



**Scientific diffraction gratings / Custom gratings**

**Flat field & imaging gratings - Type IV**

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# Flat field and imaging gratings- Type IV

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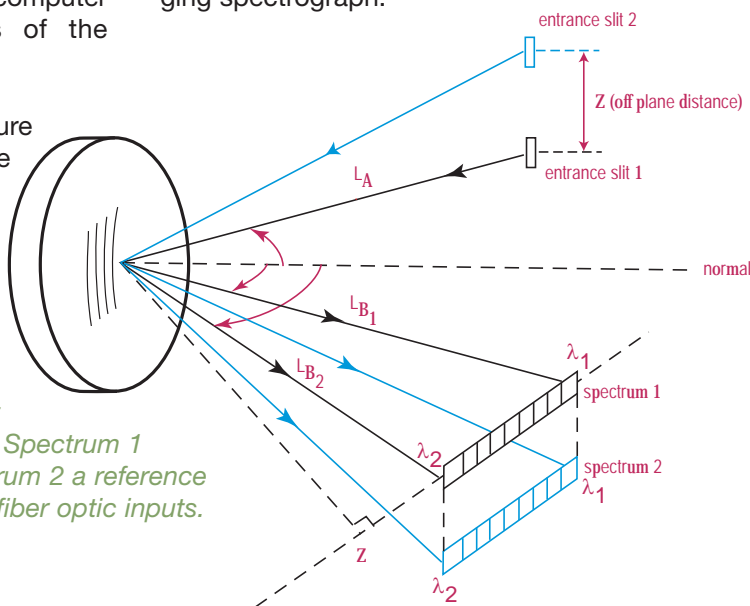
Type IV aberration corrected flat field & imaging gratings are designed to focus a spectrum onto a plane surface, making them ideal for use with linear or 2-D array detectors.

These gratings are produced with grooves that are neither equispaced nor parallel, and are computer optimized to form near-perfect images of the entrance slit on the detector plane.

Owing to their large optical numerical aperture and correction from aberrations, these Type IV aberration corrected flat field & imaging gratings provide much better light collection efficiency and signal to noise ratio than traditional Type I Rowland circle concave gratings.

*The illustration shows a “super corrected grating” imaging two independent sources onto two independent linear arrays. Spectrum 1 is a “sample spectrum” from slit 1 and spectrum 2 a reference spectrum from slit 2. These “slits” could be fiber optic inputs.*

When an area detector such as a CCD is utilized, it is often possible to focus multiple sources onto the entrance slit and independently evaluate the spectrum from each source. These “Imaging Gratings” are nearly free from astigmatism, and therefore only one fixed optical element is required to construct an imaging spectrograph.



### List of Type IV flat field & imaging gratings

reference number	dispersion (nm/mm)	wavelength range (nm)	spectrum length (mm)	LA (mm)	blank dim. (mm)	F / #	grooves per mm	note
523 00 080	4	300-400	25	210	∅ 70	3.2	1200	a
523 00 010	8	200-400	25	210	∅ 70	3.2	600	a
523 00 020	16	400-800	25	210	∅ 70	3.2	300	a.b
523 00 030	24	200-800	25	210	∅ 70	3.2	200	a.b
523 00 070	24	300-900	25	210	∅ 70	3.2	200	a
523 00 040	36	300-1170	25	210	∅ 70	3.2	138	a
523 00 050	40	200-1200	25	210	∅ 70	3.2	120	a
523 00 060	48	200-1400	25	210	∅ 70	3.2	100	a
523 01 020	14	190-455	18.8	190	∅ 70	2.8	360	a.c
523 01 030	24	190-820	25	190	∅ 70	2.8	200	a.c
523 01 070	24	300-820	21.6	190	∅ 70	2.8	200	a.c
523 01 040	37.8	285-1232	25	190	∅ 70	2.8	133	a.c
523 01 090	37.8	500-1232	19.3	190	∅ 70	2.8	133	a.c
523 01 060	76	600-2500	25	190	∅ 70	2.8	65	a.c

Note: a<sub>n</sub> : these gratings are interchangeable (same geometry of use)  
 b : these gratings are blazed by ion etching (higher efficiency)  
 c : these gratings are imaging gratings  
 d : these gratings are ion-etched, laminar profile (suppression of the 2<sup>nd</sup> order)

reference number	dispersion (nm/mm)	wavelength range (nm)	spectrum length (mm)	LA (mm)	blank dim. (mm)	F / #	groove density (l/mm)	note
523 00 420	1.0	250-450	203	257	Ø50	5.1	1800	
523 00 410	1.1	440-520	70	326	Ø50	6.7	2000	
523 00 430	1.4	100-400	210.4	238	Ø30	7.9	1340	
523 00 440	1.6	170-500	211.1	238	Ø30	7.9	1200	
523 00 730	4.6	395-705	68	231	Ø100	2.4	793	
533 00 110	5	200-360	32	223	Ø55	4.4	807	b
543 00 180	5	4160-4180	4	258	Ø70	3.9	376	d
533 00 450	7.1	200-350	21.2	113	44x44	2.3	900	
523 00 540	7.9	340-660	40.6	201	Ø90	2.3	600	
523 00 510	8.1	330-660	40.4	210	Ø108	2	540	
533 00 550	8.4	340-750	49	148	Ø38	4	800	b
543 00 170	9	175-400	25.1	153	40x40	4	580	d

reference number	dispersion (nm/mm)	wavelength range (nm)	spectrum length (mm)	LA (mm)	blank dim. (mm)	F / #	groove density (l/mm)	note
523 00 560	10	380-720	33.7	107	Ø50	2	900	
533 00 570	10	370-760	37.1	99	Ø32	3	950	b
533 00 890	15.5	340-800	29.6	58	25x25	2.2	785	b
523 00 210	15.6	800-1000	12.8	105	46x46	2.2	595	
533 00 580	16	340-690	24	145	Ø44	3.3	430	b
533 00 100	15.8	340-830	31	163	52x52	3.3	372	b
533 00 720	16	380-780	25	138	Ø50	2.8	457	b
533 00 670	23	340-800	19.7	89	30x30	2.8	440	b
533 00 130	24	190-800	25.4	210	Ø40	5.3	200	b
533 00 710	24	190-800	25	138	Ø50	2.8	298	b
543 00 150	25.1	1600-2200	23.9	148	40x40	3.7	267	d
523 03 120	25.5	190-800	24.6	90	Ø48	2	340	
523 00 470	27	400-950	20	85	Ø48	1.8	217	

reference number	dispersion (nm/mm)	wavelength range (nm)	spectrum length (mm)	LA (mm)	blank dim. (mm)	F / #	groove density (l/mm)	note
523 00 460	29	320-710	13.4	100	Ø50	2	310	
523 00 480	30	200-800	20	85	Ø48	1.8	200	
533 00 700	32	300-1100	25	138	Ø50	2.8	227	b
533 00 610	40	330-780	11.3	120	34x34	3.5	250	b
523 00 840	53	190-870	12.6	94	44x44	2	185	
523 00 630	67	380-720	5	40.4	32x32	1.5	320	
523 00 810	67	380-820	6.6	93	Ø54	1.8	143	
523 00 150	67.4	1600-2200	8.9	101	Ø54	2	130	
523 00 820	68	750-1180	6.4	93	Ø54	1.8	143	
523 00 530	106	350-1050	6.6	143	Ø42	3.4	65	

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**USA - HORIBA Jobin Yvon Inc**

Tel: +1-732-494-8660  
Fax: +1-732-549-5125  
Email: info@jobinyvon.net

**France - HORIBA Jobin Yvon SAS**

Tel: +33 (0) 1 64 54 13 00  
Fax: +33 (0) 1 69 09 07 21  
Email: info@jobinyvon.fr

**Japan - HORIBA Ltd**

Tel: +81 (0) 3 38618231  
Fax: +81 (0) 3 38618259  
Email: info@horiba.co.jp

**Germany - HORIBA Jobin Yvon GmbH**

Tel: +49 (0) 89 46 23 17-0  
Fax: +49 (0) 89 46 23 17-99  
Email: info@jobinyvon.de

**Italy - HORIBA Jobin Yvon SRL**

Tel: +39 0 2 57603050  
Fax: +39 0 2 57600876  
Email: info@jobinyvon.it

**UK - HORIBA Jobin Yvon Ltd**

Tel: +44 (0) 20 8204 8142  
Fax: +44 (0) 20 8204 6142  
Email: info@jobinyvon.co.uk

**China - HORIBA Jobin Yvon SAS**

**Beijing representative office**

Tel: +86 (0) 10 8567 9966  
Fax: +86 (0) 10 8567 9066

**Shanghai representative office**

Tel: +86 (0) 21 3222 1818  
Fax: +86 (0) 21 6289 5553  
Email: jjh@jobinyvon.cn

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**HORIBA**JOBIN YVON

USA: HORIBA Jobin Yvon Inc., 3880 Park Avenue, Edison, NJ 08820-3012, Toll-Free: +1-866-jobinyvon  
Tel: +1-732-494-8660 Ext 232, Fax: +1-732-549-5125, E-mail: oem@jobinyvon.com, www.jobinyvon.com  
France: HORIBA Jobin Yvon S.A.S., 16-18, rue du Canal, 91165 Longjumeau Cedex,  
Tel: +33(0)164541338, Fax: +33(0)169099319, E-mail: oem.sales@jobinyvon.fr, www.jobinyvon.com  
Japan: HORIBA Ltd., JY Optical Sales Dept, Higashi-Kanda, Daiji Building, 1-7-8 Higashi-Kanda  
Chiyoda-ku, Tokyo 101-0031, Tel: +81 (0) 3 3861 8231, www.jyoriba.jp  
Germany: +49 (0) 89 462317-0 Italy: +39 0 2 57603050 UK: +44 (0) 20 8204 8142  
China: +86 (0) 10 8567 9966

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