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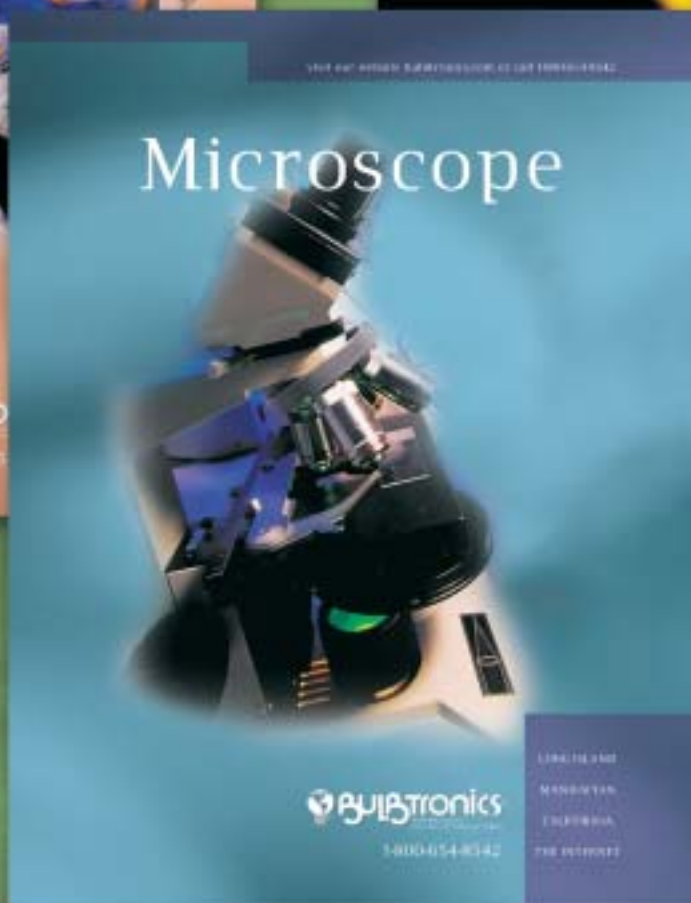


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Microscope



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Microscope/Model	Manufacturer Part No.	Ordering Code
American Optical		
50	611	15S11102CL
354, 359, 340A, 3411, 603, 653, K13602, 1810	360	1493
78, 385	386	25S115C120V
600	602	BMV
605, 610, 612, 614, 616, 1034, 1037	611	15S11102CL
615 Older Series, 40	621	15T7N120V
L150	624	64225
4046	626	15S1113120V
Pointer DN50, DN60, DN150, DN160, 1048	634	252
645	649	HBO200WL1 or L2
1000	1005	233
1039, Pointer 1049	1032	328
363, 364, 369, 579, 3000, 1036, 3060, K1567A, K1886, K1730, L10	1033	1460
H10, 1031, H110, 1130, 1820	1120	788
583	1121	778
1180, 1180E, 1183H	1182	EJY
1800 Micro Projector, Custom Project O Chart	11807	1096
H20, 2070H, 2071H	2052	7023
V20, 2070L, 2071M	2055	HBO50WL1 or L2
2505	2509	157
10406	10407	6S6DC120V
10408	10409	10S6230V
10450, 10460	10454	605
1130A		7388
Bausch & Lomb		
31-29-26, 31-33-44, 31-33-61, 31-31-66, 42-16-25, 42-44-41	31-31-03	F4T5D
31-33-82, 31-33-84, 31-27-69 thru 31-27-99	31-31-12	30021
31-33-86 thru 31-33-94, 31-32-12-01	31-31-15	15S11102CL
31-33-23	31-31-23	MIC1W45TS
31-29-46	31-31-24	14
74BWW Warm White	31-31-30	UFLFCB74LWW
74 DBL Daylight Blue	31-31-31	UFLFCB74LD
31-33-07, 31-33-20, 31-33-59, 31-33-69	31-31-37	1634
31-33-03	31-31-40	7C9W120V
31-33-40, 31-32-14, 31-99-23	31-31-42	1649
31-18-85, 31-18-93	31-31-50	328
31-30-50-01, 2, 3, 4, 5	31-31-52	EKE
31-36-05-01, 2	31-31-57	313157W45
31-32-57	31-31-58	FDT
31-32-56	31-31-65	HBO50WL2
31-70-01	31-31-71-03, 05	BLC
31-33-05	31-31-75, 76	1460X
31-33-04, 31-33-33, 31-33-34, 31-33-35, 31-33-39, 31-99-25	31-31-77-01/31-31-77-01-10	787
31-33-32, 31-34-64, 42-20-61, 42-31-32, 42-31-42, 42-31-52	31-31-79, 33-33-85	1630
31-33-96, 31-27-12, 31-27-65, 31-32-42, 31-32-15,		
31-33-60, 31-34-28, 31-32-16, 31-32-18	31-31-81-01, 31-31-81	778
31-33-41, 31-33-53, 31-33-56, 31-34-27, 31-32-13	31-31-85/31-31-86	1631X
31-33-24, 31-33-74	31-31-87	BLK
31-74-24, Galen II Tungsten	31-74-28	78508
31-74-26, 31-74-27 Galen II Halogen	31-74-29	778
Spectronic 21DV, 21MV, 21UV	33-33-07	333307
Stereo Zoom 2000, academic	31-31-25	13528
	33-51-24	790
42-63-59, 42-63-60 Tri Simplex	42-42-86	BEY
Fossomatic		
215		XBO75W2
360		64440
Foton		
	UXL451	XBO450W
Jena (Narva)		
All Jena 6V/15W Microscopes, Amplival, Ergaval, Peraval, Epignost, Technival & Citoval	681.34, 67271	67273
Laboval 3, Jenatech	105.817, 55125	55125
Laboval 4	55131, 105.817	64250HLX
Epival INKO, Surgery 212, I212, 110/120, 150, 160, 210, 211, 310, 320, 330, 111, 113, 121	688.00, 55133	688
Epival, Vertival, Metaval, Docuval, D-Illumination	688.05, 55205	68805
Flouval 2, Jenalumar FL	688.09	HBO200W2L1
Laboval 2AFL	682.50	HBO50WL1

Microscope/Model	Manufacturer Part No.	Ordering Code
Jena (Narva) (Cont.)		
Laboval 2AFL	682.51	HBO50W3
Pictoval	682.52	XBO150W1
Plastival	683.79	64610HLX
DL2 Plack Viewer	682.92, 55301	7023
Amplival, Amplival POL D&U, Ergaval, Technival 2, Citoval 2, Jenamed, Jenaval, Jenalumar, Peraval, INKO, Jenatech, GSZ, GSM, Jenapol D&U, Sedival, Televal 3, Epignost 21 HD Surgery 110F, 150F	105.859, 55147 SI64627, EFP	105859 EFP
Laboval (Old Style)	681.16	GSL310
Laboval 2, Maxial Illuminator, Eduval	688.61, TGL10619	68861
Amplival Pol U (Incident), Epival INKO, NV2, JenaTech (Incident), Jenavert BF/DF	688.01, 55305 105.908, 55307	68101 68101
Laboval 2 Dual View, Stereo, Slide Viewer, Jenamed Dual View	681.98	68198
Leitz		
Heating Scope, Panphot, OrthoplanMM5, Metalux, Lamp House 100, UWM1, 2, 3, MM6	500-010	DFBT348
Simplex, Old UWM, KM150, Monla, Ortholux, Dual Illuminator	500-011	8100
LH100Z, LH102Z	500-137	HBO50WL1 or L2
LH100Z, LH102Z	500-138	HBO100W2
LH100Z, LH102Z	500-139	XBO75W2
Ophthalmic, Diavert, Dialux, Ultropak, HDLUX, Comp. Microscope	500-177	177L
LH50, Ortholux2, Epivert, Comp. Microscope	500-182	64610HLX
Linnick	500-186	NA10
Laborlux12, Dialux20, Vario, Orthomat, SMLUXHL, Laborlux 12HLME	500-245	778
LH100, Biopromar, Orthoplan, LH100Z, Dialux20, LH102Z	500-974	7023
UWM 1, Vert III, Heating Scope, Miniloat, UWM, Vert Gauge, Autocollimator, JIG Bore Microscope	500-979	500979
Stereo Twin III Galvanotometer (Heat. Micro)	580-603	TL4W33
Promar OM20, Prado Universal, Pradovit 250, Mask Comparator, PP600	590-910	EHJ
Nephelometer, DF Interference	620-071	8025
LH250DC	050-610	HBO200WL1 or L2
LH500, LH250AC	050-615	HBO200W4L1
LH250DC	050-620	HBO200W2L1
Photometer No. 1	094-502	1133
Photometers 760118999, 70017600, 19000-up	094-524, 094-528, 094-529	1763
Reprovit Pradix	098-588	BEH
Diascriptor 4	098-724	FAD
M8	166-324	8018
M20	177-160	70249B
	193-049	7023
LH250, LH500	500-008	XBO150W1
UWM3X8, Laborlux NANAW, Dialux, MPA5, Simplex, Multipurpose, Dilatometer, Nadal	500-012	8018
HMLUX, Microdia SM, Ultrapak	500-013	GSL306
LH250AC	500-016	HBO200WL1 or L2
XICMM6, MM5, LH500 Microprojector, Telepromar 500	500-031	XBO450WOFR
SMPOL, SMM, MPV, HMLUX3, HMR*, Ellipsoidal	500-073	1855
Monochromator	610-025	8001
SMLUX, TL Lamp	500-096	5001
Nikon		
Multiviewing, Dual View	79186	79186
Stereo Illum Model 2	76907	76907
6C2, V16C, V12, V20A, V24B, V20	71826	FCS
V10, Diaphot, Epiphot, M22 Epi, TM20 Dia & Epi, UM3, Optiphot, 88 Epi/Dia, Optiphot, M, 66, 88 Epi, Optiphot Pol, Optistation Epi, SCB/D6 QH, SMZU Dark/Bright, Universal Epi	76516	64610HLX
Alphaphot KT2, KT, Labophot, M Epi, (Old 20W) Optiphot, Measurescope MM-11 (20W Epi & Dia), Measurescope TM1, TM2 Epi, Optiphot 66 Dia, SMZ10 Coaxial, SMZ10 Dia, SMZU Coaxial & Epi, SMZ1, 2 Vert, TMS	79099	7388
Stereo Illuminator, SU, 1EPI, Autocollimator, 6D, 6B	76906	8018
SKT, POH3	77903	77903
SKE, LKE, MS, Apophot Tungsten, Multiphot, M Inverted, Diascopic, Univ Illum, FL200 Tungsten, VM8	77904	EI738
Epi Model 2, Diff R, M & Ms, EpiPOH, EpiTM, Epi B, TM2 Shadow, SU115V, 3A Shadow & 3C Shadow/Surface, 2A Shadow, 3 Shadow	77910 71256	77910 71256
2A, 3, 3A Surface, 6C Shadow/Surface	71818	71818
Model 5A, 5B, V24 Surface	71500	71500
Teaching Head Illum, Dual View	79098	328

Microscope/Model	Manufacturer Part No.	Ordering Code
Nikon (Cont.)		
SC	77458	77458
Aphophot Xenon Illum	76461	XBO150W1OFR
Micropan	78153	XBO450WOFR
Epi Fluorescence Optiphot & Labophot	78564	HBO50WL1 or L2
Epi Fluorescence Fluophot, Apophot, V20A	78580	HBO200W2L1
FL200, FT200	78590	HBO200WL1
Alphophot YS, SE2	78595	78595
Olympus		
LSF2	8S306	M14573W45OLLO
Photomax	8B101	8B101
LSK, LSKII, CHLSK	8B150	8B150
KHC, CHB, CHT, CHZ	8B152	BLC
VMILA	8B153	8B153
AH2RFL, AFL/ARFL, A1FLM	8B190	HBO200W2L1
BHDO, MDO, LDO	8G102	8G102
OME	8S101	8S101
DO, STM4	8G101	8G101
BHRFL, BH2RFL, IMT2RFL	8B192	HBO100W2
BHLSF	8B193	HBO50W3
AH2LSRFTH	8B194	SN250505
UNIV Lamphouse AH2	8B195	XBO150WCR
AH, E, F, PME, LSD, LSE, MTX	8C101	EI738
BHA, BHB, IMT, LK04	8C102	8C102
VMLSG, BHMJ, STM, BHC, BHM	8C103	8C103
SZ, TMLSG2, LSP,	8C201	8C201
BLSH3, ALSH3, BHRFL, PMELSM	8C401	FCR
BHMLSH2, BH2MLSH, SZHILLD	8C402	64440
BHT, BHTU, VMILA2, CHS,		
SZHILLB, SZHILLK, SZHILLC, CK2	8C405	7388
BHS, AHS, AHT, AHMT, PMG3	8C406	EVA
IMT2	8C407	64610HLX
SZHLSGA	8C408	13528
CK, LSM, MG, STM, LSN, LSP, PMEDL	8M102	8M102
STM4, MI	8M103	8M103
Transillum Base SZIII, XTR	8S250	8S250
LSF Old Design	8S203	MIC1W45TS
LSF Old Design UV	8S303	M14573FUV36LO
LSF New Design	8S304	M14572W45OLLO
LSF2	8S306	M14573W45OLLO
VMZ500, SS105	8S307	7388
OME, OCS, OCS2	8S401	EFR
LSM3, AH2	88002	XBO150W1OFR
BMAX, BX40, IXILL30, ULS30, ULS303	8C410	5761
Sunnex		
High Intensity Unit		64425
Swift		
M100 Series, EPI Illum	MA100	MA100
M20T Series	MA21	MA21
SSL10E, SSL10, SSL10C, M240, M250, M2240, M950, M960, MA25	MA2201	MA2201
SL8, SL24	MA584	MA584
M2247B, M459B, CIBM, CYVR, M960, M3200,		
M1001, M1001D, M970, M3301D	MA722/MA722A	MA722A
M8OBH Incident Illum	MA723	MA723
M8OB Stand	MA724	MA724
M8OBH Blue Transmitted	MA726	MA726
Y2	MA736	MA736
Y3	MA737	MA737
Y4	MA738	MA738
SL23, M1004, M1005, CYHR5, M1002	MA760	1460
Y3H, M4002D, 3D, 4D, 5D, MA759Y, M1002D, M1004D, M1005D, M3300D	MA780	778
M8802B Incident Illum. Stand	MA8816	MA8816
Fluoromaster	MA885	HBO200W4L1
M400, CIB, CIBM, M3200	MA886	MA886
MA985D Duo Master	MA986	MA986
M20 Series, Duo Master	MA987	6V6WE10

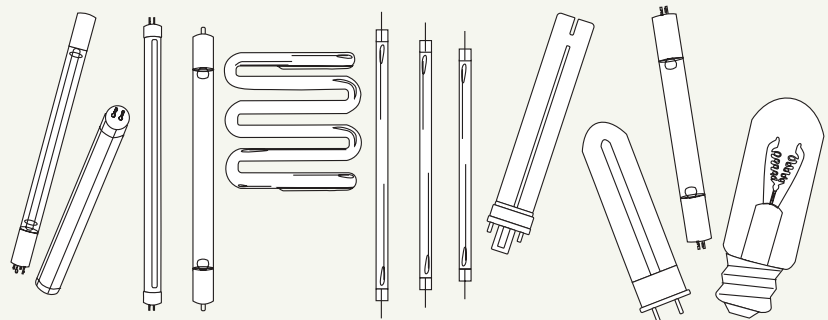
Microscope

Microscope/Model	Manufacturer Part No.	Ordering Code
Unitron		
Various	15745	EL1B
MMA, MMU, MSFNTO, MEC	15746	EL2
(B)TMS, (B)TMD, MLU(A), BMLU, (B)MIC, BR(B)MIC, MPH, MPHBPB, BPHN, TPHN, DMR, RMM, MCTL, MEC	15747	EL2B
TMOL, MLU(A), BMLU, MK(A), MKDA	15748	EL3B
Vert Illum Series UFM	15750	EL25C
UFMQR High Intensity Illum Series UFM	15752	EVA
BMEC, ME, GM, DMR, RMM	15753	EL12B
(B)MKK, MK	15754	EL30
LS, LT Spotlight Illum	15756	1003
LLV High Intensity Substage Illum	15758	15758
LKR Koehler Research Illum	15759	OP2205
(B)NX11, (B)UX11, Metallograph	15761	XBO150W1OFR
Versamet Metallograph, Unimet MR1, MR2, MR3	15777	FCS
Unimet Ser. MR4 Inverted Metal, LAB3	15828	778
High Intensity Ring Illuminator	15887	15887
CP6 Comparison Proj, Comp Micro, Fiber Optic Power Supply	16034	EJA
Wild		
W113806	W1384643	HLX4643
M5A, M3 M7, M8		9206
M40	177160	70249B
M695		D2S
Zeiss Types		
	310198	EFR
	3800181730	76Z
	3800181740	77Z
	3800181830	GSL306
	3800182520	DFBT348
	3800182600	8032
	3800182550	EFR
	3800184060	HBO100W2
	3800184070	HBO200W4L1
	3800299020	8017
	3800447390	UXL150S
	3800591660	FCR
	3800799190	XBO75W2
	3800799540	EVA
	3800751020	64626HLX
ENT SCOPE		
	3800799040	EFP
	300799/390172	72Z
	380177	77Z
	390153	53Z
	390158	58Z
	390186	86Z
Operation Scope 1, 2, 6, 9 EPI Techniscope		
	380158	58Z
	380176	76Z
	380179	8017
	380215	8032
	380116	DFBT348
	380416	GSL306
	381613	HBO100W2
	381615	HBO200WL2
	381617	XBO150W1
	381619	HBO50WL2
	391603	HBO200W2L1
	417053	EFR
	910050	HBO200W2L1
	910143	HB050W3
	910154	6605
	910219	SN250505

Type#	Base	Bulb	Length (mm/in)	Approximate Operating		Nominal Lamp Watts	Total Watts UV	Rated Average Life (hrs)
				AMPS	VOLTS			
UV 253.7 NM Nominal								
G4T5	Mini Bi-Pin (G5)	T-5	152/6	0.162	30.0	4	0.50	6000
G6T5	Mini Bi-Pin (G5)	T-5	229/9	0.147	46.0	6	1.00	6000
G8T5	Mini Bi-Pin (G5)	T-5	305/12	0.170	58.0	8	1.85	6000
G10T8	Med. Bi-Pin (G13)	T-8	343/13.5	0.230	48.0	10	1.85	6000
G15T8	Med. Bi-Pin (G13)	T-8	457/18	0.300	56.0	15	3.50	8000
G20T10	Med. Bi-Pin (G13)	T-10	580/22.8	0.360	59.0	20	4.20	8000
G25T8	Med. Bi-Pin (G13)	T-8	457/18	0.600	50.0	25	4.50	8000
G30T8	Med. Bi-Pin (G13)	T-8	914/36	0.355	103.0	30	10.00	8000
G40T10	Med. Bi-Pin (G13)	T-10	1216/48	0.415	113.0	40	11.50	8000
GTL3	E17	T-7	63/2.48	0.300	10.5	3	0.18	2000
G4T41	4 Pin	U-Shaped	146/5.75	0.900	55.0	4	0.70	3000
PL-S 9WTUV	G23 - 2 Pin	PLS	168/6.6	0.170	60.0	9	2.10	8000
PLL18WTUV	2G11 - 4 Pin	PLL	227/9	0.370	60.0	18	5.50	8000
PLL36WTUV	2G11 - 4 Pin	PLL	417/16.43	0.440	105.0	36	12.00	8000

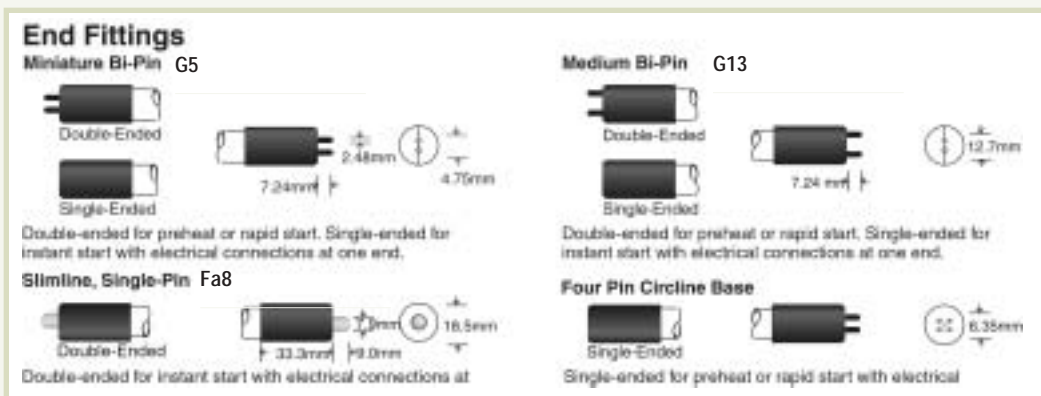
Type#	Base Face Length inches (4)	Length mm (4)	Arc Length (inches)	Life Hours (5)	Lamp Watts W(1)	Lamp Current mA	Lamp Voltage V	254nm Watts (2)	UV Output (3)	Ozone Generated gr/hr
Instant Start Lamps (Single-Pin Base) - Fa8										
G10T5L	14.0	356.6	10.9	9000	16	400	55	5.3	55	0.0
G10T5H	14.0	356.6	10.9	9000	16	400	55	5.3	55	0.03
G10T5VH	14.0	356.6	10.9	9000	16	400	55	5.3	55	0.18
G36T6L	33.2	842.4	30.0	9000	39	425	120	13.8	120	0.0
G36T6H	33.2	842.4	30.0	9000	39	425	120	13.8	120	0.5
G36T6VH	33.2	842.4	30.0	9000	39	425	120	13.8	120	14.0
G37T6VH	34.2	867.8	31.0	9000	40	425	120	14.3	130	15.0
G64T5L	61.2	1553.6	58.0	9000	65	425	220	25.0	200	0.0
G64T5VH	61.2	1553.6	58.0	9000	65	425	220	25.0	200	29.0
G67T5L	64.2	1629.8	61.0	9000	79	425	238	25.6	205	
G67T5VH	64.2	1629.8	61.0	9000	79	425	238	25.6	205	
GSL692T5L	27.3	692.0	24.1	9000	32	425	94	11.0	95	

- 1) Output wattage is specified for output in the nominal UV wavelength for the entire luminous surface of the lamp.
- 2) Microwatts per square centimeter at nominal UV wavelength at a distance of 1 meter from the luminous surface of the lamp at 100 hours of use.
- 3) Measurement may vary depending on applications and surrounding conditions.
- 4) Base face length does not include contact pins. To obtain length with standard lamp holders, add 2.8 inches base face length. Length tolerances are within 3mm of nominal length.
- 5) Rated average useful life is defined as the average time a set of lamps under continuous test conditions operate and maintain 60% of the average UV output.



CAUTION: Always observe safety precautions when utilizing ultraviolet light sources.

Type#	Base Face Length inches (6)	mm (6)	Arc Length (inches)	Lamp Watts W(1)	Lamp Current mA	Lamp Voltage V	254nm Watts (2)	UV Output (3)	Average Life (7)
Cold-Cathode Lamps (Single-Pin Base) Fa8									
782L10	14.0	356.7	8.7	15	90	180	2.8	22	17500
782H10	14.0	356.7	8.7	15	90	180	2.8	22	17500
782VH10	14.0	356.7	8.7	15	90	180	2.8	22	17500
782L20	24.0	610.7	18.7	22	90	270	5.5	45	17500
782H20	24.0	610.7	18.7	22	90	270	5.5	45	17500
782VH20	24.0	610.7	18.7	22	90	270	5.5	45	17500
782L30	34.0	864.7	28.7	28	90	350	8.3	63	17500
782H30	34.0	864.7	28.7	28	90	350	8.3	63	17500
782VH30	34.0	864.7	28.7	28	90	350	8.3	63	17500
Preheat-Start Lamps (Miniature Bi-Pin Base) G5									
GPH212T5L	8.4	212.0	5.2	10	400	32	2.6	23.0	9000
GPH287T5L	11.3	287.0	8.1	14	400	42	3.0	33.0	9000
GPH287T5VH	11.3	287.0	8.1	14	400	42	3.0	33.0	9000
U-Lamp (Preheat Start) (Miniature Bi-Pin Base) G5									
GPHU22-10T5-12L	7.3	186.0	10.9	16	400	55	5.3	55	9000
GPHU22-36T6L	16.9	429.0	30.0	39	425	120	13.8	120	9000
GPHU22-390T5VH	15.4	390.0	27.5	36	425	100	12.0	105	9000
GPHU76-10T5-1/2VH	6.7	169.0	10.9	16	400	55	5.3	55	9000
GPHU76-36T6VH	16.2	412.0	30.0	39	425	120	13.8	120	9000
GPHU76802T5VH	15.4	391.0	28.0	37	425	108	12.8	110	9000
U-Lamp (Instant Start) (Single-Pin Base) Fa8									
GSLU22-10T5-1/2L	7.3	186.0	10.9	16	400	55	5.3	55	9000
GSLU22-36T6L	16.9	429.0	30.0	39	425	120	13.8	120	9000
GSLU22-390T5VH	15.4	390.0	27.5	36	425	100	12.0	105	9000
GPHU76-10T5-1/2VH	6.7	169.0	10.9	16	400	55	5.3	55	9000
GPHU76-36T6VH	16.2	412.0	30.0	39	425	120	13.8	120	9000
GPHU76802T5VH	15.4	391.0	28.0	37	425	108	12.8	110	9000



(6) Nominal base face to base face dimensions are given for straight lamps. Length tolerance for bipin lamps with pin connections at both ends is +2.4 millimeters. Tolerance of slimline, cold cathode and all "single-ended" lamps is + 3.0mm. Nominal U-lamp length is base face to outside of bend with tolerance of + 6.4mm.

(7) Approximate output after 100 hours of use measured in still air at 77oF ambient and under specific test conditions. Subject to wide variations due to application conditions. Rated average useful life is defined as the elapsed operating time under essentially continuous operation for the output to decline to 60% of the out put the lamp had at 100 hours. Hot-cathode lamps have a rated average useful life of 9,000 hours; cold-cathode lamps have a rated average useful life of 17, 500 hours.

Ordering Code	Wattage (W)	Bulb	Tube Length (mm/in)	Tube Diameter (mm)	Lamp Current (A)	Ultraviolet Output Watts	Average Life (Hrs) (2)	Base
Black-Light Blue Lamp (BLB)								
F4T5BLB	4	T5	152/6	15.5	0.162	0.3	3000	Miniature Bi-Pin (G5)
F6T5BLB	6	T5	229/9	15.5	0.147	0.6	3000	Miniature Bi-Pin (G5)
F8T5BLB	8	T5	305/12	15.5	0.170	1.2	3000	Miniature Bi-Pin (G5)
F10T8BLB	10	T8	343/13.5	25.5	0.230	1.2	4000	Medium Bi-Pin (G13)
F15T8BLB	15	T8	457/18	25.5	0.300	2.5	4000	Medium Bi-Pin (G13)
F20T10BLB	20	T10	580/22.8	32.5	0.360	3.6	4000	Medium Bi-Pin (G13)
F20T12BLB	20	T12	610/24	38	0.380		9000	Medium Bi-Pin (G13)
F30T8BLB	30	T8	914/36	25.5	0.355	5.5	7500	Medium Bi-Pin (G13)
F40BLB	40	T12	1219/48	38	0.430		20000+	Medium Bi-Pin (G13)
PLS9W08	9	PL9	165/6.5	27	0.17	2.5	10000	(G23)

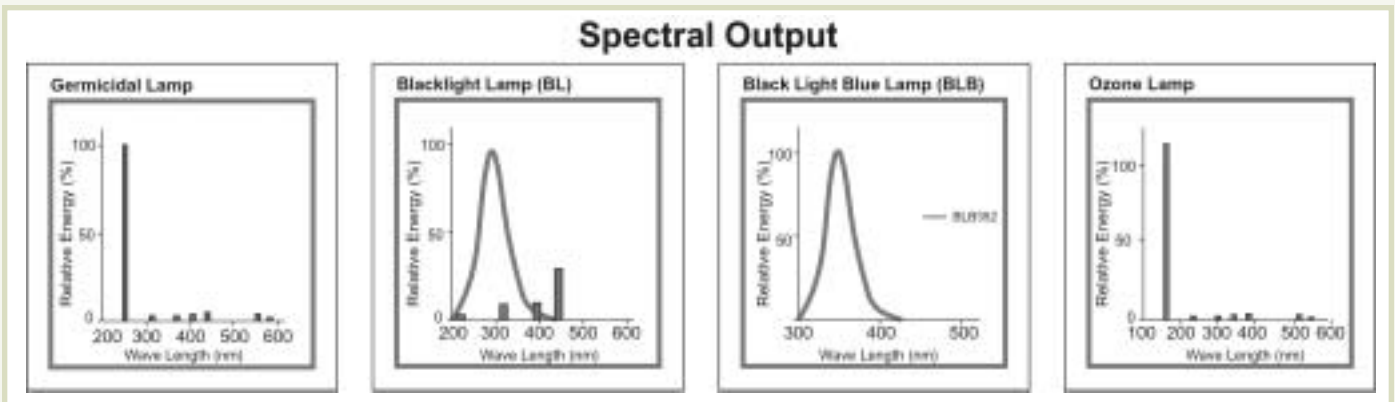
Effectively emit UV-rays between 315nm-400nm. The deep blue filter glass absorbs visible rays and transmits near UV-rays with radiation peaks at 352nm & 368nm.

Black Light Lamp (BL)

F4T5BL	4	T5	152/6	15.5	0.162	0.25	3000	Miniature Bi-Pin (G5)
F6T5BL	6	T5	229/9	15.5	0.147	0.6	3000	Miniature Bi-Pin (G5)
F8T5BL	8	T5	305/12	15.5	0.170	0.8	3000	Miniature Bi-Pin (G5)
F15T8BL	15	T8	457/18	25.5	0.300	2.1	4000	Medium Bi-Pin (G13)
F20T10BL	20	T10	580/22.8	32.5	0.300	3.5	4000	Medium Bi-Pin (G13)
F20T1BL	20	T12	610/24	38	0.380		9000	Medium Bi-Pin (G13)
F30T8BL	30	T8	914/36	25.5	0.355	4.5	4000	Medium Bi-Pin (G13)
F40BL	40	T12	1219/48	38	0.430		20000	Medium Bi-Pin (G13)
PL9 W10BL	9	PL9	165/6.5	27	0.170	1.7	10000	(G23)

Effectively emit UV- rays between 315nm-400nm. Three types of phosphors are used with radiation peaks at 352nm, 368nm and 372nm.

Spectral Output



CAUTION: Always observe safety precautions when utilizing ultraviolet light sources.

Deuterium

Manufacturer	Instruments	Ordering Code
AGILENT/HEWLETT-PACKARD	HP HPLC (SYSTEMS): DETECTORS	
AGILENT/HEWLETT-PACKARD	(1040): 1040A DAD, 1040MVW	LH10
AGILENT/HEWLETT-PACKARD	(1080): 1080B; (1081): 1081B	DO802
AGILENT/HEWLETT-PACKARD	(1082): 1082B; (1084): 1084B	DO802
AGILENT/HEWLETT-PACKARD	(1050): 79853A VWD	P01
AGILENT/HEWLETT-PACKARD	(1050): 79853C VWD, 79854A MWD, G1306A DAD	P21
AGILENT/HEWLETT-PACKARD	(1090): 79880A DAD	P21
AGILENT/HEWLETT-PACKARD	(1090): 79881A FPD	P21
AGILENT/HEWLETT-PACKARD	(1100): G1314 VWD (1314A)	P17
AGILENT/HEWLETT-PACKARD	(1100): G1315A DAD, (CE): HP3DCE, G1365AMWD	P19
AGILENT/HEWLETT-PACKARD	(1100): (CE):HP3DCE	P19
AGILENT/HEWLETT-PACKARD	(1100): G1315A, (CE): HP3DCE Long Life	LH13X2
AGILENT/HEWLETT-PACKARD	HP1046 PFD Programmable Fluorescence Detector	FX963
AGILENT/HEWLETT-PACKARD	HP SPECTROPHOTOMETERS	
AGILENT/HEWLETT-PACKARD	8450, 8450A	G07
AGILENT/HEWLETT-PACKARD	8451A DAD	LH11
AGILENT/HEWLETT-PACKARD	8452A, 8452A (OPTION 2)	DO20405RTJ
AGILENT/HEWLETT-PACKARD	8452, 8452A NIR version	inquire
AGILENT/HEWLETT-PACKARD	8453 Long Life	LH13X2
AGILENT/HEWLETT-PACKARD	8453A, 8453E	LH15
AGILENT/HEWLETT-PACKARD	9492 DAD	inquire
APPLIED BIOSYS. (ABI)PE	120, 130, 120A, 130A, 230A, 773, 775	DS244TJ
APPLIED BIOSYS. (ABI)PE	FS970, FS980, 270AHT, 1000S DIODE ARRAY, 980 FLUORESCENCE	DS244TJ
APPLIED BIOSYS. (ABI)PE	SF757, 773, 783A, ADB7XX, SF759A, SF785A	DS244TJ
ALLTECH	200, 201 & 205	DS248TJ
ALTEX/BECKMAN	BECKMAN ALTEX HPLC'S	
ALTEX/BECKMAN	DETECTOR MODELS 150B & 153	L885
ALTEX/BECKMAN	DETECTOR MODEL 155	DO848
ALTEX/BECKMAN	DETECTOR MODEL163	DO901T
ALTEX/BECKMAN	DETECTOR MODELS 164, 165 & (DUAL)167	D753
ALTEX/BECKMAN	(VW) DETECTOR MODEL 166	LHA70 or LH70
ALTEX/BECKMAN	(VW) DETECTOR MODEL 168	LHA75 or LH75
ALTEX/BECKMAN	SYSTEM GOLD	D753
ALTEX/BECKMAN	P/ACE 2000, 5000 SERIES	inquire
AMINCO (SLM)	DW2, DW2/S, DW2A	DO902
AMINCO (SLM)	DW2C, DW/2000	DO946
AMINCO (SLM)	SLM 4800, 8000, 8100	XBO150W1 or OFR
AMINCO (SLM)	SPF500 C/FLUOR XENON	LX300UV
Applied Chrom. Sys.	LC750/11, LC750, LC750/11E, LC750/12	G16
B&L / MILTON ROY	Models: 21UVM, UVD, 200, 601, 700, 710, 1001, 1201, 2000, DE50	G05
B&L / MILTON ROY	3000DAD	Inquire
B&L / MILTON ROY	GENESYS 2, 5, UV	G31
B&L / MILTON ROY	SPECTRONIC 1001, 1201 VIS	L810
BARSPEC (all models)		DO946
BAS (Bio Anal Systems)	UV116A and 200	DS248TJ
BECKMAN SPEC'S.	DU, DU2, DK, DBG, DBGT, DB	DO946
BECKMAN SPEC'S.	DU5, 6, 7, 8, ACTA, CENTURY & 5200'S	D753
BECKMAN SPEC'S.	5230, 5240 & 5270 MODELS	inquire
BECKMAN SPEC'S.	MODELS 24, 25, 34, 35, DU40, DU50, EARLY 24, 25, 34, 35	D753
BECKMAN SPEC'S.	DU60, 62, 64, 65	D753J6
BECKMAN SPEC'S.	DU70	LH73
BECKMAN SPEC'S.	DU50, DU60 SERIES, DU70, 600 SERIES & 7000 TUNGSTEN	64258
BECKMAN SPEC'S.	DU7000, 7400, 7500 AND 600 SERIES UV	DS24605 J
BECKMAN SPEC'S.	DU7000 & 600 SERIES TUNGSTEN	64258
BECKMAN SPEC'S.	DU520, 530	DO54305J

Manufacturer	Instruments	Ordering Code
BIO RAD	MODEL 1305, 1306	D0848
BIO RAD	MODEL 1503	D0902
BIO RAD	1790, BioDimension, HPE100, CE2000	DS248TJ
BIO RAD	BIFOCUS	LH41
BIO RAD	MODELS 206, 300	J54
BUCHLER	ALL MODELS	D0902
CAMAG	HPTLC SCANNER	G06
CAMAG	HPTLC SCANNER 2	G29
CARY - see Varian		
CECIL INSTRUMENTS	Series 1000, 1070, 2000, 3000, 5000, 6000, 7000, 8000, 9000	R18
CECIL INSTRUMENTS	Series 2 Models	R18
CECIL INSTRUMENTS	CE2012, 2112, 5095, 202, 212, 212A, 272, 292, 373, 393, 505, 515, 545, 588, 594, SERIES 1	D01 or D02
COLEMAN (PE)	MODEL 124	D0946
COLE-PALMER	MODEL 0195300	DS248TJ
DIONEX	DURRUM	D0802
DIONEX	MODELS 20001, CES1, CZE, VDM2	J10
DIONEX	VDM1, DSAI SPECTRAL ARRAY	D0248TJ
DUPONT	MODELS: 8800	L280
DUPONT	825	D0946
DUPONT	837	D0802
DUPONT	850	R38
DUPONT	852	R25
DUPONT	860, 862	R29
DUPONT	870	R15
DYNAMAX	UVCUSTOMER, UVD11, UVMisc	D0248TJ
EM SCIENCE (HITACHI)	ALL	D0946J
FISHER SCIENTIFIC	200344	DS248TJ
GBC	All AA Instruments	J07
GBC	MODELS: 906, 911	D0848
GBC	916, 918, 920	D0405J
GBC	LC1205, 1206, 1210	DS248TJ
GILFORD	200, 220, 223, 230, 240, 250, 260, 2000, 2400, 2500, 2600	D0802
GILFORD	ABOVE MODELS TUNGSTEN	L875
GILFORD	RESPONSE	D0946
GILSON	HOLOCHROME	D0902
GILSON	115, 116, 117	DS222J
GILSON	118, 119, 151, 152, 155, 156, 160DAD	DS273TJ
HACH	DR4000U	D0542J
HEWLETT-PACKARD/AGILENT	HP HPLC (SYSTEMS): DETECTORS	
HEWLETT-PACKARD/AGILENT	(1040): 1040A DAD, 1040MVW	LH10
HEWLETT-PACKARD/AGILENT	(1080): 1080B; (1081): 1081B	D0802
HEWLETT-PACKARD/AGILENT	(1082): 1082B; (1084): 1084B	D0802
HEWLETT-PACKARD/AGILENT	(1050): 79853A VWD	P01
HEWLETT-PACKARD/AGILENT	(1050): 79853C VWD, 79854A MWD, G1306A DAD	P21
HEWLETT-PACKARD/AGILENT	(1090): 79880A DAD	P21
HEWLETT-PACKARD/AGILENT	(1090): 79881A FPD	P21
HEWLETT-PACKARD/AGILENT	(1100): G1314 VWD (1314A)	P17

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Manufacturer	Instruments	Ordering Code
HEWLETT-PACKARD/AGILENT	(1100): G1315A DAD, (CE): HP3DCE, G1365AMWD	P19
HEWLETT-PACKARD/AGILENT	(1100): (CE): HP3DCE	P19
HEWLETT-PACKARD/AGILENT	(1100): G1315A, (CE): HP3DCE Long Life	LH13X2
HEWLETT-PACKARD/AGILENT	HP1046 PFD Programmable Fluorescence Detector	FX963
HEWLETT-PACKARD/AGILENT	HP SPECTROPHOTOMETERS	
HEWLETT-PACKARD/AGILENT	8450, 8450A	G07
HEWLETT-PACKARD/AGILENT	8451A DAD	LH11
HEWLETT-PACKARD/AGILENT	8452A, 8452A (OPTION 2)	DO20405RTJ
HEWLETT-PACKARD/AGILENT	8452, 8452A NIR version	inquire
HEWLETT-PACKARD/AGILENT	8453 Long Life	LH13X2
HEWLETT-PACKARD/AGILENT	8453A, 8453E	LH15
HEWLETT-PACKARD/AGILENT	9492 DAD	inquire
HITACHI	SPECTROPHOTOMETERS	
HITACHI	10010, 20, 30, 40, 50, 60	DO946
HITACHI	10080, 181, 124, 191	DO946
HITACHI	181	R38
HITACHI	101, 102, 111	DO848
HITACHI	110, 10040 (SOME), 15020, 200, 300, 320, 330, 340, 556, 557, 655A22, 655A23	DO946J
HITACHI	HPLC DETECTORS	
HITACHI	L2000, L2500, L3000, L3100, L3200, L4200, L4250, L4720	DO651MJ
HITACHI	L7400, 7420, 7450A, L4000, L4500	DO651MJ
HITACHI	U1100, 1110, U2000, U2001, U2010, 3000, 3010, 3210, U3310, U3400, 3410, 3510, 4001	DO946J
HITACHI	U1100, U2000 TUNGSTEN	JC12V50W
HITACHI	F1000, 1080, 1200, 2000, 3000, 3010, F4000, 4010, 4500, F7400, F7480	XBO150W1
IBM	9400 SERIES	DO848
IBM	9500 SERIES, 9523, 9563	DO902
ICI	LC1200	DO946
ISCO	1800	A04A01
ISCO	1840, V4	inquire
ISCO	LINEAR UV/VIS 200, 203, 204, 205, 206	DS248TJ
INSTRUMENTS S.A.	JY201	DO303
JASCO	Uvidec 1, 2, 4, 100, 100II, 320, 340, 420, 430, 505, 510, 710	DO848
JASCO	Uvidec 4D	DO946
JASCO	870, 875	P01
JASCO	920, 970, 975A, 975B, 974, 975	inquire
JASCO	DIP181, MD910	inquire
JASCO	MULTI 320, 100III, 100IV, 100V, 100VI, 430, 610, 650	DO902
JASCO	FP770	UXL151HO
JASCO	FP820, 821, 920	UXL150S
JASCO	J500 FLUOROMETER and 720 FLUOROMETER	XBO450W4
JASCO	UV530	DO405J
JOBIN YVON	Monospec 103	DO902
JOYCE LOEBL	Chromoscan	DO902
JOYCE LOEBL	Scan 400	DO802
KNAUER	6100, 8100	DO902
KNAUER	2000, 2500, 2600	LH22
KNAUER	2000, 2500, 2600 TUNGSTEN	LH23
KNAUER	7100, D2540	LH21
KNAUER	8700, 9700, D871	LH20
KONTRON	HPLC DETECTORS (BIO-TEC)	
KONTRON	332, 432, 770	DO802
KONTRON	430, 433, 335, 332	DS22205

Manufacturer	Instruments	Ordering Code
KONTRON	440DAD	DO65205TJ
KONTRON	720, 720LC, 722, DE430, 810P	DO902
KONTRON	735LC	DO946
KONTRON	710, 715, 72013C, 740LC, 810, 820, 860	DO302
KONTRON	SPECTROPHOTOMETERS	
KONTRON	UVIKON 710, 720, 810, 810P, 820, 860	DO302
KONTRON	UVIKON 710, 720, 800, 820, 860 TUNGSTEN	inquire
KONTRON	UVIKON 722, 730, 735, 735LC	R19
KONTRON	UVIKON 725	DO946
KONTRON	UVIKON 922, 923, 930, 931, 932, 933	DO905TJ
KONTRON	UVIKON 941 PLUS, 942, 943	DO905TJ
KRATOS & PE-AB see ABI	SEE ABI	
LDC (MILTON ROY)	UVVIS DETECTORS	
LDC (MILTON ROY)	SPECTROMONITOR MODELS	
LDC (MILTON ROY)	SMI, SMII, SMIII, SM3100, SM3200, SM4100	DO901T
LDC (MILTON ROY)	SM3000, SM121, 1200, 1222	DO902T
LDC (MILTON ROY)	3100X, 4200	LH42
LDC (MILTON ROY)	SM5000	inquire
LDC (MILTON ROY)	SC100234, UV100411, UV150511	DS248TJ
LEAR SIEGLER	ALL MODELS	DO802
LINEAR	UV200, 203, 204, 205, 205PH, FOCUS	DS248TJ
LINEAR	FOCUS 2000 HIGH RESOLUTION	J54
LKB (BIOCHROME)	Ultraspec II & III, PLUS	R07
LKB PHARMACIA	2151	LH20
LKB PHARMACIA	ULTRASPECS: 1000E, 2000, 2158, 3000, 4000	inquire
LKB PHARMACIA	4050, 4051, 4054, TDS	R07
McPHERSON	701, 707, 785, 786	DO902
McPHERSON	632	V01
McPHERSON	FL750/A & B XENON	LH101
McPHERSON	FL750/A & B XENON/MERCURY	LH102
McPHERSON	FL750/A & B DEUTERIUM	LH100
MELOY LABS	SA70, SA700	Y02
MERCKE (HITACHI)	SEE HITACHI for all others....	
MERCKE (HITACHI)	655A/22/ L3000, 4000, 4500, 4520	DO651MJ
MERCKE (HITACHI)	655A/22/ L3000, 4000, 4500, 4520 W/ TIMER	R53
MICROMERITICS	785, 786	DO902
MICROMERITICS	787, 788	DO848
MICHROM BIOSCIENCES	UV200	DS248TJ
NANOMETRICS	NAMOSPEC MODEL 4150	L7296
NICOLET	8745	L06
OPTICA	10	DO902
PE (HITACHI)	SYSTEMS 200, 320, 329, 330, 340, 556, & 557	DO946J
PE (HITACHI)	(Atomic Absorption Systems) MODEL 139	DO946
PERKIN ELMER	HPLC SYSTEMS	
PERKIN ELMER	LC90, LC290	LH94
PERKIN ELMER	LC45, 55, 55B, 65T, LC75, LC85, 85B, 95	R07
PERKIN ELMER	LC135, 135C, LC235, 235C	DO946
PERKIN ELMER	INTEGRAL 2000 & 4000	DO946
PERKIN ELMER	MODEL 200DAD	DS272TJ
PERKIN ELMER	LC240, LC250, LC295, 481	LH95
PERKIN ELMER	LC480 DIODE ARRAY	DO650TJ

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Manufacturer	Instruments	Ordering Code
PERKIN ELMER	SPECTROPHOTOMETERS	
PERKIN ELMER	M46, 55, 57	DO902
PERKIN ELMER	570, 571, 572, 575, 576	L200
PERKIN ELMER	55, 550, 551, 552, 552A, 553, 559, 559A	DO650TJ
PERKIN ELMER	200, 220, 320, 330, 340, 556, 557	DO946J
PERKIN ELMER	LAMBDA ARRAY 3840	R21
PERKIN ELMER	LAMBDA 1 and 3 (early models of 3), 3A	R38
PERKIN ELMER	LAMBDA 3, 3B, 5, 7, 9, 15, 17, 19	DO650TJ
PERKIN ELMER	LAMBDA 2, 10, 11, 12, 20, 25, 40	DO650TJ
PERKIN ELMER	LAMBDA 18, BIO, 19, 900	DO650TJ
PERKIN ELMER	LAMBDA 4, 6	LH93
PERKIN ELMER	LAMBDA 14 THRU 18, BIO	
PERKIN ELMER	LAMBDA 15, 17, 19, 20, 40, 900, 800	DO650TJ
PERKIN ELMER	ATOMIC ABS SPECTROS	
PERKIN ELMER	272, 280, 360, 370, 372, 373, 380, 450, 460, 560	R06
PERKIN ELMER	303, 304B, 305, 305A, 306, 402, 403, 480, 503, 555, 575, 603, 606, 703	inquire
PERKIN ELMER	2280, 2380, 280, 380, 3030, 4000, 5000, 5100 & ZEEMANS	R06
PERKIN ELMER	1100, 2100, 4100, 1100B	P16
PERKIN ELMER	400, 410, 420, 430	G20
PERKIN ELMER	55E, 575	R38
PERKIN ELMER	555	R30
PERKIN ELMER	FLUOROMETERS	
PERKIN ELMER	203, 204, 204A&S, 512, 512A, 650 SERIES	XBO150W1
PERKIN ELMER	MPF2A, 3, 4, 43, 43A, 44, 44A&B, LS1 & LS2 SERIES	XBO150W1
PERKIN ELMER	3000, LS3, 4, 5 SERIES	NL200
PERKIN ELMER	MPF44E & MPF66	inquire
PERCEPTIVE BIOSYS.	BIOCAD, SPRINT	DS248TJ
PHARMACIA / LKB	SEE LKB	
RAINEN / VARIAN	HPLC'S	
RAINEN / VARIAN	MODEL 87	LH20
RAINEN / VARIAN	FLUORESCENCE DETECTOR FL2	inquire
RAINEN / VARIAN	UV1, UV1A	inquire
RAINEN / VARIAN	UVC, UVDII, UVMULTI	DS248TJ
SAITRON	MONOSPEC B	DO802
SCHOEFFEL	MODEL 740	DO802
SECOMAN	ALL MODELS	DO302
SSI (SCI. SYS. INC.)	500, 504, 506	DS248TJ
SEVERN ANALYTICAL	UVVIS Spec.'s SA6500, 3, 5, 8	J53
SEVERN ANALYTICAL	HPLC SA6510	DS244TJ
SHIMADZU	SPECTROPHOTOMETERS	
SHIMADZU	D300L, UV200S	DO902
SHIMADZU	UV120, 1201, 12002, 14004, UV150, 15020, 160A, 160U, 240, UV250, U260, 265	DO405J
SHIMADZU	1604, 1200, 1201, 1240, UV1201PC, 1600, 1601, MPS2000, UV2100, 2501, 3000, 3100PC, 3501	DO405J
SHIMADZU	SERIES 160, 260, 265 TUNGSTEN	13079
SHIMADZU	UV2101, 2401, 3000, 2501, 3501 TUNGSTEN	inquire
SHIMADZU	CS930, 9000, UV365	DO405J
SHIMADZU	ATOMIC ABSORPTION	
SHIMADZU	AA625, 630, 640, 660, 670, 680U, 6501	DO405J
SHIMADZU	FLUOROMETERS	
SHIMADZU	RF10A, 535, 540, 551, 1501, 5000, 5301	XBO150 W1
SHIMADZU	RF551, RF10AXL, RF10A	XBO150WOFR
SHIMADZU	RF530	inquire
SHIMADZU	HPLC SYSTEMS	
SHIMADZU	SPD2A, 2AV, SPD6A, SPD6AV, SP4, SPD7A, SPD7AV	DO506

Manufacturer	Instruments	Ordering Code
SHIMADZU	LC4A, LC6A	DO506
SHIMADZU	SPD10A, SPD10AV, M10AVP, 10AVP	DS25005J
SHIMADZU	SPDM1A, M6A, 10AVVP	LH80
SHIMADZU	SPDM6A, SPDM10A, M10AV	LH81
SIGMA	MODEL ZWS11	DO902T
SIGNAL	NA3 ANALYZER	Y01
THERMO SEPRTN. PRODS.	CORPORATION REF'D TO AS (TSP)	
LDC OF (TSP)	ALL HPLC DETECTORS	
LDC OF (TSP)	SMI, SMII, SMIII, D, SM121, 1200, 1222, SM3000, SM3100, SM4000	DO901T
LDC OF (TSP)	SM3100X, SM4100	LH42
LDC OF (TSP)	SM3200, SM5000	inquire
LDC OF (TSP)	SC100234, UV100411, UV150511, 200, 203, 204, 206, FOCUS, LC871	DS248TJ
JARREL ASH (TSP)	ATOMIC ABSORPTION	
JARREL ASH (TSP)	BKG. CORRECTION LAMP, SH1000	inquire
SPCTRA PHYS OF (TSP)	SP770, SP970, SP8480XR, SP8773XR	DS244TJ
SPCTRA PHYS OF (TSP)	LC871	A04
SPCTRA PHYS OF (TSP)	SP8200	inquire
SPCTRA PHYS OF (TSP)	SP8400, SP8430, SP8440, SP8440XR, SP8450, SP8490, SP8480, SP8490	DO902T
SPCTRA PHYS OF (TSP)	CE500,1000, 2000, SC100, 200, SF100, SF200, SC100, SPECTRA 100, 200, UV100, 150, 200	DS248TJ
SPCTRA PHYS OF (TSP)	UV6000LP	inquire
SPCTRA PHYS OF (TSP)	SM5000 DIODE ARRAY	inquire
SPCTRA PHYS OF (TSP)	UV1000, 2000, 3000	DS248TJ
SPCTRA PHYS OF (TSP)	UV3000 & FOCUS DETECTORS	inquire
SPCTRA PHYS OF (TSP)	FOCUS 2000 HR, UV3000 HR	DS248TJ
SPCTRA PHYS OF (TSP)	SM3100, SM3200, SM4100	inquire
SPCTRA PHYS OF (TSP)	FLUORESCENCE DETECTOR 95510144	inquire
TRACOR	MODEL D970A	DO902
TURNER	330, 340, 350	DO902
UNICAM (PYE)	4020, 4025, LC/UV, LC3, SP500	A04
UNICAM (PYE)	4021	G18
UNICAM (PYE)	4110	A06
UNICAM (PYE)	4225	J08
UNICAM (PYE)	5600 SERIES, 8500, 8740, SP8150, 8200, 8400	L01
UNICAM (PYE)	9002	inquire
UNICAM (PYE)	SP700, 800, SP1700, 1750, 1800, 30UV, 7500, 8000, 8100, 8800, 8820	B01
UNICAM (PYE)	SP192, SP1960, SP6, SP6350, SP600, SP6400, SP6450, SP550	D01
UNICAM (PYE)	SP8150, 8200, 8400, SP8740	L01
UNICAM (PYE)	SP8620, 8625	L07
UNICAM (PYE)	SP8450, 8700, 8710, 8720, 8730, SP8745, 8750	L06
UNICAM (PYE)	MODELS: 9002, SOLARS, SP7500, UV2, 4	inquire
UNICAM (PYE)	HELIOS MODELS: Beta, Delta & Gamma	J53
VARIAN	AAS BACKGROUND CORRECTION LAMPS	
VARIAN	SPECTRA AMOUNT & X75	inquire
VARIAN	75 SERIES, 1275, 1475	DO946
VARIAN	MODELS 275, 400, 775, 875, 975, 3000	DO946
VARIAN	2050	DO848
VARIAN	2550	G03
VARIAN	SPECTROPHOTOMETERS	
VARIAN	CARY1, 2, 3, 14, 15, 16, 118, 17, 17D, 300, 219	R17
VARIAN	CARY210, early models of 219	inquire
VARIAN	CARY219, 118CX, 2200, 2300	DO902
VARIAN	ALL ABOVE MODELS TUNGSTEN	inquire
VARIAN	DMS70, 80, 90, 100S, 200, 300	J02

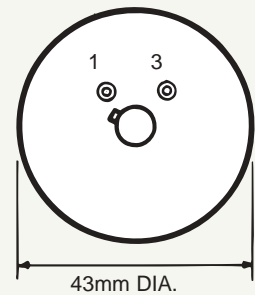
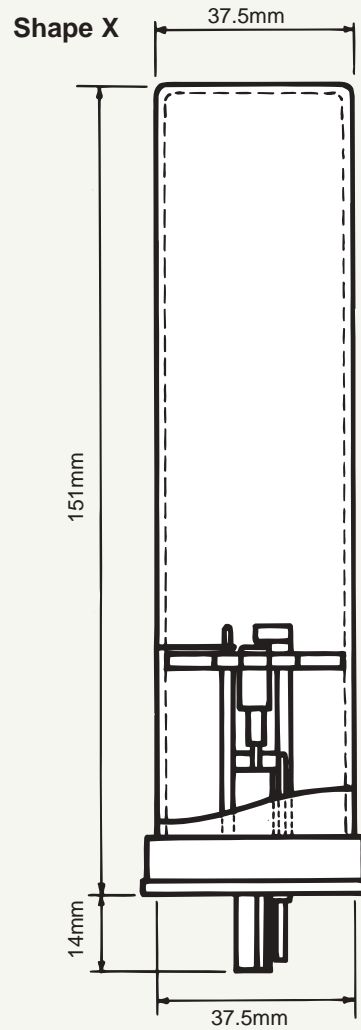
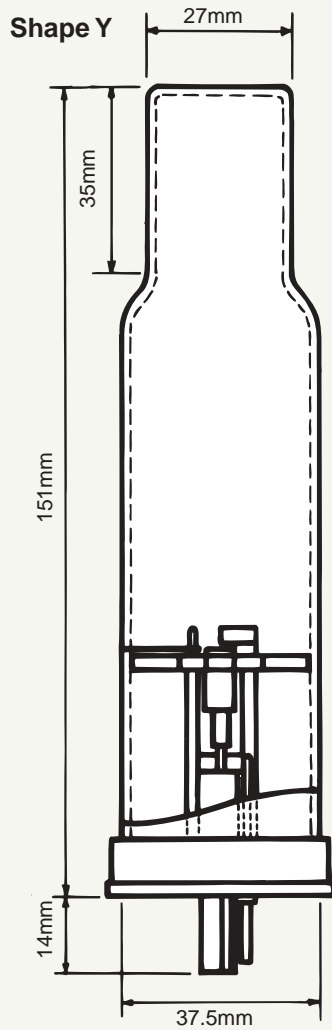
Deuterium

Manufacturer	Instruments	Ordering Code
VARIAN	Spectra A10, 20, 30, 40	DO946
VARIAN	Spectra 100, 5000, UV5	inquire
VARIAN	UV10	DO902
VARIAN	UV50, 100, VARICHROME	G14
VARIAN	UV200, VISTA 5500	inquire
VARIAN	UV634, 635	DO946
VARIAN	HPLC SYSTEMS	
VARIAN	MODEL 1050, 2050	inquire
VARIAN	MODEL 2550	P01
VARIAN	2070, 9050, 9060, 9065, 9070	inquire
VARIAN	LC50	L305
WATERS	ALL HPLC DETECTORS	
WATERS	LAMBDA MAX	DO903T
WATERS	MODELS: 440/441 MERCURY	L820
WATERS	441, 445	inquire
WATERS	M450/455	LHA1 or LH1
WATERS	470, 474	XBO150W1
WATERS	490 S/N's UP TO 1000	inquire
WATERS	490E S/N's ABOVE 1000	FX963
WATERS	480, 481, 481AZ, 481LC, LAMBDA MAX	DO903T
WATERS	484	DS223TJ
WATERS	LC MODULE I, 486	DS61005RTJ
WATERS	990, 991, 994 & 994DAD	DO65205TJ
WATERS	996DAD	DO24705TJ
WATERS	2487	LH36
WATERS	2487 LONG LIFE	LH36X2
ZEISS	PM2, PM4, DM4	H30DS
ZEISS	CLD300	DO54605TJ
ZEISS	PM6, PMQ1, PMQ3, M4Q3	H30DS
ZEISS	SPEKOL, SPECORD, S10, UVVIS, S5/UV, M500	DO249TJ

NOTES

1½" (37mm) Hollow Cathode Lamp

Outline Dimensions



OCTAL BASE
PIN 1 CATHODE
PIN 3 ANODE

1½" Hollow Cathode

Type Number Code

3 QNY/Fe

Size Window Filler Gas Shape Element

Size	3	-	37mm diameter
Window	Q	-	Quartz
	U	-	UV Glass
	B	-	Borosilicate
Filler Gas	A	-	Argon
	N	-	Neon
	X	-	(Wide Nose)
	Y	-	(Narrow Nose)
Element	-	-	Chemical Symbol

1 1/2" Hollow Cathode

SINGLE ELEMENT LAMPS

Element	Type No.	Recommended Wavelength, nm	Alternative Wavelength, nm
Aluminum	3UNX/Al	309.3	394.4
Antimony	3QNY/Sb	217.6	231.1
Arsenic	3QNY/As	193.7	197.2
Barium	3BAX/Ba	553.5	350.1
Beryllium	3QNY/Be	234.9	—
Bismuth	3QNY/Bi	223.1	306.8
Boron	3QNY/B	248.8	—
Cadmium	3QNY/Cd	228.8	326.1
Caesium	3BNX/Cs	852.1	455.5
Calcium	3UNX/Ca	422.7	—
Cerium	3UNX/Ce	520.0	569.7
Chromium	3UNX/Cr	357.9	429.0
Cobalt	3QNY/Co	240.7	304.4
Copper	3UNX/Cu	324.8	327.4
Deuterium	3QDY/D2	Continuum 170-380	
Dysprosium	3BNX/Dy	421.2	416.8
Erbium	3BNX/Er	400.8	408.8
Europium	3BAX/Eu	459.4	333.4
Gadolinium	3UNX/Gd	368.4	419.1
Gallium	3UNX/Ga	287.4	403.3
Germanium	3UNX/Ge	265.2	269.1
Gold	3QNY/Au	242.8	267.6
Hafnium	3UAX/Hf	307.3	295.1
Holmium	3BNX/Ho	410.4	417.3
Indium	3UNX/In	303.9	451.1
Iridium	3QNY/Ir	208.9	264.0
Iron	3QNY/Fe	248.3	372.0
Lanthanum	3UAX/La	550.1	418.7
Lead	3QNY/Pb	217.0	283.3
Lithium	3BAX/Li	670.8	323.3
Lutetium	3UAX/Lu	336.0	337.7
Magnesium	3QNY/Mg	285.2	202.6
Manganese	3UNX/Mn	279.5	403.0
Mercury	3UNX/Hg	253.6	—
Molybdenum	3UNX/Mo	313.3	390.1
Neodymium	3BNX/Nd	492.5	490.2
Nickel	3QNY/Ni	232.0	305.1
Niobium	3UAX/Nb	334.4	358.0
Osmium	3UNX/Os	290.9	301.8
Palladium	3QNY/Pd	247.6	340.5
Phosphorus	3QNY/P	213.6	—
Platinum	3UNX/Pt	265.9	299.8
Potassium	3BNX/K	766.5	404.4
Praseodymium	3BNX/Pr	495.1	492.5
Rhenium	3UAX/Re	346.1	345.2
Rhodium	3UAX/Rh	343.5	365.8
Rubidium	3BNX/Rb	780.0	794.8
Ruthenium	3UNX/Ru	349.9	392.6
Samarium	3UNX/Sm	429.7	476.0
Scandium	3UNX/Sc	391.2	408.2
Selenium	3QNY/Se	196.0	204.0
Silicon	3QNY/Si	251.6	250.7
Silver	3UAX/Ag	328.1	338.3
Sodium	3UNX/Na	589.0	330.3
Strontium	3BAX/Sr	460.7	—
Tantalum	3UNX/Ta	271.5	277.6
Tellurium	3QNY/Te	214.3	225.9
Terbium	3BNX/Tb	432.7	431.9
Thallium	3UNX/Tl	276.8	377.6
Thorium	3UNX/Th	371.9	—
Thulium	3UNX/Tm	371.8	375.2
Tin	3QNY/Sn	224.6	300.9
Titanium	3UNX/Ti	365.4	375.3

SINGLE ELEMENT LAMPS (CONTINUED)

Element	Type No.	Recommended Wavelength, nm	Alternative Wavelength, nm
Tungsten	3QNY/W	255.1	400.9
Uranium	3UAX/U	358.5	306.6
Vanadium	3UNX/V	318.5	385.6
Ytterbium	3UNX/Yb	398.8	246.4
Yttrium	3BNX/Y	410.2	362.1
Zinc	3QNY/Zn	213.9	307.6
Zirconium	3UNX/Zr	360.1	301.2

TWO ELEMENT LAMPS

Element	Type No.
Aluminum + Calcium	3QNY/Al/Ca
+ Magnesium	3QNY/Al/Mg
+ Silicon	3QNY/Al/Si
+ Titanium	3QNY/Al/Ti
Barium + Strontium	3QNY/Ba/Sr
Cadmium + Zinc	3QNY/Cd/Zn
Calcium + Barium	3QNY/Ca/Ba
+ Magnesium	3QNY/Ca/Mg
+ Silicon	3QNY/Ca/Si
+ Strontium	3QNY/Ca/Sr
+ Zinc	3QNY/Ca/Zn
Chromium + Cobalt	3QNY/Cr/Co
+ Copper	3QNY/Cr/Cu
+ Iron	3QNY/Cr/Fe
+ Manganese	3QNY/Cr/Mn
+ Molybdenum	3QNY/Cr/Mo
+ Nickel	3QNY/Cr/Ni
Cobalt + Copper	3QNY/Co/Cu
+ Iron	3QNY/Co/Fe
+ Manganese	3QNY/Co/Mn
+ Molybdenum	3QNY/Co/Mo
+ Nickel	3QNY/Co/Ni
Copper + Iron	3QNY/Cu/Fe
+ Manganese	3QNY/Cu/Mn
+ Molybdenum	3QNY/Cu/Mo
+ Nickel	3QNY/Cu/Ni
+ Zinc	3QNY/Cu/Zn
Gold + Copper	3QNY/Au/Cu
+ Nickel	3QNY/Au/Ni
+ Platinum	3QNY/Au/Pt
+ Silver	3QNY/Au/Ag
Iron + Manganese	3QNY/Fe/Mn
+ Molybdenum	3QNY/Fe/Mo
+ Nickel	3QNY/Fe/Ni
+ Zinc	3QNY/Fe/Zn
Magnesium + Silicon	3QNY/Mg/Si
Manganese + Molybdenum	3QNY/Mn/Mo
+ Nickel	3QNY/Mn/Ni
+ Zinc	3QNY/Mn/Zn
Platinum + Silver	3QNY/Pt/Ag
Silicon + Titanium	3QNY/Si/Cr
Silver + Chromium	3QNY/Ag/Cr
+ Copper	3QNY//Ag/Cu
Sodium + Potassium	3UNX/Na/K

1 1/2" Hollow Cathode

THREE ELEMENT LAMPS

Element			Type No.
Aluminum	+ Calcium	+ Magnesium	3QNY/Al/Ca/Mg
Aluminum	+ Silicon	+ Titanium	3QNY/Al/Si/Ti
Antimony	+ Arsenic	+ Bismuth	3QNY/Sb/As/Bi
Arsenic	+ Selenium	+ Tellurium	3QNY/As/Se/Te
Calcium	+ Barium	+ Strontium	3QNY/Ca/Ba/Sr
Calcium	+ Magnesium	+ Silicon	3QNY/Ca/Mg/Si
		+ Zinc	3QNY/Ca/Mg/Zn
Chromium	+ Cobalt	+ Copper	3QNY/Cr/Co/Cu
		+ Iron	3QNY/Cr/Co/Fe
		+ Manganese	3QNY/Cr/Co/Mn
		+ Nickel	3QNY/Cr/Co/Ni
Chromium	+ Copper	+ Iron	3QNY/Cr/Cu/Fe
		+ Manganese	3QNY/Cr/Cu/Mn
		+ Nickel	3QNY/Cr/Cu/Ni
Chromium	+ Iron	+ Manganese	3QNY/Cr/Fe/Mn
		+ Nickel	3QNY/Cr/Fe/Ni
Chromium	+ Manganese	+ Nickel	3QNY/Cr/Mn/Ni
Cobalt	+ Copper	+ Iron	3QNY/Co/Cu/Fe
		+ Manganese	3QNY/Co/Cu/Mn
		+ Nickel	3QNY/Co/Cu/Ni
Cobalt	+ Iron	+ Manganese	3QNY/Co/Fe/Mn
		+ Nickel	3QNY/Co/Fe/Ni
		+ Zinc	3QNY/Co/Fe/Zn
Copper	+ Manganese	+ Nickel	3QNY/Cu/Mn/Ni
		+ Zinc	3QNY/Cu/Mn/Zn
Gold	+ Copper	+ Nickel	3QNY/Au/Cu/Ni
Gold	+ Platinum	+ Silver	3QNY/Au/Pt/Ag
Iron	+ Manganese	+ Nickel	3QNY/Fe/Mn/Ni
		+ Zinc	3QNY/Fe/Mn/Zn
Molybdenum	+ Chromium	+ Cobalt	3QNY/Mo/Cr/Co
		+ Copper	3QNY/Mo/Cr/Cu
		+ Iron	3QNY/Mo/Cr/Fe
		+ Manganese	3QNY/Mo/Cr/Mn
Molybdenum	+ Cobalt	+ Copper	3QNY/Mo/Co/Cu
		+ Manganese	3QNY/Mo/Co/Mn
Molybdenum	+ Iron	+ Manganese	3QNY/Mo/Fe/Mn
Silver	+ Chromium	+ Copper	3QNY/Ag/Cr/Cu
Silver	+ Copper	+ Nickel	3QNY/Ag/Cu/Ni

FOUR ELEMENT LAMPS

Element				Type No.
Aluminum	+ Calcium	+ Iron	+ Magnesium	3QNY/Al/Ca/Fe/Mg
Aluminum	+ Calcium	+ Lithium	+ Magnesium	3QNY/Al/Ca/Li/Mg
Barium	+ Calcium	+ Magnesium	+ Strontium	3QNY/Ba/Ca/Mg/Sr
Chromium	+ Cobalt	+ Copper	+ Iron	3QNY/Cr/Co/Cu/Fe
			+ Manganese	3QNY/Cr/Co/Cu/Mn
			+ Nickel	3QNY/Cr/Co/Cu/Ni
		+ Iron	+ Manganese	3QNY/Cr/Co/Fe/Mn
			+ Nickel	3QNY/Cr/Co/Fe/Ni
		+ Manganese	+ Nickel	3QNY/Cr/Co/Mn/Ni
Chromium	+ Copper	+ Iron	+ Manganese	3QNY/Cr/Cu/Fe/Mn
			+ Nickel	3QNY/Cr/Cu/Fe/Ni
		+ Manganese	+ Nickel	3QNY/Cr/Cu/Mn/Ni
		+ Nickel	+ Silver	3QNY/Cr/Cu/Ni/Ag
Chromium	+ Iron	+ Manganese	+ Nickel	3QNY/Cr/Fe/Mn/Ni
Cobalt	+ Copper	+ Iron	+ Manganese	3QNY/Co/Cu/Fe/Ni
			+ Nickel	3QNY/Co/Cu/Fe/Ni
		+ Manganese	+ Nickel	3QNY/Co/Cu/Mn/Ni
Cobalt	+ Iron	+ Manganese	+ Nickel	3QNY/Co/Fe/Mn/Mn
Copper	+ Iron	+ Manganese	+ Nickel	3QNY/Cu/Fe/Mn/Ni
			+ Zinc	3QNY/Cu/Fe/Mn/Zn
Copper	+ Iron	+ Nickel	+ Silver	3QNY/Cu/Fe/Ni/Ag

FOUR ELEMENT LAMPS (CONTINUED)

Element				Type No.
Molybdenum	+ Cobalt	+ Copper	+ Iron	3QNY/Mo/Co/Cu/Fe
			+ Manganese	3QNY/Mo/Co/Cu/Mn
		+ Iron	+ Manganese	3QNY/Mo/Co/Fe/Mn
Molybdenum	+ Copper	+ Iron	+ Manganese	3QNY/Mo/Cu/Fe/Mn

FIVE ELEMENTS

Element					Type No.
Chromium	+ Cobalt	+ Copper	+ Iron	+ Manganese	3QNY/Cr/Co/Cu/Fe/Mn
				+ Nickel	3QNY/Cr/Co/Cu/Fe/Ni
			+ Manganese	+ Nickel	3QNY/Cr/Co/Cu/Mn/Ni
		+ Iron	+ Manganese	+ Nickel	3QNY/Cr/Co/Fe/Mn/Ni
Chromium	+ Copper	+ Iron	+ Manganese	+ Nickel	3QNY/Cr/Cu/Fe/Mn/Ni
Chromium	+ Copper	+ Iron	+ Nickel	+ Silver	3QNY/Cr/Cu/Fe/Ni/Ag
Cobalt	+ Copper	+ Iron	+ Manganese	+ Molybdenum	3QNY/Co/Cu/Fe/Mn/Mo
				+ Nickel	3QNY/Co/Cu/Fe/Mn/Ni

SIX ELEMENTS

Element						Type No.
Chromium	+ Cobalt	+ Copper	+ Iron	+ Manganese	+ Molybdenum	3QNY/Cr/Co/Cu/Fe/Mn/Mo
					+ Nickel	3QNY/Cr/Co/Cu/Fe/Mn/Ni

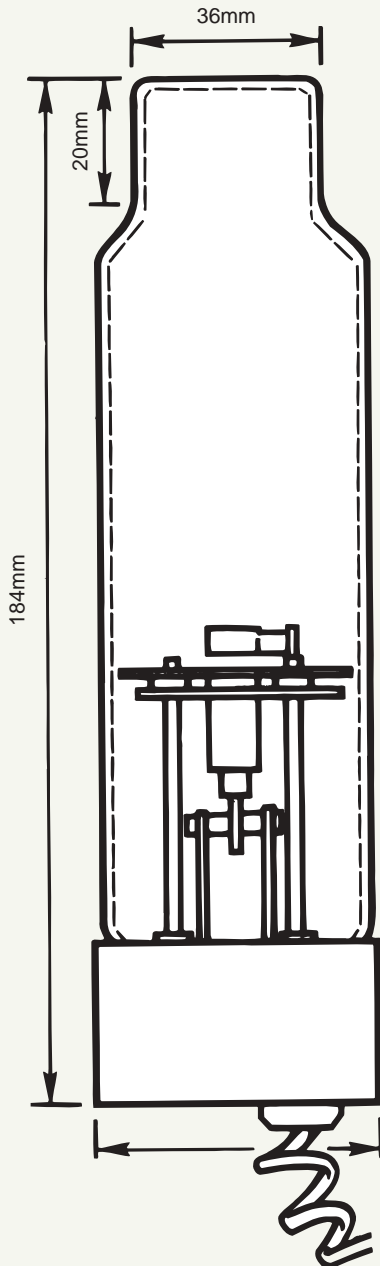
SEVEN ELEMENTS

Element							Type No.
Aluminium	+ Calcium	+ Copper	+ Iron	+ Magnesium	+ Silicon	+ Zinc	3QNY/Al/Ca/Cu/Fe/Mg/Si/Zn

Notes

2" (50mm) Hollow Cathode Lamp

Outline Dimensions



Type Number Code

5 QNY/Fe

Size Window Filler Gas Shape Element

Size	5	-	50mm diameter
Window	Q	-	Quartz
	U	-	UV Glass
	B	-	Borosilicate
Filler Gas	A	-	Argon
	N	-	Neon
Element	-	-	Chemical Symbol

SINGLE ELEMENT LAMPS			
Element	Type No.	Recommended Wavelength, nm	Alternative Wavelength, nm
Aluminum	5UN/Al	309.3	394.4
Antimony	5QN/Sb	217.6	231.1
Arsenic	5QN/As	193.7	197.2
Barium	5BA/Va	553.6	350.1
Beryllium	5QN/Be	234.9	-
Bismuth	5QN/Bi	223.1	306.8
Boron	5QN/B	249.8	-
Cadmium	5QN/Cd	228.8	326.1
Caesium	5BN/Cs	852.1	455.5
Calcium	5UN/Ca	422.7	-
Cerium	5UN/Ce	520.0	569.7
Chromium	5UN/Cr	357.9	429.0
Cobalt	5UN/Co	240.7	304.4
Copper	5UN/Cu	324.8	327.4
Dysprosium	5BN/Dy	421.2	416.8
Erbium	5BN/Er	400.8	408.8
Europium	5BA/Eu	459.4	333.4
Gadolinium	5UN/Gd	407.9	419.1
Gallium	5UN/Ga	287.4	403.3
Germanium	5UN/Ge	265.2	269.1
Gold	5QN/Au	242.8	267.6
Hafnium	5UA/Hf	307.3	295.1
Holmium	5BN/Ho	410.4	417.3
Indium	5UN/In	303.9	451.1
Iridium	5QN/Ir	264.0	208.9
Iron	5QN/Fe	248.3	372.0
Lanthanum	5UA/La	550.1	418.7
Lead	5QN/Pb	283.3	217.0
Lithium	5BA/Li	670.8	323.3
Lutetium	5UA/Lu	336.0	337.7
Magnesium	5QN/Mg	285.2	202.6
Manganese	5UN/Mn	279.5	403.0
Mercury	5UN/Hg	253.7	-
Molybdenum	5UN/Mo	313.3	390.1
Neodymium	5BN/Nd	492.5	490.2
Nickel	5QN/Ni	232.0	305.1
Niobium	5UA/Nb	334.4	358.0
Osmium	5UN/Os	290.9	301.8
Palladium	5QN/Pd	247.6	340.5
Phosphorus	5QN/P	213.6	-
Platinum	5UN/Pt	265.9	299.8
Potassium	5BN/K	766.5	404.4
Praseodymium	5BN/Pr	495.1	492.5
Rhenium	5UA/Re	346.1	345.2
Rhodium	5UA/Rh	343.5	365.8
Rubidium	5BN/Rb	780.0	794.8
Ruthenium	5UN/Ru	349.9	392.6
Samarium	5UN/Sm	429.7	476.0
Scandium	5UN/Sc	391.2	408.2
Selenium	5QN/Se	196.0	204.0
Silicon	5QN/Si	251.6	250.7
Silver	5UA/Ag	328.1	338.3
Sodium	5UN/Na	589.0	330.3
Strontium	5BA/Sr	460.7	-
Tantalum	5UN/Ta	271.5	277.6
Tellurium	5QN/Te	214.3	225.9
Terbium	5BN/Tb	432.7	431.9
Thallium	UN/Tl	276.8	377.6
Thorium	5UN/Th	371.9	-
Thulium	5UN/Tm	371.8	375.2
Tin	5QN/Sn	286.3	224.6
Titanium	5UN/Ti	365.4	375.3
Tungsten	5QN/W	255.1	400.9

2" Hollow Cathode

SINGLE ELEMENT LAMPS (CONTINUED)

Element	Type No.	Recommended Wavelength, nm	Alternative Wavelength, nm
Uranium	5UA/U	356.7	351.5
Vanadium	5UN/V	318.5	306.6
Ytterbium	5UN/Yb	398.8	246.4
Yttrium	5BN/Y	410.2	362.1
Zinc	5QN/Zn	213.9	307.6
Zirconium	5UN/Zr	360.1	301.2

TWO ELEMENT LAMPS

Element	Type No.
Aluminum + Calcium	5QN/Al/Ca
+ Magnesium	5QN/Al/Mg
+ Silicon	5QN/Al/Si
+ Titanium	5QN/Al/Ti
Barium + Strontium	5QN/Ba/Sr
Cadmium + Zinc	5QN/Cd/Zn
Calcium + Barium	5QN/Ca/Ba
+ Magnesium	5QN/Ca/Mg
+ Silicon	5QN/Ca/Si
+ Strontium	5QN/Ca/Sr
+ Zinc	5QN/Ca/Zn
Chromium + Cobalt	5QN/Cr/Co
+ Copper	5QN/Cr/Cu
+ Iron	5QN/Cr/Fe
+ Manganese	5QN/Cr/Mn
+ Molybdenum	5QN/Cr/Mo
+ Nickel	5QN/Cr/Ni
Cobalt + Copper	5QN/Co/Cu
+ Iron	5QN/Co/Fe
+ Manganese	5QN/Co/Mn
+ Molybdenum	5QN/Co/Mo
+ Nickel	5QN/Co/Ni
Copper + Iron	5QN/Cu/Fe
+ Manganese	5QN/Cu/Mn
+ Molybdenum	5QN/Cu/Mo
+ Nickel	5QN/Cu/Ni
+ Zinc	5QN/Cu/Zn
Gold + Copper	5QN/Au/Cu
+ Nickel	5QN/Au/Ni
+ Platinum	5QN/Au/Pt
+ Silver	5QN/Au/Ag
Iron + Manganese	5QN/Fe/Mn
+ Molybdenum	5QN/Fe/Mo
+ Nickel	5QN/Fe/Ni
+ Zinc	5QN/Fe/Zn
Magnesium + Silicon	5QN/Mg/Si
Manganese + Molybdenum	5QN/Mn/Mo
+ Nickel	5QN/Mn/Ni
+ Zinc	5QN/Mn/Zn
Platinum + Silver	5QN/Pt/Ag
Silicon + Titanium	5QN/Si/Ti
Silver + Chromium	5QN/Ag/Cr
+ Copper	5QN/Ag/Cu
Sodium + Potassium	5UN/Na/K

THREE ELEMENT LAMPS

Element			Type No.
Aluminum	+ Calcium	+ Magnesium	5QN/Al/Ca/Mg
Aluminum	+ Silicon	+ Titanium	5QN/Al/Si/Ti
Antimony	+ Arsenic	+ Bismuth	5QN/Sb/As/Bi
Arsenic	+ Selenium	+ Tellurium	5QN/As/Se/Te
Calcium	+ Barium	+ Strontium	5QN/Ca/Ba/Sr
Calcium	+ Magnesium	+ Silicon	5QN/Ca/Mg/Si
		+ Zinc	5QN/Ca/Mg/Zn
		+ Copper	5QN/Cr/Co/Cu
Chromium	+ Cobalt	+ Iron	5QN/Cr/Co/Fe
		+ Manganese	5QN/Cr/Co/Mn
		+ Nickel	5QN/Cr/Co/Ni
		+ Iron	5QN/Cr/Cu/Fe
Chromium	+ Copper	+ Manganese	5QN/Cr/Cu/Mn
		+ Nickel	5QN/Cr/Cu/Ni
Chromium	+ Iron	+ Manganese	5QN/Cr/Fe/Mn
		+ Nickel	5QN/Cr/Fe/Ni
Chromium	+ Manganese	+ Nickel	5QN/Cr/Mn/Ni
Cobalt	+ Copper	+ Iron	5QN/Co/Cu/Fe
		+ Manganese	5QN/Co/Cu/Mn
		+ Nickel	5QN/Co/Cu/Ni
Cobalt	+ Iron	+ Nickel	5QN/Co/Fe/Ni
		+ Manganese	5QN/Co/Fe/Mn
Cobalt	+ Manganese	+ Nickel	5QN/Co/Mn/Ni
Copper	+ Iron	+ Manganese	5QN/Cu/Fe/Mn
		+ Nickel	5QN/Cu/Fe/Ni
		+ Zinc	5QN/Cu/Fe/Zn
Copper	+ Manganese	+ Nickel	5QN/Cu/Mn/Ni
		+ Zinc	5QN/Cu/Mn/Zn
Gold	+ Copper	+ Nickel	5QN/Au/Cu/Ni
Gold	+ Platinum	+ Silver	5QN/Au/Pt/Ag
Iron	+ Manganese	+ Nickel	5QN/Fe/Mn/Ni
		+ Zinc	5QN/Fe/Mn/Zn
Molybdenum	+ Chromium	+ Cobalt	5QN/Mo/Cr/Co
		+ Copper	5QN/Mo/Cr/Cu
		+ Manganese	5QN/Mo/Cr/Mn
Molybdenum	+ Cobalt	+ Copper	5QN/Mo/Co/Cu
		+ Manganese	5QN/Mo/Co/Mn
		+ Iron	5QN/Mo/Co/Fe
Molybdenum	+ Copper	+ Iron	5QN/Mo/Cu/Fe
		+ Manganese	5QN/Mo/Cu/Mn
Molybdenum	+ Iron	+ Manganese	5QN/Mo/Fe/Mn
Silver	+ Chromium	+ Copper	5QN/Ag/Cr/Cu
Silver	+ Copper	+ Nickel	5QN/Ag/Cu/Ni

FOUR ELEMENT LAMPS

Element				Type No.
Aluminum	+ Calcium	+ Iron	+ Magnesium	5QN/Al/Ca/Fe/Mg
Aluminum	+ Calcium	+ Lithium	+ Magnesium	5QN/Al/Ca/Li/Mg
Barium	+ Calcium	+ Magnesium	+ Strontium	5QN/Ba/Ca/Mg/Sr
Chromium	+ Cobalt	+ Copper	+ Iron	5QN/Cr/Co/Cu/Fe
			+ Manganese	5QN/Cr/Co/Cu/Mn
			+ Nickel	5QN/Cr/Co/Cu/Ni
		+ Iron	+ Manganese	5QN/Cr/Co/Fe/Mn
			+ Nickel	5QN/Cr/Co/Fe/Ni
			+ Manganese + Nickel	5QN/Cr/Co/Mn/Ni
Chromium	+ Copper	+ Iron	+ Manganese	5QN/Cr/Cu/Fe/Mn
			+ Nickel	5QN/Cr/Cu/Fe/Ni
		+ Manganese + Nickel	+ Nickel	5QN/Cr/Cu/Mn/Ni
			+ Silver	5QN/Cr/Cu/Ni/Ag
Chromium	+ Iron	+ Manganese + Nickel	5QN/Cr/Fe/Mn/Ni	

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