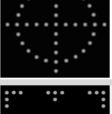
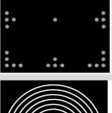
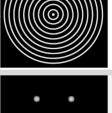
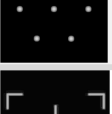
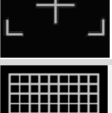
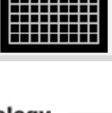
	DOE Item #	Description	Design Wavelength	Pattern Size @ 100 mm Distance (@ Design Wavelength, Values: mm)				Pattern Angles (@ Design Wavelength)				Optimum Wavelength Range(s)
				a	b	c	d	$\alpha$	$\beta$	$\gamma$	$\delta$	
<b>Multi Lines:</b> 	DE-R 213	11 Lines (Square)	635nm*	76.7	54.4	5.4	54.4	42.0	30.4	3.0	30.4	530-670 nm
	DE-R 233	7 Lines (Square)	635nm*	54.0	38.2	6.4	38.2	30.2	21.6	3.6	21.6	530-670 nm
	DE-R 250	5 Lines (Rectangular)	660nm*	55.0	10.9	2.7	53.9	30.8	6.2	1.6	30.2	590-670 nm
	DE-R 251	7 Lines (Rectangular)	650nm	15.5	9.0	1.5	12.6	8.9	5.2	0.8	7.2	590-730 nm
	DE-R 252	5 Lines (Square)	635nm*	42.7	30.2	7.5	30.2	24.1	17.2	4.3	17.2	530-670 nm
	DE-R 253	11 Lines (Square, Thin Lines)	635nm*	76.4	54.0	5.4	54.0	41.8	30.2	3.0	30.2	530-670 nm
	DE-R 254	25 Lines (Square)	660nm*	68.4	48.3	2.0	48.3	37.7	27.2	1.1	27.2	530-670 nm
	DE-R 255	65 Lines (Square, Central Line Thicker)	660nm*	45.6	32.2	0.5	32.2	25.7	18.3	0.3	18.3	530-670 nm
	DE-R 284	41 Lines (Rectangular)	660nm*	133.4	104.0	2.6	78.0	67.4	54.9	1.4	42.6	600-700 nm
	DE-R 348 <b>NEW</b>	10 Lines (Rectangular)	650nm*	125.5	90.0	10.0	87.5	64.2	48.5	5.4	47.3	600-700 nm
	DE-R 350 <b>NEW</b>	15 Lines (Rectangular)	520nm*	65.5	42.1	3.0	50.2	36.3	23.8	1.7	28.2	480-550 nm
	DE-R 391 <b>NEW</b>	81 Lines (Rectangular)	650nm*	156.0	124.8	1.6	93.6	75.9	63.9	0.8	50.2	600-700 nm
	DE-R 392 <b>NEW</b>	3 Lines (Rectangular)	660nm*	54.7	10.8	5.4	53.6	30.6	6.2	3.1	30.0	600-700 nm
<b>Dot Matrix:</b> 	DE-R 206	17 x 17 Dots	660nm	38.0	26.6	1.7	26.6	21.5	15.2	0.9	15.2	590-730 nm
	DE-R 223	2 x 2 + 1 Dots	635nm	28.3	19.9	19.9	19.9	16.1	11.4	11.4	11.4	635 & 405 nm
	DE-R 231	101 x 101 Dots	660nm	12.8	9.1	0.1	9.1	7.4	5.2	0.05	5.2	635-680 nm
	DE-R 241	21 x 21 Dots	635nm	11.9	8.4	0.4	8.4	6.8	4.8	0.2	4.8	560-730 nm
	DE-R 242	16 x 16 Dots	635nm	12.4	8.8	0.6	8.8	7.1	5.0	0.3	5.0	530-730 nm
	DE-R 243	17 x 17 Dots	635nm	12.4	8.8	0.5	8.8	7.1	5.0	0.3	5.0	550-720 nm
	DE-R 244	13 x 13 Dots	635nm	7.4	5.3	0.4	5.3	4.3	3.0	0.3	3.0	590-670 nm
	DE-R 257	51 x 51 Dots	660nm*	56.9	40.3	0.8	40.3	31.8	22.8	0.5	22.8	560-720 nm
	DE-R 258	11 x 11 Dots	635nm*	71.2	50.3	5.0	50.3	39.2	28.2	2.8	28.2	590-690 nm
	DE-R 339	6 x 6 Dots	635nm	11.7	8.3	1.7	8.3	6.7	4.7	0.9	4.7	590-690 nm
	DE-R 351	10 x 10 Dots	532nm	21.1	14.9	3.3	14.9	23.8	17.0	1.9	17.0	510-600 nm
	DE-R 352	4 x 6 Dots	532nm	26.6	13.7	4.6	22.8	15.1	7.8	2.6	13.6	500-580 nm
	DE-R 353	5 x 5 Dots	690nm	1.1	0.75	0.19	0.75	0.61	0.43	0.11	0.43	630-750 nm
<b>Crosshair:</b> 	DE-R 205	Cross - 5@650	650nm	8.7				5.0				580-660 nm
	DE-R 212	Cross - 25@532	532nm	45.1				25.4				500-640 nm
	DE-R 214	Cross - 2@645	645nm	3.4				2.0				600-645 nm
	DE-R 218	Cross - 15@640	640nm	26.3				15.0				500-640 nm
	DE-R 239	Cross - 5@520	520nm	8.7				5.0				488-600 nm
	DE-R 245	Cross - 10@633	633nm	17.5				10.0				570-690 nm
	DE-R 246	Cross with high contrast area	633nm	17.5				10.0				530-670 nm
	DE-R 247	Cross - 25@645	645nm	44.3				25.0				600-800 nm
	DE-R 248	Cross - 37@645	645nm	66.8				37.0				630-700 nm
	DE-R 249	Cross - 45@633	633nm	83.0				45.0				620-700 nm
	DE-R 270	Cross - 30@640	640nm	53.6				30.0				590-660 nm
	DE-R 280	Cross - 60@635	635nm	115.5				60.0				580-690 nm
	DE-R 289	Cross - 15@520	520nm	26.4				15.0				480-550 nm
	DE-R 299 <b>NEW</b>	Cross - 75@650	650nm	153.5				75.0				600-700 nm
	DE-R 340	Cross - 60@450	450nm	116.1				60.3				420-520 nm
DE-R 342	Cross - 52@515	515nm	97.6				52.0				440-540 nm	
<b>Dot Lines &amp; Quasi-Continuous Lines:</b> 	DE-R 263	1 : 5 Dot Line	635nm	10.5	2.6			6.0	1.5			450-700 nm
	DE-R 264	1 : 9 Dot Line	670nm	1.6	0.2			0.9	0.1			630-780 nm
	DE-R 265	1 : 19 Dot Line	650nm	24.0	1.3			13.7	0.8			500-540 & 630-690 nm
	DE-R 266	QC- Line - 5@633	633nm	8.7	--			5.0	--			630-690 nm
	DE-R 267	QC -Line - 30@532	532nm	53.8	--			30.1	--			470-560 nm
	DE-R 281	1 : 11 Dot Line	650nm	28.9	2.9			16.5	1.6			600-730 nm
	DE-R 282	1 : 99 Dot Line	660nm	33.7	0.3			19.1	0.2			600-700 nm
	DE-R 283	QC - Line - 20@633	633nm	35.2	--			20.0	--			630-670 nm
	DE-R 286	QC - Line - 30@660	660nm	54.6	--			30.5	--			600-700 nm
	DE-R 287	QC - Line - 45@660	660nm	83.9	--			45.5	--			600-700 nm
	DE-R 337	1 : 99 Dot Line	635nm	49.3	0.5			27.7	0.3			600-700 nm
	DE-R 364 <b>NEW</b>	QC - Line - 45@940	940nm	83.0	--			45.0	--			890-980 nm
	DE-R 369 <b>NEW</b>	QC - Line - 36@640	639nm	65.0	--			36.0	--			600-700 nm

Standard DOE Plastics - Rev. 4.4 - Specifications are subject to change without notice



	DOE Item #	Description	Design Wavelength	Pattern Size @ 100 mm Distance (@ Design Wavelength, Values: mm)				Pattern Angles (@ Design Wavelength)				Optimum Wavelength Range(s)
				a	b	c	d	$\alpha$	$\beta$	$\gamma$	$\delta$	
<b>Circles &amp; Dot Circles:</b> 	DE-R 219	Solid Line Circle	592nm	55.8	--			31.2	--			480-600 nm
	DE-R 220	1 : 16 Dot Circle	515nm	81.9	16.1			44.5	9.2			480-532 nm
	DE-R 221	1 : 72 Dot Circle	532nm	36.9	1.6			20.9	0.9			400-570 nm
	DE-R 229	1 : 36 Dot Circle	532nm	6.1	0.5			3.5	0.3			480-560 nm
	DE-R 238	Solid Line Circle	520nm	6.0	--			3.4	--			520-532 nm
	DE-R 240	1 : 16 Dot Circle	635nm	18.9	3.7			10.8	2.1			530-700 nm
	DE-R 268	Solid Line Circle	488nm	77.0	--			42.1	--			488-532 nm
<b>Random Dot Patterns:</b> 	DE-R 332	33000-Dot Pseudo-Random	830nm	136.9	114.6		76.3	68.8	59.6		41.7	820-850 nm
	DE-R 335	33000-Dot Pseudo-Random	645nm	101.3	84.8		56.4	53.7	45.9		31.5	630-660 nm
	DE-R 372	40100-Dot Pseudo-Random	850nm	135.6	114.9		72.0	68.3	59.7		39.6	825-870 nm
	DE-R 373	<b>NEW</b> 31806-Dot Truly-Random	830nm	146.9	118.5		86.9	72.6	61.3		47.0	800-890 nm
	DE-R 374	<b>NEW</b> 47708-Dot Truly-Random	830nm	146.9	118.5		86.9	72.6	61.3		47.0	800-890 nm
	DE-R 375	29594-Dot Pseudo-Random	830nm	146.7	118.5		86.5	72.5	61.3		46.8	810-850 nm

### Special Patterns:

DOE Item #	Description	Design Wavelength	Pattern Size @ 100 mm Distance (@ Design Wavelength)	Pattern Angles (@ Design Wavelength)	Optimum Wavelength Range(s)	Image
DE-R 215	Viewfinder	645nm	Width: 26.9 mm Height: 18.0 mm Diagonal: 32.6 mm	Width: 15.3° Height: 10.3° Diagonal: 18.5°	570-750 nm	
DE-R 234	Viewfinder (Lines Square)	633nm*	Width: 60.6 mm Height: 60.6 mm Diagonal: 85.6 mm	Width: 33.7° Height: 33.7° Diagonal: 46.4°	590-730 nm	
DE-R 236	Solid Line Square	633nm*	Width: 63.1 mm Height: 63.1 mm Diagonal: 89.5 mm	Width: 35.0° Height: 35.0° Diagonal: 48.2°	530-650 nm	
DE-R 256	Square Grid 51 x 51 Lines	660nm	Width: 40.3 mm Height: 40.3 mm Diagonal: 56.9 mm Line Spacing: 0.8 mm	Width: 22.8° Height: 22.8° Diagonal: 31.8° Angle betw. Lines: 0.45°	530-660 nm	
DE-R 259	5 Rings	645nm	Width: 51.3 mm Line Spacing: 5.1 mm	Width: 28.8° Line Spacing: 2.9°	530-700 nm	
DE-R 260	Viewfinder (Circle + Cross)	645nm	Width Cross: 37.0 mm Circle Ø: 18.5 mm	Width Cross: 21.0° Circle Ø: 10.6°	570-750 nm	
DE-R 261	Viewfinder (Dot Circle + Cross)	635nm	Width Cross: 11.0 mm Circle Ø: 8.8 mm Dot Spacing: 1.1 mm	Width Cross: 6.3° Circle Ø: 5.0° Angle betw. Dots: 0.63°	570-750 nm	
DE-R 262	Viewfinder (Dot Square)	532nm	Width: 12.3 mm Height: 12.3 mm Diagonal: 17.4 mm Dot Spacing: 0.5 mm	Width: 7.0° Height: 7.0° Diagonal: 10.0° Angle betw. Dots: 0.3°	480-670 nm	
DE-R 269	10 Rings	515nm	Width: 96.2 mm Line Spacing: 4.8 mm	Width: 51.4° Line Spacing: 2.6°	488-532 nm	
DE-R 285	Hexagon	780nm	Width: 13.1 mm	Width: 7.5°	520-800 nm	
DE-R 288	Viewfinder	650nm	Width: 83.0 mm Height: 53.7 mm Diagonal: 98.9 mm	Width: 43.7° Height: 27.9° Diagonal: 52.6°	590-730 nm	
DE-R 354	Square Grid 10 x 10 Lines	658nm	Width: 72.8 mm Height: 72.8 mm Diagonal: 102.9 mm Line Spacing: 8.1 mm	Width: 40.0° Height: 40.0° Diagonal: 51.4° Angle betw. Lines: 4°	620-680 nm	

\* Large-angle pattern that due to its symmetry properties is subject to geometrical distortion, if the DOE is used at laser wavelengths significantly different ( $\Delta\lambda > 50\text{nm}$ ) from the design wavelength.