

Theoretical Spot Size

The table below shows the theoretical spot sizes of the imaged IR laser beam impinging upon the welding surface based on the lens combinations available. The actual weld spot diameter is material dependent and will always be larger than the theoretical values shown in the table. At high power levels, the spot size will be significantly larger. The weld spot diameter is a function of the material type, laser settings, penetration depth, and desired weld strength. The standard lens combinations are listed on the previous pages. Please consult the factory for the availability and pricing of non-standard lens combinations.

The working distance is usually 13-15mm less than output focal length listed in the table. We encourage you to use our laser applications laboratory to help you determine the best process and equipment for your specific application.

FOCUS HEAD LENS COMBINATION		FIBER DIAMETER (MICRONS)						
Collimating Focal Length (mm)	Output Focal Length (mm)	100	200	300	400	600	800	1000
70	50	0.003	0.006	0.008	0.011	0.017	0.022	0.028
70	70	0.004	0.008	0.012	0.016	0.024	0.031	0.039
70	75	0.004	0.008	0.013	0.017	0.025	0.034	0.042
70	100	0.006	0.011	0.017	0.022	0.034	0.045	0.056
70	120	0.007	0.013	0.020	0.027	0.040	0.054	0.067
100	50	0.002	0.004	0.006	0.008	0.012	0.016	0.020
100	70	0.003	0.006	0.008	0.011	0.017	0.022	0.028
100	75	0.003	0.006	0.009	0.012	0.018	0.024	0.030
100	100	0.004	0.008	0.012	0.016	0.024	0.031	0.039
100	120	0.005	0.009	0.014	0.019	0.028	0.038	0.047
120	50	0.002	0.003	0.005	0.007	0.010	0.013	0.016
120	70	0.002	0.005	0.007	0.009	0.014	0.018	0.023
120	75	0.002	0.005	0.007	0.010	0.015	0.020	0.025
120	100	0.003	0.007	0.010	0.013	0.020	0.026	0.033
120	120	0.004	0.008	0.012	0.016	0.024	0.031	0.039
200	50	0.001	0.002	0.003	0.004	0.006	0.008	0.010
200	70	0.001	0.003	0.004	0.006	0.008	0.011	0.014
200	75	0.001	0.003	0.004	0.006	0.009	0.012	0.015
200	100	0.002	0.004	0.006	0.008	0.012	0.016	0.020
200	120	0.002	0.005	0.007	0.009	0.014	0.019	0.024

NOTE: Spot diameter in inches