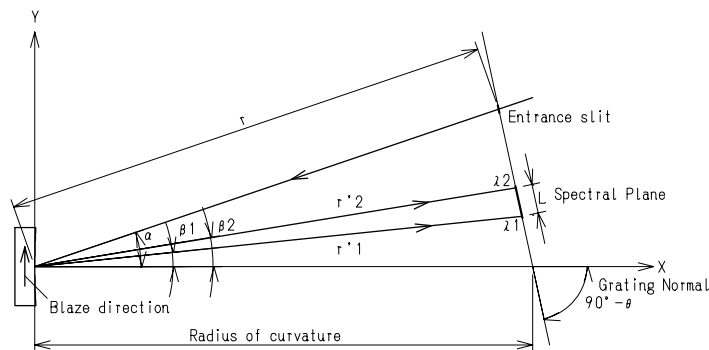


# Hitachi Aberration-Corrected Concave Gratings for Flat-Field Spectrographs

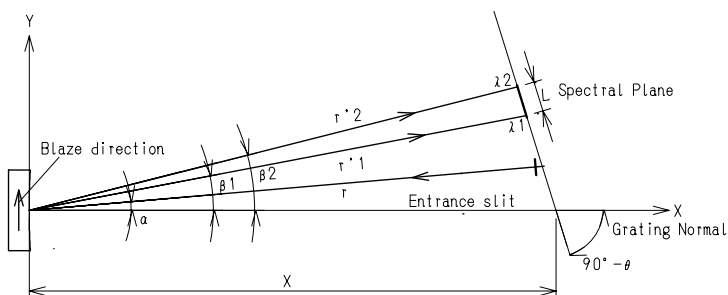
## Normal-Incidence: 4 Types (A to D)

### Normal-incidence Type A



| Part No. | Grooves per mm | Radius of curvature (mm) | Blaze WL (nm) | Blank size H×W×T (mm) | Blaze angle (degree) | $\alpha$ (degree) | $r$ (mm) | $\theta$ (degree) | $\beta_1$ (degree) | $r'_1$ (mm) | $\beta_2$ (degree) | $r'_2$ (mm) | $L$ (mm) | WL Range $\lambda_1$ to $\lambda_2$ (nm) |
|----------|----------------|--------------------------|---------------|-----------------------|----------------------|-------------------|----------|-------------------|--------------------|-------------|--------------------|-------------|----------|--|
| 001-0287 | 600            | 200                      | 785           | 30×30×10              | 13.7                 | 19.8              | 197.22   | 12.2              | 6.39               | 196.49      | 9.86               | 195.83      | 11.9     | 750~850                                  |
| 001-0295 | 600            | 400                      | 769           | 28×38×10              | 13.4                 | 19.1              | 394.28   | 12                | 6.01               | 393.4       | 9.48               | 391.64      | 23.83    | 720~820                                  |
| 001-0296 | 600            | 400                      | 786           | 28×38×10              | 13.7                 | 19.78             | 425.08   | 0                 | 6.41               | 402.51      | 9.88               | 406.02      | 25.18    | 750~850                                  |
| 001-0297 | 600            | 500                      | 786           | 45×60×10              | 13.7                 | 19.78             | 531.35   | 0                 | 6.41               | 503.14      | 9.88               | 507.53      | 30.91    | 750~850                                  |

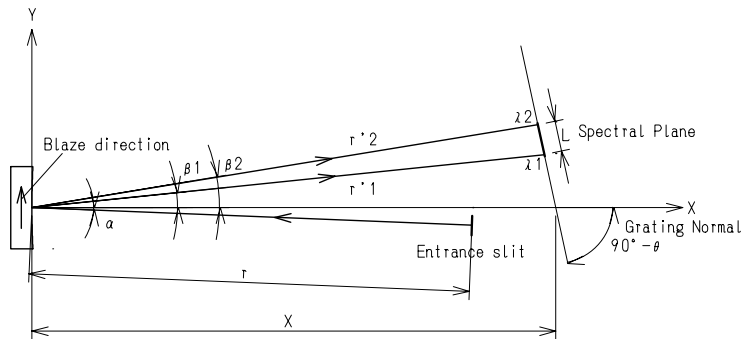
### Normal-incidence Type B



| Part No. | Grooves per mm | Radius of curvature (mm) | Blaze WL (nm) | Blank size H×W×T (mm) | Blaze angle (degree) | $\alpha$ (degree) | $r$ (mm) | $X$ (mm) | $\theta$ (degree) | $\beta_1$ (degree) | $r'_1$ (mm) | $\beta_2$ (degree) | $r'_2$ (mm) | $L$ (mm) | WL Range $\lambda_1$ to $\lambda_2$ (nm) |
|----------|----------------|--------------------------|---------------|-----------------------|----------------------|-------------------|----------|----------|-------------------|--------------------|-------------|--------------------|-------------|----------|--|
| 001-0258 | 600            | 100                      | 249           | 12×12×5               | 4.3                  | 0                 | 105      | 102.62   | 15.183            | 11.77              | 99.216      | 21.1               | 99.571      | 16.17    | 340~600                                  |
| 001-0273 | 600            | 150                      | 448           | 25×20×5               | 7.8                  | 0                 | 150      | 165.92   | 13.847            | 15.31              | 161.15      | 24.83              | 164.11      | 27.16    | 440~700                                  |
| 001-0275 | 600            | 150                      | 493           | 50×40×10              | 8.6                  | 6                 | 156.75   | 160.8    | 16.67             | 14.41              | 154.16      | 24                 | 155.31      | 25.89    | 589~852                                  |
| 001-0276 | 600            | 200                      | 232           | 25×20×5               | 4                    | 0                 | 200      | 204.2    | 7.03              | 7.24               | 202.67      | 9.67               | 202.88      | 8.59     | 210~280                                  |

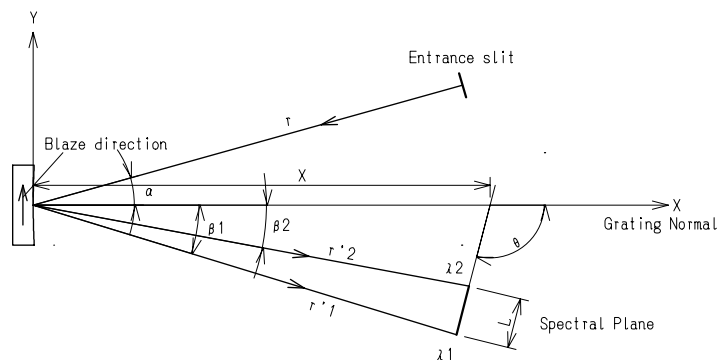
# Hitachi Aberration-Corrected Concave Gratings for Flat-Field Spectrographs

## Normal-incidence Type C



| Part No. | Grooves per mm | Radius of curvature (mm) | Blaze WL (nm) | Blank size H×W×T (mm) | Blaze angle (degree) | $\alpha$ (degree) | $r$ (mm) | $X$ (mm) | $\theta$ (degree) | $\beta_1$ (degree) | $r'1$ (mm) | $\beta_2$ (degree) | $r'2$ (mm) | $L$ (mm) | WL Range $\lambda_1$ to $\lambda_2$ (nm) |
|----------|----------------|--------------------------|---------------|-----------------------|----------------------|-------------------|----------|----------|-------------------|--------------------|------------|--------------------|------------|----------|--|
| 001-0245 | 300            | 50                       | 253           | 9×9×5                 | 2.2                  | -5.6              | 50.94    | 50       | 8                 | 9.84               | 49.542     | 18.71              | 50.409     | 7.78     | 250~750                                  |
| 001-0248 | 330            | 149.5                    | 222           | 25×25×5               | 2.1                  | -1                | 149.5    | 151.93   | 15.683            | 4.79               | 148.96     | 10.9               | 146.78     | 15.91    | 200~520                                  |
| 001-0253 | 500            | 100                      | 207           | 20×18×5               | 3                    | -5.2              | 102.05   | 100      | 10                | 10.7               | 98.49      | 15.11              | 98.87      | 7.6      | 190~340                                  |

## Normal-incidence Type D



| Part No. | Grooves per mm | Radius of curvature (mm) | Blaze WL (nm) | Blank size H×W×T (mm) | Blaze angle (degree) | $\alpha$ (degree) | $r$ (mm) | $X$ (mm) | $\theta$ (degree) | $\beta_1$ (degree) | $r'1$ (mm) | $\beta_2$ (degree) | $r'2$ (mm) | $L$ (mm) | WL Range $\lambda_1$ to $\lambda_2$ (nm) |
|----------|----------------|--------------------------|---------------|-----------------------|----------------------|-------------------|----------|----------|-------------------|--------------------|------------|--------------------|------------|----------|--|
| 001-0464 | 1200           | 500                      | 60            | 50×50×10              | 3.08                 | 51                | 314.66   | 429.18   | 132.74            | -46.81             | 315.97     | -39.28             | 315.752    | 41.6     | 40~120                                   |

## References

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2. T. Harada and H. Sakuma, T. Kita, M. Nakamura, "Design of EUV spectrometer with stigmatic image focusing using spherical varied line-space gratings", Proc. Soc. Photo-Opt. Instrum. Eng. 2283(1994)
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4. T. Harada, H. Sakuma, K. Takahashi, T. Watanabe, H. Hara and T. Kita, "Design of a high-resolution extreme-ultraviolet imaging spectrometer with aberration-corrected concave gratings", Appl. Opt. 37, 6803-6810(1998)